

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: 5/2/14

Well information;

Operator Loe J, Well Name and Number Aztec Oil Syndicate 2H

API# 30-043-21227, Section 5, Township 22 N/S, Range 6 E/W

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. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

Charlie Perez
NMOCD Approved by Signature

6-20-2014
Date

RECEIVED

Form 3160-3
(March 2012)

MAY 02 2014

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Farmington Field Office
Bureau of Land Management

5. Lease Serial No.
NM 109387 NMNM109387

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		8. Lease Name and Well No. AZTEC OIL SYNDICATE 2H	
2. Name of Operator Logos Operating, LLC		9. API Well No. 30-043-21227	
3a. Address 4001 North Butler Ave, Building 7101 Farmington, NM 87401	3b. Phone No. (include area code) 505-330-9333	10. Field and Pool, or Exploratory Wildcat Gallup	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 989' FNL & 341' FEL At proposed prod. zone 1650' FNL & 2340' FEL		11. Sec., T. R. M. or Blk. and Survey or Area SHL: Sec 5, T22N R06W, UL A BHL: Sec 6, T22N R06W, UL G	
14. Distance in miles and direction from nearest town or post office* 6 miles southwest of Counselor		12. County or Parish Sandoval	13. State NM
15. Distance from proposed* 341' from eastern edge of Sec 5 location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of acres in lease 644.67 acres	17. Spacing Unit dedicated to this well Sec 5 S2/N2, Sec 6 S2NE = 200.0 acres	
18. Distance from proposed location* 50' from applied for to nearest well, drilling, completed, Aztec Oil Syndicate 1H applied for, on this lease, ft.	19. Proposed Depth 12685' MD, 5397' VD	20. BLM/BIA Bond No. on file BLM NMB000917	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7126' GL	22. Approximate date work will start* 07/01/2014	23. Estimated duration 45 days	

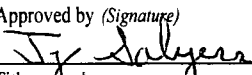
24. Attachments

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 	Name (Printed/Typed) Tamra Sessions	Date 5-2-14
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Title
Operations Technician

Approved by (Signature) 	Name (Printed/Typed) Troy Salyers	Date 6/16/2014
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Title Petroleum Engineer (Acting AFM)	Office FFO
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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)

CONFIDENTIAL

NMOCD

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-8161 Fax: (575) 393-0720

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

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, N.M. 87505
Phone: (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, N.M. 87505

Form C-132
Revised August 1, 2011
Submit one copy to appropriate District Office

MAY 02 2014

Farmington Field Office
Bureau of Land Management
AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-043-21227	*Pool Code 42289	*Pool Name Lybrook	*Well Number 2H
*Property Code 3133m	*Property Name AZTEC OIL SYNDICATE		*Elevation 7126
*GRID No. 289408	*Operator Name LOGOS OPERATING, LLC		

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
A	5	22 N	6 W	LOT 1	989	NORTH	341	EAST	SANDOVAL

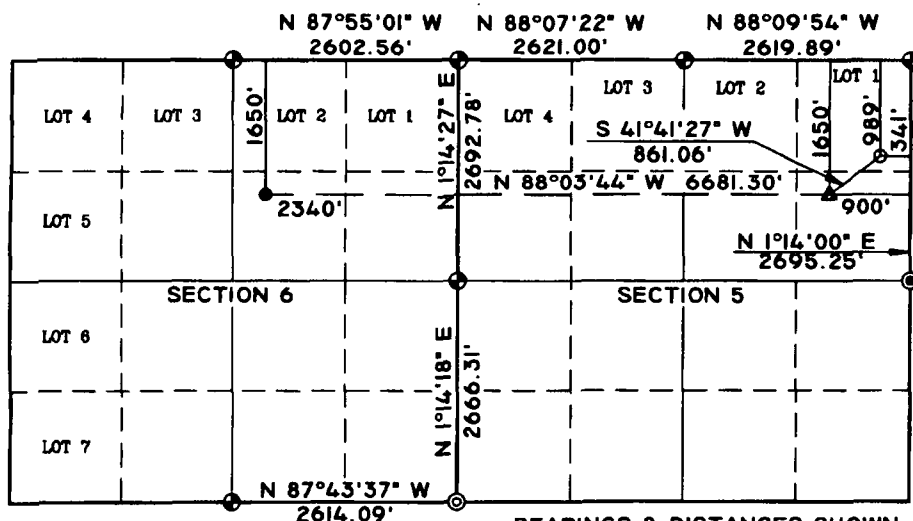
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	6	22 N	6 W		1650	NORTH	2340	EAST	SANDOVAL

¹² Dedicated Acres 240 acres	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

16 BOTTOM HOLE	LANDING POINT	SURFACE
LAT: 36.1710622° N	LAT: 36.1706772° N	LAT: 36.1724632° N
LONG: 107.5078113° W	LONG: 107.4851823° W	LONG: 107.4832700° W
NAD 83	NAD 83	NAD 83
LAT: 36°10.26286' N	LAT: 36°10.23976' N	LAT: 36°10.34692' N
LONG: 107°30.43236' W	LONG: 107°29.07466' W	LONG: 107°28.95992' W
NAD 27	NAD 27	NAD 27



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Tamra Sessions* Date: *4/30/14*
Printed Name: **Tamra Sessions**
Email Address: **tsessions@logosresourcesllc.com**

18 SURVEYOR CERTIFICATION

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

Date of Survey: **03/04/14**

Signature and Seal of Professional Surveyor

Signature and Seal of Professional Surveyor

Signature and Seal of Professional Surveyor

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**Attachment To Application For Permit To Drill.
Drilling program**

LOGOS OPERATING, LLC
4001 N. Butler, Bldg 7101
Farmington, NM 87401
U.S.A

Aztec Oil Syndicate 2H
Horizontal Gallup Oil and Gas Well
Surface Location: 989' FNL – 341' FEL
Section 5, T22N, R6W
Ungraded GL Elev = 7,126'
Estimate KB Elev = 7,141' (14.5'KB)
Lat. = 36.1724632 deg N
Long. = 107.4832700 deg W
NAD83
Sandoval County, New Mexico

Proposed Bottom Hole Location: 1,650' FNL – 2,340' FEL
Section 6, T22N, R6W
Sandoval County, New Mexico

Drilling program written in compliance with onshore Oil and Gas Order No. 1
(001 III.D.3, effective May 2007) and Onshore Order No. 2 Dated November 18, 1988

• **ESTIMATED TOPS FOR IMPORTANT GEOLOGICAL FORMATIONS**

<u>Formation Tops</u>	<u>Surface (TVD)</u>
Ojo Alamo	1342
Kirtland	1460
Fruitland	1728
Pictured Cliffs	1899
Chacra	2299
Cliffs House	3371
Menefee	3404
Point Lookout	4174
Mancos	4358
Gallup	5243
Lower Gallup	5432
Landing Point	5442
Total Depth	5397

Drilling Plan

Drill 12 ¼" hole to 500' then set 9 5/8" casing. Drill 8 3/4" hole with fresh water mud from 500' MD to kick off point 4,575' MD

Trip out of hole and pick up 8 ¾" kick off assembly at 4,575' MD. Build angle at 9.73 deg/100' to 85 degrees inclination and 271.21 degrees azimuth in the Gallup formation at 5,443' MD/ 5,243' TVD where 7" intermediate casing will be set.

7" casing will be set in a legal position 1,650' FNL & 900' FEL in Section 5.

The 7" casing will be drilled out with a 6 1/8" drilling assembly building angle at 5 deg/100' to 90.39 degrees inclination and 271.21 degree azimuth to 6,111' MD/ 5,442' TVD. Hold 90.39 degrees, 271.21 degrees azimuth and drill to a total depth at 12,685' MD/ 5,397' TVD. Adjustments may be made to the directional program based on geology. Total depth will be 12,685' MD/ 5,397' TVD - 90.39 degrees, 271.21 degrees Azimuth.

The Bottom hole location will be in a legal location at 12,685' MD at 1,650' FNL & 2340' FEL of section 6.

A total of 6,682' of horizontal hole will be drilled.

- **ANTICIPATED DEPTHS OF PROSPECTIVE OIL GAS AND OTHER HYDROCARBONS**

Primary objective is the Gallup formation encountered first at 5,243' TVD

See formation listings in #1 above for additional zones of interest.

- **MINIMUM SPECIFICATIONS FOR 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 1981 psig (0.364 psi/ft @ 5442' 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 1197 psi (5442' 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, 2000 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.

1. **PROPOSED BIT AND CASING PROGRAM**

- A. Bit Program

12 1/4" Surface Hole = Surface to 500'

8 3/4" = 500' to 6,003' = 7" Casing point @ 85 degrees – DV 100' below top of Mancos

8 3/4" Landing point = 6,111' @ 90.39 degrees

6-1/8" Lateral = 6,003' MD to 12,685' MD = Gallup Pay Zone Horizontal

- A. Casing Program – all casing strings are new casing

Casing & Hole Size	Weight	Grade	Coupling	Setting Depth (MD)	Comments
9-5/8" (12 1/4")	36 ppf	J or K-55	LT&C	0' - 500'	New casing. Cement to surface.
7" (8 3/4")	23 ppf	J or K-55	LT&C	0' – 6,003' MD	New Casing. Cement to surface with two stages- DV Tool 100' below Mancos Top at 4,458'
4 1/2" (6 1/8")	11.6 ppf	P-110	LT&C	4,700' – 12,685' MD	New Casing - Horizontal Hole Cemented full length with foam cement - TOL at 15 degrees.

Casing strings below the conductor casing will be tested to .22 psi per foot of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield.

Minimum casing design factors used:	Collapse -	1.125
	Burst -	1.0
	Jt. Strength -	1.60

Surface casing shall have a minimum of 1 centralizer per joint on the bottom three (3) joints, starting with the shoe joint for a total of (4) minimum centralizers. Centralizers will be placed 10' above the shoe on the shoe joint, on the 1st, 2nd and 3rd casing collars.

The intermediate casing will be centralized using 1 centralizer the first 6 jts and spaced appropriately through the curve section of the well-bore and then spaced +/- 1 centralizer / 4 jts through the remainder of the cement column, using approximately 40 centralizers.

1. PROPOSED CEMENTING PROGRAM

The proposed 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.

- 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.

Surface Casing Single Stage Job – (0-500'):

Excess – 100% over gauge hole – 12-1/4" hole and 9-5/8" casing (0.3132ft³/ft)

Top of Cement - Surface

Primary Cement

HALCEM (TM) SYSTEM

0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

Fluid Weight	15.80 lbm/gal
Slurry Yield:	1.174 ft ³ /sk
Total Mixing Fluid:	5.13 Gal/sk
Top of Fluid:	0 ft
Calculated Fill:	500 ft
Volume:	55.8 bbls
Calculated Sacks:	270 sks

Intermediate Casing – Two Stage Job – DV@ 4,458' - (0- 6,003' MD):

Excess – 50% over gauge hole – 8-3/4" hole and 7" casing (0.1503 ft³/ft)

Top of Cement – Surface

Stage #1:

Lead - (4,458' – 5,503'): 121 sx - 12.3 ppg, lightweight conventional cement containing:

HALCEM™ SYSTEM – Cement

HR-5 – Retarder – 0.30% BWOB

Kol - Seal – Lost Circulation Control Agent – 5 lbs/sx BWOB

Poly - E – Flake – 0.125 lbs/sx BWOB

Yield – 1.951 ft³/sx

Water requirement – 10.10 gal/sx.

Tail - (5,503' – 6,003'): 86 sx – 13.5. ppg, lightweight conventional cement containing:

HALCEM™ SYSTEM – Cement

Kol - Seal – Lost Circulation Control Agent – 5 lbs/sx BWOB

Poly - E – Flake – 0.125 lbs/sx BWOB

Yield – 1.314 ft³/sx

Water requirement – 5.45 gal/sx.

Stage #2:**Lead - (0' – 3,958'): 462 sx** - 12.3 ppg, lightweight conventional cement containing:

HALCEM™ SYSTEM – Cement

Kol - Seal – Lost Circulation Control Agent – 3 lbs/sx WBWOB

Poly - E – Flake – 0.125 lbs/sx WBWOB

Yield – 1.933 ft³/sx

Water requirement – 10.17 gal/sx.

Tail - (3,958' – 4,458'): 98 sx - 15.8 ppg, conventional cement containing:

HALCEM™ SYSTEM – Cement

Yield – 1.148 ft³/sx

Water requirement – 4.97 gal/sx.

Total sacks of cement pumped = 785**Cement volumes are minimums and may be adjusted based on caliper log results.****Production Casing – Single Stage Job (4,700' – 12,685' MD):****Excess – 50% over gauge hole – 6-1/8" hole and 4-1/2" casing (0.0942 ft³/ft)****Top of Cement – Top of Liner.****Lead Cement - Cap Cement**

ELASTISEAL (TM) SYSTEM

0.2 % Versaset (Thixotropic Additive)

0.15 % HALAD-766 (Low Fluid Loss Control)

0.2 % Halad(R)-344 (Low Fluid Loss Control)

Fluid Weight	13 lbm/gal
Slurry Yield:	1.43 ft ³ /sk
Total Mixing Fluid:	6.75 Gal/sk
Top of Fluid:	4,400 ft
Calculated Fill:	300 ft
Volume:	7.55 bbl
Calculated Sacks:	30 sks

Foamed Lead Cement

ELASTISEAL (TM) SYSTEM

0.2 % Versaset (Thixotropic Additive)

0.15 % HALAD-766 (Low Fluid Loss Control)

2.5 % CHEM - FOAMER 760, TOTETANK (Foamer)

0.2 % Halad(R)-344 (Low Fluid Loss Control)

Fluid Weight	13 lbm/gal
Slurry Yield:	1.43 ft ³ /sk
Total Mixing Fluid:	6.75 Gal/sk
Top of Fluid:	4,700 ft
Calculated Fill:	7,080 ft
Volume:	169 bbl
Calculated Sacks:	700 sks

Tail Cement

ELASTISEAL (TM) SYSTEM

0.2 % Versaset (Thixotropic Additive)

0.15 % HALAD-766 (Low Fluid Loss Control)

0.05 % SA-1015 (Suspension Agent)

Fluid Weight	13.50 lbm/gal
Slurry Yield:	1.28 ft ³ /sk
Total Mixing Fluid:	5.64 Gal/sk
Top of Fluid:	11,780 ft
Calculated Fill:	905 ft
Volume:	23 bbl
Calculated Sacks:	100 sks

Detailed Pumping Schedule

Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Estimated Avg Rate bbl/min	Downhole Volume
1	Spacer	Fresh Water Spacer	8.3		10 bbl
2	Spacer	CHEMICAL WASH	8.4		40 bbl
3	Spacer	Fresh Water Spacer	8.3		10 bbl
4	Cement	Cap Cement	13.0		30 sks
5	Cement	Foamed Lead Cement	13.0		700 sks
6	Cement	Tail Cement	13.5		100 sks
7	Spacer	MMCR Spacer	8.3		20 bbl
8	Spacer	Fresh Water Displacement	8.3		

Foam Output Parameter Summary:

Fluid #	Fluid Name	Unfoamed Liquid Volume	Beginning Density lbm/gal	Ending Density lbm/gal	Beginning Rate scf/bbl	Ending Rate scf/bbl
Stage 1						
5	Foamed Lead Cement	99.40 bbl	10.0	10.0	303.8	509.4

Foam Design Specifications:

Foam Calculation Method: Constant Density
 Backpressure: 14 psig
 Bottom Hole Circulating Temp: 158 degF
 Mud Outlet Temperature: 100 degF
 Production liner clarification: Utilizing foam cement for zonal isolation in the production liner.

Calculated Gas = 20792.1 scf
 Additional Gas = 50000 scf
 Total Gas = 70792.1 scf

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.

• PROPOSED DRILLING FLUIDS PROGRAM

- Vertical Portion

Hole Size (in)	TVD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
12 1/4"	0-500'	FreshWater	8.4-8.6	60-70	NC
8 3/4"	500'-4,575'	FreshWater LSND	8.5-8.8	40-50	8-10

- Kick off to Horizontal Lateral:

Hole Size (in)	TVD/MD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (CC)
8 3/4"	4,575' - 6,003'	Fresh Water LSND	8.5-8.8	40-50	8-10
6 1/8"	6,003' - 12,685'	Synthetic Oil Based Mud	7.0-9.0	15-25	<1

- 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.
- 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.
- **TESTING, CORING and LOGGING**
 - Drill Stem Testing - None anticipated
 - Coring - None anticipated.
 - Mud Logging - Mud loggers will be on location from intermediate casing point to TD.
 - Logging - See Below
 - Gamma Ray from surface casing point to TD

Cased Hole:

CBL/CCL/GRNDL will be run as needed for perforating control

- **ABNORMAL PRESSURES & HYDROGEN SULFIDE**

The anticipated bottom hole pressure is +/- 2546 psi based on a 9.0 ppg at 5442' TVD of the landing point of the horizontal. 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 June 1, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

It is anticipated that the drilling of this well will take approximately 25 days.

CLOSED-LOOP SYSTEM DESIGN PLAN

The closed-loop system will consist of a series of temporary above-ground storage tanks and/or haul-off bins suitable for holding the cuttings and fluids from drilling operations. The closed-loop system will not entail temporary pits, below-grade storage tanks, below-grade sumps, or drying pads.

Design considerations include:

- The closed-loop system will be signed in accordance with 19.15.17.11 NMAC.
- The closed-loop system storage tanks will be of adequate volume to ensure confinement of all fluids and provide sufficient freeboard to prevent uncontrolled releases.
- Topsoil will be salvaged and stored for use in reclamation activities.
- The closed-loop system storage tanks will be placed in bermed secondary containment sized to contain a minimum of 110 percent of the volume of the largest storage tank.

CLOSED-LOOP SYSTEM OPERATING & MAINTENANCE PLAN

The closed-loop system will be operated and maintained to contain liquids and solids; minimize the amount of drilling fluids and cuttings that require disposal; maximize the amount of drilling fluid recycled and reused in the drilling process; isolate drilling wastes from the environment; prevent contamination of fresh water; and protect public health and the environment.

Operation and maintenance considerations include:

- Fluid levels will be maintained to provide sufficient freeboard to prevent over-topping.
- Visual inspections will be conducted on a daily basis to identify any potential leaks and to ensure that the closed-loop system storage tanks have sufficient freeboard to prevent over-topping.
- Only drilling fluids or cuttings intrinsic to, used by, or generated from, drilling operations will be stored in the closed-loop system storage tanks. Hazardous waste, miscellaneous solid waste, and/or debris will not be stored in the storage tanks.
- The OCD District Office will be notified within 48 hours of discovery of a leak in the closed-loop drilling system. If a leak is discovered, all liquid will be removed within 48 hours and the damage repaired.

CLOSED-LOOP SYSTEM CLOSURE PLAN

The closed-loop system will be closed in accordance with 19.15.17.13 NMAC. Closure

considerations include:

- Drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical.
- Residual fluids will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at Industrial Ecosystem, Inc. waste disposal facilities.
- Remaining cuttings or sludges will be vacuumed from the storage tanks and disposed of at the Envirotech, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
- Storage tanks will be removed from the well location during the rig move.
- The well pad will be reclaimed and seeded in accordance with subsections G, H and I of 19.15.17.13 NMAC.



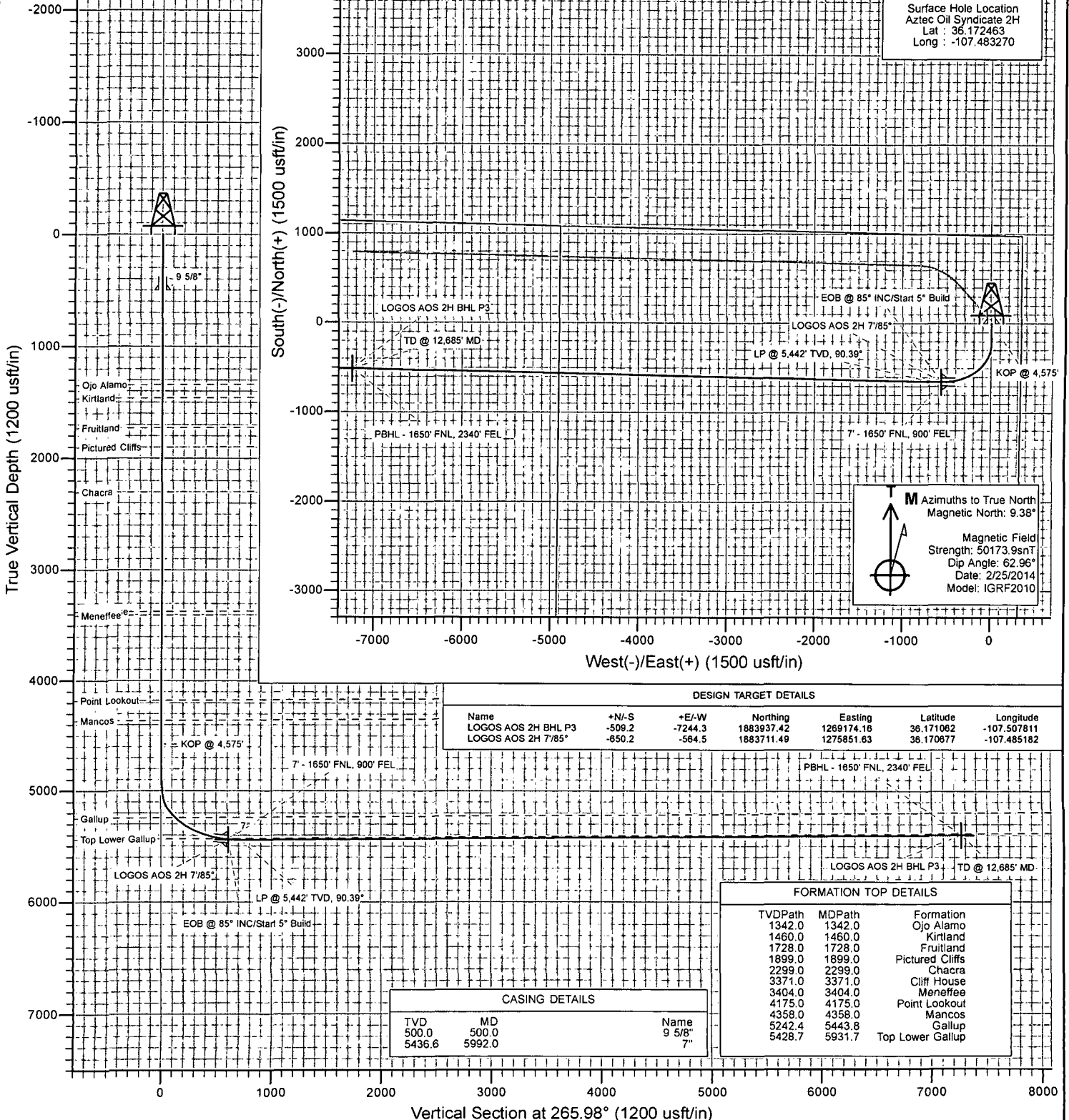
Project: Sandoval County, NM
Site: S5-T22N-R6W
Well: Aztec Oil Syndicate 2H
Wellbore: HZ
Design: Plan #3



Plan #3
Aztec Oil Syndicate 2H
145XXX; SC
KB=15' @ 7141.0usft (Aztec #222)
Ground Elevation @ 7126.0
North American Datum 1983
Well Aztec Oil Syndicate 2H, True North

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	4575.0	0.00	0.00	4575.0	0.0	0.0	0.00	0.00	0.0	
3	5101.8	51.28	180.05	5034.2	-220.4	-0.2	9.73	180.05	15.7	
4	6003.5	85.00	271.21	5437.7	-650.2	-564.5	9.73	94.63	608.7	LOGOS AOS 2H 7/85°
5	6111.3	90.39	271.21	5442.0	-647.9	-672.2	5.00	0.00	716.0	
6	12685.0	90.39	271.21	5397.0	-509.2	-7244.3	0.00	0.00	7262.2	LOGOS AOS 2H BHL P3



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Company:	LOGOS Operating LLC	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Project:	Sandoval County, NM	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site:	S5-T22N-R6W	North Reference:	True
Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Project	Sandoval 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		S5-T22N-R6W			
Site Position:		Northing:	1,883,183.57 usft	Latitude:	36.169247
From:	Lat/Long	Easting:	1,276,424.49 usft	Longitude:	-107.483219
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.73 °

Well	Aztec Oil Syndicate 2H					
Well Position	+N/-S	0.0 usft	Northing:	1,884,354.48 usft	Latitude:	36.172463
	+E/-W	0.0 usft	Easting:	1,276,424.34 usft	Longitude:	-107.483270
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	7,126.0 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/25/2014	9.38	62.96	50,174

Design	Plan #3				
Audit Notes:					
Version:	Phase:	PROTOTYPE		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	265.98	

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,575.0	0.00	0.00	4,575.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,101.8	51.28	180.05	5,034.2	-220.4	-0.2	9.73	9.73	0.00	180.05	
6,003.5	85.00	271.21	5,437.7	-650.2	-564.5	9.73	3.74	10.11	94.63	LOGOS AOS 2H 7'/8"
6,111.3	90.39	271.21	5,442.0	-647.9	-672.2	5.00	5.00	0.00	0.00	
12,685.0	90.39	271.21	5,397.0	-509.2	-7,244.3	0.00	0.00	0.00	0.00	LOGOS AOS 2H BHL

Cathedral Energy Services

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Company:	LOGOS Operating LLC	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Project:	Sandoval County, NM	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site:	S5-T22N-R6W	North Reference:	True
Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
0.5	0.00	0.00	0.5	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	SH - 989' FNL, 341' FEL
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	
1,100.0	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	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,342.0	0.00	0.00	1,342.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,460.0	0.00	0.00	1,460.0	0.0	0.0	0.0	0.00	0.00	Kirtland
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	
1,728.0	0.00	0.00	1,728.0	0.0	0.0	0.0	0.00	0.00	Fruitland
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,899.0	0.00	0.00	1,899.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs
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	
2,299.0	0.00	0.00	2,299.0	0.0	0.0	0.0	0.00	0.00	Chacra
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	
2,600.0	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	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,371.0	0.00	0.00	3,371.0	0.0	0.0	0.0	0.00	0.00	Cliff House
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,404.0	0.00	0.00	3,404.0	0.0	0.0	0.0	0.00	0.00	Menefee
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	
4,175.0	0.00	0.00	4,175.0	0.0	0.0	0.0	0.00	0.00	Point Lookout
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	

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Wellbore:	HZ		
Design:	Plan #3		

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
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,358.0	0.00	0.00	4,358.0	0.0	0.0	0.0	0.00	0.00	Mancos
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	
4,575.0	0.00	0.00	4,575.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4,575'
4,600.0	2.43	180.05	4,600.0	-0.5	0.0	0.0	9.73	9.73	
4,650.0	7.30	180.05	4,649.8	-4.8	0.0	0.3	9.73	9.73	
4,700.0	12.17	180.05	4,699.1	-13.2	0.0	0.9	9.73	9.73	
4,750.0	17.04	180.05	4,747.4	-25.8	0.0	1.8	9.73	9.73	
4,800.0	21.90	180.05	4,794.6	-42.5	0.0	3.0	9.73	9.73	
4,850.0	26.77	180.05	4,840.1	-63.1	-0.1	4.5	9.73	9.73	
4,900.0	31.64	180.05	4,883.7	-87.5	-0.1	6.2	9.73	9.73	
4,950.0	36.50	180.05	4,925.1	-115.5	-0.1	8.2	9.73	9.73	
5,000.0	41.37	180.05	4,964.0	-146.9	-0.1	10.4	9.73	9.73	
5,050.0	46.24	180.05	5,000.1	-181.5	-0.2	12.9	9.73	9.73	
5,101.8	51.28	180.05	5,034.2	-220.4	-0.2	15.7	9.73	9.73	
5,150.0	51.06	186.07	5,064.5	-257.9	-2.2	20.3	9.73	-0.47	
5,200.0	51.15	192.33	5,095.9	-296.3	-8.4	29.2	9.73	0.19	
5,250.0	51.58	198.54	5,127.1	-333.9	-18.8	42.2	9.73	0.85	
5,300.0	52.33	204.64	5,158.0	-370.5	-33.3	59.2	9.73	1.50	
5,350.0	53.38	210.61	5,188.2	-405.7	-51.8	80.1	9.73	2.11	
5,400.0	54.73	216.39	5,217.5	-439.5	-74.1	104.7	9.73	2.69	
5,443.8	56.13	221.28	5,242.4	-467.5	-96.7	129.3	9.73	3.19	Gallup
5,450.0	56.34	221.96	5,245.8	-471.4	-100.2	133.0	9.73	3.44	
5,500.0	58.19	227.31	5,272.9	-501.3	-129.7	164.5	9.73	3.70	
5,550.0	60.25	232.44	5,298.5	-528.9	-162.5	199.2	9.73	4.13	
5,600.0	62.51	237.36	5,322.4	-554.1	-198.4	236.8	9.73	4.51	
5,650.0	64.93	242.07	5,344.6	-576.7	-237.1	277.0	9.73	4.84	
5,700.0	67.49	246.59	5,364.8	-596.5	-278.4	319.5	9.73	5.13	
5,750.0	70.18	250.94	5,382.8	-613.4	-321.8	364.0	9.73	5.37	
5,800.0	72.96	255.15	5,398.6	-627.2	-367.2	410.3	9.73	5.57	
5,850.0	75.84	259.23	5,412.1	-637.9	-414.1	457.8	9.73	5.74	
5,900.0	78.77	263.21	5,423.1	-645.3	-462.3	506.4	9.73	5.88	
5,931.7	80.66	265.69	5,428.7	-648.3	-493.3	537.6	9.73	5.96	Top Lower Gallup
5,950.0	81.76	267.11	5,431.5	-649.4	-511.4	555.7	9.73	6.01	
5,992.0	84.30	270.33	5,436.6	-650.4	-553.1	597.3	9.73	6.05	7"
6,003.5	85.00	271.21	5,437.7	-650.2	-564.5	608.7	9.70	6.06	7" - 1650' FNL, 900' FEL - EOB @ 85° INC/Star
6,100.0	89.83	271.21	5,442.1	-648.2	-660.9	704.7	5.00	5.00	
6,111.3	90.39	271.21	5,442.0	-647.9	-672.2	716.0	5.00	5.00	LP @ 5,442' TVD, 90.39°
6,200.0	90.39	271.21	5,441.4	-646.1	-760.9	804.3	0.00	0.00	
6,300.0	90.39	271.21	5,440.7	-644.0	-860.8	903.9	0.00	0.00	
6,400.0	90.39	271.21	5,440.1	-641.8	-960.8	1,003.4	0.00	0.00	
6,500.0	90.39	271.21	5,439.4	-639.7	-1,060.8	1,103.0	0.00	0.00	
6,600.0	90.39	271.21	5,438.7	-637.6	-1,160.8	1,202.6	0.00	0.00	
6,700.0	90.39	271.21	5,438.0	-635.5	-1,260.7	1,302.2	0.00	0.00	
6,800.0	90.39	271.21	5,437.3	-633.4	-1,360.7	1,401.8	0.00	0.00	
6,900.0	90.39	271.21	5,436.6	-631.3	-1,460.7	1,501.3	0.00	0.00	
7,000.0	90.39	271.21	5,435.9	-629.2	-1,560.7	1,600.9	0.00	0.00	
7,100.0	90.39	271.21	5,435.3	-627.1	-1,660.6	1,700.5	0.00	0.00	
7,200.0	90.39	271.21	5,434.6	-625.0	-1,760.6	1,800.1	0.00	0.00	
7,300.0	90.39	271.21	5,433.9	-622.8	-1,860.6	1,899.7	0.00	0.00	
7,400.0	90.39	271.21	5,433.2	-620.7	-1,960.6	1,999.3	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Company:	LOGOS Operating LLC	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Project:	Sandoval County, NM	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site:	S5-T22N-R6W	North Reference:	True
Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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
7,500.0	90.39	271.21	5,432.5	-618.6	-2,060.5	2,098.8	0.00	0.00	
7,600.0	90.39	271.21	5,431.8	-616.5	-2,160.5	2,198.4	0.00	0.00	
7,700.0	90.39	271.21	5,431.2	-614.4	-2,260.5	2,298.0	0.00	0.00	
7,800.0	90.39	271.21	5,430.5	-612.3	-2,360.5	2,397.6	0.00	0.00	
7,900.0	90.39	271.21	5,429.8	-610.2	-2,460.4	2,497.2	0.00	0.00	
8,000.0	90.39	271.21	5,429.1	-608.1	-2,560.4	2,596.7	0.00	0.00	
8,100.0	90.39	271.21	5,428.4	-606.0	-2,660.4	2,696.3	0.00	0.00	
8,200.0	90.39	271.21	5,427.7	-603.8	-2,760.4	2,795.9	0.00	0.00	
8,300.0	90.39	271.21	5,427.0	-601.7	-2,860.3	2,895.5	0.00	0.00	
8,400.0	90.39	271.21	5,426.4	-599.6	-2,960.3	2,995.1	0.00	0.00	
8,500.0	90.39	271.21	5,425.7	-597.5	-3,060.3	3,094.7	0.00	0.00	
8,600.0	90.39	271.21	5,425.0	-595.4	-3,160.3	3,194.2	0.00	0.00	
8,700.0	90.39	271.21	5,424.3	-593.3	-3,260.2	3,293.8	0.00	0.00	
8,800.0	90.39	271.21	5,423.6	-591.2	-3,360.2	3,393.4	0.00	0.00	
8,900.0	90.39	271.21	5,422.9	-589.1	-3,460.2	3,493.0	0.00	0.00	
9,000.0	90.39	271.21	5,422.2	-587.0	-3,560.2	3,592.6	0.00	0.00	
9,100.0	90.39	271.21	5,421.6	-584.8	-3,660.1	3,692.1	0.00	0.00	
9,200.0	90.39	271.21	5,420.9	-582.7	-3,760.1	3,791.7	0.00	0.00	
9,300.0	90.39	271.21	5,420.2	-580.6	-3,860.1	3,891.3	0.00	0.00	
9,400.0	90.39	271.21	5,419.5	-578.5	-3,960.1	3,990.9	0.00	0.00	
9,500.0	90.39	271.21	5,418.8	-576.4	-4,060.0	4,090.5	0.00	0.00	
9,600.0	90.39	271.21	5,418.1	-574.3	-4,160.0	4,190.0	0.00	0.00	
9,700.0	90.39	271.21	5,417.4	-572.2	-4,260.0	4,289.6	0.00	0.00	
9,800.0	90.39	271.21	5,416.8	-570.1	-4,360.0	4,389.2	0.00	0.00	
9,900.0	90.39	271.21	5,416.1	-568.0	-4,459.9	4,488.8	0.00	0.00	
10,000.0	90.39	271.21	5,415.4	-565.8	-4,559.9	4,588.4	0.00	0.00	
10,100.0	90.39	271.21	5,414.7	-563.7	-4,659.9	4,688.0	0.00	0.00	
10,200.0	90.39	271.21	5,414.0	-561.6	-4,759.9	4,787.5	0.00	0.00	
10,300.0	90.39	271.21	5,413.3	-559.5	-4,859.8	4,887.1	0.00	0.00	
10,400.0	90.39	271.21	5,412.7	-557.4	-4,959.8	4,986.7	0.00	0.00	
10,500.0	90.39	271.21	5,412.0	-555.3	-5,059.8	5,086.3	0.00	0.00	
10,600.0	90.39	271.21	5,411.3	-553.2	-5,159.8	5,185.9	0.00	0.00	
10,700.0	90.39	271.21	5,410.6	-551.1	-5,259.7	5,285.4	0.00	0.00	
10,800.0	90.39	271.21	5,409.9	-549.0	-5,359.7	5,385.0	0.00	0.00	
10,900.0	90.39	271.21	5,409.2	-546.8	-5,459.7	5,484.6	0.00	0.00	
11,000.0	90.39	271.21	5,408.5	-544.7	-5,559.7	5,584.2	0.00	0.00	
11,100.0	90.39	271.21	5,407.9	-542.6	-5,659.6	5,683.8	0.00	0.00	
11,200.0	90.39	271.21	5,407.2	-540.5	-5,759.6	5,783.3	0.00	0.00	
11,300.0	90.39	271.21	5,406.5	-538.4	-5,859.6	5,882.9	0.00	0.00	
11,400.0	90.39	271.21	5,405.8	-536.3	-5,959.6	5,982.5	0.00	0.00	
11,500.0	90.39	271.21	5,405.1	-534.2	-6,059.6	6,082.1	0.00	0.00	
11,600.0	90.39	271.21	5,404.4	-532.1	-6,159.5	6,181.7	0.00	0.00	
11,700.0	90.39	271.21	5,403.7	-529.9	-6,259.5	6,281.3	0.00	0.00	
11,800.0	90.39	271.21	5,403.1	-527.8	-6,359.5	6,380.8	0.00	0.00	
11,900.0	90.39	271.21	5,402.4	-525.7	-6,459.5	6,480.4	0.00	0.00	
12,000.0	90.39	271.21	5,401.7	-523.6	-6,559.4	6,580.0	0.00	0.00	
12,100.0	90.39	271.21	5,401.0	-521.5	-6,659.4	6,679.6	0.00	0.00	
12,200.0	90.39	271.21	5,400.3	-519.4	-6,759.4	6,779.2	0.00	0.00	
12,300.0	90.39	271.21	5,399.6	-517.3	-6,859.4	6,878.7	0.00	0.00	
12,400.0	90.39	271.21	5,399.0	-515.2	-6,959.3	6,978.3	0.00	0.00	
12,500.0	90.39	271.21	5,398.3	-513.1	-7,059.3	7,077.9	0.00	0.00	
12,600.0	90.39	271.21	5,397.6	-510.9	-7,159.3	7,177.5	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Company:	LOGOS Operating LLC	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Project:	Sandoval County, NM	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site:	S5-T22N-R6W	North Reference:	True
Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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
12,685.0	90.39	271.21	5,397.0	-509.2	-7,244.3	7,262.1	0.00	0.00	PBHL - 1650' FNL, 2340' FEL - TD @ 12,685' M

Targets

Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LOGOS AOS 2H 7°/85° I	- plan misses target center by 24.9usft at 6004.6usft MD (5437.8 TVD, -650.2 N, -565.6 E)	0.00	0.00	5,462.7	-650.2	-564.5	1,883,711.49	1,275,851.63	36.170677	-107.485182
LOGOS AOS 2H BHL P:	- plan hits target center	0.00	0.00	5,397.0	-509.2	-7,244.3	1,883,937.42	1,269,174.16	36.171062	-107.507811
LOGOS AOS 2H BHL P:	- plan misses target center by 25.0usft at 12684.9usft MD (5397.0 TVD, -509.2 N, -7244.1 E)	0.00	0.00	5,422.0	-509.2	-7,244.3	1,883,937.42	1,269,174.16	36.171062	-107.507811
LOGOS AOS 2H 7°/85°	- plan hits target center	0.00	0.00	5,437.7	-650.2	-564.5	1,883,711.49	1,275,851.63	36.170677	-107.485182
Logos #702H BHL	- plan misses target center by 509.5usft at 12600.0usft MD (5397.6 TVD, -510.9 N, -7159.3 E)	0.00	0.00	5,402.0	-1,019.7	-7,185.7	1,883,426.17	1,269,226.25	36.169660	-107.507612
Logos #702H VP	- plan misses target center by 722.3usft at 5500.8usft MD (5273.3 TVD, -501.8 N, -130.2 E)	0.00	0.00	4,771.9	-1,019.7	-85.0	1,883,335.95	1,276,326.42	36.169662	-107.483558

500.0	500.0	9 5/8"	0	0
5,992.0	5,436.6	7"	0	0

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,342.0	1,342.0	Ojo Alamo		-0.39	271.21
1,460.0	1,460.0	Kirtland		-0.39	271.21
1,728.0	1,728.0	Fruitland		-0.39	271.21
1,899.0	1,899.0	Pictured Cliffs		-0.39	271.21
2,299.0	2,299.0	Chacra		-0.39	271.21
3,371.0	3,371.0	Cliff House		-0.39	271.21
3,404.0	3,404.0	Meneffee		-0.39	271.21
4,175.0	4,175.0	Point Lookout		-0.39	271.21
4,358.0	4,358.0	Mancos		-0.39	271.21
5,443.8	5,243.0	Gallup		-0.39	271.21
5,931.7	5,432.0	Top Lower Gallup		-0.39	271.21

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Company:	LOGOS Operating LLC	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Project:	Sandoval County, NM	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site:	S5-T22N-R6W	North Reference:	True
Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.5	0.5	0.0	0.0	SH - 989' FNL, 341' FEL
4,575.0	4,575.0	0.0	0.0	KOP @ 4,575'
6,003.5	5,437.7	-650.2	-564.5	7' - 1650' FNL, 900' FEL
6,003.5	5,437.7	-650.2	-564.5	EOB @ 85° INC/Start 5° Build
6,111.3	5,442.0	-647.9	-672.2	LP @ 5,442' TVD, 90.39°
12,685.0	5,397.0	-509.2	-7,244.3	PBHL - 1650' FNL, 2340' FEL
12,685.0	5,397.0	-509.2	-7,244.3	TD @ 12,685' MD

LOGOS Operating LLC

Sandoval County, NM

S5-T22N-R6W

Aztec Oil Syndicate 2H

HZ

Plan #3

Anticollision Report

01 May, 2014

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference:	Plan #3
Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference
Interpolation Method:	MD Interval 100.0usft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 500.0usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	5/1/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,685.0	Plan #3 (HZ)	Geolink MWD	Geolink MWD	

Summary						
Site Name	Reference	Offset	Distance		Separation	Warning
	Measured	Measured	Between	Between		
Offset Well - Wellbore - Design	Depth	Depth	Centres	Ellipses	Factor	
	(usft)	(usft)	(usft)	(usft)		
S5-T22N-R6W						
Aztec Oil Syndicate 1H - HZ - Plan #2	4,500.0	4,500.0	52.2	36.5	3.334	CC, ES
Aztec Oil Syndicate 1H - HZ - Plan #2	4,600.0	4,600.0	52.7	36.7	3.295	SF
Aztec Oil Syndicate 2H - HZ - Plan #4	4,500.0	4,500.0	0.0	-15.7	0.000	Level 1, CC, SF
Aztec Oil Syndicate 2H - HZ - Plan #4	12,685.0	12,710.0	25.0	-18.5	0.575	Level 1, ES

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S5-T22N-R6W - Aztec Oil Syndicate 1H - HZ - Plan #2														Offset Site Error: 0.0 usft	
Survey Program: 0-Geolink MWD														Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	-17.27	49.8	-15.5	52.2						
100.0	100.0	100.0	100.0	0.1	0.1	-17.27	49.8	-15.5	52.2	51.9	0.30	175.913			
200.0	200.0	200.0	200.0	0.3	0.3	-17.27	49.8	-15.5	52.2	51.5	0.65	80.825			
300.0	300.0	300.0	300.0	0.5	0.5	-17.27	49.8	-15.5	52.2	51.2	0.99	52.465			
400.0	400.0	400.0	400.0	0.7	0.7	-17.27	49.8	-15.5	52.2	50.9	1.34	38.838			
500.0	500.0	500.0	500.0	0.8	0.8	-17.27	49.8	-15.5	52.2	50.5	1.69	30.830			
600.0	600.0	600.0	600.0	1.0	1.0	-17.27	49.8	-15.5	52.2	50.2	2.04	25.560			
700.0	700.0	700.0	700.0	1.2	1.2	-17.27	49.8	-15.5	52.2	49.8	2.39	21.829			
800.0	800.0	800.0	800.0	1.4	1.4	-17.27	49.8	-15.5	52.2	49.5	2.74	19.048			
900.0	900.0	900.0	900.0	1.5	1.5	-17.27	49.8	-15.5	52.2	49.1	3.09	16.896			
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-17.27	49.8	-15.5	52.2	48.8	3.44	15.180			
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-17.27	49.8	-15.5	52.2	48.4	3.79	13.781			
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-17.27	49.8	-15.5	52.2	48.1	4.14	12.618			
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-17.27	49.8	-15.5	52.2	47.7	4.49	11.636			
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-17.27	49.8	-15.5	52.2	47.4	4.83	10.796			
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-17.27	49.8	-15.5	52.2	47.0	5.18	10.069			
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-17.27	49.8	-15.5	52.2	46.7	5.53	9.434			
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-17.27	49.8	-15.5	52.2	46.3	5.88	8.874			
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-17.27	49.8	-15.5	52.2	46.0	6.23	8.377			
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-17.27	49.8	-15.5	52.2	45.6	6.58	7.932			
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-17.27	49.8	-15.5	52.2	45.3	6.93	7.533			
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-17.27	49.8	-15.5	52.2	44.9	7.28	7.172			
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	-17.27	49.8	-15.5	52.2	44.6	7.63	6.843			
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	-17.27	49.8	-15.5	52.2	44.2	7.98	6.544			
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	-17.27	49.8	-15.5	52.2	43.9	8.33	6.269			
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	-17.27	49.8	-15.5	52.2	43.5	8.67	6.017			
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	-17.27	49.8	-15.5	52.2	43.2	9.02	5.784			
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	-17.27	49.8	-15.5	52.2	42.8	9.37	5.569			
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	-17.27	49.8	-15.5	52.2	42.5	9.72	5.369			
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	-17.27	49.8	-15.5	52.2	42.1	10.07	5.183			
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	-17.27	49.8	-15.5	52.2	41.8	10.42	5.009			
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	-17.27	49.8	-15.5	52.2	41.4	10.77	4.847			
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	-17.27	49.8	-15.5	52.2	41.1	11.12	4.695			
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	-17.27	49.8	-15.5	52.2	40.7	11.47	4.552			
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	-17.27	49.8	-15.5	52.2	40.4	11.82	4.417			
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	-17.27	49.8	-15.5	52.2	40.0	12.16	4.291			
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	-17.27	49.8	-15.5	52.2	39.7	12.51	4.171			
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	-17.27	49.8	-15.5	52.2	39.3	12.86	4.058			
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	-17.27	49.8	-15.5	52.2	39.0	13.21	3.950			
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	-17.27	49.8	-15.5	52.2	38.6	13.56	3.849			
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	-17.27	49.8	-15.5	52.2	38.3	13.91	3.752			
4,100.0	4,100.0	4,100.0	4,100.0	7.1	7.1	-17.27	49.8	-15.5	52.2	37.9	14.26	3.660			
4,200.0	4,200.0	4,200.0	4,200.0	7.3	7.3	-17.27	49.8	-15.5	52.2	37.6	14.61	3.573			
4,300.0	4,300.0	4,300.0	4,300.0	7.5	7.5	-17.27	49.8	-15.5	52.2	37.2	14.96	3.490			
4,400.0	4,400.0	4,400.0	4,400.0	7.7	7.7	-17.27	49.8	-15.5	52.2	36.9	15.31	3.410			
4,500.0	4,500.0	4,500.0	4,500.0	7.8	7.8	-17.27	49.8	-15.5	52.2	36.5	15.66	3.334 CC, ES			
4,555.6	4,555.6	4,555.6	4,555.6	7.9	7.9	162.88	49.8	-15.5	52.8	37.0	15.85	3.333			
4,600.0	4,600.0	4,600.0	4,600.0	8.0	8.0	162.83	49.8	-15.5	52.7	36.7	16.00	3.295 SF			
4,700.0	4,699.1	4,699.1	4,699.1	8.2	8.2	165.85	49.8	-15.5	64.9	48.8	16.12	4.027			
4,800.0	4,794.6	4,784.4	4,784.2	8.4	8.3	167.43	53.7	-19.0	98.6	82.6	15.93	6.186			
4,900.0	4,883.7	4,855.2	4,853.9	8.7	8.5	166.33	62.8	-27.2	155.6	140.1	15.48	10.054			
5,000.0	4,964.0	4,908.4	4,905.2	9.2	8.6	163.80	73.1	-36.6	230.6	215.8	14.86	15.523			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S5-T22N-R6W - Aztec Oil Syndicate 1H - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-Geolink MWD												Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,033.1	4,950.0	4,944.5	9.8	8.7	159.22	83.2	-45.8	318.2	303.9	14.34	22.200	
5,200.0	5,095.9	4,971.6	4,964.5	10.6	8.7	135.95	89.2	-51.1	409.4	392.9	16.51	24.797	
5,300.0	5,158.0	5,000.0	4,990.5	11.5	8.8	118.99	97.7	-58.9	497.8	479.4	18.43	27.006	

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S5-T22N-R6W - Aztec Oil Syndicate 2H - HZ - Plan #4													Offset Site Error:	0.0 usft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Distance		Between Centres		Between Ellipses		Total	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0	-0.3	0.30	0.000 Level 1		
100.0	100.0	100.0	100.0	0.1	0.1	0.00	0.0	0.0	0.0	-0.6	0.65	0.000 Level 1		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	0.0	0.0	0.0	-1.0	0.99	0.000 Level 1		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	0.0	0.0	0.0	-1.3	1.34	0.000 Level 1		
400.0	400.0	400.0	400.0	0.7	0.7	0.00	0.0	0.0	0.0	-1.7	1.69	0.000 Level 1		
500.0	500.0	500.0	500.0	0.8	0.8	0.00	0.0	0.0	0.0	-2.0	2.04	0.000 Level 1		
600.0	600.0	600.0	600.0	1.0	1.0	0.00	0.0	0.0	0.0	-2.4	2.39	0.000 Level 1		
700.0	700.0	700.0	700.0	1.2	1.2	0.00	0.0	0.0	0.0	-2.7	2.74	0.000 Level 1		
800.0	800.0	800.0	800.0	1.4	1.4	0.00	0.0	0.0	0.0	-3.1	3.09	0.000 Level 1		
900.0	900.0	900.0	900.0	1.5	1.5	0.00	0.0	0.0	0.0	-3.4	3.44	0.000 Level 1		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	0.00	0.0	0.0	0.0	-3.8	3.79	0.000 Level 1		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	0.00	0.0	0.0	0.0	-4.1	4.14	0.000 Level 1		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	0.00	0.0	0.0	0.0	-4.5	4.49	0.000 Level 1		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	0.00	0.0	0.0	0.0	-4.8	4.83	0.000 Level 1		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	0.00	0.0	0.0	0.0	-5.2	5.18	0.000 Level 1		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	0.00	0.0	0.0	0.0	-5.5	5.53	0.000 Level 1		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	0.00	0.0	0.0	0.0	-5.9	5.88	0.000 Level 1		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	0.00	0.0	0.0	0.0	-6.2	6.23	0.000 Level 1		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	0.00	0.0	0.0	0.0	-6.6	6.58	0.000 Level 1		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	0.00	0.0	0.0	0.0	-6.9	6.93	0.000 Level 1		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	0.00	0.0	0.0	0.0	-7.3	7.28	0.000 Level 1		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	0.00	0.0	0.0	0.0	-7.6	7.63	0.000 Level 1		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	0.00	0.0	0.0	0.0	-8.0	7.98	0.000 Level 1		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	0.00	0.0	0.0	0.0	-8.3	8.33	0.000 Level 1		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	0.00	0.0	0.0	0.0	-8.7	8.67	0.000 Level 1		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	0.00	0.0	0.0	0.0	-9.0	9.02	0.000 Level 1		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	0.00	0.0	0.0	0.0	-9.4	9.37	0.000 Level 1		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	0.00	0.0	0.0	0.0	-9.7	9.72	0.000 Level 1		
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	0.00	0.0	0.0	0.0	-10.1	10.07	0.000 Level 1		
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	0.00	0.0	0.0	0.0	-10.4	10.42	0.000 Level 1		
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	0.00	0.0	0.0	0.0	-10.8	10.77	0.000 Level 1		
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	0.00	0.0	0.0	0.0	-11.1	11.12	0.000 Level 1		
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	0.00	0.0	0.0	0.0	-11.5	11.47	0.000 Level 1		
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	0.00	0.0	0.0	0.0	-11.8	11.82	0.000 Level 1		
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	0.00	0.0	0.0	0.0	-12.2	12.16	0.000 Level 1		
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	0.00	0.0	0.0	0.0	-12.5	12.51	0.000 Level 1		
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	0.00	0.0	0.0	0.0	-12.9	12.86	0.000 Level 1		
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	0.00	0.0	0.0	0.0	-13.2	13.21	0.000 Level 1		
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	0.00	0.0	0.0	0.0	-13.6	13.56	0.000 Level 1		
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	0.00	0.0	0.0	0.0	-13.9	13.91	0.000 Level 1		
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	0.00	0.0	0.0	0.0	-14.3	14.26	0.000 Level 1		
4,100.0	4,100.0	4,100.0	4,100.0	7.1	7.1	0.00	0.0	0.0	0.0	-14.6	14.61	0.000 Level 1		
4,200.0	4,200.0	4,200.0	4,200.0	7.3	7.3	0.00	0.0	0.0	0.0	-15.0	14.96	0.000 Level 1		
4,300.0	4,300.0	4,300.0	4,300.0	7.5	7.5	0.00	0.0	0.0	0.0	-15.3	15.31	0.000 Level 1		
4,400.0	4,400.0	4,400.0	4,400.0	7.7	7.7	0.00	0.0	0.0	0.0	-15.7	15.66	0.000 Level 1, CC, SF		
4,500.0	4,500.0	4,500.0	4,500.0	7.8	7.8	0.00	0.0	0.0	0.0	-14.9	15.88	0.059 Level 1		
4,566.5	4,566.5	4,566.5	4,566.5	7.9	7.9	-180.00	0.0	0.0	0.9	-15.5	15.99	0.033 Level 1		
4,600.0	4,600.0	4,600.0	4,600.0	8.0	8.0	-180.00	0.0	0.0	0.5	-11.4	16.11	0.295 Level 1		
4,700.0	4,699.1	4,700.4	4,699.9	8.2	8.2	180.00	-8.5	0.0	4.8	-7.1	15.94	0.556 Level 1		
4,800.0	4,794.6	4,801.4	4,797.5	8.4	8.4	180.00	-34.1	0.0	8.9	-2.8	15.50	0.821 Level 1		
4,900.0	4,883.7	4,903.2	4,890.0	8.7	8.7	180.00	-76.4	-0.1	12.7					
5,000.0	4,964.0	5,005.7	4,974.3	9.2	9.1	180.00	-134.4	-0.1	16.2	1.4	14.85	1.092 Level 2		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S5-T22N-R6W - Aztec Oil Syndicate 2H - HZ - Plan #4														Offset Site Error:	0.0 usft
Survey Program: O-Geolink MWD														Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis	Factor			
5,100.0	5,033.1	5,108.8	5,047.7	9.8	9.7	180.00	-206.5	-0.2	19.2	5.2	14.08	1.366	Level 3		
5,200.0	5,095.9	5,209.3	5,111.0	10.6	10.5	179.38	-284.3	-6.0	19.5	4.9	14.56	1.337	Level 3		
5,300.0	5,158.0	5,309.6	5,173.5	11.5	11.4	179.43	-359.3	-28.4	19.8	4.8	15.00	1.317	Level 3		
5,400.0	5,217.5	5,410.4	5,234.1	12.4	12.3	179.52	-429.8	-67.2	20.4	5.0	15.39	1.323	Level 3		
5,500.0	5,272.9	5,511.6	5,290.8	13.5	13.4	179.62	-493.5	-121.5	21.2	5.5	15.67	1.352	Level 3		
5,600.0	5,322.4	5,613.2	5,342.0	14.7	14.6	179.73	-548.4	-189.7	22.1	6.4	15.76	1.404	Level 3		
5,700.0	5,364.8	5,715.2	5,386.0	15.9	15.8	179.83	-592.9	-270.1	23.1	7.4	15.61	1.476	Level 3		
5,800.0	5,398.6	5,817.5	5,421.4	17.3	17.2	179.91	-625.3	-360.3	23.9	8.6	15.25	1.565			
5,900.0	5,423.1	5,920.0	5,447.1	18.7	18.7	179.96	-644.7	-457.5	24.5	9.7	14.79	1.657			
6,000.0	5,437.4	6,022.7	5,462.2	20.2	20.2	179.99	-650.3	-558.7	24.9	10.4	14.45	1.723			
6,100.0	5,442.1	6,124.9	5,467.1	21.9	21.9	-180.00	-648.2	-660.8	25.0	10.4	14.58	1.715			
6,200.0	5,441.4	6,225.2	5,466.4	23.7	23.7	-180.00	-646.1	-761.0	25.0	9.9	15.09	1.657			
6,300.0	5,440.7	6,325.2	5,465.7	25.6	25.6	-180.00	-644.0	-861.0	25.0	9.4	15.60	1.602			
6,381.9	5,440.2	6,407.0	5,465.2	27.2	27.3	-180.00	-642.2	-942.9	25.0	9.0	16.02	1.560			
6,400.0	5,440.1	6,425.2	5,465.1	27.6	27.6	-180.00	-641.8	-961.0	25.0	8.9	16.11	1.551			
6,475.5	5,439.5	6,500.7	5,464.5	29.2	29.2	-180.00	-640.3	-1,036.4	25.0	8.5	16.50	1.516			
6,500.0	5,439.4	6,525.2	5,464.4	29.7	29.7	-180.00	-639.7	-1,061.0	25.0	8.4	16.62	1.504			
6,600.0	5,438.7	6,625.2	5,463.7	31.9	31.9	-180.00	-637.6	-1,160.9	25.0	7.9	17.12	1.461	Level 3		
6,700.0	5,438.0	6,725.2	5,463.0	34.1	34.1	-180.00	-635.5	-1,260.9	25.0	7.4	17.61	1.420	Level 3		
6,782.6	5,437.4	6,807.8	5,462.4	35.9	35.9	-180.00	-633.8	-1,343.5	25.0	7.0	18.01	1.388	Level 3		
6,800.0	5,437.3	6,825.2	5,462.3	36.3	36.3	-180.00	-633.4	-1,360.9	25.0	6.9	18.10	1.381	Level 3		
6,870.1	5,436.8	6,895.2	5,461.8	37.9	37.9	-180.00	-631.9	-1,430.9	25.0	6.6	18.44	1.356	Level 3		
6,900.0	5,436.6	6,925.2	5,461.6	38.6	38.6	-180.00	-631.3	-1,460.9	25.0	6.4	18.58	1.346	Level 3		
7,000.0	5,435.9	7,025.2	5,460.9	40.8	40.9	-180.00	-629.2	-1,560.8	25.0	5.9	19.06	1.312	Level 3		
7,100.0	5,435.3	7,125.2	5,460.3	43.2	43.2	-180.00	-627.1	-1,660.8	25.0	5.5	19.53	1.280	Level 3		
7,173.8	5,434.8	7,199.0	5,459.8	44.9	44.9	-180.00	-625.5	-1,734.6	25.0	5.1	19.88	1.257	Level 3		
7,200.0	5,434.6	7,225.2	5,459.6	45.5	45.5	-180.00	-625.0	-1,760.8	25.0	5.0	20.00	1.250	Level 2		
7,300.0	5,433.9	7,325.2	5,458.9	47.8	47.8	-180.00	-622.8	-1,860.8	25.0	4.5	20.47	1.221	Level 2		
7,384.9	5,433.3	7,410.0	5,458.3	49.8	49.8	-180.00	-621.1	-1,945.6	25.0	4.1	20.87	1.198	Level 2		
7,400.0	5,433.2	7,425.2	5,458.2	50.2	50.2	-180.00	-620.7	-1,960.7	25.0	4.1	20.94	1.194	Level 2		
7,500.0	5,432.5	7,525.2	5,457.5	52.6	52.6	-180.00	-618.6	-2,060.7	25.0	3.6	21.40	1.168	Level 2		
7,569.1	5,432.0	7,594.3	5,457.0	54.2	54.2	-180.00	-617.2	-2,129.8	25.0	3.3	21.72	1.151	Level 2		
7,600.0	5,431.8	7,625.2	5,456.8	54.9	54.9	-180.00	-616.5	-2,160.7	25.0	3.1	21.86	1.144	Level 2		
7,700.0	5,431.2	7,725.2	5,456.1	57.3	57.3	-180.00	-614.4	-2,260.7	25.0	2.7	22.31	1.120	Level 2		
7,778.7	5,430.6	7,803.8	5,455.6	59.2	59.2	-180.00	-612.7	-2,339.3	25.0	2.3	22.67	1.103	Level 2		
7,800.0	5,430.5	7,825.2	5,455.5	59.7	59.7	-180.00	-612.3	-2,360.6	25.0	2.2	22.77	1.098	Level 2		
7,900.0	5,429.8	7,925.2	5,454.8	62.1	62.1	-180.00	-610.2	-2,460.6	25.0	1.8	23.22	1.077	Level 2		
8,000.0	5,429.1	8,025.2	5,454.1	64.5	64.5	-180.00	-608.1	-2,560.6	25.0	1.3	23.67	1.056	Level 2		
8,075.4	5,428.6	8,100.6	5,453.6	66.3	66.3	-180.00	-606.5	-2,636.0	25.0	1.0	24.01	1.041	Level 2		
8,100.0	5,428.4	8,125.2	5,453.4	66.9	66.9	-180.00	-606.0	-2,660.6	25.0	0.9	24.11	1.037	Level 2		
8,171.6	5,427.9	8,196.8	5,452.9	68.7	68.7	-180.00	-604.4	-2,732.2	25.0	0.6	24.43	1.023	Level 2		
8,200.0	5,427.7	8,225.2	5,452.7	69.3	69.4	-180.00	-603.8	-2,760.5	25.0	0.4	24.56	1.018	Level 2		
8,300.0	5,427.0	8,325.2	5,452.0	71.8	71.8	-180.00	-601.7	-2,860.5	25.0	0.0	25.00	1.000	Level 1		
8,400.0	5,426.4	8,425.2	5,451.4	74.2	74.2	-180.00	-599.6	-2,960.5	25.0	-0.4	25.45	0.982	Level 1		
8,481.8	5,425.8	8,506.9	5,450.8	76.2	76.2	-180.00	-597.9	-3,042.2	25.0	-0.8	25.81	0.969	Level 1		
8,500.0	5,425.7	8,525.2	5,450.7	76.6	76.6	-180.00	-597.5	-3,060.5	25.0	-0.9	25.89	0.966	Level 1		
8,565.6	5,425.2	8,590.7	5,450.2	78.2	78.2	-180.00	-596.1	-3,126.0	25.0	-1.2	26.17	0.955	Level 1		
8,600.0	5,425.0	8,625.2	5,450.0	79.0	79.1	-180.00	-595.4	-3,160.4	25.0	-1.3	26.32	0.950	Level 1		
8,700.0	5,424.3	8,725.2	5,449.3	81.5	81.5	-180.00	-593.3	-3,260.4	25.0	-1.8	26.76	0.934	Level 1		
8,800.0	5,423.6	8,825.2	5,448.6	83.9	83.9	-180.00	-591.2	-3,360.4	25.0	-2.2	27.20	0.919	Level 1		
8,865.4	5,423.2	8,890.6	5,448.2	85.5	85.5	-180.00	-589.8	-3,425.8	25.0	-2.5	27.48	0.910	Level 1		
8,900.0	5,422.9	8,925.2	5,447.9	86.3	86.4	-180.00	-589.1	-3,460.4	25.0	-2.6	27.63	0.905	Level 1		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S5-T22N-R6W - Aztec Oil Syndicate 2H - HZ - Plan #4													Offset Site Error:	0.0 usft
Survey Program: O-Geolink MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Distance		Total		Separation		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis	Factor		
9,000.0	5,422.2	9,025.2	5,447.2	88.8	88.8	-180.00	-587.0	-3,560.3	25.0	-3.1	28.06	0.891 Level 1		
9,100.0	5,421.6	9,125.2	5,446.6	91.2	91.2	-180.00	-584.8	-3,660.3	25.0	-3.5	28.50	0.877 Level 1		
9,200.0	5,420.9	9,225.2	5,445.9	93.7	93.7	-180.00	-582.7	-3,760.3	25.0	-3.9	28.93	0.864 Level 1		
9,265.0	5,420.4	9,290.2	5,445.4	95.3	95.3	-180.00	-581.4	-3,825.3	25.0	-4.2	29.20	0.856 Level 1		
9,300.0	5,420.2	9,325.2	5,445.2	96.1	96.1	-180.00	-580.6	-3,860.3	25.0	-4.4	29.36	0.852 Level 1		
9,400.0	5,419.5	9,425.2	5,444.5	98.6	98.6	-180.00	-578.5	-3,960.2	25.0	-4.8	29.78	0.839 Level 1		
9,500.0	5,418.8	9,525.2	5,443.8	101.0	101.0	-180.00	-576.4	-4,060.2	25.0	-5.2	30.21	0.827 Level 1		
9,600.0	5,418.1	9,625.2	5,443.1	103.5	103.5	-180.00	-574.3	-4,160.2	25.0	-5.6	30.64	0.816 Level 1		
9,700.0	5,417.4	9,725.2	5,442.4	105.9	105.9	-180.00	-572.2	-4,260.2	25.0	-6.1	31.06	0.805 Level 1		
9,717.1	5,417.3	9,742.3	5,442.3	106.3	106.3	-180.00	-571.8	-4,277.3	25.0	-6.1	31.14	0.803 Level 1		
9,800.0	5,416.8	9,825.2	5,441.8	108.4	108.4	-180.00	-570.1	-4,360.1	25.0	-6.5	31.49	0.794 Level 1		
9,900.0	5,416.1	9,925.2	5,441.1	110.8	110.8	-180.00	-567.9	-4,460.1	25.0	-6.9	31.91	0.783 Level 1		
10,000.0	5,415.4	10,025.2	5,440.4	113.3	113.3	-180.00	-565.8	-4,560.1	25.0	-7.3	32.33	0.773 Level 1		
10,100.0	5,414.7	10,125.2	5,439.7	115.7	115.7	-180.00	-563.7	-4,660.1	25.0	-7.8	32.76	0.763 Level 1		
10,120.7	5,414.6	10,145.8	5,439.6	116.2	116.2	-180.00	-563.3	-4,680.7	25.0	-7.8	32.84	0.761 Level 1		
10,200.0	5,414.0	10,225.2	5,439.0	118.2	118.2	-180.00	-561.6	-4,760.0	25.0	-8.2	33.18	0.754 Level 1		
10,217.1	5,413.9	10,242.3	5,438.9	118.6	118.6	-180.00	-561.3	-4,777.2	25.0	-8.2	33.25	0.752 Level 1		
10,300.0	5,413.3	10,325.2	5,438.3	120.6	120.6	-180.00	-559.5	-4,860.0	25.0	-8.6	33.60	0.744 Level 1		
10,400.0	5,412.7	10,425.2	5,437.7	123.1	123.1	-180.00	-557.4	-4,960.0	25.0	-9.0	34.02	0.735 Level 1		
10,420.7	5,412.5	10,445.8	5,437.5	123.6	123.6	-180.00	-557.0	-4,980.6	25.0	-9.1	34.10	0.733 Level 1		
10,500.0	5,412.0	10,525.2	5,437.0	125.5	125.5	-180.00	-555.3	-5,060.0	25.0	-9.4	34.44	0.726 Level 1		
10,515.2	5,411.9	10,540.4	5,436.9	125.9	125.9	-180.00	-555.0	-5,075.2	25.0	-9.5	34.50	0.725 Level 1		
10,600.0	5,411.3	10,625.2	5,436.3	128.0	128.0	-180.00	-553.2	-5,159.9	25.0	-9.9	34.85	0.717 Level 1		
10,700.0	5,410.6	10,725.2	5,435.6	130.5	130.5	-180.00	-551.1	-5,259.9	25.0	-10.3	35.27	0.709 Level 1		
10,800.0	5,409.9	10,825.2	5,434.9	132.9	132.9	-180.00	-548.9	-5,359.9	25.0	-10.7	35.69	0.700 Level 1		
10,819.6	5,409.8	10,844.7	5,434.8	133.4	133.4	-180.00	-548.5	-5,379.5	25.0	-10.8	35.77	0.699 Level 1		
10,900.0	5,409.2	10,925.2	5,434.2	135.4	135.4	-180.00	-546.8	-5,459.9	25.0	-11.1	36.10	0.692 Level 1		
10,919.8	5,409.1	10,945.0	5,434.1	135.9	135.9	-180.00	-546.4	-5,479.7	25.0	-11.2	36.19	0.691 Level 1		
11,000.0	5,408.5	11,025.2	5,433.5	137.8	137.8	-180.00	-544.7	-5,559.8	25.0	-11.5	36.52	0.685 Level 1		
11,002.5	5,408.5	11,027.7	5,433.5	137.9	137.9	-180.00	-544.7	-5,562.3	25.0	-11.5	36.53	0.684 Level 1		
11,100.0	5,407.9	11,125.2	5,432.9	140.3	140.3	-180.00	-542.6	-5,659.8	25.0	-11.9	36.94	0.677 Level 1		
11,102.5	5,407.8	11,127.7	5,432.8	140.4	140.4	-180.00	-542.6	-5,662.3	25.0	-11.9	36.95	0.677 Level 1		
11,200.0	5,407.2	11,225.2	5,432.2	142.8	142.8	-180.00	-540.5	-5,759.8	25.0	-12.4	37.35	0.669 Level 1		
11,215.0	5,407.1	11,240.2	5,432.1	143.1	143.1	-180.00	-540.2	-5,774.8	25.0	-12.4	37.41	0.668 Level 1		
11,300.0	5,406.5	11,325.2	5,431.5	145.2	145.2	-180.00	-538.4	-5,859.8	25.0	-12.8	37.77	0.662 Level 1		
11,302.8	5,406.5	11,328.0	5,431.5	145.3	145.3	-180.00	-538.3	-5,862.6	25.0	-12.8	37.78	0.662 Level 1		
11,400.0	5,405.8	11,425.2	5,430.8	147.7	147.7	-180.00	-536.3	-5,959.7	25.0	-13.2	38.18	0.655 Level 1		
11,423.1	5,405.6	11,448.3	5,430.6	148.2	148.3	-180.00	-535.8	-5,982.9	25.0	-13.3	38.27	0.653 Level 1		
11,500.0	5,405.1	11,525.2	5,430.1	150.1	150.1	-180.00	-534.2	-6,059.7	25.0	-13.6	38.59	0.648 Level 1		
11,501.1	5,405.1	11,526.3	5,430.1	150.2	150.2	-180.00	-534.1	-6,060.8	25.0	-13.6	38.60	0.648 Level 1		
11,600.0	5,404.4	11,625.2	5,429.4	152.6	152.6	-180.00	-532.1	-6,159.7	25.0	-14.0	39.00	0.641 Level 1		
11,623.1	5,404.3	11,648.3	5,429.3	153.2	153.2	-180.00	-531.6	-6,182.8	25.0	-14.1	39.10	0.639 Level 1		
11,700.0	5,403.7	11,725.2	5,428.7	155.1	155.1	-180.00	-529.9	-6,259.7	25.0	-14.4	39.42	0.634 Level 1		
11,703.1	5,403.7	11,728.3	5,428.7	155.1	155.1	-180.00	-529.9	-6,262.8	25.0	-14.4	39.43	0.634 Level 1		
11,800.0	5,403.1	11,825.2	5,428.1	157.5	157.5	-180.00	-527.8	-6,359.6	25.0	-14.8	39.83	0.628 Level 1		
11,817.2	5,402.9	11,842.4	5,427.9	158.0	158.0	-180.00	-527.5	-6,376.9	25.0	-14.9	39.90	0.627 Level 1		
11,900.0	5,402.4	11,925.2	5,427.4	160.0	160.0	-180.00	-525.7	-6,459.6	25.0	-15.2	40.24	0.621 Level 1		
11,900.4	5,402.4	11,925.6	5,427.4	160.0	160.0	-180.00	-525.7	-6,460.0	25.0	-15.2	40.24	0.621 Level 1		
12,000.0	5,401.7	12,025.2	5,426.7	162.5	162.5	-180.00	-523.6	-6,559.6	25.0	-15.7	40.65	0.615 Level 1		
12,003.4	5,401.7	12,028.5	5,426.7	162.5	162.5	-180.00	-523.5	-6,563.0	25.0	-15.7	40.67	0.615 Level 1		
12,100.0	5,401.0	12,125.2	5,426.0	164.9	164.9	-180.00	-521.5	-6,659.6	25.0	-16.1	41.06	0.609 Level 1		
12,116.4	5,400.9	12,141.6	5,425.9	165.3	165.3	-180.00	-521.2	-6,676.0	25.0	-16.1	41.13	0.608 Level 1		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design													S5-T22N-R6W - Aztec Oil Syndicate 2H - HZ - Plan #4		Offset Site Error: 0.0 usft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 usft			
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning			
12,200.0	5,400.3	12,225.2	5,425.3	167.4	167.4	-180.00	-519.4	-6,759.5	25.0	-16.5	41.47	0.603	Level 1			
12,217.1	5,400.2	12,242.3	5,425.2	167.8	167.8	-180.00	-519.0	-6,776.7	25.0	-16.5	41.54	0.602	Level 1			
12,300.0	5,399.6	12,325.2	5,424.6	169.9	169.9	-180.00	-517.3	-6,859.5	25.0	-16.9	41.88	0.597	Level 1			
12,302.2	5,399.6	12,327.4	5,424.6	169.9	169.9	-180.00	-517.2	-6,861.7	25.0	-16.9	41.89	0.597	Level 1			
12,400.0	5,399.0	12,425.2	5,424.0	172.3	172.3	-180.00	-515.2	-6,959.5	25.0	-17.3	42.29	0.591	Level 1			
12,416.4	5,398.8	12,441.6	5,423.8	172.7	172.7	-180.00	-514.8	-6,975.9	25.0	-17.4	42.36	0.590	Level 1			
12,500.0	5,398.3	12,525.2	5,423.3	174.8	174.8	-180.00	-513.1	-7,059.5	25.0	-17.7	42.70	0.585	Level 1			
12,520.5	5,398.1	12,545.6	5,423.1	175.3	175.3	-180.00	-512.6	-7,079.9	25.0	-17.8	42.78	0.584	Level 1			
12,600.0	5,397.6	12,625.2	5,422.6	177.2	177.2	-180.00	-510.9	-7,159.5	25.0	-18.1	43.11	0.580	Level 1			
12,653.6	5,397.2	12,678.8	5,422.2	178.6	178.6	-180.00	-509.8	-7,213.1	25.0	-18.3	43.33	0.577	Level 1			
12,685.0	5,397.0	12,710.0	5,422.0	179.3	179.3	180.00	-509.2	-7,244.3	25.0	-18.5	43.46	0.575	Level 1, ES			

Cathedral Energy Services

Anticollision Report

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well Aztec Oil Syndicate 2H
Project:	Sandoval County, NM	TVD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Reference Site:	S5-T22N-R6W	MD Reference:	KB=15' @ 7141.0usft (Aztec #222)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Aztec Oil Syndicate 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore:	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=15' @ 7141.0usft (Aztec #222)

Offset Depths are relative to Offset Datum

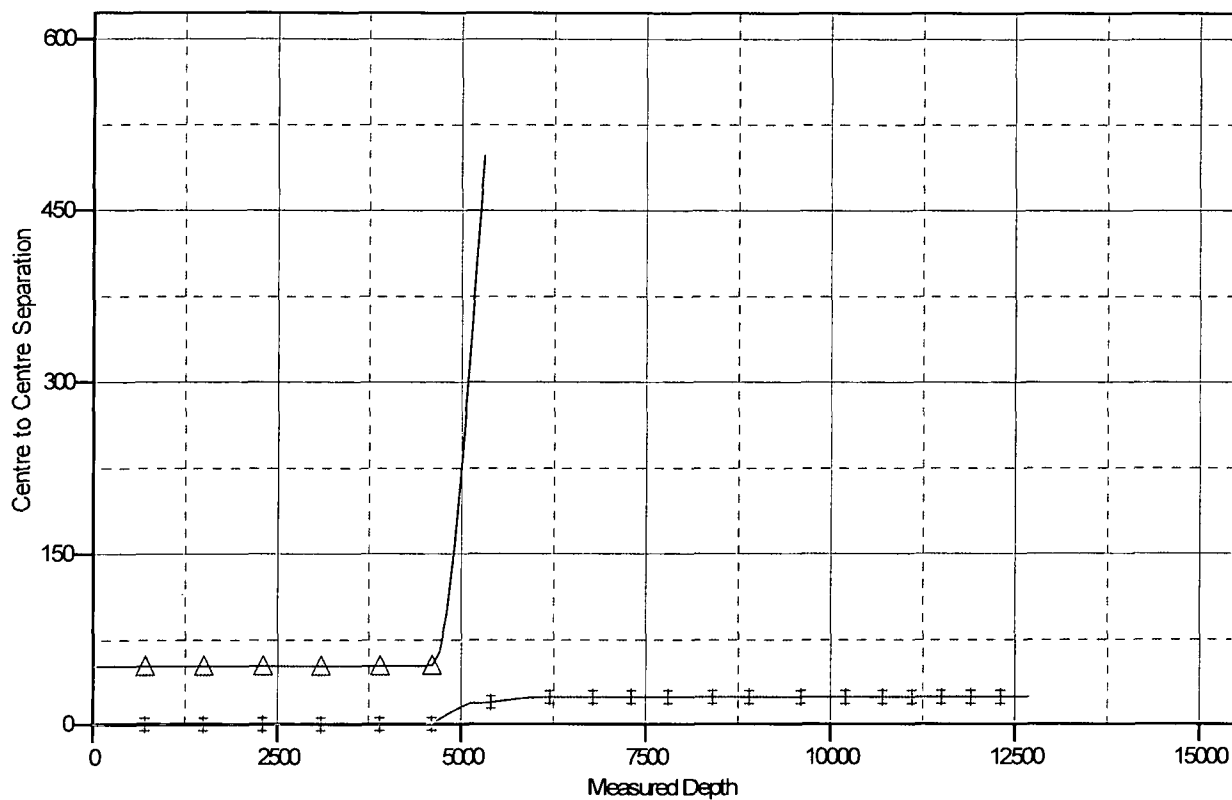
Central Meridian is -106.250000 °

Coordinates are relative to: Aztec Oil Syndicate 2H

Coordinate System is US State Plane 1983, New Mexico Central Zone

Grid Convergence at Surface is: -0.73°

Ladder Plot



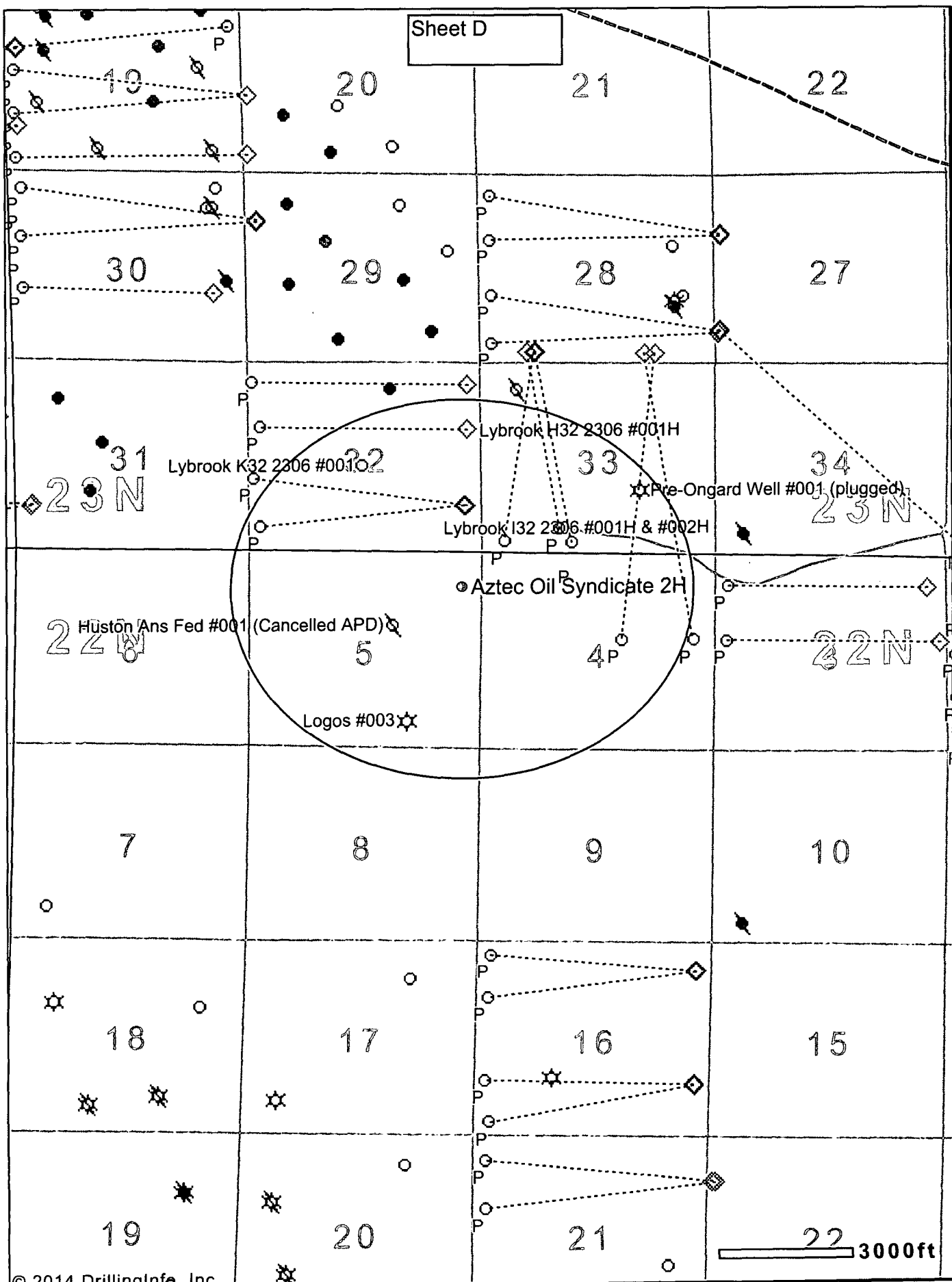
LEGEND

△ Aztec Oil Syndicate 1H, HZ, Plan #2 V0 ○ Aztec Oil Syndicate 2H, HZ, Plan #4 V0

LOGOS OPERATING, LLC
AZTEC OIL SYNDICATE #2H
989' FNL, 341' FEL (SURFACE) SECTION 5
1650' FNL, 2340' FEL (BOTTOM HOLE) SECTION 6
LATITUDE: 36.1724632° N
LONGITUDE: 107.4832700° W
NAD 83
T-22-N, R-6-W, N.M.P.M
SANDOVAL COUNTY, NEW MEXICO

FROM THE INTERSECTION OF U.S. HIGHWAY 550
AND U.S. HIGHWAY 64 IN BLOOMFIELD, NEW MEXICO.
TRAVEL SOUTHERLY ON U.S. HIGHWAY 550 FOR 54.5 MILES TO COUNSELOR.
TURN RIGHT AND TRAVEL SOUTHERLY 4.6 MILES TO FOUR WAY INTERSECTION.
TURN RIGHT AND TRAVEL WESTERLY 1.4 MILES TO PROPOSED ACCESS ROAD
LEADING TO PROPOSED AZTEC OIL SYNDICATE #1H/2H WELL LOCATIONS.

Sheet D



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 (Walsh E&P)

