

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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.

5. Lease Serial No. NMNM18463

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

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

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No. ATHENA 2308 14L 1H

2. Name of Operator LOGOS Operating, LLC

9. API Well No. 30-045-35632

3a. Address 2010 Afton Place
Farmington, NM 87401

3b. Phone No. (include area code)
(505) 324-4145

10. Field and Pool or Exploratory Area
Basin Mancos

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2171 FSL & 571 FWL, NW/SW, L Sec 14 T23N R08W

11. Country or Parish, State
San Juan County, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ 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 recompleate 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 recompleation 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 detennined that the site is ready for final inspection.)

LOGOS is revising the directional drill plan to maximize the producing interval as per attached Drilling Plan & Directional Drill Plan.

LOGOS proposes to make the following changes:

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

Change the 7" Intermediate casing from J-55 26# to J-55 23#.

Change the 4-1/2" Production casing from L-80 11.6# to P-110 11.6#.

Cement volumes will be adjusted accordingly.

Formation tops were reviewed and adjusted by LOGOS geologist.

OIL CONS. DIV DIST. 3

RECEIVED

JAN 29 2018

**ADHERE TO PREVIOUS NMOCD
CONDITIONS OF APPROVAL**

FEB 01 2018

Farmington Field Office
Bureau of Land Management

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

Tamra Sessions

Title Regulatory Specialist

Signature

Tamra Sessions

Date

01/29/2018

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

[Signature]

Title PE

Date 1/31/18

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 FFO

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)

NMOCD

12

**Sundry Drilling Plan
LOGOS Operating, LLC**

Revised 1/26/18

**Athena 2308 14L #1H
(fka Chaco 23 08 15 1H)
API # 30-045-35632
Lease Serial # NMNM18463**

Surface Location: 2171 FSL, 571 FWL

Legal Description: Sec 14, T23N, R8W (36.225657° N, 107.658266° W –NAD83)

Pay Zone Entry Point Location: 1430' FSL, 280' FEL

Legal Description: Sec 15, T23N, R8W (36.223636° N, 107.661203° W –NAD83)

Permitted Bottom Hole Location (PBHL): 1430' FSL, 280' FWL

Legal Description: Sec 15, T23N, R8W (36.223718° N, 107.661203° W –NAD83)

San Juan County, NM

1. The elevation of the unprepared ground is 6,878 feet above sea level. Estimated KB Elevation = 6892' (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 5,116' TVD/10,425' MD with the first perforation at the PBHL 10,425' MD/5,116' TVD, 1430' FSL, 330' FWL.
4. Estimated top of important geological markers:

<u>Formation</u>	<u>Depth TVD (ft)</u>	<u>Depth MD (ft)</u>
Nacimiento	Surface	Surface
Ojo Alamo	890	890
Kirtland	1,060	1,060
Fruitland	1,156	1,156
Pictured Cliffs	1,515	1,515
Chacra	2,302	2,303
Cliff House	2,982	2,999
Menefee	3,049	3,069
Point Lookout	3,910	3,980
Mancos	4,074	4,130
Gallup	4,826	4,935

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	1,156	Gas
Pictured Cliffs	1,515	Gas
Cliff House	2,982	Gas
Point Lookout	3,910	Gas
Mancos	4,074	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"	0-5,690'	0-5,153'	J-55	23.00	LTC	4360	3270	313
Production	4-1/2 "	5,540'-10,425'	5,139'-5,116'	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 136 sks (100% excess true hole) Type I-II neat cement with 20% flyash 14.5 ppg, 1.61 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 5,690' MD. Cement will be circulated to surface in a single stage with 578 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 238 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 10,425' MD. It will be a conventional liner job using 30% excess for TOC at 5,540' MD liner top, Cement slurry consist of 441 sks EXTENDACEM cement, -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 1862 psig (0.364 psi/ft @ 5116' 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 1126 psi (5116' 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 8.8 ppg, 32 to 44 vis, PV <8, YP 2 to 13, FLNC, LGS < 3%
320' - 5,690'	KCL WBM. As needed LCM for losses and seepage. 9.0 to 9.5 ppg, pH 9.0-9.5, 38 to 45 vis, PV 8-14, YP 8-14, FL <20cc/30min, LGS <6%
5,690' - 10,425'	LSND WBM. As needed LCM for losses and seepage. 8.8 to 9.0 ppg, PH 9.0-9.5, 34 to 38 vis, PV 4-8, YP 6-8, FL <8cc/30min, LGS < 4%

**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:

- Testing Program: No drillstem tests are anticipated
- Electric Logging Program: TBD
- LWD Program: TBD
- Coring Program: None anticipated.
- CBL's and/or Temperature Surveys Will Be Performed as Needed or Required.
- MudLogging: On location from 4000'TVD to TD.

11. Bottom Hole Pressure expected to be 2,500 +/- psi

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

Well Control Equipment Schematic for 2M Service

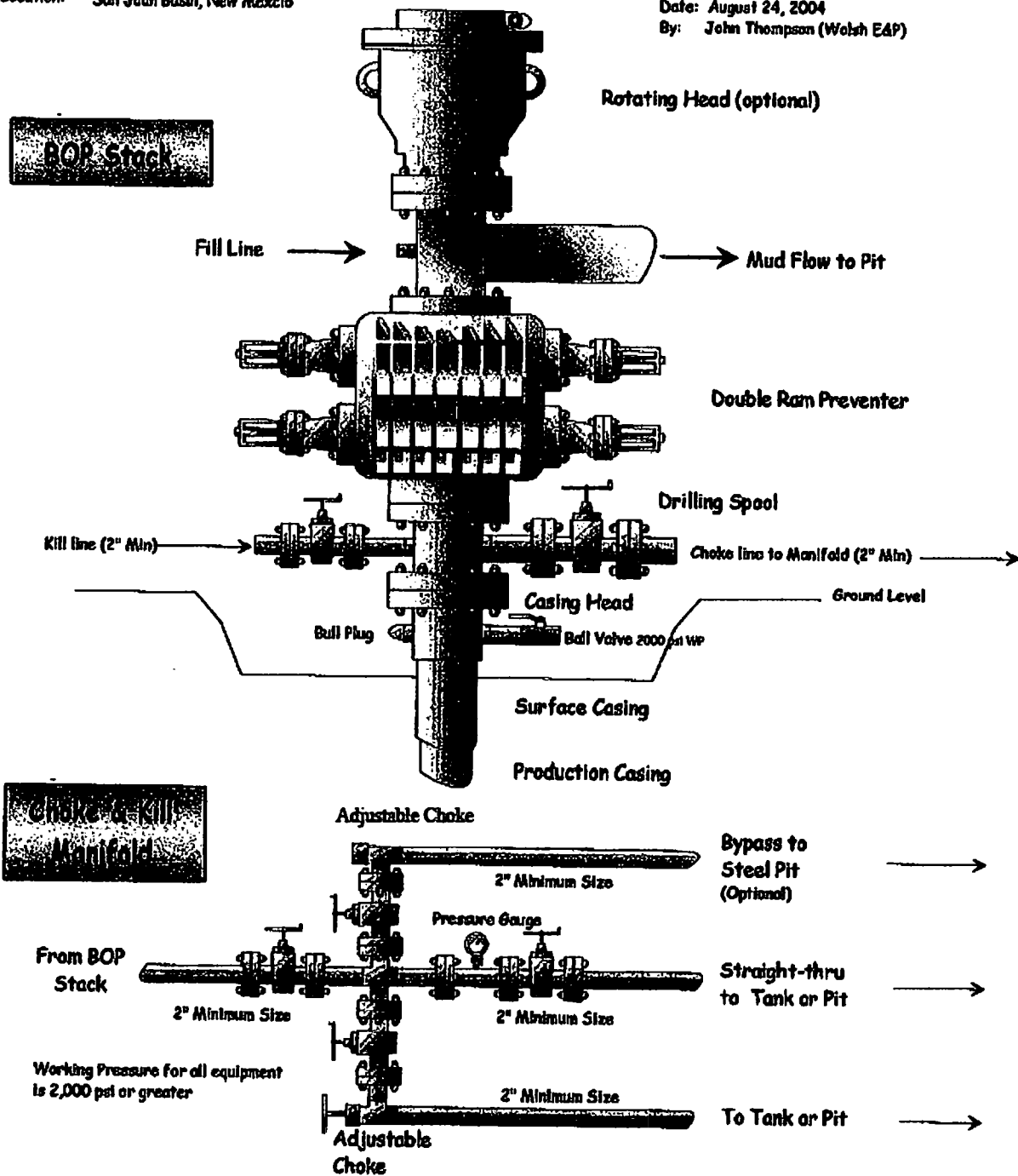
Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

Location: San Juan Basin, New Mexico

Date: August 24, 2004

By: John Thompson (Welsh E&P)





Company: Logos Operating LLC
Project: San Juan, NM NAD83
Site: Athena 2308-14L
Well: Athena 2308-14L 1H
Wellbore: OH
Design: Plan #2

PROJECT DETAILS: San Juan, NM NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: True



Azimuths to True North
Magnetic North: 8.92°

Magnetic Field
Strength: 49576.7nT
Dip Angle: 62.85°
Date: 1/18/2018
Model: HDGM

WELL DETAILS: Athena 2308-14L 1H

GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 1901483.74 2774726.47 36.2256570 -107.6582660

Plan: Plan #2 (Athena 2308-14L 1H/OH)

Created By: Janie Collins Date: 14:09, January 26 2018

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Athena 1H LP	5153.00	-735.68	-866.27	1900746.50	2773861.53
Athena 1H BHL	5116.00	-705.29	-5601.11	1900768.34	2769126.65

SECTION DETAILS

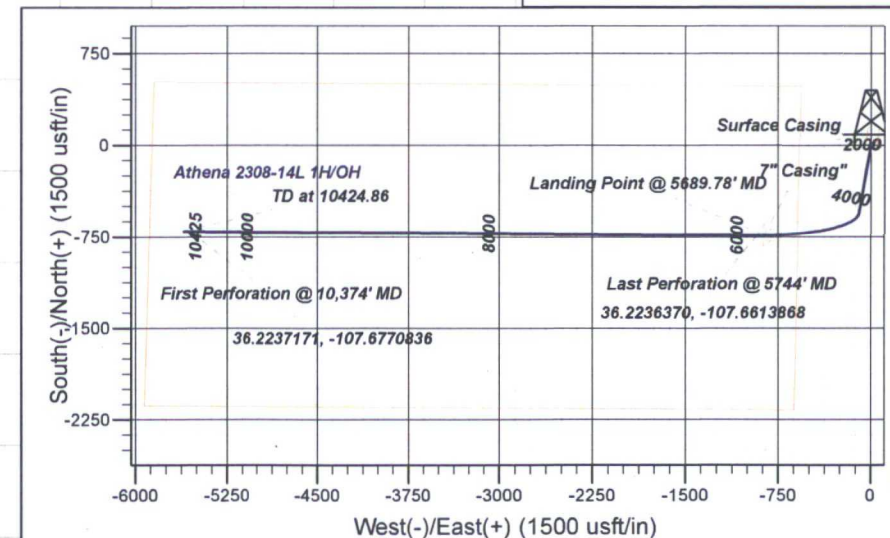
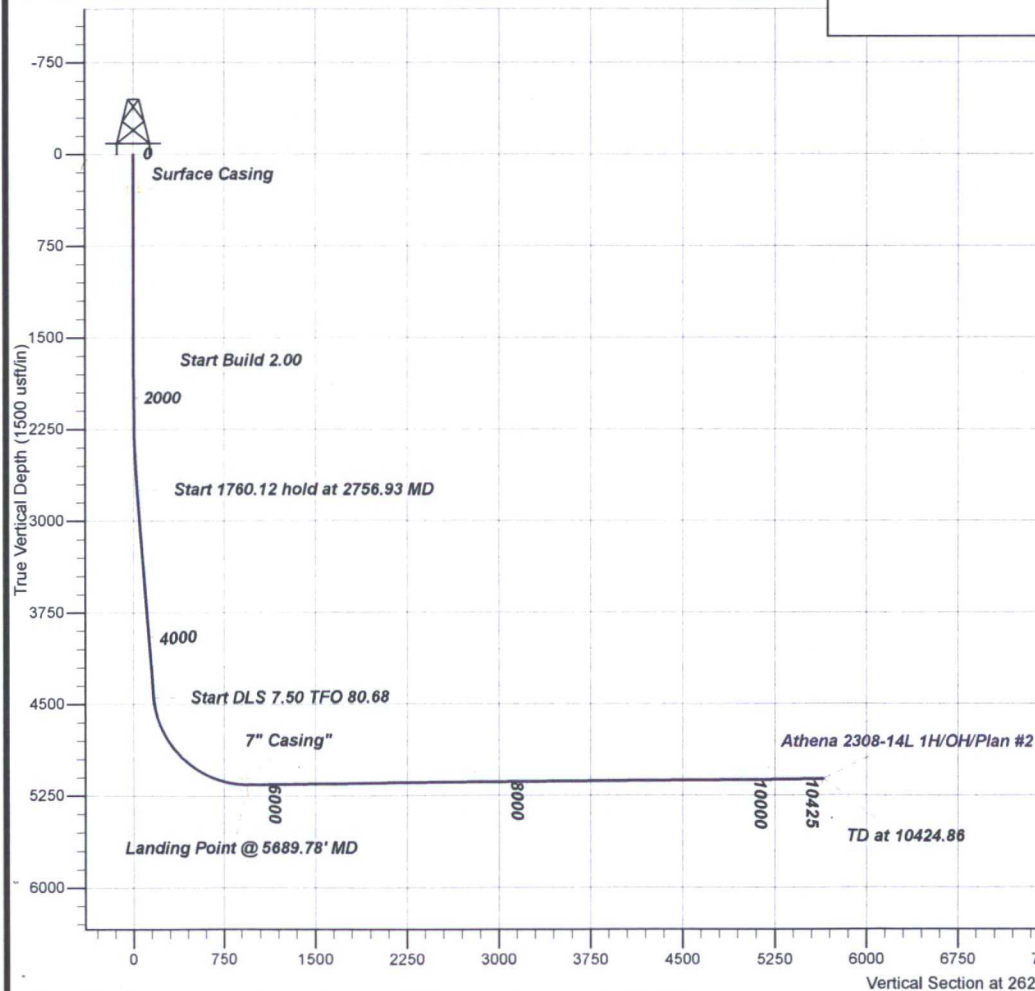
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
2756.93	15.14	189.89	2748.15	-97.94	-17.08	2.00	189.89	29.19	
4517.04	15.14	189.89	4447.19	-550.76	-96.07	0.00	0.00	164.13	
5689.78	90.45	270.37	5153.00	-735.68	-866.27	7.50	80.68	951.39	Athena 1H LP
10424.86	90.45	270.37	5116.00	-705.29	-5601.11	0.00	0.00	5645.34	Athena 1H BHL

CASING DETAILS

TVD	MD	Name
320.00	320.00	Surface Casing
5153.01	5689.00	7" Casing"

FORMATION DETAILS

TVDPath	MDPath	Formation
890.00	890.00	Ojo Alamo
1060.00	1060.00	Kirtland
1156.00	1156.00	Fruitland
1515.00	1515.00	Pictured Cliffs
2302.00	2302.56	Chacra
2982.00	2999.18	Cliff House
3049.00	3068.59	Menefee
3910.00	3960.54	Point Lookout
4074.00	4130.44	Mancos
4826.00	4934.88	Gallup





Logos Operating LLC

San Juan, NM NAD83

Athena 2308-14L

Athena 2308-14L 1H

OH

Plan: Plan #2

Standard Planning Report

26 January, 2018



www.scientificdrilling.com



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Athena 2308-14L 1H
Company:	Logos Operating LLC	TVD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Project:	San Juan, NM NAD83	MD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Site:	Athena 2308-14L	North Reference:	True
Well:	Athena 2308-14L 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Project	San Juan, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Athena 2308-14L				
Site Position:		Northing:	1,901,483.74 usft	Latitude:	36.2256570
From:	Lat/Long	Easting:	2,774,726.48 usft	Longitude:	-107.6582660
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.10 °

Well	Athena 2308-14L 1H				
Well Position	+N/-S	0.00 usft	Northing:	1,901,483.74 usft	Latitude: 36.2256570
	+E/-W	0.00 usft	Easting:	2,774,726.48 usft	Longitude: -107.6582660
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 6,878.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/18/2018	8.92	62.85	49,577

Design	Plan #2				
Audit Notes:					
Version:	Phase:	PLAN		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	262.82	

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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,756.93	15.14	189.89	2,748.15	-97.94	-17.08	2.00	2.00	0.00	189.89	
4,517.04	15.14	189.89	4,447.19	-550.76	-96.07	0.00	0.00	0.00	0.00	
5,689.78	90.45	270.37	5,153.00	-735.68	-866.27	7.50	6.42	6.86	80.68	Athena 1H LP
10,424.86	90.45	270.37	5,116.00	-705.29	-5,601.11	0.00	0.00	0.00	0.00	Athena 1H BHL

Database:	Grand Junction District	Local Co-ordinate Reference:	Well Athena 2308-14L 1H
Company:	Logos Operating LLC	TVD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Project:	San Juan, NM NAD83	MD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Site:	Athena 2308-14L	North Reference:	True
Well:	Athena 2308-14L 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	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	0.00
200.00	0.00	0.00	200.00	0.00	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	0.00
320.00	0.00	0.00	320.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Casing									
400.00	0.00	0.00	400.00	0.00	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	0.00
600.00	0.00	0.00	600.00	0.00	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	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
890.00	0.00	0.00	890.00	0.00	0.00	0.00	0.00	0.00	0.00
Ojo Alamo									
900.00	0.00	0.00	900.00	0.00	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	0.00
1,060.00	0.00	0.00	1,060.00	0.00	0.00	0.00	0.00	0.00	0.00
Kirtland									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,156.00	0.00	0.00	1,156.00	0.00	0.00	0.00	0.00	0.00	0.00
Fruitland									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,515.00	0.00	0.00	1,515.00	0.00	0.00	0.00	0.00	0.00	0.00
Pictured Cliffs									
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
2,100.00	2.00	189.89	2,099.98	-1.72	-0.30	0.51	2.00	2.00	0.00
2,200.00	4.00	189.89	2,199.84	-6.87	-1.20	2.05	2.00	2.00	0.00
2,300.00	6.00	189.89	2,299.45	-15.46	-2.70	4.61	2.00	2.00	0.00
2,302.56	6.05	189.89	2,302.00	-15.73	-2.74	4.69	2.00	2.00	0.00
Chacra									
2,400.00	8.00	189.89	2,398.70	-27.47	-4.79	8.18	2.00	2.00	0.00
2,500.00	10.00	189.89	2,497.47	-42.88	-7.48	12.78	2.00	2.00	0.00
2,600.00	12.00	189.89	2,595.62	-61.67	-10.76	18.38	2.00	2.00	0.00
2,700.00	14.00	189.89	2,693.06	-83.83	-14.62	24.98	2.00	2.00	0.00
2,756.93	15.14	189.89	2,748.15	-97.94	-17.08	29.19	2.00	2.00	0.00
Start 1760.12 hold at 2756.93 MD									
2,800.00	15.14	189.89	2,789.73	-109.02	-19.02	32.49	0.00	0.00	0.00
2,900.00	15.14	189.89	2,886.26	-134.75	-23.50	40.15	0.00	0.00	0.00
2,999.18	15.14	189.89	2,982.00	-160.26	-27.96	47.76	0.00	0.00	0.00
Cliff House									
3,000.00	15.14	189.89	2,982.79	-160.47	-27.99	47.82	0.00	0.00	0.00
3,068.59	15.14	189.89	3,049.00	-178.12	-31.07	53.08	0.00	0.00	0.00
Menefee									
3,100.00	15.14	189.89	3,079.32	-186.20	-32.48	55.49	0.00	0.00	0.00

Database:	Grand Junction District	Local Co-ordinate Reference:	Well Athena 2308-14L 1H
Company:	Logos Operating LLC	TVD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Project:	San Juan, NM NAD83	MD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Site:	Athena 2308-14L	North Reference:	True
Well:	Athena 2308-14L 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,200.00	15.14	189.89	3,175.85	-211.93	-36.97	63.15	0.00	0.00	0.00
3,300.00	15.14	189.89	3,272.38	-237.65	-41.46	70.82	0.00	0.00	0.00
3,400.00	15.14	189.89	3,368.91	-263.38	-45.94	78.49	0.00	0.00	0.00
3,500.00	15.14	189.89	3,465.44	-289.11	-50.43	86.15	0.00	0.00	0.00
3,600.00	15.14	189.89	3,561.97	-314.83	-54.92	93.82	0.00	0.00	0.00
3,700.00	15.14	189.89	3,658.50	-340.56	-59.41	101.49	0.00	0.00	0.00
3,800.00	15.14	189.89	3,755.03	-366.29	-63.89	109.15	0.00	0.00	0.00
3,900.00	15.14	189.89	3,851.56	-392.01	-68.38	116.82	0.00	0.00	0.00
3,960.55	15.14	189.89	3,910.00	-407.59	-71.10	121.46	0.00	0.00	0.00
Point Lookout									
4,000.00	15.14	189.89	3,948.09	-417.74	-72.87	124.49	0.00	0.00	0.00
4,100.00	15.14	189.89	4,044.62	-443.47	-77.36	132.15	0.00	0.00	0.00
4,130.44	15.14	189.89	4,074.00	-451.30	-78.72	134.49	0.00	0.00	0.00
Mancos									
4,200.00	15.14	189.89	4,141.15	-469.19	-81.84	139.82	0.00	0.00	0.00
4,300.00	15.14	189.89	4,237.68	-494.92	-86.33	147.49	0.00	0.00	0.00
4,400.00	15.14	189.89	4,334.20	-520.65	-90.82	155.15	0.00	0.00	0.00
4,500.00	15.14	189.89	4,430.73	-546.38	-95.31	162.82	0.00	0.00	0.00
4,517.04	15.14	189.89	4,447.19	-550.76	-96.07	164.13	0.00	0.00	0.00
Start DLS 7.50 TFO 80.68									
4,600.00	17.25	211.04	4,526.92	-571.99	-104.28	174.93	7.50	2.54	25.49
4,700.00	21.92	228.73	4,621.19	-597.04	-125.99	199.59	7.50	4.67	17.69
4,800.00	27.81	239.87	4,711.93	-621.09	-160.24	236.58	7.50	5.89	11.14
4,900.00	34.29	247.22	4,797.59	-643.74	-206.44	285.25	7.50	6.48	7.35
4,934.88	36.63	249.23	4,826.00	-651.24	-225.24	304.83	7.50	6.72	5.75
Gallup									
5,000.00	41.08	252.43	4,876.70	-664.59	-263.82	344.79	7.50	6.84	4.93
5,100.00	48.06	256.38	4,947.91	-683.29	-331.39	414.16	7.50	6.97	3.95
5,200.00	55.14	259.54	5,010.00	-699.52	-407.99	492.19	7.50	7.08	3.16
5,300.00	62.29	262.19	5,061.91	-713.00	-492.31	577.53	7.50	7.15	2.65
5,400.00	69.48	264.52	5,102.74	-723.50	-582.91	668.73	7.50	7.19	2.33
5,500.00	76.70	266.63	5,131.81	-730.84	-678.23	764.22	7.50	7.22	2.12
5,600.00	83.94	268.63	5,148.61	-734.89	-776.65	862.38	7.50	7.24	1.99
5,689.00	90.39	270.35	5,153.01	-735.68	-865.49	950.62	7.50	7.25	1.94
7" Casing"									
5,689.78	90.45	270.37	5,153.00	-735.68	-866.27	951.39	7.50	7.25	1.93
Landing Point @ 5689.78' MD - Athena 1H LP									
5,700.00	90.45	270.37	5,152.92	-735.61	-876.49	961.53	0.00	0.00	0.00
5,706.50	90.45	270.37	5,152.87	-735.57	-882.99	967.97	0.00	0.00	0.00
Athena 2H LP									
5,744.00	90.45	270.37	5,152.58	-735.33	-920.49	1,005.14	0.00	0.00	0.00
Last Perforation @ 5744' MD - 36.2236370, -107.6613868									
5,800.00	90.45	270.37	5,152.14	-734.97	-976.49	1,060.66	0.00	0.00	0.00
5,900.00	90.45	270.37	5,151.36	-734.33	-1,076.48	1,159.79	0.00	0.00	0.00
6,000.00	90.45	270.37	5,150.58	-733.69	-1,176.48	1,258.92	0.00	0.00	0.00
6,100.00	90.45	270.37	5,149.79	-733.04	-1,276.47	1,358.05	0.00	0.00	0.00
6,200.00	90.45	270.37	5,149.01	-732.40	-1,376.47	1,457.18	0.00	0.00	0.00
6,300.00	90.45	270.37	5,148.23	-731.76	-1,476.46	1,556.31	0.00	0.00	0.00
6,400.00	90.45	270.37	5,147.45	-731.12	-1,576.46	1,655.44	0.00	0.00	0.00
6,500.00	90.45	270.37	5,146.67	-730.48	-1,676.45	1,754.58	0.00	0.00	0.00
6,600.00	90.45	270.37	5,145.89	-729.83	-1,776.45	1,853.71	0.00	0.00	0.00



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Athena 2308-14L 1H
Company:	Logos Operating LLC	TVD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Project:	San Juan, NM NAD83	MD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Site:	Athena 2308-14L	North Reference:	True
Well:	Athena 2308-14L 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,700.00	90.45	270.37	5,145.11	-729.19	-1,876.44	1,952.84	0.00	0.00	0.00
6,800.00	90.45	270.37	5,144.32	-728.55	-1,976.43	2,051.97	0.00	0.00	0.00
6,900.00	90.45	270.37	5,143.54	-727.91	-2,076.43	2,151.10	0.00	0.00	0.00
7,000.00	90.45	270.37	5,142.76	-727.27	-2,176.42	2,250.23	0.00	0.00	0.00
7,100.00	90.45	270.37	5,141.98	-726.63	-2,276.42	2,349.36	0.00	0.00	0.00
7,200.00	90.45	270.37	5,141.20	-725.98	-2,376.41	2,448.50	0.00	0.00	0.00
7,300.00	90.45	270.37	5,140.42	-725.34	-2,476.41	2,547.63	0.00	0.00	0.00
7,400.00	90.45	270.37	5,139.64	-724.70	-2,576.40	2,646.76	0.00	0.00	0.00
7,500.00	90.45	270.37	5,138.86	-724.06	-2,676.40	2,745.89	0.00	0.00	0.00
7,600.00	90.45	270.37	5,138.07	-723.42	-2,776.39	2,845.02	0.00	0.00	0.00
7,700.00	90.45	270.37	5,137.29	-722.78	-2,876.39	2,944.15	0.00	0.00	0.00
7,800.00	90.45	270.37	5,136.51	-722.13	-2,976.38	3,043.28	0.00	0.00	0.00
7,900.00	90.45	270.37	5,135.73	-721.49	-3,076.38	3,142.41	0.00	0.00	0.00
8,000.00	90.45	270.37	5,134.95	-720.85	-3,176.37	3,241.55	0.00	0.00	0.00
8,100.00	90.45	270.37	5,134.17	-720.21	-3,276.37	3,340.68	0.00	0.00	0.00
8,200.00	90.45	270.37	5,133.39	-719.57	-3,376.36	3,439.81	0.00	0.00	0.00
8,300.00	90.45	270.37	5,132.60	-718.93	-3,476.36	3,538.94	0.00	0.00	0.00
8,400.00	90.45	270.37	5,131.82	-718.28	-3,576.35	3,638.07	0.00	0.00	0.00
8,500.00	90.45	270.37	5,131.04	-717.64	-3,676.35	3,737.20	0.00	0.00	0.00
8,600.00	90.45	270.37	5,130.26	-717.00	-3,776.34	3,836.33	0.00	0.00	0.00
8,700.00	90.45	270.37	5,129.48	-716.36	-3,876.34	3,935.46	0.00	0.00	0.00
8,800.00	90.45	270.37	5,128.70	-715.72	-3,976.33	4,034.60	0.00	0.00	0.00
8,900.00	90.45	270.37	5,127.92	-715.08	-4,076.33	4,133.73	0.00	0.00	0.00
9,000.00	90.45	270.37	5,127.13	-714.43	-4,176.32	4,232.86	0.00	0.00	0.00
9,100.00	90.45	270.37	5,126.35	-713.79	-4,276.32	4,331.99	0.00	0.00	0.00
9,200.00	90.45	270.37	5,125.57	-713.15	-4,376.31	4,431.12	0.00	0.00	0.00
9,300.00	90.45	270.37	5,124.79	-712.51	-4,476.31	4,530.25	0.00	0.00	0.00
9,400.00	90.45	270.37	5,124.01	-711.87	-4,576.30	4,629.38	0.00	0.00	0.00
9,500.00	90.45	270.37	5,123.23	-711.22	-4,676.30	4,728.51	0.00	0.00	0.00
9,600.00	90.45	270.37	5,122.45	-710.58	-4,776.29	4,827.65	0.00	0.00	0.00
9,700.00	90.45	270.37	5,121.66	-709.94	-4,876.29	4,926.78	0.00	0.00	0.00
9,800.00	90.45	270.37	5,120.88	-709.30	-4,976.28	5,025.91	0.00	0.00	0.00
9,900.00	90.45	270.37	5,120.10	-708.66	-5,076.28	5,125.04	0.00	0.00	0.00
10,000.00	90.45	270.37	5,119.32	-708.02	-5,176.27	5,224.17	0.00	0.00	0.00
10,100.00	90.45	270.37	5,118.54	-707.37	-5,276.27	5,323.30	0.00	0.00	0.00
10,200.00	90.45	270.37	5,117.76	-706.73	-5,376.26	5,422.43	0.00	0.00	0.00
10,300.00	90.45	270.37	5,116.98	-706.09	-5,476.26	5,521.56	0.00	0.00	0.00
10,374.00	90.45	270.37	5,116.40	-705.62	-5,550.25	5,594.92	0.00	0.00	0.00
First Perforation @ 10,374' MD - 36.2237171, -107.6770836									
10,400.00	90.45	270.37	5,116.19	-705.45	-5,576.25	5,620.70	0.00	0.00	0.00
10,424.86	90.45	270.37	5,116.00	-705.29	-5,601.11	5,645.34	0.00	0.00	0.00
TD at 10424.86 - Athena 1H BHL - Athena 2H BHL									



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Athena 2308-14L 1H
Company:	Logos Operating LLC	TVD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Project:	San Juan, NM NAD83	MD Reference:	GL 6878' & RKB 14' @ 6892.00usft (Aztec 920)
Site:	Athena 2308-14L	North Reference:	True
Well:	Athena 2308-14L 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Design 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
Athena 1H BHL - plan hits target center - Point	0.00	0.00	5,116.00	-705.29	-5,601.11	1,900,768.34	2,769,126.65	36.2237180	-107.6772560
Athena 1H LP - plan hits target center - Point	0.00	0.00	5,153.00	-735.68	-866.27	1,900,746.50	2,773,861.53	36.2236360	-107.6612030

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
320.00	320.00	Surface Casing		
5,689.00	5,153.01	7" Casing"		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	2,000.00	0.00	0.00	Start Build 2.00
2,756.93	2,748.15	-97.94	-17.08	Start 1760.12 hold at 2756.93 MD
4,517.04	4,447.19	-550.76	-96.07	Start DLS 7.50 TFO 80.68
5,689.78	5,153.00	-735.68	-866.27	Landing Point @ 5689.78' MD
5,744.00	5,152.58	-735.33	-920.49	Last Perforation @ 5744' MD
5,744.00	5,152.58	-735.33	-920.49	36.2236370, -107.6613868
10,374.00	5,116.40	-705.62	-5,550.25	First Perforation @ 10,374' MD
10,374.00	5,116.40	-705.62	-5,550.25	36.2237171, -107.6770836
10,424.86	5,116.00	-705.29	-5,601.11	TD at 10424.86