District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
August 1, 2011

Permit 260467

NMOCD
DEC 05 2018
DISTRICT III

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address	2. OGRID Number
LOGOS OPERATING, LLC 4001 N Butler Farmington, NM 87401	289408
	3. API Number 30-045- 35912
4. Property Code 322997	5. Property Name STATE 2408 32A COM
	6. Well No. 002H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
A	32	24N	08W		310	N	300	E	SAN JUAN

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
E	32	24N	08W	E	1321	N	20	W	San Juan

9. Pool Information

NAGEEZI GALLUP	47540

Additional Well Information

11. Work Type	12. Well Type	13. Cable/Rotary	14. Lease Type	15. Ground Level Elevation
New Well	OIL	R	State	7013
16. Multiple	**17. Proposed Depth**	**18. Formation**	**19. Contractor**	**20. Spud Date**
N	11661	Gallup Formation	TBA	1/1/2019
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

AP

☒ **We will be using a closed-loop system in lieu of lined pits**

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	12.25	9.625	36	320	100	0
Int1	8.75	7	23	6345	867	0
Liner1	6.125	4.5	11.6	11661	494	6195

Casing/Cement Program: Additional Comments

If necessary, LOGOS will add a stage (DV) tool to the 7" intermediate casing within the Pictured Cliffs/Chacra zone. If cement is not being returned to surface, the DV tool will be utilized and two stages of cement will be pumped, otherwise a DV cancellation plug will be used and one stage of cement will be pumped.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	2000	1500	

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify I have complied with 19.15.14.9 (A) NMAC** ☒ **and/or 19.15.14.9 (B) NMAC** ☒**, if applicable.**	**OIL CONSERVATION DIVISION**
Signature: Marie E. Florez	
Printed Name: Marie E. Florez	Approved By: Brandon Powell
Title: Regulatory Specialist	Title: Supervisor
Email Address: mflorez@logosresourcesllc.com	Approved Date: 12.18.18 Expiration Date: 12.18.2020
Date: 12/3/2018 Phone: 505-419-8420	Conditions of Approval Attached

AV

SEE ATTACHED NMOCD CONDITIONS OF APPROVAL

24

District I
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Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-35912	47540	NAGEEZI GALLUP

[4] Property Code	[5] Property Name	[6] Well Number
322997	STATE 2408-32A **COM**	2H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	7013'

[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	32	24N	8W		310	NORTH	300	EAST	SAN JUAN

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	32	24N	8W		1321	NORTH	20	WEST	SAN JUAN

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320.0 Acres N/2 – Section 32			

END-OF-LATERAL
1321' FNL 20' FWL
SECTION 32, T24N, R8W
LAT: 36.274458 °N
LONG: 107.713447 °W
DATUM: NAD1927

LAT: 36.274470 °N
LONG: 107.714060 °W
DATUM: NAD1983

FIRST PERFORATION
1321' FNL 100' FWL
SECTION 32, T24N, R8W
LAT: 36.274457 °N
LONG: 107.713176 °W
DATUM: NAD1927

LAT: 36.274470 °N
LONG: 107.713788 °W
DATUM: NAD1983

SURFACE LOCATION
310' FNL 300' FEL
SECTION 32, T24N, R8W
LAT: 36.277223 °N
LONG: 107.696596 °W
DATUM: NAD1927

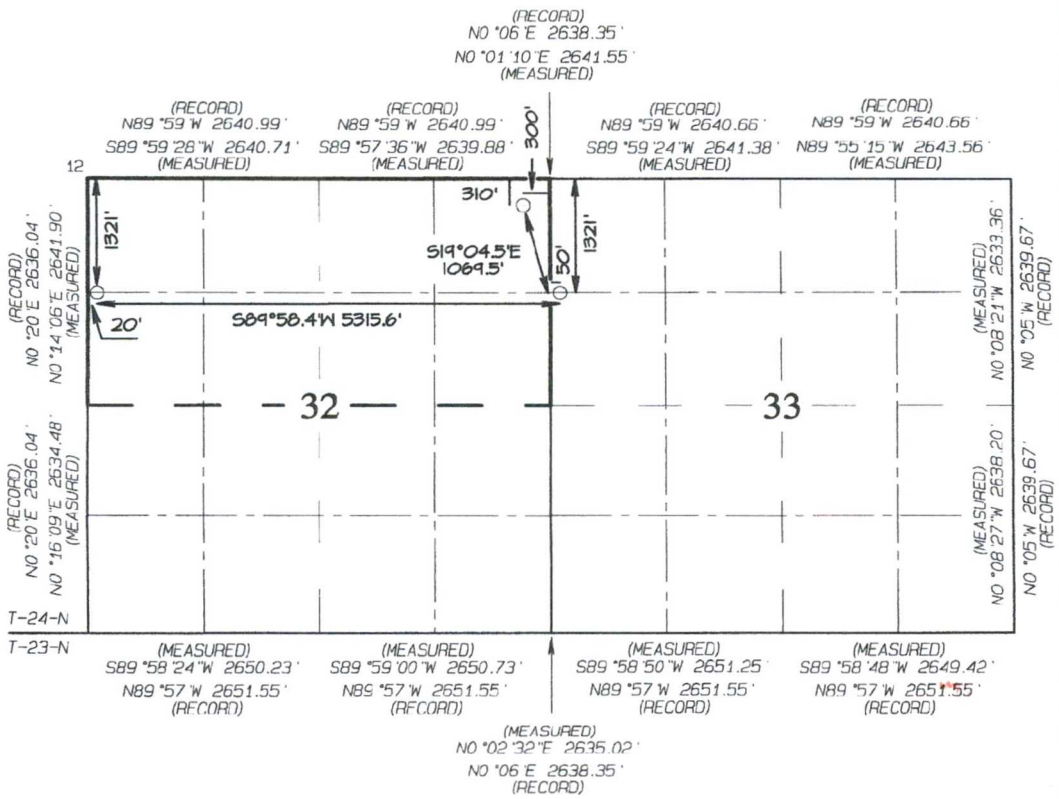
LAT: 36.277235 °N
LONG: 107.697207 °W
DATUM: NAD1983

LAST PERFORATION
1321' FNL 100' FEL
SECTION 32, T24N, R8W
LAT: 36.274445 °N
LONG: 107.695923 °W
DATUM: NAD1927

LAT: 36.274458 °N
LONG: 107.696535 °W
DATUM: NAD1983

POINT-OF-ENTRY
1321' FNL 50' FWL
SECTION 33, T24N, R8W
LAT: 36.274445 °N
LONG: 107.695415 °W
DATUM: NAD1927

LAT: 36.274457 °N
LONG: 107.696026 °W
DATUM: NAD1983



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

[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 Date 12/3/18

Marie E Florez
Printed Name

Mflorez@logosresourcesllc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

Date Revised: NOVEMBER 13, 2018
Survey Date: NOVEMBER 9, 2018

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

LOGOS Operating, LLC
Operations Plan

Note: This procedure will be adjusted onsite based upon actual conditions

Date:	November 30, 2018	Pool:	Nageezi Gallup
Well Name:	**State 2408 32A Com 2H**	Elevation:	7,013'
Surface Location:	Sec 32, T24N, R8W 310 FNL, 300 FEL (36.277235° N, 107.697207° W – NAD83)	Measured Depth:	11,661'
Bottom Hole Location:	Sec 32, T24N, R8W 1321 FNL, 20 FWL (36.274470° N, 107.714060° W – NAD83)	County:	San Juan

Lease Serial #VC-0472

I. GEOLOGY

A. Formation Tops (KB): Estimated top of important geological markers:
SURFACE FORMATION - NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	1,165	1,165	*POINT LOOKOUT	4,497	4,257
KIRTLAND	1,320	1,320	*MANCOS	4,713	4,442
*FRUITLAND	1,518	1,518	GALLUP	5,875	5,431
*PICTURED CLIFFS	1,849	1,849	KICKOFF POINT	4,899	4,602
CHACRA	2,290	2,288	LANDING POINT	6,345	5,569
*CLIFF HOUSE	3,430	3,344	TD	11,661	5,533
MENEFEE	3,474	3,382			

* indicates depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered.

B. **MUD LOGGING PROGRAM;** Mudlogger on location from KOP to TD.

C. **LOGGING PROGRAM;** LWD GR from surface casing to TD.

D. **NATURAL GAUGES:** Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

II. DRILLING

A. **MUD PROGRAM:** LSND mud (WBM) will be used to drill the 12-1/4" Surface hole, the 8 ¾" Directional Vertical hole, and the curve portion of the wellbore. A LSND (WBM) or (OBM) will be used to drill the lateral portion of well. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

B. **BOP TESTING:** While drill pipe is in use, the pipe rams and the blind rams will be function tested once each trip. The BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10 minutes.** Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes.** Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. **All tests and inspections will be recorded and logged with time and**

results.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	12.25"	320'	9.625"	36 LBS	J-55 or equiv	STC
INTERMEDIATE	8.75"	6,345'	7"	23 LBS	J-55 or equiv	LTC
PRODUCTION	6.125"	6,195' – 11,661'	4.5"	11.6 LBS	P-110 or equiv	LTC
TIE BACK	6.125"	Surf. – 6,195'	4.5"	11.6 LBS	P-110 or equiv	LTC

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (4) joints of Surface Casing.
2. INTERMEDIATE CASING: 7" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft.
3. PRODUCTION LINER: Run 4-1/2" Liner with cement nose guide Float Shoe+ 2jts. of 4-1/2" casing+ Landing Collar+ 4-1/2" pup joint+ 1 RSI (Sliding Sleeve) positioned inside the **100** ft Hard line. Centralizer program will be determined by wellbore condition. Set seals on Liner Hanger. Liner to be pressure tested during completion operations.

C. CEMENTING:

(Note: Volumes may be adjusted onsite due to actual conditions)

1. SURFACE: 5 bbl Fresh Water Spacer, 100 sx (161 cu.ft.) of 14.5 ppg Type 1-11 (Neat G) + 20% Fly Ash cement w/ 7.41 gal/sack mix water ratio @ 1.61 cu ft/sx yield. Calculated @volume+ 50% excess. woc 12 hours. Test csg to 600 psi. Total Volume: (160cu-ft/100 sx/ Bbls). TOC at Surface.

2. INTERMEDIATE: Stage 1: Spacer #1: 20 bbl (112 cuft) Chemwash. Lead Cement: 206 bbls, 592 sks (1155 cu.ft.), 12.3 ppg@ 1.95 cuft/sk yield. Tail Cement: 64 bbls, 275 sks, (357 cuft), 13.5 ppg@ 1.3 cu'ft/sk yield. Displacement: Displace w/ +/- 248 bbl Drilling mud or water. Total Cement: 269 bbls, 867 sks, (1512 cuft)

3. PRODUCTION LINER: Spacer #1:10 bbl (56.cu-ft) Water Spacer. Spacer #2: 40 bbl 9.5 ppg (224.6 cu-ft) Tuned Spacer Ill. Spacer #3: 10 bbl Water Spacer. Lead Cement: Extencem TM System. Yield 1.36 cuft/sk 13.3 ppg (494 sx / 671 cuft /120 bbls). Tail Spacer: 40 BBL of MMCR. Displacement: Displace w/ +/- 151 bbl.

IV. COMPLETION

A. CBL

CBLs and/or Temperature Surveys Will Be Performed as Needed or Required

B. PRESSURE TEST

Pressure test 4-1/2" casing to 4000 psi max, hold at 1500 psi for 30 minutes. Increase pressure to Open RSI sleeves.

C. STIMULATION

Stimulate with sand, water and N2. Isolate stages with flow through frac plugs. Drill out frac plugs and flowback lateral.

D. PRODUCTION TUBING

Run 2-7/8", 6.5#, J-55, EUE tubing

LOGOS RESOURCES II, LLC

Company: Logos Operating LLC
Project: San Juan, NM NAD83
Site: State 2408-32A
Well: State 2408-32A 2H
Wellbore: OH
Design: Plan #1

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

Scientific Drilling

Azimuths to True North
Magnetic North: 8.85°

Magnetic Field
Strength: 49528.6snT
Dip Angle: 62.85°
Date: 11/28/2018
Model: HDGM

WELL DETAILS: State 2408-32A 2H

GL 7013' & RKB 14' @ 7027.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1920240.90	2763214.73	36.2772350	-107.6972070

Plan: Plan #1 (State 2408-32A 2H/OH)

Created By: Janie Collins Date: 18:01, November 30 2018

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
State 2H LP	5569.00	-1011.26	348.11	1919230.13	2763564.26	36.2744570	-107.6960260
State 2H BHL	5533.00	-1006.10	-4967.58	1919227.82	2758248.57	36.2744700	-107.7140600
State 2H FPerf	5533.00	-1006.11	-4887.41	1919227.92	2758328.74	36.2744700	-107.7137880
State 2H LPerf	5569.00	-1010.90	198.08	1919230.28	2763414.23	36.2744580	-107.6965350

SECTION DETAILS

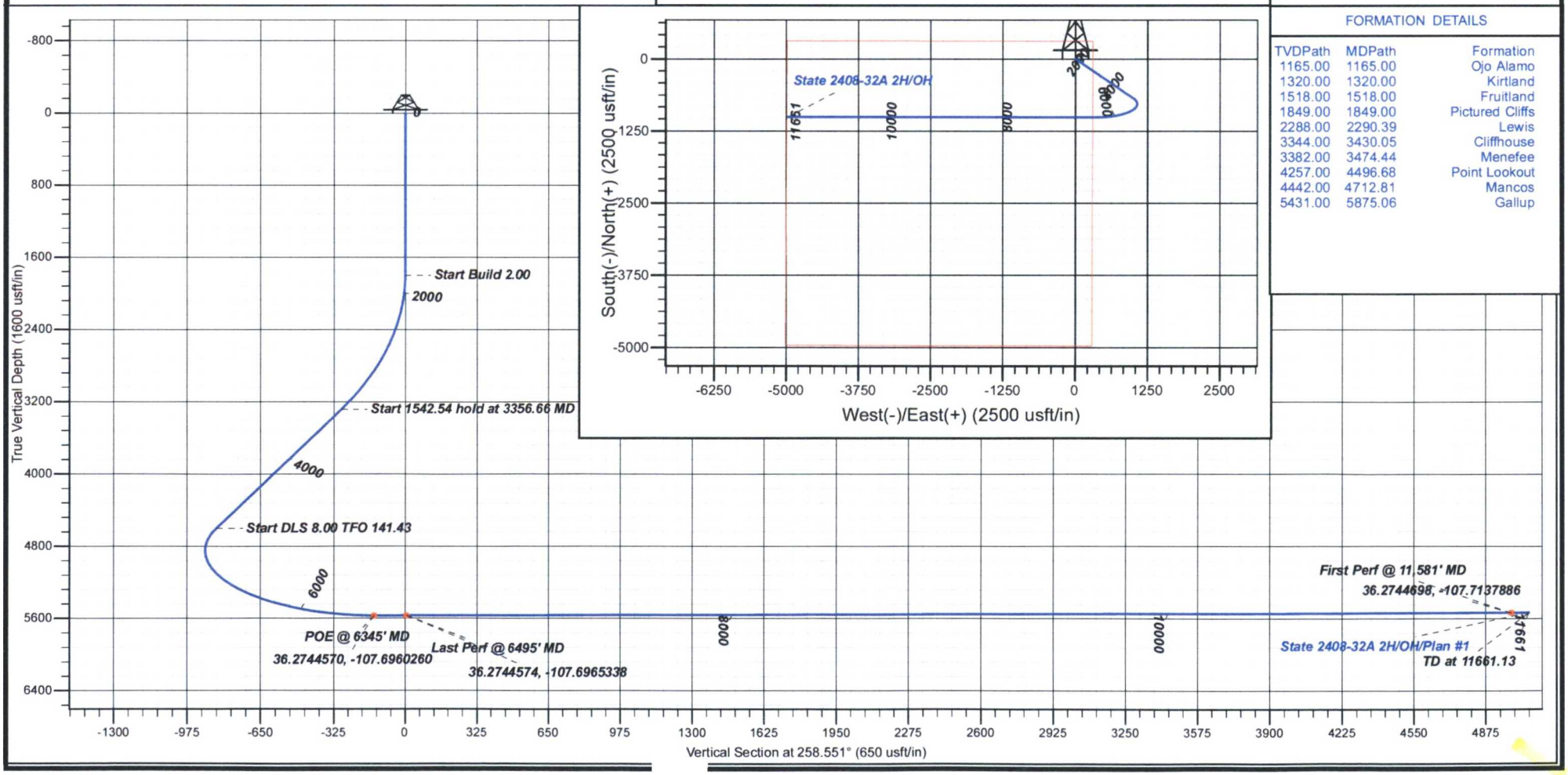
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
1800.00	0.00	0.000	1800.00	0.00	0.00	0.00	0.00	0.00	
3356.66	31.13	124.241	3281.18	-232.17	341.10	2.00	124.24	-288.23	
4899.20	31.13	124.241	4601.54	-680.93	1000.41	0.00	0.00	-845.33	
6345.31	90.39	270.056	5569.00	-1011.26	348.11	8.00	141.43	-140.45	State 2H LP
11661.13	90.39	270.056	5533.00	-1006.10	-4967.58	0.00	0.00	5068.44	State 2H BHL

CASING DETAILS

No casing data is available

FORMATION DETAILS

TVDPath	MDPath	Formation
1165.00	1165.00	Ojo Alamo
1320.00	1320.00	Kirtland
1518.00	1518.00	Fruitland
1849.00	1849.00	Pictured Cliffs
2288.00	2290.39	Lewis
3344.00	3430.05	Cliffhouse
3382.00	3474.44	Menefee
4257.00	4496.68	Point Lookout
4442.00	4712.81	Mancos
5431.00	5875.06	Gallup



LOGOS RESOURCES II, LLC

Logos Operating LLC

San Juan, NM NAD83
State 2408-32A
State 2408-32A 2H

OH

Plan: Plan #1

Standard Planning Report

30 November, 2018

Scientific Drilling

www.scientificdrilling.com

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Project:	San Juan, NM NAD83	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site:	State 2408-32A	**North Reference:**	True
Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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 State 2408-32A

Site Position:		**Northing:**	1,920,260.92 usft	**Latitude:**	36.2772900
From:	Lat/Long	**Easting:**	2,763,214.70 usft	**Longitude:**	-107.6972070
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	0.08 °

Well State 2408-32A 2H

Well Position	**+N/-S**	-20.02 usft	**Northing:**	1,920,240.90 usft	**Latitude:**	36.2772350
	+E/-W	0.00 usft	**Easting:**	2,763,214.73 usft	**Longitude:**	-107.6972070
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	7,013.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/28/2018	8.85	62.85	49,529

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	258.551

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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.000	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,356.66	31.13	124.241	3,281.18	-232.17	341.10	2.00	2.00	0.00	124.24	
4,899.20	31.13	124.241	4,601.54	-680.93	1,000.41	0.00	0.00	0.00	0.00	
6,345.31	90.39	270.056	5,569.00	-1,011.26	348.11	8.00	4.10	10.08	141.43	State 2H LP
11,661.13	90.39	270.056	5,533.00	-1,006.10	-4,967.58	0.00	0.00	0.00	0.00	State 2H BHL

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Project:	San Juan, NM NAD83	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site:	State 2408-32A	**North Reference:**	True
Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.000	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.000	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.000	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.000	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.000	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,900.00	2.00	124.241	1,899.98	-0.98	1.44	-1.22	2.00	2.00	0.00
2,000.00	4.00	124.241	1,999.84	-3.93	5.77	-4.87	2.00	2.00	0.00
2,100.00	6.00	124.241	2,099.45	-8.83	12.97	-10.96	2.00	2.00	0.00
2,200.00	8.00	124.241	2,198.70	-15.69	23.05	-19.48	2.00	2.00	0.00
2,300.00	10.00	124.241	2,297.47	-24.49	35.98	-30.40	2.00	2.00	0.00
2,400.00	12.00	124.241	2,395.62	-35.23	51.75	-43.73	2.00	2.00	0.00
2,500.00	14.00	124.241	2,493.06	-47.88	70.35	-59.44	2.00	2.00	0.00
2,600.00	16.00	124.241	2,589.64	-62.44	91.74	-77.52	2.00	2.00	0.00
2,700.00	18.00	124.241	2,685.27	-78.89	115.91	-97.94	2.00	2.00	0.00
2,800.00	20.00	124.241	2,779.82	-97.21	142.82	-120.68	2.00	2.00	0.00
2,900.00	22.00	124.241	2,873.17	-117.38	172.45	-145.72	2.00	2.00	0.00
3,000.00	24.00	124.241	2,965.21	-139.36	204.75	-173.01	2.00	2.00	0.00
3,100.00	26.00	124.241	3,055.84	-163.14	239.68	-202.53	2.00	2.00	0.00
3,200.00	28.00	124.241	3,144.94	-188.68	277.21	-234.24	2.00	2.00	0.00
3,300.00	30.00	124.241	3,232.39	-215.96	317.29	-268.10	2.00	2.00	0.00
3,356.66	31.13	124.241	3,281.18	-232.17	341.10	-288.23	2.00	2.00	0.00
Start 1542.54 hold at 3356.66 MD									
3,400.00	31.13	124.241	3,318.28	-244.78	359.63	-303.88	0.00	0.00	0.00
3,500.00	31.13	124.241	3,403.87	-273.87	402.37	-340.00	0.00	0.00	0.00
3,600.00	31.13	124.241	3,489.47	-302.97	445.11	-376.11	0.00	0.00	0.00
3,700.00	31.13	124.241	3,575.07	-332.06	487.85	-412.23	0.00	0.00	0.00
3,800.00	31.13	124.241	3,660.67	-361.15	530.59	-448.35	0.00	0.00	0.00
3,900.00	31.13	124.241	3,746.26	-390.24	573.34	-484.46	0.00	0.00	0.00
4,000.00	31.13	124.241	3,831.86	-419.34	616.08	-520.58	0.00	0.00	0.00
4,100.00	31.13	124.241	3,917.46	-448.43	658.82	-556.69	0.00	0.00	0.00
4,200.00	31.13	124.241	4,003.05	-477.52	701.56	-592.81	0.00	0.00	0.00
4,300.00	31.13	124.241	4,088.65	-506.61	744.30	-628.93	0.00	0.00	0.00
4,400.00	31.13	124.241	4,174.25	-535.70	787.04	-665.04	0.00	0.00	0.00
4,500.00	31.13	124.241	4,259.84	-564.80	829.78	-701.16	0.00	0.00	0.00
4,600.00	31.13	124.241	4,345.44	-593.89	872.53	-737.28	0.00	0.00	0.00
4,700.00	31.13	124.241	4,431.04	-622.98	915.27	-773.39	0.00	0.00	0.00
4,800.00	31.13	124.241	4,516.63	-652.07	958.01	-809.51	0.00	0.00	0.00
4,899.20	31.13	124.241	4,601.54	-680.93	1,000.41	-845.33	0.00	0.00	0.00

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Project:	San Juan, NM NAD83	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site:	State 2408-32A	**North Reference:**	True
Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
Start DLS 8.00 TFO 141.43									
4,900.00	31.08	124.319	4,602.23	-681.16	1,000.75	-845.62	8.00	-6.25	9.66
5,000.00	25.28	136.058	4,690.41	-711.14	1,036.95	-875.15	8.00	-5.80	11.74
5,100.00	20.87	153.209	4,782.49	-742.47	1,059.83	-891.36	8.00	-4.41	17.15
5,200.00	18.84	176.160	4,876.68	-774.53	1,068.96	-893.94	8.00	-2.02	22.95
5,300.00	19.95	200.182	4,971.15	-806.71	1,064.14	-882.83	8.00	1.11	24.02
5,400.00	23.76	219.232	5,064.07	-838.38	1,045.49	-858.26	8.00	3.80	19.05
5,500.00	29.22	232.420	5,153.61	-868.92	1,013.35	-820.71	8.00	5.47	13.19
5,600.00	35.59	241.506	5,238.05	-897.73	968.36	-770.89	8.00	6.37	9.09
5,700.00	42.45	248.065	5,315.73	-924.26	911.40	-709.79	8.00	6.86	6.56
5,800.00	49.60	253.073	5,385.15	-947.99	843.56	-638.59	8.00	7.15	5.01
5,900.00	56.92	257.105	5,444.95	-968.46	766.17	-558.68	8.00	7.32	4.03
6,000.00	64.35	260.511	5,493.97	-985.26	680.74	-471.62	8.00	7.43	3.41
6,100.00	71.85	263.513	5,531.25	-998.08	588.93	-379.09	8.00	7.50	3.00
6,200.00	79.39	266.266	5,556.07	-1,006.66	492.52	-282.90	8.00	7.54	2.75
6,300.00	86.96	268.886	5,567.95	-1,010.84	393.40	-184.92	8.00	7.57	2.62
6,345.31	90.39	270.056	5,569.00	-1,011.26	348.11	-140.45	8.00	7.57	2.58
POE @ 6345' MD - 36.2744570, -107.6960260									
6,400.00	90.39	270.056	5,568.63	-1,011.21	293.42	-86.86	0.00	0.00	0.00
6,495.00	90.39	270.056	5,567.99	-1,011.11	198.42	6.23	0.00	0.00	0.00
Last Perf @ 6495' MD - 36.2744574, -107.6965338									
6,500.00	90.39	270.056	5,567.95	-1,011.11	193.42	11.13	0.00	0.00	0.00
6,600.00	90.39	270.056	5,567.28	-1,011.01	93.43	109.12	0.00	0.00	0.00
6,700.00	90.39	270.056	5,566.60	-1,010.92	-6.57	207.11	0.00	0.00	0.00
6,800.00	90.39	270.056	5,565.92	-1,010.82	-106.57	305.10	0.00	0.00	0.00
6,900.00	90.39	270.056	5,565.24	-1,010.72	-206.57	403.09	0.00	0.00	0.00
7,000.00	90.39	270.056	5,564.57	-1,010.62	-306.56	501.07	0.00	0.00	0.00
7,100.00	90.39	270.056	5,563.89	-1,010.53	-406.56	599.06	0.00	0.00	0.00
7,200.00	90.39	270.056	5,563.21	-1,010.43	-506.56	697.05	0.00	0.00	0.00
7,300.00	90.39	270.056	5,562.53	-1,010.33	-606.56	795.04	0.00	0.00	0.00
7,400.00	90.39	270.056	5,561.86	-1,010.24	-706.55	893.03	0.00	0.00	0.00
7,500.00	90.39	270.056	5,561.18	-1,010.14	-806.55	991.02	0.00	0.00	0.00
7,600.00	90.39	270.056	5,560.50	-1,010.04	-906.55	1,089.01	0.00	0.00	0.00
7,700.00	90.39	270.056	5,559.83	-1,009.94	-1,006.55	1,186.99	0.00	0.00	0.00
7,800.00	90.39	270.056	5,559.15	-1,009.85	-1,106.55	1,284.98	0.00	0.00	0.00
7,900.00	90.39	270.056	5,558.47	-1,009.75	-1,206.54	1,382.97	0.00	0.00	0.00
8,000.00	90.39	270.056	5,557.79	-1,009.65	-1,306.54	1,480.96	0.00	0.00	0.00
8,100.00	90.39	270.056	5,557.12	-1,009.56	-1,406.54	1,578.95	0.00	0.00	0.00
8,200.00	90.39	270.056	5,556.44	-1,009.46	-1,506.54	1,676.94	0.00	0.00	0.00
8,300.00	90.39	270.056	5,555.76	-1,009.36	-1,606.53	1,774.92	0.00	0.00	0.00
8,400.00	90.39	270.056	5,555.09	-1,009.26	-1,706.53	1,872.91	0.00	0.00	0.00
8,500.00	90.39	270.056	5,554.41	-1,009.17	-1,806.53	1,970.90	0.00	0.00	0.00
8,600.00	90.39	270.056	5,553.73	-1,009.07	-1,906.53	2,068.89	0.00	0.00	0.00
8,700.00	90.39	270.056	5,553.05	-1,008.97	-2,006.52	2,166.88	0.00	0.00	0.00
8,800.00	90.39	270.056	5,552.38	-1,008.88	-2,106.52	2,264.87	0.00	0.00	0.00
8,900.00	90.39	270.056	5,551.70	-1,008.78	-2,206.52	2,362.86	0.00	0.00	0.00
9,000.00	90.39	270.056	5,551.02	-1,008.68	-2,306.52	2,460.84	0.00	0.00	0.00
9,100.00	90.39	270.056	5,550.34	-1,008.58	-2,406.51	2,558.83	0.00	0.00	0.00
9,200.00	90.39	270.056	5,549.67	-1,008.49	-2,506.51	2,656.82	0.00	0.00	0.00
9,300.00	90.39	270.056	5,548.99	-1,008.39	-2,606.51	2,754.81	0.00	0.00	0.00
9,400.00	90.39	270.056	5,548.31	-1,008.29	-2,706.51	2,852.80	0.00	0.00	0.00
9,500.00	90.39	270.056	5,547.64	-1,008.20	-2,806.51	2,950.79	0.00	0.00	0.00
9,600.00	90.39	270.056	5,546.96	-1,008.10	-2,906.50	3,048.77	0.00	0.00	0.00

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Project:	San Juan, NM NAD83	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site:	State 2408-32A	**North Reference:**	True
Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
9,700.00	90.39	270.056	5,546.28	-1,008.00	-3,006.50	3,146.76	0.00	0.00	0.00
9,800.00	90.39	270.056	5,545.60	-1,007.90	-3,106.50	3,244.75	0.00	0.00	0.00
9,900.00	90.39	270.056	5,544.93	-1,007.81	-3,206.50	3,342.74	0.00	0.00	0.00
10,000.00	90.39	270.056	5,544.25	-1,007.71	-3,306.49	3,440.73	0.00	0.00	0.00
10,100.00	90.39	270.056	5,543.57	-1,007.61	-3,406.49	3,538.72	0.00	0.00	0.00
10,200.00	90.39	270.056	5,542.90	-1,007.52	-3,506.49	3,636.71	0.00	0.00	0.00
10,300.00	90.39	270.056	5,542.22	-1,007.42	-3,606.49	3,734.69	0.00	0.00	0.00
10,400.00	90.39	270.056	5,541.54	-1,007.32	-3,706.48	3,832.68	0.00	0.00	0.00
10,500.00	90.39	270.056	5,540.86	-1,007.22	-3,806.48	3,930.67	0.00	0.00	0.00
10,600.00	90.39	270.056	5,540.19	-1,007.13	-3,906.48	4,028.66	0.00	0.00	0.00
10,700.00	90.39	270.056	5,539.51	-1,007.03	-4,006.48	4,126.65	0.00	0.00	0.00
10,800.00	90.39	270.056	5,538.83	-1,006.93	-4,106.47	4,224.64	0.00	0.00	0.00
10,900.00	90.39	270.056	5,538.15	-1,006.84	-4,206.47	4,322.62	0.00	0.00	0.00
11,000.00	90.39	270.056	5,537.48	-1,006.74	-4,306.47	4,420.61	0.00	0.00	0.00
11,100.00	90.39	270.056	5,536.80	-1,006.64	-4,406.47	4,518.60	0.00	0.00	0.00
11,200.00	90.39	270.056	5,536.12	-1,006.54	-4,506.47	4,616.59	0.00	0.00	0.00
11,300.00	90.39	270.056	5,535.45	-1,006.45	-4,606.46	4,714.58	0.00	0.00	0.00
11,400.00	90.39	270.056	5,534.77	-1,006.35	-4,706.46	4,812.57	0.00	0.00	0.00
11,500.00	90.39	270.056	5,534.09	-1,006.25	-4,806.46	4,910.56	0.00	0.00	0.00
11,581.13	90.39	270.056	5,533.54	-1,006.17	-4,887.59	4,990.05	0.00	0.00	0.00
First Perf @ 11,581' MD - 36.2744698, -107.7137886									
11,600.00	90.39	270.056	5,533.41	-1,006.16	-4,906.46	5,008.54	0.00	0.00	0.00
11,661.13	90.39	270.056	5,533.00	-1,006.10	-4,967.58	5,068.44	0.00	0.00	0.00
TD at 11661.13									

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
State 2H FPerf	0.00	0.000	5,533.00	-1,006.11	-4,887.41	1,919,227.92	2,758,328.74	36.2744700	-107.7137880
- plan misses target center by 0.55usft at 11580.95usft MD (5533.54 TVD, -1006.17 N, -4887.41 E)									
- Point									
State 2H BHL	0.00	0.000	5,533.00	-1,006.10	-4,967.58	1,919,227.82	2,758,248.57	36.2744700	-107.7140600
- plan hits target center									
- Point									
State 2H LP	0.00	0.000	5,569.00	-1,011.26	348.11	1,919,230.13	2,763,564.26	36.2744570	-107.6960260
- plan hits target center									
- Point									
State 2H LPerf	0.00	0.000	5,569.00	-1,010.90	198.08	1,919,230.29	2,763,414.23	36.2744580	-107.6965350
- plan misses target center by 1.04usft at 6495.34usft MD (5567.98 TVD, -1011.11 N, 198.08 E)									
- Point									

Database:	Grand Junction District	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Project:	San Juan, NM NAD83	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site:	State 2408-32A	**North Reference:**	True
Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,165.00	1,165.00	Ojo Alamo		0.00	0.000
1,320.00	1,320.00	Kirtland		0.00	0.000
1,518.00	1,518.00	Fruitland		0.00	0.000
1,849.00	1,849.00	Pictured Cliffs		0.00	0.000
2,290.39	2,288.00	Lewis		0.00	0.000
3,430.05	3,344.00	Cliffhouse		0.00	0.000
3,474.44	3,382.00	Menefee		0.00	0.000
4,496.68	4,257.00	Point Lookout		0.00	0.000
4,712.81	4,442.00	Mancos		0.00	0.000
5,875.06	5,431.00	Gallup		0.00	0.000

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,800.00	1,800.00	0.00	0.00	Start Build 2.00
3,356.66	3,281.18	-232.17	341.10	Start 1542.54 hold at 3356.66 MD
4,899.20	4,601.54	-680.93	1,000.41	Start DLS 8.00 TFO 141.43
6,345.31	5,569.00	-1,011.26	348.11	POE @ 6345' MD
6,345.31	5,569.00	-1,011.26	348.11	36.2744570, -107.6960260
6,495.00	5,567.99	-1,011.11	198.42	Last Perf @ 6495' MD
6,495.00	5,567.99	-1,011.11	198.42	36.2744574, -107.6965338
11,581.13	5,533.54	-1,006.17	-4,887.59	First Perf @ 11,581' MD
11,581.13	5,533.54	-1,006.17	-4,887.59	36.2744698, -107.7137886
11,661.13	5,533.00	-1,006.10	-4,967.58	TD at 11661.13

LOGOS RESOURCES II, LLC

Logos Operating LLC

San Juan, NM NAD83
State 2408-32A
State 2408-32A 2H

OH
Plan #1

Anticollision Report

29 November, 2018

Scientific Drilling

www.scientificdrilling.com

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Reference Site:	State 2408-32A	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction District
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 15,000.00 usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 11/29/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	11,661.13	Plan #1 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
State 2408-32A						
State 2408-32A 1H - OH - Plan #1	1,800.00	1,800.00	20.02	7.53	1.602	CC, ES
State 2408-32A 1H - OH - Plan #1	1,900.00	1,900.01	20.96	7.77	1.589	SF
State 2408-32A 3H - OH - Plan #1	1,600.00	1,600.00	20.02	8.96	1.810	CC, ES, SF

Offset Design State 2408-32A - State 2408-32A 1H - OH - Plan #1 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.02	0.00	20.02				
100.00	100.00	100.00	100.00	0.15	0.15	0.00	20.02	0.00	20.02	19.71	0.31	64.944	
200.00	200.00	200.00	200.00	0.51	0.51	0.00	20.02	0.00	20.02	19.00	1.03	19.529	
300.00	300.00	300.00	300.00	0.87	0.87	0.00	20.02	0.00	20.02	18.28	1.74	11.492	
400.00	400.00	400.00	400.00	1.23	1.23	0.00	20.02	0.00	20.02	17.56	2.46	8.142	
500.00	500.00	500.00	500.00	1.59	1.59	0.00	20.02	0.00	20.02	16.85	3.18	6.304	
600.00	600.00	600.00	600.00	1.95	1.95	0.00	20.02	0.00	20.02	16.13	3.89	5.143	
700.00	700.00	700.00	700.00	2.30	2.30	0.00	20.02	0.00	20.02	15.41	4.61	4.343	
800.00	800.00	800.00	800.00	2.66	2.66	0.00	20.02	0.00	20.02	14.69	5.33	3.759	
900.00	900.00	900.00	900.00	3.02	3.02	0.00	20.02	0.00	20.02	13.98	6.04	3.313	
1,000.00	1,000.00	1,000.00	1,000.00	3.38	3.38	0.00	20.02	0.00	20.02	13.26	6.76	2.961	
1,100.00	1,100.00	1,100.00	1,100.00	3.74	3.74	0.00	20.02	0.00	20.02	12.54	7.48	2.677	
1,200.00	1,200.00	1,200.00	1,200.00	4.10	4.10	0.00	20.02	0.00	20.02	11.83	8.19	2.443	
1,300.00	1,300.00	1,300.00	1,300.00	4.46	4.46	0.00	20.02	0.00	20.02	11.11	8.91	2.247	
1,400.00	1,400.00	1,400.00	1,400.00	4.81	4.81	0.00	20.02	0.00	20.02	10.39	9.63	2.079	
1,500.00	1,500.00	1,500.00	1,500.00	5.17	5.17	0.00	20.02	0.00	20.02	9.68	10.35	1.935	
1,600.00	1,600.00	1,600.00	1,600.00	5.53	5.53	0.00	20.02	0.00	20.02	8.96	11.06	1.810	
1,700.00	1,700.00	1,700.00	1,700.00	5.89	5.89	0.00	20.02	0.00	20.02	8.24	11.78	1.700	
1,800.00	1,800.00	1,800.00	1,800.00	6.25	6.25	0.00	20.02	0.00	20.02	7.53	12.50	1.602	CC, ES
1,900.00	1,899.98	1,900.01	1,899.99	6.59	6.60	-123.40	19.97	1.74	20.96	7.77	13.19	1.589	SF
2,000.00	1,999.84	1,999.96	1,999.80	6.93	6.94	-121.27	19.83	6.97	23.79	9.92	13.87	1.715	
2,100.00	2,099.45	2,099.80	2,099.25	7.26	7.29	-118.66	19.59	15.67	28.55	14.00	14.55	1.962	
2,200.00	2,198.70	2,199.46	2,198.17	7.61	7.64	-116.17	19.25	27.79	35.27	20.02	15.25	2.313	
2,300.00	2,297.47	2,298.90	2,296.39	7.96	8.00	-114.07	18.83	43.32	43.95	27.99	15.95	2.755	

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Reference Site:	State 2408-32A	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction District
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design State 2408-32A - State 2408-32A 1H - OH - Plan #1

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,400.00	2,395.62	2,398.06	2,393.73	8.32	8.36	-112.38	18.31	62.18	54.57	37.89	16.68	3.272	
2,500.00	2,493.06	2,496.89	2,490.04	8.70	8.75	-111.04	17.69	84.31	67.12	49.69	17.43	3.851	
2,600.00	2,589.64	2,595.34	2,585.16	9.10	9.14	-109.95	17.00	109.66	81.56	63.35	18.21	4.479	
2,700.00	2,685.27	2,693.37	2,678.96	9.52	9.56	-109.06	16.21	138.12	97.87	78.84	19.03	5.143	
2,800.00	2,779.82	2,790.93	2,771.28	9.98	10.01	-108.31	15.34	169.61	116.01	96.11	19.90	5.830	
2,900.00	2,873.17	2,887.98	2,862.01	10.47	10.49	-107.66	14.39	204.04	135.96	115.13	20.83	6.527	
3,000.00	2,965.21	2,984.49	2,951.03	11.00	11.01	-107.08	13.36	241.31	157.68	135.84	21.84	7.221	
3,100.00	3,055.84	3,080.65	3,038.44	11.58	11.57	-106.57	12.26	281.36	181.12	158.20	22.92	7.902	
3,200.00	3,144.94	3,177.53	3,126.03	12.21	12.17	-106.68	11.12	322.74	205.79	181.68	24.11	8.535	
3,300.00	3,232.39	3,274.04	3,213.29	12.91	12.80	-107.49	9.98	363.96	231.50	206.12	25.38	9.122	
3,400.00	3,318.28	3,370.12	3,300.15	13.67	13.44	-108.93	8.85	405.00	258.29	231.58	26.71	9.671	
3,500.00	3,403.87	3,466.10	3,386.94	14.48	14.10	-110.46	7.71	445.99	285.45	257.37	28.08	10.167	
3,600.00	3,489.47	3,562.09	3,473.72	15.31	14.78	-111.72	6.58	486.99	312.77	283.29	29.48	10.610	
3,700.00	3,575.07	3,658.08	3,560.51	16.17	15.47	-112.78	5.45	527.99	340.20	309.29	30.91	11.007	
3,800.00	3,660.67	3,754.07	3,647.29	17.04	16.18	-113.68	4.32	568.99	367.73	335.37	32.36	11.364	
3,900.00	3,746.26	3,850.06	3,734.08	17.94	16.89	-114.45	3.19	609.99	395.32	361.49	33.83	11.684	
4,000.00	3,831.86	3,946.05	3,820.86	18.85	17.61	-115.12	2.06	650.98	422.98	387.65	35.33	11.973	
4,100.00	3,917.46	4,042.03	3,907.65	19.77	18.34	-115.72	0.93	691.98	450.68	413.85	36.84	12.235	
4,200.00	4,003.05	4,138.02	3,994.43	20.71	19.08	-116.24	-0.21	732.98	478.43	440.07	38.36	12.472	
4,300.00	4,088.65	4,234.01	4,081.22	21.65	19.83	-116.70	-1.34	773.98	506.20	466.31	39.90	12.688	
4,400.00	4,174.25	4,330.00	4,168.00	22.61	20.58	-117.12	-2.47	814.97	534.00	492.56	41.44	12.885	
4,500.00	4,259.84	4,425.99	4,254.79	23.57	21.33	-117.50	-3.60	855.97	561.83	518.83	43.00	13.066	
4,600.00	4,345.44	4,521.97	4,341.57	24.54	22.10	-117.84	-4.73	896.97	589.68	545.11	44.57	13.231	
4,700.00	4,431.04	4,617.96	4,428.36	25.51	22.86	-118.15	-5.86	937.97	617.54	571.40	46.14	13.383	
4,800.00	4,516.63	4,713.95	4,515.14	26.49	23.63	-118.43	-6.99	978.97	645.42	597.70	47.72	13.524	
4,900.00	4,602.23	4,811.13	4,603.54	27.48	24.38	-118.89	-8.14	1,019.29	673.28	623.98	49.29	13.659	
5,000.00	4,690.41	4,908.75	4,696.34	28.35	24.98	-132.33	-9.34	1,049.31	701.93	651.39	50.54	13.887	
5,100.00	4,782.49	5,005.10	4,791.09	29.02	25.39	-151.21	-10.55	1,066.31	731.99	680.60	51.40	14.242	
5,200.00	4,876.68	5,100.52	4,886.35	29.49	25.65	-175.84	-11.76	1,070.47	762.83	710.90	51.93	14.690	
5,300.00	4,971.15	5,195.39	4,980.76	29.80	25.83	158.57	-12.95	1,062.02	793.82	741.55	52.27	15.186	
5,400.00	5,064.07	5,290.05	5,073.03	30.00	25.99	138.14	-14.10	1,041.23	824.34	771.78	52.56	15.683	
5,500.00	5,153.61	5,384.85	5,161.89	30.14	26.18	123.80	-15.20	1,008.41	853.77	800.87	52.90	16.138	
5,600.00	5,238.05	5,480.08	5,246.00	30.28	26.45	113.85	-16.22	963.92	881.55	828.16	53.39	16.511	
5,700.00	5,315.73	5,575.99	5,324.00	30.46	26.83	106.74	-17.16	908.24	907.14	853.01	54.13	16.759	
5,800.00	5,385.15	5,672.74	5,394.44	30.73	27.39	101.53	-18.00	842.03	930.04	874.82	55.21	16.845	
5,900.00	5,444.95	5,770.42	5,455.85	31.14	28.16	97.68	-18.72	766.17	949.80	893.07	56.73	16.741	
6,000.00	5,493.97	5,869.02	5,506.81	31.76	29.19	94.86	-19.29	681.85	966.06	907.29	58.77	16.438	
6,100.00	5,531.25	5,968.44	5,545.98	32.63	30.49	92.88	-19.71	590.55	978.48	917.14	61.35	15.950	
6,200.00	5,556.07	6,068.53	5,572.27	33.79	32.05	91.63	-19.96	494.07	986.83	922.39	64.44	15.314	
6,300.00	5,567.95	6,169.02	5,584.90	35.22	33.82	91.04	-20.04	394.46	990.95	922.99	67.95	14.583	
6,400.00	5,568.63	6,269.29	5,585.64	36.89	35.73	90.98	-19.97	294.21	991.38	919.61	71.77	13.813	
6,500.00	5,567.95	6,369.29	5,585.00	38.75	37.77	90.99	-19.88	194.21	991.38	915.52	75.85	13.070	
6,600.00	5,567.28	6,469.29	5,584.36	40.76	39.93	90.99	-19.79	94.21	991.37	911.20	80.17	12.366	
6,700.00	5,566.60	6,569.29	5,583.72	42.91	42.19	90.99	-19.70	-5.79	991.37	906.68	84.69	11.706	
6,800.00	5,565.92	6,669.29	5,583.08	45.17	44.53	90.99	-19.61	-105.78	991.36	901.98	89.38	11.092	
6,900.00	5,565.24	6,769.29	5,582.44	47.52	46.95	90.99	-19.52	-205.78	991.35	897.14	94.21	10.523	
7,000.00	5,564.57	6,869.29	5,581.80	49.95	49.43	91.00	-19.43	-305.78	991.35	892.18	99.17	9.996	
7,100.00	5,563.89	6,969.29	5,581.16	52.44	51.96	91.00	-19.34	-405.78	991.34	887.10	104.24	9.511	
7,200.00	5,563.21	7,069.29	5,580.52	54.99	54.54	91.00	-19.25	-505.77	991.33	881.94	109.39	9.062	
7,300.00	5,562.53	7,169.29	5,579.88	57.58	57.16	91.00	-19.16	-605.77	991.33	876.70	114.63	8.648	
7,400.00	5,561.86	7,269.29	5,579.24	60.21	59.81	91.00	-19.07	-705.77	991.32	871.39	119.93	8.266	
7,500.00	5,561.18	7,369.29	5,578.60	62.88	62.49	91.01	-18.98	-805.77	991.32	866.02	125.30	7.912	

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Reference Site:	State 2408-32A	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction District
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design State 2408-32A - State 2408-32A 1H - OH - Plan #1

Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,600.00	5,560.50	7,469.29	5,577.96	65.57	65.20	91.01	-18.89	-905.77	991.31	860.59	130.72	7.584	
7,700.00	5,559.83	7,569.29	5,577.32	68.29	67.94	91.01	-18.79	-1,005.76	991.30	855.12	136.18	7.279	
7,800.00	5,559.15	7,669.29	5,576.68	71.04	70.69	91.01	-18.70	-1,105.76	991.30	849.61	141.69	6.996	
7,900.00	5,558.47	7,769.29	5,576.04	73.80	73.46	91.02	-18.61	-1,205.76	991.29	844.06	147.23	6.733	
8,000.00	5,557.79	7,869.29	5,575.40	76.58	76.25	91.02	-18.52	-1,305.76	991.29	838.48	152.80	6.487	
8,100.00	5,557.12	7,969.29	5,574.76	79.38	79.05	91.02	-18.43	-1,405.76	991.28	832.87	158.41	6.258	
8,200.00	5,556.44	8,069.29	5,574.12	82.19	81.87	91.02	-18.34	-1,505.75	991.27	827.24	164.04	6.043	
8,300.00	5,555.76	8,169.29	5,573.48	85.01	84.70	91.02	-18.25	-1,605.75	991.27	821.58	169.69	5.842	
8,400.00	5,555.09	8,269.29	5,572.84	87.84	87.53	91.03	-18.16	-1,705.75	991.26	815.90	175.36	5.653	
8,500.00	5,554.41	8,369.29	5,572.20	90.69	90.38	91.03	-18.07	-1,805.75	991.25	810.20	181.06	5.475	
8,600.00	5,553.73	8,469.29	5,571.56	93.54	93.24	91.03	-17.98	-1,905.75	991.25	804.48	186.77	5.307	
8,700.00	5,553.05	8,569.29	5,570.92	96.40	96.10	91.03	-17.89	-2,005.74	991.24	798.75	192.49	5.149	
8,800.00	5,552.38	8,669.29	5,570.28	99.27	98.97	91.04	-17.80	-2,105.74	991.24	793.00	198.24	5.000	
8,900.00	5,551.70	8,769.29	5,569.64	102.15	101.85	91.04	-17.71	-2,205.74	991.23	787.24	203.99	4.859	
9,000.00	5,551.02	8,869.29	5,569.00	105.03	104.74	91.04	-17.62	-2,305.74	991.22	781.47	209.76	4.726	
9,100.00	5,550.34	8,969.29	5,568.36	107.92	107.63	91.04	-17.53	-2,405.73	991.22	775.68	215.53	4.599	
9,200.00	5,549.67	9,069.29	5,567.72	110.81	110.52	91.04	-17.44	-2,505.73	991.21	769.89	221.32	4.479	
9,300.00	5,548.99	9,169.29	5,567.08	113.71	113.42	91.05	-17.35	-2,605.73	991.21	764.08	227.12	4.364	
9,400.00	5,548.31	9,269.29	5,566.44	116.61	116.32	91.05	-17.26	-2,705.73	991.20	758.27	232.93	4.255	
9,500.00	5,547.64	9,369.29	5,565.80	119.52	119.23	91.05	-17.17	-2,805.73	991.19	752.45	238.74	4.152	
9,600.00	5,546.96	9,469.29	5,565.16	122.43	122.14	91.05	-17.08	-2,905.72	991.19	746.62	244.56	4.053	
9,700.00	5,546.28	9,569.29	5,564.52	125.34	125.06	91.05	-16.99	-3,005.72	991.18	740.79	250.39	3.958	
9,800.00	5,545.60	9,669.29	5,563.88	128.26	127.98	91.06	-16.90	-3,105.72	991.17	734.95	256.23	3.868	
9,900.00	5,544.93	9,769.29	5,563.24	131.18	130.90	91.06	-16.81	-3,205.72	991.17	729.10	262.07	3.782	
10,000.00	5,544.25	9,869.29	5,562.60	134.11	133.83	91.06	-16.72	-3,305.72	991.16	723.24	267.92	3.699	
10,100.00	5,543.57	9,969.29	5,561.96	137.03	136.75	91.06	-16.63	-3,405.71	991.16	717.38	273.77	3.620	
10,200.00	5,542.90	10,069.29	5,561.32	139.96	139.68	91.07	-16.54	-3,505.71	991.15	711.52	279.63	3.544	
10,300.00	5,542.22	10,169.29	5,560.68	142.89	142.62	91.07	-16.45	-3,605.71	991.14	705.65	285.49	3.472	
10,400.00	5,541.54	10,269.29	5,560.04	145.83	145.55	91.07	-16.36	-3,705.71	991.14	699.78	291.36	3.402	
10,500.00	5,540.86	10,369.29	5,559.40	148.76	148.49	91.07	-16.27	-3,805.71	991.13	693.90	297.23	3.335	
10,600.00	5,540.19	10,469.29	5,558.76	151.70	151.43	91.07	-16.18	-3,905.70	991.13	688.02	303.11	3.270	
10,700.00	5,539.51	10,569.29	5,558.12	154.64	154.37	91.08	-16.09	-4,005.70	991.12	682.13	308.99	3.208	
10,800.00	5,538.83	10,669.29	5,557.48	157.58	157.31	91.08	-15.99	-4,105.70	991.11	676.24	314.87	3.148	
10,900.00	5,538.15	10,769.29	5,556.84	160.53	160.25	91.08	-15.90	-4,205.70	991.11	670.35	320.76	3.090	
11,000.00	5,537.48	10,869.29	5,556.20	163.47	163.20	91.08	-15.81	-4,305.70	991.10	664.46	326.65	3.034	
11,100.00	5,536.80	10,969.29	5,555.56	166.42	166.15	91.08	-15.72	-4,405.69	991.10	658.56	332.54	2.980	
11,200.00	5,536.12	11,069.29	5,554.92	169.37	169.09	91.09	-15.63	-4,505.69	991.09	652.66	338.43	2.928	
11,300.00	5,535.45	11,169.29	5,554.28	172.31	172.04	91.09	-15.54	-4,605.69	991.08	646.75	344.33	2.878	
11,400.00	5,534.77	11,269.29	5,553.64	175.26	174.99	91.09	-15.45	-4,705.69	991.08	640.85	350.23	2.830	
11,500.00	5,534.09	11,369.29	5,553.00	178.22	177.95	91.09	-15.36	-4,805.68	991.07	634.94	356.13	2.783	
11,600.00	5,533.41	11,469.29	5,552.36	181.17	180.90	91.10	-15.27	-4,905.68	991.06	629.03	362.04	2.737	
11,654.80	5,533.04	11,524.10	5,552.01	182.79	182.52	91.10	-15.22	-4,960.49	991.06	625.79	365.28	2.713	
11,661.13	5,533.00	11,525.71	5,552.00	182.98	182.57	91.10	-15.22	-4,962.10	991.07	625.56	365.51	2.711	

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Reference Site:	State 2408-32A	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction District
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design State 2408-32A - State 2408-32A 3H - OH - Plan #1

Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-180.00	-20.02	0.00	20.02				
100.00	100.00	100.00	100.00	0.15	0.15	-180.00	-20.02	0.00	20.02	19.71	0.31	64.944	
200.00	200.00	200.00	200.00	0.51	0.51	-180.00	-20.02	0.00	20.02	19.00	1.03	19.529	
300.00	300.00	300.00	300.00	0.87	0.87	-180.00	-20.02	0.00	20.02	18.28	1.74	11.492	
400.00	400.00	400.00	400.00	1.23	1.23	-180.00	-20.02	0.00	20.02	17.56	2.46	8.142	
500.00	500.00	500.00	500.00	1.59	1.59	-180.00	-20.02	0.00	20.02	16.85	3.18	6.304	
600.00	600.00	600.00	600.00	1.95	1.95	-180.00	-20.02	0.00	20.02	16.13	3.89	5.143	
700.00	700.00	700.00	700.00	2.30	2.30	-180.00	-20.02	0.00	20.02	15.41	4.61	4.343	
800.00	800.00	800.00	800.00	2.66	2.66	-180.00	-20.02	0.00	20.02	14.69	5.33	3.759	
900.00	900.00	900.00	900.00	3.02	3.02	-180.00	-20.02	0.00	20.02	13.98	6.04	3.313	
1,000.00	1,000.00	1,000.00	1,000.00	3.38	3.38	-180.00	-20.02	0.00	20.02	13.26	6.76	2.961	
1,100.00	1,100.00	1,100.00	1,100.00	3.74	3.74	-180.00	-20.02	0.00	20.02	12.54	7.48	2.677	
1,200.00	1,200.00	1,200.00	1,200.00	4.10	4.10	-180.00	-20.02	0.00	20.02	11.83	8.19	2.443	
1,300.00	1,300.00	1,300.00	1,300.00	4.46	4.46	-180.00	-20.02	0.00	20.02	11.11	8.91	2.247	
1,400.00	1,400.00	1,400.00	1,400.00	4.81	4.81	-180.00	-20.02	0.00	20.02	10.39	9.63	2.079	
1,500.00	1,500.00	1,500.00	1,500.00	5.17	5.17	-180.00	-20.02	0.00	20.02	9.68	10.35	1.935	
1,600.00	1,600.00	1,600.00	1,600.00	5.53	5.53	-180.00	-20.02	0.00	20.02	8.96	11.06	1.810	CC, ES, SF
1,700.00	1,700.00	1,699.39	1,699.37	5.89	5.87	177.33	-21.43	1.00	21.46	9.70	11.76	1.824	
1,800.00	1,800.00	1,798.55	1,798.39	6.25	6.20	171.15	-25.62	3.99	25.98	13.54	12.45	2.087	
1,900.00	1,899.98	1,897.38	1,896.84	6.59	6.53	42.29	-32.58	8.94	32.63	19.51	13.12	2.488	
2,000.00	1,999.84	1,995.94	1,994.68	6.93	6.86	40.77	-42.28	15.84	39.98	26.22	13.77	2.904	
2,100.00	2,099.45	2,094.21	2,091.77	7.26	7.20	40.97	-54.66	24.66	47.92	33.50	14.42	3.324	
2,200.00	2,198.70	2,192.18	2,187.97	7.61	7.56	42.14	-69.70	35.37	56.43	41.37	15.06	3.747	
2,300.00	2,297.47	2,289.83	2,283.19	7.96	7.92	43.88	-87.35	47.94	65.57	49.86	15.71	4.174	
2,400.00	2,395.62	2,387.15	2,377.28	8.32	8.31	45.90	-107.56	62.33	75.37	59.01	16.36	4.607	
2,500.00	2,493.06	2,484.12	2,470.15	8.70	8.71	48.07	-130.28	78.50	85.91	68.88	17.03	5.046	
2,600.00	2,589.64	2,580.72	2,561.68	9.10	9.14	50.26	-155.44	96.41	97.22	79.51	17.71	5.488	
2,700.00	2,685.27	2,676.96	2,651.77	9.52	9.60	52.43	-182.99	116.03	109.36	90.92	18.44	5.932	
2,800.00	2,779.82	2,772.81	2,740.32	9.98	10.09	54.52	-212.87	137.30	122.34	103.14	19.20	6.371	
2,900.00	2,873.17	2,868.27	2,827.25	10.47	10.62	56.51	-245.01	160.18	136.20	116.17	20.03	6.800	
3,000.00	2,965.21	2,963.34	2,912.46	11.00	11.19	58.38	-279.34	184.62	150.94	130.01	20.93	7.213	
3,100.00	3,055.84	3,058.00	2,995.87	11.58	11.80	60.13	-315.80	210.58	166.57	144.66	21.91	7.603	
3,200.00	3,144.94	3,152.26	3,077.41	12.21	12.46	61.77	-354.31	238.00	183.11	160.11	22.99	7.964	
3,300.00	3,232.39	3,246.11	3,157.01	12.91	13.17	63.28	-394.80	266.83	200.53	176.34	24.18	8.292	
3,400.00	3,318.28	3,339.55	3,234.60	13.67	13.93	64.75	-437.20	297.02	218.97	193.48	25.49	8.591	
3,500.00	3,403.87	3,432.43	3,310.01	14.48	14.74	65.71	-481.37	328.46	239.44	212.61	26.82	8.926	
3,600.00	3,489.47	3,524.56	3,383.03	15.31	15.60	66.01	-527.14	361.04	262.01	233.85	28.16	9.304	
3,700.00	3,575.07	3,617.80	3,455.17	16.17	16.53	65.82	-575.25	395.30	286.50	256.96	29.54	9.697	
3,800.00	3,660.67	3,714.63	3,529.68	17.04	17.53	65.57	-625.63	431.17	311.44	280.36	31.08	10.020	
3,900.00	3,746.26	3,811.46	3,604.18	17.94	18.55	65.35	-676.02	467.04	336.38	303.73	32.65	10.302	
4,000.00	3,831.86	3,908.29	3,678.68	18.85	19.60	65.16	-726.40	502.91	361.33	327.08	34.25	10.548	
4,100.00	3,917.46	4,005.12	3,753.19	19.77	20.66	64.99	-776.79	538.79	386.28	350.40	35.88	10.765	
4,200.00	4,003.05	4,101.96	3,827.69	20.71	21.73	64.84	-827.17	574.66	411.23	373.70	37.53	10.957	
4,300.00	4,088.65	4,198.79	3,902.20	21.65	22.82	64.72	-877.56	610.53	436.19	396.99	39.20	11.127	
4,400.00	4,174.25	4,295.62	3,976.70	22.61	23.92	64.60	-927.94	646.40	461.14	420.26	40.89	11.278	
4,500.00	4,259.84	4,392.45	4,051.21	23.57	25.03	64.50	-978.33	682.27	486.10	443.51	42.59	11.414	
4,600.00	4,345.44	4,489.28	4,125.71	24.54	26.15	64.41	-1,028.71	718.15	511.06	466.76	44.31	11.535	
4,700.00	4,431.04	4,586.12	4,200.22	25.51	27.27	64.32	-1,079.10	754.02	536.02	489.99	46.03	11.645	
4,800.00	4,516.63	4,682.95	4,274.72	26.49	28.40	64.24	-1,129.48	789.89	560.99	513.22	47.77	11.744	
4,900.00	4,602.23	4,779.78	4,349.23	27.48	29.54	64.12	-1,179.87	825.76	585.95	536.43	49.52	11.834	
5,000.00	4,690.41	4,876.63	4,423.75	28.35	30.68	54.90	-1,230.26	861.64	609.36	558.42	50.94	11.962	
5,100.00	4,782.49	4,972.26	4,497.33	29.02	31.81	38.84	-1,280.02	897.07	629.90	578.19	51.70	12.183	

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

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Reference Site:	State 2408-32A	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction District
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design State 2408-32A - State 2408-32A 3H - OH - Plan #1

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	4,876.68	5,064.80	4,568.53	29.49	32.91	15.86	-1,328.17	931.35	648.39	596.61	51.78	12.521	
5,300.00	4,971.15	5,152.45	4,635.97	29.80	33.95	-8.91	-1,373.78	963.82	666.32	615.12	51.20	13.014	
5,400.00	5,064.07	5,233.50	4,698.34	30.00	34.92	-29.01	-1,415.96	993.85	685.58	635.53	50.05	13.699	
5,500.00	5,153.61	5,306.46	4,754.49	30.14	35.78	-43.06	-1,453.93	1,020.80	708.24	659.74	48.49	14.605	
5,600.00	5,238.05	5,378.41	4,811.13	30.28	36.58	-52.67	-1,492.26	1,043.05	735.73	688.65	47.09	15.625	
5,700.00	5,315.73	5,455.97	4,873.91	30.46	37.32	-59.56	-1,534.78	1,059.22	767.98	721.70	46.28	16.594	
5,800.00	5,385.15	5,542.05	4,944.78	30.73	38.01	-64.81	-1,582.84	1,067.46	804.42	758.19	46.23	17.402	
5,900.00	5,444.95	5,641.59	5,027.03	31.14	38.62	-69.21	-1,638.67	1,064.11	844.16	797.22	46.94	17.983	
6,000.00	5,493.97	5,763.65	5,126.07	31.76	39.13	-73.44	-1,705.99	1,041.28	885.88	837.54	48.34	18.326	
6,100.00	5,531.25	5,925.62	5,249.80	32.63	39.51	-78.17	-1,790.24	980.34	927.32	876.95	50.38	18.407	
6,200.00	5,556.07	6,160.10	5,401.66	33.79	39.75	-83.76	-1,893.99	836.58	964.14	910.31	53.83	17.911	
6,300.00	5,567.95	6,506.23	5,537.47	35.22	40.26	-88.60	-1,987.60	536.10	987.60	924.73	62.86	15.710	
6,400.00	5,568.63	6,751.81	5,556.55	36.89	41.58	-89.30	-2,001.72	292.63	990.59	918.68	71.91	13.776	
6,500.00	5,567.95	6,851.81	5,555.70	38.75	42.50	-89.29	-2,001.63	192.63	990.60	914.67	75.93	13.046	
6,600.00	5,567.28	6,951.81	5,554.85	40.76	43.66	-89.28	-2,001.54	92.64	990.61	910.42	80.19	12.353	
6,700.00	5,566.60	7,051.81	5,554.01	42.91	45.08	-89.27	-2,001.45	-7.36	990.62	905.95	84.66	11.701	
6,800.00	5,565.92	7,151.81	5,553.16	45.17	46.75	-89.26	-2,001.36	-107.35	990.63	901.32	89.31	11.092	
6,900.00	5,565.24	7,251.81	5,552.32	47.52	48.64	-89.25	-2,001.27	-207.35	990.64	896.53	94.11	10.526	
7,000.00	5,564.57	7,351.81	5,551.47	49.95	50.70	-89.24	-2,001.18	-307.35	990.64	891.61	99.03	10.003	
7,100.00	5,563.89	7,451.81	5,550.62	52.44	52.91	-89.23	-2,001.09	-407.34	990.65	886.58	104.07	9.519	
7,200.00	5,563.21	7,551.81	5,549.78	54.99	55.24	-89.22	-2,001.00	-507.34	990.66	881.46	109.20	9.072	
7,300.00	5,562.53	7,651.81	5,548.93	57.58	57.66	-89.21	-2,000.91	-607.34	990.67	876.26	114.41	8.659	
7,400.00	5,561.86	7,751.81	5,548.09	60.21	60.16	-89.20	-2,000.82	-707.33	990.68	870.99	119.69	8.277	
7,500.00	5,561.18	7,851.81	5,547.24	62.88	62.71	-89.19	-2,000.73	-807.33	990.69	865.65	125.04	7.923	
7,600.00	5,560.50	7,951.81	5,546.39	65.57	65.32	-89.18	-2,000.64	-907.32	990.70	860.26	130.44	7.595	
7,700.00	5,559.83	8,051.81	5,545.55	68.29	67.96	-89.17	-2,000.55	-1,007.32	990.71	854.82	135.89	7.291	
7,800.00	5,559.15	8,151.81	5,544.70	71.04	70.65	-89.16	-2,000.46	-1,107.32	990.72	849.34	141.38	7.008	
7,900.00	5,558.47	8,251.81	5,543.86	73.80	73.36	-89.15	-2,000.37	-1,207.31	990.73	843.82	146.91	6.744	
8,000.00	5,557.79	8,351.80	5,543.01	76.58	76.09	-89.14	-2,000.28	-1,307.31	990.74	838.27	152.47	6.498	
8,100.00	5,557.12	8,451.80	5,542.16	79.38	78.85	-89.14	-2,000.19	-1,407.31	990.75	832.69	158.06	6.268	
8,200.00	5,556.44	8,551.80	5,541.32	82.19	81.63	-89.13	-2,000.10	-1,507.30	990.76	827.08	163.68	6.053	
8,300.00	5,555.76	8,651.80	5,540.47	85.01	84.42	-89.12	-2,000.01	-1,607.30	990.77	821.44	169.32	5.851	
8,400.00	5,555.09	8,751.80	5,539.63	87.84	87.23	-89.11	-1,999.92	-1,707.29	990.78	815.79	174.99	5.662	
8,500.00	5,554.41	8,851.80	5,538.78	90.69	90.05	-89.10	-1,999.83	-1,807.29	990.78	810.11	180.67	5.484	
8,600.00	5,553.73	8,951.80	5,537.94	93.54	92.88	-89.09	-1,999.74	-1,907.29	990.79	804.42	186.37	5.316	
8,700.00	5,553.05	9,051.80	5,537.09	96.40	95.73	-89.08	-1,999.65	-2,007.28	990.80	798.71	192.09	5.158	
8,800.00	5,552.38	9,151.80	5,536.24	99.27	98.58	-89.07	-1,999.56	-2,107.28	990.81	792.99	197.83	5.008	
8,900.00	5,551.70	9,251.80	5,535.40	102.15	101.44	-89.06	-1,999.47	-2,207.28	990.82	787.25	203.57	4.867	
9,000.00	5,551.02	9,351.80	5,534.55	105.03	104.31	-89.05	-1,999.38	-2,307.27	990.83	781.50	209.33	4.733	
9,100.00	5,550.34	9,451.80	5,533.71	107.92	107.19	-89.04	-1,999.29	-2,407.27	990.84	775.74	215.11	4.606	
9,200.00	5,549.67	9,551.80	5,532.86	110.81	110.07	-89.03	-1,999.20	-2,507.26	990.85	769.96	220.89	4.486	
9,300.00	5,548.99	9,651.80	5,532.01	113.71	112.96	-89.02	-1,999.11	-2,607.26	990.86	764.18	226.68	4.371	
9,400.00	5,548.31	9,751.80	5,531.17	116.61	115.85	-89.01	-1,999.02	-2,707.26	990.87	758.39	232.48	4.262	
9,500.00	5,547.64	9,851.80	5,530.32	119.52	118.75	-89.00	-1,998.93	-2,807.25	990.88	752.59	238.29	4.158	
9,600.00	5,546.96	9,951.80	5,529.48	122.43	121.66	-88.99	-1,998.84	-2,907.25	990.89	746.78	244.11	4.059	
9,700.00	5,546.28	10,051.80	5,528.63	125.34	124.56	-88.98	-1,998.75	-3,007.25	990.90	740.97	249.94	3.965	
9,800.00	5,545.60	10,151.80	5,527.78	128.26	127.47	-88.97	-1,998.65	-3,107.24	990.91	735.14	255.77	3.874	
9,900.00	5,544.93	10,251.80	5,526.94	131.18	130.39	-88.96	-1,998.56	-3,207.24	990.92	729.32	261.61	3.788	
10,000.00	5,544.25	10,351.80	5,526.09	134.11	133.31	-88.95	-1,998.47	-3,307.23	990.93	723.48	267.45	3.705	
10,100.00	5,543.57	10,451.80	5,525.25	137.03	136.23	-88.94	-1,998.38	-3,407.23	990.94	717.64	273.30	3.626	
10,200.00	5,542.90	10,551.80	5,524.40	139.96	139.15	-88.93	-1,998.29	-3,507.23	990.95	711.80	279.15	3.550	
10,300.00	5,542.22	10,651.80	5,523.55	142.89	142.08	-88.92	-1,998.20	-3,607.22	990.96	705.95	285.01	3.477	

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Reference Site:	State 2408-32A	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction District
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design State 2408-32A - State 2408-32A 3H - OH - Plan #1

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

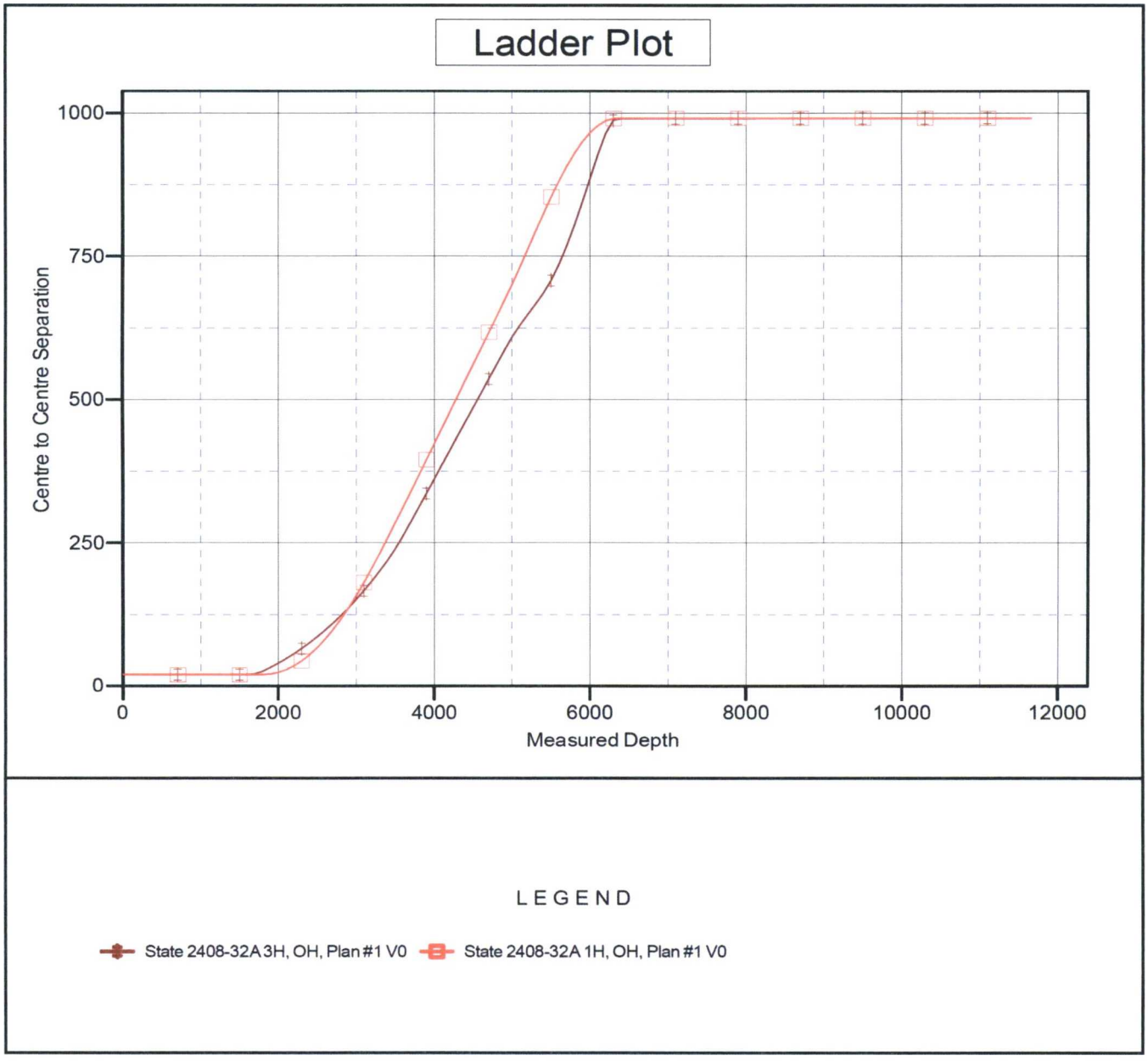
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,400.00	5,541.54	10,751.80	5,522.71	145.83	145.01	-88.91	-1,998.11	-3,707.22	990.97	700.09	290.88	3.407	
10,500.00	5,540.86	10,851.80	5,521.86	148.76	147.94	-88.90	-1,998.02	-3,807.22	990.98	694.23	296.75	3.339	
10,600.00	5,540.19	10,951.80	5,521.02	151.70	150.88	-88.89	-1,997.93	-3,907.21	990.99	688.37	302.62	3.275	
10,700.00	5,539.51	11,051.80	5,520.17	154.64	153.81	-88.88	-1,997.84	-4,007.21	991.00	682.51	308.50	3.212	
10,800.00	5,538.83	11,151.80	5,519.32	157.58	156.75	-88.87	-1,997.75	-4,107.20	991.01	676.64	314.38	3.152	
10,900.00	5,538.15	11,251.80	5,518.48	160.53	159.69	-88.86	-1,997.66	-4,207.20	991.02	670.76	320.26	3.094	
11,000.00	5,537.48	11,351.80	5,517.63	163.47	162.63	-88.85	-1,997.57	-4,307.20	991.03	664.89	326.14	3.039	
11,100.00	5,536.80	11,451.80	5,516.79	166.42	165.58	-88.84	-1,997.48	-4,407.19	991.04	659.01	332.03	2.985	
11,200.00	5,536.12	11,551.80	5,515.94	169.37	168.52	-88.83	-1,997.39	-4,507.19	991.05	653.13	337.93	2.933	
11,300.00	5,535.45	11,651.80	5,515.10	172.31	171.47	-88.82	-1,997.30	-4,607.19	991.06	647.24	343.82	2.882	
11,400.00	5,534.77	11,751.80	5,514.25	175.26	174.41	-88.81	-1,997.21	-4,707.18	991.07	641.35	349.72	2.834	
11,500.00	5,534.09	11,851.80	5,513.40	178.22	177.36	-88.80	-1,997.12	-4,807.18	991.08	635.47	355.62	2.787	
11,600.00	5,533.41	11,951.80	5,512.56	181.17	180.31	-88.79	-1,997.03	-4,907.17	991.09	629.57	361.52	2.741	
11,661.13	5,533.00	12,012.93	5,512.04	182.98	182.12	-88.79	-1,996.98	-4,968.30	991.10	625.97	365.13	2.714	

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Reference Site:	State 2408-32A	**MD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	State 2408-32A 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction District
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to GL 7013' & RKB 14' @ 7027.00usft
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: State 2408-32A 2H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.08°



Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well State 2408-32A 2H
Project:	San Juan, NM NAD83	**TVD Reference:**	GL 7013' & RKB 14' @ 7027.00usft
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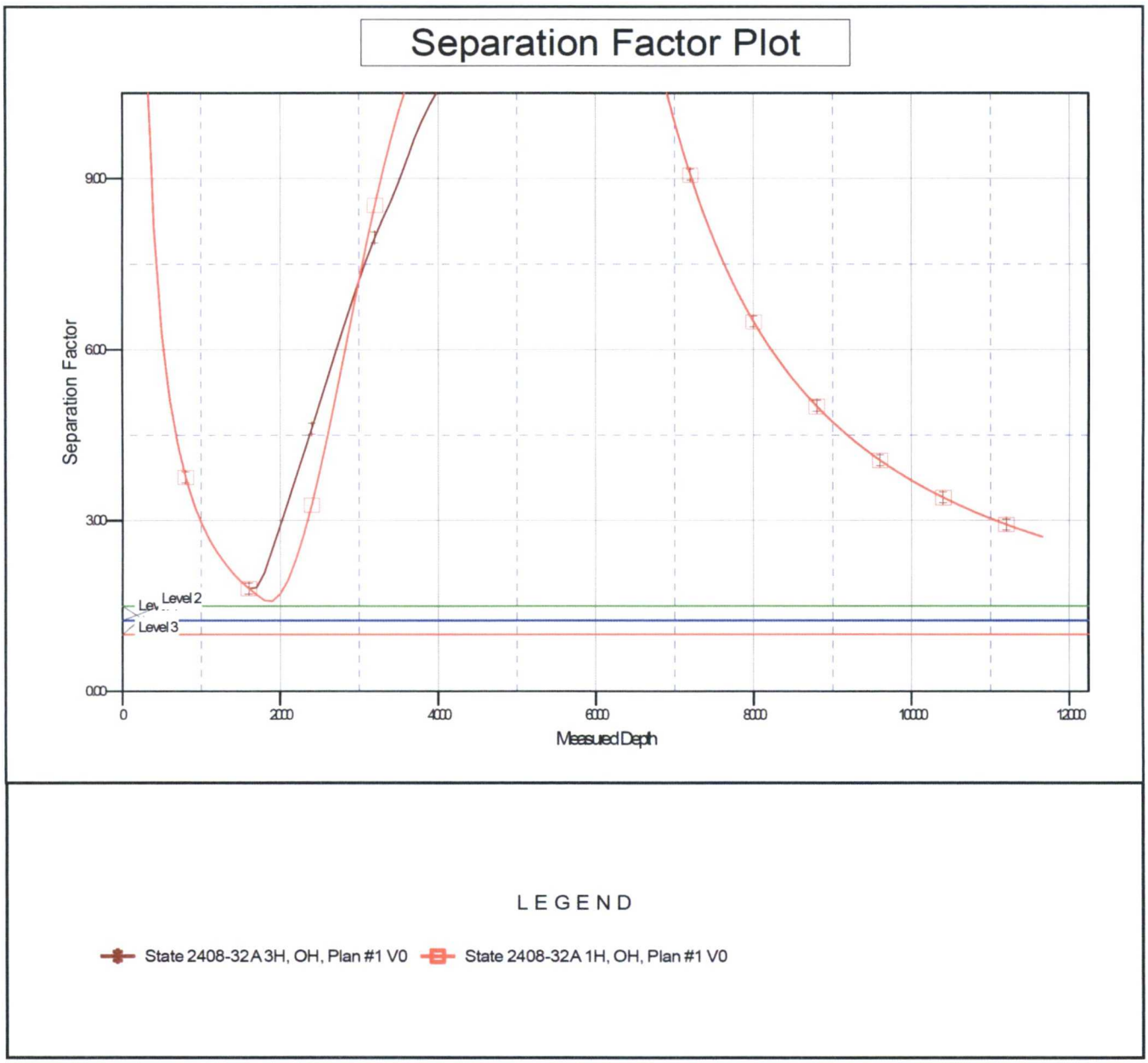
Reference Depths are relative to GL 7013' & RKB 14' @ 7027.00usft	Coordinates are relative to: State 2408-32A 2H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Western Zone
Central Meridian is -107.8333334	Grid Convergence at Surface is: 0.08°

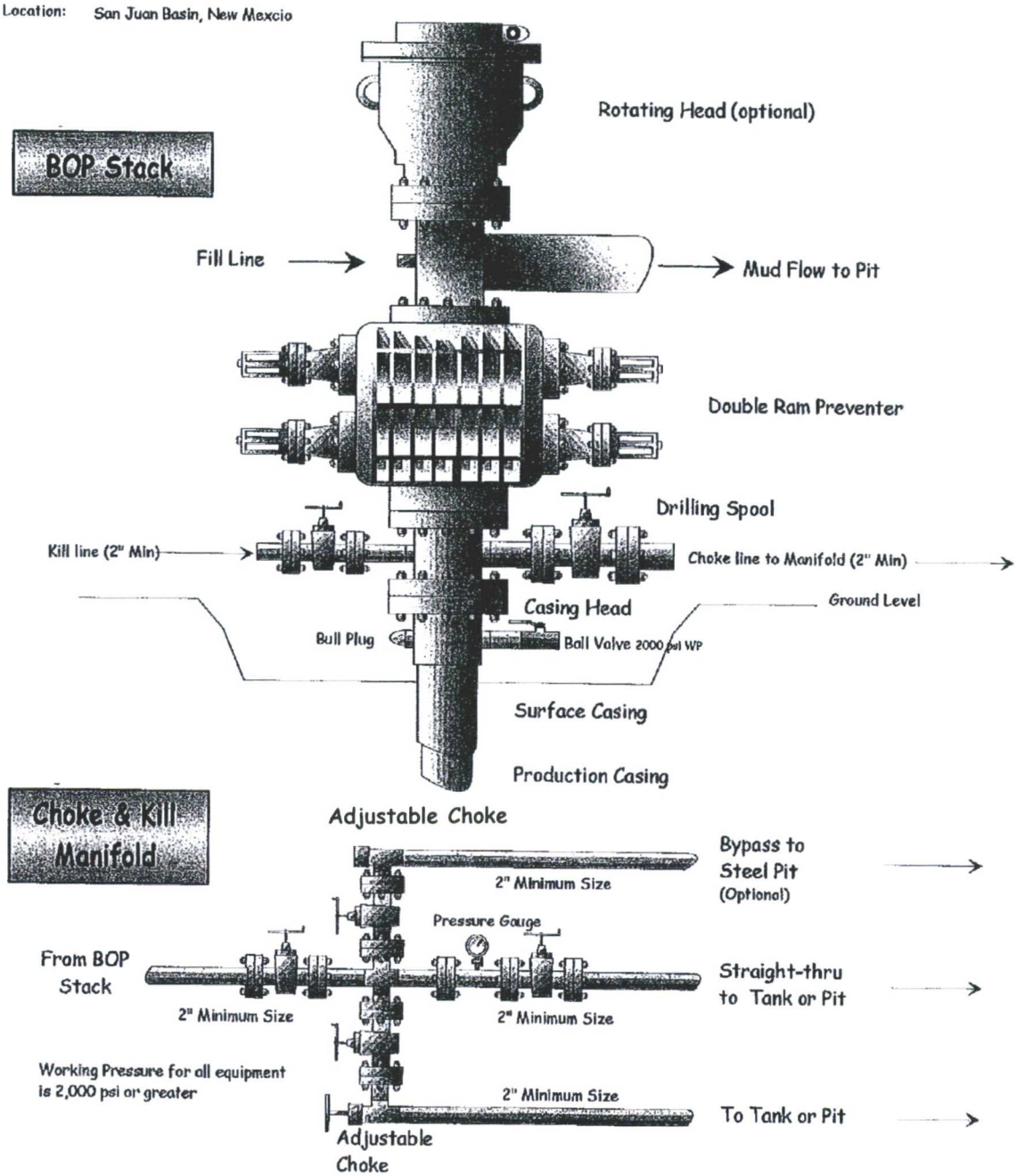


Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1
Typical BOP setup

Location: San Juan Basin, New Mexcio



Directions from the Intersection of US Hwy 550 & US Hwy 64

in Bloomfield, NM to Logos Operating, LLC State 2408-32A #2H

310' FNL & 300' FEL, Section 32, T24N, R8W, N.M.P.M., San Juan County, NM

Latitude: 36.277235°N Longitude: 107.697207°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 36.4 miles to Mile Marker 115.3;

Go Left (Easterly) on existing roadway for 2.3 miles to fork in roadway;

Go Right (Easterly) on existing roadway for 0.6 miles to fork in roadway;

Go Right (Northerly) which is straight for 0.1 mile to fork in roadway;

Go Left (North-westerly) for approx. 200' to begin proposed access on right-hand side of existing roadway which continues for 1106.4' to staked Logos State 2408-32A #2H location.

State of New Mexico
Energy, Minerals and Natural Resources Department

New Mexico Oil Conservation Division Conditions of Approval
C-101 Application for Permit to Drill

Operator Signature Date: 12/3/2018
Well information;
Operator 20605, Well Name and Number State 2408 32A Com 2H

API# 30-045-35912 Section 32, Township 24 (N)/S, Range 8 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
- o Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- o 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
- o 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
- o Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- ✓ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ✓ 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.
- ✓ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.