

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 Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV

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

State of New Mexico

Form C-101
Revised July 18, 2013

Energy Minerals and Natural Resources**Oil Conservation Division**☐ AMENDED REPORT**1220 South St. Francis Dr.****Santa Fe, NM 87505****APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

¹ Operator Name and Address LOGOS Operating, LLC 2010 Afton Place Farmington, NM 87401		² OGRID Number 289408
³ Property Code 325177		⁴ Property Name STATE 2408 32H COM
		⁵ APL Number 32045-35920
		⁶ Well No. 2H

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		1206	FNL	360	FEL	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		1321	FNL	20	FWL	SAN JUAN

9. Pool Information

Pool Name NAGEEZI GALLUP	Pool Code 47540
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Additional Well Information

¹¹ Work Type New Well	¹² Well Type Oil	¹³ Cable/Rotary R	¹⁴ Lease Type State	¹⁵ Ground Level Elevation 7002'
¹⁶ Multiple N	¹⁷ Proposed Depth 11,492'	¹⁸ Formation Gallup Formation	¹⁹ Contractor	²⁰ Spud Date 4/15/19
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ 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
Int	8.75	7	23	6176'	843	0
Prod	6.125	4.5	11.6	11,492'	494	6026'

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. A LSND (WBM) or (OBM) will be used to drill the lateral portion of well.

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 that I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒, if applicable.

Signature: *Tamra Sessions*

Printed name: Tamra Sessions

Title: Regulatory Specialist

E-mail Address: tsessions@logosresourcesllc.com

Date: 3-18-19 Phone: 505-324-4145

OIL CONSERVATION DIVISION

Approved By:

APD Rescinded

Title:

Approved Date:

Expiration Date:

Conditions of Approval Attached

N

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State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30045-35920	² Pool Code 47540	³ Pool Name NAGEEZI GALLUP
⁴ Property Code 325177	⁵ Property Name STATE 2408-32H COM	⁶ Well Number 2H
⁷ GRID No. 289408	⁸ Operator Name LOGOS OPERATING, LLC	⁹ Elevation 7002'

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		1206	NORTH	360	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 320.0 Acres N/2 - Section 32	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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END-OF-LATERAL (A)
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

S89°58.4'W 80.00'

FIRST PERFORATION (B)
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

S89°58.4'W 5085.6'

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

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

S89°58.4'W 150.0'

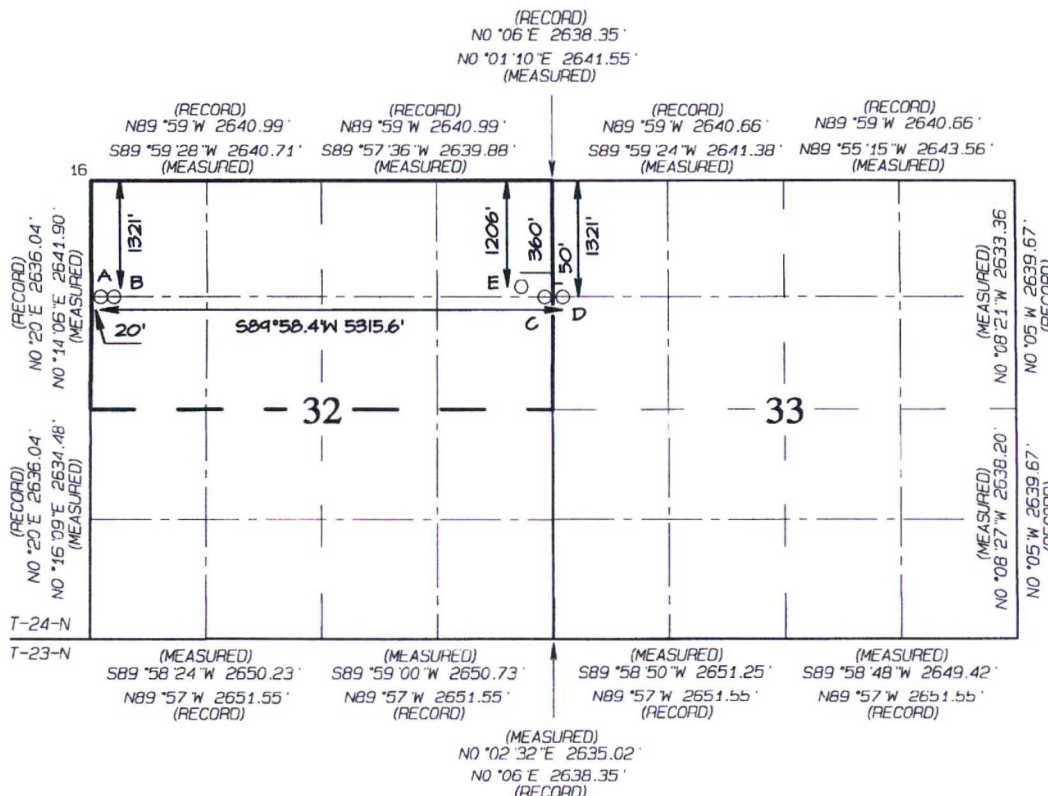
POINT-OF-ENTRY (D)
1321' FNL 50' FWL
SECTION 33, T24N, R8W
LAT: 36.274445°N
LONG: 107.695415°W
DATUM: NAD1927

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

S74°21.0'E 425.9'

SURFACE LOCATION (E)
1206' FNL 360' FEL
SECTION 32, T24N, R8W
LAT: 36.274762°N
LONG: 107.696805°W
DATUM: NAD1927

LAT: 36.274774°N
LONG: 107.697417°W
DATUM: NAD1983

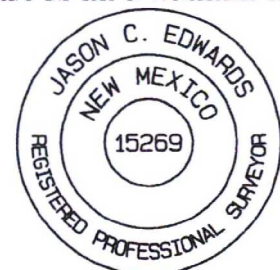


17 OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral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

Tamra Sessions 3/15/19
Signature Date
Printed Name
tsessions@logosresourcesllc.com
E-mail Address

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

Date Revised: MARCH 14, 2019
Date of Survey: MARCH 8, 2019
Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

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



LOGOS Operating, LLC Operations Plan

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

Date:	March 18, 2019	Pool:	Nageezi Gallup
Well Name:	State 2408 32H Com 2H	Elevation:	7,002'
Surface Location:	Sec 32, T24N, R8W 1206 FNL, 360 FEL (36.274774° N, 107.697417° W – NAD83)	Measured Depth:	11,492'
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	4,429	4,257
KIRTLAND	1,320	1,320	*MANCOS	4,629	4,442
*FRUITLAND	1,518	1,518	GALLUP	5,738	5,431
*PICTURED CLIFFS	1,852	1,849	KICKOFF POINT	4,771	4,574
CHACRA	2,306	2,288	LANDING POINT	6,176	5,558
*CLIFF HOUSE	3,444	3,344	TD	11,492	5,522
MENEFEE	3,485	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 3/4" 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 blindrams 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	CON N
SURFACE	12.25"	320'	9.625"	36 LBS	J-55 or equiv	STC
INTERMEDIATE	8.75"	6,176'	7"	23 LBS	J-55 or equiv	LTC
PRODUCTION	6.125"	6,026' – 11,492'	4.5"	11.6 LBS	P-110 or equiv	LTC
TIE BACK	6.125"	Surf. – 6,026'	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: 200 bbls, 576 sks (1124 cu.ft.), 12.3 ppg@ 1.95 cuft/sk yield. Tail Cement: 62 bbls, 267 sks, (347 cuft), 13.5 ppg@ 1.3 cu'ft/sk yield. Displacement: Displace w/ +/- 241 bbl Drilling mud or water. Total Cement: 262 bbls, 844 sks, (1471 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/ +/- 133 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



Company: Logos Operating LLC
Project: San Juan, NM NAD83
Site: State 2408-32H
Well: State 2408-32H 2H
Wellbore: OH
Design: Plan #3

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: 8.83°

Magnetic Field
Strength: 49534.0snT
Dip Angle: 62.85°
Date: 11/28/2018
Model: HDGM

WELL DETAILS: State 2408-32H 2H

GL 7002' & RKB 14' @ 7016.00usft
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 1919344.95 2763154.09 36.2747740 -107.6974170

Plan: Plan #3 (State 2408-32H 2H/OH)

Created By: Janie Collins Date: 12:49, March 15 2019

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
State 2H LP	5558.00	-115.39	410.01	1919230.13	2763564.26	36.2744570	-107.6960260
State 2H BHL	5522.00	-110.24	-4905.68	1919227.82	2758248.57	36.2744700	-107.7140600
State 2H FPerf	5522.00	-110.26	-4825.51	1919227.92	2758328.74	36.2744700	-107.7137880
State 2H LPerf	5558.00	-115.03	259.98	1919230.28	2763414.23	36.2744580	-107.6965350

SECTION DETAILS

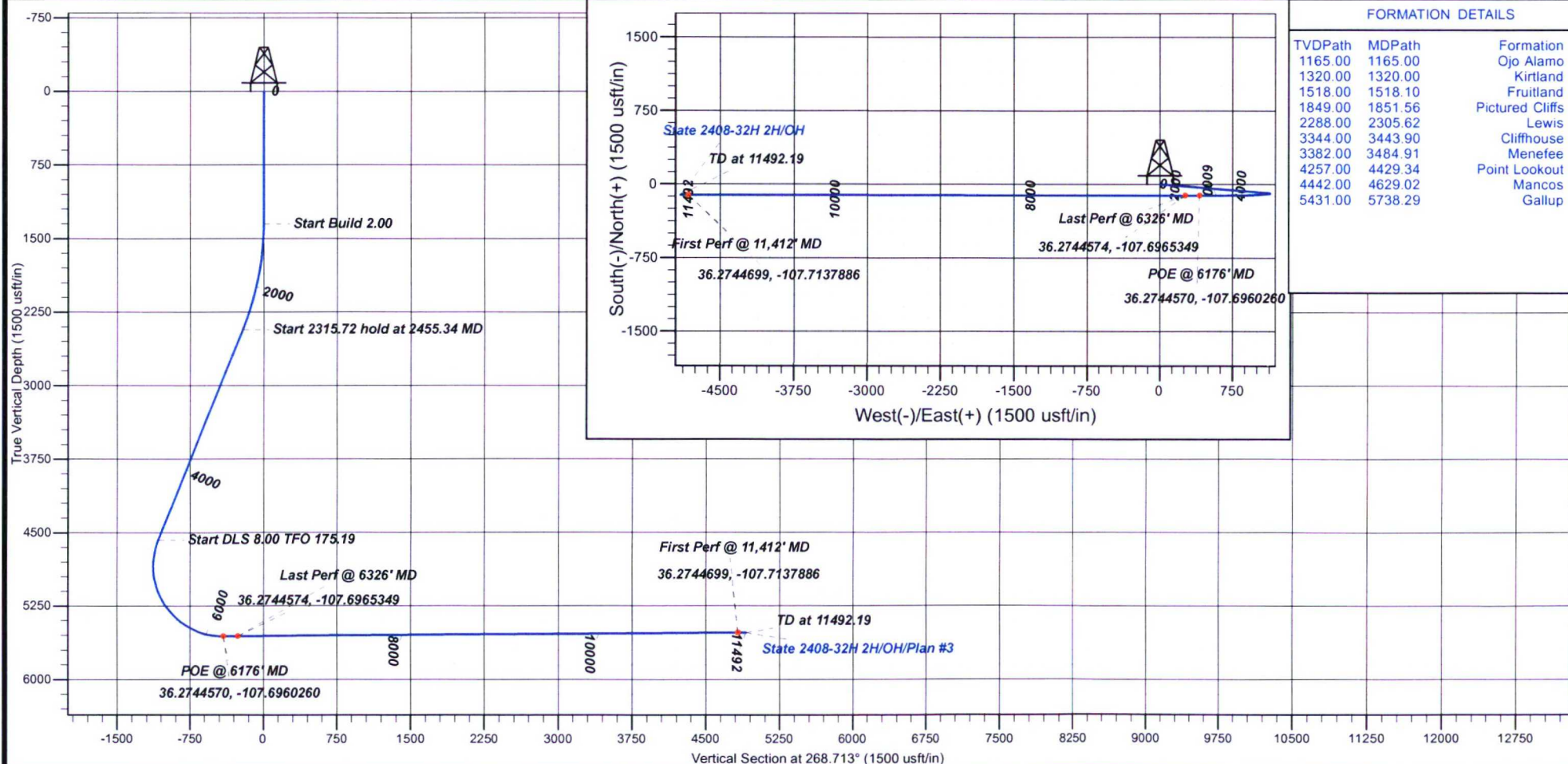
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
1350.00	0.00	0.000	1350.00	0.00	0.00	0.00	0.00	0.00	
2455.34	22.11	94.497	2428.12	-16.51	209.96	2.00	94.50	-209.54	
4771.06	22.11	94.497	4573.59	-84.85	1078.76	0.00	0.00	-1076.58	
6176.37	90.39	270.056	5558.00	-115.39	410.01	8.00	175.19	-407.31	State 2H LP
11492.19	90.39	270.056	5522.00	-110.24	-4905.68	0.00	0.00	4906.92	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	1518.10	Fruitland
1849.00	1851.56	Pictured Cliffs
2288.00	2305.62	Lewis
3344.00	3443.90	Cliffhouse
3382.00	3484.91	Menefee
4257.00	4429.34	Point Lookout
4442.00	4629.02	Mancos
5431.00	5738.29	Gallup





Logos Operating LLC

San Juan, NM NAD83

State 2408-32H

State 2408-32H 2H

OH

Plan: Plan #3

Standard Planning Report

15 March, 2019



www.scientificdrilling.com



Scientific Drilling, Intl
Planning Report



Database: Grand Junction District
Company: Logos Operating LLC
Project: San Juan, NM NAD83
Site: State 2408-32H
Well: State 2408-32H 2H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well State 2408-32H 2H
TVD Reference: GL 7002' & RKB 14' @ 7016.00usft
MD Reference: GL 7002' & RKB 14' @ 7016.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

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 2408-32H		
Site Position:		Northing:	1,919,371.54 usft
From:	Lat/Long	Easting:	2,763,167.91 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	36.2748470
		Longitude:	-107.6973700
		Grid Convergence:	0.08 °

Well	State 2408-32H 2H		
Well Position	+N/-S	-26.57 usft	Northing: 1,919,344.95 usft
	+E/-W	-13.85 usft	Easting: 2,763,154.09 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	36.2747740
		Longitude:	-107.6974170
		Ground Level:	7,002.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	11/28/2018	8.83
			Dip Angle (°)
			62.85
			Field Strength (nT)
			49,534

Design	Plan #3		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			268.713

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	
1,350.00	0.00	0.000	1,350.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,455.34	22.11	94.497	2,428.12	-16.51	209.96	2.00	2.00	0.00	94.50	
4,771.06	22.11	94.497	4,573.59	-84.85	1,078.76	0.00	0.00	0.00	0.00	
6,176.37	90.39	270.056	5,558.00	-115.39	410.01	8.00	4.86	12.49	175.19	State 2H LP
11,492.19	90.39	270.056	5,522.00	-110.24	-4,905.68	0.00	0.00	0.00	0.00	State 2H BHL



Scientific Drilling, Intl
Planning Report



Database: Grand Junction District
Company: Logos Operating LLC
Project: San Juan, NM NAD83
Site: State 2408-32H
Well: State 2408-32H 2H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well State 2408-32H 2H
TVD Reference: GL 7002' & RKB 14' @ 7016.00usft
MD Reference: GL 7002' & RKB 14' @ 7016.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/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
1,350.00	0.00	0.000	1,350.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,400.00	1.00	94.497	1,400.00	-0.03	0.43	-0.43	2.00	2.00	0.00
1,500.00	3.00	94.497	1,499.93	-0.31	3.91	-3.91	2.00	2.00	0.00
1,600.00	5.00	94.497	1,599.68	-0.85	10.87	-10.85	2.00	2.00	0.00
1,700.00	7.00	94.497	1,699.13	-1.67	21.29	-21.24	2.00	2.00	0.00
1,800.00	9.00	94.497	1,798.15	-2.77	35.16	-35.09	2.00	2.00	0.00
1,900.00	11.00	94.497	1,896.63	-4.13	52.47	-52.37	2.00	2.00	0.00
2,000.00	13.00	94.497	1,994.44	-5.76	73.20	-73.05	2.00	2.00	0.00
2,100.00	15.00	94.497	2,091.46	-7.65	97.31	-97.12	2.00	2.00	0.00
2,200.00	17.00	94.497	2,187.58	-9.82	124.79	-124.54	2.00	2.00	0.00
2,300.00	19.00	94.497	2,282.68	-12.24	155.60	-155.28	2.00	2.00	0.00
2,400.00	21.00	94.497	2,376.65	-14.92	189.69	-189.31	2.00	2.00	0.00
2,455.34	22.11	94.497	2,428.12	-16.51	209.96	-209.54	2.00	2.00	0.00
Start 2315.72 hold at 2455.34 MD									
2,500.00	22.11	94.497	2,469.49	-17.83	226.71	-226.26	0.00	0.00	0.00
2,600.00	22.11	94.497	2,562.14	-20.78	264.23	-263.70	0.00	0.00	0.00
2,700.00	22.11	94.497	2,654.79	-23.73	301.75	-301.14	0.00	0.00	0.00
2,800.00	22.11	94.497	2,747.44	-26.68	339.27	-338.58	0.00	0.00	0.00
2,900.00	22.11	94.497	2,840.09	-29.64	376.79	-376.02	0.00	0.00	0.00
3,000.00	22.11	94.497	2,932.74	-32.59	414.30	-413.47	0.00	0.00	0.00
3,100.00	22.11	94.497	3,025.39	-35.54	451.82	-450.91	0.00	0.00	0.00
3,200.00	22.11	94.497	3,118.03	-38.49	489.34	-488.35	0.00	0.00	0.00
3,300.00	22.11	94.497	3,210.68	-41.44	526.86	-525.79	0.00	0.00	0.00
3,400.00	22.11	94.497	3,303.33	-44.39	564.37	-563.23	0.00	0.00	0.00
3,500.00	22.11	94.497	3,395.98	-47.34	601.89	-600.68	0.00	0.00	0.00
3,600.00	22.11	94.497	3,488.63	-50.29	639.41	-638.12	0.00	0.00	0.00
3,700.00	22.11	94.497	3,581.28	-53.24	676.93	-675.56	0.00	0.00	0.00
3,800.00	22.11	94.497	3,673.92	-56.19	714.44	-713.00	0.00	0.00	0.00
3,900.00	22.11	94.497	3,766.57	-59.14	751.96	-750.44	0.00	0.00	0.00
4,000.00	22.11	94.497	3,859.22	-62.10	789.48	-787.88	0.00	0.00	0.00
4,100.00	22.11	94.497	3,951.87	-65.05	827.00	-825.33	0.00	0.00	0.00
4,200.00	22.11	94.497	4,044.52	-68.00	864.51	-862.77	0.00	0.00	0.00
4,300.00	22.11	94.497	4,137.17	-70.95	902.03	-900.21	0.00	0.00	0.00
4,400.00	22.11	94.497	4,229.81	-73.90	939.55	-937.65	0.00	0.00	0.00
4,500.00	22.11	94.497	4,322.46	-76.85	977.07	-975.09	0.00	0.00	0.00
4,600.00	22.11	94.497	4,415.11	-79.80	1,014.58	-1,012.54	0.00	0.00	0.00
4,700.00	22.11	94.497	4,507.76	-82.75	1,052.10	-1,049.98	0.00	0.00	0.00
4,771.06	22.11	94.497	4,573.59	-84.85	1,078.76	-1,076.58	0.00	0.00	0.00



Scientific Drilling, Intl
Planning Report



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Company: Logos Operating LLC
Project: San Juan, NM NAD83
Site: State 2408-32H
Well: State 2408-32H 2H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well State 2408-32H 2H
TVD Reference: GL 7002' & RKB 14' @ 7016.00usft
MD Reference: GL 7002' & RKB 14' @ 7016.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Start DLS 8.00 TFO 175.19									
4,800.00	19.80	95.070	4,600.62	-85.71	1,089.08	-1,086.87	8.00	-7.97	1.98
4,900.00	11.86	98.684	4,696.75	-88.76	1,116.15	-1,113.87	8.00	-7.94	3.61
5,000.00	4.14	115.905	4,795.72	-91.89	1,129.57	-1,127.22	8.00	-7.72	17.22
5,100.00	4.64	247.193	4,895.58	-95.04	1,129.08	-1,126.66	8.00	0.51	131.29
5,200.00	12.41	261.801	4,994.41	-98.15	1,114.69	-1,112.20	8.00	7.77	14.61
5,300.00	20.36	265.166	5,090.28	-101.15	1,086.68	-1,084.13	8.00	7.95	3.37
5,400.00	28.33	266.689	5,181.31	-103.99	1,045.59	-1,042.99	8.00	7.98	1.52
5,500.00	36.32	267.584	5,265.75	-106.62	992.23	-989.58	8.00	7.99	0.89
5,600.00	44.31	268.192	5,341.94	-108.97	927.63	-924.95	8.00	7.99	0.61
5,700.00	52.30	268.646	5,408.40	-111.01	853.05	-850.34	8.00	7.99	0.45
5,800.00	60.30	269.012	5,463.85	-112.70	769.94	-767.22	8.00	7.99	0.37
5,900.00	68.29	269.324	5,507.19	-113.99	679.92	-677.19	8.00	8.00	0.31
6,000.00	76.29	269.602	5,537.59	-114.88	584.74	-582.02	8.00	8.00	0.28
6,100.00	84.28	269.862	5,554.45	-115.34	486.26	-483.55	8.00	8.00	0.26
6,176.37	90.39	270.056	5,558.00	-115.39	410.01	-407.31	8.00	8.00	0.25
POE @ 6176' MD - 36.2744570, -107.6960260									
6,200.00	90.39	270.056	5,557.84	-115.37	386.38	-383.69	0.00	0.00	0.00
6,300.00	90.39	270.056	5,557.16	-115.27	286.38	-283.72	0.00	0.00	0.00
6,326.37	90.39	270.056	5,556.98	-115.25	260.01	-257.36	0.00	0.00	0.00
Last Perf @ 6326' MD - 36.2744574, -107.6965349									
6,400.00	90.39	270.056	5,556.49	-115.18	186.38	-183.75	0.00	0.00	0.00
6,500.00	90.39	270.056	5,555.81	-115.08	86.39	-83.78	0.00	0.00	0.00
6,600.00	90.39	270.056	5,555.13	-114.98	-13.61	16.19	0.00	0.00	0.00
6,700.00	90.39	270.056	5,554.45	-114.88	-113.61	116.16	0.00	0.00	0.00
6,800.00	90.39	270.056	5,553.78	-114.79	-213.61	216.13	0.00	0.00	0.00
6,900.00	90.39	270.056	5,553.10	-114.69	-313.60	316.10	0.00	0.00	0.00
7,000.00	90.39	270.056	5,552.42	-114.59	-413.60	416.07	0.00	0.00	0.00
7,100.00	90.39	270.056	5,551.75	-114.50	-513.60	516.04	0.00	0.00	0.00
7,200.00	90.39	270.056	5,551.07	-114.40	-613.60	616.01	0.00	0.00	0.00
7,300.00	90.39	270.056	5,550.39	-114.30	-713.60	715.98	0.00	0.00	0.00
7,400.00	90.39	270.056	5,549.71	-114.20	-813.59	815.95	0.00	0.00	0.00
7,500.00	90.39	270.056	5,549.04	-114.11	-913.59	915.92	0.00	0.00	0.00
7,600.00	90.39	270.056	5,548.36	-114.01	-1,013.59	1,015.89	0.00	0.00	0.00
7,700.00	90.39	270.056	5,547.68	-113.91	-1,113.59	1,115.86	0.00	0.00	0.00
7,800.00	90.39	270.056	5,547.00	-113.82	-1,213.58	1,215.83	0.00	0.00	0.00
7,900.00	90.39	270.056	5,546.33	-113.72	-1,313.58	1,315.80	0.00	0.00	0.00
8,000.00	90.39	270.056	5,545.65	-113.62	-1,413.58	1,415.77	0.00	0.00	0.00
8,100.00	90.39	270.056	5,544.97	-113.52	-1,513.58	1,515.75	0.00	0.00	0.00
8,200.00	90.39	270.056	5,544.30	-113.43	-1,613.57	1,615.72	0.00	0.00	0.00
8,300.00	90.39	270.056	5,543.62	-113.33	-1,713.57	1,715.69	0.00	0.00	0.00
8,400.00	90.39	270.056	5,542.94	-113.23	-1,813.57	1,815.66	0.00	0.00	0.00
8,500.00	90.39	270.056	5,542.26	-113.14	-1,913.57	1,915.63	0.00	0.00	0.00
8,600.00	90.39	270.056	5,541.59	-113.04	-2,013.57	2,015.60	0.00	0.00	0.00
8,700.00	90.39	270.056	5,540.91	-112.94	-2,113.56	2,115.57	0.00	0.00	0.00
8,800.00	90.39	270.056	5,540.23	-112.84	-2,213.56	2,215.54	0.00	0.00	0.00
8,900.00	90.39	270.056	5,539.56	-112.75	-2,313.56	2,315.51	0.00	0.00	0.00
9,000.00	90.39	270.056	5,538.88	-112.65	-2,413.56	2,415.48	0.00	0.00	0.00
9,100.00	90.39	270.056	5,538.20	-112.55	-2,513.55	2,515.45	0.00	0.00	0.00
9,200.00	90.39	270.056	5,537.52	-112.46	-2,613.55	2,615.42	0.00	0.00	0.00
9,300.00	90.39	270.056	5,536.85	-112.36	-2,713.55	2,715.39	0.00	0.00	0.00
9,400.00	90.39	270.056	5,536.17	-112.26	-2,813.55	2,815.36	0.00	0.00	0.00
9,500.00	90.39	270.056	5,535.49	-112.16	-2,913.54	2,915.33	0.00	0.00	0.00



Scientific Drilling, Intl Planning Report



Database: Grand Junction District
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Site: State 2408-32H
Well: State 2408-32H 2H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well State 2408-32H 2H
TVD Reference: GL 7002' & RKB 14' @ 7016.00usft
MD Reference: GL 7002' & RKB 14' @ 7016.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,600.00	90.39	270.056	5,534.81	-112.07	-3,013.54	3,015.30	0.00	0.00	0.00
9,700.00	90.39	270.056	5,534.14	-111.97	-3,113.54	3,115.27	0.00	0.00	0.00
9,800.00	90.39	270.056	5,533.46	-111.87	-3,213.54	3,215.24	0.00	0.00	0.00
9,900.00	90.39	270.056	5,532.78	-111.78	-3,313.53	3,315.21	0.00	0.00	0.00
10,000.00	90.39	270.056	5,532.11	-111.68	-3,413.53	3,415.18	0.00	0.00	0.00
10,100.00	90.39	270.056	5,531.43	-111.58	-3,513.53	3,515.15	0.00	0.00	0.00
10,200.00	90.39	270.056	5,530.75	-111.48	-3,613.53	3,615.12	0.00	0.00	0.00
10,300.00	90.39	270.056	5,530.07	-111.39	-3,713.53	3,715.09	0.00	0.00	0.00
10,400.00	90.39	270.056	5,529.40	-111.29	-3,813.52	3,815.06	0.00	0.00	0.00
10,500.00	90.39	270.056	5,528.72	-111.19	-3,913.52	3,915.03	0.00	0.00	0.00
10,600.00	90.39	270.056	5,528.04	-111.10	-4,013.52	4,015.00	0.00	0.00	0.00
10,700.00	90.39	270.056	5,527.36	-111.00	-4,113.52	4,114.97	0.00	0.00	0.00
10,800.00	90.39	270.056	5,526.69	-110.90	-4,213.51	4,214.94	0.00	0.00	0.00
10,900.00	90.39	270.056	5,526.01	-110.80	-4,313.51	4,314.91	0.00	0.00	0.00
11,000.00	90.39	270.056	5,525.33	-110.71	-4,413.51	4,414.88	0.00	0.00	0.00
11,100.00	90.39	270.056	5,524.66	-110.61	-4,513.51	4,514.85	0.00	0.00	0.00
11,200.00	90.39	270.056	5,523.98	-110.51	-4,613.50	4,614.82	0.00	0.00	0.00
11,300.00	90.39	270.056	5,523.30	-110.42	-4,713.50	4,714.79	0.00	0.00	0.00
11,400.00	90.39	270.056	5,522.62	-110.32	-4,813.50	4,814.76	0.00	0.00	0.00
11,412.19	90.39	270.056	5,522.54	-110.31	-4,825.69	4,826.95	0.00	0.00	0.00
First Perf @ 11,412' MD - 36.2744699, -107.7137886									
11,492.19	90.39	270.056	5,522.00	-110.24	-4,905.68	4,906.92	0.00	0.00	0.00
TD at 11492.19									

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 - plan misses target center by 0.55usft at 11412.01usft MD (5522.54 TVD, -110.31 N, -4825.51 E) - Point	0.00	0.000	5,522.00	-110.26	-4,825.51	1,919,227.92	2,758,328.74	36.2744700	-107.7137880
State 2H BHL - plan hits target center - Point	0.00	0.000	5,522.00	-110.24	-4,905.68	1,919,227.82	2,758,248.57	36.2744700	-107.7140600
State 2H LP - plan hits target center - Point	0.00	0.000	5,558.00	-115.39	410.01	1,919,230.13	2,763,564.26	36.2744570	-107.6960260
State 2H LPerf - plan misses target center by 1.04usft at 6326.40usft MD (5556.98 TVD, -115.25 N, 259.98 E) - Point	0.00	0.000	5,558.00	-115.03	259.98	1,919,230.29	2,763,414.23	36.2744580	-107.6965350



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Planning Report



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Design: Plan #3

Local Co-ordinate Reference: Well State 2408-32H 2H
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MD Reference: GL 7002' & RKB 14' @ 7016.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

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	
1,518.10	1,518.00	Fruitland		0.00	0.000	
1,851.56	1,849.00	Pictured Cliffs		0.00	0.000	
2,305.62	2,288.00	Lewis		0.00	0.000	
3,443.90	3,344.00	Cliffhouse		0.00	0.000	
3,484.91	3,382.00	Menefee		0.00	0.000	
4,429.34	4,257.00	Point Lookout		0.00	0.000	
4,629.02	4,442.00	Mancos		0.00	0.000	
5,738.29	5,431.00	Gallup		0.00	0.000	

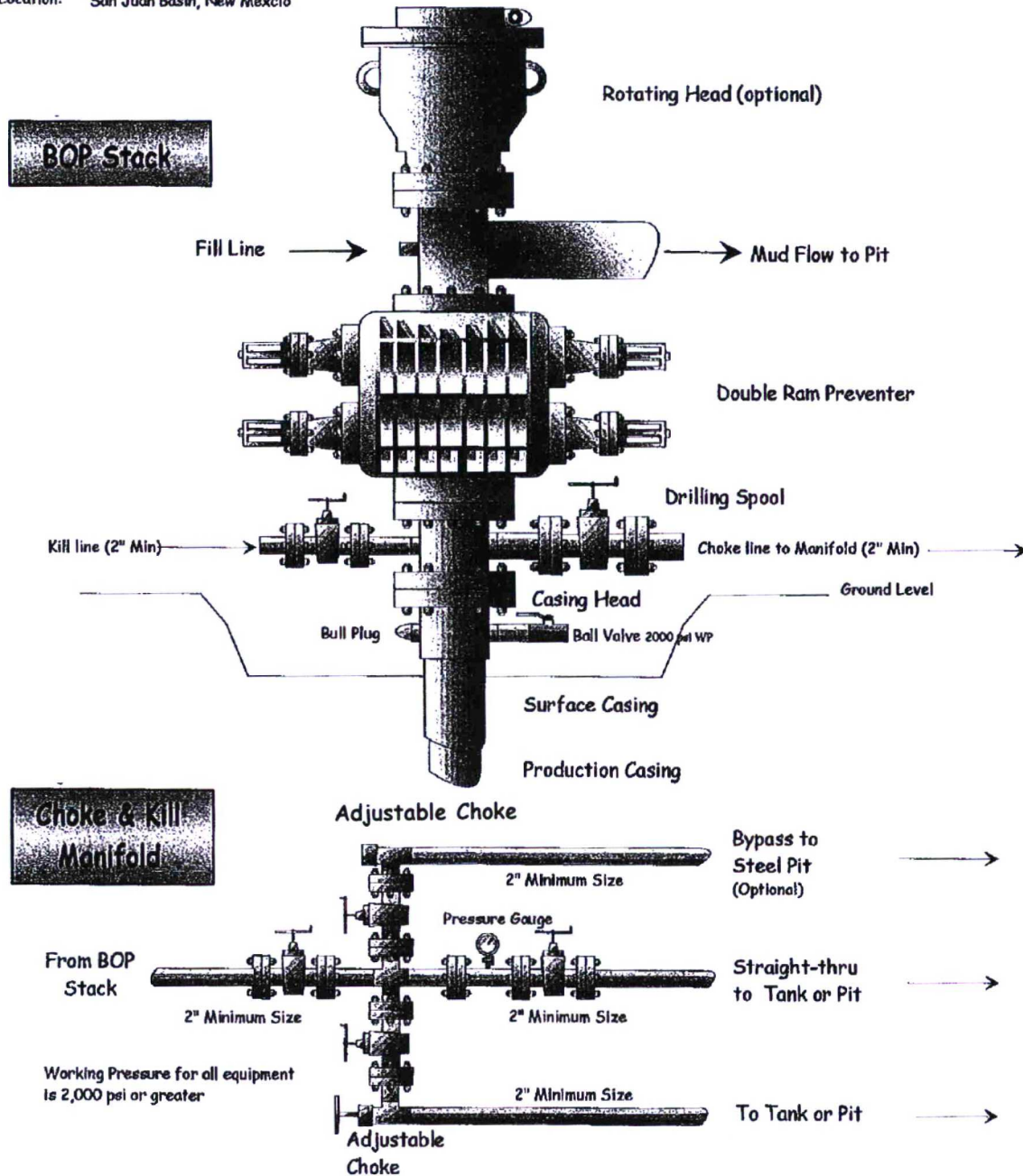
Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,350.00	1,350.00	0.00	0.00	Start Build 2.00	
2,455.34	2,428.12	-16.51	209.96	Start 2315.72 hold at 2455.34 MD	
4,771.06	4,573.59	-84.85	1,078.76	Start DLS 8.00 TFO 175.19	
6,176.37	5,558.00	-115.39	410.01	POE @ 6176' MD	
6,176.37	5,558.00	-115.39	410.01	36.2744570, -107.6960260	
6,326.37	5,556.98	-115.25	260.01	Last Perf @ 6326' MD	
6,326.37	5,556.98	-115.25	260.01	36.2744574, -107.6965349	
11,412.19	5,522.54	-110.31	-4,825.69	First Perf @ 11,412' MD	
11,412.19	5,522.54	-110.31	-4,825.69	36.2744699, -107.7137886	
11,492.19	5,522.00	-110.24	-4,905.68	TD at 11492.19	

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

Location: San Juan Basin, New Mexico



State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Gabriel Wade, Acting Director
Oil Conservation Division



New Mexico Oil Conservation Division conditions of approval
C-101 Application for Permit to Drill

Operator Signature Date: 3/18/19

Well information;

Operator LOGOS, Well Name and Number 5412 2408 32HCOM 2H

API# 30-045-35920, Section 32, Township 24 NS, Range 8 EW

Conditions of Approval: (See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☒ Hold C-104 for NSL, NSP, DHC
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☐ 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.