

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 API Number 30-045-35919
⁵ Property Name STATE 2408 32H COM		⁶ Well No. 1H

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		1179	FNL	346	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
D	32	24N	08W		330	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 11,579'	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	6267'	854	0
Prod	6.125	4.5	11.6	11,579'	493	6117'

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

A

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Phone: (505) 476-3460 Fax: (505) 476-3462

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 30.045-35919		2 Pool Code 47540		3 Pool Name NAGEEZI GALLUP	
4 Property Code 325177		5 Property Name STATE 2408-32H COM			6 Well Number 1H
7 OGRID No. 289408		8 Operator Name LOGOS OPERATING, LLC			9 Elevation 7002'

10 Surface Location

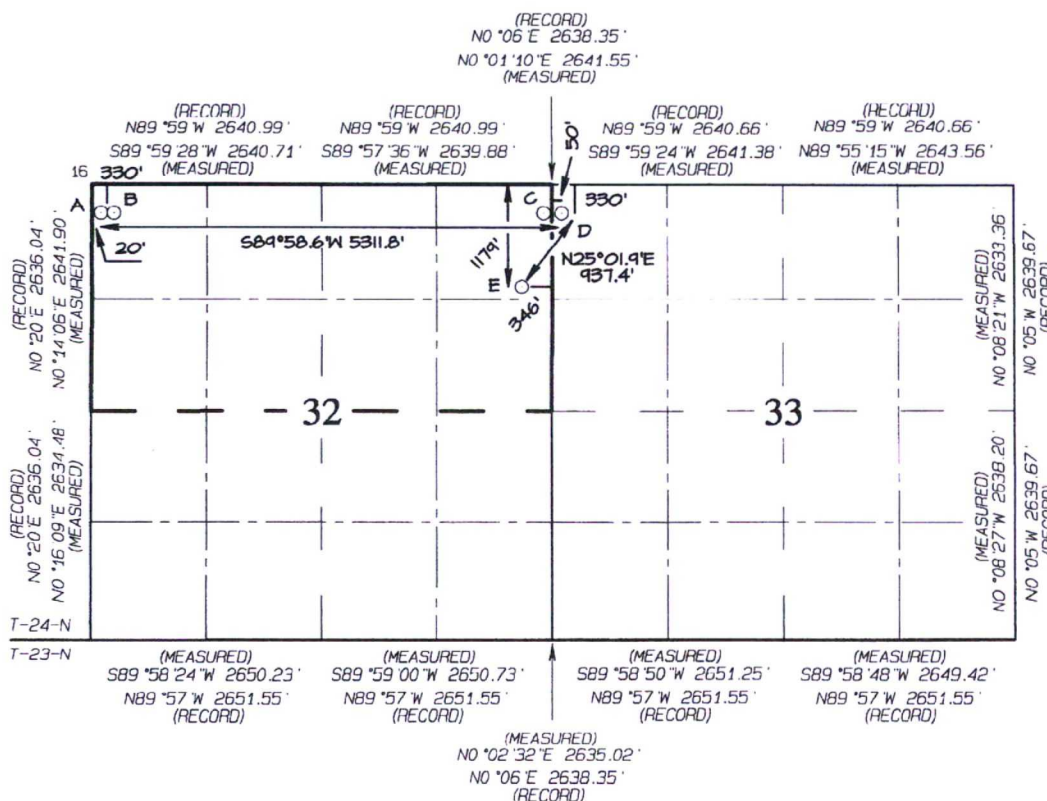
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	32	24N	8W		1179	NORTH	346	EAST	SAN JUAN

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
D	32	24N	8W		330	NORTH	20	WEST	SAN JUAN

12 Dedicated Acres 320.0 Acres N/2 - Section 32		13 Joint or Infill INFILL		14 Consolidation Code		15 Order No.	
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END-OF-LATERAL (A) 330' FNL 20' FWL SECTION 32, T24N, R8W LAT: 36.277180°N LONG: 107.713430°W DATUM: NAD1927 LAT: 36.277192°N LONG: 107.714042°W DATUM: NAD1983	FIRST PERFORATION (B) 330' FNL 100' FWL SECTION 32, T24N, R8W LAT: 36.277180°N LONG: 107.713158°W DATUM: NAD1927 LAT: 36.277192°N LONG: 107.713770°W DATUM: NAD1983	LAST PERFORATION (C) 330' FNL 100' FWL SECTION 32, T24N, R8W LAT: 36.277167°N LONG: 107.695918°W DATUM: NAD1927 LAT: 36.277179°N LONG: 107.696529°W DATUM: NAD1983	POINT-OF-ENTRY (D) 330' FNL 50' FWL SECTION 33, T24N, R8W LAT: 36.277167°N LONG: 107.695409°W DATUM: NAD1927 LAT: 36.277180°N LONG: 107.696020°W DATUM: NAD1983	SURFACE LOCATION (E) 1179' FNL 346' FEL SECTION 32, T24N, R8W LAT: 36.274835°N LONG: 107.69758°W DATUM: NAD1927 LAT: 36.274847°N LONG: 107.697370°W DATUM: NAD1983
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17 OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Tamra Sessions Date 3/15/19
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



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

JASON C. EDWARDS
Certificate Number 15269



LOGOS Operating, LLC Operations Plan

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

Date:	March 15, 2019	Pool:	Nageezi Gallup
Well Name:	State 2408 32H Com 1H	Elevation:	7,002'
Surface Location:	Sec 32, T24N, R8W 1179 FNL, 346 FEL (36.274847° N, 107.697370° W – NAD83)	Measured Depth:	11,579'
Bottom Hole Location:	Sec 32, T24N, R8W 330 FNL, 20 FWL (36.277192° N, 107.714042° 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	1,175	1,175	*POINT LOOKOUT	4,481	4,267
KIRTLAND	1,330	1,330	*MANCOS	4,683	4,452
*FRUITLAND	1,538	1,538	GALLUP	5,829	5,451
*PICTURED CLIFFS	1,863	1,859	KICKOFF POINT	4,879	4,630
CHACRA	2,323	2,298	LANDING POINT	6,267	5,575
*CLIFF HOUSE	3,479	3,354	TD	11,579	5,541
MENEFEE	3,521	3,392			

* 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	OHSIZE (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"	6,267'	7"	23 LBS	J-55 or equiv	LTC
PRODUCTION	6.125"	6,117' – 11,579'	4.5"	11.6 LBS	P-110 or equiv	LTC
TIE BACK	6.125"	Surf. – 6,117'	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 and when Lateral is evaluated by Geoscientists and Reservoir Engineers. 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: 205 bbls, 590 sks (1150 cu.ft.), 12.3 ppg@ 1.95 cuft/sk yield. Tail Cement: 61 bbls, 264 sks, (343 cuft), 13.5 ppg@ 1.3 cu'ft/sk yield. Displacement: Displace w/ +/- 245 bbl Drilling mud or water. Total Cement: 266 bbls, 854 sks, (1493 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 III.Spacer #3: 10 bbl Water Spacer. Lead Cement: Extencem TM System. Yield 1.36 cuft/sk 13.3 ppg (493 sx / 671 cuft /120 bbls). Tail Spacer: 40 BBL of MMCR. Displacement: Displace w/ +/- 151 bbl Fr Water.



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 or greater, 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 1H
Wellbore: OH
Design: Plan #4

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 1H

GL 7002' & RKB 14' @ 7016.00usft
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 1919371.54 2763167.91 36.2748470 -107.6973700

Plan: Plan #4 (State 2408-32H 1H/OH)

Created By: Janie Collins Date: 12:40, March 15 2019

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
State 1H LP	5575.00	849.27	397.91	1920221.37	2763564.63	36.2771800	-107.6960200
State 1H BHL	5541.00	854.06	-4914.06	1920218.70	2758252.65	36.2771920	-107.7140420
State 1H FPerf	5541.00	854.05	-4833.89	1920218.80	2758332.82	36.2771920	-107.7137700
State 1H LPerf	5575.00	848.91	247.88	1920220.80	2763414.60	36.2771790	-107.6965290

SECTION DETAILS

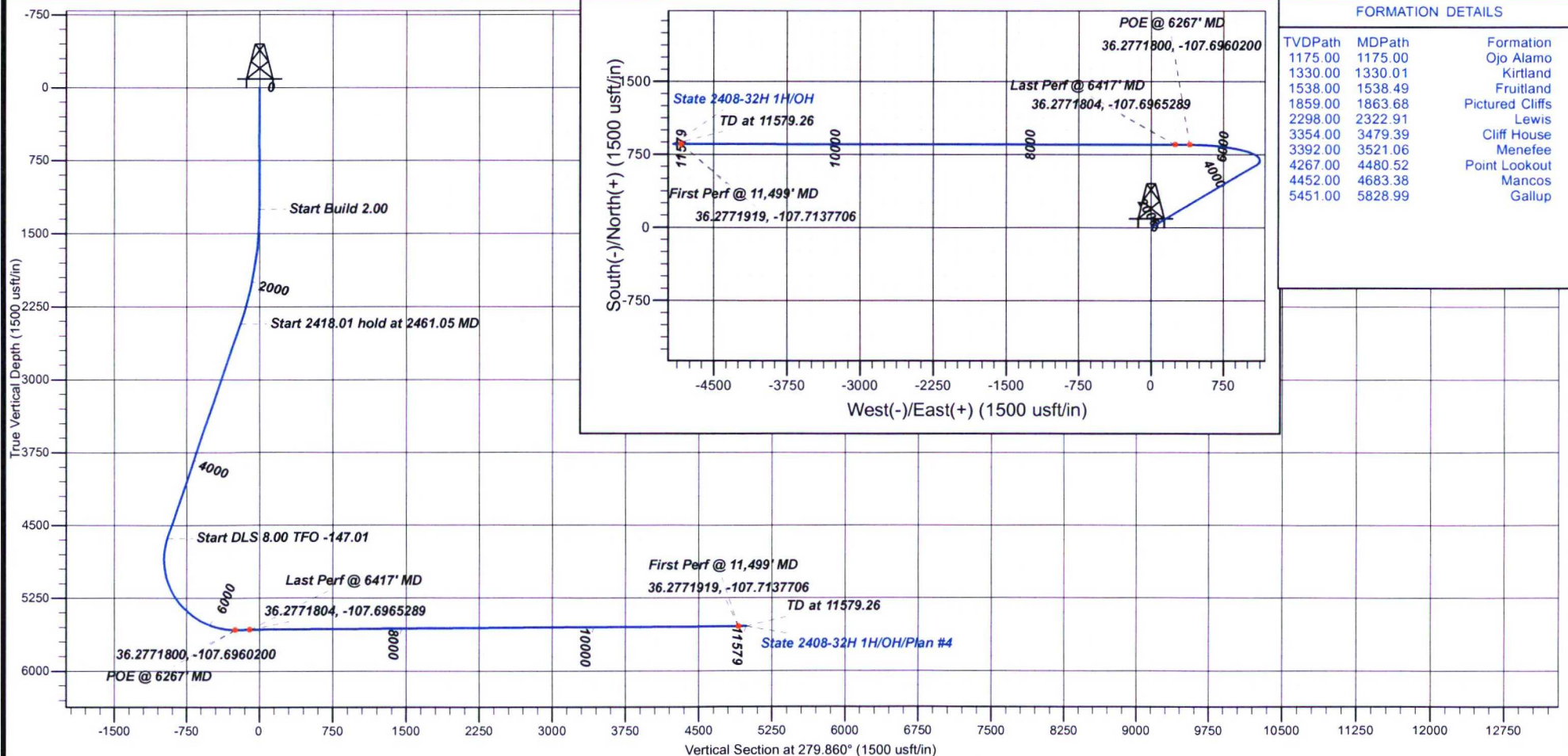
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
1250.00	0.00	0.000	1250.00	0.00	0.00	0.00	0.00	0.00	
2461.05	24.22	59.513	2425.30	127.95	217.32	2.00	59.51	-192.20	
4879.06	24.22	59.513	4830.45	631.23	1072.18	0.00	0.00	-948.26	
6267.18	90.37	270.052	5575.00	849.27	397.91	8.00	-147.01	-246.61	State 1H LP
11579.26	90.37	270.052	5541.00	854.06	-4914.06	0.00	0.00	4987.73	State 1H BHL

CASING DETAILS

No casing data is available

FORMATION DETAILS

TVDPath	MDPath	Formation
1175.00	1175.00	Ojo Alamo
1330.00	1330.01	Kirtland
1538.00	1538.49	Fruitland
1859.00	1863.68	Pictured Cliffs
2298.00	2322.91	Lewis
3354.00	3479.39	Cliff House
3392.00	3521.06	Menefee
4267.00	4480.52	Point Lookout
4452.00	4683.38	Mancos
5451.00	5828.99	Gallup





Logos Operating LLC

San Juan, NM NAD83

State 2408-32H

State 2408-32H 1H

OH

Plan: Plan #4

Standard Planning Report

15 March, 2019





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 1H
Wellbore: OH
Design: Plan #4

Local Co-ordinate Reference: Well State 2408-32H 1H
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 1H		
Well Position	+N/-S	0.00 usft	Northing: 1,919,371.54 usft
	+E/-W	0.00 usft	Easting: 2,763,167.91 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	36.2748470
		Longitude:	-107.6973700
		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 #4		
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 (°)
			279.859

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	
1,250.00	0.00	0.000	1,250.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,461.05	24.22	59.513	2,425.30	127.95	217.32	2.00	2.00	0.00	59.51	
4,879.06	24.22	59.513	4,630.45	631.23	1,072.18	0.00	0.00	0.00	0.00	
6,267.18	90.37	270.052	5,575.00	849.27	397.91	8.00	4.77	-10.77	-147.01	State 1H LP
11,579.26	90.37	270.052	5,541.00	854.06	-4,914.06	0.00	0.00	0.00	0.00	State 1H 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 1H
Wellbore: OH
Design: Plan #4

Local Co-ordinate Reference: Well State 2408-32H 1H
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
1,250.00	0.00	0.000	1,250.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,300.00	1.00	59.513	1,300.00	0.22	0.38	-0.33	2.00	2.00	0.00
1,400.00	3.00	59.513	1,399.93	1.99	3.38	-2.99	2.00	2.00	0.00
1,500.00	5.00	59.513	1,499.68	5.53	9.39	-8.31	2.00	2.00	0.00
1,600.00	7.00	59.513	1,599.13	10.83	18.40	-16.27	2.00	2.00	0.00
1,700.00	9.00	59.513	1,698.15	17.89	30.39	-26.88	2.00	2.00	0.00
1,800.00	11.00	59.513	1,796.63	26.70	45.36	-40.11	2.00	2.00	0.00
1,900.00	13.00	59.513	1,894.44	37.25	63.27	-55.96	2.00	2.00	0.00
2,000.00	15.00	59.513	1,991.46	49.52	84.12	-74.40	2.00	2.00	0.00
2,100.00	17.00	59.513	2,087.58	63.51	107.87	-95.40	2.00	2.00	0.00
2,200.00	19.00	59.513	2,182.68	79.18	134.50	-118.95	2.00	2.00	0.00
2,300.00	21.00	59.513	2,276.65	96.54	163.97	-145.02	2.00	2.00	0.00
2,400.00	23.00	59.513	2,369.36	115.54	196.25	-173.57	2.00	2.00	0.00
2,461.05	24.22	59.513	2,425.30	127.95	217.32	-192.20	2.00	2.00	0.00
Start 2418.01 hold at 2461.05 MD									
2,500.00	24.22	59.513	2,460.82	136.05	231.09	-204.38	0.00	0.00	0.00
2,600.00	24.22	59.513	2,552.02	156.87	266.45	-235.65	0.00	0.00	0.00
2,700.00	24.22	59.513	2,643.22	177.68	301.80	-266.92	0.00	0.00	0.00
2,800.00	24.22	59.513	2,734.41	198.49	337.15	-298.18	0.00	0.00	0.00
2,900.00	24.22	59.513	2,825.61	219.31	372.51	-329.45	0.00	0.00	0.00
3,000.00	24.22	59.513	2,916.81	240.12	407.86	-360.72	0.00	0.00	0.00
3,100.00	24.22	59.513	3,008.00	260.94	443.21	-391.99	0.00	0.00	0.00
3,200.00	24.22	59.513	3,099.20	281.75	478.57	-423.26	0.00	0.00	0.00
3,300.00	24.22	59.513	3,190.40	302.56	513.92	-454.52	0.00	0.00	0.00
3,400.00	24.22	59.513	3,281.59	323.38	549.28	-485.79	0.00	0.00	0.00
3,500.00	24.22	59.513	3,372.79	344.19	584.63	-517.06	0.00	0.00	0.00
3,600.00	24.22	59.513	3,463.99	365.01	619.98	-548.33	0.00	0.00	0.00
3,700.00	24.22	59.513	3,555.19	385.82	655.34	-579.59	0.00	0.00	0.00
3,800.00	24.22	59.513	3,646.38	406.64	690.69	-610.86	0.00	0.00	0.00
3,900.00	24.22	59.513	3,737.58	427.45	726.04	-642.13	0.00	0.00	0.00
4,000.00	24.22	59.513	3,828.78	448.26	761.40	-673.40	0.00	0.00	0.00
4,100.00	24.22	59.513	3,919.97	469.08	796.75	-704.66	0.00	0.00	0.00
4,200.00	24.22	59.513	4,011.17	489.89	832.11	-735.93	0.00	0.00	0.00
4,300.00	24.22	59.513	4,102.37	510.71	867.46	-767.20	0.00	0.00	0.00
4,400.00	24.22	59.513	4,193.56	531.52	902.81	-798.47	0.00	0.00	0.00
4,500.00	24.22	59.513	4,284.76	552.33	938.17	-829.73	0.00	0.00	0.00
4,600.00	24.22	59.513	4,375.96	573.15	973.52	-861.00	0.00	0.00	0.00
4,700.00	24.22	59.513	4,467.16	593.96	1,008.87	-892.27	0.00	0.00	0.00
4,800.00	24.22	59.513	4,558.35	614.78	1,044.23	-923.54	0.00	0.00	0.00
4,879.06	24.22	59.513	4,630.45	631.23	1,072.18	-948.26	0.00	0.00	0.00



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 1H
Wellbore: OH
Design: Plan #4

Local Co-ordinate Reference: Well State 2408-32H 1H
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 -147.01									
4,900.00	22.83	57.162	4,649.65	635.61	1,079.29	-954.52	8.00	-6.63	-11.23
5,000.00	16.90	41.163	4,743.73	657.11	1,105.20	-976.36	8.00	-5.94	-16.00
5,100.00	13.24	13.333	4,840.40	679.23	1,117.43	-984.62	8.00	-3.65	-27.83
5,200.00	13.83	338.739	4,937.78	701.55	1,115.74	-979.13	8.00	0.58	-34.59
5,300.00	18.24	314.185	5,033.97	723.63	1,100.16	-960.00	8.00	4.41	-24.55
5,400.00	24.50	300.328	5,127.11	745.04	1,070.99	-927.60	8.00	6.26	-13.86
5,500.00	31.51	292.082	5,215.38	765.37	1,028.81	-882.56	8.00	7.02	-8.25
5,600.00	38.88	286.645	5,297.06	784.22	974.43	-825.75	8.00	7.37	-5.44
5,700.00	46.43	282.726	5,370.56	801.21	908.91	-758.30	8.00	7.55	-3.92
5,800.00	54.08	279.689	5,434.45	816.03	833.54	-681.50	8.00	7.65	-3.04
5,900.00	61.80	277.193	5,487.50	828.39	749.77	-596.85	8.00	7.72	-2.50
6,000.00	69.56	275.036	5,528.65	838.03	659.23	-506.00	8.00	7.76	-2.16
6,100.00	77.34	273.087	5,557.13	844.79	563.69	-410.71	8.00	7.78	-1.95
6,200.00	85.13	271.255	5,572.36	848.51	465.01	-312.85	8.00	7.79	-1.83
6,267.18	90.37	270.052	5,575.00	849.27	397.91	-246.61	8.00	7.80	-1.79
36.2771800, -107.6960200 - POE @ 6267' MD									
6,300.00	90.37	270.052	5,574.79	849.30	365.09	-214.27	0.00	0.00	0.00
6,400.00	90.37	270.052	5,574.15	849.39	265.10	-115.74	0.00	0.00	0.00
6,417.18	90.37	270.052	5,574.04	849.41	247.92	-98.81	0.00	0.00	0.00
Last Perf @ 6417' MD - 36.2771804, -107.6965289									
6,500.00	90.37	270.052	5,573.51	849.48	165.10	-17.20	0.00	0.00	0.00
6,600.00	90.37	270.052	5,572.87	849.57	65.10	81.34	0.00	0.00	0.00
6,700.00	90.37	270.052	5,572.23	849.66	-34.90	179.87	0.00	0.00	0.00
6,800.00	90.37	270.052	5,571.59	849.75	-134.90	278.41	0.00	0.00	0.00
6,900.00	90.37	270.052	5,570.95	849.85	-234.89	376.95	0.00	0.00	0.00
7,000.00	90.37	270.052	5,570.31	849.94	-334.89	475.48	0.00	0.00	0.00
7,100.00	90.37	270.052	5,569.67	850.03	-434.89	574.02	0.00	0.00	0.00
7,200.00	90.37	270.052	5,569.03	850.12	-534.89	672.56	0.00	0.00	0.00
7,300.00	90.37	270.052	5,568.39	850.21	-634.89	771.09	0.00	0.00	0.00
7,400.00	90.37	270.052	5,567.75	850.30	-734.88	869.63	0.00	0.00	0.00
7,500.00	90.37	270.052	5,567.11	850.39	-834.88	968.16	0.00	0.00	0.00
7,600.00	90.37	270.052	5,566.47	850.48	-934.88	1,066.70	0.00	0.00	0.00
7,700.00	90.37	270.052	5,565.83	850.57	-1,034.88	1,165.24	0.00	0.00	0.00
7,800.00	90.37	270.052	5,565.19	850.66	-1,134.87	1,263.77	0.00	0.00	0.00
7,900.00	90.37	270.052	5,564.55	850.75	-1,234.87	1,362.31	0.00	0.00	0.00
8,000.00	90.37	270.052	5,563.91	850.84	-1,334.87	1,460.85	0.00	0.00	0.00
8,100.00	90.37	270.052	5,563.27	850.93	-1,434.87	1,559.38	0.00	0.00	0.00
8,200.00	90.37	270.052	5,562.63	851.02	-1,534.87	1,657.92	0.00	0.00	0.00
8,300.00	90.37	270.052	5,561.99	851.11	-1,634.86	1,756.46	0.00	0.00	0.00
8,400.00	90.37	270.052	5,561.35	851.20	-1,734.86	1,854.99	0.00	0.00	0.00
8,500.00	90.37	270.052	5,560.71	851.29	-1,834.86	1,953.53	0.00	0.00	0.00
8,600.00	90.37	270.052	5,560.07	851.38	-1,934.86	2,052.07	0.00	0.00	0.00
8,700.00	90.37	270.052	5,559.43	851.47	-2,034.86	2,150.60	0.00	0.00	0.00
8,800.00	90.37	270.052	5,558.79	851.56	-2,134.85	2,249.14	0.00	0.00	0.00
8,900.00	90.37	270.052	5,558.15	851.65	-2,234.85	2,347.68	0.00	0.00	0.00
9,000.00	90.37	270.052	5,557.51	851.74	-2,334.85	2,446.21	0.00	0.00	0.00
9,100.00	90.37	270.052	5,556.87	851.83	-2,434.85	2,544.75	0.00	0.00	0.00
9,200.00	90.37	270.052	5,556.23	851.92	-2,534.85	2,643.28	0.00	0.00	0.00
9,300.00	90.37	270.052	5,555.59	852.01	-2,634.84	2,741.82	0.00	0.00	0.00
9,400.00	90.37	270.052	5,554.95	852.10	-2,734.84	2,840.36	0.00	0.00	0.00
9,500.00	90.37	270.052	5,554.31	852.19	-2,834.84	2,938.89	0.00	0.00	0.00
9,600.00	90.37	270.052	5,553.67	852.28	-2,934.84	3,037.43	0.00	0.00	0.00



Scientific Drilling, Intl Planning Report



Database: Grand Junction District
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Site: State 2408-32H
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Design: Plan #4

Local Co-ordinate Reference: Well State 2408-32H 1H
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)
9,700.00	90.37	270.052	5,553.03	852.37	-3,034.84	3,135.97	0.00	0.00	0.00
9,800.00	90.37	270.052	5,552.39	852.46	-3,134.83	3,234.50	0.00	0.00	0.00
9,900.00	90.37	270.052	5,551.75	852.55	-3,234.83	3,333.04	0.00	0.00	0.00
10,000.00	90.37	270.052	5,551.11	852.65	-3,334.83	3,431.58	0.00	0.00	0.00
10,100.00	90.37	270.052	5,550.47	852.74	-3,434.83	3,530.11	0.00	0.00	0.00
10,200.00	90.37	270.052	5,549.83	852.83	-3,534.82	3,628.65	0.00	0.00	0.00
10,300.00	90.37	270.052	5,549.19	852.92	-3,634.82	3,727.19	0.00	0.00	0.00
10,400.00	90.37	270.052	5,548.55	853.01	-3,734.82	3,825.72	0.00	0.00	0.00
10,500.00	90.37	270.052	5,547.91	853.10	-3,834.82	3,924.26	0.00	0.00	0.00
10,600.00	90.37	270.052	5,547.27	853.19	-3,934.82	4,022.80	0.00	0.00	0.00
10,700.00	90.37	270.052	5,546.63	853.28	-4,034.81	4,121.33	0.00	0.00	0.00
10,800.00	90.37	270.052	5,545.99	853.37	-4,134.81	4,219.87	0.00	0.00	0.00
10,900.00	90.37	270.052	5,545.35	853.46	-4,234.81	4,318.40	0.00	0.00	0.00
11,000.00	90.37	270.052	5,544.71	853.55	-4,334.81	4,416.94	0.00	0.00	0.00
11,100.00	90.37	270.052	5,544.07	853.64	-4,434.81	4,515.48	0.00	0.00	0.00
11,200.00	90.37	270.052	5,543.43	853.73	-4,534.80	4,614.01	0.00	0.00	0.00
11,300.00	90.37	270.052	5,542.79	853.82	-4,634.80	4,712.55	0.00	0.00	0.00
11,400.00	90.37	270.052	5,542.15	853.91	-4,734.80	4,811.09	0.00	0.00	0.00
11,499.26	90.37	270.052	5,541.51	854.00	-4,834.06	4,908.89	0.00	0.00	0.00
First Perf @ 11,499' MD - 36.2771919, -107.7137706									
11,500.00	90.37	270.052	5,541.51	854.00	-4,834.80	4,909.62	0.00	0.00	0.00
11,579.26	90.37	270.052	5,541.00	854.07	-4,914.06	4,987.72	0.00	0.00	0.00
TD at 11579.26									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
State 1H BHL - hit/miss target - Shape - Point	0.00	0.000	5,541.00	854.06	-4,914.06	1,920,218.71	2,758,252.65	36.2771920	-107.7140420
- plan misses target center by 0.01usft at 11579.26usft MD (5541.00 TVD, 854.07 N, -4914.06 E)									
State 1H FPerf - plan misses target center by 0.52usft at 11499.09usft MD (5541.51 TVD, 854.00 N, -4833.89 E) - Point	0.00	0.000	5,541.00	854.05	-4,833.89	1,920,218.80	2,758,332.83	36.2771920	-107.7137700
State 1H LP - plan hits target center - Point	0.00	0.000	5,575.00	849.27	397.91	1,920,221.38	2,763,564.63	36.2771800	-107.6960200
State 1H LPerf - plan misses target center by 1.08usft at 6417.21usft MD (5574.04 TVD, 849.41 N, 247.89 E) - Point	0.00	0.000	5,575.00	848.91	247.88	1,920,220.80	2,763,414.60	36.2771790	-107.6965290



Scientific Drilling, Intl
Planning Report



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Design: Plan #4

Local Co-ordinate Reference: Well State 2408-32H 1H
TVD Reference: GL 7002' & RKB 14' @ 7016.00usft
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 (°)
1,175.00	1,175.00	Ojo Alamo		0.00	0.000
1,330.01	1,330.00	Kirtland		0.00	0.000
1,538.49	1,538.00	Fruitland		0.00	0.000
1,863.68	1,859.00	Pictured Cliffs		0.00	0.000
2,322.91	2,298.00	Lewis		0.00	0.000
3,479.39	3,354.00	Cliff House		0.00	0.000
3,521.06	3,392.00	Menefee		0.00	0.000
4,480.52	4,267.00	Point Lookout		0.00	0.000
4,683.38	4,452.00	Mancos		0.00	0.000
5,828.99	5,451.00	Gallup		0.00	0.000

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,250.00	1,250.00	0.00	0.00	Start Build 2.00
2,461.05	2,425.30	127.95	217.32	Start 2418.01 hold at 2461.05 MD
4,879.06	4,630.45	631.23	1,072.18	Start DLS 8.00 TFO -147.01
6,267.18	5,575.00	849.27	397.91	36.2771800, -107.6960200
6,267.18	5,575.00	849.27	397.91	POE @ 6267' MD
6,417.18	5,574.04	849.41	247.92	Last Perf @ 6417' MD
6,417.18	5,574.04	849.41	247.92	36.2771804, -107.6965289
11,499.26	5,541.51	854.00	-4,834.06	First Perf @ 11,499' MD
11,499.26	5,541.51	854.00	-4,834.06	36.2771919, -107.7137706
11,579.26	5,541.00	854.07	-4,914.06	TD at 11579.26

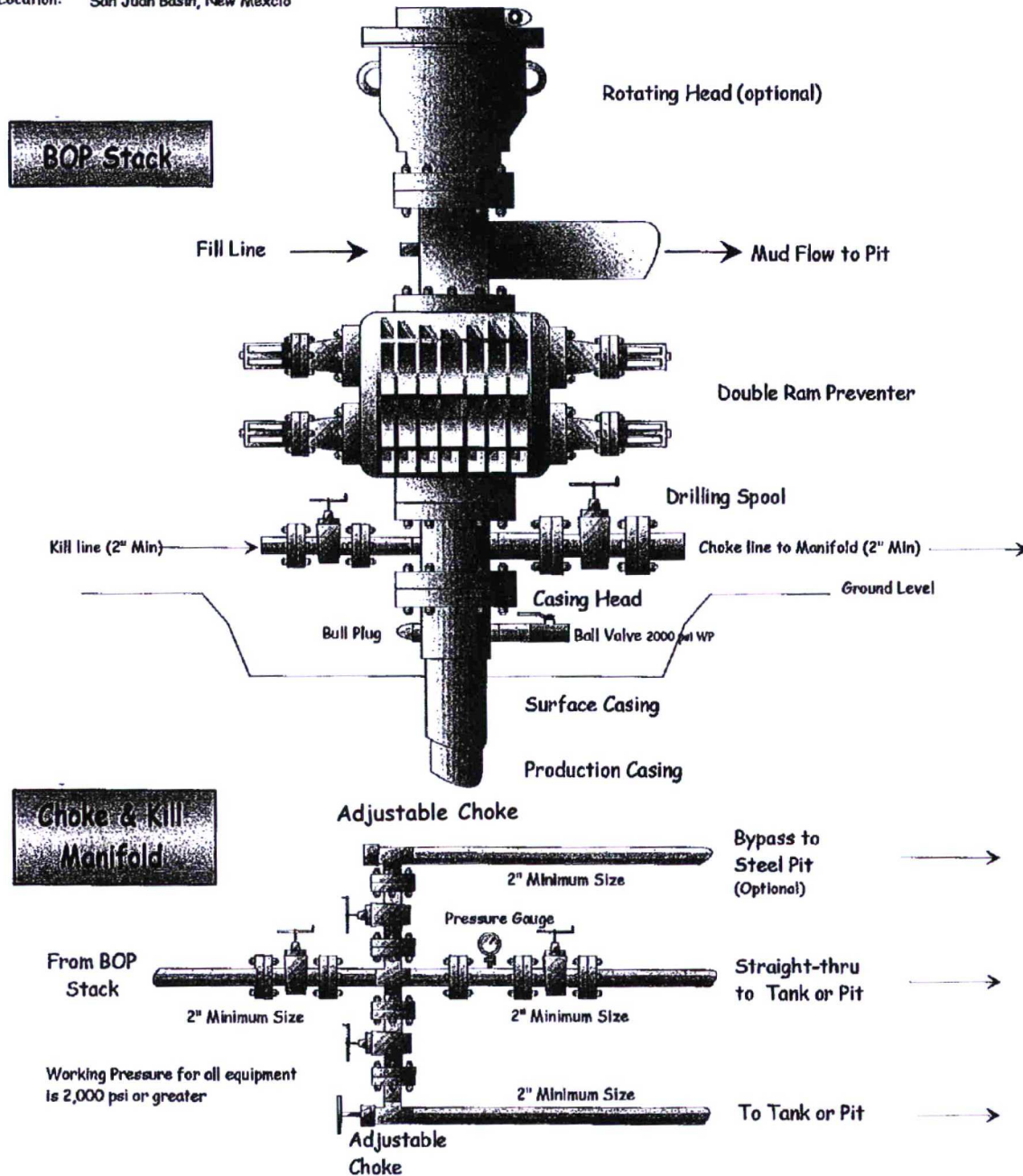


Well Control Equipment Schematic for 2M Service

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 20605, Well Name and Number State 2408 32H Com 1H

API# 30045-35919, Section 32 Township 24NS, 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
- ☐ 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.