



LOGOS Operating, LLC Operations Plan

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

Date:	May 29, 2024	Pool:	Basin Mancos
Well Name:	Ignacio 33-7 29P 001H	GL Elevation:	6,419.2'
Surface Location:	Sec 29, T33N, R7W 292' FSL, 1112' FEL (37.068673 ° N, 107.627033° W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 27, T33N, R7W 649' FSL, 2169' FWL (37.069552° N, 107.597822° W – NAD83)	Measured Depth:	16,493' (KB)
Lease Serial	I-22-IND-2788	County:	La Plata

I. GEOLOGY

A. Formation Tops (Based on KB Elevation): Estimated top of important geological markers:
SURFACE FORMATION – NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	1,468'	1,452'	*POINT LOOKOUT	5,431'	5,275'
KIRTLAND	1,605'	1,584'	*MANCOS	6,095'	5,921'
*FRUITLAND	2,562'	2,507'	KICKOFF POINT	6,253'	6,076'
*PICTURED CLIFFS	3,062'	2,989'	LANDING POINT	7,119'	6,654'
LEWIS	3,188'	3,111'			
CHACRA	4,285'	4,169'			
*CLIFF HOUSE	5,196'	5,048'			
MENEFEE	5,277'	5,126'	TD	16,493'	6,519'

* 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 Conductor 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 26"/24" conductor hole, 17-1/2" surface hole and 12-1/4" intermediate hole vertical hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

Above ground steel pits will be used for fluid and cuttings while drilling. In the unlikely event that a tank develops a leak, upon immediate visual discovery, the fluid would be transferred to another tank and contaminated soil would be removed and disposed. Any leaks, spills or other undesirable



events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times.

- B. BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **3000 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. BOP equipment will be tested every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip or but not more than once a day. The Colorado ECMC and the BLM will be notified 24 hours in advance of testing of BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when initially installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30 day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30 day interval of first full test.
- C. GeoHazards:** There are no Geohazards
- D. Maximum Anticipated Pressure:** $6,654' \text{ TVD} \times 0.43 = 2,861 \text{ psi}$
- E. H2S Concerns:** There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OHSIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
CONDUCTOR	26" or 24"	320' or greater	20"	94 LBS	J-55 or equiv	LTC/BTC
SURFACE	17.5"	3,112'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,170'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	16,493'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

NOTE: All casing depths are approximate, based on KB elevation and will be based on drilling conditions +/- 50'. Weights, grades and connections will be based on availability and may vary but will be equivalent or greater.

B. FLOAT EQUIPMENT:

- CONDUCTOR CASING:** 20" cement nose guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Conductor Casing.
- SURFACE CASING:** 13-3/8" cement nose guide shoe with 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., 2,000ft., 1,500 ft., 1,000 ft, and 500ft.
 - Casing will be kept fluid filled during drilling
- INTERMEDIATE CASING:** 9-5/8" cement nose guide shoe with 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. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancelation plugs for DV tools may be used if losses while cementing are not encountered. Optional use of an ICP may be used in conjunction with DV Tools.

4. **PRODUCTION CASING:** Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

(Note: Cement type and volumes may be adjusted onsite due to actual conditions and availability)

1. **CONDUCTOR:** Casing shall be set at ~ 320' and cemented to surface. TOC at Surface.
408 sks of 15.8 ppg Type Neat G, 1.10 cuft/sk yield or equivalent 323 sks of 14.6 ppg Type III with 1.39 cuft/sk yield, 30% excess.
2. **SURFACE:** Surface casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The surface casing will be cemented in 1 stage. If cement does not circulate to the surface, a CBL will be run to determine TOC.

Surface - 13-3/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	2,512	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	320	2,192	0.6947	1.3	1,980	353	1.90	1042	12.4
Stage 2 Lead - Cased	-	320	1.019	1	326	58	1.90	172	12.4
					2,881	513		1737	

Set Depth 3112

Calculations based on 30% excess for open hole and cement to the surface. Actual excess pumped will be determined by well conditions.

3. **INTERMEDIATE:** Intermediate casing shall be kept fluid filled while running in to the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools in order to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools and optional ICP's above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to surface, a CBL will be run to determine TOC.



Intermediate - 9-5/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,670	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,360	1,310	0.3132	1.3	533	95	1.90	281	12.4
					753	134		481	
Stage 2 Tail	3,760	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,012	748	0.3132	1.3	305	54	1.90	160	12.4
Stage 2 Lead - Cased	2,912	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					585	104		334	
Int 2 Totals					1,339	238		815	
Contingency									
Stage 3 Tail	3,112	38	0.3132	1.3	15	3	1.58	10	13.2
Stage 3 Tail - Cased	2,612	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,612	0.3490	1	912	162	1.90	480	12.4
Contingency Stage 3 Totals					1,102	196		600	

Set Depth 6170

Calculations based on 30% excess for open hole and cement to surface. Actual excess pumped will be determined by well conditions.

4. **PRODUCTION:** Production casing will be cemented in 1 stage with 100' of cement overlap above intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.

	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	6,070	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Lead	6,170	10,323	0.2291	1.15	2,725	485	1.59	1,714	13.2
					2,750	490		1,730	

Calculations based on 15% excess for open hole and 100' overlap into intermediate casing. Actual volumes will vary.

Cement calculations are used for volume estimation. Well conditions will dictate final cement job design. Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected. All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

IV. **COMPLETION**

A. **CBL**

CBLs and/or Temperature Surveys will be performed as needed or required to determine cement top if cement is not circulated.

B. **PRESSURE TEST**

- C. Pressure test 5-1/2" casing to 0.22 psi/ft * 6,654' TVD = 1464 psi for 30 minutes. Increase pressure to Open RSI sleeves.



D. STIMULATION

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

E. PRODUCTION TUBING

2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-36 months after completion.

*NOTE: Although this horizontal well may be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 8(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 8(2) NMAC, 19.15.16.15 8(2)NMAC, and 19.15.16.15. 8(4) NMAC.



3M 11" B.O.P.E Diagram

