State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez

Governor

David Martin Cabinet Secretary David R. Catanach Division Director
Oil Conservation Division



Brett F. Woods, Ph.D. Deputy Cabinet Secretary

NMOCD Approved by Signature

New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 7-29-15 Well information; Operator Logos, Well Name and Number Logos J; carilla #24D
API#30-039-31339, Section 24, Township 26 NS, Range 05 E/W
Conditions of Approval: (See the below checked and handwritten conditions) Notify Aztec OCD 24hrs prior to casing & cement.
o 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
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.
HOND CIM FOR Updated place, Surially for paul crienty

11-6-2015 Date

OIL CONS. DIV DIST. 3

NOV 02 2015

UNITED STATES

DEPARTMENT OF THE INTERIOR

Form 3160-3 (March 2012)



JUL 3 0 2015 BUREAU OF LAND MANAGEMENT armington Field Office

APPLICATION FOR PERMIT TO DRILL OF A MANAGEMENT AND MANAGEMENT ARMINGTON FOR PERMIT TO DRILL OF A MANAGEMENT AND MANAGEME

FORM APPROVED OMB No. 1004-0137 Expires October 31, 2014

Lease Serial No. Jicarilla Apache Lease #108

6. If Indian, Allotee or Tribe Name Jicarilla Apache Nation

la. Type of work: ✓ DRILL REE	NTER			I if Unit of CA Agi	reement, Name and No.	
lb. Type of Well: Oil Well Gas Well Other	Lease Name and Well No. Logos Jicarilla 24D					
2. Name of Operator Logos Operating, LLC				9. API Well No. 30-039-	31 339	
3a. Address 4001 North Butler Ave, Building 7101 Farmington, NM 87401	3b. Phone 505-330-	No. (include area code) -9333		10. Field and Pool, or Exploratory Basin Mancos		
Location of Well (Report location clearly and in accordance with At surface 807' FNL 215' FWL, NW/NW At proposed prod. zone same as above	arry State requir	rements.*)		11. Sec., T. R. M. or 1 Sec 24, T26N R05	Blk. and Survey or Area 5W, UL D	
 Distance in miles and direction from nearest town or post office* miles NE of Counselor, NM 				12. County or Parish Rio Arriba	13. State NM	
15. Distance from proposed* 1833' FSL property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of 2560.0 a	N/2 = 3		ing Unit dedicated to this well 320 Acres		
to pegreet well drilling completed 1040 Jicarilla C 219		15: 1 roposed Depth		BLM/BIA Bond No. on file A 1062402		
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6644' GL	22 Appro 10/01/20	ximate date work will s	tart*	23. Estimated duration 45 days		
	24. Att	achments				
The following, completed in accordance with the requirements of One	shore Oil and Ga	as Order No.1, must be	attached to t	his form:		
 Well plat certified by a registered surveyor. A Drilling Plan. A Surface Use Plan (if the location is on National Forest Systes SUPO must be filed with the appropriate Forest Service Office). 	em Lands, the	Item 20 above 5. Operator certification). fication		existing bond on file (see s may be required by the	
25. Signature Crash		e (Printed Typed) ty Graham			Date 07/29/2015	
Production Engineer						
Approved by (Signajur) Man Recelotes	Nam	e (Printed Typed)			Date 10/30/18	
Title AFM	Offic	FF	٥			
Application approval does not warrant or certify that the applicant h	olds legal or equ	uitable title to those rig	hts in the sul	bject lease which would e	entitle the applicant to	

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

conduct operations thereon.

Conditions of approval, if any, are attached.

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER **AUTHORIZATION REQUIRED FOR OPERATIONS** ON FEDERAL AND INDIAN LANDS

MOCDA

*(Instructions on page 2)



DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"

DISTRICT I
1625 M. Frunch Dr., Hobbs, M.M. 88240
Phone: (575) 363-6161 Fax: (575) 363-0720
DISTRICT II
611 S. Frut St., Artesia, M.M. 86210
Phone: (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Ric Braucs Rd., Astec, M.M. 67410
Phone: (505) 334-6176 Fax: (505) 334-6170
DISTRICT IV
1230 S. St. Francis Dr., Santa Fe, NM 67505
Phone: (505) 478-3480 Fax: (505) 478-3482

State of New Mexico Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

*Very Name LOGOS JICARILLA **GORDEN No. **Property Name LOGOS DICARILLA **Coperator Name LOGOS OPERATING, LLC **Surface Location UL or lot no. **Section Township Range Lot Idn Peet from the North/South line Peet from the Rant/Feet line County **I Bottom Hole Location If Different From Surface UL or lot no. **Section Township Range Lot Idn Peet from the North/South line Peet from the Rant/Feet line County **Property Name LOGOS OPERATING, LLC **Surface Location UL or lot no. **Section Township Range Lot Idn Peet from the North/South line Peet from the Rant/Feet line County **Property Name Logos OPERATING, LLC **Surface UL or lot no. **Section Township Range Lot Idn Peet from the North/South line Peet from the Rant/Feet line County **Property Name Logos OPERATING, LLC **Surface Location **I Bottom Hole Location If Different From Surface UL or lot no. **Section Township Range Lot Idn Peet from the North/South line Peet from the Rant/Feet line County **Property Name Location Peet from the Rant/Feet line County **Property Name Location Peet from Surface **I Bottom Hole Location If Different From Surface **UL or lot no. **Section Township Range Lot Idn Peet from the North/South line Peet from Surface **I Bottom Hole Location If Different From Surface **I Bottom Hole Location In Bot	30-039-31339 Pool Code 97232				*Pool Name BASIN MANCOS							
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LOGOS JICARILLA 24D

Note: This procedure will be adjusted on site based on actual conditions.

I. Location: 807' FNL & 215' FWL

Sec 24, T26N, R05W Rio Arriba County, NM Date: July 27, 2015

Field: Mancos

Mancos

Elev: GL 6,644'

Surface: Tribal Minerals: Tribal

II. Geology: Surface formation, San Jose

a. Note: tops estimated

Formation Tops	Depths			
Ojo Alamo	2556'			
Kirtland	2765'			
Fruitland	2836'			
Pictured Cliffs	3127'			
Lewis	3185'			
Chacra	4033'			
Cliff House	4809'			
Menefee	4893'			
Point Lookout	5321'			
Mancos	5531'			
Gallup	6347'			
Greenhorn Member-Mancos	7237'			
Graneros Shale	7293'			
Dakota	7336'			
Total Depth Proposed	7336'			

Estimated depths of anticipated water, oil, gas, and other mineral bearing formations, which are expected to be encountered:

Water and gas- 3127', 4033', 4809', and 5321' Water, gas, and oil- 5531', and 6347'

- b. Logging Program: Induction/GR and density/neutron logs from TD to the surface casing point. Mud logs will be run from below the surface casing to TD. No DST's or cores are planned for this well. Cased hole GR/CCI and CBL logs will be run from PBTD to surface.
- c. No over pressured zones are expected in this well. No H_2S zones will be penetrated in this well. Max BHP = 3176 psig. Lost circulation zones may be encountered in the Mesa Verde group and Niobrara sections.

III. Drilling

a. Contractor: To be determined.

b. Mud Program:

The surface hole will be drilled with a fresh water mud.

The production hole will be drilled with a fresh water mud and will use bentonite to increase the viscosity. The weighting material will be drill solids or if conditions dictate, barite. The maximum mud weight expected in 9.2 ppg. The water loss will be controlled to a 6-8 cc/30 min. and loss circulation will be controlled with cedar fiber, paper, etc.

The Mancos, and Gallup formations will all be considered for completion in this well. A completion procedure will be developed after evaluating the wireline and mud logs.

c. Minimum Blowout Control Specifications:

Double ram type 2000 psi working pressure BOP with a rotating head. See the attached Exhibit #1 for details on the BOP equipment. All ram type preventers and related equipment will be hydraulically tested at nipple-up to 250 psi (Low) for 5 minutes and 1,500 psi (High) for 10 minutes. All tests and inspections will be recorded in the daily drilling tour book.

The blind rams will be hydraulically activated and checked for operational readiness each time pipe is pulled out of the hole. All checks of the BOP stack and equipment will be noted on the daily drilling report. The BOP equipment will include a kelly cock, floor safety valve, and choke manifold all rated to 2000 psi.

IV. Materials

a. Casing Program

Hole Size	Depth	Casing Size	Wt. & Grade
12-1/4"	500'	9-5/8"	36# J or K-55
7-7/8"	7336'	5-1/2"	17# P-110

b. Float Equipment:

- i. Surface Casing: Notched collar, aluminum insert float in the first collar, and 3 centralizers on the bottom 3 joints.
- ii. Production Casing: 5-1/2" cement float shoe and self-fill insert float collar. Place float one joint above shoe. Place DV tool at 5681'. Place ten centralizers spaced every other joint above the shoe, two turbolizers on the collars below the DV tool and two turbolizers above the DV tool. Place five turbolizers every third joint from the top of the well.

V. Cementing:

Note: Cement volumes will be adjusted based on actual conditions.

Surface casing: 9-5/8" – use 225 sx (266) cu. ft.) of Type V with 2% $CaCl_2$ and $\frac{1}{4}$ #/sk Celloflake (Yield = 1.18 cu. ft./sk; slurry weight = 15.6 PPG). 100% excess to circulate cement to surface. WOC 12 hours. Pressure test surface casing to 1500 psi.

Production casing: 5-1/2" – Before cementing circulate hole with at least 1-1/2 hole volumes of mud. Precede cement with 30 bbls of fresh water. 1st stage: Lead with 260 sx (458 cu. ft.) of Cl "B" 65/35 poz with 6% gel, 1% CaCl₂, 4% Phenoseal, and ¼ #/sx Celloflake (Yield = 1.6 cu. ft./sk; slurry weight – 12.8 PPG)> Tail with 100 sx (146 cu. ft.) of Cl "B" 50/50 poz with 0.15% dispersant, 1% CaCl₂ and ¼#/sk. Celloflake. (Yield 1.46 cu.ft./sk; slurry weight = 13.0 PPG). 2nd stage: Precede cement with 20 bbls of water. Lead with 600 sx (1056 cu. ft.) Cl "B" 65/35 poz with 6% gel, 1% CaCl₂, and ¼#/sx Celloflake (Yield = 1.76 cu. ft./sk; slurry weight = 12.8 PPG). Tail with 100 sx (146 cu. ft.) of Cl "B" 50/50 poz with 0.15% dispersant, 1% CaCl₂, and ¼#/sk. Celloflake. (Yield = 1.46 cu. ft./sk; slurry weight = 13.0 PPG). Total cement volume is 1806 cu. ft. (50% excess to hole volume to circulate cement to surface).

LOGOS OPERATING, LLC. MULTI-POINT SURFACE USE PLAN

b. Pipeline: A 106.0' up to 3-inch outside diameter, steel gas pipeline is proposed, see attached Plat #5. The entire length of the pipeline will parallel the proposed access road on tribal land. This well will be connected to the Williams Four Corners W-6 pipeline in the NW/NW of Section 24, T26N, R05W. Operator will request a 30-foot right-of-way for the pipeline. When parallel with the access road, construction width of the pipeline workspace will be restricted to 50-feet of disturbance. All buried pipelines will be buried to a minimum depth of 3-feet, except at road crossings where they will be buried to a depth of 4-feet.

Water Supply:

Water for drilling and completion operations will be hauled by truck from various permitted water sources within the area as agreed with the Jicarilla Apache Tribe. Produced water may also be recycled for use in drilling and completion activities. New Mexico Administrative Code (NMAC) Rule 19.15.34.12 allows the disposition of produced water for use as a drilling or completion fluid at a drilling site. Drill pit water will be recycled as much as reasonable.

6. Source of Construction Materials:

No additional construction materials will be required to build the proposed location.

7. Methods for Handling Waste Disposal:

- a. The drill cuttings and fluids will be placed in the reserve pit. The reserve pit will be lined with a 20 mil liner and fenced prior to drilling. The reserve pit will be allowed to dry, and materials remaining in the reserve pit buried. The reserve pit will be backfilled, leveled and contoured so as to prevent any materials being carried into the watershed. Upon completion, the pad will be leveled, contoured and reseeded with the appropriate seed mixture.
- b. If the NMOCD does not approve the use of a temporary pit the well will be drilled with a closed loop system and the fluids/cutting will be hauled to an approved disposal facility.
- Drilling mud that cannot be re-used will be disposed of at a properly permitted facility.
- d. All garbage and trash will be placed in a metal trash basket. It will be hauled off and dumped in an approved land fill upon completion of operations.
- e. Portable toilets will be provided and maintained during drilling operations. See Plat #9 for location.

8. Ancillary Facilities:

No ancillary facilities are required.

9. Well Site Layout:

A cross section of the drill pad with approximate cuts, fills, and pad orientation are attached as Plats #7 and #8. Location of drilling equipment, rig orientation, and access road approach is also attached as Plat #9.

As per the on-site on July 21, 2015 the following will apply for location construction:

- a. The pit will be "stepped-down" into the cut.
- b. 18" or greater culvert at take-off for access.
- c. Divert water around pad with top soil.
- d. Plan to use top soil for interim reclamation.

Please note "Conditions of Approval" for any additional stipulations.

Directions from the Intersection of Hwy 550 & Hwy 64 in Bloomfield, NM To:

LOGOS OPERATING, LLC.
LOGOS JICARILLA #24D
807' FNL & 215' FWL,
Section 24, T26N, R5W, N.M.P.M., Rio Arriba,
New Mexico
Latitude: 36° 28' 38.194" N
Longitude: 107° 19' 06.888" W
NAD 1983

Go south on Hwy 550 for 66.2 miles
To the Int. Hwy 550 and Hwy 537,
Turn left (northerly) on Hwy 537 for 28.1 miles to J-6 road
Turn left (west) on J-6 road 7.0 miles,
Stay right (northwest) 0.6 miles,
Turn left (westerly) 0.4 miles,
Turn right (northwesterly) 0.5 miles,
beginning of new access on left (west)side of the field road,
which continues for 237.96' to newly staked location.

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

