

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



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: 10/21/2016

Well information;

Operator LOGOS Operating Well Name and Number LOGOS 2406 29H CO M 13

API# 30-039-31359, Section 29, Township 24 N/S, Range 6 E/W

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

- Notify Aztec OCD 24hrs prior to casing & cement.
- Hold C-104 for ^{deviation} 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.

See revised C-102
attached to Sunday
Next document in
well file.


NMOCD Approved by Signature

4-24-2017
Date

RECEIVED

OCT 21 2016

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

Farmington Field Office
Bureau of Land Management

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM117140
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input checked="" type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No. NMNM-135257
2. Name of Operator LOGOS Operating, LLC		8. Lease Name and Well No. LOGOS 2406 29H Com 13
3a. Address 2010 Afton Place, Farmington, NM 87415	3b. Phone No. (include area code) 505-324-4145	9. API Well No. 30-039-31359
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 2410' FNL 330' FEL, SE/NE At proposed prod. zone same		10. Field and Pool, or Exploratory Devils Fork Gallup (Associated)
14. Distance in miles and direction from nearest town or post office* 5 miles north of Counselor, NM		11. Sec., T. R. M. or Blk. and Survey or Area Sec 29, T24N, R06W, UL H
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) N/A 330	16. No of acres in lease 160	12. County or Parish Rio Arriba
17. Spacing Unit dedicated to this well S2/NE4 = 80 Acres	13. State NM	18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A
19. Proposed Depth 6452'	20. BLM/BIA Bond No. in file BLM NMB000917	21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6891'
22. Approximate date work will start* 12/15/16	23. Estimated duration 45 days	24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature <i>Tamra Sessions</i>	Name (Printed/Typed) Tamra Sessions	Date 10/21/16
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Title
Regulatory Specialist

Approved by (Signature) <i>Chip Harvaden</i>	Name (Printed/Typed) Chip Harvaden	Date 4/12/17
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Title Regulatory Specialist <i>Acting AFM</i>	Office FFO
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Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

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.

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

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

OIL CONS. DIV DIST. 3

*(Instructions on page 2)

APR 13 2017

**LOGOS OPERATING, LLC.
DRILLING PLAN**

LOGOS 2406 29H Com 13

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

I. Location: 2410' FNL & 330' FEL Date: October 14, 2016
 Sec 29, T24N, R06W
 Rio Arriba County, NM

Field: Gallup Elev: GL 6,891'
Surface: BLM
Minerals: BLM

II. Geology: Surface formation, San Jose

a. Note: tops estimated

Formation Tops	Depths
Ojo Alamo	1658'
Kirtland	1805'
Fruitland	1971'
Pictured Cliffs	2229'
Lewis	2335'
Chacra	3061'
Cliff House	3798'
Menefee	3822'
Point Lookout	4532'
Mancos	4758'
Gallup	5458'
Greenhorn Member-Mancos	6452'
Graneros Shale	--'
Dakota	--'
Total Depth Proposed	6452'

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

Water and gas- 1971', 2229', 3061', 3798, and 4532'

Water, gas, and oil- 4758', and 5458'

- 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 PBSD to surface.
- c. No over pressured zones are expected in this well. No H₂S zones will be penetrated in this well. Max BHP = 2793 psig. Lost circulation zones may be encountered in the Mesa Verde group and Niobrara sections.

**LOGOS OPERATING, LLC.
DRILLING PLAN**

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 Charca, Cliff House, Menefee, Point Lookout, 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"	330'	9-5/8"	36# J or K-55
7-7/8"	6452'	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 4908'**. 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.

LOGOS OPERATING, LLC.
DRILLING PLAN

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% CaCl₂ and ¼ #/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).

pad would require a maximum fill of approximately 7 feet at the western corner (corner 6), and a maximum cut of 10 feet at the southeastern edge (corners 5 and 4). No additional surfacing materials would be required for construction.

5. Well pad construction would involve preparing a level area for the equipment that would drill and complete the well. The well pad would be irregularly shaped resulting in approximately 1.87 acres of new surface disturbance. In addition, the operator has proposed a 50-foot construction buffer around the perimeter of the well pad except for on the southwest side where the buffer would be 75-feet. The construction buffer would create an additional 1.60 acres of new surface disturbance. The total permitted area for the construction of the well pad would be 3.47 acres.
6. The well pad would be constructed from the earthen materials present on-site or imported from a predetermined borrow pit. Imported fill material would be weed-free and authorized. The additional fill would be brought in from off-site. No concrete or other foreign materials would be brought in for use in construction of the well pad.
7. Stormwater would be diverted to flow from the eastern side of the well pad around the northeastern corner (corners B and C) along the northern portion of the well pad and back into the natural drainage to the west and from the southwestern side of the well pad around corner 5 and along the western side of the well pad back into the natural drainage just beyond the northwest corner of the pad. See Exhibit 6.
8. The operator has proposed a 135-foot by 75-foot temporary reserve pit along the western portion of the pad.
9. Construction of the well pad would take approximately 7-10 days.

1.7. Methods for Handling Waste

Cuttings

1. Cuttings would be stored in an onsite reserve pit located on the western side of the well pad.
2. NMOCD pit rules and Onshore Orders 1 would be followed regarding placement, operation, and closure of the reserve pit.
3. A ≥ 20 mil plastic liner will be installed in the reserve pit.
4. Fencing would be constructed around three sides of the pit during drilling, and around the fourth side after the drilling rig leaves the wellhead. The fences would remain intact and in good condition until the pits are dried and backfilled.
5. Pit contents will be buried and/or hauled to a NMOCD approved disposal site within 90 days of well completion.
6. No blow pit will be used in this project.

Drilling Fluids

1. Drilling fluids would be stored onsite in above-ground storage tanks (ASTs). Upon termination of drilling operations, the drilling fluids would be recycled and transferred to other permitted locations or returned to the vendor for re-use, as practical. Residual fluids would be vacuumed from the storage tanks and disposed of at an appropriate waste disposal facility.
2. Drilling fluid storage tanks would be adequately sized to ensure confinement of all fluids and would provide sufficient freeboard to prevent uncontrolled releases.
3. The ASTs would be located on the well pad. A berm would be constructed along the perimeter of the well pad, providing secondary containment.

Flowback Water

1. The water-based solution that flows back to the surface during and after completion operations would be placed in storage tanks on location.
2. Flowback water would be confined to ASTs for a period not to exceed 90 days after initial production and would be disposed of in an approved disposal facility, or recycled.
3. The ASTs would be located on the well pad. A berm would be constructed along the perimeter of the well pad, providing secondary containment.

**Directions from the Intersection of Highway 550 and Highway
64 in Bloomfield, NM
to
LOGOS OPERATING, LLC
LOGOS 2406 29H COM #13
2410' FNL 330' FEL,
Section 29, T24N, R6W, N.M.P.M., RIO ARRIBA COUNTY,
New Mexico
Latitude: 36° 17' 02.62" N
Longitude: 107° 29' 02.65" W
Nad 1983**

**From the Intersection of Highway 550 & Highway 64
Go South on Hwy 550 for 49.1 miles to CR 0378
Just east of Lybrook Station,
turn left on CR0378 (north-northeasterly) for 1.2 miles,
Stay right (northeasterly) @ the Y-Intersection for 3.9 miles,
turn left (northerly) for 0.2 miles,
to the beginning of new access
on the leftt (west) side of the road.
Which continues (northerly) for 482.7' to the new well
location.**

LOGOS OPERATING, LLC.
DRILLING PLAN

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

**Exhibit #1
Typical BOP setup**

Location: San Juan Basin, New Mexico

Date: August 24, 2004
By: John Thompson (Welsh E&P)

