State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez

Governor

David Martin

Cabinet Secretary-Designate

Jami Bailey, Division Director Oil Conservation Division



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

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: 4/24/14 Well information; Operator Logo: , Well Name and Number Henos 2 M
API# 30-045-35542-Section 4, Township 23 No. Range 8 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

- o 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
- 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.

NMOCD Approved by Signature

Date

Fong 3li60-3 (March 2012)

RECEIVED

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

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

APR 24 2014

Expires October 31,

5. Lease Serial No.

NM109398

la. Type of work: DRILL REEL	7. If Unit or CA Agreement, Name and No.				
lb. Type of Well: Oil Well Gas Well Other	8. Lease Name and Well No. Heros 2M				
2. Name of Operator Logos Operating, LLC	9. API Well No.				
3a. Address 4001 N. Butler Ave, Bldg 7101 Farmington, NM 87401		10. Field and Pool, or Exploratory Basin Mancos			
4. Location of Well (Report location clearly and in accordance with		11. Sec., T. R. M. or Blk. and Survey or Area			
At surface 415' FSL & 400' FWL UL M(SW/SW)		Sec 4, T23N, R08W			
At proposed prod. zone same					. •
Distance in miles and direction from nearest town or post office* d miles southeast of Nageezi				12. County or Parish San Juan	13. State NM
5. Distance from proposed* location to nearest property or lease line, ft. 400' from western edge of Sec	4	16. No. of acres in lease 17. Spacing Unit dedicated to 40 acres SW4/SW4		g Unit dedicated to this was SW4/SW4	IL CONS. DIV DI
(Also to nearest drig. unit line, if any)		163		U	
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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

(Continued on page 2)

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

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

*(Instructions on page 2)

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.

DISTRICT I 1625 H. French Dr., Hobbs, N.M. 88240 Phone: (675) 393-6161 Fax: (675) 393-0720 DISTRICT II 811 S. First St., Artesia, N.M. 88810 Phone: (676) 748-1283 Fex: (676) 748-9720 DISTRICT III 1000 Rio Bressos Bd., Asteo, H.M. 87410 Phone: (505) 334-6178 Fer: (505) 334-6170

State of New Mexico
Energy, Minerals & Natural Resources Department

Revised August 1, 2011

APR Submit one copy to appropriate
District Office

Farmington Field Office Bureau of Land Management

OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, NM 87505

Property Code 1 Property Name HEROS 1 OOZM		Number			² Pool Code	77232		Pool Name BASIN MAN		
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Logos Operating, LLC Operations Plan Heros 2M

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

Location: 415' FSL & 400' FWL

Date: April 23, 2014

Sec 4, T23N R08W San Juan County, NM

Field: Mancos

I.

Elev: GL 6.844'

Surface: Federal Minerals: Federal

II. Geology: Surface formation: Nacimiento

a. (Note: tops estimated from Warner-Caldwell 1A)

Formation Tops	Depths			
Ojo Alamo	849'			
Kirtland	1065'			
Fruitland				
Pictured Cliffs				
Lewis				
Chacra				
Cliff House				
Menefee				
Point Lookout	3953'			
Mancos	4080'			
Niobrara Member				
Sanostee Member-Mancos	5684'			
Greenhorn Member-Mancos	5925'			
Ganeros Member-Mancos	5996'			
Total Depth	6400'			

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

Water and gas- 1483' and 3953' Water, gas, and oil- 4080' and 5684'

- 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 = 2850 psig. Lost circulation zones may be encountered in the Mesa Verde group and Niobrara sections.

III. Drilling

- a. Contractor:
- 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"	330'	9-5/8"	36# J-55
7-7/8"	6400'	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 4230'.**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% 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. 1^{st} 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). 2^{nd} 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% dispersand, 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).

Date

Tamra Sessions

Operations Technician

- d. After trenching and pipe placement in the trench, the soils excavated from the trench would be returned and compacted to prevent subsidence. The trench would be compacted after approximately two feet of fill is placed within the trench and after the ground surface has been leveled.
- e. Construction of the pipeline will take approximately 2 weeks.

G. Methods for Handling Waste Disposal:

1. Cuttings

a. The drill cuttings and drilling fluids will be placed in a reserve pit. The reserve pit will be lined with a 20 mil string re-enforced material and constructed to meet the NMOCD pit guidelines. The reserve pit will be fenced prior to drilling. After drilling, any free liquids in the pit will be disposed of at the appropriate waste disposal facilities. The solids in the reserve pit will be allowed to dry, tested, and buried according to NMOCD pit rules.

2. Flowback Water

- a. The water-based solution that flows back to the surface during and after completion operations will be placed in storage tanks on location.
- b. Flowback water will be confined to a storage tank for a period not to exceed 90 days after initial production and will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities, or recycled.
- 3. Spills any spills of non-freshwater fluids will be immediately cleaned up and removed to an approved disposal site.
- 4. Sewage self-contained, chemical toilets will be provided for human waste disposal. The toilet holding tanks will be pumped, as needed, and the contents thereof disposed of in an approved sewage disposal facility. The toilets will be onsite during all operations.
- 5. Garbage and other waste material garbage, trash, and other waste materials will be collected in a portable, self-contained and fully-enclosed trash container during drilling and completion operations. The accumulated trash will be removed, as needed, and will be disposed of at an authorized sanitary landfill. No trash will be buried or burned on location.
- 6. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash container will be cleaned up and removed from the well location.

- 7. No chemicals subject to reporting under SARA Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completion of this well.
- 8. No extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completion of this well.

H. Ancillary Facilities:

1. Standard drilling operation equipment that will be on location includes: drilling rig with associated equipment, temporary office trailers equipped with sleeping quarters for essential company personnel, toilet facilities, and trash containers.

I. Well Site Layout:

- 1. The proposed well pad layout is shown in Sheets F1, F2, G1, and G2. Cross sections have been drafted to visualize cuts and fills across the location. Refer to Item F for construction materials and methods.
- 2. No permanent living facilities are planned. Office trailers equipped with living quarters will be provided on location during drilling and completions operations.
- 3. The production facility layout is being deferred until the well's production characteristics can be evaluated after completion. Refer to Sheet G1 for the proposed well pad layout during drilling activities and Sheet G2 for the proposed well pad layout during completions activities.

J. Plans for Surface Reclamation:

- 1. It has been determined that the project area is within Sagebrush/Grass Community. A seed mixture was chosen for use in reclamation using the BLM seed pick list for the Sagebrush/Grass Community. Please see Reclamation Plan (Appendix A).
- 2. The proposed project falls under the BLM Vegetation Reclamation Procedure B for surface disturbing actions, grants, or permits authorized by the BLM-FFO resulting in bare mineral soil across an area greater than or equal to 1 acre, not including a BLM-FFO approved working area. Logos would be responsible for reclamation monitoring on Lease #NM 109398 in Section 4. The BLM-FFO would be responsible for reclamation monitoring off lease in Section 9. A site-specific Reclamation Plan is located in Appendix A. The BLM will be contacted 48 hours prior to reclamation activities.

Directions from the Intersection of Highway 550 and Highway 64 in Bloomfield, NM

to

LOGOS OPERATING, LLC HEROS #002M 415' FSL 400' FWL,

Section 4, T23N, R8W, N.M.P.M., San Juan County,

New Mexico

Latitude: 36° 15' 00.607" N Longitude: 107° 41' 40.016" W

Nad 1983

From the Intersection of Highway 550 & Highway 64
Go South on Hwy 550 for 40.1 miles,
turn left (north-northwesterly) for 0.3 miles on 2-track
To the beginning of new access
on the left (west) side of the field road and
continues (west-northwesterly) for 291.52'
to the new location.

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

