State of New Mexico
Energy, Minerals and Natural Resources Department

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 Logos, Well Name and Number Heros 2M
API# 30-045-35542, Section 4, Township 29 (N)/S, 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
- o 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
- o 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
- o 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.

Charlie Perrin
NMOCD Approved by Signature

8-11-2014
Date

Form 3160-3
(March 2012)

RECEIVED
APR 24 2014
Farmington Field Office
Bureau of Land Management

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NM109398

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.:

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.: Heros 2M

2. Name of Operator: Logos Operating, LLC

9. API Well No.: 30-045-35542

3a. Address: 4001 N. Butler Ave, Bldg 7101, Farmington, NM 87401

3b. Phone No. (include area code): 505-330-9333

10. Field and Pool, or Exploratory: Basin Mancos

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface: 415' FSL & 400' FWL UL M(SW/SW)
At proposed prod. zone: same

11. Sec., T. R. M. or Blk. and Survey or Area: Sec 4, T23N, R08W

14. Distance in miles and direction from nearest town or post office*: 4 miles southeast of Nageezi

12. County or Parish: San Juan

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 400' from western edge of Sec 4

16. No. of acres in lease: 639.60 acres

17. Spacing Unit dedicated to this well: 40 acres SW4/SW4

OIL CONS. DIV DIST. 3
AUG 05 2014

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 1160' from Warner-Cald well 1A, S8 T23N R8W

19. Proposed Depth: Approx. 6400'

20. BLM/BIA Bond No. on file: BLM NMB000917

21. Elevations (Show whether DF, KDB, RT, GL, etc.): GL 6844'

22. Approximate date work will start*: 06/15/2014

23. Estimated duration: 40 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature: Tamra Sessions — Name (Printed/Typed): Tamra Sessions — Date: 4-24-14

Title: Operations Technician

Approved by (Signature): /s/ Maurice Ellis — Name (Printed/Typed): — Date: 8/4/14

Title: AFM — Office: FFO

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.

(Continued on page 2)

*(Instructions on page 2)

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"

NMOCD

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

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 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
Energy, Minerals & Natural Resources Department

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

RECEIVED
APR 24 2014
Farmington Field Office
Bureau of Land Management

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-045-35542	97232	BASIN MANCOS

4 Property Code	5 Property Name	6 Well Number
313147	HEROS	002M

7 OGRID No.	8 Operator Name	9 Elevation
289408	LOGOS OPERATING, LLC	6844'

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
M	4	23-N	8-W		415	SOUTH	400	WEST	SAN JUAN

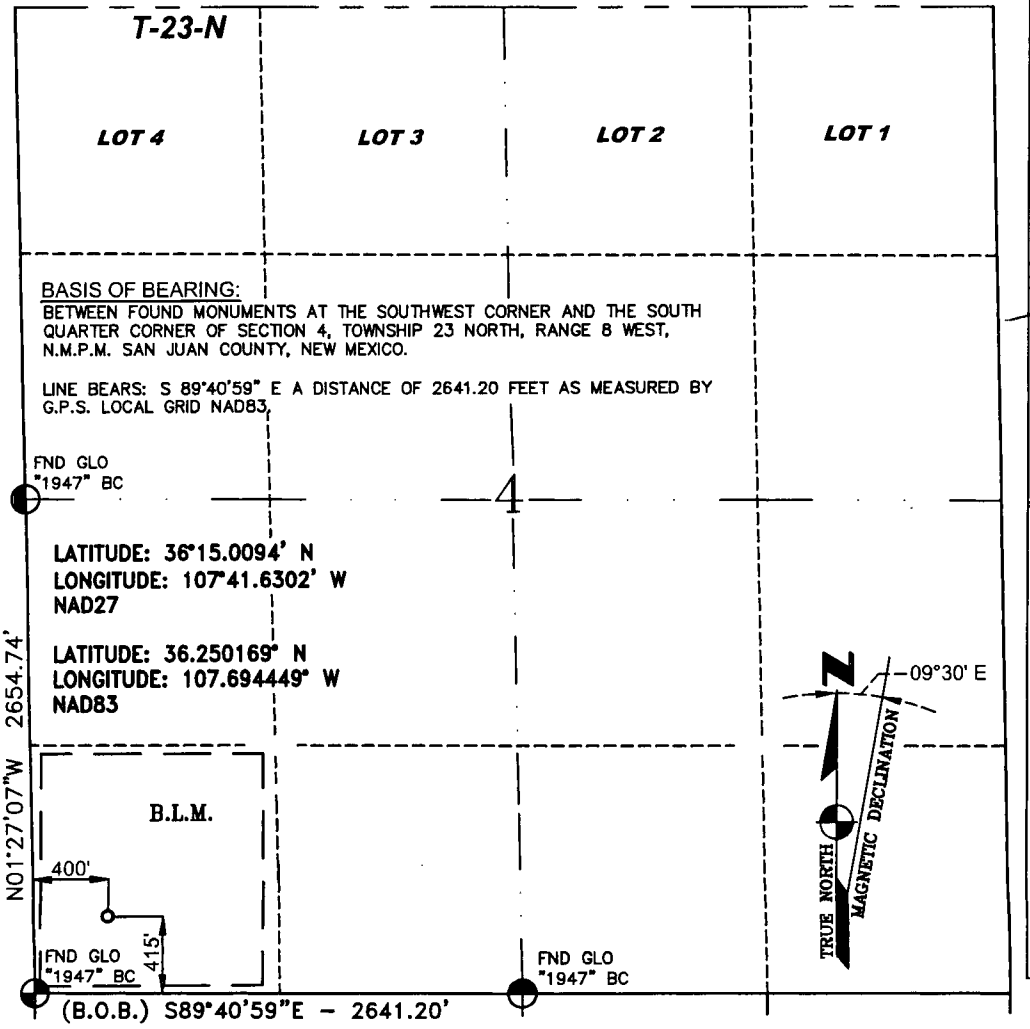
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
40.00 ACRES SW/SW			

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

16



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 a working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Tam Sessions 4-24-14
Signature Date

Tamra Sessions
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.

FEBRUARY 19, 2014
Date of Survey

Signature and Seal of Professional Surveyor:

GLEN W. RUSSELL NEW MEXICO 15703 LICENSED PROFESSIONAL SURVEYOR

GLEN W. RUSSELL
Certificate Number 15703

Logos Operating, LLC
Operations Plan
Heros 2M

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

I. Location: 415' FSL & 400' FWL
Sec 4, T23N R08W
San Juan County, NM

Date: April 23, 2014

Field: Mancos
Surface: Federal
Minerals: Federal

Elev: GL 6,844'

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% $CaCl_2$ 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% $CaCl_2$, 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% $CaCl_2$ 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% $CaCl_2$, 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% $CaCl_2$, 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).

4-23-14
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.

Sheet C

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

Location: San Juan Basin, New Mexclo

Date: August 20, 2001
By: John Thompson (Walsh E&P)