

AUG 07 2018

Form 3160-3  
(March 2012)

# Carlsbad Field Office OCD Artesia

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

DISTRICT II-ARTESIA O.C.D.

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

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM018831
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator MACK ENERGY CORPORATION		7. If Unit or CA Agreement, Name and No.
3a. Address 11344 Lovington HWY Artesia NM 88211		8. Lease Name and Well No. NOME FEDERAL 1H 322228
3b. Phone No. (include area code) (575)748-1288		9. API Well No. 30-015-45151
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface NESW / 1700 FSL / 1675 FWL / LAT 32.9499947 / LONG -104.1667867 At proposed prod. zone LOT 3 / 5 FNL / 1765 FWL / LAT 32.965222 / LONG -104.1667755		10. Field and Pool, or Exploratory DIAMOND MOUND / SAN ANDRES
11. Sec., T. R. M. or Blk. and Survey or Area SEC 3 / T16S / R28E / NMP		12. County or Parish EDDY
13. State NM		14. Distance in miles and direction from nearest town or post office* 30 miles
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1700 feet	16. No. of acres in lease 1249.63	17. Spacing Unit dedicated to this well 160
18. Distance from proposed location* to nearest well, drilling, completed, 1320 feet applied for, on this lease, ft.	19. Proposed Depth 2585 feet / 7474 feet	20. BLM/BIA Bond No. on file FED: NMB000286
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3633 feet	22. Approximate date work will start* 07/01/2018	23. Estimated duration 20 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:

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

25. Signature (Electronic Submission)	Name (Printed/Typed) Deana Weaver / Ph: (575)748-1288	Date 04/04/2018
Title Production Clerk		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 07/16/2018
Title Assistant Field Manager Lands & Minerals	Office CARLSBAD	

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)

**APPROVED WITH CONDITIONS**  
Approval Date: 07/16/2018

RECEIVED

AUG 07 2018

Rev 8-9-18

DISTRICT II-ARTESIA O.C.D.

## INSTRUCTIONS

**GENERAL:** This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

**ITEM 1:** If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

**ITEM 4:** Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

**ITEMS 15 AND 18:** If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

**ITEM 22:** Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

**Additional Operator Remarks**

**Location of Well**

- 1. SHL: NESW / 1700 FSL / 1675 FWL / TWSP: 16S / RANGE: 28E / SECTION: 3 / LAT: 32.9499947 / LONG: -104.1667867 ( TVD: 0 feet, MD: 0 feet )  
PPP: LOT 14 / 4448 FNL / 1675 FWL / TWSP: 16S / RANGE: 28E / SECTION: 3 / LAT: 32.9530132 / LONG: -104.1667898 ( TVD: 2585 feet, MD: 2981 feet )  
BHL: LOT 3 / 5 FNL / 1765 FWL / TWSP: 16S / RANGE: 28E / SECTION: 3 / LAT: 32.965222 / LONG: -104.1667755 ( TVD: 2585 feet, MD: 7474 feet )

**BLM Point of Contact**

Name: Sipra Dahal  
Title: Legal Instruments Examiner  
Phone: 5752345983  
Email: sdahal@blm.gov

**CONFIDENTIAL**

## **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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# PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Mack Energy Corporation
LEASE NO.:	NMNM-018831
WELL NAME & NO.:	Nome Federal 1H
SURFACE HOLE FOOTAGE:	1700' FSL & 1675' FWL
BOTTOM HOLE FOOTAGE:	0005' FNL & 1675' FWL
LOCATION:	Section 03, T. 16 S., R 28 E., NMPM
COUNTY:	County, New Mexico

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

**Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

## B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

### Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

### Medium Cave/Karst

Possibility of water flows in the Queen, Salado, and Artesia Group.

Possibility of lost circulation in the San Andres, Grayburg, Salado, and Artesia Group formations.

1. The 9-5/8 inch surface casing shall be set at approximately 350 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the**

**lead cement slurry.**

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

2. The minimum required fill of cement behind the 7 X 5-1/2 inch production casing is:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
3. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

**C. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **psi (Operator installing a 3M BOP, testing to 2,000 psi)**.
3. The appropriate BLM office shall be notified a minimum of hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
- b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- c. The results of the test shall be reported to the appropriate BLM office.
- d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

#### **D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

#### **E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**JAM 071618**

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Mack Energy Corporation
LEASE NO.:	NMNM 018831
WELL NAME & NO.:	1H-NOME Fed
SURFACE HOLE FOOTAGE:	1700'S & 1675'W
BOTTOM HOLE FOOTAGE:	5'N & 1675'W
LOCATION:	T-16S, R-28E, S3. NMPM
COUNTY:	EDDY, NM

**TABLE OF CONTENTS**

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Cave/Karst
  - Hydrology
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

### **Cave and Karst Conditions of Approval for APDs**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production:

#### **Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

#### **No Blasting:**

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

#### **Pad Berming:**

- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

#### **Tank Battery Liners and Berms:**

Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

#### **Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

#### **Automatic Shut-off Systems:**

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

### **Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

#### **Rotary Drilling with Fresh Water:**

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

#### **Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

#### **Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

#### **Abandonment Cementing:**

Upon well abandonment in cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

#### **Pressure Testing:**

The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

### **Hydrology**

The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will

incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

### **F. EXCLOSURE FENCING (CELLARS & PITS)**

**Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

**G. ON LEASE ACCESS ROADS****Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**

Ditching shall be required on both sides of the road.

**Turnouts**

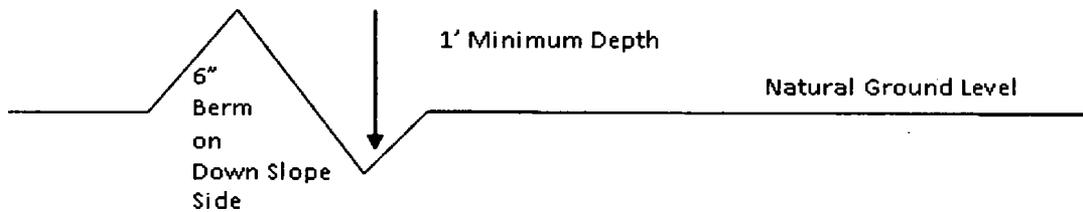
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out-sloping and in-sloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

### Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

### Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

### Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

### Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

**Construction Steps**

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

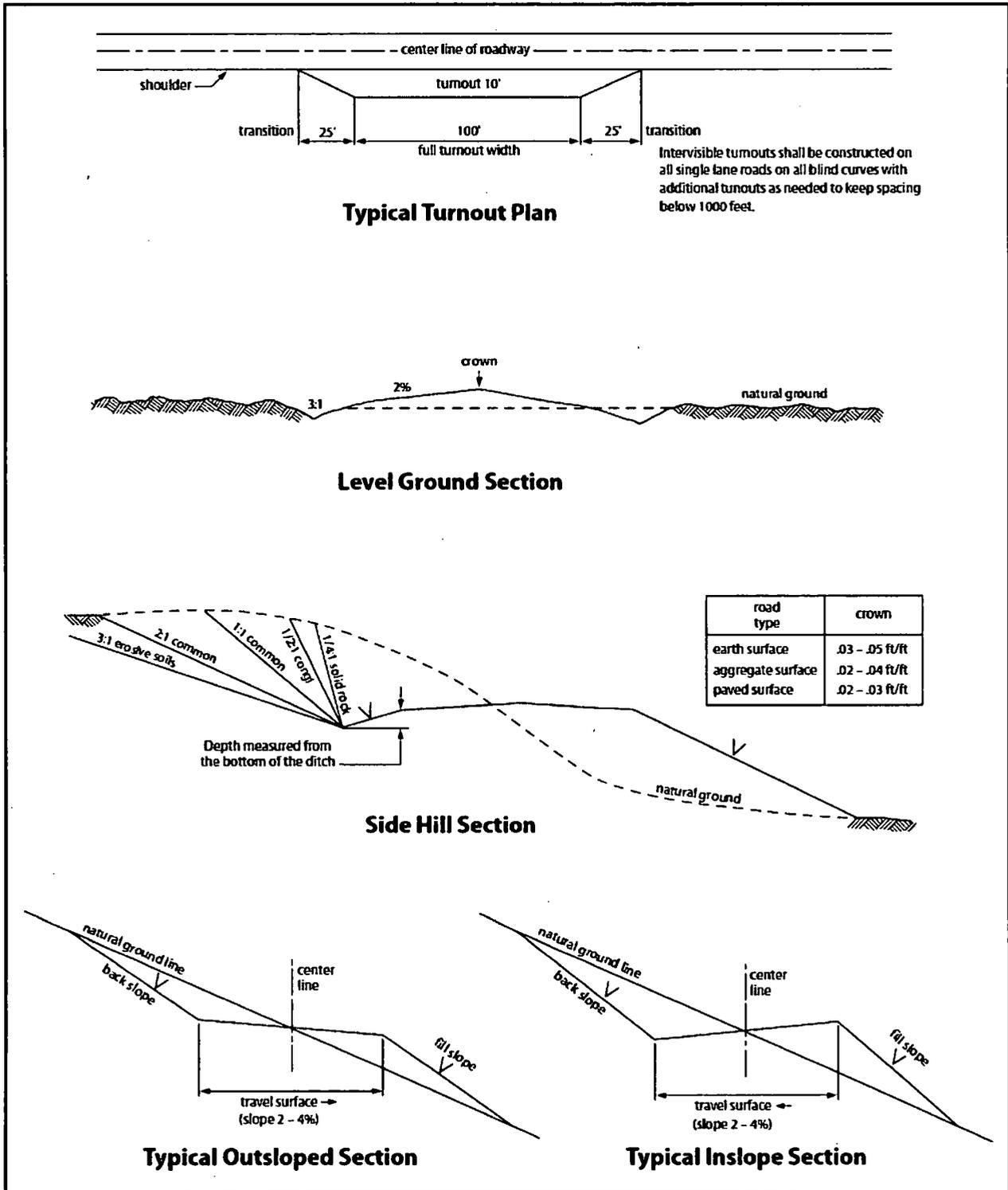


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## **VII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

### **VIII. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

### **IX. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

**Seed Mixture 1 for Loamy Sites**

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed shall be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre shall be doubled. The seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

**Operator Certification**

*I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.*

**NAME:** Deana Weaver

**Signed on:** 04/04/2018

**Title:** Production Clerk

**Street Address:** 11344 Lovington HWY

**City:** Artesia

**State:** NM

**Zip:** 88211

**Phone:** (575)748-1288

**Email address:** dweaver@mec.com

**Field Representative**

**Representative Name:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**



<b>APD ID:</b> 10400028069	<b>Submission Date:</b> 04/04/2018	<b>Highlighted data reflects the most recent changes</b>
<b>Operator Name:</b> MACK ENERGY CORPORATION		
<b>Well Name:</b> NOME FEDERAL	<b>Well Number:</b> 1H	<a href="#">Show Final Text</a>
<b>Well Type:</b> OIL WELL	<b>Well Work Type:</b> Drill	

**Section 1 - General**

<b>APD ID:</b> 10400028069	<b>Tie to previous NOS?</b> 10400027464	<b>Submission Date:</b> 04/04/2018
<b>BLM Office:</b> CARLSBAD	<b>User:</b> Deana Weaver	<b>Title:</b> Production Clerk
<b>Federal/Indian APD:</b> FED	<b>Is the first lease penetrated for production Federal or Indian?</b> FED	
<b>Lease number:</b> NMNM018831	<b>Lease Acres:</b> 1249.63	
<b>Surface access agreement in place?</b>	<b>Allotted?</b>	<b>Reservation:</b>
<b>Agreement in place?</b> NO	<b>Federal or Indian agreement:</b>	
<b>Agreement number:</b>		
<b>Agreement name:</b>		
<b>Keep application confidential?</b> YES		
<b>Permitting Agent?</b> NO	<b>APD Operator:</b> MACK ENERGY CORPORATION	
<b>Operator letter of designation:</b>		

**Operator Info**

<b>Operator Organization Name:</b> MACK ENERGY CORPORATION		
<b>Operator Address:</b> 11344 Lovington HWY		<b>Zip:</b> 88211
<b>Operator PO Box:</b>		
<b>Operator City:</b> Artesia	<b>State:</b> NM	
<b>Operator Phone:</b> (575)748-1288		
<b>Operator Internet Address:</b> jerrys@mec.com		

**Section 2 - Well Information**

<b>Well in Master Development Plan?</b> NO	<b>Mater Development Plan name:</b>	
<b>Well in Master SUPO?</b> NO	<b>Master SUPO name:</b>	
<b>Well in Master Drilling Plan?</b> NO	<b>Master Drilling Plan name:</b>	
<b>Well Name:</b> NOME FEDERAL	<b>Well Number:</b> 1H	<b>Well API Number:</b>
<b>Field/Pool or Exploratory?</b> Field and Pool	<b>Field Name:</b> DIAMOND MOUND	<b>Pool Name:</b> SAN ANDRES
<b>Is the proposed well in an area containing other mineral resources?</b> USEABLE WATER,NATURAL GAS,OIL		

Operator Name: MACK ENERGY CORPORATION

Well Name: NOME FEDERAL

Well Number: 1H

Describe other minerals:

Is the proposed well in a Helium production area? N Use Existing Well Pad? NO New surface disturbance?

Type of Well Pad: SINGLE WELL Multiple Well Pad Name: Number:

Well Class: HORIZONTAL Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: DELINEATION

Describe sub-type:

Distance to town: 30 Miles Distance to nearest well: 1320 FT Distance to lease line: 1700 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: NOME\_FEDERAL\_1H\_2\_\_plat\_20180625101221.pdf

Well work start Date: 07/01/2018 Duration: 20 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 Vertical Datum: NAVD88

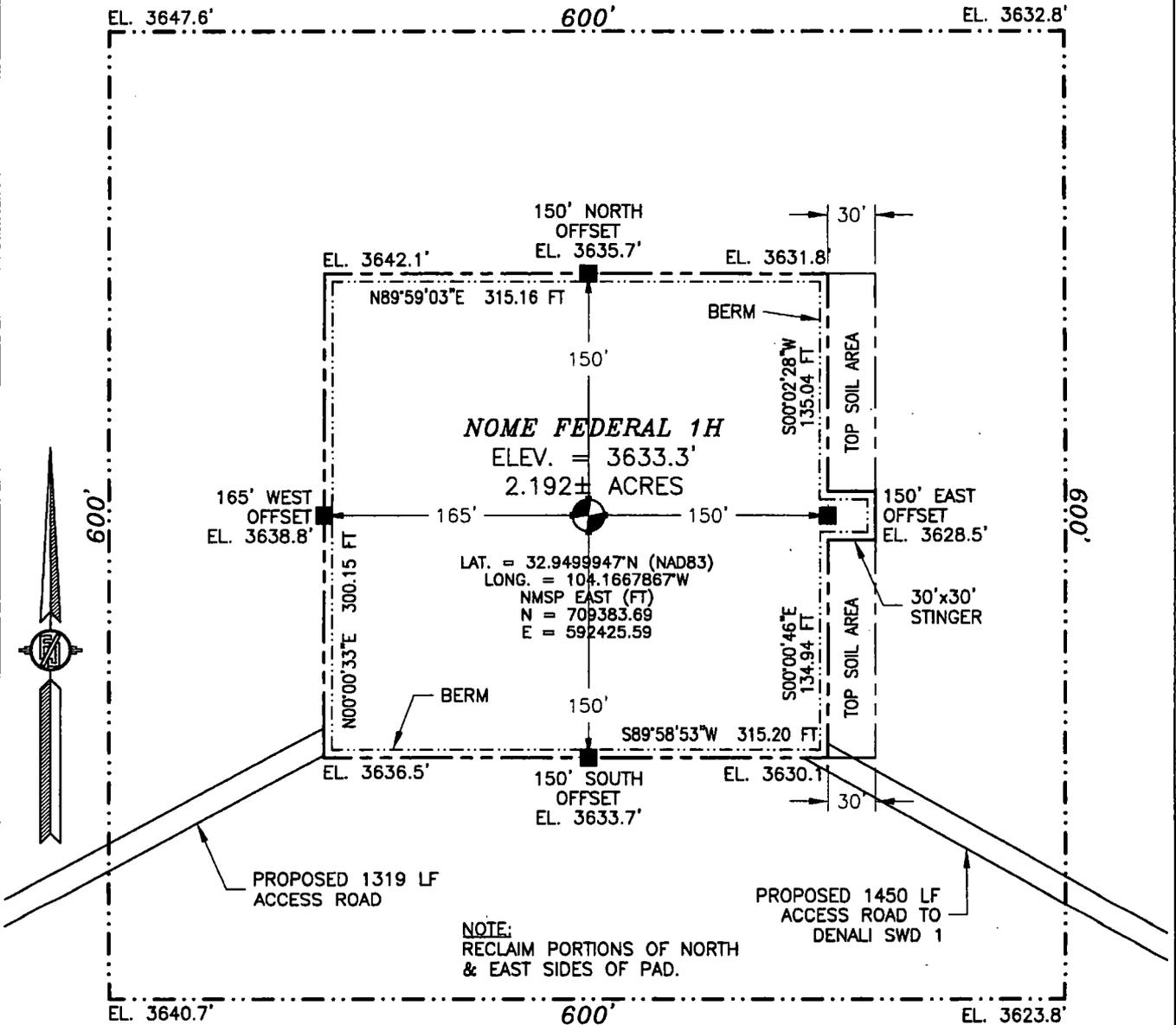
Survey number: 5968

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	170 0	FSL	167 5	FWL	16S	28E	3	Aliquot NESW	32.94999 47	- 104.1667 867	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 018831	363 3	0	0
KOP Leg #1	170 0	FSL	167 5	FWL	16S	28E	3	Aliquot NESW	32.94999 47	- 104.1667 867	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 018831	183 5	179 8	179 8
PPP Leg #1	444 8	FNL	167 5	FWL	16S	28E	3	Lot 14	32.95301 32	- 104.1667 838	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 018831	104 8	298 1	258 5

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE



0 10 50 100 200

SCALE 1" = 100'

**DIRECTIONS TO LOCATION**  
 FROM THE INTERSECTION OF US HIGHWAY 82 & CR 202 (SOUTHERN UNION) GO NORTH ON CR 202 (AROUND SUBSTATION) FOR APPROX. 2.9, MILES, VEER NORTHEAST & CONTINUE ON CR 202 FOR APPROX. 1.25 MILES TO THE END OF CR 202, GO NORTHWEST ON 15' CALICHE LEASE ROAD APPROX. 0.1 OF A MILE TO A FORK, TAKE ROAD ON RIGHT & GO NORTH APPROX. 1.0 MILE, TAKE CALICHE LEASE ROAD EAST (RIGHT) & GO APPROX. 1.1 MILES TO A "Y", TAKE LEFT FORK FOR APPROX. 0.6 OF A MILE, GO NORTH (LEFT) & GO APPROX. 2.2 MILES, THEN CONTINUE NORTH ON 30' CALICHE LEASE ROAD FOR APPROX. 1.3 MILE, TURN RIGHT (NORTHEAST) AND CONTINUE ON CALICHE LEASE ROAD FOR APPROX. 2 MILES, TURN LEFT (NORTHWEST) ON 12' CALICHE LEASE ROAD FOR APPROX. 1.6 MILES TO SELLERS & FULTON CROW FLATS 3 FED 1, FROM SOUTHWEST CORNER FOLLOW ROAD SURVEY NORTH APPROX. 285' THEN NORTHEAST APPROX. 1034' (TOTAL 1319') TO SOUTHWEST PAD CORNER FOR THIS LOCATION.

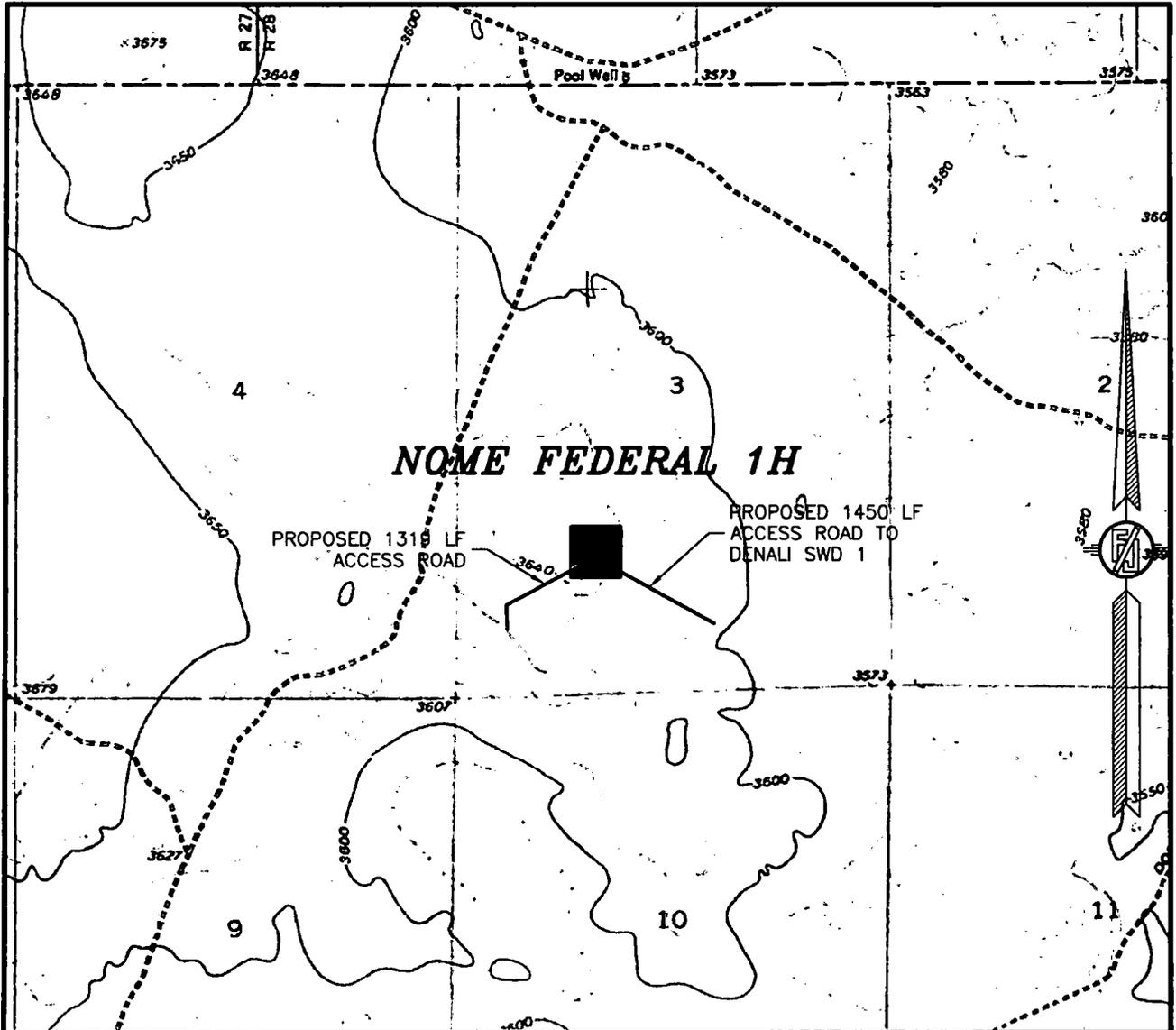
**MACK ENERGY CORPORATION**  
**NOME FEDERAL 1H**  
 LOCATED 1700 FT. FROM THE SOUTH LINE  
 AND 1675 FT. FROM THE WEST LINE OF  
 SECTION 3, TOWNSHIP 16 SOUTH,  
 RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO  
 (575) 234-3341

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 LOCATION VERIFICATION MAP



USGS QUAD MAP:  
 DIAMOND MOUND

NOT TO SCALE

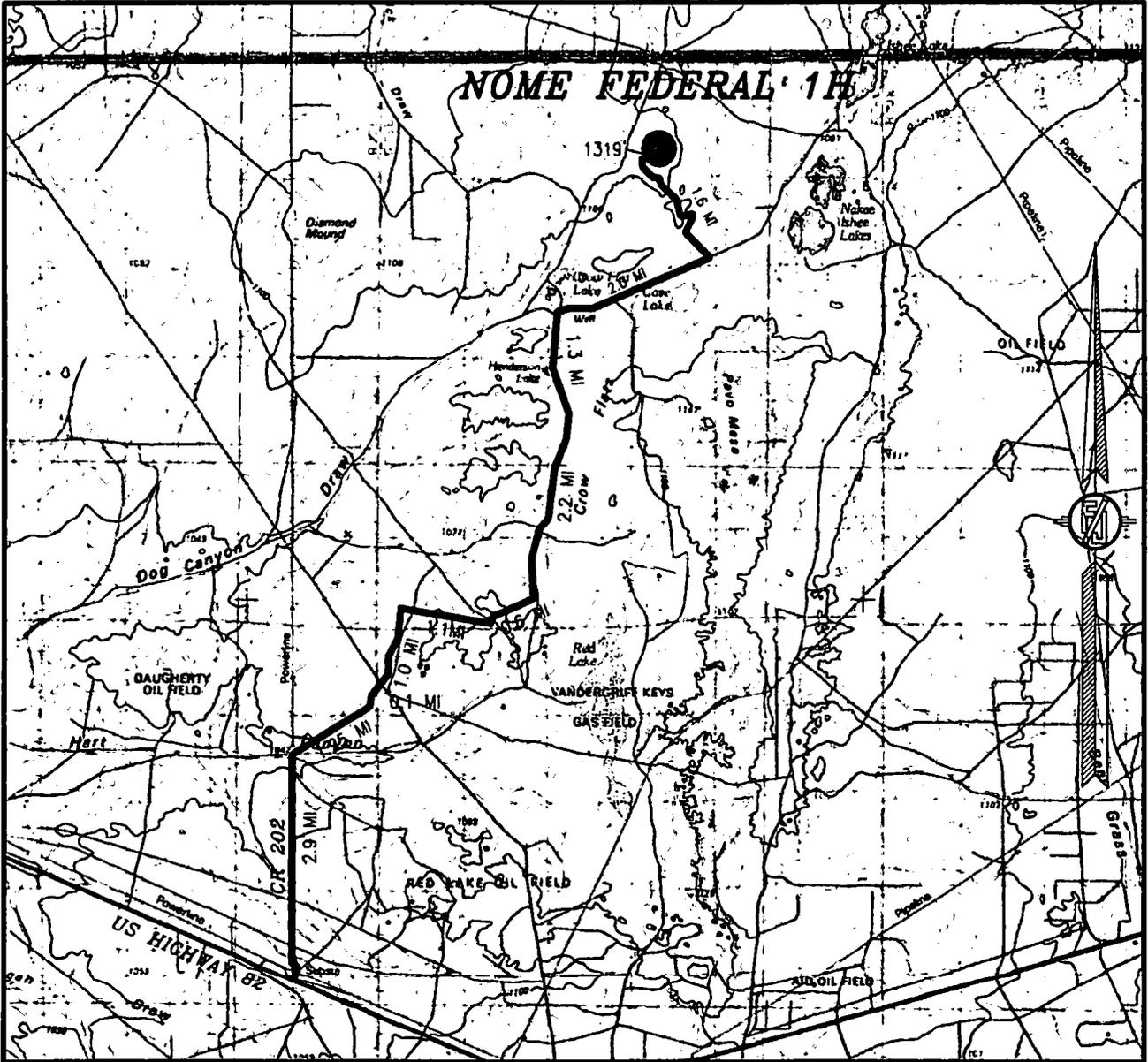
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SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

**MACK ENERGY CORPORATION  
 NOME FEDERAL 1H**

LOCATED 1700 FT. FROM THE SOUTH LINE  
 AND 1675 FT. FROM THE WEST LINE OF  
 SECTION 3, TOWNSHIP 16 SOUTH,  
 RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

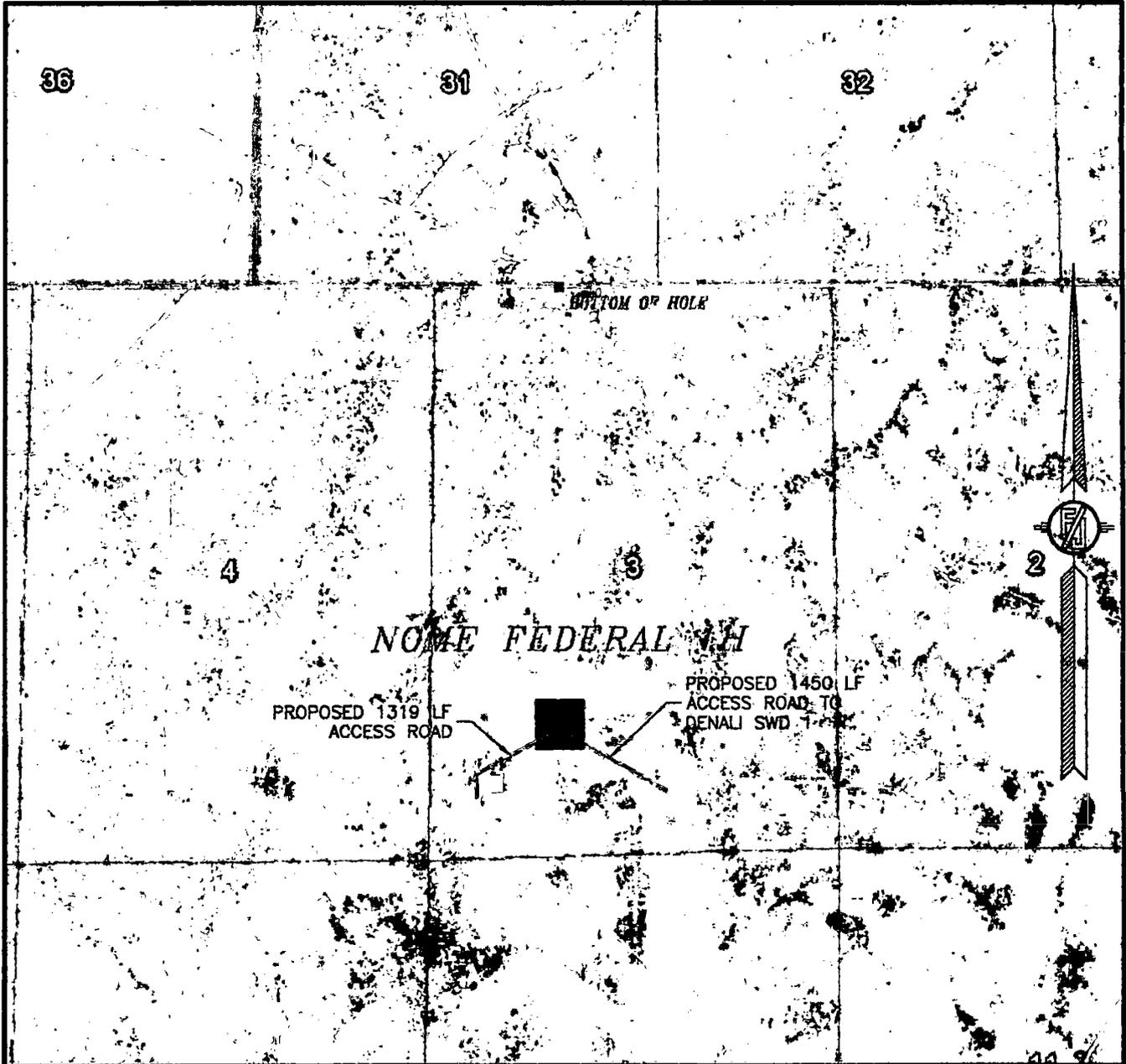
SURVEY NO. 5968A

**DIRECTIONS TO LOCATION**

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MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
AERIAL PHOTO



NOT TO SCALE  
AERIAL PHOTO:  
GOOGLE EARTH  
MARCH 2018

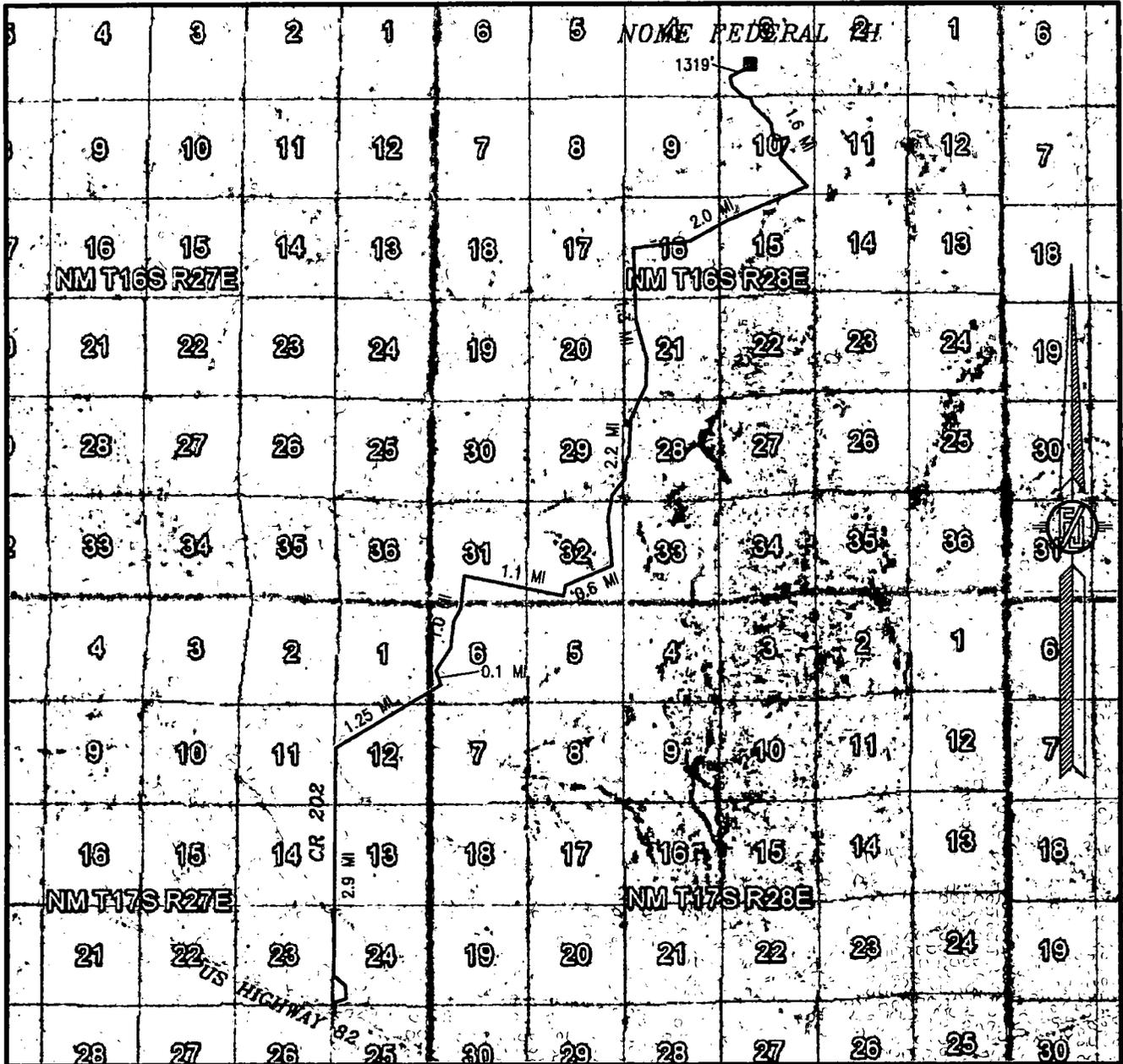
**MACK ENERGY CORPORATION**  
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LOCATED 1700 FT. FROM THE SOUTH LINE  
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RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO  
(575) 234-3341

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 ACCESS AERIAL ROUTE MAP



NOT TO SCALE  
 AERIAL PHOTO:  
 GOOGLE EARTH  
 MARCH 2016

**MACK ENERGY CORPORATION**  
**NOME FEDERAL 1H**  
 LOCATED 1700 FT. FROM THE SOUTH LINE  
 AND 1675 FT. FROM THE WEST LINE OF  
 SECTION 3, TOWNSHIP 16 SOUTH,  
 RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

**APD ID:** 10400028069

**Submission Date:** 04/04/2018

**Operator Name:** MACK ENERGY CORPORATION

Highlighted data  
reflects the most  
recent changes

**Well Name:** NOME FEDERAL

**Well Number:** 1H

[Show Final Text](#)

**Well Type:** OIL WELL

**Well Work Type:** Drill

**Section 1 - Geologic Formations**

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	QUATERNARY	3633	0	0	ALLUVIUM	NONE	No
2	YATES	3293	340	340	SILTSTONE	NATURAL GAS,OIL	No
3	SEVEN RIVERS	3073	560	560	DOLOMITE,SILTSTONE	NATURAL GAS,OIL	No
4	QUEEN	2568	1065	1065	SILTSTONE	NATURAL GAS,OIL	No
5	GRAYBURG	2148	1485	1485	DOLOMITE,SILTSTONE	NATURAL GAS,OIL	No
6	SAN ANDRES	1723	1910	1910	DOLOMITE	NATURAL GAS,OIL	Yes
7	GLORIETA	298	3335	3335	SILTSTONE	NATURAL GAS,OIL	No
8	PADDOCK	248	3385	3385	DOLOMITE	NATURAL GAS,OIL	No

**Section 2 - Blowout Prevention**

Pressure Rating (PSI): 5000

Rating Depth: 7775

**Equipment:** Rotating Head, Mud- Gas Separator

**Requesting Variance?** NO

**Variance request:**

**Testing Procedure:** The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minium of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

**Choke Diagram Attachment:**

choke\_manifold\_diagram\_20180326103447.pdf

choke\_manifold\_20180326103458.pdf

**BOP Diagram Attachment:**

bop\_diagram\_20180326103509.pdf

Operator Name: MACK ENERGY CORPORATION

Well Name: NOME FEDERAL

Well Number: 1H

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	9.625	NEW	API	N	0	350	0	350			350	J-55	36	STC	11.561	6.939	BUOY	36.654	BUOY	7.04
2	PRODUCTION	12.25	7.0	NEW	API	N	0	2700	0	2700			2700	HCP-110	26	BUTT	6.067	3.216	BUOY	9.121	BUOY	3.246
3	PRODUCTION	7.875	5.5	NEW	API	N	2700	7775	2700	7775			5075	HCP-110	17	BUTT	6.863	3.241	BUOY	7.506	BUOY	3.439

**Casing Attachments**

Casing ID: 1 String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

nome\_csg\_20180326104852.pdf

Operator Name: MACK ENERGY COF ATION

Well Name: NOME FEDERAL

Well Number: 1H

**Casing Attachments**

Casing ID: 2 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

nome\_csg\_20180326105305.pdf

Casing ID: 3 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

nome\_csg\_20180326105919.pdf

**Section 4 - Cement**

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead	350	0	350	100	1.61	14.4	7.36	0	RFC + 12% PF53 + 2%PF1 +5ppsPF42 + .125pps PF29	20bbls Gelled Water 50sx of 11# Scavenger cement
SURFACE	Tail		0	350	300	1.34	14.8	6.32	100	Class C 1% PF1	20bbls gelled water 50sx of 11# scavenger cemetn
PRODUCTION	Lead	2550	0	2550	375	1.84	13.2	9.91	35	Class C 4% PF 20 +4 pps PF 45 + 125 pps PF 29	20bbls gelled water 20bbls chemical wash 50sx of 11# scavenger

Operator Name: MACK ENERGY CORPORATION

Well Name: NOME FEDERAL

Well Number: 1H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead	7775	2550	7775	1270	1.48	13	7.58	35	PVL + 1.3 (BWOW) PF 44 + 5% PF174 +.5% PF 606+.1% PF153 +.4ppsPF44	20bbbls gelled water, 20bbbls chemical wash 50sx of 11# scavenger

### Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: BOPE Brine Water

Describe the mud monitoring system utilized: Parson PVT with PIT volume recorder

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	350	SPUD MUD	8.5	10							
350	7775	LSND/GEL	8.3	10	74.8	0.1	11		120000	15	

**Operator Name:** MACK ENERGY CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

### Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

None

**List of open and cased hole logs run in the well:**

CDL,CNL,DLL,GR

**Coring operation description for the well:**

None

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 1277

**Anticipated Surface Pressure:** 708.3

**Anticipated Bottom Hole Temperature(F):** 120

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** NO

**Hydrogen sulfide drilling operations plan:**

### Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

nome\_gas\_capture\_20180326113104.pdf

Nome\_Federal\_\_1H\_Preliminary\_Plan\_\_1\_MEC\_20180326113123.pdf

nome\_drill\_pro\_20180328101432.pdf

nome\_h2s\_20180328101449.pdf

**Other proposed operations facets description:**

**Other proposed operations facets attachment:**

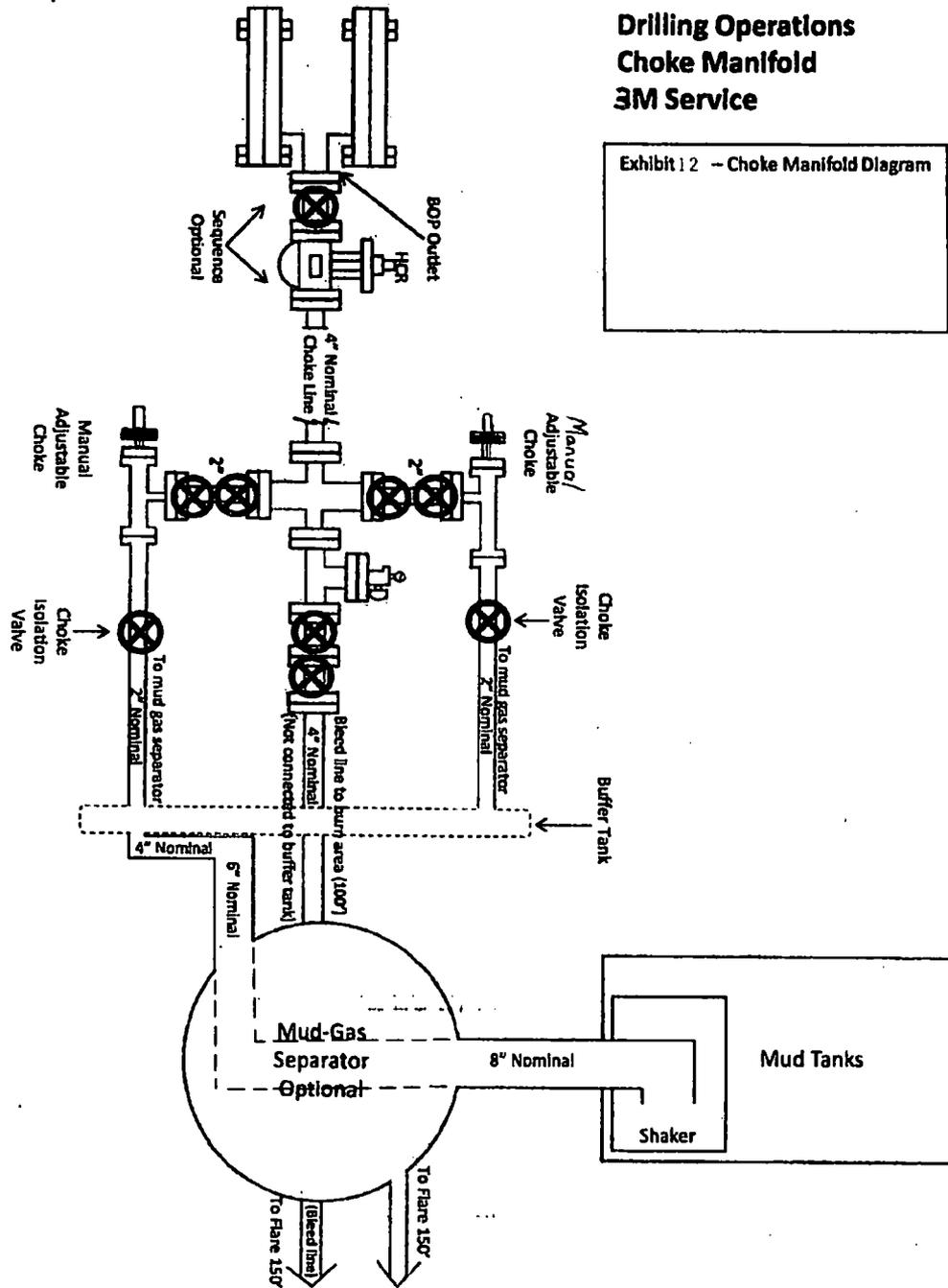
**Other Variance attachment:**

# Mack Energy Corporation

MANIFOLD SCHEMATIC  
Exhibit #12

## Drilling Operations Choke Manifold 3M Service

Exhibit 12 -- Choke Manifold Diagram





U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

**Bond Information**

**Federal/Indian APD:** FED

**BLM Bond number:** NMB000286

**BIA Bond number:**

**Do you have a reclamation bond?** NO

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**

**Injection well type:**

**Injection well number:**

**Assigned injection well API number?**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

**Injection well name:**

**Injection well API number:**

### **Section 5 - Surface Discharge**

**Would you like to utilize Surface Discharge PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

### **Section 6 - Other**

**Would you like to utilize Other PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**

### **Section 3 - Unlined Pits**

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### **Section 4 - Injection**

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

**Section 1 - General**

Would you like to address long-term produced water disposal? NO

**Section 2 - Lined Pits**

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

---

**APD CERTIFICATION**

I hereby certify that I, or person under my direct supervision, have inspected the proposed drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed in conformity with this APD package and terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Date: 3.28.18

Signed: Deana Weaver  
Deana Weaver

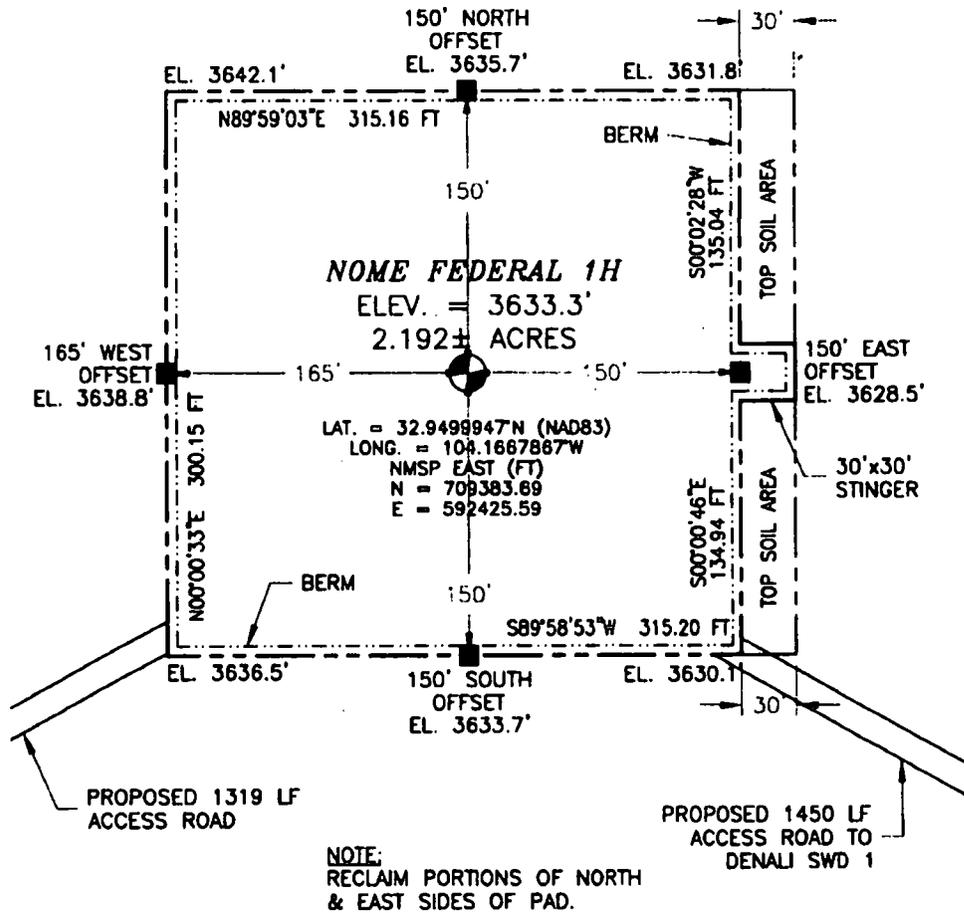
---

**12. Lessee's and Operator's Representative:**

The Mack Energy Corporation representative responsible for assuring compliance with the surface use plan is as follows:

Deana Weaver  
Mack Energy Corporation  
P.O. Box 960  
Artesia, NM 88211-0960  
Phone (575) 748-1288 (office)  
dweaver@mcc.com





Exhibit# 14

**9. Plans for Restoration of the Surface:**

- A. Upon completion of the proposed operations, if the well is completed, any additional caliche required for facilities will be obtained from a BLM approved caliche pit.
- B. Plans for interim and or final remediation:
  - 1) Caliche will be removed, ground ripped and stockpiled topsoil used to recontoured as close as possible to the original natural level to prevent erosion and ponding of water.
  - 2) Area will be reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure live seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.
- C. Exhibit #15 below shows the proposed downsized well site after Interim Reclamation. Dimensions are estimates on present conditions and are subject to change.

---

#### 4. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #6. If a commercial fresh water source is nearby, pipeline may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

#### 5. Source of Construction Materials:

- D. All caliche required for construction of the drill pad and proposed new access road (approximately 2500 cubic yards) will be obtained from BLM approved pit located Sec. 7 T16S R29E and Sec. 1 T16S R28E.

#### 6. Methods of Handling Waste:

- A. Drill cuttings and fluids will be disposed into the steel tanks and hauled to R-360 disposal facility, permit number NM-01-0006. Located on Hwy 62 at MM 66.
- B. Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) and trucked to our Denali SWD #1; produced oil will be collected in steel tanks until sold.
- C. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved local landfill. No toxic waste or hazardous chemicals will be produced by this operation.
- D. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.
- E. Sewage and Gray Water will be placed in container and hauled to a approved facility. Container and disposal handled by Black Hawk.
- F. Drilling fluids will be contained in steel tanks using a closed loop system Exhibit #12. No pits will be used during drilling operations

#### 7. Ancillary Facilities:

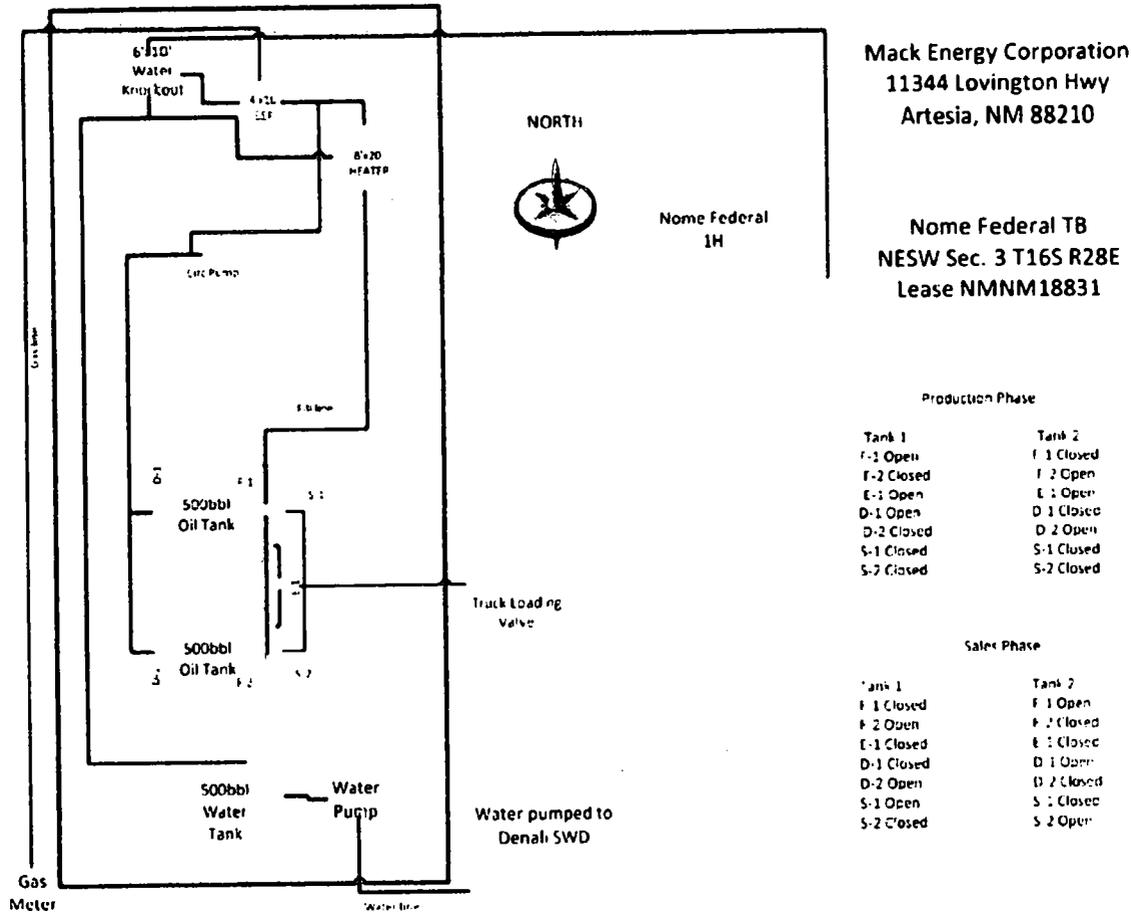
No airstrip, campsite or other facilities will be built as a result of the operation on this well.

#### 8. Well Site Layout:

- A. The well site and elevation plat for the proposed well is shown in Exhibit #14. It was staked by Maddron Surveying, Carlsbad, NM.
- B. The drill pad layout, with elevations staked by Maddron Surveying, is shown in Exhibit #14. Dimensions of the pad are shown. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.
- C. Diagram below shows the proposed orientation of the location. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

**3. Location of Existing and/or Proposed Facilities:**

- A. Mack Energy Corporation does not operate a production facility on this lease.
- B. If the well is productive, contemplated facilities will be as follows:
  - 1) Produced water from surrounding wells will be sent to the Denali SWD #1. The facility is shown in Exhibit #13.
  - 2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.
  - 3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.
  - 4) It will be necessary to run electric power if this well is productive. Power will be run by CVE and they will send in a separate plan for power.
- C. Proposed flow lines will stay on location. TB will be built on the West side of the location. Flowline will be a 3" poly surface line, 300' in length with a 40 psi working pressure.



*Exhibit #13*

## 1. Proposed Access Road:

Vicinity Map shows this location with existing road and 1319' of new road exiting the Southwest corner of the pad. Proposed upgrade of existing road will be done along staked centerline survey. Necessary maintenance will be done to insure traffic stays within proposed ROW. The road has been constructed as follows:

- A. The Maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.
- B. The average grade will be less than 1%.
- C. No turnouts are planned.
- D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.
- E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit located Sec. 7 T16S R29E and Sec. 1 T16S R28E.
- F. The access road as shown in Exhibit #6 is existing.

## 2. Location of Existing Wells:

Exhibit #16 shows all existing wells within a one-mile radius of this well.

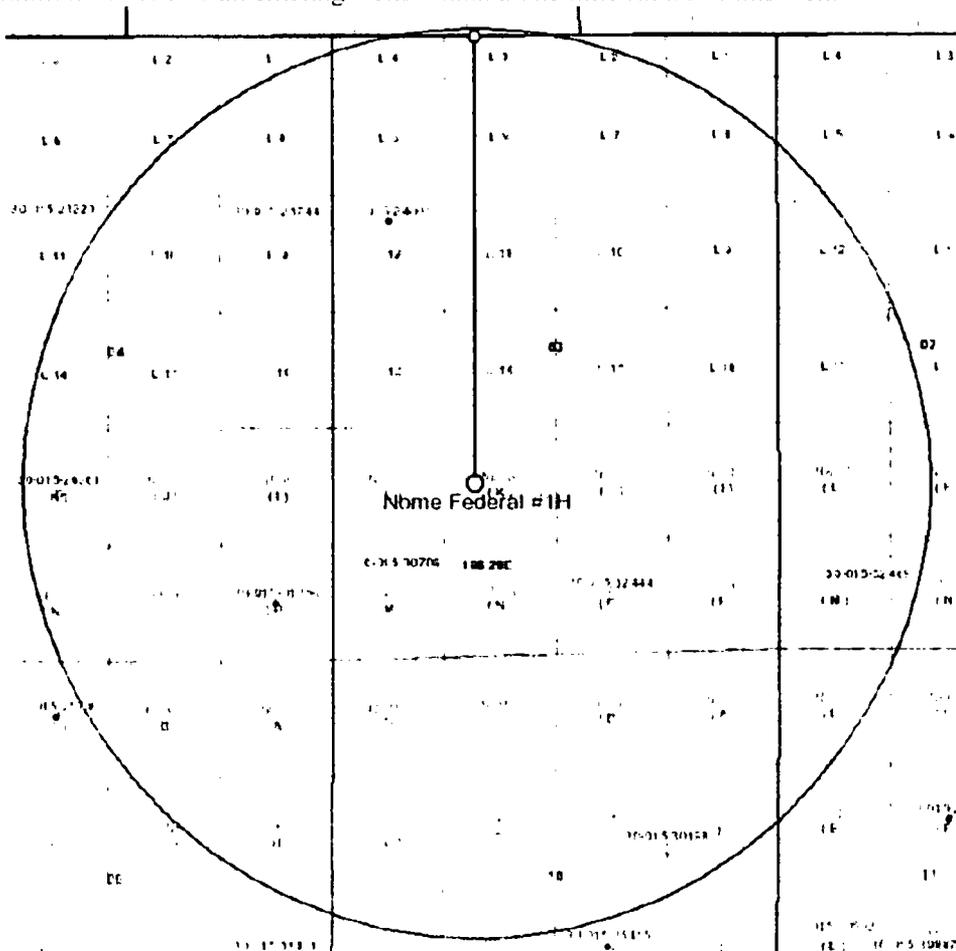


Exhibit #16

# SURFACE USE AND OPERATING PLAN

## 1. Existing Access Roads

A. All roads to the location are shown in Exhibit #6. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling well, will be done where necessary.

B. Directions to Location: From the intersection of US HWY 82 & CR 202 go North on CR 202 for approx. 2.9 miles, veer Northeast & cont on CR 202 for approx. 1.25 miles to the end of CR 202, go NW on 15' caliche lease rd approx. 0.1 mile to a fork, take rd on right & go North approx. 1.0 mile, take caliche lease rd East (right) & go approx. 1.1 miles to "Y", take left fork for approx. 0.6 of a mile, go North (left) & go approx. 2.2 miles then continue North on 30' caliche lease rd for approx. 1.3 mile, turn right (NE) and continue on caliche lease rd for approx. 2 miles, turn left (NW) on 12' caliche lease rd for approx. 1.6 miles to Sellers & Fulton Crow Flats 3 Fed L. from SW corner follow rd survey North approx. 285' then NE approx. 1034' (total 1319') to SW pad corner for this location.

C. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

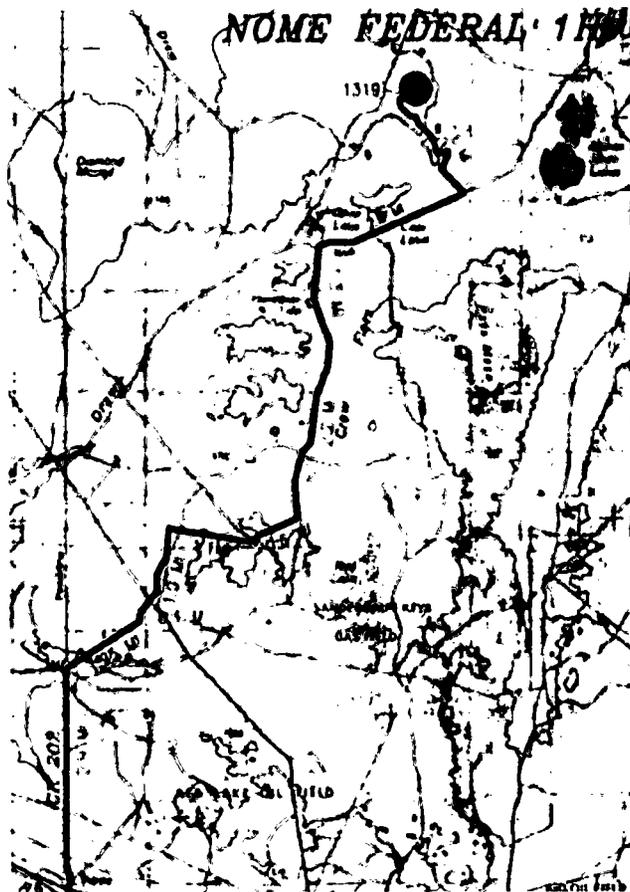


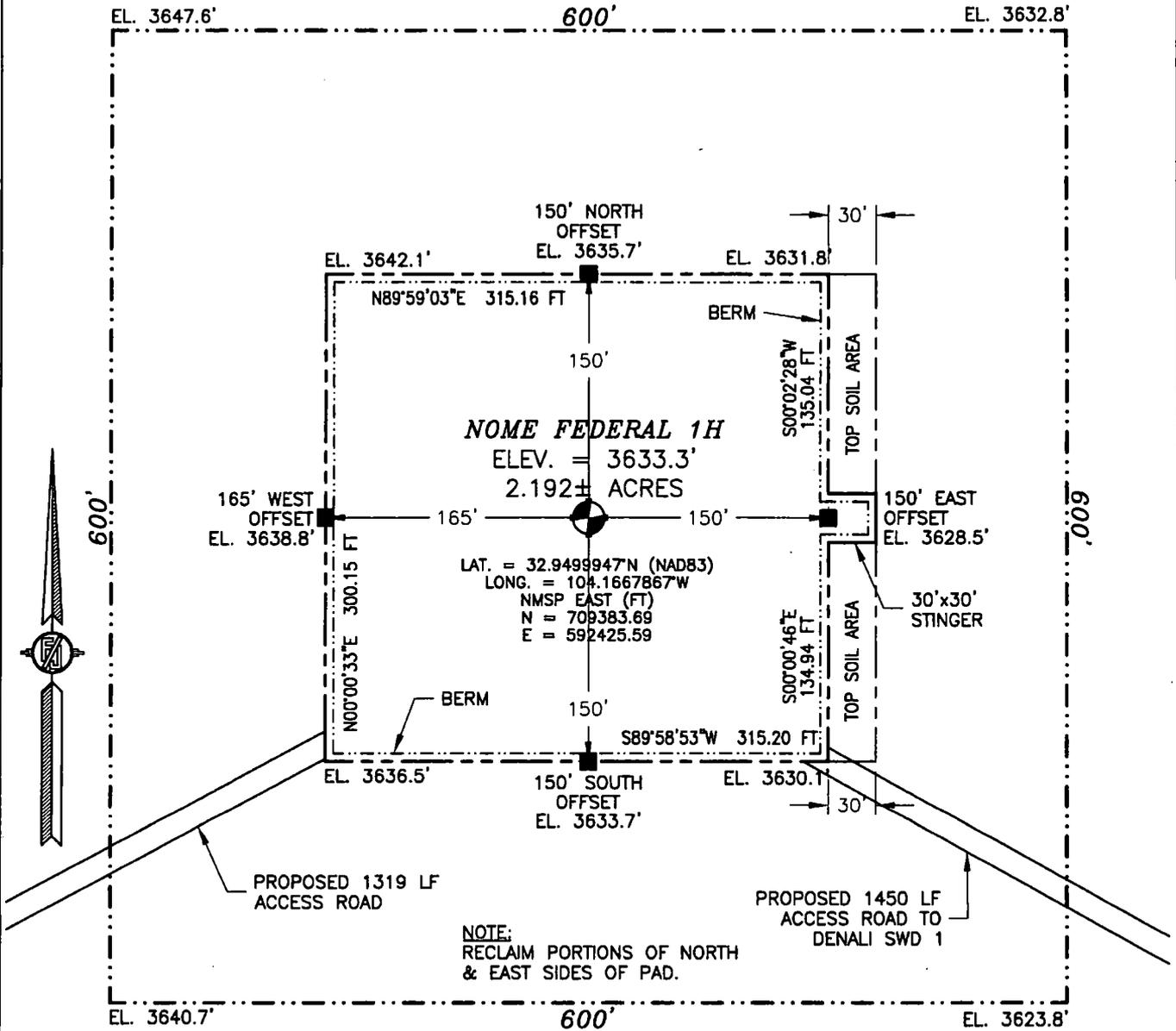
Exhibit #6



SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83), LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE



NOTE:  
 RECLAIM PORTIONS OF NORTH  
 & EAST SIDES OF PAD.



SCALE 1" = 100'  
 DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF US HIGHWAY 82 & CR 202 (SOUTHERN UNION) GO NORTH ON CR 202 (AROUND SUBSTATION) FOR APPROX. 2.0, MILES, VEER NORTHEAST & CONTINUE ON CR 202 FOR APPROX. 1.25 MILES TO THE END OF CR 202, GO NORTHWEST ON 15' CALICHE LEASE ROAD APPROX. 0.1 OF A MILE TO A FORK, TAKE ROAD ON RIGHT & GO NORTH APPROX. 1.0 MILE, TAKE CALICHE LEASE ROAD EAST (RIGHT) & GO APPROX. 1.1 MILES TO A 'Y', TAKE LEFT FORK FOR APPROX. 0.8 OF A MILE, GO NORTH (LEFT) & GO APPROX. 2.2 MILES, THEN CONTINUE NORTH ON 30' CALICHE LEASE ROAD FOR APPROX. 1.3 MILE, TURN RIGHT (NORTHEAST) AND CONTINUE ON CALICHE LEASE ROAD FOR APPROX. 2 MILES, TURN LEFT (NORTHWEST) ON 12' CALICHE LEASE ROAD FOR APPROX. 1.8 MILES TO SELLERS & FULTON CROW FLATS 3 FED 1, FROM SOUTHWEST CORNER FOLLOW ROAD SURVEY NORTH APPROX. 285' THEN NORTHEAST APPROX. 1034' (TOTAL 1319') TO SOUTHWEST PAD CORNER FOR THIS LOCATION.

MACK ENERGY CORPORATION  
**NOME FEDERAL 1H**  
 LOCATED 1700 FT. FROM THE SOUTH LINE  
 AND 1675 FT. FROM THE WEST LINE OF  
 SECTION 3, TOWNSHIP 16 SOUTH,  
 RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

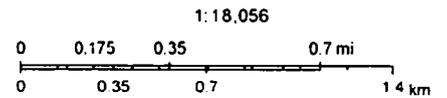
# ArcGIS Web Map



July 25, 2017

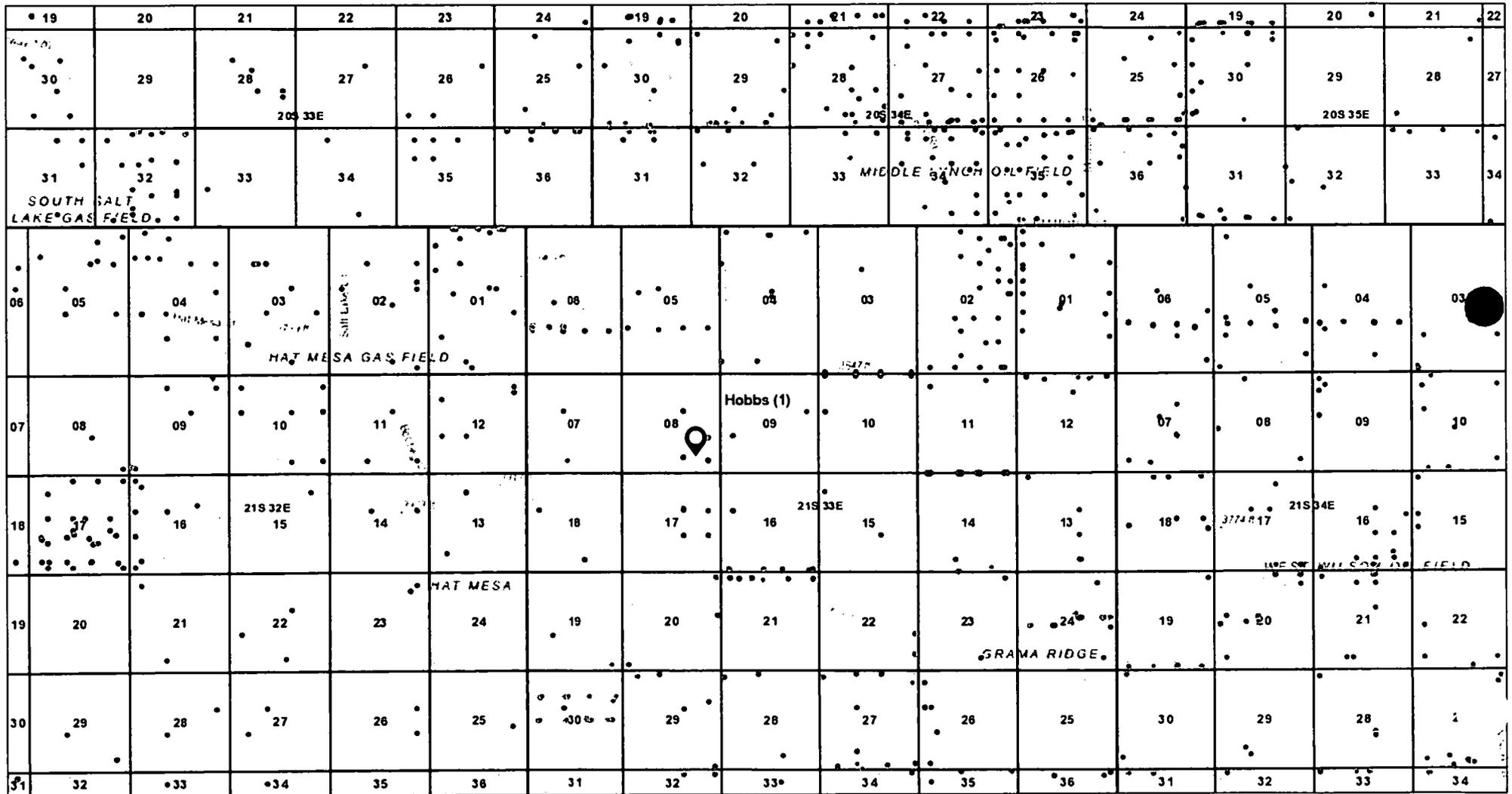
## Areas

- Override 1
- OCD District Offices
- PLSSTownship
- PLSSSecondDivision\_WMAS84\_UnitLtr
- PLSSFirstDivision



OCD  
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors  
and the GIS user community  
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics,

# OCD Well Locations



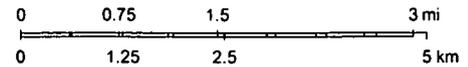
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- Well Locations - Small Scale
- Active
  - New
  - Plugged
  - Cancelled
  - Temporarily Abandoned
- Well Locations - Large Scale
- ⊙ Miscellaneous
  - ☀ CO2 Active
  - ☀ CO2 Cancelled
  - ☀ CO2 New
  - ☀ CO2 Plugged

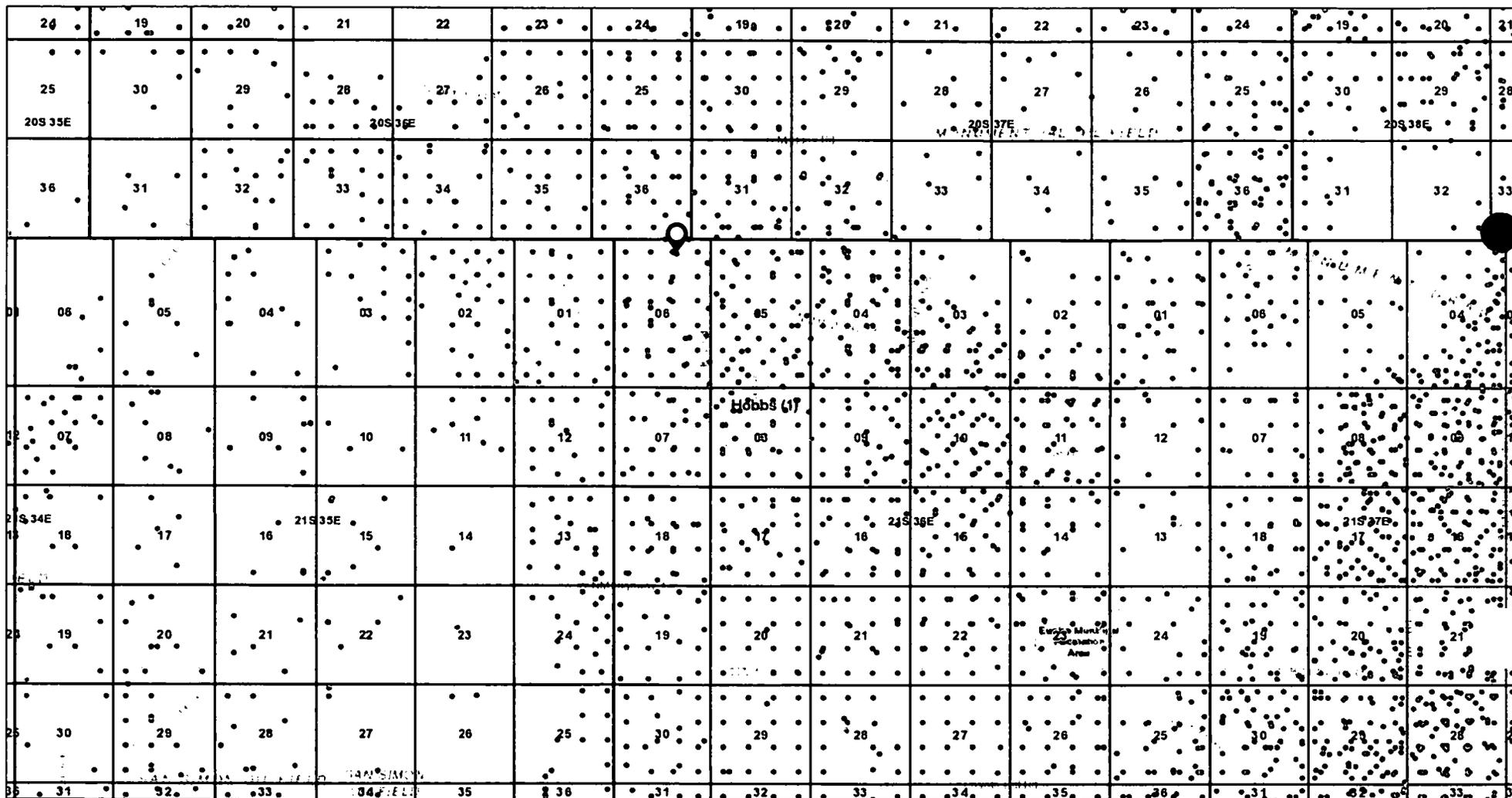
- ☀ CO2, Temporarily Abandoned
- ☀ Gas Active
- ☀ Gas, Cancelled, Never Drilled
- ☀ Gas, New
- ☀ Gas, Plugged
- ☀ Gas, Temporarily Abandoned
- ⊙ Injection, Active
- ⊙ Injection, Cancelled
- ⊙ Injection, New
- ⊙ Injection, Plugged
- ⊙ Injection, Temporarily Abandoned
- Oil, Active

- Oil, Cancelled
- Oil, New
- Oil, Plugged
- Oil, Temporarily Abandoned
- △ Salt Water Injection, Active
- △ Salt Water Injection, Cancelled
- △ Salt Water Injection, New
- △ Salt Water Injection, Plugged
- △ Salt Water Injection Temporarily Abandoned
- Water, Active
- Water, Cancelled
- Water, New



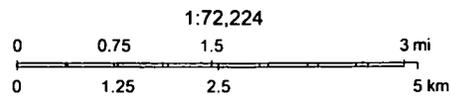
Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA, OCD, BLM

# OCD Well Locations



6/25/2018 9:36:00 AM

- |                              |                              |                                 |                                    |                                   |  |
|------------------------------|------------------------------|---------------------------------|------------------------------------|-----------------------------------|--|
| Well Locations - Small Scale | Well Locations - Large Scale | ☼ CO2, Temporarily Abandoned    | ⚡ Injection, Active                | ● Oil, Cancelled                  | ▲ Salt Water Injection, New                  |
| ● Active                     | ⊙ Miscellaneous              | ⊙ Gas Active                    | ⋯ Injection, Cancelled             | ● Oil, New                        | ▲ Salt Water Injection, Plugged              |
| ● New                        | ☼ CO2 Active                 | ⊙ Gas, Cancelled, Never Drilled | ⚡ Injection, New                   | ● Oil, Plugged                    | ▲ Salt Water Injection Temporarily Abandoned |
| ● Plugged                    | ⊙ CO2 Cancelled              | ⊙ Gas, New                      | ⚡ Injection, Plugged               | ● Oil, Temporarily Abandoned      | ● Water, Active                              |
| ● Cancelled                  | ☼ CO2 New                    | ⊙ Gas, Plugged                  | ⊙ Injection, Temporarily Abandoned | ▲ Salt Water Injection, Active    | ● Water, Cancelled                           |
| ● Temporarily Abandoned      | ☼ CO2, Plugged               | ⊙ Gas, Temporarily Abandoned    | ● Oil, Active                      | ▲ Salt Water Injection, Cancelled | ● Water, New                                 |



Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA, OCD, BLM



32°52'23.1"N 103°30'18.3"W  
 Gandy Corp - Wasserhund BW



Tatum



Lovington



Maljamar

Buckeye



Loco Hills



Monument

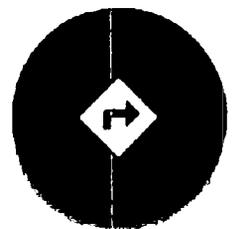


iter

North

back **Google**

E



32°52'23.1"N 103°30'18.3"W



32°49'05.3"N 103°59'03.7"W  
Mor-West Camp. — Loco Hills FW



Goat Ropers Rd

Hagerman Cutoff Rd

Goat Ropers Rd

Lovington Hwy



Loco Hills Post Office

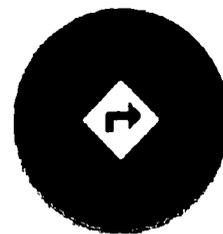
Loco Hills

Hagerman Cutoff Rd



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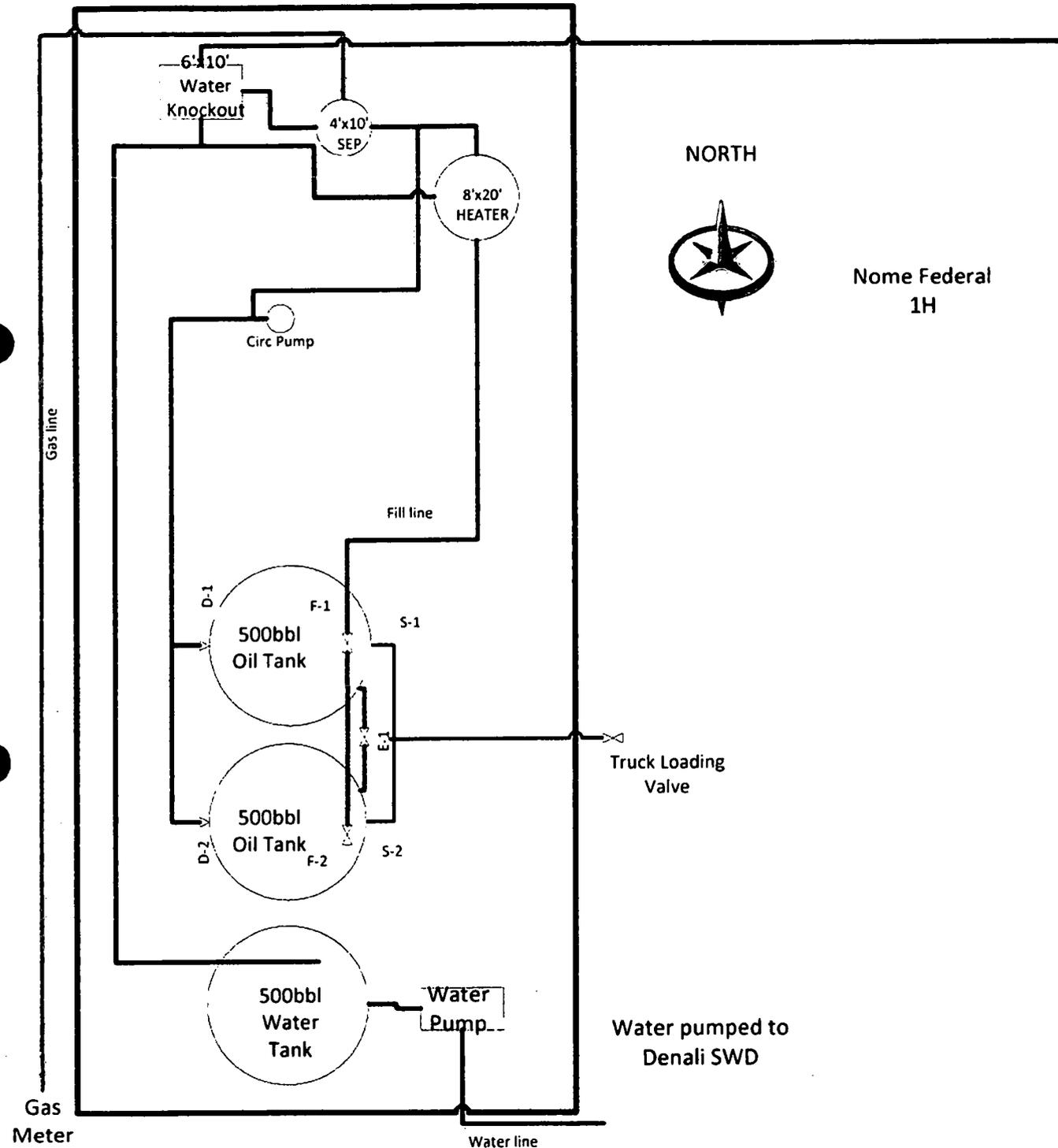
Rd



32°49'05.3"N 103°59'03.7"W

Mack Energy Corporation  
 11344 Lovington Hwy  
 Artesia, NM 88210

Nome Federal TB  
 NESW Sec. 3 T16S R28E  
 Lease NMNM18831



NORTH



Nome Federal  
 1H

Production Phase

Tank 1	Tank 2
F-1 Open	F-1 Closed
F-2 Closed	F-2 Open
E-1 Open	E-1 Open
D-1 Open	D-1 Closed
D-2 Closed	D-2 Open
S-1 Closed	S-1 Closed
S-2 Closed	S-2 Closed

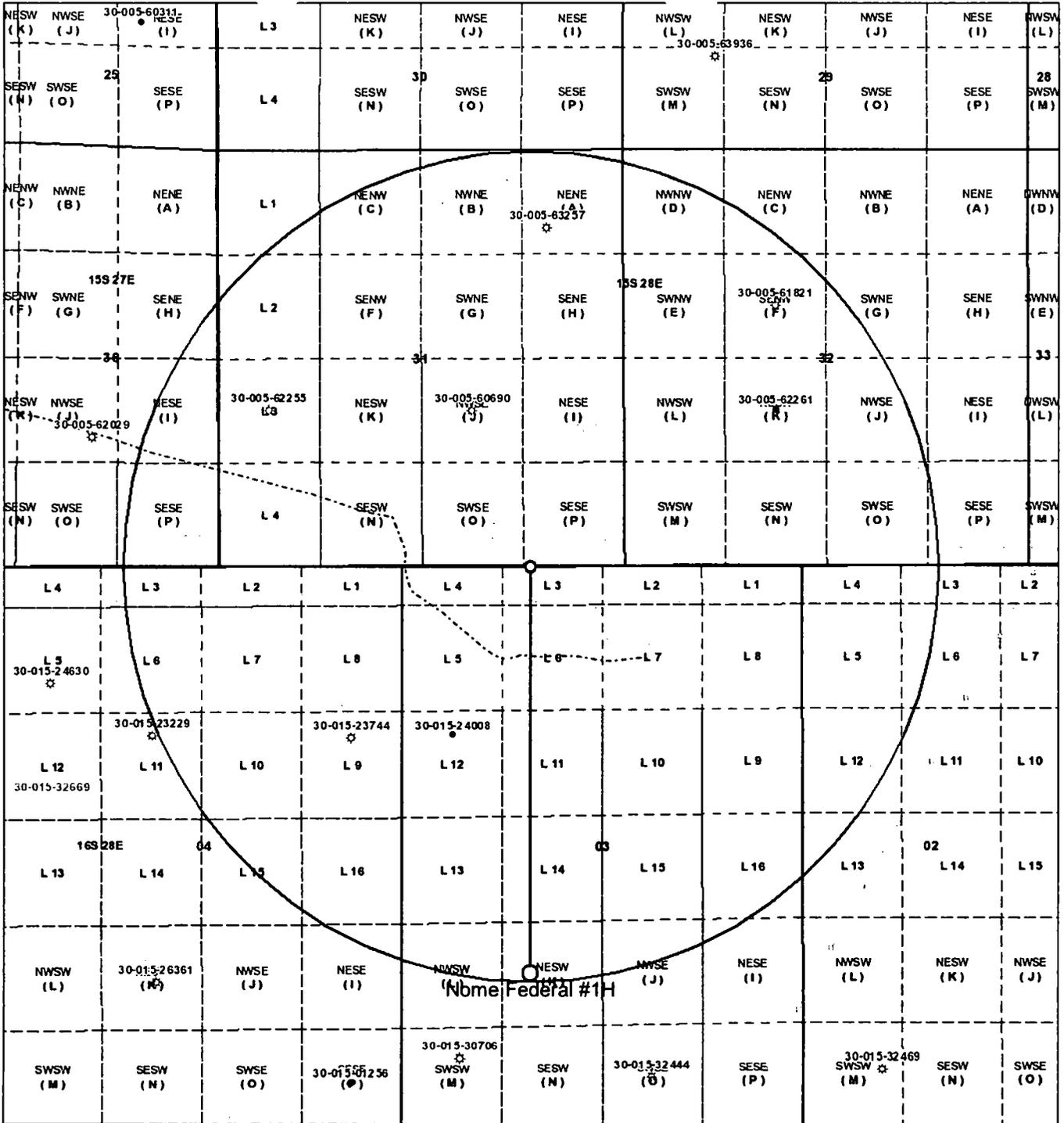
Sales Phase

Tank 1	Tank 2
F-1 Closed	F-1 Open
F-2 Open	F-2 Closed
E-1 Closed	E-1 Closed
D-1 Closed	D-1 Open
D-2 Open	D-2 Closed
S-1 Open	S-1 Closed
S-2 Closed	S-2 Open

Truck Loading  
 Valve

Water pumped to  
 Denali SWD

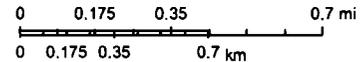
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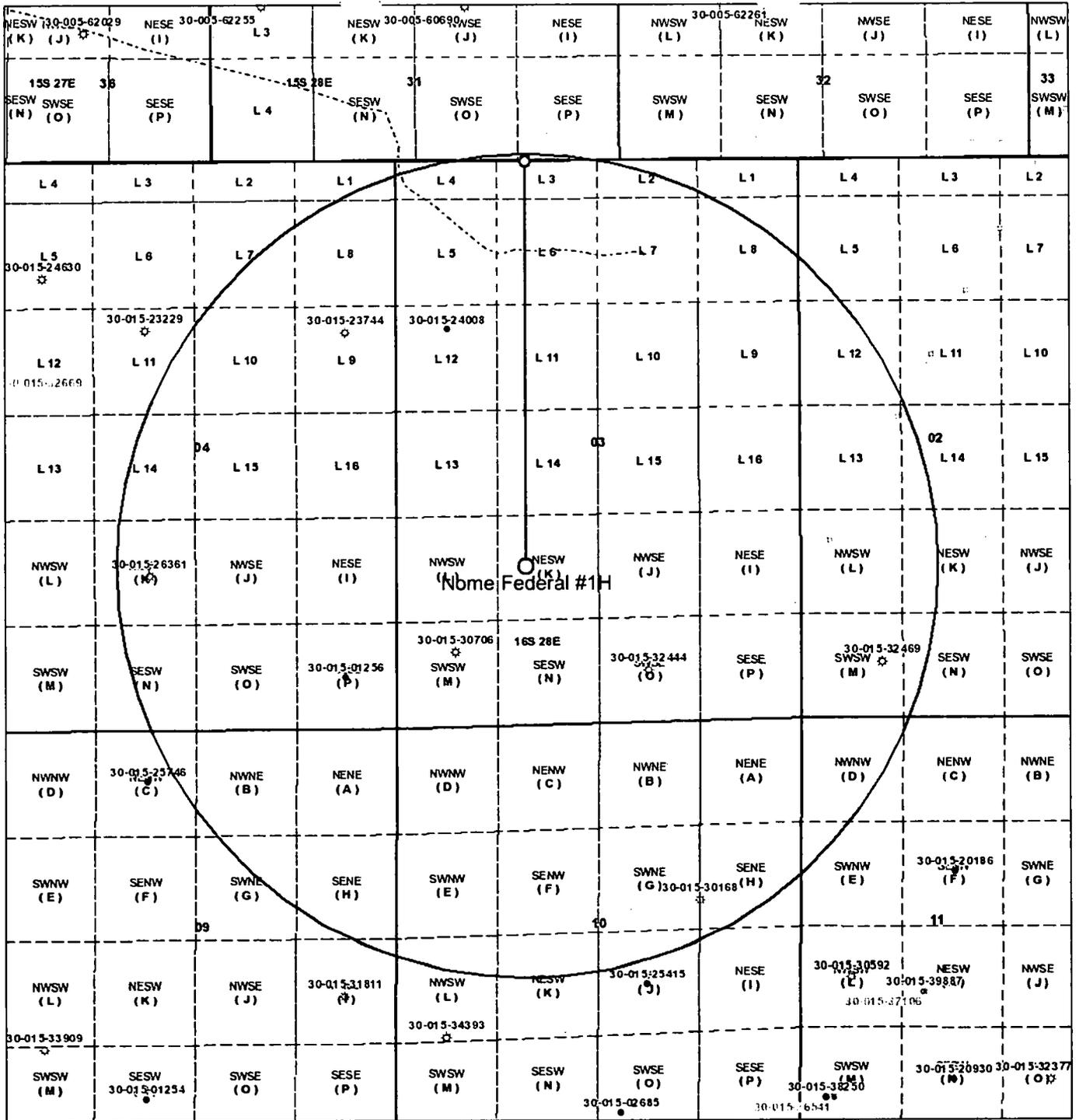
1:18,056

- |                                     |                                  |  |
|-------------------------------------|----------------------------------|--|
| <b>Points</b>                       | Gas, Cancelled, Never Drilled    | Salt Water Injection, Active               |
| ○ Override 1                        | Gas, New                         | Salt Water Injection, Cancelled            |
| ○ Override 2                        | Gas, Plugged                     | Salt Water Injection, New                  |
| <b>Lines</b>                        | Gas, Temporarily Abandoned       | Salt Water Injection, Plugged              |
| — Override 1                        | Injection, Active                | Salt Water Injection Temporarily Abandoned |
| <b>Areas</b>                        | Injection, Cancelled             | Water, Active                              |
| — Override 1                        | Injection, New                   | Water, Cancelled                           |
| <b>Well Locations - Large Scale</b> | Injection, Plugged               | Water, New                                 |
| ⋈ Miscellaneous                     | Injection, Temporarily Abandoned | Water, Plugged                             |
| ⋈ CO2 Active                        | Oil, Active                      | Water, Temporarily Abandoned               |
| ⋈ CO2 Cancelled                     | Oil, Cancelled                   | +  |
| ⋈ CO2 New                           | Oil, New                         | OCDDistrict Offices                        |
| ⋈ CO2, Plugged                      | Oil, Plugged                     | ⋮ PLSS Townships                           |
| ⋈ CO2, Temporarily Abandoned        | Oil, Temporarily Abandoned       | ⋮ PLSS Second Division                     |
| ⋈ Gas Active                        |                                  | ⋮ PLSS First Division                      |



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 OCDD  
 BLM

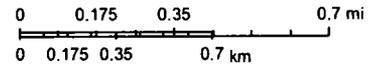
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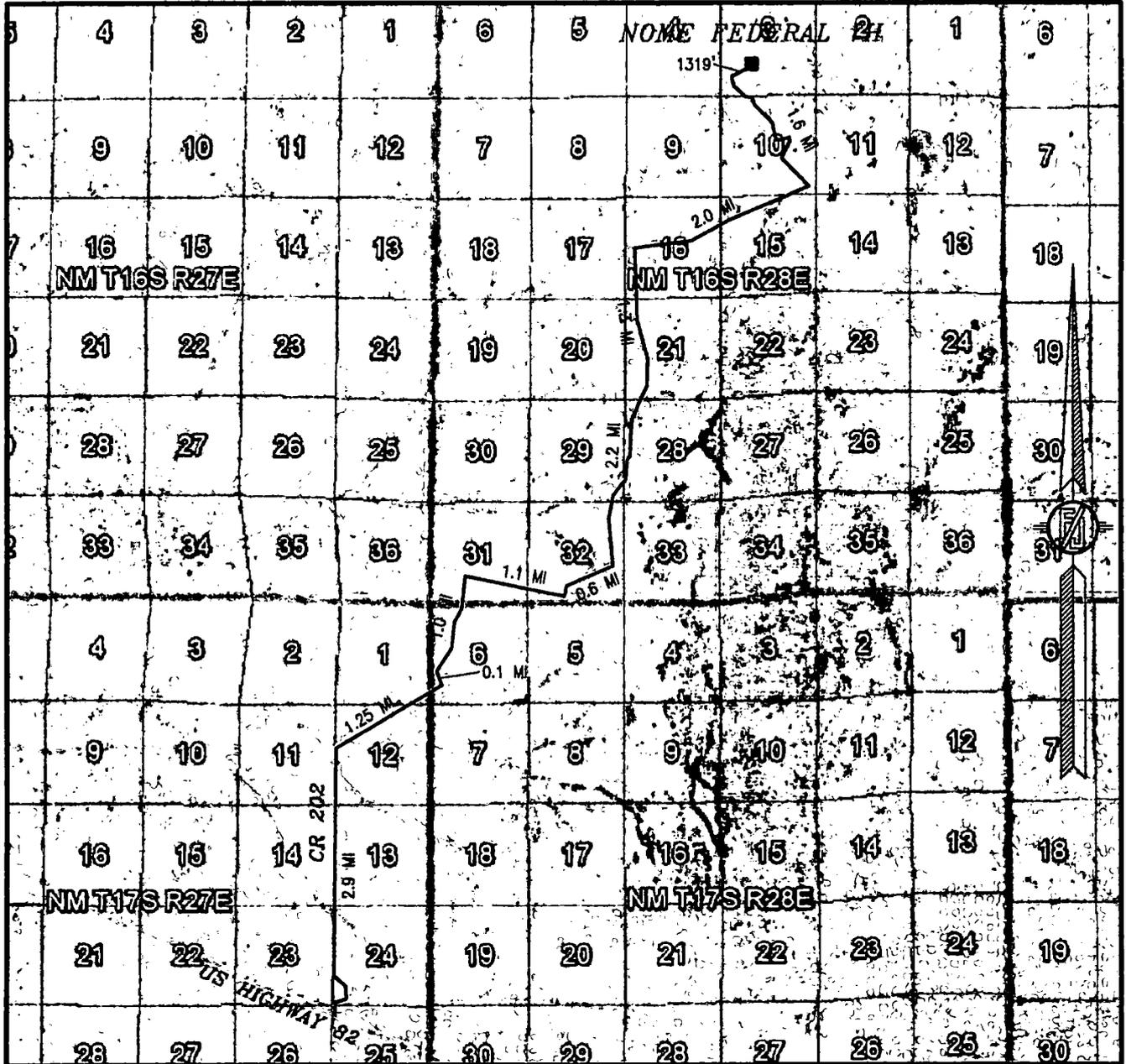
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- |               |                                  |   |  |
|---------------|----------------------------------|---|--|
| <b>Points</b> | Gas, Cancelled, Never Drilled    | ○ | Salt Water Injection, Active               |
| ○             | Gas, New                         | ○ | Salt Water Injection, Cancelled            |
| ○             | Gas, Plugged                     | ○ | Salt Water Injection, New                  |
| <b>Lines</b>  | Gas, Temporarily Abandoned       | — | Salt Water Injection, Plugged              |
| —             | Injection, Active                | — | Salt Water Injection Temporarily Abandoned |
| <b>Areas</b>  | Injection, Cancelled             | + | Water, Active                              |
| +             | Injection, New                   | + | Water, Cancelled                           |
| +             | Injection, Plugged               | + | Water, New                                 |
| +             | Injection, Temporarily Abandoned | + | Water, Plugged                             |
| +             | Oil, Active                      | + | Water, Temporarily Abandoned               |
| +             | Oil, Cancelled                   | + | OCD District Offices                       |
| +             | Oil, New                         | + | PLSS Townships                             |
| +             | Oil, Plugged                     | + | PLSS Second Division                       |
| +             | Oil, Temporarily Abandoned       | + | PLSS First Division                        |



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OCD  
BLM

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 ACCESS AERIAL ROUTE MAP



NOT TO SCALE  
 AERIAL PHOTO:  
 GOOGLE EARTH  
 MARCH 2016

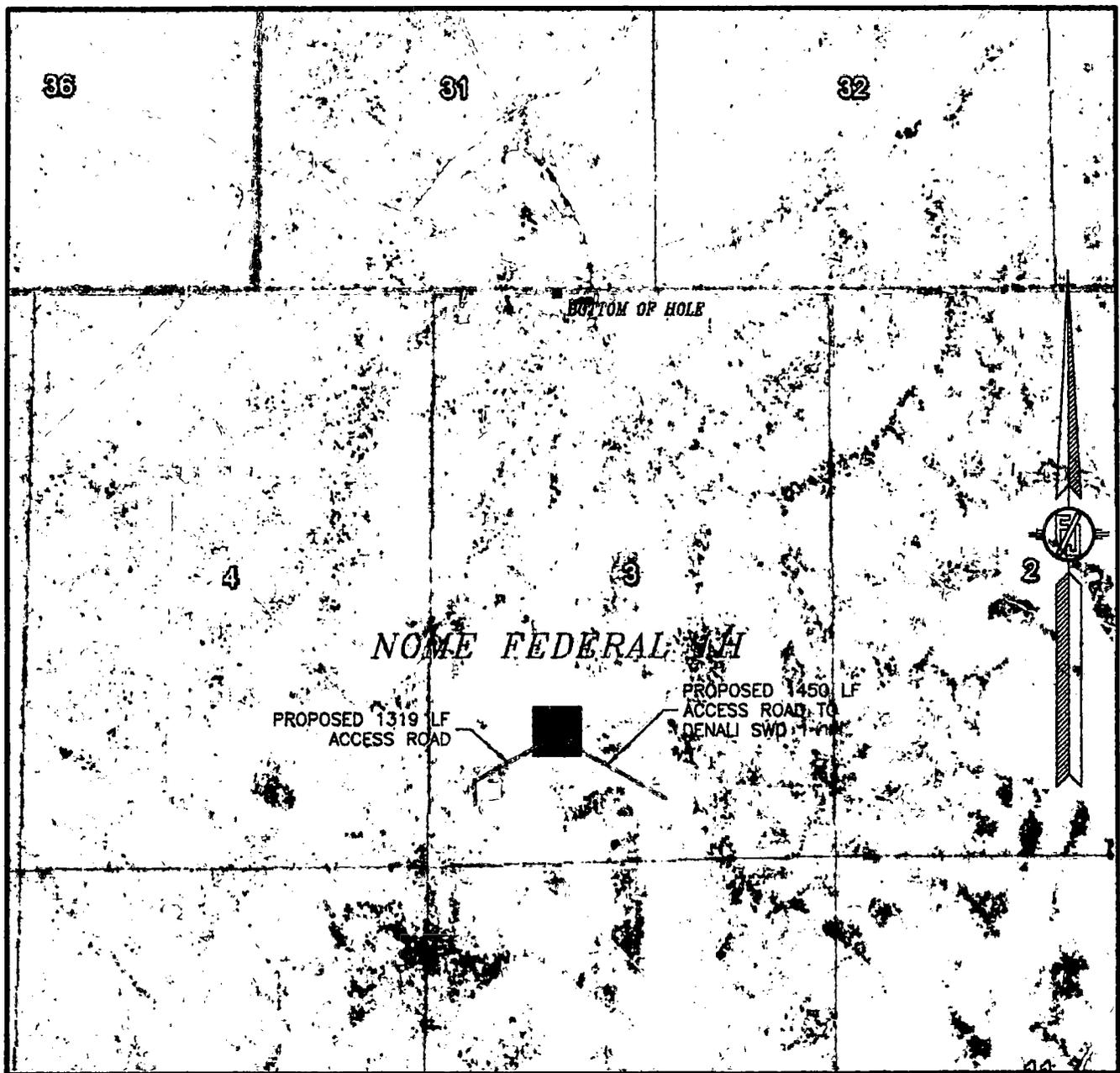
**MACK ENERGY CORPORATION**  
**NOME FEDERAL 1H**  
 LOCATED 1700 FT. FROM THE SOUTH LINE  
 AND 1675 FT. FROM THE WEST LINE OF  
 SECTION 3, TOWNSHIP 16 SOUTH,  
 RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
AERIAL PHOTO



NOT TO SCALE  
AERIAL PHOTO:  
GOOGLE EARTH  
MARCH 2018

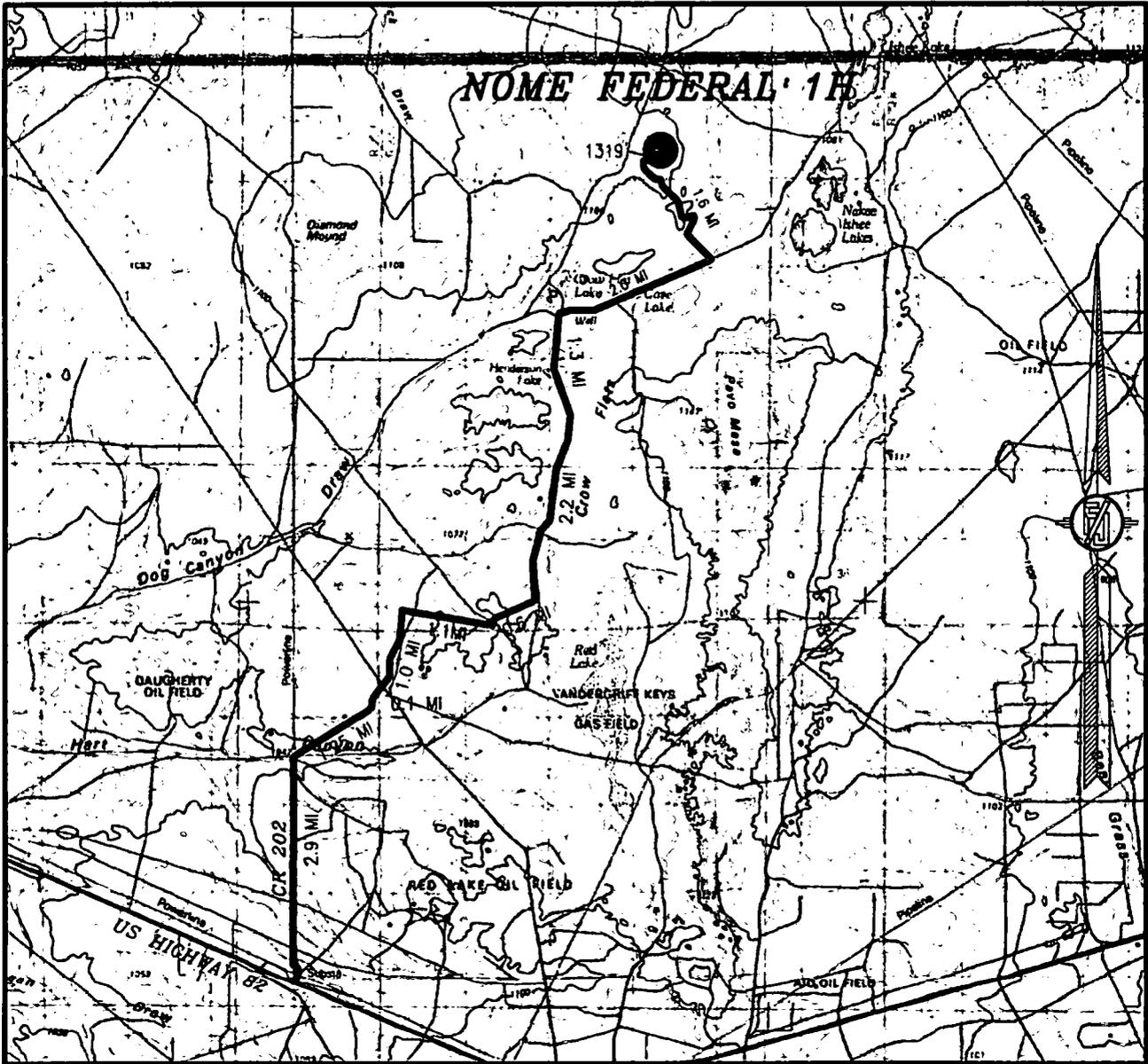
**MACK ENERGY CORPORATION**  
**NOME FEDERAL 1H**  
LOCATED 1700 FT. FROM THE SOUTH LINE  
AND 1675 FT. FROM THE WEST LINE OF  
SECTION 3, TOWNSHIP 16 SOUTH,  
RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

**MACK ENERGY CORPORATION  
 NOME FEDERAL 1H**

LOCATED 1700 FT. FROM THE SOUTH LINE  
 AND 1675 FT. FROM THE WEST LINE OF  
 SECTION 3, TOWNSHIP 16 SOUTH,  
 RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

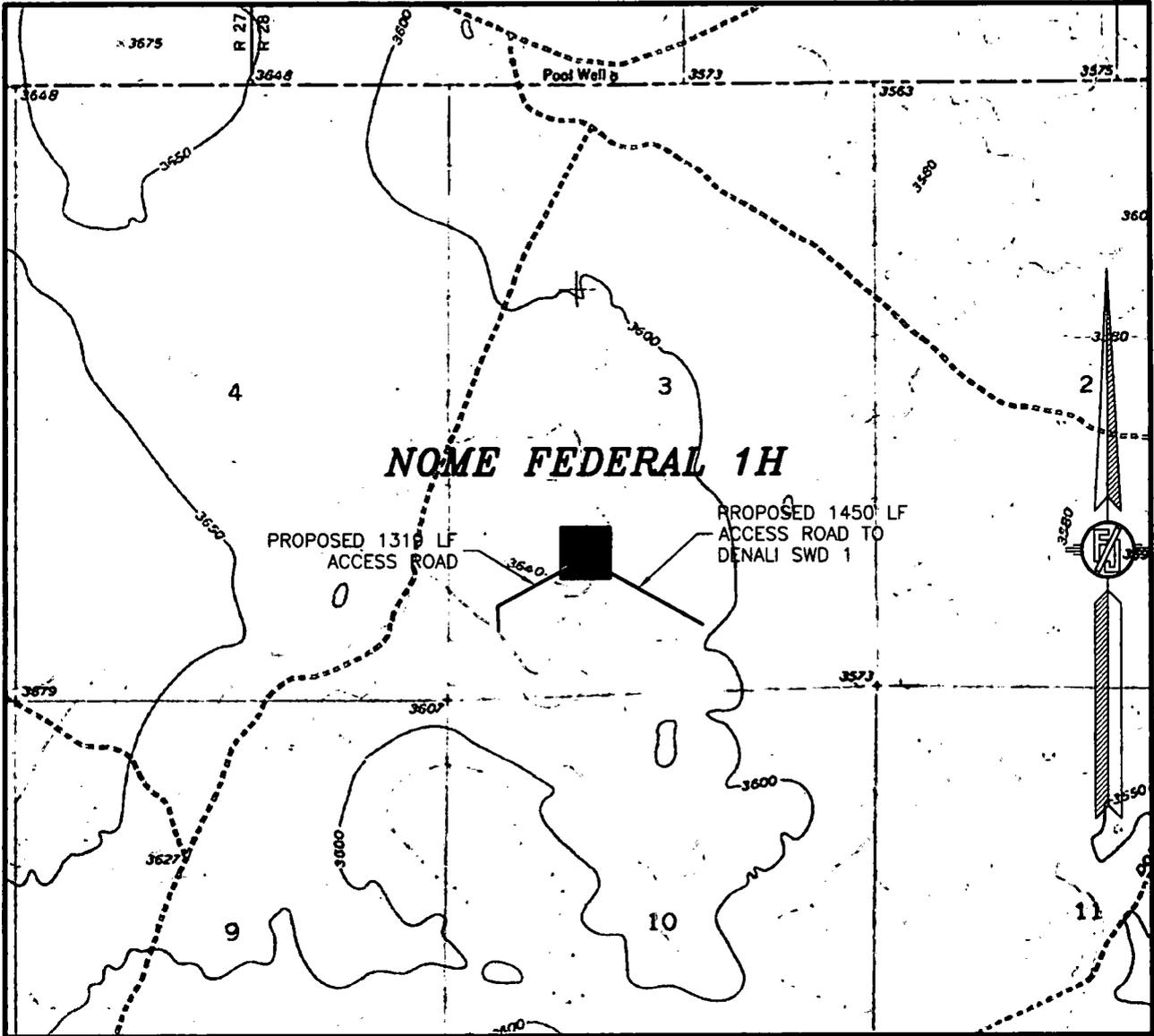
SURVEY NO. 5968A

**DIRECTIONS TO LOCATION**

FROM THE INTERSECTION OF US HIGHWAY 82 & CR 202 (SOUTHERN UNION) GO NORTH ON CR 202 (AROUND SUBSTATION) FOR APPROX. 2.9, MILES, VEER NORTHEAST & CONTINUE ON CR 202 FOR APPROX. 1.25 MILES TO THE END OF CR 202. GO NORTHWEST ON 15' CALICHE LEASE ROAD APPROX. 0.1 OF A MILE TO A FORK, TAKE ROAD ON RIGHT & GO NORTH APPROX. 1.0 MILE, TAKE CALICHE LEASE ROAD EAST (RIGHT) & GO APPROX. 1.1 MILES TO A "Y", TAKE LEFT FORK FOR APPROX. 0.8 OF A MILE, GO NORTH (LEFT) & GO APPROX. 2.2 MILES, THEN CONTINUE NORTH ON 30' CALICHE LEASE ROAD FOR APPROX. 1.3 MILE, TURN RIGHT (NORTHEAST) AND CONTINUE ON CALICHE ROAD FOR APPROX. 2 MILES, TURN LEFT (NORTHWEST) ON 12' CALICHE LEASE ROAD FOR APPROX. 1.6 MILES TO SELLERS & FULTON CROW FLATS 3 FED 1, FROM SOUTHWEST CORNER FOLLOW ROAD SURVEY NORTH APPROX. 285' THEN NORTHEAST APPROX. 1034' (TOTAL 1319') TO SOUTHWEST PAD CORNER FOR THIS LOCATION.

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
LOCATION VERIFICATION MAP



USGS QUAD MAP:  
DIAMOND MOUND

NOT TO SCALE

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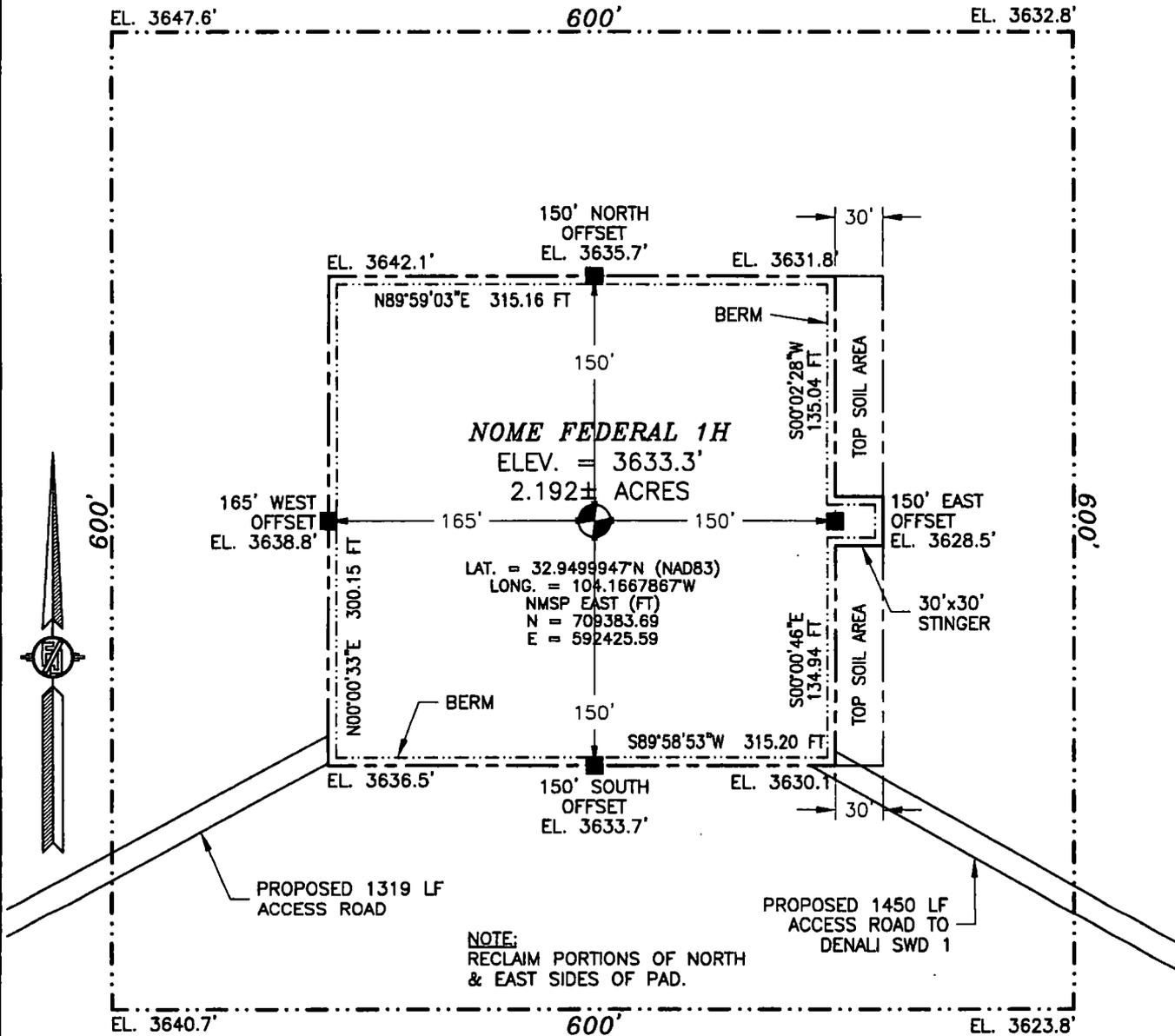
MARCH 9, 2018

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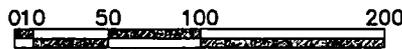
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
**SITE MAP**

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE



NOTE:  
 RECLAIM PORTIONS OF NORTH  
 & EAST SIDES OF PAD.



**DIRECTIONS TO LOCATION**

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 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

D-7001  
 1625 N. French Dr. HB86 NM 87501  
 Phone (505) 476-6161 Fax (505) 476-6170  
 District III  
 5115 East St. Albuq. NM 87210  
 Phone (505) 748-1233 Fax (505) 748-9720  
 District III  
 1000 Rio Brazos Road. Aztec. NM 87410  
 Phone (505) 334-6178 Fax (505) 334-6170  
 District IX  
 1220 S. St. Francis Dr. Santa Fe, NM 87505  
 Phone (505) 476-346 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

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

AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

API Number		Pool Code		Pool Name	
				Diamond Mound; San Andres	
Property Code		Property Name		Well Number	
		NOME FEDERAL		IH	
OGRID No.		Operator Name		Elevation	
13837		MACK ENERGY CORPORATION		3633.3	

**Surface Location**

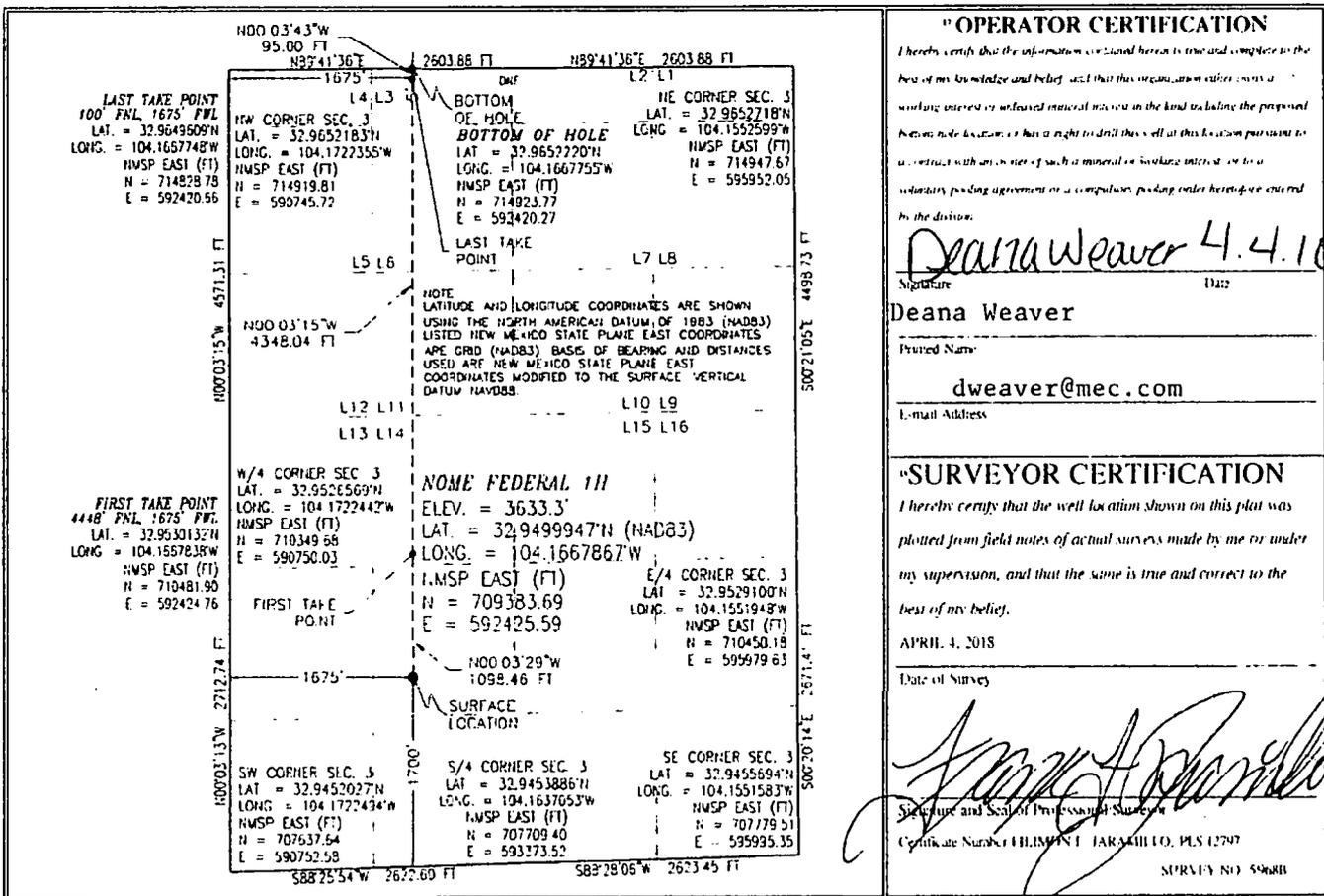
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	3	16 S	28 E		1700	SOUTH	1675	WEST	EDDY

**Bottom Hole Location If Different From Surface**

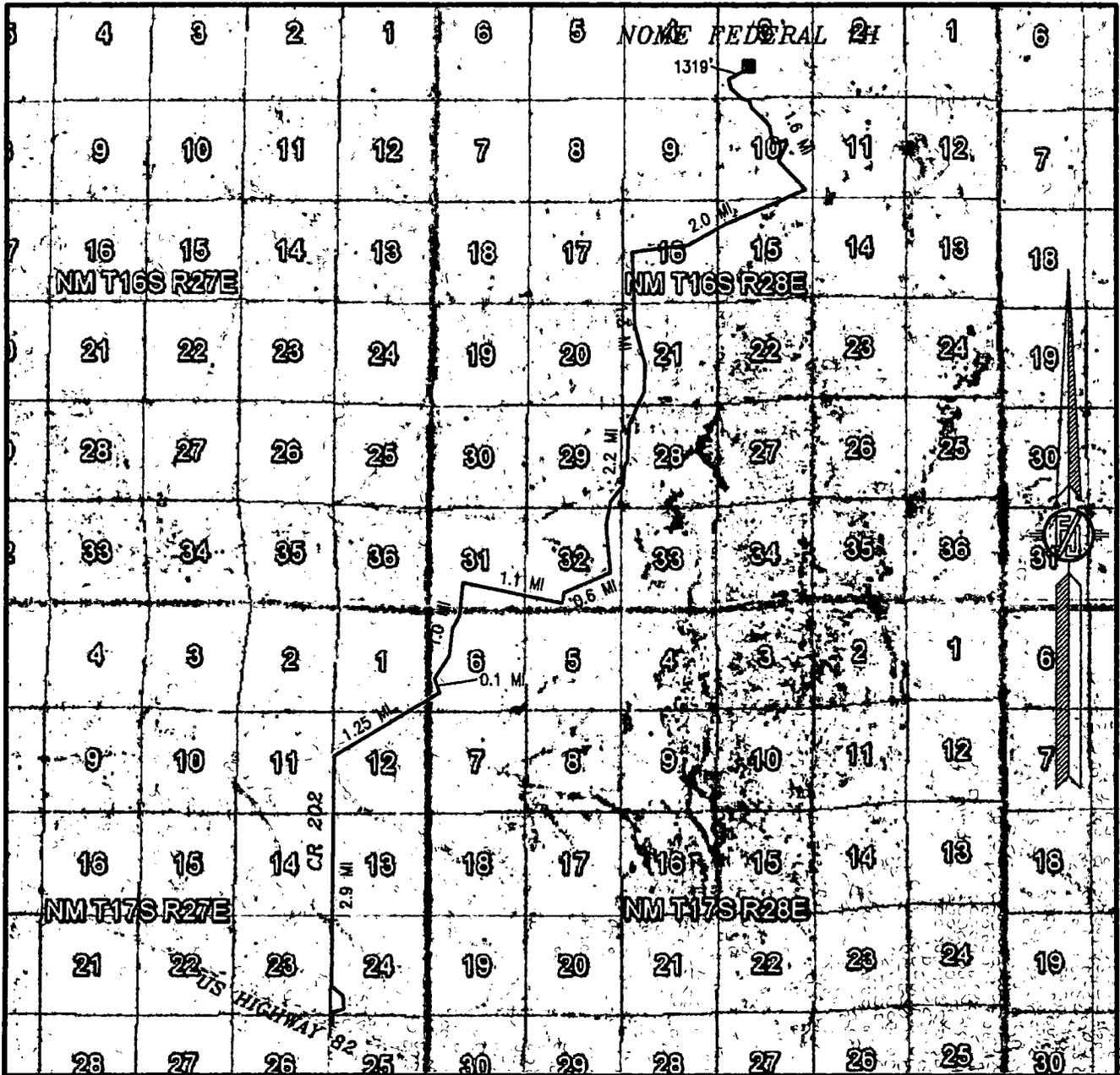
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
3	3	16 S	28 E		5	NORTH	1675	WEST	EDDY

Dedicated Acres	Joint or InHH	Consolidation Code	Order No.
160			

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.



SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
 EDDY COUNTY, STATE OF NEW MEXICO  
 ACCESS AERIAL ROUTE MAP



NOT TO SCALE  
 AERIAL PHOTO:  
 GOOGLE EARTH  
 MARCH 2018

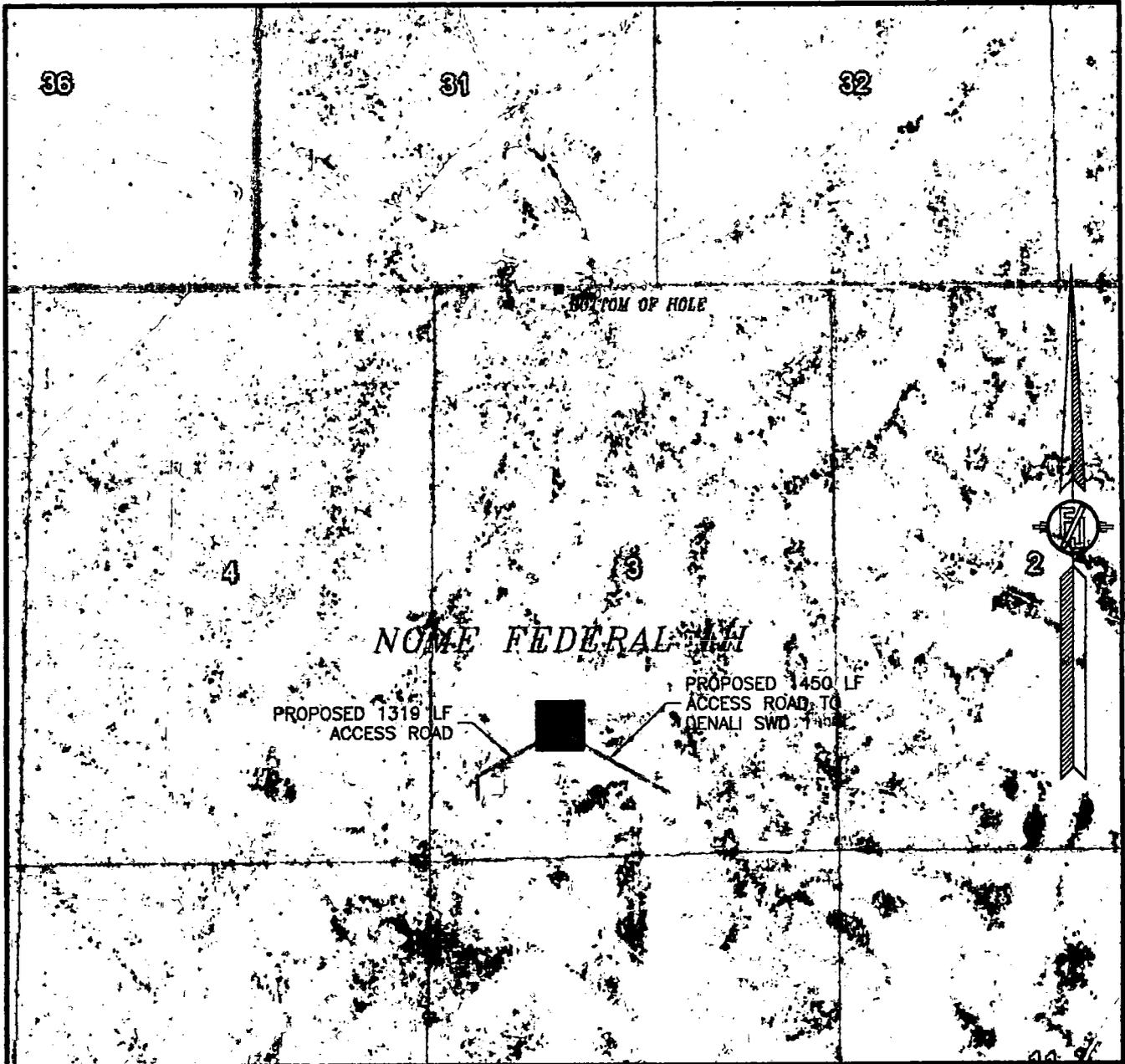
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 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 9, 2018

SURVEY NO. 5968A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
AERIAL PHOTO



NOT TO SCALE  
AERIAL PHOTO:  
GOOGLE EARTH  
MARCH 2018

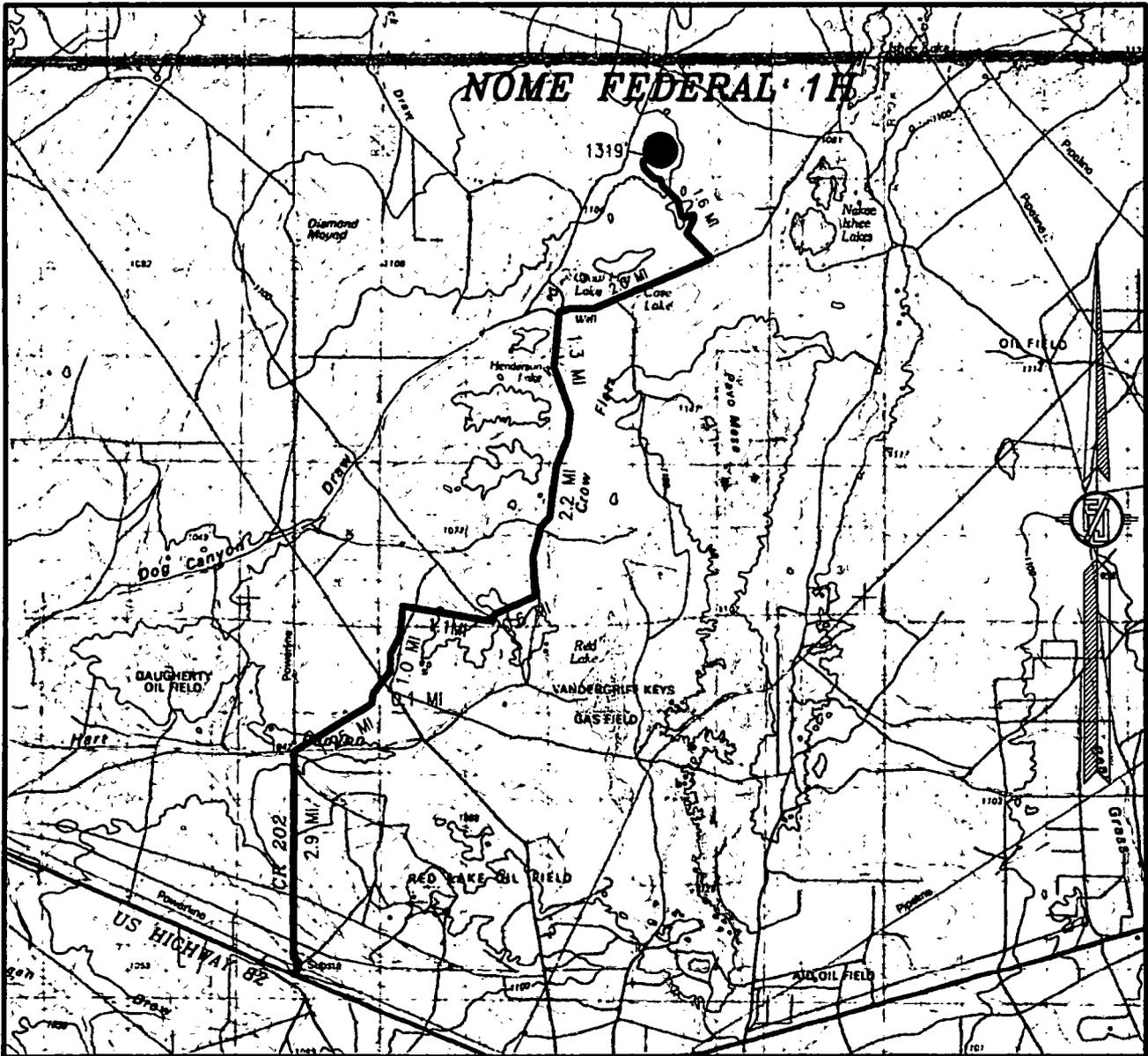
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(575) 234-3341

SECTION 3, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.  
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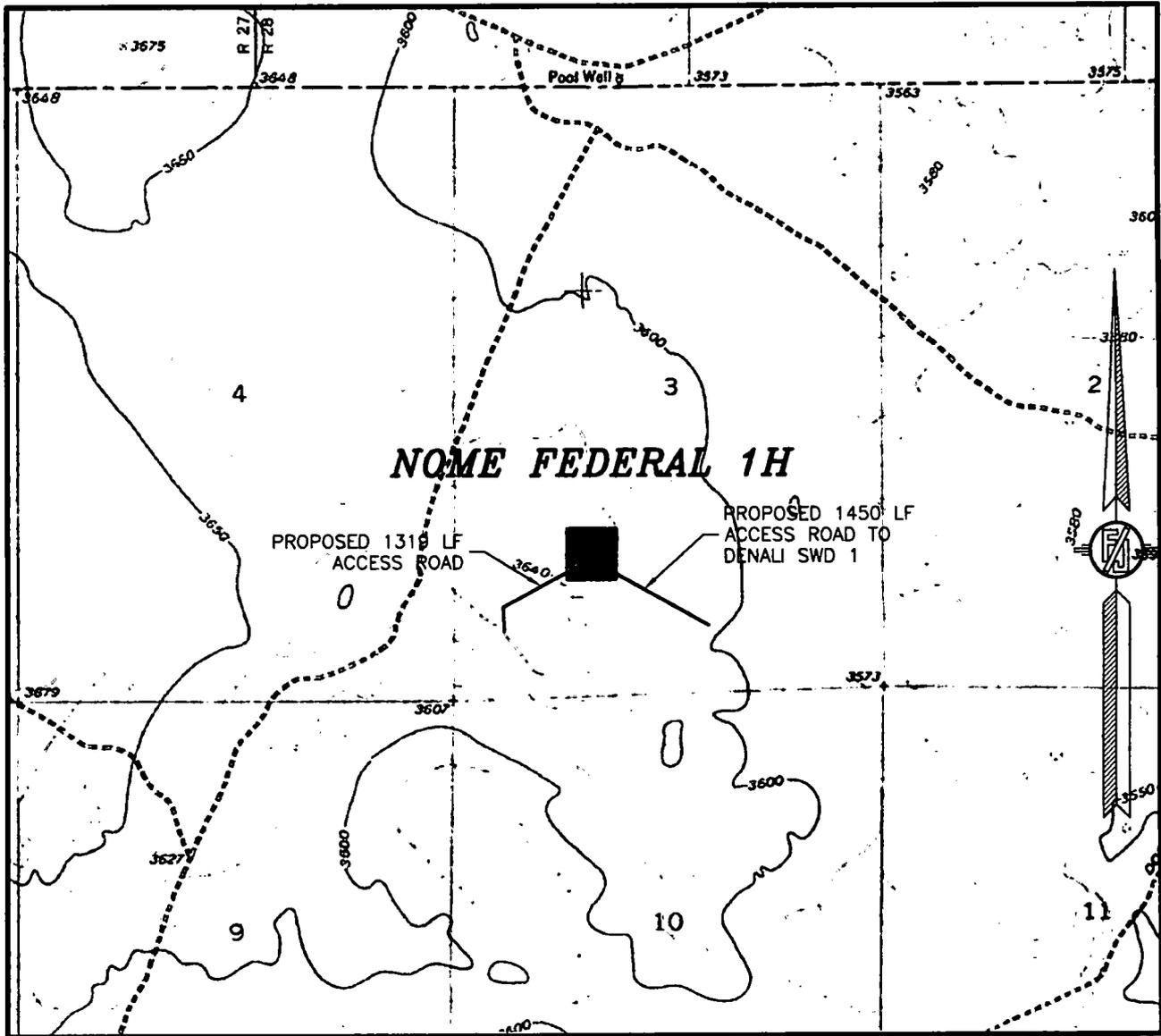
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MARCH 9, 2018

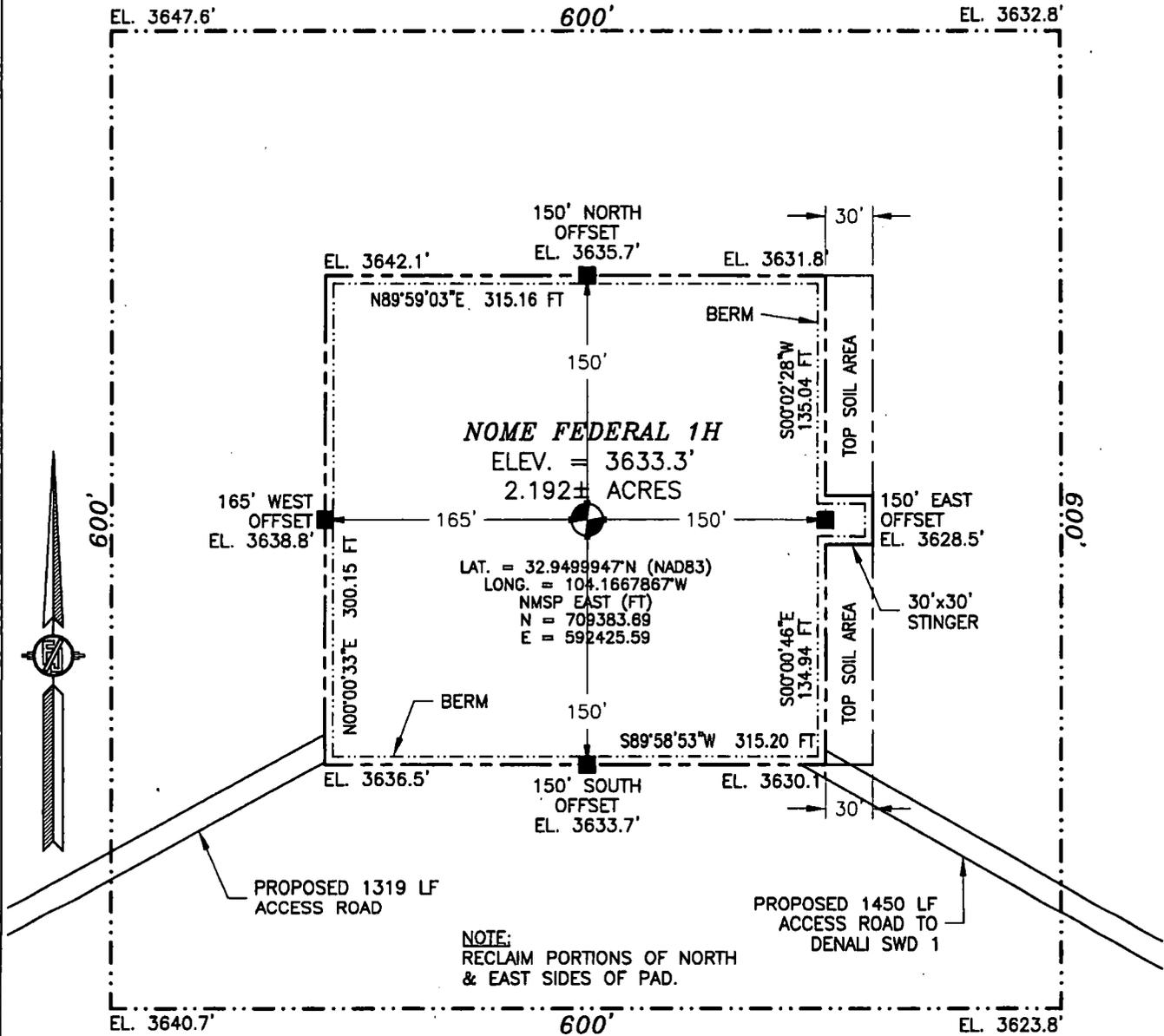
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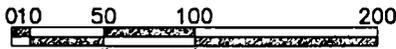
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District I  
1625 N. French Dr., Hotchkiss, NM 87524  
Phone (505) 493-6161 Fax (505) 493-9720  
District II  
5115 First St., Artesia, NM 87010  
Phone (505) 745-1253 Fax (505) 745-9720  
District III  
1600 Rio Brazos Road, Aztec, NM 87010  
Phone (505) 334-6178 Fax (505) 334-6170  
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Energy, Minerals & Natural Resources Department  
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Santa Fe, NM 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
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AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number		Pool Code		Pool Name	
				Diamond Mound; San Andres	
Property Code		Property Name		Well Number	
		NOME FEDERAL		1H	
GRID No.		Operator Name		Elevation	
13837		MACK ENERGY CORPORATION		3633.3	

Surface Location

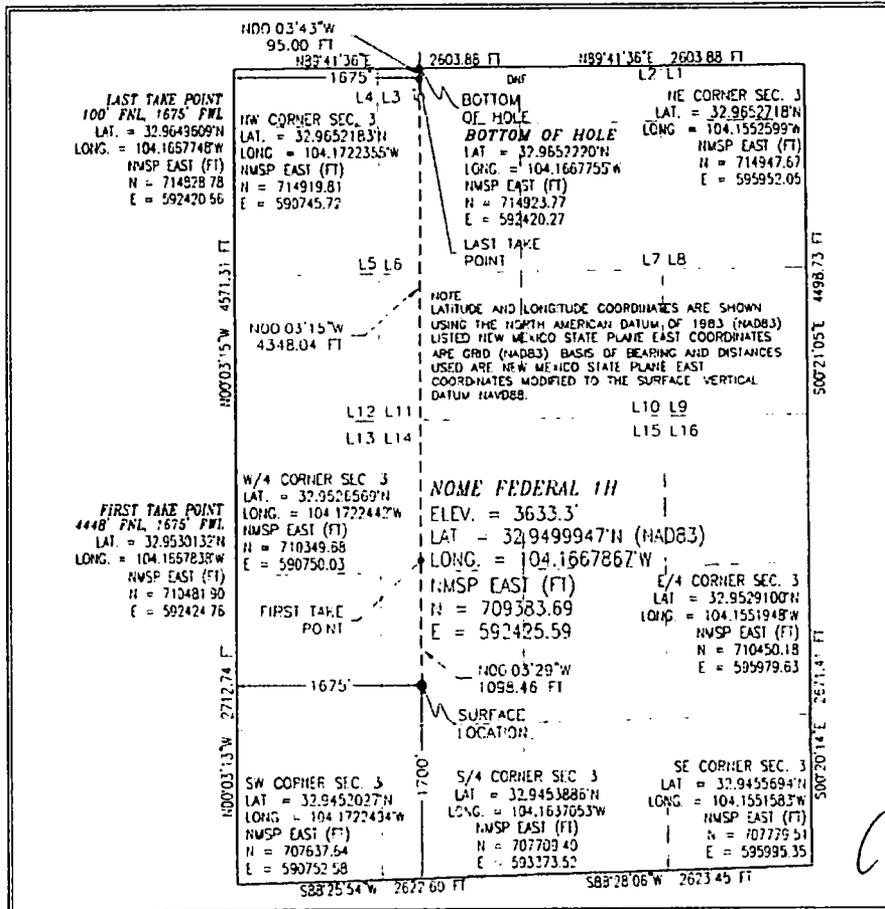
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Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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.



**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 a 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 working interest or to a voluntary pooling agreement or a completion pooling order heretofore entered by the division.

Signature: *Deana Weaver* Date: 4.4.18  
Printed Name: Deana Weaver  
E-mail Address: dweaver@mec.com

**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.

Date of Survey: APRIL 4, 2015

Signature and Seal of Professional Surveyor: *[Signature]*  
Certificate Number: ELMHNT JARVILLO PLUS 12797  
SURVIA NO 5968B

**Operator Name:** MACK EN CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Section 12 - Other Information**

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

**ROW Applications**

**SUPO Additional Information:**

**Use a previously conducted onsite?** YES

**Previous Onsite information:** Onsite 3/10/2018

**Other SUPO Attachment**

nome\_sup\_20180625102225.pdf

**Operator Name:** MACK ENERGY CO. .ATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** The holder shall seed all disturbed areas with the seed mixture listed by BLM. The seed mixture shall be planted in the amounts specified in pounds for pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability tested of seed will be done in accordance with State Law (s) and the nine (9) months prior to purchase. Commercial see will be either certified or registered seed. The seed container will be tagged in accordance with State Law (s) and available for inspection by the authorized officer.

**Weed treatment plan attachment:**

**Monitoring plan description:** After all disturbed area have been satisfactorily prepared, these areas need to be revegetated with seed mixture provided by BLM. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may be repeated until revegetation is successful, as determined by the BLM.

**Monitoring plan attachment:**

**Success standards:** The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

**Pit closure description:** NO pit

**Pit closure attachment:**

## **Section 11 - Surface Ownership**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**Operator Name:** MACK EN CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** The area around the well site is grassland and the topsoil is sandy. The vegetation is native scrub grass with sagebrush.

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** YES

**Seed harvest description:** A cultural resources examination has been requested and will be forwarded to your office in the near future.

**Seed harvest description attachment:**

**Seed Management**

**Seed Table**

**Seed type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

**Seed Summary**

**Total pounds/Acre:**

**Seed Type**

**Pounds/Acre**

**Seed reclamation attachment:**

**Operator Contact/Responsible Official Contact Info**

**First Name:** Jerry

**Last Name:** Sherrell

**Phone:** (575)748-1288

**Email:** jerrys@mec.com

Operator Name: MACK ENERGY CO. LOCATION

Well Name: NOME FEDERAL

Well Number: 1H

### Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name:

Multiple Well Pad Number:

Recontouring attachment:

nome\_reclaim\_20180328120735.pdf

**Drainage/Erosion control construction:** Edges of location will be bermed to prevent run off or erosion.

**Drainage/Erosion control reclamation:** The maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3' wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage and to be consistent with local drainage patterns.

<b>Well pad proposed disturbance (acres):</b> 2.192	<b>Well pad interim reclamation (acres):</b> 1.53	<b>Well pad long term disturbance (acres):</b> 1.53
<b>Road proposed disturbance (acres):</b> 0.9	<b>Road interim reclamation (acres):</b> 0.48	<b>Road long term disturbance (acres):</b> 0.42
<b>Powerline proposed disturbance (acres):</b> 0	<b>Powerline interim reclamation (acres):</b> 0	<b>Powerline long term disturbance (acres):</b> 0
<b>Pipeline proposed disturbance (acres):</b> 0	<b>Pipeline interim reclamation (acres):</b> 0	<b>Pipeline long term disturbance (acres):</b> 0
<b>Other proposed disturbance (acres):</b> 0	<b>Other interim reclamation (acres):</b> 0	<b>Other long term disturbance (acres):</b> 0
<b>Total proposed disturbance:</b> 3.092	<b>Total interim reclamation:</b> 2.01	<b>Total long term disturbance:</b> 1.95

#### Disturbance Comments:

**Reconstruction method:** 1) Caliche will be removed, ground ripped and stockpiled topsoil used to recontoured as close as possible to the original natural level to prevent erosion and ponding of water. 2) Area will be reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure live seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.

**Topsoil redistribution:** 1) Caliche will be removed, ground ripped and stockpiled topsoil used to recontoured as close as possible to the original natural level to prevent erosion and ponding of water. 2) Area will be reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure live seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.

**Soil treatment:** 1) Caliche will be removed, ground ripped and stockpiled topsoil used to recontoured as close as possible to the original natural level to prevent erosion and ponding of water. 2) Area will be reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure live seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.

**Existing Vegetation at the well pad:** The area around the well site is grassland and the topsoil is sandy. The vegetation is native scrub grass with sagebrush.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** The area around the well site is grassland and the topsoil is sandy. The vegetation is native scrub grass with sagebrush.

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:** The area around the well site is grassland and the topsoil is sandy. The vegetation is native scrub grass with sagebrush.

**Operator Name:** MACK EN CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)**                      **Reserve pit width (ft.)**

**Reserve pit depth (ft.)**    **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** NO

**Description of cuttings location**

**Cuttings area length (ft.)**    **Cuttings area width (ft.)**

**Cuttings area depth (ft.)**    **Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

### Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

### Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Nome\_Fed\_1\_site\_map\_20180328120402.pdf

**Comments:** Power will be run by CVE and they will send a separate plan for power. A. The well site and elevation plat for the proposed well is shown in attachment. It was staked by Maddron Surveying, Carlsbad, NM. B. The drill pad layout, with elevations staked by Maddron Surveying, is shown in attachment. Dimensions of the pad are shown. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required. C. Diagram below shows the proposed orientation of the location. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

**Operator Name:** MACK ENERGY CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

**Waste type:** SEWAGE

**Waste content description:** Sewage and Gray Water will be placed in container and hauled to an approved facility. Container and disposal handled by Black Hawk.

**Amount of waste:**

**Waste disposal frequency :** Weekly

**Safe containment description:** Sewage and Gray water will be placed in container and hauled to an approved facility. Container and disposal handled by Black Hawk

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** Black Hawk will dispose at an approved location. Black Hawk Keith Willis 15756376378.

**Waste type:** GARBAGE

**Waste content description:** Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved local landfill. No toxic waste or hazardous chemicals will be produced by this operation

**Amount of waste:**                      pounds

**Waste disposal frequency :** Weekly

**Safe containment description:** garbage and trash produced during drilling or completion operations will be collected in trash bins and hauled to an approved local landfill. No toxic waste or hazardous chemicals will be produced by this operation.

**Safe containmant attachment:**

**Waste disposal type:** OFF-LEASE INJECTION      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** garbage and trash produced during drilling or completion operations will be collected in trash bins and hauled to an approved local landfill. No toxic waste or hazardous chemicals will be produced by this operation.

**Waste type:** DRILLING

**Waste content description:** Drill cuttings and fluids will be disposed into the steel tanks and hauled to R-360 disposal facility, permit number NM-01-0006. Located on HWY 62 at MM 66.

**Amount of waste:** 380                      barrels

**Waste disposal frequency :** Weekly

**Safe containment description:** Drill cuttings and fluids will be disposed into the steel tanks and hauled to R-360 disposal facility, permit number NM-01-0006. Located on HWY 62 at MM 66.

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** R-360 disposal facility, permit number NM-01-0006. Location on HWY 62 at MM 66.

**Reserve Pit**

**Reserve Pit being used?** NO

**Operator Name:** MACK EN CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

**Well target aquifer:**

**Est. depth to top of aquifer(ft):**

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

**Well casing outside diameter (in.):**

**Well casing inside diameter (in.):**

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

**Casing top depth (ft.):**

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

## Section 6 - Construction Materials

**Construction Materials description:** All caliche required for construction of drill pad and proposed new access road (approximately 2500 cubic yards) will be obtained from approved caliche pit @ Sec 7 T16S R29S and NWSE Sec 1 T16S R28E (see map attached)

**Construction Materials source location attachment:**

Nome\_Fed\_1\_caliche\_pits\_20180328112719.pdf

## Section 7 - Methods for Handling Waste

**Waste type:** PRODUCED WATER

**Waste content description:** Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) and sent to the Denali SWD #1 Sec 3 T16S R28E

**Amount of waste:** 2080 barrels

**Waste disposal frequency :** Weekly

**Safe containment description:** Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) and sent to the Denali SWD #1 Sec 3 T16S R28E

**Safe containmant attachment:**

**Waste disposal type:** OFF-LEASE INJECTION      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) and sent to the Denali SWD #1 Sec 3 T16S R28E

Operator Name: MACK ENERGY CORPORATION

Well Name: NOME FEDERAL

Well Number: 1H

### Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

**Production Facilities description:** A. Mack Energy Corporation will construct facility on the West side of this location. B. If the well is productive, contemplated facilities will be as follows: 1) San Andres completion: will be sent to the Nome Fed TB located on the West side of the Nome Fed 1H well. 2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications. 3) any additional caliche will be obtained from BLM approved caliche pit. Any additional construction materials will be purchased from contractors. 4) It will be necessary to run electric power if this well is productive. Power will be run by CVE and they will send separate plan for power. Proposed flow lines will stay on location, TB will be built on West side of the location. Flowline will be a 3" poly surface line, 300' in length with a 40 psi working pressure.

**Production Facilities map:**

nome\_tb\_2018032809042200\_20180328101604.pdf

### Section 5 - Location and Types of Water Supply

#### Water Source Table

**Water source use type:** CAMP USE, DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE CASING

**Water source type:** GW WELL

**Describe type:**

**Source longitude:**

**Source latitude:**

**Source datum:**

**Water source permit type:** OTHER

**Source land ownership:** OTHER

**Describe land ownership:**

**Water source transport method:** TRUCKING

**Source transportation land ownership:** OTHER

**Describe transportation land ownership:**

**Water source volume (barrels):** 20000

**Source volume (acre-feet):** 2.577862

**Source volume (gal):** 840000

**Water source and transportation map:**

Nome\_Fed\_1\_WATER\_SOURCE\_MAPS\_20180328112339.pdf

NOme\_Water\_Supply\_2\_20180625093806.pdf

Nome\_Water\_Supply\_20180625093820.pdf

Water source comments: Sec. 8 T21S R32E Sec. 6 T21S R36E

**New water well?** NO

#### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Operator Name:** MACK ENERGY CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

**Access road engineering design?** NO

**Access road engineering design attachment:**

**Access surfacing type:** OTHER

**Access topsoil source:** ONSITE

**Access surfacing type description:** Surface material will consist of native caliche. Caliche will be obtained from the nearest approved caliche pit.

**Access onsite topsoil source depth:** 2

**Offsite topsoil source description:**

**Onsite topsoil removal process:** Blade topsoil into windrow along up-slope edge of road

**Access other construction information:**

**Access miscellaneous information:**

**Number of access turnouts:**

**Access turnout map:**

### Drainage Control

**New road drainage crossing:** OTHER

**Drainage Control comments:** The maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3' wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

**Road Drainage Control Structures (DCS) description:** The maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3' wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage and to be consistent with local drainage patterns.

**Road Drainage Control Structures (DCS) attachment:**

### Access Additional Attachments

**Additional Attachment(s):**

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

existing\_wells\_20180328111453.pdf

**Existing Wells description:**

**APD ID:** 10400028069

**Submission Date:** 04/04/2018

Highlighted data  
reflects the most  
recent changes

**Operator Name:** MACK ENERGY CORPORATION

**Well Name:** NOME FEDERAL

**Well Number:** 1H

Show Final Text

**Well Type:** OIL WELL

**Well Work Type:** Drill

**Section 1 - Existing Roads**

**Will existing roads be used?** YES

**Existing Road Map:**

NOME\_FEDERAL\_1H\_2\_\_plat\_20180625101427.pdf

**Existing Road Purpose:** ACCESS,FLUID TRANSPORT

**Row(s) Exist?** NO

**ROW ID(s)**

**ID:**

**Do the existing roads need to be improved?** NO

**Existing Road Improvement Description:**

**Existing Road Improvement Attachment:**

**Section 2 - New or Reconstructed Access Roads**

**Will new roads be needed?** YES

**New Road Map:**

NOME\_FEDERAL\_1H\_2\_\_plat\_20180625101549.pdf

**New road type:** LOCAL,TWO-TRACK

**Length:** 1319

Feet

**Width (ft.):** 14

**Max slope (%):** 2

**Max grade (%):** 1

**Army Corp of Engineers (ACOE) permit required?** NO

**ACOE Permit Number(s):**

**New road travel width:** 14

**New road access erosion control:** The maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3"wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage and to be consistent with local drainage patterns.

**New road access plan or profile prepared?** NO

**New road access plan attachment:**

**Mack Energy Corporation Call List, Eddy County**

<b>Artesia (575)</b>	<b>Cellular</b>	<b>Office</b>
Jim Krogman.....	432-934-1596.....	748-1288
Emilio Martinez.....	432-934-7586.....	748-1288

**Agency Call List (575)**

**Artesia**

State Police.....	746-2703
City Police.....	746-2703
Sheriff's Office.....	746-9888
Ambulance.....	911
Fire Department.....	746-2701
LEPC (Local Emergency Planning Committee).....	746-2122
NMOCD.....	748-1283

**Carlsbad**

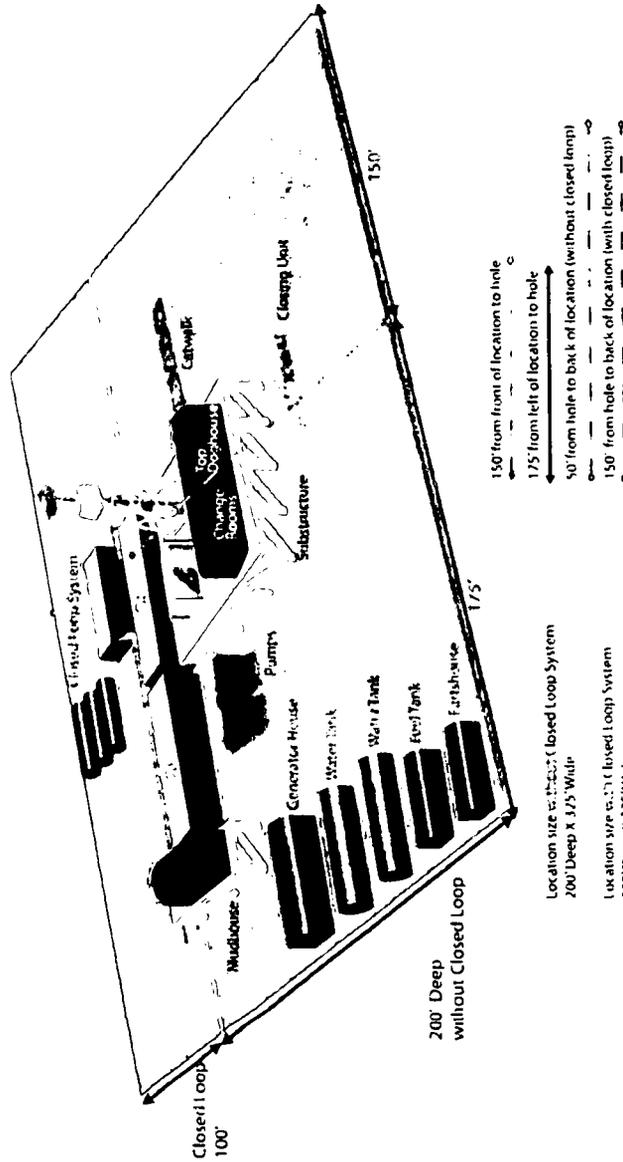
State Police.....	885-3137
City Police.....	885-2111
Sheriff's Office.....	887-7551
Ambulance.....	911
Fire Department.....	885-2111
LEPC (Local Emergency Planning Committee).....	887-3798
Bureau of Land Management.....	887-6544
New Mexico Emergency Response Commission.....	(505)476-9690
24 Hour.....	(505)827-9126
National Emergency Response Center (Washington).....	(800)424-8802

**Emergency Services**

Boots & Coots IWC.....	1-800-256-9688 or (281)931-8884
Cudd pressure Control.....	(915)699-0139 or (915)563-3356
Halliburton.....	746-2757
Par Five.....	748-9539
Flight For Life-Lubbock, TX.....	(806)743-9911
Aerocare-Lubbock, TX.....	(806)747-8923
Med Flight Air Amb-Albuquerque, NM.....	(505)842-4433
Lifeguard Air Med Svc. Albuquerque, NM.....	(505)272-3115

**DRILLING LOCATION H2S SAFTY EQUIPMENT  
Exhibit # 8**

**Location Layout**



200' Deep without Closed Loop  
 Location size with Closed Loop System  
 200' Deep x 32.5' Wide  
 Location size with Closed Loop System  
 300' Deep x 32.5' Wide



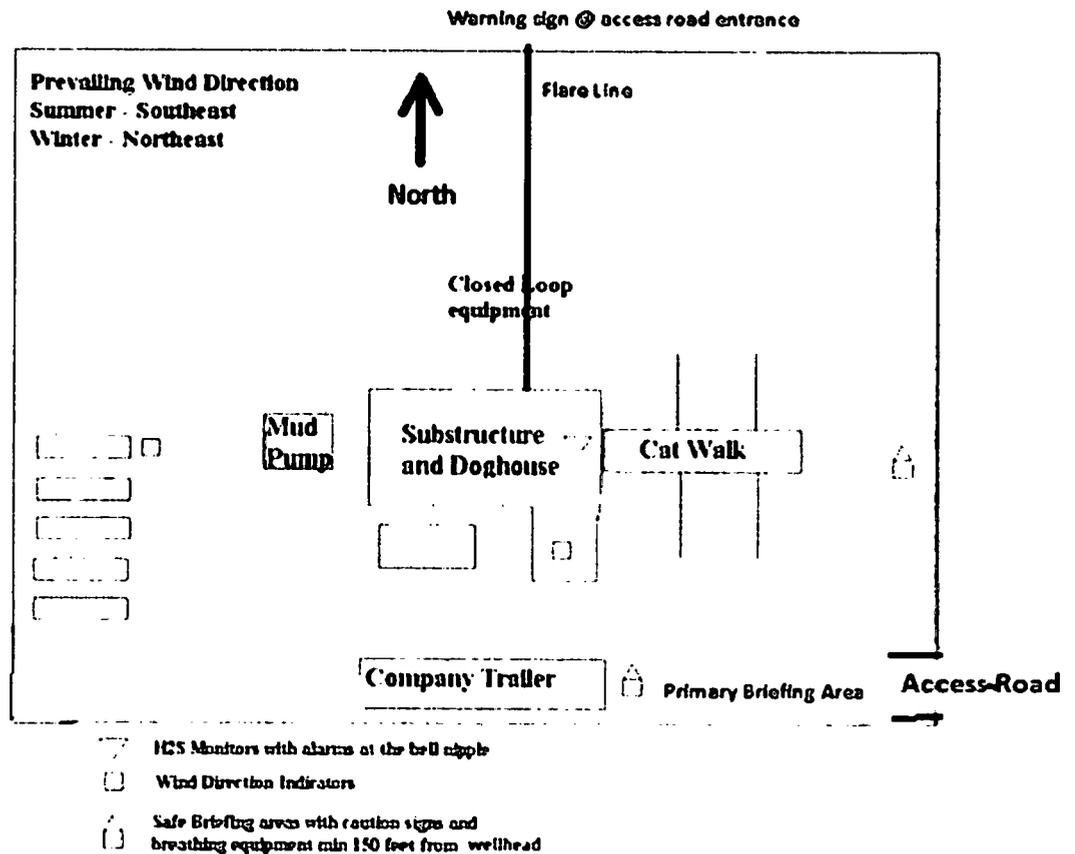
Attached to Fo .60-3  
 Mack Energy Corporation  
 Nome Federal #1 NMNM-18831  
 SHL : 1700 FSL & 1675 FWL, NE/4 SW/4, Sec. 3 T16S R28E  
 BHL : 5 FNL & 1675 FWL, NE/4 NW/4, SEC. 3 T16S R28E  
 Eddy County, NM

**EXHIBIT #7**

**WARNING**  
**YOU ARE ENTERING AN H2S**  
**AUTHORIZED PERSONNEL ONLY**

1. BEARDS OR CONTACT LENSES NOT ALLOWED
2. HARD HATS REQUIRED
3. SMOKING IN DESIGNATED AREAS ONLY
4. BE WIND CONSCIOUS AT ALL TIMES
5. CHECK WITH MACK ENERGY FOREMAN AT OFFICE

**MACK ENERGY CORPORATION**  
**1-575-748-1288**



B. There will be no drill stem testing.

Attached to Form 3160-3  
Mack Energy Corporation  
Nome Federal #1 NMNM-18831  
SHL : 1700 FSL & 1675 FWL, NE/4 SW/4, Sec. 3 T16S R28E  
BHL : 5 FNL & 1675 FWL, NE/4 NW/4, SEC. 3 T16S R28E  
Eddy County, NM

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**2. Protective equipment for essential personnel:**

- A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

**3. H2S detection and monitoring equipment:**

- A. 1 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

**4. Visual warning systems:**

- A. Wind direction indicators as shown on well site diagram (Exhibit #8).
- B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

**5. Mud program:**

- A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

**6. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
- B. All elastomers used for packing and seals shall be H2S trim.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephone and 2-way radio.
- B. Land line (telephone) communication at Office.

**8. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.

**Mack Energy Corporation  
Onshore Order #6  
Hydrogen Sulfide Drilling Operation Plan**

**I. HYDROGEN SULFIDE TRAINING**

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H<sub>2</sub>S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan. The concentrations of H<sub>2</sub>S of wells in this area from surface to TD are low enough that a contingency plan is not required.

**II. H<sub>2</sub>S SAFETY EQUIPMENT AND SYSTEMS**

Note: All H<sub>2</sub>S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H<sub>2</sub>S.

**1. Well Control Equipment:**

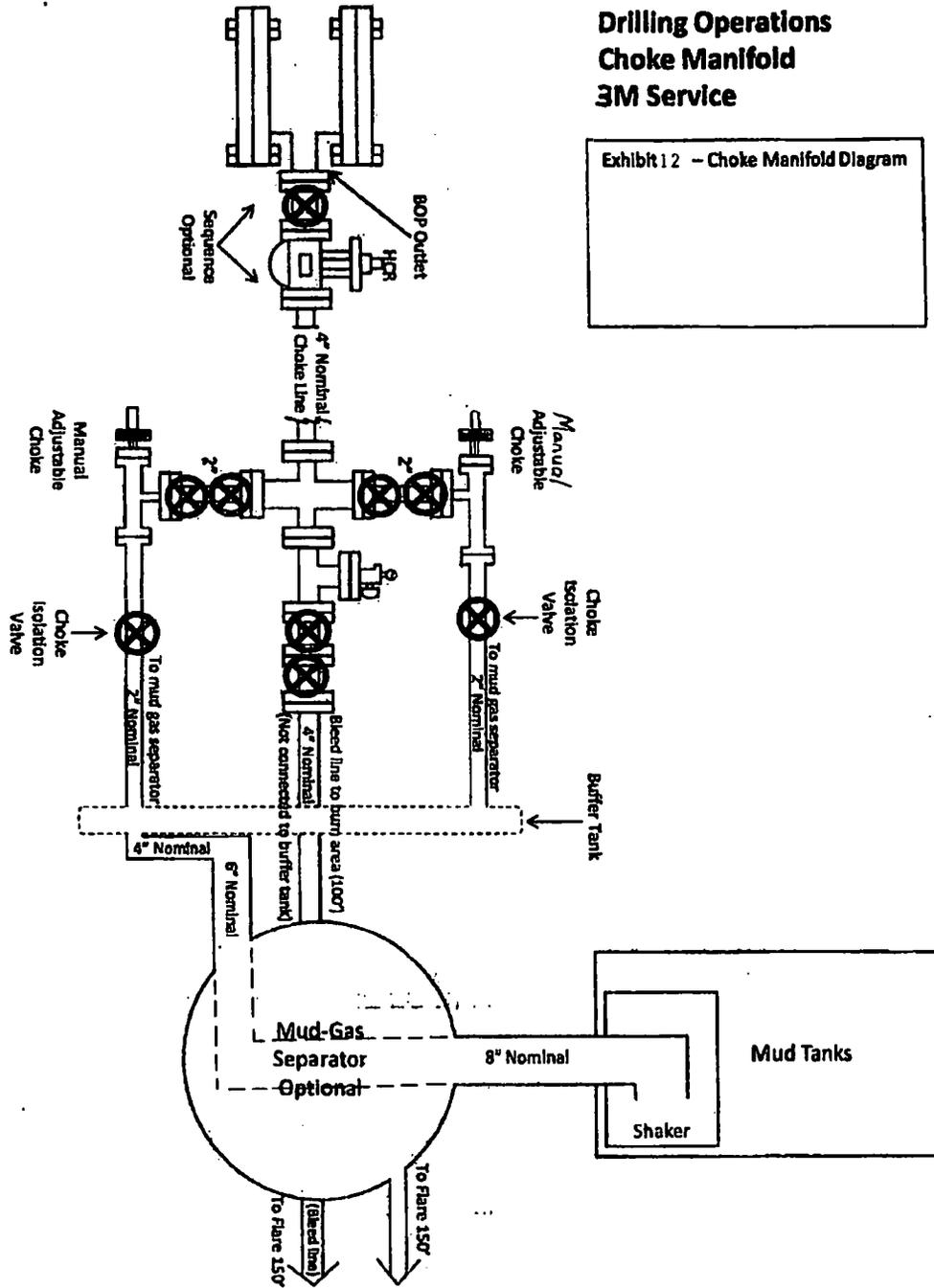
- A. Flare line.
- B. Choke manifold.
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

# Mack Energy Corporation

MANIFOLD SCHEMATIC  
Exhibit #12

## Drilling Operations Choke Manifold 3M Service

Exhibit 12 - Choke Manifold Diagram



# Mack Energy Corporation

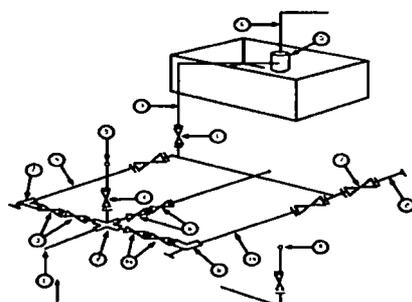
Exhibit #11

## MINIMUM CHOKE MANIFOLD

3,000, 5,000, and 10,000 PSI Working Pressure

3M will be used

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

\* Location of separator optional

Below Substructure

### Minimum requirements

No.		3,000 MWP			5,000 MWP			10,000 MWP		
		I.D.	Nominal	Rating	I.D.	Nominal	Rating	I.D.	Nominal	Rating
1	Line from drilling Spool		3"	3,000		3"	5,000		3"	10,000
2	Cross 3" x 3" x 3" x 2"			3,000			5,000			
2	Cross 3" x 3" x 3" x 2"									10,000
3	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"		10,000
4	Valve Gate Plug	1 13/16"		3,000	1 13/16"		5,000	1 13/16"		10,000
4a	Valves (1)	2 1/16"		3,000	2 1/16"		5,000	2 1/16"		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"		10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		2"	10,000
11	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"		10,000
12	Line		3"	1,000		3"	1,000		3"	2,000
13	Line		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound Standpipe pressure gauge			3,000			5,000			10,000
15	Gas Separator		2' x 5'			2' x 5'			2' x 5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"		10,000

(1) Only one required in Class 3M

(2) Gate valves only shall be used for Class 10 M

(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling.

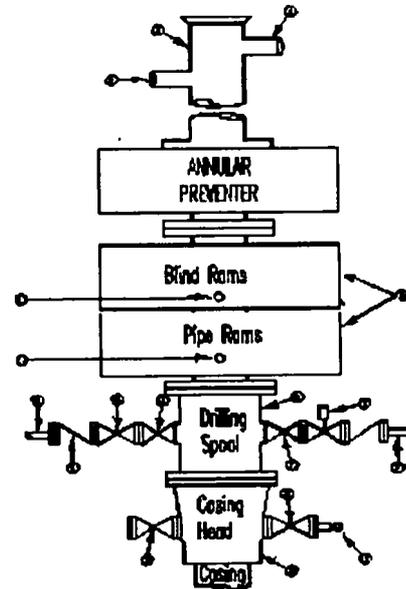
#### EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

- All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.
- All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.
- All lines shall be securely anchored.
- Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available.
- alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge.
- Line from drilling spool to choke manifold should be as straight as possible. Lines downstream from chokes shall make turns by large bends or 90 degree bends using bull plugged tees

**Mack Energy Corporation**  
**Minimum Blowout Preventer Requirements**  
 3000 psi Working Pressure  
 13 3/8 inch- 3 MWP  
 11 Inch - 3 MWP  
**EXHIBIT #10**

**Stack Requirements**

NO.	Items	Min. I.D.	Min. Nominal
1	Flowline		2"
2	Fill up line		2"
3	Drilling nipple		
4	Annular preventer		
5	Two single or one dual hydraulically operated rams		
6a	Drilling spool with 2" min. kill line and 3" min choke line outlets		2" Choke
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above)		
7	Valve Gate Plug	3 1/8	
8	Gate valve-power operated	3 1/8	
9	Line to choke manifold		3"
10	Valve Gate Plug	2 1/16	
11	Check valve	2 1/16	
12	Casing head		
13	Valve Gate Plug	1 13/16	
14	Pressure gauge with needle valve		
15	Kill line to rig mud pump manifold		2"



**OPTIONAL**

16	Flanged Valve	1 13/16	
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**CONTRACTOR'S OPTION TO FURNISH:**

1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2000 psi minimum.
2. Automatic accumulator (80 gallons, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers' position.
4. Kelly equipped with Kelly cock.
5. Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.

**MEC TO FURNISH:**

1. Bradenhead or casing head and side valves.
2. Wear bushing, if required.

10.

ME

**GENERAL NOTES:**

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position
4. Chokes will be positioned so as not to hamper or delay changing of choke beans.

Replaceable parts for

- adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.
5. All valves to be equipped with hand-wheels or handles ready for immediate use.
  6. Choke lines must be suitably anchored.
  7. Handwheels and extensions to be connected and ready for use.
  8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
  9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
  10. Casinghead connections shall not be used except in case of emergency.
  11. Does not use kill line for routine fill up operations.

Attached to Fo .60-3  
Mack Energy Corporation  
Nome Federal #1 NMNM-18831  
SHL : 1700 FSL & 1675 FWL, NE/4 SW/4, Sec. 3 T16S R28E  
BHL : 5 FNL & 1675 FWL, NE/4 NW/4, SEC. 3 T16S R28E  
Eddy County, NM

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**Attachment to Exhibit #10**  
**NOTES REGARDING THE BLOWOUT PREVENTERS**  
Nome Federal #1  
Chaves County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

Attached to Form 3160-3  
Mack Energy Corporation  
Nome Federal #1 NMNM-18831  
SHL : 1700 FSL & 1675 FWL, NE/4 SW/4, Sec. 3 T16S R28E  
BHL : 5 FNL & 1675 FWL, NE/4 NW/4, SEC. 3 T16S R28E  
Eddy County, NM

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- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log from T.D. to 8 5/8 casing shoe.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined at TD.

**10. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:**

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 1600 psig. Low levels of Hydrogen sulfide have been monitors in producing wells in the area, so H<sub>2</sub>S may be present while drilling of the well; a plan is attached to the Drilling program. No major loss of circulation zones has been reported in offsetting wells.

**11. Anticipated Starting Date and Duration of Operations:**

Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is July 1, 2018. Once commenced, the drilling operation should be finished in approximately 20 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

Attached to File 160-3  
 Mack Energy Corporation  
 Nome Federal #1 NMNM-18831  
 SHL : 1700 FSL & 1675 FWL, NE/4 SW/4, Sec. 3 T16S R28E  
 BHL : 5 FNL & 1675 FWL, NE/4 NW/4, SEC. 3 T16S R28E  
 Eddy County, NM

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12 1/4"	0-2700'	7" 26#, HCP-110, Buttress, LT&C, New, 6.067332,3.215804,3.24
7 7/8"	2700-7775'	5 1/2" 17#, HCP-110, Buttress, New, 6.863418, 3.240928, 3.43

**5. Cement Program:**

9 5/8" Surface Casing: 100sx RFC + 12% PF53+2%PF1+5ppsPF42+  
 .125ppsPF29,yld 1.61, wt 14.4, 7.357gals/sx, Tail 300sx Class C+1% PF1, yld 1.34, wt14.8,  
 6.323gals/sx, 100% excess.  
 7 & 5 1/2" Production Casing: Lead 375sx Class C 4% PF 20+4 pps PF45 +125pps PF-29,  
 yld 1.84, wt 13.2 ppg, 9.914gals/sx, excess 35%, Tail 1270sx, PVL + 1.3% (BWOW) PF44  
 + 5% PF174 + 5% PF606 + .1% PF153 +.4% PF44, yield 1.48, wt 13.0, 7.577gals/sx. 35%  
 excess.

**6. Minimum Specifications for Pressure Control:**

The blowout preventer equipment (BOP) shown in Exhibit #10 will consist of a double ram-type (3000 psi WP) minimum preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on bottom. The 11" BOP will be nipped up on the 8 5/8" surface casing and tested by a 3<sup>rd</sup> party to 2000 psi used continuously until TD is reached. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of intermediate casing. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #11) with a minimum 3000 psi WP rating

**7. Types and Characteristics of the Proposed Mud System:**

The well will be drilled to TD with a combination of fresh and cut brine mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-350'	Fresh Water	8.5	28	N.C.
350'-TD'	Cut Brine	9.1	29	N.C.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

**8. Auxiliary Well Control and Monitoring Equipment:**

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

**9. Logging, Testing and Coring Program:**

Attached to Form 3160-3  
 Mack Energy Corporation  
 Nome Federal #1 NMNM-18831  
 SHL : 1700 FSL & 1675 FWL, NE/4 SW/4, Sec. 3 T16S R28E  
 BHL : 5 FNL & 1675 FWL, NE/4 NW/4, SEC. 3 T16S R28E  
 Eddy County, NM

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## DRILLING PROGRAM

### 1. Geologic Name of Surface Formation

Quaternary

### 2. Estimated Tops of Important Geologic Markers:

Yates	370'	Abo	5370'
Seven Rivers	510'	Wolfcamp	6630'
Queen	1090'	Cisco	7640'
Grayburg	1490'	Atoka	9030'
San Andres	1850'	Morrow	9150'
Glorieta	3380'	Miss	9430'
Tubb	4580'	Devonian	10150'

### 3. Estimated Depths of Anticipated Fresh Water, Oil and Gas:

Water Sand	150'	Fresh Water
Yates	370'	Oil/Gas
Seven Rivers	510'	Oil/Gas
Queen	1090'	Oil/Gas
Grayburg	1490'	Oil/Gas
San Andres	1850'	Oil/Gas
Glorieta	3380'	Oil/Gas
Tubb	4580'	Oil/ Gas
Abo	5370'	Oil/Gas
Wolfcamp	6630'	Oil/Gas
Cisco	7640'	Oil/Gas
Atoka	9030'	Oil/Gas
Morrow	9150'	Oil/Gas
Miss	9430'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 9 5/8" casing to 350' and circulating cement back to surface will protect the surface fresh water sand. Salt section and shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 1/2" production casing, sufficient cement will be pumped to circulate back to surface.

### 4. Casing Program:

Hole Size	Interval	OD Casing	Wt, Grade, Jt, cond, collapse/burst/tension
14 3/4"	0-350'	9 5/8"	36#, J-55, ST&C, New, 11.56136,6.938969,7.04

# Nome Federal #1H, Plan 1

<b>Operator</b> Mack Energy Corp	<b>Units</b> feet, %/100ft	12:12 Wednesday, March 14, 2018 Page 4 of 4
<b>Field</b> Diamond Mound	<b>County</b> Eddy	<b>Vertical Section Azimuth</b> 359.94
<b>Well Name</b> Nome Federal #1H	<b>State</b> New Mexico	<b>Survey Calculation Method</b> Minimum Curvature
<b>Plan</b> 1	<b>Country</b> USA	<b>Database Access</b>

<b>Location</b> SL: 1700 FSL & 1675 FWL BHL: 5 FNL & 1675 FWL Section 3-T16S-R28E	<b>Map Zone</b> UTM	<b>Lat Long Ref</b>
<b>Site</b>	<b>Surface X</b> 1896092.8	<b>Surface Long</b>
<b>Slot Name</b>	<b>Surface Y</b> 11961376.5	<b>Surface Lat</b>
<b>Well Number</b>	<b>Surface Z</b> 3655	<b>Global Z Ref</b> Mean Sea Level
<b>Project</b>	<b>Ground Level</b> 3633.5	<b>Local North Ref</b> Grid

**DIRECTIONAL WELL PLAN**

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	%/100ft	ft	ft	ft	ft
6850.00	90.50	359.9	2551.96	4615.78	-7.25	0.00	4615.78	1896085.55	11965992.28	1103.04
6900.00	90.50	359.9	2551.52	4665.77	-7.33	0.00	4665.78	1896085.47	11966042.27	1103.48
6950.00	90.50	359.9	2551.09	4715.77	-7.41	0.00	4715.78	1896085.39	11966092.27	1103.91
7000.00	90.50	359.9	2550.65	4765.77	-7.49	0.00	4765.78	1896085.31	11966142.27	1104.35
7050.00	90.50	359.9	2550.21	4815.77	-7.56	0.00	4815.77	1896085.24	11966192.27	1104.79
7100.00	90.50	359.9	2549.78	4865.77	-7.64	0.00	4865.77	1896085.16	11966242.27	1105.22
7150.00	90.50	359.9	2549.34	4915.76	-7.72	0.00	4915.77	1896085.08	11966292.26	1105.66
7200.00	90.50	359.9	2548.91	4965.76	-7.80	0.00	4965.77	1896085.00	11966342.26	1106.09
7250.00	90.50	359.9	2548.47	5015.76	-7.88	0.00	5015.77	1896084.92	11966392.26	1106.53
7300.00	90.50	359.9	2548.03	5065.76	-7.96	0.00	5065.76	1896084.84	11966442.26	1106.97
7350.00	90.50	359.9	2547.60	5115.76	-8.04	0.00	5115.76	1896084.76	11966492.26	1107.40
7400.00	90.50	359.9	2547.16	5165.76	-8.11	0.00	5165.76	1896084.69	11966542.26	1107.84
7450.00	90.50	359.9	2546.72	5215.75	-8.19	0.00	5215.76	1896084.61	11966592.25	1108.28
7500.00	90.50	359.9	2546.29	5265.75	-8.27	0.00	5265.76	1896084.53	11966642.25	1108.71
7550.00	90.50	359.9	2545.85	5315.75	-8.35	0.00	5315.76	1896084.45	11966692.25	1109.15
7600.00	90.50	359.9	2545.42	5365.75	-8.43	0.00	5365.75	1896084.37	11966742.25	1109.58
7650.00	90.50	359.9	2544.98	5415.75	-8.51	0.00	5415.75	1896084.29	11966792.25	1110.02
7700.00	90.50	359.9	2544.54	5465.74	-8.59	0.00	5465.75	1896084.21	11966842.24	1110.46
7750.00	90.50	359.9	2544.11	5515.74	-8.66	0.00	5515.75	1896084.14	11966892.24	1110.89
*** TD (at MD = 7774.33)										
7774.33	90.50	359.9	2543.89	5540.07	-8.70	0.00	5540.08	1896084.10	11966916.57	1111.11

# Nome Federal #1H, Plan 1

<b>Operator</b> Mack Energy Corp	<b>Units</b> feet, %/100ft	12:12 Wednesday, March 14, 2018 Page 3 of 4
<b>Field</b> Diamond Mound	<b>County</b> Eddy	<b>Vertical Section Azimuth</b> 359.94
<b>Well Name</b> Nome Federal #1H	<b>State</b> New Mexico	<b>Survey Calculation Method</b> Minimum Curvature
<b>Plan</b> 1	<b>Country</b> USA	<b>Database</b> Access

<b>Location</b> SL: 1700 FSL & 1675 FWL BHL: 5 FNL & 1675 FWL Section 3-T16S-R28E	<b>Map Zone</b> UTM	<b>Lat Long Ref</b>
<b>Site</b>	<b>Surface X</b> 1896092.8	<b>Surface Long</b>
<b>Slot Name</b>	<b>Surface Y</b> 11961376.5	<b>Surface Lat</b>
<b>Well Number</b>	<b>Surface Z</b> 3655	<b>Global Z Ref</b> Mean Sea Level
<b>Project</b>	<b>Ground Level</b> 3633.5	<b>Local North Ref</b> Grid

**DIRECTIONAL WELL PLAN**

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	%/100ft	ft	ft	ft	ft
5000.00	90.50	359.9	2568.10	2765.85	-4.34	0.00	2765.85	1896088.46	11964142.35	1086.90
5050.00	90.50	359.9	2567.67	2815.85	-4.42	0.00	2815.85	1896088.38	11964192.35	1087.33
5100.00	90.50	359.9	2567.23	2865.85	-4.50	0.00	2865.85	1896088.30	11964242.35	1087.77
5150.00	90.50	359.9	2566.80	2915.84	-4.58	0.00	2915.85	1896088.22	11964292.34	1088.20
5200.00	90.50	359.9	2566.36	2965.84	-4.66	0.00	2965.84	1896088.14	11964342.34	1088.64
5250.00	90.50	359.9	2565.92	3015.84	-4.74	0.00	3015.84	1896088.06	11964392.34	1089.08
5300.00	90.50	359.9	2565.49	3065.84	-4.82	0.00	3065.84	1896087.98	11964442.34	1089.51
5350.00	90.50	359.9	2565.05	3115.84	-4.89	0.00	3115.84	1896087.91	11964492.34	1089.95
5400.00	90.50	359.9	2564.61	3165.83	-4.97	0.00	3165.84	1896087.83	11964542.33	1090.39
5450.00	90.50	359.9	2564.18	3215.83	-5.05	0.00	3215.84	1896087.75	11964592.33	1090.82
5500.00	90.50	359.9	2563.74	3265.83	-5.13	0.00	3265.83	1896087.67	11964642.33	1091.26
5550.00	90.50	359.9	2563.30	3315.83	-5.21	0.00	3315.83	1896087.59	11964692.33	1091.70
5600.00	90.50	359.9	2562.87	3365.83	-5.29	0.00	3365.83	1896087.51	11964742.33	1092.13
5650.00	90.50	359.9	2562.43	3415.82	-5.37	0.00	3415.83	1896087.43	11964792.32	1092.57
5700.00	90.50	359.9	2562.00	3465.82	-5.44	0.00	3465.83	1896087.36	11964842.32	1093.00
5750.00	90.50	359.9	2561.56	3515.82	-5.52	0.00	3515.82	1896087.28	11964892.32	1093.44
5800.00	90.50	359.9	2561.12	3565.82	-5.60	0.00	3565.82	1896087.20	11964942.32	1093.88
5850.00	90.50	359.9	2560.69	3615.82	-5.68	0.00	3615.82	1896087.12	11964992.32	1094.31
5900.00	90.50	359.9	2560.25	3665.81	-5.76	0.00	3665.82	1896087.04	11965042.31	1094.75
5950.00	90.50	359.9	2559.81	3715.81	-5.84	0.00	3715.82	1896086.96	11965092.31	1095.19
6000.00	90.50	359.9	2559.38	3765.81	-5.92	0.00	3765.81	1896086.88	11965142.31	1095.62
6050.00	90.50	359.9	2558.94	3815.81	-5.99	0.00	3815.81	1896086.81	11965192.31	1096.06
6100.00	90.50	359.9	2558.50	3865.81	-6.07	0.00	3865.81	1896086.73	11965242.31	1096.50
6150.00	90.50	359.9	2558.07	3915.80	-6.15	0.00	3915.81	1896086.65	11965292.30	1096.93
6200.00	90.50	359.9	2557.63	3965.80	-6.23	0.00	3965.81	1896086.57	11965342.30	1097.37
6250.00	90.50	359.9	2557.20	4015.80	-6.31	0.00	4015.80	1896086.49	11965392.30	1097.80
6300.00	90.50	359.9	2556.76	4065.80	-6.39	0.00	4065.80	1896086.41	11965442.30	1098.24
6350.00	90.50	359.9	2556.32	4115.80	-6.47	0.00	4115.80	1896086.33	11965492.30	1098.68
6400.00	90.50	359.9	2555.89	4165.79	-6.54	0.00	4165.80	1896086.26	11965542.29	1099.11
6450.00	90.50	359.9	2555.45	4215.79	-6.62	0.00	4215.80	1896086.18	11965592.29	1099.55
6500.00	90.50	359.9	2555.01	4265.79	-6.70	0.00	4265.80	1896086.10	11965642.29	1099.99
6550.00	90.50	359.9	2554.58	4315.79	-6.78	0.00	4315.79	1896086.02	11965692.29	1100.42
6600.00	90.50	359.9	2554.14	4365.79	-6.86	0.00	4365.79	1896085.94	11965742.29	1100.86
6650.00	90.50	359.9	2553.71	4415.78	-6.94	0.00	4415.79	1896085.86	11965792.28	1101.29
6700.00	90.50	359.9	2553.27	4465.78	-7.01	0.00	4465.79	1896085.79	11965842.28	1101.73
6750.00	90.50	359.9	2552.83	4515.78	-7.09	0.00	4515.79	1896085.71	11965892.28	1102.17
6800.00	90.50	359.9	2552.40	4565.78	-7.17	0.00	4565.78	1896085.63	11965942.28	1102.60

# Nome Federal #1H, Plan 1

<b>Operator</b> Mack Energy Corp	<b>Units</b> feet, °/100ft	12:12 Wednesday, March 14, 2018 Page 2 of 4
<b>Field</b> Diamond Mound	<b>County</b> Eddy	<b>Vertical Section Azimuth</b> 359.94
<b>Well Name</b> Nome Federal #1H	<b>State</b> New Mexico	<b>Survey Calculation Method</b> Minimum Curvature
<b>Plan</b> 1	<b>Country</b> USA	<b>Database</b> Access

**DIRECTIONAL WELL PLAN**

Location	SL: 1700 FSL & 1675 FWL BHL: 5 FNL & 1675 FWL Section 3-T16S-R28E	Map Zone	UTM	Lat Long Ref						
Site	UWI	Surface X	1896092.8	Surface Long						
Slot Name	API	Surface Y	11961376.5	Surface Lat						
Well Number	MD/TVD Ref	Surface Z	3655	Global Z Ref	Mean Sea Level					
Project	KB	Ground Level	3633.5	Local North Ref	Grid					
MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
°	°	°	°	°	°	%/100°	°	°	°	°
3150.00	90.50	359.9	2584.25	915.92	-1.44	0.00	915.92	1896091.36	11962292.42	1070.75
3200.00	90.50	359.9	2583.81	965.92	-1.52	0.00	965.92	1896091.28	11962342.42	1071.19
3250.00	90.50	359.9	2583.38	1015.92	-1.60	0.00	1015.92	1896091.20	11962392.42	1071.62
3300.00	90.50	359.9	2582.94	1065.92	-1.67	0.00	1065.92	1896091.13	11962442.42	1072.06
3350.00	90.50	359.9	2582.50	1115.91	-1.75	0.00	1115.92	1896091.05	11962492.41	1072.50
3400.00	90.50	359.9	2582.07	1165.91	-1.83	0.00	1165.91	1896090.97	11962542.41	1072.93
3450.00	90.50	359.9	2581.63	1215.91	-1.91	0.00	1215.91	1896090.89	11962592.41	1073.37
3500.00	90.50	359.9	2581.19	1265.91	-1.99	0.00	1265.91	1896090.81	11962642.41	1073.81
3550.00	90.50	359.9	2580.76	1315.91	-2.07	0.00	1315.91	1896090.73	11962692.41	1074.24
3600.00	90.50	359.9	2580.32	1365.90	-2.15	0.00	1365.91	1896090.65	11962742.40	1074.68
3650.00	90.50	359.9	2579.88	1415.90	-2.22	0.00	1415.90	1896090.58	11962792.40	1075.12
3700.00	90.50	359.9	2579.45	1465.90	-2.30	0.00	1465.90	1896090.50	11962842.40	1075.55
3750.00	90.50	359.9	2579.01	1515.90	-2.38	0.00	1515.90	1896090.42	11962892.40	1075.99
3800.00	90.50	359.9	2578.58	1565.90	-2.46	0.00	1565.90	1896090.34	11962942.40	1076.42
3850.00	90.50	359.9	2578.14	1615.89	-2.54	0.00	1615.90	1896090.26	11962992.39	1076.86
3900.00	90.50	359.9	2577.70	1665.89	-2.62	0.00	1665.89	1896090.18	11963042.39	1077.30
3950.00	90.50	359.9	2577.27	1715.89	-2.70	0.00	1715.89	1896090.10	11963092.39	1077.73
4000.00	90.50	359.9	2576.83	1765.89	-2.77	0.00	1765.89	1896090.03	11963142.39	1078.17
4050.00	90.50	359.9	2576.39	1815.89	-2.85	0.00	1815.89	1896089.95	11963192.39	1078.61
4100.00	90.50	359.9	2575.96	1865.88	-2.93	0.00	1865.89	1896089.87	11963242.38	1079.04
4150.00	90.50	359.9	2575.52	1915.88	-3.01	0.00	1915.88	1896089.79	11963292.38	1079.48
4200.00	90.50	359.9	2575.09	1965.88	-3.09	0.00	1965.88	1896089.71	11963342.38	1079.91
4250.00	90.50	359.9	2574.65	2015.88	-3.17	0.00	2015.88	1896089.63	11963392.38	1080.35
4300.00	90.50	359.9	2574.21	2065.88	-3.25	0.00	2065.88	1896089.55	11963442.38	1080.79
4350.00	90.50	359.9	2573.78	2115.87	-3.32	0.00	2115.88	1896089.48	11963492.37	1081.22
4400.00	90.50	359.9	2573.34	2165.87	-3.40	0.00	2165.88	1896089.40	11963542.37	1081.66
4450.00	90.50	359.9	2572.90	2215.87	-3.48	0.00	2215.87	1896089.32	11963592.37	1082.10
4500.00	90.50	359.9	2572.47	2265.87	-3.56	0.00	2265.87	1896089.24	11963642.37	1082.53
4550.00	90.50	359.9	2572.03	2315.87	-3.64	0.00	2315.87	1896089.16	11963692.37	1082.97
4600.00	90.50	359.9	2571.59	2365.87	-3.72	0.00	2365.87	1896089.08	11963742.37	1083.41
4650.00	90.50	359.9	2571.16	2415.86	-3.79	0.00	2415.87	1896089.01	11963792.36	1083.84
4700.00	90.50	359.9	2570.72	2465.86	-3.87	0.00	2465.86	1896088.93	11963842.36	1084.28
4750.00	90.50	359.9	2570.29	2515.86	-3.95	0.00	2515.86	1896088.85	11963892.36	1084.71
4800.00	90.50	359.9	2569.85	2565.86	-4.03	0.00	2565.86	1896088.77	11963942.36	1085.15
4850.00	90.50	359.9	2569.41	2615.86	-4.11	0.00	2615.86	1896088.69	11963992.36	1085.59
4900.00	90.50	359.9	2568.98	2665.85	-4.19	0.00	2665.86	1896088.61	11964042.35	1086.02
4950.00	90.50	359.9	2568.54	2715.85	-4.27	0.00	2715.85	1896088.53	11964092.35	1086.46

# Nome Federal #1H, Plan 1

<b>Operator</b> Mack Energy Corp	<b>Units</b> feet, %100ft	12:12 Wednesday, March 14, 2018 Page 1 of 4
<b>Field</b> Diamond Mound	<b>County</b> Eddy	<b>Vertical Section Azimuth</b> 359.94
<b>Well Name</b> Nome Federal #1H	<b>State</b> New Mexico	<b>Survey Calculation Method</b> Minimum Curvature
<b>Plan 1</b>	<b>Country</b> USA	<b>Database</b> Access
<b>Location</b> SL: 1700 FSL & 1675 FWL BHL: 5 FNL & 1675 FWL Section 3-T16S-R28E	<b>Map Zone</b> UTM	<b>Lat Long Ref</b>
<b>Site</b>	<b>Surface X</b> 1896092.8	<b>Surface Long</b>
<b>Slot Name</b>	<b>Surface Y</b> 11961376.5	<b>Surface Lat</b>
<b>Well Number</b>	<b>Surface Z</b> 3655	<b>Global Z Ref</b> Mean Sea Level
<b>Project</b>	<b>Ground Level</b> 3633.5	<b>Local North Ref</b> Grid

## DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
#	deg	deg	#	#	#	%100#	#	#	#	#
*** TIE (at MD = 1698.00)										
1698.00	0.00	0.0	1698.00	0.00	0.00		0.00	1896092.80	11961376.50	1957.00
1700.00	0.00	0.0	1700.00	0.00	0.00	0.00	0.00	1896092.80	11961376.50	1955.00
1750.00	0.00	0.0	1750.00	0.00	0.00	0.00	0.00	1896092.80	11961376.50	1905.00
*** KO 8 DEGREE (at MD = 1798.00)										
1798.00	0.00	0.0	1798.00	0.00	0.00	0.00	0.00	1896092.80	11961376.50	1857.00
1800.00	0.16	359.9	1800.00	0.00	0.00	8.00	0.00	1896092.80	11961376.50	1855.00
1850.00	4.16	359.9	1849.95	1.89	0.00	8.00	1.89	1896092.80	11961378.39	1805.05
1900.00	8.16	359.9	1899.66	7.25	-0.01	8.00	7.25	1896092.79	11961383.75	1755.34
1950.00	12.16	359.9	1948.86	16.07	-0.03	8.00	16.07	1896092.77	11961392.57	1706.14
2000.00	16.16	359.9	1997.33	28.30	-0.04	8.00	28.30	1896092.76	11961404.80	1657.67
2050.00	20.16	359.9	2044.83	43.88	-0.07	8.00	43.88	1896092.73	11961420.38	1610.17
2100.00	24.16	359.9	2091.13	62.73	-0.10	8.00	62.73	1896092.70	11961439.23	1563.87
2150.00	28.16	359.9	2136.00	84.77	-0.13	8.00	84.77	1896092.67	11961461.27	1519.00
2200.00	32.16	359.9	2179.22	109.89	-0.17	8.00	109.89	1896092.63	11961486.39	1475.78
2250.00	36.16	359.9	2220.59	137.96	-0.22	8.00	137.96	1896092.58	11961514.46	1434.41
2300.00	40.16	359.9	2259.89	168.85	-0.27	8.00	168.85	1896092.53	11961545.35	1395.11
2350.00	44.16	359.9	2296.95	202.40	-0.32	8.00	202.40	1896092.48	11961578.90	1358.05
2400.00	48.16	359.9	2331.57	238.46	-0.37	8.00	238.46	1896092.43	11961614.96	1323.43
2450.00	52.16	359.9	2363.60	276.84	-0.43	8.00	276.84	1896092.37	11961653.34	1291.40
*** 55 DEGREE TANGENT 200' (at MD = 2485.50)										
2485.50	55.00	359.9	2384.67	305.40	-0.48	8.00	305.40	1896092.32	11961681.90	1270.33
2500.00	55.00	359.9	2392.99	317.28	-0.50	0.00	317.28	1896092.30	11961693.78	1262.01
2550.00	55.00	359.9	2421.67	358.24	-0.56	0.00	358.24	1896092.24	11961734.74	1233.33
2600.00	55.00	359.9	2450.35	399.20	-0.63	0.00	399.20	1896092.17	11961775.70	1204.65
2650.00	55.00	359.9	2479.03	440.15	-0.69	0.00	440.15	1896092.11	11961816.65	1175.97
*** 12 DEGREE BUILD (at MD = 2685.50)										
2685.50	55.00	359.9	2499.39	469.23	-0.74	0.00	469.23	1896092.06	11961845.73	1155.61
2700.00	56.74	359.9	2507.53	481.24	-0.76	12.00	481.24	1896092.04	11961857.74	1147.48
2750.00	62.74	359.9	2532.71	524.40	-0.82	12.00	524.40	1896091.98	11961900.90	1122.29
2800.00	68.74	359.9	2553.24	569.97	-0.90	12.00	569.97	1896091.90	11961946.47	1101.76
2850.00	74.74	359.9	2568.90	617.43	-0.97	12.00	617.43	1896091.83	11961993.93	1086.10
2900.00	80.74	359.9	2579.52	666.26	-1.05	12.00	666.27	1896091.75	11962042.76	1075.48
2950.00	86.74	359.9	2584.97	715.94	-1.12	12.00	715.94	1896091.68	11962092.44	1070.03
*** LANDING POINT (at MD = 2981.33)										
2981.33	90.50	359.9	2585.72	747.26	-1.17	12.00	747.26	1896091.63	11962123.76	1069.28
3000.00	90.50	359.9	2585.56	765.93	-1.20	0.00	765.93	1896091.60	11962142.43	1069.44
3050.00	90.50	359.9	2585.12	815.93	-1.28	0.00	815.93	1896091.52	11962192.43	1069.88
3100.00	90.50	359.9	2584.68	865.92	-1.36	0.00	865.93	1896091.44	11962242.42	1070.32

Casing Design Well: Nome Federal #1H

String Size & Function: 5 1/2" x 7" in Production x

Total Depth: 7775 ft TVD: 2585 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 9.3 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.3 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.3 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 1250.106 psi Burst: 1250.106 psi joint strength: 1250.106 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 3000 psi

1st segment		7775 ft to 2700 ft		Make up Torque ft-lbs			Total ft = 5075
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
5.5 inches	17 #/ft	HCP-110	Buttress	4,620	3,470	5,780	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
8,580 psi	10,640 psi-lrcr	568 .000 #		546 .000 #		4.767	

2nd segment		2700 ft to 1750 ft		Make up Torque ft-lbs			Total ft = 800
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
7 inches	26 #/ft	HCP-110	Buttress	6,930	5,200	8,660	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
7,800 psi	9,950 psi-lrcr	853 .000 #		830 .000 #		6.151	

3rd segment		1750 ft to 0 ft		Make up Torque ft-lbs			Total ft = 1750
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
7 inches	26 #/ft	HCP-110	LT&C	6,930	5,200	8,660	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
7,800 psi	9,950 psi	693 .000 #		830 .000 #		6.151	

4th segment		0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

5th segment		0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

6th segment		0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

Select	1st segment bottom	7474	S.F.	Actual	Desire
			collapse	6.863418	>= 1.125
	7775 ft to 2585 ft		burst-b	3.240928	>= 1.25
	5.5 0 HCP-110 Buttress		burst-t	3.43881	
	Top of segment 1 (ft)	2585	S.F.	Actual	Desire
Select	2nd segment from bottom		collapse	6.067332	>= 1.125
			burst-b	3.215804	>= 1.25
	2585 ft to 1785 ft		burst-t	3.246357	
	7 26 HCP-110 Buttress		jnt strngth	7.505707	>= 1.8

Casing Design Well: Nome Federal #1H

String Size & Function: 14 3/4 in surface x intermediate         

Total Depth: 350 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 9.6 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.6 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.6 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 174.72 psi Burst: 174.72 psi joint strength: 174.72 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	350 ft to 0 ft		Make up Torque ft-lbs			Total ft = 350
O.D.	Weight	Grade	Threads	opt.	min.	mx.
9.625 inches	36 #/ft	J-55	ST&C	3,940	2,960	4,930
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
2,020 psi	3,520 psi	394 .000 #		564 .000 #		8.765

2nd segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

3rd segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

4th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

5th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

6th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

Select	1st segment bottom	350	S.F.	Actual	Desire
			collapse	11.56136	>= 1.125
	350 ft to 0 ft		burst-b	6.938969	>= 1.25
	9.625 0 J-55 ST&C		burst-l	7.04	
	Top of segment 1 (ft)		S.F.	Actual	Desire
Select	2nd segment from bottom	0	collapse	#DIV/0!	>= 1.125
			burst-b	0	>= 1.25
	0 ft to 0 ft		burst-l	0	
	0 0 0 0		jnt strngth	36.65351	>= 1.8

Top of segment 2 (ft)		1785	S.F.	Actual	Desire
Select	3rd segment from bottom		collapse	8.717538	>= 1.125
1785 ft to 0 ft			burst-b	3.246357	>= 1.25
7 26 HCP-110 LT&C			burst-t	3.316667	
			jnt strngth	9.121422	>= 1.8
Top of segment 3 (ft)		0	S.F.	Actual	Desire
Select	4th segment from bottom		collapse	#DIV/0!	>= 1.125
0 ft to 0 ft			burst-b	0	>= 1.25
0 0 0 0			burst-t	0	
			jnt strngth	7.41049	>= 1.8
Top of segment 4 (ft)			S.F.	Actual	Desire
Select	5th segment from bottom		collapse	#DIV/0!	>= 1.125
0 ft to ft			burst-b	0	>= 1.25
0 0 0 0			burst-t	0	
			jnt strngth	0	>= 1.8
Top of segment 5 (ft)			S.F.	Actual	Desire
Select	6th segment from bottom		collapse	#DIV/0!	>= 1.125
0 ft to ft			burst-b	0	>= 1.25
0 0 0 0			burst-t	0	
			jnt strngth	0	>= 1.8
Top of segment 6 (ft)			jnt strngth		>= 1.8

use in collapse calculations across different pressured formations

<b>Three gradient pressure function</b>					
Depth of evaluation:	1,200 ft	516	psi @	1,200 ft	
Top of salt:	2,400 ft	fx #1	516		
Base of salt:	3,700 ft	fx #2	900		
TD of intermediate:	4,600 ft	fx #3	540		
Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft					
fx #1	fx #2	fx #3			
0.43	0.75	0.45			

- 1) Calculate neutral point for buckling with temperature affects computed also
- 2) Surface burst calculations & kick tolerance in surface pressure for burst
- 3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
- 4) Raise joint strength safety factor up to next level on page #2
- 5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

**Adjust for best combination of safety factors**

S.F. Collapse bottom of segment:	Secondary
S.F. Collapse top of segment:	6.55434
S.F. Burst bottom of segment:	
S.F. Burst top of segment:	
S.F. Joint strength bottom of segment:	795.518
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	764.706
S.F. Body yield strength top of segment:	7.21499

**Collapse calculations for 1st segment - casing evacuated**

Buoyancy factor collapse:	0.85771	
calculations for bottom of segment @	2585 ft	
hydrostatic pressure collapse - backside:	1250.11 psi	
Axial load @ bottom of section	0 lbs	previous segments
Axial load factor:	0	load/(pipe body yield strength)
Collapse strength reduction factor:	1	Messrs. Westcott, Dunlop, Kemler, 1940
Adjusted collapse rating of segment:	8580 psi	
Actual safety factor	6.86342	adjusted casing rating / actual pressure

Casing Design Well: Nome Federal #1H

String Size & Function: 5 1/2" x 7" in Production x

Total Depth: 7775 ft TVD: 2585 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 9.3 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.3 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.3 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 1250.106 psi Burst: 1250.106 psi joint strength: 1250.106 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 3000 psi

1st segment		7775 ft to 2700 ft		Make up Torque ft-lbs			Total ft =	5075
O.D.	Weight	Grade	Threads	opt.	min.	mx.		
5.5 inches	17 #/ft	HCP-110	Buttress		4,620	3,470	5,780	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift		
8,580 psi	10,640 psi-lrcr	568 .000 #		546 .000 #		4,767		

2nd segment		2700 ft to 1750 ft		Make up Torque ft-lbs			Total ft =	800
O.D.	Weight	Grade	Threads	opt.	min.	mx.		
7 inches	26 #/ft	HCP-110	Buttress		6,930	5,200	8,660	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift		
7,800 psi	9,950 psi-lrcr	853 .000 #		830 .000 #		6,151		

3rd segment		1750 ft to 0 ft		Make up Torque ft-lbs			Total ft =	1750
O.D.	Weight	Grade	Threads	opt.	min.	mx.		
7 inches	26 #/ft	HCP-110	LT&C		6930	5200	8660	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift		
7,800 psi	9,950 psi	693 .000 #		830 .000 #		6,151		

4th segment		0 ft to 0 ft		Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.		
inches	#/ft							
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift		
psi	psi	.000 #		.000 #				

5th segment		0 ft to 0 ft		Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.		
inches	#/ft							
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift		
psi	psi	.000 #		.000 #				

6th segment		0 ft to 0 ft		Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.		
inches	#/ft							
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift		
psi	psi	.000 #		.000 #				

Select	1st segment bottom	7474	S.F.	Actual	Desire
			collapse	6.863418	>= 1.125
			burst-b	3.240928	>= 1.25
			burst-t	3.43881	
	7775 ft to 2585 ft				
	5.5 0 HCP-110 Buttress				
	Top of segment 1 (ft)	2585	S.F.	Actual	Desire
Select	2nd segment from bottom		collapse	6.067332	>= 1.125
			burst-b	3.215804	>= 1.25
			burst-t	3.246357	
	2585 ft to 1785 ft		jnt strngth	7.505707	>= 1.8
	7 26 HCP-110 Buttress				

Casing Design Well: Nome Federal #1H  
 String Size & Function: 14 3/4 in surface x intermediate           
 Total Depth: 350 ft

Pressure Gradient for Calculations (While drilling)  
 Mud weight, collapse: 9.6 #/gal Safety Factor Collapse: 1.125  
 Mud weight, burst: 9.6 #/gal Safety Factor Burst: 1.25  
 Mud weight for joint strength: 9.6 #/gal Safety Factor Joint Strength 1.8  
 BHP @ TD for: collapse: 174.72 psi Burst: 174.72 psi joint strength: 174.72 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal  
 Max. Shut in surface pressure: 500 psi

1st segment	350 ft to 0 ft		Make up Torque ft-lbs			Total ft = 350
O.D.	Weight	Grade	Threads	opt.	min.	mx.
9.625 inches	36 #/ft	J-55	ST&C	3,940	2,960	4,930
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
2,020 psi	3,520 psi	394,000 #		564,000 #		8.765

2nd segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

3rd segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

4th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

5th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

6th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	.000 #		.000 #		

Select	1st segment bottom	350	S.F.	Actual	Desire
			collapse	11.56136	>= 1.125
			burst-b	6.938969	>= 1.25
			burst-t	7.04	
	Top of segment 1 (ft)		S.F.	Actual	Desire
Select	2nd segment from bottom	0	collapse	#DIV/0!	>= 1.125
			burst-b	0	>= 1.25
			burst-t	0	
			jnt strngth	36.65351	>= 1.8

Top of segment 2 (ft)		1785	S.F.	Actual	Desire
Select	3rd segment from bottom		collapse	8.717538	>= 1.125
1785 ft to 0 ft			burst-b	3.246357	>= 1.25
7 26 HCP-110 LT&C			burst-t	3.316667	
			jnt strngth	9.121422	>= 1.8
Top of segment 3 (ft)		0	S.F.	Actual	Desire
Select	4th segment from bottom		collapse	#DIV/0!	>= 1.125
0 ft to 0 ft			burst-b	0	>= 1.25
0 0 0 0			burst-t	0	
			jnt strngth	7.41049	>= 1.8
Top of segment 4 (ft)			S.F.	Actual	Desire
Select	5th segment from bottom		collapse	#DIV/0!	>= 1.125
0 ft to 0 ft			burst-b	0	>= 1.25
0 0 0 0			burst-t	0	
			jnt strngth	0	>= 1.8
Top of segment 5 (ft)			S.F.	Actual	Desire
Select	6th segment from bottom		collapse	#DIV/0!	>= 1.125
0 ft to 0 ft			burst-b	0	>= 1.25
0 0 0 0			burst-t	0	
			jnt strngth	0	>= 1.8
Top of segment 6 (ft)			jnt strngth		>= 1.8

use in collapse calculations across different pressured formations

<b>Three gradient pressure function</b>					
Depth of evaluation:	1,200 ft		516	psi @	1,200 ft
Top of salt:	2,400 ft	fx #1	516		
Base of salt:	3,700 ft	fx #2	900		
TD of intermediate:	4,600 ft	fx #3	540		
Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft					
fx #1	fx #2	fx #3			
0.43	0.75	0.45			

- 1) Calculate neutral point for buckling with temperature affects computed also
- 2) Surface burst calculations & kick tolerance in surface pressure for burst
- 3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
- 4) Raise joint strength safety factor up to next level on page #2
- 5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

**Adjust for best combination of safety factors**

S.F. Collapse bottom of segment:		Secondary
S.F. Collapse top of segment:		6.55434
S.F. Burst bottom of segment:		
S.F. Burst top of segment:		
S.F. Joint strength bottom of segment:		795.518
S.F. Joint strength top of segment:		
S.F. Body yield strength bottom of segment:		764.706
S.F. Body yield strength top of segment:		7.21499

**Collapse calculations for 1st segment - casing evacuated**

Buoyancy factor collapse:	0.85771	
calculations for bottom of segment @	2585 ft	
hydrostatic pressure collapse - backside:	1250.11 psi	
Axial load @ bottom of section	0 lbs	previous segments
Axial load factor:	0	load/(pipe body yield strength)
Collapse strength reduction factor:	1	Messrs. Westcott, Dunlop, Kemler, 1940
Adjusted collapse rating of segment:	8580 psi	
Actual safety factor	6.86342	adjusted casing rating / actual pressure

Casing Design Well: Nome Federal #1H

String Size & Function: 5 1/2" x 7" in Production x

Total Depth: 7775 ft TVD: 2585 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 9.3 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.3 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.3 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 1250.106 psi Burst: 1250.106 psi joint strength: 1250.106 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 3000 psi

1st segment	7775 ft to 2700 ft	Make up Torque ft-lbs	Total ft =	5075		
O.D.	Weight	Grade	Threads	opt.	min.	mx.
5.5 inches	17 #/ft	HCP-110	Buttress	4,620	3,470	5,780
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
8,580 psi	10,640 psi-lrcr	568 .000 #	546 .000 #	4.767		

2nd segment	2700 ft to 1750 ft	Make up Torque ft-lbs	Total ft =	800		
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	HCP-110	LT&C	6,930	5,200	8,660
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
7,800 psi	9,950 psi-lrcr	853 .000 #	830 .000 #	6.151		

3rd segment	1750 ft to 0 ft	Make up Torque ft-lbs	Total ft =	1750		
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	HCP-110	LT&C	6930	5200	8660
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
7,800 psi	9,950 psi	693 .000 #	830 .000 #	6.151		

4th segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =	0		
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	.000 #	.000 #			

5th segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =	0		
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	.000 #	.000 #			

6th segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =	0		
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	.000 #	.000 #			

Select	1st segment bottom	7474	S.F.	Actual	Desire
			collapse	6.863418	>= 1.125
			burst-b	3.240928	>= 1.25
			burst-t	3.43881	
	7775 ft to 2585 ft				
	5.5 0 HCP-110 Buttress				
	Top of segment 1 (ft)	2585	S.F.	Actual	Desire
Select	2nd segment from bottom		collapse	6.067332	>= 1.125
			burst-b	3.215804	>= 1.25
			burst-t	3.246357	
	2585 ft to 1785 ft		jnt strngth	7.505707	>= 1.8
	7 26 HCP-110 Buttress				

Casing Design Well: Nome Federal #1H

String Size & Function: 14 3/4 in surface x intermediate \_\_\_\_\_

Total Depth: 350 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 9.6 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.6 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.6 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 174.72 psi Burst: 174.72 psi joint strength: 174.72 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	350 ft to	0 ft	Make up Torque ft-lbs			Total ft =	350
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
9.625 inches	36 #/ft	J-55	ST&C	3,940	2,960	4,930	
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
2,020 psi	3,520 psi	394,000 #		564,000 #		8.765	

2nd segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

3rd segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

4th segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

5th segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

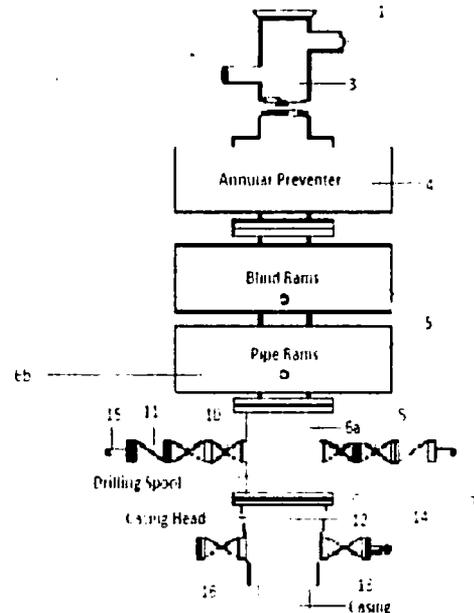
6th segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.	
inches	#/ft						
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift	
psi	psi	.000 #		.000 #			

Select	1st segment bottom		350	S.F.	Actual	Desire
				collapse	11.56136	>= 1.125
				burst-b	6.938969	>= 1.25
				burst-t	7.04	
	350 ft to	0 ft				
	9.625	0 J-55	ST&C			
	Top of segment 1 (ft)			S.F.	Actual	Desire
Select	2nd segment from bottom		0	collapse	#DIV/0!	>= 1.125
				burst-b	0	>= 1.25
				burst-t	0	
	0 ft to	0 ft		jnt strngth	36.65351	>= 1.8
	0	0	0			

**Mack Energy Corporation**  
**Minimum Blowout Preventer Requirements**  
**5000 psi Working Pressure**  
**13 5/8 inch- 5 MWP**  
**11 Inch - 5 MWP**

**Stack Requirements**

NO.	Items	Min. I.D.	Min. Nominal
1	Flowline		2"
2	Fill up line		2"
3	Drilling nipple		
4	Annular preventer		
5	Two single or one dual hydraulically operated rams		
6a	Drilling spool with 2" min. kill line and 3" min. choke line outlets		2" Choke
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above)		
7	Valve Gate Plug	3 1/8	
8	Gate valve-power operated	3 1/8	
9	Line to choke manifold		3"
10	Valve Gate Plug	2 1/16	
11	Check valve	2 1/16	
12	Casing head		
13	Valve Gate Plug	1 13/16	
14	Pressure gauge with needle valve		
15	Kill line to rig mud pump manifold		2"



**OPTIONAL**

16	Flanged Valve	1 13/16	
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**CONTRACTOR'S OPTION TO FURNISH:**

1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2000 psi minimum.
2. Automatic accumulator (80 gallons, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers' position.
4. Kelly equipped with Kelly cock.
5. Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.

**MIC TO FURNISH:**

1. Bradenhead or casing head and side valves.
2. Wear bushing. If required.

**GENERAL NOTES:**

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position.
4. Chokes will be positioned so as not to hamper or delay changing of choke beans.

- Replaceable parts for adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.
5. All valves to be equipped with hand-wheels or handles ready for immediate use.
  6. Choke lines must be suitably anchored.
  7. Handwheels and extensions to be connected and ready for use.
  8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
  9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
  10. Casinghead connections shall not be used except in case of emergency.
  11. Does not use kill line for routine fill up operations.

# Mack Energy Corporation

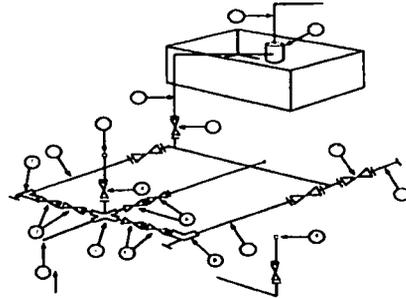
Exhibit #11

## MINIMUM CHOKE MANIFOLD

3,000, 5,000, and 10,000 PSI Working Pressure

MINIMUM REQUIREMENTS

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

\* Location of separator optional

Below Substructure

### Minimum requirements

No.		3,000 MWP		5,000 MWP		10,000 MWP			
		I.D.	Nominal Rating	I.D.	Nominal Rating	I.D.	Nominal Rating		
1	Line from drilling Spool		3"	3,000		3"	5,000	3"	10,000
2	Cross 3" x 3" x 3" x 2"			3,000			5,000		
2	Cross 3" x 3" x 3" x 2"								10,000
3	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"	10,000
4	Valve Gate Plug	1 13/16"		3,000	1 13/16"		5,000	1 13/16"	10,000
4a	Valves (1)	2 1/16"		3,000	2 1/16"		5,000	2 1/16"	10,000
5	Pressure Gauge			3,000			5,000		10,000
6	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"	10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"	10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"	10,000
9	Line		3"	3,000		3"	5,000		3"
10	Line		2"	3,000		2"	5,000		2"
11	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"	10,000
12	Line		3"	1,000		3"	1,000		3"
13	Line		3"	1,000		3"	1,000		3"
14	Remote reading compound Standpipe pressure gauge			3,000			5,000		10,000
15	Gas Separator		2' x 5'			2' x 5'			2' x 5'
16	Line		4"	1,000		4"	1,000		2,000
17	Valve Gate Plug	3 1/8"		3,000	3 1/8"		5,000	3 1/8"	10,000

(1) Only one required in Class 3M

(2) Gate valves only shall be used for Class 10 M

(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling

#### EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

- All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating
- All flanges shall be API 6B or 6BX and ring gaskets shall be API RN or BX. Use only BX for 10 MWP.
- All lines shall be securely anchored
- Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available
- alternate with automatic chokes. a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge
- Line from drilling spool to choke manifold should be as straight as possible. Lines downstream from chokes shall make turns by large bends or 90 degree bends using bull plugged tees