

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

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

David R. Catanach, Division Director
Oil Conservation Division



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

Operator Signature Date: 7-12-14

Well information:


Operator Elm Ridge, Well Name and Number Jicarilla Apache A #17

API# 30-039-31258, Section 26, Township 25 N/S, Range 05 E/W

Conditions of Approval:

(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat 45.9 compliance
 - ☐ Hold C-104 for NSL, NSP, DHC
 - ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
 - ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.


NMOCD Approved by Signature

4-16-2015
Date KC

APR 15 2015

Form 3160-3
(March 2012)

RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JUL 18 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.

BIA-9

JIC9

6. If Indian, Allottee or Tribe Name
JICARILLA APACHE NATION7. If Unit or CA Agreement, Name and No.
N/A8. Lease Name and Well No.
JICARILLA APACHE A 179. API Well No.
30-039-312581a. Type of work: ☒ DRILL☐ REENTER1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☒ Multiple Zone

2. Name of Operator ELM RIDGE EXPLORATION COMPANY, LLC

3a. Address P. O. BOX 156
BLOOMFIELD, NM 874133b. Phone No. (include area code)
(505) 632-347610. Field and Pool, or Exploratory
LINDRITH GALLUP-DAKOTA, WEST

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface 703' FNL & 55' FEL 26-25N-5W

At proposed prod. zone 1980' FNL & 660' FWL 25-25N-5W

11. Sec., T. R. M. or Blk. and Survey or Area
SHL: NENE 26-25N-5W
BHL: SWNW 25-25N-5W14. Distance in miles and direction from nearest town or post office*
14 AIR MILES NE OF COUNSELORS, NM12. County or Parish
RIO ARRIBA13. State
NM15. Distance from proposed*
location to nearest
property or lease line, ft.
(Also to nearest drig. unit line, if any)
SHL: 3343'
BHL: 4620'16. No. of acres in lease
256017. Spacing Unit dedicated to this well
NW4 SECTION 25 (=160 ACRES)18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft.
SHL: 892' (A 1)
BHL: 1172' (A 1)19. Proposed Depth
TVD: 7630' MD: 7895'20. BLM/BIA Bond No. on file
BIA nationwide OKC 60611421. Elevations (Show whether DF, KDB, RT, GL, etc.)
6,829' UNGRADED22. Approximate date work will start*
09/01/201423. Estimated duration
1 MONTH

24. Attachments

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

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

25. Signature

Name (Printed/Typed)

BRIAN WOOD (PHONE: 505 466-8120)

Date

07/12/2014

Title

CONSULTANT

(FAX: 505 466-9682)

Approved by (Signature)

Name (Printed/Typed)

Date

4/10/15

Title

Office

FFO

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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

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

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

*(Instructions on page 2)
DRILLING OPERATIONS
AUTHORIZED ARE SUBJECT TO
COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS"

NMOCDA

Drilling Condition of Approval: Refer to attached Jicarilla Apache Nation
Standard Stipulations C.6: Surface casing must be set a minimum 500 feet.

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6181 Fax: (575) 393-0720

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

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, N.M. 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

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

Form C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

JUL 18 2014

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| | | |
|--------------|------------------------------------|------------------------------|
| 30-039-31258 | 39189 | LINDRITH GALLUP-DAKOTA, WEST |
| 19025 | JICARILLA APACHE A | 17 |
| 149052 | ELM RIDGE EXPLORATION COMPANY, LLC | 6829 |

10 Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|------------|
| A | 26 | 25 N | 5 W | | 703 | NORTH | 55 | EAST | RIO ARRIBA |

11 Bottom Hole Location If Different From Surface

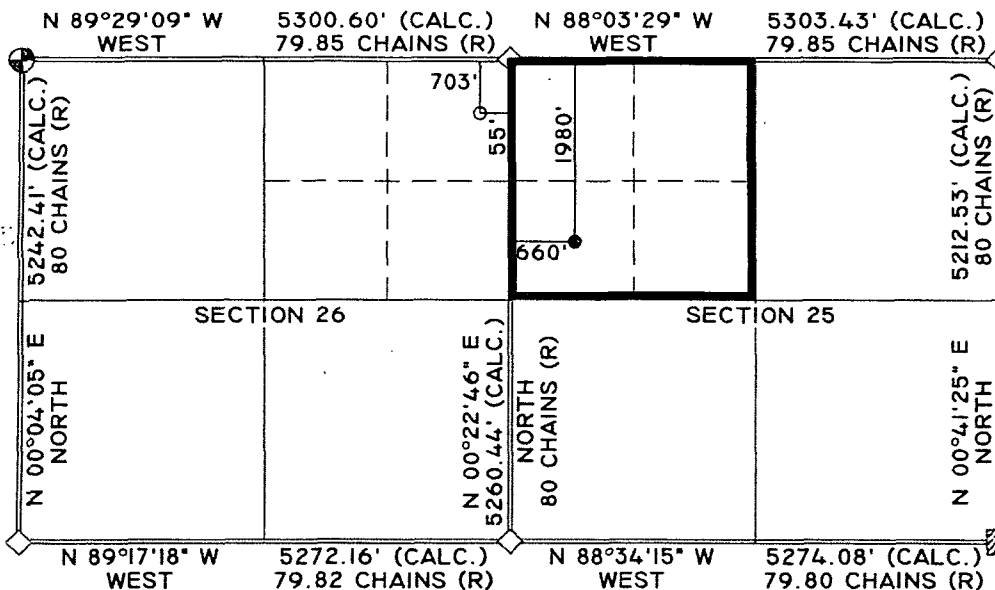
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|------------|
| E | 25 | 25 N | 5 W | | 1980 | NORTH | 660 | WEST | RIO ARRIBA |

| | | | |
|--------------------|--------------------|-----------------------|--------------|
| 12 Dedicated Acres | 13 Joint or Infill | 14 Consolidation Code | 15 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

16 SURFACE
LAT: 36.3762779° N
LONG: 107.3206434° W
NAD 83
LAT: 36°22.57596' N
LONG: 107°19.20256' W
NAD 27

BOTTOM HOLE
LAT: 36.3727281° N
LONG: 107.3181952° W
NAD 83
LAT: 36°22.36297' N
LONG: 107°19.05567' W
NAD 27



LEGEND:

- = SURFACE LOCATION
- = BOTTOM HOLE LOCATION
- ⊗ = FOUND MONUMENT 1 1/2" ALUM. CAP WITH MOUND STONE
- ◇ = D.P. SECTION CORNER
- ▨ = S.P. SECTION CORNER

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: Brian Wood Date: 7-12-14

brian@permitswest.com

E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same are true and correct to the best of my belief.

03/15/12

Date of Survey

Signature and Seal of Professional Surveyor



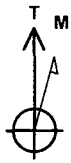
14831 Certificate Number 4-16-2012

Elm Ridge Exploration Company.

Project: Rio Arriba County, NM (Nad 83)
 Site: Sec.25,T25N,R5W
 Well: Jicarilla Apache A-17
 Wellbore: DD
 Plan: #1

Reference Details - WELL CENTRE

Geodetic System: Universal Transverse Mercator
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)
 Northing: 13215805.62
 Easting: 957435.73
 Latitude: 36° 22' 34.600 N
 Longitude: 107° 19' 14.316 W
 Grid Convergence: 1.38° East
 Ground Elevation: 6829.0
 KB Elevation: Est RKB @ 6843.0usft (A-17)

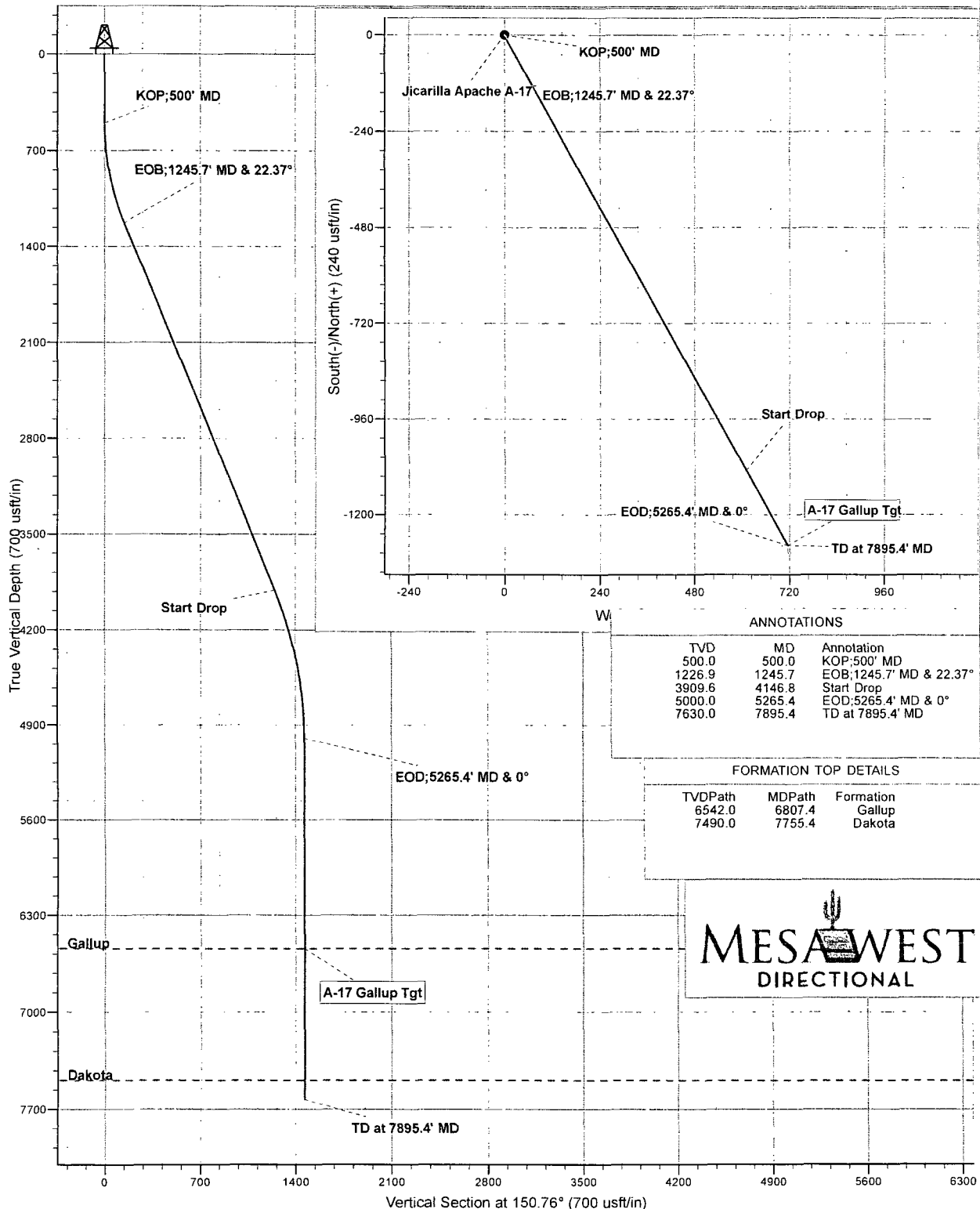


Azinuths to True North
 Magnetic North: 9.29°

Magnetic Field
 Strength: 50278.5nT
 Dip Angle: 63.16°
 Date: 7/8/2014
 Model: IGRF2010

PLAN DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSeet | Target |
|-----|--------|-------|--------|--------|---------|-------|------|--------|--------|-----------------|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 1245.7 | 22.37 | 150.76 | 1226.9 | -125.4 | 70.2 | 3.00 | 150.76 | 143.7 | |
| 4 | 4146.8 | 22.37 | 150.76 | 3909.6 | -1088.9 | 609.7 | 0.00 | 0.00 | 1247.9 | |
| 5 | 5265.4 | 0.00 | 0.00 | 5000.0 | -1277.0 | 715.0 | 2.00 | 180.00 | 1463.5 | |
| 6 | 6807.4 | 0.00 | 0.00 | 6542.0 | -1277.0 | 715.0 | 0.00 | 0.00 | 1463.5 | A-17 Gallup Tgt |
| 7 | 7895.4 | 0.00 | 0.00 | 7630.0 | -1277.0 | 715.0 | 0.00 | 0.00 | 1463.5 | |



ANNOTATIONS

| TVD | MD | Annotation |
|--------|--------|-------------------------|
| 500.0 | 500.0 | KOP;500' MD |
| 1226.9 | 1245.7 | EOB;1245.7' MD & 22.37° |
| 3909.6 | 4146.8 | Start Drop |
| 5000.0 | 5265.4 | EOD;5265.4' MD & 0° |
| 7630.0 | 7895.4 | TD at 7895.4' MD |

FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|--------|-----------|
| 6542.0 | 6807.4 | Gallup |
| 7490.0 | 7755.4 | Dakota |



Mesa West Directional
Planning Report



| | | | |
|------------------|--------------------------------|-------------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well Jicarilla Apache A-17 |
| Company: | Elm Ridge Exploration Company. | TVD Reference: | Est RKB @ 6843.0usft (A-17) |
| Project: | Rio Arriba County, NM (Nad 83) | MD Reference: | Est RKB @ 6843.0usft (A-17) |
| Site: | Sec.25,T25N,R5W | North Reference: | True |
| Well: | Jicarilla Apache A-17 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | DD | | |
| Plan: | #1 | | |

| | | | |
|--------------------|--------------------------------|----------------------|----------------|
| Project: | Rio Arriba County, NM (Nad 83) | | |
| Map System: | Universal Transverse Mercator | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Zone 13N (108 W to 102 W) | | |

| | | | | |
|------------------------------|-------------------|---------------------|--------------------|-------------------------------------|
| Site: | Sec 25, T25N, R5W | | | |
| Site Position: | | Northing: | 13,215,805.62 usft | Latitude: 36° 22' 34.600 N |
| From: | Lat/Long | Easting: | 957,435.73 usft | Longitude: 107° 19' 14.316 W |
| Position Uncertainty: | 0.0 usft | Slot Radius: | 13-3/16 " | Grid Convergence: -1.38 ° |

| | | | | |
|-----------------------------|-----------------------|----------|----------------------------|-----------------------------------|
| Well: | Jicarilla Apache A-17 | | | |
| Well Position | +N/-S | 0.0 usft | Northing: | 13,215,805.62 usft |
| | +E/-W | 0.0 usft | Easting: | 957,435.73 usft |
| Position Uncertainty | | 0.0 usft | Wellhead Elevation: | Ground Level: 6,829.0 usft |

| | | | | | |
|------------------|-------------------|--------------------|--------------------|------------------|-----------------------|
| Wellbore: | DD | | | | |
| Magnetics | Model Name | Sample Date | Declination | Dip Angle | Field Strength |
| | | | (°) | (°) | (nT) |
| | IGRF2010 | 7/8/2014 | 9.29 | 63.16 | 50,278 |

| | | | | |
|--------------------------|-------------------------|--------------|----------------------|------------------|
| Plan: | #1 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.0 |
| Vertical Section: | Depth From (TVD) | +N/-S | +E/-W | Direction |
| | (usft) | (usft) | (usft) | (°) |
| | 0.0 | 0.0 | 0.0 | 150.76 |

| Plan Sections: | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|-----------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,245.7 | 22.37 | 150.76 | 1,226.9 | -125.4 | 70.2 | 3.00 | 3.00 | 0.00 | 150.76 | |
| 4,146.8 | 22.37 | 150.76 | 3,909.6 | -1,088.9 | 609.7 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5,265.4 | 0.00 | 0.00 | 5,000.0 | -1,277.0 | 715.0 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 6,807.4 | 0.00 | 0.00 | 6,542.0 | -1,277.0 | 715.0 | 0.00 | 0.00 | 0.00 | 0.00 | A-17 Gallup Tgt |
| 7,895.4 | 0.00 | 0.00 | 7,630.0 | -1,277.0 | 715.0 | 0.00 | 0.00 | 0.00 | 0.00 | |

Mesa West Directional

Planning Report



| | | | |
|-----------|--------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well Jicarilla Apache A-17 |
| Company: | Elm Ridge Exploration Company. | TVD Reference: | Est RKB @ 6843.0usft (A-17) |
| Project: | Rio Arriba County, NM (Nad 83) | MD Reference: | Est RKB @ 6843.0usft (A-17) |
| Site: | Sec.25,T25N,R5W | North Reference: | True |
| Well: | Jicarilla Apache A-17 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | DD | | |
| Plan: | #1 | | |

Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | Subsea (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|--------------------------------|-----------------|-------------|-----------------------|---------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 0.0 | 0.00 | 0.00 | 0.0 | -6,843.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| KOP:500' MD | | | | | | | | | | |
| 500.0 | 0.00 | 0.00 | 500.0 | -6,343.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 600.0 | 3.00 | 150.76 | 600.0 | -6,243.0 | -2.3 | 1.3 | 2.6 | 3.00 | 3.00 | 0.00 |
| 700.0 | 6.00 | 150.76 | 699.6 | -6,143.4 | -9.1 | 5.1 | 10.5 | 3.00 | 3.00 | 0.00 |
| 800.0 | 9.00 | 150.76 | 798.8 | -6,044.2 | -20.5 | 11.5 | 23.5 | 3.00 | 3.00 | 0.00 |
| 900.0 | 12.00 | 150.76 | 897.1 | -5,945.9 | -36.4 | 20.4 | 41.7 | 3.00 | 3.00 | 0.00 |
| 1,000.0 | 15.00 | 150.76 | 994.3 | -5,848.7 | -56.8 | 31.8 | 65.1 | 3.00 | 3.00 | 0.00 |
| 1,100.0 | 18.00 | 150.76 | 1,090.2 | -5,752.8 | -81.6 | 45.7 | 93.5 | 3.00 | 3.00 | 0.00 |
| 1,200.0 | 21.00 | 150.76 | 1,184.4 | -5,658.6 | -110.7 | 62.0 | 126.9 | 3.00 | 3.00 | 0.00 |
| EOB:1245.7' MD @ 22.37° | | | | | | | | | | |
| 1,245.7 | 22.37 | 150.76 | 1,226.9 | -5,616.1 | -125.4 | 70.2 | 143.7 | 3.00 | 3.00 | 0.00 |
| 1,300.0 | 22.37 | 150.76 | 1,277.1 | -5,565.9 | -143.5 | 80.3 | 164.4 | 0.00 | 0.00 | 0.00 |
| 1,400.0 | 22.37 | 150.76 | 1,369.6 | -5,473.4 | -176.7 | 98.9 | 202.5 | 0.00 | 0.00 | 0.00 |
| 1,500.0 | 22.37 | 150.76 | 1,462.1 | -5,380.9 | -209.9 | 117.5 | 240.5 | 0.00 | 0.00 | 0.00 |
| 1,600.0 | 22.37 | 150.76 | 1,554.5 | -5,288.5 | -243.1 | 136.1 | 278.6 | 0.00 | 0.00 | 0.00 |
| 1,700.0 | 22.37 | 150.76 | 1,647.0 | -5,196.0 | -276.3 | 154.7 | 316.7 | 0.00 | 0.00 | 0.00 |
| 1,800.0 | 22.37 | 150.76 | 1,739.5 | -5,103.5 | -309.5 | 173.3 | 354.7 | 0.00 | 0.00 | 0.00 |
| 1,900.0 | 22.37 | 150.76 | 1,832.0 | -5,011.0 | -342.7 | 191.9 | 392.8 | 0.00 | 0.00 | 0.00 |
| 2,000.0 | 22.37 | 150.76 | 1,924.4 | -4,918.6 | -375.9 | 210.5 | 430.8 | 0.00 | 0.00 | 0.00 |
| 2,100.0 | 22.37 | 150.76 | 2,016.9 | -4,826.1 | -409.1 | 229.1 | 468.9 | 0.00 | 0.00 | 0.00 |
| 2,200.0 | 22.37 | 150.76 | 2,109.4 | -4,733.6 | -442.3 | 247.7 | 507.0 | 0.00 | 0.00 | 0.00 |
| 2,300.0 | 22.37 | 150.76 | 2,201.8 | -4,641.2 | -475.5 | 266.3 | 545.0 | 0.00 | 0.00 | 0.00 |
| 2,400.0 | 22.37 | 150.76 | 2,294.3 | -4,548.7 | -508.8 | 284.9 | 583.1 | 0.00 | 0.00 | 0.00 |
| 2,500.0 | 22.37 | 150.76 | 2,386.8 | -4,456.2 | -542.0 | 303.5 | 621.1 | 0.00 | 0.00 | 0.00 |
| 2,600.0 | 22.37 | 150.76 | 2,479.3 | -4,363.7 | -575.2 | 322.0 | 659.2 | 0.00 | 0.00 | 0.00 |
| 2,700.0 | 22.37 | 150.76 | 2,571.7 | -4,271.3 | -608.4 | 340.6 | 697.3 | 0.00 | 0.00 | 0.00 |
| 2,800.0 | 22.37 | 150.76 | 2,664.2 | -4,178.8 | -641.6 | 359.2 | 735.3 | 0.00 | 0.00 | 0.00 |
| 2,900.0 | 22.37 | 150.76 | 2,756.7 | -4,086.3 | -674.8 | 377.8 | 773.4 | 0.00 | 0.00 | 0.00 |
| 3,000.0 | 22.37 | 150.76 | 2,849.2 | -3,993.8 | -708.0 | 396.4 | 811.4 | 0.00 | 0.00 | 0.00 |
| 3,100.0 | 22.37 | 150.76 | 2,941.6 | -3,901.4 | -741.2 | 415.0 | 849.5 | 0.00 | 0.00 | 0.00 |
| 3,200.0 | 22.37 | 150.76 | 3,034.1 | -3,808.9 | -774.4 | 433.6 | 887.6 | 0.00 | 0.00 | 0.00 |
| 3,300.0 | 22.37 | 150.76 | 3,126.6 | -3,716.4 | -807.6 | 452.2 | 925.6 | 0.00 | 0.00 | 0.00 |
| 3,400.0 | 22.37 | 150.76 | 3,219.1 | -3,623.9 | -840.9 | 470.8 | 963.7 | 0.00 | 0.00 | 0.00 |
| 3,500.0 | 22.37 | 150.76 | 3,311.5 | -3,531.5 | -874.1 | 489.4 | 1,001.8 | 0.00 | 0.00 | 0.00 |
| 3,600.0 | 22.37 | 150.76 | 3,404.0 | -3,439.0 | -907.3 | 508.0 | 1,039.8 | 0.00 | 0.00 | 0.00 |
| 3,700.0 | 22.37 | 150.76 | 3,496.5 | -3,346.5 | -940.5 | 526.6 | 1,077.9 | 0.00 | 0.00 | 0.00 |
| 3,800.0 | 22.37 | 150.76 | 3,588.9 | -3,254.1 | -973.7 | 545.2 | 1,115.9 | 0.00 | 0.00 | 0.00 |
| 3,900.0 | 22.37 | 150.76 | 3,681.4 | -3,161.6 | -1,006.9 | 563.8 | 1,154.0 | 0.00 | 0.00 | 0.00 |
| 4,000.0 | 22.37 | 150.76 | 3,773.9 | -3,069.1 | -1,040.1 | 582.4 | 1,192.1 | 0.00 | 0.00 | 0.00 |
| 4,100.0 | 22.37 | 150.76 | 3,866.4 | -2,976.6 | -1,073.3 | 601.0 | 1,230.1 | 0.00 | 0.00 | 0.00 |
| Start Drop | | | | | | | | | | |
| 4,146.8 | 22.37 | 150.76 | 3,909.6 | -2,933.4 | -1,088.9 | 609.7 | 1,247.9 | 0.00 | 0.00 | 0.00 |
| 4,200.0 | 21.31 | 150.76 | 3,959.0 | -2,884.0 | -1,106.1 | 619.3 | 1,267.7 | 2.00 | -2.00 | 0.00 |
| 4,300.0 | 19.31 | 150.76 | 4,052.8 | -2,790.2 | -1,136.4 | 636.3 | 1,302.4 | 2.00 | -2.00 | 0.00 |
| 4,400.0 | 17.31 | 150.76 | 4,147.7 | -2,695.3 | -1,163.8 | 651.6 | 1,333.8 | 2.00 | -2.00 | 0.00 |

Mesa West Directional
Planning Report



| | | | |
|-----------|--------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well Jicarilla Apache A-17 |
| Company: | Elm Ridge Exploration Company. | TVD Reference: | Est RKB @ 6843.0usft (A-17) |
| Project: | Rio Arriba County, NM (Nad 83) | MD Reference: | Est RKB @ 6843.0usft (A-17) |
| Site: | Sec.25,T25N,R5W | North Reference: | True |
| Well: | Jicarilla Apache A-17 | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | DD | | |
| Plan: | #1 | | |

Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | Subsea (usft) | +N- S (usft) | +E- W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|---------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,500.0 | 15.31 | 150.76 | 4,243.7 | -2,599.3 | -1,188.3 | 665.3 | 1,361.9 | 2.00 | -2.00 | 0.00 |
| 4,600.0 | 13.31 | 150.76 | 4,340.6 | -2,502.4 | -1,209.9 | 677.4 | 1,386.6 | 2.00 | -2.00 | 0.00 |
| 4,700.0 | 11.31 | 150.76 | 4,438.3 | -2,404.7 | -1,228.5 | 687.8 | 1,407.9 | 2.00 | -2.00 | 0.00 |
| 4,800.0 | 9.31 | 150.76 | 4,536.7 | -2,306.3 | -1,244.1 | 696.6 | 1,425.8 | 2.00 | -2.00 | 0.00 |
| 4,900.0 | 7.31 | 150.76 | 4,635.6 | -2,207.4 | -1,256.7 | 703.6 | 1,440.3 | 2.00 | -2.00 | 0.00 |
| 5,000.0 | 5.31 | 150.76 | 4,735.0 | -2,108.0 | -1,266.3 | 709.0 | 1,451.3 | 2.00 | -2.00 | 0.00 |
| 5,100.0 | 3.31 | 150.76 | 4,834.7 | -2,008.3 | -1,272.8 | 712.7 | 1,458.8 | 2.00 | -2.00 | 0.00 |
| 5,200.0 | 1.31 | 150.76 | 4,934.6 | -1,908.4 | -1,276.3 | 714.6 | 1,462.8 | 2.00 | -2.00 | 0.00 |
| EOD:5265.4' MD & 0° | | | | | | | | | | |
| 5,265.4 | 0.00 | 0.00 | 5,000.0 | -1,843.0 | -1,277.0 | 715.0 | 1,463.5 | 2.00 | -2.00 | 0.00 |
| Gallup: | | | | | | | | | | |
| 6,807.4 | 0.00 | 0.00 | 6,542.0 | -301.0 | -1,277.0 | 715.0 | 1,463.5 | 0.00 | 0.00 | 0.00 |
| Dakota | | | | | | | | | | |
| 7,755.4 | 0.00 | 0.00 | 7,490.0 | 647.0 | -1,277.0 | 715.0 | 1,463.5 | 0.00 | 0.00 | 0.00 |
| TD at 7895.4' MD | | | | | | | | | | |
| 7,895.4 | 0.00 | 0.00 | 7,630.0 | 787.0 | -1,277.0 | 715.0 | 1,463.5 | 0.00 | 0.00 | 0.00 |

Design Targets

| Target Name | hit/miss target | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N- S (usft) | +E- W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---------------------------|-----------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|------------------|------------------|
| A-17 Gallup Tgt | | 0.00 | 0.00 | 6,542.0 | -1,277.0 | 715.0 | 13,214,511.80 | 958,119.84 | 36° 22' 21.974 N | 107° 19' 5.575 W |
| - plan hits target center | | | | | | | | | | |
| - Point | | | | | | | | | | |

Formations

| Measured Depth (usft) | Vertical Depth (usft) | Subsea Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------|-----------------------|---------------------|--------|-----------|---------|-------------------|
| 6,807.4 | 6,542.0 | 301.0 | Gallup | | | |
| 7,755.4 | 7,490.0 | -647.0 | Dakota | | | |

Plan Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|-------------------------|
| | | +N- S (usft) | +E- W (usft) | |
| 500.0 | 500.0 | 0.0 | 0.0 | KOP:500' MD |
| 1,245.7 | 1,226.9 | -125.4 | 70.2 | EOB:1245.7' MD & 22.37° |
| 4,146.8 | 3,909.6 | -1,088.9 | 609.7 | Start Drop |
| 5,265.4 | 5,000.0 | -1,277.0 | 715.0 | EOD:5265.4' MD & 0° |
| 7,895.4 | 7,630.0 | -1,277.0 | 715.0 | TD at 7895.4' MD |

Elm Ridge Exploration Company, LLC
 Jicarilla Apache A 17
 SHL: 703' FNL & 55' FEL 26-25N-5W
 BHL: 1980' FNL & 660' FWL 25-25N-5W
 Rio Arriba County, NM

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Drilling Plan

1. ESTIMATED FORMATION TOPS

| <u>Formation Name</u> | <u>TVD</u> | <u>KB Depth</u> | <u>Graded Elevation</u> |
|---------------------------|------------|-----------------|-------------------------|
| San Jose | 0' | 10' | +6,829' |
| Nacimiento | 849' | 859' | +5,980' |
| Ojo Alamo | 2,399' | 2,409' | +4,430' |
| Kirtland | 2,604' | 2,614' | +4,225' |
| Fruitland | 2,809' | 2,819' | +4,020' |
| Pictured Cliffs Ss | 2,964' | 2,974' | +3,865' |
| Lewis Shale | 2,999' | 3,009' | +3,830' |
| Chacra Ss | 3,424' | 3,434' | +3,405' |
| Cliff House Ss | 4,529' | 4,539' | +2,300' |
| Menefee | 4,539' | 4,549' | +2,290' |
| Point Lookout Ss | 5,179' | 5,189' | +1,650' |
| Mancos Shale | 5,459' | 5,469' | +1,370' |
| Gallup Ss | 6,542' | 6,552' | +287' |
| Greenhorn | 7,089' | 7,099' | -260' |
| Graneros | 7,179' | 7,189' | -350' |
| Dakota | 7,490' | 7,550' | -661' |
| Total Vertical Depth | 7,630' | 7,640' | -801' |
| (measured depth = 7,895') | | | |

2. NOTABLE ZONES

Oil & Gas Zones

Ojo Alamo
 Pictured Cliffs
 Chacra
 Gallup
 Dakota

Water Zones

San Jose
 Nacimiento
 Ojo Alamo
 Fruitland

Coal Zone

Fruitland

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All water zones will be protected with casing, cement, and weighted mud. Fresh water will be recorded by depth. Oil and gas shows will be tested for commercial potential based on the well site geologist's recommendations.

3. PRESSURE CONTROL

The drilling contract has not yet been awarded, thus the exact BOP model to be used is not yet known. A typical 3,000-psi model is on PAGE 3. The $\geq 3,000$ -psi BOP and choke manifold system will be installed and tested to 2,000-psi before drilling the surface casing plug. It will remain in use until the well is completed or abandoned. A safety valve and sub with a full opening valve to fit the drill pipe and collars will be available on the rig floor in the open position at all times for use when the Kelly is not in use.

All BOP mechanical and pressure tests will be recorded on the driller's log. BOPs will be inspected and opened and closed at least daily to assure good mechanical working order. Inspections will be recorded on the daily drilling report. Pressure tests will be conducted before drilling out from under all casing strings that are set and cemented in place.

4. CASING & CEMENT

| <u>Hole Size</u> | <u>O. D.</u> | <u>Weight (lb/ft)</u> | <u>Grade</u> | <u>Type</u> | <u>Age</u> | <u>Setting Depth</u> |
|------------------|--------------|-----------------------|--------------|-------------|------------|----------------------|
| 12-1/4" | 8-5/8" | 24 | J-55 | S T & C | New | 360' |
| 7-7/8" | 5-1/2" | 15.5 | J-55 | L T & C | New | 7,895' |

| | <u>Drift</u> | <u>Torque</u> | <u>Burst</u> | <u>Collapse</u> | <u>Tension</u> | <u>Pressure Test</u> |
|------------|--------------|--------------------|--------------|-----------------|-----------------|----------------------|
| | <u>inch</u> | <u>feet-pounds</u> | <u>psi</u> | <u>psi</u> | <u>1000 psi</u> | <u>psi</u> |
| Surface | 7.972 | 3070 | 2950 | 1370 | 381 | 1000 |
| Production | 4.653 | 2020 | 4810 | 4040 | 248 | 3500 |

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Surface casing will be cemented to the surface with ≈ 310 cubic feet (≈ 262 sacks) Class B with 1/4 pound per sack cellophane + 2% CaCl_2 . Yield = 1.18 cubic feet per sack. Weight = 15.2 pounds per gallon. Volume = 100% excess. Centralizers will be installed on the middle of the shoe joint and every other centralizer thereafter. Thread-lock the guide shoe and bottom of float collar only. Use API casing dope. Will test to ≈ 800 psi for ≈ 30 minutes.

Production casing will be cemented to the surface in two stages with $\geq 75\%$ excess. A stage tool will be set at $\approx 4,800'$ ($\approx 200'$ above the Mancos). Will pressure test to 2,000-psi for 30-minutes.

First stage volume will be 1,998 cubic feet. First stage will consist of 495 sacks (925 cubic feet) Halliburton light with 65/35 poz mix + 1/4 pound per sack cello flake + 2% CaCl_2 mixed at a yield of 1.87 cubic feet per sack and a weight of 12.7 pounds per gallon. That will be followed by 910 sacks (1,073 cubic feet) Class B + 2% CaCl_2 mixed at a yield of 1.18 cubic feet per sack and a weight of 15.2 pounds per gallon.

Second stage volume will be 1,340 cubic feet. Second stage will consist of 685 sacks (1,281 cubic feet) of Halliburton light with 65/35 poz mix + 1/4 pound per sack cello flake + 2% CaCl_2 mixed at a yield of 1.87 cubic feet per sack and a weight of 12.7 pounds per gallon. That will be followed by 50 sacks (59 cubic feet) Class B + 2% CaCl_2 mixed at a yield of 1.18 cubic feet per sack and a weight of 15.2 pounds per gallon.

5. MUD PROGRAM

| <u>Depth</u> | <u>Type</u> | <u>ppg</u> | <u>Viscosity</u> | <u>Fluid Loss</u> | <u>pH</u> |
|--------------|-----------------|------------|------------------|-------------------|-----------|
| 0' - 360' | Fresh water gel | 9.0 | 50 | NC | 9 |
| 360' - TD' | Fresh water gel | 9.0 | 38-50 | 6.0 | 9 |

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Sufficient material to maintain mud properties, control lost circulation, and contain a blowout will be available at the well site while drilling. Rig personnel will check the mud hourly. Material to soak up possible oil or fuel spills will be on site. System will be closed loop.

6. CORES, TESTS, & LOGS

No core or drill stem test is planned. Spectral density, high-resolution induction, and cement bond logs will be run the base of the surface casing to TD. Samples will be collected every $\approx 10'$ from $\approx 200'$ above the Point Lookout to and through the Gallup and Dakota.

7. DOWN HOLE CONDITIONS

No abnormal pressures, temperatures, nor hydrogen sulfide are expected. Maximum bottom hole pressure will be $\leq 3,303$ psi.

8. OTHER INFORMATION

The anticipated spud date is upon approval. It is expected it will take ≈ 2 weeks to drill and ≈ 3 weeks to complete the well.

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4. PROPOSED PRODUCTION FACILITIES (See PAGE 14)

Production facilities will include a separator, dehydrator, meter run, and two \approx 300 bbl tanks. All of the equipment will be painted a flat juniper green.

A 613.08' long steel \approx 4-1/2" O. D. natural gas pipeline will be laid east along the road to an existing pipeline on Elm Ridge's producing Jicarilla Apache A 1 pad. The pipeline will be buried \approx 36" deep and \approx 15' from the road.

5. WATER SUPPLY

Water will be trucked from the Tribal water well that is one mile northwest of the junction of NM 537 and US 550.

6. CONSTRUCTION MATERIALS & METHODS (See PAGES 13 & 15)

The top 6" of soil and brush will be bladed and piled east of the pad. A diversion ditch will be cut east of the pile.

7. WASTE DISPOSAL

A closed loop system will be used instead of a reserve pit. Tank contents will be hauled to a State approved disposal site off the Jicarilla Apache Nation. All trash will be placed in a portable trash cage. It will be hauled to an approved landfill. Human waste will be disposed of in chemical toilets.

8. ANCILLARY FACILITIES

There will be no airstrip or man camp. Camper trailers will be on location for the company man, tool pusher, and mud logger.

Topographic map showing contour lines and elevation markers. A large circle labeled "mile radius" is centered on a point. Two points are labeled "SHL" and "BHL". A dashed line is labeled "lease boundary". Other labels include "J-18", "Oil Well", "Gas Well", "Wild Horse Mesa", and "PAGE 12".

Topographic map showing a mountainous area with contour lines and elevation markers. A large circle labeled "mile radius" is centered on a point. Two points are labeled "SHL" and "BHL". A dashed line is labeled "lease boundary". Other labels include "J-18", "Oil Well", "Gas Well", "Wild Horse Mesa", and "PAGE 12".

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PAGE 12

mile radius

SHL

BHL

mile radius

lease boundary

J-18

Oil Well

Gas Well

Wild Horse Mesa

6827

6850

6856

6825

6824

6857

6860

6864

6866

6872

6880

6885

6890

6895

6900

6905

6910

6915

6920

6925

6930

6935

6940

6945

6950

6955

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6975

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6985

6990

6995

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7005

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Surface Use Plan

1. DIRECTIONS & EXISTING ROADS (See PAGES 10 - 13)

From the junction of US 550 and NM 537...

Go N 17.2 miles on NM 537

Then turn left and go SW 7.9 miles on dirt J-18 to a 5 way junction

Then turn right and go North 2.1 miles on dirt J-6

Then turn right and go East 2.0 miles on a dirt road

Then bear right and go Southeast 0.8 mile on a dirt road

Then turn right and go Southeast 26' cross-country to the proposed pad

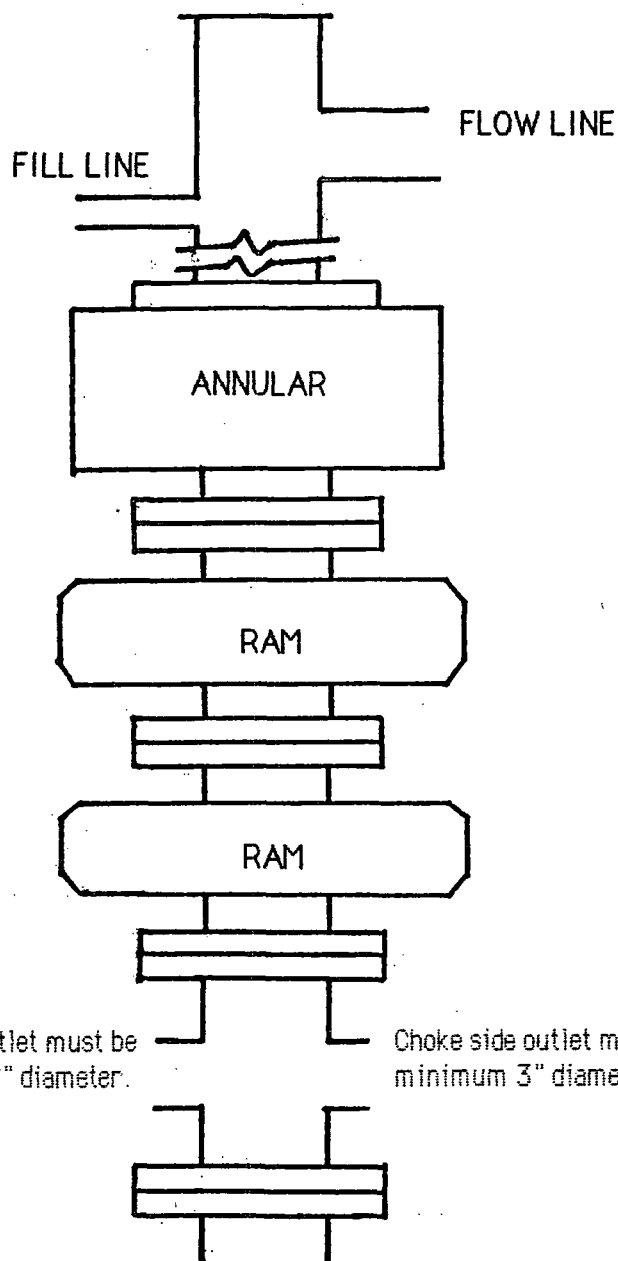
Roads will be maintained to at least equal to their present condition.

2. ROAD TO BE BUILT OR UPGRADED (See PAGE 13)

Upgrades will consist of repairing ruts. The 26' of new road will be built to BLM Gold Book standards. Road will be crowned and ditched, have a $\approx 14'$ wide running surface, and will be rocked where needed. A 24" x 50' culvert will be installed. Maximum disturbed width will be 50'. Maximum cut or fill = 5'. Maximum grade = 10%. No cattle guard is needed.

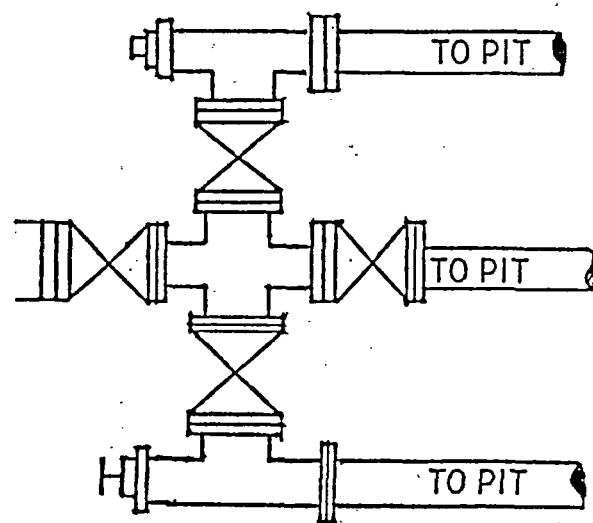
3. EXISTING WELLS (See PAGE 12)

Fifteen gas or oil wells and two plugged and abandoned wells are within a mile radius of the wellbore. There are no water or injection wells within a mile.



TYPICAL BOP STACK
& CHOKE MANIFOLD

There will be at least 2 chokes and 2 choke line valves (3" minimum). The choke line will be 3" in diameter. There will be a pressure gauge on the choke manifold.



Kill line will be minimum 2" diameter and have 2 valves, one of which shall be a minimum 2" check valve.

Upper kelly cock will have handle available.
Safety valve and subs will fit all drill string connections in use.
All BOPE connections subjected to well pressure will be flanged, welded, or clamped.