

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

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

Jami Bailey, 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: 7-28-14

Well information:

Operator Elm Ridge, Well Name and Number Jicarilla Apache A #18

API# 30-039-31282, Section 24, Township 25 N/S, Range 5 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
- 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.

* Hold C-104 for
5.9 compliance

A handwritten signature in cursive script, appearing to read "Charles Lem".

NMOCD Approved by Signature

11-3-2014

Date

ke

AUG 27 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. BIA 9 5109
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name JICARILLA APACHE NATION
2. Name of Operator ELM RIDGE EXPLORATION COMPANY, LLC		7. If Unit or CA Agreement, Name and No. N/A
3a. Address P. O. BOX 156 BLOOMFIELD, NM 87413		8. Lease Name and Well No. JICARILLA APACHE A 18
3b. Phone No. (include area code) (505) 632-3476		9. API Well No. 30-039- 31282
4. Location of Well (Report location clearly and in accordance with any State requirements) At surface 2507' FSL & 1554' FEL 24-25N-5W At proposed prod. zone 660' FSL & 660' FEL 24-25N-5W		10. Field and Pool, or Exploratory LINDRITH GALLUP-DAKOTA, WEST
14. Distance in miles and direction from nearest town or post office* 15 AIR MILES NE OF COUNSELORS, NM		11. Sec., T. R. M. or Blk. and Survey or Area SHL: NWSE 24-25N-5W BHL: SESE 24-25N-5W
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) SHL: 133' BHL: 660'	16. No. of acres in lease 2560	17. Spacing Unit dedicated to this well SE4 SECTION 24 (=160 ACRES)
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 25' (A 16) BHL: 1320' (A 16)	19. Proposed Depth TVD: 7756' MD: 8038'	20. BLM/BIA Bond No. on file BIA nationwide OKC 606114
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,908' UNGRADED	22. Approximate date work will start* 10/01/2014	23. Estimated duration 1 MONTH

OIL CONS. DIV DIST. 3

OCT 28 2014

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 <i>Brian Wood</i>	Name (Printed/Typed) BRIAN WOOD (PHONE: 505 466-8120)	Date 07/28/2014
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Title
CONSULTANT (FAX: 505 466-9682)

Approved by (Signature) <i>D. Manville</i>	Name (Printed/Typed)	Date 10/24/14
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Title
AFM FEO

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.

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

(Continued on page 2) This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

*(Instructions on page 2) This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

NMOCDA

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102

Revised August 1, 2011

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

OIL CONSERVATION DIVISION

Submit one copy to appropriate
District Office

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

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

AUG 27 2014

AMENDED REPORT

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31282		² Pool Code 39189		³ Pool Name LINDRITH GALLUP-DAKOTA, WEST	
⁴ Property Code 19025		⁵ Property Name JICARILLA APACHE A			⁶ Well Number 18
⁷ OGRD No. 149052		⁸ Operator Name ELM RIDGE EXPLORATION COMPANY, LLC			⁹ Elevation 6908

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
J	24	25 N	5 W		2507	SOUTH	1554	EAST	RIO ARRIBA

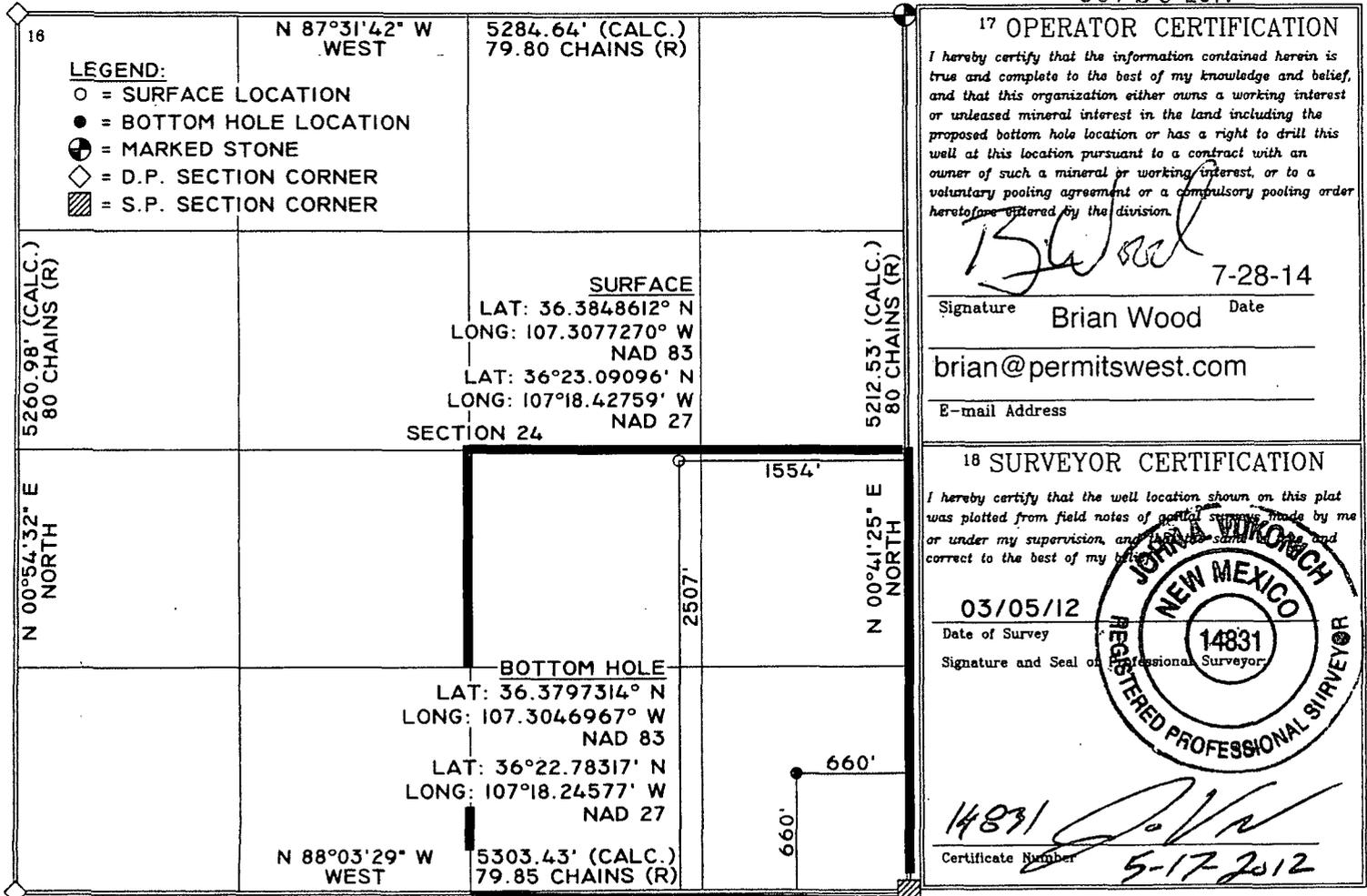
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	24	25 N	5 W		660	SOUTH	660	EAST	RIO ARRIBA

¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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OIL CONS. DIV DIST. 3

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 OCT 28 2014



Mesa West Directional
Telephone: 505.402.8944
www.mesawestdirectional.com

Elm Ridge Exploration Company.

Rio Arriba County, NM (Nad 83)

Sec.24,T25N,R5W

Jicarilla Apache A-18

DD

UWI:

API:

Plan: #2

Mesa West Planning Report

03 November, 2014

OIL CONS. DIV DIST. 3

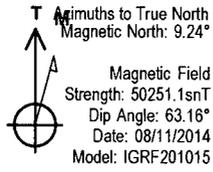
NOV 03 2014


MESA WEST
DIRECTIONAL

Elm Ridge Exploration Company.

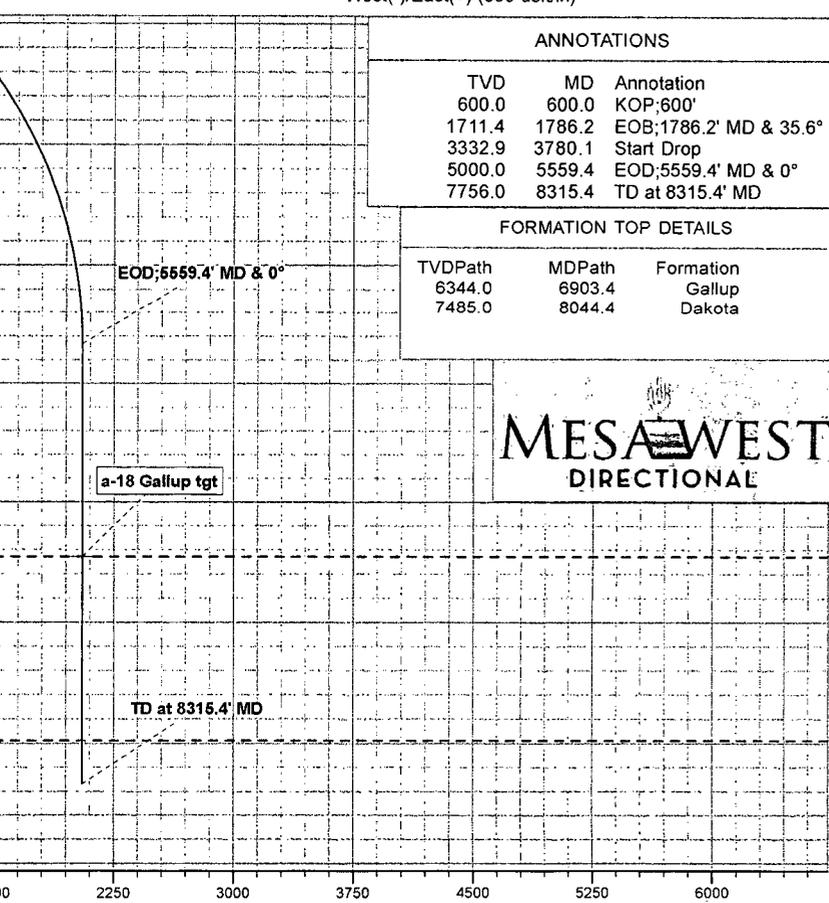
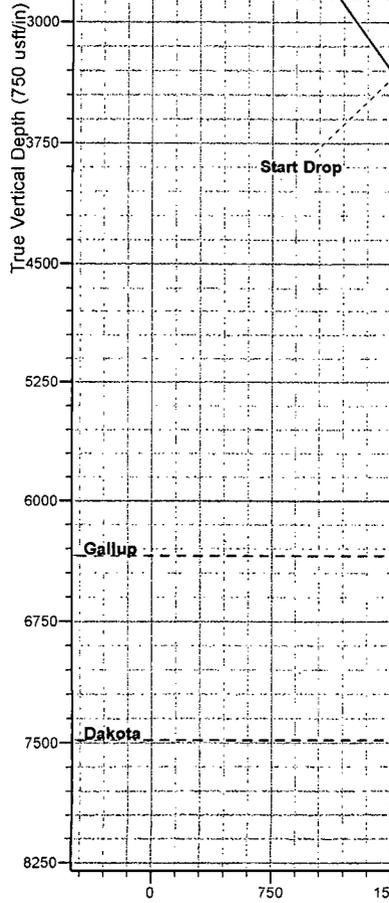
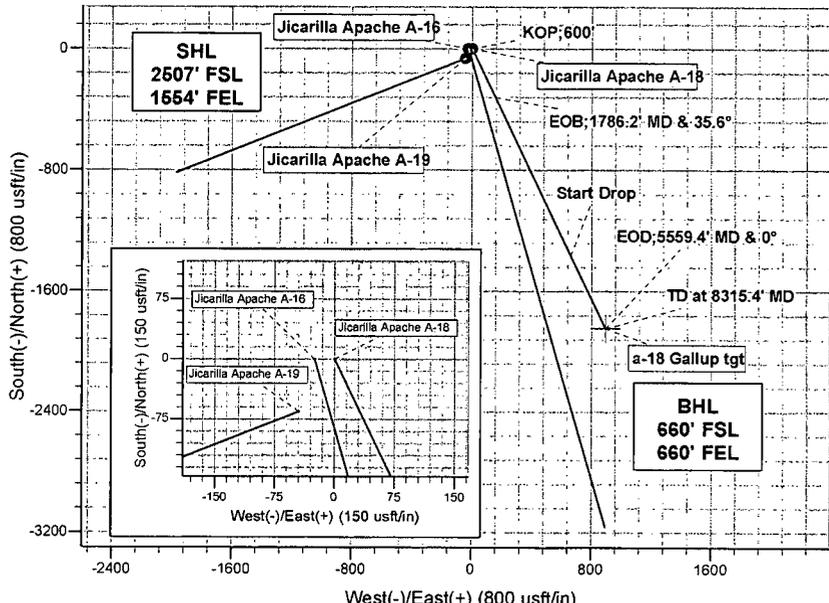
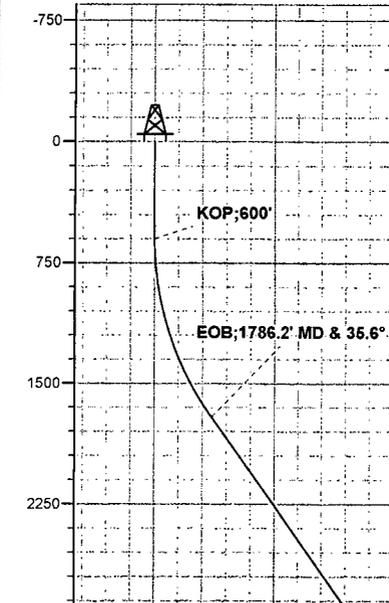
Site: Sec.24,T26N,R5W
Well: Jicarilla Apache A-18
Wellbore: DD
Plan: #2

Reference Details - WELL CENTRE
 Geodetic System: Universal Transverse Mercator
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)
 Northing: 13218838.85
 Easting: 961312.41
 Latitude: 36° 23' 5.500 N
 Longitude: 107° 18' 27.817 W
 Grid Convergence: 1.37° East
 Ground Elevation: 6908.0
 KB Elevation: Est RKB @ 6922.0usft (est kb 14')



PLAN DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSept	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
1786.2	35.59	154.17	1711.4	-321.0	155.4	3.00	154.17	356.7	
3780.1	35.59	154.17	3332.9	-1365.4	660.9	0.00	0.00	1517.0	
5559.4	0.00	0.00	5000.0	-1847.0	894.0	2.00	180.00	2052.0	
6903.4	0.00	0.00	6344.0	-1847.0	894.0	0.00	0.00	2052.0	a-18 Gallup tgt
8315.4	0.00	0.00	7756.0	-1847.0	894.0	0.00	0.00	2052.0	



ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	KOP:600'
1711.4	1786.2	EOB;1786.2' MD & 35.6°
3332.9	3780.1	Start Drop
5000.0	5559.4	EOD;5559.4' MD & 0°
7756.0	8315.4	TD at 8315.4' MD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6344.0	6903.4	Gallup
7485.0	8044.4	Dakota



Vertical Section at 154.17° (750 usft/in)

Mesa West Directional
Planning Report



Database:	WellPlan Services	Local Co-ordinate Reference:	Well Jicarilla Apache A-18
Company:	Elm Ridge Exploration Company.	TVD Reference:	Est RKB @ 6922.0usft (est kb 14')
Project:	Rio Arriba County, NM (Nad 83)	MD Reference:	Est RKB @ 6922.0usft (est kb 14')
Site:	Sec.24,T25N,R5W	North Reference:	True
Well:	Jicarilla Apache A-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Plan:	#2		

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.24,T25N,R5W				
Site Position:	Northing:	13,218,839.22 usft	Latitude:	36° 23' 5.498 N	
From:	Lat/Long	Easting:	961,287.42 usft	Longitude:	107° 18' 28.123 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.37 °

Well:	Jicarilla Apache A-18					
Well Position	+N/-S	0.2 usft	Northing:	13,218,838.84 usft	Latitude:	36° 23' 5.500 N
	+E/-W	25.0 usft	Easting:	961,312.41 usft	Longitude:	107° 18' 27.817 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,908.0 usft

Wellbore:	DD
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF201015	08/11/2014	9.24	63.16	50,251

Plan:	#2				
Audit Notes:	Land survey dated;03/05/12				
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	154.17	

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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,786.2	35.59	154.17	1,711.4	-321.0	155.4	3.00	3.00	0.00	154.17	
3,780.1	35.59	154.17	3,332.9	-1,365.4	660.9	0.00	0.00	0.00	0.00	
5,559.4	0.00	0.00	5,000.0	-1,847.0	894.0	2.00	-2.00	0.00	180.00	
6,903.4	0.00	0.00	6,344.0	-1,847.0	894.0	0.00	0.00	0.00	0.00	a-18 Gallup tgt
8,315.4	0.00	0.00	7,756.0	-1,847.0	894.0	0.00	0.00	0.00	0.00	

Mesa West Directional
Planning Report



Database:	WellPlan Services	Local Co-ordinate Reference:	Well Jicarilla Apache A-18
Company:	Elm Ridge Exploration Company.	TVD Reference:	Est RKB @ 6922.0usft (est kb 14')
Project:	Rio Arriba County, NM (Nad 83)	MD Reference:	Est RKB @ 6922.0usft (est kb 14')
Site:	Sec.24,T25N,R5W	North Reference:	True
Well:	Jicarilla Apache A-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Plan:	#2		

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)
KOP:600'										
600.0	0.00	0.00	600.0	6,322.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	3.00	154.17	700.0	6,222.0	-2.4	1.1	2.6	3.00	3.00	0.00
800.0	6.00	154.17	799.6	6,122.4	-9.4	4.6	10.5	3.00	3.00	0.00
900.0	9.00	154.17	898.8	6,023.2	-21.2	10.2	23.5	3.00	3.00	0.00
1,000.0	12.00	154.17	997.1	5,924.9	-37.6	18.2	41.7	3.00	3.00	0.00
1,100.0	15.00	154.17	1,094.3	5,827.7	-58.6	28.4	65.1	3.00	3.00	0.00
1,200.0	18.00	154.17	1,190.2	5,731.8	-84.1	40.7	93.5	3.00	3.00	0.00
1,300.0	21.00	154.17	1,284.4	5,637.6	-114.2	55.3	126.9	3.00	3.00	0.00
1,400.0	24.00	154.17	1,376.8	5,545.2	-148.6	71.9	165.1	3.00	3.00	0.00
1,500.0	27.00	154.17	1,467.1	5,454.9	-187.4	90.7	208.2	3.00	3.00	0.00
1,600.0	30.00	154.17	1,554.9	5,367.1	-230.3	111.5	255.9	3.00	3.00	0.00
1,700.0	33.00	154.17	1,640.2	5,281.8	-277.3	134.2	308.1	3.00	3.00	0.00
EOB:1786.2' MD & 35.6°										
1,786.2	35.59	154.17	1,711.4	5,210.6	-321.0	155.4	356.7	3.00	3.00	0.00
1,800.0	35.59	154.17	1,722.6	5,199.4	-328.3	158.9	364.7	0.00	0.00	0.00
1,900.0	35.59	154.17	1,803.9	5,118.1	-380.7	184.2	422.9	0.00	0.00	0.00
2,000.0	35.59	154.17	1,885.3	5,036.7	-433.0	209.6	481.1	0.00	0.00	0.00
2,100.0	35.59	154.17	1,966.6	4,955.4	-485.4	235.0	539.3	0.00	0.00	0.00
2,200.0	35.59	154.17	2,047.9	4,874.1	-537.8	260.3	597.5	0.00	0.00	0.00
2,300.0	35.59	154.17	2,129.2	4,792.8	-590.2	285.7	655.7	0.00	0.00	0.00
2,400.0	35.59	154.17	2,210.6	4,711.4	-642.6	311.0	713.9	0.00	0.00	0.00
2,500.0	35.59	154.17	2,291.9	4,630.1	-694.9	336.4	772.1	0.00	0.00	0.00
2,600.0	35.59	154.17	2,373.2	4,548.8	-747.3	361.7	830.2	0.00	0.00	0.00
2,700.0	35.59	154.17	2,454.5	4,467.5	-799.7	387.1	888.4	0.00	0.00	0.00
2,800.0	35.59	154.17	2,535.9	4,386.1	-852.1	412.4	946.6	0.00	0.00	0.00
2,900.0	35.59	154.17	2,617.2	4,304.8	-904.4	437.8	1,004.8	0.00	0.00	0.00
3,000.0	35.59	154.17	2,698.5	4,223.5	-956.8	463.1	1,063.0	0.00	0.00	0.00
3,100.0	35.59	154.17	2,779.8	4,142.2	-1,009.2	488.5	1,121.2	0.00	0.00	0.00
3,200.0	35.59	154.17	2,861.2	4,060.8	-1,061.6	513.8	1,179.4	0.00	0.00	0.00
3,300.0	35.59	154.17	2,942.5	3,979.5	-1,114.0	539.2	1,237.6	0.00	0.00	0.00
3,400.0	35.59	154.17	3,023.8	3,898.2	-1,166.3	564.5	1,295.8	0.00	0.00	0.00
3,500.0	35.59	154.17	3,105.1	3,816.9	-1,218.7	589.9	1,354.0	0.00	0.00	0.00
3,600.0	35.59	154.17	3,186.5	3,735.5	-1,271.1	615.2	1,412.2	0.00	0.00	0.00
3,700.0	35.59	154.17	3,267.8	3,654.2	-1,323.5	640.6	1,470.4	0.00	0.00	0.00
Start Drop										
3,780.1	35.59	154.17	3,332.9	3,589.1	-1,365.4	660.9	1,517.0	0.00	0.00	0.00
3,800.0	35.19	154.17	3,349.1	3,572.9	-1,375.8	665.9	1,528.5	2.00	-2.00	0.00
3,900.0	33.19	154.17	3,431.9	3,490.1	-1,426.4	690.4	1,584.7	2.00	-2.00	0.00
4,000.0	31.19	154.17	3,516.5	3,405.5	-1,474.3	713.6	1,638.0	2.00	-2.00	0.00
4,100.0	29.19	154.17	3,602.9	3,319.1	-1,519.6	735.5	1,688.2	2.00	-2.00	0.00
4,200.0	27.19	154.17	3,691.1	3,230.9	-1,562.1	756.1	1,735.5	2.00	-2.00	0.00
4,300.0	25.19	154.17	3,780.8	3,141.2	-1,601.8	775.3	1,779.6	2.00	-2.00	0.00
4,400.0	23.19	154.17	3,872.0	3,050.0	-1,638.7	793.2	1,820.6	2.00	-2.00	0.00
4,500.0	21.19	154.17	3,964.6	2,957.4	-1,672.7	809.6	1,858.3	2.00	-2.00	0.00
4,600.0	19.19	154.17	4,058.4	2,863.6	-1,703.8	824.7	1,892.8	2.00	-2.00	0.00

Mesa West Directional

Planning Report



Database:	WellPlan Services	Local Co-ordinate Reference:	Well Jicarilla Apache A-18
Company:	Elm Ridge Exploration Company.	TVD Reference:	Est RKB @ 6922.0usft (est kb 14')
Project:	Rio Arriba County, NM (Nad 83)	MD Reference:	Est RKB @ 6922.0usft (est kb 14')
Site:	Sec.24,T25N,R5W	North Reference:	True
Well:	Jicarilla Apache A-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Plan:	#2		

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)
4,700.0	17.19	154.17	4,153.4	2,768.6	-1,731.8	838.3	1,924.0	2.00	-2.00	0.00
4,800.0	15.19	154.17	4,249.5	2,672.5	-1,756.9	850.4	1,951.9	2.00	-2.00	0.00
4,900.0	13.19	154.17	4,346.4	2,575.6	-1,779.0	861.1	1,976.4	2.00	-2.00	0.00
5,000.0	11.19	154.17	4,444.2	2,477.8	-1,798.0	870.3	1,997.5	2.00	-2.00	0.00
5,100.0	9.19	154.17	4,542.6	2,379.4	-1,813.9	878.0	2,015.2	2.00	-2.00	0.00
5,200.0	7.19	154.17	4,641.6	2,280.4	-1,826.7	884.2	2,029.5	2.00	-2.00	0.00
5,300.0	5.19	154.17	4,741.0	2,181.0	-1,836.4	888.9	2,040.3	2.00	-2.00	0.00
5,400.0	3.19	154.17	4,840.7	2,081.3	-1,843.0	892.1	2,047.6	2.00	-2.00	0.00
5,500.0	1.19	154.17	4,940.6	1,981.4	-1,846.4	893.7	2,051.4	2.00	-2.00	0.00
EOD:5559.4' MD & 0°										
5,559.4	0.00	0.00	5,000.0	1,922.0	-1,847.0	894.0	2,052.0	2.00	-2.00	-259.61
5,600.0	0.00	0.00	5,040.6	1,881.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,140.6	1,781.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,240.6	1,681.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,340.6	1,581.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,440.6	1,481.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,100.0	0.00	0.00	5,540.6	1,381.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,200.0	0.00	0.00	5,640.6	1,281.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,300.0	0.00	0.00	5,740.6	1,181.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,400.0	0.00	0.00	5,840.6	1,081.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,500.0	0.00	0.00	5,940.6	981.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,040.6	881.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,140.6	781.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,240.6	681.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,340.6	581.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
Gallup - a-18 Gallup.tgt										
6,903.4	0.00	0.00	6,344.0	578.0	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,440.6	481.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,100.0	0.00	0.00	6,540.6	381.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,200.0	0.00	0.00	6,640.6	281.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,300.0	0.00	0.00	6,740.6	181.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,400.0	0.00	0.00	6,840.6	81.4	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,500.0	0.00	0.00	6,940.6	-18.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,040.6	-118.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,140.6	-218.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,240.6	-318.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,340.6	-418.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
8,000.0	0.00	0.00	7,440.6	-518.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
Dakota										
8,044.4	0.00	0.00	7,485.0	-563.0	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
8,100.0	0.00	0.00	7,540.6	-618.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
8,200.0	0.00	0.00	7,640.6	-718.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
8,300.0	0.00	0.00	7,740.6	-818.6	-1,847.0	894.0	2,052.0	0.00	0.00	0.00
TD at 8315.4' MD										
8,315.4	0.00	0.00	7,756.0	-834.0	-1,847.0	894.0	2,052.0	0.00	0.00	0.00

Mesa West Directional
Planning Report



Database:	WellPlan Services	Local Co-ordinate Reference:	Well Jicarilla Apache A-18
Company:	Elm Ridge Exploration Company.	TVD Reference:	Est RKB @ 6922.0usft (est kb 14')
Project:	Rio Arriba County, NM (Nad 83)	MD Reference:	Est RKB @ 6922.0usft (est kb 14')
Site:	Sec.24,T25N,R5W	North Reference:	True
Well:	Jicarilla Apache A-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Plan:	#2		

Design Targets										
Target Name	hit/miss target: Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
a-18 Gallup tgt		0.00	0.00	6,344.0	-1,847.0	894.0	13,216,971.00	962,162.01	36° 22' 47.239 N	107° 18' 16.886 W
	- plan hits target center									
	- Point									

Formations							
Measured Depth (usft)	Vertical Depth (usft)	Subsea Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,903.4	6,344.0	578.0	Gallup				
8,044.4	7,485.0	-563.0	Dakota				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
600.0	600.0	0.0	0.0	KOP:600'	
1,786.2	1,711.4	-321.0	155.4	EOB;1786.2' MD & 35.6°	
3,780.1	3,332.9	-1,365.4	660.9	Start Drop	
5,559.4	5,000.0	-1,847.0	894.0	EOD;5559.4' MD & 0°	
8,315.4	7,756.0	-1,847.0	894.0	TD at 8315.4' MD	

Elm Ridge Exploration Company, LLC
 Jicarilla Apache A 18
 SHL: 2507' FSL & 1554' FEL 24-25N-5W
 BHL: 660' FSL & 660' FEL 24-25N-5W
 Rio Arriba County, NM

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'	+6,908'
Ojo Alamo	2,393'	2,403'	+4,515'
Kirtland	2,678'	2,688'	+4,230'
Fruitland	2,888'	2,898'	+4,020'
Pictured Cliffs Ss	3,103'	3,113'	+3,805'
Lewis Shale	3,178'	3,188'	+3,730'
LaVentana Ss	3,973'	3,983'	+2,935'
Point Lookout Ss	5,328'	5,338'	+1,580'
Mancos Shale	5,608'	5,618'	+1,300'
Gallup Ss	6,344'	6,354'	+564'
Greenhorn	7,258'	7,268'	-350'
Graneros	7,328'	7,338'	-420'
Dakota	7,485'	7,495'	-577'
Total Vertical Depth*	7,756'	7,766'	-848'

*measured depth = 8,038'

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	8,038'

	<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 $\approx 5,400'$ ($\approx 200'$ above the Mancos). Will pressure test to 2,000-psi for 30-minutes.

First stage volume will be 1,650 cubic feet. First stage will consist of 420 sacks (785 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 775 sacks (915 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 1,040 cubic feet. Second stage will consist of 525 sacks (981 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 $\leq 3,353$ 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 PAGES 13 - 15)

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

A 314.48' long steel ≈4-1/2" O. D. natural gas pipeline will be laid north to an existing pipeline just east of Enervest's producing Jicarilla Contract 148 #42 pad. The pipeline will be buried ≈36" deep. This one pipeline will serve 3 wells (16, 18, & 19) on this one pad.

Elm Ridge will re-route its Jicarilla A 2 pipeline that crosses the proposed pad. The re-route will follow the perimeter of the proposed pad.

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 14 & 16)

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

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.

3. All liquid waste, completion fluids, and drilling products associated with oil and gas operations will be contained and removed and deposited at a licensed disposal facility.
4. Compressor units, pump jacks, and other associated equipment require the containment of fluids.
5. Where applicable, berms will be constructed in order to contain 1.5 (one and one half) times the amount of fluids contained in the storage containers or the combined capacity of storage containers in the event more than one storage container was compromised. Berm walls will be compacted.
6. Where applicable, diversion ditches will be constructed above the cut slope draining away from the well pad. Drainage plan required for mitigation of erosion and non-point source pollution originating from development activities.
7. Where applicable, all above ground structures not subject to safety requirements will be painted by the lessee to blend with the natural color of the landscape. A reflective material will be used to reduce hazards when such structures are near J-roads.
8. When construction activity destroys a natural barrier used for livestock control, gaps thus opened will be fenced to prevent drift of livestock. The subject natural barrier shall be identified and fenced by the holder as per instructions of the JOGA Administrator.

E. PITS

1. Reserve pits will be lined with an impervious (welded or sealed) material at a minimum 15 mil thick. Reserve pits will be constructed so as not to leak, break or allow discharge of liquids or produced solids.
2. At least half of the capacity of the reserve pit must be in cut material.
3. The top of the outside wall of the pit will be smoothed-off with a minimum of one blade width. The pit will have adequate capacity to maintain 2 feet of free board. Reserve pits are not to be located in natural drainages.
4. Prior to closing the pit, the material must be allowed to dry, be pumped dry, or solidified in-situ prior to filling. The pit liner must be removed to the solids level and the liner will be cut off at the mud level. The excess liner will be removed and deposited at a licensed disposal site.
5. All unguarded reserve, production, or blow pits which contain liquids will be fenced with six (6) feet high hog wire fencing. T-post spacing of twelve 12 feet. The corners will be raised and reinforced.
6. Drilling pits will be fenced on three sides. The fourth side will be fenced once the rig leaves the location.

7. Reserve pits will be closed and rehabbed 90 days after completion. All reserve pits remaining open after 90 days are required to have written authorization from JOGA/BIA. Liquids in pits will be allowed to evaporate or be properly disposed of prior to filling and recontouring. Aeration of pit fluids must be confined within pit area.
8. Upon completion of the well, the reserve pit will be covered with screening or netting and remain covered until the pit is reclaimed.
9. To protect migratory birds and other wildlife, all permanent production tanks and pits, regardless of diameter used for containment of produced water, oil, or condensate, will be screened, netted or otherwise covered.
10. Under no circumstances will pits be trenched (cut) or filled (squeezed) while still containing fluids.
11. The pit area will be covered with enough additional material to allow for settling, or mounded, in order to create a positive surface drainage.

F. ROADS

1. Adhere to the BIA Road Policy while on the Jicarilla Apache Indian Reservation.
2. Performing construction maintenance activities outside the approved access road is not allowed.
3. Access roads will not be restricted to travel. Gates and cattle guards will not be locked or closed by the operator without written authorization from JOGA Administrator.
4. Maintain roads so that user traffic remains within BIA approved right-of-way.
5. Road maintenance will include drainage dips, turnout ditches, crowning, out sloping/in sloping, low water crossings, and vehicle turnouts. Cattle guards and culverts will be cleaned, repaired, or replaced when necessary.
6. Crowning and ditching on both sides of the road is required. The crown shall have a grade of approximately two percent (2%) (i.e., two inch crown on a 14 foot wide road). The road cross section will conform to the BLM Gold Book Guidelines.
7. The operator shall be responsible for dust abatement. Reseed any disturbed area using the following designated seed mixture and to the specifications given in the RESEEDING AND ABANDONMENT section below.
8. Unless otherwise approved in writing by the Jicarilla Oil and Gas Administrator, drainage dip for the location for grades over two percent (2%) shall be determined by the BLM Gold Book

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Surface Use Plan

1. DIRECTIONS & EXISTING ROADS (See PAGES 10 - 15)

From the junction of US 550 and NM 537...
Go North 17.2 miles on NM 537
Then turn left and go Southwest 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 turn left and go North 1/3 mile on a dirt road
Then turn right and go East 1.05 mile on a dirt road
Then turn right and go South and Southeast ¼ mile on a dirt road
Then bear right and go Southeast 200 yards on a dirt road
Then turn left and go Northeast 283' cross-country to the proposed pad

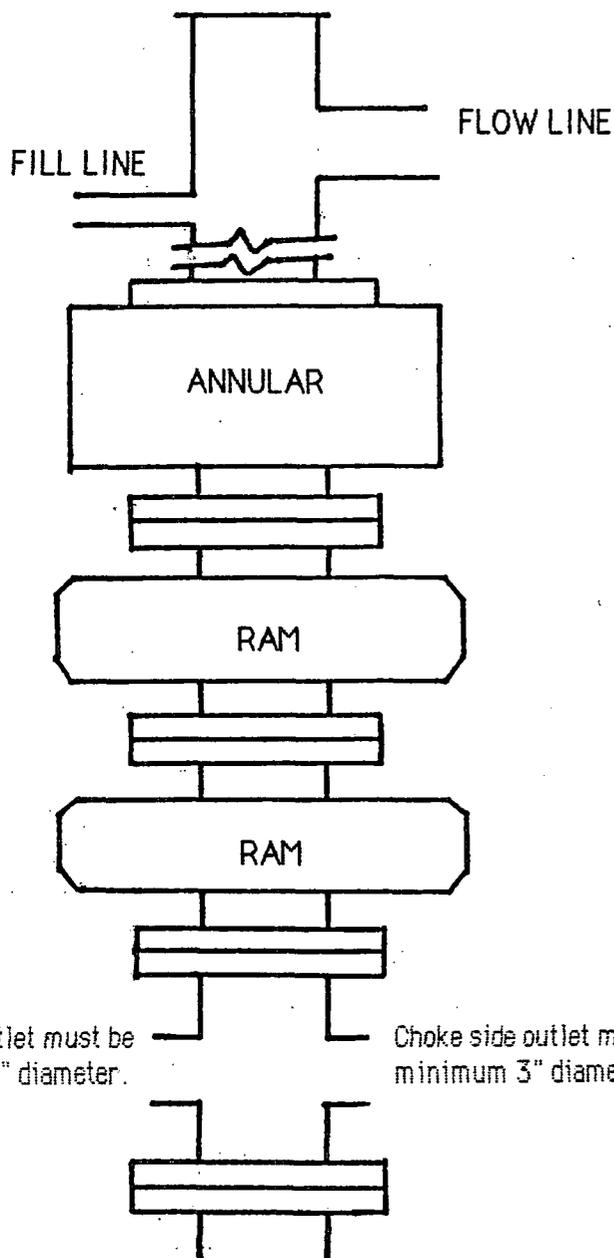
Roads will be maintained to at least equal to their present condition.

2. ROAD TO BE BUILT OR UPGRADED (See PAGES 13 - 15)

Upgrades will consist of repairing ruts and rocking soft dusty spots. The 283' of new road will be built to BLM Gold Book standards. Road will be crowned and ditched, have a ≈14' wide running surface, and will be rocked where needed. A rocked low water crossing will be installed. Top of rock will be level with existing arroyo bottom. At the request of the Jicarilla Apache Nation, two catchments will be built between the new road and A 2 pipeline. Maximum disturbed width will be 20'. Maximum cut or fill = 5'. Maximum grade = 10%. No cattle guard is needed.

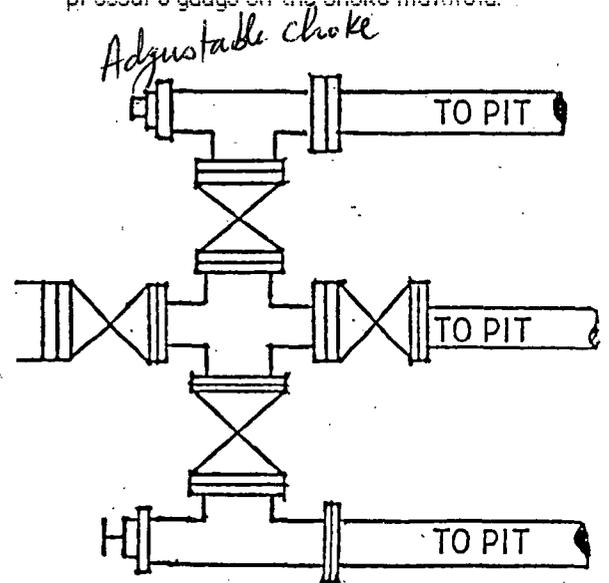
3. EXISTING WELLS (See PAGE 12)

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



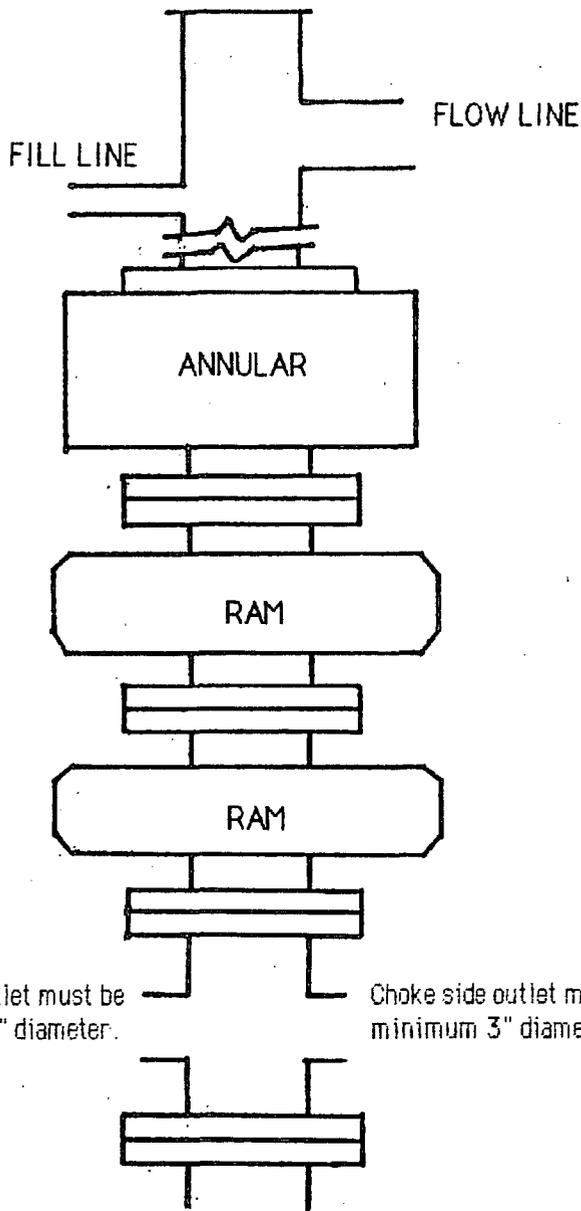
TYPICAL BOP STACK & CHOKE MANIFOLD

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.



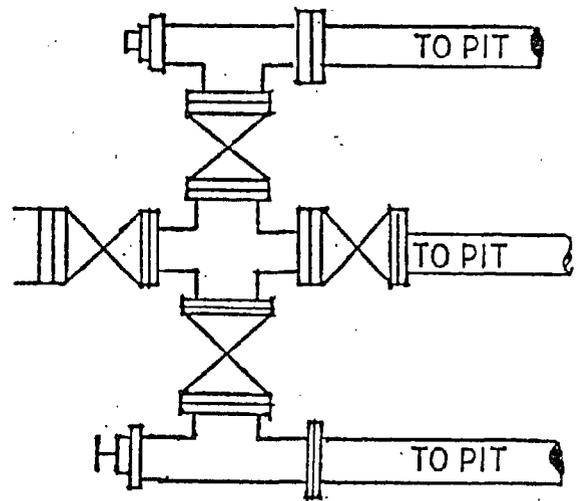
Kill line will be minimum 2" diameter and have 2 valves, one of which shall be a minimum 2" check valve.

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.



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