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: 10-31-14
Well information:
Operator Elm Ridge, Well Name and Number Bonanza #16
API# 30-043-21240, Section 2, Township 22 N/S, Range 3 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 & 5.9 compliance
- o Hold C-104 for NSL, NSP, DHC
- o Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- o Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- o Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ✓ 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.

Charlie Perrin
NMOCD Approved by Signature

4-2-2015
Date

OIL CONS. DIV DIST. 3

MAR 30 2015

Form 3160-3
(March 2012)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. ~~BIA 360~~ J1C360

6. If Indian, Allotee or Tribe Name
JICARILLA APACHE NATION

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
N/A

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

8. Lease Name and Well No.
BONANZA 16

2. Name of Operator ELM RIDGE EXPLORATION COMMPANY, LLC

9. API Well No.
30-043-21240

3a. Address P. O. BOX 156
BLOOMFIELD, NM 87413

3b. Phone No. *(include area code)*
(505) 632-3476

10. Field and Pool, or Exploratory
LINDITH GALLUP-DAKOTA, WEST

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface L 1850' FSL & 1000' FWL
At proposed prod. zone F 1980' FNL & 1980' FWL

11. Sec., T. R. M. or Blk. and Survey or Area
2-22N-3W

14. Distance in miles and direction from nearest town or post office*
9 AIR MILES WSW OF REGINA, NM

12. County or Parish
SANDOVAL

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
SHL: 1000'
BHL: 1980'

16. No. of acres in lease
2541

17. Spacing Unit dedicated to this well
Lots 3 & 4 and S2NW4

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
SHL: 850' (Bonanza 8)
BHL: 1400' (Bonanza 1)

19. Proposed Depth
TVD: 7200' MD: 7601'

20. BLM/BIA Bond No. on file
BIA nationwide OKC 606114

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
7,120' UNGRADED

22. Approximate date work will start*
01/02/2015

23. 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 B J Wood

Name *(Printed/Typed)*
BRIAN WOOD (PHONE: 505 466-8120)

Date
10/31/2014

Title
CONSULTANT (FAX: 505 466-9682)

Approved by *(Signature)* Joe Hewitt

Name *(Printed/Typed)*
Joe Hewitt

Date
3-25-15

Title
Acting AFM

Office
FFO

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

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

NOTICE 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)

*(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

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

NMOCD

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, 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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-043- 21240	39189	LINDRITH GALLUP-DAKOTA, WEST

[4] Property Code	[5] Property Name	[6] Well Number
27875	BONANZA	16

[7] OGRID No.	[8] Operator Name	[9] Elevation
149052	ELM RIDGE EXPLORATION COMPANY, LLC	7120

[10] Surface Location

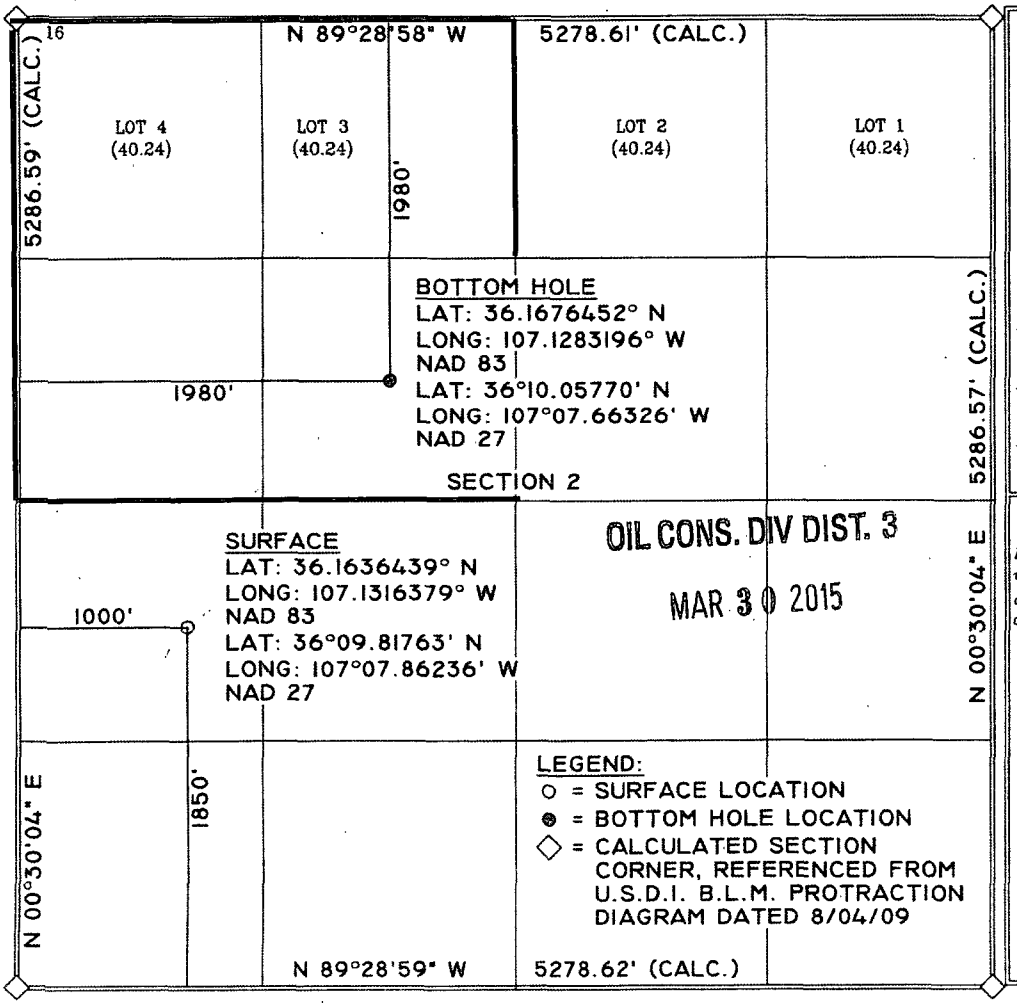
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	2	22 N	3 W	700	1850	SOUTH	1000	WEST	SANDOVAL

[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
F	2	22 N	3 W	700	1980	NORTH	1980	WEST	SANDOVAL

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
160 ~~48~~			

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



OIL CONS. DIV DIST. 3
MAR 30 2015

[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.

10-31-14
Signature Date

BRIAN WOOD

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 is true and correct to the best of my belief.

10/07/13
Date of Survey

Signature and Seal of Professional Surveyor:

JOHN A. VUKONICH
NEW MEXICO
14831
REGISTERED PROFESSIONAL SURVEYOR

14831
Certificate Number
United Field Services, Inc. 10-17-2013

Elm Ridge Exploration Company.

Project: Sandoval County, NM (Nad 83)
Site: Sec 2-T22N-R3W
Well: Bonanza #16
Wellbore: DD
Plan: #2

Reference Details - WELL CENTRE

Geodetic System: US State Plane 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone
Northing: 1880013.36
Easting: 1380180.32
Latitude: 36° 9' 49.118 N
Longitude: 107° 7' 53.896 W
Grid Convergence: 0.52° East
Ground Elevation: 7120.0
KB Elevation: Est RKB @ 7134.0usft

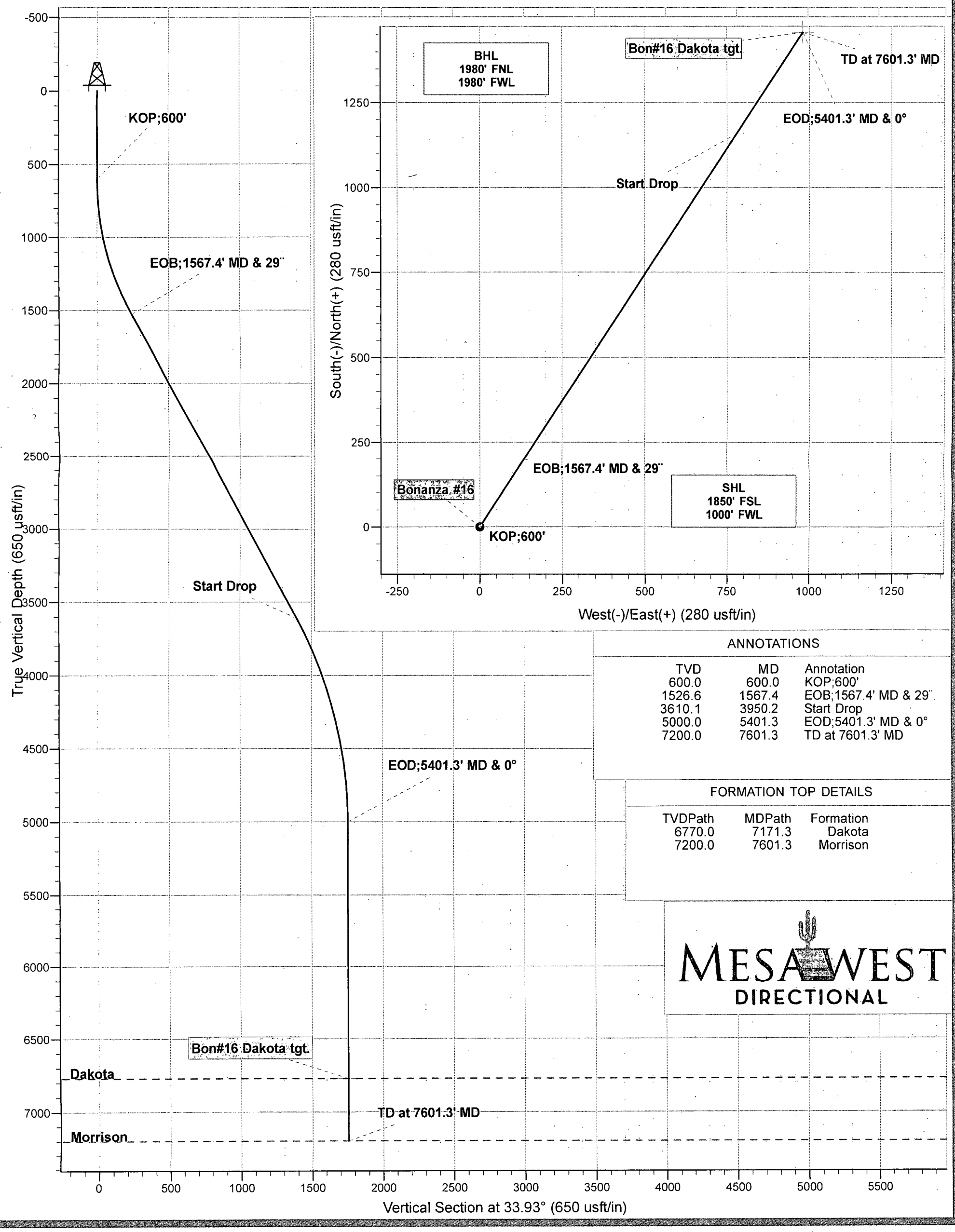
T M

Azimuths to True North
Magnetic North: 9.14°

Magnetic Field
Strength: 50148.6snT
Dip Angle: 63.00°
Date: 27/10/2014
Model: IGRF201015

PLAN DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DIeg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1567.4	29.02	33.93	1526.6	199.0	133.9	3.00	33.93	239.8	
4	3950.2	29.02	33.93	3610.1	1158.1	779.2	0.00	0.00	1395.8	
5	5401.3	0.00	0.00	5000.0	1456.6	980.0	2.00	180.00	1755.6	
6	7171.3	0.00	0.00	6770.0	1456.6	980.0	0.00	0.00	1755.6	Bon#16 Dakota tgt.
7	7601.3	0.00	0.00	7200.0	1456.6	980.0	0.00	0.00	1755.6	



ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	KOP;600'
1526.6	1567.4	EOB;1567.4' MD & 29°
3610.1	3950.2	Start Drop
5000.0	5401.3	EOD;5401.3' MD & 0°
7200.0	7601.3	TD at 7601.3' MD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6770.0	7171.3	Dakota
7200.0	7601.3	Morrison

MESA WEST DIRECTIONAL

Database:	WellPlan Services	**Local Co-ordinate Reference:**	Well Bonanza #16
Company:	Elm Ridge Exploration Company.	**TVD Reference:**	Est RKB @ 7134.0usft
Project:	Sandoval County, NM (Nad 83)	**MD Reference:**	Est RKB @ 7134.0usft
Site:	Sec 2-T22N-R3W	**North Reference:**	True
Well:	Bonanza #16	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Plan:	#2		

Project Sandoval County, NM (Nad 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site Sec 2-T22N-R3W

Site Position:		**Northing:**	1,880,013.36 usft	**Latitude:**	36° 9' 49.118 N
From:	Lat/Long	**Easting:**	1,380,180.32 usft	**Longitude:**	107° 7' 53.896 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.52 °

Well Bonanza #16

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,880,013.36 usft	**Latitude:**	36° 9' 49.118 N
	+E/-W	0.0 usft	**Easting:**	1,380,180.32 usft	**Longitude:**	107° 7' 53.896 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	7,120.0 usft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF201015	27/10/2014	9.14	63.00	50,149

Plan #2

Audit Notes:

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	33.93

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	
1,567.4	29.02	33.93	1,526.6	199.0	133.9	3.00	3.00	0.00	33.93	
3,950.2	29.02	33.93	3,610.1	1,158.1	779.2	0.00	0.00	0.00	0.00	
5,401.3	0.00	0.00	5,000.0	1,456.6	980.0	2.00	-2.00	0.00	180.00	
7,171.3	0.00	0.00	6,770.0	1,456.6	980.0	0.00	0.00	0.00	0.00	Bon#16 Dakota tgt.
7,601.3	0.00	0.00	7,200.0	1,456.6	980.0	0.00	0.00	0.00	0.00	

Database:	WellPlan Services	**Local Co-ordinate Reference:**	Well Bonanza #16
Company:	Elm Ridge Exploration Company	**TVD Reference:**	Est RKB @ 7134.0usft
Project:	Sandoval County, NM (Nad 83)	**MD Reference:**	Est RKB @ 7134.0usft
Site:	Sec 2-T22N-R3W	**North Reference:**	True
Well:	Bonanza #16	**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)
0.0	0.00	0.00	0.0	-7,134.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP;600'										
600.0	0.00	0.00	600.0	-6,534.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	3.00	33.93	700.0	-6,434.0	2.2	1.5	2.6	3.00	3.00	0.00
800.0	6.00	33.93	799.6	-6,334.4	8.7	5.8	10.5	3.00	3.00	0.00
900.0	9.00	33.93	898.8	-6,235.2	19.5	13.1	23.5	3.00	3.00	0.00
1,000.0	12.00	33.93	997.1	-6,136.9	34.6	23.3	41.7	3.00	3.00	0.00
1,100.0	15.00	33.93	1,094.3	-6,039.7	54.0	36.3	65.1	3.00	3.00	0.00
1,200.0	18.00	33.93	1,190.2	-5,943.8	77.6	52.2	93.5	3.00	3.00	0.00
1,300.0	21.00	33.93	1,284.4	-5,849.6	105.2	70.8	126.9	3.00	3.00	0.00
1,400.0	24.00	33.93	1,376.8	-5,757.2	137.0	92.2	165.1	3.00	3.00	0.00
1,500.0	27.00	33.93	1,467.1	-5,666.9	172.7	116.2	208.2	3.00	3.00	0.00
EOB;1567.4' MD & 29°										
1,567.4	29.02	33.93	1,526.6	-5,607.4	199.0	133.9	239.8	3.00	3.00	0.00
1,600.0	29.02	33.93	1,555.1	-5,578.9	212.1	142.7	255.6	0.00	0.00	0.00
1,700.0	29.02	33.93	1,642.5	-5,491.5	252.3	169.8	304.1	0.00	0.00	0.00
1,800.0	29.02	33.93	1,730.0	-5,404.0	292.6	196.9	352.7	0.00	0.00	0.00
1,900.0	29.02	33.93	1,817.4	-5,316.6	332.9	223.9	401.2	0.00	0.00	0.00
2,000.0	29.02	33.93	1,904.8	-5,229.2	373.1	251.0	449.7	0.00	0.00	0.00
2,100.0	29.02	33.93	1,992.3	-5,141.7	413.4	278.1	498.2	0.00	0.00	0.00
2,200.0	29.02	33.93	2,079.7	-5,054.3	453.6	305.2	546.7	0.00	0.00	0.00
2,300.0	29.02	33.93	2,167.2	-4,966.8	493.9	332.3	595.2	0.00	0.00	0.00
2,400.0	29.02	33.93	2,254.6	-4,879.4	534.1	359.4	643.8	0.00	0.00	0.00
2,500.0	29.02	33.93	2,342.0	-4,791.9	574.4	386.4	692.3	0.00	0.00	0.00
2,600.0	29.02	33.93	2,429.5	-4,704.5	614.6	413.5	740.8	0.00	0.00	0.00
2,700.0	29.02	33.93	2,516.9	-4,617.1	654.9	440.6	789.3	0.00	0.00	0.00
2,800.0	29.02	33.93	2,604.4	-4,529.6	695.1	467.7	837.8	0.00	0.00	0.00
2,900.0	29.02	33.93	2,691.8	-4,442.2	735.4	494.8	886.3	0.00	0.00	0.00
3,000.0	29.02	33.93	2,779.3	-4,354.7	775.6	521.9	934.9	0.00	0.00	0.00
3,100.0	29.02	33.93	2,866.7	-4,267.3	815.9	548.9	983.4	0.00	0.00	0.00
3,200.0	29.02	33.93	2,954.1	-4,179.9	856.1	576.0	1,031.9	0.00	0.00	0.00
3,300.0	29.02	33.93	3,041.6	-4,092.4	896.4	603.1	1,080.4	0.00	0.00	0.00
3,400.0	29.02	33.93	3,129.0	-4,005.0	936.7	630.2	1,128.9	0.00	0.00	0.00
3,500.0	29.02	33.93	3,216.5	-3,917.5	976.9	657.3	1,177.4	0.00	0.00	0.00
3,600.0	29.02	33.93	3,303.9	-3,830.1	1,017.2	684.3	1,225.9	0.00	0.00	0.00
3,700.0	29.02	33.93	3,391.4	-3,742.6	1,057.4	711.4	1,274.5	0.00	0.00	0.00
3,800.0	29.02	33.93	3,478.8	-3,655.2	1,097.7	738.5	1,323.0	0.00	0.00	0.00
3,900.0	29.02	33.93	3,566.2	-3,567.8	1,137.9	765.6	1,371.5	0.00	0.00	0.00
Start Drop										
3,950.2	29.02	33.93	3,610.1	-3,523.9	1,158.1	779.2	1,395.8	0.00	0.00	0.00
4,000.0	28.03	33.93	3,653.9	-3,480.1	1,177.9	792.5	1,419.6	2.00	-2.00	0.00
4,100.0	26.03	33.93	3,743.0	-3,391.0	1,215.6	817.8	1,465.1	2.00	-2.00	0.00
4,200.0	24.03	33.93	3,833.6	-3,300.4	1,250.7	841.4	1,507.4	2.00	-2.00	0.00
4,300.0	22.03	33.93	3,925.6	-3,208.4	1,283.1	863.3	1,546.5	2.00	-2.00	0.00
4,400.0	20.03	33.93	4,018.9	-3,115.1	1,312.9	883.3	1,582.4	2.00	-2.00	0.00
4,500.0	18.03	33.93	4,113.5	-3,020.5	1,339.9	901.5	1,615.0	2.00	-2.00	0.00

Database:	WellPlan Services	**Local Co-ordinate Reference:**	Well Bonanza #16
Company:	Elm Ridge Exploration Company.	**TVD Reference:**	Est RKB @ 7134.0usft
Project:	Sandoval County, NM (Nad 83)	**MD Reference:**	Est RKB @ 7134.0usft
Site:	Sec 2-T22N-R3W	**North Reference:**	True
Well:	Bonanza #16	**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)
4,600.0	16.03	33.93	4,209.1	-2,924.9	1,364.2	917.8	1,644.2	2.00	-2.00	0.00
4,700.0	14.03	33.93	4,305.7	-2,828.3	1,385.7	932.3	1,670.2	2.00	-2.00	0.00
4,800.0	12.03	33.93	4,403.1	-2,730.9	1,404.4	944.9	1,692.7	2.00	-2.00	0.00
4,900.0	10.03	33.93	4,501.2	-2,632.8	1,420.3	955.6	1,711.8	2.00	-2.00	0.00
5,000.0	8.03	33.93	4,600.0	-2,534.0	1,433.3	964.3	1,727.5	2.00	-2.00	0.00
5,100.0	6.03	33.93	4,699.2	-2,434.8	1,443.5	971.2	1,739.7	2.00	-2.00	0.00
5,200.0	4.03	33.93	4,798.8	-2,335.2	1,450.7	976.1	1,748.5	2.00	-2.00	0.00
5,300.0	2.03	33.93	4,898.7	-2,235.3	1,455.1	979.0	1,753.8	2.00	-2.00	0.00
5,400.0	0.03	33.93	4,998.7	-2,135.3	1,456.6	980.0	1,755.6	2.00	-2.00	0.00
EOD;5401.3' MD & 0°										
5,401.3	0.00	0.00	5,000.0	-2,134.0	1,456.6	980.0	1,755.6	2.00	-2.00	0.00
Dakota - Bon#16 Dakota tgt.										
7,171.3	0.00	0.00	6,770.0	-364.0	1,456.6	980.0	1,755.6	0.00	0.00	0.00
TD at 7601.3' MD										
7,601.3	0.00	0.00	7,200.0	66.0	1,456.6	980.0	1,755.6	0.00	0.00	0.00

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
Bon#16 Dakota tgt. - plan hits target center - Point	0.00	0.00	6,770.0	1,456.6	980.0	1,881,460.99	1,381,173.51	36° 10' 3.522 N	107° 7' 41.944 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Subsea Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,171.3	6,770.0	364.0	Dakota			
7,601.3	7,200.0	-66.0	Morrison		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
600.0	600.0	0.0	0.0	KOP;600'
1,567.4	1,526.6	199.0	133.9	EOB;1567.4' MD & 29°
3,950.2	3,610.1	1,158.1	779.2	Start Drop
5,401.3	5,000.0	1,456.6	980.0	EOD;5401.3' MD & 0°
7,601.3	7,200.0	1,456.6	980.0	TD at 7601.3' MD

Elm Ridge Exploration Company, LLC
Bonanza 16
SHL: 1850' FSL & 1000' FWL
BHL: 1980' FNL & 1980' FWL
Sec. 2, T. 22 N., R. 3 W., Sandoval County, NM

Drilling Program

1. ESTIMATED FORMATION TOPS

Formation Name	TVD	KB Depth	Graded Elevation
San Jose	0'	10'	+7,120'
Ojo Alamo	2,220'	2,230'	+4,900'
Kirtland	2,370'	2,380'	+4,750'
Fruitland	2,445'	2,455'	+4,675'
Pictured Cliffs Ss	2,570'	2,580'	+4,550'
Lewis Shale	2,670'	2,680'	+4,450'
Cliff House Ss	4,095'	4,105'	+3,025'
Menefee	4,206'	4,216'	+3,010'
Point Lookout Ss	4,650'	4,660'	+2,470'
Mancos Shale	4,795'	4,805'	+2,325'
Gallup Ss	5,660'	5,670'	+1,460'
Greenhorn	6,695'	6,705'	+425'
Graneros	6,785'	6,795'	+335'
Dakota	6,770'	6,780'	+350'
Morrison	7,200'	7,210'	-80'
Total Vertical Depth	7,200'	7,210'	-80'

(measured depth = 7,601')

2. NOTABLE ZONES

Oil & Gas Zones	Water Zones	Coal Zone
Ojo Alamo	San Jose	Fruitland
Pictured Cliffs	Ojo Alamo	
Chacra	Fruitland	
Gallup		
Graneros		
Dakota		

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 ≥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

Hole Size	O. D.	Weight (lb/ft)	Grade	Type	Age	Setting Depth
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	7,601'

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

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 ≥75% excess. A stage tool will be set at ≈4,595' (≈200' above the Mancos). Will pressure test to 2,000-psi for 30-minutes.

First stage volume will be 1,771 cubic feet. First stage will consist of 440 sacks (822 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 805 sacks (949 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 1,629 cubic feet. Second stage will consist of 840 sacks (1,570 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

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

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 ≈10' from ≈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 ≤3,117 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.

Surface Use Plan

1. DIRECTIONS & EXISTING ROADS (See PAGES 10 - 14)

From the equivalent of Mile Post 80.5 on US 550...
Go Northeast 2.9 miles on gravel J-37
Then turn right and go ESE 1.3 miles on dirt J-38 to just after a cattle guard
Turn left and go Northeast 1.1 miles on a dirt road
Then bear left and continue Northeast 0.4 mile on a dirt road
Then bear left and go North 1/4 mile on a dirt road
Then turn left and go NW 1.05 mile on a dirt road
Then turn left and go South 0.45 mile on a dirt road to the Bonanza 8 pad
Then turn right and go West 486' cross-country to the proposed Bonanza 16 pad

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

2. ROAD TO BE BUILT OR UPGRADED (See PAGES 11 - 14)

Upgrades will consist of repairing potholes. The final ≈486' of 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. Maximum disturbed width will be 20' (all within 40' pipeline corridor). Maximum cut or fill = 3'. Maximum grade = 5%. No culvert or cattle guard is needed. A rocked low water crossing will be built in the low spot just west of the Bonanza 8 pad.

3. EXISTING WELLS (See PAGE 11)

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

4. PROPOSED PRODUCTION FACILITIES (See PAGES 11-14)

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 624.49' long steel 4-1/2" O. D. natural gas pipeline will be laid east to an existing pipeline on Elm Ridge's producing Bonanza 8 pad. The pipeline will be buried ≈36" deep and ≈15' from the road.

5. WATER SUPPLY (See PAGE 10)

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

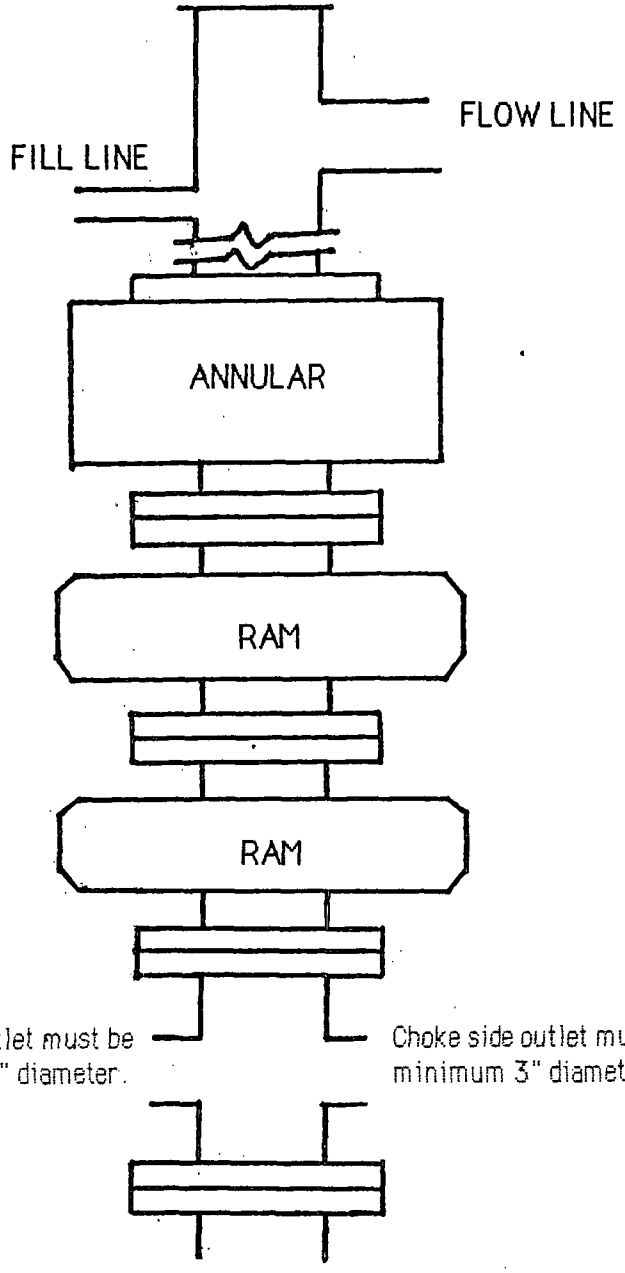
6. CONSTRUCTION MATERIALS & METHODS (SEE PAGES 14 & 15)

NM One Call will be notified (811) before construction starts. Sagebrush will be brush hogged. The top 6" of soil and will be bladed and piled northwest of the pad. A diversion ditch will be cut northwest of the pile.

7. WASTE DISPOSAL

✓A closed loop system will be used instead of a reserve pit. Cuttings and mud will be hauled to a state approved facility 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.



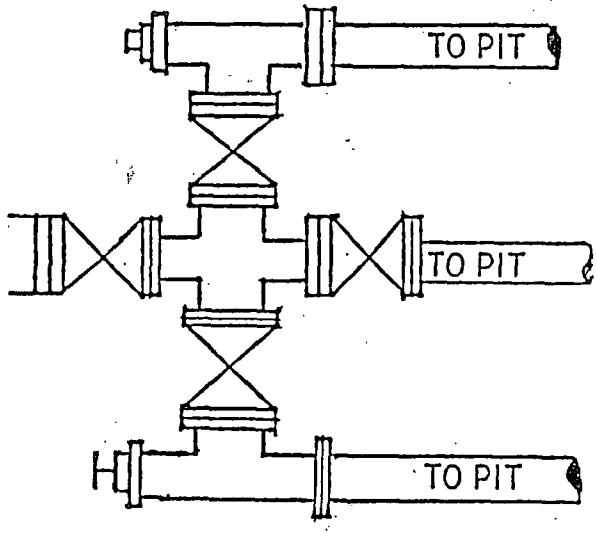
Kill side outlet must be minimum 2" diameter.

Choke side outlet must be minimum 3" diameter.

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

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.



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.