13-600

RECEIVED
AUG 05 2013
OCD Artesia
NMOCD ARTESIA

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.: NMNM-121954

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☒ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.: Gordon Federal #1 H (40058)

2. Name of Operator: Mack Energy Corporation (13837)

9. API Well No.: 30-015-41592

3a. Address: PO Box 960 Artesia, NM 88211-0960

3b. Phone No. *(include area code)*: (575)748-1288

10. Field and Pool, or Exploratory: Sand Tank;Bone Spring (96832)

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

At surface: 1350 FSL & 1130 FWL

At proposed prod. zone: 1675 FSL & 965 FWL

11. Sec., T. R. M. or Blk. and Survey or Area: Sec. 1 T18S R30E

14. Distance in miles and direction from nearest town or post office*: 5 miles SE of Loco Hills, NM

12. County or Parish: Eddy

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
30'	80	40

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
N/A	9130' MD 9100' TVD	NMB000286

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3520' GR	7/1/2013	15 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
Jerry W. Sherrell	Jerry W. Sherrell	5/30/13

Title: Production Clerk

Approved by (Signature)	Name *(Printed/Typed)*	Date
/s/George MacDonell	/s/George MacDonell	JUL 30 2013

Title	Office
FIELD MANAGER	CARLSBAD FIELD OFFICE

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.

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Roswell Controlled Water Basin

Cannot produce well until in Compliance w/NMOCD Rule 5.9

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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
30-015-41592	96832	Sand Tank; Bone Spring

[4] Property Code	[5] Property Name	[6] Well Number
40058	GORDON FEDERAL	1 H

[7] OGRID No.	[8] Operator Name	[9] Elevation
~~6137~~ 13837	MACK ENERGY CORPORATION	3520.3

[10] Surface Location

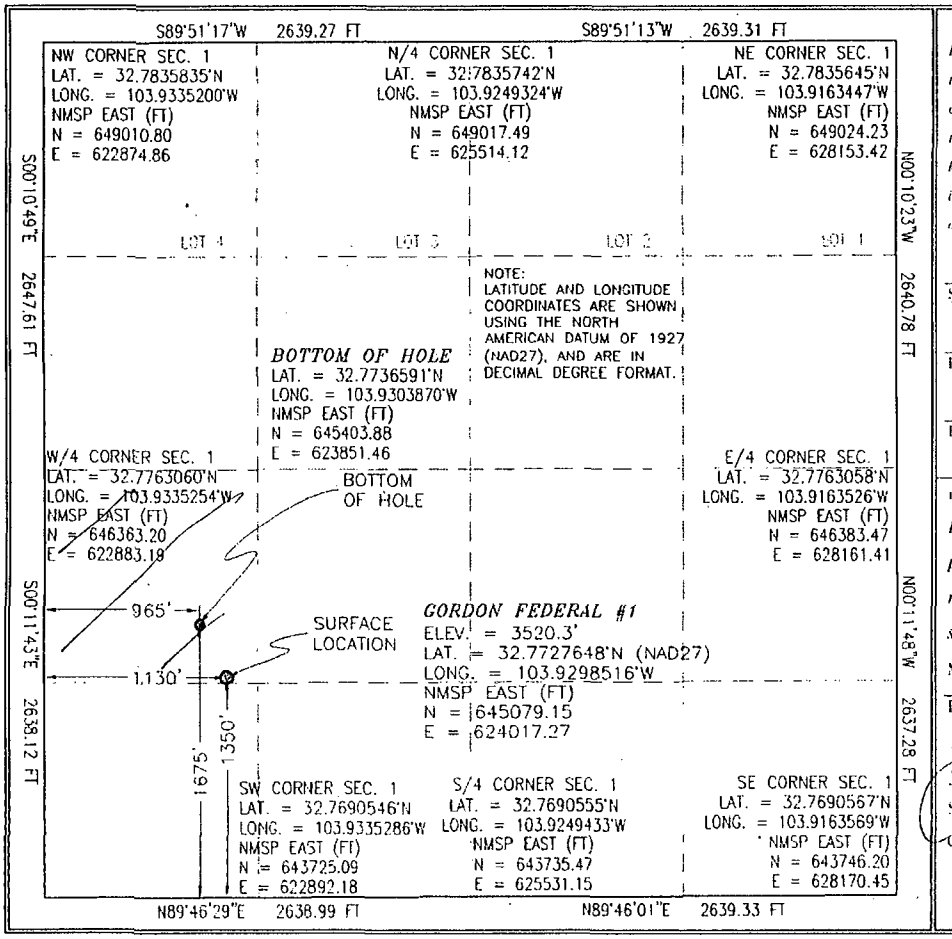
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	1	18 S	30 E		1350	SOUTH	1130	WEST	EDDY

[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
L	1	18 S	30 E		1675	SOUTH	965	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
40			

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.



[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.

Jerry W. Sherrell 5-10-2013
Signature Date

Jerry W. Sherrell
Printed Name

jerrys@mec.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.

MAY 2, 2013
Date of Survey

12797

Signature and Seal of Professional Surveyor:
DIVISION F. JARAMILLO, PLS 12797
Certificate Number

SURVEY NO. 1645B

APD CERTIFICATION

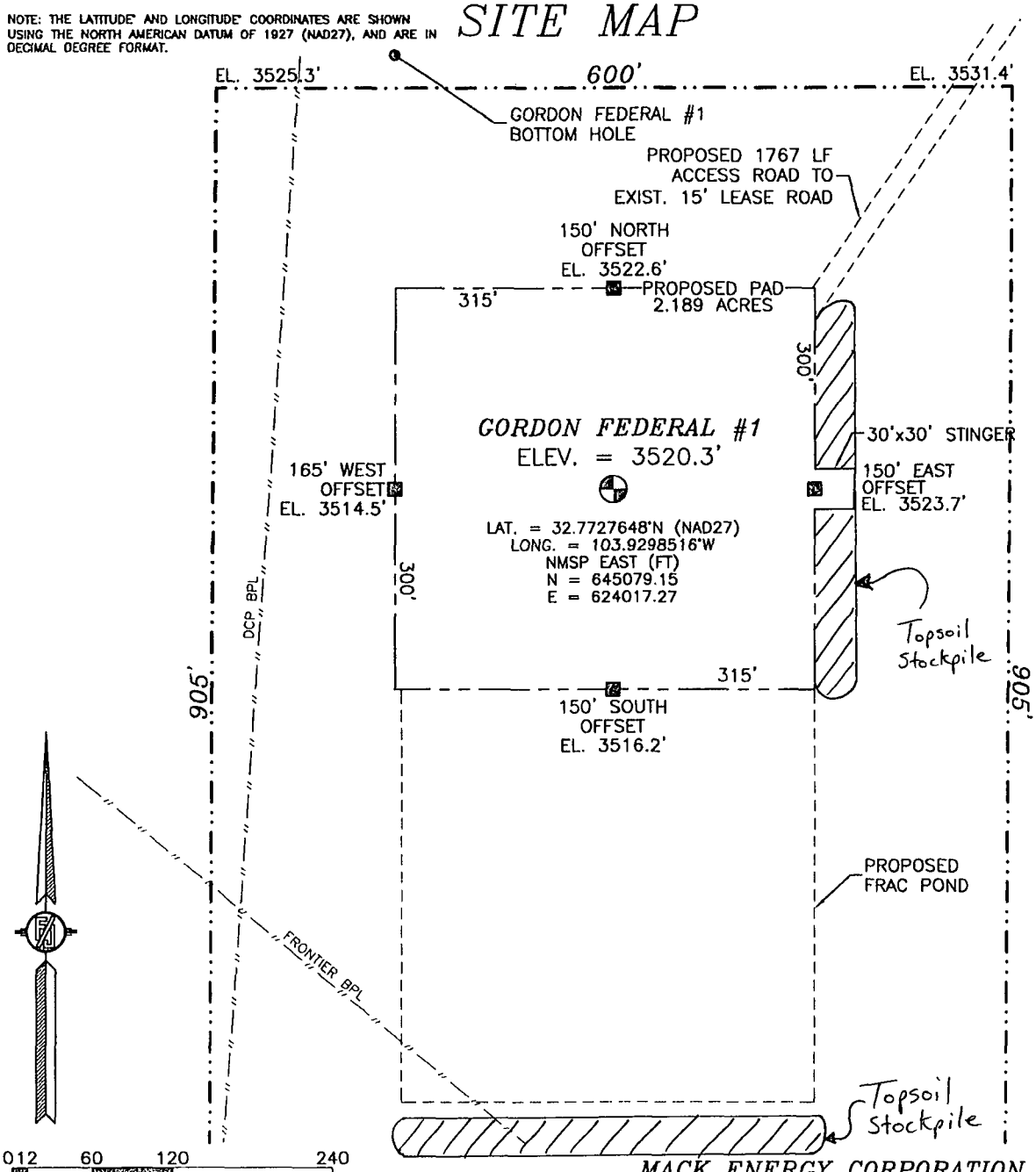
I hereby certify that I, or person under my direct supervision, have inspected the proposed drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements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

Date: 5-30-2013 Signed: Jerry W. Sherrell

Jerry W. Sherrell

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: THE LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN DECIMAL DEGREE FORMAT.



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF US HIGHWAY 82 AND CR 222 (SHUGART) GO SOUTH ON CR 222 FOR APPROX. 2.3 MILES. GO WEST ON CALICHE LEASE ROAD FOR APPROX. 2.9 MILES. GO SOUTH ON CALICHE LEASE ROAD FOR APPROX. 0.5 OF A MILE. GO EAST ON CALICHE LEASE ROAD FOR APPROX. 300 FT. FOLLOW ROAD LATHS IN A SOUTHERLY DIRECTION FOR APPROX. 0.33 OF A MILE TO NORTHEAST CORNER PAD. LOCATION IS APPROX. 200 FT. SOUTHWEST.

MACK ENERGY CORPORATION

GORDON FEDERAL #1

LOCATED 1350 FT. FROM THE SOUTH LINE AND 1130 FT. FROM THE WEST LINE OF SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

TN 5/17/13

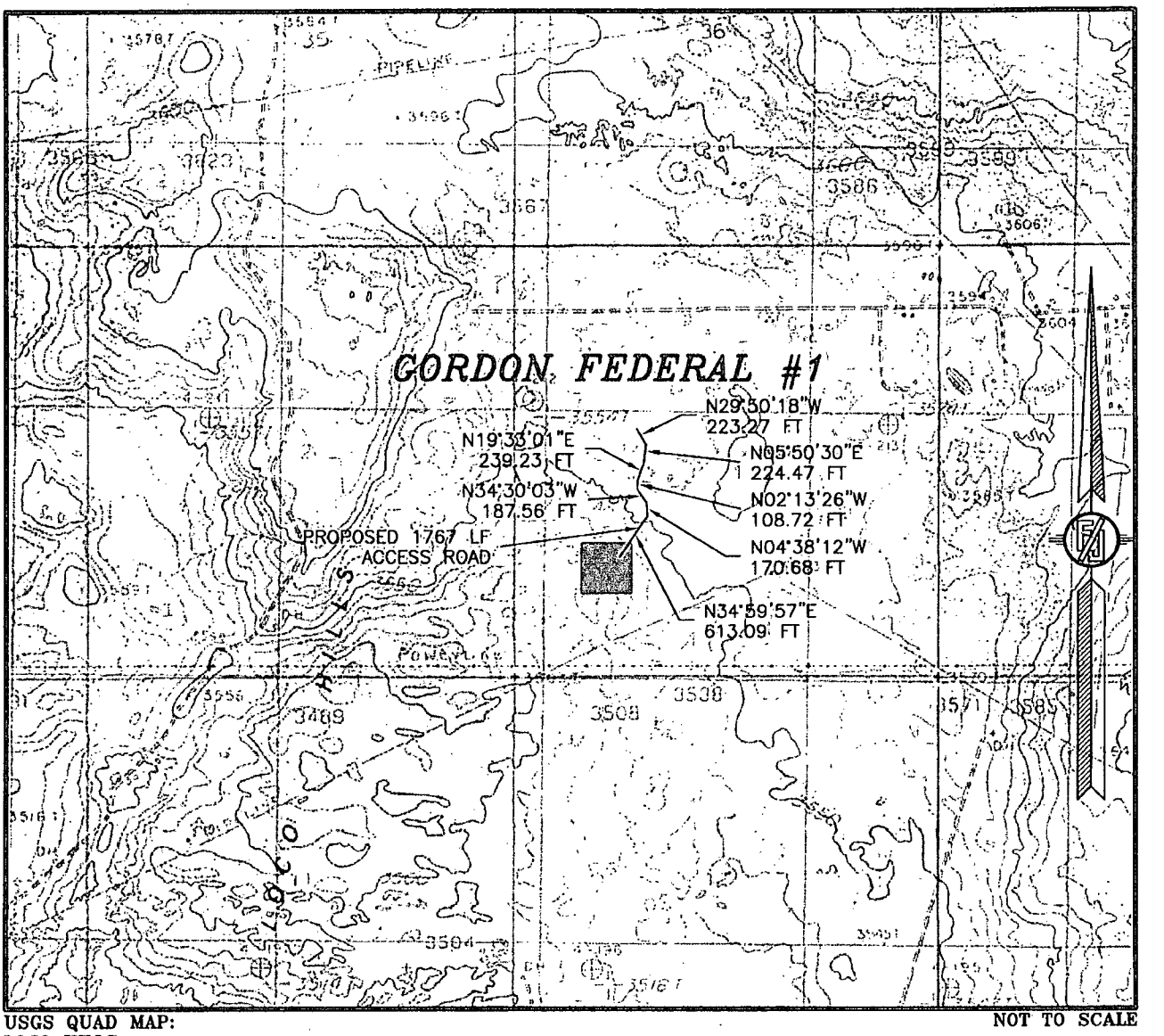
MAY 2, 2013

SURVEY NO. 1645B

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

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

LOCATION VERIFICATION MAP



USGS QUAD MAP:
LOCO HILLS

NOT TO SCALE

MACK ENERGY CORPORATION
GORDON FEDERAL #1
LOCATED 1350 FT. FROM THE SOUTH LINE
AND 1130 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 18 SOUTH,
RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

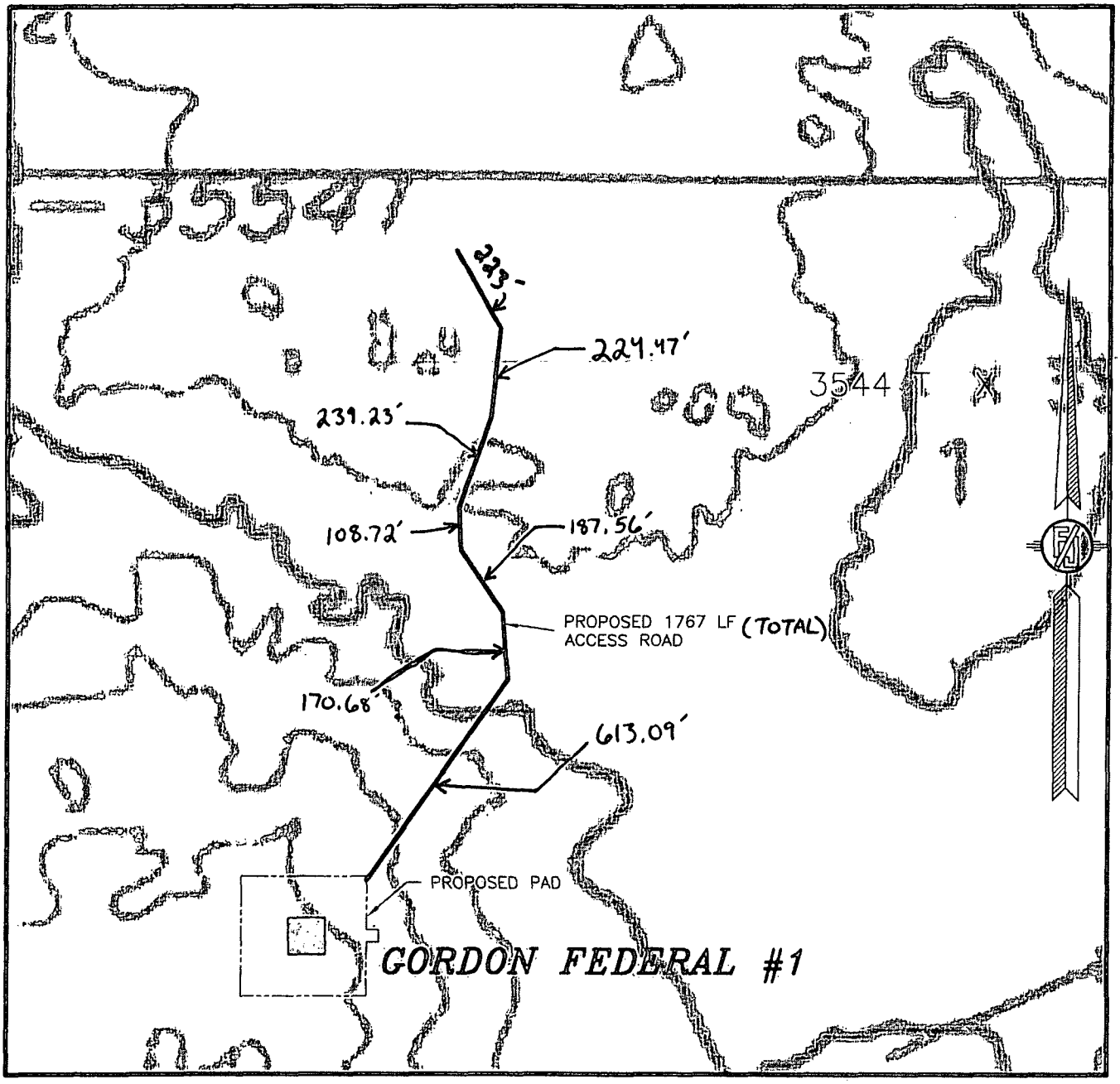
MAY 2, 2013

SURVEY NO. 1645B

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

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

LOCATION VERIFICATION MAP



USGS QUAD MAP:
LOCO HILLS

SCALE: 1"= 400'

MACK ENERGY CORPORATION

GORDON FEDERAL #1

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AND 1130 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 18 SOUTH,
RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 31, 2013

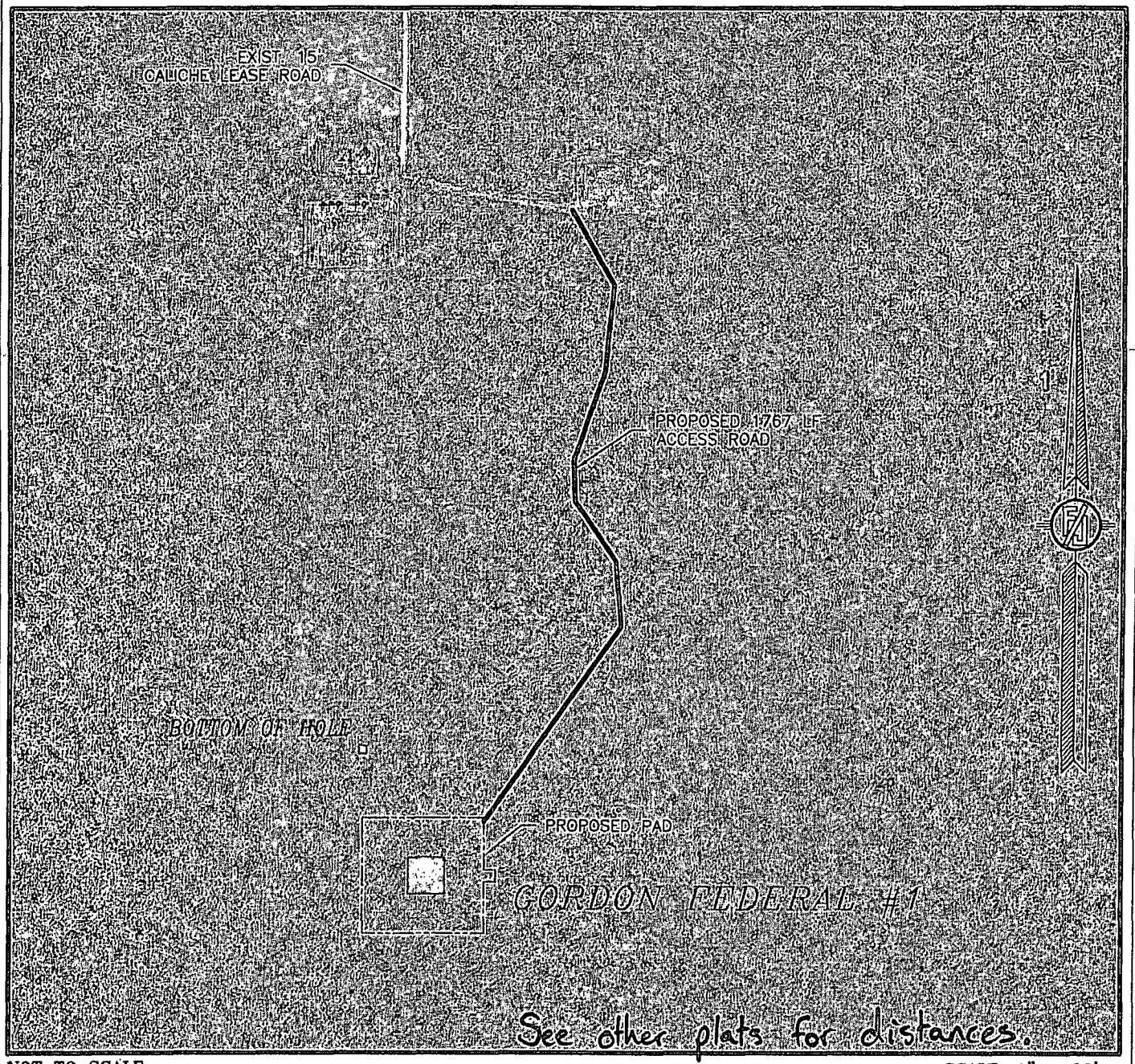
TN
ch 5/13

SURVEY NO. 1645C

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

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
MARCH 2012

SCALE: 1"= 400'

MACK ENERGY CORPORATION
GORDON FEDERAL #1
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AND 1130 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 18 SOUTH,
RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 31, 2013

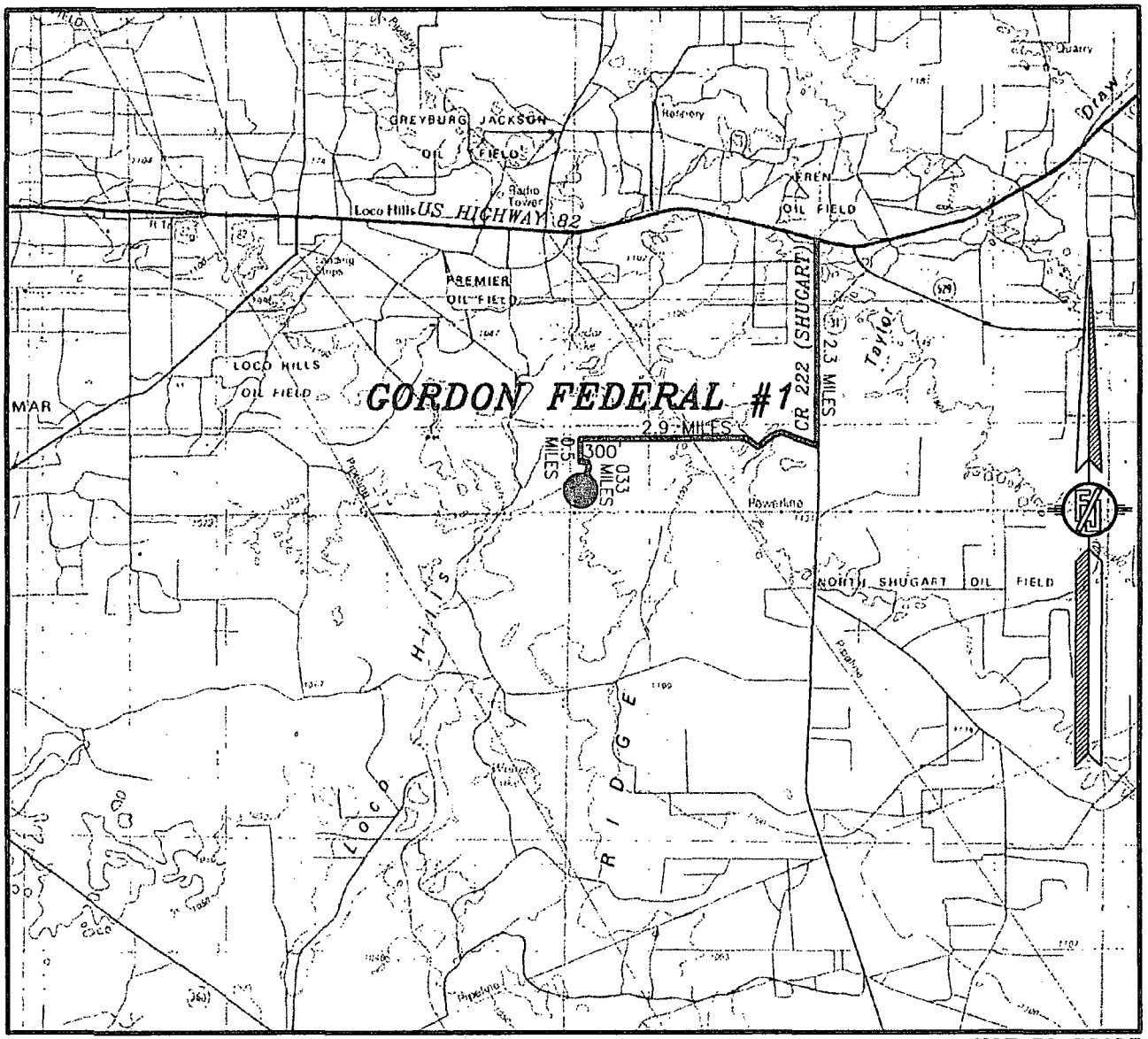
TN 6/6/13

SURVEY NO. 1645C

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

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

VICINITY MAP



NOT TO SCALE

MACK ENERGY CORPORATION
GORDON FEDERAL #1
LOCATED 1350 FT. FROM THE SOUTH LINE
AND 1130 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 18 SOUTH,
RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 2, 2013

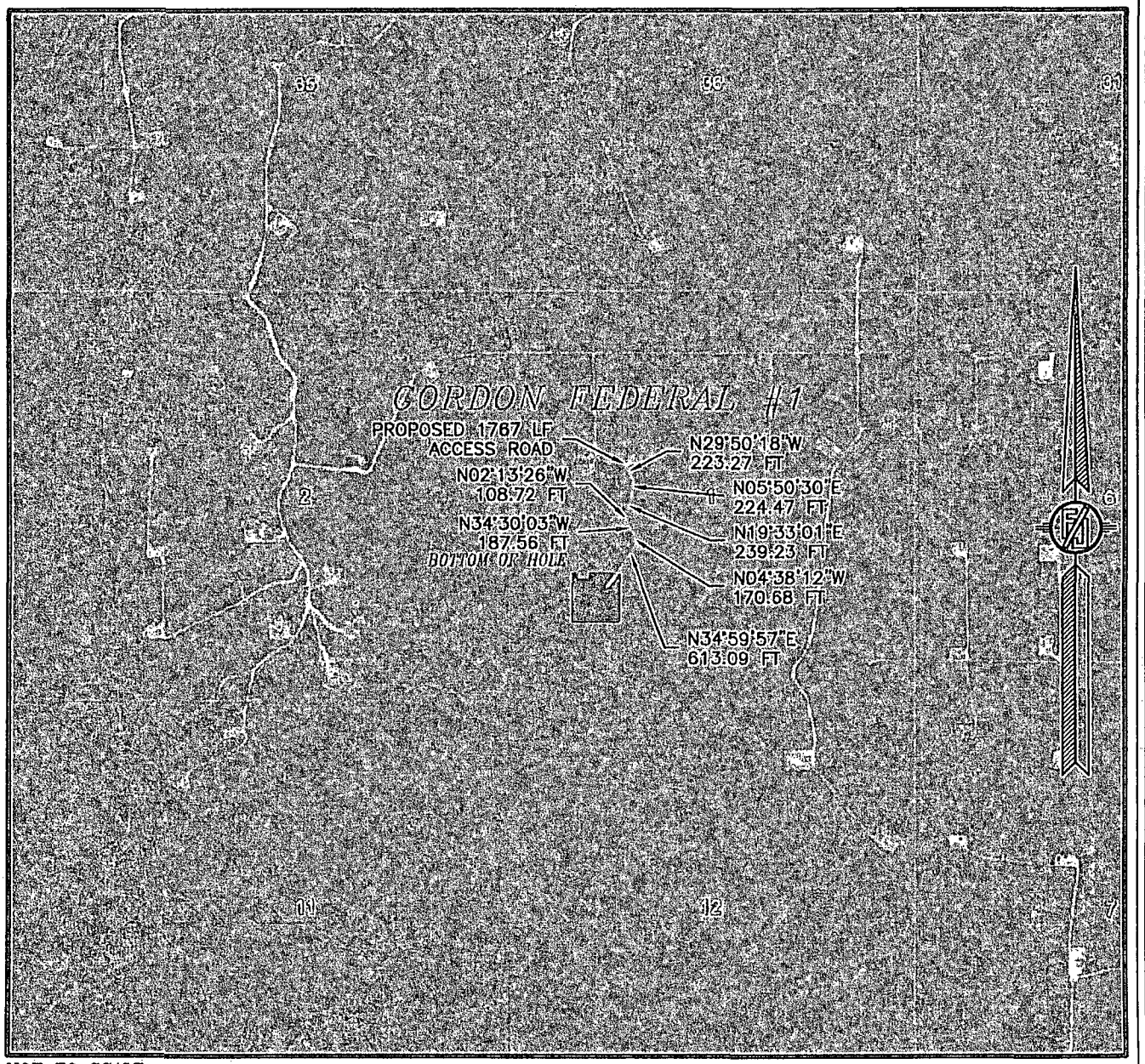
DIRECTIONS TO LOCATION
FROM THE INTERSECTION OF US HIGHWAY 82 AND CR 222 (SHUGART) GO SOUTH ON CR 222 FOR APPROX. 2.3 MILES. GO WEST ON CALICHE LEASE ROAD FOR APPROX. 2.9 MILES. GO SOUTH ON CALICHE LEASE ROAD FOR APPROX. 0.5 OF A MILE. GO EAST ON CALICHE LEASE ROAD FOR APPROX. 300 FT. FOLLOW ROAD LATHS IN A SOUTHERLY DIRECTION FOR APPROX. 0.33 OF A MILE TO NORTHEAST CORNER PAD. LOCATION IS APPROX. 200 FT. SOUTHWEST.

SURVEY NO. 1645B

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

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
MARCH 2012

MACK ENERGY CORPORATION

GORDON FEDERAL #1

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AND 1130 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 18 SOUTH,
RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 2, 2013

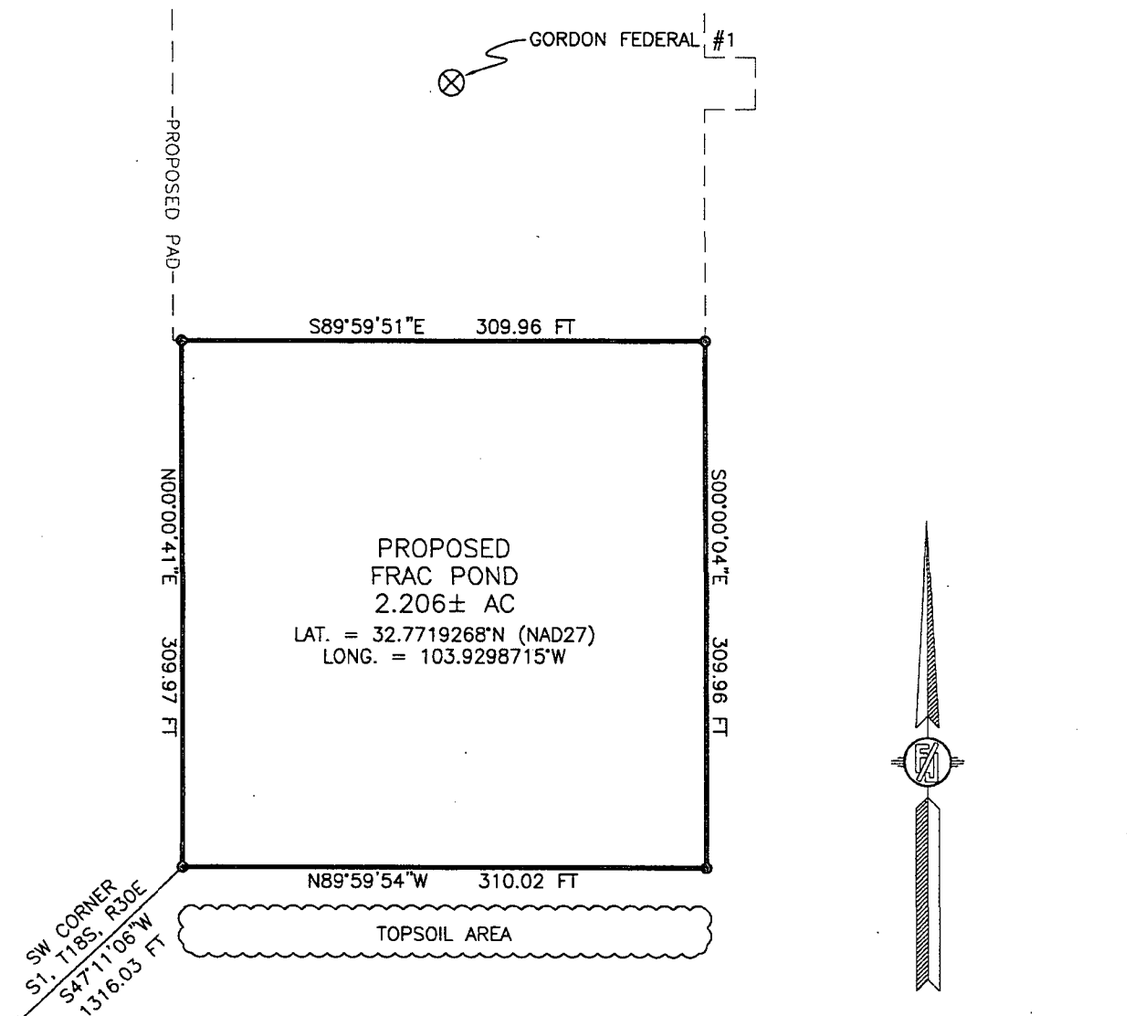
SURVEY NO. 1645B

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

GORDON FEDERAL #1 FRAC POND

MACK ENERGY CORPORATION
IN THE E/2 SW/4 SW/4 OF
SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

APRIL 23, 2013



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LEGEND
⊙ SET #4 REBAR W/JARAMILLO CAP

100 0 100
Scale: 1" = 100'

DESCRIPTION

A CERTAIN PIECE OR PARCEL OF LAND AND REAL ESTATE LYING IN THE E/2 SW/4 SW/4 OF SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST N.M.P.M., EDDY COUNTY, NEW MEXICO.

BEGINNING AT THE SOUTHWEST CORNER OF THE PARCEL, WHENCE THE SOUTHWEST CORNER OF SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M. BEARS S47°11'06"W, A DISTANCE OF 1316.03 FEET;
THENCE N00°00'41"E A DISTANCE OF 309.97 FEET TO THE NORTHWEST CORNER OF THE PARCEL;
THENCE S89°59'51"E A DISTANCE OF 309.96 FEET TO THE NORTHEAST CORNER OF THE PARCEL;
THENCE S00°00'04"E A DISTANCE OF 309.96 FEET TO THE SOUTHEAST CORNER OF THE PARCEL;
THENCE N89°59'54"W A DISTANCE OF 310.02 FEET TO THE SOUTHWEST CORNER OF THE PARCEL, THE POINT OF BEGINNING;
CONTAINING 2.206 ACRES MORE OR LESS.

GENERAL NOTES
1.) THE INTENT OF THIS SURVEY IS TO ACQUIRE A BUSINESS LEASE FOR THE PURPOSE OF BUILDING A FRAC. POND

2.) BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST ZONE

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 25 DAY OF APRIL, 2013

FILIMON F. JARAMILLO PLS. 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SURVEY NO. 1786

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

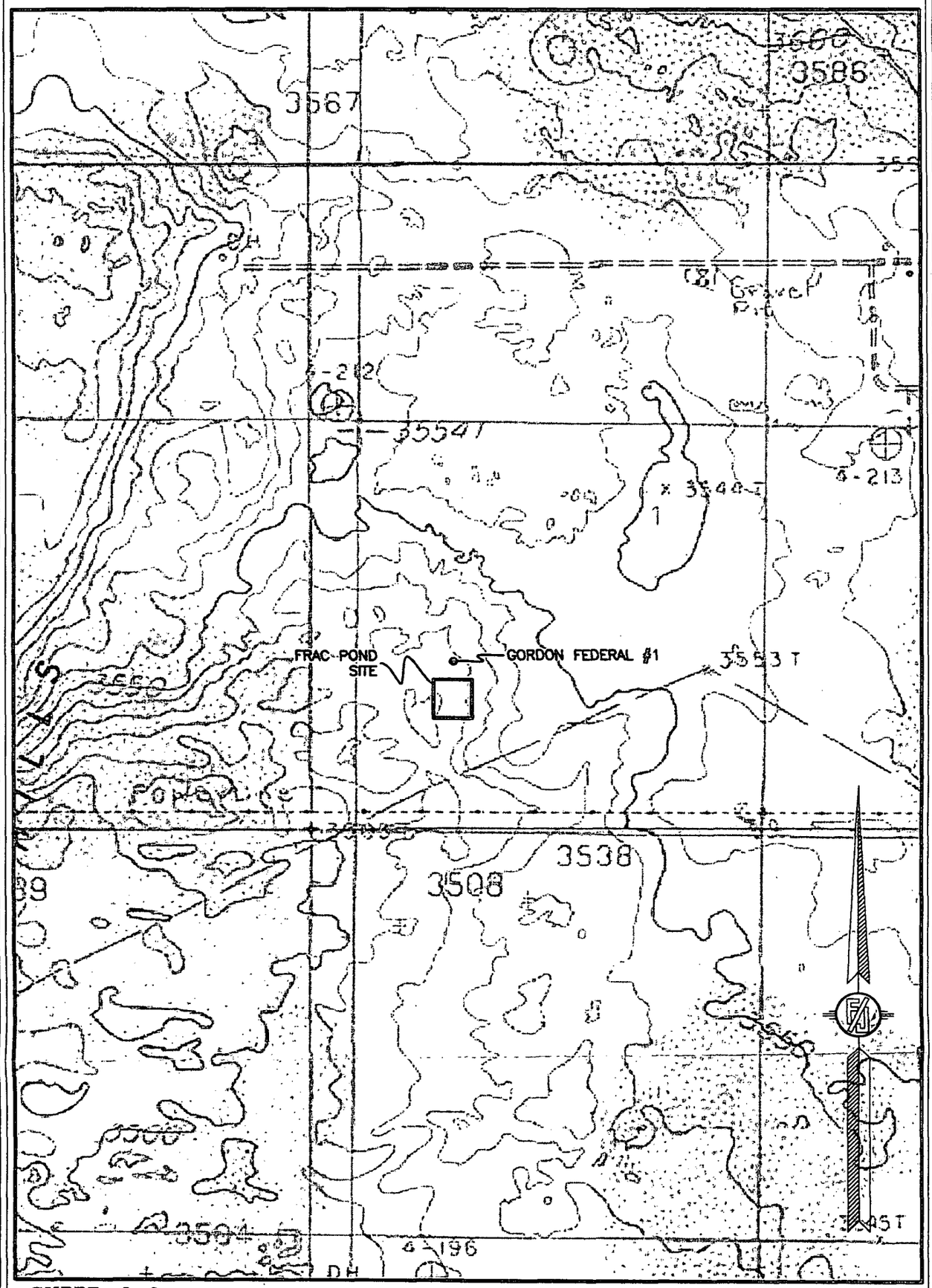
GORDON FEDERAL #1 FRAC POND

MACK ENERGY CORPORATION

IN THE E/2 SW/4 SW/4 OF
SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

APRIL 23, 2013

QUAD MAP



SHEET: 2-3 SURVEY NO. 1786

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

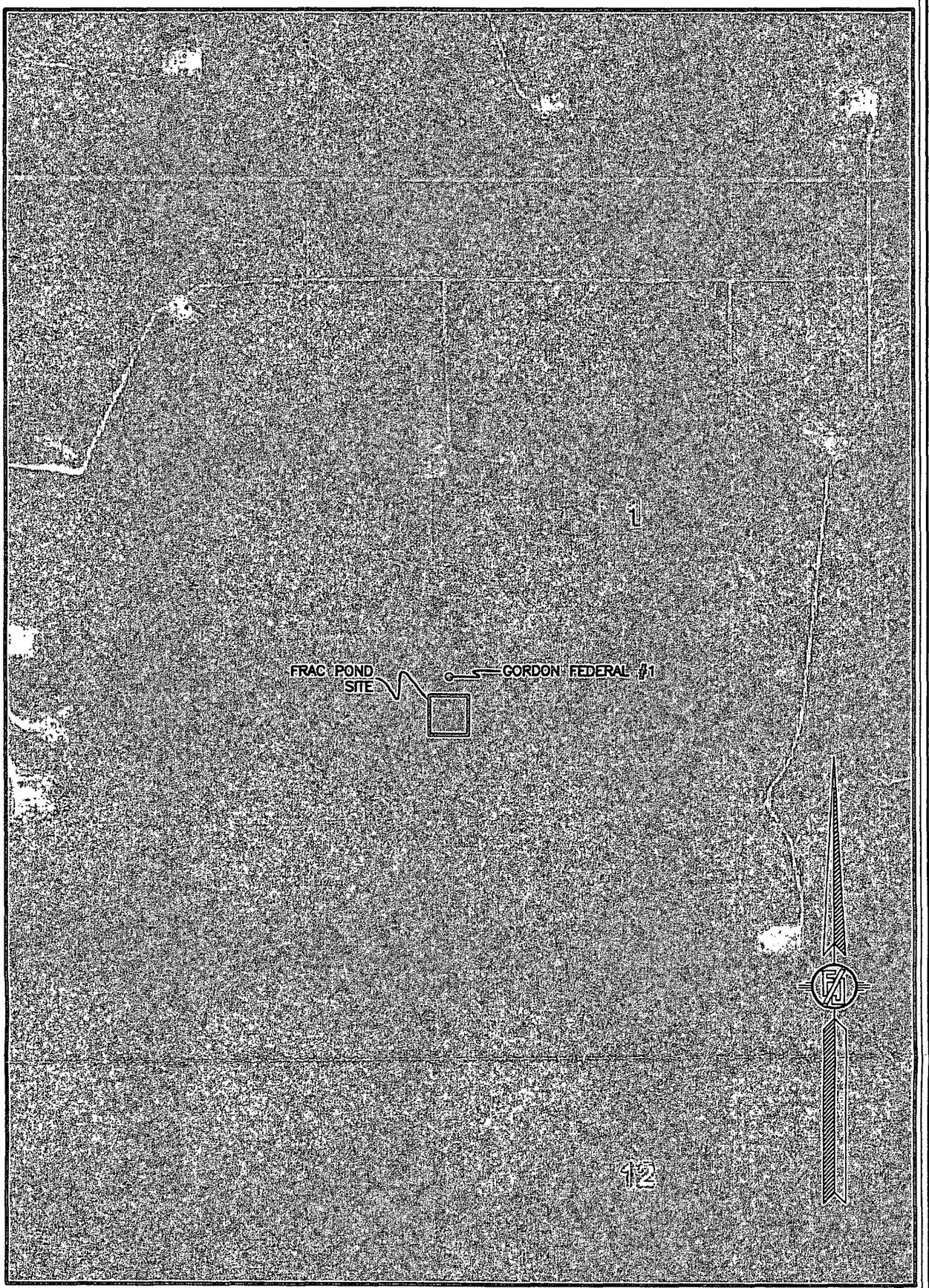
GORDON FEDERAL #1 FRAC POND

MACK ENERGY CORPORATION

IN THE E/2 SW/4 SW/4 OF
SECTION 1, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

APRIL 23, 2013

AERIAL PHOTO



SHEET: 3-3 SURVEY NO. 1786

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

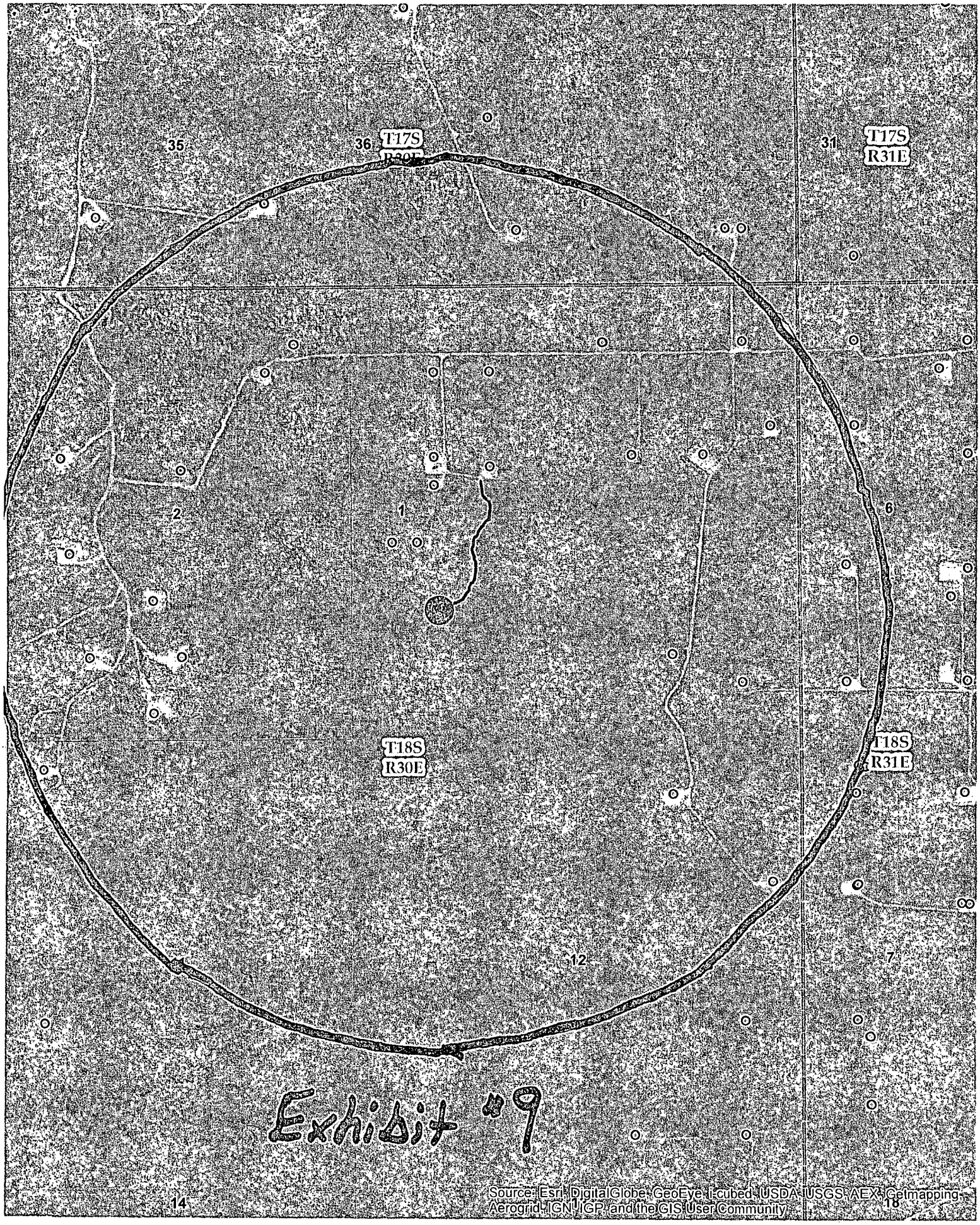

35
36
T17S
R30E
31
T17S
R31E
2
1
6
T18S
R30E
T18S
R31E
12
7
14
18
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

Exhibit "9"

Attached to Form 3160-3
Mack Energy Corporation
Gordon Federal #1
SL: 1350 FSL & 1130 FWL, NW/SW, Sec. 1 T18S R30E
BHL: 1675 FSL & 965 FWL, NW/SW, Sec. 1 T18S R30E
Eddy County, NM

DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Rustler	340'	Queen	2605'
TOS	630'	Grayburg	2984'
BOS	1460'	San Andres	3452'
Yates	1650'	Blinebry	4900'
Seven Rivers	1970'	Bone Spring	6940'
		Wolfcamp	8860'

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

Water Sand	150'	Fresh Water
Grayburg	2984'	Oil/Gas
San Andres	3452'	Oil/Gas
Blinebry	4900'	Oil/Gas
Bone Spring	6940'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 400' and circulating cement back to surface will protect the surface fresh water sand. Salt section and zones will be protected by the 8 5/8" casing at ~~2800'~~ 2500' and circulating cement back to surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 ½" production casing, sufficient cement will be pumped to circulate back to surface.

4. Casing Program:

See COA

Hole Size	Interval	OD Casing	Wt, Grade, Jt, cond, collapse/burst/tension
17 1/2"	0-400'	13 3/8"	48#,H-40, ST&C, New, 3.70/3.40/3.46
12 ¼"	0-~~2800~~ 2500'	8 5/8"	32#, J-55, ST&C, New, 1.68/8.61/7.86
7 7/8"	0-9130'	5 ½"	17#,L-80,LT&C, New, 1.38/2.42/2.58

5. Cement Program:

13 3/8" Surface Casing: 500sx, Class C + 1% PF1, yield 1.34, wt 14.8, excess 100%.
8 5/8" Intermediate Casing: Lead 1100sx, Class C +.4% PF20 + 2% PF1+ .25#/sk PF29, yield 1.75, wt 13.5, excess 100%, Tail 300sx Class C 1% PF1, yield 1.34, wt 14.8.

5 ½" Production Casing: Lead 550sx POZ/C + 5% PF44 + 6% PF20 + 1.5% PF112 + .125/sk PF132 + .2# sk PF42 + .2% PF46 + .2% PF13, yield 1.95, wt 12.8, excess 35%, Tail 750sx PVL + 2% PF167 + .2% PF65 +.2% PF46 + .2% PF13 , yield 1.47, wt 13.0 excess 35%.

6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #1 will consist of a double ram-type (3000 psi WP) minimum preventer, with annular. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on bottom. The 13 5/8" BOP will be nippled up on the 13 3/8" surface casing and tested by a 3rd party to ~~2000~~ 3000 psi. The 13 5/8" BOP will then be nippled up on the 8 5/8" casing using a double stud adapter and used continuously until TD is reached. All BOP's and accessory equipment will be tested to ~~2000~~ 3000 psi before drilling out of intermediate casing. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #2) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #3) with a minimum 3000 psi WP rating

See COA

7. Types and Characteristics of the Proposed Mud System:

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

See COA

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-400' 2500'	Fresh Water	8.5	28	N.C.
400-2800	Brine	10	30	N.C.
2800'-TD'	Brine	9.1	29	N.C.

A. Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times. **Pason Equipment: Flow system and pit leveler.**

8. Auxiliary Well Control and Monitoring Equipment:

A. Kelly cock will be kept in the drill string at all times.
B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.
C. **Per BLM requirements a Mud Gas Seperator will be installed, with remotely operated choke.**

9. Logging, Testing and Coring Program: See COA

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

Attached to Form 3160-3
Mack Energy Corporation
Gordon Federal #1
SL: 1350 FSL & 1130 FWL, NW/SW, Sec. 1 T18S R30E
BHL: 1675 FSL & 965 FWL, NW/SW, Sec. 1 T18S R30E
Eddy County, NM

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

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 3,953 psig Based on Offset Data. Low levels of Hydrogen sulfide have been monitors in producing wells in the area, so H2S may be present while drilling of the well; a plan is attached to the Drilling program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations:

Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is July 1, 2013. Once commenced, the drilling operation should be finished in approximately 15 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

Attachment to Exhibit #1
NOTES REGARDING THE BLOWOUT PREVENTERS
Gordon Federal #1
Eddy County, New Mexico

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

Mack Energy Corp

Eddy County
Gordon Federal #1
Fed #1
#1

Plan: Plan #1

MEC Survey Report

07 May, 2013

MEC

MEC Survey Report

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Gordon Federal #1
Project:	Eddy County	**TVD Reference:**	WELL @ 3537.3usft (Original Well Elev)
Site:	Gordon Federal #1	**MD Reference:**	WELL @ 3537.3usft (Original Well Elev)
Well:	Fed #1	**North Reference:**	Grid
Wellbore:	#1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Single User Db

Project Eddy County

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Gordon Federal #1

Site Position:		**Northing:**	645,079.15 usft	**Latitude:**	32° 46' 21.953 N
From:	Map	**Easting:**	624,017.27 usft	**Longitude:**	103° 55' 47.466 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.22 °

Well Fed #1

Well Position	**+N/-S**	0.0 usft	**Northing:**	645,079.15 usft	**Latitude:**	32° 46' 21.953 N
	+E/-W	0.0 usft	**Easting:**	624,017.27 usft	**Longitude:**	103° 55' 47.466 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,520.3 usft

Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	4/25/2013	7.56	60.61	48,763

Design Plan #1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	332.95

Survey Tool Program **Date** 5/7/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.0	9,129.9	Plan #1 (#1)		

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Gordon Federal #1
Project:	Eddy County	**TVD Reference:**	WELL @ 3537.3usft (Original Well Elev)
Site:	Gordon Federal #1	**MD Reference:**	WELL @ 3537.3usft (Original Well Elev)
Well:	Fed #1	**North Reference:**	Grid
Wellbore:	#1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	645,079.15	624,017.27
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	645,079.15	624,017.27
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	645,079.15	624,017.27
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	645,079.15	624,017.27
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	645,079.15	624,017.27
450.0	0.00	0.00	450.0	0.0	0.0	0.0	0.00	645,079.15	624,017.27
500.0	2.25	332.95	500.0	0.9	-0.4	1.0	4.50	645,080.02	624,016.82
600.0	6.75	332.95	599.7	7.9	-4.0	8.8	4.50	645,087.01	624,013.26
665.5	9.70	332.95	664.4	16.2	-8.3	18.2	4.50	645,095.35	624,009.00
700.0	9.70	332.95	698.5	21.4	-10.9	24.0	0.00	645,100.53	624,006.35
800.0	9.70	332.95	797.1	36.4	-18.6	40.8	0.00	645,115.53	623,998.70
900.0	9.70	332.95	895.6	51.4	-26.2	57.7	0.00	645,130.53	623,991.04
1,000.0	9.70	332.95	994.2	66.4	-33.9	74.5	0.00	645,145.53	623,983.38
1,100.0	9.70	332.95	1,092.8	81.4	-41.6	91.4	0.00	645,160.53	623,975.72
1,200.0	9.70	332.95	1,191.3	96.4	-49.2	108.2	0.00	645,175.53	623,968.06
1,300.0	9.70	332.95	1,289.9	111.4	-56.9	125.1	0.00	645,190.52	623,960.40
1,400.0	9.70	332.95	1,388.5	126.4	-64.5	141.9	0.00	645,205.52	623,952.74
1,500.0	9.70	332.95	1,487.1	141.4	-72.2	158.7	0.00	645,220.52	623,945.08
1,600.0	9.70	332.95	1,585.6	156.4	-79.8	175.6	0.00	645,235.52	623,937.42
1,700.0	9.70	332.95	1,684.2	171.4	-87.5	192.4	0.00	645,250.52	623,929.77
1,800.0	9.70	332.95	1,782.8	186.4	-95.2	209.3	0.00	645,265.52	623,922.11
1,900.0	9.70	332.95	1,881.3	201.4	-102.8	226.1	0.00	645,280.52	623,914.45
2,000.0	9.70	332.95	1,979.9	216.4	-110.5	242.9	0.00	645,295.52	623,906.79
2,100.0	9.70	332.95	2,078.5	231.4	-118.1	259.8	0.00	645,310.52	623,899.13
2,200.0	9.70	332.95	2,177.1	246.4	-125.8	276.6	0.00	645,325.52	623,891.47
2,300.0	9.70	332.95	2,275.6	261.4	-133.5	293.5	0.00	645,340.52	623,883.81
2,400.0	9.70	332.95	2,374.2	276.4	-141.1	310.3	0.00	645,355.52	623,876.15

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Gordon Federal #1
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Site:	Gordon Federal #1	**MD Reference:**	WELL @ 3537.3usft (Original Well Elev)
Well:	Fed #1	**North Reference:**	Grid
Wellbore:	#1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
2,500.0	9.70	332.95	2,472.8	291.4	-148.8	327.2	0.00	645,370.52	623,868.49
2,600.0	9.70	332.95	2,571.3	306.4	-156.4	344.0	0.00	645,385.52	623,860.84
2,614.4	9.70	332.95	2,585.6	308.5	-157.5	346.4	0.00	645,387.68	623,859.73
2,700.0	5.85	332.95	2,670.3	318.8	-162.8	358.0	4.50	645,397.98	623,854.47
2,800.0	1.35	332.95	2,770.1	324.4	-165.7	364.3	4.50	645,403.57	623,851.62
2,829.9	0.00	0.00	2,800.0	324.7	-165.8	364.6	4.50	645,403.88	623,851.46
2,900.0	0.00	0.00	2,870.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,000.0	0.00	0.00	2,970.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,100.0	0.00	0.00	3,070.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,200.0	0.00	0.00	3,170.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,300.0	0.00	0.00	3,270.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,400.0	0.00	0.00	3,370.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,500.0	0.00	0.00	3,470.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,600.0	0.00	0.00	3,570.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,700.0	0.00	0.00	3,670.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,800.0	0.00	0.00	3,770.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
3,900.0	0.00	0.00	3,870.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,000.0	0.00	0.00	3,970.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,100.0	0.00	0.00	4,070.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,200.0	0.00	0.00	4,170.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,300.0	0.00	0.00	4,270.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,400.0	0.00	0.00	4,370.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,500.0	0.00	0.00	4,470.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,600.0	0.00	0.00	4,570.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,700.0	0.00	0.00	4,670.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,800.0	0.00	0.00	4,770.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
4,900.0	0.00	0.00	4,870.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Gordon Federal #1
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Well:	Fed #1	**North Reference:**	Grid
Wellbore:	#1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
5,000.0	0.00	0.00	4,970.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,100.0	0.00	0.00	5,070.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,200.0	0.00	0.00	5,170.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,300.0	0.00	0.00	5,270.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,400.0	0.00	0.00	5,370.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,500.0	0.00	0.00	5,470.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,600.0	0.00	0.00	5,570.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,700.0	0.00	0.00	5,670.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,800.0	0.00	0.00	5,770.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
5,900.0	0.00	0.00	5,870.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,000.0	0.00	0.00	5,970.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,100.0	0.00	0.00	6,070.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,200.0	0.00	0.00	6,170.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,300.0	0.00	0.00	6,270.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,400.0	0.00	0.00	6,370.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,500.0	0.00	0.00	6,470.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,600.0	0.00	0.00	6,570.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,700.0	0.00	0.00	6,670.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,800.0	0.00	0.00	6,770.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
6,900.0	0.00	0.00	6,870.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,000.0	0.00	0.00	6,970.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,100.0	0.00	0.00	7,070.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,200.0	0.00	0.00	7,170.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,300.0	0.00	0.00	7,270.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,400.0	0.00	0.00	7,370.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,500.0	0.00	0.00	7,470.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,600.0	0.00	0.00	7,570.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46

MEC

MEC Survey Report

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Site Gordon Federal #1
Project:	Eddy County	**TVD Reference:**	WELL @ 3537.3usft (Original Well Elev)
Site:	Gordon Federal #1	**MD Reference:**	WELL @ 3537.3usft (Original Well Elev)
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Design:	Plan #1	**Database:**	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
7,700.0	0.00	0.00	7,670.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,800.0	0.00	0.00	7,770.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
7,900.0	0.00	0.00	7,870.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,000.0	0.00	0.00	7,970.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,100.0	0.00	0.00	8,070.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,200.0	0.00	0.00	8,170.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,300.0	0.00	0.00	8,270.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,400.0	0.00	0.00	8,370.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,500.0	0.00	0.00	8,470.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,600.0	0.00	0.00	8,570.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,700.0	0.00	0.00	8,670.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,800.0	0.00	0.00	8,770.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
8,900.0	0.00	0.00	8,870.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
9,000.0	0.00	0.00	8,970.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
9,100.0	0.00	0.00	9,070.1	324.7	-165.8	364.6	0.00	645,403.88	623,851.46
9,129.9	0.00	0.00	9,100.0	324.7	-165.8	364.6	0.00	645,403.88	623,851.46

Checked By: _____ Approved By: _____ Date: _____

MACK Energy Corporation

SITE DETAILS: Gordon Federal #1	
Site Centre Northing:	645079.15
Easting:	624017.27
Positional Uncertainity:	0.0
Convergence:	0.22
Local North:	Grid

Azimuths to Grid North
True North: -0.22°
Magnetic North: 7.34°

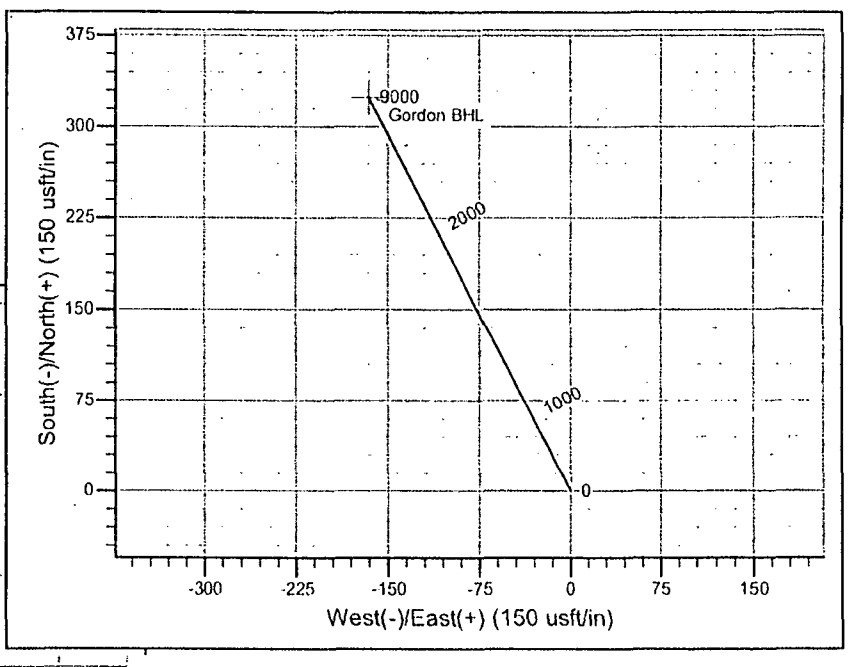
Magnetic Field
Strength: 48763.2snT
Dip Angle: 60.61°
Date: 4/25/2013
Model: IGRF200510

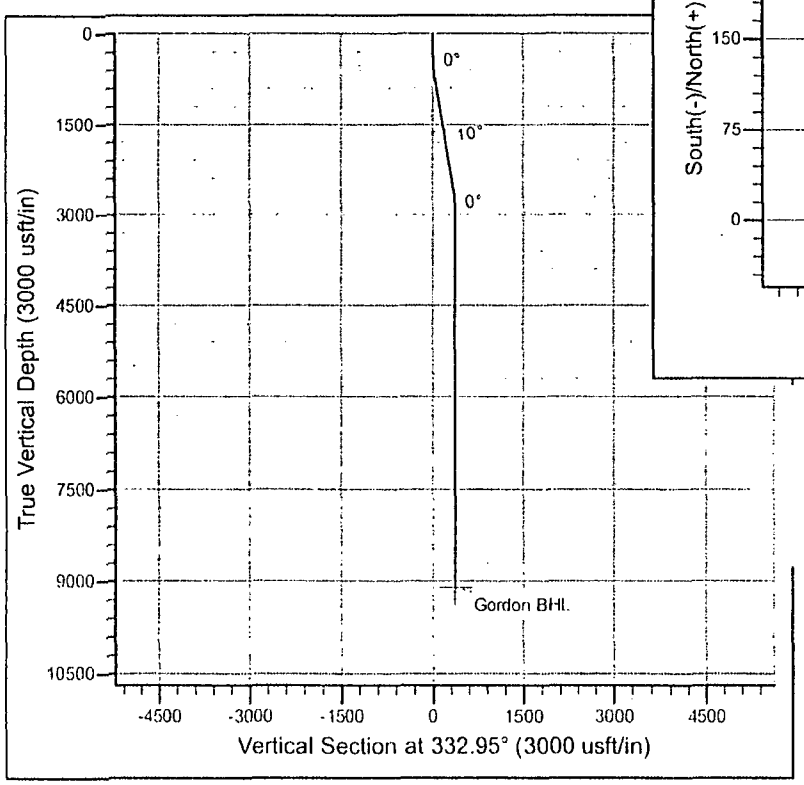
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	450.0	0.00	0.00	450.0	0.0	0.0	0.00	0.00	0.0	
3	665.5	9.70	332.95	664.4	16.2	-8.3	4.50	332.95	18.2	
4	2614.4	9.70	332.95	2585.6	308.5	-157.5	0.00	0.00	346.4	
5	2829.9	0.00	0.00	2800.0	324.7	-165.8	4.50	180.00	364.6	
6	9129.9	0.00	0.00	9100.0	324.7	-165.8	0.00	0.00	364.6	Gordon BHL

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Gordon BHL - plan hits target center	9100.0	324.7	-165.8	645403.88	623851.43	32° 46' 25.173 N	103° 55' 49.393 W	Point



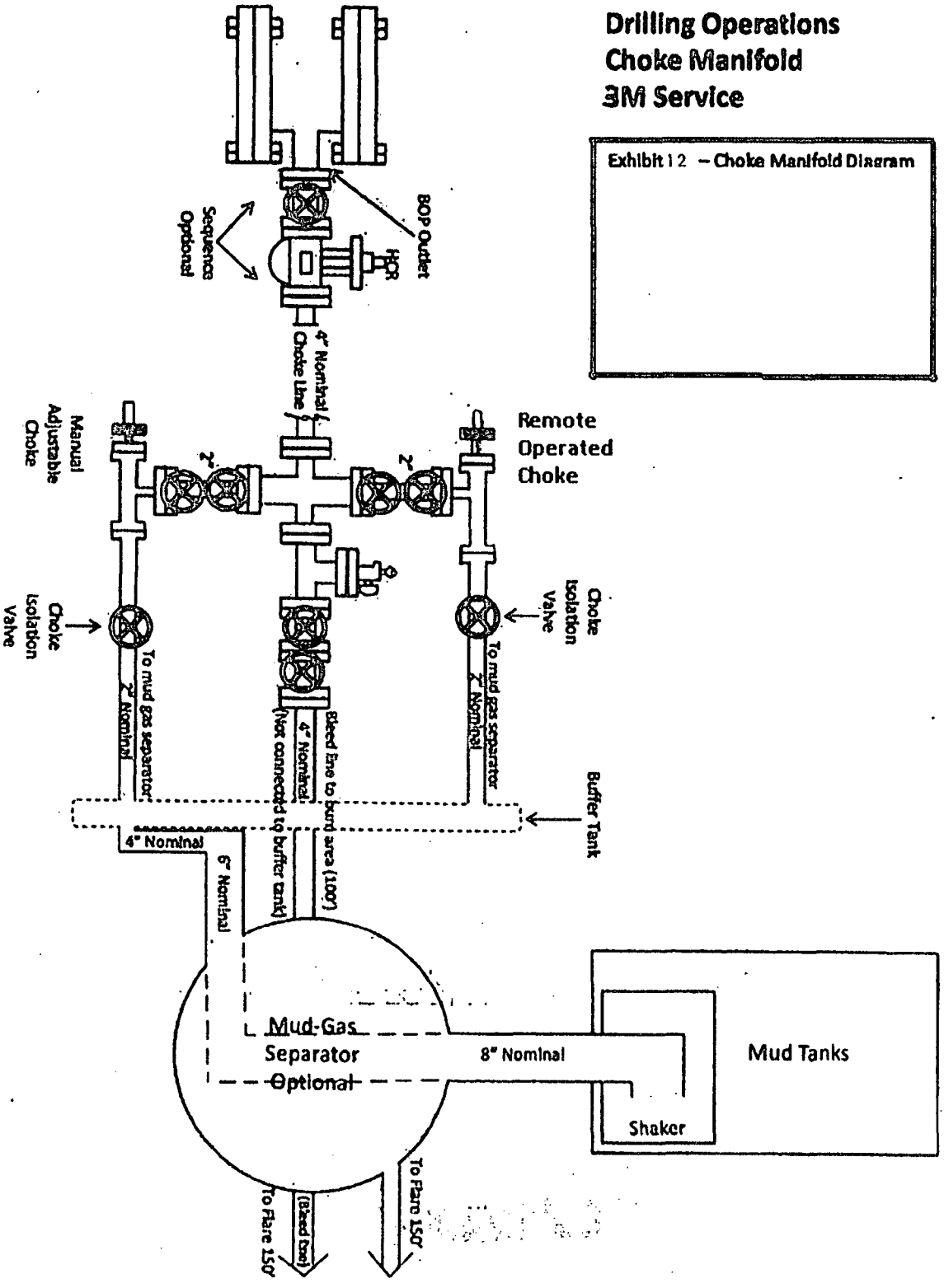


1650 FSL and 990 FWL are Hard Lines. We ca be north, west, or northwest of these hard lines but not south, east, or southeast. From the BHL the well is 25' north of the south hard line and 25' west of the west hardline

Mack Energy Corporation

MANIFOLD SCHEMATIC

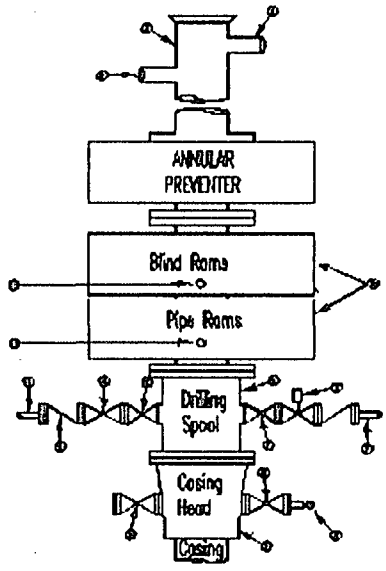
Exhibit #3



Mack Energy Corporation
Minimum Blowout Preventer Requirements
3000 psi Working Pressure
13 5/8 inch- 3 MWP
11 Inch - 3 MWP
EXHIBIT #1

Stack Requirements

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



OPTIONAL

16	Flanged Valve	1 13/16	

CONTRACTOR'S OPTION TO FURNISH:

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

MEC TO FURNISH:

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

GENERAL NOTES:

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position
4. Chokes will be positioned so as not to hamper or delay changing of choke beans. Replaceable parts for adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.
5. All valves to be equipped with hand-wheels or handles ready for immediate use.
6. Choke lines must be suitably anchored.
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Does not use kill line for routine fill up operations.

Mack Energy Corporation

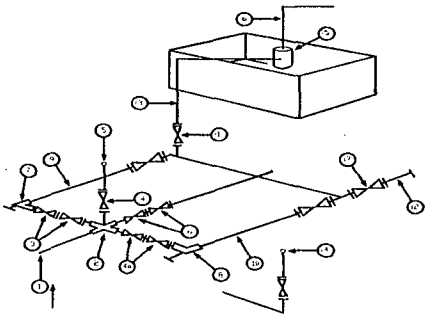
Exhibit #2

MIMIMUM CHOKE MANIFOLD

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

3M will be used

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

*** Location of separator optional**

Below Substructure

Mimimum requirements

		3,000 MWP			5,000 MWP			10,000 MWP		
No.		**I.D.**	**Nominal**	**Rating**	**I.D.**	**Nominal**	**Rating**	**I.D.**	**Nominal**	**Rating**
1	Line from drilling Spool		3"	3,000		3"	5,000		3"	10,000
2	Cross 3" x 3" x 3" x 2"			3,000			5,000			
2	Cross 3" x 3" x 3" x 2"									10,000
3	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
4	Valve Gate Plug	1 13/16		3,000	1 13/16		5,000	1 13/16		10,000
4a	Valves (1)	2 1/16		3,000	2 1/16		5,000	2 1/16		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		2"	10,000
11	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
12	Line		3"	1,000		3"	1,000		3"	2,000
13	Line		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound Standpipe pressure quage			3,000			5,000			10,000
15	Gas Separator		2' x5'			2' x5'			2' x5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

(1) Only one required in Class 3M

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

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

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

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

Attached to Form 3160-3
Mack Energy Corporation
Gordon Federal #1
SL: 1350 FSL & 1130 FWL, NW/SW, Sec. 1 T18S R30E
BHL: 1675 FSL & 965 FWL, NW/SW, Sec. 1 T18S R30E
Eddy County, NM

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

I. HYDROGEN SULFIDE TRAINING

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

1. The hazards an characteristics of hydrogen sulfide (H2S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H2S detectors alarms warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

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

1. The effects of H2S on metal components. If high tensile tubular are to be used, personnel well be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

1. **Well Control Equipment:**

   A. Flare line.
   B. Choke manifold w/remotely operated choke.

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

2. Protective equipment for essential personnel:

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

3. H2S detection and monitoring equipment:

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

4. Visual warning systems:

A. Wind direction indicators as shown on well site diagram (Exhibit #5).
B. Caution/Danger signs (Exhibit #4) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

5. Mud program:

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

6. Metallurgy:

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

7. Communication:

A. Cellular communications in company vehicles including hand held devices.
B. Land line (telephone) communication at Office.

8. Well testing:

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

B. There will be no drill stem testing.

EXHIBIT # 4

WARNING

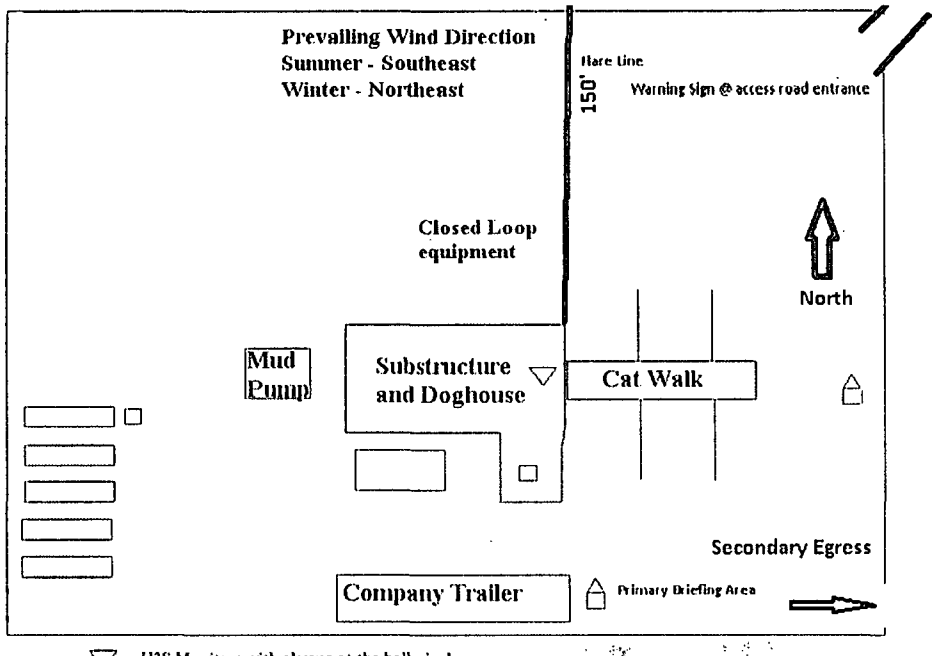
YOU ARE ENTERING AN H2S

AUTHORIZED PERSONNEL ONLY

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

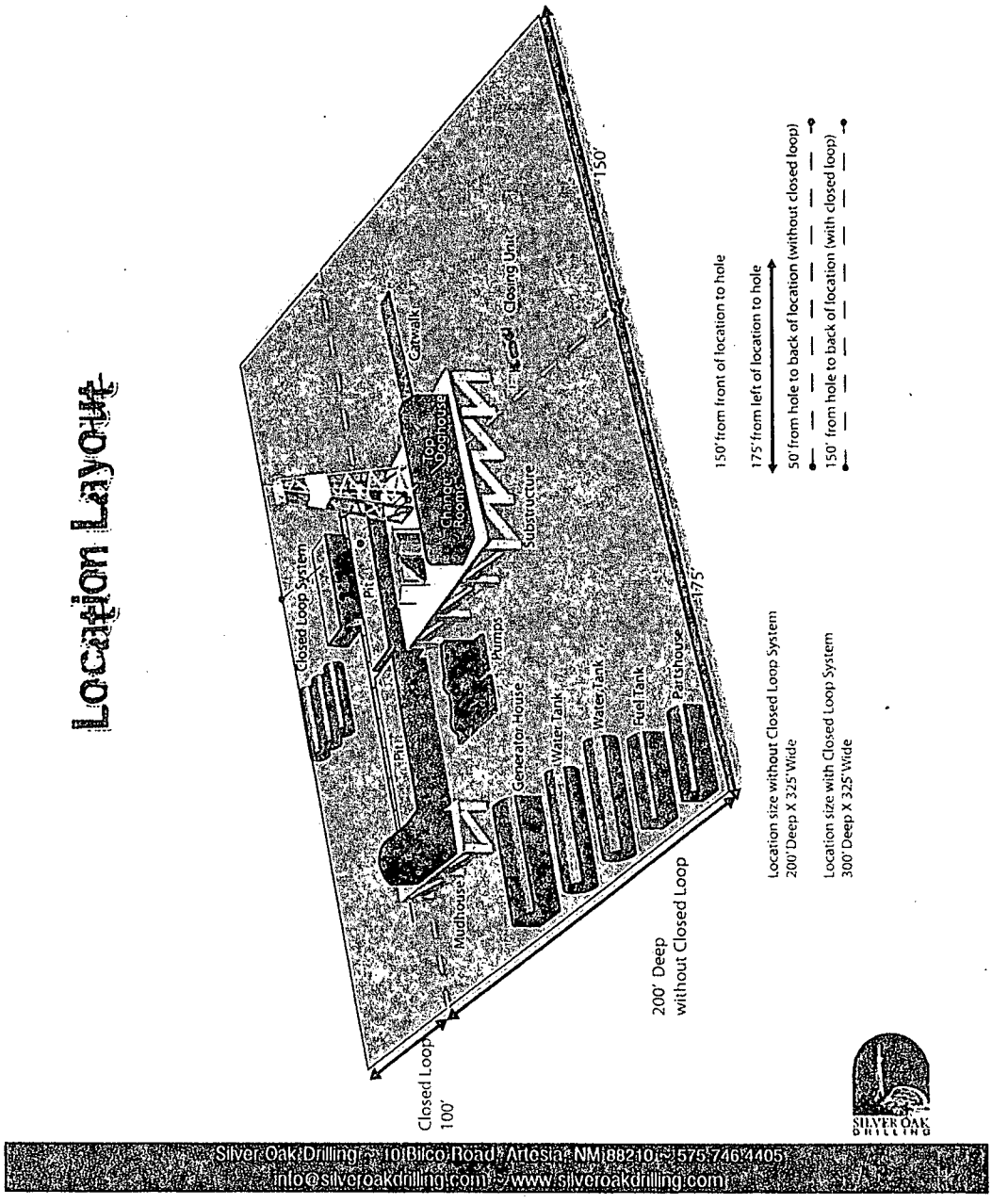
MACK ENERGY CORPORATION

1-575-748-1288



Eshibit #5

DRILLING LOCATION H2S SAFTY EQUIPMENT
Exhibit # 6



Mack Energy Corporation Call List, Eddy County

Artesia (575)	Cellular	Office	Home
Jim Krogman	432-934-1596	748-1288	746-2674
Donald Archer	748-7875	748-1288	748-2287
Chris Davis	432-934-7846	748-1288	
Emilio Martinez	432-934-7586	748-1288	
Matt Buckles	432-212-3732	748-1288	
Kevin Garrett	432-934-7948	748-1288	

Agency Call List (575)

Artesia

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

Carlsbad

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

Emergency Services

Boots & Coots IWC.....1-800-256-9688 or (281)931-8884
Cudd pressure Control.....(915)699-0139 or (915)563-3356
Halliburton.....746-2757
B. J. Services.....746-3569

Flight For Life-Lubbock, TX.....(806)743-9911
Aerocare-Lubbock, TX.....(806)747-8923
Med Flight Air Amb-Albuquerque, NM.....(505)842-4433
Lifeguard Air Med Svc. Albuquerque, NM.....(505)272-3115

Exhibit #7

SURFACE USE AND OPERATING PLAN

1. Existing Access Roads

A. All roads to the location are shown in Exhibit #8. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. New construction and upgrading existing roads prior to drilling well, will be done where necessary.

B. Directions to Location: From the intersection of U.S. HWY #82 and CO. RD #222 (Shugart Rd.) intersection. Go South approx.. 2.3 miles on CO RD. #222, turn right and go west approx. 2.9 miles, turn left and go southt approx.. 0.5 mile, turn left and go east approx.. 300' to road survey, follow survey .33 mile south to location.

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

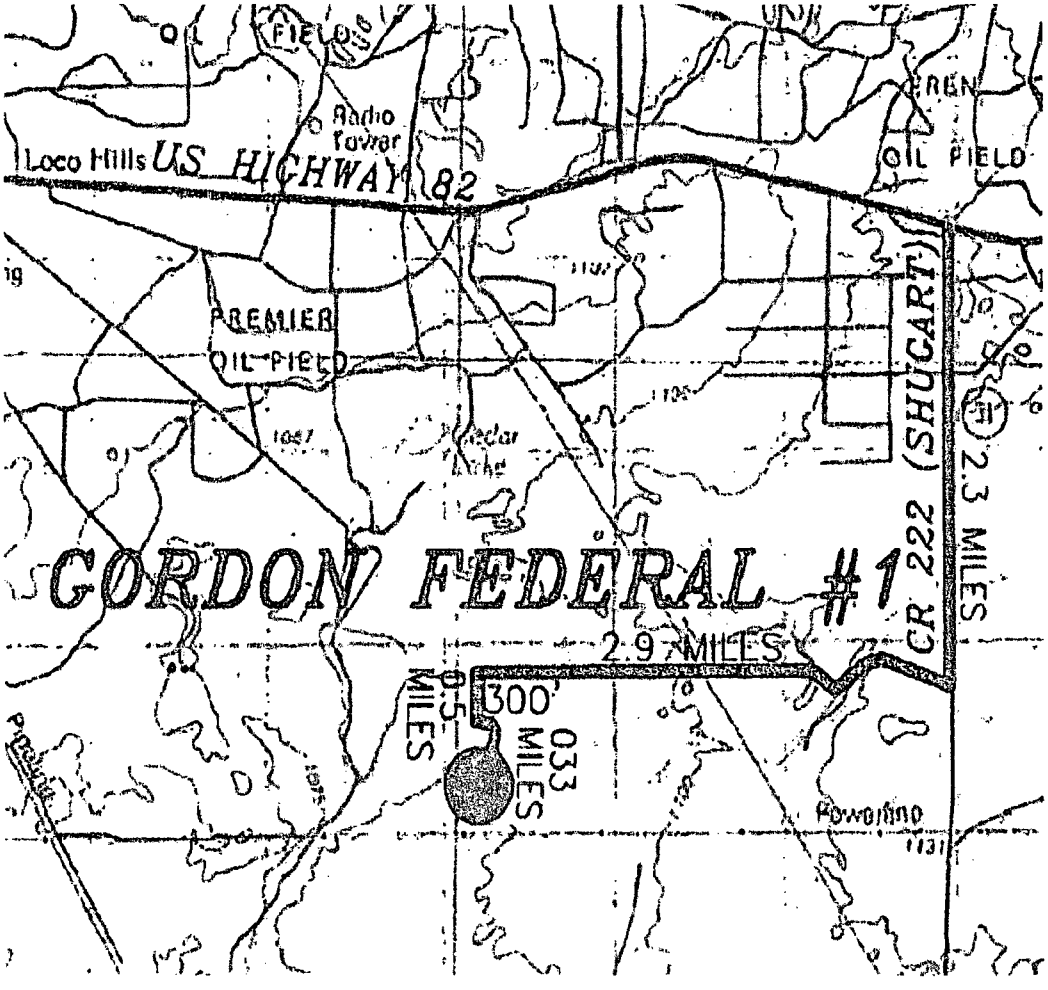


Exhibit #8

1. **Proposed Access Road:**

Location Verification map shows the 1767' of new access road to be constructed. Proposed upgrade of existing road will be done along staked centerline survey. Necessary maintenance will be done to insure traffic stays within proposed ROW. The road will be constructed as follows:

A. The Maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.
B. The average grade will be less than 1%.
C. No turnouts are planned.
D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.
E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit.
F. The proposed access road as shown in Exhibit #8 has been centerline flagged by Madron Surveying Inc., Carlsbad, New Mexico.

2. **Location of Existing Wells:**

Exhibit #9 shows all existing wells within a one-mile radius of this well.

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

A. Mack Energy Corporation does not operate a production facility on this lease.

B. If the well is productive, contemplated facilities will be as follows:

1) Bone Spring Completion: Will be sent to the Gordon Federal TB located at the #1 well. The Facility is shown in Exhibit #10.

2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.

4) It will be necessary to run electric power if this well is productive. Power will be run by CVE and they will send in a separate plan for power.

C. Proposed flow lines will stay on location, TB at well #1.

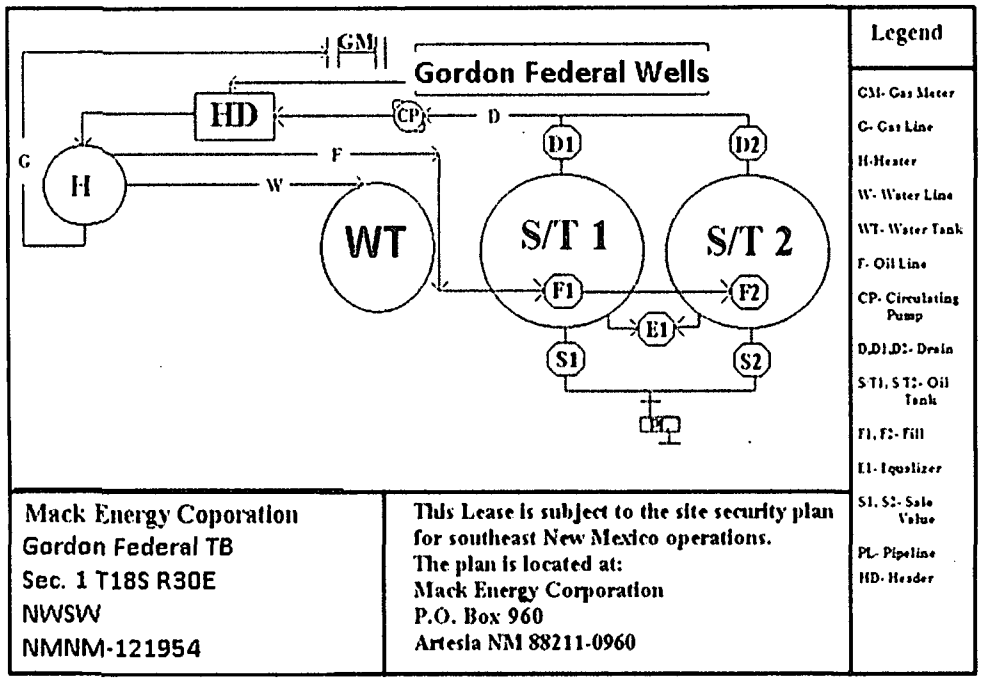


Exhibit #10

4. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #8. If a commercial fresh water source is nearby, fasline may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

5. Source of Construction Materials:

All caliche required for construction of the drill pad and proposed new access road (approximately 2500 cubic yards) will be obtained from a BLM approved caliche pit.

6. Methods of Handling Waste:

A. Drill cuttings not retained for evaluation purposes will be disposed into the steel tanks and hauled to an approved facility.

B. Drilling fluids will be contained in steel tanks using a closed loop system Exhibit #6.

C. Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks

(fiberglass) until pumped to an approved disposal system; produced oil will be collected in steel tanks until sold.

D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. All water and fluids will be disposed of into an approved facility. No toxic waste or hazardous chemicals will be produced by this operation.

E. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

F. Sewage and Gray Water will be place in container and hauled to a approved facility.

7. Frac Pond Site:

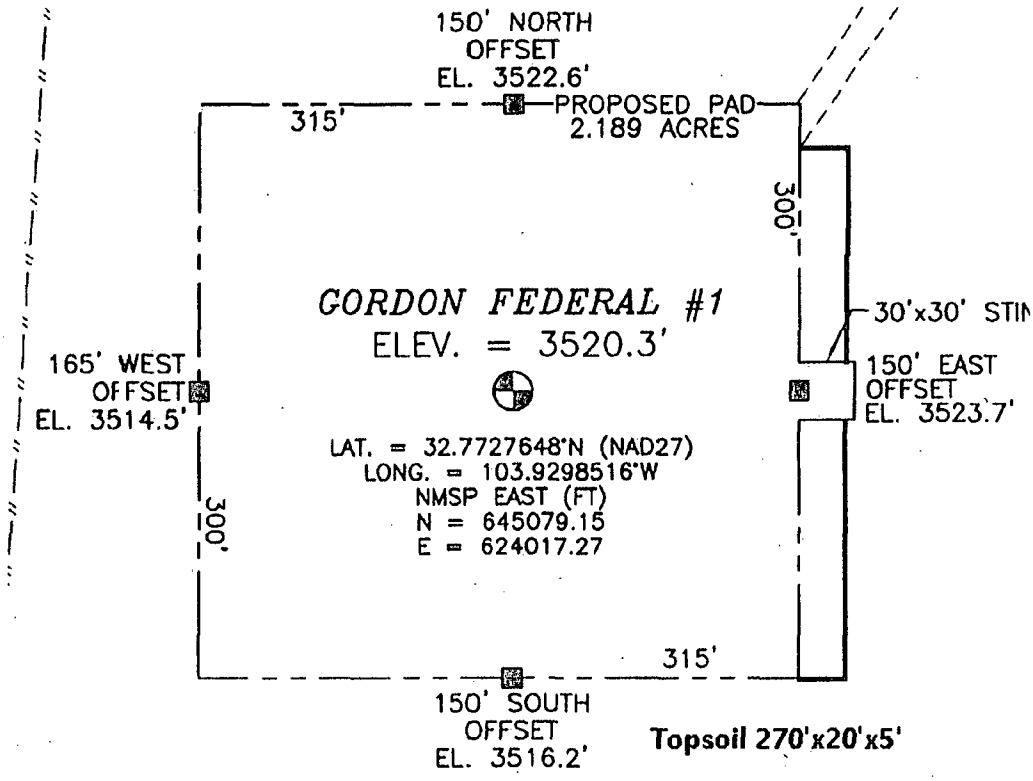
A Frac Pond will be constructed along the south edge of this proposed location. The pond demensions are 310' x 310' x 15' deep. Lined with a 20 mil plastic liner. Fresh water only will be placed in this pond. Pond will be filled using either transport trucks or pipelined from a nearby fresh water well if available. This will be used to aid in the completion of the Gordon Federal #1. Survey plats are attached.

8. Well Site Layout:

A. The well site and elevation plat for the proposed well is shown in 3160-3 attachments. It was staked by Madron Surveying Inc., Carlsbad, NM.

B. The drill pad layout, with elevations, is shown in Exhibit #11. Dimensions of the pad are shown. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

C. Diagram below shows the proposed orientation of the location. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.



Exhibit# 11

9. Plans for Restoration of the Surface:

A. Upon completion of the proposed operations, if the well is completed, any additional caliche required for facilities will be obtained from a BLM approved caliche pit.

B. In the event of a dry hole. Topsoil removed from the drill site will be used to recontour the area to its original natural level and reseeded as per BLM specifications.

C. If the well is productive, rehabilitation plans are as follows:

1) Topsoil removed from the drill site will be used to recontour the surrounding area to the original natural level and reseeded as per BLM specifications.

D. Exhibit #12 below shows the proposed downsized well site after Interim Reclamation. Dimensions are estimates on present conditions and are subject to change.

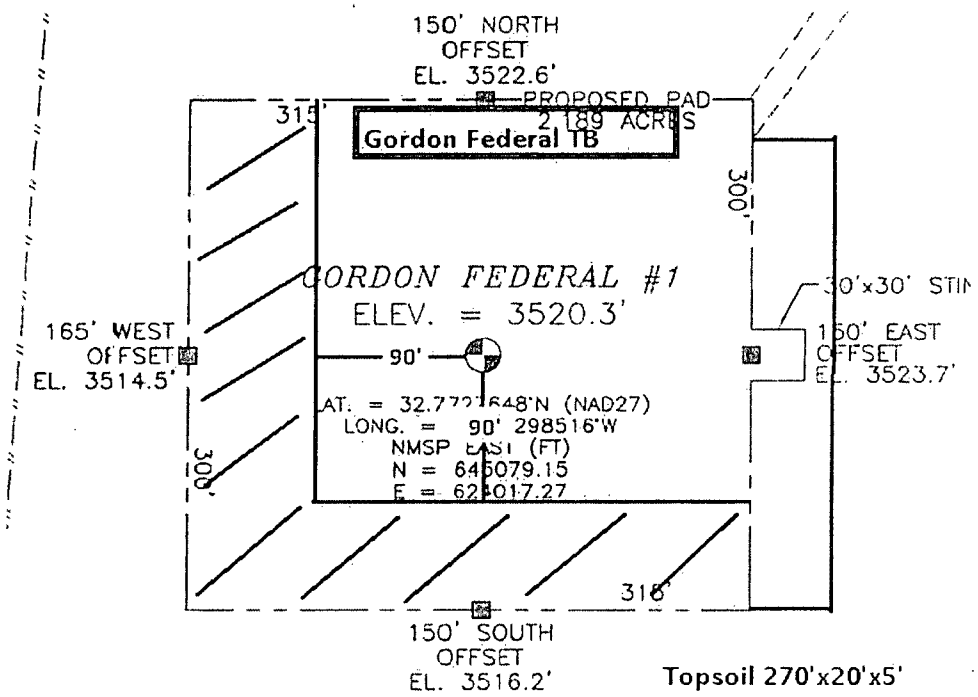


Exhibit #12

10. Surface Ownership:

The well site and lease is located entirely on Federal surface. We have notified the surface lessee of the impending operations. According to BLM the leasee is Olane Caswell, 1702 Gillham Dr. Brownfield, TX 79316 (806) 637-7004.

11. Other Information:

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is native scrub grass with sagebrush.
B. There is no permanent or live water in the immediate area.
C. A Cultural Resources Examination has been requested and will be forwarded to your office in the near future.

12. Lessee's and Operator's Representative:

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

Jerry W. Sherrell
Mack Energy Corporation
P.O. Box 960
Artesia, NM 88211-0960
Phone (575) 748-1288 (office)

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Mack Energy Corporation**
LEASE NO.:	**NMNM-121954**
WELL NAME & NO.:	**Gordon Federal 1**
SURFACE HOLE FOOTAGE:	**1350' FSL & 1130' FWL**
BOTTOM HOLE FOOTAGE	**1675' FSL & 0965' FWL**
LOCATION:	**Section 01, T. 18 S., R 30 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Frac Pond Requirements

A copy of the application (APD, Grant, or Sundry Notice) and attachments, including stipulations, survey plat and diagram, will be on location during construction. BLM personnel may request to see a copy of your permit during construction to ensure compliance with all conditions of approval.

Holder agrees to comply with the following conditions of approval to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this permit.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated.

3. Required Standard Conditions of Approval:

a. **Notification**
Contact the Supervisory Environmental Protection Specialist, Jim Amos, at 575-234-5909 at least 24 hours prior to starting construction.

b. **Freshwater Only**
The frac pond will only be authorized to contain freshwater and testing of water quality is required. Additives are not allowed without consent of the authorized officer in writing.

c. **Contamination**
If at any time the water in the frac pond becomes polluted with salts or other contaminants, use of the frac pond will cease and desist, and all liquids will be removed from the frac pond and disposed of properly. The operator will preclude releases of oil into open pits. The operator must remove any accumulation of oil, condensate, or contaminant in a pit within 48 hours of discovery.

d. **Authorized Disturbance**
Confine all construction and maintenance activity to the approved authorized area applied for in the application.

e. **Facilities**
Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations. Grey-water, sewage, and trash shall be removed from the site and disposed of properly at a state approved facility.

f. **Escape Ramps**
The operator will construct and maintain frac ponds to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in frac ponds. Escape ramps must be installed at every corner of the frac pond and in the center of each side if that side exceeds 100 feet in length. Escape ramps must be in contact with the side of the frac pond, bottom of the frac

pond, and the top of the frac pond berm. Escape ramps cannot be made of metal and cannot be steeper than a 3:1 slope (Horizontal Distance: Vertical Distance) or 30% slope. (*Examples of escape ramps: 12" wide wooden planks wrapped in matting, felt lining, etc.*)

g. Frac Pond Pipelines

Temporary pipelines flowing from the frac pond to the target well will be laid along existing roadways unless an exception has been granted by the authorized officer in writing.

h. Mineral Material from Excavation

Mineral materials extracted during construction of the frac pond will be stored on-location and/or used for constructing the frac pond.

i. Frac Pond Liner

The frac pond will be lined with at least a 30 mil. plastic liner. The plastic lining will be removed prior to final abandonment.

j. Topsoil Stockpile

The operator shall strip at least the top 6 inches of soil (root zone) from the entire frac pond area and stockpile the topsoil approximately 25 feet outside the bermed perimeter of the pond in a low profile manner, reasonably protected from wind and water erosion. Topsoil shall not be used for constructing the frac pond. The topsoil will be used for final reclamation purposes only.

k. Frac Pond Fence

The operator will install and maintain exclosure fencing on all sides of the frac pond to prevent access to public, livestock, and large forms of wildlife. The fence shall be installed at the base of the berm and never on top of the berm. Construction of the fence shall consist of steel and/or wooden posts set firmly into natural ground. Hog panel or chain-link fencing must be used as the fence and tied securely to the fence posts. Barbed-wire fencing or electric fences shall not be used. The fence height shall not be shorter than six (6) feet. The erected fence shall be maintained in adequate condition until the frac pond is reclaimed.

l. Erosion Prevention

Install earthen erosion-control structures as are suitable for the specific terrain and soil conditions.

m. Reclamation Start

I. Reclamation efforts will commence immediately after the frac pond is no longer needed for the purpose of completing wells.

II. Within 3 months of completion of frac operations on associated wells, all earthwork and final reclamation must be completed. This includes reclaiming and/or removal of:

i. Any roads approved for use with the pond
ii. Surface water lines
iii. Tanks, pumps, fencing etc.

4. If, during any phase of the construction, operation, maintenance, or termination of the frac pond, any pollutant should be released from the contaminated frac pond, the control and total removal, disposal, and cleaning up of such pollutant, wherever found, shall be the responsibility of holder, regardless of fault.

Upon failure of holder to control, dispose of, or clean up such discharge, or to repair all damages resulting there-from, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

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

7. After all disturbed areas have been satisfactorily contoured and prepared for seeding the location needs to be revegetated with the seed mixture provided. Seeding may need to be repeated until revegetation is successful. Operators shall contact Jim Amos, Supervisor, Environmental Protection – (575)234-5909, **prior** to beginning surface reclamation operations.

8. Seeding is required: Use the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
(x) LPC mixture	( ) Aplomado Falcon mix

9. Special Stipulations:

Dune Sagebrush Lizard: Within Dune Sagebrush Lizard Suitable Habitat

In addition to the fence requirements above, the operator must install a reptile exclosure fence (*Example: silt fence*). The reptile exclosure fence must be in contact with the soil at all times around the entire frac pond.

Final Well Abandonment Requirements

If the well is abandoned and pad reclaimed, the frac pond must also be abandoned and reclaimed, unless the entire access road for this well is used to access another Mack Energy Corporation well. This frac pond cannot be at the dead-end of the access road. A new frac pond location must be pursued.

Recreation Area Requirements

Pipelines shall be buried a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. Power poles and associated ground structures (poles, guy wires) will not be placed within 20 feet of recreation trails. Guy wires must be equipped with a sleeve, tape or other industry approved apparatus that is highly visible during the day and reflective at night. Appropriate safety signage will be in place during all phases of the project. Upon completion of construction, the road shall be returned to pre-construction condition with no bumps or dips. All vehicle and equipment operators will observe speed limits and practice responsible defensive driving habits.

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching:

Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For

examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width

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

Surfacing

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

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

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

Crowning

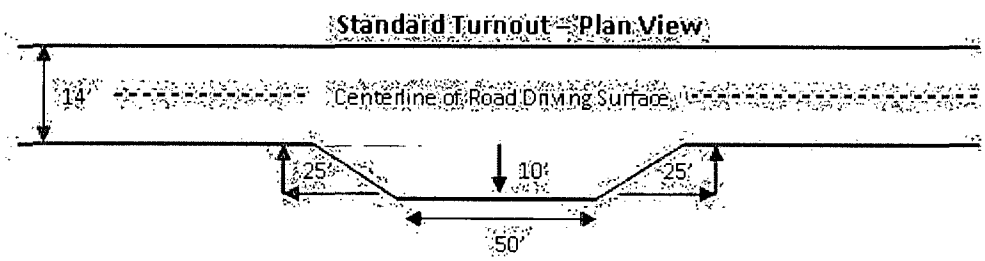
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

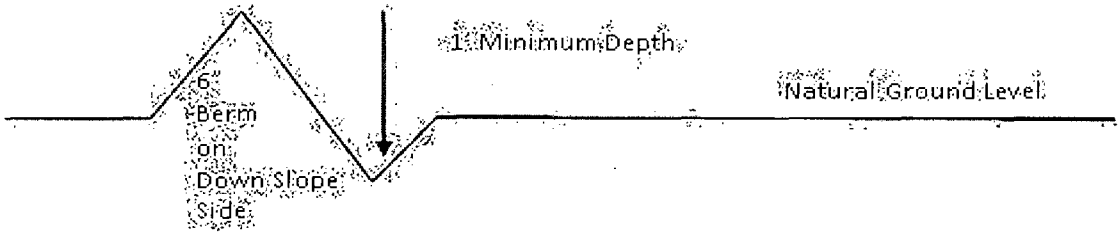


Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattleguards

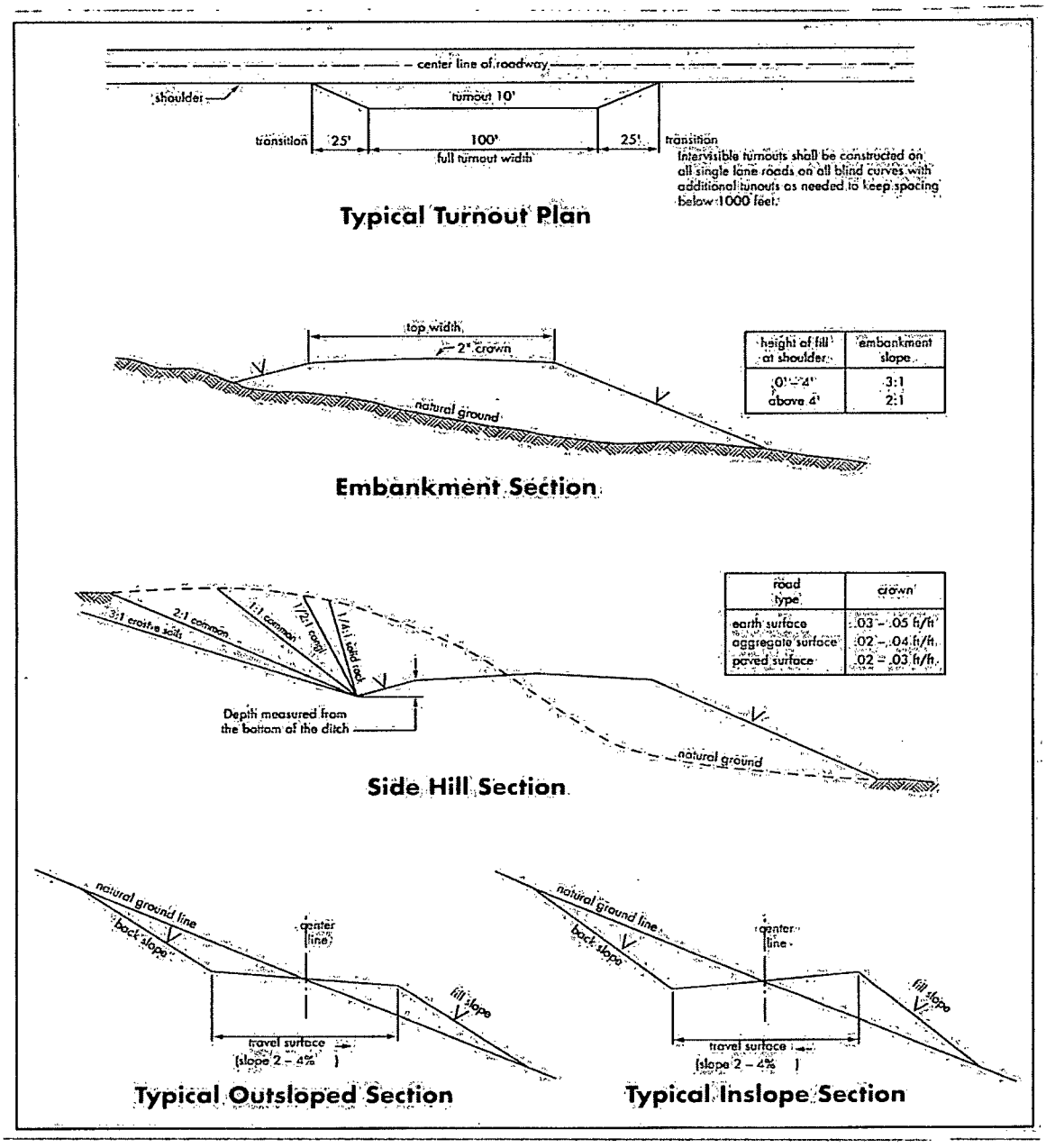
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

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

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Grayburg** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

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

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

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

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

Possibility of water flows in the Salado, Tansil, Yates, Seven Rivers and San Andres. Possibility of lost circulation in the Rustler, Salado, Grayburg, and Bone Spring.

1. The **13-3/8** inch surface casing shall be set at approximately **400** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing, which shall be set at approximately **2500** feet, is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

   a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **8-5/8** intermediate casing shoe shall be **3000 (3M)** psi.

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.

d. The results of the test shall be reported to the appropriate BLM office.

e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

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VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

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

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

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

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Final Well Abandonment Requirements for Frac Pond

If the well is abandoned and pad reclaimed, the frac pond must also be abandoned and reclaimed, unless the entire access road for this well is used to access another Mack Energy Corporation well. This frac pond cannot be at the dead end of the access road. A new frac pond location must be pursued.

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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