GEO

ATS-08-305

BLE - CFO

Form 3160 -3
(April 2004)

HIGH CAVEKARST

MAY 15 2008
OCD-ARTESIA

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

5. Lease Serial No
NMNM-029135

S

APPLICATION FOR PERMIT TO DRILL OR REENTER

6. If Indian, Allotee or Tribe Name

1a. Typeofwork- ☒ 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. 37166
Lobos Federal #1

2. Name of Operator
Mack Energy Corporation 13837

9. API Well No.
30-015-36318

3a Address
P.O. Box 960 Artesia, NM 88211-0960

3b PhoneNo *(include area code)*
(505)748-1288

10 Field and Pool, or Exploratory
Red Lake; Glorieta-Yeso

4. Location of Well *(Report location clearly andinaccorounce with any State requirements*)*

At surface 605 FSL & 2015 FWL

At proposed prod. zone 330 FSL & 1650 FWL

11. Sec , T R M or Blk and Survey or Area
Sec. 4 T18S R27E

14 Distance in miles and direction from nearest town or post office*
7 miles southeast of Artesia, 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) 330	16 No. of acres in lease 38.43	17. Spacing Unit dedicated to this well 38.43
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 300	19. Proposed Depth 5200 TVD 5570 MD	20 BLM/BIA Bond No on file NMB000286
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3572' GR	22 Approximate date work will start* 5/5/08	23 Estimated duration 12 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, shall 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 shall 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 authorized officer

25 Signature Jerry W. Sherrell	Name *(Printed/Typed)* Jerry W. Sherrell	Date 4/4/08
Title Production Clerk		
Approved by *(Signature)* /s/ James Stovall	Name *(Printed/Typed)*	Date MAY 13 2008
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrantor certify that the applicant holds lega orequitable 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

, make it a crime for any person knowirilly and willfully to make to any department or agency ofthe United ations as to any matter within its juris iction

NOTE: New Pit Rule
NMAC 19-15-17

Witness Surface Casing

Roswell Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

VRS

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
	51120	Red Lake;Glorieta-Yeso

Property Code	Property Name	Well Number
37166	LOBOS FEDERAL	1

OGRID No.	Operator Name	Elevation
013837	MACK ENERGY CORPORATION	3572'

Surface Location

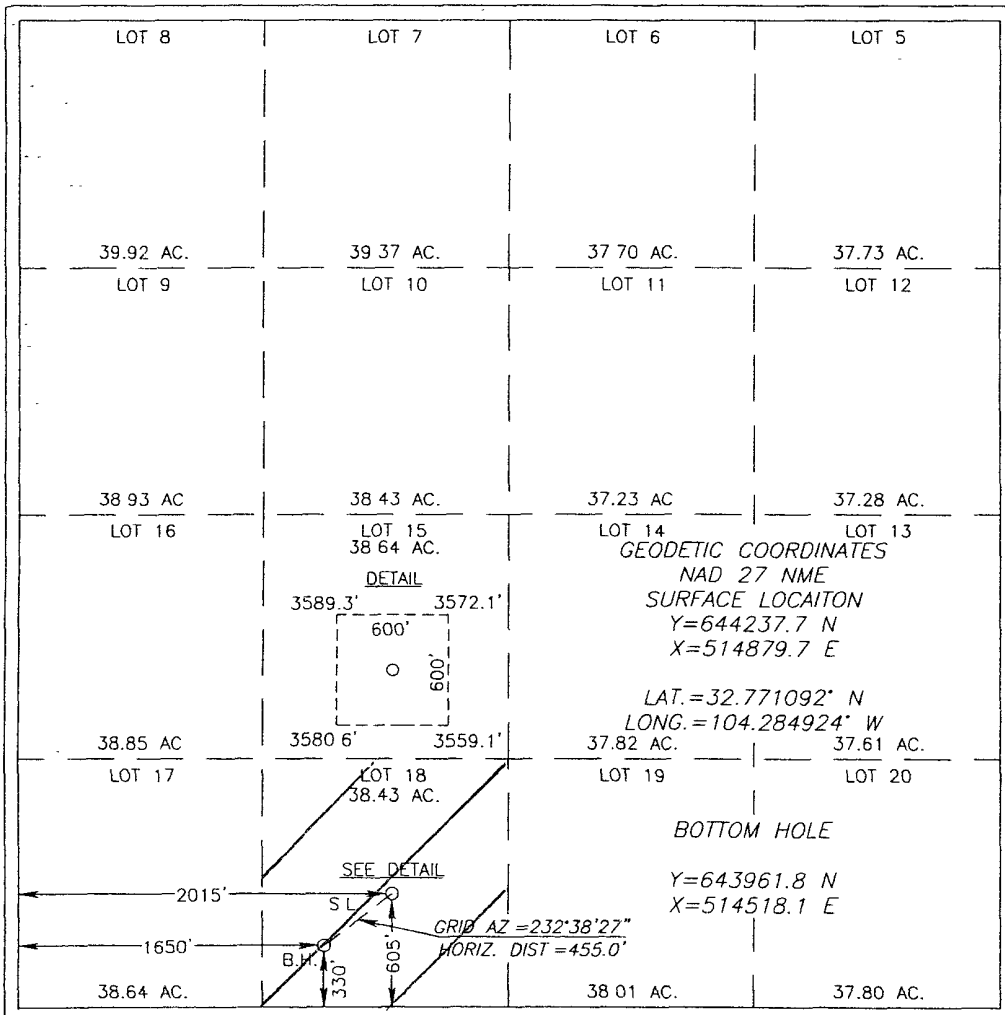
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/EAST line	County
18	4	18-S	27-E		605	SOUTH	2015	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/EAST line	County
18	4	18-S	27-E		330	SOUTH	1650	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
38.43			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Jerry W. Sherrell 4/4/08
Signature Date

Jerry W. Sherrell
Printed Name

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.

RONALD J EIDSON
MARCH 27, 2008
NEW MEXICO
3239
REGISTERED PROFESSIONAL SURVEYOR

Date Surveyed AR

Signature & Seal of Professional Surveyor

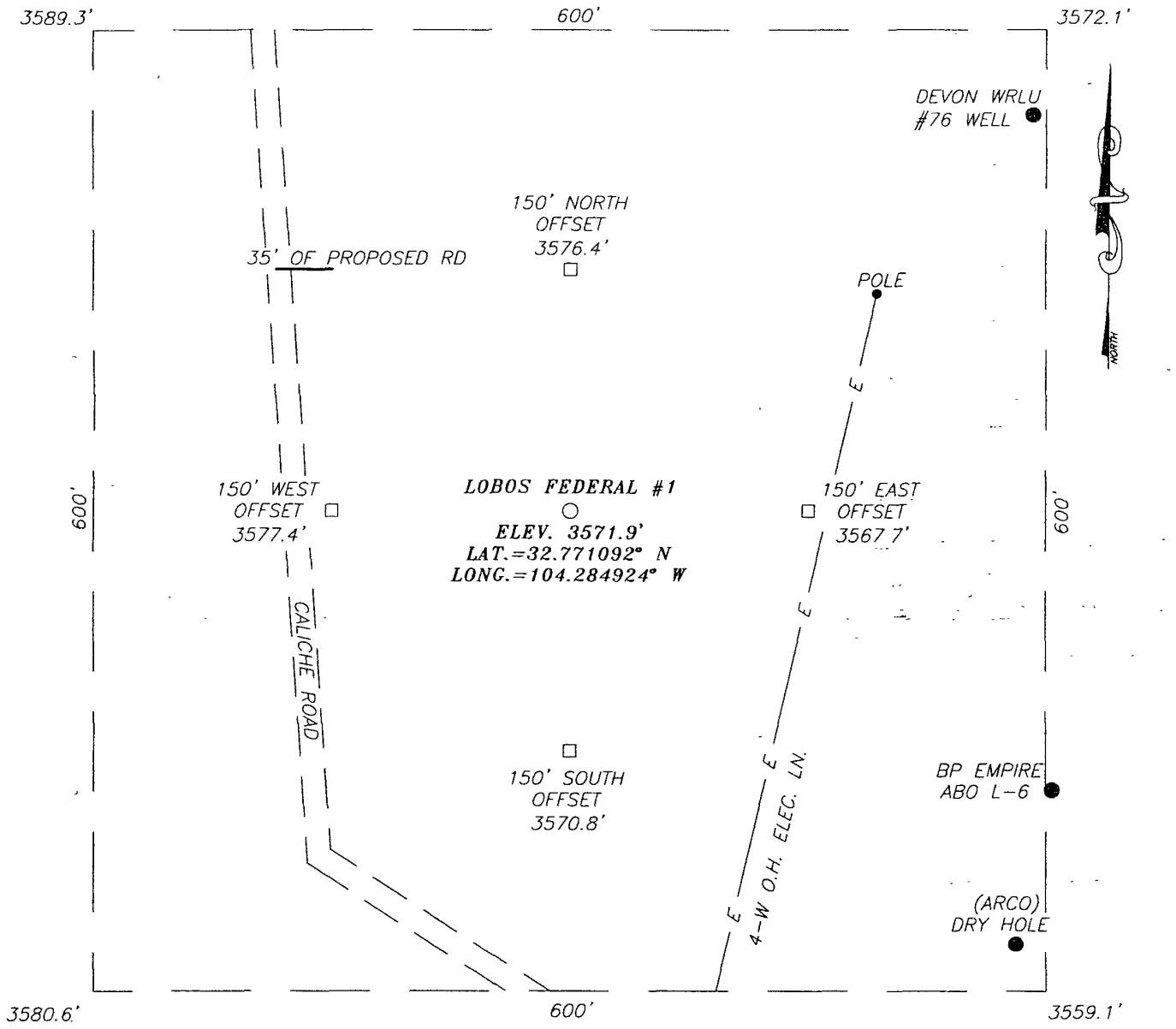
Ronald J. Eidson 4/1/08

08.11.0364

Certificate No. GARY G. EIDSON 12641
RONALD J. EIDSON 3239

SECTION 4, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF COUNTY ROAD 201 (CHALK BLUFF ROAD) AND COUNTY ROAD 227 (LITTLE DIAMOND), GO EAST ON COUNTY ROAD 227 APPROX. 0.5 MILES. TURN RIGHT ON CALICHE ROAD AND GO SOUTH APPROX. 330 FEET. THIS LOCATION IS APPROX. 170 FEET EAST

100 0 100 200 Feet

Scale: 1"=100'

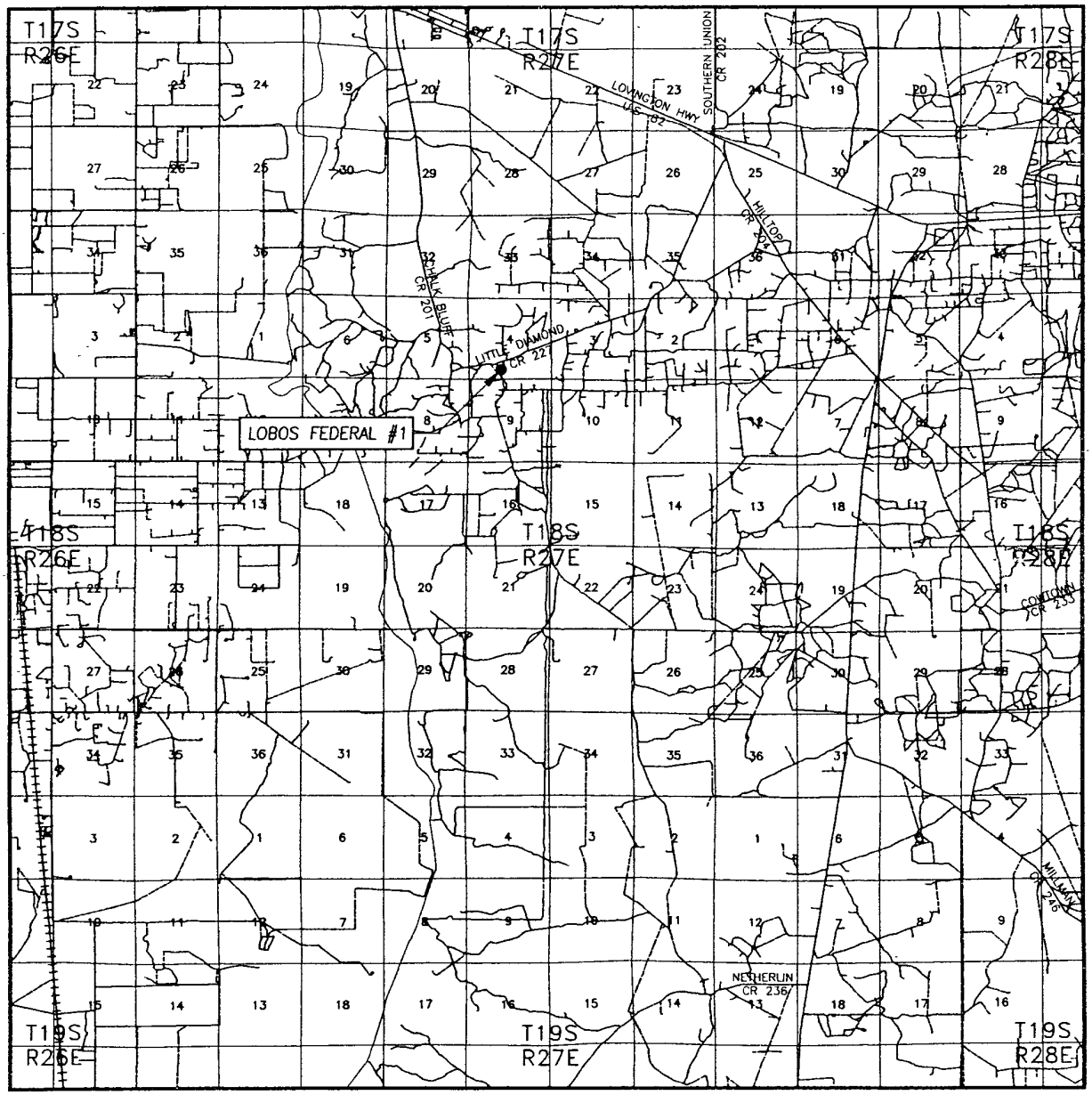
PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

MACK ENERGY CORPORATION

LOBOS FEDERAL #1 WELL
LOCATED 605 FEET FROM THE SOUTH LINE
AND 2015 FEET FROM THE WEST LINE OF SECTION 4,
TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 3/27/08	Sheet 1 of 1 Sheets		
W.O. Number: 08.11.0364	Dr By: AR	Rev 1: N/A	
Date: 3/31/08	REL.: .07111867	08110364	Scale: 1"=100'

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 4 TWP. 18-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 605' FSL & 2015' FWL

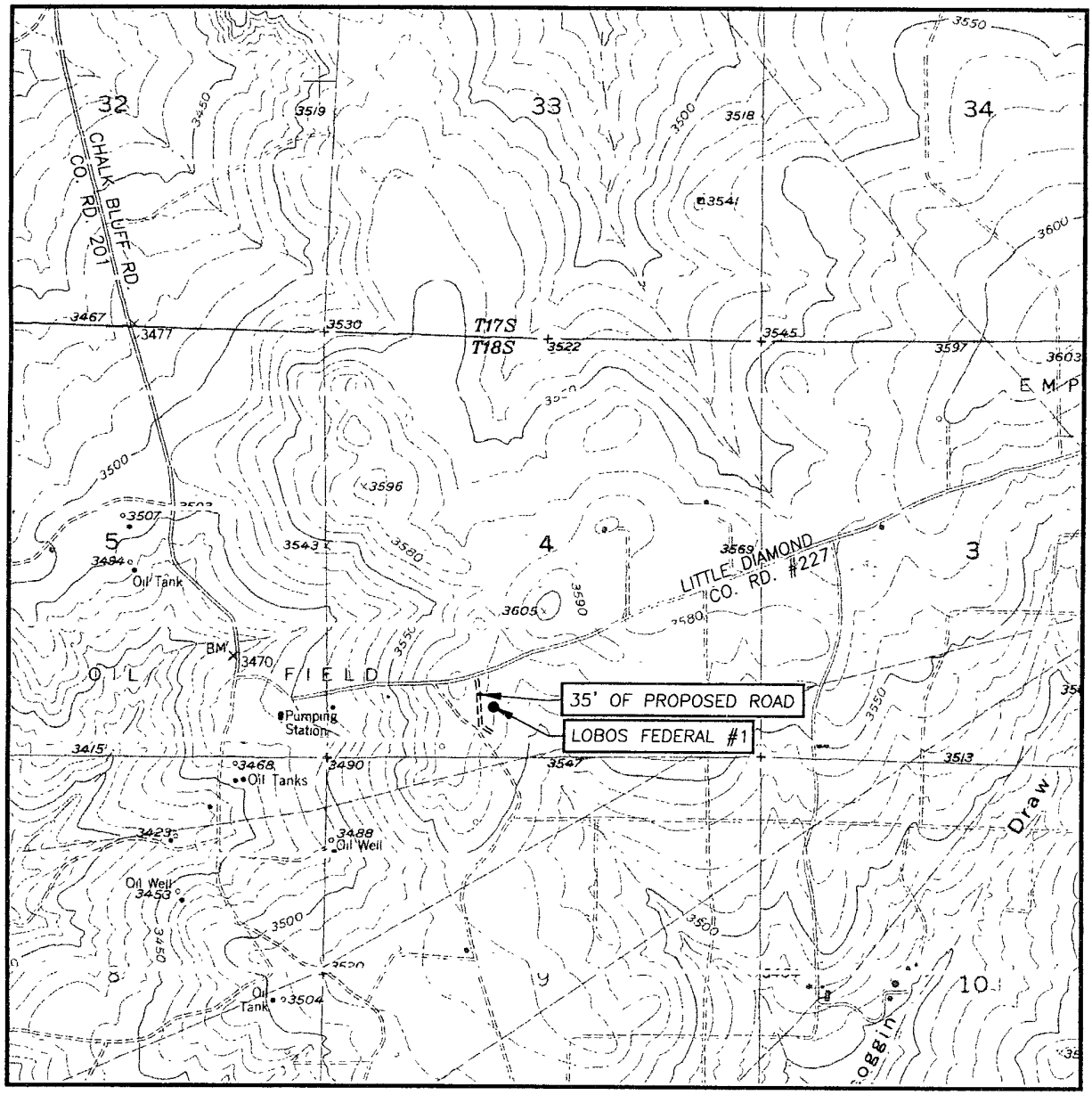
ELEVATION 3572'

OPERATOR MACK ENERGY CORPORATION

LEASE LOBOS FEDERAL

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
SPRING LAKE, N.M. – 10'

SEC. 4 TWP. 18-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 605' FSL & 2015' FWL

ELEVATION 3572'

OPERATOR MACK ENERGY CORPORATION

LEASE LOBOS FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
SPRING LAKE, N.M.

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

Attached to Form 3160-3
Mack Energy Corporation
Lobos Federal #1
SHL 605 FSL & 2015 FWL, BHL 330 FSL & 1650 FWL
Lot 18, Sec. 4 T18S R27E
Eddy County, NM

DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Seven Rivers	290'
Queen	800'
San Andres	1460'
Glorieta	2850'
Abo	5580'

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

Water Sand	50'	Fresh Water
Seven Rivers	290'	Oil/Gas
Glorieta	2850'	Oil/Gas
Abo	5580'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Surface casing will be 8 5/8" casing to 1350' 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 1/2" production casing, sufficient cement will be pumped to circulate back to surface.

4. Casing Program:

Hole Size	Interval	OD Casing	Wt, Grade, Jt, cond, collapse/burst/tension
12 ¼"	0-1350'	8 5/8"	24#, J-55, ST&C, New, 2.269/4.931/5.9
7 7/8"	0-5570'	5 1/2"	17#, J-55, LT&C, New, 1.695/1.773/1.773

5. Cement Program:

8 5/8 Surface Casing: Class C, 550sx, yield 1.32. ← see COA

5 1/2" Production Casing: Class C, 1700sx, yield 1.32.

6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (3000 psi WP) minimum preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on bottom. The conductor pipe will have a flow nipple installed. The BOP will then be nippled up on the 8 5/8" surface casing and tested by a 3rd party to 2000 psi and used continuously until TD is reached. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of surface casing. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #11) with a minimum 3000 psi WP rating.

7. Types and Characteristics of the Proposed Mud System:

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

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-1350'	Fresh Water	8.5	28	N.C.
1350'-TD	Cut Brine	9.1	29	N.C.

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

8. Auxiliary Well Control and Monitoring Equipment:

A. Kelly cock will be kept in the drill string at all times.

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

9. Logging, Testing and Coring Program:

A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be ran 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 after the 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

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

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and estimated maximum bottom hole pressure is 2896 psig. 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 May 5, 2008. Once commenced, the drilling operation should be finished in approximately 12 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.

MACK Energy Corporation

Mack Energy Corp.

Eddy County, NM (NAD 27 NME)
Lobos Federal #1
Lobos Federal #1
OH

Plan: Plan #1

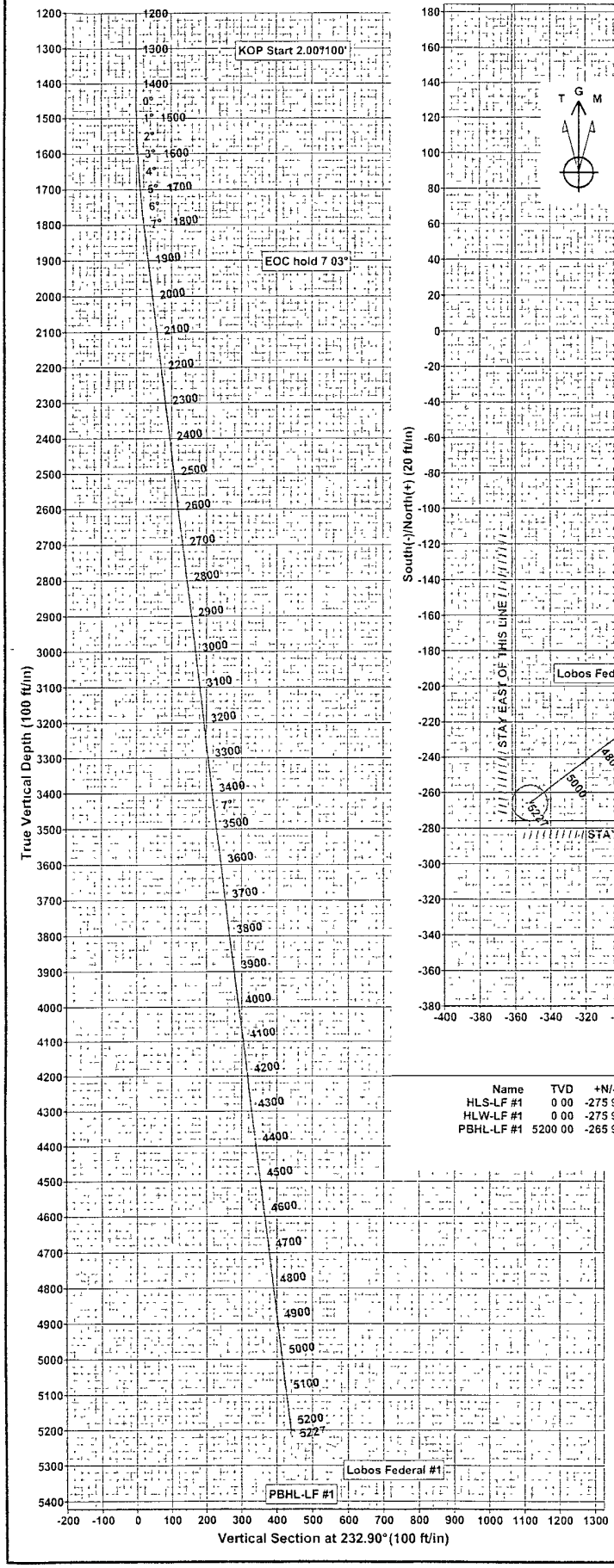
Standard Planning Report

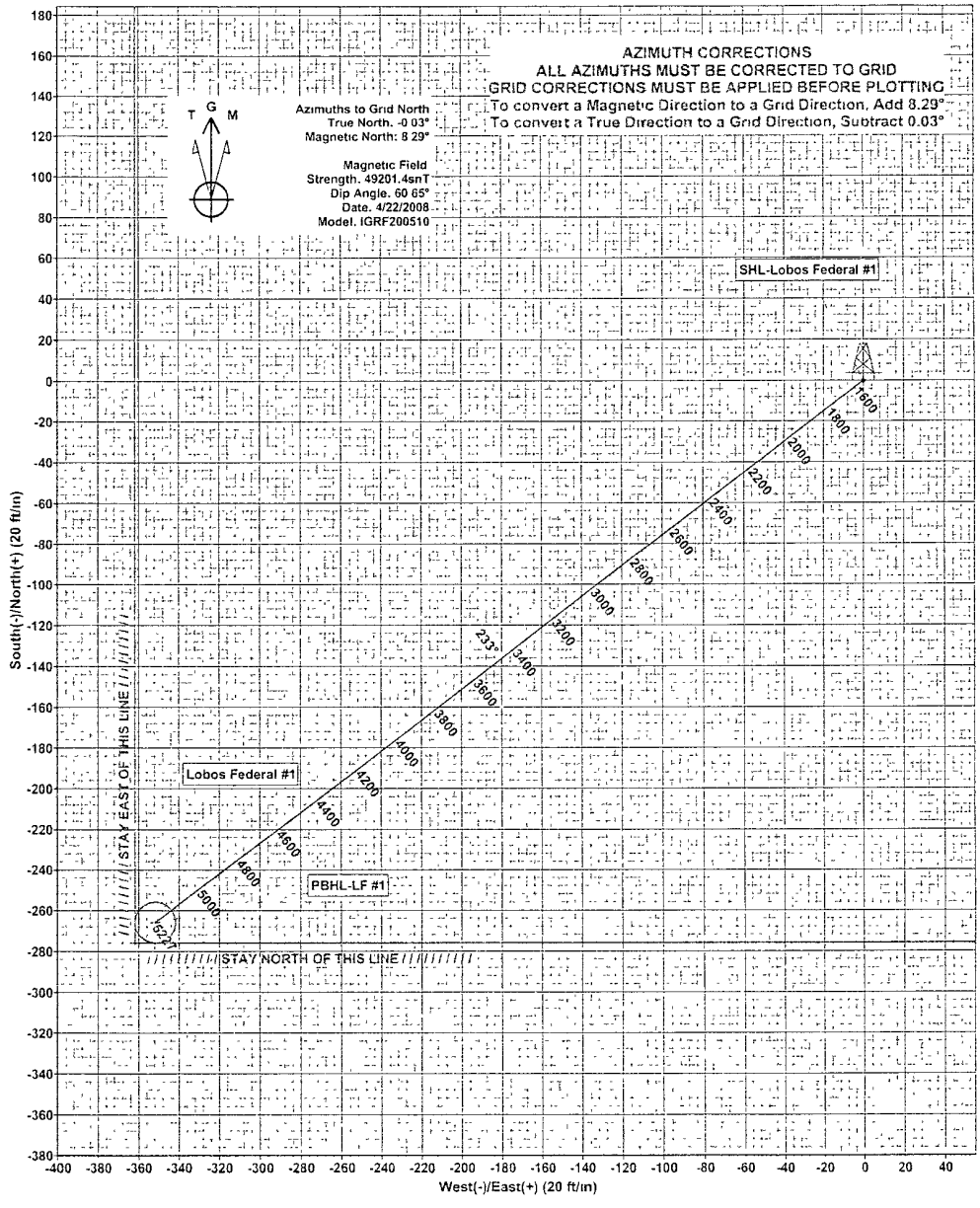
22 April, 2008

Scientific Drilling
Directional Drilling Operations

Scientific Drilling for Mack Energy Corp.
Site: Eddy County, NM (NAD 27 NME)
Well: Lobos Federal #1
Wellbore: OH
Design: Plan #1

Scientific Drilling
Directional Drilling Operations





WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
HLS-LF #1	0.00	-275.90	-361.60	643961.80	514518.10	32° 46' 13.203 N	104° 17' 9.963 W	Rectangle (Sides: L0.00 W500.00)
HLW-LF #1	0.00	-275.90	-361.60	643961.80	514518.10	32° 46' 13.203 N	104° 17' 9.963 W	Rectangle (Sides: L500.00 W0.00)
PBHL-LF #1	5200.00	-265.90	-351.60	643971.80	514528.10	32° 46' 13.302 N	104° 17' 9.846 W	Circle (Radius: 10.00)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1450.00	0.00	0.00	1450.00	0.00	0.00	0.00	0.00	0.00	
3	1801.57	7.03	232.90	1800.69	-13.00	-17.18	2.00	232.90	21.55	
4	5226.64	7.03	232.90	5200.00	-265.90	-351.60	0.00	0.00	440.82	PBHL-LF #1

WELL DETAILS: Lobos Federal #1

Ground Level: 3572.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	644237.70	514879.70	32° 46' 15.932 N	104° 17' 5.726 W	

PROJECT DETAILS: Eddy County, NM (NAD 27 NME) — Plan: Plan #1 (Lobos Federal #1/OH)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

Created By: Julio Pina — Date: 22-Apr-08
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

Database:	EDM 2003 16 Single User Db	**Local Co-ordinate Reference:**	Well Lobos Federal #1
Company:	Mack Energy Corp	**TVD Reference:**	KB Elev @ 3589 50ft (Rig ?)
Project:	Eddy County, NM (NAD 27 NME)	**MD Reference:**	KB Elev @ 3589 50ft (Rig ?)
Site:	Lobos Federal #1	**North Reference:**	Grid
Well:	Lobos Federal #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project Eddy County, NM (NAD 27 NME)

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 Lobos Federal #1

Site Position:		**Northing:**	644,237 70 ft	**Latitude:**	32° 46' 15.932 N
From:	Map	**Easting:**	514,879.70 ft	**Longitude:**	104° 17' 5.726 W
Position Uncertainty:	0 00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.03 °

Well Lobos Federal #1

Well Position	**+N/-S**	0 00 ft	**Northing:**	644,237 70 ft	**Latitude:**	32° 46' 15 932 N
	+E/-W	0 00 ft	**Easting:**	514,879.70 ft	**Longitude:**	104° 17' 5.726 W
Position Uncertainty		0 00 ft	**Wellhead Elevation:**	3,589.50 ft	**Ground Level:**	3,572.00 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	4/22/2008	8 32	60 65	49,201

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0 00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0 00	0 00	0 00	232 90

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0 00	0 00	0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00	
1,450 00	0 00	0 00	1,450 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,801 57	7 03	232.90	1,800 69	-13.00	-17 18	2.00	2 00	-36 15	232 90	
5,226 64	7 03	232 90	5,200 00	-265 90	-351 60	0 00	0 00	0 00	0 00	PBHL-LF #1

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Lobos Federal #1
Company:	Mack Energy Corp.	**TVD Reference:**	KB Elev @ 3589.50ft (Rig ?)
Project:	Eddy County, NM (NAD 27 NME)	**MD Reference:**	KB Elev @ 3589.50ft (Rig ?)
Site:	Lobos Federal #1	**North Reference:**	Grid
Well:	Lobos Federal #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HLS-LF #1 - HLW-LF #1									
1,450.00	0.00	0.00	1,450.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start 2.00°/100'									
1,500.00	1.00	232.90	1,500.00	-0.26	-0.35	0.44	2.00	2.00	0.00
1,600.00	3.00	232.90	1,599.93	-2.37	-3.13	3.93	2.00	2.00	0.00
1,700.00	5.00	232.90	1,699.68	-6.58	-8.69	10.90	2.00	2.00	0.00
1,800.00	7.00	232.90	1,799.13	-12.88	-17.03	21.35	2.00	2.00	0.00
1,801.57	7.03	232.90	1,800.69	-13.00	-17.18	21.55	2.00	2.00	0.00
EOC hold 7.03°									
1,900.00	7.03	232.90	1,898.38	-20.26	-26.80	33.59	0.00	0.00	0.00
2,000.00	7.03	232.90	1,997.63	-27.65	-36.56	45.84	0.00	0.00	0.00
2,100.00	7.03	232.90	2,096.87	-35.03	-46.32	58.08	0.00	0.00	0.00
2,200.00	7.03	232.90	2,196.12	-42.42	-56.09	70.32	0.00	0.00	0.00
2,300.00	7.03	232.90	2,295.37	-49.80	-65.85	82.56	0.00	0.00	0.00
2,400.00	7.03	232.90	2,394.62	-57.18	-75.61	94.80	0.00	0.00	0.00
2,500.00	7.03	232.90	2,493.87	-64.57	-85.38	107.04	0.00	0.00	0.00
2,600.00	7.03	232.90	2,593.11	-71.95	-95.14	119.28	0.00	0.00	0.00
2,700.00	7.03	232.90	2,692.36	-79.34	-104.91	131.53	0.00	0.00	0.00
2,800.00	7.03	232.90	2,791.61	-86.72	-114.67	143.77	0.00	0.00	0.00
2,900.00	7.03	232.90	2,890.86	-94.10	-124.43	156.01	0.00	0.00	0.00
3,000.00	7.03	232.90	2,990.10	-101.49	-134.20	168.25	0.00	0.00	0.00
3,100.00	7.03	232.90	3,089.35	-108.87	-143.96	180.49	0.00	0.00	0.00
3,200.00	7.03	232.90	3,188.60	-116.25	-153.72	192.73	0.00	0.00	0.00
3,300.00	7.03	232.90	3,287.85	-123.64	-163.49	204.97	0.00	0.00	0.00
3,400.00	7.03	232.90	3,387.10	-131.02	-173.25	217.22	0.00	0.00	0.00
3,500.00	7.03	232.90	3,486.34	-138.41	-183.02	229.46	0.00	0.00	0.00
3,600.00	7.03	232.90	3,585.59	-145.79	-192.78	241.70	0.00	0.00	0.00
3,700.00	7.03	232.90	3,684.84	-153.17	-202.54	253.94	0.00	0.00	0.00
3,800.00	7.03	232.90	3,784.09	-160.56	-212.31	266.18	0.00	0.00	0.00
3,900.00	7.03	232.90	3,883.34	-167.94	-222.07	278.42	0.00	0.00	0.00
4,000.00	7.03	232.90	3,982.58	-175.33	-231.83	290.66	0.00	0.00	0.00
4,100.00	7.03	232.90	4,081.83	-182.71	-241.60	302.91	0.00	0.00	0.00
4,200.00	7.03	232.90	4,181.08	-190.09	-251.36	315.15	0.00	0.00	0.00
4,300.00	7.03	232.90	4,280.33	-197.48	-261.13	327.39	0.00	0.00	0.00
4,400.00	7.03	232.90	4,379.58	-204.86	-270.89	339.63	0.00	0.00	0.00
4,500.00	7.03	232.90	4,478.82	-212.25	-280.65	351.87	0.00	0.00	0.00
4,600.00	7.03	232.90	4,578.07	-219.63	-290.42	364.11	0.00	0.00	0.00
4,700.00	7.03	232.90	4,677.32	-227.01	-300.18	376.36	0.00	0.00	0.00
4,800.00	7.03	232.90	4,776.57	-234.40	-309.94	388.60	0.00	0.00	0.00
4,900.00	7.03	232.90	4,875.82	-241.78	-319.71	400.84	0.00	0.00	0.00
5,000.00	7.03	232.90	4,975.06	-249.17	-329.47	413.08	0.00	0.00	0.00
5,100.00	7.03	232.90	5,074.31	-256.55	-339.24	425.32	0.00	0.00	0.00
5,200.00	7.03	232.90	5,173.56	-263.93	-349.00	437.56	0.00	0.00	0.00
5,226.64	7.03	232.90	5,200.00	-265.90	-351.60	440.82	0.00	0.00	0.00
PBHL-LF #1									

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Lobos Federal #1
Company:	Mack Energy Corp.	**TVD Reference:**	KB Elev. @ 3589.50ft (Rig ?)
Project:	Eddy County, NM (NAD 27-NME)	**MD Reference:**	KB Elev. @ 3589.50ft (Rig ?)
Site:	Lobos Federal #1	**North Reference:**	Grid
Well:	Lobos Federal #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-LF #1 - plan hits target - Circle (radius 10.00)	0.00	0.00	5,200.00	-265.90	-351.60	643,971.80	514,528.10	32° 46' 13.302 N	104° 17' 9.846 W
HLW-LF #1 - plan misses by 454.84ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Rectangle (sides W500.00 H0.00 D0.00)	0.00	0.00	0.00	-275.90	-361.60	643,961.80	514,518.10	32° 46' 13.203 N	104° 17' 9.963 W
HLS-LF #1 - plan misses by 454.84ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Rectangle (sides W0.00 H500.00 D0.00)	0.00	0.00	0.00	-275.90	-361.60	643,961.80	514,518.10	32° 46' 13.203 N	104° 17' 9.963 W

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,450.00	1,450.00	0.00	0.00	KOP Start 2.00°/100'
1,801.57	1,800.69	-13.00	-17.18	EOC hold 7.03°

Attachment to Exhibit #9
NOTES REGARDING THE BLOWOUT PREVENTERS
Lobos 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 Corporation

Minimum Blowout Preventer Requirements

3000 psi Working Pressure

3 MWP

EXHIBIT #10

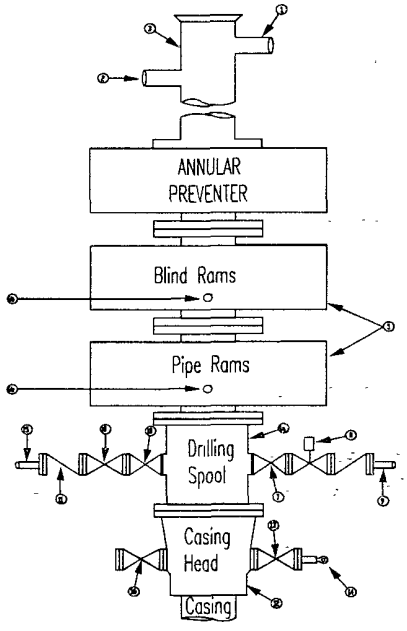
Stack Requirements

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

OPTIONAL

16	Flanged Valve	1 13/16	

Figure 1



CONTRACTOR'S OPTION TO FURNISH:

1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 3000 psi minimum.
2. Automatic accumulator (80 gallon, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure
3. BOP controls, to be located near drillers' position.
4 Kelly equipped with Kelly cock.
5 Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times
7 Plug type blowout preventer tester
8. Extra set pipe rams to fit drill pipe in use on location at all times
9 Type RX ring gaskets in place of Type R.

MEC TO FURNISH:

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

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. Do not use kill line for routine fill up operations.

Mack Energy Corporation

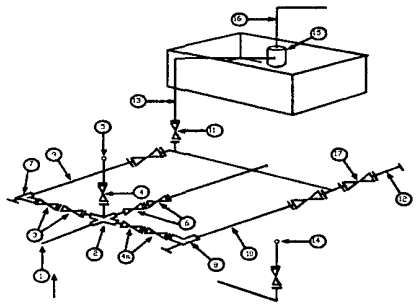
Exhibit #11

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 guage			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 Choke manifold pressure and standpipe pressure gauges shall be available at the choke manifold to assist in regulating chokes. As an 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.

Mack Energy Corporation

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.

   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 #8).

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

5. **Mud program:**

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

6. **Metallurgy:**

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

   B. All elastomers used for packing and seals shall be H2S trim.

7. **Communication:**

   A. Radio communications in company vehicles including cellular telephone and 2-way radio.

   B. Land line (telephone) communication at Office.

8. **Well testing:**

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

   B. There will be no drill stem testing.

EXHIBIT #7

WARNING

YOU ARE ENTERING AN H2S

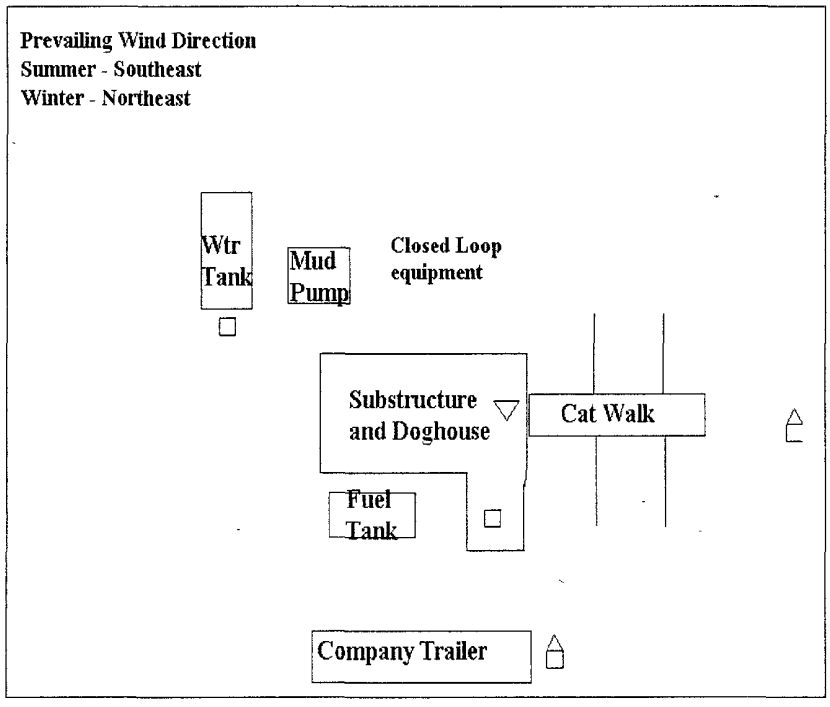
AUTHORIZED PERSONNEL ONLY

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

MACK ENERGY CORPORATION

1-575-748-1288

DRILLING LOCATION H2S SAFTY EQUIPMENT
Exhibit # 8



▽ H2S Monitors with alarms at the bell nipple

□ Wind Direction Indicators

△ Safe Briefing areas with caution signs and breathing equipment min 150 feet from

Mack Energy Corporation Call List, Eddy County

Artesia (575)	Cellular	Office	Home
Jim Krogman	746-5515	748-1288	746-2674
Lonnie Archer	746-7889	748-1288	365-2998
Donald Archer	748-7875	748-1288	748-2287
Chris Davis	746-7132	748-1288	
Kevin Garrett	746-7423	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

Attached to Form 3160-3
Mack Energy Corporation
Lobos Federal #1
SHL 605 FSL & 2015 FWL, BHL 330 FSL & 1650 FWL
Lot 18, Sec. 4 T18S R27E
Eddy County, NM

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site and elevation plat for the proposed well is shown in Exhibit #1. It was staked by John West Engineering, Hobbs, NM.

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

C. Directions to Location: From the intersection of CR 201 and CR 227 go east on 227 .55 miles, turn right/south on caliche road 330', location is 170' east.

D. 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.

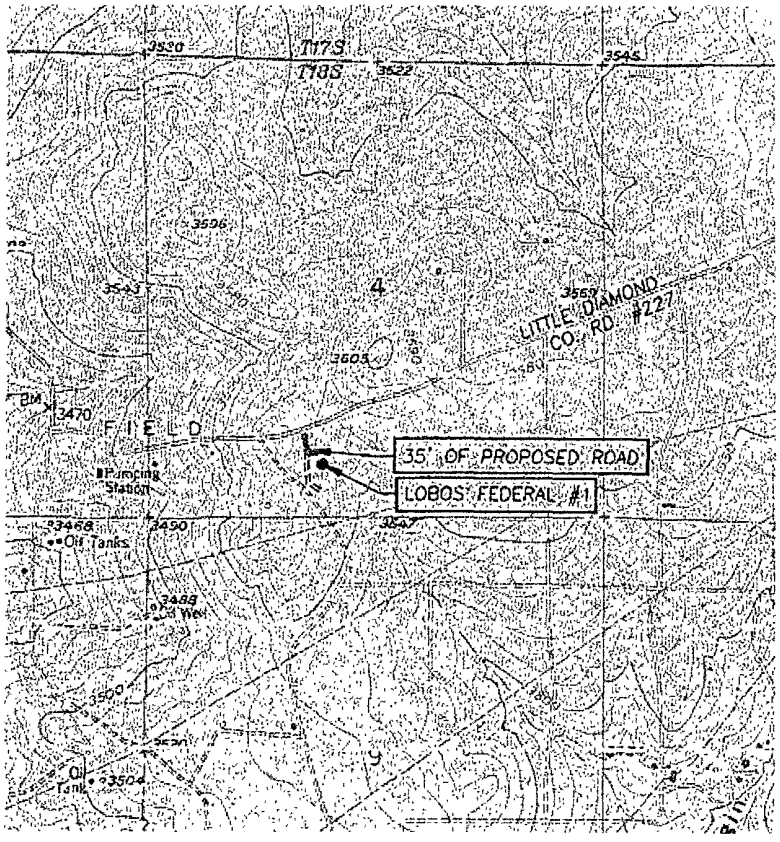


Exhibit #4

2. Proposed Access Road:

Exhibit #3 shows the 35' of new access road to be constructed. 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 4 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 or reserve pit area.

F. The proposed access road as shown in Exhibit #3 has been centerline flagged by John West Engineering, Hobbs, New Mexico.

3. Location of Existing Wells & Proposed flow lines for New Wells:

Exhibit #4 shows all existing wells within a one-mile radius of this well. Proposed flow lines, will stay on this location Tank Battery will be constructed.

4. 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:

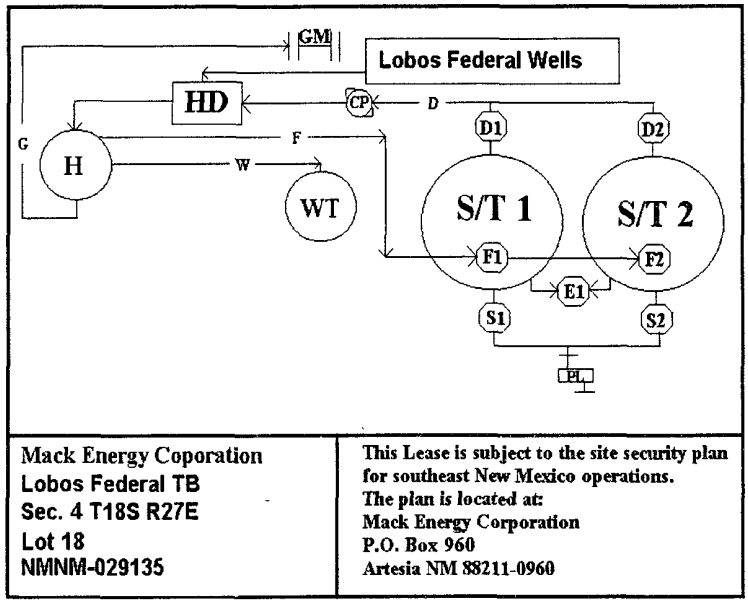
1) Yeso Completion: Will be sent to the Lobos Federal TB located at the #1 well. The Facility is shown in Exhibit #5.

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.

Exhibit #5



A. 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, as nearly as possible, and reseeded as per BLM specifications.

5. 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 #4. 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.

6. 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.

7. Methods of Handling Water Disposal:

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.

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.

8. Ancillary Facilities:

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

9. Well Site Layout:

A. The drill pad layout, with elevations staked by John West Engineering, is shown in Exhibit #6. 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.

B. 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.

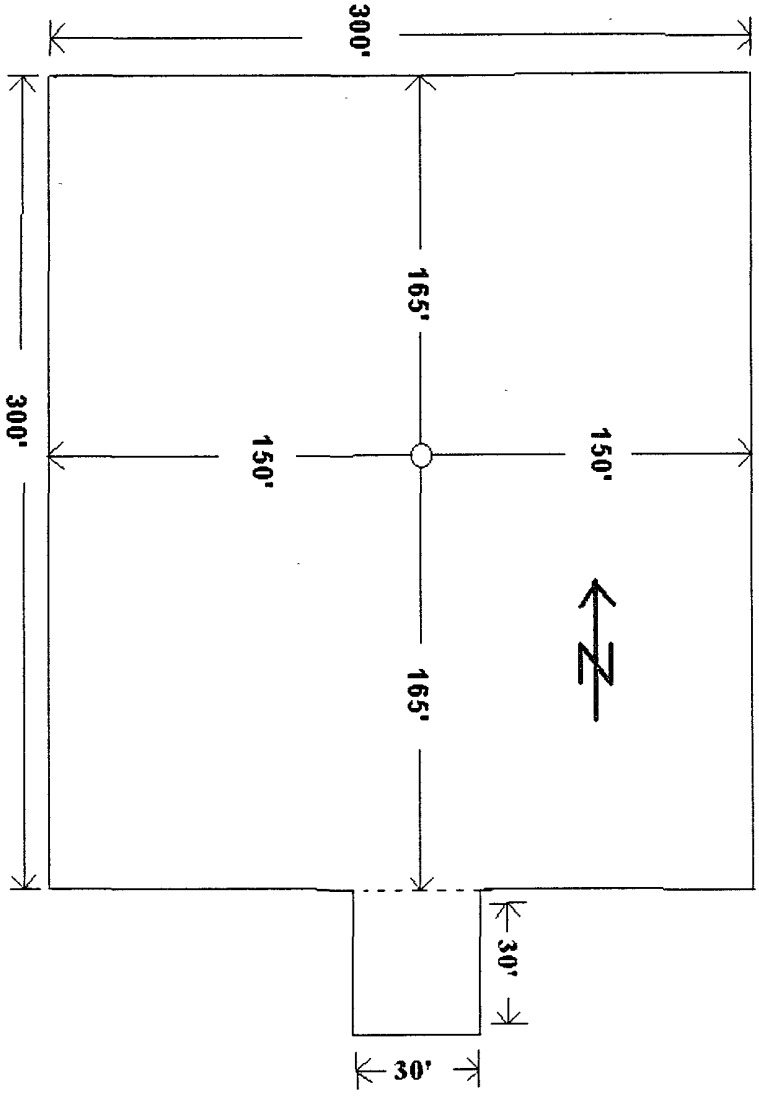


Exhibit #6

10. 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.

11. 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 Bogel Limited Company, Lewis Derrick, P.O. Box 460 Dexter, NM 88230.

12. 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.

13. 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 (505) 748-1288 (office)

CERTIFICATION

I hereby certify that I, or person under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this APD are to the best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed by Mack Energy Corporation and its contractors and subcontractors in conformity with this plan and the terms and conditions which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date: 4-4-08

Signed: Jerry W. Sherrell

Jerry W. Sherrell

United States Department of the Interior
Bureau of Land Management
Carlsbad Field Office

COPY

Refer To: 3160-3

April 10, 2008

To: AFM, Lands & Minerals, CFO

From: Geologist, CFO

Subject: Geologic Review of Application for Permit to Drill

Operator: Mack Energy Corporation

Well Name and Number: Lobos Federal No. 1

Location: 605' FSL & 2015' FWL (SHL)
330' FSL & 1650' FWL (SHL)

Section: 04, T. 18 S., R. 27 E., NMPM

County: Eddy State: NM

Lease No.: LC-029135 Date APD Rec'd: 04/08/08

1. Surface Elevation **3,572'** Surface Geology **Tansill Formation**

2. Geologic Marker Tops (from reports on surrounding wells):

Geologic Marker	Depth
Queen	555'
Grayburg	995'
San Andres	1220'
Glorietta	2563'
Yeso	2770'
Clearfork	3465'
Tubb	4045'
Abo	4720'
Wolfcamp	5955'
Atoka	8777'
Morrow Ls.	8985'

Geologic markers are taken from the Red Lake Federal Com. No. 1 well located in the NW¼SW¼, sec. 6, T. 18 S., R. 27 E., NMPM

3. Useable Water Information: In this area useable water may be obtained as deep as 1130' from the Queen and Grayburg Formations. The Brainard No. 2 well located in sec. 5, T. 18 R. 27 E., NMPM reported encountering the artesian aquifer at a depth of 1130'. The upper most portion of this township seems to mirror to some extent that above it T. 17 S., R. 27 E. In that township, water in the west half is as deep as 1150+ ft. and in the east it is 350 to 450 ft. The same situation is apparent in the very top of T. 18 S., R. 27 E.. Waters in sections 4 and 5 occur at 900 to 1175 and those east ward are around 300 ft. Seemingly this situation dissolves south of the Artesia -Vaccum Arch as the sections south obtain water from 90 ft to a maximum of 381 ft. in section 8.

   Deepest Expected Fresh Water: 1150'

   Does Surface Casing cover all anticipated usable fresh water zones? yes

   Controlled Water Basin: Yes

   Capitan Carlsbad Roswell **X** Lea No basin

   Remarks: Witness surface casing set at approximately 1,150 feet within the lower Artesia Group. The San Andres may have water flows. Witness setting production casing and ensure that cement is circulated to surface to protect the waters of the San Andres.

4. Geologic Hazards? Yes

   H_2S **X** Karst **X** Abnormal Pressures Other **X**

   Remarks: Although no H_2S has been reported in Sections 7, 8, 9, and 15, T. 18 S., R. 27 E., NMPM, Eddy County, H_2S is always a possible hazard. However, H_2S has been reported several times in a Comstock Federal lease well completed in Artesia Queen-Grayburg-San Andres, located in the SE¼SW¼ of Sec. 12, T. 18 S., R. 27 E., NMPM; measuring 224 ppm. in the Gas Streams and 4 ppm. in STVs. H_2S has also been reported in a Shaw Federal lease well completed in the Artesia Pool, located in the NE¼SW¼ of Sec. 13, T. 18 S., R. 27 E., NMPM; measuring 760 ppm. in the Gas Stream and 20 ppm. in STVs. Also, H_2S has been reported hundreds of times in an Empire Abo lease well in the SE¼NW¼ of Sec. 17, T. 18 S., R. 27 E., NMPM; measuring 29,600 ppm. in the Gas Streams and 100+ ppm. in STVs. H_2S has been reported on one occasion in Section 5, T. 18S., R. 27E. of at least 200ppm in the gas stream. H_2S has also been reported in the all portions of Section 04 with at least 200ppm H_2S in the Gas Stream. Possible loss of circulation in the Grayburg and San Andres. The potential for the occurrence of karst type feature is high. Anticipated Bottom Hole Pressure is expected to be approximately 2,300psi. with less than 2,000psi at the surface.

5. Other Mineral Deposits: Possible Halite and other associated salts in the Salado Group. Possible sand gravel and caliche deposits.

6. Potash:

Secretary's Oil-Potash Area	R-111-P Area	Not Applicable **X**

7. Other References:

New Mexico State Engineer's Water Well Listings;

Eddy County H_2S List;

Hendrikson, G. E., and Jones, R. S., 1952, Geology and Ground-Water Resources of Eddy County, New Mexico, Ground Water Report No. 3, New Mexico Bureau of Mines and Mineral Resources, Campus Station, Socorro, New Mexico.

8. No active mining claims are located in this vicinity.

Geologist Signature: Larry B. Fant Date: 04/10/08

Lobos Federal #1 Directional Well Path
Plan #1

Surface Location:	See Attached
Bottom Hole Location:	See Attached
KB Elevation:	3589.5'
Casing:	8 5/8" @ 1350'
Hole Size:	7 7/8"

Start building curve underneath 8 5/8" casing to make curves a smooth as possible to a TVD of 5200' at the BHL.

330 FSL & 1650 FWL are HARD LINES. We can be north, east, or northeast of these hard lines, but not south, west, or southwest.

Placing the BHL 10' inside the Hard Lines would be great.

Let me know if you have any questions.

Thanks,

Matt Brewer
Geologist
Mack Energy Corp.
(505)748-1288

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Mack Energy Corporation
LEASE NO.:	NM029135
WELL NAME & NO.:	Lobos Federal No 1
SURFACE HOLE FOOTAGE:	605' FSL & 2015' FWL
BOTTOM HOLE FOOTAGE	330' FSL & 1650' FWL
LOCATION:	Section 4 T18S., R27E., 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.

CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (505) 234-5972 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 of the well pad. The topsoil to be stripped is approximately 6 inches in depth. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. RESERVE PITS

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

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the
Carlsbad Field Office at (505) 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. 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 thirty (30) 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.

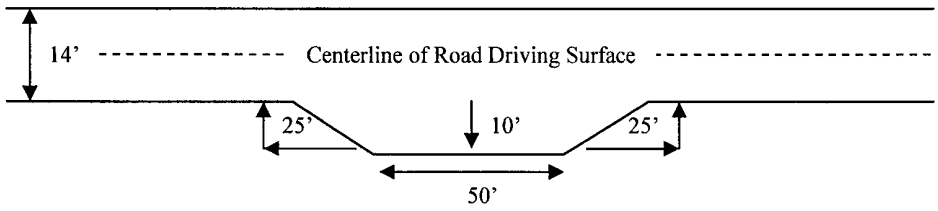
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

Standard Turnout – Plan View

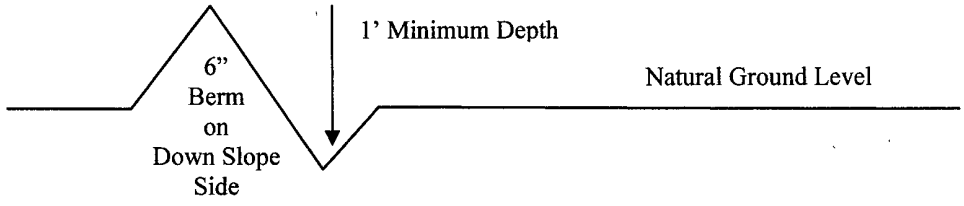


Drainage

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:

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

Culvert Installations
Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

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.

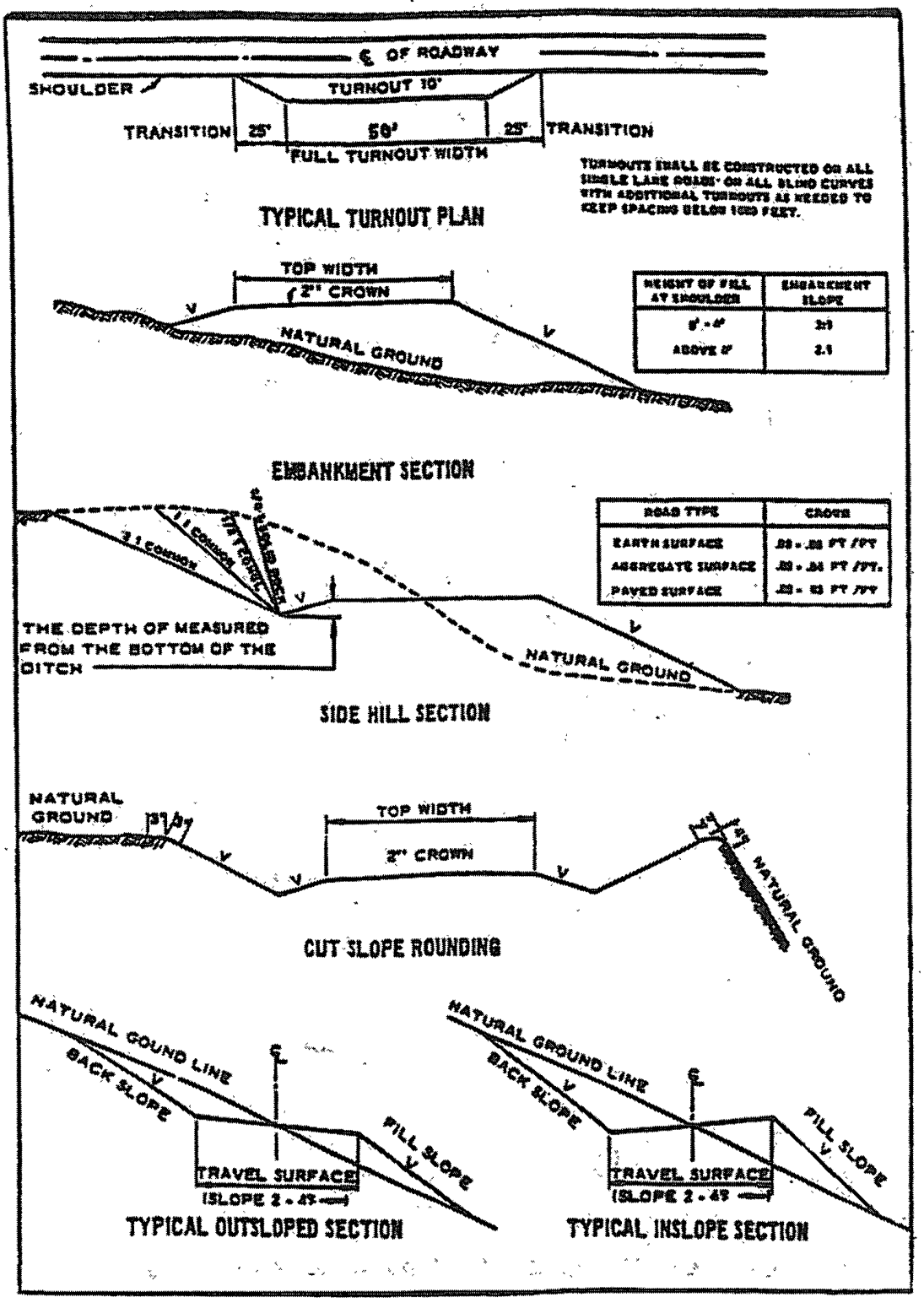
A gate shall be constructed and fastened securely to H-braces.

Fence Requirement
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

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



V. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

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

1. A Hydrogen Sulfide (H2S) Drilling Plan should be activated 500 feet prior to drilling into the **Yates** formation. **If Hydrogen Sulfide is encountered, please report measured amounts and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

B. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work.

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

High cave/karst.
Possible lost circulation in the Grayburg and San Andres formations.

1. The **8-5/8** inch surface casing shall be set at **approximately 1350** feet and cemented to the surface. **Additional cement may be required as excess with true gauge hole is only 30%.**

   Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing.

   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 a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

b. Wait on cement (WOC) time 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. (This is to include the lead cement).

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

a. The tests shall be done by an independent service company.

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

c. 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.

d. 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.

D. DRILL STEM TEST

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

WWI 051208

VI. 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.

Containment Structures
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

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, Munsell Soil Color Chart # 5Y 4/2

VII. INTERIM RECLAMATION & RESERVE PIT CLOSURE

A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting 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.

The operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions 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 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.

Seed Mixture 4, for Gypsum 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
Alkali Sacaton (Sporobolus airoides)	1.0
DWS⊆ Four-wing saltbush (Atriplex canescens)	5.0

⊆DWS: DeWinged Seed

*Pounds of pure live seed:

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

(Insert Seed Mixture Here)

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.