

FEB 06 2008
OCD-ARTESIA

OCD-ARTESIA

S

ATS-08-153
EA-08-276

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of work- <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No NMNM-117550	
1b Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6 If Indian, Allottee or Tribe Name	
2. Name of Operator Mack Energy Corporation 13837		7 If Unit or CA Agreement, Name and No	
3a Address P.O. Box 960 Artesia, NM 88211-0960		8, Lease Name and Well No. North Pole Federal #1 36994	
3b. Phone No (include area code) (505)748-1288		9 API Well No. 30-015-3607	
4 Location of Well (Report location clearly and in accordance with any State requirements*) At surface 330 FSL & 330 FWL - M At proposed prod zone 355 FSL & 330 FEL - P Roswell Controlled Water Basin		10. Field and Pool, or Exploratory Crow Flats; Wolfcamp 97102	
14 Distance in miles and direction from nearest town or post office* 12 miles northwest of Loco Hills, NM		11 Sec., T. R. M. or Blk. and Survey or Area Sec. 15 T16S R28E	
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 480	17 Spacing Unit dedicated to this well 160	
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 1320	19 Proposed Depth TVD 6691 10,650 10953 MD	20 BLM/BIA Bond No. on file Per Plan 12-20-07 NMB000286	
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3584' GR	22 Approximate date work will start* 11/30/07	23 Estimated duration 35 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 | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above), |
| 2 A Drilling Plan | 5 Operator certification |
| 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) | 6 Such other site specific information and/or plans as may be required by the authorized officer |

25 Signature <i>Jerry W. Sherrell</i>	Name (Printed/Typed) Jerry W. Sherrell	Date 11/5/07
Title Production Clerk		
Approved by (Signature) <i>/s/ James Stovall</i>	Name (Printed/Typed) <i>/s/ James Stovall</i>	Date FEB 01 2008
Title FIELD MANAGER	Office 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

*(Instructions on page 2)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

DISTRICT I

625 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 87505Form 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 97102	Pool Name Crow Flats; Wolfcamp
Property Code	Property Name NORTH POLE FEDERAL	Well Number 1
GRID No. 013837	Operator Name MACK ENERGY CORPORATION	Elevation 3584'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	15	16-S	28-E		330	SOUTH	330	WEST	EDDY

Bottom Hole Location If Different From Surface

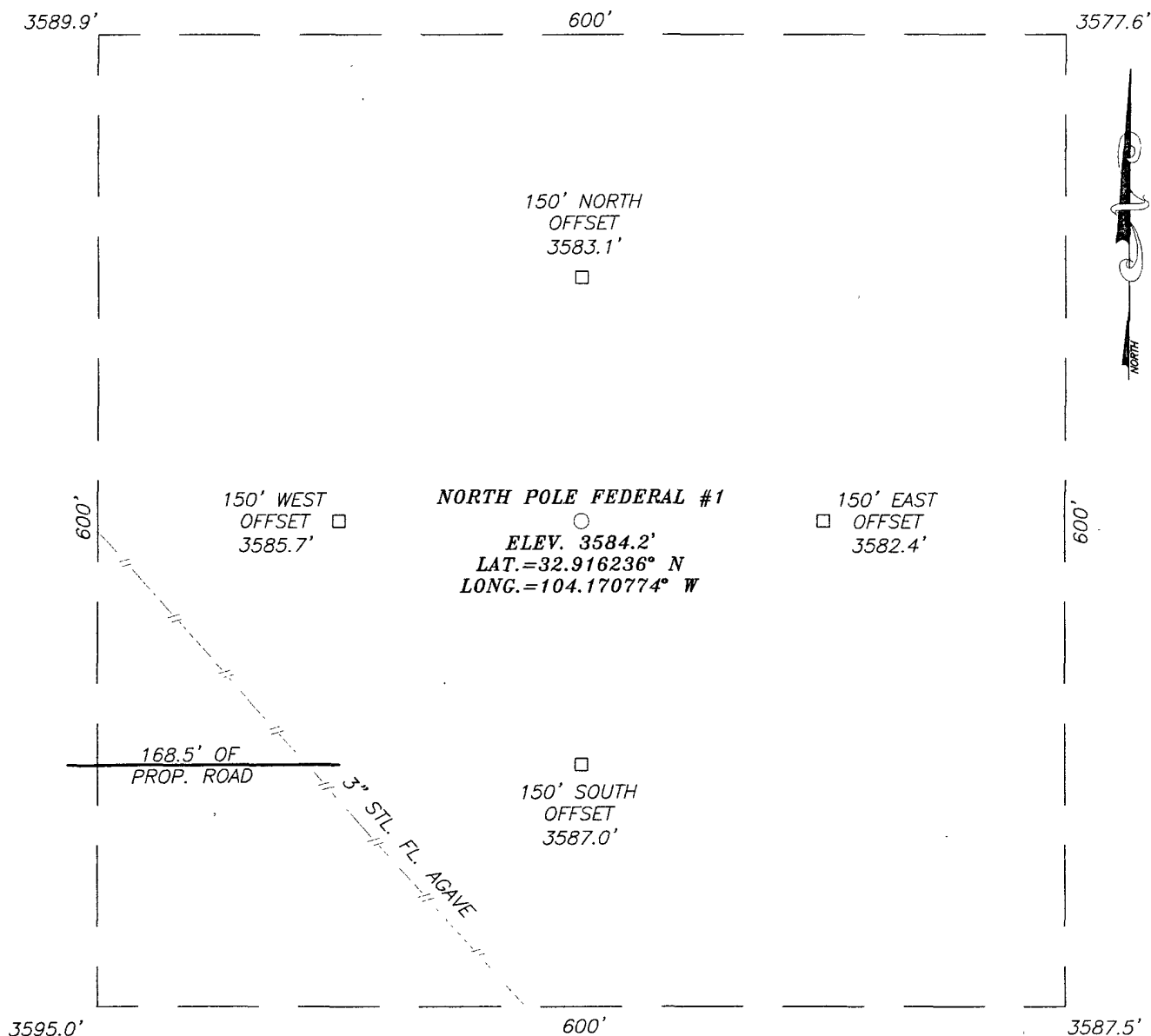
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	15	16-S	28-E		355	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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

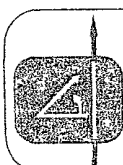
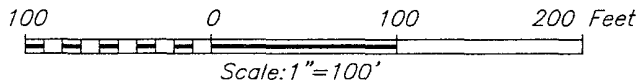
<p>GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION</p> <p>Y=697076.9 N X=549885.1 E</p> <p>LAT.=32.916236° N LONG.=104.170774° W</p> <p>DETAIL</p> <p>3589.9' 3577.6' 600' 3595.0' 3587.5'</p> <p>BOTTOM HOLE LOCATION Y=697373.1 N X=554459.6 E</p> <p>GRID AZ.=86°17'43" HORIZ. DIST.=4585.2'</p> <p>330' SEE DETAIL 330' 355' B.H.</p>		<p>OPERATOR CERTIFICATION</p> <p>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.</p> <p><i>Jerry W. Sherrell</i> 11/5/07 Signature Date Jerry W. Sherrell Printed Name</p> <p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>RONALD J. EIDSON OCTOBER 10, 2007 Date Surveyed 3239 Signature & Seal of Professional Surveyor <i>Ronald J. Eidson</i> 10/18/07 07.11.1404</p> <p>Certificate No. GARY G. EIDSON 12841 RONALD J. EIDSON 3239</p>
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SECTION 15, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF STATE HWY. #82 AND CO. RD. #214 (BARNAVAL DRAW), GO NORTH-NORTHWEST ON CO. RD. #214 APPROX. 6.5 MILES. VEER LEFT AT "Y" IN ROAD AND GO NORTHWEST APPROX. 2.0 MILES. VEER LEFT AT "Y" IN ROAD AND GO APPROX. 5.0 MILES. TURN LEFT AND GO SOUTH APPROX. 0.7 MILES. TURN LEFT AT PROPOSED ROAD SURVEY AND GO 168.5 FEET. THIS LOCATION IS APPROX. 300 FEET EAST.



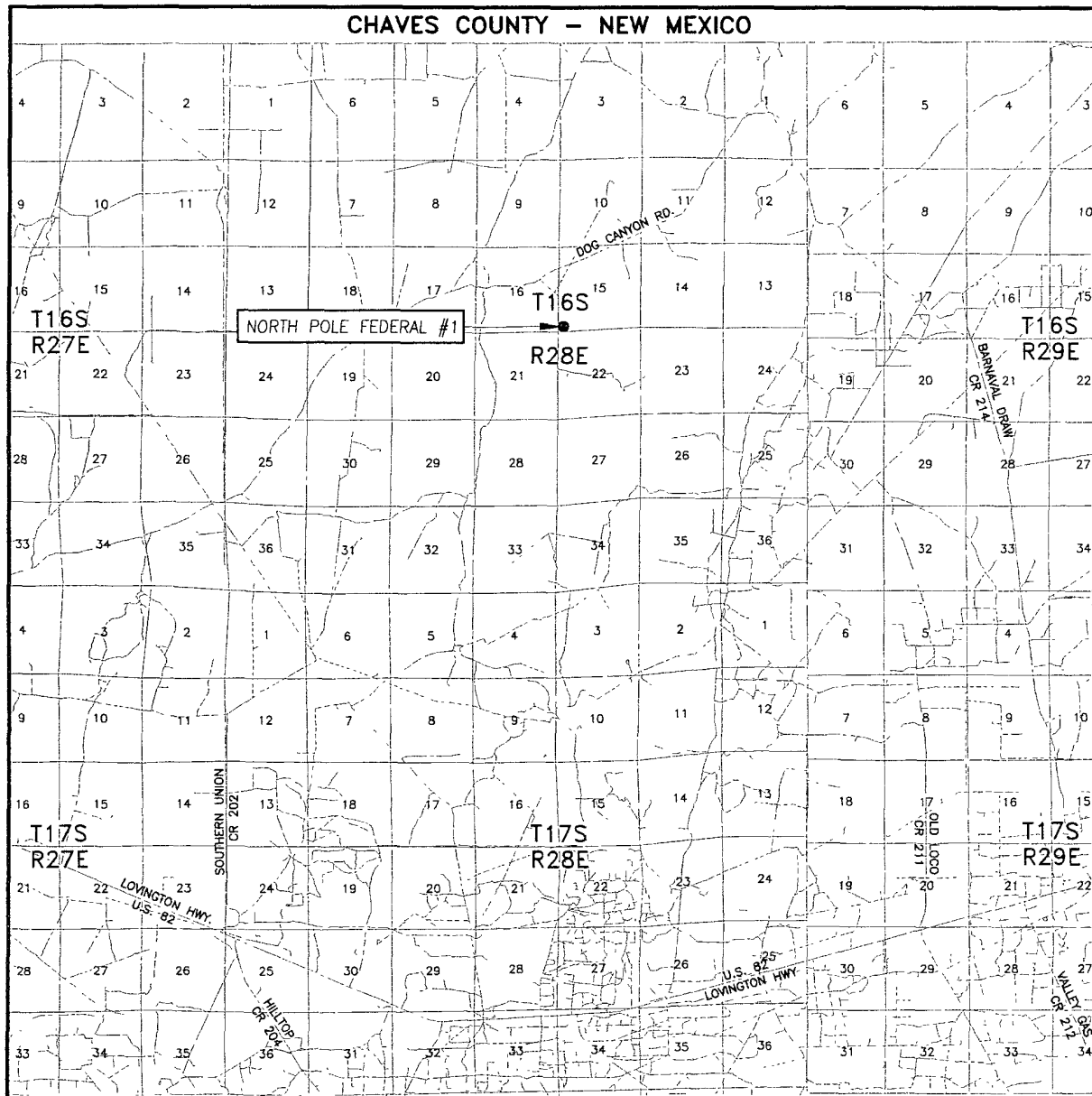
PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO
 HOBBS, N.M. 88240
 (505) 393-3117

MACK ENERGY CORPORATION

NORTH POLE FEDERAL #1 WELL
 LOCATED 330 FEET FROM THE SOUTH LINE
 AND 330 FEET FROM THE WEST LINE OF SECTION 15,
 TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO.

Survey Date: 10/10/07	Sheet 1 of 1 Sheets
W.O. Number: 07.11.1404	Dr By: DSS
Date: 10/16/07	Disk: .
07111404	Scale: 1"=100'

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 15 TWP. 16-S RGE. 28-E

SURVEY N.M.P.M.

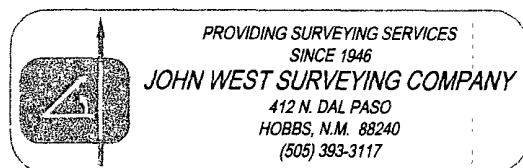
COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 330' FSL & 330' FWL

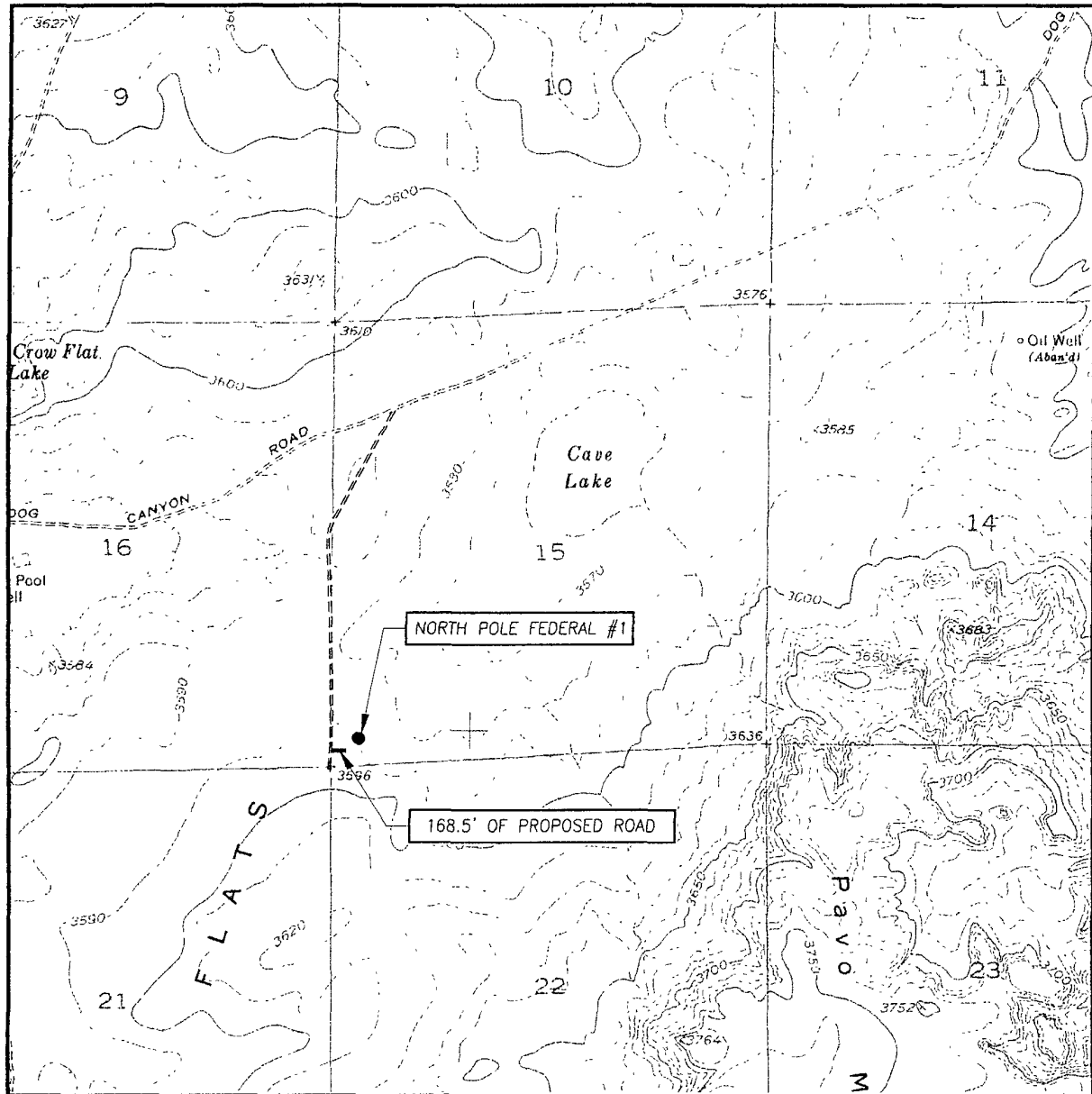
ELEVATION 3584'

OPERATOR MACK ENERGY CORPORATION

LEASE NORTH POLE FEDERAL



LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
DIAMOND MOUND, N.M. - 10'

SEC. 15 TWP. 16-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

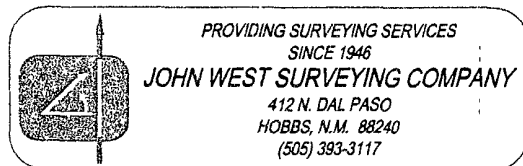
DESCRIPTION 330' FSL & 330' FWL

ELEVATION 3584'

OPERATOR MAC K ENERGY CORPORATION

LEASE NORTH POLE FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
DIAMOND MOUND, N.M.



DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface	Wolfcamp	6650'
San Andres	2220'		
Glorieta	3750'		
Tubb	4960'		
Abo	5730'		

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

Water Sand	150'	Fresh Water
San Andres	2220'	Oil/Gas
Abo	5730'	Oil/Gas
Wolfcamp	6650'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 330' and circulating cement back to surface will protect the surface fresh water sand. Salt Section will be protected by setting 8 5/8" casing to 1450' 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, burst/collapse/tension
17 1/2"	0-330'	13 3/8"	48#, H-40, ST&C, New, 7.84/3.352/13.42
12 1/4"	0-1450'	8 5/8"	24#, J-55, ST&C, New, 3.28/3.044/7.27
7 7/8"	0-6200'	5 1/2"	17#, HCP-110, LT&C, New, 3.13/2.6/2.21
7 7/8"	6200-10,650'	5 1/2"	17#, HCL-80, Buttress, New, 2.27/2.521/4.14

5. Cement Program:

13 3/8" Surface Casing: Class C, 300sx, yield 1.32.

8 5/8 Intermediate Casing: Class C, 850sx, yield 1.32.

5 1/2" Production Casing: Class C, 2500sx, 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 (2000 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 BOP will be nipped up on the 13 3/8" surface casing and tested to 1500 psi by a 3rd party. The BOP will then be nipped up on the 8 5/8" intermediate 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 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 #10) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #11) with a minimum 2000 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
0-330'	Fresh Water	8.5	28	N.C.
330-1450'	Brine	10	30	N.C.
1450'-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:

Attached to Form 3160-3
Mack Energy Corporation
North Pole Federal #1
SHL 330 FSL & 330 FWL Unit M, Sec. 15 T16S R28E
BHL 355 FSL & 330 FEL Unit P, Sec 15 T16S R28E
Eddy County, NM

- 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 120 degrees and estimated maximum bottom hole pressure is 3250 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 November 30, 2007. Once commenced, the drilling operation should be finished in approximately 35 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 Corp.

Eddy County, NM (NAD 27 NME)

North Pole Fed #1

North Pole Fed #1

Wellbore #1

Plan: Plan #1

Standard Planning Report

07 November, 2007

Bureau of Land Management.
Received

NOV 08 2007

Carlsbad Field Office
Carlsbad, N.M.



Scientific Drilling
Directional Drilling Operations



Scientific Drilling Planning Report



Database	EDM.2003.16 Single User Db	Local Co-ordinate Reference	Well North Pole Fed #1
Company	Mack Energy Corp	TVD Reference:	WELL @ 3602 00ft (KB Elev)
Project	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3602 00ft (KB Elev)
Site	North Pole Fed #1	North Reference:	Grid
Well	North Pole Fed #1	Survey Calculation Method:	Minimum Curvature
Wellbore	Wellbore #1		
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	North Pole Fed #1		
Site Position:	Northing	697,076 90 ft	Latitude: 32° 54' 58 450 N
From: Map	Easting	549,885 10 ft	Longitude: 104° 10' 14 786 W
Position Uncertainty:	0 00 ft	Slot Radius: ft	Grid Convergence: 0 09 °

Well	North Pole Fed #1		
Well Position	+N/-S	0 00 ft	Northing: 697 076 90 ft
	+E/-W	0 00 ft	Easting: 549,885 10 ft
Position Uncertainty	0 00 ft	Wellhead Elevation:	3,602 00 ft
		Ground Level:	3,584 00 ft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF200510	11/7/2007	8 33
			Dip Angle (°)
			60 82
			Field Strength (nT)
			49,346

Design	Plan #1		
Audit Notes:			
Version	Phase:	PLAN	Tie On Depth: 0 00
Vertical Section	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0 00	0 00	0 00
			Direction (°)
			86 17

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	
6,100 00	0 00	0 00	6,100 00	0 00	0 00	0 00	0 00	0 00	0 00	
6,862 63	89 54	86 17	6,588 00	32 34	483 00	11 74	11 74	0 00	86 17	
10,952 91	89 54	86 17	6,621 00	305 60	4,564 00	0 00	0 00	0 00	0 00	PBHL-NPF #1

Database:	EDM 2003 16 Single User Db	Local Co-ordinate Reference:	Well North Pole Fed #1
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3602 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3602 00ft (KB Elev)
Site:	North Pole Fed #1	North Reference:	Grid
Well:	North Pole Fed #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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
East HL-NPF #1 - South HL-NPF #1									
1,450 00	0 00	0 00	1,450 00	0 00	0 00	0 00	0 00	0 00	0 00
8 5/8" Casing									
6,100 00	0 00	0 00	6,100 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start 11.74°/100'									
6,200 00	11 74	86 17	6,199 30	0 68	10 19	10 21	11 74	11 74	0 00
6,300 00	23 48	86 17	6,294 45	2 70	40 32	40 41	11 74	11 74	0 00
6,400 00	35 22	86 17	6,381 46	5 97	89 14	89 34	11 74	11 74	0 00
6,500 00	46 96	86 17	6,456 69	10 35	154 61	154 95	11 74	11 74	0 00
6,600 00	58 70	86 17	6,517 00	15 67	233 98	234 50	11 74	11 74	0 00
6,700 00	70 44	86 17	6,559 86	21 69	323 93	324 66	11 74	11 74	0 00
6,800 00	82 18	86 17	6,583 48	28 17	420 71	421 65	11 74	11 74	0 00
6,862 63	89 54	86 17	6,588 00	32 34	483 00	484 08	11 74	11 74	0 00
6,862 99	89 54	86 17	6,588 00	32 36	483 35	484 43	0 00	0 00	0 00
EOC hold 89.54°									
6,900 00	89 54	86 17	6,588 30	34 84	520 28	521 44	0 00	0 00	0 00
7,000 00	89 54	86 17	6,589 11	41 52	620 05	621 44	0 00	0 00	0 00
7,100 00	89 54	86 17	6,589 91	48 20	719 82	721 44	0 00	0 00	0 00
7,200 00	89 54	86 17	6,590 72	54 88	819 60	821 43	0 00	0 00	0 00
7,300 00	89 54	86 17	6,591 53	61 56	919 37	921 43	0 00	0 00	0 00
7,400 00	89 54	86 17	6,592 33	68 24	1,019 14	1,021 43	0 00	0 00	0 00
7,500 00	89 54	86 17	6,593 14	74 92	1,118 92	1,121 42	0 00	0 00	0 00
7,600 00	89 54	86 17	6,593 95	81 60	1,218 69	1,221 42	0 00	0 00	0 00
7,700 00	89 54	86 17	6,594 75	88 28	1,318 46	1,321 42	0 00	0 00	0 00
7,800 00	89 54	86 17	6,595 56	94 96	1,418 24	1,421 41	0 00	0 00	0 00
7,900 00	89 54	86 17	6,596 37	101 64	1,518 01	1,521 41	0 00	0 00	0 00
8,000 00	89 54	86 17	6,597 18	108 32	1,617 78	1,621 41	0 00	0 00	0 00
8,100 00	89 54	86 17	6,597 98	115 01	1,717 56	1,721 40	0 00	0 00	0 00
8,200 00	89 54	86 17	6,598 79	121 69	1,817 33	1,821 40	0 00	0 00	0 00
8,300 00	89 54	86 17	6,599 60	128 37	1,917 10	1,921 40	0 00	0 00	0 00
8,400 00	89 54	86 17	6,600 40	135 05	2,016 88	2,021 39	0 00	0 00	0 00
8,500 00	89 54	86 17	6,601 21	141 73	2,116 65	2,121 39	0 00	0 00	0 00
8,600 00	89 54	86 17	6,602 02	148 41	2,216 42	2,221 39	0 00	0 00	0 00
8,700 00	89 54	86 17	6,602 82	155 09	2,316 20	2,321 38	0 00	0 00	0 00
8,800 00	89 54	86 17	6,603 63	161 77	2,415 97	2,421 38	0 00	0 00	0 00
8,900 00	89 54	86 17	6,604 44	168 45	2,515 74	2,521 38	0 00	0 00	0 00
9,000 00	89 54	86 17	6,605 24	175 13	2,615 52	2,621 37	0 00	0 00	0 00
9,100 00	89 54	86 17	6,606 05	181 81	2,715 29	2,721 37	0 00	0 00	0 00
9,200 00	89 54	86 17	6,606 86	188 49	2,815 06	2,821 37	0 00	0 00	0 00
9,300 00	89 54	86 17	6,607 66	195 17	2,914 84	2,921 36	0 00	0 00	0 00
9,400 00	89 54	86 17	6,608 47	201 85	3,014 61	3,021 36	0 00	0 00	0 00
9,500 00	89 54	86 17	6,609 28	208 54	3,114 38	3,121 36	0 00	0 00	0 00
9,600 00	89 54	86 17	6,610 08	215 22	3,214 16	3,221 35	0 00	0 00	0 00
9,700 00	89 54	86 17	6,610 89	221 90	3,313 93	3,321 35	0 00	0 00	0 00
9,800 00	89 54	86 17	6,611 70	228 58	3,413 70	3,421 35	0 00	0 00	0 00
9,900 00	89 54	86 17	6,612 50	235 26	3,513 48	3,521 34	0 00	0 00	0 00
10,000 00	89 54	86 17	6,613 31	241 94	3,613 25	3,621 34	0 00	0 00	0 00
10,100 00	89 54	86 17	6,614 12	248 62	3,713 02	3,721 34	0 00	0 00	0 00
10,200 00	89 54	86 17	6,614 93	255 30	3,812 80	3,821 33	0 00	0 00	0 00
10,300 00	89 54	86 17	6,615 73	261 98	3,912 57	3,921 33	0 00	0 00	0 00
10,400 00	89 54	86 17	6,616 54	268 66	4,012 34	4,021 33	0 00	0 00	0 00
10,500 00	89 54	86 17	6,617 35	275 34	4,112 12	4,121 32	0 00	0 00	0 00

Database:	EDM 2003 16 Single User Db	Local Co-ordinate Reference:	Well North Pole Fed #1
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3602 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3602 00ft (KB Elev)
Site:	North Pole Fed #1	North Reference:	Grid
Well:	North Pole Fed #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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)	
10,600 00	89 54	86 17	6,618 15	282 02	4,211 89	4,221 32	0 00	0 00	0 00	
10,700 00	89 54	86 17	6,618 96	288 70	4,311 66	4,321 32	0 00	0 00	0 00	
10,800 00	89 54	86 17	6,619 77	295 38	4,411 44	4,421 31	0 00	0 00	0 00	
10,900 00	89 54	86 17	6,620 57	302 07	4,511 21	4,521 31	0 00	0 00	0 00	
10,952 91	89 54	86 17	6,621 00	305 60	4,564 00	4,574 22	0 00	0 00	0 00	
PBHL-NPF #1										

Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-NPF #1	- plan hits target - Circle (radius 10 00)	0 00	0 00	6,621 00	305 60	4,564 00	697,382 50	554,449 10	32° 55' 1 401 N	104° 9' 21 238 W
East HL-NPF #1	- plan misses by 4584 08ft at 0 00ft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W0 00 H1,000 00 D0 00)	0 00	0 00	0 00	296 20	4,574 50	697,373 10	554,459 60	32° 55' 1 308 N	104° 9' 21 115 W
South HL-NPF #1	- plan misses by 4584 08ft at 0 00ft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W1,000 00 H0 00 D0 00)	0 00	0 00	0 00	296 20	4,574 50	697,373 10	554,459 60	32° 55' 1 308 N	104° 9' 21.115 W

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (ft)	Hole Diameter (ft)	
1,450 00	1,450 00	8 5/8" Casing	8 62500	12 25000	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment	
6,100 00	6 100 00	0 00	0 00	KOP Start 11 74°/100'	
6,862 99	6,588 00	32 36	483 35	EOC hold 89 54°	



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

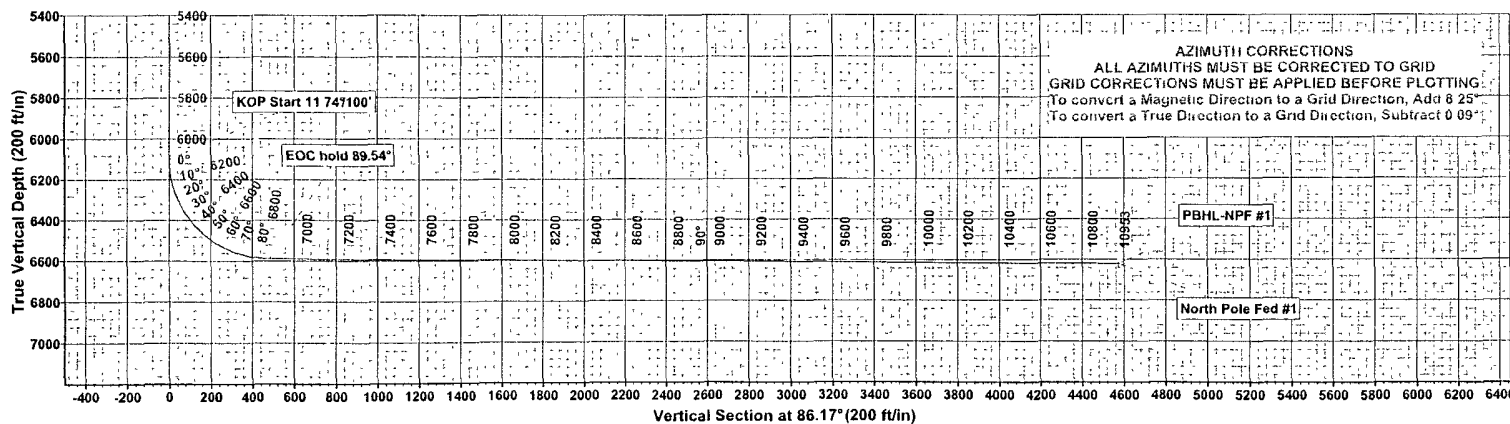
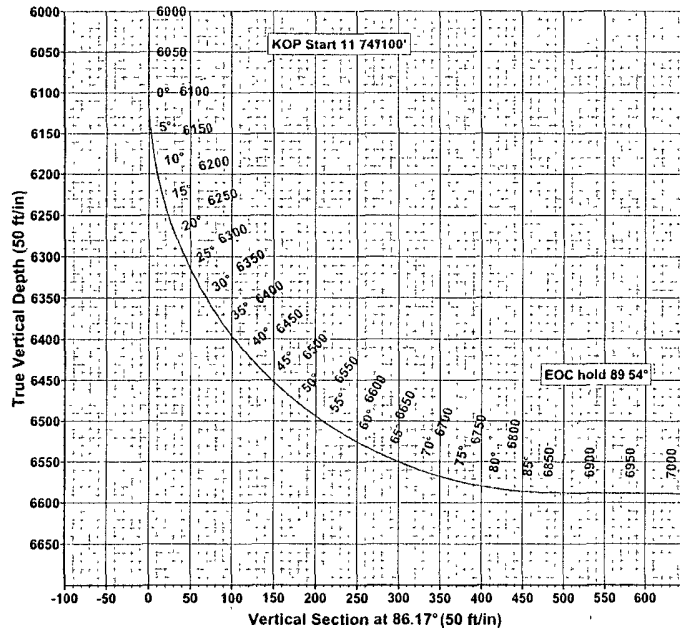


SECTION DETAILS

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	6100.00	0.00	0.00	6100.00	0.00	0.00	0.00	0.00	0.00	
3	6862.63	89.54	86.17	6588.00	32.34	483.00	11.74	86.17	484.08	
4	10952.91	89.54	86.17	6621.00	305.60	4564.00	0.00	0.00	4574.22	PBHL-NPF #1

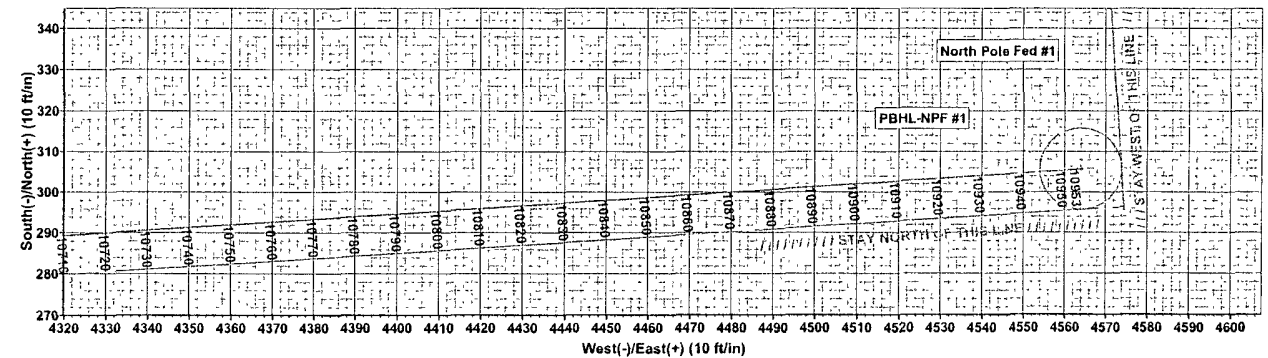
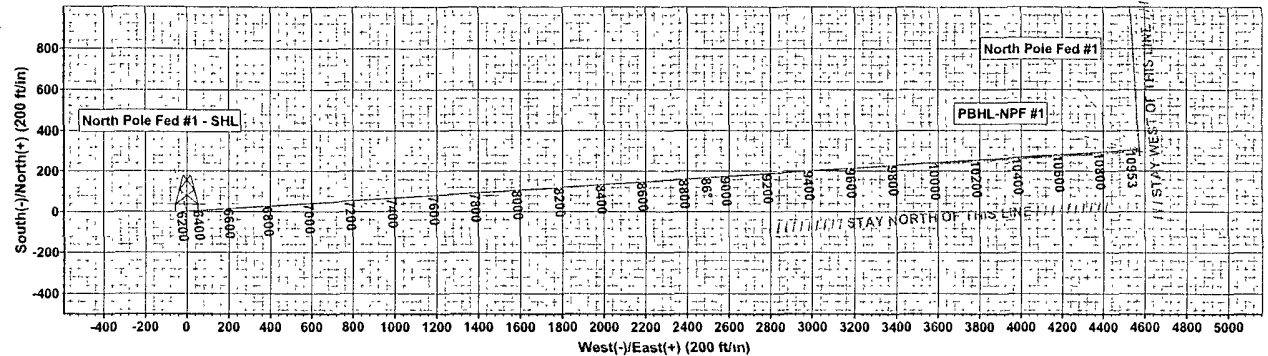
WELL DETAILS North Pole Fed #1

+N/-S	+E/-W	Ground Level:	3584.00	Latitude	Longitude	Slot
0.00	0.00	North	697076.90	549885.10	32°54' 58.450 N 104°10' 14.786 W	



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	North	Easting	Latitude	Longitude	Shape
East HL-NPF #1	0.00	296.20	4574.50	697373.10	554459.60	32°55' 1.308 N	104°9' 21.115 W	Rectangle (Sides: L0 0 0 W1000 00)
South HL-NPF #1	0.00	296.20	4574.50	697373.10	554459.60	32°55' 1.308 N	104°9' 21.115 W	Rectangle (Sides: L10 00.00 W0.00)
PBHL-NPF #1	6621.00	305.60	4564.00	697382.50	554449.10	32°55' 1.401 N	104°9' 21.238 W	Circle (Radius: 10.00)



AZIMUTH CORRECTIONS
ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 8.25°
To convert a True Direction to a Grid Direction, Subtract 0.09°



Azimuths to Grid North
True North: -0.09°
Magnetic North: 8.24°
Magnetic Field
Strength: 49346 4snT
Dip Angle: 60.82°
Date: 11/7/2007
Model: IGRF200510

PROJECT DETAILS Eddy County, NM (NAD 27 NME)

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

Plan: Plan #1 (North Pole Fed #1/Wellbore #1)

Created By: Julio Pina Date: 07-Nov-07

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____

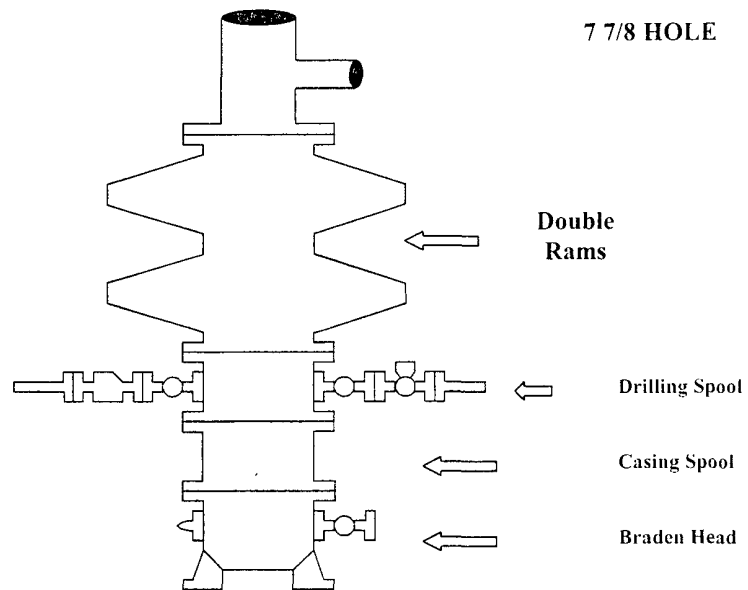
Attachment to Exhibit #9
NOTES REGARDING THE BLOWOUT PREVENTERS
North Pole Federal #1
Eddy County, New Mexico

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.

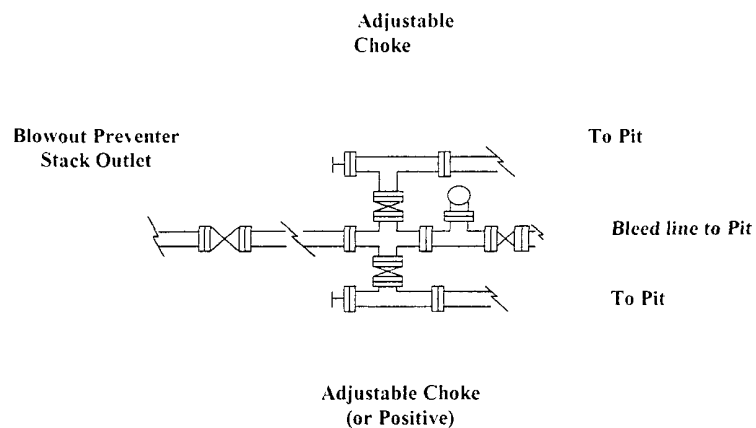
Mack Energy Corporation

Exhibit #9

BOPE Schematic



Choke Manifold Requirement (2000 psi WP minimum)
No Annular Required
See Exhibit #11 for Detail



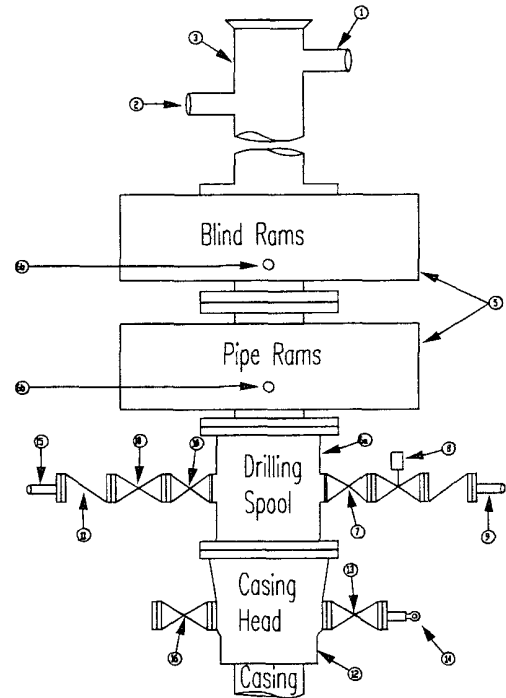
Mack Energy Corporation
Minimum Blowout Preventer Requirements
 2000 psi Working Pressure
 2 MWP
 EXHIBIT #10

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	
----	---------------	---------	--



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 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

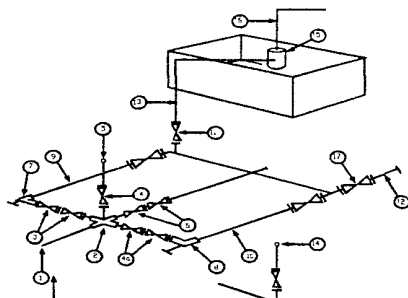
Exhibit #11

MINIMUM 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

Minimum requirements

No.		3,000 MWP			5,000 MWP			10,000 MWP		
		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' x 5'			2' x 5'			2' x 5'	
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 be 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 and 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 tubulars are to be used, personnel will 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

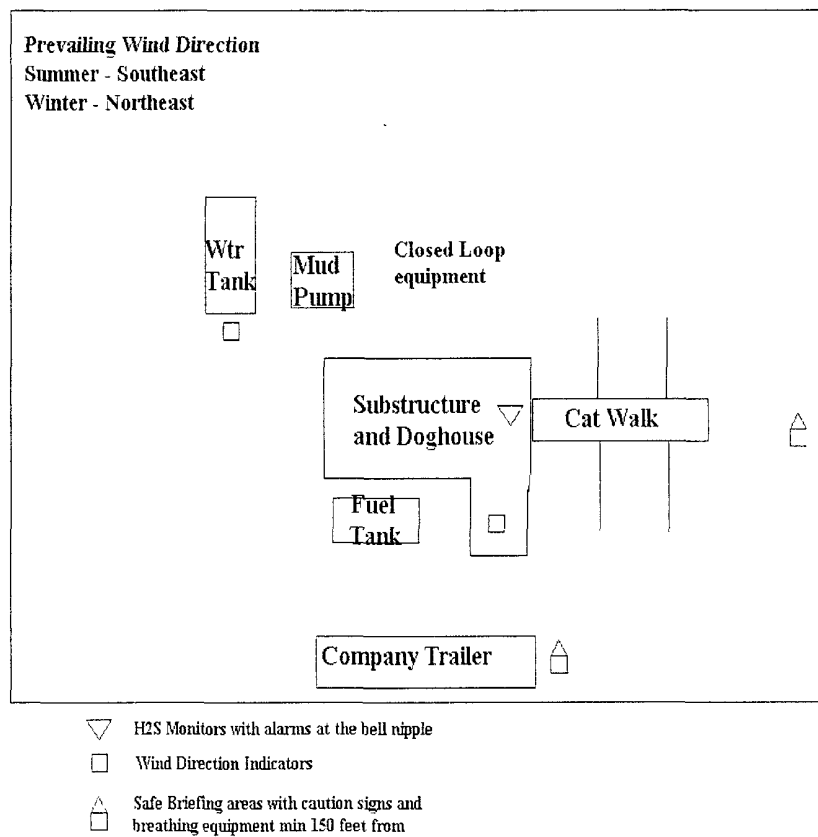
WARNING
YOU ARE ENTERING AN H₂S
AUTHORIZED PERSONNEL ONLY

- 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

1-505-748-1288

DRILLING LOCATION H2S SAFTY EQUIPMENT
Exhibit # 8



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 Hwy 82 and CR 214 go north 6.5 miles, turn left at Y 2 miles, turn left at Y 5 miles, turn left go south .7 mile, follow road survey 168' east to location.
- 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.

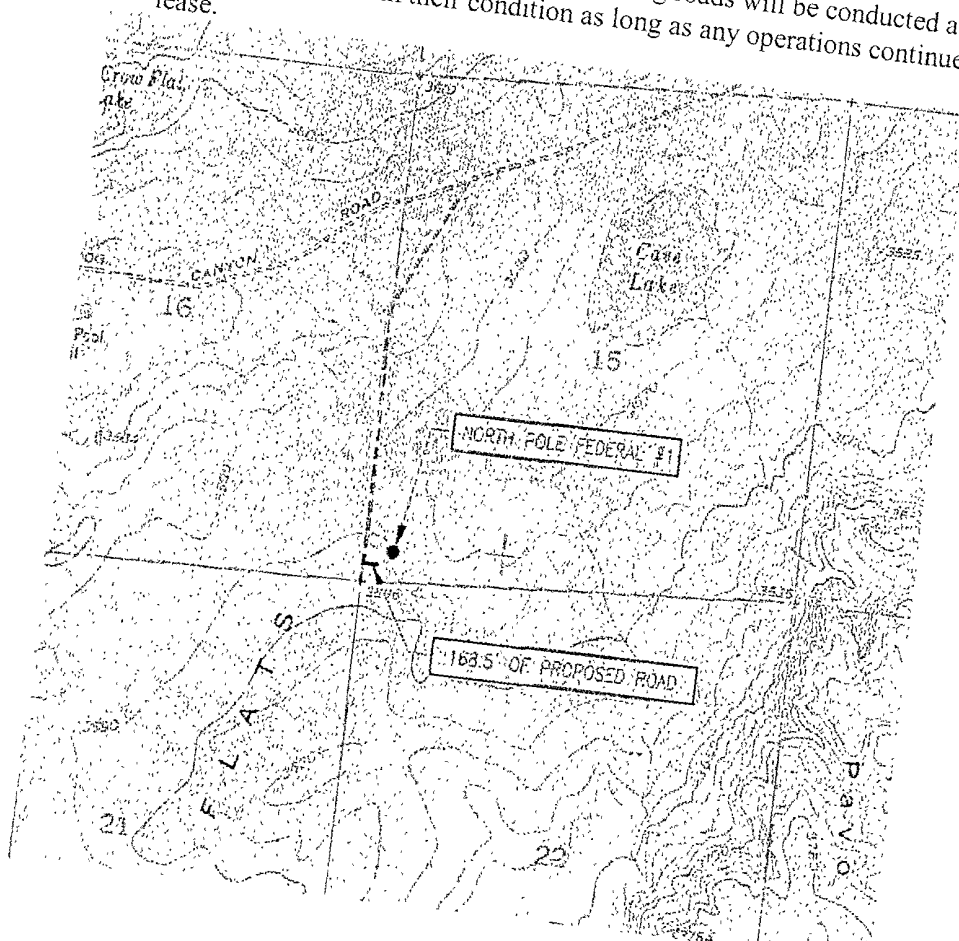


Exhibit #4

2. Proposed Access Road:

Exhibit #3 shows the 168.5' 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 location Tank Battery will be constructed.

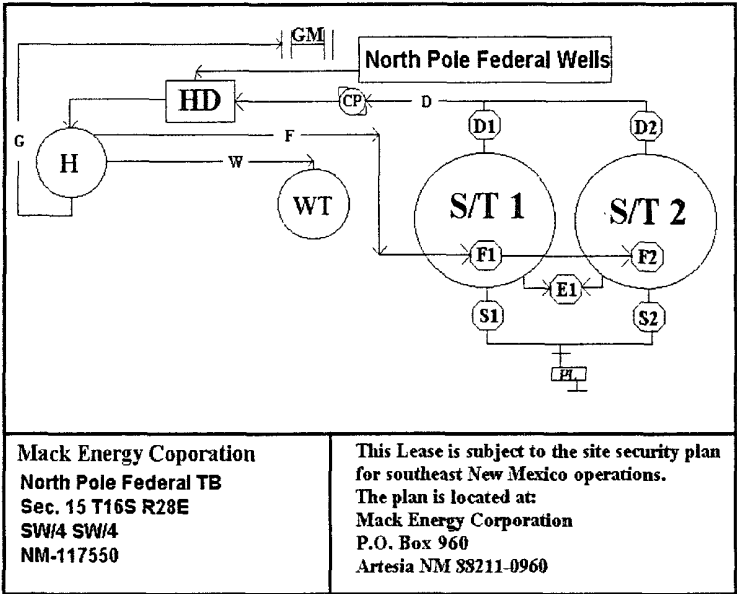
4. Location of Existing and/or Proposed Facilities:

- 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) Wolfcamp Completion: Will be sent to the North Pole 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.

Attached to Form 3160-3
Mack Energy Corporation
North Pole Federal #1
SHL 330 FSL & 330 FWL Unit M, Sec. 15 T16S R28E
BHL 355 FSL & 330 FEL Unit P, Sec 15 T16S R28E
Eddy County, NM

- 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:

Attached to Form 3160-3
Mack Energy Corporation
North Pole Federal #1
SHL 330 FSL & 330 FWL Unit M, Sec. 15 T16S R28E
BHL 355 FSL & 330 FEL Unit P, Sec 15 T16S R28E
Eddy County, NM

- A. Drill cuttings not retained for evaluation purposes will be disposed into 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.

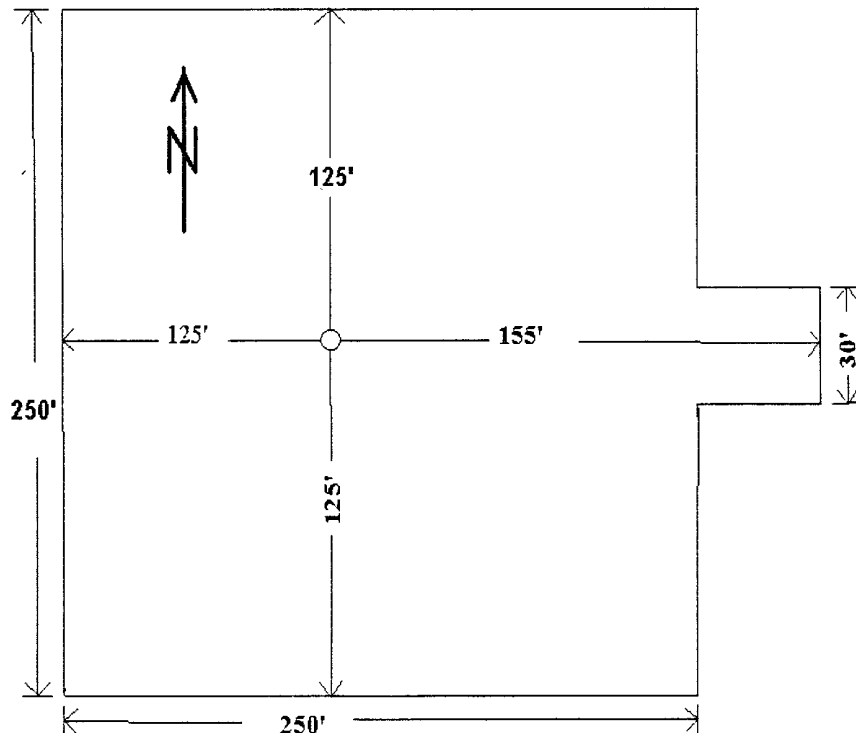


Exhibit #6

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

Attached to Form 3160-3
Mack Energy Corporation
North Pole Federal #1
SHL 330 FSL & 330 FWL Unit M, Sec. 15 T16S R28E
BHL 355 FSL & 330 FEL Unit P, Sec 15 T16S R28E
Eddy County, NM

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 lessee 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:

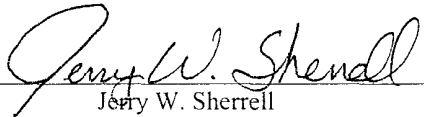
The Mack Energy Corporation representative responsible for assuring compliance with the surface use plan is as follows:

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: 11-5-07

Signed: 
Jerry W. Sherrell

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Mack Energy Corporation
LEASE NO.:	NMNM-117550
WELL NAME & NO.:	North Pole Federal # 1
SURFACE HOLE FOOTAGE:	330' FSL & 330' FWL
BOTTOM HOLE FOOTAGE:	355' FSL & 330' FEL
LOCATION:	Section 15, T. 16 S., R 28 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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Cave/Karst
- ☒ **Construction**
 - Notification
 - Topsoil
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
- ☒ **Interim Reclamation**
- ☐ **Final Abandonment/Reclamation**

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)

Mitigation Measures: The mitigation measures include the special drilling stipulations, the standard stipulation for surface pipelines, the standard stipulation for High Cave/Karst occurrence, and the standard stipulations for permanent resource roads.

North Pole Federal # 1: Closed Loop V-Door West

Cave and Karst

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Berming:

Any tank batteries will be constructed and bermed large enough to contain any spills that may occur.

Bermed areas will be lined with rip-stop padding to prevent tears or punctures in liners and lined with a permanent 20 mil plastic liner.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:

Rotary drilling techniques in cave or karst areas will include the use of fresh water as a circulating medium in zones where caves or karst features are expected. Use depth to the deepest expected fresh water as listed in the geologist report.

Directional Drilling:

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone as identified in the geologic report.

Casing:

All casing will meet or exceed National Association of Corrosion Engineers specifications pertaining to the geology of the location and be run to American Petroleum Institute and BLM standards.

Lost Circulation:

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported.

Regardless of the type of drilling machinery used, if a void (bit drops) of four feet or more and circulation losses greater than 75 percent occur simultaneously while drilling in any cave-bearing zone, drilling operations will immediately stop and the BLM will be notified by the operator. The BLM will assess the consequences of the situation and work with operator on corrective actions to resolve the problem.

Delayed Blasting:

Any blasting will be a phased and time delayed.

Abandonment Cementing:

Upon well abandonment the well bore will be cemented completely from 100 feet below the bottom of the cave bearing zone to the surface.

Record Keeping:

The Operator will track customary drilling activities, including the rate of penetration, pump pressure, weight on bit, bit drops, percent of mud returns, and presence or absence of cuttings returning to the surface. As part of customary record keeping, each detectable void or sudden increase in the rate of penetration not attributable to a change in the formation type should be documented and evaluated as it is encountered.

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) 234-5972 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 shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

Close Loop V- Door West

Tanks are required for drilling operations: No Pits.

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

C. 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 (575) 234-5972.

D. 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.

E. 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

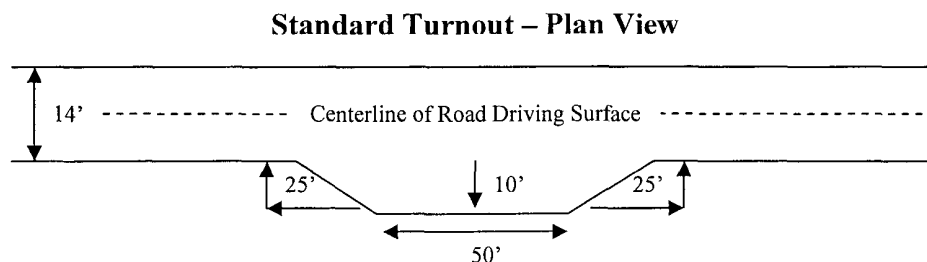
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

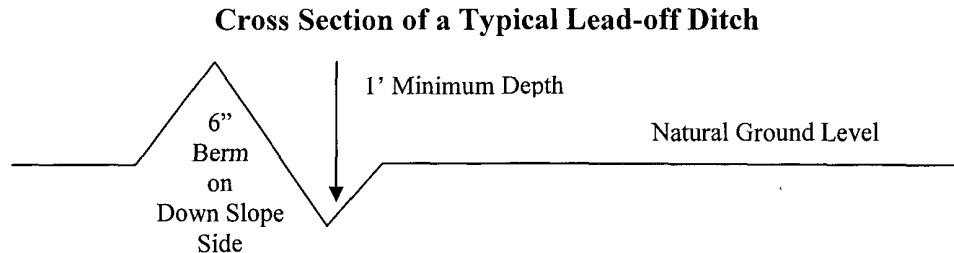
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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.



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:

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

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

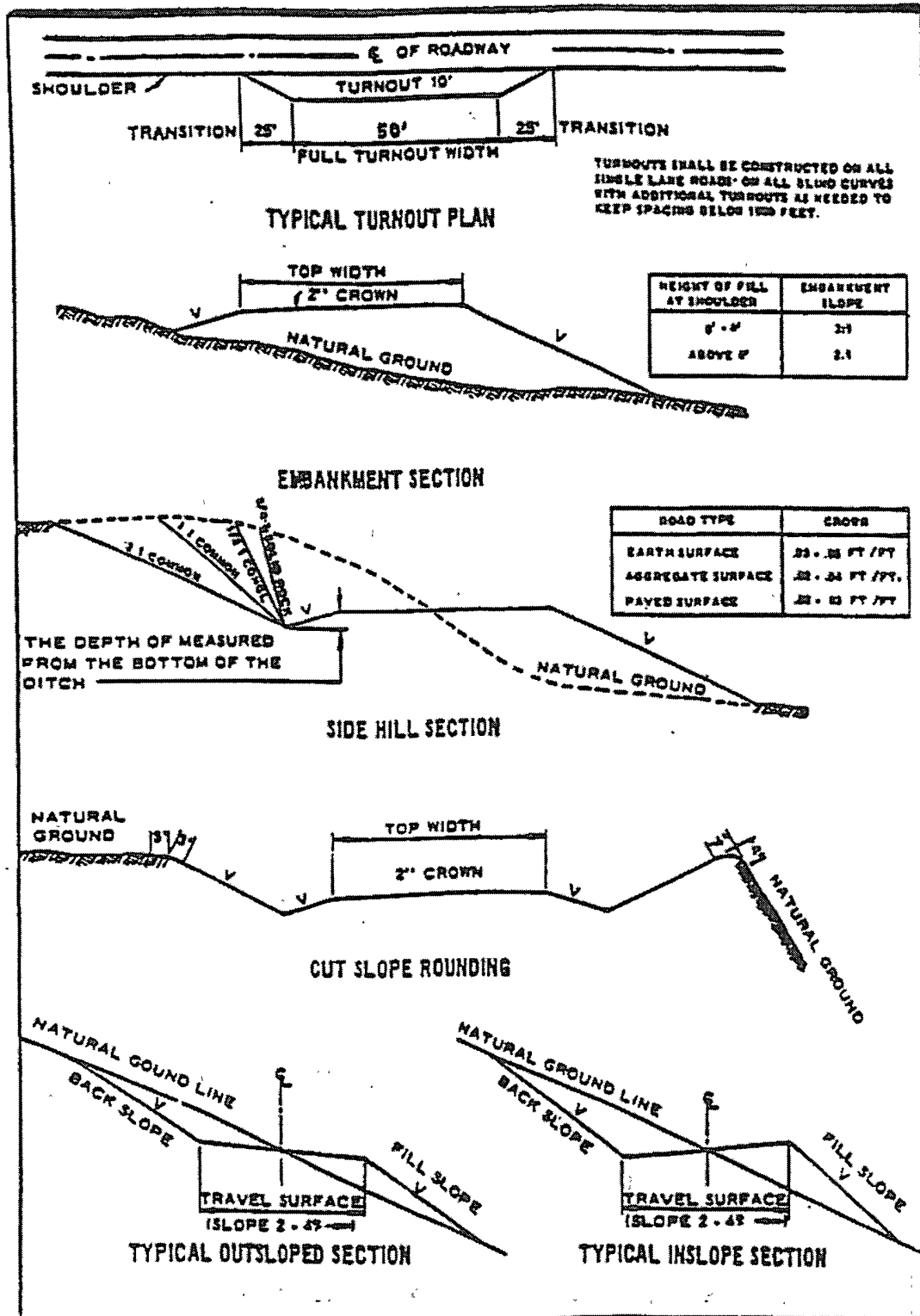
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 2 hours in advance for a representative to witness:

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

☒ **Chaves and Roosevelt Counties, T16S Eddy County**

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
(575) 627-0205.

1. **Hydrogen Sulfide has been reported as a hazard, but no measurements have been recorded. It is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide. If Hydrogen Sulfide is encountered, please report measurements 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.
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 are located, this does not include the dog house or stairway area.

B. CASING

1. The 13-3/8 inch surface casing shall be set **at approximately 330 feet in the Tansill formation** and cemented to the surface.
 - 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 action will be done prior to drilling out that string.

High cave/karst.

Possible lost circulation in the Grayburg and San Andres formations.

Possible high pressure gas bursts within the Wolfcamp formation

- 2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:

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

Formation below the 8-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i.

- 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.
- 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. **3M system based on pressures expected by BLM geologist in the Wolfcamp formation.**
- 4. The appropriate BLM office shall be notified a minimum of 2 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.
- e. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation **if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days**. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.
- f. A variance to test the surface casing and BOP/BOPE to the reduced pressure of 1500 psi is approved.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

Engineer on call phone (after hours): Carlsbad: (575) 706-2779

WWI 122007

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.

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

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the APD and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations 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 grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing.
 - (2) Earth-disturbing and earth-moving work.
 - (3) Blasting.
 - (4) Vandalism and sabotage.
- c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, 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 the holder

of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of 25 feet.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with 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. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land 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 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.

(March 1989)

IX. 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.

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 1, for Loamy 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 regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/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:

<u>Species</u>	<u>lb/acre</u>
Plains lovegrass (<i>Eragrostis intermedia</i>)	0.5
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sideoats grama (<i>Bouteloua curtipendula</i>)	5.0

*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.