ATS-08-460

OCD-HOBBS

Form 3160-3
(August 2007)

COPY

FORM APPROVED
OMB No 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
LC032573B

6 If Indian, Allotee or Tribe Name

7 If Unit or CA Agreement, Name and No.

1a. Type of work: ☑ DRILL ☐ REENTER

8. Lease Name and Well No. 301545
ELLIOTT B FEDERAL #20

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

9 API Well No.
30-025-39023

2. Name of Operator
RANGE OPERATING NEW MEXICO, INC. 227588

3a. Address
100 THROCKMORTON STREET, STE 1200
FORT WORTH, TX 76102

3b Phone No. *(include area code)*
(817) 869-4145

10 Field and Pool, or Exploratory
BLINEBRY/TUBB/DRINKARD

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 930' FSL & 2310 FEL Unit O
At proposed prod. zone 930' FSL & 2310 FEL

11. Sec., T. R. M. or Blk. and Survey or Area
UNIT O, SEC 6, T22S, R37E

14 Distance in miles and direction from nearest town or post office*
2 MILES SE OF EUNICE, NEW MEXICO

12. County or Parish
LEA

13. State
NM

15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any)	16 No. of acres in lease	17 Spacing Unit dedicated to this well
930	40	40
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft	**19 Proposed Depth**	**20. BLM/BIA Bond No. on file**
	6850	NM2399
21 Elevations (Show whether DF, KDB, RT, GL, etc.)	**22 Approximate date work will start***	**23. Estimated duration**
3447	07/07/2008	9 DAYS

24. Attachments

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

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

25 Signature	Name *(Printed/Typed)*	Date
Linda Brown	LINDA BROWN	04/11/2008

Title
REGULATORY ANALYST

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Don Peterson	/s/ Don Peterson	JUN 11 2008

Title	Office
FOR FIELD MANAGER	CARLSBAD FIELD OFFICE

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

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

SEE ATTACHED FOR CONDITIONS OF APPROVAL

RECEIVED
JUN 13 2008
HOBBS OCD

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

CAPITAN CONTROLLED WATER BASIN

CONDITIONS OF APPROVAL: Intent to drill ONLY-- CANNOT produced commingle until the Down Hole Commingle has been approved by OCD Santa Fe Office.

RANGE RESOURCES

May 2, 2008

State of New Mexico
Bureau of Land Management
620 E. Greene Street
Carlsbad, NM 88220-6292

Re: Elliott B Federal #20
Sec 6, T22S, R37E
Lea County, NM

Range Operating New Mexico, Inc. has reached a land use agreement with the property owner, Range Operating New Mexico, Inc.

Range Resources Corporation
100 Throckmorton Street Suite 1200 Fort Worth, Texas 76102 Tel: (817) 870-2601 Fax: (817) 870-2316

United State Department of the Interior

Bureau of Land Management

ROSWELL FIELD OFFICE
2902 West Second Street
Roswell, New Mexico 88201

Statement Accepting Responsibility for Operations

Operator Name:	Range Operating New Mexico, Inc.
Street or Box:	100 Throckmorton St., St. 1200
City, State:	Fort Worth, TX
Zip Code:	76102

The undersigned accepts all applicable terms, conditions, stipulations and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Lease No.:	LC-032753-B
Legal Description of Land:	Sec. 6, T22S, R37E SW/4 of SE/4
Formations:	Blinebry-Tubb-Drinkard
Bond Coverage: (State, Nationwide or Individual)	Statewide
BLM Bond File No.:	NM2399

Authorized Signature: Joanna Poindexter

Title: Petroleum Engineer

Date: 3/20/08

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025-39023	06660/60240/19190	Blinebry O&G (Oil) Tubb O&G (Oil) / Drinkard

Property Code	Property Name	Well Number
301545	ELLIOTT "B" FEDERAL	20

OGRID No.	Operator Name	Elevation
227588	RANGE OPERATING	3447'

Surface Location

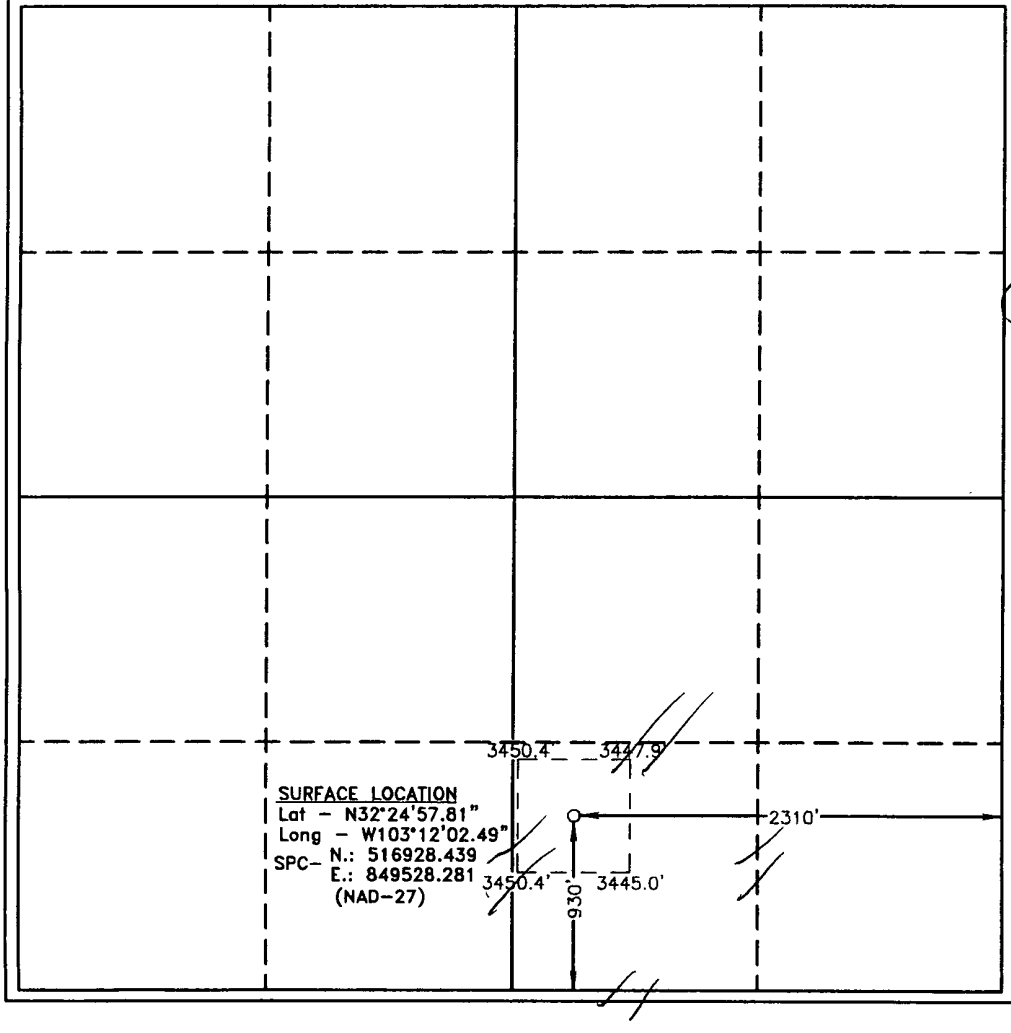
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	6	22 S	37 E		930	SOUTH	2310	EAST	LEA

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

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

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



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Linda Brown 3/24/08
Signature Date

Linda Brown
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 supervison, and that the same is true and correct to the best of my belief

MARCH 13, 2008
Date Surveyed

Signature & Seal of Professional Surveyor

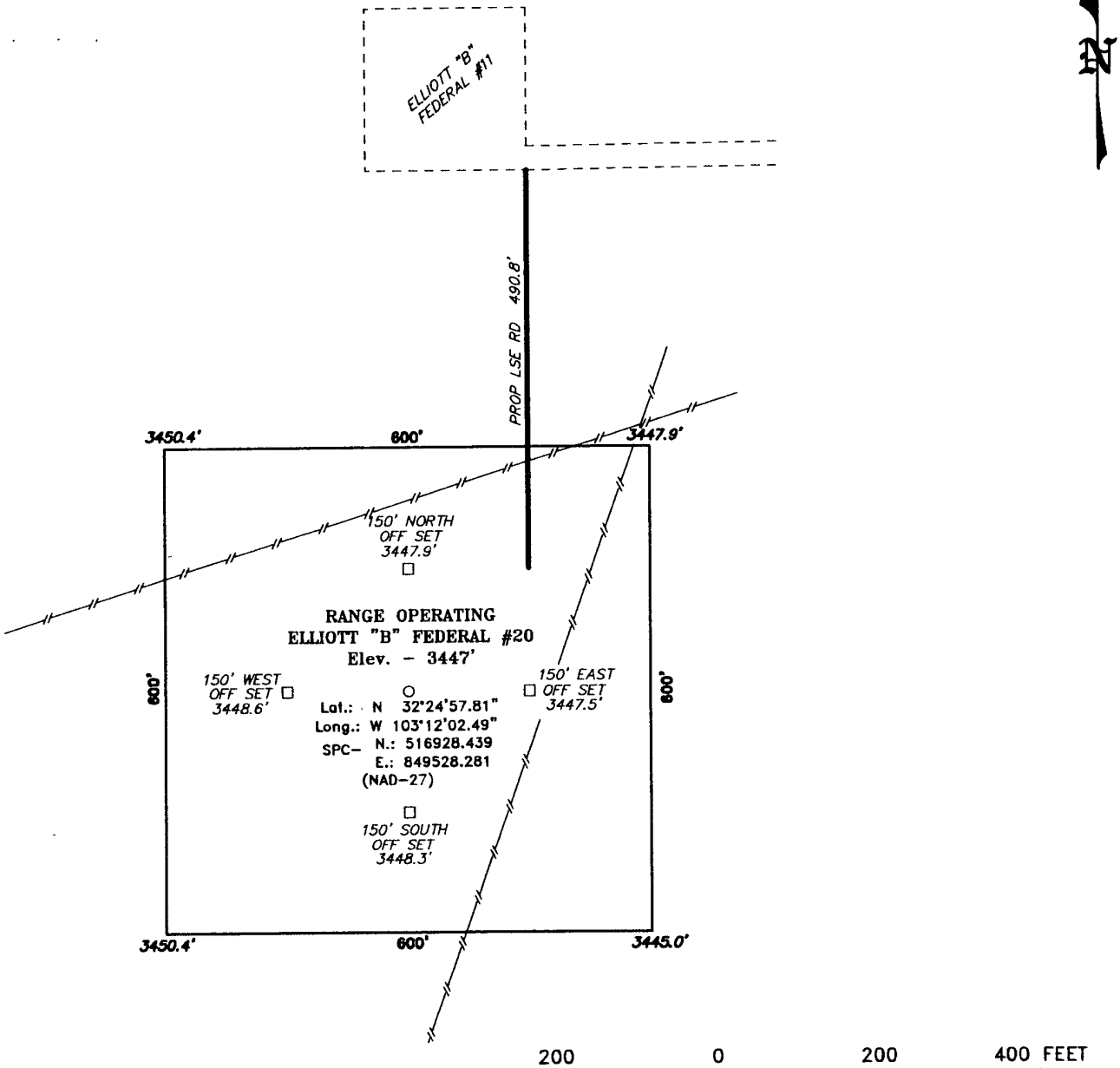
NEW MEXICO 7977

W.O.

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

SECTION 6, TOWNSHIP 22 SOUTH, RANGE 37 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF LEGION AND DELAWARE BASIN, GO NORTH 1.1 MILES TO LEASE ROAD, ON LEASE ROAD GO 1.5 MILES WEST TO LEASE ROAD, ON LEASE ROAD GO 0.5 MILES NORTH THENCE 0.1 MILES NORTHWEST TO THE #11 LOCATION AND PROPOSED LEASE ROAD.

BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO

W.O. Number: 19358	Drawn By: J. M. SMALL
Date: 03-14-2008	Disk: 19358W JMS

RANGE OPERATING

REF: ELLIOTT "B" FEDERAL #20 / WELL PAD TOPO

THE ELLIOTT "B" FEDERAL #20 LOCATED 930' FROM THE SOUTH LINE AND 2310' FROM THE EAST LINE OF SECTION 6, TOWNSHIP 22 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

Survey Date: 03-13-2008 | Sheet 1 of 1 Sheets

Elliott 'B' Federal #20
DRILLING PROGRAM

PROPOSED DEPTH: 6850' MD / 6850' TVD
GROUND ELEVATION: 3447'
KB: 13'
LOCATION: 930' FSL & 2310' FEL, Sec 2, T 22 S, R 37 E, Lea County, NM
ANTICIPATED PRODUCTIVE FORMATION: Blinebry/Tubb/Drinkard

1. **Geologic Name of Surface Formation**
   a. Permian

2. **Estimated Tops of Geological Markers & Depths of Anticipated Fresh Water, Oil or Gas:**

a.	Rustler	1090'	Water
b.	Penrose-Skelly	3490'	
c.	San Andres	3915'	
d.	Glorieta	5095'	
e.	Blinebry	5475'	Oil
f.	Tubb	6150'	Oil
g.	Drinkard	6330'	Oil
h.	Abo	6710'	

No other formations are expected to yield oil, gas or fresh water in measurable volumes. Potash / fresh water sands will be protected by setting 8 5/8" casing at 1115' and circulating cement to surface. The Morrow intervals will be isolated by setting 5 ½" casing to total depth and circulating cement 200' inside the shoe of the 8 5/8" casing.

3. **Casing Program:**

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used
12 1/4"	0'– 1115'	8 5/8"	24#	ST&C	J-55	New
7 7/8"	0' – 6850'	5 /12"	17#	LT&C	J-55	New

Safety factors: Burst 1.2 Collapse 1.2 Tension 1.8

4. **Cement Program:**

a.	8 5/8"	Surface	Cement to surface with 350sx 35:65 Poz C,5%KCl,1/4pps Celloflake,6% Bentonite,12.8ppg, 1.90 cu ft/sx, Tail-150sx C,1%CaCl,1/4pps Celloflake 14.8ppg, 1.34 cu ft/sx, TOC @ surface.

b.	5 1/2"	Production	Cement with Stage 1: Lead-250sx 50:50:10 Poz C, 5%KCl, 1/4pps Celloflake, 0.01gps FP-6L, 11.8ppg, 2.45cu ft/sx, Tail-550sx 50:50:2 Poz C, 5% KCl, 0.01gps FP-6L, 14.20ppg, 1.29cu ft/sx, DV @ 3500', Stage2: Lead-700sx 50:50:10 Poz C, 5% KCl, 0.01gps FP-6L, ¼pps Celloflake, 11.8ppg, 2.45cu ft/sx, Tail-100sx Premium Plus C, 14.80ppg, 1.33cu ft/sx, TOC @ 900'.

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach approximately 200' above the 8 5/8" casing shoe.

SEE COA

5. Pressure Control Equipment:

The blowout preventor equipment (BOP) as shown below will consist of a (2M system) double ram type (3000 psi WP) preventor and rotating head. Both units will be hydraulically operated and the ram type preventor will be equipped with blind rams on top and 4 1/2 " drill pipe rams on bottom. The BOP will be installed on the 8 5/8" surface casing and utilized continuously until total depth is reached. **ALL BOP's and associated equipment will be tested to 1000 psi high and 250 psi low with the rig pump.** Prior to drilling out the 8 5/8" casing shoe, the BOP's AND Hydril will be tested per BLM Drilling Operations Order #2.

SEE COA

Pipe rams will be operated and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily driller's log. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the ram-type BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines and choke manifold having a minimum 2000 psi WP rating.

6. Proposed Mud Circulation System

Depth	Mud Wt.	Visc	Fluid Loss	Type System
0' – 1115'	8.4	32-40	NC	Fresh Water
1115'–6850'	9.3–10	29	NC	Cut Brine/Brine

The necessary mud products for weight addition and fluid loss control will be on location at all times.

7. Auxiliary Well Control and Monitoring Equipment:

a. A Kelly cock will be in the drill string at all times.
b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 8 5/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 8 5/8" shoe until total depth is reached.

8. Logging, Coring, and Testing Program:

Mudlogging: Mud System 10.1 lbs/gal Brine-Suttles Unit on @2500' w/ gas monitoring equipment & cuttings collected
Drillstem Tsts: No DST's are planned-should the need for a DST arise, a procedure, equipment to be used & safety measures will be provided via sundry notice to the BLM
Wireline Logs: Upon TD, the following open hole logs will be run from TD to surface casing point:

1. Dual Laterolog-Micro Guard, Spectral Gamma Ray, Compensated neutron, Spectral Density
2. Delta T Sonic & Rotary Sidewall Cores are optional services for the open hole
3. From Surface Casing point to Surface, Compensated neutron & Gamma Ray will be run in cased portion of hole

Whole Coring: No Whole Coring in planned.

9. Potential Hazards:

a. No abnormal pressures or temperatures are expected. There is no known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6 No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP 2800 psi and Estimated BHT 130°. No H2S is anticipated to be encountered.

10. Anticipated Starting Date and Duration of Operations:

a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 15 days. If production casing is run then an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

Range Operating NM

Elliot 'B' Federal #20
Lea County, NM
Drilling Program

Prepared By: Nick Christ
4/17/2008

PROPOSED DEPTH: 6850' MD / 6850' TVD
GROUND ELEVATION: 3447'
KB: 13'

LOCATION: 930' FSL & 2310' FEL, Sec 2, T 22 S, R 37 E, Lea County, NM

ANTICIPATED PRODUCTIVE FORMATION: Blinebry/Tubb/Drinkard

API NO:

GENERAL:
The Elliot 'B' #20 will be a 6850' Blinebry/Tubb/Drinkard producer in Lea Co., New Mexico drilled on a daywork basis by Patterson rig #63. A 12-1/4" surface hole will be drilled to +/-1100'. A string of 8-5/8" casing will be run and cemented to surface.

Nipple up BOPs and test same, drilling will continue with a 7-7/8" hole to a total depth of 6850'. Actual TD will be spaced so that casing will be landed where the casing head can be screwed on. After electric-logging the open-hole interval, a string of 5-1/2" casing will be run and cemented from total depth to 200' up inside the surface casing.

ESTIMATED FORMATION TOPS: (Log Depths)

Upper Permian Rustler Fm	+2370 ft	1090 ft MD	
Upper Permian PS Fm	-30 ft	3490 ft MD	
Upper Permian San Andres Fm	-455 ft	3915 ft MD	
Upper Permian Glorieta Fm	-1635 ft	5095 ft MD	
Upper Permian Blinebry Fm	-2015 ft	5475 ft MD	*
Lower Permian Tubb Fm	-2690 ft	6150 ft MD	+
Lower Permian Drinkard Fm	-2870 ft	6330 ft MD	+
Lower Permian Abo Fm	-3250 ft	6710 ft MD	+
PTD		6850 ft MD	

*= Primary Reservoir Targets
+= Secondary Reservoir Targets

DETAILED DRILLING PROCEDURE

TIMES AND EVENTS TO NOTE ON DRILLING REPORT:

A. SPUD (date and time)
B. TD (each interval date and time)
C. Cement in place (date and time)
D. RIG RELEASE (date and time)

BOTTOM HOLE ASSEMBLIES

BHA #1: (0-1100') - Bit, (2) 8" DC, IBS, 8" DC, IBS, 8" DC, (20) 6.25" DC's (Pend 60/90)

BHA #2: (1100'-4800') - Bit, 3-PT Roller Reamer, Pup Joint, 3-PT Roller Reamer, 6.25" DC, 3-PT Roller Reamer, 6.25" DCs (Packed)

BHA #3: (4800'-6700') - Bit, 6.25" DC's (Slick)

The IBS's will be layed down prior to drilling the Tubb.

BIT & HYDRAULICS PLAN

Bit #	Size	Mfg.	Type	IADC	Jets	Out	Hrs	ROP	WOB	RPM	GPM	PSI
1	12.25	SEC	QH04R	417X		1100'	25	44	5-45	90-120		
2	7.875	SEC	FMH655ZR	M424		4800'	69	54	5-25	60-90	350	
3	7.875	SEC	FMH655ZR	M424		6700'	35	54	5-25	60-90	350	
							129					

MUD PROGRAM

INTERVAL	MUD WEIGHT	FUNNEL VIS.	API Fluid Loss
0' - 1100'	8.6 – 9.6	32-34	N/C
1100' - 6500'	10.0	28	N/C
6500' - 6700'	10.0 – 10.2	30-34	12cc

1) Level and build an all-weather location and access road.

2) MIRU Patterson #63. Perform rig safety inspection and ensure that everything is in proper working order prior to spudding well.

3) Notify NMOCD and BLM of intent to spud, run casing and cement each 24 hours in advance 505-748-1283.

4) Spud well with 12.25" insert RR bit. BHA should consist of (4) 8" drill collars and (20) 6.25" drill collars. Drill to +/-

1100' with surveys at 500' and 1000' (Actual depth will be determined by the length of the casing). Circulate hole clean. Sweep and condition hole to run casing. Pull out of hole, lay down 12.25" BHA.

NOTE: Mud through this interval will be a native spud mud supplemented with Bentonite. Lime may be used to flocculate the mud and increase the yield point to clean the hole. Mix paper for seepage control. A closed loop system will be used on this well. MI-Swaco will be providing a primary shaker, a mud cleaner, and a centrifuge. They will have a two man crew on site working 12 hour towers. Utilize all solids control equipment to control drill solids. Use water to control mud weight and viscosity. Maintain mud weight at 8.6 – 9.6 ppg. All the solids will be dumped into a roller bin located on the opposite side of the steel pits from the rig. Allow the roller bins to fill to 80% before rolling in a new bin. Contact Zia Transports when the roller bins are ready to be dumped. The roller bins should be emptied prior to cementing, preferably while running casing.

Fluid levels should be monitored while drilling. Contact Sierra Trucking at (505) 390-1986 as Brine is needed. Brine delivery should take about one hour.

CIOSED LOOP NOTES: See Closed Loop Program for details

5) Rig up casing crew and run 8-5/8", 24.0#, J-55, ST&C as follows :

1-8-5/8" Texas Pattern Shoe
Single Shoe Joint
1-8-5/8" Insert Float Collar
1-8-5/8" x 12-1/4" Centralizer 10' above shoe
1-8-5/8" x 12-1/4" Centralizer every other joint
1-8-5/8" Stop Ring

6) Circulate for at least bottoms up plus one casing volume with mud prior to cementing. Cement surface casing according to cement recommendation. NOTE: Have field bin, cement, and circulating equipment on location prior to casing job. Also, make sure the cement company brings sugar to mix with any excess cement returned to surface.

a) Review rates, pressures, displacement volumes and casing pressure rating with Service Company and rig personnel. All cement slurries are to be lab tested; both a pilot test and a test of the actual field blend. Report results, including 24 hour compressive strengths, to the office. **(See Cement Testing Requirements below).** Also keep two samples of each of the dry cements in the event that a problem is encountered while cementing. Discard this sample if all indications are positive.

RU BJ Cementing Services. Cement surface casing as follows:

Precede cement with 20 bbls freshwater.

LEAD: 350 SACKS
Slurry: 35/65 POZ 'C' + 5% Salt + ¼# Cello Flake
Slurry Weight: 12.8 ppg Slurry Yield: 1.94 cuft/sk

TAIL: 150 SACKS
Slurry: Class C + 1% CaCl + ¼# Cello Flake
Slurry Weight: 14.8 ppg Slurry Yield: 1.32 cuft/sk

Displace with freshwater.

b) If cement is not circulated to surface, contact the office and the NMOCD and prepare to run 1" and top out cement. Have 1" pipe on location for possible top-out.

c) If cement falls, fill 12.25" X 8-5/8" annulus with cement

7) Release pressure and check for flow back. Set casing on bottom. If float is holding, base nipple up of wellhead and BOP on the surface cement samples. Well must stand at least 8 hours total before any testing of casing is

performed per NMOCD. WOC 18 hours as per BLM requirements.

8) After Cementing casing, weld on 8-5/8" flange type casing head. Test BOP blind Rams & choke manifold 250# low & 2000# high. Pick up Bit #2 (7-7/8") & BHA , trip in hole, test BOP pipe rams 250# low & 2000#. **Pressure test casing to 1000 psi for 30 minutes prior to drilling out shoe.** Clearly report this test information of the daily drilling report.

MUD NOTES: See Mud Program for details

After cementing 8-5/8" casing circ pit with brine water. Mix paper for seepage control. Utilize pre-hydrated Gel/Lime sweeps for flushing the hole. Run all available solids control equipment to control weight. Add brine water as needed to maintain volume. Add LCM to system only as needed. Use batch LCM treatment if losses occur and maintain as needed.

9) Drill ahead with brine water in 7-7/8" hole taking deviation surveys every ±500' or nearest bit run per NMOCD rules. Use sweeps as needed to clean hole. Drill to +/-6700; exact TD will be determined by the length of the casing. Mud logger will be brought on at 2500' unless otherwise stated. Sweep and condition hole in preparation for logging. Spot a 50 bbl, 40-42 visc pill prior to POOH for logs. Strap out of hole.

10) RU Wire line Truck and Tools. Log well as instructed by Range Operating NM. Rotary sidewall cores may be required along with RFTs.

11) Make a conditioning trip prior to running casing. Trip into hole with BHA and drill pipe, break circulation half way in hole. Ream last two stands to bottom. Circulate and condition hole. Maintain viscosity of 28. TOH laying down 4-1/2" drill pipe and HWDP. Clear floor and prepare to run casing.

12) Rig up casing crew and run 5-1/2" 17#, J-55, LT&C as follows:

a) Float shoe (thread-lock)
b) 1 jts. 5-1/2", 17#, J-55, LT&C casing (thread-lock)
c) Float collar (thread-lock)
d) 5-1/2", 17#, J-55, LT&C Casing to 3500'
e) Cement stage tool @ 3500'
f) 5-1/2", 17#, J-55, LT&C Casing to surface

The two bottom joints of 5-1/2" casing and the float shoe and float collar should be thread-locked (do not weld pipe). Run 1 centralizer 5' above shoe with limit clamp, one on the next collar, one just below the float collar with limit clamp and one per joint up to 4500'.

13) Circulate mud for at least bottoms up plus one casing volume prior to cementing.

14) Cement the production casing as follows. Re-figure cement volumes on a basis of: caliper + 20%. Precede Cement with 20 bbl fresh water.

Stage One (6700' to 3500'):

LEAD: ?? SACKS
Slurry: 50/50 POZ 'C' + Gel + 5% Salt + ¼# Cello Flake
Slurry Weight: 12.0 ppg Slurry Yield: 2.30 cuft/sk Water: ? gals/sk

TAIL: ?? SACKS
Slurry: 50/50 POZ 'C' + 5% Salt
Slurry Weight: 14.2 ppg Slurry Yield: 1.27 cuft/sk Water: ? gals/sk

Stage Two (3500' to 900'):

LEAD: ?? SACKS
Slurry: 50/50 POZ 'C' + Gel + 5% Salt + ¼# Cello Flake
Slurry Weight: 12.0 ppg Slurry Yield: 2.30 cuft/sk Water: ? gals/sk

TAIL: ?? SACKS
Slurry: Class C Cement
Slurry Weight: 14.8 ppg Slurry Yield: 1.33 cuft/sk Water: ? gals/sk

Review rates, pressures, displacement volumes and casing pressure rating with Service Company and rig personnel. All cement slurries are to be lab tested; both a pilot test and a test of the actual field blend. Report results, including 24 hour compressive strengths, to the office. **(See Cement Testing Requirements below).** Also keep two samples of each dry cement.

a) Have additional water storage on location as necessary for mixing cement. Have water analyzed by cementing company for compatibility with cement and chemicals.

b) Reciprocate pipe during 1st Stage job. Take special care to move pipe very slowly on the down stroke. Pump spacer and cement at 7-8 BPM. When the last cement has been pumped, maintain rate at 7-8 BPM. Displace with fresh water. When reaching displacement to shoe joint minus 10 bbls slow pump rate to 2 barrels per minute or less prior to bumping plug. Bleed off pressure and check for backflow. If negative, remove the cap and drop the opening bomb for the second stage job. Wait 30 minutes then attempt to open stage tool. Circulate a minimum of 2 hours prior to pumping second stage job.

c) Cement second stage. Bump plug with 500 psi over final displacement pressure and hold pressure for 15 minutes.

15) Release pressure and check for flow back. If floats are holding, continue to make preparations to hang 5-1/2" casing one foot off bottom. If floats do not hold, wait 12 hours on cement.

16) Set 5-1/2" slips in "A" section with full string weight. Nipple down BOP, Nipple up well head.

17) Install cap. Clean mud pits and release rig.

CEMENT TESTING REQUIREMENTS:

Laboratory Blend: Obtain thickening time, rheology, water loss, and compressive strengths of the laboratory cement blend with a water sample of the actual water to be used in cementing for each cement slurry to be pumped.

Field Blend: Obtain thickening time of the field cement blend with a water sample of the actual water to be used in cementing for each slurry to be pumped. If the thickening time of the field blend is consistent with the thickening time of the laboratory blend, proceed with the cement job. If not, wait on the compressive strength results. Regardless of thickening time results, obtain all of the compressive strengths of field blend to compare with the compressive strengths of the laboratory blend.

NAME	POSITION	CELL PHONE	HOME PHONE	OFFICE PHONE
Nick Christ	Drilling Engineer	(713) 480-2215	(214) 485-2168	(817) 869-4103
Don Robinson	Drilling Manager	(469) 450-2281	(972) 317-8345	(817) 869-4128
George Allen Teer	VP of Operations			(817) 869-4213
Andrew Tullis	District Engineer	(817) 797-2804	(214) 505-0233	(817) 869-4132
Terri Cowan	Chief Geologist	(682) 429-7493	(817) 448-9842	
Chris Garcia	Production Foreman	(505) 631-9025		

COMPANY NAME	SERVICE	CONTACT PERSON	TELEPHONE NO.
Nova Mud - Hobbs	Mud	Rick Rippy	(505) 631-9597
Zia Transports – Hobbs	Roller Bins	Larry Parker	(505) 390-6402
Sierra Trucking – Hobbs	Vacuum Trucks	Javier Estrada	(505) 390-1986
MI Swaco - Odessa	Closed Loop Sys.	Keith Solley	(432) 556-8411
		Casey	(432) 664-7754
BJ Services	Cement		(505) 392-5556
Schlumberger - Hobbs	Logging	Jared Walker	(505) 393-4107

EUNICE FIELD (Blinebry/Tubb/Drinkard)
Range Operating NM, Inc. Elliott 'B' Federal #20
Geological Data for Permit
Prepared by Terri Mayfield-Cowan 3/27/2008

I) WELL OBJECTIVES

The objective of the well is to drill and evaluate the Penrose-Skelly through Drinkard Formations and complete the well as a Blinebry/Tubb/Drinkard producer. Secondary target is the San Andres Formation.

II) LOCATION

	930' FSL & 2310' FEL **Section 6-T22S-R37E** Lea County, New Mexico **Lat: 32.4160583** **Long: -103.2006917**
Bottom-hole Location:	same, vertical
Elevation:	GL: 3447 ft Est. KB: 3460 ft
Directions to Location:	From the junction of Legion & Delaware Basin Rds., Go N 1.1 mi. to lease road. On lease road, go 1.5 mi. W. to lease road & go 0.5 mi N, thence 0 1 mi. NW to the #11 location & proposed lease road to the #20 new site.
Access to Location:	Unrestricted

III) PROGNOSIS

Upr Permian Rustler Fm	+2370 ft	1090 ft MD	Not Reservoir Rock
Upr Permian Penrose-Skelly Fm	-30 ft	3490 ft MD	Oil, gas, water poss
Upr Permian San Andres Fm	-455 ft	3915 ft MD	Gas, oil, water likely
Upr Permian Glorieta Fm	-1635 ft	5095 ft MD	Oil, gas, water likely
Upr Permian Blinebry Fm	-2015 ft	5475 ft MD*	Oil, gas, water likely
Lwr Permian Tubb Fm	-2690 ft	6150 ft MD*	Oil, gas, water poss
Lwr Permian Drinkard Fm	-2870 ft	6330 ft MD*	Oil, gas, water likely
Lwr Permian Abo	-3250ft	6710 ft MD+	Tight oil & gas poss
Proposed TD: **Est. BHP @TD: 2650 psi**	**-3390 ft**	**6850 ft MD**	**Tight oil & gas likely** **Water poss**

*= Primary Reservoir Targets
+= Secondary Reservoir Targets

IV) PRIMARY RESERVOIR TARGETS

Upper Permian **Blinebry Formation**

Rock Type:	Dolostone
Thickness:	Est. 675 ft, 20 ft. net pay
Avg. Porosity:	9%; ranges from 6% -11%
Est. Reservoir Temp.:	120° F
Est. Reservoir Press.:	2200 psi (assuming no pressure depletion)

Lower Permian **Tubb Formation**

Rock Type:	Silty Dolostone
Thickness:	Est. 180 ft., 5 ft. net pay
Avg. Porosity:	8%, Ranges from 2%-12%
Est. Reservoir Temp.:	130 degrees F
Est. Reservoir Press.:	2500 psi, assuming no pressure depletion

Lower Permian **Drinkard Formation**

Rock Type:	Dolostone
Thickness:	Est. 375 ft., 40 ft. Net Pay
Avg. Porosity:	12%, Ranges from 2%-22%
Est. Reservoir Temp.:	135 degrees F
Est. Reservoir Press.:	2650 psi, assuming no pressure depletion

V) SECONDARY RESERVOIR TARGETS

1) Upper Permian **Penrose-Skelly** through **San Andres Dolostones-** likely significant depletion in Penrose-Skelly through Grayburg intervals

VI) EVALUATION

Mudlogging:	Mud System 10.1 lbs/gal Brine-Suttles Unit on @2500' w/ gas monitoring equipment & cuttings collected
Wireline Logs:	Upon TD Schlumberger will run PEX-HRLA, MCFL, HNGS, TLD, w/BHC Sonic-Rotary Sidewall Cores as optional services

VII) POTENTIAL HAZARDS/PITFALLS

Abnormal Pressure/Temperature Zones:	Possibilty of partial depletion within Queen to Grayburg Formations
Fractured/Lost Circulation Zones:	See above-**Please tag mud if circulation is lost in primary pay interval**
Presence of H_2S or CO_2:	None expected
Faults Intersecting the Wellbore:	None expected

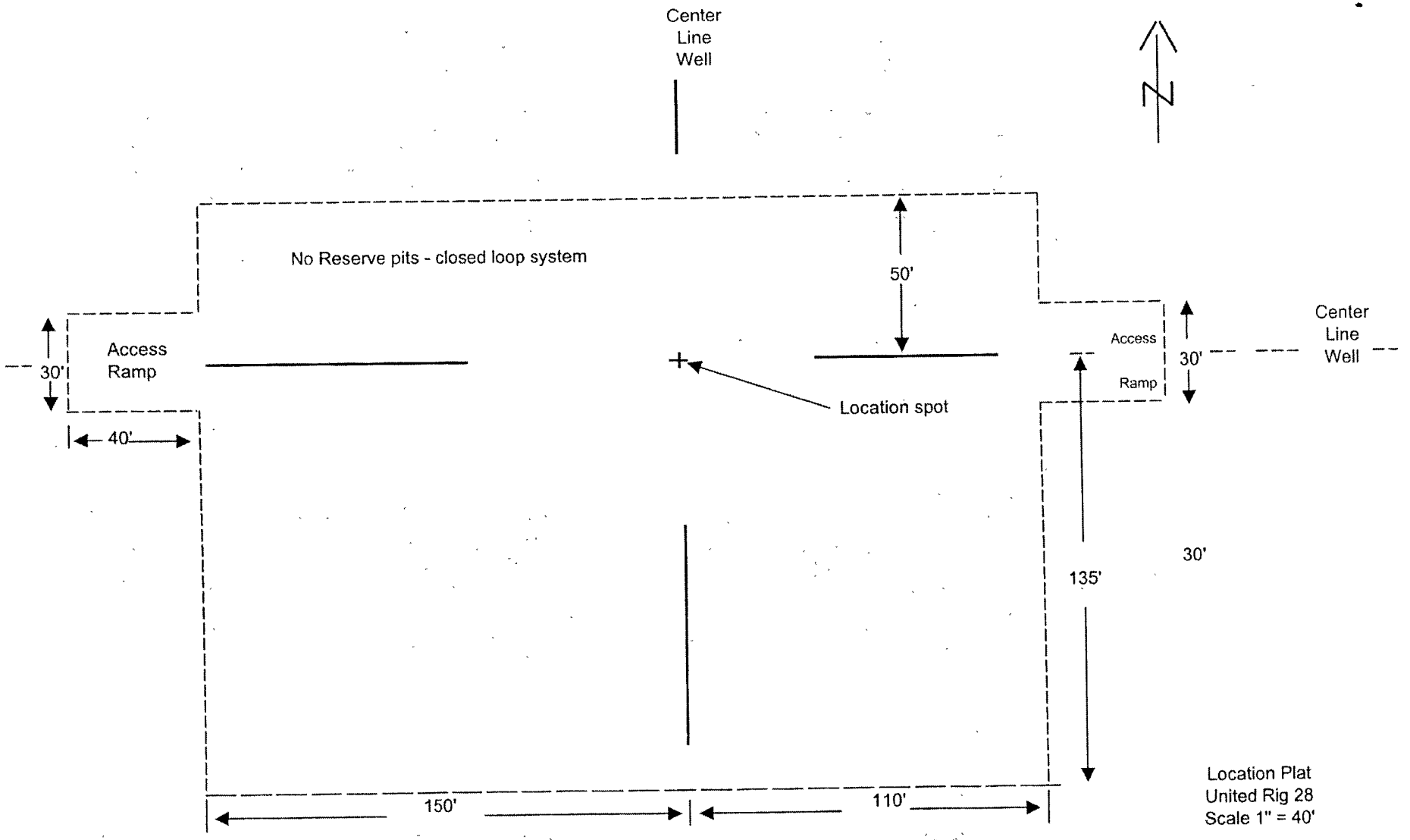


EXHIBIT C

SEE ATTACHED FOR CONDITIONS OF APPROVAL

NOTES REGARDING THE BLOWOUT PREVENTERS

Lea 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. Blowout preventer and all fittings must be in good condition, 3000 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 3000 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. Blowout preventer control to be located as close to driller's position as feasible.

11. Blowout preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

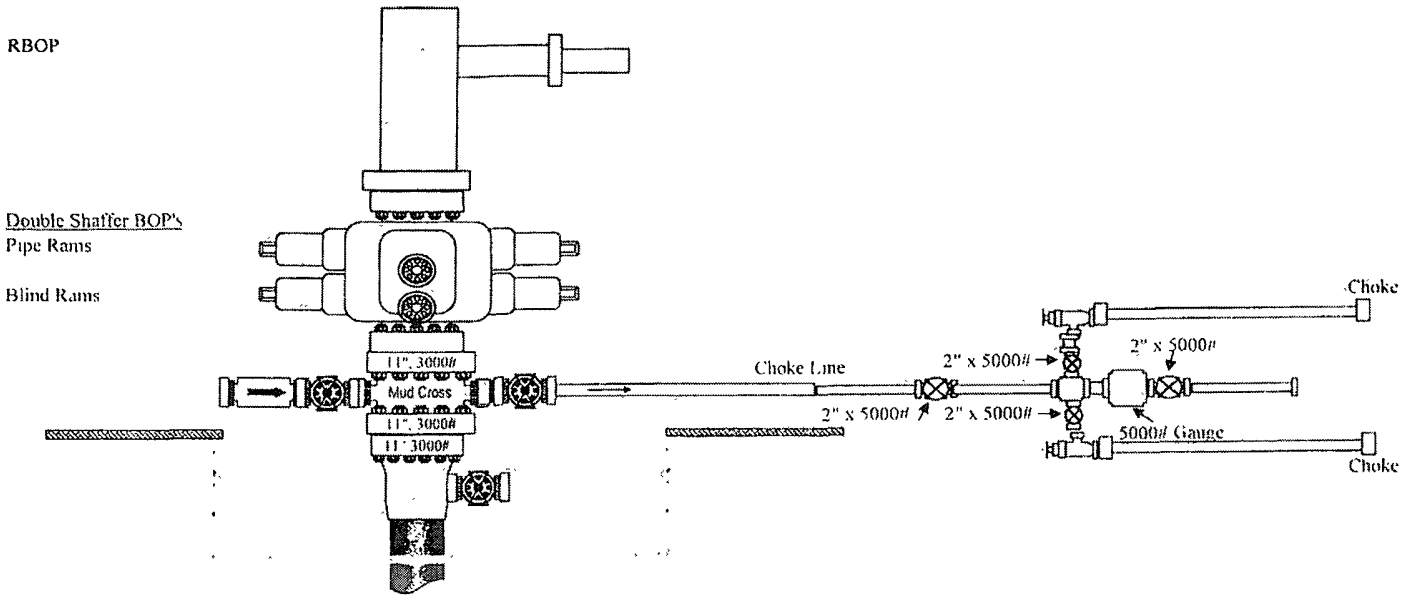
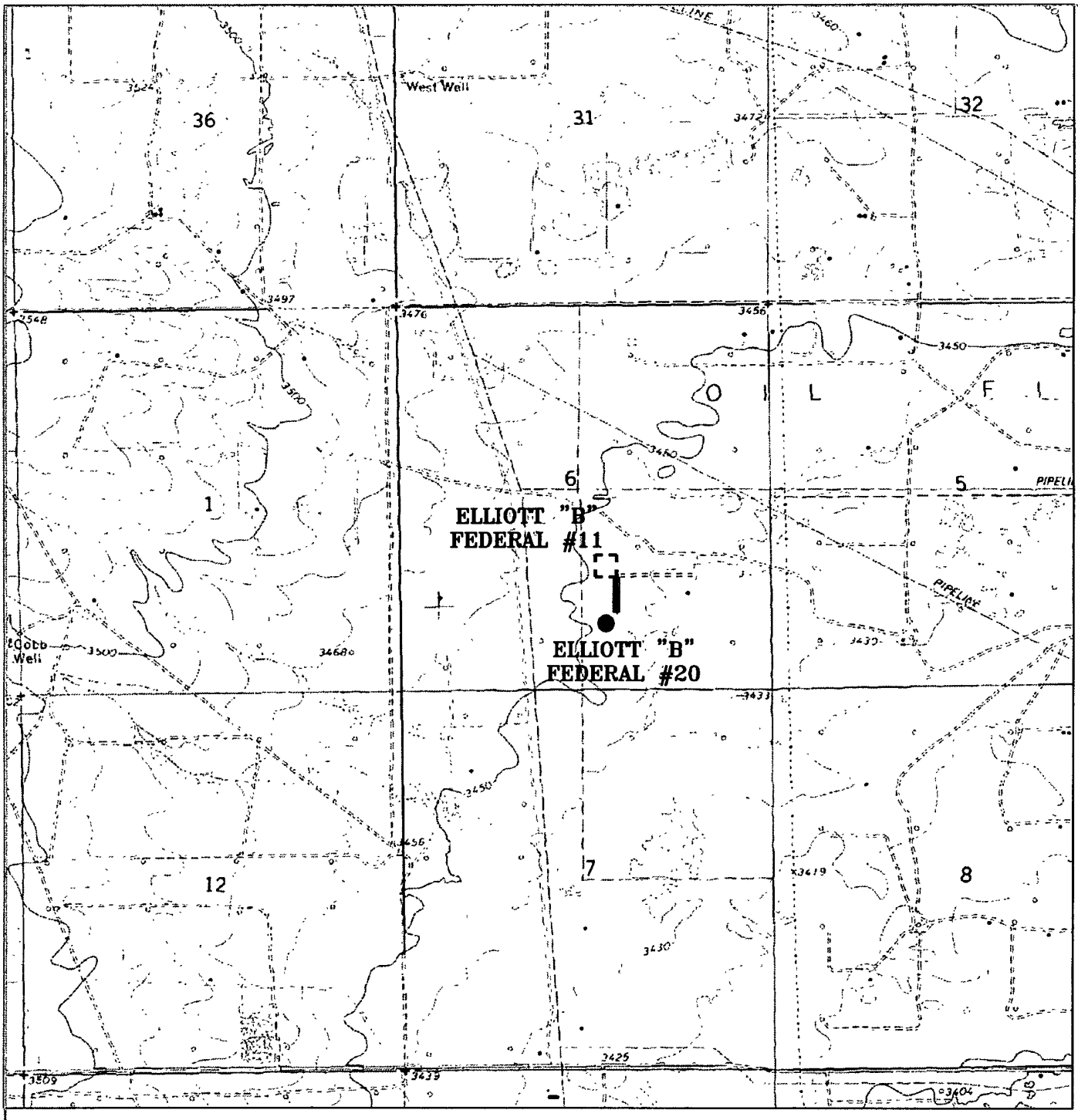

RBOP
Double Shaffer BOP's
Pipe Rams
Blind Rams
11", 3000#
Mud Cross
11", 3000#
11" 3000#
Choke Line
2" x 5000#
2" x 5000#
2" x 5000#
2" x 5000#
5000# Gauge
Choke
Choke

EXHIBIT A



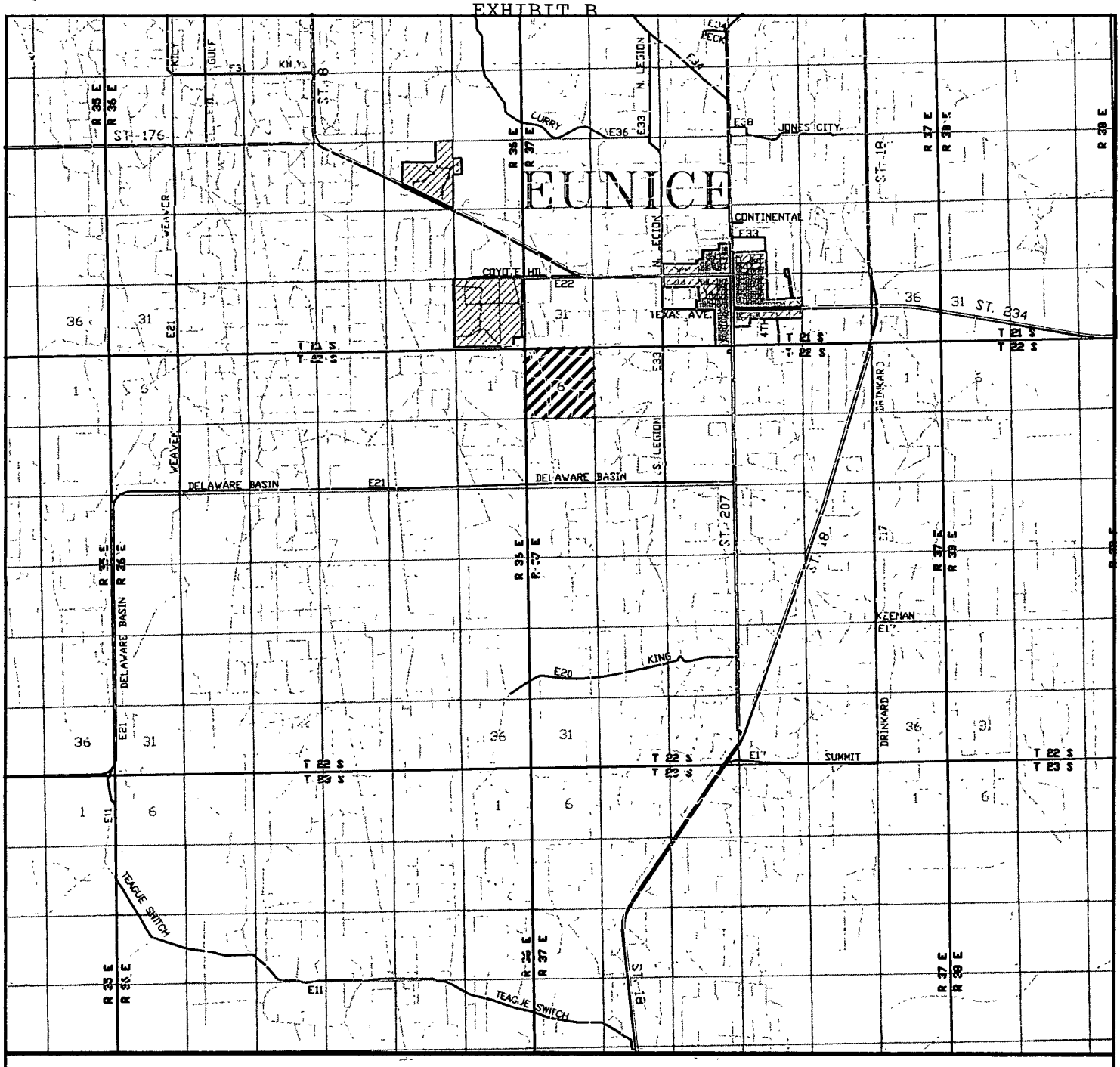
ELLIOTT "B" FEDERAL #20
Located at 930' FSL AND 2310' FEL
Section 6, Township 22 South, Range 37 East,
N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

W.O. Number:	19328T
Survey Date:	03-13-2008
Scale:	1" = 2000'
Date:	03-14-2008

RANGE OPERATING

EXHIBIT B



ELLIOTT "B" FEDERAL #20
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1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

W.O. Number:	JMS 19358TR
Survey Date:	03-13-2008
Scale:	1" = 2 MILES
Date:	03-14-2008

RANGE OPERATING

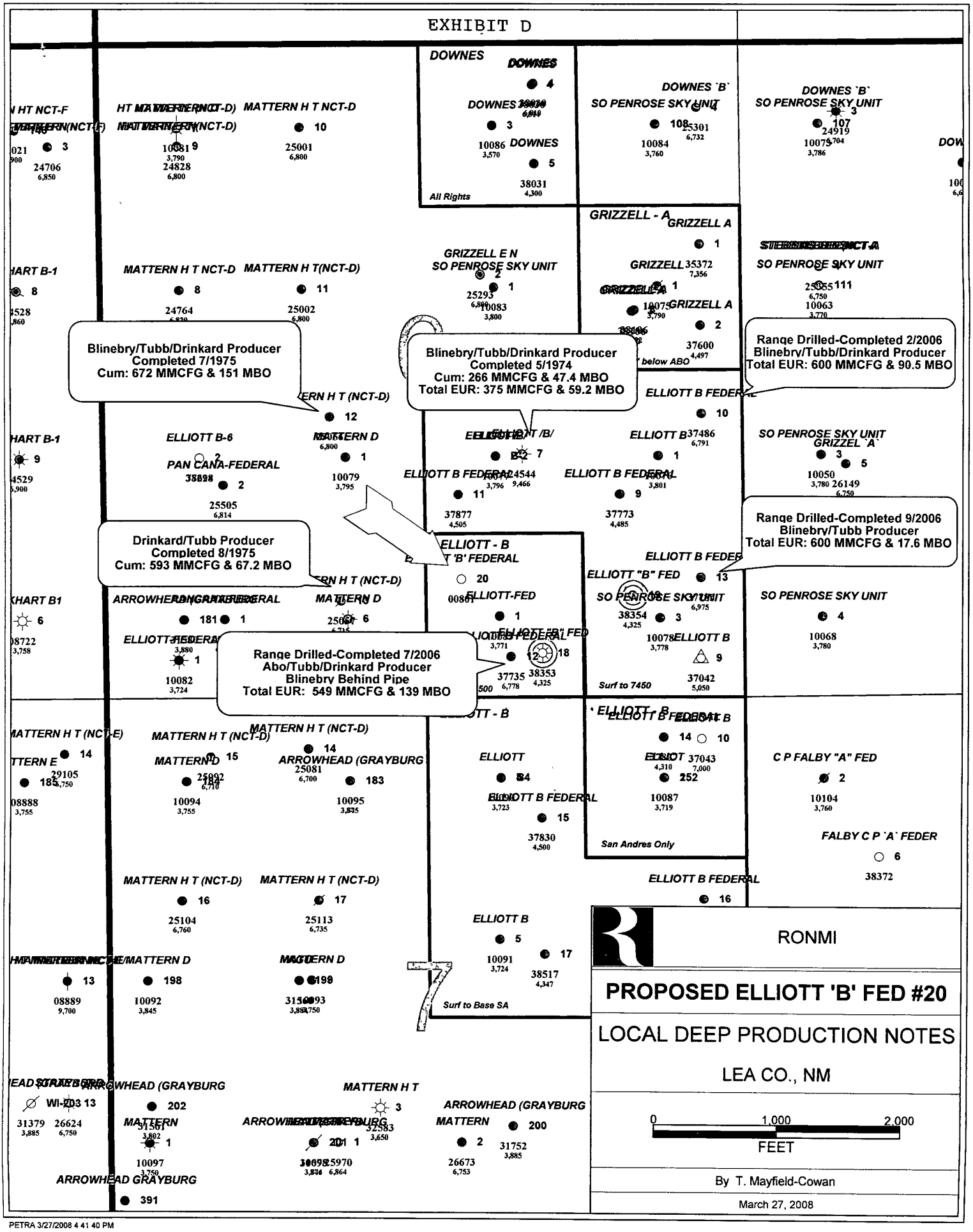


EXHIBIT D
Blinebry/Tubb/Drinkard Producer
Completed 7/1975
Cum: 672 MMCFG & 151 MBO
Blinebry/Tubb/Drinkard Producer
Completed 5/1974
Cum: 266 MMCFG & 47.4 MBO
Total EUR: 375 MMCFG & 59.2 MBO
Range Drilled-Completed 2/2006
Blinebry/Tubb/Drinkard Producer
Total EUR: 600 MMCFG & 90.5 MBO
Drinkard/Tubb Producer
Completed 8/1975
Cum: 593 MMCFG & 67.2 MBO
Range Drilled-Completed 9/2006
Blinebry/Tubb Producer
Total EUR: 600 MMCFG & 17.6 MBO
Range Drilled-Completed 7/2006
Abo/Tubb/Drinkard Producer
Blinebry Behind Pipe
Total EUR: 549 MMCFG & 139 MBO
DOWNES
DOWNES `B`
SO PENROSE SKY UNIT
GRIZZELL - A
GRIZZELL A
GRIZZELL E N
SO PENROSE SKY UNIT
MATTERN H T NCT-D
MATTERN H T(NCT-D)
ELLIOTT B-6
PAN CANA-FEDERAL
ELLIOTT B FEDERAL
ELLIOTT - B
ELLIOTT-FED
ELLIOTT "B" FED
ELLIOTT B
ARROWHEAD (GRAYBURG
MATTERN D
MATTERN H T
C P FALBY "A" FED
FALBY C P `A` FEDER
All Rights
Surf to 7450
San Andres Only
Surf to Base SA
RONMI
PROPOSED ELLIOTT 'B' FED #20
LOCAL DEEP PRODUCTION NOTES
LEA CO., NM
0
1,000
2,000
FEET
By T. Mayfield-Cowan
March 27, 2008
PETRA 3/27/2008 4 41 40 PM

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Range Operating
LEASE NO.:	NMLC032573B
WELL NAME & NO.:	Elliott B Federal No 20
SURFACE HOLE FOOTAGE:	930' FSL & 2310' FEL
BOTTOM HOLE FOOTAGE	
LOCATION:	Section 6, T. 22 S., R 37 E., NMPM
COUNTY:	Lea County, New Mexico

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Hobbs Field Station at (505) 393-3612 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

There is no measurable soil on this well pad to stockpile. No topsoil stockpile is required.

C. RESERVE PITS

The operator has applied for a closed-loop system. 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.

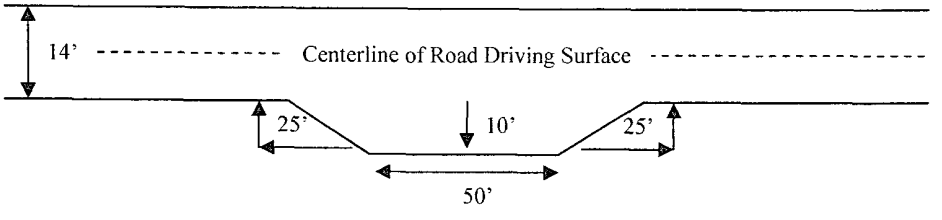
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

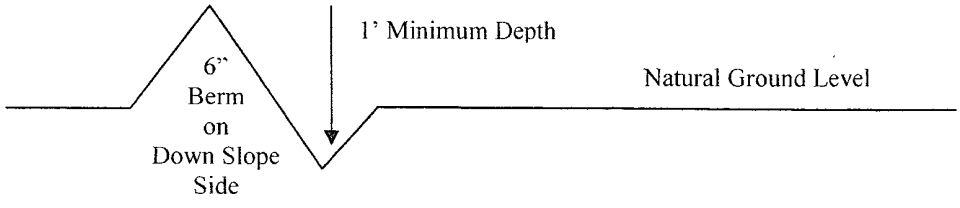
Standard Turnout – Plan View



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:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ 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.

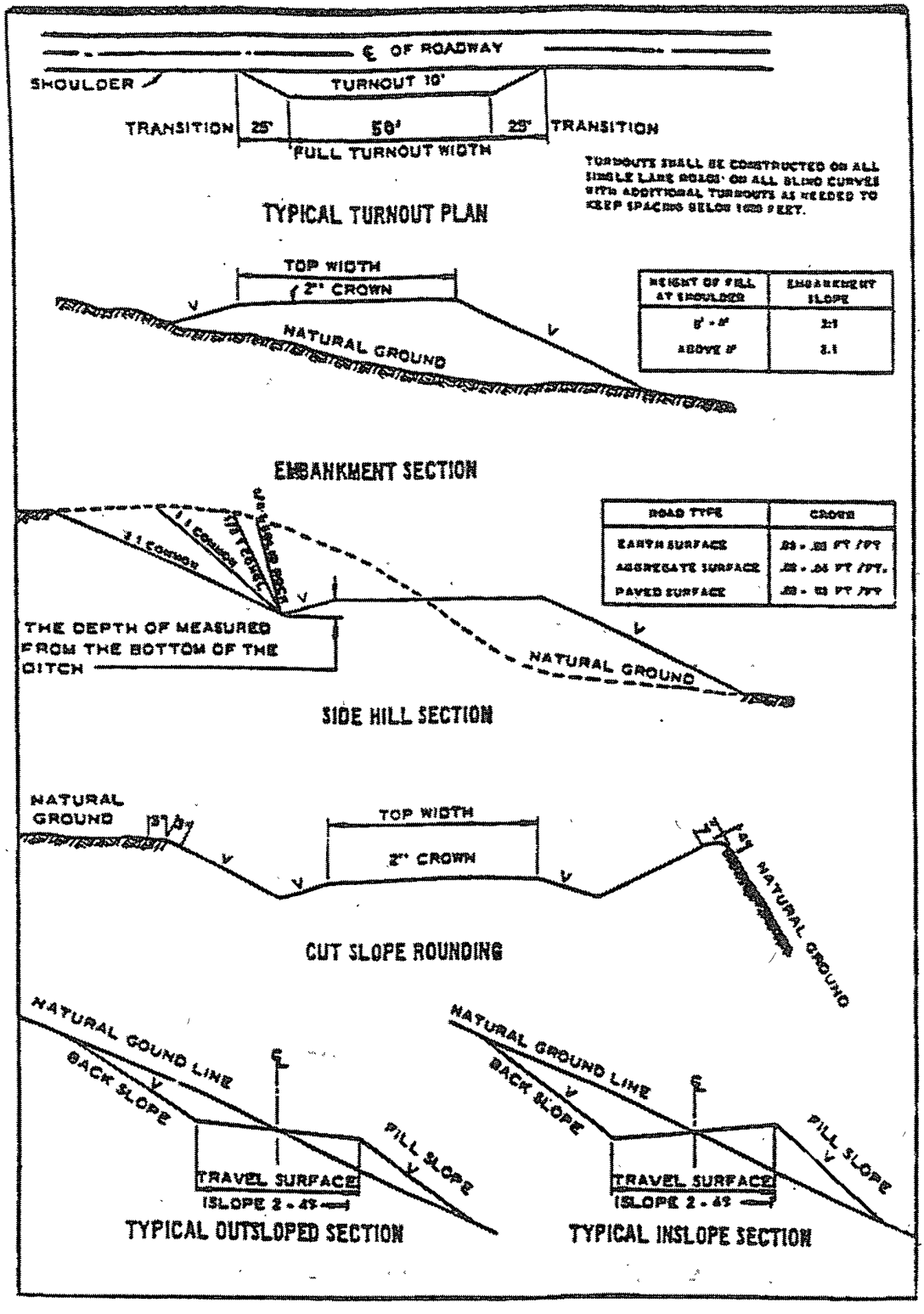
Fence Requirement
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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



VI. 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. BOP/BOPE tests

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs, NM 88240,
(575) 393-3612

1. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. Hydrogen Sulfide has been reported in an adjacent Section. 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.

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

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

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

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

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

Possible lost circulation in Delaware Group

1. The **8-5/8** inch surface casing shall be set at **approximately 1115 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface. **If salt is penetrated surface casing should be set 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

    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:

    a. **First stage to DV tool, cement shall:**

    ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office, before proceeding with second stage cement job.

    b. **Second stage above DV tool, cement shall:**

    ☒ Cement should tie-back at least 200 feet into previous casing string. **Operator shall provide method of verification.**

3. 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.

   e. **No variance granted on BOP/BOPE test when running only two casing strings.**

D. DRILL STEM TEST

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

LB. 6/5/08

VII. 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

VIII. 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.

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 2, for Sandy 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 see 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
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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

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.