

DRILLING PROGRAM

BELL LAKE UNIT #22
660' FSL & 990' FEL
Section 31-T22S-R34E
Lea County, New Mexico

1. Geologic Name of Surface Formation

Permian

2. Estimated Tops of Important Geologic Markers

Rustler	1,790'
Top Of Salt	2,266'
Top Of Reef	3,000'
Top Of Reef Porosity	3,400'
Base Of Salt	4,790'
Delaware	5,000'
Bone Spring	8,450'
Wolfcamp	10,970'
Strawn	11,800'
Atoka Clastics	12,080'
Morrow	12,210'
Morrow Clastics	12,890'
Mid Morrow Grama Ridge	12,920'
Mid Morrow A Sand	13,100'
Mid Morrow C Sand	13,300'
TD	±13,700'

3. Estimated Depths of Anticipated Fresh Water, Oil or Gas

The estimated depths at which water, oil and gas will be encountered are as follows.

Water: None expected in area.

Oil: Bone Springs

Gas: Upper Morrow

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 20" casing at 800' and 9 5/8" casing at 5,100' and circulating cement back to surface. The oil and gas intervals will be isolated by setting 7" casing at 12,000' and bring cement top to approximately 5,000'. A 4 1/2" production liner will be run from 11,700' to TD and cemented back to liner top.

4. Casing Program:

<u>Hole Size</u>	<u>Interval</u>	<u>Casing OD</u>	<u>Weight, ppf</u>	<u>Grade</u>	<u>Type</u>
26"	0'-800'	20"	94#	H-40	ST&C
17 1/2"	0'-2,200'	13 3/8"	61#	J-55	ST&C
12 1/4"	0-5,100'	9 5/8"	40#	N-80	LT&C
8 3/4"	0-12,000'	7"	26#	P-110	LT&C
6 1/8"	11,700'-13,700'	4 1/2"	13.5#	P-110	LT&C

*Optional – Will be run if unconsolidated sands are encountered at $\pm 1,800'$.

Casing Cementing Program:

20" Surface Casing:	Lead Slurry: 1,064 sxs 35:65 Poz Class C with 6% Bentonite, 2% CaCl ₂ and 1/4 lb/sx Cello Flake. Tail Slurry: 400 sxs Class C with 2% CaCl ₂ and 1/4 lb/sx Cello Flake. Cement to be circulated to surface.
13 3/8" Intermediate Csg: (Optional)	Lead Slurry: 1,138 sxs 35:65 Poz Class C with 6% Bentonite, 5% NaCl, 5 lb/sx LCM-1 and 1/4 lb/sx Cello Flake. Tail Slurry: 300 sxs Class C with 2% CaCl ₂ and 1/4 lb/sx Cello Flake. Cement to be circulated to surface.
9 5/8" Intermediate Casing:	Lead Slurry: 952 sxs 50:50 Poz Class C with 10% Bentonite, 5% NaCl, 0.05% ASA-301 and 1/4 lb/sx Cello Flake. Tail Slurry: 300 sxs 60:40 Poz Class C with 4% MPA-1, 5% NaCl and 1/4 lb/sx Cello Flake. Cement to be circulated to surface.
7" Production Casing:	1 st STAGE Lead Slurry: 115 sxs 35:65 Poz Class H with 6% Bentonite, 5% NaCl, 0.3% FL-52, 5 lb/sx LCM-1 and 1/4 lb/sx Cello Flake. Tail Slurry: 500 sxs 15:61:11 Poz Class C with 2% KCl, 0.5% FL-25, 0.5% FL-52, 2 lb/sx EC-1, 5 lb/sx LCM-1 and 1/4 lb/sx Cello Flake. 2 nd STAGE Lead Slurry: 168 sxs 35:65 Poz Class C with 6% Bentonite, 5% NaCl, 3% FL-52 and 1/4 lb/sx Cello Flake. Tail Slurry: 125 sxs Class C with 0.05% ASA-301. Cement to 5,000'.
4 1/2" Liner	272 sxs Class H with 3% KCl, 1.2% FL-25, 3 lb/sx EC-1, 0.2% Sodium Metasilicate, 0.2% R-3 and 0.003 gps FP-13L. Cement to be circulated to liner top.

The above cement volumes are subject to revision pending the caliper measurement from the open hole logs.

5. Minimum Specifications for Pressure Control

The blowout preventer equipment (BOP) shown in Exhibit #1 will consist of a (5M system) double ram type (5,000 psi WP) preventer and a bag-type (Hydril) preventer (5,000 psi WP). Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and 4 1/2" drill pipe rams on bottom. Both BOP's will be installed on the 9 5/8" intermediate casing and utilized continuously until total depth is reached. As per BLM Drilling Operations Order #2, prior to drilling out the 9 5/8" casing shoe, the BOP's and Hydril will be function tested.

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 drillers 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 5,000 psi WP rating.

6. Types and Characteristics of the Proposed Mud System

The well will be drilled to total depth brine with starch mud systems. Depths of systems are as follows.

<u>Depth</u>	<u>Type</u>	<u>Weight (ppg)</u>	<u>Viscosity (1/sec)</u>	<u>Water Loss (cc)</u>
0' – 800'	Fresh Water	8.4	34 – 36	No control
800' – 5,100'	Brine	9.8 - 10.2	28 – 30	No control
5,100' – 12,000'	Cut Brine	8.8 – 9.2	30 – 32	No control
12,000' – TD	Starch / mud	9.2 – 9.8	32 – 36	8 - 12

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 (Compliance Package) will be in operation from drilling out 9 5/8" casing shoe until TD.

8. Logging, Testing and Coring Program

- A. Drill stem tests may be run on potential pay interval.
- B. The open hole electrical logging program will be as follows.
 - 1) DLL/MSFL/GR from total depth to base of intermediate casing.
 - 2) CNL/LDT/GR from total depth to base of intermediate casing with CNL/GR to surface.
- C. No coring program is planned.
- D. Additional testing will be initiated subsequent to setting the 4 1/2" liner. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

9. Abnormal Pressures, Temperatures and Potential Hazards

The anticipated bottom hole temperature at total depth is 190 degrees and maximum bottom hole pressure is 8,200 psig. A hydrogen sulfide operations plan will be implemented prior to drilling out from under the intermediate casing string (see attached "Hydrogen Sulfide Operations Plan").

10. Anticipated Starting Date and Duration of Operations

Road and location preparation will not be undertaken until approval has been received from the BLM. If approved, this well will be drilled as part of a development project. The anticipated spud date for the project is June 15, 2001. The drilling operation should require approximately 45 days. If the well is deemed productive, completion operations will require, at minimum, an additional 30 days of testing to ascertain whether permanent production facilities will be constructed.