

MARATHON OIL COMPANY

Drilling Operations Plan

Ohio "D" Gov't. #2
 Section 8, T31N, R12W
 La Plata Area
 San Juan County, New Mexico

1. Geologic name of surface:

Tertiary - Nacimiento

2. Estimated tops of important geologic markers:

| <u>Formation</u> | <u>Top</u> | <u>Datum</u> |
|------------------|----------------------|--------------|
| Fruitland | 1,772' | +4,160' |
| Pictured Cliffs | 2,207' | +3,725' |
| Cliffhouse | 3,840' | +2,092' |
| Menefee | 4,067' | +1,865' |
| Point Lookout | 4,622' | +1,310' |
| TD | 5,000' | + 932' |
| | Estimated KB: 5,932' | |
| | Estimated GL: 5,920' | |

3. Estimated depths of anticipated water, oil, gas or other mineral bearing formations:

| <u>Formation</u> | <u>Estimated Depth</u> | <u>Possible Content</u> |
|------------------|------------------------|-------------------------|
| Pictured Cliffs | 2,207' | Gas |
| Point Lookout | 4,622' | Gas |

4a. The casing program including the size, grade, weight, whether new or used, and a setting depth of each string:

| <u>Min. Hole Size</u> | <u>Casing O.D.</u> | <u>Grade</u> | <u>Weight</u> | <u>Setting Depth</u> | <u>New or Used</u> |
|-----------------------|--------------------|--------------|---------------|----------------------|--------------------|
| 12-1/4" | 9-5/8" | J-55 | 36# | 200' | New |
| 8-3/4" | 7" | K-55 | 23# | 4,550' | New |
| 6-1/4" | 4-1/2" | K-55 | 10.5# | 5,000' | New |

4b. The cementing program including type, amounts, and additives:

9-5/8" Casing:

Equip with a guide shoe, insert float and three centralizers. Cement to surface with 150 sacks of Class "B" cement with 2% CaCl₂ and 1/4#/sack Flocele.

7" Casing:

Equip with float shoe, baffle collar, and 10 centralizers. Cement to +2,000' with 350 sacks of Halliburton Light with 2% CaCl₂ (add 12-1/2#/sack of gilsonite if any lost circulation was encountered). Tail in with 150 sacks of Class "B" cement with 2% CaCl₂ (add gilsonite as above).

4-1/2" Liner:

Equip with float shoe, float collar, 6 centralizers. Cement liner with 200 sacks of 50-50 Poz Mix with 2% gel plus 6-1/4#/sack of gilsonite plus 0.6% Halad 9.

5. B.O.P. specification and testing: (see the attached schematic diagram for size and pressure ratings):

2,000 psi WP hydraulic double-ram preventer with blind and drill pipe rams. Operation to be checked daily.

6. Mud program and anticipated pressures:

| <u>From</u> | <u>To</u> | <u>Type Mud</u> | <u>Weight</u> | <u>% Oil</u> | <u>Water Loss</u> |
|-------------|-----------|---------------------------------|---------------|--------------|-------------------|
| 0' | 200' | Native | 8.5 - 8.8 | 0 | - |
| 200' | 4,550' | Low solids Non-dispersed gel | 9.0 | 0 | <20 cc's* |
| 4,550' | T.D.- | Air | | | |

*Starch required to prevent sand bridges which have hampered logging operations in nearby wells.

7a. Type of drilling tools and auxiliary equipment:

- (1) Drill time and drill pipe weight will be recorded on a geograph or equivalent instrument from surface to T.D.
- (2) A single shot survey instrument is required.
- (3) Desilter or desander.

7b. Deviation Control:

| <u>From</u> | <u>To</u> | <u>Maximum Deviation Between Surveys</u> | <u>Maximum Deviation From Vertical</u> | <u>Maximum Change Per 100' of Depth</u> |
|-------------|-----------|--|--|---|
| 0' | 200' | 100' | 1° | 1/2° |
| 200' | T.D. | 500'* | 4-1/2° | 1° |

*Required by the New Mexico Conservation Commission.

8. Sample, logging, testing, and coring program:

Catch 10' samples from 4,550' to T.D.

Open Hole Logs - (A short trip will be made prior to logging)

Run #1: At 7" casing point run a GR/Caliper/DIL from T.D. to surface.

Run #2: At T.D. run a GR/DIL from T.D. to 7" casing and run a GR/Caliper/CNL/FDC from T.D. to 7" casing and continue GR/CNL through pipe to 3,000'.

9. Anticipated abnormal pressures or temperatures:

Pressure in Point Lookout expected to be only 700 to 800 psi.

10. The anticipated starting date and duration of operation:

Starting Date: May 1, 1978

Duration: 3 Weeks

DISTRICT APPROVALS

| <u>Approved</u> | <u>Date</u> |
|---------------------|-------------|
| <i>[Signature]</i> | 3-27-78 |
| <i>B. E. Jester</i> | 3/27/78 |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

DIVISION APPROVALS

| <u>Approved</u> | <u>Date</u> |
|-----------------|-------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |