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COLO. OIL & GAS CONS. COMM.

BUCKHORN PETROLEUM CO.
#4-24 CALIFORNIA-FEDERAL
NW NW Sec. 24 - T9N - R87W
Routt County, Colorado

C-15280

10-POINT PLAN OF OPERATIONS1. The geologic name of the surface formation.

Williams Fork

2. The estimated tops of important geologic markers.

	MD	TVD
Trout Creek	1191'	1190' (+7200)
Iles (Mesaverde)	1437'	1430' (+6960)
Mancos	3958'	3890' (+4500)
Marapos sand	4983'	4890' (+3500)
Niobrara	7655'	7490' (+900)
1st Bench	8258'	8090' (+300)
2nd Bench	8758'	8590' (-200)
3rd Bench	9158'	8990' (-600)
Carlisle shale	9308'	9140' (-750)
Total Depth	9558'	9390' (-1000)

3. The estimated depths of anticipated water, oil, gas or mineral bearing formations.

No water-bearing formations are anticipated.

Intermittent coal seams will be encountered from surface to the upper Marapos (+3500).

Possible hydrocarbon-bearing sands in the Iles (+6960); possible gas-bearing sands in the Marapos sand (+3500); and possible oil-bearing sands in the Niobrara from 8258'(MD) to RTD ($\pm 9558'$).

4. The proposed casing program.

Surface casing: 600' of 10-3/4", 40.5#, J-55, ST&C, new casing set from 600' to surface.

Intermediate casing (from bottom to top):

Quantity	Size	Weight	Grade	Depth Set
3400'	7-5/8"	29.7#	N-80, LT&C, new	4300' to 7700'
3500'	7-5/8"	26.4#	N-80, LT&C, new	800' to 4300'
800'	7-5/8"	29.7#	N-80, LT&C, new	Surf. to 800'

Liner: $\pm 2100'$ of 5", 18#, N-80, new seamless Super-flush pipe set from 7500' to TD.

5. The operator's minimum specifications for pressure control equipment.

A double gate hydraulic BOP, 13-5/8", 3000# WP, with pipe rams, blind rams and hydril will be installed on the 10-3/4" casinghead. All components of this equipment will be tested to 1000 psi prior to drilling under surface; and operational checks will be made daily or on trips. After 7-5/8" intermediate casing has been cemented and flanged up, the stack will be removed briefly to allow for installation of a 7-5/8" casinghead. The stack will be reconnected and tested to 1000 psi after installation; operational checks will continue to be made daily or on trips. Please see attached schematic diagram.

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6. The type and characteristics of the proposed circulating fluid:

Fresh water with circulated reserve pit will be used for drilling fluid to approximately 600'. Mud-up will start shortly after drilling out cement, and a low solids polymer-base mud with 8.8-9.0 ppg wt, 35-40 sec. viscosity, and 6-10 cc WL will be used while drilling 9-7/8" hole to $\pm 7700'$. From the top of the Niobrara to total depth the 6 1/2" hole will be drilled with air foam. If mud-up is required, an oil-base inverted mud system with 8.8-9.0 ppg wt and 45-50 sec viscosity will be utilized.

7. The auxiliary equipment to be used.

- a. A kelly cock will be used at all times.
- b. Drill pipe floats will be used at all times.
- c. A full opening floor stabbing valve will be on the floor.
- d. The mud system will be visually monitored at all times.

8. The testing, logging and coring programs to be followed.

- a. No cores are planned.
- b. There is a possibility for two Drill Stem Tests uphole from the Niobrara, in the Iles section of the Mesaverde at approximately 1437'(MD) and in the Marapos sand at approximately 4983'(MD). No Drill Stem Tests in the Niobrara will be necessary unless mud-up occurs.
- c. The logging program planned calls for a suite consisting of Dual Induction-SFL, BHC-Sonic w/caliper, Compensated Neutron Density, Velocity Survey and Dipmeter to be run from the base of the surface casing to total depth and recovered in two runs. The first run (600'-7700'MD) will be made prior to running 7-5/8" casing, and the second run (7700'MD-TD) will be made at total depth. In addition, the second run will include a Spectrolog from $\pm 7700'$ to TD.
- d. Planned stimulation is a frac treatment consisting of approximately 100,000 gals x-linked polymer gel containing 500 SCF/bbl CO₂ and approximately 250,000# sand. No additional surface disturbance will be required for this job.

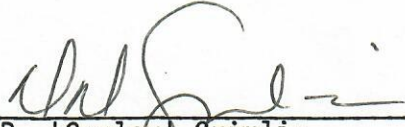
9. Any abnormal pressures or temperatures expected.

No abnormal temperatures, pressures or potential hazards such as H₂S have been encountered in this area.

10. The anticipated starting date and duration of operations.

Projected spud date for this well is March 25, 1982, with completion of drilling operations within 45 days if air drilling is successful, 52 days if mud-up is required. It is estimated that completion operations will be accomplished in an additional 25-30 days.

Productive zones will be perforated, treated and tested. Gas will be flared during testing periods. Water produced during testing will be contained in the (lined) drilling reserve pit. All possible oil will be stored and sold.


D. D. 'Curley' Grimlie
Manager of Operations

2-19-82

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