

4. THE PROPOSED CASING AND CEMENTING PROGRAM:

A. Casing Program: (All New)

<u>Hole Size</u>	<u>Casing Size</u>	<u>Wt./Ft.</u>	<u>Grade</u>	<u>Thread</u>	<u>Coupling</u>	<u>Interval</u>	<u>Length</u>
26"	20"	94#	J-55	8R	ST&C	0 - 425'	425'
17 1/2"	13 3/8"	54.5#	J-55	8R	ST&C	0 - 1550'	1550'
12 1/4"	8 5/8"	32#	J-55	8R	ST&C	0 - 3100'	3100'
7 7/8"	5 1/2"	17#	N-80	8R	LT&C	0 - TD	12,600'

Minimum Casing Design Factors: Collapse 1.125, Burst 1.0, Tensile Strength 1.8

B. CEMENTING PROGRAM:

Surface Casing: Lead slurry 375 sx Lite "C" 1/4# Cellocel + 2% CaCl₂ with weight of 12.4 ppg and Yield 1.87 cu.ft./sx. Circulate to surface.

Intermediate Casing on 13 3/8" casing: Lead slurry 925 sx Lite "C" with 1/4# Cellocel, 10# salt with weight of 12.4 ppg and Yield of 2.03 cu.ft./sx tail with 200 sx "Class C" with 2% CaCl₂. 8 5/8" casing: lead slurry 700 sx "Lite C" with 1/4# Cellocel, 5# Gilsontite, 2% CaCl₂ with weight of 12.4 ppg and Yield of 1.97 cu.ft./sx tail slurry 200 sx "C" with 1% CaCl₂.

Production Casing: Will be cemented in 3 stages as follows:

Cement Program: Lead Slurry 600 sacks "h" with 8# CSE .89. CF-14, .35% LWL, .35% Thrifty lite. Cement calculated to 9800'. Weight of 14.0 ppg and yield of 1.59 cu.ft./sack. D.V. Tool at approximately 9800'.

2nd stage: D.V. Tool at approximately 6400'. Lead Slurry 525 sacks "Lite H" with 1/4# cellocel, .5% CF-14 with weight of 13.0 ppg and yield of 1.97 cu.ft./sx. Tail slurry 200 sx Class "H" w/7% CF-14 with weight of 15.6 ppg and yield of 1.18 cu.ft./sx. Cement calculated to 6400'.

3rd stage: Lead Slurry 600 sx "Lite H" with 1/4# cellocel, .5% CF-14 with weight of 13.0 ppg and yield of 1.97 cu.ft./sx. Tail slurry 100 sx "H" neat with weight of 15.6 ppg and yield of 1.18 cu.ft./sx. Cement calculated to 3400'. (500' tie back to 8 5/8" casing.)

A greater amount of cement will be used if necessary to ensure that all potentially productive hydrocarbon zones are cemented off. Fill-up to be determined from logs.

5. MUD PROGRAM:

<u>Interval</u>	<u>Type</u>	<u>Weight</u>	<u>Viscosity</u>	<u>Fluid Loss</u>
0 - 425'	FW gel/paper	9.0	34	N/C
425' - 1550'	Brine	10.0	28	N/C
1550' - 3200'	FW	8.4	28	N/C
3200' - 9700'	Cut Brine	8.7	28	N/C
9700' - 10,600'	Brine	10.0	28	N/C
10,600' - TD	XCD, Drispak, Starch	9.5	33	12 CC

Sufficient mud material(s) to maintain mud properties, control lost circulation and contain a blowout will be available at the well site during drilling operations. Mud will be checked hourly by rig personnel.