

MARTHA CREEK #4 SWD
DRILLING PLAN
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4. Casing Program

<u>Hole Size</u>	<u>Interval</u>	<u>Casing OD</u>	<u>Weight</u>	<u>Grade</u>	<u>Type</u>
17 1/2"	0'-40'	14"		Conductor	0.30" wall
12 1/4"	0'-1,500'	9 5/8"	32#	H-40	ST&C
8 3/4"	0'-10,600'±	7"	23 / 26 / 29#	J-55 / L-80	Buttress / LT&C
6 1/8"	to TD 11,400'±	open hole			

Cementing Program

14" Conductor Casing: Cement with Redi-mix to surface.

9 5/8" Surface Casing: -- Cement to surface -- 500 sx Lite (35% Poz, 65% Class C, 6% gel) with 2% CaCl₂ and 1/4 lb/sx Cellophane flakes + 300 sx Class C with 2% CaCl₂ and 1/4 lb/sx Cellophane flakes.

7" Production Casing: -- Cement to 6,500' -- 550 sx Class H with 3 lb/sx salt, .4% FL-52, 12 lb/sx BA-90 bonding, .2% CD-32 and 1/4 lb/sx Celloflakes.

The cement volumes for the 7" casing will be revised pending the caliper measurement from the open hole logs.

5. Minimum Specifications for Pressure Control

The blowout preventor equipment (BOP) shown in Exhibit #1 will consist of a (3M system) double ram type (3,000 psi WP) preventor and a bag-type (Hydril) preventor (3,000 psi WP). 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. Both BOP's will be installed on the 9 5/8" surface 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 3000 psi WP rating.