

Petro 311
Hydraulics Take-home
11/17/09

The One Hopes #1 is target to drill to 14,570 feet. The intermediate casing will be set at 6500 ft. The hole below the casing will be drilled with a 7 7/8" bit with 70,000# on the bit. The drill string will consist of 4 1/2" 16.6 #/ft drill pipe and 6" 120 #/ft drill collars (2" ID).

The mud that will be used initially will be 10 ppg with fann readings of θ_{600} 120 and θ_{300} 87.

The rig assigned to this well has a mud pump with 1000 HHP with a maximum pressure of 2500 psi. Assume the pump works with a 90% efficiency.

Calculate the hydraulic system just below the casing, experience has shown the holes in this area average 8" under these conditions.

At 12,500 feet the mud in the system is changed to a 10.5ppg with fann readings of θ_{600} 120 and θ_{300} 75. Calculate the new system at this depth.

Will the rates calculated clean the hole assuming a particle size of .2 inches? Is this still the case if the hole washes out to 10" for 150 feet at about 10,000 ft?

If a reservoir pressure of 7200 psi is encountered at should the mud weight be brought up before 12,500'?

Due 11/24/09