

PRESSURE CONTROL

Abnormal Pressure Prediction

Safe drilling practices are to be followed throughout the drilling of the well with special attention being given to the abnormally pressured section from 12,700' to 14,700'. Since the well is a development well and the formations and casing points are well defined, it is not planned to use the abnormal pressure detection methods to pick the transition zone and casing point at 12,700'. However, the procedure for applying the data is included should it be decided during the drilling of the well to make use of the data.

Trip Control

Hole fillup should be conducted with the pump stroke method. The hole should be filled every 5 stands when pulling drill pipe and each stand when pulling drill collars.

In the event of hole swabbing, the hole should be filled each stand or each second stand if it is the opinion of rig supervisory personnel that swabbing is not too severe. Measures including, but not limited to, reducing mud viscosity and gel strength, reducing mud weight, reducing pipe pulling speed, and filling the hole through drill pipe should be considered if severe swabbing occurs.

Pipe tripping speed should be controlled so that the trip margin as calculated from surge pressure considerations will not be exceeded.

Primary Methods for Abnormal Pressure Detection

Penetration Rate

Penetration rate is to be continuously recorded. The driller is to mark on the chart the depth of each connection and the depth at which major changes are made in bit weight and/or rotary speed. Average bit weight and rotary speed will also be recorded at the depth of each connection and at depths at which major changes occur. The depth at which a new bit is run is to be recorded.

It will be necessary to rely heavily upon experience to determine if a drilling break is due to lithology or pressure changes. An increase in penetration rate after drilling 50 feet of shale will be considered a warning. A marked or abrupt decrease in shale penetration rate followed by an increase in penetration rate will be considered a definite indication of abnormal pressure. No more than 50 feet is to be drilled after penetration rate increases if the increase is preceded by a decrease.