LITHOLOGIC LOG

Project: 620-Livermore

Hole: 620-65

Elevation: 1040'

Date Drilled: 6-14 - 7-29-80

Location: NE-1/4 SW-1/4 Sec.34 10N 6W

Method:

Geologist: Jim Gross/Dean Pilkington

Gamma:

Depth ( )	Description
0-50'	Clay, silt, sand and larger rock to boulder size. Material is landslide debris derived from Franciscan formation (graywacke) and overlying volcanics.
50-100'	Light to dark gray graywacke. Generally fine grain but some medium grain size. Finer grain varieties are generally darker. Medium grain variety exhibits a salt and pepper appearance. Some material appears quite sheared and crushed and is cemented together in a liminoitic matrix. Clasts are generally mono-minerallic, however there are a few lithic clasts. Clasts are predominantly quartz and feldspar. Mafics are very fine and indistinguishable and vary from 0-2%. Original porosity of 10 to 20% is now filled with flood silica. Flood silica also seen as veins and fracture fillings. Possible basalt vein at 50-60' interval.
100-200'	Light to dark gray graywacke as above with some interbedded dark gray argillite. Argillaceous layers exhibit mineralogic banding due to preferential silica replacement of certain layers. Silica replacement somewhat less than at 50-100', probably about 10-15%. Some cuttings at 150' exhibit primary porosity.
200-300'	Light to dark gray graywacke as 100-200'. Possible basaltic dike crossed about 275'. Very fine disseminated pyrite. Secondary (flood) silica decreasing to about 5% at 300'.
300-400'	Light to dark gray graywacke becoming almost black at 400'. 15 to 20% silica flooding and veins. Medium grain variety has appearance of a granodiorite.
400-500'	Interbedded gray, medium grained graywacke and dark gray fine grained graywacke. Finer material predominates at 500'. Disseminated pyrite. Secondary silica about 15-20%. Silicification isevident in both medium and fine grain cuttings.
500-700'	Continued interbedded sequence of light to medium gray medium grain graywacke and dark gray, fine grain graywacke. Euhedral pyrite to .5mm is abundant at 550'. Light gray (salt and pepper) graywacke is predominant at 600'. Some pyrite as veins at 600'. Silica replacement 15-20%.

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Depth ( )	Description
700-1400'	Gray, medium grain graywacke. Continued pyrite both as disseminated and in bands apparently along original bedding planes. Flood silica decreasing downhole to perhaps 10-15% at 900'. Oxidation at 1400' suggests intermittent water zone.
1400-1660'	Interbedded light to medium gray, medium grain graywacke and very fine grain, dark gray to black graywacke and argillite. Silica replacement decreasing to 5-10% at 1500'.
1660-2840'	Cuttings are all nearly mono minerallic. Section was drilled with button bit and mud. Some feldspars altered to bottle green color, probably epidote. Rock is probably a continuation of graywacke as above but the finer varieties were probably not dropped out because thick drilling mud was used. Lost circulation zone at 2840' was the end of surface return of cuttings.
2840-3030'T.D.	Penetration constant as above so lithology is presumed to be continued graywacke.

H_2O entry information

1392'	30 gpm, surface return temp is about 110°F
1547'	additional 25 gpm, surface return temp is 125°F
1975'	inferred water zone; drilled through with mud; no lost circulation nor water added to drilling mud. Inferred from temperature log. probably small flow
2850'	inferred water zone. Lost circulation and deflection of temperature curve.