

Lithologic Log Addendum

Well BLM-27-270

Cuttings of the lithologic unit from well BLM-27-270 were sent to the Department of Geological Sciences, New Mexico State University (NMSU), Las Cruces, New Mexico, for detailed petrographic analysis when identification of fine-grained, highly altered volcanic rocks at the NASA-WSTF site became difficult using conventional field methods. Petrographic reports from NMSU were received after the printing of these lithologic logs, hence the need for this addendum. The petrographic description from NMSU is included below.

Previous unit name based on field identification: **Tuff**

New Unit name based on petrographic analysis: **Porphyritic Andesite**

BLM-27-270 (340' - 343')

Porphyritic hornblende andesite

Origin: lava flow and volcanoclastic sedimentary rocks
Texture: aphanitic porphyritic
Phenocryst mineralogy: plagioclase + hornblende
Porosity: low, except along veins
Alteration: moderate; calcite veins and replacement of hornblende

Approximately 10% phenocrysts are present in a devitrified matrix of plagioclase + oxides + apatite. Plagioclase and hornblende are the phenocryst phases. Plagioclase crystals (8%, 0.2 - 1.0 mm) are oscillatory zoned and complexly twinned. Hornblende crystals (2%, 0.2 - 0.7 mm) are completely altered and replaced by calcite and oxides, leaving only the characteristic amphibole outline. Porosity is moderate only along the veins; elsewhere in the rock it is low. The sample is moderately altered, mainly by calcite veins, and clay replacing the groundmass. Feldspars are only slightly altered to clay.

Several fragments in this sample are quartz sandstones with calcite cement. Average grain size ranges from 0.05 mm to 0.18 mm. Clasts are almost entirely quartz, mainly individual quartz grains, but rarely are polycrystalline quartz clasts present.

This horizon is interpreted to represent an andesitic lava flow intercalated with sandstones derived largely from the volcanic terrain.