Abstract

STRATIGRAPHIC SEQUENCE FOR SAMPLES RETURNED
BY APOLLO MISSIONS 11 AND 12

H. H. Schmitt, National Aeronautics and Space Administration
and

The sample location data of Sutton and Schaber (this conference),
the geology and morphology of local craters, and the petrography of
individual samples provide the basis for proposing a tentative strati-
graphic sequence of samples from Apollo missions 11 and 12. The Apollo 11
samples appear to have been derived from the base of the regolith and the
top of the bedrock at about 9 m depth in the 250 m diameter crater to
the west of the collection area. The stratigraphic sequence of four or
more flows underlying Mare Tranquillitatis, represented by crystalline
rock samples, must be determined largely by chemical and age criteria.
However, petrographic data indicate a reasonable sequence of individual
flows from the top down of basalt, olivine basalt, crystobalite gabbro
and olivine gabbro.

The stratigraphic sequence of Apollo 12 samples is closely con-
trolled by their locations relative to the morphological features of
local craters. The crystalline rock samples appear to be derived from
two flows. The upper flow is characterized by a top of olivine/vesicular
basalt porphyry, and the lower flow is characterized by a top of clino-
pyroxene/olivine basalt porphyry. Within the upper flow, petrographic
data indicate a sequence, from the top down, of olivine/vesicular basalt
porphyry, olivine/clinopyroxene basalt porphyry, crystobalite olivine
basalt, crystobalite gabbro, tridymite/pyroxferroite porphyritic gabbro,
and olivine gabbro.