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Age and Petrography
of well samples from
Alaska

SOCAL Cape Espenbers #1

Petrography and isotopic dating have been completed on the well samples from Alaska. The results indicate an Eocene age for the dated samples.

Cape Espenberg	5170-5290	Basalt
Cape Espenberg	5260-5320	Basalt

40.7 ± 2.0 Million years K/Ar whole rock

The intervals are essentially identical with the degree of alteration as the basic difference. The original rock was composed of plagioclase, pyroxene, iron oxides and olivine. The olivine is now completely converted to iddingsite in phenocrysts. There is an erratic amount of devitrified reddish glass now converted to micaceous material. The texture is mildly porphyritic with phenocrysts of plagioclase and former olivine. The plagioclase is generally fresh as is most pyroxene.

The upper interval was somewhat fresher and was picked for dating. The samples were carefully picked, treated to remove alterations and repicked. The determined age is a minimum due to the alteration but should be quite close to the age of crystallization. The age is Late Eocene and it is doubtful, in my opinion, that the age is likely to be older than Middle Eocene.

SOCAL Nimiuk Pt. #1

Socal #1 Nimiuk 5915', 5921', 5923', 5929', 5932', 5934', 5938', 5940' Basalt

42.3 ± 10.2 Million years K/Ar treated whole rock

The intervals differ in detail but are essentially identical. The rock was originally composed of plagioclase, pyroxene, iron oxides and olivine. Only plagioclase remains as a fresh mineral. The remainder has been altered to chloritic micas or replaced by carbonate minerals. Both calcite and siderite appear to be present. The plagioclase is generally fresh in most intervals. Calcite veins are common. The grain size is variable between intervals but the texture and basic mineralogy remains identical.

The problem in obtaining a satisfactory age centers on a lack of sample. The core chips are too small to obtain enough volume. The rock was treated to remove calcite and the intergranular micaceous material. The plagioclase was then concentrated. If a clean plagioclase separation could be made it is believed that a reliable age could be determined from the interval. The high error is caused by the relatively small sample size. The analysts would have rerun the sample if more sample had been available. The age indicates the rock was probably crystallized in the Eocene.

INTEROFFICE CORRESPONDENCE

APPLIED STRATIGRAPHY

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TO N. R. Flurry

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ISOTOPIC AGE DATING OF IGNEOUS ROCKS FROM WELLS IN THE SEWARD PENINSULA AREA OF ALASKA.

Basalt samples from ditch cuttings in the ARCO, Norton Basin COST #1, and SOCAL, Cape Espenberg #1 wells plus core chips from the SOCAL, Nimiuk Point #1 well were sent to a consultant for isotopic age dating. The consultant's report and time scales compiled by the Applied Stratigraphy group are attached.

Our interpretation of the results of the isotopic age dating are as follows:

Cape Espenberg #1 - Middle Eocene - This date has a small experimental error and the age is considered to be valid.

Nimiuk Point #1 - probable Eocene - The statistical error was high due to insufficient sample material. However, if the true age lies within the range of experimental error, the geologic age probably falls within the Eocene and could not be younger than Early Oligocene. Due to the proximity of the Cape Espenberg and Nimiuk Point wells, it is logical to assume that the basalts from both wells represent the same geologic event and are approximately coeval.

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