Outline of the Cruise GDP-8 (Part I. Outlines of the Geological Research Operations)

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Principal results of onboard observations by the geological scientific staff on Geodynamics Cruise GDP-8 as well as parts of results of analyses obtained at onshore laboratory after the cruise are summarized in this report.

The research cruise GDP-8 was carried out under the direction of K. KOBAYASHI (Chief Scientist) for 13 days from October 12 to October 25, 1973, using the Research and Training Ship Bosei-Maru of Tokai University (Sei-ichiro HAYASHI, Captain). Scientific members of the cruise are scientists from several universities, a high school, and Geological Survey of Japan with technical assistants from Tokai University (Table 1). Geophysical and geological investigations including magnetic total force measurement by a towed proton precession magnetometer, seismic reflection profiling by an airgun as a sound source and dredge hauls were carried out. Magnetic lineations in the Shikoku Basin previously reported based upon the results of Umitaka-Maru (TOMODA *et al.*, 1968) and Hakuho-Maru (KH72-2, KH73-4) were extended southward by the results of this cruise (TOMODA *et al.*, 1975).

By the dredge hauls conducted in this cruise a number of granitic rocks were collected. Six hundred and thirty seven (637) pieces of angular or round gravels encrusted with ferromanganese oxides were recovered from a mid-slope terrace of Komahashi II (Komahashi-daini) Seamount situated at the northern extremity of the Kyushu-Palau Ridge (Geol. Res. Members GDP-8, 1975; SHIKI *et al.*, 1974; SHIKI *et al.*, 1975). Dominant portions of the nucleus of the gravels were plutonic rocks (Fig. 1), although several andesitic tuff and one fine quartzose sandstone were also found.

Petrological studies have shown that the recovered granitic rocks are biotite-hornblende

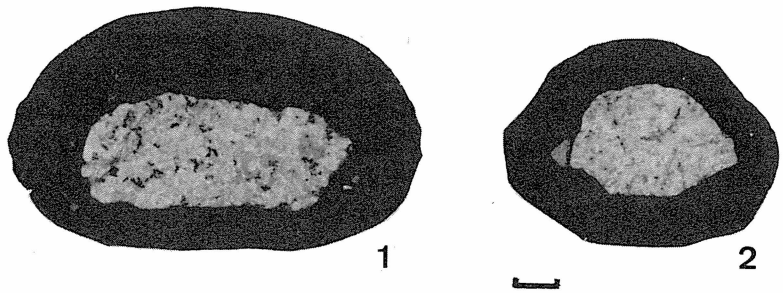

Fig. 1. Granitic rocks obtained at the Komahashi-daini Seamount, Kyushu-Palau Ridge.
1: Biotite granite gravel encrusted with ferro-manganese oxides of ca. 1 cm thick. (GDP-8-12-9)
2: Angular gravel of albite tonalite encrusted with ferro-manganese oxides. (GDP-8-12-12)
scale: 1 cm

Table 1. Scientists on board (GDP-8)

Ocean Research Institute, University of Tokyo
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Hogara USUI
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Faculty of Marine Science and Technology, Tokai University
Megumu ANMA
Present address: Kawasaki Chishitsu Co., Ltd.
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Faculty of Science, Nagoya University
Hideki WADA
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Geological Survey of Japan
Yoshiro INOUCHI
Yoshihisa OKUDA
National Science Museum
Toshio ASANUMA
Present address: Faculty of Science, Chiba University
Sadanori MURAUCHI
Present address: Faculty of Science, Chiba University
Nara University of Education
Shiro NISHIDA

tonalite, trondhjemite and biotite granodiorite, which were probably derived from one source magma of the same rock series. Although their color indices are varied, lack or very low content of potash feldspar is a characteristic feature of these granitic rocks (SUWA and AOKI, 1975; AOKI *et al.*, 1975). These rocks are characterized by low K content, very low Rb content, high K/Rb ratio, low Rb/Sr ratio and relatively low initial $^{87}Sr/^{86}Sr$ ratio (ISHIZAKA, 1975; ISHIZAKA and YANAGI, 1975). K-Ar age of one tonalite sample is 38Ma (SHIBATA and OKUDA, 1975). Fission track age of granitic gravel is 51 ± 10Ma (NISHIMURA, 1975).

Prior to this cruise granitic rocks were obtained from the crest of the same seamount by a Soviet research vessel (OSTAPENKO and NARYIENYI, 1976). Our collection indicated a wide occurrence of granitic rocks at the Komahashi II Seamount. It has been informed that K-Ar age of granitic rocks collected by the Soviet ship is much younger, although a tonalite sample collected by a later cruise of Geological Survey of Japan provided K-Ar

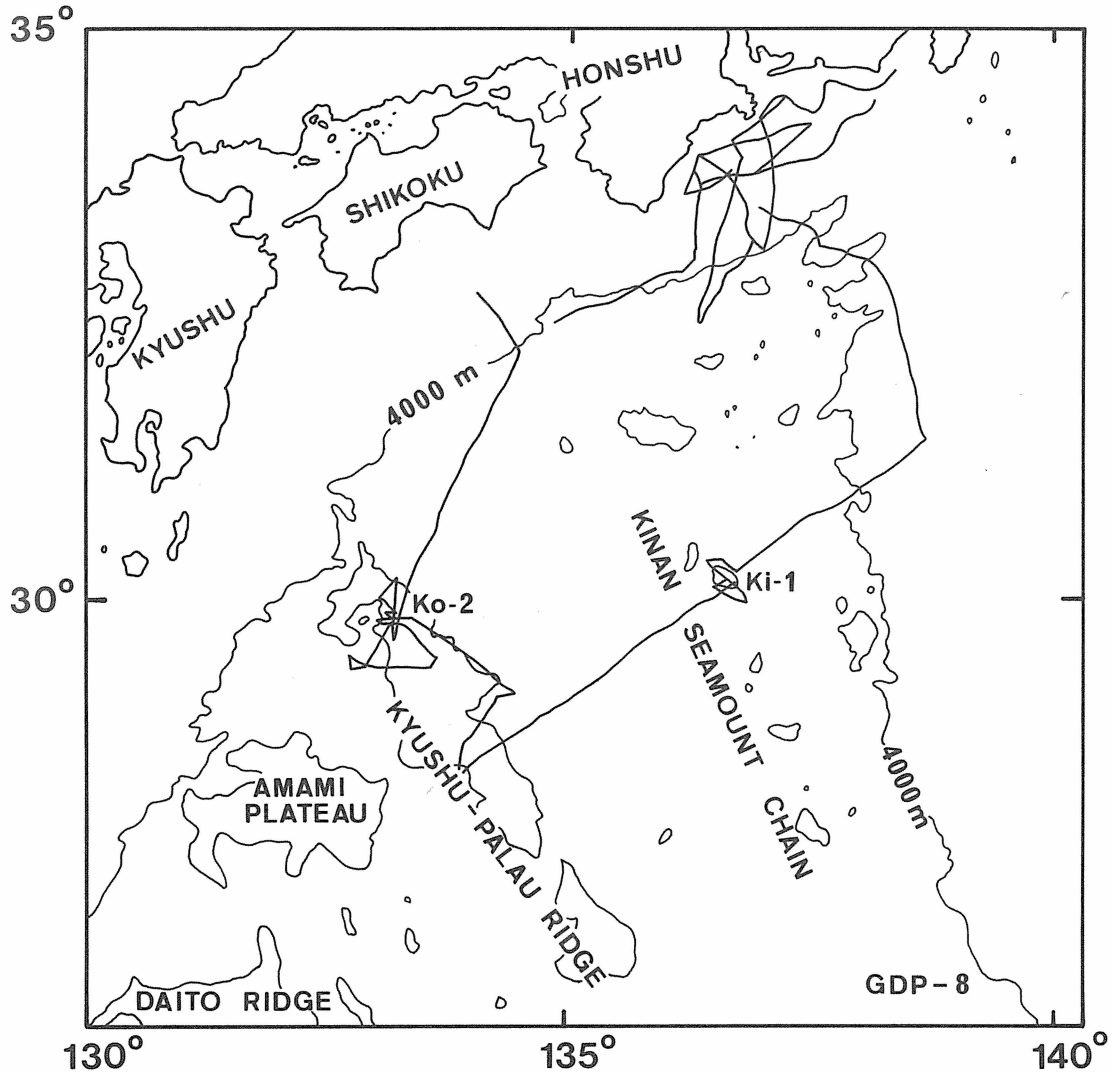

Fig. 2. Ship track chart of the cruise GDP-8.

age identical with that of our GDP-8 samples.

Eighteen (18) clastic carbonate (partly phosphorized) rocks collected from the same site of Komahashi II Seamount also provided very interesting implications, since they were dredged at a water depth of about 1,000m. Corals, urchins and foraminifera of middle Miocene were found in the samples (KONDA, 1975). Occurrence of these fossils indicates shallow sea environment at the time of deposition, as revealed by the DSDP result from site 296 described elsewhere in this volume (KOBAYASHI, this volume).

From the Kinan Seamount Chain trending nearly at the axial zone of the Shikoku Basin the GDP-8 cruise recovered a piece of altered olivine basalt tuff by a dredge haul at the 2nd (Daini) Kinan Seamount (Geol. Res. Member GDP-8, 1975; SHIKI *et al.*, 1974; SHIKI *et al.*, 1975). This was the first recovery of the igneous rock from the Kinan Seamount Chain. Before that a fossil bearing altered calcareous rock ("palagonite tuff") was col-

lected by Hydrographic Department, Maritime Safety Agency of Japan in 1962 (Sato, 1975; Iwabuchi, personal comm.). Following the GDP-8 cruise the R.V. Hakuho-maru of Ocean Research Institute, University of Tokyo (cruise KH74-4, GDP-14) recovered a large boulder of pillow basalt from Hakuho Seamount (provisional name) south of the 2nd Kinan Seamount in the Kinan Seamount Chain.

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