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CRUISE REPORT

Ship Name: R/ V VEMA

Cruise No: 36-05

Departure: 2 December 1979
Date

from Hong Kong
Port

Arrival: 21 December 1979
Date

at Hong Kong
Port

Days at Sea: 19
(Count day of departure but
not day of arrival in port)

Days Foreign Port: 3
(number of days in arrival port
before next leg)

Area of Operation:

South China Sea - Deep Basin

Program Description:

To map magnetic lineations and fracture zones and to determine crustal structure from sonobuoy observations using large volume airguns and from seismic reflection profiling. Three seamounts were dredged successfully.

Program supported by what contract: N00014-75-C-0210, Scope "0"

Participants: (All L-DGO unless otherwise specified)

<u>Name</u>	<u>Title</u>
Dennis Hayes	Chief Scientist
Brian Taylor	Assistant Scientist
P. W. Woodroffe	Technician
D. J. Medlicott	Computer Tech.
M. W. Iltzsche	Compressor Tech.
S. L. Hudson	Elect. Tech.
K. Jacobs	" "
C. A. Salcedo	" "
H. R. Smith	Airgun Tech.
A. Hazelman	" "
M. Bolekin-aivalu	Coring, Dredging
Qian Yi Peng	Magnetics Scientist (from P. R. China)
Feng Wen Ke	Marine Geology Scientist " "
Li Zhen Wu	Seismic Scientist " " "

All inquiries regarding cruise should be made to the chief scientist.

CRUISE REPORT

VEMA 36-06

The cruise began on 2 December 1979 following a brief drydocking and minor ship repairs in Hong Kong. It was necessary first to sail approximately 60 miles up the Pearl River to near Canton where a formal cooperative agreement and protocols were signed with scientists from the People's Republic of China. After a brief stop in Canton, we sailed with three visiting scientists from the People's Republic of China on board.

The principal objectives of the cruise were to further map magnetic lineations and fracture zones in the deep basin area; to determine crustal structure using seismic profiling and sonobuoy techniques with large volume air guns; to dredge selected seamounts for petrologic and age dating studies.

The weather during most of the cruise was rough (consistent Beaufort Force 6 or greater) and this degraded the quality of the gravity measurements and prevented dredging at several planned targets. The cruise track closely followed that outlined in the prospectus and is shown in Figure 1. Tracks were slightly modified from the near N-S lines planned so that better quality magnetics data could be obtained in the low latitude region and in the absence of a working magnetometer with a toroidal coil. The toroidal coil could not be "tuned" apparently because the signal strength was too low.

All equipment worked satisfactorily except the 12 kHz PDR which in spite of installation of a new transducer (while in drydock) was very

noisy and virtually unusable in deep water. A new transceiver was received in Hong Kong (II) and it appeared that the 12 kHz was again operating satisfactorily.

One gyro was replaced on the gyrotable about 14 days into the cruise and this appeared to improve the record quality, although this also coincided with the moderation in the weather so both factors may have been responsible for the improvement.

The large airguns were operated without problems for about 4 days at stretches of 6-18 hours at a time. Their deployment and retrieval was routine and the gun handling equipment is well designed and utilitarian.

About 12 commercial (Fairfield) sonobuoys were deployed with good to excellent results and no obvious sonobuoy failures, although several buoys were noisy, sea conditions were also rough. This constitutes the first use of the sonobuoy receiver recently modified by Fairfield for use with their standard 72-76 mHz buoys. Two sets of crystals for channels 10, 20, 30, 40, and 50 are on board.

Three successful dredge stations were made; the rocks recovered, mostly highly weathered basalts (some pillows) with manganese crust and possible glass rims, constitute the only rocks ever recovered from the deep South China Sea Basin. All dredge sites were on the lower flanks of major seamounts. The samples were split with scientists from the People's Republic of China.

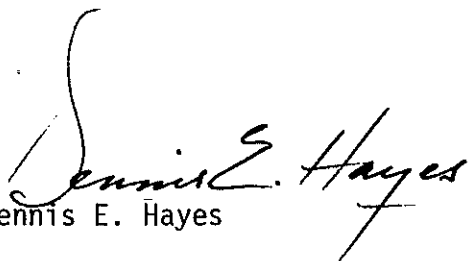
Extensive work was done on the computer system by a field engineer in Hong King (I). The system performed well during the cruise and all navigation and underway geophysics data was processed (preliminarily) on board. All of the routine data reduction programs were operable and

essentially "debugged." The software for the automatic data acquisition logging side of the computer is still under development.

Only one good eel is on board. This eel was received in Hong Kong (I). The backup eel is very noisy and since the preamp section checks specs it is likely that some (or most) of the hydrophones are partially collapsed, thus reducing the signal level.

In general the ship was in excellent condition and operated without any major problems during the duration of the cruise. The cooperation of the ship's officers and crew were, as usual, excellent!

The scientific staff performed well and morale was high. Everyone was cooperative and helpful to the visiting PRC scientists. These PRC scientists expect to remain on board the VEMA for the next three cruise legs.


Dennis E. Hayes
Chief Scientist

Date: 27/12/79

