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CRUISE REPORT

Ship name: VEMA Cruise No. 35-03

Departure: April 9, 1978 from Colombo, Sri Lanka

Arrival: April 16, 1978 at Singapore

Days at sea: eight plus additional day at anchorage

Days foreign port: dry dock and extended port stay

Area of operation: Bay of Bengal, Strait of Malacca

Program Description: IN TRANSIT from Sri Lanka to Singapore

Participants (L-DGO personnel)

Mossman, Brian	E.T.
Mossman, Dwight	E.T.
Ostrowski, Brian	E.T.
Schwartz, Jeffrey	Core Describer
Van Steveninck, William	Heat Flow (party chief)

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

Being an "IN TRANSIT" leg, V35-03 was mostly concerned with getting from here to there; viz., Colombo, Sri Lanka to Singapore. It did, however, provide some time to examine certain aspects of the equipment used in collecting the underway data. In view of the harshness of the seagoing environment and the impartiality of the second law of thermodynamics, it may be stated at the outset that it is remarkable that the equipment aboard the ships functions as well as it does and for the extended periods of constant operation demanded in this type of service.

One very serious problem is the lack of documentation available to the shipboard E.T. The worst case in point is the manual which accompanies the profiler. Not only is the information it contains conflicting and incomplete, but the format used to describe the various modi operanda of the unit is haphazard and confusing. It is of little value when troubleshooting the equipment— when time is of the essence. In this situation, the E.T. must rely completely on his personal experience with the unit. Unfortunately, when the ship is underway and the equipment is running, it cannot be extricated from its primary role of collecting data; so the E.T. has no hands-on experience with the unit until something goes wrong— a bad time for on-the-job training.

For the same reason, spare modules often cannot be repaired after they have been removed from a piece of equipment. A backup unit would alleviate the above conditions but would be expensive. The only alternative is to give the E.T.'s some time with the equipment when the data is not critical. Vema 35-03 provided

a good opportunity for some of these activities to take place.

Another glaring weakness in documentation was in evidence as regards changes or modifications made to equipment. There is little or no indication of when and where such changes are made and for what reasons. The packet of diagrams for the gravity computer, for example, contained three or four conflicting schematics which gave no indication as to which drawing actually was a faithful representation of the system in use. Several sheets were clearly marked 'Conrad.' Another case in point was the 3.5 KHz P.D.R. To my knowledge, there is no indication anywhere that the input board must be modified to accomodate the higher signal level coming out of the newer transceivers. For this very reason, the records for V 35-01 and V 35-02 were of marginal quality. Many man hours were wasted in attempting to fix the 3.5 when the whole problem was lack of documentation. The E.T.'s have started a log for each piece of equipment. This should keep track of what has been done recently; but what was done three years ago may be expected to lead to surprises for years to come.

In addition, people seem to have gotten sloppy over the years. Many of the precision resistors in the profiler modules have been replaced by carbon resistors. In addition to being "noisy," these resistors simply do not have the close tolerance necessary to insure that the gain of the amplifiers will have any more than a casual relationship to the settings on the dials. This reflects the attitude of complacence which has become evident in the testing procedures for most Lamont equipment. There is only very sketchy

information available concerning what signals to expect both on the input and from the output of our in-house equipment. It has been "good enough" when a signal is present at the output, irrespective of the signal level required at the input to drive the output to a reasonable level.

During the leg, I did some work on the eel preamplifiers both in the eel itself and in the upper lab. These experiments were aimed at using a balanced line to transmit the signal from the eel back to the ship. The results raise some serious questions concerning the assumptions made in designing the eel preamp currently in use. While my design had vastly better common mode rejection of radio interference generated by the ship's transmitters, preliminary results seemed to indicate that the actual signal was not significantly improved. While we may safely conclude therefore that these conceptual blunders did not adversely affect the performance of the eel under actual operating conditions, it is nevertheless frightening to think that this result may have been fortuitous.

William Van Steveninck

Party Chief, VEMA 35-03