



THE UNIVERSITY OF TEXAS
MARINE SCIENCE INSTITUTE
GEOPHYSICS LABORATORY
GALVESTON, TEXAS 77550

700 *The Strand*
713 765-2173

1 August 1977

CHIEF SCIENTIST'S REPORT

IG 24-6

The Research Vessel *Ida Green* departed from Acapulco 19 June 77 and arrived in Puenta Arenas, Costa Rica, 15 July 77. The scientific crew consisted of T. Shipley, M. Houston, J. Shaub, J. Kunselman, A. Ibrahim, O. Eapen, G. Percy, E. Boucher, and W. Featherston. H. Sandoval and A. Dominguez were on board as visiting scientists from the University of Mexico.

The first several days were spent on OBS refraction work at Oaxaca using air guns and Maxipulse sound sources. The first OBS failed because the tape stepped through the four tracks before the unit was launched. Sunlight apparently triggered the end-of-tape sensor. OBS-2 and OBS-3 (redeployed at the first site) operated correctly. We then deployed two OBS's on oceanic crust to run a reversed profile with the Maxipulse. The Maxipulse was deployed with the 300-lb weight. We did not recover OBS-4 although we spent 13 hours looking for it (mostly at night). We had a good idea of the drift vector and went 10 miles farther down-drift than where it should have been if it came up on the clock release. I believe that it probably did not come up. The other OBS refraction unit was recovered, but there were some tape problems, so the whole experiment may be a failure. Four days were spent on OBS refraction work.

We then shot the Maxipulse CDP line on oceanic crust from the refraction station toward the trench axis. After completion of the Maxipulse work, we pulled the streamer to work on leakage that had developed on many of the channels. In addition #10 was intermittently dead. After working for about 24 hours, we had not been able to fix the problems. The leakage seemed to be in the leader or sliprings. We finally began our first CDP line off Oaxaca and had not finished the first tape before we had to pull the streamer for boarding by a Mexican Naval Vessel (GO-5). Eventually our ship's captain, Otis Murray, was ordered to discontinue work and to leave Mexican waters.

We began a transit to Guatemala with the intention of working there until the Mexican situation was cleared up. We were about 24 hours out when we were instructed to return to Oaxaca. We worked on the #1 line section and were finally able to get the signal up to the DFS. The signal was not being passed through the #1 depth sensor correctly. We have

put a jumper from #1 live to #1 dead passing the depth sensor until the problem can be fixed correctly. About 2 days were lost due to the problem with the Mexican work permit.

We finished the Oaxaca geophysics 02 July and began shooting the trench strike line to Guatemala. This line was finished on 07 July. We brought in the streamer and spent 1 day trying to transpond to two of the Guatemala OBS's. Since we had no success, we redeployed the streamer and began shooting the Guatemala-Costa Rica Trench line.

We pulled the streamer on 10 July as the seas were picking up, and we did not want to be late arriving at the Guatemala OBS sites. Because we pulled the streamer early, about 100 miles of CDP work remain to complete the trench line.

We arrived early at the OBS sites and tried to recover by transponder two OBS's that we had not tried to locate the first time we were in the area. We recovered OBS-A with the transponder release. The other three came up on the clock release. There were various tape and tape transport malfunctions of the units along with strobe light and transmitter failures. Ibrahim has the details of the problems encountered with the passive OBS units.

The Mexican scientists were quite helpful, and I think we will be able to develop a more meaningful and useful relationship with the University of Mexico. Sr. Sandoval seems knowledgeable and quite willing to help in advancing our work and developing projects in the future with our group.

We have three significant ship problems. The aft compressor engine broke an engine mount which cracked the top of the belly tank. Otis re-aligned the compressors, and they were working all right. The forward compressor engine has a main shaft bearing going out, and Otis has recommended that we run it below 1000 rpm. This limits us to three air guns.

We had to ration water for 3 weeks. The showers were turned off for 3 weeks, and the heads were flushed with salt water for the last 2 weeks. This was probably the main reason that two crew members left the ship. There are indications that two members of the scientific crew will get off in Balboa if the legs are extended more than 2 weeks.

Finally, we were forced to come in early and unexpectedly because we were low on fuel. I had asked Otis several times about the fuel situation as our plans changed, and I was always assured that there was plenty of fuel. I suggest that the Captain be required to sound both the fuel and water tanks every other day and include these figures in bi-daily reports to Galveston.

We collected approximately 1100 nm of CDP data, made five OBS refraction drops, and recovered four OBS earthquake units. Six days were spent on OBS work, plus 2 days of running to come back to Guatemala to pick them up on the clock release.

Both the ship and scientific crew did an excellent job of maintaining the safety of the vessel and in obtaining the best data possible.

Respectfully,

Thomas H. Shipley
Thomas H. Shipley

THS:lab

cc: Dr. J. Lamar Worzel
Dr. Joel S. Watkins