

CRUISE REPORT

TR-67 TEQUILA

20 February - 6 April 1969

Ship's Schedule

- Leg 1    20 February, depart San Juan, Puerto Rico  
          10 March,     arrive Tela, Honduras
- Leg 2    12 March,     depart Tela, Honduras  
          26 March,     arrive Cristobal, Panama
- Leg 3    29 March,     depart Cristobal, Panama  
          6 April,     arrive Barranquilla, Colombia

Dillon

Eric

ERIC CHRISTOFFERSON

Scientific Party

- William Dillon (legs 1,2,3), scientific leader
- Eric Christofferson (legs 1,2,3), graduate student
- Paul Pinet (legs 1,2,3), graduate student
- Arthur Buddington (legs 1,2,3) marine technician
- Timothy Kennard (legs 1,2,3), marine technician
- Christine Trmal (legs 1,2,3), technician
- Michael Harvey (leg 1), marine technician
- Jim Tapper (legs, 1,2,3), undergraduate, U.R.I.

1500

Research Programs and Preliminary Results

Continuous bathymetric and total magnetic intensity readings were made from San Juan, Puerto Rico to the northern coast of British Honduras. At this point, William Dillon commenced a geophysical survey along the continental margin of British Honduras. Over 1500 km of bathymetric and magnetic data and 800 km of seismic-reflectivity profiles were obtained during the 5 day survey. To date, the magnetic data has not been analyzed, but a preliminary study of both the bathymetric and sub-bottom records indicates that the shelf off British Honduras is characterized by complex, high angle normal faulting.

During late February and throughout March a geophysical survey was conducted by Paul Pinet along the south side of the Cayman Trough at its western end in order to collect thesis information. Approximately 5,500 km of bathymetric and magnetic surveys were obtained in addition to 2300 km of continuous seismic-reflectivity profiles. The best coverage begins at Tela, Honduras and extends eastwards between the mainland of Honduras and the Bay Islands to the

84° W line of longitude. East of this area, the spacing of survey lines was increased in order to ascertain the general nature of the Nicaraguan Rise.

The magnetic field intensity data was contoured aboard the ship. It appears that several prominent magnetic anomalies occur south of the islands of Utila and Roatan. The anomalies are extended in an east-west direction and are in line with the regional structures of Honduras and with the trend of the Bay Islands. A preliminary examination of the sub-bottom records indicates that extensive block-faulting has controlled or at least influenced the development of this continental borderland. The down-thrown blocks are often covered by a sequence ( $> 300$  m) of horizontally-bedded sediments. The beds which underlie the outer shelf and continental slope are usually folded and faulted. Several distinct stratigraphic unconformities are also apparent in many of the seismic records.

Four dredge hauls were attempted in the vicinity of Isla Utila. Moderately indurated carbonate mud was dredged from three of the sites which included a canyon wall and two scarp like features on the shelf edge. Coral and other related organisms were dredged from a shoal located on the shelf proper. Unfortunately, no rock samples were collected for dating purposes.

4 Dredge  
No rock samples collected

A seven day survey was conducted by Eric Christofferson off the northwest coast of Colombia, S.A. from 29 March to 6 April, 1969. The operation involved geological studies in an area lying between 75°15' and 76°30'W and 12°N southward to the 50 fathom contour on the Colombian continental shelf. Over 853 km of depth soundings and magnetic field intensity readings were obtained while approximately 181 km of sub-bottom profiles were collected.

(Seismic)

The area surveyed is a westward extension of the area covered during TRIDENT cruise 036 in the fall of 1966 under the direction of Dale C. Krause. The purpose of this survey was to determine if a fold belt found flanking the continental margin off Colombia by Krause (1969, in press) extends along the northwestern coast of Colombia toward the Gulf of Darien. Also, attempts were made to ascertain whether or not the east-west shear zone of northern Colombia and Venezuela extends westward across the sea floor toward Panama. This extension has been predicted by several recent models of Caribbean evolution.

Preliminary results indicate that tensional faulting rather than compressive folding dominates the structure of the northwestern continental margin. Geophysical evidence for the east-west shear zone on the sea floor is weak or non-existent, indicating that a new model for the evolution of the western Caribbean Sea must be constructed.

Continued geophysical and geological studies of this area are planned for TRIDENT cruise 075, October 1969. This survey will cover the bight between Colombia and Panama as well as the Gulf of Darien.

