

PILSON

TR-044

ASAF ASHRAF

Core Laboratory
Graduate School of Oceanography
University of Rhode Island

PILSON

CRUISE REPORT

R/V TRIDENT

Cruise No. - TR 044

5 November 1967 - 27 November 1967

TR-044

R/V TRIDENT CRUISE REPORT

SHIP'S SCHEDULE

5 November 1200, depart St. George, Bermuda)	
12 November 1127, arrive Cristobal, Panama)	leg 1
13 November 0553, arrive Station 1, Gulf of Panama)	
19 November 0800, arrive Balboa, Panama)	
22 November 1605, depart Balboa, Panama)	leg 2
27 November 2054, arrive Nassau, Bahamas)	

SCIENTIFIC PARTY

James Frey, Cruise leader (graduate student, U.R.I.)
leg 1 and 2

David Johnson (graduate student, U.R.I.), leg 1

Kent Fanning (graduate student, U.R.I.), leg 1

Dr. Michael Pilson (faculty, U.R.I.) leg 2

Arthur Buddington (technician, N.M.L.) leg 1 and 2

Timothy Kennard (technician, N.M.L.) leg 1 and 2

STATION SUMMARY

4 Microbiological Stations
6 Cores (Stations 4 and 29 (3 each))
33 Hydrographic stations (4)3000 m
31 Phytoplankton stations
11 Zooplankton stations

SCIENTIFIC PROGRAMS

- 1) Four biological samples were collected and treated for Dr. Robert Fournier, then at the University of Oslo. The samples were taken at Stations 1 and 2 en route to Panama, and at Stations 4 and 29 in the Gulf of Panama.
- 2) Four 13 liter surface sea water samples were collected and filtered for Dr. Theodore Smayda of U.R.I. These samples were taken at stations 1, 2; and at stations 3 and 29 in the Gulf of Panama.
- 3) Seven enriched flask cultures were collected for Dr. Smayda at Stations, 3, 4, 5, 10, 20, 26, in the Gulf of Panama. These cultures were returned directly to the lab from Nassau by air.

- 4) Two continuous profiles of sonic depth and magnetics were taken for Dr. Dale Krause of U.R.I., in the Caribbean en route to and from Panama.
- 5) David Johnson's phosphate work is reported as follows:

The persulfate oxidation method of total phosphorus analysis (Menzel and Corwin, 1965) was tested under sea conditions. In "Organic Phosphorus" studies, this eliminates not only a delay in obtaining the requisite data, but also problems associated with sample storage -- such as changes in the inorganic/organic phosphorus ratios. While the final results have not yet been worked up, it is clear that the accuracy of this method, at sea, is on the order of $\pm 1-1/2\%$ (one standard deviation) as compared with $\pm 5\%$ for the older perchloric acid digestion method. This will allow more significant "Organic Phosphorus" determinations to be carried out than have previously been possible. ("Organic Phosphorus" values of 3% of the total can be considered significant as opposed to 10% previously)

The methods were applied to analyses of the vertical distribution of "Organic Phosphorus" at two deep stations in the Gulf of Panama. (TR 44 stations 4 and 29, 14 and 18 Nov., 1967) Dissolved organic carbon samples were taken at each phosphorus sampling depth in hopes of being correlated with the "organic phosphorus" content. These results have not yet been obtained. At both stations, the "Organic Phosphorus" in the water below 100 m averaged about "2% of the total" and in a few instances was greater than 3% of the total.

- 6) Kent Fanning did silica analyses and silica uptake by deep sediments on Stations 4 and 29 in the Gulf of Panama. He reports: "The hydrocasts were analyzed for silica in duplicate by two methods. Some of the differences between the methods were so large that different forms of silica may have been present. The silica concentration increased continuously from 1 - 2 μM at the surface to 150 - 160 μM at the bottom (approximately 3300 meter). Two cores from each station were wrapped and stored under refrigeration for later analysis. The interstitial water was squeezed out of the two remaining cores and analyzed for dissolved silica. The top 10 cm. of each of the three cores from Station 4 were mixed, and portions of this mixture were exposed to seawater of different silica concentrations. Uptake or release of silica over time was followed by occasional sampling of the supernatant water."

4 pages 4
CORES

- 7) Oblique zooplankton tows, using large Clark-Bumpus samplers, were made in the Gulf of Panama for Howard Russell of U.R.I. Formalin preserved samples were taken at Stations 3, 5, 6, 7, 9, 11, 13, 17, 18, 20, and 25. Frozen samples were taken at Stations 7, 9, 11, 13, 17, 20, 22 and 25.

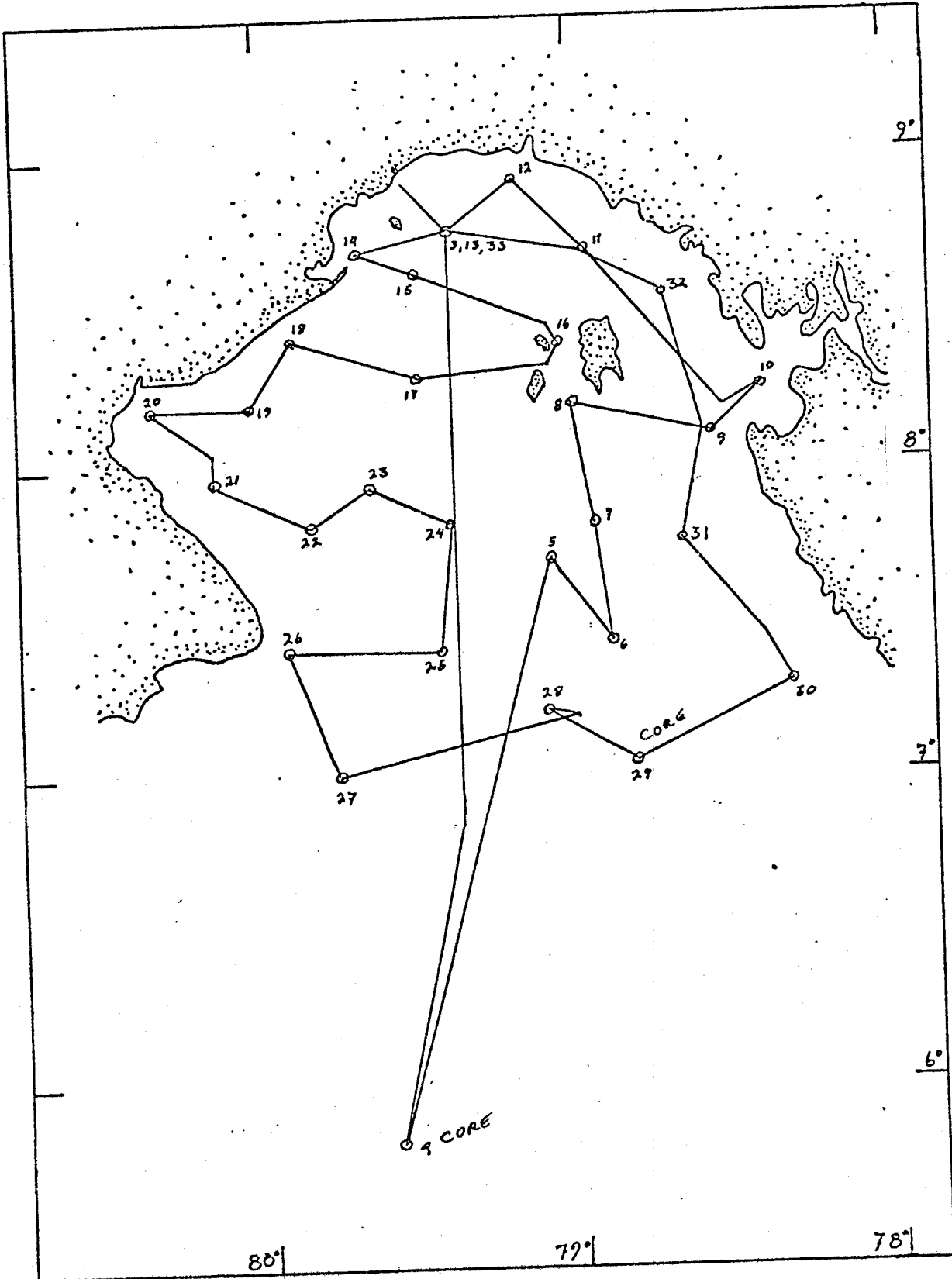
- 8) James Frey collected 60 liters of water from 10 meters at Station 3 in the Gulf of Panama, for use in nutrient enrichment studies on the natural phytoplankton population. The sample was dispensed into culture flasks in 150 ml aliquots, for a total of 18 treatments in triplicate. The cultures were incubated at 25°C at approximately 1000 foot candles, on a 12 hour light cycle. Replicates of each treatment were then preserved at 3, 6, 9, 12, and 15 days after inoculation, for future enumeration at the Lab.

- 9) All members of the scientific party participated in a survey of the Gulf of Panama consisting of 31 Stations at which phytoplankton, hydrographic data, phosphates, and silicates were taken. Nitrates were taken at half of these stations. In addition, 64 expendable BT's were taken, at all stations and at 10 to 15 mile intervals between them.

- 10) Dr. Michael Pilson finished the phosphate analyses from the survey while en route from Panama to Nassau; in addition to setting up his equipment for the following cruise.

The Officers and crew of the R/V TRIDENT are to be commended for their cooperation and helpfulness throughout the cruise.

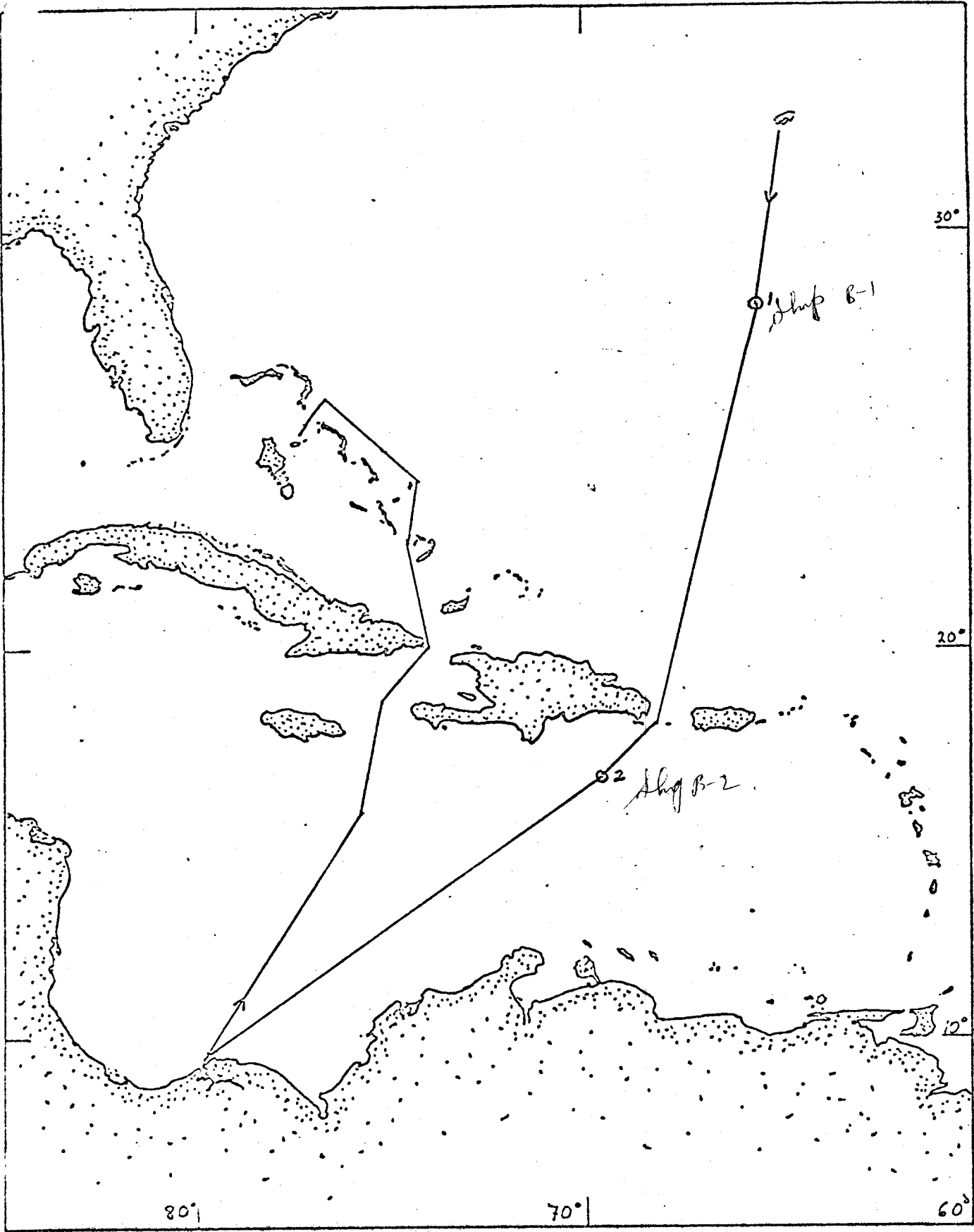
Ships log =
 Ship station #1 = this map station #3



1 - 78° 49.1 W
 7° 02.7 N

 4 - 78° 36.4 W
 5° 48.2 N

Gulf of Panama Stations - TR 044



Atlantic and Caribbean Tracks - TR 044