Criticism

1. A primary criticism of the operation was the lack of communications between airborne observers and surface craft hunting oil slicks.
   a. C. B. Radios with similar crystals could have eliminated this situation completely.
2. A second fault was the apparent lack of a definite preconceived plan of operation, e.g.
   a. The equipment required.
   b. Number of men required.
   c. Base of operations.
   d. A coordinator available at all times.
   e. Orientation of personnel involved as to what was to be done when and how.

Recommendation

Due to the expanding petrochemical industry in Puerto Rico and St. Croix I recommend as an extremely important step the following:

A study of winds, currents and natural features and phenomena of this area be made. It is a fact that there are no current charts of inshore waters around Puerto Rico existing today. To effectively control a petroleum spill one must be able to predict accurately the course of the spilled oil, its speed of travel over the surface and the effects upon it of various combinations of conditions of wind, weather, tides, currents and temperature. This is not now known which was quite apparent in the operation involving the *Ocean Eagle.* Spills occurring approximately 15 miles offshore can be predicted as to travel, etc., and a fairly good plot of their travel made as there is a fair amount of information available regarding the most influential elements. A result of such a study should result in some of the following:

1. What means of control would be most effective in a given location.
2. What means of control would be most effective under various combinations of conditions of sea and weather.
3. What materials and equipment will be required under the various combinations of conditions in the various areas.
4. What materials and equipment and in what quantities should be kept available by what agencies for such contingencies.
5. What agencies should be available for what job.
6. The funds for such a preconceived plan should be made available prior to necessity.

It is my opinion that, if we are to preserve at least in part, the beauty and present resources of the island, studies of the various effects and causes and their prevention and control should be made now. It is quite obviously too late to begin after a disaster to decide what to do. We have had a slight experience with the *Ocean Eagle.* In the San Juan area, the most important thing to do is to widen the harbor entrance at Punta del Morro, deepen the channel, eliminate the dog leg course in and out and establish sea buoys slightly further outside those now existing. A means of eliminating passing situations entering and leaving the harbor is extremely important. All ships awaiting pilots should, by local law, be required to leave—to much further off than is now the practice. On the south coast, studies of all these problems are also indicated as numerous critical conditions exist these also. The incident of the tub boat "Coral" was an indication of one such existing Logard. Should this have been a petroleum vessel the marine life in and about Parguera would have been irreparably damaged.

RESUME OF ACTIVITIES REGARDING "OCEAN EAGLE" BY WILLIAM H. EGER

March 6.—Arrived in San Juan late afternoon with Drs. Maximo Cerame and William Maddux (Dept. Marine Sciences, UPR). Arrangements for accommodations.

March 7.—Help set up mobile laboratory and acquire aquaria supplies for bioassay experiments. Conferred with Mr. Keith Stewart (Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio). Examination of extent of oil pollution in San Juan harbor in vicinity of U.S. Coast Guard installation with Dr. Cerame and Mr. Stewart. Observation of marine life killed in vicinity of La Puntilla.