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MEMORANDUM

Date: August 12, 1987

To: B. Halley, H. Kneble, G. Hill, T. Aldrich, S. Barton,  
J. Newell, T. O'Brien, G. Sexton, N. Soderberg,  
B. Henry (DMA), T. Cocke (State Department)

From: J. Dodd

Subject: Cruise Report M/V Starella

Cruise No.: S3-87-CI

Parent Project: Defense Mapping Agency Gravity

Funding Agency: Defense Mapping Agency

Funding Amount:

Contract No.:

Contract Start/End Dates: October 1, 1986 - open

Area of Operation: Canary Islands

Cruise Start/End Dates, Ports: <sup>132</sup> 12 May 1987 - Las Palmas, Canary Islands  
<sup>162</sup> 11 June 1987 - Las Palmas, Canary Islands

Chief Scientist: Jim Dodd, Bill Stahle

Cruise Data Curator: Jim Dodd, Bill Strahle

|                                |                |              |
|--------------------------------|----------------|--------------|
| Scientific Party, Affiliation: | Jim Dodd       | USGS-AMG     |
|                                | Bill Strahle   | USGS-AMG     |
|                                | Cathy Delorey  | USGS-AMG     |
|                                | Candace Lane   | USGS-AMG     |
|                                | Carol Renaud   | USGS-AMG     |
|                                | Noemi Rosado   | USGS-AMG     |
|                                | Barry Irwin    | USGS-AMG     |
|                                | Ron Circe      | USGS-AMG     |
|                                | Jim McCullough | WHOI         |
|                                | John Haaglund  | Nortech      |
|                                | John Ryland    | Racal Survey |

Ships Captain: John Nichols

Purpose: The purpose of this cruise was to collect gravity and bathymetry data around the Canary Islands on a 3 nmi grid with an internal consistency of +/- 3 milligals. Concurrently, work was continued on tying the General Electric 810 Correlation Sonar equipment into the Magnavox 5000 Integrated Navigation System and the USGS Data Collection System.

Navigation Techniques: Global Positioning System (satellite), Racal Hyperfix (radio, shore-based) and Racal Microfix

(radio, shore-based).

Equipment: USGS Gravity Data Logging System  
USGS Data Processing System  
LaCoste and Romberg Air/Sea Gravimeters S-26 and S-41  
Raytheon PTR 12KHz Bathymetry System  
Racal Hyperfix and Microfix Navigation Systems  
General Electric 810 Correlation Sonar  
Magnavox System 5000 Integrated Navigation System

Tabulated Information:

Days at sea: 29  
Kilometers surveyed: 7105.8  
Kilometers steamed: 9695.8

Narrative:

The ship left Las Palmas (on Gran Canaria Island) on May 12, 1987 and headed for the island of Fuerteventuro. Starting off the southern coast, we worked our way east and north toward Lanzarote Island. We surveyed around Lanzarote then had to go to Las Palmas to exchange some crew members. We ran one long line south-west along the west coast of Fuerteventuro on the way in and made the exchange on May 18th. Then the ship steamed back to Fuerteventuro to finish up all lines on the west side of the island.

Racal had only a limited number of navigation stations. Besides this, each station had limited range (15 - 20 nmi for Microfix, 150 nmi for Hyperfix). Therefore, we had to coordinate the survey at sea with the resources on land. While data is normally processed every few days, here the schedule was increased so that as soon as an area was surveyed, the data from that area was processed so we could be sure we wouldn't have to return there. Then Racal could move the navigation stations to the next area. This 'leap-frogging' system was made possible through the hard work of the Racal shore team and the help of many of the local Canary Islanders who helped in keeping the equipment moving, in set-up and break-down of stations and in transporting the equipment from island to island.

The next island surveyed was Gran Canaria. On May 23rd, we finished the east side of the island and came into the port at Las Palmas to exchange more of the scientific party. Then the survey around Gran Canaria was finished and work was continued on the western islands of Tenerife, Gomera, Hierro and La Palma. The cruise ended in Las Palmas on June 11, 1987 where the gravity data we collected was referenced to the gravity station in Las Palmas.

# Canary Islands

