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MINERAL RESOURCES IN SOUTH PACIFIC OFFSHORE AREAS
CRUISE REPORT: SAMOA OFFSHORE SURVEY

24-28 November 1979

by

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SAMOA OFFSHORE SURVEY (WS-79-1) 24-28 November 1979 CRUISE REPORT

SOUNDING SURVEYS BY R/V MACHIAS AT ASAU AND SALELOLOGA HARBOURS, SAVAII

Introduction

Whilst in Apia preparing for the commencement of the 1979 offshore airgun and seabed sampling survey on the UNDP chartered vessel R/V MACHIAS, between 21 and 23 November 1979, the Project Chief Scientist was asked by the Apia Harbourmaster if it would be possible to carry out sounding surveys of the harbour entrances at Asau and Salelologa, both on Savaii Island. This type of work was not scheduled by the Project Office for the MACHIAS at that time. However, it happened that a breakdown of the airgun hydrophone amplifier occurred at the start of this phase of work, and, since a replacement was required from Suva which would take several days to arrive, it was decided that the MACHIAS could be gainfully employed conducting sounding work at Asau and Salelologa as requested. Whilst recognizing that the positioning methods and water depth measuring methods available on the MACHIAS would not allow an accurate hydrographic survey to be carried out, it was considered that useful results could still be obtained bearing in mind the complete dearth of recent data available for both harbours. Work was undertaken under the direction of the Master of the MACHIAS, Capt. W. Austin, between 24 and 28 November 1979.

Survey Methods At neither Asau nor Salelologa was a suitable harbour plan available on which to base the work. At each site, therefore, the MACHIAS was anchored on a four point anchor and a base plan was constructed by taking radar ranges and bearings onto suitable existing markers, such as the channel marker piles, leading lights, etc. The ship's dinghy was then used to tie and pull tight a rope marked off in units of 0.01 nautical miles between suitable channel marker piles on opposite sides of the channel and hand soundings by line were then taken at 0.01 mile intervals along

this rope. At Asau it was necessary along some sounding lines to attach one end of the line to the reef (either exposed or submerged) because sufficient suitably placed piles did not exist. These anchor positions were not marked and cannot be precisely recovered. It is considered that the principal source of error in the surveys will lie in the horizontal positioning of the sounding points. Although it has been assumed on the accompanying bathymetric charts that soundings were taken

on straight lines between the rope tie points, because of the current in the channel the rope was frequently bowed downstream and this has not been allowed for. Nevertheless, the depth measurements at crossover points on different lines are generally

in reasonable agreement and gross errors are not thought to be present.

Results

Salelologa Harbor

A soundings chart was prepared at a scale of 0.25 inches equals 0.01 nautical mile (scale of the field plot) showing spot depths in meters below Chart Datum along the 15 lines measured and hand sounded across the final approach channel between the outer leading light and the dock. The position of the channel marker piles, leading lights and dock face, all of which were fixed by radar as described above, are also shown on this plan. An inset plan, at a larger scale, of the dock face showing spot water depths along the face are also presented on the chart. This was made by tape measure and hand sounding line. All soundings on the chart were reduced to Chart Datum by applying a correction for the tidal levels predicted for Apia Harbour as published in the Admiralty Tide Tables Volume 3 (Pacific Ocean). No time or height difference data between Apia and Salelologa is available and these are almost certainly negligible.

In order for the Salelologa chart to be more conveniently studied, the original 0.25 inch to 0.01 mile plan has been photographically reduced and presented at an approximate scale of 1:3000.

Asau Harbor

A soundings chart was prepared at a scale of 1cm equals 0.01 nautical mile (scale of the field plot) showing spot depths in meters below Chart Datum along the lines measured and hand sounded across the channel entrance to the Harbour. In all, thirteen lines were sounded between the outer reef point and the inner, north side, channel marker pile. Soundings have been reduced to Chart Datum by applying a correction for the tidal levels calculated for Asau Harbor from the predictions and corrections for Apia published in the Admiralty Tide Tables.

In order for convenience of study, in particular for direct comparison with the previous survey by the Fiji Marine Dept., the original 1 cm to 0.01 mile plan has been photographically reduced and presented at an approximate scale of 1 :2500.

Summary Survey Log

<u>Date</u>	<u>Time</u>	<u>Activity</u>
24 Nov. 1980	1500 (GMT)	MACHIAS abandoned airgun work and set course for Salelologa Harbor.
24 Nov. 1980	2145 (GMT)	Arrived Salelologa.
25 Nov. 1980	all day	Bathymetric survey carried out Salelologa channel.

<u>Date</u>	<u>Time</u>	<u>Activity</u>
26 Nov. 1980	All day	Bathymetric survey Salelologa completed. Transit to Asau.
27 Nov. 1980	All day	Bathymetric survey of Asau entrance channel carried out.
28 Nov. 1980	All day	MACHIAS in transit to Apia.
28 Nov. 1980	20.00 (local)	MACHIAS arrived Apia and anchored.

Scientific Personnel

E. Saphore - UNDP Electronics Technician
P. Tuani - Apia Observatory
F. Malele - Apia Observatory
Y. Okuda - Geological Survey of Japan

Ship's Personnel

W. Austin - Master
C. Erkelens - First Mate
C. Blem - Second Mate
W. Myers - Cook