

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT UM0503

Howland Island, U.S. Pacific Islands

Introduction

Coastal Mapping Program (CMP) Project UM0503 provides an accurate database of new digital shoreline data for Howland Island, located at approximately 00° 48' north latitude and 176° 37' west longitude. Howland Island is an uninhabited atoll located 1640 nautical miles southwest of Hawaii and near the equator. It is managed by the U.S. Fish and Wildlife Service (Department of Interior). The digital cartographic feature file (DCFF) may be used in support of the NOAA Nautical Charting Program (NCP) and coastal zone management activities. Project survey data is referenced to the North American Datum of 1983 (NAD 83).

Project Design

This project was designed per a request from the NOAA Office of Coast Survey (OCS), for cartographic data in support of Marine Chart Division (MCD) operations. Based on an analysis of project requirements and results of a source data search, it was determined that CMP procedures for multiple source projects would apply for this project. Available source data deemed adequate for successful completion of this project included sources acquired in May 2005.

Field Operations

Routine CMP field operations did not apply for this project based on the origin of the project source data.

Aerotriangulation

The aerotriangulation task was accomplished by Applications Branch (AB), Remote Sensing Division (RSD) personnel in May 2006 utilizing a Digital Photogrammetric Workstation (DPW), which is a configuration of computer hardware, modular software components and other associated peripheral devices. The image files were imported into SOCET SET (version 5.2) using the DataThruWay (version 5.0) software extension. The import process converted the stored compressed files to the National Imagery Transmission Format (NITF 2.0) with headers and metadata. Aerotriangulation procedures were accomplished using the Multi-Sensor Triangulation (MST) module of SOCET SET. The Interactive Point Measurement tool of MST was used to collect several tie points, and it was determined from running the simultaneous solve adjustment program that the average predicted horizontal circular error for all well defined points in this project area is 12 meters at the 95% confidence level.

Compilation

Digital feature data compilation for this project was accomplished by AB personnel in May 2006. The digital mapping was performed using a DPW in conjunction with the SOCET SET Feature Extraction software module. Feature attribution was assigned in compliance with the Coastal Cartographic Object Attribute Source Table (C-COAST), which provides the definition and attribution scheme for the full range of cartographic features pertinent to the CMP.

Cartographic features were compiled to meet a horizontal accuracy of 15 meters at the 95% confidence level. The water level at the time of imagery is unknown, but the mean tide range for Howland Island is about 1.5 meters.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of AB. The final QC review was completed in June 2006. The review process included analysis of aerotriangulation results and assessment of the identification and attribution of cartographic features within the DCFF according to image analysis and criteria defined in C-COAST. The quality control process concluded with an inspection of topological connectivity within the DCFF using ArcGIS 9.1 software. All project data was evaluated for compliance to CMP requirements.

Comparisons of the largest scale NOAA nautical charts with source imagery and compiled project data resulted in creation of the Chart Evaluation File (CEF). The following nautical chart was used in the comparison process:

Chart 83116, Islands in the Pacific (Howland Isl. inset), 1:15,000 scale, Jul.15 /78, 4th ed.

End Products and Deliverables

The following specifies the location and identification of the products generated during the completion of this project:

RSD Applications Branch Archive

- Hardcopy of the Project Completion Report (PCR)
- Page-size graphic plot of GC10609 file contents, attached to PCR

Remote Sensing Division Electronic Data Library

- Project Database
- Digital copy of DCFF GC10609 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File in shapefile format

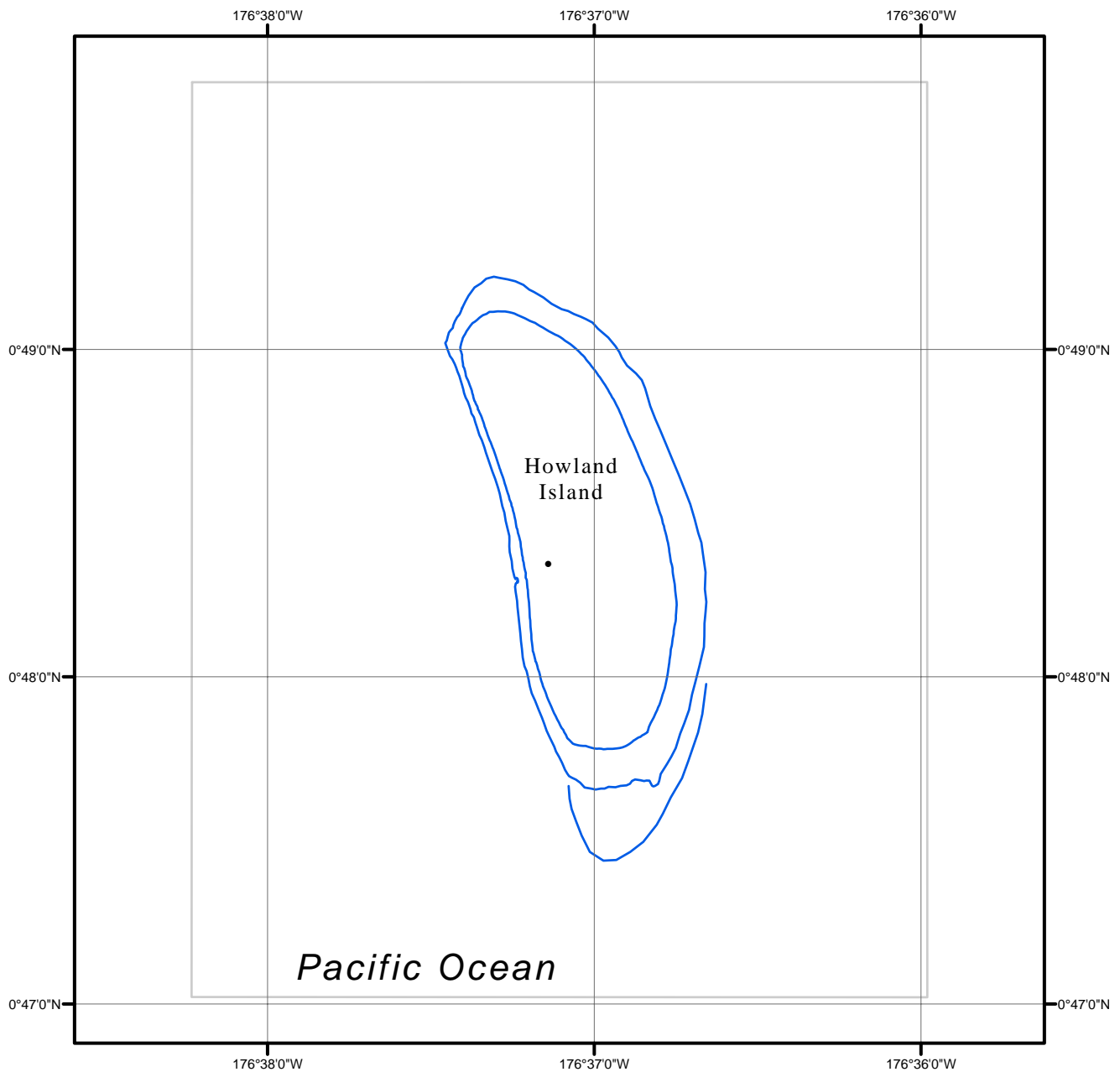
NOAA Shoreline Data Explorer

- DCFF for GC10609
- Metadata file for GC10609
- Digital copy of the PCR in Adobe PDF format

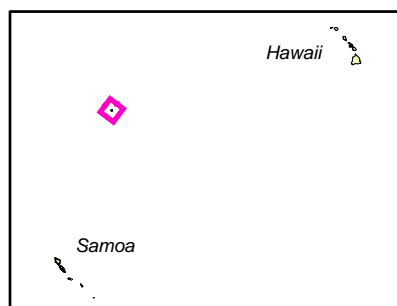
End of Report

HOWLAND ISLAND

U.S. PACIFIC ISLANDS



Overview



UM0503

GC10609