DESCRIPTIVE REPORT

Type of Survey  
**Basic Hydrographic**  
(*Navigable Area*)

Hydrographic/Multibeam  
*Side Scan Sonar*

Registry No.  
H11035

LOCALITY

State/Territory  
**Commonwealth of Puerto Rico**

General Locality  
South Coast of Puerto Rico

Sub-locality  
Approaches to Aguirre

2001

CHIEF OF PARTY

Gerd F. Glang, LCDR, NOAA
**NOAA FORM 77-28**  
U.S. DEPARTMENT OF COMMERCE  
(11-72)  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

**HYDROGRAPHIC TITLE SHEET**

<table>
<thead>
<tr>
<th>REGISTRY NUMBER:</th>
<th>H11035</th>
</tr>
</thead>
</table>

**INSTRUCTIONS:** The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

<table>
<thead>
<tr>
<th>FIELD NUMBER:</th>
<th>N/A &quot;C&quot;</th>
</tr>
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</table>

<table>
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<tr>
<th>State/Territory:</th>
<th>Commonwealth of Puerto Rico</th>
</tr>
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<tbody>
<tr>
<td>General Locality:</td>
<td>South Coast of Puerto Rico</td>
</tr>
<tr>
<td>Sub-Locality:</td>
<td>Approaches to Aguirre</td>
</tr>
<tr>
<td>Scale:</td>
<td>1:10,000</td>
</tr>
<tr>
<td>Date of Survey:</td>
<td>05/21/01 to 06/04/01</td>
</tr>
<tr>
<td>Instructions Dated:</td>
<td>19 MAR 01</td>
</tr>
<tr>
<td>Project Number:</td>
<td>OPR-1305-WH</td>
</tr>
<tr>
<td>Vessel:</td>
<td>NOAA Ship WHITING, S-329</td>
</tr>
<tr>
<td>Chief of Party:</td>
<td>Lieutenant Commander Gerd F. Glang, NOAA</td>
</tr>
<tr>
<td>Surveyed by:</td>
<td>WHITING Personnel</td>
</tr>
<tr>
<td>Soundings by:</td>
<td>Odom Echotrac DF3200 MK II Echosounder</td>
</tr>
<tr>
<td></td>
<td>Reson SeaBat 8101 multibeam sonar</td>
</tr>
<tr>
<td>Graphic record scaled by:</td>
<td>WHITING Personnel</td>
</tr>
<tr>
<td>Graphic record checked by:</td>
<td>WHITING Personnel</td>
</tr>
<tr>
<td>Hewlett Packard Design Jet 2500CP (office)</td>
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</tr>
<tr>
<td>Protracted by:</td>
<td>N/A</td>
</tr>
<tr>
<td>Automated Plot:</td>
<td>HP-750C (field)</td>
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<tr>
<td>Verification by:</td>
<td>Atlantic Hydrographic Branch personnel</td>
</tr>
<tr>
<td>Soundings in:</td>
<td>Meters FEET at MLLW</td>
</tr>
</tbody>
</table>

**Remarks:**  
* notes in Descriptive Report were made during office processing.  

1) **All Times are UTC.**  
2) **This is a basic Hydrographic Survey under the Navigable Area Concept.**  
3) **Projection is UTM Zone 19.**
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SEPARATE I - V
DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SURVEY H11035

Scale of Survey:  1:10,000
Year of Survey:  2001
NOAA Ship WHITING
LCDR Gerd F. Glang, Commanding

A. AREA SURVEYED

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions for project OPR-I305-WH, South Coast of Puerto Rico, Puerto Rico. The instructions are dated March 19, 2001.

This Descriptive Report pertains to survey H11035, Approaches to Aquirre Aguirre. Survey H11035 is referenced in the letter instructions as Sheet "C" of project OPR-I305-WH. The name and the scale of this survey has changed from that specified for Sheet C in the Letter Instructions. These changes are outlined in an e-mail from LCDR Gerd Glang to LCDR Don Haines dated May 10, 2001, and can be found in Appendix V of this report.

Survey limits are displayed graphically in the chartlet on the following page (Figure 1).
B. DATA ACQUISITION AND PROCESSING  See also evaluation report

B.1. EQUIPMENT

Data were acquired by NOAA Ship WHITING and survey Launches 1005 and 1014. WHITING is a 49.7 meter vessel with average transducer draft of 3.2 meters. Both launches are NOAA’s standard 8.5-meter aluminum Jensen vessel with a typical 0.5-meter transducer draft. All vessels were configured as described in the Data Acquisition and Processing Report (DAPR) for this project. Major data acquisition systems are summarized below.

NOAA Ship WHITING acquired High Speed/High Resolution side scan sonar (HSHRSSS) and VBES data. HSHRSSS data were acquired with the Klein T-5500 side scan sonar towfish. VBES data were acquired with an Odom Echotrac DF3200 MKII echosounder. WHITING’s positioning system is a Trimble DSM212L integrated differential GPS receiver. Attitude data were determined using a TSS DMS-05 Dynamic Motion Sensor.

Launch 1005 acquired shallow water multibeam (SWMB), side scan sonar (SSS), VBES, and Detached Position (DP) data. An Odom Echotrac DF3200 MK II echosounder was used for VBES hydrography. SWMB data were acquired with a Reson SeaBat 8101 shallow water multibeam system. SSS data were acquired with an Edgetech model 272-T towed side scan sonar. Launch 1005 utilizes a TSS POS/MV 320 (version 2) GPS-aided inertial motion sensor to determine both positioning and attitude.

Launch 1014 acquired VBES, SSS and HSHRSSS data. Launch 1014 was also used to acquire detached positions (DP), and bottom samples. An Odom Echotrac DF3200 MK II echosounder was used for VBES hydrography. Side scan sonar data were acquired with an Edgetech model 272-T towed side scan sonar. Positioning was determined with a Trimble DSM212L integrated differential GPS receiver. Attitude data were determined using a TSS DMS-05 attitude sensor.

No unusual vessel configurations were encountered. *Refer to the Data Acquisition and Processing Report (DAPR) for detailed equipment and vessel configuration information. *DAPR filed with Project reports for OPR-I305-WH.

A catastrophic hardware failure occurred during the final days of this survey. Two days (DN 151 and 153) of raw and processed side scan sonar data were lost. Prior to the crash, the side scan sonar for these two days was scanned and fully processed. Contacts were identified, flagged and SWMB development line plans created. All SWMB and VBES data were recovered and are included in the final data set. Raw and processed side scan sonar data for DN 151 and 153 were not recovered and therefore are not included on the DLT media.

---

1Launch 1005 VBES data were not processed when SWMB data were acquired.
submitted to the office; nor are they shown on the mosaic coverage plots for this survey. A chartlet showing the areas of 100% and 200% coverages is shown in Figure 2. The remaining days of data were checked after being restored from backup tapes. Restored processed side scan data was intact, however the VBES data required reprocessing. Since contacts for this data were already extracted, and development line plans laid out, and executed, it is the hydrographer’s opinion that this area was adequately investigated. Concur
Figure 2. Chartlet showing missing side scan regions due to loss of data storage unit.
B.2. QUALITY CONTROL

Side Scan Sonar Quality Control

Daily confidence checks were conducted by observing side scan imagery in the vicinity of known contacts, such as buoys or sand waves. Side scan data were considered satisfactory if these contacts could be distinguished throughout the entire range of the side scan trace.

When operating in shoaler waters (e.g. less than 30 meters deep), a short tow was required for the Edgetech systems. When cable-out was approximately 10 meters or less, minor degradation of the side scan imagery and ODOM echosounder traces were noted due to cross-talk between the two systems.

Shallow Water Multibeam Quality Control

There were no faults with the SWMB system which affected data integrity. Refer to this project’s *DAPR for detailed discussion of SWMB system calibrations, data acquisition, and data processing.*

At the conclusion of survey operations, a CARIS HIPS Quality Control Report was compiled. This process compares the soundings in a checkline file with a Digital Terrain Model (DTM). The report generates statistics relating to the deviation of beams from a reference surface. Since VBES crossline data were acquired for this survey, this report was generated using a SWMB development area. *A copy of the Quality Control Report has been included in Separate V - Crossline Comparisons.*

Preliminary Smooth Sheet Histogram

The preliminary smooth sheet histogram is shown in Figure 3. The histogram shows two main concentrations of soundings. The shallow concentration, which corresponds to the area inside the barrier islands, ranges from 10 to 30 feet. The second, deeper depth range (65-90 feet) is evident of the gradual slope of the sea floor south of the barrier islands.

Figure 3. Histogram of depths from H11035.
Crosslines

60.95 linear nautical miles (lnm) of crosslines were run, equivalent to 9.78% of the 622.95 nautical miles of mainscheme data. Mainscheme data was defined for this survey to be both the 100% and 200% coverage. Crossline and mainscheme sounding data were compared using MAPINFO 5.0, with no significant discrepancies observed. concur

100% SWMB data were acquired in the Bahia de Jobos channel. SWMB developments were acquired on this sheet, and one of these developments provided the data for the quality control report. SWMB data were analyzed in a CARIS/HIPS workfile (see project DAPR). *One-hundred percent of the checkline data agreed with the IHO specifications, as compared with the mainscheme DTM of this check area. Based on CARIS Quality Control Report (see Separate V). concur *data filed with original field records

Junctions

H11034 was available for junction comparisons, adjoining H11035's eastern limit. The soundings agreed well. concur

B.3. CORRECTIONS TO ECHO SOUNDING

All survey methods and instruments were implemented as described in the Correction to Echo Soundings section of the DAPR for this project. concur

A table detailing all sound velocity casts is contained in *Separates III - Sound Velocity Profile Data. Sound velocity data has been submitted on CD-ROM with the digital data package. Cast data is organized on the digital media as follows: vessel / day of cast / cast data. *data filed with original field records
C. VERTICAL AND HORIZONTAL CONTROL

Vertical Control

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide station at Magueyes, PR (975-9110) served as control for datum determination. Two tertiary, 30-day gauges were installed to provide ancillary tidal data for this project. One gauge was installed at Punta Guayanilla (975-8053), and one gauge was installed at Las Mareas (975-5679). Installation and initial leveling of subordinate stations was performed by CO-OPS/FOD personnel. WHITING personnel performed closing levels at each subordinate station.

Tidal zoning for this survey is consistent with the Letter Instructions. The zone used for this survey is as follows:

<table>
<thead>
<tr>
<th>CORRECTOR (min)</th>
<th>RATIO</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRS2</td>
<td>12</td>
<td>x1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>975-9110</td>
</tr>
</tbody>
</table>

A Request for Approved Tides letter was sent to N/OPS1 on July 6, 2001 (Appendix IV). Verified tides from the N/OPS1 CO-OPS website were downloaded on July 1, 2001 and applied to all sounding data. Approved tides and zones were applied to the survey during office processing.

Horizontal Control

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 19. Concur

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon station at Isabella, PR. No secondary DGPS beacon was available for this survey area. Horizontal control stations were not used for this survey. Concur

Horizontal dilution of precision (HDOP) was monitored on Hypack daily on all survey platforms. Neither value exceeded 4.00, and adequate satellite coverage was maintained throughout the survey period. All positioning equipment was operated in a manner consistent with the manufacturer’s requirements and as described in the *DAPR. There were no equipment malfunctions which affected the positional quality of the data. Concur *DAPR filed with Project reports for OPR-I305-WH.
D. RESULTS AND RECOMMENDATIONS. See also evaluation report

D.1. CHART COMPARISON

There are two charts affected by this survey:

25677, 19th edition, March 18, 1995, 1:100,000
25687, 12th edition, January 19, 1991, 1:20,000

General Agreement with Charted soundings

**South of the Cayos/Barrier Islands**

Soundings taken south of the barrier islands agreed well with the charted depths. The contours generally agree with the chart. Serious discrepancies are addressed in the “Dangers to Navigation” section. Two soundings that do not agree with the chart, but based on their close proximity to the barrier islands, are not dangers to navigation are a 45ft 52ft over a charted 59 ft at latitude 17° 54' 47.58"N, longitude 066° 14' 48.83" W and a 17ft over a charted 22 ft at latitude 17° 55' 08.28"N, longitude 066° 15' 18.58"W. *It is recommended that present survey data be used to update the chart in these areas.*

**North of the Barrier Islands, west of Cayo Puerca**

Soundings taken north of the barrier islands agreed well with the charted depths. This area is mainly used by recreational boaters and small fishing vessels. Serious discrepancies are addressed in the “Dangers to Navigation” section. *concur*

**Channel to Bahia de Jobos and Turning Basin**

The soundings in this area agreed well with the charted soundings, with a few exceptions of isolated shoaling. The channel is used by tug boats going to and from the power station in Aguirre. An area southeast of Cayo Puerca is shoaling southward towards the channel. *do not concur.* No indication of shoaling was found in this area on the present survey. *It is recommended that the area be updated based on present survey findings.* The area just east of the northeast tip of Punta Colchones shows soundings ten feet shoaler than the charted depth; this area is encroaching on the channel. *do not concur.* No indication of shoaling was found in this area on the present survey. *It is recommended that the area be updated based on present survey findings.* The channel itself is shoaler than the charted depths of 27 and 26 feet by one to two feet, with a recommended controlling depth of 24 feet. *concur*

There is little change in the turning basin. The area between the power station and the warehouse dock is showing a shoaling trend; *do not concur.* No indication of shoaling was found in this area on the present survey.
a 22 foot sounding was found near the channel on final approach. **concur** The channel and area east of the power station dock are used by tugs and appear to be well maintained. **It is recommended that present survey soundings supersede the charted soundings in this area.**

Serious discrepancies are addressed in the “Dangers to Navigation” section. **concur**

**AWOIS Item Investigations**

There are three AWOIS items within the survey limits. These item investigations are summarized in the following pages.
AWOIS: 10865

Item Description: Sounding

Source: LNM12/88

Item Position: Lat. 17° 55'58.61" N, Long. 066° 13' 38.96" W

Required Investigation: S2, SWMB, DI  Status: Completed

Charts Affected: 25687  Radius: 100m

INVESTIGATION

Contact No: N/A

Date(s): 143, 152

Least Depth Position Number: H11035_05MB_152_433_1522_280_87

Investigation Used: 200% SSS, 100% SWMB

Surveyed Position: Longitude 17° 55' 59.11" N, Longitude 066° 13' 38.83" W

Position Determined By: Differential GPS

Investigation Summary: 200% SSS and 100% SWMB were acquired over the entire 100m radius. No contacts were identified within the AWOIS radius. Depths in the area were found to be significantly greater than the reported 16 foot charted sounding. concur

CHARTING RECOMMENDATION

Recommendations: The hydrographer recommends deleting “16 ft rep 1988” note at position Lat. 17° 55'58.61" N, Long. 066° 13' 38.96" W and charting present survey soundings in this area. concur
AWOIS: 11013

Item Description: Wreck (Unknown)

Source: LNM 2/88, LNM 13/88, LNM 19/88

Item Position: Lat. 17° 53’ 46.20” N, Long. 066° 11’ 00.20” W

Required Investigation: SD, S2, SWMB, DI

Charts Affected: 25687

Status: Assigned

Charts Affected: 25687

Radius: 1000m

INVESTIGATION

Contact No: N/A

Date(s): N/A

Least Depth Position Number: N/A

Investigation Used: N/A

Surveyed Position: N/A

Position Determined By: N/A

Investigation Summary: This AWOIS item was outside the sheet limits of this survey. 10% of the radius of the AWOIS item was covered with 100% and 200% SSS. concur

CHARTING RECOMMENDATION

Recommendations: This survey did not adequately cover this AWOIS item, however survey H11034 did cover this item. See Survey H11034 for AWOIS investigation information and charting recommendations. concur
AWOIS: 11014

Item Description: Wreck (Unknown)

Source: CL1985/68, LNM 4/69, CL1015/87

Item Position: Lat. 17° 55' 58.88" N, Long. 066° 15' 36.60" W

Required Investigation: SD, S2. SWMB, DI  Status: Assigned

Charts Affected: 25687  Radius: 500m

INVESTIGATION

Contact No: 155_2010_1

Date(s): 143

Least Depth Position Number: H11035_05VB_141_155_2010_11394_1

Investigation Used: 200% SSS

Surveyed Position: Latitude 17° 55' 55.89" N, Longitude 066° 15' 37.36" W

Position Determined By: Differential GPS

Investigation Summary: The investigation covered 50% of the assigned 500m radius with 200% side scan sonar; the area not covered was too shoal for launch operations. The item was not sufficiently developed. One significant contact was found (155_2010_1) and resembled a wreck, however this was not verified. A SWMB development of this contact determined this item had a least depth of 19.88 ft (6.06 m) corrected using verified tides.

concur

CHARTING RECOMMENDATION

Recommendations: The hydrographer recommends relocating the “wk” at position 17° 55' 58.88" N, 066° 15' 36.60" W to the position 17° 55' 55.89" N, 066° 15' 37.36" W. concur. Chart a 20 ft dangerous sunken wreck and the notation “Wks” at the present survey location. Delete the charted dangerous sunken wreck symbol and ED note.
Dangers to Navigation

A total of 14 Dangers to Navigation (DtoN) were reported by the Hydrographer to N/CS33 (AHB). For the complete DtoN report (dated November 4, 2001) *see Appendix I. Concur. Of the 14 dangers reported by the field, only 2 were determined to actually be DtoNs during office processing. Item 14 is a privately maintained buoy. *(A copy of the DtoN letter is appended to this report.)

D. 2. ADDITIONAL RESULTS

Aids to Navigation and Other Detached Positions

The following is a list of all aids to navigation that were positioned during this survey:
(Defer to MCD Update Service Branch for charting recommendations for Aids to Navigation.)

<table>
<thead>
<tr>
<th>ATON</th>
<th>Light List #</th>
<th>Latitude Longitude (surveyed position)</th>
<th>Range (R) and Bearing (B) from Charted Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>R N “2”</td>
<td>31860</td>
<td>17° 55' 57&quot; N 066° 16' 18&quot; W</td>
<td></td>
</tr>
<tr>
<td>G C “3”</td>
<td>31862</td>
<td>17° 55' 54&quot; N 066° 15' 50&quot; W</td>
<td></td>
</tr>
<tr>
<td>G C “5”</td>
<td>31865</td>
<td>17° 55' 30&quot; N 066° 14' 19&quot; W</td>
<td></td>
</tr>
<tr>
<td>G C “7”</td>
<td>31870</td>
<td>17° 55' 22&quot; N 066° 13' 48&quot; W</td>
<td></td>
</tr>
<tr>
<td>R N “8”</td>
<td>31875</td>
<td>17° 55' 56&quot; N 066° 13' 39 &quot; W</td>
<td></td>
</tr>
<tr>
<td>* 2 Q R 12ft 2M (rock pile)</td>
<td>31880/31881</td>
<td>17° 56' 06&quot; N 066° 13' 40&quot; W</td>
<td>(see last 2 entries in this list &amp; p. 16)</td>
</tr>
<tr>
<td>Q G “1”</td>
<td>31890</td>
<td>17° 56' 35&quot; N 066° 13' 30&quot; W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>Q R “2”</td>
<td>31895</td>
<td>17° 56' 40 39.868&quot; N 066° 13' 27 26.707&quot; W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>Fl R 4s “4”</td>
<td>31905</td>
<td>17° 56' 47&quot; N 066° 13' 28 &quot; W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>ATON</td>
<td>Light List #</td>
<td>Latitude (surveyed position)</td>
<td>Range (R) and Bearing (B) from Charted Feature</td>
</tr>
<tr>
<td>------</td>
<td>--------------</td>
<td>------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>Fl R 4s “6”</td>
<td>31915</td>
<td>17° 56' 52'' N 066° 13' 26'' W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>Fl G 4s “3&quot; charted as “5”</td>
<td>31900</td>
<td>17° 56' 45'' N 066° 13' 38'' W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>Lt R not marked between charted “6&quot; and “8”</td>
<td>31920</td>
<td>17° 56' 57'' N 066° 13' 30'' W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>Lt G not marked charted as “3”</td>
<td>31910</td>
<td>17° 56' 43'' N 066° 13' 33'' W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>* 2 Q R 12ft 2M</td>
<td>31880</td>
<td>17° 56' 06.026'' N 066° 13' 40.465'' W</td>
<td>priv maintd</td>
</tr>
<tr>
<td>* 2 Q R 12ft 2M</td>
<td>31885</td>
<td>17° 56' 06.028'' N 066° 13' 40.545'' W</td>
<td>priv maintd</td>
</tr>
</tbody>
</table>

The Hydrographer believes that the lighted red buoy (position #41569) is item charted as Fl R 4s “8" (Light#31920), and the lighted green buoy (position #41578) is item charted as Fl G 4s “3" (Light#31910) in the Light List. Concur

Bottom samples were collected to verify charted bottom types. Samples were collected at most of the currently charted bottom type locations within the areas north of the barrier islands. Of the 6 samples collected, 84% did not agree with the currently charted bottom types. The hydrographer recommends making the following charting changes based on this current bottom sample data. Concur

<table>
<thead>
<tr>
<th>Charted Latitude</th>
<th>Charted Longitude</th>
<th>Charted Bottom Type</th>
<th>Survey Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>17° 56' 01.8'' N</td>
<td>066° 16' 3331.3'' W</td>
<td>Sh S</td>
<td>gr gy M</td>
</tr>
<tr>
<td>17° 55' 56.7'' N</td>
<td>066° 15' 5153'' W</td>
<td>rky</td>
<td>Sh S</td>
</tr>
<tr>
<td>17° 55' 50'' N 51.1</td>
<td>066° 56' 34'' W 16'10&quot;</td>
<td>Sh Co</td>
<td>Sh Co</td>
</tr>
<tr>
<td>17° 56' 31''30.5'' N</td>
<td>066° 13' 3133'' W</td>
<td>M</td>
<td>gn gr silt CL Cl</td>
</tr>
</tbody>
</table>
The position and characteristics of each sample acquired (i.e. Log M sheets) can be reviewed in *Appendix 5.* *(Data filed with original field records)*

There were no requirements for shoreline verification on this survey. *Concur*

No bridges are located within the survey limits. *Concur*

**Detached Positions**

Detached positions were acquired on buoys in the survey area. Detached positions were also acquired on the dolphins, and piers, and obstructions in the vicinity of the power plant in the Bahia De Jobos turning basin. The pier and dolphin that are charted off the power station agree with the DP’s acquired on this survey. Detached positions are shown on a separate 1:2,500 scale plot for enhanced detail. *Concur, no changes to charting recommended for the piers and dolphins in the turning basin.*

**Ferry Routes**

There are no ferry routes or ferry terminals located within the survey limits. *Concur*

**Submarine Cables and Pipelines**

One sewer pipeline is located in the turning basin of Bahia de Jobos. Charted 2 Q R 12 ft 2M lights that are positioned on a rock pile that lies above the outfall pipe are charted at 17° 56' 00.75" N, 066° 13' 39.98" W. Side scan sonar and SWMB investigations have determined that this pipeline is mischarted. The 2 Q R 12 ft 2M lights were positioned at 17° 56' 06.04 26" N, 066° 13' 39.62 40.465" W. The seaward termination of the pipeline is identified by this survey at position 17° 56' 06.05" N, 066° 13' 40.47" W, with the pipe running toward shore at a bearing of 327° T. *Concur (Update chart as shown on the smooth sheet)*

Discrete cables or cable areas were neither charted nor observed in the survey area. *Concur*
E. APPROVAL SHEET

OPR-I305-WH
Puerto Rico
South Coast of Puerto Rico

Approaches to Aguirre
Survey Registry No. H11035

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

Submitted:

ENS Shannon M. Ristau, NOAA
Junior Officer

LT Richard T. Brennan, NOAA
Field Operations Officer

Approved and Forwarded:

LCDR Gerd F. Glang, NOAA
Commanding Officer
REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H11035

Survey Title: State: Puerto Rico
Locality: South Coast of Puerto Rico
Sub-Locality: Approaches to Aguirre

Project Number: OPR-I305-WH

Survey Date(s): May 21, 2001 - June 4, 2001

Features are reduced to Mean Lower Low Water using Verified Water Levels and are positioned on NAD 83.

Charts affected: 25677, 19th edition, March 18, 1995, scale 1:100,000, NAD 83
25687, 11th edition, January 19, 1991, 1:20,000, NAD 83

DANGERS TO NAVIGATION

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.
<table>
<thead>
<tr>
<th>ITEM #</th>
<th>FEATURE</th>
<th>DEPTH (feet)</th>
<th>LATITUDE (N)</th>
<th>LONGITUDE (W)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>no danger</td>
<td>Rock add non-dangerous Rk</td>
<td>54 (See E &amp; A Report Section D.7.)</td>
<td>17° 54' 39.33&quot;</td>
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<td>2</td>
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<td>Sounding chart 45' depth</td>
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<td>17° 54' 43.58&quot;</td>
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<td>3</td>
<td>no danger</td>
<td>Sounding/Rock add dangerous Rk (See E &amp; A Report Section D.5.)</td>
<td>18</td>
<td>17° 55' 48.24&quot;</td>
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<td>4</td>
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<td>17° 55' 41.16&quot;</td>
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<td>5</td>
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<td>Coral add Co label</td>
<td>34</td>
<td>17° 55' 28.18&quot;</td>
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<td>6</td>
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<td>Sounding chart present survey data</td>
<td>33</td>
<td>17° 55' 37.65&quot;</td>
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<td>7</td>
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<td>Sounding chart 26' depth</td>
<td>26</td>
<td>17° 55' 30.02&quot;</td>
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<td>8</td>
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<td>Sounding chart 26' depth</td>
<td>26</td>
<td>17° 55' 25.40&quot;</td>
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<td>9</td>
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<td>Sounding chart 16' depth</td>
<td>16</td>
<td>17° 55' 35.90&quot;</td>
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<td>17° 55' 34:07&quot;,0</td>
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<td>11</td>
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<td>Sounding chart 16' depth</td>
<td>16</td>
<td>17° 56' 04.80&quot;</td>
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<td>12</td>
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<td>17° 56' 52.32&quot;</td>
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<td>13</td>
<td>no danger</td>
<td>Sounding chart 20' depth</td>
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<td>17° 56' 54.70&quot;</td>
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<tr>
<td>14</td>
<td>no danger</td>
<td>Sounding chart present survey data</td>
<td>22</td>
<td>17° 56' 39.91&quot;</td>
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</tbody>
</table>
TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 19, 2001

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-I305-WH-2001
HYDROGRAPHIC SHEET: H11035

LOCALITY: Approaches to Aguirre, Puerto Rico
TIME PERIOD: May 21 - June 4, 2001

TIDE STATION USED: 975-5679 Las Mareas, PR
Lat. 17° 55.7'N    Lon. 66° 9.5'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.208 meters

TIDE STATION USED: 975-8053 Punta Guayanilla, PR
Lat. 17° 58.6'N    Lon. 66° 45.7'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.212 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PRS2.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Note 2: Use tide data from the appropriate station with applicable zoning correctors for each zone according to the order in which they are listed in the Tidezone corrector files. For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available.

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION
This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. AUTOMATED DATA ACQUISITION AND PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

- Hydrographic Processing System
- NADCON, version 2.10
- MicroStation J 01, version 7.1
- I/RAS B, version 5.01
- Caris HIPS/SIPS
- PYDRO, Release 2.5.3

The smooth sheet was plotted using a Hewlett-Packard DesignJet 2500CP plotter.

B.2. JUNCTIONS

H11034 (2001) 1:10,000 to the east

A standard junction was effected between the present survey and surveys H11034 (2001).

D. COMPARISON WITH CHARTS 25677 (19th Edition, Mar 18/95)  
25687 (12th Edition, Jan 19/91)

Hydrography

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparison in section D. of the Descriptive Report. The following should be noted:

1. A charted notation subm coral and dashed limits in the vicinity of Latitude 17°55’30"N, Longitude 66°12’00"W originates with an unknown source and was verified by the present survey. It is recommended that the depths and limits be updated and charted as found on the present survey and that the subm coral notation be retained as charted.

2. A charted notation 26½ FT 1977" inside the turning basin in the vicinity of Latitude 17°56’47.6"N, Longitude 66°13’32.5"W originates with an unknown source. This area was investigated by the present survey and the controlling depth was found to be 21 feet. It is recommended that the charted notation 26½ FT 1977 be deleted and the basin be updated as
found on the present survey.

3. A charted notation 17 ft rep 1979 in the vicinity of Latitude 17°56'50.6"N, Longitude 66°13'33.0"W originates with an unknown source and was disproved by the present survey. Present survey depths are from 21 feet to 29 feet in the vicinity of the note. It is recommended that the charted note 17 ft rep 1979 be deleted from the chart and the area updated as found on the present survey.

4. During present survey operations, an uncharted dangerous submerged Coral Head with a least depth of 11 feet was located in Latitude 17°56'40.8"N, Longitude 66°17'42.3"W. It is recommended that an 11 foot submerged coral head with a danger curve be charted in the above present survey location.

5. A charted 18 ft sounding on a non dangerous rock in Latitude 17°55'48.2"N, Longitude 66°15'35.4"W originates with an unknown source. This rock, (DTN #3) was found by the present survey with a least depth of 18 feet in Latitude 17°55'48.3"N, Longitude 66°15'35.7"W. It is recommended that the charted rock be removed and an 18 ft sounding on a dangerous rock be charted in the present survey location.

6. During present survey operations, an uncharted dangerous submerged Coral Head with a least depth of 6 feet was found in Latitude 17°56'16.4"N, Longitude 66°17'19.3"W. It is recommended that a 6 foot submerged coral head with a danger curve be charted in the above present survey location.

7. During present survey operations, an uncharted 54 ft sounding on a non dangerous rock, (DTN #1), was found in Latitude 17°54'39.4"N, Longitude 66°15'54.8"W. It is recommended that a 54 ft sounding on a non dangerous rock be charted in the above present survey location.

8. During present survey operations, an uncharted 19 ft sounding on a dangerous submerged rock was found in Latitude 17°55'55.2"N, Longitude 66°15'39.1"W. Because of the scale of the chart, this feature cannot be shown, but is included in the danger curve limits for another charted feature.

9. During present survey operations, an uncharted 17 ft sounding on a dangerous submerged rock was found in Latitude 17°55'54.4"N, Longitude 66°15'40.8"W. It is recommended that a 17 ft sounding on a dangerous submerged rock be charted in the above present survey location.

10. During present survey operations, an uncharted 26 ft
sounding on a dangerous sunken wreck, was found in Latitude 17'55'54.4"N, Longitude 66'15'33.6"W. It is recommended that a 26 ft sounding on a sunken wreck be charted in the above present survey location.

11. During office inspection it was noted that the hydrographer ran a buffer line along the shoreline to define his inshore survey limits. The buffer line begins in the vicinity of Latitude 17'55'29.1"N, Longitude 66'15'56.0"W extending to the vicinity of Latitude 17'55'59.9"N, Longitude 66'11'42.7"W. Numerous unexplained holidays exist between the buffer line and hydro lines throughout the survey area. Numerous other unexplained holidays exist throughout the survey area as listed below. It is recommended that the area be charted to reflect present survey findings.

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
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<tbody>
<tr>
<td>17'55'39.4&quot;N</td>
<td>66'16'51.0&quot;W</td>
</tr>
<tr>
<td>17'55'34.4&quot;N</td>
<td>66'16'51.2&quot;W</td>
</tr>
<tr>
<td>17'54'34.8&quot;N</td>
<td>66'13'35.0&quot;W</td>
</tr>
<tr>
<td>17'54'19.4&quot;N</td>
<td>66'14'13.0&quot;W</td>
</tr>
<tr>
<td>17'53'21.8&quot;N</td>
<td>66'14'31.0&quot;W</td>
</tr>
</tbody>
</table>

DANGERS TO NAVIGATION

One Danger to Navigation report was submitted to Commander (oan), Seventh Coast Guard District, Miami, Florida for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of the Danger to Navigation Report is appended to this report.

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area.

AIDS TO NAVIGATION

The hydrographer located fourteen (14) fixed and floating aids to navigation on the present survey. Two are privately maintained fixed lights, five are buoys, and seven are privately maintained lighted buoys. These aids were discussed in the Descriptive Report and appear adequate to serve their intended purpose.

CONTROLLING DEPTHS

a. Conflicts exist between the charted notation 27 FT FOR A WIDTH OF 150 FT MAR 1975 in the vicinity of Latitude 17'55'41.0"N, Longitude 66'14'00.0"W. The least depth found on the present survey was 24 ft in Latitude 17'55'41.2"N, Longitude 66'14'01.5"W. It is recommended that the controlling depth note
be revised to 24 FT FOR A WIDTH OF 150 FT JUN 2001.

b. Conflicts exist between the charted notation 26 FT FOR A WIDTH OF 150 FT APR 1975 in the vicinity of Latitude 17°56'16.0"N, Longitude 66°13'33.0"W. The least depth found on the present survey was 25 ft in Latitude 17°56'28.0"N, Longitude 66°13'29.5"W. It is recommended that the controlling depth note be revised to 25 FT FOR A WIDTH OF 150 FT JUN 2001.

COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar/multibeam survey. No additional field work is recommended.

MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to the Marine Chart Division, Silver Spring, Maryland. The following National Ocean Survey chart was compiled using the present survey:

25687 (11th Edition, Jan 19/91)
Douglas V. Mason
Verification of Field Data
Evaluation and Analysis
LETTER TRANSMITTING DATA

TO:

☐ CHIEF, DATA CONTROL GROUP, N/CS3x1
NOAA / NATIONAL OCEAN SERVICE
STATION 6815, SSMC3
1315 EAST-WEST HIGHWAY
SILVER SPRING, MARYLAND 20910-3282

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H11035
COMMONWEALTH OF PUERTO RICO, SOUTH COAST OF PUERTO RICO, APPROACHES TO AGUIRRE

ONE TUBE CONTAINING THE FOLLOWING:

1 SMOOTH SHEET FOR SURVEY H11035
1 ORIGINAL DESCRIPTIVE REPORT FOR SURVEY H11035
1 H-DRAWING ON MYLAR FOR SURVEY H11035
1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96) FOR SURVEY H11035

FROM: (Signature)

Return receipted copy to:

☐ NOAA / NATIONAL OCEAN SERVICE
ATLANTIC HYDROGRAPHIC BRANCH N/CS33
439 WEST YORK STREET
NORFOLK, VA. 23510-1114

RECEIVED THE ABOVE
(Name, Division, Date)

NOAA FORM 61-29 SUPERCEDES FORM C AND GS 413 WHICH MAY BE USED.

U.S. GOVERNMENT PRINTING OFFICE: 1988 - 554-006-61309
The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disapproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Deborah A. Bland  
Cartographer,  
Atlantic Hydrographic Branch  

Date: 2/17/2003

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Emily B. Christman  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch  

Date: 2/17/03
INSTRUCTIONS
A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

<table>
<thead>
<tr>
<th>CHART</th>
<th>DATE</th>
<th>CARTOGRAPHER</th>
<th>REMARKS</th>
</tr>
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<tbody>
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