

F00481

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE

## DESCRIPTIVE REPORT

*Type of Survey* Hydrographic /  
Side Scan Sonar / Multibeam

*Field No.* N/A

*Registry No.* F00481

### LOCALITY

*State* Maryland

*General Locality* Baltimore Harbor

*Locality* Canton Piers

2001-2002

### CHIEF OF PARTY

Lt. Lawrence T. Krepp., NOAA

### LIBRARY & ARCHIVES

DATE

**HYDROGRAPHIC TITLE SHEET**

**F00481**

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

State: **Maryland**

General Locality: **Baltimore Harbor, ~~Maryland~~**

Sub-Locality: **Canton Piers**

Scale: **1:10,000** Date of Survey: **09/21/01 and 04/16/02**

Instructions Dated: **03/26/99** Project Number: **OPR-E346-BH**

Vessel: **NOAA S/V Bay Hydrographer**

Chief of Party: **Lieutenant Lawrence T. Krepp, NOAA**

Surveyed by: **Bay Hydrographer Personnel**

Soundings by: **Reson SeaBat 9001 and 8125 multibeam sonar**

Graphic record scaled by: **Bay Hydrographer Personnel**

Graphic record checked by: **Bay Hydrographer Personnel**

Protracted by: **N/A** Automated Plot: **HP-750C (field)**  
**HP DesignJet 2500CP (office)**

Verification by: **Atlantic Hydrographic Branch *Personnel***

Soundings in: **Feet at MLLW**

Remarks: ***Bold, red, italic notes in the Descriptive Report were made during office processing.***

- 1) All Times are UTC.***
- 2) This is a basic Hydrographic Survey.***
- 3) Projection is UTM Zone 18.***

**TABLE OF CONTENTS**

|  |   |
|--|---|
| A. AREA SURVEYED .....                   | 1 |
| B. DATA ACQUISITION AND PROCESSING ..... | 3 |
| EQUIPMENT .....                          | 3 |
| QUALITY CONTROL .....                    | 3 |
| CORRECTIONS TO ECHO SOUNDING .....       | 4 |
| C. VERTICAL AND HORIZONTAL CONTROL ..... | 5 |
| VERTICAL CONTROL .....                   | 5 |
| HORIZONTAL CONTROL .....                 | 5 |
| D. RESULTS AND RECOMMENDATIONS .....     | 6 |
| CHART COMPARISON .....                   | 6 |
| ADDITIONAL RESULTS .....                 | 7 |
| E. APPROVAL SHEET .....                  | 8 |

**DESCRIPTIVE REPORT**  
to accompany  
HYDROGRAPHIC SURVEY F00481

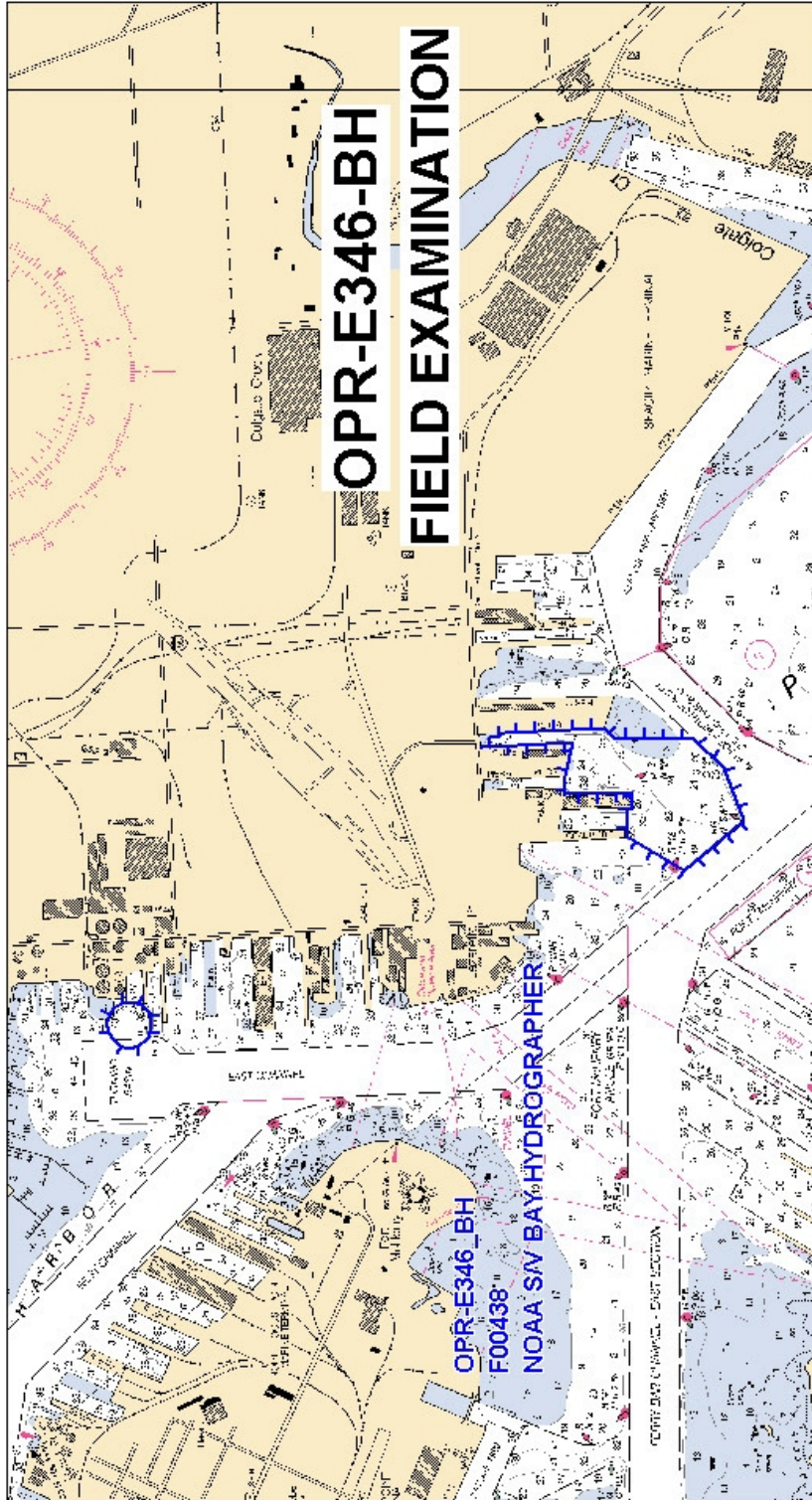
Scale of Survey: 1:10,000  
Year of Survey: 2001 - **2002**  
NOAA S/V Bay Hydrographer  
LT Lawrence T. Krepp, Officer in Charge

**A. AREA SURVEYED**

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions for project OPR-E346-BH, Northern Chesapeake Bay, Maryland dated March 26, 1999 as amended by change No. 4 ~~March 26, 1999~~. **September 21, 2001**


The area surveyed for F00481 covers selected (by the Maryland Pilots Association) pier slips within the Baltimore Harbor. The pier areas are located between Lazaretto Point and the SeaGirt Marine Terminal, specifically including the waters from Pier 2 to Pier 10 and the approaches to these piers. A secondary area was surveyed to correct an incorrectly charted obstruction located at LAT. 39-16-21.60, LONG 76-34-21.60. **See Section D.2. of Evaluation Report for chart recommendation.**

For complete survey limits, see the chartlet on the following page.



**Chartlet 1 of 1**

This chartlet may not be up to date with the latest Local Notice to Mariners information. NOT FOR NAVIGATION.

|   |   |  |  |
|---|---|--|--|
|  <p>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION<br/>NATIONAL OCEAN SERVICE</p> | <p>Project: OPR-E346-BH<br/>Survey: F00481<br/>State: Maryland<br/>Locality: Baltimore Harbor, Maryland<br/>Sub-locality: Canton Piers<br/>Survey Scale: 1:10,000</p> | <p>Sounding Units: Feet<br/>Sounding Datum: MLLW<br/>Horizontal Datum: WGS 84<br/>Projection: UTM 18<br/>Central Meridian: 075° 00 00<br/>Scale Factor: 0.9996</p> | <p>NOAA S/V Bay Hydrographer<br/>LT. Krepp<br/>Officer in Charge<br/>September 21, 2001 and<br/>April 16, 2002</p> |
|---|---|--|--|

## **B. DATA ACQUISITION AND PROCESSING**

### **EQUIPMENT**

All Data were acquired by NOAA S/V BAY HYDROGRAPHER.

BAY HYDROGRAPHER is a 56 foot vessel drafting 5 feet. BAY HYDROGRAPHER acquired shallow-water multibeam (SWMB), side scan sonar (SSS), and sound velocity data. Reson SeaBat 9001/8125 multibeam systems were used for SWMB hydrography. Positioning was determined with a Trimble DSM212L integrated differential GPS receiver. Attitude was determined with a TSS DMS-05 attitude sensor. Side scan sonar data were acquired with an Edgetech 272-T towed side scan sonar. Velocity casts were conducted with a SeaBird SeaCat CTD instrument. Refer to the Data Acquisition and Processing Report (DAPR) for detailed equipment and vessel configuration information. *Data filed with original field records. See also Evaluation Report for software used during office processing.*

### **QUALITY CONTROL**

#### **Side Scan Sonar Quality Control**

A confidence check was made by observing the outer ranges of the side scan sonar images. A good check consisted of distinguishing contacts or pier faces across the entire range of the side scan trace. No unusual problems were encountered.

### **Shallow Water Multibeam Quality Control**

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

### **Crosslines**

Crosslines were not completed for this survey.

### **Junctions *See also Evaluation Report.***

F00481 junctions with F00438, a pier survey completed in 1998. Agreement between F00481 and F00438 is acceptable. The majority of compared soundings fell within 1 foot of each other, with only an occasional difference of 2 feet noted in deeper bathymetry.

### **CORRECTIONS TO ECHO SOUNDING**

All methods or instruments were used as described in the project DAPR. A table detailing all sound velocity casts is located in Separate III. *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 Baltimore, MD (857-4680) served as control for datum determination.

Tidal zoning for this survey is consistent with the Letter Instructions except for the northern development. Half of the data in the northern development area in this area lies outside the tidal zoning provided before the survey. As per phone request from Bay Hydrographer staff to CO\_OPS staff, the outlying data is applicable to the original tide zone provided by CO-OPS. The zone data applicable for this survey is as follows.

| STATION | CORRECTOR (min) | RATIO | REFERENCE |
|---------|-----------------|-------|-----------|
| NCB123  | 0               | x1.00 | 857-4680  |

A Request for Approved Tides letter was sent to N/OPS1 on July 31, 2002 (Appendix IV). Verified tides from the N/OPS1 CO-OPS website were downloaded on October 3, 2001 and applied to all sounding data. *Approved tides and zones were reapplied to survey in CARIS during office processing.*

### HORIZONTAL CONTROL *See also Evaluation Report.*

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 18.

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary DGPS beacon used for this survey was Annapolis. Horizontal control stations were not used for this survey.

In addition to performance checks, horizontal dilution of precision (HDOP) and the positional dilution of precision (PDOP) were monitored within Hypack. Neither value exceeded 4.00, and adequate satellite coverage was maintained throughout the survey period.



## D. RESULTS AND RECOMMENDATIONS

This survey was completed in response to a request from the Maryland Docking Pilots to verify charted soundings in the port area and to eliminate the previously charted 35 foot obstruction that was located at LAT. 39-16-21.60N, LONG. 76-34-21.60W. This obstruction has been removed from the chart as of chart **12281**, 49<sup>th</sup> edition, May 13, 2000. Two specific areas were of concern to the Pilots between pier 2 and pier 10. These areas include a 26 foot sounding south of Pier 3 and a shoaling along the west center of Pier 10. The investigation was done with 100% Side Scan Sonar coverage and enhanced with multibeam bathymetry. The multibeam data covered most of the survey area but was not 100%. However, 100% multibeam bathymetry was collected over all shoal areas and significant objects.

### CHART COMPARISON *See also Evaluation Report.*

There is one chart affected by this survey:

**12281**, 49<sup>th</sup> edition, May 13, 2000, 1:15,000

### General Agreement with Charted soundings

Sounding data agreed well with charted depths. *Concur*

### Tabulated Channel Depths

Soundings within Fort McHenry Channel agreed well with charted depths. Only a few of the present survey soundings overlapped the channel. These soundings were within 0.5 ft of depths reported for the Fort McHenry Channel. *Concur*

### Shoaling Trends

In general soundings agree well with charted depths. Two areas of significant shoaling were noted. A 23 foot sounding (Lat. 39° 15' 30.08 **.84**" N, Long. 076° 33' 37.03" W) and a ~~22~~ **21** foot sounding (Lat. 39° 15' 32.85 **33.95**" N, Long. 076° 33' 37.22 **.30**" W) were identified west of Pier 10. There was side scan evidence of two portions of the main concrete pier collapsing in this area. *Concur*

### Deepening Trends

Deepening was noted north of the G C "3" buoy. Depths of 27/28 were found over top of a 20 foot charted sounding. This area was not covered with 100% multibeam to disprove the 20 foot charted sounding. 100% percent side scan sonar coverage was gathered in the area. No evidence of shoaling was noticed in the side scan profiles. Hydrographer recommends charting representative soundings. *Concur*

**AWOIS Item Investigations**

There are no AWOIS items located within the survey limits.

**Charted Features**

There are no charted features in the surveyed area. *Do not concur / See Evaluation Report.*

**Charting Recommendations**

The Hydrographer recommends charting present survey soundings within the survey area.  
*Concur*

**ADDITIONAL RESULTS****Aids to Navigation and Other Detached Positions**

Aids to navigation were not positioned during this survey. There were no aids to navigation surveyed that did not appear on the chart or in the Light List.

**Submarine Cables and Pipelines**

No submarine cables or pipelines were identified within the survey limits.

**E. APPROVAL SHEET**

**OPR-E346-BH  
Baltimore Harbor, Maryland  
Maryland**

**Canton Piers  
Survey Registry No. F00481**

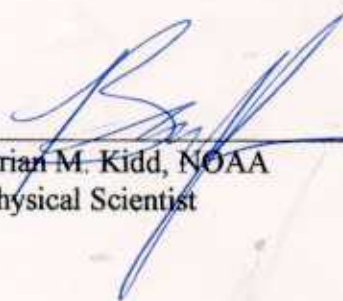
Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, this Descriptive Report, and all accompanying records and data are approved.


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

Respectfully,

Submitted:

Approved and Forwarded:

  
Brian M. Kidd, NOAA  
Physical Scientist

  
LT. Lawrence T. Krepp, NOAA  
Officer in Charge



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

**DATE:** April 23, 2002

**HYDROGRAPHIC BRANCH:** Atlantic  
**HYDROGRAPHIC PROJECT:** OPR-E346-BH-2001  
**HYDROGRAPHIC SHEET:** F00481

**LOCALITY:** Baltimore Harbor, MD  
**TIME PERIOD:** September 21, 2001

**TIDE STATION USED:** 857-4680 Baltimore, MD  
Lat. 39° 16.0'N Lon. 76° 34.7'W  
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 0.411 meters

**REMARKS:** RECOMMENDED ZONING  
Use zone(s) identified as: NCB123

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.

*Thomas V. Mero 4/23/02*  
-----  
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Silver Spring, Maryland 20910

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE:** Oct 31, 2002

**HYDROGRAPHIC BRANCH:** Atlantic

**HYDROGRAPHIC PROJECT:** OPR-E346-BH-01/02

**HYDROGRAPHIC SHEET:** F00481

**LOCALITY:** Baltimore Harbor, MD

**TIME PERIOD:** September 21, 2001 & April 16, 2002

**TIDE STATION USED:** 857-4680 Baltimore, MD  
Lat. 39° 16.0'N Lon. 76° 34.7'W

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters

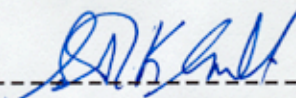
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 0.411 meters

**REMARKS:** RECOMMENDED ZONING

Use zone(s) identified as: NCB123

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.

*Fm*   
-----  
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR F00481 (2001)**

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  
MicroStation J, version 7.1  
I/RAS B, version 5.01  
NADCON, version 2.10  
MapInfo, version 6.5  
CARIS HIPS/SIPS 2000  
PYDRO, version 2.9.1

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

**JUNCTIONS**

**F00438 (1998)**

A standard junction could not be effected between the present survey and survey F00438 (1998). The present survey encompasses survey F00438 (1998). Therefore the present survey is adequate to supersede prior survey F00438 within the common area. Any adjustments to the depth curves in the junctional areas will have to be made on the chart during compilation.

There are no junctional surveys to the north, east, south and to the west. Present survey depths are in harmony with the charted hydrography to the north, east, south and to the west.

**C. HORIZONTAL CONTROL**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. Two page size plots have been annotated with ticks showing the computed mean shift between NAD 83 and the North American Datum of 1927 (NAD 27).

(1) To place plot 1 of 2 on NAD 27, move the projection lines 0.387 seconds (11.93 meters or 1.193 mm at the scale of the

survey) north in latitude, and 1.127 seconds (27.030 meters or 2.703 mm at the scale of the survey) east in longitude.

(2) To place plot 2 of 2 on NAD 27, move the projection lines 0.386 seconds (11.91 meters or 1.191 mm at the scale of the survey) north in latitude, and 1.125 seconds (26.97 meters or 2.697 mm at the scale of the survey) east in longitude.

**D. COMPARISON WITH CHART 12281 (49<sup>th</sup> Edition, May. 13/00)**

**Hydrography**

The charted hydrography originates with the prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D. of the Descriptive Report. Attention is directed to the following:

1) A charted Submerged dolphin, in the vicinity of Latitude 39°16'20.19"N, Longitude 76°34'19.18"W, was neither verified nor disproved by present survey. It is recommended that the charted Submerged dolphin be retained.

2) A charted dangerous submerged obstruction, PA, with a depth of 35ft, in the vicinity of Latitude 39°16'21.60"N, Longitude 76°34'21.60"W, was reported to be charted in the wrong position. Through a phone conversation with Mr. Steve Verry at Hydrographic Surveys Division, on 12/18/02, information was received that the item had been incorrectly charted. The correct position for the dangerous submerged obstruction, PA, with a depth of 35ft, is in the vicinity of Latitude 39°16'07.8"N, Longitude 76°34'21.6"W. The present survey located a 34ft depth in Latitude 39°16'21.29"N, Longitude 76°34'21.70"W, and verified it as natural bottom. It is recommended that the dangerous submerged obstruction, PA, with a depth of 35ft, (35Obstn, PA) be deleted and present survey depths charted.

3) A charted dolphin, in the vicinity of Latitude 39°16'20"N, Longitude 76°34'19"W, was neither verified nor disproved by present survey. It is recommended that the charted dolphin be retained.

4) A charted 26ft depth in the vicinity of Latitude 39°15'22"N, Longitude 76°33'48"W, was a concern of the Pilots Association. A depth of 25ft was located in Latitude 39°15'22.04"N, Longitude 76°33'47.90"W by the present survey. It is recommended that the charted 26ft depth be superseded by present survey depths.

5) *Shoaling*, in the vicinity of Latitude 39°15'35"N, Longitude 76°33'38"W, was a concern of the Pilots Association. A depth of 21ft was located in Latitude 39°15'33.95"N, Longitude 76°33'37.30"W by the present survey. It is recommended that the area be superseded by present survey depths.

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

---

#### **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.

#### **MISCELLANEOUS**

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The following NOS Chart was used for compilation of the present survey:

12281 (49<sup>th</sup> Edition, May. 13/00)

#### **ADEQUACY OF SURVEY**

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



F00481

*Robert Snow*

**Robert Snow**

Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis

76° 34' 00"

76° 33' 30"

39° 15' 30"



76° 34' 00" W

NAD 27 — 39° 15' 00" N

CHECKED BY: RS  
12/17/02

F00481

MARYLAND

39° 15' 00"

BALTIMORE HARBOR

CANTON PIERS

SCALE: 1:10,000

SEP. 2001 - APR. 2002

NORTH AMERICAN DATUM OF 1983

SOUNDINGS IN FEET AT MLLW

SHEET 1 OF 2


76° 34' 00"

76° 33' 30"

76° 34' 30"

76° 34' 00"

76° 34' 30" W

NAD 27  39° 16' 30" N

39° 16' 30"

CHECKED BY: RS  
12/17/02

47394039  
495038 403933  
50494537 4393823  
504847543 3833  
47 3837 323  
47 3833 3129

F00481  
MARYLAND  
BALTIMORE HARBOR  
CANTON PIERS  
SCALE: 1:10,000

39° 16' 00"

SEP. 2001 - APR. 2002  
NORTH AMERICAN DATUM OF 1983  
SOUNDINGS IN FEET AT MLLW  
SHEET 2 OF 2

76° 34' 30"

76° 34' 00"

APPROVAL SHEET  
F00481

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval 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.

Toshihiko Uozumi Date: 2/14/03  
Toshihiko Uozumi  
Physical Scientist  
Atlantic Hydrographic Branch

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 Date: 2/14/03  
Emily B. Christman  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch

\*\*\*\*\*

Final Approval:

Approved: Samuel P. De Bow, Jr. Date: April 14, 2003  
Samuel P. De Bow, Jr.  
Captain, NOAA  
Chief, Hydrographic Surveys Division

AW015/SURF ✓ 3/26/03 SSJ

