

H10930

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

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

*Field No.* RU-10-6-99

*Registry No.* H10930

### LOCALITY

*State* New York

*General Locality* Long Island Sound

*Locality* Vicinity of Northville  
Oil Terminal

1999

CHIEF OF PARTY  
LCDR. J. Verlaque

### LIBRARY & ARCHIVES

DATE MAY 8 2000

HYDROGRAPHIC TITLE SHEET

H10930

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

FIELD NO.

RU-10-06-99

State New York

General locality Long Island Sound

Locality Vicinity of Northville Oil Terminal

Scale 1:10,000

Date of survey September 08 to September 1<sup>4</sup>, 1999

Instructions dated September 13, 1999

Project No. OPR-B352-RU-99

Vessel NOAA Ship RUDE S590 EDP#9040

Chief of party Lieutenant Commander James S. Verlaque, NOAA

Surveyed by LCDR J. Verlaque, LT E. Berkowitz, ENS K. Slover, ST S. Rooney, ST S. Baum, PS E. Owens

Soundings taken by: (echo sounder, hand lead, pole) Raytheon DSF 6000N Echosounder, Reson Seabat 9003

Graphic record scaled by RUDE personnel

Graphic record checked by RUDE personnel

Protracted by N/A

Automated plot by HP DesignJet 2500CP  
HP 2500CP

Verification by Atlantic Hydrographic Surveys Branch Personnel

Soundings in (~~fathoms~~, feet, or ~~meters~~ at ~~MLW~~ or MLLW) meters at MLLW

REMARKS: Time Zone Used, 0 (UTC)

Hand written notes in the Descriptive Report  
were made during office processing

ADWIS/SARP ✓ 4/27/00 EV

## TABLE OF CONTENTS

A. PROJECT.....	1
B. AREA SURVEYED.....	1
C. SURVEY VESSELS.....	2
D. AUTOMATED DATA ACQUISITION AND PROCESSING.....	2
E. SIDE SCAN SONAR EQUIPMENT.....	4
F. SOUNDING EQUIPMENT.....	5
G. CORRECTIONS TO SOUNDINGS.....	7
H. HYDROGRAPHIC POSITION CONTROL.....	9
I. SHORELINE.....	11
J. CROSSLINES.....	12
K. JUNCTIONS.....	12
L. COMPARISON WITH PRIOR SURVEYS.....	12
M. ITEM INVESTIGATION REPORTS.....	12
N. COMPARISON WITH THE CHART.....	13
O. ADEQUACY OF SURVEY.....	15
P. AIDS TO NAVIGATION.....	15
Q. STATISTICS.....	15
R. MISCELLANEOUS.....	16
S. RECOMMENDATIONS.....	16
T. REFERRAL TO REPORTS.....	16

### \* APPENDICES

APPROVAL SHEET

### \* SEPARATES

\* Data filed with original field records

## **A. PROJECT**

- A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-B352-RU-99, Vicinity of Northville Oil Platform, Long Island, New York.
- A.2 The original instructions are dated September ~~13~~<sup>7</sup>, 1999.
- A.3 There are no amendments to the original instructions.
- A.4 This survey is comprised of one sheet, designated Sheet A.
- A.5 This survey is designated H10930.
- A.6 This project responds to increased oil tanker traffic calling at the Northville Terminal on the north shore, Long Island, New York. The decrease of under keel clearances of these vessels requires that modern hydrographic survey techniques accurately portray the bottom and locate or disprove shipwrecks and obstructions.

## **B. AREA SURVEYED**

- B.1 Survey H10930 covers an area of approximately eight square miles, four nautical miles west of Mattituck Inlet, Long Island Sound, New York.
- B.2 Survey H10930 is comprised of one field sheet with the following approximate boundaries, starting at the southeast corner and proceeding clockwise:

Sheet Limits: Vicinity of Northville Oil Platform	
Latitude	Longitude
41°59'02.49" N	072°36'04.46" W
40°59'02.49" N	072°41'30.12" W
41°05'36.94" N	072°41'30.12" W
41°05'36.95" N	072°36'04.46" W

- B.3 Data acquisition for this survey began on September 8, 1999 (DN 251) and ended on September 14, 1999 (DN 257).

### C. SURVEY VESSELS

- C.1 Hydrography, side scan, and multibeam investigations were conducted from NOAA Ship RUDE, S-590, EDP# 9040. General functions include 200% side scan sonar, multibeam sounding operations, velocity of sound determinations, and navigational aid positioning.
- C.2 The transducer for the multibeam sonar was deployed on a pivoting arm mounted on the port side, approximately amidships. The arm was rotated into the operating position only during times of data acquisition. Offset table attached in Appendix E. \*

### D. AUTOMATED DATA ACQUISITION AND PROCESSING *See Also Evaluation Report*

- D.1a Coastal Oceanographics' HYPACK for Windows Version 7.1a (12/02/97) was used for data acquisition on this survey. Post processing included the use of HPTools Version 9.4.0 (04/22/99) for all Hypack data conversion data. Data processing was conducted using Hydrographic Processing System (HPS) Version 8.2 (03/02/98) supplied by Atlantic Hydrographic Branch Computer Support Group. MapInfo Version 5.0 (08/18/98) was utilized for data display during the evaluation process and completion of the field sheet. All software versions used for data processing are listed in Appendix H. \*
- D.1b Triton Corporation's ISIS software Version 3.24 was used to acquire SeaBat multibeam and digital side scan imagery. SeaBat data were processed on the CARIS-HIPS System Version 4.2.7 (01/17/97).
- D.1c The SEABIRD SBE-19 sound velocity profiler unit was utilized with SEASOFT 3.3M (11/27/89) and SEACAT 3.1 (02/25/98) software. The program VELOCWIN Version 4.01 was used to process the acquired data and to calculate velocity corrections.
- D.2a Multibeam and side scan sonar data (XTF Format) conversion in the CARIS-HIPS System utilized specific selections within the *Convert Triton Isis XTF* program in HDCS. Selections with CARIS software included "Ship Nav" from Sensor; "Ship Gyro" from Attitude; "Fish Nav" from Sensor; "Fish Gyro" from Attitude.

\* *Data filed with original field records*

Data decimation and image correction was not selected during conversion.

- D.2b SeaBat depth data was monitored using ISIS during acquisition and processed utilizing CARIS-HIPS multibeam data cleaning programs. Digital multibeam depth profiles were visually reviewed and fliers were identified and manually flagged as "rejected"; no SeaBat quality flags were used to automatically "reject" data. Vessel navigation data from DGPS and attitude data from heave, pitch, roll, and gyro sensors were displayed and manually cleaned (see Sections G and H).
- D.2c After reviewing and cleaning the data, the depth, navigation, and attitude data were merged with sound velocity, tide, and vessel configuration data to compute the true depth and position of each sonar beam footprint. Work file processing included importing the multibeam depths (selecting "extended no key", "group by beam number", and "line by line binning"). Processed depths were binned by utilizing a shoal biased gridding sounding selection of fifteen meters during HIPS-Workfile Creation at a 1:10,000 survey scale. The fifteen-meter gridded CARIS Workfile Processing soundings were transferred into HPS (using HPTools) and MapInfo databases.
- D.2d Sounding evaluation included the use of a dat file (.dat) which was converted into HPS via HPTools, generating an HPS multibeam only data file for each day of acquisition. Final field sheet selected soundings originate from these HPS multibeam only data files.
- D.2e Final plots were created in MapInfo, a PC-based GIS package, with assistance from HPS-MI MapInfo tools supplied by Hydrographic Survey Division (HSD). These tools produced depth, track and swath plots from HPS data.
- D.2f The total number of multibeam soundings provided to N/CS33 does not reflect the total number of multibeam soundings acquired and processed. The sounding density was reduced by selecting a grid size of 15 meters with no sounding suppression within HIPS.

Additional sounding excessing will be conducted during the verification process using HPS.

#### **E. SIDE SCAN SONAR EQUIPMENT**

- E.1 All side scan sonar data was acquired with an Edgetech (EG&G) Model 272 towfish (S/N 11591 and 16700) and an Edgetech Model 260-TH image-correcting side scan sonar recorder. All side scan data was also recorded digitally using ISIS software and archived in the Extended Triton Format (\*.XTF) files.
- E.2 The side scan towfish used a 50° vertical beam width tilted down 20° from horizontal.
- E.3 The 100-kHz frequency was used throughout the survey.
- E.4a Water depths encountered in the survey area ranged from 20 feet to 100 feet. During the survey, the 100, 75, and 50 meter range scales were utilized. Range scale was determined according to the water depth. The 50 meter range scale was utilized for depths of less than 30 feet, 75 meter range scale for detailed coverage in and around the platform and dolphins, and 100 meter range scale for all other areas. Line spacing was set at 40, 60, and 80 meters, respectively to obtain 200% side scan sonar coverage.
- E.4b Frequent confidence checks were obtained whenever common features as sand waves or rocks were encountered.
- E.4c One hundred and two hundred percent side scan sonar coverage was completed for this survey. Holiday lines were run to fill in any gaps of coverage. All coverage was checked with on-screen zoomable coverage displays in MapInfo to ensure proper overlap between lines.
- E.4d Any data degraded by towfish instability, thermocline, prop wash, etc., was rejected and reacquired.
- E.4e The towfish was deployed exclusively from the stern.
- E.4f An electronic cable counter (M/D Totco) was employed to determine the amount of side scan cable deployed.

- E.5 Sonar records were monitored on-line and reviewed by two persons during processing to identify contacts. Contact offsets and shadow heights were measured on sonar paper records, checked, and entered into the HPS Contact Table to compute contact heights and positions.
- E.6 All side scan contacts with computed heights greater than 10% of depth, one meter or greater than in depths shoaler than 20 meters, and all contacts which appeared man-made were deemed significant. All significant contacts were developed with multibeam sonar coverage. All coverage was checked with on-screen zoomable coverage displays in CARIS-HIPS and MapInfo, and holiday lines were run to fill in any gaps.

#### **F. SOUNDING EQUIPMENT**

- F.1 All multibeam sounding data was collected with the single-frequency (455 kHz) Reson SeaBat 9003 (S/N 10496-447020) shallow-water sonar system.
- F.2 Dual-frequency (24 and 100 kHz) vertical beam echo sounding data were acquired with a Odom Echo-Trac echo sounder. The RUDE's Echo-Trac echo sounder S/N 9643 was used from beginning through survey completion. Echo-sounder S/N 9643 did not record the low frequency; survey data using this echo sounder recorded only high frequency returns. **NOTE: Single-beam data is not included in the final data set.**
- F.2a High frequency (100 kHz) vertical beam ODOM data was recorded during data acquisition. ODOM-Echotrac and Anomalous echogram traces were immediately cross-referenced to the ISIS multibeam acquisition display online.
- F.2b Manual edits were made to single-beam crossline data only. No edits made during all mainscheme single beam data field processing. Vertical correctors were applied to the raw single-beam digital soundings (see Section G). The archived HPS fixes of single-beam soundings do not represent the entire character of the seafloor because shoal bias inserts were not selected; graphic records were not scanned for depth edits.



**Single-beam data should NOT be included on the final field sheet; all final field soundings originate from multibeam and dive investigation data.**

- F.3 There were no observed faults in sounding equipment that affected the accuracy or quality of the data.
- F.4 Dual-beam echosounder equipment was used during OPR-B352-RU-99.
- F.5a The 9003's combined transmit and receive beams yield forty (40) soundings per ping, each formed from a 3° crosstrack x 1.5° alongtrack bottom footprint. During multibeam data processing, the outermost two beams on each side of the swath (beam numbers 1, 2, 39, and 40) were not processed, reducing the effective swath width to 108°.
- F.5b SeaBat 9003 multibeam data was continuously recorded and served as the primary source for hydrographic digital soundings, though 100% coverage was not obtained, nor required. Sounding depths ranged from 18 to 102 feet of water, utilizing multibeam range scales of 25, 50 and 100 meters. Contact development line spacing was based upon contact positions for nadir-beam development.
- F.6 Vessel speeds during multibeam data and side scan sonar acquisition were conducted within the standards for side scan operations. When side scan sonar acquisition was not being conducted, multibeam bathymetry data was collected at vessel speeds between 4 and 7.5 knots; item and contact investigation speeds were generally collected at speeds of 3 to 4 knots. Slower vessel speed increases the data density in the along track coverage over the feature. Ping rate is dependent upon multibeam range scale being utilized and determines the number of pings per unit area of the bottom.
- F.7 Multibeam swaths were viewed with Mapinfo. Since 100% multibeam coverage was not required, a digital terrain model was not created during the project.

## G. CORRECTIONS TO SOUNDINGS

G.1a Sound velocity and refraction correctors were computed from conductivity, temperature, and depth measurements acquired with a SeaBird SBE190 SEACAT Profilers (S/N 1251). Data quality assurance tests using the CAT program were performed weekly using an Odom Digibar (S/N 168). The profiler is calibrated at the beginning and ending of each field season. (See APPENDIX I\* for data records).

The following velocity casts were used for this survey:

VELOCITY CAST #	JULIAN DAY #
1-2	251
3-8	252
9	253
10	255
11-15	256
16	257

Sound velocity and refraction effects were applied to the SeaBat data using CARIS-HIPS (incorporating the NOAA Nautical Charting Development Lab REFRACT algorithm). Sound velocity correctors for the vertical beam soundings were computed using VELOCITY and applied to the ODOM data using HPS.

G.1b ODOM-leadline direct comparisons were conducted during the 1999 field season. Records are provided with H10930 documentation (See Appendix E).\*

G.1c Sensor offsets and transducer static drafts were measured during the December 1996 dry-dock period. Sensor offsets were stored in the CARIS-HIPS Vessel Configuration File and HPS Offset Table for use in data processing. See ~~Separate IV~~ for data records.  
\* Appendix E

G.1d Vessel dynamic draft was originally measured for NOAA Ship RUDE vessel number 9040 on March 5, 1999 using the Real Time Kinematic on the fly GPS method. Prior to the commencement of OPR-B352-RU-99, the Reson SeaBat 9003 was sent to Reson for repairs to Beam #8. A patch test was performed on September 8<sup>th</sup>, 10<sup>th</sup>, and  
\* Data filed with original field records.

12<sup>th</sup>, 1999 (DN's 251, 253, 255) to recompute the vessel's dynamic draft. Dynamic draft correctors were stored in the CARIS-HIPS Vessel Configuration File and HPS Offset Tables for use in data processing (See APPENDIX E for data records).

*\**

G.1e Heave, pitch, and roll data were acquired with the SeaPath system. Heave, pitch, and roll data from Seatex Seapath MRU (S/N 0544) were applied to SeaBat multibeam data. Heave data were applied to ODOM vertical beam data.

G.1f Vessel heading data was acquired with the SeaPath system. Heading data was used to compute multibeam transducer azimuth and position.

G.1g Multibeam heave, pitch, roll, and heading sensor data was adjusted according to the results of the patch test conducted in September. See the CARIS-HIPS Vessel Configuration File in ~~Separate I~~ for data records.

*Appendix E \**

G.2 No unusual or unique methods or instruments were used to correct sounding data.

G.3 Tide zoning for this survey is consistent with the Project Instructions. Tide correctors were developed by applying time correctors and range correctors to the preliminary unverified tides at the Bridgeport tide gauge, Bridgeport Harbor, Connecticut (Station 846-7150). Preliminary unverified tides were computed in CARIS-HIPS and applied to SeaBat data. Preliminary unverified tides were also computed in HP-Tools and applied in HPS to all single-beam data.

Tide Station 846-7150, Bridgeport, BridgePort Harbor, Connecticut		
Zone #	LIS54	LIS51
Time Corrector	-6 minutes	-6 minutes
Range Corrector	X 0.82	X 0.79

G.4 Four diver investigations were performed for this survey. The MOD III pneumatic diver least depth gauge (S/N 68336) was used for least depth determination. These dives were performed to identify and record least depths of side scan contact numbers 5704.1s

*\* Data filed with original field records*

5901.1s, 4127.4p and 6009.6p, 2464.8s and 5053.9s, respectively. See Separate IV <sup>\*</sup>for reports.

G.5 No significant systematic errors were detected.

G.6a The vertical reference surface for this survey is Mean Lower Low Water (MLLW).

G.6b Tide data was acquired at the Bridgeport, Bridgeport Harbor, Connecticut (Station 846-7150) by N/OES231. A request for approved tides was mailed to N/OPS1 on September 27, 1999. This data will be compared to the verified tide data during verification by N/CS33. (see Section G.6d)

G.6c Note that multibeam data processing was accomplished using preliminary unverified tide values during data acquisition and during post processing (downloaded from the OPSD web-site).

Zone station time and height tidal correctors provided by N/CS31, with the project instructions, were applied to all tidal correctors relative to reference station Bridgeport, Bridgeport Harbor, Connecticut (Station 846-7150)

G.6d **DO NOT REAPPLY ANY CORRECTORS to multibeam data in HPS, including verified smooth tides. Note that only preliminary unverified tide values have been applied to H10930 data. Verified smooth tide values and correctors need to be applied to the entire multibeam data set in CARIS-HIPS prior to conversion to HPS.** *Approved Tides and Zones were applied using Caris-Hips during office processing*  
Upon receipt of approved tides, only dive investigation data should have tide values and correctors applied in HPS. If necessary, all vertical correctors and horizontal offsets should be reapplied to multibeam data using CARIS software only.

#### H. HYDROGRAPHIC POSITION CONTROL *See also Evaluation Report*

H.1 The horizontal reference surface for this survey is the Universal Transverse Mercator (WGS84), Northern Hemisphere, UTC Zone 18. No horizontal control stations were established for this survey.

*\* Data filed with original field records*

- H.2 Positioning for this survey was obtained from the NAVSTAR Global Positioning System (GPS) augmented with the U.S. Coast Guard Differential GPS (DGPS) service.

The Seatex Seapath 200 and Starlink systems were used throughout this survey for positioning determination. DGPS Radio Beacon reception sites were automatically selected by the strongest signal available within the survey area at a given time. The following DGPS beacons were within range of the survey area:

USCG DGPS Radio Beacon Broadcast Sites						
Site	Freq	BPS	Lat (N)	Long (W)	Range (NM)	beacon ID
Sandy Hook, NJ	286	200	40°28.29'	74°00.71'	100	804
Moriches, NY	293	100	40°47.40'	72°44.70'	130	803

- H.3 Accuracy requirements were met as specified by the Hydrographic Manual, sections 1.3 and 3.1, and Field Procedures Manual, section 3.4.
- H.4 GPS and DGPS signals were acquired with the following hardware equipment:

GPS and DGPS Hardware	SERIAL #
SeaPath 200	0347
StarLink, antenna Model MBA2	4202

- H.5 The GPS Horizontal Dilution of Precision (HDOP) was recorded during data acquisition. HDOP values were checked within the raw DGPS navigational information (PreProcess.XTF data) when navigational errors were detected in HDOS navigational cleaning in CARIS-HIPS. Data where the computed maximum allowable HDOP value was exceeded was rejected in HDOS and reacquired.

Anomalous position data was either manually smoothed or flagged "rejected", depending on the extent of the affected data. Instantaneous vessel speed was manually cleaned in CARIS with an event tolerance of 1.0 knot to aid in the manual cleaning of multibeam navigation data.

DGPS performance checks were not conducted. The necessity for control checks is eliminated when using the Seatex Seapath 200; quality positioning is

supported by the continuous calibration routine inherent of Seapath.

DGPS monitor and scatter plots for USCG beacons are not required as per guidelines mentioned in FPM 3.2.2.1.

H.6 Calibration data is not required for differential GPS.

H.7a There were no unusual methods used to operate the positioning equipment.

H.7b During survey operations, DGPS heading would be reduced at various times. During these periods, operations would be delayed until heading was normal.

H.7c There were no unusual atmospheric conditions noted which might have affected data quality.

H.7d No significant systematic errors were detected.

H.7e Offsets for the GPS antenna were applied from the CARIS-HIPS Vessel Configuration File (VCF) to compute the position of the SeaBat transducer. See Appendix E \* for data records.

Horizontal positions of the ODOM vertical beam echosounder data was corrected for GPS antenna offsets during field processing. Offsets in Hypack were acquired with multibeam transducer as the offset point ("batcentric"). See Appendix E \* for data records.

H.7f A-frame position (tow point), cable length, towfish height, and depth of water were applied to navigation data to compute the position of the towfish. These corrections are applied in HPS via offset table and Reapply Sounding Corrections.

## **I. SHORELINE**

No shoreline exists within the boundaries of survey H10930.

\* Data filed with original field records

## **J. CROSSLINES**

- J.1 A total of 14.1 nautical miles of crosslines were acquired for this survey, equating to 7.7% of the multibeam and side scan sonar coverage lines.
- J.2 Caris crossline comparison computations do not work well with surveys that are not 100% multibeam. The gaps between sounding lines of this survey inhibits the comparison of a digital terrain model (DTM) to a checkline file. With this in mind, the hydrographer differentiated Seabat mainscheme and Seabat crossline data. With this accomplished, a visual comparison was made between the data using a Mapinfo table. In general, sounding agreement was identical or less than one foot between SeaBat mainscheme and SeaBat crossline soundings, with occasional differences of 1 to 2 feet.

Processed multibeam-crossline soundings converted in HPS were compared to the edited single beam crossline ODOM soundings in MapInfo. Sounding variance between SeaBat crossline and DSF crossline soundings was between 0-2 feet.

- J.3 No anomalous crossline comparisons were noted.
- J.4 The mainscheme and crossline data was collected with the same suite of survey equipment.

## **K. JUNCTIONS** *See also Evaluation Report*

This survey does not junction with any contemporary surveys.

## **L. COMPARISON WITH PRIOR SURVEYS** *See also Evaluation Report*

Comparisons with prior surveys are not required when 200 percent (or greater) side scan sonar coverage is acquired over the entire survey area. Refer to NOS Hydrographic Surveys Specifications and Deliverables, Section L, page 62.

## **M. ITEM INVESTIGATION REPORTS**

All side scan contacts with measurable shadows and all contacts which appeared manmade were deemed significant.

Four diver investigations were performed on contacts deemed most significant. The MOD(3) Divers Investigation Report can be found in Separate IV. \*

**N. COMPARISON WITH THE CHART** *See also Evaluation Report*

N.1 Two charts are affected by this survey:

CHART AFFECTED	EDITION	DATE	CHART SCALE
Chart 12354	37 <sup>th</sup> Ed.	November 14, 1998	1:80,000
Chart 12358	18 <sup>th</sup> Ed.	April 2, 1994	1:40,000

N.2 Four Dangers to Navigation were submitted for this project. See Appendix A for details.

N.3a The overall agreement between charted soundings and survey depths was good. Most soundings compare within one foot, with occasional differences of two to three feet, with one exception. The 21-foot sounding located at latitude 40°59'51.13"N, longitude 072°39'41.22"W was disproved by 200% side scan. The 21-foot sounding was "advance information" from H-9087. Refer to Appendix J, <sup>\*</sup>Supplemental Correspondence, for additional information. The hydrographer recommends removing this sounding from both charts 12358 and 12354. *Concur Remove 21*

N.3b No extensive shoaling or deepening trends were found in the survey area.

N.4a The charted position of the oil platform and dolphins were compared to detached positions obtained during the survey. In each case, the range and bearing was applied during data collection. Comparisons were made using Chart 12358 18<sup>th</sup> Ed, April 2, 1994 (1:40,000) for comparisons. The results are as follows:

The southwest dolphin's calculated position of 41°00'00.14"N, 072°38'53.41"W is located 50 meters southwest of the charted position at 41°00'00.08"N, 072°38'51.71"W. The detached position was taken at a range of 2 meters and a bearing of 233.5°T. The hydrographer recommends updating the chart with the detached position. *Concur*

The northeast dolphin's calculated position at 41°00'02.12"N, 072°00'42.52"W is located 50 meters

*\* Data filed with original field records*



north northeast of the charted position of 41°00'00.59"N, 072°38'43.00"W. The detached position was taken at a range of 15 meters and a bearing of 289°T. The hydrographer recommends updating the chart with the detached position. *Concur*

The northeast corner of the oil platform's calculated position of 41°00'02.89"N, 072°38'46.22"W is located 12 meters east northeast of the charted position at 41°00'02.70"N, 072°38'46.68"W. The detached position was taken at a range of 10 meters and a bearing of 158°T. The hydrographer recommends retaining the charted position of the northeast corner. *Concur*

The southeast corner of the oil platform's calculated position at 41°00'00.81"N, 072°38'47.08"W is located 18 meters south southwest of the actual position of 41°00'01.26"N, 072°38'46.69"W. The detached position was taken at a range of 5 meters and a bearing of 159°T. The hydrographer recommends retaining the charted position of the southeast corner. *Concur*

The northwest corner of the oil platform's calculated position at 41°00'01.98"N, 072°38'46.69"W is located 45 meters southwest of the charted position of 41°00'02.70"N, 072°38'43.38"W. The detached position was taken at a range of 6 meters and a bearing of 152°T. The hydrographer recommends retaining the charted position of the northwest corner. *Concur*

The southwest corner of the oil platform's calculated position at 41°00'00.21"N, 072°38'49.00"W is located 35 meters south southwest of the charted position of 41°00'01.27"N, 072°38'48.39"W. The detached position was taken at a range of 10 meters and a bearing of 341°T. The hydrographer recommends retaining the charted position of the southwest corner. *Concur*

~~The four~~ <sup>Two</sup> charted mooring buoys in the vicinity of 40°59'55"N, 072°38'39"W should be removed from chart 12358. Detached positions were taken on the two mooring buoys located to the south of the oil terminal. The hydrographer recommends charting the two mooring buoys at the following positions: the eastern mooring buoy at 40°59'55.37"N, 072°38'39.96"W, and the western mooring buoy at 40°59'55.09"N, 072°38'52.39"W. *Concur*

N.4e Within the surveyed region, a pipeline leading from the oil terminal to the oil transfer station ashore was identified on side scan records. The charted position adequately represents the position of the pipeline. No overhead pipelines, cables, bridges, or ferry routes were otherwise found in the survey area.

**O. ADEQUACY OF SURVEY** *See Also Evaluation Report*

This survey is complete and fully adequate to supersede prior surveys in common areas.

**P. AIDS TO NAVIGATION**

P.1 No fixed aids were located directly in the survey area. However, a detached position was taken on the private green buoy C"3" located just outside the southern survey limits. A comparison was made between the detached position and the chart 12358, 18th Ed., April 2, 1994 of the area. The buoy was determined to be off station. The survey position of this buoy, 40°59'42.<sup>12</sup>"N 072°38'52.<sup>41</sup>"W, is 175 meters south southwest of the charted position at 40°59'47.16"N, 072°38'48.66"W. The hydrographer recommends charting private green buoy C"3" at the survey position. *Retain as charted*

P.2 No other aids to navigation are contained within survey H10930.

P.3 Survey H10930 is inclusive of the waters surrounding the Northville Oil Terminal.

**Q. STATISTICS**

1.	a.	# of Multibeam (MB) Soundings Processed	26,670,000
	b.	Number of HPS Positions	74,112
	c.	Lineal Nautical Miles of Sounding Lines	183.5 NM
2.	a.	Square Nautical Miles of Hydrography	8.6 SQNM
	b.	Days of Production	6
	c.	Detached Positions	10
	d.	Bottom Samples	25
	e.	Tide Stations	2
	f.	Velocity Casts	16
	g.	Dive Item Investigations	4
	h.	SeaBat Item Investigations	34

**R. MISCELLANEOUS**

*See Also Evaluation Report*

- R.1 a. No evidence of silting was found during this survey.
- b. No unusual submarine features were found during this survey, however, a charted pipeline was found within the survey limits. Refer to Section N, Comparison with the Chart, paragraph 4e for detailed information.
- c. No evidence of anomalous tides or tidal current conditions were found during this survey.
- R.2 Twenty-five bottom samples were taken during this survey. The results were submitted to the Smithsonian Institution.

**S. RECOMMENDATIONS**

No additional fieldwork is required.

**T. REFERRAL TO REPORTS**

No reports or data are referred to in this Descriptive Report that are not included with this survey.

This report and the accompanying field sheets are respectfully submitted.

---

Ensign Kevin Slover, NOAA  
NOAA Ship RUDE



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**Office of NOAA Corps Operations**  
**NOAA Ship RUDE S-590**  
**439 W. York Street**  
**Norfolk, VA 23510-1114**

September 24, 1999

Commander  
First Coast Guard District  
Aids to Navigation Office  
408 Atlantic Avenue  
Boston, Massachusetts 02110-3350

**REPORT OF DANGER TO NAVIGATION**

Dear Sir:

The NOAA Ship RUDE has recently completed a hydrographic survey in the vicinity of the Northville Oil Terminal, 4 nautical miles west of Mattituck Inlet, New York:

Hydrographic Survey Registry No. H-10930  
State New York  
General Locality Long Island Sound  
Sublocality Vicinity of Northville Oil Terminal  
Project Number OPR-B352-RU-99

During the course of multibeam sonar operations, four dangers to navigation were discovered. This new depth information merits immediate publication in the Local Notice to Mariners. The updated depths affect the following charts:

CHART 12354 1:80,000 37<sup>th</sup> Ed., November 14, 1998  
CHART 12358 1:40,000 18<sup>th</sup> Ed., April 02, 1994

Depth*	Latitude (NAD83)	Longitude (NAD 83)	Charts Affected
44 "Rk"	41°00'39.48" N	072°36'19.81" W	12354, 12358
47 "Rk"	41°00'28.08" N 10	072°36'27.58" W 54	12354, 12358
321 "Obs"	40°59'53.32" N 44	072°38'54.69" W 77	12354, 12358
30 "Obs"	40°59'53.22" N 24	072°38'49.17" W 19	12354, 12358

\* Updated depths are reduced to feet at MLLW using predicted tides and should be viewed as preliminary information, subject to office review.

Contact either of the following personnel for further information:

Commanding Officer  
NOAA Ship RUDE  
439 West York Street  
Norfolk, VA 23510-1145  
(757) 615-6465

Chief, Atlantic Hydrographic Branch  
Atlantic Marine Center  
439 W. York Street  
Norfolk, VA 23510-115  
(757) 441-6746

Sincerely,

Lieutenant Commander James S. Verlaque, NOAA  
Commanding Officer, NOAA Ship RUDE

Attachment  
cc: AHB, NIMA



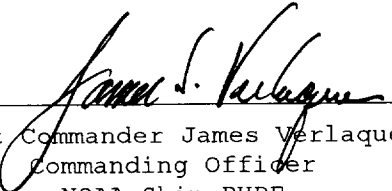
## APPENDIX K

### APPROVAL SHEET

LETTER OF APPROVAL  
FOR  
DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY, H10930  
OPR-B352-RU-99  
FIELD NUMBER: RU-10-06-99  
SCALE: 1:10,000  
NOAA SHIP RUDE  
Commanding Officer  
Lieutenant Commander James S. Verlaque, NOAA

Field operations contributing to the accomplishment of this Navigable Area survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. All field sheets and reports were reviewed in their entirety and all supporting records were checked as well.

This survey was completed with 200% SSS coverage and is more than adequate to supercede all prior surveys in common areas. This survey is considered complete and adequate for nautical charting.

  
Lieutenant Commander James Verlaque, NOAA  
Commanding Officer  
NOAA Ship RUDE



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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE:** November 16, 1999

**HYDROGRAPHIC BRANCH:** Atlantic

**HYDROGRAPHIC PROJECT:** OPR-B352-RU-99

**HYDROGRAPHIC SHEET:** H-10930

**LOCALITY:** Vicinity of Northville Oil Terminal, NY

**TIME PERIOD:** September 8 - September 14, 1999

**TIDE STATION USED:** 851-2987 Northville Fuel Dock, NY  
Lat. 40° 58.9'N Lon. 72° 38.7'W

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

**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 1.719 meters

**REMARKS: RECOMMENDED ZONING**

**Use zone(s) identified as:** LIS51, LIS52 & LIS53.

Refer to attachments for zoning information.

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

*Thomas V. Mero* 11/16/99  
-----  
**CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION**



Printed on Recycled Paper



## GEOGRAPHIC NAMES

H-10930

Name on Survey	A ON CHART NO. 12554, 12558	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND McNALLY ATLAS	H U.S. LIGHT LIST	K
LONG ISLAND SOUND	X		X						1
NEW YORK (title)	X		X						2
NORTHVILLE (title)	X		X						3
									4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

04/19/2000

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H10930

NUMBER OF CONTROL STATIONS		2
NUMBER OF POSITIONS		103310
NUMBER OF SOUNDINGS		103310
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	15.5	10/20/1999
VERIFICATION OF FIELD DATA	73.0	01/24/2000
QUALITY CONTROL CHECKS	16.0	
EVALUATION AND ANALYSIS	7.0	
FINAL INSPECTION	20.0	02/07/2000
COMPILATION	207.0	04/14/2000
TOTAL TIME	338.5	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		12/06/1999



N/CS33-29-00

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY  
(Check):

☐ ORDINARY MAIL

☐ AIR MAIL

☐ REGISTERED MAIL

☒ EXPRESS

☐ GBL (Give number) \_\_\_\_\_

DATE FORWARDED

April 24, 20000

NUMBER OF PACKAGES

ONE TUBE

# 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.

H10930

NEW YORK, LONG ISLAND SOUND, VICINITY OF NORTHVILLE OIL TERMINAL

(ONE) TUBE CONTAINING THE FOLLOWING:

- 1 SMOOTH SHEET FOR SURVEY H10930
- 1 ORIGINAL DESCRIPTIVE REPORT
- 1 DRAWING HISTORY FORMS (NOAA FORM #76-71) FOR NOS CHART 12358
- 1 RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96)
- 1 H-DRAWING FOR NOS CHART 12358 ON MYLAR
- 1 COMPOSITE DRAWING FOR NOS CHART 12358

FROM: (Signature)

ROBERT R. HILL

RECEIVED THE ABOVE

(Name, Division, Date)

Return receipted copy to:

ATLANTIC HYDROGRAPHIC BRANCH  
N/CS33  
439 WEST YORK STREET  
NORFOLK, VA 23510-1114

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H10930 (1999)**

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.

**D. 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 95, version 5.05  
I/RAS B, version 5.01  
CARIS HIPS/SIPS

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

**H. CONTROL STATIONS**

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. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 0.357 seconds (11.001 meters or 1.10 mm at the scale of the survey) north in latitude, and 1.661 seconds (38.817 meters or 3.88 mm at the scale of the survey) east in longitude.

**I. SHORELINE**

There is no shoreline within the survey area.

**K. JUNCTIONS**

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

**L.    COMPARISON WITH PRIOR SURVEYS**

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

**N.    COMPARISON WITH CHARTS 12354 (37<sup>th</sup> Edition, Nov. 14/98)  
12358 (18<sup>th</sup> Edition, Apr. 2/94)****Hydrography**

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

1) An uncharted submerged rock with a depth of 47 feet (14<sup>3</sup> m), in Latitude 41°00'31.73"N, Longitude 72°36'25.59"W, was located by the field unit. It is recommended that this feature be charted as shown on the present survey.

2) The following charted dolphins originate with unknown sources and were not addressed by the hydrographer:

<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
41°00'02.15"	72°38'49.50"
41°00'02.05"	72°38'45.20"
41°00'00.80"	72°38'46.20"
41°00'00.80"	72°38'48.85"

In the vicinity of the charted dolphins, the present survey covered the area with 200% side scan sonar and multibeam sounding operations. This data was reviewed during office processing and no indication of visible or submerged dolphins was detected. Also, it was ascertained from the hydrographer that the charted dolphins are actually supports for a nearby platform. It is recommended that the four dolphins be removed from the charted.

3) An uncharted obstruction with a depth of 33 feet (10 m), in Latitude 40°59'57.35"N, Longitude 72°38'37.00"W, was noted while reviewing multibeam data during office processing. It is recommended that this feature be charted as shown on the present survey.

4) The following features were located by the present survey and reported as dangers to navigation:

<u>FEATURES</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
44 Rk	41°00'39.48"	72°36'19.81"
46 RK	41°00'28.10"	72°36'27.54"
31 Obstr	40°59'53.44"	72°38'54.77"
29 Obstr	40°59'53.24"	72°38'49.19"

It is recommended that these features be charted as shown on the present survey.

### **Dangers to Navigation**

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

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

### **O. ADEQUACY OF SURVEY**

This is an adequate hydrographic/side scan sonar/multi-beam survey. There are numerous areas within the survey area that no sounding coverage was obtained due to crab pots. Each of the areas are less than 100 meters long in length and width. No additional work is recommended.

### **R. MISCELLANEOUS**

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

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

12358 (18<sup>th</sup> Edition, Apr. 2/94)

H10930

*Robert Snow*

**Robert Snow**

Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis

**APPROVAL SHEET**  
**H10930**

**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.

Richard W. Blevins Date: 12 / 3 / 1999  
Richard W. Blevins  
Cartographer  
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.

Andrew L. Beaver Date: 12/6/99  
Andrew L. Beaver  
Lieutenant Commander, NOAA  
Chief, Atlantic Hydrographic Branch

\*\*\*\*\*

**Final Approval:**

Approved: Samuel P. De Bow, Jr. Date: May 8, 2000  
Samuel P. De Bow, Jr.  
Captain, NOAA  
Chief, Hydrographic Surveys Division

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H70930

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.

[illegible]