

H11011

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Hydrographic /
Type of Survey Side Scan Sonar / Multibeam

Field No. Sheet A

Registry No. H11011

LOCALITY

State Connecticut

General Locality Long Island Sound

Locality Approaches to New Haven

2000

CHIEF OF PARTY
LCDR James S. Verlaque

LIBRARY & ARCHIVES

DATE *October 18, 2001*

H11011

HYDROGRAPHIC TITLE SHEET

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.

N/A

State Connecticut

General locality Long Island Sound

Locality Approaches to New Haven HARBOR

Scale 1:10,000

Date of survey September 18 - October 19, 2000

Instructions dated September 28, 2000

Project No. OPR-B317-RU

Vessel NOAA Ship RUDE s590, EDP# 9040

Chief of party LCDR James S. Verlaque, NOAA

Surveyed by LCDR J. Verlaque, LT J. Crocker, ENS K. Slover

Soundings taken by:(echo sounder,hand lead,pole) Reson Seabat 9003 SWMB, Innerspace 448 SBES

Graphic record scaled by RUDE personnel

Graphic record checked by RUDE personnel

Protracted by N/A

Automated plot by

~~N/A~~ HEWLETT PACKARD DESIGNJET 2500 CP

Verification by Atlantic Hydrographic Branch personnel

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

REMARKS: Hydrographic survey. All time recorded in UTC.

Sounding corrected using preliminary unverified tides.

HAND WRITTEN NOTES IN DESCRIPTIVE REPORT WERE MADE DURING OFFICE PROCESSING.

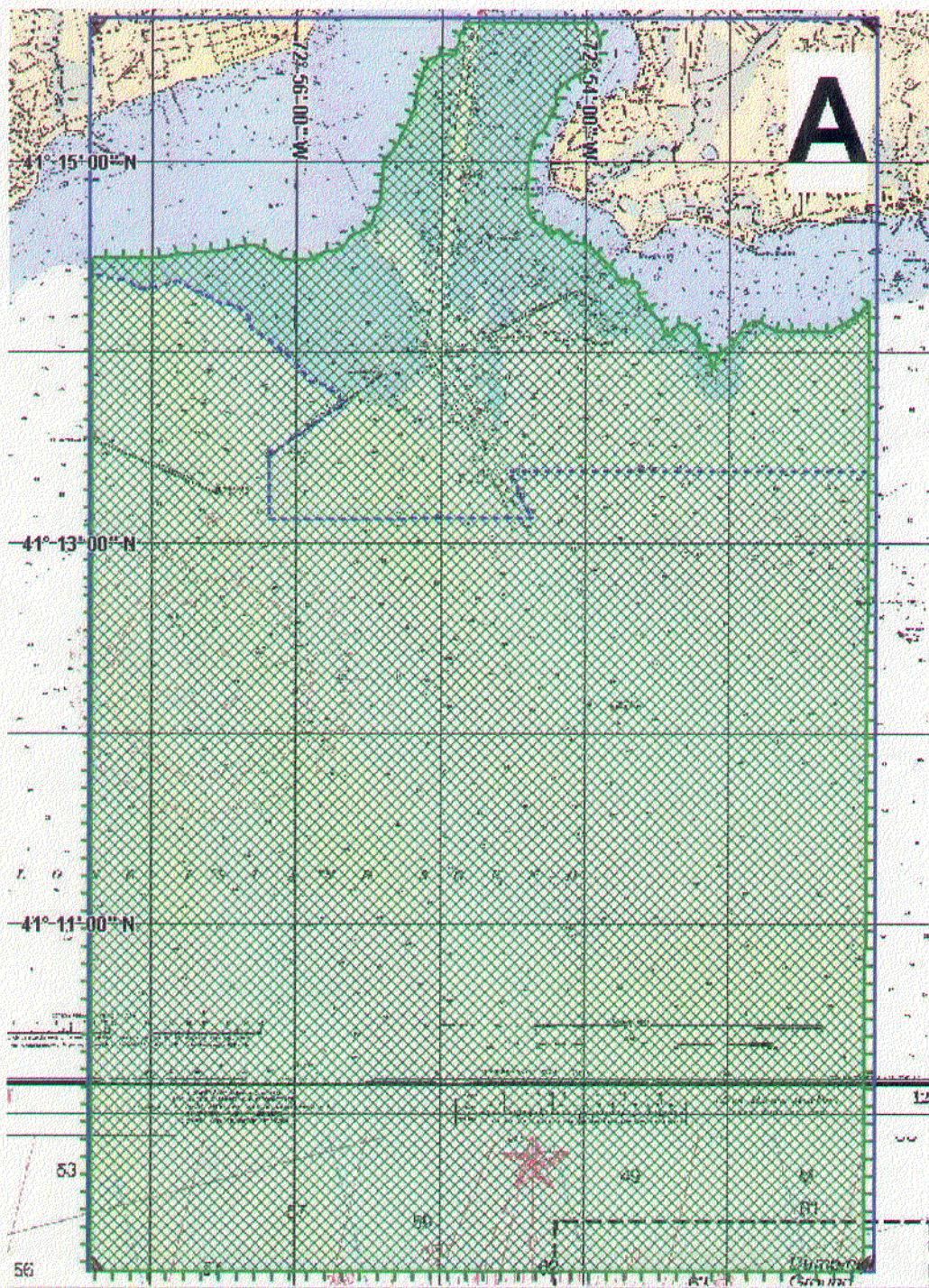
AWO'S/SURF ✓ 9/13/01. SJV ✓

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**Descriptive Report to Accompany Hydrographic Survey
H11011
Scale: 1:10,000
NOAA Ship RUDE S590
LCDR James S. Verlaque, NOAA**

A. AREA SURVEYED



- A.1** This survey was conducted in accordance with Hydrographic Survey Letter Instructions for OPR-B317-RU, Approaches to New Haven, Connecticut, dated ~~September 28, 2000~~.
OCTOBER 3, 2000. SEE ALSO THE EVALUATION REPORT
- A.2.** This survey was conducted per request from the Northeast Marine Pilots Association. Increased oil tanker traffic lightering in the approaches to New Haven requires that modern hydrographic survey techniques accurately portray the bottom and locate or disprove shipwrecks and obstructions. This survey will also update National Ocean Service (NOS) nautical charts in areas last surveyed in 1897.
- A.3** Full coverage with side scan sonar was accomplished up to the 18-foot curve. Basic hydrography was acquired between the 12- and 18-foot curves. Additional graphics depicting the sonar systems used in the survey area are attached in Appendix V, Supplemental Survey Records and Correspondence, filed with the original field records.

B. DATA ACQUISITION AND PROCESSING *SEE ALSO THE EVALUATION REPORT*

B.1 EQUIPMENT

- B.1a** All hydrographic data acquisition for this survey was conducted from NOAA Ship RUDE (S-590, EDP #9040) and NOAA Launch 0517. RUDE acquired all multi-beam hydrography, side-scan sonar data up to the 30-foot curve, and all side-scan data inside the west and middle breakwaters to the 18-foot curve. Launch 0517 acquired all single beam data and the remainder of the side-scan sonar data from the 30-foot to the 18-foot curve, and, all single-beam data between the 18-foot and 12-foot curves.

The RUDE is 90 feet in length, with a 22-foot beam, and a 7-foot draft. Launch 0517 is 21 feet in length, with a 6-foot beam, and a 1½ -foot draft.

- B.1b** Vertical-beam echo-sounding data were acquired on RUDE with an Odom Echo-Trac dual-beam echo sounder (24 and 200 kHz) (S/N 9641). RUDE vertical-beam data was only used to compare depths with multi-beam data and was not included in the final data set. Launch 0517 acquired single-beam echo-sounding data with an Innerspace 448 single-beam echo-sounder (100kHz, S/N 241), and all launch data is included in the final data set.
- B.1c** RUDE acquired all side scan sonar data using an Edgetech (EG&G) Model 272 towfish (S/N's 11902, 16697). An Edgetech Model 260-TH slant range correcting side scan sonar recorder (S/N 12106) was used to acquire the analog data. Side scan sonar data was recorded digitally using Triton ISIS software and archived in Extended Triton Format (*.XTF).

Launch 0517 acquired all side scan sonar data using an Edgetech (EG&G) Model 272 towfish (S/N's 16696, 16630). An Edgetech Model 260-TH slant range

correcting side scan sonar recorder (S/N 10884) was used to acquire the analog data.

- B.1d** Single frequency (455kHz) multi-beam data were acquired with a Reson SeaBat 9003 (S/N 10496-447020) shallow water sonar system. The 9003's combined transmit and receive beams yield forty (40) soundings per ping, each formed from a 3° cross-track by 1.5° along-track bottom footprint.
- B.1e** Heave, pitch, and roll data for RUDE were acquired using a Seatex Seapath Motion Reference Unit (MRU-5, S/N 0544). Only heave data was applied to Launch 517 single-beam data.
- B.1f** All positions for this survey were obtained from the NAVSTAR Global Positioning System (GPS) augmented with the U.S. Coast Guard Differential GPS service. GPS signals were acquired on RUDE with a SeaPath 200GPS receiver (S/N 0347) and differential correctors were acquired using a Starlink DNAV-212G differential receiver (S/N 848). On Launch 517, both GPS signals and differential correctors were acquired using a Starlink DNAV-212G differential receiver (S/N 853) on Launch 0517.
- B.1g** Sounding velocity data throughout the water column was acquired using a SeaBird SBE19 Seacat Profiler (S/N 196721-1251 and S/N 196721-1991). For RUDE multi-beam data acquisition, sound velocity casts were taken every four hours, or normally when surface velocity, determined by using an Odom Digibar Pro DB1200, (S/N 98013), differed by more than two meters per second. For Launch 0517, sound velocity casts were conducted at least weekly, and, daily when ship data acquisition occurred on the same day as launch data acquisition.

B.2 QUALITY CONTROL

- B.2a** A total of 27 nautical miles of cross-lines were acquired on RUDE during the survey, equating to 10.6% of the total nautical miles of ship hydrography. A total of 13 nautical miles of cross-lines were acquired on Launch 0517 during the survey, equating to 16% of the total nautical miles of launch hydrography. Cross-lines were accomplished according to NOS Specifications and Deliverables guidelines.

A visual comparison of multi-beam cross-lines and single-beam cross-lines was conducted in MapInfo. Multi-beam mainscheme lines and multi-beam crosslines were compared visually within MapInfo. In both cases, comparisons yielded excellent results, with discrepancies of not more than one foot observed. The Quality Control report within CARIS-HIPS was not utilized, as one hundred percent multi-beam coverage was not acquired throughout the entire survey area.

Launch 517 single-beam crosslines and single-beam mainscheme lines were compared visually within MapInfo. Comparisons yielded excellent result, with discrepancies of not more than one foot observed.

B.2b There are no contemporary junctions with this survey. *CONCUR*

B.2c Multi-beam quality control checks were accomplished on-line by comparing mutli-beam soundings to single-beam soundings using the Bathymetry Confidence program within ISIS. Differences of 0.2 to 0.5 meters were observed during data acquisition.

B.3 DATA REDUCTION

B.3a No deviations from the prescribed method for data reduction were used during this survey.

C. VERTICAL AND HORIZONTAL CONTROL

C.1 VERTICAL CONTROL

Tidal zoning for this survey is consistent with the Survey Letter Instructions. During data acquisition, the tide station at Bridgeport, Connecticut (846-7150) was used as the reference station to acquire preliminary unverified tides.

Zone correctors were applied to the preliminary unverified tidal data from the Bridgeport tide station generating tide correctors. The conversion routine for the tidal data was generated within CARIS-HIPS and resulting correctors were applied to all multi-beam data. Preliminary unverified tidal data were zone corrected within HP_Tools and applied to all single-beam data from both RUDE and Launch 0517.

NOTE: Verified smooth tidal values and correctors may be applied to multi-beam data within HPS, as "line by line" binning was chosen when multi-beam data was imported into the CARIS-HIPS workfile. Note that only preliminary unverified tides have been applied to all submitted data. *

C.2 HORIZONTAL CONTROL *SEE ALSO THE EVALUATION REPORT*

The horizontal reference station for this survey is the North American Datum of 1983 (NAD83). Geodesy parameters during data collection entailed the use of Universal Transverse Mercator (UTM) Zone 18, WGS 84, Northern Hemisphere. No horizontal control stations were used for this survey.

The following USCG reference station beacons were used:

USCG DGPS Radio Beacon Broadcast Site						
Site	Freq.	Tran Rate (BPS)	Lat (N)	Long (W)	Range	Beacon ID
Moriches, NY	293	100	40° 47.4'	072° 44.7'	130	803
Chatham, MA	325	200	41° 40.3'	069° 57.0'	95	802
Sandy Hook, NJ	286	200	40° 28.3'	074° 00.7'	100	804

** A COMPARISON BETWEEN APPROVED TIDES AND ZONING AND PRELIMINARY UNVERIFIED TIDES SHOWED AGREEMENT.*

D. RESULTS AND RECOMMENDATIONS

D.1 AUTOMATED WRECK AND OBSTRUCTION INFORMATION SYSTEM

Five AWOIS items are contained within the survey limits. Of these five items, three are assigned and two are informational.

D.1a AWOIS 1827

ITEM DESCRIPTION: 20-foot cabin cruiser
SOURCE: NM7/66, H9008/68, FE241/82, FE343SS/90
AWOIS POSITION: 41°12'20.35" N, 072°54'28.36"W
REQUIRED INVESTIGATION: MB, S2, SWMB, DI
CHARTS AFFECTED: 12354, 12364, 12371, 12372

INVESTIGATION

DATE (S) / DN (S): Sep18-21, 25, 27, **Oct 10/** 262-265, 269, 271, **284**
LINE/POSITION: 992/51020
INVESTIGATION USED: S2, SWMB DEV, DI
POSITION DETERMINED BY: DGPS

INVESTIGATION SUMMARY:

RUDE acquired 200% side scan sonar over the AWOIS circle area, multi-beam development over the wreck and diver investigation. Multi-beam development on DN 284 yielded a least depth of 33 feet. On DN 284, divers located a 28-foot long cabin cruiser with least depth determined by diver least depth gauge of 32 feet.

Copies of the dive report are included in Appendix V, filed with the original field records.

CHARTING RECOMMENDATION:

The hydrographer recommends removing the charted dangerous wreck in latitude 41°12'20.3"N, longitude 072°54'28.4"W, and charting a wreck with least depth known and position listed below. *Concur*

RECOMMENDED POSITION: 41°11'42.05"N, 072°54'56.00"W

RECOMMENDED LEAST DEPTH: ³³~~32~~ feet at MLLW

COMPILATION NOTES:

DELETE ~~(32)~~
(CHARTS 12364 + 12354)
ADD ~~(32)~~ *33:WK*
(ALL CHARTS)

D.1.b AWOIS 2728

ITEM DESCRIPTION: Steel I-beam laying flat on bottom with diver least depth of 25 feet.

SOURCE: RH MAR 9/30/82

AWOIS POSITION: 41°13'22.52" N, 072°53'37.33"W

REQUIRED INVESTIGATION: SD, S2, SWMB, DI

CHARTS AFFECTED: 12354, 12364, 12371, 12372

INVESTIGATION

DATE (S) / DN (S): September 19-20, October 3, 10/263-264, 277, 284

LINE/POSITION: 131/51042

INVESTIGATION USED: S2, SWMB DEV, DI

POSITION DETERMINED BY: DGPS

INVESTIGATION SUMMARY:

RUDE and Launch 517 acquired 200% side scan sonar over the feature. The multi-beam, acquired simultaneously with the side scan sonar, on DN 263 revealed a least depth of 26 feet. On DN 277, a multi-beam development revealed a least depth of 27 feet. On DN 284, a diver least depth of 27 feet was determined. Divers verified an I-beam laying flat on the bottom.

Copies of the dive report are included in Appendix V, filed with the original field records.

CHARTING RECOMMENDATION:

The hydrographer recommends retaining the charted notation "Obstn"^{CONCUR} but removing the charted 25-foot sounding, cleared notation, and danger curve.^{CONCUR} Add the least depth and position listed below. *Do NOT CONCUR - INSIGNIFICANT, CHART SURVEY SOUNDINGS*

RECOMMENDED POSITION: 41°13'^{20.13}~~19.98~~"N, 072°53'⁴⁸~~36.59~~"W

RECOMMENDED LEAST DEPTH: ²⁷~~26~~ feet at MLLW

COMPILATION NOTES:

*Do NOT CONCUR
DELETE "OBSTN"*

*DELETE (25) OBSTN
(CHARTS 12364 + 12371)*

*DELETE (25) OBSTN
(CHARTS 12354 + 12372)*

D.1c AWOIS 10727

ITEM DESCRIPTION: "Obstr Rep", an uncharted object is reported to exist 2 to 3 feet below MLLW, approx. 1200 yards from Southwest Ledge Light.

SOURCE: LNM38/72

AWOIS POSITION: 41°14'13.12" N, 072°53'58.40"W

REQUIRED INVESTIGATION: SD, BD, DI

CHARTS AFFECTED: 12354, 12364, 12371, 12372

INVESTIGATION

DATE (S) / DN (S): October 9, 18/ 283,292

LINE/POSITION: 200/11575 11580

INVESTIGATION USED: S2, SB DEV, DI

POSITION DETERMINED BY: DGPS

INVESTIGATION SUMMARY:

On DN 283, Launch 517 acquired 200% side scan sonar coverage over the area to the maximum extent possible due to shallow water depths. On DN 283, a significant contact was developed with 5-meter line spacing and a least depth of one foot was determined. The surrounding area is comprised of rocks and boulders with shoal depths of one to three feet. On DN 292, a diver investigation revealed a boulder with a least depth of two feet by depth gauge and sounding pole. The least depth on the boulder is 76 meters north-northwest of the charted "Obstr PA" notation and danger curve.

CHARTING RECOMMENDATION:

The hydrographer recommends removing the notation "Obstr PA", the "(2 ft rep)" *CONCUR* notation, and the danger curve in latitude 41°14'13.1"N, longitude 072°53'58.4"W. Chart the notation "rky" with a least depth and position as listed below. *CONCUR*

RECOMMENDED POSITION: 41°14'15.⁷⁴54"N, 072°53'59.⁰⁶14"W

RECOMMENDED LEAST DEPTH: 1 foot at MLLW

COMPILATION NOTES:

DELETE ∴ Obstr PA (2 ft rep)

RETAIN "rky"

D.1d AWOIS 1840*FREIGHTER*

ITEM DESCRIPTION: 4340 tons_A sank 8/28/42 in entrance to New Haven Harbor; sunk by marine casualty, position accuracy 3-5 miles.

SOURCE: 20 FTR, 24 NO.4941

AWOIS POSITION: 41°14'00.34" N, 072°54'58.36"W

REQUIRED INVESTIGATION: INFORMATION

CHARTS AFFECTED: 12354, 12364, 12371, 12372

INVESTIGATION

DATE (S) / DN (S): N/A

LINE/POSITION: N/A

INVESTIGATION USED: S2, 100%MB, SB

POSITION DETERMINED BY: DGPS

INVESTIGATION SUMMARY:

The AWOIS position is charted in the center of the channel. One hundred percent multi-beam was acquired in the channel, two hundred percent side scan sonar was acquired in the surrounding area to the 18-foot curve, and single beam was acquired outside the 18-foot curve, all in the vicinity of the AWOIS position. There is no evidence of a wreck anywhere in the vicinity of the reported AWOIS position as could be determined from the hydrographic survey records.

CHARTING RECOMMENDATION:

The hydrographer recommends updating the common area with present survey soundings.

CONCUR

RECOMMENDED POSITION: N/A

RECOMMENDED LEAST DEPTH: N/A

COMPILATION NOTES:

D.1e AWOIS 3048

ITEM DESCRIPTION: "27 Rk", three submerged rocks with a least depth of 27 feet by diver least depth gauge.

SOURCE: FE241/82, FE254/83

AWOIS POSITION: 41°12'17.61" N, 072°55'39.74"W

REQUIRED INVESTIGATION: INFORMATION

CHARTS AFFECTED: 12354, 12364, 12371, 12372

INVESTIGATION

DATE (S) / DN (S): September 19, 25, 27, **October** 3/263, 269, 271, 277

LINE/TIME: 940/~~193549~~ 272687

INVESTIGATION USED: S2, MB DEV

POSITION DETERMINED BY: DGPS

INVESTIGATION SUMMARY:

As this item was previously dived by another field unit and positively identified, RUDE acquired full side-scan coverage and multi-beam development to confirm the charted depth. A multi-beam least depth over the significant contact, located by side scan, revealed a least depth of ~~28~~ feet.

29

CHARTING RECOMMENDATION:

The hydrographer recommends removing the charted danger curve and 27-foot notation, *CONCUR* but retaining the "Rk" notation, adding the least depth known and position listed below. *DO NOT CONCUR FEATURE IS INSIGNIFICANT CHART SURVEY SOUNDINGS*

RECOMMENDED POSITION: 41°12'17.50"N, 072°55'39.41"W

RECOMMENDED LEAST DEPTH: ~~28~~ feet at MLLW

29

COMPILATION NOTES:

Delete (27) Rk
Add "rky"

D.2 COMPARISON WITH THE CHART

D.2.a Four charts are affected by this survey:

CHART AFFECTED	EDITION	DATE	CHART SCALE
Chart 12354	38 th Ed.	13 May 2000	1:80,000
Chart 12364	30 th Ed.	15 Feb 1997	1:40,000
Chart 12371	22 nd Ed.	25 Jul 1992	1:20,000
Chart 12372	29 th Ed.	19 Jun 1997	1:40,000

D.2.b A comparison of present survey soundings and features was made to NOS chart 12371 and 12354. Chart 12371 is the largest scale chart that covers the majority of the survey area. Chart 12354 covers the southern portion of the survey area, not covered by Chart 12371. Chart 12372 is a small craft chart that also does not cover the entire area. Chart 12364 covers the southwest corner of the survey area. Chart 12354 is the smallest scale of the survey area, but has features in the survey area not found on Chart 12371. These features were transferred to Chart 12371 and added as a layer in MAPINFO for comparison purposes.

The entire survey area is comprised primarily of mud and sand except in the vicinity of the east end of the east breakwater where numerous boulders are evident from the sonar records. Additionally, boulders were located in the vicinity of the R N“36” buoy, south of Round Rock to just outside the 18-foot curve. Areas inside the 18-foot curve with significant rocks determined by side scan sonar were developed with single beam by Launch 517, and, those rocks submitted as dangers to navigation items were investigated by divers. Areas RUDE acquired side-scan sonar data provided a digital view of the bottom distinguishing rocky areas from mud and sand. Rocky areas that were deemed safe for the RUDE to investigate were investigated using multi-beam. In those areas where safe navigation was compromised due to shallow water, Launch 517 acquired single-beam development at 5-meter line spacing.

The color scheme varies between the charts for the common survey area. Charts 12372 and 12364 show blue tint from shore to the 6-foot curve. Charts 12371 and 12354 show blue tint from shore to the 18-foot curve. The hydrographer recommends the color scheme be consistent for all of the charts. *COAEUR*

Inside the west and middle breakwater, the 18-foot curve has shifted 1500 meters to the southwest. A 14-foot to 15-foot shoal in latitude 41°13'53"N, longitude 72°56'07"W was located during survey operations. Tug and barge traffic, drawing 15 feet, routinely transit this area as a short cut to the channel outside the breakwater, and, to avoid channel traffic. A Danger to Navigation was submitted for this shoal to the Atlantic Hydrographic Branch on October 23, 2000.

Several isolated shoal soundings appear on Chart 12371 in the vicinity of the Entrance Channel. These soundings were investigated with one hundred percent multi-beam. The following discrepancies were noted:

Charted Sounding (feet)	Charted Latitude (N)	Charted Longitude (W)	Survey Soundings (feet)
14	41°13'52.83"	072°55'01.50"	19-34
14	41°13'46.81"	072°54'57.06"	19-27
17	41°13'43.77"	072°54'56.74"	18-20
18	41°13'26.65"	072°55'07.98"	20
18 25	41°13'54.56"	072°54'51.97"	25-37
15-18	41°13'49.88"	072°54'36.50"	16 17-27

The hydrographer recommends updating the chart with present survey data in the common area.

The hydrographer recommends charted features identified with a depth, description, and charted notation "Obstn rep 1990" be deleted from the chart and superseded by present survey soundings and features as listed below:

	Charted as "Obstn rep 1990" (feet)	Charted Latitude N	Charted Longitude W	Survey Depth (feet)	Survey Latitude N	Survey Longitude W	Recommend Charting as (feet)	
Delete	22 Obstn	41°13'05"	72°55'31"	22	41°13'10.60"	72°55'43.79"	22 Obstn Rk	Add
Delete	37 Obstn	41°12'33.4"	72°53'33.2"	38	41°12'33.17"	72°53'28.72"	38 Obstn	Add
Delete	44 Obstn	41°11'48"	72°53'30"	47	41°11'48.15"	72°53'28.94"	48 47 Obstn	CHART SOUNDING ONLY

A charted sounding with the notation "Rk" and a danger curve should be modified as listed below:

	Charted as (feet)	Charted Latitude N	Charted Longitude W	Survey Depth (feet)	Survey Latitude N	Survey Longitude W	Recommend Charting as (feet)	
Delete	32 25 Rk	41°11'48"	72°55'43"	30	41°11'46.93"	72°55'30.87"	30 Rk	Add

Twenty-one significant features, not previously charted, were located during survey operations. The hydrographer recommends charting these rocks if the survey scale permits. CONCUR AND FEATURES

Charted Soundings (feet)	Survey Soundings (feet)	Survey Latitude N	Survey Longitude W	Recommend Charting as (feet)
61-69	57	41°09'13.94"	72°52'42.82"	57 *
63 (DUMPING)	51	41°09'16.78"	72°53'23.21"	51 *
63 (GROUND)	51	41°09'17.72"	72°53'05.42"	51 *
61	45 44	41°09'49.14"	72°52'41.47"	*44 Wk
58	44	41°09'58.00"	72°51'49.74"	44 Wk
53	49	41°10'52.22"	72°52'08.82"	49 *
52	48 50	41°11'04.10"	72°52'52.81"	48 50 *
51	48	41°11'12.47"	72°52'12.14"	48 *
18	15	41°13'46.24"	72°53'09.39"	15 Rk
25	19	41°13'47.42"	72°52'02.84"	19 Rk

SEE ALSO THE DR pg. 13 D.2f

ADD ADD

ADD ADD

* CHART SURVEY SOUNDINGS

Charted Soundings (feet)	Survey Soundings (feet)	Survey Latitude N	Survey Longitude W	Recommend Charting as (feet)	
20	11 12	41°13'47.56"	72°53'16.16"	11 12 Rks	ADD
22	16	41°13'53.15 ¹⁷ "	72°52'14.48 ⁵¹ "	16 Rk	ADD
12 16	9 8	41°14'13.20 ³² "	72°53'44.25 ²⁷ "	9 8 Rk	ADD
rky	1 2	41°14'19.24"	72°54'05.95 ⁹⁴ "	1 2 Rky	CONCUR
33	32 31	41°14'26.13"	72°54'56.83"	32 31	SEE E+A REPORT DTDN CONTROLLING DEPTHS
17	5	41°14'11.27"	72°54'05.32"	5 Rk	ADD
14	12	41°13'52.33 ⁰¹ "	72°55'29.63 ³⁶ "	12 Rk	ADD / RETAIN
19	14	41°13'44.03"	72°55'28.87 ⁹⁶ "	14 Rky	ADD "rky"
SALVAGED — 30	22	41°13'16.01"	72°56'53.84"	**22 Wk	SEE E+A DTDN 1.
28	25 24	41°12'35.54 ⁶⁶ "	72°55'47.10 ⁰⁰ "	25 24 Rk Obstr	ADD
29 37 WK	30 28	41°11'52.83"	72°56'18.93"	30 28 Wk	REVISE (29) WK TO (30) WK

* On DN 286, a dive investigation was conducted to confirm the least depth. Reduced visibility resulted in divers acquiring a least depth by diver gauge of 49 feet, eight meters away from the multi-beam least depth. The 44-foot least depth, acquired during the one hundred percent multi-beam development, is recommended for charting. CONCUR

** On October 18, DN 292, a diver investigation was conducted on a vessel that sank two weeks previously. The approximate position of the sunken vessel was provided by USCG Group Long Island to RUDE on October 16. Launch 517 investigated and acquired a least depth by single beam of 22 feet. Divers acquired a least depth by diver least depth gauge of 23 feet. Divers marked the wreck with a 12-inch red cherry fender. On October 19, USCG Group Long Island was notified the wreck was marked. USCG Long Island stated the owner would recover the wreck within two weeks. A Danger to Navigation was submitted to the Atlantic Hydrographic Branch on October 23, 2000. The hydrographer recommends the Atlantic Hydrographic Branch follow-up on the status of the wreck to determine if the wreck has been removed or should be charted. SALVAGED — SEE ALSO THE EVALUATION REPORT DTDN 1.

The charted obstructions with the notation "Obstr" should be modified as listed below and the danger curve should be removed:

Charted as (feet)	Charted Latitude N	Charted Longitude W	Survey Depth (feet)	Survey Latitude N	Survey Longitude W	Recommend Charting as (feet)	
23 Obstr	41°13'15"	72°54'56"	23 22	41°13'17.16 ²³ "	72°55'00.80 ⁴⁶ "	22 23 Obstr	ADD
40 Obstr	41°12'15"	72°53'24"	45	41°12'14.34"	72°53'22.51"	* 45 Obstr	INSIGN * CHART SURVEY SOUNDINGS

D.2c There are two submarine cable areas charted in the survey area; from Morgan Point to the west end of the east breakwater and through the center of the sheet from Mansfield Point to the southwest corner of the sheet. No evidence of a cable area is apparent in the vicinity of the breakwater, although the lighted, fixed aid on the west end of the east breakwater may be powered from shore via that cable area. The cable area running through the center of the sheet is apparent on the

side scan sonar records. The hydrographer recommends retaining the cable area as charted. There are no pipelines within the survey area.

CONCUR

D.2d Bottom sediment samples were acquired and, all but six samples agree with the charted bottom characteristics in the common area. Discrepancies were found between charted bottom characteristics and survey bottom characteristics as listed below:

Charted Characteristics	Survey Characteristics	Charted Latitude (N)	Charted Longitude (W)	Sample Number
hrd	gy M, brk Sh	41°13'44.14"	072°55'52.90"	10,330
hrd	gy M	41°13'34.12"	072°56'36.98"	10,337
hrd	gy M	41°14'23.78"	072°56'35.44"	10,345
hrd	gy M, brk Sh	41°14'20.18"	072°54'30.62"	10,324
hrd	gy M, brk Sh	41°15'07.62"	072°54'41.38"	10,355
hrd	gy M	41°13'41.59"	072°52'57.08"	34,600

The oceanographic log sheet is attached in ^{*}Appendix V, Supplemental Survey Records and Correspondence, filed with the original field records. The hydrographer recommends removing the charted bottom characteristics listed above, and charting the survey bottom characteristics. *CONCUR*

D.2e There are ²⁷~~24~~ floating and six fixed aids to navigation within the sheet limits. Detached positions were taken on each aid to navigation. Two floating aids, R N°2" and G C°5" at the East Entrance Channel, were found to be off station, and are noted in the Dangers to Navigation report that can be viewed in ^{*}Appendix V, Supplemental Records and Correspondence, filed with the original field records. All other aids to navigation adequately serve their intended purpose.

SEE ALSO THE EVALUATION REPORT - AIDS TO NAVIGATION

D.2f The southeast corner of the survey area encompasses the northern limits of a designated dumping ground in latitude 41°05'06.7"N, longitude 71°49'20.3"W. There is no charted ^{SOUNDING}controlling depth notated in the vicinity of the dumping ground, though the dumping ground is active. One hundred percent multi-beam was acquired over the area of the dumping ground within the survey limits revealing a least depth of 51 feet. The hydrographer recommends the compiler chart a controlling depth in the vicinity of the dumping ground area. *DO NOT CONCUR CHART ONLY SURVEY SOUNDINGS*

Furthermore, side scan records revealed numerous dumping spoils, up to one mile outside the charted dumping ground limits, to the north and northeast of the dumping grounds.

D.2g A crater was located with side-scan sonar and developed with one-hundred percent multi-beam sonar. Further investigation by divers revealed the crater was empty with a bottom depth of 41 feet in latitude 41°12'40.35"N, longitude 072°54'48.59"W. No explanation may be attributed to the origin of the crater.

D.2h An underwater burrow pit was surveyed at the northeast corner of the survey area in latitude 41°15'36.6"N, longitude 072°53'58.8"W. Local knowledge revealed the pit was used in the past to burrow sand for highway construction. The pit is

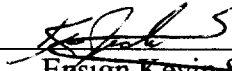
** DATA FILED WITH ORIGINAL FIELD RECORDS*

no longer active, but is now used as a mooring area. The mooring buoy limits were positioned and two hundred percent side scan was acquired in the mooring field area. A dive investigation was conducted on suspect side-scan contacts and divers located hard clay ledges. Copies of the dive report are included in Appendix V, Supplemental Records and Correspondence, filed with the original field records. The hydrographer recommends updating the chart with present survey soundings.

D.3 DANGERS TO NAVIGATION *SEE ALSO THE EVALUATION REPORT*

¹⁰
There were ~~15~~ dangers to navigation identified within the survey area. Two reports were submitted to reflect these findings. A copy of the reports are included in Appendix V, Supplemental Records and Correspondence, filed with the original field records. *AN ADDITIONAL DTN REPORT WAS SUBMITTED DURING OFFICE PROCESSING ON 2/2/01 AND IS ATTACHED TO THE EVALUATION REPORT.*

This report and accompanying field sheets are respectfully submitted.



Ensign Kevin Slover, NOAA
Field Operations Officer
NOAA Ship RUDE

E. APPROVAL SHEET

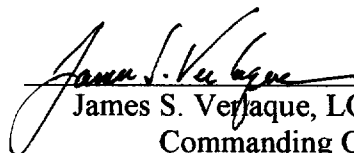
APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. H11011

Field operations contributing to the accomplishment of this hydrographic 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.

This survey is more than adequate to supersede ALL prior surveys in common areas. This survey is considered complete and adequate for nautical charting.



James S. Verjaque, LCDR, NOAA
Commanding Officer
NOAA Ship RUDE

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H11011

Survey Title: State: Connecticut
 Locality: Long Island Sound
 Sublocality: Approaches to New Haven Harbor

Project Number: OPR-B317-RU

Survey Date: September 18 - October 19, 2000

Soundings are reduced to Mean Lower Low Water (MLLW) using preliminary unverified tides. Horizontal datum is North American Datum 83 (NAD 83). Positions were determined using Differential Global Positioning System (DGPS).

Charts affected: 12371 22nd Edition/July 25, 1992, scale 1:20,000, NAD83
 12372 29th Edition/July 19, 2000, scale 1:40,000, NAD83
 12364 30th Edition/February 15, 1997, scale 1:40,000, NAD83
 11354 38th Edition/May 13, 2000, scale 1:80,000, NAD83

DANGERS TO NAVIGATION

<u>FEATURE</u>	<u>DEPTH</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
1. Rock	12 ft	41°13'52.33"	072°55'29.63"

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.

Revisions from NOAA Hydrographic Survey H11011

LCDR James S. Verlaque, NOAA

Commanding Officer, NOAA Ship RUDE

Chart 12371

22nd Edition, July 25, 1992

Chart Scale 1:20,000

12-ft Rock

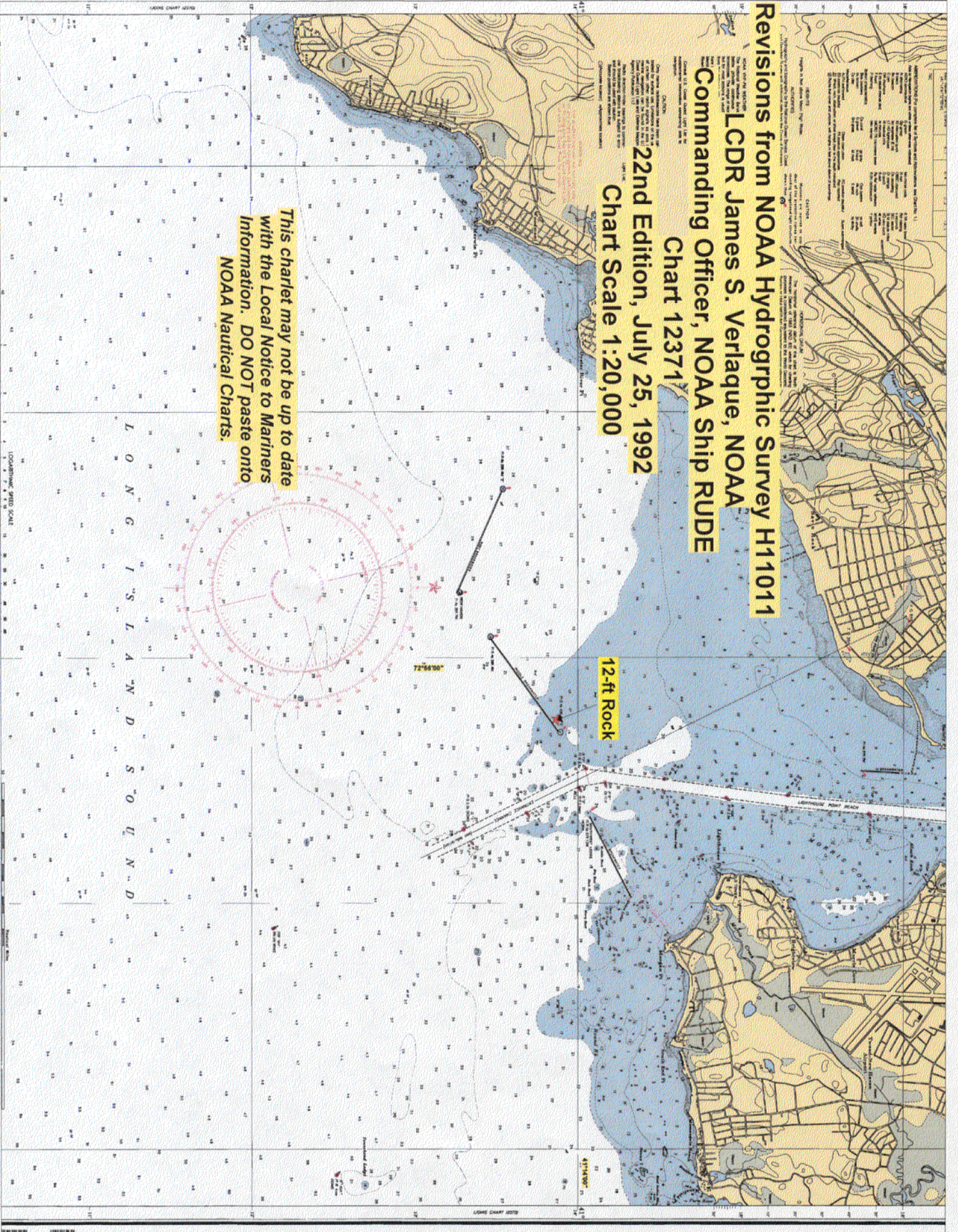
72°54'00"

41°14'00"

This chartlet may not be up to date
With the Local Notice to Mariners
Information. DO NOT paste onto
NOAA Nautical Charts.

L O N G I T U D I N E

LOOKING WEST SCALE



REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H11011

Survey Title: State: Connecticut
 Locality: Long Island Sound
 Sublocality: Approaches to New Haven Harbor

Project Number: OPR-B317-RU

Survey Date: September 18 - October 19, 2000

Soundings are reduced to Mean Lower Low Water (MLLW) using preliminary unverified tides. Horizontal datum is North American Datum 83 (NAD 83). Positions were determined using Differential Global Positioning System (DGPS).

Charts affected: 12371 22nd Edition/July 25, 1992, scale 1:20,000, NAD83
 12372 29th Edition/July 19, 2000, scale 1:40,000, NAD83
 12364 30th Edition/February 15, 1997, scale 1:40,000, NAD83
 11354 38th Edition/May 13, 2000, scale 1:80,000, NAD83

DANGERS TO NAVIGATION

<u>FEATURE</u>	<u>DEPTH</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
1. Wreck	33 ft	41°11'41.92"	072°54'56.18"
2. Rock	24 ft	41°12'35.54"	072°55'47.10"
3. Rock	14 ft	41°13'44.03"	072°55'28.87"
4. Rock	9 ft	41°14'23.98"	072°54'03.74"
5. Rock	8 ft	41°14'13.14"	072°53'44.16"
6. Rock	12 ft	41°13'47.56"	072°53'16.16"
7. Rock	16 ft	41°13'53.17"	072°52'14.51"
8. Shoaling	14 ft	41°13'52.55"	072°56'06.76"
9. Wreck	22 ft	41°13'16.01"	072°56'53.84"

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.

Revisions from NOAA Hydrographic Survey H11011

LCDR James S. Verlaque, NOAA

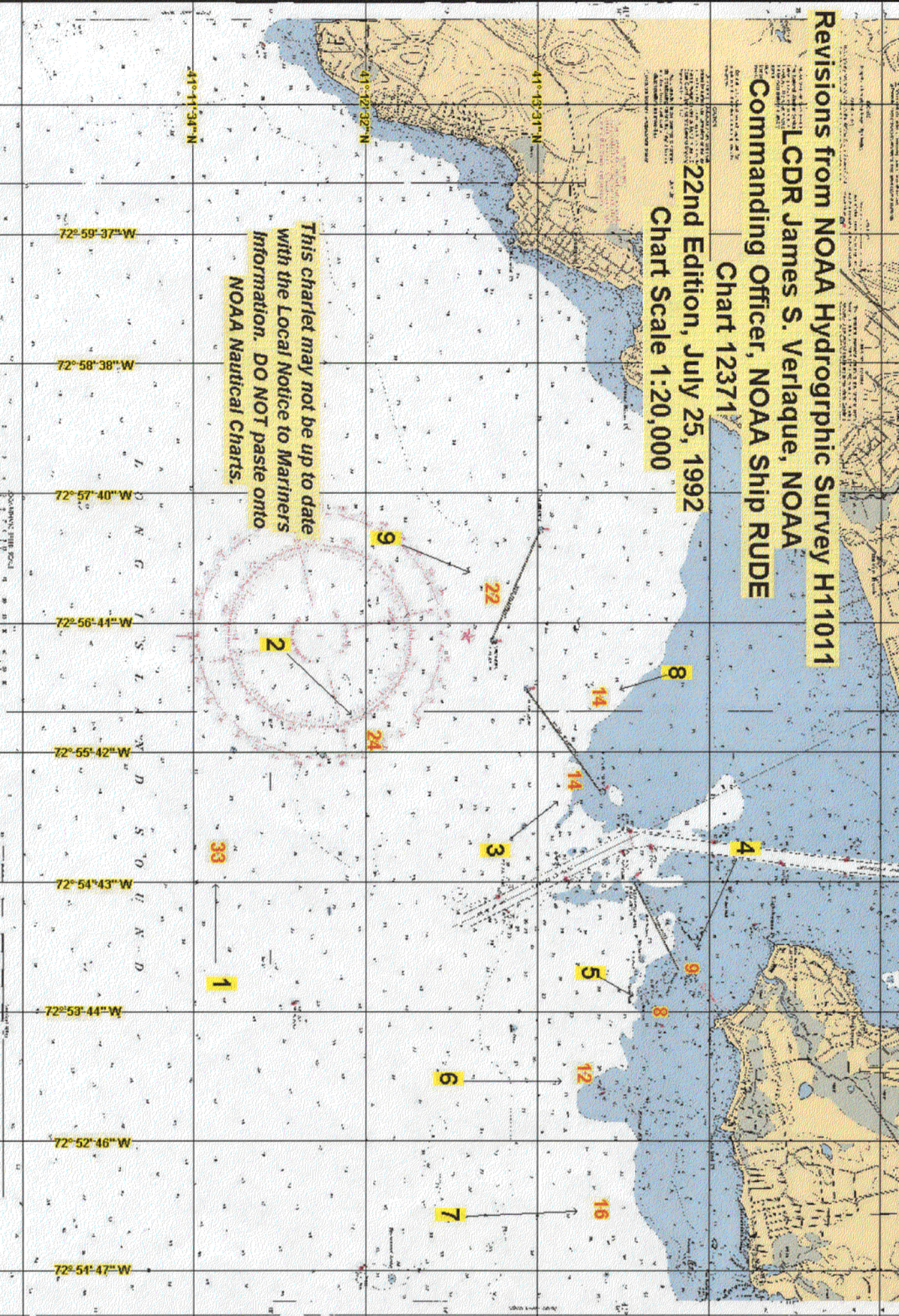
Commanding Officer, NOAA Ship RUDE

Chart 12371

22nd Edition, July 25, 1992

Chart Scale 1:20,000

This chartlet may not be up to date
with the Local Notice to Mariners
Information. DO NOT paste onto
NOAA Nautical Charts.





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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 28, 2000

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-B317-RU-2000
HYDROGRAPHIC SHEET: H-11011

LOCALITY: Approaches to New Haven, Long Island Sound, CT
TIME PERIOD: September 18 - October 19, 2000

TIDE STATION USED: 846-5705 New Haven, CT
Lat. 41° 17.0'N Lon. 72° 54.5'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.955 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: LIS37, LIS40, LIS42, LIS45, LIS47
& LIS48.

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.

For  -----
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

GEOGRAPHIC NAMES

H-11011

Name on Survey	Page 1 of 2										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO.	ON PREVIOUS SURVEY NO.	CON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
ADAMS FALL	X		X								1
BIG BOIL	X		X								2
BRADLEY POINT	X		X								3
BRADLEY ROCKS	X		X								4
BRIGHTVIEW	X		X								5
CONNECTICUT (title)	X		X								6
DICK ROCK	X		X								7
FORBES BLUFF	X		X								8
LIGHTHOUSE POINT	X		X								9
LONG ISLAND SOUND	X		X								10
MARY ROCK	X		X								11
MIDDLE ROCK	X		X								12
MOMAUGUIN BEACH	X		X								13
MORRIS COVE	X		X								14
MORRIS COVE (pp1)	X		X								15
MORRIS CREEK	X		X								16
MORGAN POINT	X		X								17
NEW HAVEN (title)	X		X								18
OLD HEAD REEF	X		X								19
QUIXES LEDGE	X		X ^v								20
ROUND ROCK	X		X								21
SAVIN ROCK (pp1)	X		v								22
SOUTH END POINT	X		X								23
SOUTHWEST LEDGE	X										24
THE CHIMNEYS	X		X								25

GEOGRAPHIC NAMES

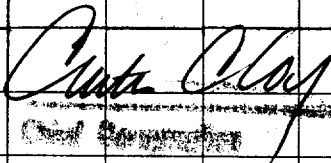
H-11011

Name on Survey

Page 2 of 2

A ON CHART NO.
12371
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

Name on Survey	A	B	C	D	E	F	G	H	K
WEST HAVEN	X		X						1
									2
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Chris Clay


JAN 23 2001

REFERENCE NO.
N/CS 33-41-01

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL AIR MAIL
 REGISTERED MAIL EXPRESS
 GBL (Give number) _____

TO:

[NOAA / National Ocean Service
Chief, Data Control Group, N/CS 3x1
SSMC3, Station 6826
1315 East-West Hwy.
Silver Spring, MD 20910-3282]

DATE FORWARDED **08/21/2001**

NUMBER OF PACKAGES **1**

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.

H11011

Connecticut
Long Island Sound, Approaches to New Haven

- 1 Descriptive Report / Evaluation Report
- 1 Mylar Smooth Sheet

- 1 Mylar H-Drawing for NOS chart 12354
- 2 Paper Composite plots for Nos chart 12354
- 1 Miscellaneous paper plot with compilers notes Nos chart 12354

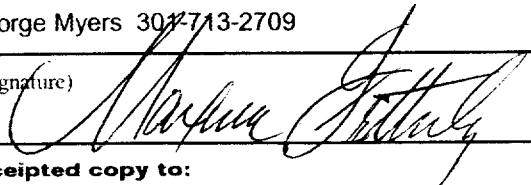
- 1 Mylar H-Drawing for NOS chart 12364
- 2 Paper Composite plots for Nos chart 12364

- 1 Mylar H-Drawing for NOS chart 12371
- 2 Paper Composite plots for Nos chart 12371
- 1 Miscellaneous paper plot with compilers notes Nos chart 12371

- 1 Mylar H-Drawing for NOS chart 12372
- 2 Paper Composite plots for Nos chart 12372

ATTN: George Myers 301-713-2709

FROM: (Signature)



RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

[Maxine Fetterly
Atlantic Hydrographic Branch
439 W. York St.
Norfolk, VA 23510]

08/21/2001

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H11011

NUMBER OF CONTROL STATIONS		2
NUMBER OF POSITIONS		42403
NUMBER OF SOUNDINGS		42403
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	14.0	11/07/2000
VERIFICATION OF FIELD DATA	181.5	06/14/2001
QUALITY CONTROL CHECKS	66.0	
EVALUATION AND ANALYSIS	55.0	
FINAL INSPECTION	13.5	02/14/2001
COMPILATION	364.0	07/13/2001
TOTAL TIME	694.0	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		03/02/2001

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 pipe PA, in the vicinity of Latitude 41°15'22"N, Longitude 72°54'11"W, described as a 12 inch diameter pipe, originates with Local Notice to Mariners 12 of 1994 (LNM12/94). This feature was not addressed nor adequately investigated by the hydrographer. It is recommended the feature be retained as charted.

2. A charted rock with a depth of 20 feet, in Latitude 41°13'53"N, Longitude 72°52'05"W, originates with survey F00340 (1989) as Automated Wreck and Obstruction Information System (AWOIS) Item #6929. This feature was investigated and verified by the hydrographer. It is recommended that the feature be retained as charted.

3. A charted rock rep PA with a depth of 4 feet, in Latitude 41°15'11"N, Longitude 72°54'43"W, originates with LNM42/90. The geographic position and description listed in LNM42/90 are incorrect. LNM48/90 corrected the errors and described the feature as a rock awash PA in Latitude 41°15'11.5"N, Longitude 72°45'40.0"W. It is recommended that the charted feature be removed from charts 12354, 12364, 12371 and 12372. The feature addressed in LNM48/90 is located outside the present survey area. It is recommended that Marine Chart Division personnel review the Local Notice to Mariner's listed in this paragraph and determine the proper disposition of the feature.

4. A charted depth of 5 feet, in Latitude 41°14'37"N, Longitude 72°54'38"W, originates with an unknown source. This feature was not adequately investigated. It is recommended that the feature be retained as charted.

5. An uncharted dangerous rock with a depth of 16 feet (5⁰ m), in Latitude 41°13'56.23"N, Longitude 72°52'07.81"W, was verified by the hydrographer. It is recommended that a dangerous rock with a depth of 16 feet, be charted in the present survey location.

6. The 12 and 18 foot depth curves are not shown on chart 12364. The 30 foot depth curve is not shown on charts 12364

or 12372. It is recommended that the depth curves be added to the charts to better delineate the bottom configuration in the area.

Dangers to Navigation

Two Danger to Navigation reports were submitted by the hydrographer 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. Copies of these reports are appended to the Descriptive Report. Attention is directed to the following:

1. A dangerous sunken wreck with a reported depth of 22 feet (6⁷ m), in Latitude 41°13'16.01"N, Longitude 72°56'53.84"W, was investigated and verified by the hydrographer. This feature was included as a Danger to Navigation report sent to the U.S. Coast Guard, Long Island Group. During office processing, a telephone conversation with the U.S. Coast Guard established that the wreck has been salvaged. It is therefore recommended that the feature not be charted.

2. An uncharted dangerous rock with a depth of 9 feet (2⁸ m), in Latitude 41°14'23.98"N, Longitude 72°54'03.73"W, was located by the hydrographer. This feature was included in a Danger to Navigation report but not addressed in the Descriptive Report. It is recommended that a dangerous rock with a depth of 9 feet be charted as shown on the present survey.

A third Danger to Navigation report was submitted by the Atlantic Hydrographic Branch 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 on February 2, 2001. A copy of this report is appended to the Evaluation Report.

Controlling Depths

1. A conflict exists between the charted controlling depth in Lighthouse Point Reach, Right Outside Quarter, from Latitude 41°14'19.53"N to Latitude 41°14'39.47"N. Present survey depths range from 28 to 33 feet with a controlling depth of 33.4 feet. This area of shoaling was submitted as a Danger to Navigation during office processing.

2. Conflicts exist between the charted controlling depth in Lighthouse Point Reach, Left Outside Quarter, from Latitude 41°14'32.41"N to Latitude 41°14'39.74"N. Present survey depths are 33 feet with a controlling depth of 33.6 feet.

3. Conflicts exist between the charted controlling depth in the Entrance Channel in the vicinity of Latitude 41°13'30.87"N, Longitude 72°54'38.39"W. Present survey depths are 35 feet with a controlling depth of 35.7 feet.

4. Conflicts exist between the charted controlling depth in the Entrance Channel in the vicinity of Latitude 41°13'59.36"N, Longitude 72°54'58.04"W. Present survey depths are 35 feet with a controlling depth of 35.8 feet.

Comparison with Prior Surveys

H09008 (1968) 1:20,000

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.

During survey operations, full coverage with side scan sonar was only acquired to a depth 18 feet. H09008 (1968) does not extend into areas where depths are shoaler than 18 feet; therefore no comparison was made.

Except as noted above, the present survey soundings are adequate to supercede the prior survey within the common area.

Aids to Navigation

The charted New Haven Research Lighted Buoy, a private aid listed as Light List #24067, in Latitude 41°13'42"N, Longitude 72°56'00"W, was not located by the hydrographer. It is recommended that data from the First Coast Guard District, Boston, Massachusetts, be consulted for proper chart disposition.

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

E. 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 Charts were used for compilation of the present survey:

12354 (38th Edition, May 13/00)
12364 (31st Edition, Jan 13/01)
12371 (22nd Edition, July 25/92)
12372 (29th Edition, July 19/97)

ADEQUACY OF SURVEY

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

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H11011

Survey Title: State: Connecticut
 Locality: Long Island Sound
 Sublocality: Approaches to New Haven Harbor

Project Number: OPR-B317-RU

Survey Date: September 18 - October 19, 2000

Soundings are reduced to Mean Lower Low Water (MLLW) using approved tides. Horizontal datum is North American Datum 83 (NAD 83). Positions were determined using Differential Global Positioning System (DGPS).

DANGERS TO NAVIGATION

Charts affected: 12371 22nd Edition /July 25, 1992, scale 1:20,000, NAD83
 12372 29th Edition /July 19, 2000, scale 1:40,000, NAD83
 12364 30th Edition /February 15, 1997, scale 1:40,000, NAD83
 12354 38th Edition /May 13, 2000, scale 1:80,000, NAD83

1. Shoaling to 28 feet on the Right Outside Quarter of Lighthouse Point Reach from Latitude 41° 14' 34.72" to Latitude 41° 54' 55.28"

Chart affected: 12354 38th Edition /May 13, 2000, scale 1:80,000, NAD83

2. Wreck 44 feet in Latitude 41° 09' 57.92", Longitude 072° 51' 49.35"
3. Wreck 44 feet in Latitude 41° 09' 49.14", Longitude 072° 52' 41.47"

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.

Revisions from NOAA Hydrographic Survey H11011

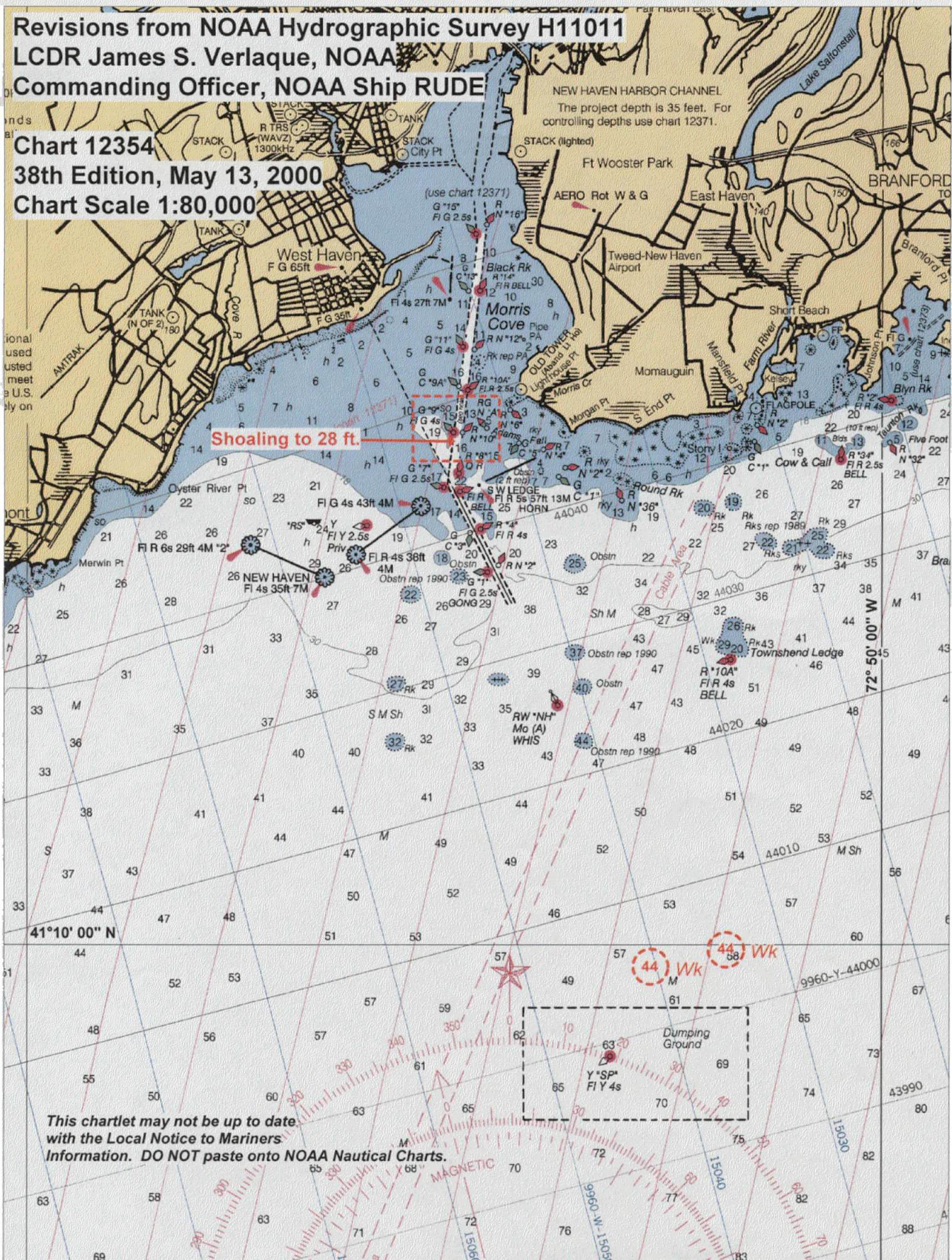
LCDR James S. Verlaque, NOAA

Commanding Officer, NOAA Ship RUDE

Chart 12354

38th Edition, May 13, 2000

Chart Scale 1:80,000



This chartlet may not be up to date with the Local Notice to Mariners Information. DO NOT paste onto NOAA Nautical Charts.

Revisions from NOAA Hydrographic Survey H11011
LCDR James S. Verlaque, NOAA
Commanding Officer, NOAA Ship RUDE

Chart 12371

22nd Edition, July 25, 1992

Chart Scale 1:20,000

NO. OF SHEETS	DATE	REVISIONS
18	ATL 1	75 11-06.13-89
15 UPSTREAM	5.8	MID-WIDTH 75 11-06.13-89
ED IN	4.8	11-06.13-89
FOURTH		

LOCATED AT 41° 16' 52.4" N, 72° 55' 36.9" W, WITH A
OF 5 FEET.
CORPS OF ENGINEERS FOR CHANGING CONDITIONS
TO THE ABOVE

PRINTED METHOD

This chartlet may not be up to date
with the Local Notice to Mariners
Information. DO NOT paste onto NOAA Nautical Charts.

Area of Shoaling
See next page

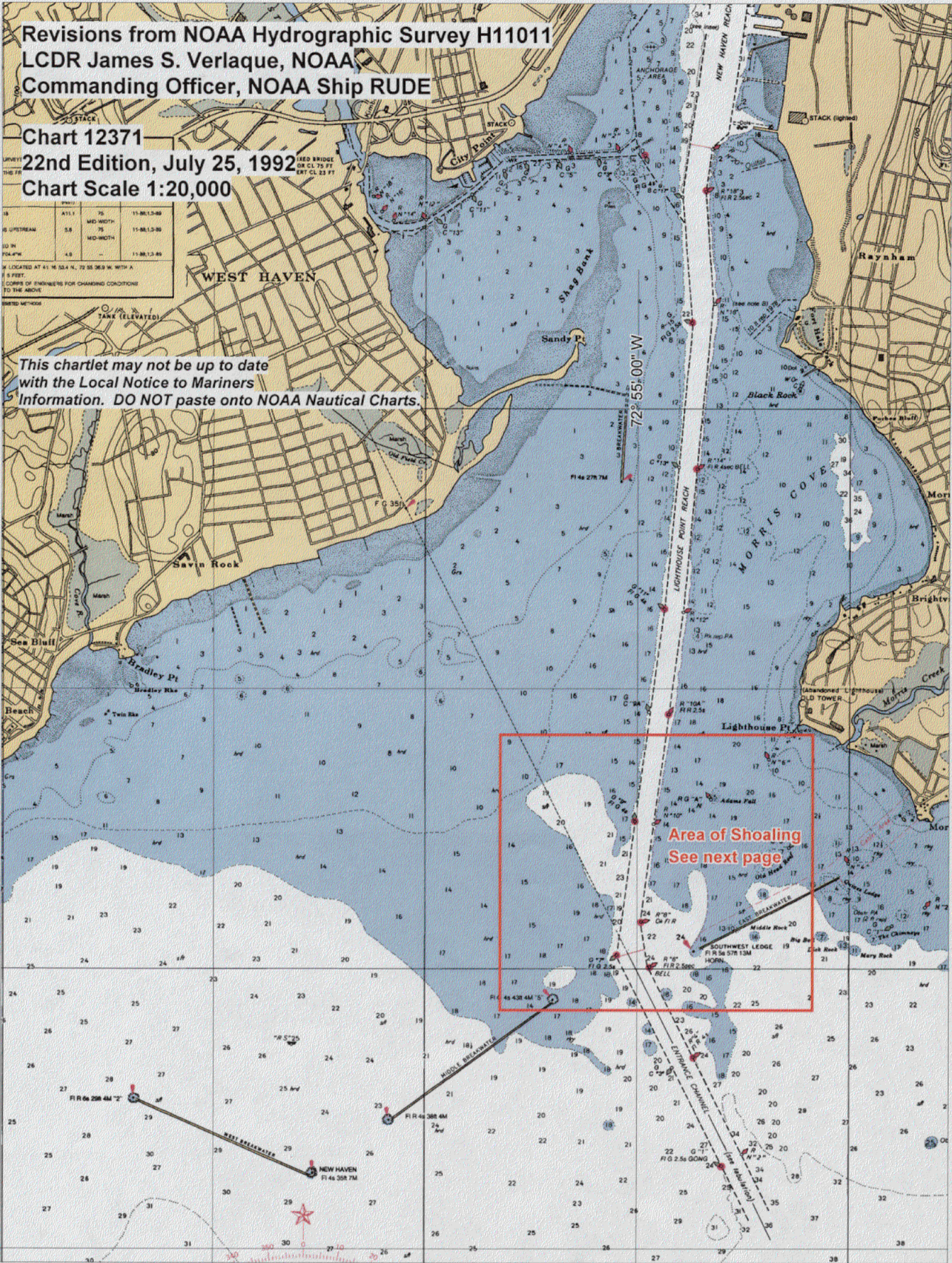
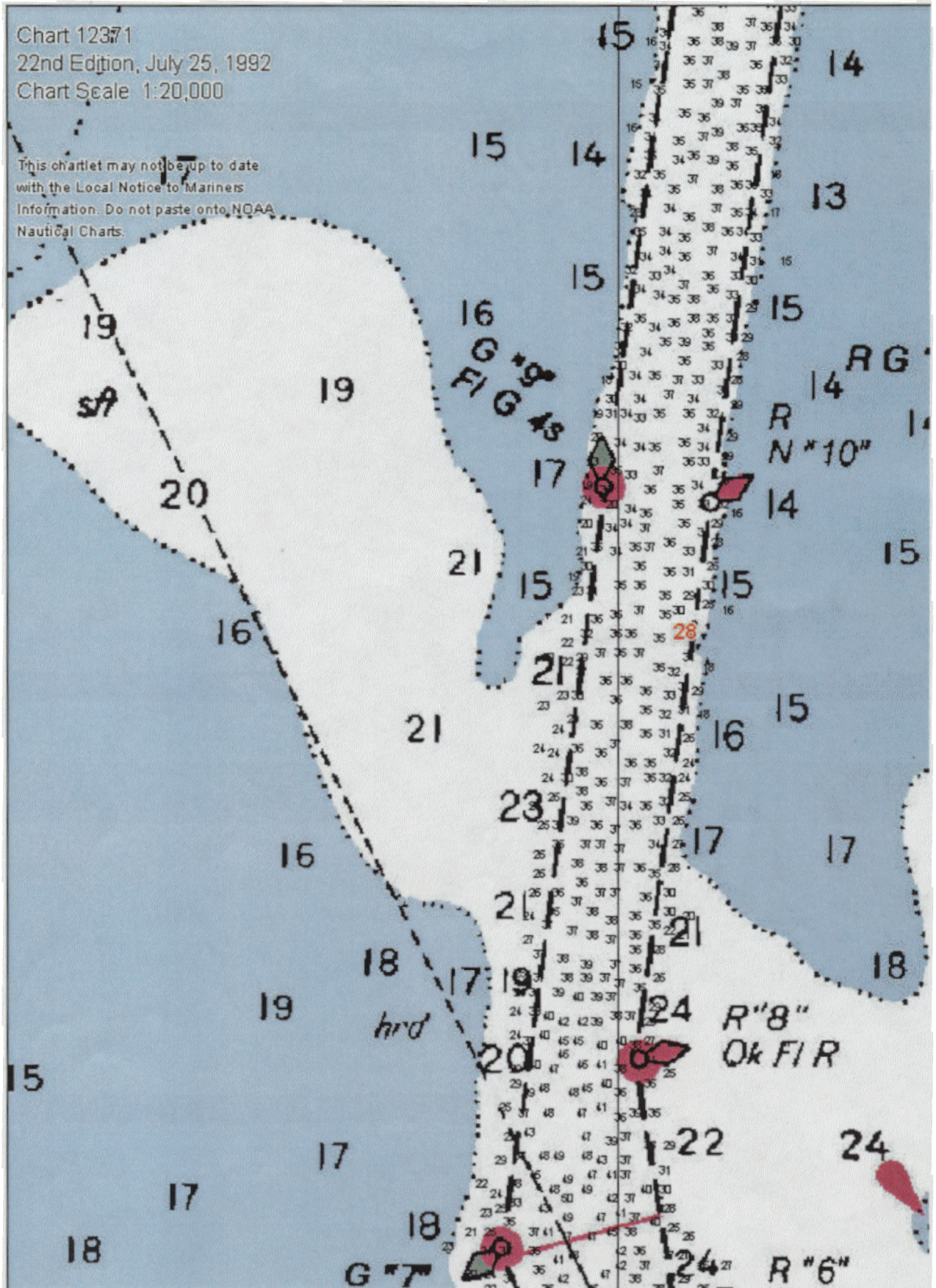


Chart 12371
22nd Edition, July 25, 1992
Chart Scale 1:20,000

This chartlet may not be up to date with the Local Notice to Mariners Information. Do not paste onto NOAA Nautical Charts.



H11011

Robert Snow

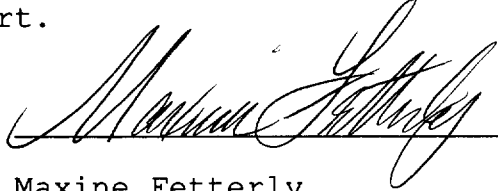
Robert Snow

Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H11011

Initial Approvals:

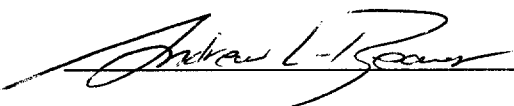
The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disapproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet 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.



Date: February 14, 2001

Maxine Fetterly
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.



Date: 3/2/11

Andrew L. Beaver
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

Final Approval:

Approved: Samuel P. DeBow, Jr.

Date: October 18, 2001

Samuel P. DeBow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H11011

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.

CHART	DATE	CARTOGRAPHER	REMARKS
12371	5/1/01	Maxim Jettley	Full Part Before After Marine Center Approval Signed Via Drawing No.
12372	6/15/01	Maxim Jettley	Full Part Before After Marine Center Approval Signed Via Drawing No.
12364	6/20/01	Maxim Jettley	Full Part Before After Marine Center Approval Signed Via Drawing No.
12354	6/27/01	Maxim Jettley	Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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