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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

~~R. S. Fetter~~ Director

State: NEW YORK

DESCRIPTIVE REPORT

Topographic } ⁵⁴⁰⁷ Sheet No. 5 5407
Hydrographic } ₁₂₁₂₋₅

LOCALITY

North Shore of Long Island Sound

Echo Bay to Hunter & Hart Islands

1933

CHIEF OF PARTY

Harold A. Cotton

DESCRIPTIVE REPORT

to accompany
HYDROGRAPHIC SHEET NO. 5

Echo Bay to Hunters and Harts Islands.

INSTRUCTIONS

The authority for this work is included in instructions for Project H.T. 134 dated March 23, 1933.

SURVEY METHODS

Control of sounding lines and individual positions was obtained by sextant angles in accordance with standard methods; selecting stations located by triangulation whenever practical. All soundings were obtained by use of lead line with standard markings or sounding pole graduated to half feet.

No boat sheets were prepared by the Washington Office to cover this area and topography was incomplete at time of commencing hydrographic work. Accordingly enlargements of the present charts were used as guides, the fathom curves and critical soundings transferred on the boat sheet for verification in the field. Sounding lines extend out from shore to overlap the limit of area dragged by 1930-1931 surveys.

A portable automatic tide gauge was established at Davids Island, on the southeast face of the outer section of the coal dock for all work on this sheet.

The closing of work for the season necessitated discontinuing sounding lines southwestward of a line between Twin Island and the north point of Hart Island, and southwestward of a line extending 1/4 mile 135° T from the south point of Hart Island. Much of the development especially in the northeast section of the area was incomplete at the close of the work as noted below. Many shoal areas were left for investigation by drag.

DANGERS

In addition to the dangers shown on the present chart, the following rocks and shoals were found.

(1) A rocky ledge 151° true, 220 meters from triangulation station TWIN (45 dd to 48 dd) with 2 ft. least depth at M.L.W. This is apparently an extension of the rocky ledge 70 m. to the N.E. and extends into deeper water to the S.S.W. (3 fathoms on chart).

(2) A rock approximately 4m in diameter surrounded by 8 ft., 105 m, 346° true from triangulation station TWIN with 1 ft. least depth at M.L.W. (60 ee).

(3) A rock, 90m 134° true from triangulation TWIN (61dd) awash at M.L.W., surrounded by 6 ft., approximately 4 m in diameter.

(4) A rock 10 m, S.E. of $\frac{1}{3}$ above with 2 feet least depth at M.L.W. (62 dd) surrounded by 5 ft.

- (5) A group of 3 isolated rocks, 35m S.W. of #3 above baring 1 ft. at M.L.W. (36cc to 39cc). ✓
- (6) A rocky ledge 210m, 3° true from triangulation station TWIN with least depth of 3 ft at M.L.W. (-35cc) ✓
- (7) A rocky ledge 32m N.W. from #6 above with least depth of 3 ft. at M.L.W. (34cc) ✓
- (8) A rocky ledge partially covered with sand and gravel 90m, 175° true from topographic signal TALL (40b to 47b), highest point baring 3 ft. at M.L.W. ✓
- (9) A rocky ledge 235m, 110° true from topographic signal RED with 1½ ft at M.L.W. (1ff & 2ff) (3 fathoms on chart). ✓ *Dangers*
- (10) A rocky ledge 400 to 450 m, 69° true from topographic signal TALL with 11 ft. or less at M.L.W. Apparently extension to the N.E of rocky ledge forming Huckleberry. Should be investigated further (3 fathoms on chart). ✓
- (11) A rocky shoal 430m, 287° true from topographic signal TALL, with 6½ ft at M.L.W. Should be investigated further. Apparently a spur from ledge 65m to S.W. ✓
- (12) A rocky shoal 310m, 115° true from topographic signal RED with 5 feet at M.L.W. Should be investigated further (See 9 above). ✓
- (13) A rocky shoal 65m, N.W. or #12 above. Possibly part of the ledge described in #9 above. Should be investigated further. ✓
- (14) A rocky ledge approximately 10m in diameter, 30m N.W. of #9 above with 2 ft least depth at M.L.W. (3ff). ✓
- (15) A 5 foot sounding (rocky) 140m, 183° true from triangulation station TWIN (27x to 28x) surrounded by 9 feet. Should be developed further. ✓

75

CHANNELS

The most important channel in the area covered by hydrography is that used between Fort Washington and New Rochelle by the electric ferries. It passes northward along the eastern side of Hart Island to Gong #1, 260, N.E. of topographic signal SIG; thence N.W. to South Vocation lighted bell #2, 570m, north of topographic signal GAR; thence N.W. to Machaux Rock Lighted bell #4; thence N x E to Aunt Phoebe Rock lighted beacon; thence to Neptune Island passing between Davenport Necka and Glen Island. From Neptune Island two channels branch off, one leading NNE into New Rochelle Harbor and the other leading thru the lift bridge between Glen Island on the south and east and Traverse Island and Hunter Islands on the north and west. The controlling depth is 12 feet in the shoal water approximately 700 m N.E. of triangulation station TWIN. ✓

Vessels also enter this channel from between Hart and City Islands. The electric ferries pass to the west of Hart Island in heavy weather. Texaco tank vessels from New York Harbor use this channel as far as topographic signal TEX on the Texaco Dock. A U.S. Army ferry runs between Neptune Island and Fort Slocum on David Island. H5247

Greater draft can be carried to Neptune Island by passing in just northward of Huckleberry Island and David Island. The controlling depth is 21 feet located midway between topographic signal TALL and topographic signal SIN. This entrance is used chiefly by yachts belonging to the clubs in New Rochelle Harbor and on Traverse and Neptune Islands. ✓

The channel between Davenport Neck and Glen Island was not developed.

Small vessels also pass from eastward between can #1 north of Middle Ground and topographic signal PAR on Pine Island. Small local vessels, mostly fishermen, make use of the channel leading southward along the easterly shore of David Island. This channel runs from a point 730 m. east of triangulation station DAVID to a point 270 m northeast of topographic signal RED; thence south to a point 250m S.E. of topographic signal RED. From this point these small vessels either head south leaving Lower Green Flats to starboard, or south westward between Machaux Rock and Middle Reef or westward leaving David Island to starboard.

It would be very helpful to these small vessels and to strangers if two of the rocky ledges in this vicinity were marked by beacons or buoys. These are Machaux Rock (970m, 216° true from topographic signal RED and the rocky ledge 550m. 218° true from topographic signal red.

ADDITIONAL WORK ← see D.R. of H 5547 re add'l wk.

The full investigation and development of shoal areas was prevented by the close of the season. Considerable such work is required and is listed herewith. Old soundings i.e. from the present chart are indicated as (red) while new soundings i.e. from this survey are indicated as (black).

(a) Old soundings materially shoaler than found during present survey.

- Six feet ^(red) / 110° true, 350 meters from topographic signal PAR. (2) H 1623
- Sixteen feet (Red) 117° true, 1000 meters from topographic signal PAR - Note 22 & 25 foot (black, 50 meters north (3) W.D. 5078.
- Seven foot (red) 22° true, 700 meters from topographic signal Tall (4) H 1560
- Nineteen foot (Red) 55° true, ⁶⁰⁰ ~~650~~ meters from topographic signal Tall (5). W.D. 5078 (grounding only)
- Twenty feet (Red) 250 meters S.E. topographic signal PAR (6). H 1683
- Twenty feet (Red) 550 meters NE topographic signal TALL (7). H 1683
- Seven feet (Red) 550 meters NxE topographic signal TALL (9). H 1560
- Fourteen feet (Red) 140 meters North topographic signal TALL (10). H 1560
- Nine and a twenty four foot sounding (Red) 300 meters south topographic signal PAR (11). *Simonsd Pt. see H 1560*
- Seventeen feet (Red) 590 meters (N.E.) triangulation station DAVID (13). H 2223 NxE
- Thirty two feet (Red) 680 meters SExS topographic signal TALL (15). H 1683
- Five feet (Red) 400 meters SxE topographic signal TALL (16). H 1560
- Eight feet (Red) 350 meters NxE triangulation station H 1683
- Six feet (Red) 680 Meters, E x S triangulation station H 1560
- Six feet (Red) 280 meters, north triangulation station H 2223
- Six feet (Red) 570 meters S:E. triangulation station DAVID (23) (H 1560)
- Fifteen and twenty seven feet (Red) 500 meters NE triangulation station PEA (24). H 1560

DAVID (26). Three feet (Black) 540 meters SE triangulation station
 Six feet (Red) 350 meters WNW triangulation station DAVID (27). H 1560^a
 Four feet (Red) 230 meters WNW triangulation station DAVID (28). H 2223
 Fourteen feet (Red) 340 meters ENE triangulation station PEA H 1560^c

(31). Twenty one feet (Red) 170 meters N_W triangulation station H 1560^a
 PEA (32). Five feet (Red) 360 meters SE PEA (37). H 1560^a Important

station PEA (38). W.D. 5078
 Thirty two feet (Red) sounding 500 meters SSE triangulation
 Twenty three feet (Red) 730 meters NE topographic signal GAR H 1560^c

(39). Twenty one feet (Red) 870 meters N_E topographic signal GAR (40). H 1560^a
 Fourteen feet (Red) 1000 meters north topographic signal GAR (41). W.D. 2914
 Six feet (Red) 400 meters S. topographic signal SIL (43). H 1560^a
 Twenty four feet (Red) 280 meters E. topographic signal SIG (45). *Discovered by W.D. 2914*
 Eighteen feet (Red) 410 meters N topographic signal GAR (46). *W.D. 2914*
 Nine feet (Red) 450 meters ExS triangulation station TWIN (48). H 1560^a
 Nine feet (Red) 150 meters W topographic signal OFF (49). H 2223
 Seven feet (Red) 300 meters SW topographic signal OFF (50). H 2223
 Ten feet (Red) 1000 meters N_E topographic signal GAR (51). H 1560^a

(b) Indications of new shoals found during present survey.

Twelve (recharted)
 Thirteen feet (Black) 440 meters N_E topographic signal TALL (14).
Six Seven feet (Black) 450 meters WNW topographic signal TALL (17).
 Nine feet (Black) 300 meters ExN triangulation station DAVID (21).
 Six feet (Black) 350 meters NNE triangulation station PEA
 Note seven foot (Red) 25 meters east of this position. Also seven foot
 (Black) 370 meters NNE triangulation station PEA. (29) + 8 feet (Black) 450 meters NE. sta. PEA
 Twenty seven feet (Black) 830 meters N topographic signal
 GAR (44). Seven foot (Black) 250 m. SE triangulation station PEA (36).

(c) Shoal soundings (Old or New) lying close to rocks or ledges - not meriting much additional work.

Four feet (Red) 520 meters NE triangulation station PEA (25). H 1560^a
 Six feet (Black) 600 meters N_W triangulation station PEA (30).
 Five feet (Red) 310 meters N_E triangulation station PEA (33). H 1560^a
Six Seven feet (Black) 300 meters N_W triangulation station PEA (34).
 Five feet (Red) 180 meters ESE triangulation station PEA (35). H 1560^a

(42). Two feet (Black) 380 meters ExS triangulation station PEA Z

One foot (Red) 500 meters S triangulation station TWIN (47). H 1560^a investigate
show as on H 5407

(d) Old soundings materially deeper than found during present work - not meriting much additional work.

Twenty nine feet (Red) 200 meters south triangulation station ECHO (1).
Thirty two feet (Red) 350 meters NE triangulation station DAVID (12).

(e) Additional soundings are also needed behind Hunter Island and Glen Island, in the bight along the east shore of Glen Island and off Davenport Neck just south of Pine Island and inside the off-lying ledge at this point.

Numbers in parenthesis shown above indicate a red crayon number shown at this spot on the boat sheet.

STATISTICS

Miles Statute	Positions	Soundings
107.5	1874	7165

Respectfully submitted

Charles D. Case

Charles D. Case,
Surveyor, Coast and Geodetic Survey.

Approved and Forwarded

Harold A. Cotton

Harold A. Cotton,
Chief of Party, Coast and Geodetic Survey.

Generally speaking, off lying rocks and reefs were located by the hydrographic party while the low water line and adjacent rocks were located by the topographic party. The low water line as shown on the hydrographic sheet is from the topographic sheets.

In the case of generally foul area extending off protruding points or of reefs of the same character, such rocks were located as to outline the foul area. In these cases, there are numerous other rocks inside the foul area thus outlined. Areas of this type include the following:

Middle Ground	Middle Reef
Reef S.E. Topo.Sig. SIN.	Several reefs east shore Davids Is.

Altho the sheet was uncompleted, a low water examination was made of the entire area over which sounding lines were run. Quite a number of low water rocks and ledges were located in addition to those shown on the chart- these have been listed in the report.

It was seldom possible to carry the hydrography far enough inshore to give a determination of the low water line. Where soundings could be carried far enough inshore for this purpose there is a good agreement with the topography.

NAMES

No new names were uncovered during the present survey except as mentioned in the "Descriptive Report" for the topographic sheet of this area.

The names on the present chart seem to be in general use.

Respectfully submitted

Harold A. Cotton
Harold A. Cotton,
Chief of Party,
Coast and Geodetic Survey.

LAC

March 30, 1934

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
5 volumes of sounding records for

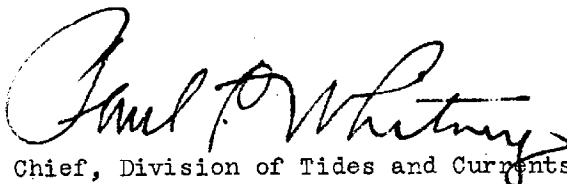
HYDROGRAPHIC SHEET 5407

Locality Echo Bay to Hart Island, Long Island Sound

Chief of Party: H. A. Cotton in 1933
Plane of reference is mean low water, reading
4.0 ft. on tide staff at Davids Island
13.6 ft. below B. M. 4

Height of mean high water above plane of reference is 7.2 feet.

Condition of records satisfactory except as noted below:


Chief, Division of Tides and Currents

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 5407

HYDROGRAPHIC TITLE SHEET

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. 5

REGISTER NO. 5407

State New York

General locality North shore Long Island Sound

Locality Echo Bay to ~~Waters~~ and Hart Island

Scale 1:10,000 Date of survey Sept. Oct. Nov, 19 33

Vessel Shore Party No. 3

Chief of Party Harold A. Cotton

Surveyed by C. D. Case

Protracted by C. G. H. Swanson - J. D. Groff

Soundings penciled by C. G. H. Swanson

Soundings in fathoms feet

Plane of reference

Subdivision of wire dragged areas by

Inked by [Signature]

Verified by [Signature]

Instructions dated March 23, 19 33

Remarks:

Field Record Section
Report OWS-5407

April 18, 1934

Chief of Party - Harold A. Cotton

Surveyed by - C. D. Case

Protracted by - C. S. W. Swanson - J. D. Kroff

Sounding Levels by - C. S. W. Swanson

Verified & inked by - J. D. Ziskind

The sounding records were neat, legible & complete.

The protracting was well done.

Soundings were correctly plotted according to time interval & the fractions used conformed to the hydrographic manual.

The field drafting was well done.

The smooth sheet paper is evidently of poor character. In order to keep ink from spreading it was necessary to put glue in the ink & to use a paper restorative in certain areas.

Lat $40^{\circ}-54.7$ & Long $73^{\circ}-46.1$, Smooth sheet originally showed rocks while top sheet shows wrecks. These were changed to wrecks on Smooth sheet.

Lat $40^{\circ}-52.8$ & Long $73^{\circ}-46$. S.E. of Signal Red-Rock awash (*), Post sheet shows the rock east of position plotted on smooth sheet. This rock is correctly plotted according to sounding records (3ff).

Respectfully submitted,

J. D. Ziskind

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5407 (1933) - FIELD NO. 5

Echo Bay to Hart Island, North Shore of Long Island Sound, New York
Instructions dated March 23, 1933 (H. A. Cotton)
Surveyed in September - November, 1933

Sounding Pole and Hand Lead Soundings. 3 Point Fixes on Shore Signals.

Chief of Party - H. A. Cotton.

Surveyed by - C. D. Case.

Protracted and Soundings Pencil'd by - C. G. W. Swanson and J. D. Groff.

Verified and Inked by - I. M. Zeskind.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except as follows:

- a. Evidence that the transfer of topographic signals had been checked in the field was lacking since the initials of the checker were not shown on the smooth sheet. This has been accomplished in the office.
- b. The two small islands at lat. $40^{\circ}53.8'$, long. $73^{\circ}46.6'$ and lat. $40^{\circ}53.39'$, long. $73^{\circ}46.61'$, respectively, are shown on the boat sheet for the present survey. However, no mention of them could be found in the sounding records. The islands are not shown on the contemporary or any previous topographic survey. The air photographs showed no indication of the islands which are therefore considered to be non-existent and were not shown on the smooth sheet.

The "Descriptive Report" is complete and adequately covers all matters of importance.

2. Compliance with Instructions for the Project.

The survey satisfies the instructions for the project with the exception that only about half the area intended to be covered by this sheet was surveyed and numerous shoal spots, rocks, etc., within the area of the survey were not adequately verified or developed, due to the termination of the season. (See D. R.). The balance of the area and the necessary development and verification of the shoals, rocks, etc., that fall within the limits of the present survey were surveyed the following season and are shown on H-5547 (1934). That portion of H-5547 (1934) that falls within the limits of H-5407 (1933) has been transferred in red and is considered in this review.

3. Sounding Line Crossing.

No regular system of cross lines were run. However, those that do occur in the normal development of the work, as well as the parallel adjacent lines, are in good agreement, except in the broken and irregular areas.

4. Depth Curves.

Within the limits of the survey the usual depth curves may be satisfactorily drawn, including portions of the 6 foot and low water curves.

5. Junctions with Contemporary Surveys.

Satisfactory junctions are made with H-5547 (1934) on the south and on a portion of the east, with H-5546 (1934) on the balance of the east, and with H-5413a (1933) on the north. It should be mentioned at this point as a matter of record that the portion of H-5547 (1934) which overlaps the present survey and shown thereon in red is considered in this review as though it originated with H-5407 (1933), since it constitutes additional work within the limits of the latter survey. The junction with H-5078 W. D. (1930) on the east is satisfactory and all soundings from this drag survey that fall within the limits of H-5407 (1933) have been carried forward and are shown in brown. The hydrography of the present survey is consistent with the effective depths of the drag.

6. Comparison with Prior Surveys.

In studying the prior surveys of this area, which is characterized by numerous rocky shoal spots and reefs, all discrepancies on shoals, etc., which were not in excess of one foot were rejected in favor of the present depths without further discussion. Where greater conflicts existed, the records (old and new) were examined and in determining what shoal spots should be carried forward to the new survey, consideration was given to the possibility of errors in lead line reading or of position. The matter of whether the shoals on the old survey were developed or whether they represented a single sounding on the regular system of lines, and the amount and character of development on the new survey was considered.

- a. H-1 (1837), H-4 (1836-37),
H-2 (1837), H-5 (1836-37).
H-3 (1836-37),

These sheets constitute but one survey of the area. Each sheet contains a large overlap from some or all of the others, but as plotted appear as though all the work on each was original with

it. Considering the time elapsed between these surveys and the present one, and the fact that they were among the first surveys executed by this Bureau, when methods and equipment were in the developmental stage, they are in fair agreement with the present survey. Of the few soundings that are in disagreement with the present survey, none are charted since they have all been reasonably disproved by subsequent detailed surveys of the area.

- b. H-1560a (1883), H-1683 (1886),
H-1560b (1882), H-1560c (1894).

These surveys cover the major portions of the present survey. The latter is a re-survey of portions of the other three. They are in agreement with the present survey with the following exceptions:

- (1) The 1, 3 and 4 foot soundings (uncharted) on H-1560a (1883) just north of Machaux Rock at lat. $40^{\circ}52.45'$, long. $73^{\circ}46.5'$ are considered to be disproved by the sounding lines in the area on both H-1560c (1894) and the present survey. Altho the development was not intensive, it clearly indicates that the northern limits of the shoaling around the rock are incorrectly shown on H-1560a (1883). These soundings should be disregarded in future charting.
- (2) The 2 foot sounding (uncharted) shown on H-1560a (1883) at lat. $40^{\circ}52.1'$, long. $73^{\circ}46.05'$ falls on the new survey just north of a group of rocks (East Nonations). There is insufficient development on the present survey to disprove the 2 foot sounding and it is considered to be a part of the rocky area just to the south. It is carried forward to the present survey and should be charted until disproved.
- (3) The $6\frac{1}{2}$ foot sounding (uncharted) from H-1560a (1883) at lat. $40^{\circ}52.80'$, long. $73^{\circ}46.55'$ falls on the new survey in depths of 9 feet. This spot was carefully developed by the field party by cross lines and 9 feet was the least depth found. However, no drift soundings were taken and it is not considered that the least depth was necessarily obtained. Therefore the $6\frac{1}{2}$ foot sounding from H-1560a (1883) has been carried forward to the present survey and should be used for charting.
- (4) The 10 foot sounding (uncharted) shown on H-1560a (1883) at lat. $40^{\circ}52.48'$, long. $73^{\circ}46.65'$ is a single intermediate sounding on a long line of soundings between pos. 35s and pos. 36s. The later surveys, both H-1560c (1894) and the present survey located a shoaling with a least depth of $8\frac{1}{2}$ feet about 65 meters SSW of the old 10. Both of these later

surveys show depths of 15 feet in the position of the 10. The 10 foot sounding is believed to be out of position and was probably obtained on the shoaling which was strongly located on H-1560c (1894) and the present survey. The 10 foot sounding from H-1560a (1883) should be disregarded in future charting.

- (5) The 12 foot sounding (uncharted) from H-1560a (1883) at lat. $40^{\circ}52.1'$, long. $73^{\circ}46.35'$ falls on the new survey in depths of 21 feet. An examination of the sounding records for H-1560a (1883) shows that the 12 foot sounding is incorrectly spaced between positions (28 - 29s). When correctly spaced the 12 falls about 90 meters to the east where it is in good agreement with the present soundings. The 12 foot sounding should, therefore, be disregarded in future charting.
- (6) The 10 foot sounding (charted) from H-1560a (1883) at lat. $40^{\circ}52.12'$, long. $73^{\circ}46.25'$ is verified by a $11\frac{1}{2}$ foot sounding just to the west on the present survey. The 10 foot sounding is just outside the area specially developed to verify this and other shoal soundings and falls in an open area. It has been carried forward to the present survey and should be retained on the chart until disproved.
- (7) The small reef (charted as a sunken rock) shown on H-1560a (1883) but originating with T-1515a bis (1883) at lat. $40^{\circ}53.33'$, long. $73^{\circ}46.72'$ is not verified by the present topo or hydro surveys. It falls on the present survey in depths of about 10 feet. Altho it was not seen by the present field party, there is insufficient hydrography in the area to disprove it. It has been carried forward to the present survey as a sunken rock.
- (8) The 6 foot sounding (charted) from H-1560a (1883) at lat. $40^{\circ}53.39'$, long. $73^{\circ}46.30'$ falls on the present survey in depths of 10 feet. An examination of the sounding records reveals that the time interval between pos. 29 and 30m is very difficult of interpretation and the line bends sharply at both pos. 29 and pos. 30m. The position of the 6 is considered very approximate. If plotted in its more probable position, about 30 meters southward, it would fall in the immediate vicinity of a 6 foot spot, more accurately located on a later survey, H-2223 (1895). The latter 6 has been carried forward to the present survey (see par. 6c(6)), and the 6 foot sounding shown on H-1560a (1883) should be disregarded in future charting.

- (9) The 25 foot sounding (charted) from H-1560a (1883) at lat. $40^{\circ}51.79'$, long. $73^{\circ}45.92'$ falls on the present survey in depth of 29 feet. An examination of the sounding records reveals that the 25 is incorrect and should have been a 28. This has been corrected on the old survey and the 25 foot sounding should be disregarded in future charting.
- (10) The $6\frac{1}{2}$ foot sounding (charted as 6) from H-1560b (1882) at lat. $40^{\circ}51.9'$, long. $73^{\circ}46.25'$ is verified on the new survey by a 7 and an 8 about 20 meters away and other surrounding soundings showing evidence of a shoaling at this spot. The $6\frac{1}{2}$ has been carried forward to the present survey and should be continued to be charted.
- (11) The $7\frac{1}{2}$ and 14 foot soundings (charted as 7 and 14) from H-1560c (1894) at lat. $40^{\circ}53.5'$, long. $73^{\circ}45.45'$ and lat. $40^{\circ}53.3'$, long. $73^{\circ}45.55'$, respectively, fall on the new survey in appreciably deeper water. The 7 foot sounding was obtained as a result of a careful investigation of the area on the old survey. Altho the area was fairly well developed on the present survey by sounding lines, no drift soundings were taken and it is, therefore, considered that the $7\frac{1}{2}$ and 14 are not necessarily disproved. Both have been carried forward to the present survey and should be retained on the chart until definitely disproved.
- (12) The two six foot soundings (charted) from H-1560c (1894) at lat. $40^{\circ}53.09'$, long. $73^{\circ}45.95'$ and lat. $40^{\circ}53.18'$, long. $73^{\circ}45.8'$ fall on the present survey in 8 and 10 foot depths, respectively. The latter 6 is verified by a $6\frac{1}{2}$ foot sounding at the same spot on H-1560a (1883). An examination of the sounding records for H-1560c (1894) shows that the 6 foot soundings were located by detached positions after the shoals were located by cross lines, and the notes in the "Remarks" column (pos. 64t) states "locates shoalest water found, searched for in preceeding lines." The development of the area on the present survey is considered insufficient to disprove the two 6 foot soundings and they have, therefore, been carried forward to the present survey and should be retained on the chart.
- (13) The $5\frac{1}{2}$ foot sounding (charted as 5) from H-1560c (1894) at lat. $40^{\circ}53.05'$, long. $73^{\circ}45.5'$ falls on the present survey on a shoaling with a least depth of $6\frac{1}{2}$ feet. The area on the old survey was reasonably well developed and the $5\frac{1}{2}$ foot sounding originates with a detached position (84p) and the note in the sounding record at this position states: "locates rock with deep water (3 to 5 fathoms) some short distance from it." In view of the fact that the sounding is on a rock and that the development on the present survey, altho rather close, is insufficient to conclusively disprove it, the $5\frac{1}{2}$ foot sounding has been carried forward and should be retained on the chart.

- (14) The 4 foot sounding (charted) from H-1560c (1894) at lat. $40^{\circ}52.86'$, long. $73^{\circ}45.68'$ falls on the present survey between a 14 and 6 foot soundings. An examination of the sounding records for H-1560c (1894) shows that the 4 foot sounding, which is on a sounding line between positions 31 and 32"o" is incorrectly spaced. When plotted correctly it would fall about 20 meters to the north and just inshore of the 6 foot sounding on the present survey. It should be disregarded in future charting.
- (15) The $5\frac{1}{2}$ foot sounding (charted as 5) from H-1560c (1894) at lat. $40^{\circ}52.77'$, long. $73^{\circ}45.78'$ falls on the new survey between a $6\frac{1}{2}$ and 12 foot sounding. Inasmuch as the present development consisted of a number of parallel lines spaced about 20 meters apart, with no cross lines and no drift soundings, it is considered that the $6\frac{1}{2}$ foot sounding shown on H-5407 (1933) is not necessarily the least depth on the shoal. The $5\frac{1}{2}$ foot sounding has, therefore, been carried forward and should be retained on the chart until disproved.
- (16) The 5-1/4 foot sounding (charted as 5) from H-1560c (1894) at lat. $40^{\circ}52.48'$, long. $73^{\circ}45.62'$ falls on the present survey in depths of 27 feet. An examination of the sounding records for H-1560c (1894) shows that the 5 is a single sounding and is incorrectly spaced between positions (pos. 39 to 40"o"). When correctly spaced the 5 falls on the new survey about 30 meters to the north in a shoal area with a least depth of 6 feet. The 5 foot sounding has been carried forward in its correct position and its position on the chart should be changed to agree with this.
- (17) The 21 foot sounding (charted) from H-1560c (1894) at lat. $40^{\circ}53.48'$, long. $73^{\circ}45.54'$ falls on the new survey in depths of 24 feet. An examination of the sounding records for H-1560c (1894) reveals that the sounding at pos. 83r is 24 feet and not 21 as plotted. The 21 foot sounding should therefore be removed from the chart.
- (18) The 8 foot sounding (charted) from H-1560c (1894) at lat. $40^{\circ}52.5'$, long. $73^{\circ}46.5'$ falls on the new survey in depths of 18 to 19 feet. An examination of the sounding records for the old survey reveals that the correct sounding is 18 feet instead of 8 feet. The 8 foot sounding should, therefore, be removed from the chart.

- (19) The 8 foot sounding (charted) and the adjacent 3 foot sounding (uncharted) from H-1560c (1894) at lat. $40^{\circ}52.75'$, long. $73^{\circ}46.24'$ fall on the present survey in a rather undeveloped area outside the 12 foot curve. In view of the lack of development on the present survey and the rocky nature of the bottom, the 8 and 3 foot soundings have been carried forward to the present survey and may be used in charting.
- (20) The 20 foot sounding (charted) from H-1560c (1894) at lat. $40^{\circ}52.5'$, long. $73^{\circ}45.9'$ falls on the present survey in depths of 27 to 29 feet. However, the sounding lines in this area on the present survey are about 100 meters apart and the 20 foot sounding, altho on a single line of sounding is okeyed in the sounding records. The 20 foot sounding is not considered disproved and it has been carried forward to the present survey and should be retained on the chart.
- (21) The 23 foot sounding (charted) from H-1560c (1894) at lat. $40^{\circ}51.92'$, long. $73^{\circ}46.1'$ falls on the present survey in depths of 41 feet. It was found that pos. 50"1", which controls the 23foot sounding was erroneously plotted and should be about 280 meters west of the position shown. The 23 foot sounding should therefore be removed from the chart.
- (22) The small reef (charted) shown on H-1683 (1886) but originating with T-1709 (1885) at lat. $40^{\circ}53.62'$, long. $73^{\circ}46.08'$ is not verified by the present survey. It falls in an undeveloped area between two other reefs about 120 meters apart. This reef is not shown on the present topo. survey, T-6025 (1933), and apparently was not seen by the present hydrographic party. However, it is not considered disproved and has, therefore, been carried forward to the present survey as a sunken rock.
- (23) The 16 foot sounding (charted) from H-1683 (1886) at lat. $40^{\circ}53.31'$, long. $73^{\circ}46.02'$ falls on the present survey in depths of 22 feet. An examination of the sounding records for H-1686 (1886) shows that the soundings between pos. 29 and 30k are incorrectly spaced and that the 16 foot sounding should have been further south where it would be in better agreement with the ^{present} depths. The present development of this area is very close and should be accepted. The 16 foot sounding should be removed from the chart.

- (24) The 20 and 6 foot soundings (charted) from H-1683 (1886) at lat. $40^{\circ}53.79'$, long. $73^{\circ}45.78'$ and $73^{\circ}45.65'$, respectively, fall on the present survey in depths 3 to 4 feet deeper. An examination of the sounding records for H-1683 (1886) reveals that the sounding between pos. 10c and 11c are incorrectly spaced and that the 20 and 6 foot sounding should both be plotted about 40 meters to the east, where they would agree with the present depths. The 20 and 6 foot soundings should, therefore, be disregarded in future charting.

c. H-2223 (1895).

This survey is in good agreement with the present survey with the following exceptions:

- (1) The one foot sounding (charted) at lat. $40^{\circ}52.55'$, long. $73^{\circ}46.10'$ falls on the present survey in depths of 10 feet. The one foot sounding first originated with chart letter No. 282 (1917) and is the result of a special examination by an officer of this Bureau. At this same spot H-2223 (1895) showed a sounding which, although 1.1 foot in the records, had been erroneously inked on the sheet as a 7 foot sounding. 1.1 foot is correct and a note in the record states that this is the shallowest point on a boulder patch. (Pos. 20e). This is an excellent check on the least depth of 1.5 feet given in the letter. The proper correction has been made on H-2223 (1895). The 1 foot depth from the chart letter and from H-2223 (1895) is considered to have been well established and has been carried forward and should be continued on the chart.
- (2) The 12 foot sounding (charted) at lat. $40^{\circ}53.43'$, long. $73^{\circ}46.12'$ falls on the present survey in depths of about 20 feet, with a 14 foot sounding about 25 meters to the south. This 12 was first charted in 1896 on chart #272 which is the first edition of the chart issued to which H-2223 (1895) was applied. Inasmuch as no authority could be found for this 12 foot sounding, together with the fact that H-2223 (1895) shows a 13 foot sounding at this identical spot, it is believed that the 12 was inadvertently charted instead of the 13. Since the area was not developed on the present survey the 13 foot sounding from H-2223 (1895) has been carried forward and should replace the 12 foot sounding of doubtful origin on the chart. The 12 foot sounding may have been charted by reducing the 13 by one foot so as to emphasize the shoal with the 12 foot curve. This practice is no longer followed.

- (3) The 2 foot sounding (charted) from H-2223 (1895) at lat. $40^{\circ}52.76'$, long. $73^{\circ}45.95'$ falls on the new survey on a shoal spot with $4\frac{1}{2}$ feet as the least depth. A note in the sounding records for H-2223 (1895) at pos. 29e states that this 2 foot sounding "locates shoalest spot in this vicinity that could be found after dragging and running two leads for nearly an hour. This is isolated rock lying in 18 to 24 feet of water." In view of this careful search for the least depth on this shoal and the fact that the present survey confirms the existence of a shoal spot in identical surrounding depths, the 2 foot sounding from H-2223 (1895) has been carried forward and should be retained on the chart.
- (4) The 1 foot sounding (charted) at lat. $40^{\circ}53.15'$, long. $73^{\circ}45.35'$ falls on the new survey between a reef and the shore of Huckleberry Island. Since there are no soundings in this immediate area on the present survey, the 1 foot sounding has been carried forward and should be retained on the chart.
- (5) The 11 foot sounding (charted) at lat. $40^{\circ}53.35'$, long. $73^{\circ}46.48'$ falls on the present survey in a shoal area with a least depth of 13 feet surrounded by deeper water. Since this area was not closely developed on the present survey, the 11 foot sounding has been carried forward and should be retained on the chart.
- (6) A number of other charted shoal soundings from H-2223 (1895) fall on the present survey in depths from 3 to 6 feet deeper. Since the general area is indicated as being rocky and irregular, together with the fact that the development on the present survey is insufficient to disprove their existence, the following soundings have been carried forward:

The	2	foot	sounding	at	lat.	$40^{\circ}53.42'$,	long.	$73^{\circ}46.55'$;
"	3	"	"	"	"	$40^{\circ}53.37'$,	"	$73^{\circ}46.60'$;
"	6	"	"	"	"	$40^{\circ}53.29'$,	"	$73^{\circ}46.48'$;
"	11	"	"	"	"	$40^{\circ}53.54'$,	"	$73^{\circ}46.27'$;
"	18	"	"	"	"	$40^{\circ}53.46'$,	"	$73^{\circ}46.18'$;
"	6	"	"	"	"	$40^{\circ}53.38'$,	"	$73^{\circ}46.29'$.

It should be noted that the 6 foot sounding (the latter of the above list) plots about 20 meters south of the position as charted. Since no other authority could be found for the charted 6, it was considered to be an incorrect charting of the 6 shown on H-2223 (1895) and should be corrected accordingly.

d. H-2914 (1907) W. D.

This wire drag survey covers a portion of the southern limits of the present survey. The effective depths of the drag are consistent with the present hydrography. All soundings have been carried forward to the present survey and are shown in blue.

e. H-2223a (1912).

This survey which covers the approach to New Rochelle Harbor along the west of Davids Island is in fair general agreement with the present survey. However, the area has been subject to dredging operations by the U. S. Engineers in the construction and maintenance of the New Rochelle Harbor Channel subsequent to the time of this survey.

f. H-1683c (1914).

This survey covers the northern portion of the present survey and is in general good agreement. This survey is not superseded for charting purposes.

7. Comparison with Chart No. 222 and 223.

a. Hydrography.

Within the area of the present survey the charts are based on surveys discussed in the previous paragraphs with the following exceptions:

(1) The two 6 foot soundings (charted) at lat. $40^{\circ}52.8'$, long. $73^{\circ}46.41'$ and lat. $40^{\circ}52.71'$, long. $73^{\circ}46.5'$ originate with U. S. Engineer's blueprint No. 16364 (1915). The former 6 falls on the present survey in depths of 7 to 8 feet. Since the 6 is actually a $6\frac{1}{2}$ on the blueprint and the area is fairly well developed on the present survey it is considered that the soundings from H-5407 (1933) should supersede those on the blueprint at this spot and that the 6 should be disregarded in future charting. The latter 6, however, falls on the new survey farther offshore in depth of 10 feet, outside the limits of the intensive development and between sounding lines 100 meters apart. Since it is in no way disproved by the present survey and is in an area likely to be used by navigation, this 6 foot sounding should be retained on the chart.

(2) The 8 foot sounding charted, at lat. $40^{\circ}53.42'$, long. $73^{\circ}46.23'$ falls on the present survey in depths of 15 to 17 feet. It originates with Chart Letter No. 325 (1919) from the Bureau of Lighthouses, which shows the 8 spotted on a

section of chart 272 but contains no information regarding the method used to locate it. There is no indication on the present survey of a shoaling at this spot but no special attempt was made to verify or disprove the 8. This area is rocky and irregular and in view of the absence of an intensive investigation the 8 foot sounding should be retained on the chart until definitely disproved.

- (3) The charted 9 foot sounding marked "Emerald Rock" at lat. $40^{\circ}53.71'$, long. $73^{\circ}45.88'$ originates with chart letter No. 547 (1906) from H. P. Ritter of this Bureau. The 9 is the result of a careful investigation from an anchored boat from which numerous cuts were taken. The spot was developed by the present field party by a number of parallel lines spaced approximately 20 meters apart and one half hour was spent feeling around. The least depth found was $11\frac{1}{2}$ feet in the same position as that located in 1906. Since the area of the least water as stated in the chart letter is less than a square yard, it is evident that the shoalest point could have easily been missed by the present development. The 9 foot sounding should, therefore, be retained on the chart.
- (4) The charted soundings in New Rochelle Harbor and west and southwest of Glen Island are from surveys by the U. S. Engineers, which are in satisfactory agreement with the present survey.
- (5) The small reef symbol shown on chart No. 223 between the two 7 foot soundings at lat. $40^{\circ}52.8'$, long. $73^{\circ}45.62'$ is not verified by the present or any prior hydrographic or topographic survey. A careful examination of all the standards of this chart fail to disclose its authority. It was not shown on chart 272 which was superseded by chart 223 and is not shown on the overlapping chart No. 222. It is, therefore, believed to have gotten on the chart inadvertently and should be deleted from chart No. 223.

b. Controlling Depth in Channel.

The controlling depth of the channel in New Rochelle Harbor of 8 feet originating with the U. S. Engineers surveys is consistent with the present depths. There are a few indications of shoaling along the edge of the channel which are not discussed in detail since the channel is reported by U. S. Engineers, subsequent to this survey, as still having a controlling depth of 8 feet. See chart letter No. 475/3 (1934).

c. Aids to Navigation.

The aids to navigation are in substantially the same positions as charted with the exception of buoy C "3" at lat. 40°53.44', long. 73°46.26', which is about 80 meters west and 90 meters south of its charted position. The following charted aids to navigation were not located on the present survey:

- (1) The beacon on "Spindle Rock" at lat. 40°53.36', long. 73°46.51'.
- (2) The red buoy "N2" at lat. 40°53.45', long. 73°45.41'.
- (3) The black buoy "C1" at lat. 40°53.10, long. 73°46.57'.
- (4) The red buoy N "4A" at lat. 40°52.90', long. 73°46.55'.
- (5) The horizontal stripe buoy "N" at lat. 40°52.89', long. 73°46.70'.

8. Field Plotting.

The field plotting was satisfactory.

9. Additional Field Work Recommended.

The following shoal spots should be further investigated when work is resumed in this vicinity:

- a. The two 6 foot soundings carried forward from H-2223 (1895) at lat. 40°53.29', long. 73°46.48' and lat. 40°53.38', long. 73°46.29', respectively. (See par. 6c(6)).
- b. The 7½ foot sounding carried forward from H-1560c (1894) at lat. 40°53.50', long. 73°45.45'. (See par. 6b(10)).
- c. The sunken rock carried forward from T-1515a bis (1882-83) at lat. 40°53.33', long. 73°46.72'. (See par. 6b(7)).
- d. The sunken rock carried forward from T-1709 (1885) at lat. 40°53.62', long. 73°46.08'. (See par. 6b(22)).
- e. The charted 8 foot sounding at lat. 40°53.42', long. 73°46.23', originating with chart letter No. 325 (1919). (See par. 7a(2)).
- f. The 2 foot sounding carried forward from H-1560a (1883) at lat. 40°52.1', long. 73°46.05'. (See par. 6b(2)).

10. Note to Compiler.

- a. It should be noted that a number of shoal soundings, rocks and reefs around Davids Island, chiefly those to the north and west, are charted from 20 to 40 meters to the north of the positions on the surveys from which they originate. It was clearly evident after a study of the relationship of the features as charted to those shown on the surveys that they are one and the same. However, no conclusive explanation of the shift in position could be drawn. They should be shown in accordance with the present survey.
- b. Attention is called to the fact that Middle Ground Shoal, in approximate lat. 40°53.75', long. 73°45.6', is shown at present on the charts as a marsh area. This delineation originates with a small marsh symbol shown on the 1837 surveys. The present survey shows that this shoal is entirely of a rocky nature and the rocky ledge symbol should be used in charting.
- c. The attention of the compiler is directed to paragraph 1b, paragraph 6c(6) and paragraph 7a(5) of this review.

11. Superseding Old Surveys.

Within the area covered the present survey, with the indicated additions from previous surveys, supersedes the following surveys for charting purposes:

H-	1	(1837)	in part.	H-1560b	(1882)	in part.
H-	2	(1837)	" "	H-1683	(1886)	" "
H-	3	(1837-38)	" "	H-1560c	(1894)	" "
H-	4	(1837-38)	" "	H-2223	(1895)	" "
H-	5	(1837-38)	" "	H-2223a	(1912)	" "
H-	1560a	(1883)	" "			

12. Reviewed by - John G. Ladd, April, 1935.

Inspected by - R. L. Johnston.

Examined and approved:

C. K. Green, *C. K. Green*
Chief, Section of Field Records.

F. S. Borden
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J. O. Tolbut
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G. W. de
Chief, Division of H. & T.

Applied to charts 222 and 223 J.M.A. Aug. 1935

chart 222 - reexamined for rocks, reefs, low water, + critical depths.
" 233 - ditto June 16, 1949 - RDC - April 1949 - RDC

chart 223 - reapplied on rock J.P. 3-31-72