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DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY R.S. Patton, Director	
<div style="float: right; border: 1px solid black; width: 100px; height: 50px;"></div>	
State: <u>New York</u>	
DESCRIPTIVE REPORT	
Topographic Hydrographic	} Sheet No. 4 5413a 5413b
LOCALITY	
<u>North Shore Long Island Sound</u>	
<u>Manursing Island to Devenport Neck</u>	
193 3	
CHIEF OF PARTY	
<u>Harold A. Cotton</u>	

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 54132

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. 4

REGISTER NO. 54132

State New York

General locality North Shore Long Island Sound

Locality Manursing Island to Davenport Neck

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

Vessel Shore Party No. 3

Chief of Party Harold A. Cotton

Surveyed by F. E. Okeson - W. F. Deane

Protracted by H. T. Steffensen - W. L. Willig

Soundings penciled by W. L. Willig - L. E. Ash

Soundings in ~~fathoms~~ feet

Plane of reference MLW

Subdivision of wire dragged areas by

Inked by H. W. Murray & S. E. Perkins

Verified by H. A. Cotton S. E. Perkins H. W. Murray

Instructions dated March 23, 19 33

Remarks:

DESCRIPTIVE REPORT
to accompany
HYDROGRAPHIC SHEET No.4. 54138

INSTRUCTIONS

This survey was executed in compliance with Directors Instructions dated March 23, 1933 - Project H.T. 134.

LIMITS OF SHEET

This sheet extends along the north shore of Long Island Sound from Manumasing Island to Davenport Neck and offshore for a mile to a mile and a half from the general trend of the coast; it covers about the same area as Hydrographic Sheet No. 1683C (Whitneys 1914). On the east, the sheet joins Hydrographic Sheet No. 5402a (Field No. 3, same season) and on the west Hydrographic Sheet No. 5407 (Field No. 5, same season).

CONTROL AND SURVEY METHODS

Numerous third order triangulation stations furnished excellent control for the survey. Hydrographic signals were either such triangulation stations or topographic signals based on this control.

Two hydrographic parties worked at times on the sheet. The major portion of the work was done by the party in charge of Mr. F. E. Okeson Mate. The second party was in charge of Ensign W. F. Deane and later Mr. Chas. Case, Surveyor.

Most soundings were taken with a 8 - 12 pound leadline altho a sounding pole was used in shoaler areas. With care it was found possible to maintain leadlines with little or no correction.

Practically all sounding lines were run on ranges, particularly the work of Mr. Okeson. This should be borne in mind during verification.

Positions of the sounding launches were determined by the usual three point fixes except as noted in Echo Bay.

SCOPE OF WORK

The present survey in conjunction with the work of 1914 and surveys since that time, was to form the basis for a new chart of the area. This involved the following:

(a) The verification of all rocks and shoals located prior to 1914.

(b) The general verification of depth curves and soundings for the area covered by the 1914 survey with such additional work as necessary to substantiate any changes found.

(c) Development of areas not covered by the 1914 survey.

A boat sheet was prepared in the Washington Office to indicate the necessary verification of work prior to 1914. This verification consisted of relocating extensive foul areas as well as numerous rocks and shoals. Most of this work was accomplished either by special examination at low water (see below) or by dragging (separate report). In some cases a close system of sounding lines secured the necessary verification.

Rocks, shoals, etc shown on the chart but not shown on the above sheet did not require verification; they having been located by wire drag or otherwise since 1914.

A general system of 200 meter lines were run over the outside area; these were split to 100 meters as thought necessary to secure good determination of the depth curves. In the bays and anchorages areas, lines were spaced from 100 meters (outer Mamaroneck Harbor) to 30 - 40 meters in the smaller harbors (Milton - Mamaroneck-Larchmont and Echo Bay).

There was considerable development of shoal areas on this sheet. For much of this development, lines were spaced about 20-25 meters and in a few cases, particularly off Rye Point, the line spacing was reduced to about 15 meters.

All soundings were spaced very close on account of the extremely uneven nature of the bottom. Usual sounding speed was about $1\frac{1}{2}$ - 2 knots with interval for soundings varying from 10-15 seconds for less than 2 fathoms to one minute for over 10 fathoms. This schedule gave soundings spaced about three times the depth.

For some of the development on the shoals, both the line and the sounding spacing may appear very close on the sheet but actually the spacing is no closer than desirable if giving due consideration to the extremely uneven nature of the bottom; it is more a question of the scale of the sheet. The closest spacing gives 50-60 feet between both lines and soundings in 3 fathoms with a proportional variation in other depths; such spacing is not actually unduly close for this type of work. With such close spacing it was frequently possible to secure approximately the least depths from the soundings altho this was not always the case.

LOW WATER EXAMINATION

The entire shoreline as well as off lying reefs were specially examined during periods of low water for the location of rocks (* or /) and the delineation of the low water line.

As this portion of Long Island Sound has a great amount of foul area of this type, much time was devoted to such low water examination. The regular program for the hydrographic party was to utilize every low water period for such examination, the sounding lines being run at other times.

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. *and has been altered to conform with the soundings*

(j) Drag area #5- Huron Rock - General depth 11-12 ft. now in this vicinity. Rock apparently removed but surrounding depths shoaler than previously. *RR removed - Engr Report 1916 + Cg. 13493 - Old position cleared by 1 1/2 ft drag strip.*

(k) West side Larchmont Harbor. North Ledge and south Ledge located by topography - somewhat different in position than old red and blue shapes on boatsheet. Area inside South Ledge closely developed by hydrography- boats and moorings too close for dragging. Found 10-13 ft. but no trace old red 1 ft. spot. Umbrella Rock has been built up above low water for the purpose of erecting a beacon.

(l) Two hundred meters Northeast GUT - Area fully developed by soundings and low water examination.

(m) Bailey Rock (Echo Bay) - And area behind- Made several low water examinations but found nothing more than shown on sheets.

(n) Two blue *'s inside Playland breakwater - Found by neither topographic or hydrographic party. *Previous search made and rocks not found. (see 92, 7/1683, 1894) Old rocks from 5 (1836-7) considered disapproved.*

(o) One hundred sixty meters ESE topographic signal MAG - Searched for red-2 1/2 ft. spot during several low waters but found nothing further than shown on sheets. - 2 1/2 sdg. prob. out of position. Not located by fix. Is not charted.

(p) North and west of triangulation signal TALL several red shapes not found during low water examination. Ran several sounding lines over area.

(q) Three hundred sixty meters east triangulation station RYE - Found 6 ft. near green 3 ft.- assumed 3 ft OK and did not investigate further. *Should have been further examined as T. 1709 (1885-6) shows a rocky ledge at this point.*

(r) Five hundred meters east of triangulation station RYE- Old blue 3 ft. spot ~~not~~ found; 3 and 5 ft found immediately to S.W. near rock awash. *Added a rock awash symbol to H. 5413a (1833) at this spot. Old 3 ft sounding from H. 5 (1836-7) probably slightly out of position. Superseded by new soundings.*

(s) Neither low water examination nor hydrography disclosed any of the following-

- Blue shaped 335 meters 126° from topographic signal PAV
 - Red shape 308 meters 101° from topographic signal PAV
 - Two foot spot 220 meters 190° from topographic signal BILL
 - Blue * and red shape 325 meters 135° from triangulation station RYE
- 2 ft sdg. retained (see 1894-5) Old rock symbol incorrectly plotted on H. 5 (1836-7). Removed from chart.*

HYDROGRAPHY- ECHO BAY

The upper portion of Echo Bay was developed by cross-channel lines of soundings taken along a graduated wire, the ends of which were generally located by measurements to definite points shown on the topographic sheet but at times by three point fixes. The method of location is fully described in the Sounding Record. This control is considered decidedly preferable to three point fixes for the sounding launch under way in such a restricted area.

STATISTICS

Miles Statute	Positions	Soundings	Area.
246.2	3208	18,926	10.2

Respectfully submitted

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

File with D.R. H-5413-

Memo. Re- 9 foot Shoal off Larchmont Breakwater (Chart 222).

Referring to paragraph 2 of Commander Cotton's Letter: (of March 13, 1934)

The omission of the charted 9 foot shoal from the boat sheet prepared in the office was not an oversight. The 9 foot shoal originated with the 1930 wire drag survey H. 5078 and since there was nothing doubtful about, it was unnecessary to call for further investigation.

An examination of the wire drag records indicates that a drag set to an effective depth of 13 feet grounded at this spot immediately after setting out (IX day). (Was probably travelling in a northeasterly direction). The tender sounded over the spot and obtained a depth of 2 fathoms 1 foot (Boulders). There was a 4 foot tide at the time, making the reduced depth 9 feet. Two fixes were taken to locate the position, neither of which were particularly strong, but nevertheless were far from swingers. The spot was later cleared by an 8 foot drag (FF day).

Regarding Mr. Okeson clearing the spot with an 11 foot drag, it would seem likely that from the character of the shoal, this would be possible, particularly if the drag approached the boulder from the right direction. In this connection, attention is directed to the 13 foot rock located in lat. 40°-54'.2 long. 73°44'.05 on the same survey. When this rock was approached from the N. E. all drags deeper than 13 feet grounded, but when dragged from the S. W. and S. E. drags cleared with depths of 16 and 18 feet (see AK day, page 14, Descriptive Report).

Under the circumstances the 9 foot sounding will be retained.

A. L. Shalowitz.

LWC

March 29, 1934

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
11 volumes of sounding records for

HYDROGRAPHIC SHEET 5413 a

Locality Mamursing Island to Davenport Neck, Long Island, N. Y.

Chief of Party: H. A. Cotton in 1933

Plane of reference is mean low water, reading

5.0 ft. on tide staff at Cos Cob Harbor

10.6 ft. below B. M. 1

4.0 ft. on tide staff at David's 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:

W. H. Hammer
Chief, Division of Tides and Currents

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 5413a

The following statistics will be submitted with the
cartographer's report on the sheet:

Number of positions on sheet	32.08
Number of positions checked	305
Number of positions revised	46.
Number of soundings recorded	18,926
Number of soundings revised	40.
Number of signals erroneously plotted or transferred	6.

Date: Aug. 11 1934
Cartographer: S. E. Perkins

Verification of pretracting
Verification & inking of rocks & shoals) by H. W. Murray Time:

Verification of inking by S. E. Perkins Time: 155 1/2 hrs.

Review by Time:

SECTION OF FIELD RECORDS ----

Report on H - 5413a

1. The field plotting was completed to the extent specified in the general instructions. However, .5 feet was plotted as 1 foot instead of either $\frac{1}{2}$ or 0, and -.5 feet as -1 foot instead of 0. Also $-2\frac{1}{2}$ feet was plotted as -3 instead of -2ft.
2. Rocks awash at M. L. W. were sometimes plotted as 0 soundings instead of using the symbols.
3. The spacing of the soundings was generally good.
4. Several sounding lines were plotted in exactly the reverse order.
5. In numerous cases the names of stations and signals were placed in areas of much development and these names had to be removed and replaced in open spaces.
6. The greater part of the protracting, and the majority of the rocks and shoals located by the hydrographic party, were verified by H. W. Murray.
7. All positions of buoys listed in the remarks columns of the sounding volumes were verified by H. W. Murray.
8. Rocks and reefs were treated in accordance with the rules drawn up by A. L. Shalowitz, (May 1934).
9. The light at station "Weather" which is a flagpole at the Larchmont Harbor Yacht Club, was not plotted either on the topographic sheet or on the Hydrographic sheet. It was placed on both sheets by the verifier. (Source -- Report on T - 6024.)
Approved by Mr. Passmore
10. ~~Attention~~ is called to the fact that the topographic sheet 6024 was surveyed by G. L. Govin and inked in by A. Black after G. L. Govin had left the party. The low water line at station Hen is in question, since it is not inked in on the sheet. A marsh island shown on the topographic sheet was removed on both the topo. and hydro sheets at the direction of Mr. Bush. Two rocks awash south of signal Tom were found in pencil on the topo sheet and were inked in by the verifier, at the direction of A. L. S.
11. Topographic sheets 6023 and 6024 have periods placed after M - L and W. In closely developed areas, particularly in the vicinity

of Parsonage Point, the verifier experienced difficulty because of the confusion due to the use of periods.

12. The topographic sheet for the west end of H - 5413a has been returned to the field and is not available at this time. The island at 15m should be verified when this sheet is available. *The island as shown on T.6025 is accepted. The shoreline of the island is probably indefinite as it is on a mud flat.*
13. Echo Harbor was surveyed by using a tape and a graduated wire strung from wharf to wharf. Soundings were taken every 5 meters. This is useless detail on this scale.
14. In several cases the reducers on rocks were erroneously applied.
15. It will be noted that the reefs delineated by the hydrographic party are plotted with the rocky ledge symbol. However, some transferred reefs from the topographic sheet are shown simply with the low water line symbol. Obviously the ledge formation is to be found at these places too, but the transfer has been made just as the topographic sheet gives them. *The topographic surveys of 1886 show most of these spots as rocky ledge. Also see statement in Possip Report of T.6023.*
16. A rock noted on page 39 vol 10 was considered to be a part of the reef shown on the topographic sheet between the positions 50 and 51 c (blue) passed over while turning. *(West of Rye Pt)*
17. The two piles on the topographic sheet off Playland pier, are shown on the boat sheet as rocks awash. It is assumed that they were transferred to the boat sheet incorrectly.
18. There was no datum reference on the sheet.
19. The correct stamp at the bottom of the sheet was not on when the sheet was received from the field.
20. When the sheet was received in the office, the transfer of the hydro. & topographic signals had not been checked. The transfer was verified by the writer and the following signals were found to be in error.

SIGNAL	LAT	LONG	ERROR (w to r)
Ely	40 54.8'	73 45.2'	10m E
Per	40 55'	73 44.8'	12m S
Black	40 55.65'	73 43.6'	7m N
Bee	40 56.3'	73 43.3'	5m E
Bust	40 56.6'	72 42.4'	16m E
Lat	40 56.6'	72 42.2'	16m E

Signal Ely's position seems questionable since the topo shows evidence of a change of plotting in the field, and it is also born in mind that a different man inked in the sheet than the one who made the survey.

It is suggested that when the adjoining sheet (topographic) ^{T.6025} is received in the office, the signal Ely be checked on that sheet. This signal controls the position of numerous rocks. When this signal was changed to agree with topo sheet 6024 all effected positions were replotted. In correcting the positions of the signals in error, ten sounding lines were changed. The remainder that were effected were not replotted since the error was not more than the width of a sounding. *The position of signal Ely as shown on H-5413a checks with the position shown on a traverse of T.6025 (original sheet in field)*

Other signals were slightly out of position but were not changed since the error was negligible.

21. The 2 foot drag sounding from (H-5413b) near Forbes Rocks is given on the chart as a rock awash. Since this is a particularly bad off-shore danger it would be better shown as a rock awash. However, it is left as a 2 foot sounding pending the reviewers decision. *The rock awash symbol on the chart is correct since a zero sounding on a rock was obtained on the wire drag survey, H-5142 (1931) R.Lg*
22. The junctions this sheet makes with H-5402a on the east, and H-5407 on the west, are in good agreement. *Junction on the east with H-5402a not quite close enough to develop curves on shoals.*
23. The curves in the developed areas have been inked in. The curves in the areas of little development have been left in pencil by the verifier. *Other curves in open areas were inked by the reviewer and were drawn to conform as close as possible with H-1683c (1914)*
24. The following buoys shown on the chart (222) are not shown on this sheet:-

White Can	East of Hen and Chichens	✓
Can <i>Hor. Strips</i>	East of Delancy Point	✓
Nun	South ^{east} of Ship Rock Buoy	✓
2 Nuns	North and East of Outer Steamboat Rock Buoy	✓
<i>Hor. Strips</i>	(one at Turkey Rock, the other near rock awash)	✓
Nun 6	Upper Mamaroneck Harbor	✓
White Nun	Near buoy C-5	✓
Can 1	North of Middle Ground	✓

The chart shows a red Nun #4 in Mamaroneck Harbor. The records give a red Can #4. (see vol. 7 page²1)

Red buoy #2 south of Playland (see vol. 8 page 1). Shown on chart as a Nun.

25. The wire drag soundings from 5413b were applied to this sheet by I. M. Zeskind. ✓
26. The wire drag soundings from 5078 were applied to this sheet by the verifier. ✓
27. The paper is porous and did not take ink well without the aid of "Restor-Rite". ✓

28. Attention is called to the fact that the breakwaters in the vicinity of Playland are shown on the chart (222) as submerged at high water. The topographic sheet shows them with solid lines. See letters, 444(1929) and 422(1931) for additional information on this conflict.
29. The verifier experienced numerous interruptions while working on this sheet due to an unusual demand for photostats of this area.

Respectfully submitted,

S. E. Perkins
S. E. Perkins

Aug. 11, 1934

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5413a (1933)

North Shore Long Island Sound, New York

Surveyed in 1933

Instructions dated March 23, 1933(H.A.Cotton)

Hand Lead and Pole Soundings - 3 Point Fix Control

Chief of Party - H. A. Cotton.

Surveyed by - F. E. Okeson, W. F. Deane.

Protracted by - H. T. Steffensen, W. L. Willig.

Sounding plotted by - W. L. Willig, L. E. Ash.

Verified by - H. W. Murray, S. E. Perkins.

Inked by - H.W.M., S.E.P.

1. Condition of Records.

The sounding records conform to the requirements of the Hydrographic Manual.

The usual stamp at the bottom of the sheet was omitted and this office had no information as to whether the transfer of topographic stations had been verified in the field. When these were checked in the office six were found to be excessively in error and were replotted. (par. 20, Verifiers Report). No datum reference was given on sheet.

2. Compliance with Instructions for the Project.

The instructions for the project specified a spacing of sounding lines but left the amount of development largely to the discretion of the Chief of Party. As the present survey in conjunction with the work of 1914 was to form the basis for a new chart, the following items were involved.

a. The verification of all rocks and shoals located prior to 1914, shown on a boatsheet furnished by this office.

b. The general verification of the soundings and depth curves of the 1914 survey with enough additional work to confirm any changes.

c. The development of areas not covered by the 1914 survey.

A few of the rocks and shoal soundings from the older surveys prior to 1914 were not found, but were not definitely disproved and it was necessary to carry them forward.

One or two of the areas, not covered by the 1914 survey, such as the 12 foot spit making off Delancey Pt. and the 18 foot shoaling on the eastern limits of the work were not developed. Soundings from surveys prior to 1914 will have to be used in these areas.

With these exceptions the plan and extent of the survey satisfy the instructions for the project.

3. Sounding Line Crossings.

Close development with cross lines was done only in the harbor and channels and areas where irregularities were looked for. The agreement of the soundings in these areas and the agreement of adjacent sounding lines in the open areas is satisfactory.

4. Depth Curves.

Within the limits of the survey the usual depth curves may be satisfactorily drawn, including portions of the low water curve, most of which was located by the topographic party. In the open areas the curves were drawn to conform as closely as possible with the surveys of 1914.

5. Junctions with Contemporary Surveys.

At the junction on the east with H-5402a (1933) no actual overlap was made. This junction should have been closer because the wire drag soundings from H-5142 (1931) show the least depths on the shoals in this area but do not show the extent of these shoals and the curves are not well fixed.

The junction on the west with H-5407 (1933) is satisfactory.

The junction on the south with H-1732a (1914) is satisfactory.

6. Comparison with Prior Surveys.

a. H-1 (1837), covers a small area on the western limits of this survey. H-1 (1837) was examined and no soundings or other features were found which need be carried forward. H-1 (1837) may be superseded by H-5413a (1933) within the area covered by that sheet.

b. H-4 (1836-7), appears to be a duplicate of H-5 (1836-7) and will be considered under that sheet.

c. H-5 (1836-7),

(1) In some areas there are shoaler soundings shown on H-5 (1836-7) but in these areas the bottom is soft in character and there is a general disagreement in the soundings. Sunken rock symbols, which are not definitely located have been used very profusely in the shoaler areas on H-5 (1836-7). Most of the located rocks agree fairly well but some differ in position.

(2) Two rocks awash shown on H-5 (1836-7) in lat. $40^{\circ}57.67'$, long. $73^{\circ}40.53'$ were not located on H-5413a (1933). A sounding line (pos. 7d to pos. 8 d) passes close to their position without mentioning rocks. The position of these rocks was verified from the records of H-5 (1836-7) but no description of them is given. A

search was made for these rocks in 1894. A buoy was dropped to mark their position and a general depth of 10 feet was found. Local fisherman reported they knew of no rock in this vicinity. (pos. 9e red, H-1683a 1894). These rocks are indicated on Chart 222 as a small ~~bare rock~~ and in view of the fact that they were not found on either H-1683a (1894) or H-5413a (1933) this symbol should be removed from the chart.

(3) Three rock symbols are shown on H-5 (1836-7) in a southwesterly direction from Transport Rock. It is not clear from the records of H-5 (1836-7) whether these were intended for sunken rocks or rocks awash. As a 3 foot rock is charted from H-1683a (1894) in about the position of the outermost of these rocks, the old rock symbols on H-5 (1836-7) can be disregarded and the delineation of rocks as shown on H-5413a (1933) accepted.

(4) Rock symbols are shown on H-5 (1836-7) on the Hen and Chickens Shoal which are considerably north of the rocks located on the new survey, H-5413a (1933). This area was closely developed by sounding lines and also covered with the drag. The old rock symbols on H-5 (1836-7) should be disregarded and the new delineation as shown on H-5413a (1933) accepted.

(5) A rock awash symbol on H-5 (1836-7) in lat. $40^{\circ}56.3'$, long. $73^{\circ}41.7'$ has been carried forward to H-1683 (1886-7-9-90) and is shown on Chart 222 as a small ledge. The drag party, H-5413b (1933) grounded the drag on a 4 foot spot about 75m N.N.E. of the rock without clearing the old position. They believe the new 4 foot sounding is the old rock but they did not prove this conclusively. A replotting of the position of the old rock symbol from the records of H-5 (1836-7) places it directly over the 4 foot spot and on page 4 (item S) of the Descriptive Report there is a statement that the old position of the rock was examined by the hydrographic party at low water without having seen any rock. For these reasons it is recommended that the ledge symbol, based on this rock, be removed from the chart.

(6) A sounding of 23 feet shown on H-5 (1836-7) in lat. $40^{\circ}56.8'$, long. $73^{\circ}40.5'$, was disproved by the drag, H-5413b (1933). This sounding is not shown on the chart.

(7) H-5 (1836-7) may be superseded by H-5413a (1933) within the area covered by that sheet.

d. H-1560c (1894).

H-1560c (1894) covers a very small area northeast of Huckleberry I. and shows shoal depths just beyond the western limits of H-5413a (1933) but may be superseded by H-5407 (1933) and H-5413a (1933) within the area covered by H-5413a (1933).

¹⁶⁹⁹
e. H-6199 (1886 and 1893)

H-1699 (1886 and 1893) covers a narrow strip south of Manursing I., on the eastern limits of H-5413a (1933). On the recent work the sounding lines are quite widely spaced and the soundings on H-1699b (1914) are also very open in this area. The least depths were established by the wire drag, H-5142 (1931), but the drag soundings do not show the extent of the shoals. A 14 foot sounding shown on Chart 222 in lat. $40^{\circ}57.4'$, long. $70^{\circ}39.8'$ is from the 1893 records of H-1699 (1886 and 1893). Because it falls in an area which is blank on the later surveys, the 14 foot sounding should be retained on the chart. Other soundings from H-1699 (1886 and 1893) have been added to H-5413a (1933) in this vicinity in order that the 18 foot curve may be more completely drawn. Only one sounding line on H-5413a (1933) crosses the shoaling shown on H-1699 (1886 and 1893) and this line shows only a slight indication of the shoal. With the exception of the soundings added to H-5413a (1933), H-1699 (1886 and 1893) may be superseded by H-5413a (1933) within the area covered by that sheet.

f. H-1699 (1914).

Only a few sounding lines from H-1699b (1914) fall within the eastern limits of H-5413a (1933). These soundings may be used for charting if needed.

g. H-1732 (1886).

H-1732 (1886) covers only a narrow strip along the southern limits of H-5413a (1933) and may be superseded by that sheet within the area covered by it.

h. H-1683 (1886-7-9-90).

(1) H-1683 (1886-7-9-90) is the most complete of the older surveys and is generally in fair agreement with the new work. Because it is desired to have the chart based on the present survey in conjunction with the surveys of 1914, H-1683 (1886-7-9-90) should be superseded as far as possible but it will be necessary to retain some of the soundings from this survey.

(2) A 20 foot sounding, shown on Chart 222 in approximate lat. $40^{\circ}53.4'$ long. $73^{\circ}45.3'$ was verified in the 1886 records (pos. 8j to pos. 9j blue) of H-1683 (1886-7-9-90). It should be retained on the chart because all of the surveys indicate a shoaling at this point.

(3) A 24 foot sounding shown on Chart 222 in approximate lat. $40^{\circ}54.6'$, long. $73^{\circ}44.7'$ was verified in the 1886 records (pos. 45A to pos. 46A red) of H-1683 (1886-7-9-90). The original sounding is recorded as 4 fm. 2 ft. between 5 fathom soundings and may be a fathom in error. This spot was developed by sounding lines without obtaining less than 28 feet and was also covered by a $25\frac{1}{2}$ foot drag strip without striking (H-5413b 1933). The 24 foot sounding is believed to have been disproved and should be removed from the chart.

(4) Huron Rock, with a depth of 10 feet over it, is shown in red on H-1683 (1886-7-9-90) in lat. $40^{\circ}55.2'$, long. $73^{\circ}44.25'$ and was located on an Engineers Survey of 1889 according to a pencil note on that sheet. It has since been removed. (Engineers Report of 1916 and Bp. 13493). The old position of the rock was cleared with an $11\frac{1}{2}$ foot drag strip, H-5413b (1933), which grounded to the northward in depths of 11 feet, shown on H-5413a (1933). This is mentioned as a matter of history only since Huron Rock is not now charted.

(5) The depths obtained by the recent hydrographic development and drag examinations, H-5413a and b (1933) should supersede those shown on the Hen and Chickens Shoal on H-1683 (1886-7-9-90) with one exception. An 8 foot sounding shown on Chart 222 in lat. $40^{\circ}54.87'$, long. $73^{\circ}44.25'$ was verified in the 1887 sounding records (pos. 43e' red) of H-1683 (1886-7-9-90). It is said to be an isolated rock and a 12 foot sounding on the new work indicates that it is probably correct. The drag party, H-5413b (1933) cleared the spot with a 7 foot drag strip. The 8 foot sounding should be retained on the chart.

(6) A small ledge symbol charted in lat. $40^{\circ}56.4'$, long. $73^{\circ}41.6'$ is from H-1683 (1886-7-9-90) and T-1709 (1885-6-7). This was not located on the new survey but there was no close hydrographic development of the spot, which was not covered by the drag. There was 4 and 5 feet of tide at the time the nearest sounding lines were run. This has been added to H-5413a (1933) as a rock awash and should be so charted.

(7) A rock awash is shown on Chart 222 in approximate lat. $40^{\circ}56.55'$, long. $73^{\circ}40.98'$. The authority for the rock symbol is a minus $2\frac{1}{4}$ foot sounding on H-1683 (1886-7-9-90). This sounding was verified in the 1887 sounding records (pos. 8c red) of H-1683 (1886-7-9-90) but it was found that the line on which the sounding was obtained is very poorly controlled as only one angle was taken. This sounding was shown on the boatsheet furnished the field party and should have been examined more closely. A rock awash at extreme low tide was located by the hydrographic party, H-5413a (1933), about 60 meters northwest from this spot, at a time when there was only 1 foot of tide. (pos. 47ccred). It is improbable they would have failed to see the $-2\frac{1}{4}$ foot rock if it were in the position shown on H-1683 (1886-7-9-90). For this reason and also because its location is so indefinite the minus $2\frac{1}{4}$ foot rock ^{should} be omitted from the chart.

(8) A 1 foot sounding shown on Chart 222 in lat. $40^{\circ}56.15'$, long. $73^{\circ}41.81'$ and a 3 foot sounding just northeast of it were verified in the 1887 records (pos. 6b to pos. 7b and pos. 9b to pos. 10b) red) of H-1683 (1886-7-9-90). There is some doubt about the correctness of the 1 foot sounding as it is a single sounding in a row of 2 fathom soundings. The position of the 1 foot sounding barely falls within the limits of an 8 foot drag strip without any margin of overlap, H-5413b (1933) and the 3 foot spot was missed entirely by the drag. Because this area is so thickly covered with rocks and shoals and because these soundings have not been definitely disproved they should be retained on the chart.

- (9) A 25 foot sounding shown on Chart 222 in lat. $40^{\circ}56.3'$, long. $73^{\circ}41.2'$ was verified in the 1886 sounding records (pos. 33c to pos. 34c blue) of H-1683 (1886-7-9-90). The spot was cleared by a $23\frac{1}{2}$ foot drag strip, H-5413b (1933), which of course does not disprove the 25 foot sounding. While this sounding does not agree well with the new depths of from 33 to 41 feet, it should be retained on the chart because the area is very irregular and the 25 foot sounding has not been discredited.
- (10) A 2 foot sounding shown on Chart 222 in lat. $40^{\circ}56.5'$, long. $73^{\circ}41.35'$ was verified in the 1887 records (pos. 20b to pos. 21b red) of H-1683 (1886-7-9-90). The new work shows depths of 17 to 18 feet and a statement is made in the Descriptive Report, page 4, item 5, that a low water examination failed to show any 2 foot spot. However there is nothing in the records, such as drift soundings, to show how thorough this examination was and as the spot was not covered by the drag, the evidence of its non-existence is not considered conclusive. The 2 foot sounding should be retained on the chart until further disproved.
- (11) A sounding of $1\frac{3}{4}$ (charted as 2 feet) is shown on H-1683 (1886-7-9-90) in lat. $40^{\circ}56.4'$, long. $73^{\circ}42.2'$ on the east side of Hen Island. This sounding was cleared by a 5 foot drag strip, H-5413b (1933) and proven to be incorrect. The 2 foot sounding should be removed from the chart.
- (12) Two small rocks shown on Chart 222 in lat. $40^{\circ}57.2'$, long. $73^{\circ}41.03'$ apparently originate from H-1683 (1886-7-9-90). This area was visited several times at low water and two sounding lines were run over the position without finding any rocks. These rocks are considered disproved, and should be removed from the chart. The delineation of rocks as shown on H-5413a (1933) in this locality should be accepted.
- (13) With the exception of the rocks and soundings which have been noted, H-1683 (1886-7-9-90) may be superseded by H-5413a (1933) within the area covered by that sheet.

i. H-1683a (1894).

H-1683a (1894) is not a complete survey of the area but consists of examinations of several spots. The following soundings charted from this survey were noted.

- (1) An 18 foot sanded spot shown on Chart 222 in lat. $40^{\circ}55.6'$, long. $73^{\circ}42.3'$ is actually 19 feet in the records of H-1683a (1894) (pos. 31f). The present survey obtained a 20 foot sounding but as the development is not very close the old sounding should be retained.
- (2) A 1 foot sanded spot shown on Chart 222 in lat. $40^{\circ}56.3'$, long. $73^{\circ}43.24'$ is actually 1.6 feet in the records of H-1683a (1894)

(pos. 27c). The sounding was obtained over a rock, which was found by the drag party, H-5413b (1933), and a sounding of 2 feet obtained. The difference between these depths is not large and the 2 foot sounding should be charted in preference to the old 1 foot sounding since more modern methods were used in obtaining it.

(3) A 9 foot sounding shown on Chart 222 in approximate lat. $40^{\circ}55.5'$, long. $73^{\circ}43.4'$ is from H-1683a (1894). This sounding should be retained on the chart because this area was not developed on the surveys of 1914 and 1933.

(4) A 7 foot sounding shown on Chart 222 in lat. $40^{\circ}56.0'$, long. $73^{\circ}42.75'$ is from H-1683a (1894). This spot was cleared by an 11 foot drag strip in one direction and by a $11\frac{1}{2}$ foot drag strip in the opposite direction, H-5413b (1933). The 7 foot sounding is disproved and should be removed from the chart.

(5) A 3 foot sanded spot is shown on Chart 222 in lat. $40^{\circ}57.6'$, long. $73^{\circ}40.1'$. This sounding was verified in the records of H-1683a (1894) (pos. 1e) and is supposed to be an isolated rock. A sunken rock symbol is shown on H-5 (1836-7) close to this point. A drag strip barely missed covering this spot. (H-5413b 1933). Because the hydrographic development on H-5413a (1933) is insufficient to disprove its existence, the 3 foot rock should be retained on the chart.

(6) With the exception of the soundings mentioned H-1683a (1894) may be superseded by H-5413a (1933).

j. H-1683b (1901).

From an examination of the records of H-1683b (1901) the reviewer was unable to tell how the signals on that sheet were located. They appear to be located by sextants and for that reason the control may not be quite as accurate as that of the present survey, H-5413a (1933).

(1) The 10 foot sounding from H-1683b (1901) on Dauntless Rock in Larchmont Harbor should be superseded by the new depths of 8 and 11 feet obtained by the drag party, H-5413b (1933).

(2) The new locations as shown on H-5413a (1933) of the two rocks in lat. $40^{\circ}54.72'$, long. $73^{\circ}44.36'$ should be accepted in preference to the positions determined on H-1683b (1901) which differ only slightly.

(3) A 9 foot sounding shown on Chart 222 in approximate lat. $40^{\circ}55.7'$, long. $73^{\circ}43.2'$ was verified from the records of H-1683b (1901). The hydrographic party of 1933 found a minimum depth of 12 feet and the drag party located a 10 ft. spot about 80 meters S.S.E. of the old 9 foot sounding. Because the position of the 9 foot spot was not covered by the drag, it is not considered disproved and should be retained on the chart.

(4) Soundings of 4 and 6 feet shown on Chart 222 in approximate lat. 40°56.1', long. 73°42.45' were verified in the records of H-1683b (1901). The hydrographic party, H-5413a (1933) obtained a minimum depth of 8 feet. A 6½ foot drag strip, H-5413b (1933) did not clear the position of these soundings which should be retained on the chart.

(5) With the exception of the soundings discussed H-1683b (1901) may be superseded by H-5413a (1933).

k. H-1683c (1914).

H-1683c (1914) is the most recent of the previous surveys and the soundings from this sheet may be used to supplement those of H-5413a (1933). Some of the shoals found in 1914 were accepted as correct, and were not re-examined in 1933. Rocks and the most critical soundings from H-1683c (1914) have been added to H-5413a (1933) in brown in order that that sheet may be fairly complete within the area covered, but the compiler is not restricted to these soundings.

In the area adjacent to the northern breakwater off Rye Beach improvements have been made. (Letters 422, 429, 479 and 498, 1931). Within this area H-1683c (1914) should be superseded by H-5413a (1933).

l. H-5078 (1930).

All soundings found by the wire drag survey, H-5078 (1930), have been added to H-5413a (1933) in blue.

m. H-5142 (1931).

All soundings found by the wire drag survey, H-5142 (1931) have been added to H-5413a (1933) in violet.

n. H-5413b (1933).

All soundings found by the contemporary drag examinations, H-5413b (1933), have been added to H-5413a (1933) in red.

7. Comparisons with Chart No. 222.

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and contains no additional information that needs consideration in this review.

Two wreck symbols are shown on Chart 222 northwest and southwest from Goat Island in Echo Bay. These were placed on Chart 222 when it was first compiled from some source which was not recorded. They should be removed from the chart and the wrecks located on T-6025 (1933) charted.

The aids to navigation as located on this survey generally differ a little from their charted positions. The largest differences noted were the red nun buoy and the lighted buoy approximately one half mile south of Scotch Caps which were located about 50 meters south

of their charted positions. Black can Buoy No. 5, which marks the southern edge of the dredged channel in Marmaroneck Harbor, appears to be about 40 meters too far northward. (Located on P. 2, Vol. 7) Other discrepancies and a list of buoys shown on the chart but not located by this survey are given in par. 24 of the verifiers report.

8. Field Plotting.

The prescribed amount of field plotting was accomplished by the field party. The protracting and spacing of sounding lines was generally well done. The following errors were made. Rocks awash at M.L.W. were sometimes plotted as zero soundings instead of using the symbols. Soundings of +5 foot were plotted as 1 foot instead of either $\frac{1}{2}$ or 0 and -5 foot as -1 foot instead of 0. Names of stations were often placed in areas closely developed by sounding lines instead of open spaces. Six topographic signals were incorrectly transferred and were changed in the office.

9. Additional Field Work Recommended.

a. Immediately Necessary.

None.

The present survey in conjunction with the survey of 1914 and with some additions from prior surveys give a fairly complete survey of this complicated area.

b. For Future Consideration.

It might be desirable at some future time to verify or disprove more definitely some of the soundings brought forward from surveys prior to 1914. These are described in the following paragraphs of this review. Par. 6 (8f), Par. 6 (8g), Par. 6 (8h), Par. 6 (8j), Par. 6 (9e), Par. 6 (10c) and Par. 6 (10d).

10. Superseding Old Surveys.

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

H-1 (1837) in part.
H-4 (1836-7) in part.
H-5 (1836-7) in part.
H-1560c (1894) in part.
H-1699 (1886+1893) in part.
H-1732 (1886) in part.
H-1683 (1886-7-9-90) in part.
H-1683a (1894) in part.
H-1683b (1901) in part.

11. Reviewed by - R. L. Johnston, October 1934.

Supervised by A. L. Shalowitz.

Examined and approved:

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

F. S. Borden
Chief, Section of Field Work.

L. O. Golub
Chief, Division of Charts.

G. H. de
Chief, Division of H. & T.

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

DRAG
~~HYDROGRAPHIC~~ TITLE SHEET

REG. NO. 5413b

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. 4

REGISTER NO. 5413b

State New York

General locality North Shore Long Island Sound

Locality Manhasset Neck Bay Echo Bay.

Scale 1:10,000 Date of survey October-November, 1933

Vessel Shore Party No. 3

Chief of Party Harold A. Cotton

Surveyed by W. F. Deane and F. E. Okeson

Protracted by _____

Soundings penciled by _____

Soundings in ~~bottoms~~ feet

Plane of reference MLW

Subdivision of wire dragged areas by W. F. D. - F. E. O.

Inked by J. D. Groff *th*

Verified by H. A. Cotton *W H Bamford*

Instructions dated March 23, 1933

Remarks: _____

DESCRIPTIVE REPORT
to accompany
DRAG SHEET No. 4 H 5413^b 1933

INSTRUCTIONS

This survey was executed in compliance with Directors instructions dated March 23, 1933 - Project H.T. 134.

LIMITS OF SHEET

Sheet covers same area as Hydrographic Sheet No. 5413a (Field No. 4 - same season).

CONTROL

Same as above mentioned Sheet No. 5413a (Field No. 4).

SCOPE OF WORK

All dragging on this sheet was for the purpose of verifying rocks and shoals found during previous surveys.

The Rope Drag was used for all of this work except disproving a questionable seven (7) foot sounding near the head of Mamaroneck Harbor - reference No. 48.

Two rope drag parties worked on the sheet. The work of the party in charge of Mr. W.F. Deane is shown with green position numbers while the work of the party in charge of Mr. F.E. Okeson is shown with brown position numbers.

The lift for the drag work of Mr. Deane was always small (generally not over one foot) while Mr. Okeson's drag frequently had excessive lifts of three (3) - four (4) feet. The excessive lift in the case of Mr. Okeson's work can no doubt be attributed to the type of small weights used - long slender window sash weights. This is discussed further in a special report on the Rope Drag.

PLOTTING DRAG STRIPS

The type of dragging necessary for such verification work as accomplished on this sheet required relatively narrow strips and generally quite a number of strips over the same area. As it is quite confusing to properly plot and interpret such overlapping narrow drag strips, each strip was first plotted separately on a piece of tracing paper and notation made on the same as to what had been accomplished by the particular strip. A study of these strips quickly showed to what extent the area had been covered.

It was inevitable in this type of work ~~but that~~ these would be some duplication of work with different strips and some strips that actually accomplished little or nothing. Such strips were discarded in the smooth plotting.

All of the separate sheets of tracing paper on which the individual drag strips were originally plotted are enclosed in a separate folder and accompanying this report.

SUMMARY OF RESULTS

Results of the dragging are as noted below. For reference purposes the various locations of work have been indicated by large green figures on the smooth sheet.

1. Old $3\frac{1}{2}$ ft. spot reported removed by Army Engineers. ✓
Found 9-10 ft. by soundings.
Dragging not possible on account numerous anchored boats and moorings in this area.
- #2. Cleared old green 7 ft. spot with 6 ft. strip. ✓
- #3. Cleared old red 24 ft. spot with $25\frac{1}{2}$ ft. ✓
Found 27 ft. during hydrography.
- #4. Found $4\frac{1}{2}$ ft. close by old blue *
Did not attempt to clear account being near cluster rocks awash to northeast. *Old blue rock from H. 5 (1836-7) not as accurately located as the new positions on H. 5413 at 4*
5. Cleared old red 10 ft. spots with $11\frac{1}{2}$ ft. drag but grounded immediately to northwest in 11-12 ft. area as developed by hydrography. ✓
Bottom shoals gradually toward inner harbor.
- #9. Found $21\frac{1}{2}$ ft. by old red 23 ft. - cleared with $20\frac{1}{2}$ ft. ✓
Also found $20\frac{1}{2}$ ft. spot to north-northwest - cleared with 18 ft. - and $22\frac{1}{2}$ ft spot to southwest - cleared with 21 ft. - Disproved ✓
18 ft. sounding (Pos. 56 - 57c this seasons work) by dragging both directions 26 and $26\frac{1}{2}$ feet. This area also developed by hydrography.
- #10. Found $16\frac{1}{2}$ ft. near old 16 ft. - Cleared with $13\frac{1}{2}$ ft. - This ✓
area well developed by hydrography - Several 17 and 18 ft. spots close by.
- #11. Found 18 ft. near old red 18 ft. - Cleared with 15 ft - This ✓
area well developed by hydrography - An 18 ft. spot close by and 17 ft. little to northward. *16 ft close by H 5078 M.D. (1930)*
- #12. Found $13\frac{1}{2}$ ft. alongside old green 18 ft. - Cleared with $13\frac{1}{2}$ ft ✓
strip. *Found several twelve foot spots to westward.*
- #13. Found 30 ft. near old red 29 ft. spot - (previously cleared by 27 ft. drag.
Developed area as per Instructions on Washington Boat sheet. This 30 ft. spot was cleared by 31 and 32 ft. strips which should be rejected on account of being questionable. Both these strips showed excessive lift. A small variation in the lift would possibly allow the 31 ft. strip to pass over a 30 ft. spot. In the case of the 32 ft. strip, no test for lift was actually made and it is further doubtful if the correct hook-up is recorded - just previous to this strip the hook-up is recorded as being changed from 33 to 36 ft. Instructions were for a 29 ft. drag over this area and the increased hook-up appears unlikely. ✓

#14 Found 9 and $9\frac{1}{2}$ ft. near old red $9\frac{1}{2}$ ft. - Cleared with $6\frac{1}{2}$ ft. ✓

#15. Found 10 ft. near old red $9\frac{1}{2}$ ft. - Cleared with 8 ft. - Also cleared old green 7 ft. with $5\frac{1}{2}$ ft. *This is true but the position of the $9\frac{1}{2}$ ft sdg from #1683 (1901) was not cleared by the drag. The 7 ft sdg has been retained on the chart.* ✓

Determined limits of foul ground northeast Delancy Point by wrapping with 4 ft. drag strip. - Found 2 four ft. spots. ✓

Area between strips should also have been dragged- This area closely developed by hydrography. ✓

16. Cleared old green 28 and 29 ft. spots with $25\frac{1}{2}$ ft. ✓

#17. (a) HEN AND CHICKENS

Cleared old blue * with $9\frac{1}{2}$ ft. but found $8\frac{1}{2}$ ft. close by (strip 8 - 9A) did not clear this $8\frac{1}{2}$ ft. spot on account lying near other rocks. ✓

Found 3 ft. alongside old red $3\frac{1}{2}$ ft. spot; also numerous other rocks with $4\frac{1}{2}$ to 8 ft. ✓

Limits this group of rocks defined by grounding from three directions (N-E-W); group of bare rocks to southward. ✓

Group of shoalest soundings cleared with 1 ft. strip. ✓

(b) DAUNTLESS ROCKS

Found 11 ft. alongside old red 10 ft. spot and $8\frac{1}{2}$ ft. just to southward - Cleared with 7 ft. ✓

(c) TO EASTWARD OF DAUNTLESS ROCKS

Hydrography found 15 ft. by old red $14\frac{3}{4}$ ft. and 16 ft. by old red 15 ft. - Cleared all with $14\frac{1}{2}$ ft. strip. ✓

Found two $17\frac{1}{2}$ ft. spots close by old red 20 ft. spots - Cleared with $14\frac{1}{2}$ ft. *4 1/2 ft.* ✓

Cleared old green 15 ft. with $14\frac{1}{2}$ ft. strip. ✓

#18- #19. Found 26 ft. close by old red 26 ft. - Cleared with 24 ft. Also found 26 and 23 ft. spots, clearing with 24 ft and $21\frac{1}{2}$ ft. respectively. ✓

#20. Cleared old red 25 ft. with $23\frac{1}{2}$ ft. ✓

Found 20 ft. close by brown 18 - assumed 18 O.K. and cleared with $15\frac{1}{2}$ ft. strip grounding on 11 ft. spot to northward. ✓

24. Cleared old blue islet with 4 ft. - Found $2\frac{1}{2}$ ft. alongside old red $1\frac{1}{2}$ ft. *Recommend that 2 ft be charted.* ✓

#25. Area closely developed by hydrography - Dragged as follows to clear shoal areas - Found 6 ft. by old red 6 - Cleared with 6 ft. Found 10 ft. by old red 10 ft. - Cleared with 8 ft. - Found 12 ft. by old red 13. - Cleared with $9\frac{1}{2}$ ft. ✓

27. Ineffective strip.

Area fully developed by hydrography with least depths of 8 and 9 ft; too close quarters for dragging. ✓

28. Searching for blue * - Grounded 8 ft. drag strip on $6\frac{1}{2}$ ft. close to 4 ft. spot found during hydrography. This 4 ft. spot evidently old blue.

Found $10\frac{1}{2}$ ft. to southward - Cleared drag and proceeded; further dragging in this area not considered essential.

Position of old rock should have been covered with drag at a lesser depth in order to definitely disprove it. Item (5) on page 4 of Descriptive Report says a low water examination was made without seeing any rock. The old rock symbol was found to have been indefinitely located from the records of #15 (1836-7) and will be removed from chart. P.L.

- #29 Found 4 ft. spot about 100 meters WNW from old red
 6-3/4 ft spot. Hydrography verified old red soundings about this spot.
 #30 Found 16 1/2 ft. near old red 17 1/4 ft.; also 11' about 100 meters to N.W.
 #31. Found 14 ft. close by old blue 15 ft. spot - Cleared with
 13 ft. - Found 12 ft. near old red 15 ft.
- 32 (a) Cleared old green 23 ft. spot with 22 ft.
 32 (b) Cleared old green 31 ft. spot with 29 1/2 ft. drag.
33. Found 26 close by old green 26 and old red 25 ft spots.
 Cleared this and other 26 and 28 ft. soundings with 23 1/2
 ft.
34. Found 7 ft. - Cleared with 6 ft. strip.
35. Found 5 ft. near old red 2 and green 3 ft. spots. Cleared
 shoal sounding, this vicinity (2-3-4-5 1/2 ft) with 4-5 ft. strip.
The position of the 3 foot rock shown on H. 16832 (1894) was not cleared.
36. Found 18 ft. (Hydrography) on old blue 19 ft. spot - Cleared
 with 17 ft. strip.
 Found 4 ft. by old red 3 ft. (Both drag and Hydrography).
37. Examining area with numerous old blue sunken rocks and
 red rocks awash. Sweeping drag about anchored position of end launch/
 Sounding and clearing grounds; only method to examine such an area. Rocks
 awash found during low water examination.
39. Found 4 ft. close by old green 4 ft. spot.
41. Found 9 1/2 ft. on black (present hydrography) 12 ft. spot-
 Determined limits foul area by wrapping with 6 ft. drag. Found 3 ft on
 old red 2 1/2 ft spot.
- #42. Old blue 23 ft. sounding cleared by 28 ft. strip one
 direction and 30 ft. strip opposite direction.
43. Old red: 7 1/2 ft. spot - Cleared by 11 ft. one direction
 and 11 1/2 ft. opposite direction. *Insufficiently covered. Idg may be out of position and
 still intact. S.M.A.*
- #44. Minimum 8 ft. sounding found during present hydrography
 Cleared by 7 ft. strip. Old blue sunken rocks in area cleared by this strip.
*This strip should have been extended in N.E. direction in order to verify or disprove the 4 and 6 ft idg
 (H. 16832-1901)*
45. Found 12 1/2 ft. close by old blue 14 ft. - Cleared with 11 ft.
46. Determined limits of shoal area off east side Hen Island-
 Cleared old red 1-3/4 ft spot with 5 ft. drag - Carried
 drag strip. inshore to grounding.
 Found 1 and 2 ft spots inshore from grounding.
47. Found 3 1/2 ft. on old red 4 ft. spot.
48. Disproving a questionable 7 ft. sounding- A drag strip with
 8 1/2 ft. effective depth was put out in mid-channel on high water and dragged
 cross-channel both directions - See Record.
 A range was placed on shore to control the strip to insure
 dragging over the correct position.
7 ft sounding pos 86 a a (red) H. 54132 (1933) was omitted. See note pos 6 ft (brown), H. 54132 (1933)
 Areas marked # are well developed by hydrography.

FURTHER COMMENT RELATIVE AREA #13

The failure of drag strips with apparent effective depths of 31 and 32 feet respectively to ground on a 30 ft. shoal in this area might be considered basis for doubting the efficiency of the drag for detecting shoals. It is not believed that any such doubt should be entertained. *Explanation given in Item #13 drag report is plausible. Greater discrepancies occur in the wire drag survey #5078 (1950). Drag strips grounded on some shoals when going in one direction but cleared the same shoal when approached in the opposite direction.*

This particular dragging was one of the last cleanup items accomplished during cold weather just before the close of the seasons work in Long Island Sound. General packing and preparation for moving to Miami, Florida were in progress at the time and the smooth plotting was not accomplished until some time after reaching Miami. Instructions for the work were to clear ~~up~~ the 30 ft. spot with a 29 ft. drag strip and Mr. Okeson the officer in direct charge of the work did not report any inconsistencies. It is believed there may be a more definite explanation than noted above but Mr. Okeson did not accompany the party to Miami.

In this connection it might be worth while calling attention to the excellent agreement between effective depths and groundings throughout the sheet, particularly to such areas as Nos. 9 and 18-19 where dragging was to deeper depths. These areas involved a 25 ft. strip grounding on 24½ ft., a 21 ft strip grounding on a 20½ ft., a 24 ft. strip grounding on a 23 ft. spot, etc etc.

STATISTICS

Miles Statute	Positions	Soundings	Area
17.1	405	118	0.9 sq.stat.

Respectfully submitted

Harold A. Cotton

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

P.O. Box 468, Miami, Florida

Miami, Fla.,
March 13, 1934.

To: The Director,
U.S. Coast and Geodetic Survey,
Washington, D.C.

From: Harold A. Cotton, Lieutenant Commander,
U.S. Coast and Geodetic Survey.

Subject: Chart No. 222 - Nine foot sounding off Larchmont Breakwater.

Chart number 222 shows a nine (9) foot sounding 275 meters northeast of the light on Larchmont Breakwater.

During our past seasons work in Long Island Sound, Mr. Okeson investigated this area with a drag altho without instructions to do so as the spot was not indicated as requiring verification on the boat sheet prepared in the Washington Office.

Mr. Okeson grounded in exactly this position and secured several twelve (12) foot soundings about this spot but nothing as shoal as nine (9) feet. After sounding over the area, Mr. Okeson cleared it with a eleven (11) foot drag strip.

There was zero tide when Mr. Okeson took the above soundings and he is generally quite adept in securing the least water on a shoal. Under the conditions (shallow depth - small drag wrapped about shoal and zero tide), there would seem a good chance that he would secure the least depth, irrespective of the fact that he later cleared the spot with a eleven (11) foot drag strip.

In view of the above, this is to inquire if the above nine (9) foot sounding is fully substantiated.

Harold A. Cotton, Lieutenant Commander,
U.S. Coast and Geodetic Survey.

Lac

March 29, 1934

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in

2 volumes of sounding records ~~for~~ and 4 volumes of Wire Drag records for

HYDROGRAPHIC SHEET 5413 b

Locality Mamursing Island to Echo Bay, 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 David's Island

13.6 ft. below B. M. 4

5.0 ft. on tide staff at Cos Cob Harbor

10.6 ft. below B.M. 1

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

Condition of records satisfactory except as noted below:

Octy Harnner
Chief, Division of Tides and Currents

SECTION OF FIELD RECORDS

REPORT ON WIRE DRAG SHEET NO. H.5413.6

MAY 15 1934

SURVEYED IN - OCT - NOV. 1933.

CHIEF OF PARTY - HAROLD A. COTTON.

SURVEYED BY - W. F. DEANE & F. E. OKESON

PROTRACTED BY -

INKED BY - J. D. GROFF.

VERIFIED BY - W. H. BAMFORD.

- 1./ The protracting and plotting was found to have been well done.
- 2./ The soundings as inked on the smooth sheet by the field party were plotted to the nearest half foot and were so small that they were almost illegible. The soundings were replotted to the nearest foot and large enough to be legible.
- 3./ The topographic & hydrographic signals were not indicated on the smooth sheet having been checked and were therefore checked. It was found that a large number of these signals were out of position as much as ten meters - but as this

affected the plotting of the work only slightly - no wholesale change in signals was undertaken.

4./ All drag strips were outlined in black ink and the effective depths shown in red ^{to nearest half foot} - this in contrary to the instructions for plotting "drag" work - but as this work is either rope drag or pipe drag work - and not equal to the standard wire drag work - it was not considered advisable to make any changes in the color scheme.

5./ A few of the drag strips were found to have been plotted illogically. i.e. the width of the drag was plotted greater than the total length of the drag.

Where positions had been taken at launches - no explanation could be offered - but where one launch was anchored and

the other swept around with the drag - the distance between launches was made equal to the length of the drag plus the tow line lengths. (In all of these cases - the only position for the anchored launch was taken at the beginning of the drag strip.

6./ Throughout the sheet, at the beginning of each drag strip - the outline of the drag was assumed to be a straight line connecting the 1st & last buoy. This necessitated the changing of the outline of the drag as plotted by the field party.

Respectfully Submitted

Warren H. Bamford

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5413b (1933) (Rope Drag)

Manursing I. to Echo Bay, North Shore Long Island Sound, N.Y.

Surveyed in 1933

Instructions dated March 23, 1933 (H.A.Cotton)

Hand Lead Soundings - 3 Point Fix Control

Chief of Party - H. A. Cotton.

Surveyed by - W. F. Deane, F. E. Okeson.

Protracted by - R. M. Searle

Subdivision of areas by - W.F.D., F.E.O.

Verified by - W. H. Bamford.

Inked by - J. D. Groff.

1. Purpose of Survey.

This sheet covers the same area as the contemporary hydrographic survey, H-5413a (1933) and consists of examinations with the rope drag of small areas where shoal soundings were shown on old surveys. The purpose of this drag work was to verify or disprove the old sounding and to supplement the hydrographic survey but it is not intended for a complete drag survey of this area.

2. Field Plotting.

The usual amount of field plotting was only fairly well done by the field party. The drag strips were inked in black and the effective depths shown in red. The usual standard colors should have been used for both. They were not changed in the office. The soundings were inked on the sheet and were too small. They should have been plotted in pencil. The usual stamp at the bottom of the sheet was omitted and there was no record that the transfer of topographic stations had been checked in the field. They were verified in the office and some were found to be as much as 10 meters in error but were not changed as the plotting of the work was not affected.

The field party did not submit an Area and Depth Tracing and it was not thought necessary to prepare any in the office for this type of drag work.

3. Comparison with Chart 222.

Charted soundings which have been disproved by the drag examinations are listed in par. 6 in the review of the hydrographic sheet, H-5413a (1933).

4. Remarks.

The Chief of Party calls attention to the fact that in drag area #13

a 30 ft. spot was cleared by a 31 and 32 ft. drag strip. The explanation given in the drag report under item #13 is quite logical and this discrepancy is not considered any reason for doubting the efficiency of the remaining drag work. In this connection a 13 foot rock was located on the wire drag survey H-5078 (1930) which failed to hang up with 16 and 18 feet when approached in a certain direction. The only criticism of this drag work is that a few of the old soundings which they were investigating were not actually covered by the drag strips. (Drag areas #28, #15 and #44, described in par. 6 (3e), 6(10c) and 6(10d) Review of H-5413a 1933).

5. Additional Dragging Recommended.

None

6. Reviewed by R. L. Johnston, October 1934.

Inspected by - A. L. Shalowitz.

Examined and approved:

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

F. B. Borden
Chief, Section of Field Work.

L. O. Gilbert
Chief, Division of Charts.

G. W. Hude
Chief, Division of H. & T.

H5413^{a & b}

Applied to chart 222 J.M.M. Aug. 29, 1935

25 for 24, 1936
L.M.P.

chart 222 - reexamined for rocks, reefs, low water & critical depths
April 1949 - R.D.B.