6427
6428 6430
6429

6430
6427 6428
6429

Form 504
Rev. April 1935
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Topographic / *Hydrographic* } *Sheet No.* 6427 to 6430 Inc.

State New York

LOCALITY

Hudson River

Hudson Heights
Weehawken to Shady Side.
Shady side to George Washington Bridge. — Fort Washington Point
George Washington Bridge To Riverdale.
Riverdale to North End of Glenwood.

Fort Washington Point

193 9

CHIEF OF PARTY

C.M.Thomas

U. S. GOVERNMENT PRINTING OFFICE

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

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. 501

REGISTER NO. 6427

State New York

General locality Hudson River

Locality Weehawken to ~~Shady Side~~ Hudson Heights

Scale 1:5,000 Date of survey Feb. 13 - 25, 1939

Vessel Gilbert

Chief of Party C.M.Thomas

Surveyed by C.M.Thomas

Protracted by

Soundings penciled by

Soundings in ~~fathoms~~ XXXXXXX feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by

Inked by G.C. McGlasson

Verified by G.C. McGlasson

Instructions dated ~~July~~ Jan. 9, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1929

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO.

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. 502

REGISTER NO. 6428

State New York

General locality Hudson River

Locality ~~Shady Side~~ Hudson Heights to ~~George Washington Bridge~~ Fort Washington Point

Scale 1:5,000 Date of survey Mar. 1- 16, 1939

Vessel Gilbert

Chief of Party C.M.Thomas

Surveyed by C.M.Thomas

Protracted by

Soundings penciled by

Soundings in ~~XXXXXX~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by

Inked by Thomas A. Wells

Verified by "

Instructions dated ~~July~~ Jan. 9, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1929

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

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. 503

REGISTER NO. 6429

State New York

General locality Hudson River

Locality Fort Washington Point ~~George Washington Bridge~~ to Riverdale

Scale 1:5,000 Date of survey Mar. 17 - April 1, 1939

Vessel Gilbert

Chief of Party C.M.Thomas

Surveyed by C.M.Thomas

Protracted by

Soundings penciled by

Soundings in ~~XXXXXXX~~ feet

Plane of reference MEAN LOW WATER

Subdivision of wire dragged areas by

Inked by } H.F. Steyman

Verified by }

Instructions dated ~~July~~ Jan. 9, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1929

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO.

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. 504

REGISTER NO. 6430

State New York

General locality Hudson River

Locality Riverdale to North End of Glenwood

Scale 1:5000 Date of survey April 3 - 15, 1939

Vessel Gilbert

Chief of Party C.M.Thomas

Surveyed by C.M.Thomas

Protracted by

Soundings penciled by

Soundings in ~~Fathoms~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated ~~July~~ Jan. 9, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1929

Descriptive Report to Accompany

Hydrographic Surveys Nos. 6427, 6428, 6429, and 6430

Lower Hudson River

U.S.C. & G.S. M.V. GILBERT - Lieutenant Charles M. Thomas, Commanding.

January 25 - April 15, 1939.

INSTRUCTIONS: Original instructions dated January 9, 1939 and supplemental instructions dated February 28, 1939 calling for a hydrographic survey of the Hudson River from the southern limit of chart 746 (latitude 40° 46') to latitude 41° 06'.

GENERAL STATEMENT: These surveys were requested by the Navy Department for the use of the United States Fleet which was under orders to use the area as an anchorage. The finished charts were needed by the Navy by April 15, 1939. This made it necessary to do the smooth plotting and sounding reductions in the office. The positions were plotted by the writer of this report and Ensign William R. Jackson, assisted at times by Messrs. Harold F. Stegman and Harry D. Reed, Jr. Tidal reducers were entered by the Division of Tides and Currents and the fathometer corrections entered and checked by Ensign Jackson and myself. The soundings were reduced and plotted on the smooth sheets by the Section of Field Records.

Because of the fact that the field party did not do the smooth plotting or have access to the smooth sheets, this report is being written in the office. A preliminary descriptive report written by the chief of party is being used as a guide for the parts of the report which require first-hand knowledge of the field work.

At the time this report is being written the soundings have not yet been plotted on Sheet 6430 (the northernmost sheet), and it is probable that some revision of the report may be found necessary after the soundings are plotted. It is recommended that this revision be made by the verifier or reviewer of the sheet.

SURVEY METHODS: Due to the fact that the survey was made on a scale of 1:5,000, with lines spaced 20 to 30 meters and five-second soundings, some departure was made from the usual hydrographic methods in order to obtain a detailed survey of the desired degree of accuracy.

The sounding speed was generally kept at from 7-1/2 knots down to a much slower speed of two or three knots when the 12-foot curves were being developed and there was danger of the vessel touching bottom. When the depth became less than 16 to 18 feet leadline

soundings were taken; these generally checked closely with the fathometer soundings and gave the depth when in less than 12 feet.

Two recorders were used on this project at all times, one recording the 5-second soundings and position numbers opposite their respective times, while the other recorded the position numbers, angles and fixes and also for an additional check the soundings obtained for each position.

The 5-second sounding clock was used as the master of the two clocks, it being set each morning to Eastern Standard Time. At no time did this clock differ from Eastern Standard Time by more than 15 seconds, nor did the two hydrographic clocks differ by more than 1-1/2 seconds, a time comparison between them being made about every five or ten minutes.

At the beginning of the survey the chief of party, the two officers taking angles and the position recorder took their station on top of the pilot house with the two observers standing as nearly as possible over the vertical position of the transceiver, while the plotting officer, the wireless operator reading the fathometer, and the sounding recorder werestationed in the pilot house. However, on account of the severity of the weather, and in order to secure closer coordination, this method was abandoned after the first sheet was nearly completed and all operations carried out inside the pilot house.

Ranges were used when practicable but since the lines were run parallel with the axis of the river, they were seldom available except in the vicinity of George Washington Bridge where the piers and pairs of vertical suspension cables were used. For a part of the work on sheet 6429, a weighted line with multi-colored signal flags was suspended from the bridge at the base of the various uprights to serve as a front range, the rear range being taken on the Manhattan sky-line. This method was discontinued after three days on receipt of instructions from the office.

Temperatures and salinities were observed about four times each day, readings being taken at bottom, half-depth and at one fathom. In addition, one entire day was spent taking temperatures and salinities each hour in an attempt to determine the variation of salinity through a tidal cycle, but at strength of ebb it was impossible to obtain accurate readings. Comparisons of lead line and fathometer were also made about four times a day or oftener, a series of ten hand-lead soundings with corresponding fathometer readings comprising a set of observations. Many of these comparisons had to be rejected, the principal causes of error probably being strong currents, irregular bottom, and lead sinking in soft bottom.

The method used in computing the fathometer corrections is described in a separate report.

Many difficulties were encountered in the survey, chief among them being ice floes which delayed the beginning of field work for three weeks and seriously interfered with it as late as the first week in March; heavy traffic consisting chiefly of tugs, barges and ferries, which, if they did not force the GILBERT to break off a sounding line often threw it off the line by the wash of the propellers; strong cross currents; the poor maneuvering qualities of the GILBERT; lack of good ranges; and numerous fish traps, which necessitated many short lines.

CONTROL: Triangulation stations and points located by photo-topography were plotted on the boat sheets in the office. One hundred four additional signals were located by plane table triangulation. The boat sheet was used as a topographic sheet, exceptionally good intersections being obtained. The signals were located and D.M.'s and D.P.'s scaled while the sheet was new and before any great amount of distortion could take place. The signalslocated by this method are shown in blue on the smooth sheets.

The triangulation and topographic stations on sheets Nos. 6429 a and 6430 were inadvertently plotted on the boat sheets on the old North American Datum instead of the North American 1927 Datum. When this was discovered there was no time to prepare new projections, so projection intersections for the 1927 Datum were shown in red. The D.M.'s and D.P.'s were recorded from the projection for the old datum, so that a correction was necessary when they were plotted on the smooth sheets.

DANGERS: Survey 6427. The following were the only shoal spots of any consequence on this survey:

A 32-foot spot with surrounding depths of 38 to 40 feet in latitude 40° 47' 06", longitude 73° 59' 53".

A 28-foot spot in latitude 40° 48' 18", longitude 73° 58' 53"; this spot was developed on survey 6428 with no depth less than 32 feet being found. The reason for this was that the spot was dredged in the meantime by the Army Engineers as described in the paragraph "dredging" later in this report.

Survey 6428. The most outstanding obstruction found on this survey was a wrecked barge in latitude 40° 49' 46", longitude 73° 57' 26", with a least depth over it, as obtained by fathometer, of 31 feet. From the fathometer soundings the field party determined that the wreck was probably a barge about 120 feet in length. The U. S. Engineers made a wire drag examination of it and obtained a least depth of 29 feet. It was removed in April by a wrecking company and found to be a barge about 35 x 110 feet, lying right side up, with about 2 feet of mud in it.

Under the heading of "Discrepancies" in the Preliminary Report are listed some 10-foot soundings (reduced to 9 feet in the office) on the west side of the river in latitude 40° 50' 13", longitude 73° 57' 58", with surrounding depths of 15 and 16 feet which could not be verified by the development. It seems certain that this shoal spot exists since the fathometer soundings were checked by hand lead. There are two possibilities to account for this discrepancy: either the position of the line is incorrect due to an erroneous sextant angle, or the shoal is very narrow and the field party simply failed to hit it again during development. The former is suggested by the chief of party as the more probable, in his report which reads "it is possible that the positions of the previous sounding line were in error in this vicinity."

Survey 6429. Several small shoal lumps and obstructions were found on this survey, as follows:

Latitude 40° 52' 07", longitude 73° 56' 46.5", a 16-foot shoal with surrounding depths of 20 to 22 feet.

Latitude 40° 53' 28", longitude 73° 55' 54", a 16-1/2 foot shoal with surrounding depth of 22 feet.

Latitude 40° 52' 49.5", longitude 73° 55' 35", a 26-foot obstruction, apparently a wreck, with surrounding depths of 35 to 40 feet.

Latitude 40° 52' 55", longitude 73° 55' 32", a 31-foot obstruction, apparently a wreck, with surrounding depths of 35 to 40 feet.

Latitude 40° 51' 25.5", longitude 73° 56' 28", a 13-foot spot 80 meters from shore with surrounding depths of 22 feet.

Survey 6430. Latitude 40° 55' 15", longitude 73° 55' 00", a 34-foot spot in depths of 42 to 45 feet. Pos 164-165 A HJL

Latitude 40° 57' 12", longitude 73° 54' 18", an obstruction, probably a wreck with 29 feet over it in 42 to 45 feet. Pos 321 E HJL

Latitude 40° 53' 59", longitude 73° 55' 29", a 24-foot spot with surrounding depth of 30 feet. Pos 49-50 L HJL

In addition to the above there are a few lumps with 38 to 40 feet in depths several feet greater, but are not considered shoal enough to be classed as dangers.

DISCREPANCIES: Quoting from the Preliminary Descriptive Report: "At the junction of the four hydrographic sheets there are certain places where the soundings do not check with the usual degree of accuracy with the surrounding soundings, due principally to weak fixes as a result of their being so near the end of the sheet. It is hoped that better checks have been obtained after the positions and soundings

have been plotted on the smooth sheets in the Washington office than were obtained on the boat sheets."

There are only two places on the sheet junctions where there is any noticeable discrepancy between soundings on adjoining smooth sheets.

The soundings on Survey 6427, positions 141 to 144-D, are 3 to 5 feet deeper than the soundings on Survey 6428, positions 214-215-E. This is probably due to a lateral displacement in one of thelines of 15 or 20 meters. Recommend using the shallower of the two lines for charting purposes.

The soundings on Survey 6430, positions 133-134-E, do not check well with the soundings on Survey 6429 nor with adjoining lines on 6430. This is apparently due to a small error in the left angle of position 134-E. The discrepancy, however, is much smaller on the smooth sheet than on the boat sheet. Recommend that these soundings be rejected on account of uncertainty of position.

Soundings between 133E-134E rejected. Junction is now satisfactory. L.S.

Sounding line crossings are excellent, there being no discrepancies in crossings of any importance.

DREDGING: While the party was engaged in the hydrography of Survey 6427 the U. S. Engineers started dredging out the shoal within the 30-foot curve on the west side of the channel opposite Riverside Park. They had run several lines over the area before dredging was begun. By the time the dredging project was completed the party had begun hydrography on the next sheet. As it was understood that the U. S. Engineers would make an accurate and detailed resurvey of the dredged area and furnish the office with a copy, it was thought to be unnecessary to resurvey this area.

Lat. 40° 48'

FISH TRAPS: While the party was engaged on Survey 6429, shad fish traps were erected in the western two thirds of the river and caused much trouble and inconvenience. These traps are of a temporary nature, being used each year from about the middle of March to the middle of May while the shad are running and are then removed. They are composed of long poles about 25 feet apart and supporting gill nets. The distances between them vary from a few hundred yards to half a mile, and they extended from about one-fourth to two-thirds the distance across the river, being staggered in such a manner, that, in the words of the chief of party, "A sizable shad, unless it were swimming in the main channel along the east side of the river, would stand a very slim chance of reaching its destination." The traps extended as far south as latitude 40° 47' and to the northward beyond the limits of the project.

No attempt was made to locate the traps on the first three sheets on account of their temporary nature. The chief of party does

not recommend showing them on the charts but suggests that a notation might be made of them under the "CAUTION" caption, stating that numerous fish traps are planted each spring, extending from the west side of the channel almost to the New Jersey shore, the end stakes being marked usually by a flag by day and a lantern by night.

The chief of party was informed by the U. S. Engineers that they found about twenty of these fish trap stakes broken off below the surface while conducting wire-drag surveys over certain parts of the area.

COMPARISON WITH PREVIOUS SURVEYS: Owing to the fact that the latest previous surveys in this area ranged from recent surveys of limited extent by the U. S. Engineers to very old surveys (1886) by the Coast and Geodetic Survey, it was impracticable to make a direct comparison. Instead the current surveys were compared with the latest previous editions of charts Nos. 745, 746, and 747. The following changes are noted:

Survey 6427: The east half of the river from Pier 81 to Pier 93 is in general about 6 feet deeper than shown on previous editions of charts Nos. 745 and 746.

There is also deepening on the west side of the river from pier 8, Weehawken, to the northern limit of the sheet. The 30-foot curve is now along or close to the pier-head line in this area, wheras it was a considerable distance out on previous surveys. This change is probably mostly due to dredging.

There are no other changes of note on this survey. The 30 and 18-foot curves on the east side and the 18-foot curve on the west side of the river are about as shown.

Survey 6428: Some dredging has been done near the southern end of this survey, the southern tip of the middle ground having been removed. The depressions on the west side of the river from latitude 40° 49' to 40° 50' have mostly filled in. Otherwise there is little change. There are no changes of note north of latitude 40° 50' or anuwhere in the eastern half of the river.

Survey 6429: There are no changes in the general depths on this survey. The shoal lumps and obstructions described under "DANGERS" were not previously shown.

Survey 6430: Astthe soundings have not yet been plotted on the smooth sheet as this report is being written, no comparison has been made.

These surveys are not complete in that the areas close to shore and within the pier-head lines which it was impracticable to survey

with the GILBERT were not surveyed, on account of lack of time. It is planned to survey these areas at a later date.

It is recommended that these surveys, within the area surveyed, supersede all previous hydrographic surveys for charting purposes.

Respectfully submitted,

M. O. Witherbee

M. O. Witherbee
Lieutenant, U.S.C. & G.S.

H6430 H6427
H6429
H6428

TIDAL NOTES

Survey No.	Location of Gage	Latitude	Longitude	M.L.W. on Staff
6427	Pier 92, New York City	40 46.2	73 59.8	3.6
6428	Edgewater, N.J.	40 49.0	73 58.6	4.4
6429	Dyckman Street, New York City	40 52.1	73 56.0	4.2
6430	Yonkers, N.Y.	40 56.1	73 54.3	4.7

PROJECT HT-228, LOWER HUDSON RIVER, NEW YORK, N. Y.

Original Descriptive Names of Some of the Stations Previously Plotted On Boat Sheet No. 501, with Hydrographic Names Underscored and in Capital Letters.

New Jersey side

EdGEWater, Ford Motor Car Co., Tank, 1932.

Edgewater, LEVer Bros. Co., Chimney, 1932.

North Bergen, LORD Dry Dock Co.,Chy. 1932.

Triangulation Sta. STEPs, (U.S.E.) 1932.

Tower (SHAKespeare Towers)

West New York, New York Central R.R. Powerhouse CHY. 1932

West New York, Pier 7, ElEVAtor, 1932.

STAck

WEEhawken, American Diamond Lines, Pier K, Tank, 1932.

West SHOre, (U.S.E.)

Steel TRIpod (Port Authority)

New York side

RoerICH Museum, Tower, 1932.

Manhattan, HOTel Paris,Flagpole,19

DrIVE, 1932. (Triangulation Sta.)

Manhattan, SOLdiers & Sailors Mon. U.S.E. 1932.

Manhattan, HUDson Tower Bldg., Tower, 1932.

Manhattan, Interborough POWerhouse W. Chy. 1932.

MANhattan, Interborough Powerhouse E. Chy. 1932.

Triangulation Sta.SABaudo,(U.S.E.) 1932.

Manhattan, Consolidated Gas & Electric Co., GAS Holder, 1932

Manhattan, New York FIRe Dept. Pier, Watch Tower, 1932.

TABLE OF STATISTICS.

Hydrographic Surveys Nos. 6427,6428,6429,6430.

Survey	Statute Miles.	Soundings.	Positions.
6427	155.6	16,437	1,436
6428	234.9	24,662	2,292
6429	290.2	27,620	2,479
6430	299.0	26,536	2,651

PROJECT HT-228, LOWER HUDSON RIVER, NEW YORK, N. Y.

Hydrographic Names and Co-ordinates of Stations Located Graphically on Boat Sheet No. 501.

New Jersey side					New York side				
Name of Station	Lat.	(Meters)	Long.	(Meters)	Name of Station	Lat.	(Meters)	Long.	(Meters)
MAZ	40°48'00"	636.0	73°59'00"	95.2	NIK	40°48'00"	430.4	73°58'00"	507.8
ALI	40-48-00	330.6	73-59-00	499.4	OLE	40-48-00	39.1	73-58-30	05.7
ZEL	40-47-30	384.8	73-59-30	89.6	PAT	40-47-30	551.0	73-58-30	237.4
JAX	40-47-00	692.8	73-59-30	469.6	TAG	40-47-30	170.2	73-58-30	441.9
RUS	40-47-00	103.9	74-00-00	37.4	JIG	40-47-00	332.8	73-59-00	257.7
LEO	40-46-30	704.7	74-00-00	226.0	FIE	40-46-30	765.6	73-59-00	412.1
EL	40-46-30	382.8	74-00-00	419.2	ETA	40-46-30	513.9	73-59-30	32.0
FOR	40-46-30	121.6	74-00-00	579.2	ESE	40-46-30	185.1	73-59-30	119.6
IMP	40-46-00	782.9	74-00-30	24.8	DAD	40-46-30	37.6	73-59-30	208.9
					CAT	40-46-00	794.1	73-59-30	418.3
					CEN	40-46-00	510.8	73-59-30	562.6
					BIO	40-46-00	159.5	74-00-00	92.2
					EYE	40-46-00	23.4	74-00-00	149.5
					USE	40-45-30	786.5	74-00-00	219.0
					ATE	40-45-30	575.4	74-00-00	345.6
					AGA	40-45-30	447.0	74-00-00	419.1

Scaled by F.J.B.
Checked by C.M.T.
Copy " " C.M.T.

6428

PROJECT HT-228, LOWER HUDSON RIVER, NEW YORK, N. Y.

Hydrographic Names and Co-ordinates of Stations Located Graphically on

Boat Sheet No. 502, and also Triangulation Stations Used, showing Hydro. Name.

* *

WEST SIDE (New Jersey Shore).

SIGNAL	LATITUDE & LONGITUDE	METERS.
MAZ	(See Boat Sheet No. 501.)	
GEW	(Tri. Sta. EdGEWater, Ford Motor Car Co., Tank, 1932.)	
COAL	40° 48' 30"	272.4
	73 58 30	511.9 (1913)
ODA	40 48 30	515.0
	73 58 30	381.2
MID	(Tri. Sta. Edgewater, Archer-Daniels MIDland Co., Tank, 1932.)	
LUM	(Tri. Sta. Edgewater, United States ALUMinum Company, Chimney, 1932.)	
DIX	40° 49' 00"	319.2
	73 58 30	74.4
MES	40 50 00	281.7
	73 58 00	90.2
YOT	40 50 00	574.7
	73 58 00	140.2
BAR	40 50 30	64.0
	73 57 30	676.4
SON	40 50 30	572.2
	73 57 30	437.6
ROK	40 50 30	814.5
	73 57 30	260.0
GEO	40 51 00	186.2
	73 57 30	138.2
SIG	40 51 00	662.2
	73 57 30	19.9
SEE	40 50 00	204.6
	73 58 00	121.5
POL	40 50 00	82.3
	73 58 00	585.4
YEL	40 50 00	418.0
	73 58 00	346.8
MUN	40 49 30	123.4
	73 58 00	663.2
CAR	40 48 00	900.7
	73 58 30	669.1
ZOL	40 48 00	629.0
	73 59 00	103.3
OUS	40 49 30	676.0
	73 58 00	348.0
EFF	40 49 00	808.0
	73 58 00	545.0

EAST SIDE (Manhattan Shore.)

SIGNAL	LATITUDE & LONGITUDE	METERS.
JEF	△(JEFferson Hook Lighthouse, 1930.)	
ZOO	40° 50' 30"	4470.8
	73 56 30	441.4
WAR	40 50 00	867.2
	73 56 30	521.8
VAY	40 50 00	611.3
	73 56 30	602.4
OFF	40 50 00	320.2
	73 57 00	52.1
SAD	40 49 30	569.7
	73 57 00	270.3
IPA	40 49 30	266.2
	73 57 00	410.4
HIT	40 49 00	885.5
	73 57 00	571.0
GAG	40 49 00	478.8
	73 57 30	281.1
HAT	(Tri. Sta. ManHATtan Consolidated Gas & Elec. Co. Riverside Drive Gas Holder, 1932.)	
LAM	40° 49' 00"	190.6
	73 57 30	428.7
OME	(Tri. Sta. Manhattan, Grant's Tomb, DOME, 1911.)	
RIV	(Manhattan, RIVerside Baptist Church, Tower, 1932.)	
QUO	40° 48' 30"	268.7
	73 58 00	94.0
RIP	40 48 00	699.9
	73 58 00	348.6
NIK	(See Boat Sheet No. 501).	
OLE	" " " " "	
ICH	(Tri. Sta. Roerich Museum, Tower.)	

* *

WEST SIDE, Cont'd.

SIGNAL	LATITUDE & LONGITUDE	METERS.
MIN	40 49 00	308.5
	73 58 30	203.8
VAL	40 49 00	01.4
	73 58 30	165.9
SUG	(Tri. Sta. Edgewater National SUGar Refining Co., Chimney, 1911)	

Note: The above stations should cover all that were used on Sheet 502. If not, please advise me at once, giving names of additional stations needed. C.M.T.

Scaled by F.J.B. Checked by

6429

HYDROGRAPHIC NAMES AND CO-ORDINATES OF STATIONS LOCATED GRAPHICALLY ON BOAT SHEET, FIELD NO. 503, ON THE EAST SIDE OF THE HUDSON RIVER.

PROJECT: HT-228. LOCALITY: NEW YORK CITY; LOWER HUDSON RIVER.

* *

NAME OF STATION	LATITUDE	(METERS)	LONGITUDE	(METERS)	
RAL	40-53-30	827.5	73-54-30	673.5	
RIV	(Triangulation Station RIV, 1930)				
LAK	40-53-30	307.0	73-55-00	168.4	
SEC	40-53-00	821.5	73-55-00	207.5	
NIG	40-53-00	382.0	73-55-00	376.5	
MAT	40-52-30	893.0	73-55-00	518.5	
FUL	(Triangulation Station FULTON MONUMENT, 1898.)				
LIK	40-52-30	573.5	73-55-00	657.9	
KEL	40-52-30	222.0	73-55-30	211.0	
JAP	40-52-30	35.0	73-55-30	392.0	
HIP	40-52-00	630.5	73-55-30	540.0	
FOG	40-52-00	341.5	73-55-30	653.0	
GED	40-52-00	155.0	73-55-30	658.0	
SQA	40-51-30	737.4	73-55-30	591.4	
DOK	40-51-30	719.0	73-56-00	115.0	
CAN	40-51-30	430.0	73-56-00	245.0	
ORT	40-51-30	388.0	73-56-00	61.5	
BIT	40-51-30	187.5	73-56-00	359.0	
DRI	(Triangulation Station RIVERSIDE DRIVE FLAGPOLE, 1930.)				
OLA	40-51-00	830.0	73-56-00	251.8	Station "CupOLA"
ABU	40-51-00	616.0	73-56-00	565.8	
JEF	(Triangulation Station JEFFERIES HOOK LIGHTHOUSE, 1930.)				

NOTE: THE ABOVE STATIONS, AND ALSO THOSE ON THE WEST SHORE, WERE PLOTTED FROM THE NORTH AMERICAN PROJECTION SHOWN ON THE BOAT SHEET WITH FULL BLACK LINES. THE 1927 " " DATUM WAS NOT USED. C.M.T.

Plotted by C.M.T.
Checked by F.N.

6429

HYDROGRAPHIC NAMES AND CO-ORDINATES OF STATIONS LOCATED GRAPHICALLY ON BOAT SHEET, FIELD NO. 503, ON THE WEST SIDE OF THE HUDSON RIVER, THE STATIONS USED ON MARCH 17th & 20th, AND MOST OF THOSE USED ON MARCH 21st, 1939.

PROJECT: HT-228. LOCALITY: NEW YORK CITY; LOWER HUDSON RIVER.

* *

NAME OF STATION	LATITUDE	(METERS)	LONGITUDE	(METERS)
KAO	40-54-00	925.4 737.2 (188.0)	73-55-30	702.1 625.6 (76.5)
OOP	40-54-00	448.6	73-55-30	702.1 650.0 52.1
JAR	40-54-00	1166.5	73-56-00	108.0
ILK	40-53-30	925.4 814.9 110.5	73-56-00	204.2
ILE	40-53-30	490.9	73-56-00	290.2
HAM	40-53-00	925.4 528.2 397.2	73-56-00	702.3 619.8 82.5
GOB	40-52-30	925.4 713.1 212.3	73-56-30	214.4
ARM	40-52-30	384.6	73-56-30	340.3
LAG	40-52-30	109.1	73-56-30	448.4
EBB	40-52-00	522.1 (403.3)	73-56-30	702.5 674.0 28.5
(LIN)	(Triangulation Station LIN, 1930)			
DOT	40-51-30	319.3	73-57-00	345.1
CAB	40-51-30	125.3	73-57-00	702.6 420.7 291.9
SIG	(Located on Boat Sheet No. 502)			
GEO	" " " " " "			

NOTE: CO-ORDINATES FOR THE ADDITIONAL STATIONS WILL BE TRANSMITTED AS THE STATIONS ARE USED.

THE ABOVE STATIONS WERE PLOTTED FROM THE NORTH AMERICAN PROJECTION SHOWN ON THE BOAT SHEET WITH FULL BLACK LINES (Red on Smooth Sheet.

CO-ORDINATES PLOTTED BY C.M.T.
" CHECKED BY F.J.B.

Note: The flagpole plotted on Boat Sheet No. 503, on west side of River near Dyckman St. Ferry Dock, is probably identical with our signal LAG. The difference between our position of LAG and the Office position of the flagpole is approximately the same as the difference between the two projections shown in black & red. It seems possible that there is a G. P. available for LAG which was used in connection with the wrong datum in plotting the control on the Boat Sheet No. 503.

80 KTA
20 JSP

6430

HYDROGRAPHIC NAMES AND CO-ORDINATES OF STATIONS LOCATED GRAPHICALLY ON BOAT SHEET, FIELD NO. 504, ON THE WEST SIDE OF THE HUDSON RIVER.

PROJECT: HT-228. LOCALITY: NEW YORK CITY, LOWER HUDSON RIVER.

Datum: North American (Not 1927)

1929 MAR 31 AM 9 28

NAME OF STATION	LATITUDE	(METERS)	LONGITUDE	(METERS)
JAR	(Located on Boat Sheet No. 503.)			
OOP	" " " " " "			
KAO	" " " " " "			
ANK	40-54-30	184.9 m.	73-55-30	520.5m.
BIM	40-54-30	553.5	73-55-30	412.6
CUL	40-54-30	793.7	73-55-30	262.8
DAF	40-55-00	175.9	73-55-30	212.1
EPI	40-55-00	565.7	73-55-30	145. 8
EGG	(Triangulation Station EGG 2,1930.)			
FOX	40-55-00	888.4	73-55-30	121.2
GAB	40-55-30	232.7	73-55-30	37.1
HEX	40-55-30	802.2	73-55-00	640.0
IOT	40-56-00	225.5	73-55-00	577.1
JAY	40-56-00	772.3	73-55-00	334.2
KIK	40-56-30	313.0	73-55-00	147.6
MAS	40-56-30	463.2	73-55-00	133.7
LOP	40-56-30	684.2	73-55-00	136.3
NUT	40-57-00	300.1	73-55-00	32.3
OUK	40-57-00	767.8	73-54-30	544.7

702.0
577.0
125.0

Plotted by FJB.
Checked by JPL.

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. H6427

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

Number of positions on sheet	143.6
Number of positions checked	34
Number of positions revised	0
Number of soundings recorded	16,437
Number of soundings revised	118
Number of soundings erroneously spaced	0
Number of signals erroneously plotted or transferred	0

Date: January 18, 1940

Verification by G.C. McGlasson Time: 11 days

Review by J.A. McCormick 1/22/40 Time: 18 hrs.

2629

HYDROGRAPHIC SURVEY NO. 6427

Smooth Sheet One

Boat Sheet One

Records; Sounding 16 Vols., Wire Drag ___ Vols., Bomb ___ Vols.

Descriptive Report Yes

Title Sheet Yes (Made in the office)

List of Signals Yes

Landmarks for Charts (Form 567) None

Statistics Yes

Approved by Chief of Party No

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service (Circular Nov.30, 1933) None

Hydrography: Total Days 8 ; Last Date XXXX Feb. 25 1939

Remarks

2776

	Remarks	Decisions
1		407 740
2		407 740
3		407740
4		408 739
5	USGB decision	408739
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HYDROGRAPHIC SURVEY NO. 6428

Smooth Sheet Yes

Boat Sheet Yes

Records; Sounding 15 Vols., Wire Drag ___ Vols., Bomb ___ Vols.

Descriptive Report Yes

Title Sheet Yes (Made in the office)

List of Signals Yes (In the descriptive report)

Landmarks for Charts (Form 567) None

Statistics Yes

Approved by Chief of Party No

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service None
(Circular Nov.30, 1933)

Hydrography: Total Days 10 ; Last Date March 16, 1939

Remarks

2776

GEOGRAPHIC NAMES

Survey No. H- 6427

Name on Survey	A, On Chart No. 746	B, On previous survey No.	C, On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Weehawken	✓									1
Days Point	✓									2
Hudson Heights	Shaddyside									3
Hudson River	✓									4
New York City	✓									5
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Names underlined in red approved by GTE on 7/28/39

M 234 √

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. H6428

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

Number of positions on sheet	2292
Number of positions checked	35
Number of positions revised	0
Number of soundings recorded	24,662
Number of soundings revised	33
Number of soundings erroneously spaced	9
Number of signals erroneously plotted or transferred	0

Date: Feb. 10, 1940

Verification by Francis B. Kelly Time: 103 hrs.

Review by J.A. McCormick 2/14/40 Time: 11 hrs.

2629

	Remarks	Decisions
1		408 739
2		408 739
3		408 739
4		408 739
5	USGB decision	
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M 234

GEOGRAPHIC NAMES

Survey No. H - 6428

Name on Survey	A, On Chart No.	B, On previous survey No.	C, On U. S. quadrangle Maps	D, From local information	E, On local Maps	F, P. O. Guide or Map	G, Rand McNally Atlas	H, U. S. Light List	K,	
Hudson Heights	shady side									1
George Washington Br.	✓									2
Hudson River	✓									3
Edgewater	✓									4
New York City	✓									5
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Names underlined in red approved by GRE on 7/28/39

M 234 YR

HYDROGRAPHIC SURVEY NO. 6429

Smooth Sheet Yes

Boat Sheet Yes

Records; Sounding 17 Vols., Wire Drag ___ Vols., Bomb ___ Vols.

Descriptive Report Yes

Title Sheet Yes (Made in the office)

List of Signals Yes (IN the descriptive report)

Landmarks for Charts (Form 567) None

Statistics Yes

Approved by Chief of Party No

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service None
(Circular Nov.30, 1933)

Hydrography: Total Days 11 ; Last Date April 1, 1939

Remarks

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. H6429

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

Number of positions on sheet	2479
Number of positions checked	17
Number of positions revised	0
Number of soundings recorded	27620
Number of soundings revised	59
Number of soundings erroneously spaced	14
Number of signals erroneously plotted or transferred	0

Date: March 4, 1940.

Verification by H.F. Stegman, J.A. McCormick — Time: 10½ hr. 9 hr.

Review by J.A. McCormick — Time: 12 hr.

	Remarks	Decisions
1		USGB decision
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M 234		

GEOGRAPHIC NAMES

Survey No. H - 6429

Name on Survey	A, On Chart No. 281	B, On previous survey No.	C, On U. S. quadrangle Maps	D, From local information	E, On local Maps	F, P. O. Guide or Map	G, Rand McNally Atlas	H, U. S. Light List	K,	
Fort Washington Point	746									1
Spuyten Duyvil Cr.	✓									2
Riverdale	✓									3
Hudson River	✓									4
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Names underlined in red approved by GHE on 7/28/39

M 234

HYDROGRAPHIC SURVEY NO. 6430

Smooth Sheet Yes

Boat Sheet Yes

Records; Sounding 19 Vols., Wire Drag ___ Vols., Bomb ___ Vols.

Descriptive Report Yes

Title Sheet Yes (Made in the office)

List of Signals Yes (In the descriptive report)

Landmarks for Charts (Form 567) None

Statistics Yes

Approved by Chief of Party No

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service None
(Circular Nov.30, 1933)

Hydrography: Total Days 11 ; Last Date April 15,1939

Remarks

2776

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. H6430

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

Number of positions on sheet	2651
Number of positions checked	26
Number of positions revised	10
Number of soundings recorded	26536
Number of soundings revised	41
Number of soundings erroneously spaced	11
Number of signals erroneously plotted or transferred	—

Date: 4/17/40

Verification by H.F. Stegman — Time: 21 days 3hours (150 hours)

Review by [signature] — Time: 26 hours

2629

	Remarks	Decisions
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4	USGB decision	
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GEOGRAPHIC NAMES

Survey No. H - 6430

Name on Survey	A, On Chart No. 261	B, On previous survey No.	C, On U. S. quadrangle Maps	D, From local information	E, On local Maps	F, P. O. Guide or Map	G, Rand McNally Atla.	H, U. S. Light List	K,	
Riverdale	✓									1
Glenwood	✓									2
Hudson River	✓									3
Yonkers	✓									4
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Names underlined in red approved by GHE on 7/28/39

M 234

X4C

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

August 8, 1939.

Division of Hydrography and Topography:

✓Division of Charts: Attention: Mr. H. R. Edmonston

Plane of reference approved in
10 volumes of sounding records for

HYDROGRAPHIC SHEET 6427

Locality Weehawken to Shady Side, Hudson River

Chief of Party: C. M. Thomas in 1939
Plane of reference is mean low water reading
3.6 ft. on tide staff at Pier 92, West 52nd Street
10.6 ft. below B. M. 1

Height of mean high water above plane of reference is 4.2 ft.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 154327

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

August 8, 1939.

Division of Hydrography and Topography:

✓ Division of Charts: Attention: Mr. H. R. Edmonston

Plane of reference approved in
10 volumes of sounding records for

HYDROGRAPHIC SHEET 6428

Locality Shady Side to Geo. Washington Bridge, Hudson River

Chief of Party: C. M. Thomas in 1939
Plane of reference is mean low water reading
4.3ft. on tide staff at Edgewater, N. J.
12.1ft. below B. M. B 47 (U.S.E.)

Height of mean high water above plane of reference is 4.1 ft.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 154227

DAC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

August 8, 1939.

Division of Hydrography and Topography:

Division of Charts: Attention: Mr. H. R. Edmonston

Plane of reference approved in
11 volumes of sounding records for

HYDROGRAPHIC SHEET 6429

Locality Geo. Washington Bridge to Riverdale, Hudson River

Chief of Party: C. M. Thomas in 1939
Plane of reference is mean low water reading
4.2 ft. on tide staff at Dyckman St., Hudson River
10.7 ft. below B. M. 1

Height of mean high water above plane of reference is 3.8 ft.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 154327

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

August 8, 1939.

Division of Hydrography and Topography:

Division of Charts: Attention: Mr. H. R. Edmonston

Plane of reference approved in
12 volumes of sounding records for

HYDROGRAPHIC SHEET 6430

Locality Riverdale to North End of Glenwood, Hudson River, N. Y.

Chief of Party: C. M. Thomas in 1939
Plane of reference is mean low water reading
4.7 ft. on tide staff at Yonkers
17.7 ft. below B. M. 2

Height of mean high water above plane of reference is 3.6 ft.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 154327

FORM M-238

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT
~~PHOTOSTATIC OF~~

No. H 6427 to 6430 Incl.

~~No. T~~

received
registered July 20,1939
verified
reviewed
approved

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE		Initial	Attention called to
20			
22			
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62			
63			
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83			
88			
90			

RETURN TO

82	Lt. Reed

✓ 7/30

January 18, 1940

Report on H 6427
Verifying and Inking

1. Shoreline and Signals.

The shoreline and topographic signals originate with Supplemental T 5448, T 5449, T 5452, and T 5453. The hydrographic signals were located by plane table triangulation. The boat sheet was used as a topographic sheet and the D.M's and D.P's were scaled while the sheet was new and before any great amount of distortion could take place. The above signals were plotted on the smooth sheet.

2. Depth Curves.

The usual depth curves may be satisfactorily drawn within the limits of the survey.

3. Sounding Line Crossings.

Satisfactory.

4. Junction with Contemporary Surveys.

This sheet joins H 6428 (1939) on the north and the junction will be made when that sheet is verified and inked.

5. Condition of Survey.

Satisfactory.

6. Field Plotting.

The plotting was done in the office and it is satisfactory.

7. Note to Reviewer.

In Lat. 40° 48.3', Long. 73° 58.8'. Volume 7S - Page 43 - Position 120, E day. There is recorded a 28 foot sounding. This shoal was investigated on H 6428(1939) with no depth less than 32 feet. This shoal was dredged by the U.S. Army Engineers and apparently removed prior to the Survey of H 6428(1939).

Respectfully submitted,

G. C. McGlasson

Verifiers report on H 6428 (1939)

The records conform to the requirements of the General Instructions. ✓

The soundings in red are from Supplemented T 5448, T 5451, T 5452, and T 5453 ✓

The signals in blue were located by plane table on the boat sheet and transferred to the smooth sheet before it was used for hydrography so that the distortion should be negligible.

This survey joins H 6429 (1939) on the north ✓ and the junction will be made when that sheet is verified.

a brief junction was made on the south with H 6427 (1939) because H 6428 shows hydrography after dredging was accomplished in the area where the surveys overlap. Revised to show part of overlap.

The obstruction (Chart Dept 31) shown in lat 40° 49' 45" was removed in April 1939. ✓

In general the crossing lines agreed very well.

Numerous wrecks & bottom characteristics were found in the records but not plotted on the sheet. ✓ all bottoms however were added to the sheet by the verifier

Frances A. Kelly
Feb 10, 1940

VERIFICATION REPORT ON H-6429 (1939)

CONDITION OF RECORDS:

Neat and legible. The soundings and position fixes are recorded in separate volumes since the 5 second sounding interval and one minute position interval made it impossible for one man to do all the recording. The details of the procedure followed are discussed in the Descriptive Report.

The Descriptive Report was written in the Washington office after the sheet had been protracted and plotted. It is combined with the Descriptive Reports of H-6427, H-6428, and H-6430 (1939).

SHORELINE AND SIGNALS:

Shoreline and topographic signals are from Topographic maps T-4567a, T-4568a, T-4569a, T-4570 and T-5451. Signals inked in blue were located on the boatsheet by planetable.

DEPTH CURVES:

Satisfactory.

SOUNDING LINE CROSSINGS:

VERY good.

JUNCTIONS WITH CONTEMPORARY HYDROGRAPHIC SURVEYS:

A satisfactory junction was made with H-6428 (1939) which joins H-6429 near Fort Washington Pt.

PROTRACTING AND PLOTTING:

Satisfactory.

Respectfully submitted,

Harold F. Stegman

Mar. 4, 1940

VERIFICATION REPORT
H-6430 (1939)

CONDITION OF RECORDS

The records are neat and legible, and conform to the requirements of the hydrographic manual.

The Descriptive Report is combined with the reports of H-6427, H-6428, and H-6429 (all of 1939). It was written in the Washington Office before the smooth plotting of H-6430 was accomplished. In addition to the shoals mentioned under "Dangers" on page 4 of the Descriptive Report, attention is called to the following:

A shoal with least depth of 41 feet falling in depths of 47 to 50 feet. Pos. 202-203 B ϕ - 40°-54'-16", λ - 73°-55'-07".

A 36 foot spot (mentioned in the records as probably being a wreck) in depths of 41 to 44 feet. Pos. 82-83 K ϕ - 40°-56'-56", λ - 73°-54'-33".

SHORELINE AND SIGNALS.

Shoreline and topographic signals originate with Topographic maps T-4569a (1930) T-4570 (1930) T-4571 (1930) and T-4587 (1930) as corrected to conform to the field

inspection of March to May 1939.

DEPTH CURVES

Satisfactory, within the limits of this survey.

JUNCTIONS WITH CONTEMPORARY HYDROGRAPHIC SURVEYS

A satisfactory junction was made with H-6429 (1939) which joins the southern limits of H-6430 in ϕ - 40°-54'-00".

H-6430 overlaps H-5044 (1930) 1:5,000 at the northern limit of H-6430. ~~No junction was made because of the difference in dates and methods of the two surveys.~~ Junction at northern limit of H-6430 is satisfactory.

CROSSINGS

Satisfactory.

PLOTTING AND PENCILING.

Protracting of positions was satisfactory.

Plotting of soundings was accurate, but an attempt was made to plot too many soundings in congested areas, so that the verifier had to verify and ink directly from the records. This, at times, required that soundings already inked had to be removed, and thus slowed the verification.

Bottom characteristics were plotted by protracting the fathometer comparison fixes at which bottom samples were obtained.

4/17/40

Respectfully submitted
Harold F. Stegman

H6427
H6428
H6429
H6430

U. S. COAST AND GEODETIC SURVEY

PRELIMINARY DESCRIPTIVE REPORT OF HUDSON RIVER SURVEYS,

PROJECT HT-228

For

FIELD SHEETS NOS. 501, 502, 503,& 504,
COMBINED.

USC&GS. MOTOR VESSEL GILBERT,
LIEUT.CHAS. M. THOMAS,
COMMANDING.

JAN. 25th to APRIL 15th,
1939.

POST-OFFICE ADDRESS: c/o Interboro Coal Company
132nd Street and North River,
TELEGRAPH ADDRESS: New York, N.Y.

EXPRESS ADDRESS:

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

MOTOR VESSEL GILBERT

April 28, 1939

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

From: The Commanding Officer,
Motor Vessel GILBERT, C&GS,
New York, N.Y.

Subject: Preliminary Description Report of Hudson River Surveys, Project H.T.-228, for Field Sheet Nos. 501,502,503, and 504 combined.
H-6427 6428 6429, 6430

Date of Instructions: Original Instructions dated Jan. 9, 1939, and Supplemental Instructions dated Feb. 28, 1939, calling for a hydrographic resurvey of the Hudson River, New York, from the Southern limit of Chart 746,(latitude 40° 46') northward to latitude 41° 6'.

Survey Methods Used:

Due to the fact that the survey was made on a scale of 1:5000 in accordance with Paragraph 5 of the original Instructions, and with a vessel this size, somewhat of a departure was made from the usual hydrographic methods, in order to obtain a more extensive and detailed survey of the desired degree of accuracy. In accordance with Paragraphs 7 and 10, soundings were recorded every five seconds, and positions were obtained every minute and sometimes oftener. Our sounding speed was generally kept at from 7½ knots down to a much slower speed of two or three knots at times when the twelve foot depth curves were being devoloped, and there was danger of the vessel touching bottom. While devoloping these curves on each side of the river, we would also have the leadsman stand by, heaving the lead when the depths became shoaler than about 16 to 18 feet. These sounding generally checked closely with those obtained by the fathometer. These lead line soundings also gave us the depths when they became less than 12 feet, as the fathometer would, in shoaler depths, show"strays" all over the dial, the only steady flash being the initial reading.

Two recorders were used on this project at all times, one recording the 5 second soundings and position numbers opposite their respective times while the other,recording the position numbers, angles and fixes, and also for an additional check, the soundings obtained for

The Director:

each position.

The five second sounding clock was used as the master of the two clocks, it being set each morning to eastern standard time, a time tick being obtained almost every day to determine our Chronometer error. At no time during the entire survey did this clock differ from correct Eastern Standard Time by more than 15 seconds, and at no time did the two hydrographic clocks differ by more than 1½ seconds, a time comparison being made about every five or ten minutes, and if necessary the Position Recorders Clock would be set to correspond to the five-second master clock.

When the ice on the river had melted to a sufficient extent to permit hydrography to be started without too much of a risk, the two Officers taking angles, the position recorder, and myself, as a ships conner,(in accordance with the expressed desire of the Chief,Division of Hydrography and Topography,) carried on our part of the hydrography from the top side of the pilot house. The Officer doing the plotting, the wireless operator reading the fathometer, and the sounding recorder worked inside the ~~inside the~~ pilot house, our reliable inter-communications system being used while carrying on our hydrography in this manner. This was done primarily to conform with Paragraph 6 of our original Instructions, the latter part of which reads as follows: "The right angle observer and the left angle observer shall stand close together, and as near to the vertical position of the transceiver as is practicable." However due to the severity of the cold wintry weather, it was decided to try carrying on all operations inside the pilot house after our first sheet, No. 501 (H 6427 (1939)) was almost completed. This method was found to be much more satisfactory than was expected, although the angleman could not remain as close to the vertical position of the transceiver, in and about the pilot house, as they could on the top side of the same. However, this enabled us to carry on our hydrography in a much closer coordinated manner which had a decided advantage over the former method.

In order to promote among the three Officers a maximum amount of interest in the execution of this project in an accurate and expeditious manner, and also add to their ability as hydrographers, I had them take their turns each third day doing the plotting. This system was found not only much more desirable, but practically imperative, as the constant duties of one Officer plotting day after day, and the other two doing nothing but taking angles day after day when hydrography was permitted by weather, would very probably have worn down their morale and gotten their nerves on edge long before the project was completed. As it was I was most agreeable surprised at the interest manifested, and the willingness to put in plenty of hard work and long hours, in spite of the difficulties and hardships encountered on this project, by the entire ships complement. Had the weather been more favorable and the river free from ice, this project could have been completed several weeks soon-

The Director:

er than it was. On the favorable days when an unusual amount of hydrography was done, and every one aboard had worked harder than usual, the entire complement seemed much happier and in better spirits. Due to the one minute positions and 5 second soundings the two recorders would get the writers cramp on several occasions and part of the time the Ships Writer who was recording the soundings would have to stop using his right hand, and would use his left hand for recording in order to not hold up progress. This will account for the non-uniformity in the looks of many of the recorded soundings. The position recorder would keep his writing fingers taped in order to not wear off the skin.

Aditional Control

In order to supplement the control previously plotted on the boat sheets furnished by the office, 104 additional signals were located by planetable triangulation, the majority of them being built by the Bos'n of the GILBERT, who served as a one man building party most all of the time hydrography was in progress, putting forth much effort and doing an excellent job. The boat sheet was used as a topographic sheet by Lieut. Lushene, exceptionally good intersections being obtained.

Temperature and Salinities and Lead Line Comparisons

Very soon after the hydrography was started, leadline comparisons and temperature and salinity observations made, a large discrepancy of approximately 6%, was noticed between the soundings obtained by the fathometer and those obtained by the lead line, the former depths being greater due to a low velocity of from 1400 to 1445 meters per second during the project, due of course to the variation in temperature and salinity on sheet No. 501, H-6427 the water temperatures were extremely low, but the salinity greater than on any of the other sheets, due to its greater proximity to the ocean. Some of the temperatures were so low that the mercury would not rise high enough in the thermometer to register. As the hydrography progressed from Feb. 13, the first day of hydrography, to April 15th, the last day, from sheet 501 H-6427 northward up the river to sheet 504, H-6430 the average water temperature gradually increased from the sub-zero temperatures to about 6° centigrade, while the salinity gradually decreased until practically fresh water was reached on sheet 504 H-6430 as shown by the hydrometer tests, the specific gravity being 1.0000 or less depending upon the temperature of the water. In this vicinity, average velocity was approximately 1420 meters per second. Since our Dorsey Fathometer No.1 was calibrated for a velocity of 1499.6 meters per second, a correction factor of approximately 0.940 had to be applied to all the fathometer soundings to take care of the correction.

At the beginning of the project when numerous observations of temperature and salinity were being taken and recorded, the specific gravities and temperatures were so low that no graphs nor tables were available for determining the salinities. This was rather disconcerting as it was necessary for these computations to be made on Form 717, "Record

of Temperatures, Salinities, and Theoretical Velocities", and promptly transmitted to the Office. Mr. Thomas J. Hickley, Senior Radio Electrician, who was temporarily attached to this vessel during the duration of this project, made a detailed study of this problem and developed a series of graphs, some of which were used satisfactprily for the determination of salinities and velocities until another table was compiled by Lieut. Max O. Witherbee in the Washington Office, and furnished this vessel. This table gave the salinity from 0 to 28 parts per thousand, at temperatures from 0 to 10 degrees C., corresponding to apparent specific gravity of sea water from 0.99949 up to 1.02141. From this table graphs were plotted aboard this vessel which were used for obtaining the salinities during the remainder of the project. This table was very acceptable and arrived at a time when we could make good use of it.

After we got pretty well organized we made it a general practice during a full working day to take four observations for temperatures and salinities about evenly distributed throughout the day, so that accurate average velocities could be obtained for the area and time in which we were working. Lead line and fathometer comparisons were also taken and recorded each time when they could be obtained with the desired degree of accuracy, and bottom samples obtained. Ten comparisons would be taken and the average computed for each lead line - fathometer comparison. In each case when accurate comparisons were obtained, the soundings obtained by the fathometer were generally about 6% greater than those obtained by the lead line. From these comparisons an# index error of the fathometer was computed from time to time, which usually amounted to about 0.7 ft. These data were transmitted to the Office as rapidly as they were worked up.

Difficulties Encountered:

From the time the GILBERT arrived on the working grounds, at midnight of January 24, 1939, to begin this project, it seemed that we were continually confronted with difficulties. Wintry weather set in the day after our arrival, and for the following three weeks we were unable to begin hydrography due to bad weather and ice floes in the river, which continued most of the time till March 1st, after we had started on our second sheet, No. 502. We encountered more ice during the first two days we started on this sheet (H-6428) than at any time while working on Sheet No. 501, which included an area containing lots of water traffic which kept the (H-6427) ice pretty well broken up and that section of the river fairly free from it.

When we would be running through ice floes, "strays" would appear all over the dial of the fathometer, making the soundings inaccurate. Therefore such unsatisfactory conditions were avoided.

Water traffic was also very bothersome, especially on Sheet No. 501, (H-6427) which extended along the river from about West 50th Street northward to the vicinity of West 110th Street, Manhattan. Many times sounding lines had to be broken as a result of congested traffic, consisting principally of tug boats, ferry boats, various barges and car floats, etc. Even the wash from the propellers of these boats would throw us off our sounding lines when they would pass nearby, due to the large scale of 1:5000 used on this project. On account of the strong

currents in the river, sometimes with a velocity of 4 or 5 knots, we were troubled a lot with cross currents, especially in the vicinity where there were any docks which would divert the ebbing and flooding tidal currents at various angles with the axis of the river, sometimes causing eddy currents in the vicinity of the shorelines. This, in addition to the fact that the GILBERT, with her small rudder, was difficult to maneuver, and keep a straight course against the currents, was the principal cause of us not being able to keep our sounding lines straight and parallel, and our "splits" down to a minimum. On our first two sheets, Nos. 501 and 502, H-6427 H-6428 it took us longer to run our splits, to properly conform to Instructions, than it did to run all of our main sounding lines. With a vessel of this size, and on such a large scale, it was found quite difficult to get the GILBERT maneuvered properly to run the splits satisfactorily, especially when there was much of a wind or current.

The cross currents in the vicinity of various docks and piers on this project, and also in the vicinity of the George Washington Bridge and the mouth of Spuyten Duyvil Creek caused us lots of trouble in keeping straight courses for our sounding lines, resulting in many splits.

Several days before Sheet No. 503 H-6429 was completed, the shad fishermen started setting their fish traps along the New Jersey side of the river, at various places, extending from near the New Jersey shore line eastward from 1/2 to 2/3 the width of the river, and located approximately 1/3 of a mile apart and about perpendicular to the axis of the river. These traps were composed of long poles about 25 feet apart, rammed down into the bottom of the river, and supporting gill nets. On Sheet No. 503 H-6429 these were located across several of our sounding lines that needed to be split, which was very discouraging to us, and also to see the numerous fishermen extending their traps all over the west side of the river on Sheet No. 504 H-6430 before we had even gotten started on it. Furthermore, this was the side of the river that our Instructions requested to be surveyed first in case the project was delayed due to bad weather. These fish traps delayed the completion of the project by several days. Extreme care and judgement had to be exercised, especially during strong ebb tides, when running our lines perpendicular to these traps where they were fairly far apart. Fortunately a close co-ordination between the pilot house and the engine room averted any ramming and damaging of any of the traps. Where these traps were located too close together for running our lines parallel to the axis of the river, as requested in the original Instructions, our sounding lines were run parallel with the traps, special permission have been previously obtained from the Director for using this method.

It has recently been brought to my attention that the U. S. Engineer Department, while conducting their wire drag surveys in certain areas over this project, located about twenty of these fish trap poles which had been broken off between the surface of the river and the bottom during the past years when they were trying to be pulled out. It would be very improbable that these could be located with the fathometer.

Dangers:

During the course of the survey of this project several shoals and obstructions were located by the fathometer which were not previously

shown on our charts, none of any consequence, however, being found on Sheet No. 501. H-6427

The most outstanding obstruction found on Sheet No. 502, for the first time, was the wrecked barge, a notice of which was contained in Department of Commerce "Notice to Mariners", No. 13, of March 29, 1939, on page 115, described as "an obstruction about 285 yards off-shore at 145th Street, Manhattan. This obstruction appears to be the remains of an old wreck about 120 feet long with a least obtained depth of 31 feet over it." Position: 40°49' 46" N., 73°57'26" W. H-6426 A report has previously been made and transmitted to the Office regarding the way in which this wreck was found and its dimensions delineated. It will be interesting to know that when the U. S. Engineer Department, at the request of the Navy, I understand, made a wire drag of this wreck, they obtained a least depth of 29 feet over it. When it was recently removed by a wrecking company it was found to be an old barge, about 35-ft. x 110 ft., lying right side up, with about 2 feet of mud inside. This information coincides very closely with the estimated dimensions and description obtained from our fathometer soundings.

A 16-ft. shoal was located at Lat. 40°52' 07"; Long. 73°56' 46.5", with surrounding depths of about 4 feet deeper.

An 18-ft. shoal was located at Lat. 40°53' 29"; Long. 73°55' 54", with surrounding depths of 4 to 5 feet deeper.

From the nature of the soundings observed on the fathometer, wrecks or obstructions were found a short distance north of the mouth of Spuyten Duyvil Creek, at the following locations:

A 29-ft. obstruction at Lat. 40°52' 49.5"; Long. 73°55' 35", with surrounding depths of from 10 to 12 feet deeper.

A 35-ft. obstruction at Lat. 40°52' 55"; Long. 73°55' 32", with surrounding depths of 6 to 8 feet deeper.

Several other shoals of less consequence were located, notations also having been made on the boat sheets regarding most of them.

In numerous places on the west side of the river on Sheets Nos. 501 and 502, principally between the pier-heads, and in some places farther out, there many old wrecks of various descriptions, baring at different stages of the tide. Most of these were the remains of old barges, and house-boats, it being difficult in lots of cases for a decision to be made as to whether some of them were actual derelicts or still useful and seaworthy. From all appearances, it seems that a general cleanup of the entire waterfront in this vicinity would be a most acceptable project, financed either by the State or Government. In lots of places along this side of the New Jersey waterfront, it is dangerous for craft of any size to navigate in these waters, due to the large number of hidden wrecks, hidden at various stages of the tide. Due to this fact it was deemed inadvisable to take any additional chances in developing the 12-foot curve. It was also inadvisable to develop, or attempt to develop, the 12-foot curve along the east, (Manhattan) side of the river, on account of it being almost on the shore line along this section. At one place along the east shore line a short distance above the George Washington Bridge on Sheet No. 503, bottom was touched while we were slowly running our innermost sounding line along that section, the bottom shoaling up quite rapidly. At another point on the west side of the river, just north of the Fort Lee ferry slips, we slowly drifted aground in the soft

mud for a very short while, a lead line sounding being taken over the starboard (inshore) side of the vessel. When the tidal reducer was applied, the resulting sounding was only about 1½ ft., a sounding which I deemed needed an explanation, being so much shoaler than any of the others.

Before the sounding records were transmitted to the Washington Office, each page was inspected by me in search of any shoal soundings that may need development, a record of any such soundings being entered in my "Shoal" Book. Numerous soundings were found that were less than 1 and 2 feet of the depths on each side. These differences are so relatively small, that they will not be included herewith. Practically no shoals of any consequence were found on Sheets Nos. 501 and 502, with the exception of the shoal off signal MAZ, approximate latitude 40°48.3, longitude: 73°58.9', (~~figures from memory only~~), and the wreck located off 145th Street, previously mentioned. The more outstanding shoals soundings found on Sheets Nos. 503, and 504, are as follows:

Sheet 503:

"A" Day,	between Positions	61 and 62,	a 29-ft. sounding	between	a 34-ft. & 31-ft.
"B" Day;	between Positions	143 & 144,	a 21-ft.	" "	a 26-ft. & 25-ft.
"C" Day;	between "	276 & 277,	a 49-ft.	" "	a 55-ft. & 54-ft.
"D" Day;	" "	114 & 115,	a 19-ft.	" "	a 27-ft. & 28-ft.
"F" Day;	" "	50 & 51,	a 21-ft.	" "	a 24-ft. & 24-ft.
"J" Day;	at Position	48,	a 46-ft. & 39-ft. soundings	"	a 46-ft. & 46-ft.
" "	between Positions	176 & 177,	an 18-ft. sounding	"	a 20-ft. & 21-ft.
" "	" "	184 & 185,	a 24-ft.	" "	a 27-ft. & 31-ft.
" "	" "	185 & 186,	a 19-ft.	" "	a 28-ft. & 28-ft.
" "	" "	214 & 215,	a 37,34,& 32-ft.	"	a 42-ft. & 44-ft.
" "	" "	225 & 226,	a 28-ft. sounding	"	a 34-ft. & 34-ft.
" "	" "	226 & 227,	a 35-ft.	" "	a 38-ft. & 39-ft.
" "	" "	238 & 239,	a 39-ft.	" "	a 46-ft. & 47-ft.
"K" "	" "	79 & 80,	a 35-ft.	" "	a 43-ft. & 38-ft.
" "	on "	164	a 21-ft.	" "	a 25-ft. & 25-ft.
" "	between "	182 & 183,	a 24-ft.	" "	a 28-ft. & 28-ft.
" "	" "	186 & 187,	a 22-ft.	" "	a 29-ft. & 28-ft.
" "	" "	189 & 190,	a 24-ft.	" "	a 27-ft. & 27-ft.
"L" Day;	on "	6,	an 18-ft.	" "	a 27-ft. & 22-ft.
" "	between "	164 & 165,	a 38,46,& 35-ft.	"	a 44-ft. & 46-ft.

Sheet 504:

"A" Day;	between Positions	79 & 80,	a 21-ft. sounding	"	a 24-ft. & 25-ft.
" "	" "	164 & 165,	a 39,& 37-ft."	"	a 45-ft. & 48-ft.
"B" "	" "	202 & 203,	a 44-ft. sounding	"	a 53-ft. & 52-ft.
"C" "	" "	87 & 88,	a 41-ft.	" "	a 44-ft. & 44-ft.
" "	" "	114 & 115,	a 41-ft.	" "	a 44-ft. & 44-ft.
" "	" "	137 & 138,	a 40,& 42-ft. Sndgs."	"	a 47-ft. & 47-ft.
" "	" "	165 & 166,	a 31-ft. sounding	"	a 33-ft. & 34-ft.
" "	" "	197 & 198,	a 31-ft.	" "	a 33-ft. & 35-ft.
"E" Day;	" "	113 & 114,	a 38-ft.	" "	a 42-ft. & 45-ft.
" "	" "	132 & 133,	a 47-ft.	" "	a 51-ft. & 53-ft.
" "	" "	182 & 183,	a 53,& 52-ft."	"	a 59-ft. & 58-ft.
" "	" "	289 & 290,	a 50-ft.	" "	a 55-ft. & 57-ft.
" "	" "	320 & 321,	& on 321, 42,& 32ft."	"	a 49-ft. & 46-ft.
" "	" "	333 & 334,	a 47-ft. sounding	btwn.	a 52-ft. & 55-ft.

The above constitute most all of the outstanding shoal soundings on main sounding lines, Sheets 503 & 504, no fathometer corrections having been applied.

Discrepancies:

At the junction of the four hydrographic sheets, there are certain places where the soundings do not check with the usual degree of accuracy with the surrounding soundings, due principally to weak fixes as a result of their being so near the end of the sheet. It is hoped that better checks have been obtained after the positions and soundings have been plotted on the smooth sheets in the Washington office than were obtained on the boat sheets. A notation of certain discrepancies was usually made in the record books.

In Destroyer Anchorage Circle No. 213, some 10-ft. soundings were obtained on the west side of the circle. An attempt was later made to verify these soundings, several lines having been run in the vicinity of the shoal soundings, which were almost directly across the river from 150th Street, West; however, no similar shoal soundings were obtained. It is possible that the positions of the previous sounding line were in error in this vicinity.

Another condition that probably had some effect on the accuracy of the positions was the tearing down of a number of our survey signals, principally on Sheets 503 and 504, along the west side of the river, along the Palisades Park. H-6429 H-6430 It could not be learned for sure whether this Vandalism was caused by mischievous boys loafing along the Park, with idle minds, or by the shad fishermen, with shore camps in the vicinity of their traps, who were very probably irritated at us for maneuvering our vessel so near their gill-net traps while running our sounding lines, especially those perpendicular to their traps. We would not have been surprised at times to have heard rifle shots ringing out from ashore, as our maneuvers seemed to be carefully watched at all times by these fishermen, especially when we would be nearing their nets. Fortunately not a bit of damage was done to any of them. Due to the missing signals, especially the last one to the south, on the west side of the river, on Sheet 504, our fixes at times were not as strong as they would have been otherwise. H-6430 The job was so near completed at the time, it was thought unnecessary to do anymore reconstruction of signals.

Dredging:

Shortly after we started our hydrography, the U. S. Engineer Department started dredging out the shoal area within the 30-ft. depth curve just west of Battleship Anchorage Circle No. 9. We had already run several sounding lines over this area before dredging operations had begun. By the time this dredging project was completed, Sheet No. 501, H-6427 which contained this area, had been finished. As I had been informed that the Engineer Department would make an accurate and detailed resurvey of the dredged area and furnish the Washington Office with a copy of their hydrographic sheet containing same, it was deemed unnecessary to resurvey this with our fathometer.

40 48 +650
73 58 +940

Ranges:

Since the Instructions called for the sounding lines to be run parallel with the axis of the river, at specified intervals, which varied according to the depths, which would naturally seem to be the most rapid and economical manner for carrying on such a survey, the lack of ranges as a result, however, delaying our progress no

little. On Sheet 502 an attempt was made to use the two large piers and also numerous ones of the fifty-seven intervening vertical suspension cables, and their corresponding floor-beams underneath the George Washington Bridge. This bridge, with its two peirs, had already been plotted on the boat sheet. After the fifty-seven vertical cables had been counted several times from this vessel, and this number obtained without doubt, they were plotted on the boat sheet, represented by blue dots, every fifth one from the west pier being shown as a blue cross on Sheet 502. On the sounding lines where they extended a short distance south of the bridge and at right angles to it, the corresponding pairs of suspension upright cables proved to make fairly good ranges, the distance between the front and back ranges being only the width of the bridge.

When work was started on Sheet 503, permission had been received from the George Washington Bridge Division of the Port Authority of New York City to allow us the privilage of suspending a weighted line, about 100 feet lone, with multi-colored signal flags on same, to identify certain vertical uprights, which were to serve as front ranges, the rear ranges being certain sky-scrapers, and other tall structures on the Manhattan sky-line. Our Bos'n., who attended this signal line from the bridge, was given a schedule each morning, showing which vertical uprights were to be used in succession, as our sounding lines were being run up and down the river north of the bridge. These were numbered east or west from the center of the bridge. This system of forming ranges for our sounding lines was of much help to us during the three days it was being used, and expedited the completion of Sheet 503. Instructions had been received from the Washington Office to cease using this method, on account of the possibility of the signal line parting and the weight landing on a boat passing underneath the bridge. However, a line was used large enough to give a good safety factor, the upper end of the line was kept secured to the bridge at all times even when the line was being shifted between certain uprights; and river traffic in that vicinity was very light also. By the time these instructions were received, however, this method of ranging our sounding lines had served its purpose, and we no longer had use for it.

We also tried running ranges, the first day work was started on Sheet 503, obliquely across the river at a small angle with the axis of the river, this method having previously been sanctioned by the Washington Office. On account of the steepness of the Palisades on the west side of the river, and few suitable ranges to be used on the east side, this method was soon found to be unsatisfactory after having been given a fair trial. It was therefore deemed advisable to resume our original scheme of running the sounding lines parallel with the axis of the river, in accordance with the original Instructions.

Fish Traps:

The difficulties encountered due to the erection of the shad fish traps, containing the long gill nets, during the duration of our hydrographic project has been previously mentioned. These traps are only of a temporary nature, being installed each year during the early spring months, being used from about the middle of March to the middle of May, while the shad are running. They are then removed until the next shad season the following year. The dis-

tances between these traps varied from a few hundred yards up to as much as a half a mile or more, and extended from about one-fourth to two-thirds the distance across the river. They were staggered in such a manner that a sizeable shad, unless it were swimming in the main channel along the east side of the river, would stand a very slim chance of reaching its destination.

These fish traps were installed after we had almost completed Sheet No. 503. However, there were quite a few of them located on Sheets 501 and 502, the most southern trap being down in the vicinity of Latitude 40°47', No attempt was made to go back and locate the traps on these two sheets, nor on Sheet 503, since they were only of a temporary nature. In view of this fact, I would not recommend that any of them be shown on our new charts of this area. However, a notation might be made on them under the "CAUTION" caption, that numerous shad traps are planted each spring season extending from the west side of the main channel almost to the New Jersey shore line, being located at varying distances apart from a few hundred yards to a half-mile or more, the end stakes usually being marked by a flag by day and a lantern by night.

On account of a number of house boats and barges containing fish trap poles being anchored along the New Jersey shore line, west of the line connecting the scattered pier heads, it was deemed inadvisable to try to develop the 12-ft. depth curve in that vicinity, as the time spent on that part of the project would not have justified the small amount of additional hydrography obtained. Also a certain amount of risk would have been involved, as there are a number of large boulders along certain sections of this shore line at the base of the Palisades, and it is possible that we might have hit one of them which fails to bare at low water.

Field Inspection of Air Photos:

The field inspection of the air photos, taken during the month of February, 1939, by the Navy Department, who was extending its co-operation in connection with this project, a detailed hydrographic survey of the Naval Anchorage in the lower Hudson River, was accomplished along both sides of the river, from the vicinity of the southern most limit of the project, Latitude 40°46', to Latitude 40°58', just above Yonkers. Also, at the request of the Washington Office, a field inspection was made concerning landmarks for charts of this entire area. On this class of work, the Motor Vessel GILBERT, Auto Truck No. 515, Port Dinghy, with outboard motor, and private automobile were used at different times, each one having certain advantages over the other. Practically all of this work was carried on by Lieut. J. P. Lushene, and Ensign F. J. Bryant, who took much interest in it and did an exceptionally good job.

Tide Gages:

In addition to the primary tide gage, in continuous operation at the Battery, New York City, three portable tide gages had already been installed by Lieut. Fred Natella by the time this project got underway, and were immediately put in operation. These were located at the following places:

Pier No. 92, (52nd Street, West),	Latitude:	40°46.12'	Long.	73°59.87'
Dyckman Street Ferry Slip,	"	40°52.10'	"	73°55.95'
Yonkers, City Pier, Ft. Main Street,	"	40°56.10'	"	73°54.30'

At the request of the Washington Office an additional portable tide gage was established at Edgewater, New Jersey the latter part of February, on a dock of the Valvoline Oil Co., Latitude: 40°49.02' Longitude: 73°58.62', principally to obtain a connection between the datum used by the Coast and Geodetic Survey and that used by the U. S. Engineer Department. At the request of the latter, a copy of our wye leveling notes was furnished them, to give them a check on the difference between their own bench marks, saving them a trip to this vicinity to obtain this information. They were suspicious as to the permanence of the elevation of one of their bench marks, and desired a check on this difference, our difference checking their original difference quite closely.

The first three of these portable tide gages operated continuously from the time they were started till April 21, 1939, with the exception of the gage at Yonkers, which lost a few day's record due to it having gotten out of order between inspections. The gage at Edgewater, New Jersey, was operated continuously from the time it was installed until April 22nd.

It is regretted that more opportunities weren't available for inspecting these gages and making more comparative readings on the records. However, they were located so far apart and along a section of so much traffic, with one of them on the west side of the river, that it would take from 3 to 4 hours to visit and service all four of the gages. With the hydrographic party working continuously while the weather permitted, several days would sometimes elapse between visits to the gages, as it was not deemed advisable to try to service them after dark.

Lieut. J. P. Lushene did most all of the servicing, of the gages, with the exception of several times when Lieut. Natella, or some of the rest of us took over the job. Lieut. Lushene took quite a personal interest in these tide gages and the continuance and quality of the records obtained therefrom.

Recommendations:

Since it is possible that there may be other existing obstructions and wrecks between the sounding lines run on this project, and which were not discovered in spite of the proximity of the lines, it is recommended that the entire area covered by this project be wire-dragged in the near future to reassure the maritime public navigating these waters of the absence of any uncharted shoals, wrecks or obstructions. The U. S. Engineer Department, while doing a limited amount of wire-dragging over this area, located many fish trap poles that were broken off well above the bottom while they were trying to be removed by the fishermen.

Co-operation:

Excellent co-operation was obtained from the Department of Docks, the Department of Parks, and the Port Authority of New York. Also from the Inspector of our local Coast and Geodetic Survey Field Station, and the U. S. Engineer Department.

Too much credit cannot be given the officers of this vessel, Lieut. Lushene and Ensign Bryant, and also Lieut. Natella, detailed over to this project from the Division of Geodesy, as these men are the ones who carried on practically all of the actual hydrography putting in many hours of hard conscientious hydrographic labor. The Bos'n. did a noble job carrying

on a one-man building party all by himself, keeping one sheet ahead of the hydrographic party, this being a great help, as the signals would be all ready for location by plane table triangulation, which was ably and accurately accomplished in one or two days for each sheet by Lieut. Lushene.

The two recorders, Messrs. Harrison and Smith, also co-operated very heartily indeed, were greatly interested in the accuracy and progress of the work, each day hoping it would be the best day yet.

Neither can too much credit be given Warren H. Conant, Wireless Operator, for the manner in which he handled his end of the project, with the able assistance of Mr. T. J. Hickley, Senior Radio Electrician, who was also of much assistance during the time he was detailed to this project. Conant desired to concentrate on reading the fathometer at all times, as he took special interest in it at all times and preferred not taking a chance on anyone else overlooking a possible shoal sounding while substituting in his place. It was rather uncanny the way in which he could continue reading the fathometer throughout the day and continue to remain sufficiently alert to see that no shoals, wrecks, or other obstructions escaped his notice. Even when there occurred a suspicious "stray" on the fathometer, he would notify the recorder, and it would later be investigated to determine whether it might have been a shoal sounding. Since we would rarely be on any one sounding line for a longer period that 30 or 40 minutes, he would have plenty of chances to relax and rest his eyes. He seemed to think that this 5-second sounding was not as tiresome as sounding at 20 or 30-second intervals on longer lines with fewer intermissions.

Excellent and quick co-operation was obtained from the two Engineers, Merrs. Olsen and Morton, in promptly answering and responding to the pilot house telegraph, which was quite a relief, especially when doing hydrography among so much congested traffic on Sheet No. 501, and among so many fish traps on Sheets 503 and 504 during strong currents.

H 6427 (1939)

H-6429 H-6430

Last, but by no means least, the prompt and hearty co-operation and advice furnished us by the H. & T. officials of the Washington Office, and also the patience shown by them, are all most heartily appreciated.

This has proved to be a most interesting and unusual project and one to be well remembered by all parties concerned, both in the field and in the Office.

Statistics for the project will be found on the following sheet.

Respectfully submitted,

Chas. M. Thomas

(Lieut.) Chas. M. Thomas, Comd'g.,
U.S.C.& G.S.Motor Vessel GILBERT.

H6427
H6428
H6429
H6430

STATISTICS FOR SHEETS, FIELD NUMBERS
H 6427 (1939) 501 - 502 - 503 - 504 H-6430

	H 6427 (1939) 501	H-6428 502	H-6429 503	H-6430 504
STATUTE MILES	155.6	234.9	290.2	299.0
SOUNDINGS	16,437	24,662	27,620	26,536
POSITIONS	1436	2292	2479	2651

TOTAL FOR FOUR SHEETS

979.7 STATUTE MILES

95,255 SOUNDINGS

8,858 POSITIONS

TOTAL NUMBER OF HYDROGRAPHY DAYS: 40.

DIVISION OF CHARTS

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6427 (1939) FIELD NO. 501

New York, Hudson River, Weehawken to Hudson Heights
Surveyed in February, 1939, Scale 1:5,000
Instructions dated Jan. 9, 1939 (GILBERT)

Soundings:
Dorsey Fathometer

Control:
Three-point fixes on shore signals

Chief of Party - C. M. Thomas
Surveyed by - C. M. Thomas
Protracted in Washington Office
Soundings plotted in Washington Office
Verified and inked by - G. C. McGlasson
Reviewed by - J. A. McCormick, Jan. 22, 1940
Inspected by - H. R. Edmonston

1. Shoreline and Signals

Signals in red and shoreline are from topographic maps T-5448, T-5449, T-5452 and T-5453. Signals in blue were located by planetable methods on the boat sheet. Positions were scaled, listed in the descriptive report and plotted on the smooth sheet.

2. Depth Curves

Satisfactory.

3. Sounding Line Crossings

Satisfactory.

4. Junctions with Contemporary Surveys

The junction with H-6428 (1939) on the north will be considered in the review of that survey. There are no contemporary surveys on the south nor are any contemplated.

5. Comparison with Prior Surveys

H-68 (1837), 1:5,000; H-70 (1837), 1:5,000; H-71 (1837), 1:5,000; H-477 (1855), 1:10,000; H-496 (1855), 1:10,000; H-1669 (1885), 1:5,000; H-1670 (1855), 1:5,000

Changes in the area common to old and new surveys are mostly of an artificial nature. Addition of new piers and alterations to old ones, consequent dredging around pier heads and dredging of natural shoal spots on the west side of the river have been the

major contributing factors. Differences in the deeper water in the middle of the river are little more than might be expected from the different methods of sounding. The present survey supersedes the portions of the old surveys which it overlaps.

6. Comparison with Chart 745 (new print of Aug. 14, 1939)
Chart 746 (new print of Oct. 13, 1939)

a. Hydrography

Hydrography charted in the area covered by the present survey was compiled from the survey in advance of verification and from various surveys executed at frequent intervals by the U. S. Engineers. Every sounding charted in the common area has been compared with the present survey and although some revision might be desirable it is not strictly essential in view of the frequency of application of the U. S. Engineers' surveys.

b. Aids to Navigation

The spar buoy charted in lat. 40° 47.4', long. 73° 59.6' was not located on the present survey. There are no other aids in the common area.

7. Condition of Survey

Satisfactory.

8. Compliance with Instructions for the Project

Satisfactory.

9. Additional Field Work Recommended

None.

10. Superseded Surveys

H-68	in part	H-496	in part
H-70	" "	H-1669	" "
H-71	" "	H-1670	" "
H-477	" "		

Examined and approved:

Thos B Reed
T. B. Reed
Chief, Section of Field Records

J. S. Borden
Chief, Division of Charts

Raymond P. Eyman.
Chief, Section of Field Work

G Rude
Chief, Division of H. & T.

DIVISION OF CHARTS

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6428 (1939) FIELD NO. 502

New York, Hudson River, Hudson Heights to Fort Washington Point
Surveyed in March, 1939, Scale 1:5,000
Instructions dated January 9, 1939 (GILBERT)

Soundings:
Dorsey I Fathometer and
Hand Lead

Control:
Three-point fixes on shore
signals

Chief of Party - C. M. Thomas
Surveyed by - C. M. Thomas
Protracted in Washington Office
Soundings plotted in Washington Office
Verified and inked by - F. B. Kelly
Reviewed by - J. A. McCormick, Feb. 14, 1940
Inspected by - H. R. Edmonston

1. Shoreline and Signals

Shoreline and red inked signals are from topographic maps T-5448, T-5451, T-5452 and T-5453. Signals inked in blue were located by planetable methods on the boat sheet. Positions of the latter were scaled and listed in the descriptive report and the scaled values used for plotting the smooth sheet.

2. Depth Curves

Satisfactory.

3. Sounding Line Crossings

Satisfactory.

4. Junctions with Contemporary Surveys

a. An extensive overlap was made with H-6427 (1939) on the south because of dredging in the vicinity of the 28 foot shoal found in lat. 40° 48.30', long. 73° 58.88' on that survey. The area was developed on the present survey after dredging and a least depth of 32 feet found. The present survey, with the addition of selected soundings from H-6427, supersedes the overlapping portion of the latter.

b. The junction with H-6429 (1939) on the north will be considered in the review of that survey.

5. Comparison with Prior Surveys

H-68 (1837), 1:5,000	H-496 (1855), 1:10,000
H-69 (1837), 1:5,000	H-1670 (1885), 1:5,000
H-71 (1837), 1:10,000	H-1701 (1886), 1:5,000
H-408 (1853), 1:10,000	H-5041 (1930), 1:5,000

The surveys of 1837 and of 1853-55 were not as carefully executed as those of later dates but they show sufficient detail to indicate that natural changes have been of relatively minor proportions in the interim between 1837 and 1939. Surveys of 1885-86 and of 1930 are in fair to good agreement with the present survey depending, of course, on the amount of dredging and fill between surveys. There has been considerable man-made fill on the east side of the river, the old surveys showing as much as 50 feet of water back of the present high water line. Dredging has been done on the west side of the river but appears to have been confined to the area south of lat. 40° 49.5'. The present survey supersedes the older surveys in the common area.

6. Comparison with Chart 746 (new print of Oct. 13, 1939)
Chart 747 (new print of Aug. 19, 1939)

a. Hydrography

Hydrography charted in the area covered by the present survey is from H-5041 (discussed in par. 5), from surveys of the U. S. Engineers and from the present survey itself in advance of verification and review. Every sounding charted in the common area has been considered and although some few additions or deletions might be desirable they are not considered essential. It is noted, however, that several minor shoreline details on T-4848 have been omitted in charting the west side of the river between lat. 40° 49.8' and lat. 40° 49.5'. On the east side of the river, detail between lat. 40° 49.3' and lat. 40° 49.6' should be revised to agree with that on the latest supplemental of T-5452. This includes removal of four lines of piles which originated with blueprint 26461 and chart letter 358 of 1933. They do not appear on the latest photographs and it is extremely unlikely that there are stubs remaining under water because if such had been the case the GILBERT almost certainly would have struck them in sounding the area.

b. Aids to Navigation

Survey positions of navigational aids are in substantial agreement with those charted.

7. Condition of Survey

Satisfactory.

8. Compliance with Instructions for the Project

Satisfactory.

9. Additional Field Work Recommended

None.

10. Superseded Surveys

H-68	in part	H-496	in part
H-69	"	H-1670	"
H-71	"	H-1701	"
H-408	"	H-5041	"

Examined and approved:

T. B. Reed
Chief, Section of Field Records

Chief, Division of Charts

Chief, Section of Field Work

Chief, Division of H. & T.

DIVISION OF CHARTS

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6429 (1939) FIELD NO. 503

New York, Hudson River, Fort Washington Point to Riverdale.
Surveyed in March - April, 1939, Scale 1:5,000.
Instructions dated January 9, 1939 (GILBERT)

Soundings:
Dorsey III Fathometer.

Control:
Three-point fixes on shore signals.

Chief of Party - C. M. Thomas.
Surveyed by - C. M. Thomas.
Protracted in - Washington Office.
Soundings plotted in - Washington Office.
Verified and inked by - H. F. Stegman.
Reviewed by - J. A. McCormick, March 4, 1940.
Inspected by - H. R.Edmonston.

1. Shoreline and Signals.

Shoreline and topographic signals are from topographic maps T-4567a, T-4568a, T-4569a, T-4570 and T-5451. Signals inked in blue were located directly on the boat sheet by plane table methods and their positions scaled and listed in the descriptive report.

2. Depth Curves.

Satisfactory.

3. Sounding Line Crossings.

Satisfactory.

4. Junctions with Contemporary Surveys.

The junction with H-6428 (1939) on the south is satisfactory. The junction with H-6430 (1939) on the north will be considered in the review of that survey.

5. Comparison with Prior Surveys.

a. H-68 (1837), 1:5,000; H-69 (1837), 1:5,000; H-71 (1837), 1:10,000; H-408 (1853), 1:10,000; H-475 (1855), 1:10,000; H-496 (1855), 1:10,000; H-1701 (1886), 1:5,000; H-1705 (1886), 1:5,000; H-2384 (1898), 1:5,000.

The above surveys were considered in the reviews of H-5041 and H-5042 of 1930. The latter surveys are discussed in the following paragraph.

6430

ORIGINAL DESCRIPTIVE NAMES OF TRIANGULATION AND TOPOGRAPHIC STATIONS PREVIOUSLY PLOTTED ON BOAT SHEET, FIELD NO. 504, WITH HYDROGRAPHIC NAMES ACCOMPANYING THEM. THESE STATIONS ARE ALL LOCATED ON THE EAST SIDE OF HUDSON RIVER.

PROJECT: HT-228. LOCALITY: NEW YORK CITY. LOWER HUDSON RIVER.
Datum: North American Not NA 1927

* *

HYDROGRAPHIC NAME OF STA.	OFFICIAL DESCRIPTIVE NAME OF STATION, OR LATITUDE AND LONGITUDE
RIV ✓	Triangulation Station RIV, 1930. (Located on Boat Sheet 503.)
RAL ✓	" " " " "
AMI ✓	40-54-00 327.6 meters. 73-54-30 598.4 meters.
ATU ✓	Triangulation Station STATUE, 1930.
BUG ✓	40-54-30 576.8 meters. 73-54-30 297.5 meters. Note: This is not Triangulation Station MT. ST. VINCENT, 1920.
VIN ✓	Triangulation Station ST. VINCENT, 1898, 1930.
COR ✓	Triangulation Station Leake and Watts, 1921.
DIE ✓	40-55-00 631.4 73-54-30 41.5 meters.
PAR ✓	Topographic Station "APARtment Cupula".
ACK ✓	Topographic Station "StACK, South One of 3", 40-55-30 471.5 meters. 73-54-00 436.0 meters.(For identification.)
ARY ✓	Triangulation Station ST. MARY'S CHURCH SPIRE, 1921.
YON ✓	Triangulation Station CITY, YONKERS CITY HALL, 1911.
TAL ✓	Triangulation Station TALLER, 1930.
END* ✓	Topographic Station "Flagpole, End of 2nd Dock N. of Tri. Sta. TALLER". 40-56-00 203.0 meters. 73-54-00 435.5 meters.
OTI ✓	Triangulation Station OTIS STACK, 1911.
TAN ✓	Triangulation Station OTIS TANK, 1930.
MET ✓	Triangulation Station METHODIST CHURCH, 1921.
BAP ✓	Triangulation Station BAPTIST CHURCH, 1921.
TAC* ✓	Topographic Station "STACK, Dodge-Phelps" 40-56-30 644.6 meters. 73-54-00 76.5 meters.
TWI ✓	Triangulation Station TWIN, OUTER STACK, GLENWOOD POWER HOUSE, 1911.
WIN* ✓	Topographic Station "Inner Stack", 40-57-00 140.0 meters. 73-53-30 672.5 meters.

* Co-ordinates given to identify these stations, previously plotted on Boat Sheet No. 504 in Office. Stas. Plotted by FJB. & JPL.
" Checked by JPL. & CMT.

b. H-5041 (1930), 1:5,000; H-5042 (1930), 1:5,000.

The above surveys of the common area are more complete than the present survey in that they cover the inshore area omitted on the latter. Agreement of depths on old and new surveys is fair to good. Differences are small, in most cases not exceeding amounts which might be expected of the different methods of sounding. The present survey develops a few shoal spots not found on the old surveys (descriptive report, page 4). The present survey supersedes only those portions of the old surveys which it completely covers.

6. Comparison with Chart 746 (New Print of Oct. 13, 1939). Chart 747 (New Print of Aug. 19, 1939).

Hydrography charted in the area covered by the present survey was compiled mostly from this survey in advance of verification and inking. Other sources are H-5041 and H-5042, discussed in the preceding paragraph, and surveys by the U. S. Engineers south of latitude 40° 53'. Charted hydrography is satisfactory without revision. However, the following minor differences in topographic detail are noted:

a. Shark nets charted in latitude 40° 51.3', longitude 73° 57.5' and latitude 40° 51.7', longitude 73° 57.3' are not shown on the latest topographic maps nor do they appear on the photographs. They have probably been removed.

b. Piers charted in latitude 40° 51.3', longitude 73° 56.5' are now in ruins.

c. There are now large floats off the runways charted in latitude 40° 52.8', longitude 73° 56.7' and the dolphin off the north runway is 20 meters closer to the runway than charted.

7. Condition of Survey.

Satisfactory. Plotting and penciling of soundings were accomplished in the Washington Office.

8. Compliance with Instructions for the Project.

Satisfactory.

9. Additional Field Work Recommended.

None.

10. Superseded Surveys.

H-68 in part	H-1701 in part
H-69 in part	H-1705 in part
H-71 in part	H-2384 in part
H-408 in part	H-5041 in part
H-475 in part	H-5042 in part
H-496 in part	

Examined and approved:

T. B. Reed,
Chief, Section of Field Records.

Chief, Division of Charts.

Chief, Section of Field Work.

Chief, Division of H. & T.

DIVISION OF CHARTS

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6430 (1939) FIELD NO. 504

New York, Hudson River, Riverdale to North End of Glenwood
Surveyed in April 3 - 15, 1939, Scale 1:5,000
Instructions dated January 9, 1939 (GILBERT)

Soundings:
Dorsey III Fathometer.

Control:
Three point fixes on shore signals.

Chief of Party - C. M. Thomas.
Surveyed by - C. M. Thomas.
Protracted by - Washington Office.
Soundings plotted by - Washington Office.
Verified and inked by - H. F. Stegman.
Reviewed by - L. S. Straw, April 23, 1940.
Inspected by - H. R. Edmonston.

1. Shoreline and Signals.

The shoreline and topographic signals are from topographic maps (corrected up to 1939) T-4569a, T-4570, T-4571 and T-4587. Signals inked in blue were located directly on the boat sheet by plane table methods and their positions scaled and listed in the descriptive report. The scaled values were used in plotting the smooth sheet.

2. Depth Curves.

Satisfactory.

3. Sounding Line Crossings.

Satisfactory.

4. Junctions with Contemporary Surveys.

The junction with H-6429 (1939) on the south is satisfactory.

H-5042 (1930) and H-5044 (1930) run from shore to shore of the river. The soundings are in good agreement in the common area and the junctions with these surveys at the limits of the sounded area of the present survey are satisfactory.

5. Comparison with Prior Surveys.

a. H-408 (1853) scale 1:10,000; H-475 (1855), Scale 1:10,000; H-2384 (1898) Scale 1:5,000; H-2385 (1898) Scale 1:5,000.

The changes in the common area of the old and new surveys are mostly of an artificial nature. Additions of new piers and alterations of old ones as well as some dredging around pier heads and in front of bulkheads have taken place on both banks of the river. This is particularly the case at Yonkers. Differences in depths in the middle of the river are little more than might be expected from the different methods of sounding. The sunken rocks (charted in lat. 40°57.24', long. 73°55.0' on H-2385 (1898) originate with T-2359 (1898). These sunken rocks have not been disproved on any of the subsequent surveys and should be retained on the charts, otherwise the present survey should supersede the above old surveys.

b. H-5042 (1930) scale 1:5,000; H-5044 (1930), scale 1:5,000.

The above surveys of the common area are more complete than the present survey in that they cover the inshore area omitted on the latter. The depths on the new and old surveys are in good agreement and considering the different methods of sounding, the small differences that exist are not more than might be expected.

The 22 foot sounding(charted in lat. 40°56.27' long. 73°54.92') from H-5044 (1930) falls in depths of 26 to 29 feet on the present survey. This sounding is marked "OK" in the original records. The field party, after further development on H-5044 (1930) recommended in the descriptive report of the old survey that this sounding be accepted as correct and charted. Accordingly it is carried forward to the present survey.

The present survey develops several shoals not found on previous surveys, (page 4 of the descriptive report). The present survey supersedes only those portions of H-5042 (1930) and H-5044 (1930) which it completely covers.

6. Comparison with Chart No. 747 (New Print dated Aug. 19, 1939)
Chart No. 748 (New Print dated Sept.11, 1939)
Chart No. 281 (New Print dated Jun. 20, 1939)

The charts are based on surveys discussed in paragraphs 5a and b of this review, two soundings applied in advance of verification and inking from the present survey, and several soundings from H-6429 (1939) which fall in the overlapping area of the 1939 surveys.

The piles off the dock in lat. 40°56.7', long. 73°55.11' should be charted. They show plainly on the photographs (No. 92) and are plotted on T-4587 Supplemental.

Bottom characteristics from previous surveys may be retained to supplement those obtained by the present survey.

7. Condition of Survey.

The plotting and penciling of soundings were satisfactorily accomplished in the Washington Office. This survey is exceptionally well developed and contains about five times the number of soundings per unit area than the 1930 surveys.

8. Compliance with Instructions for the Project.

Satisfactory.

9. Additional Field Work Required.

No additional soundings are required within the limits of this project. See the paragraph on "Recommendations" page 11 of the descriptive report in which the Chief of Party recommends that the entire area of the project be wire dragged for wrecks or obstructions not found by the sounding lines.

10. Superseded Surveys.

H-408 (1853)	in part	H-2385 (1898)	in part
H-475 (1855)	" "	H-5042 (1930)	" "
H-2384 (1898)	" "	H-5044 (1930)	" "

Examined and approved:

Thos B Reed
T. B. Reed,
Chief, Section of Field Records.

J. B. Borden
Chief, Division of Charts.

Raymond P. Eyman.
Chief, Section of Field Work.

G Rude
Chief, Division of H. & T.

H 6428 Applied to Chart 746 and 281 10-1-40
H 6429 Applied to Chart 747 and 281 10-1-40
H 6430 Applied to Chart 747, 748, and 281 10-1-40
G. C. McGlasson

ChN 746 - H-6427 1939 - Examined - applied thru overlap Cht 745 - complete revision (except for later hydro) not considered necessary - see Review paragraph 6a A. F. Siegman May 23 1950 (H-6427 had been applied to Cht 746 before verification)