

7046

7046

Form 504	
U. S. COAST AND GEODETIC SURVEY	
DEPARTMENT OF COMMERCE	
DESCRIPTIVE REPORT	
Type of Survey	Hydrographic
Field No.	FA 05145
Office No.	H-7046
LOCALITY	
State	New York
General locality	New York Harbor
Locality	Gravesend Bay
194 5	
CHIEF OF PARTY	
Ralph L. Pfau	
LIBRARY & ARCHIVES	
DATE	NOV 2 1945

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

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.

REG. NO. H7046

REGISTER No. H-7046

Field No. FA 05145

State New York,

General locality New York Harbor.

Locality Gravesend Bay.

Scale 1 : 5000 Date of survey May 29, 1945 - August 3, 1945.

Instructions dated May 5, 1945 (Directors letter to Supervisor, Eastern District.

Vessel FARIS

Chief of party Ralph L. Pfau

Surveyed by Ralph L. Pfau

Soundings taken by fathometer, graphic recorder, hand lead, wire 808 fathometer & lead line.

Protracted by A. G. Atwill

Soundings penciled by A. G. Atwill

Soundings in ~~fathoms~~ feet at MLW ~~MLW~~

REMARKS: This sheet was processed ~~at~~ in the Hydrographic Section of the  
S.E. District, Norfolk, Va.

NOTES AND DATA FOR DESCRIPTIVE REPORT AND PROCESSING  
OF HYDROGRAPHIC SURVEY OF GRAVESEND BAY, NEW YORK HARBOR.  
Sheet Fa 05145 (Field No.)

Project.

No project number was assigned, and no detailed instructions issued. The survey was made under the instructions contained in letters from the Director to the Supervisor, Eastern District, dated May 5, 1945, May 12, 1945 and May 18, 1945, copies of which are included with these data.

Survey Limits.

Survey limits are these indicated on section of chart No. 339, which is included with these data. This is the original chart section referred to in the Director's letter of May 5, 1945 addressed to the Supervisor, Eastern District.

Vessels and Equipment

This survey was conducted from the FARIS, basing at the Marine Basin, Brooklyn, N.Y. Launch 102 was used throughout the survey with the exception of some soundings in the vicinity of wrecks which were made from a skiff, and soundings along the face of docks which were made from the decks.

Depths were measured with 808 fathometer No. 71S except for soundings along the face of docks and some soundings on and around wrecks, which were made by lead line.

Tide and Current Stations.

A portable automatic tide gage was maintained on a fishing pier on Norton Point throughout the period of the survey. This was the site of a previous gage established in 1934 and operated for a period of two months. (See Director's letter of May 12, 1945 - copy included with these data.)

The plane of M.L.W. as defined by bench mark No. 3, 1934 was determined as 2.62 ft. on the tide staff and this value used for all tide reducers. Attention is invited to letter to the Director dated Aug. 8, 1945, a copy of which is included with these data.

All records for the tide station have been forwarded to the Washington Office.

Control Stations.

The control was by triangulation stations and intersection stations of the New York triangulation, points from air photo compilation sheets T-5462 and T-5463, and signals located by the party.

The boat sheet positions of signals located by the party are from sextant angles (Vol. 1, P. 2) Final locations were determined by theodolite cuts from triangulation stations. The computations have been made and the geographic positions should be used for the smooth sheet.

A tabulation listing all signals used and their origin is included with these data, and a checked list of geographic positions for these stations of the New York triangulation used in the survey are being forwarded, follows the tabulation.

Shoreline and topography.

Shore line and topographic details are from air photo compilation sheets T-5462 and T-5463.

Sextant angles were taken at the corners of the dock ruins (Approx. Lat.  $40^{\circ}-35'35''$ , Long.  $74^{\circ}-00'07''$ ) to verify <sup>are</sup> position shown on compilation sheet T-5462. These angles, in Vol. 6, P. 35 of the sounding records.

Soundings.

Depths were measured with 808 fathometer 71S except for soundings along the face of docks and some soundings on and around wrecks, which were by lead line.

For soundings with 808 fathometer, the initial setting was 2.0 ft. for all days except "a" day when the initial setting was 2.5 ft.

Bar checks were made three times daily except when this was prevented by weather or other cause. Fathometer speed was verified by stop watch at frequent intervals, and the middle reed kept vibrating at maximum amplitude at all times.

Fathometer Corrections. (attached)

The fathometer corrections entered in the records are based on three curves as follows:

- (1) An individual curve was used for "a" day when the initial setting was 2.5 ft.
- (2) A single curve based on the mean of all bar checks for the period was used for corrections from "b" day to "m" day inclusive. Policy? - days mean of 0.4 to 0.9 - average 0.6 at 30ft depth

(3) A single curve based on all bar checks for the period was used from "n" day to "bb" day inclusive. ✓

Control of Hydrography.

Sounding lines were controlled by sextant fixes taken from a point close to the fish, or by reference to signals or objects nearby for some positions in slips or restricted areas. ✓

Bottom Characteristics.

Bottom characteristics were taken on "z" day, but are not plotted on the boat sheet. ✓

Aids to navigation.

A tabulation of floating aids to navigation is included with these data. Final positions should be from the smooth sheet. ✓

Verification of Wrecks Shown on Compilation Sheets.

Sheet T-5462.

Wreck above L.W. shown at the end of slip, in approx. Lat. ~~36°-36.76~~ <sup>40°-35.43</sup> and Long. 73°-59.95 could not be found and should not be charted. ✓

The two wrecks above L.W. in approx. Lat. 40°-35.20 and Long. 73°-59.95 were verified in the field and should be charted. ✓

Sheet T-5463

Probable wreckage shown in Approx. Lat. 40°-34.98 and Long. 73°-59.53 was verified and both areas should be charted. ✓

Two wrecks above H.W. shown in approx. Lat. 40°-34.85 and Long. 73°-59.54 were verified and both should be charted. ✓  
Additional wreckage in this area as well as in other parts of the boat sheet was located by the field party on "x" day. For wrecks located on "x" day, amount bare <sup>is the height above</sup> water at the time the fix was taken. These amounts have not been reduced to the reference plane and shown on the boat sheet. ✓

Chart 540  
WAB  
1/8/46

Work Done on Records.

1. Fathograms scanned. This scanning was done by relatively inexperienced personnel, and it is recommended that they be rescanned in the Processing Office. - *accomplished - Gutz*
2. Tide reducers entered and checked. (See section of these notes titled "Tide and Current Stations".)
3. Fathometer and lead line corrections entered and checked. ( See section of these notes titled "Soundings".) ✓

LIST OF HYDROGRAPHIC SIGNALS.

<u>SIGNAL</u>	<u>ORIGIN</u>
Bat	T-5463 (Correction sheet 302)
Bell	T-5462 (Correction sheet 300)
Benson	G.Ps, Gravesend Bay, FARIS, 1945.
Black	T-5463 (Correction sheet 302)
B.M.T.	G.Ps, New York Tria. P 62. "Gravesend, BMT Repair Shop, Chimney, 1930"
Cin	G.Ps, New York Tria. P 62. "Gravesend, Brooklyn Ash removal Co., Incinerator Chimney, 1930"
Clock	G.Ps, New York Tria. P 129. Fort Hamilton, Polytechnic Institute, clock tower, 1919"
Con	G.Ps, New York Tria. P 33. "Coney Island Lighthouse 1903-08"
Corn	T-5462 (Correction sheet 300)
Cup *	G.Ps, Gravesend Bay, FARIS, 1945.
Doc	" " " " "
Dol	" " " " "
Dope	" " " " "
End	" " " " "
Flag *	" " " " "
Fort	G.Ps, New York Tria. P 81. "Dover 1931"
Gas	G.Ps, New York Tria. P 61. "Coney Island, Brooklyn Borough Gas Co., Largest Gas Tank, 1930"
Ken	T-5462 (Correction sheet 300)
Last	G.Ps, Gravesend Bay, FARIS, 1945.
Light	G.Ps, New York Tria. P 129. "Fort Lafayette Light 1930"
Loew	G.Ps, New York Tria. P 62. "Coney Island, Loew's Theatre Roof Tank, 1930"
Map	G.Ps, Gravesend Bay, FARIS, 1945.
Mast	" " " " "
Mid	" " " " "
Moon	G.Ps, New York Tria. P 16. "Coney Island, Half Moon Hotel, large building, dome, 1930"
Net	G.Ps, Gravesend Bay, FARIS, 1945.
New	T-5462 (Correction sheet 300) (S.W. Corner of Dock)
Park	G.Ps, Gravesend Bay, FARIS, 1945.
Pie *	" " " " "
Red	" " " " "
School	G.Ps, New York Tria. P 61. "Coney Island, Public School No. 188, Chimney, 1930"
Sem	G.Ps, New York Tria. P 71. "Semken, 1931"
Steep	G.Ps, New York Tria. P 62. "Coney Island, Steeplechase Park, Chimney, 1919"
Stump	Vol. / P. 2 of Sounding Records.

(Continued on next sheet)

LIST OF HYDROGRAPHIC SIGNALS (Cont'd)

<u>SIGNAL</u>	<u>ORIGIN</u>
Tide	G.Ps, Gravesend Bay, PARIS, 1945.
Tow	G.Ps, New York Tria. P 61. "Coney Island, Shrine of Our Lady of Solace, Tall Church Tower, 1930"
Twin	G.Ps, New York Tria. P 130, "Gravesend, Loew's Oriental Theatre, north twin tank, 1930"
Wat	G.Ps, Gravesend Bay, PARIS, 1945.
Way *	" " " " "
White	" " " " "
Yel	T-5462 (Correction sheet 300)

\* Also shown on T-5462.

NOTE: The Boat Sheet position of the following stations was plotted from sextant angles. These observations are in Vol. 1 Page 2 of the sounding records. These angles also serve as a check on the G.P. of those stations which were later determined by theodolite cuts from two stations only.

Doc	Map	Red
Dol	Mast	Stump *
Dope	Mid	Tide
End	Net	Wat
Last	Park	White

\* The final position of this station will be dependent on the sextant angles and a cut (Theodolite) from Triangulation station Semken 1931.



Transcribed from lithographed  
G.P.s for New York  
North American 1927 Data

Locality Vicinity of New York City

STATION (Hydrographic names in red)	LATITUDE AND LONGITUDE	SECONDS IN METERS	AZIMUTH	BACK
Gravesend, BMT. Repair Shop, Chimney, 1930 "BMT"	40 35 16.169 <sup>1</sup> 73 58 30.810 <sup>1</sup>	498.7 <sup>1</sup> 724.5 <sup>1</sup>		
Gravesend, Brooklyn Ash Removal Co., Incinerator Chimney, 1930 "Cin"	40 35 26.721 <sup>1</sup> 73 58 50.007 <sup>1</sup>	824.2 <sup>1</sup> 1176.0 <sup>1</sup>		
Fort Hamilton, Polytechnic Institute, Clock tower, 1919 "Clock"	40 36 43.712 <sup>1</sup> 74 01 30.373 <sup>1</sup>	1348.3 <sup>1</sup> 714.0 <sup>1</sup>		
Coney Island Lighthouse 1903-08 "Con"	40 34 35.373 <sup>1</sup> 74 00 43.827 <sup>1</sup>	1091.1 <sup>1</sup> 1030.8 <sup>1</sup>		
Dover, 1931 "Fort"	40 36 36.900 <sup>1</sup> 74 02 03.035 <sup>1</sup>	1138.2 <sup>1</sup> 71.3 <sup>1</sup>		
Coney Island, Brooklyn Borough Gas Co., Largest Gas Tank, 1930 "Gas"	40 34 53.595 <sup>1</sup> 73 58 50.503 <sup>1</sup>	1653.1 <sup>1</sup> 1187.8 <sup>1</sup>		
Fort Lafayette Light, 1930 "Light"	40 36 29.114 <sup>1</sup> 74 02 20.287 <sup>1</sup>	898.0 <sup>1</sup> 476.9 <sup>1</sup>		
Coney Island, Loew's Theatre Roof Tank, 1930 "Loew"	40 34 32.626 <sup>1</sup> 73 58 56.068 <sup>1</sup>	1006.3 <sup>1</sup> 1318.8 <sup>1</sup>		
Coney Island, Half Moon Hotel, large building, dome, 1930 "Moon"	40 34 18.430 <sup>1</sup> 73 59 41.395 <sup>1</sup>	568.5 <sup>1</sup> 973.7 <sup>1</sup>		

<sup>1</sup> No check on this position.

Abbreviations used: d.=described; m.=marked; n.=not; r.=recovered; l.=lost; p.=probably.

Transcribed from lithographed sheets  
GPS for New York.  
North American 1927 Datum

Locality Vicinity of New York City.

STATION	LATITUDE AND LONGITUDE	SECONDS IN METERS	AZIMUTH	BACK A
	" ' "		" ' "	
Coney Island, Public School	40 34 35.236 <sup>d</sup>	1086.9 <sup>v</sup>		
No. 188 Chimney, 1930 "School"	74 00 03.128 <sup>d</sup>	73.6 <sup>d</sup>		
Semken, 1931 "Sem"	40 35 40.950 <sup>v</sup>	1263.1 <sup>v</sup>		
	74 00 03.654 <sup>d</sup>	85.9 <sup>v</sup>		
Coney Island, Steeplechase	40 34 29.352 <sup>v</sup>	905.4 <sup>d</sup>		
Park, Chimney, 1919 "steep"	73 59 09.242 <sup>x</sup>	217.4 <sup>x</sup>		
Coney Island, Shrine of Our	40 34 36.407 <sup>d</sup>	1123.0 <sup>v</sup>		
Lady of Solace, Tall Church Tower, 1930 "TOW"	73 59 08.702 <sup>x</sup>	204.7 <sup>v</sup>		
Gravesend, Loew's Oriental	40 36 21.893 <sup>v</sup>	675.3 <sup>v</sup>		
Theatre, North Twin Tank, 1930 "Twin"	74 00 10.115 <sup>x</sup>	237.8 <sup>x</sup>		

No check on this position. Abbreviations used: d.=described; m.=marked; n.=not; r.=recovered; l.=lost; p.=probably.

P. Aids to navigation:

Buoy No.	Latitude	Longitude	Vel.	Pes.No.	Date
Letter C					
(Mooring)	40°-35'88	74°-00'78	4	36 e	June 19
Mooring Buoy	40°-35'98	74°-01'56	5	97 f	June 20
1	40°-35'28	74°-00'86	6	53 g	June 21
2	40°-35'22	74°-00'83	6	54 g	June 21
3	40°-34'95	74°-00'16	6	147 g	June 21
1	40°-34'98	74°-00'35	6	151 g	June 21
5	40°-35'23	74°-00'20	6	1 h	June 22
6	40°-35'19	74°-00'17	6	2 h	June 22
3	40°-35'26	74°-00'51	6	9 h	June 22
4	40°-35'20	74°-00'50	6	10 h	June 22
Letter B	40°-35'02	74°-00'77	6	11 h	June 22
Bell Buoy					
18 B	40°-34'92	74°-01'82	6	127 h	June 22
White Buoy	40°-35'90	74°-01'15	8	164 l	June 22
20	40°-36'12	74°-01'83	5	38 f	June 20

Statistics, Hydrographic Sheet of Gravesend Bay  
Field No. FA-05145

Vol.	Day Letter	Date	No. Pos.	Stat. Miles
1&2 ✓	a ✓	June 8 ✓	162 ✓	18.3 ✓
2&3 ✓	b	June 12	232	23.4
3	c	June 14	105	7.7
3&4	d	June 18	151	13.3
4&5	e	June 19	157	13.5
5	f	June 20	168	16.3
5&6	g	June 21	<del>163</del> 164	13.8
6	h	June 22	133	12.9
6&7	j	June 25	143	14.1
7&8	k	June 27	160	10.8
8	l	June 28	188	12.0
8&9	m	June 29	168	11.7
9	n	July 4	<del>111</del> 134	9.8
10	p	July 5	67	4.8
10	q	July 9	155	10.3
11	r	July 10	<del>111</del> 115	7.0
11	s	July 12	130	7.5
12	t	July 13	122	6.9
12	u	July 16	78	1.7
12	v	July 18	61	1.9
12	w	July 19	51	3.9
13	x	July 20	75	0.3
13	y	July 23	156	11.5
14	z	July 24	127	bottom samples.
14	aa	July 26	40	1.9
14	bb	July 31	57	2.5
			<u>3508</u>	<u>237.8</u>

Total Square Statute Miles = 2.0

Total lead line soundings = 631

22/MEK  
1975 NY 4

5 May 1945

To: Supervisor, Eastern District,  
U. S. Coast and Geodetic Survey,  
631 Federal Office Building,  
90 Church Street,  
New York-7, N. Y.

Subject: Hydrographic surveys in the Eastern District.

With reference to your letter of 26 April 1945, relative to hydrographic surveys in the Eastern District, this office is of the opinion that a new hydrographic survey of a portion of Gravesend Bay should be given highest priority and that you should assign this as the first work to be taken up by the Launch FARIS upon arrival of that vessel in New York.

The other projects which you have listed in your letter can later be assigned to the Launch FARIS in the order of priority in which you believe they should be accomplished.

Enclosed is a section of chart No. 369 showing the layout of a proposed, 1:10,000 scale, chart of the Gravesend Bay area. On this chart-section the area to be surveyed is cross-hatched.

The planimetric map will be corrected by additions from the new air photographs and a copy of this map will be furnished you along with copies of previous surveys, triangulation data, etc.

In accordance with the recommendation contained in your letter, instructions will be issued to the Launch FARIS to check the landmarks along the New Jersey coast while en route to New York.

(Signed) G. T. BUDN

Acting Director.

cc. Division of Charts  
Launch FARIS ✓

FOR THE FARIS

22/MEK  
1975 NY 4

12 May 1945

To: Supervisor, Eastern District,  
U. S. Coast and Geodetic Survey,  
631 Federal Office Building,  
90 Church Street,  
New York-7, N. Y.

Subject: Tide observations, Gravesend Bay and Jamaica Bay.

1. In connection with the hydrographic work to be undertaken by the party of the Launch FARIS in Gravesend Bay, a portable automatic gage shall be maintained, if practicable, at Norton Point, Coney Island, where 2 months of automatic gage records were obtained in 1934. The descriptions and elevations of 3 standard disk bench marks established at that time are given on page 97 of "Tidal Bench Marks, State of New York," published in December 1936.
2. A report on the establishment of the tide station shall be made, in duplicate, on Form 681 and both copies forwarded to this office upon completion of the installation. The exact location of the tide station shall be shown on the hydrographic sheet. When the station is discontinued, this should be noted on the original tide record.
3. The tide staff shall be connected by spirit levels with at least 3 standard disk bench marks. All old bench marks shall be inspected and a report submitted on them. New marks shall be established to replace marks that have been destroyed, and those which are found in poor condition.
4. All of the above work shall be done in accordance with instructions in Special Publication No. 196, "Manual of Tide Observations."
5. For work in Jamaica Bay, a revised list of the descriptions and elevations of tidal bench marks at Beach Channel Bridge is furnished herewith to replace the list given on pages 91-93 of "Tidal Bench Marks, State of New York." There is also furnished a new list of bench marks at the Naval Air Station (Floyd Bennett Field), Barren Island. Descriptions and elevations of other bench marks in the vicinity of Jamaica Bay can be found in the tidal bench mark publication.

(signed) L. O. COLBERT

Enclosures.

Director.

cc. Officer in Charge, Launch FARIS  
Division of Tides and Currents

C O P Y

DEPARTMENT OF COMMERCE  
U.S. COAST AND GEODETIC SURVEY  
Washington 25, D.C.

18 May 1945.

To: Supervisor, Eastern District,  
U.S. Coast and Geodetic Survey,  
631 Federal Office Building,  
90 Church Street,  
New York-7, N.Y.

Subject: Field Data.

Included in the field data recently sent to you, in connection with the hydrographic survey of Gravesend Bay, were copies of the planimetric map of that area corrected by the addition of information obtained from air photo pictures which were taken in 1944.

Additional pictures were recently made of this area, and a new revision of the planimetric map will be made so that it will not be necessary for the field party to do any detailed topographic work. The revised copies will be sent to you as soon as possible.

Sgd. J.H. Hawley,  
Acting Director.

Coney Island P.O. Station,  
Brooklyn, N.Y.

August 8, 1945.

To: The Director,  
U.S. Coast and Geodetic Survey,  
Washington 25, D.C.

From: Ralph L. Pfau, Lieut. Comdr.,  
U.S. Coast and Geodetic Survey

Subject: Tidal data.

There is being forwarded under separate cover twenty-two marigrams and one Vol. of Leveling Record for the Norton Point gage, Gravesend Bay, New York.

The marigrams cover the period from June 5 to August 3, 1945, and attention is invited to the fact that only during the first few days of the period did the low waters reach the plane of Mean Low Water as determined from the old bench marks.

Of the three original bench marks established in 1934, only bench mark No. 3 was recovered in good condition. However, the drill holes in which bench marks Nos. 1 and 2 had been set, and the imprint of the disks in the concrete seawall were recovered.

New bench marks Nos. 4 and 5 were set in the original drill holes of bench marks Nos. 1 and 2 respectively, and as nearly as possible at the same elevation, as determined by the imprints of the old disks. The differences in elevation between the marks as determined by the leveling this season agree well with the original differences.

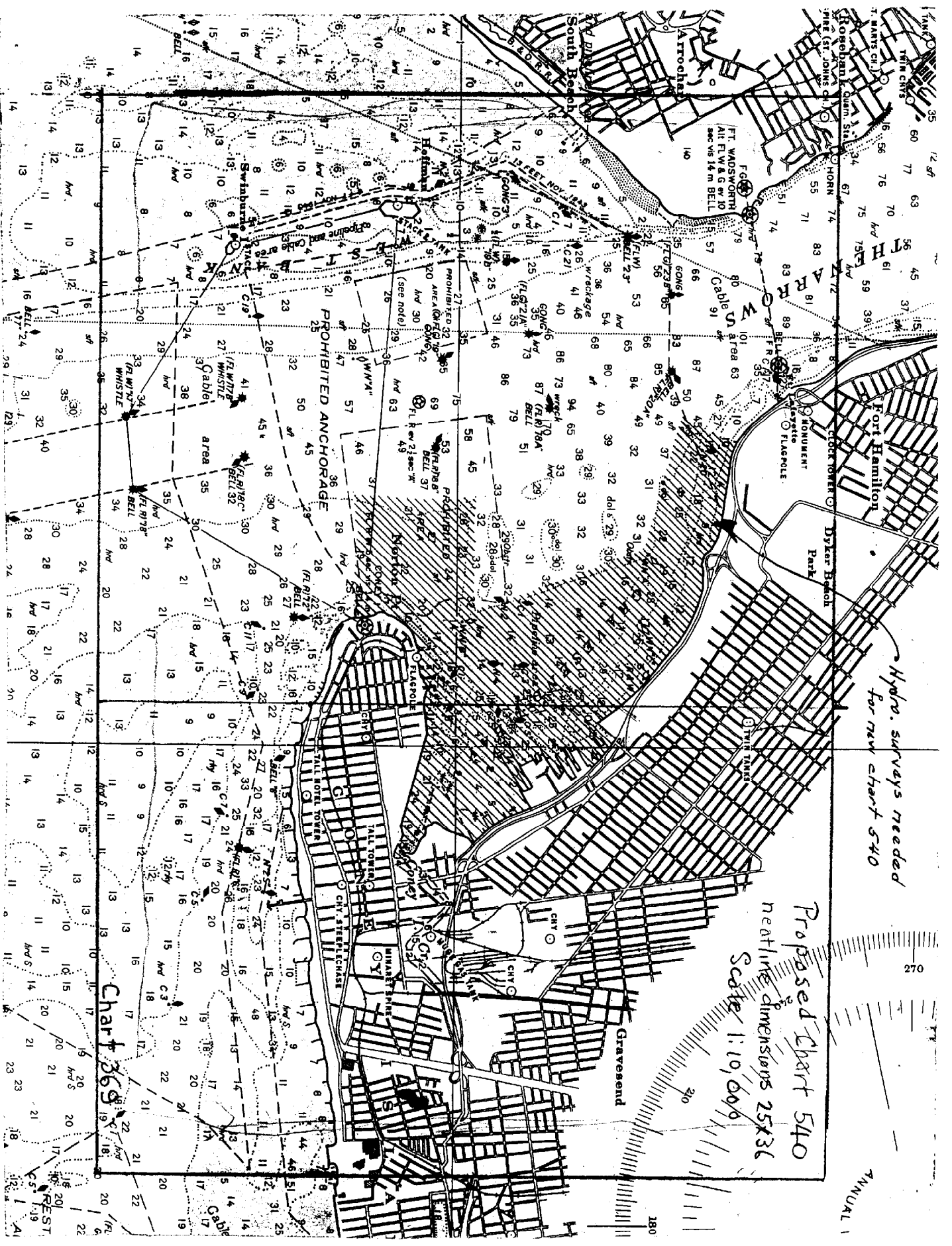
Tide reducers for the sounding in Gravesend Bay were taken from the marigrams and based on a staff reading of 2.62 ft. for M.L.W. as determined from bench mark No. 3.

Tide reducers have been entered and checked in the sounding records being forwarded to the Norfolk Processing Office, and should any adjustment be made in the plane of M.L.W. at this station, it is respectfully requested that that office be advised of the change.

Respectfully,

Ralph L. Pfau,  
Commanding Officer,  
U.S.C.&G.S.S. FARIS





*Hydro surveys needed for new chart 540*

Proposed Chart 540  
 netline dimensions 25X36  
 Scale 1:10,000

Chart 369

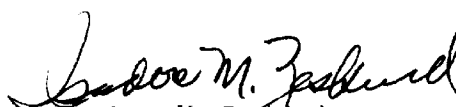
ANNUAL I

A D D E N D U M

HYDROGRAPHIC SHEET NO. H-7046 (Field No. FA 05145)

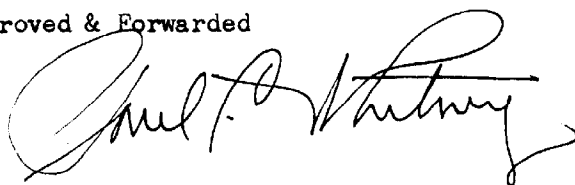
This sheet was processed in the Hydrographic Section of the  
Southeastern District.

Respectfully submitted,

  
Isadore M. Zeskind  
Cartographic Engineer

Norfolk, Va.  
October 31, 1945

Approved & Forwarded



Paul C. Whitney  
Supervisor SE District

GEOGRAPHIC NAMES

Survey No. **H7046**

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
<u>New York Harbor</u>									1
<u>Gravesend Bay</u>				405	740				2
<u>Coney Island</u>				405	729		U.S.G. B		3
<u>Coney Island Cr.</u>				"					4
<u>Norton Pt</u>				405	740				5
									6
									7
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									27

L. Hack on 1/31/46

Surveys Section (Chart Division)

HYDROGRAPHIC SURVEY NO. **H7046**

Records accompanying survey:

Boat sheets **.1**...; sounding vols. **.14**.; wire drag vols. ....;  
 bomb vols. ....; graphic recorder rolls **.23**...;  
 special reports, etc. **1** folder - tide & fath. reducers (with Desc. Rep't)  
**1** folder - Triangulation (GKZ) **2** Vols. Obs. of Horizontal Angles (G.H)

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

Number of positions on sheet	<b>.3308</b>	
Number of positions checked	<b>.81</b>	
Number of positions revised	<b>.11</b>	
Number of soundings recorded	<b>.20000</b>	(Estimate)
Number of soundings revised (refers to depth only)	<b>.36</b>	
Number of soundings erroneously spaced	<b>.44</b>	
Number of signals erroneously plotted or transferred	<b>....</b>	
Topographic details	Time <b>.8</b>	
Junctions	Time <b>....</b>	
Verification of soundings from graphic record	Time <b>.24</b>	
Verification by <b>A.P. STIANI</b> .....	Total time <b>182</b>	Date <b>Jan. 3, 1946</b>
Review by <b>G.F. Jordan</b> .....	Time <b>.28</b>	Date <b>Jan. 28, 1946</b>

TIDE REDUCERS AND FATHOMETER CORRECTION CURVES,  
GRAVESEND BAY, NEW YORK.  
Sheet FA 05145 (Field No.)

FARIS ----- 1945.

June 8, 1945

A-Day

Time	Reducer
0803 0814	3.6 ✓
0814 0823	3.4 ✓
0823 0833	3.2 ✓
0833 0841	3.0 ✓
0841 0852	2.8 ✓
0852 0900	2.6 ✓
0900 0908	2.4 ✓
0908 0915	2.2 ✓
0915 0925	2.0 ✓
0925 0935	1.8 ✓
0935 0946	1.6 ✓
0946 0957	1.4 ✓
0957 1008	1.2 ✓
1008 1021	1.0 ✓
1021 1035	0.8 ✓
1035 1051	0.6 ✓
1051 1106	0.4 ✓
1106 1122	0.2 ✓
1122 1150	0.0 ✓
1150 1251	+ 0.2 ✓
1251 1302	0.0 ✓
1302 1314	0.2 ✓
1314 1325	0.4 ✓
1325 1333	0.6 ✓
1333 1341	0.8 ✓
1341 1347	1.0 ✓
1347 1354	1.2 ✓
1354 1403	1.4 ✓
1403 1410	1.6 ✓
1410 1417	1.8 ✓
1417 1423	2.0 ✓
1423 1429	2.2 ✓
1429 1437	2.4 ✓
1437 1444	2.6 ✓
1444 1450	2.8 ✓
1450 1457	3.0 ✓
1457 1504	3.2 ✓
1504 1511	3.4 ✓
1511 1520	3.6 ✓
1520 1527	3.8 ✓
1527 1533	4.0 ✓
1533 1540	4.2 ✓
1540 1550	4.4 ✓
1550 1558	4.6 ✓
1558 1605	4.8 ✓
1605 1615	5.0 ✓
1615 1623	5.2 ✓
1623 1636	5.4 ✓
1636 1649	5.6 ✓
1649 1701	5.8 ✓
1701 1715	6.0 ✓

June 12, 1945

B-Day

Time	Reducer
0748 0757	1.2 ✓
0757 0815	1.4 ✓
0815 0830	1.6 ✓
0830 0850	1.8 ✓
0850 0915	5.0 ✓
0915 0942	5.2 ✓
0942 1003	5.0 ✓
1003 1028	1.8 ✓
1028 1037	1.6 ✓
1037 1048	1.4 ✓
1048 1100	1.2 ✓
1100 1111	1.0 ✓
1111 1120	0.8 ✓
1120 1129	0.6 ✓
1129 1138	0.4 ✓
1138 1147	0.2 ✓
1147 1156	0.0 ✓
1156 1206	2.8 ✓
1206 1217	2.6 ✓
1217 1228	2.4 ✓
1228 1238	2.2 ✓
1238 1246	2.0 ✓
1246 1257	1.8 ✓
1257 1309	1.6 ✓
1309 1322	1.4 ✓
1322 1337	1.2 ✓
1337 1350	1.0 ✓
1350 1405	0.8 ✓
1405 1424	0.6 ✓
1424 1458	0.4 ✓
1458 1614	0.2 ✓
1614 1638	0.0 ✓

June 19, 1945

E-Day

Time	Reducer
0805 0848	1.0 ✓
0848 1022	0.8 ✓
1022 1040	1.0 ✓
1040 1058	1.2 ✓
1058 1112	1.4 ✓
1112 1122	1.6 ✓
1122 1134	1.8 ✓
1134 1143	2.0 ✓
1143 1150	2.2 ✓
1150 1203	2.4 ✓
1203 1214	2.6 ✓
1214 1225	2.8 ✓
1225 1235	3.0 ✓
1235 1245	3.2 ✓
1245 1258	3.4 ✓
1258 1312	3.6 ✓
1312 1323	3.8 ✓
1323 1336	4.0 ✓
1336 1352	4.2 ✓
1352 1411	4.4 ✓
1411 1428	4.6 ✓
1428 1510	4.8 ✓

June 14, 1945

C-Day

Time	Reducer
1235 1246	3.8 ✓
1246 1300	3.6 ✓
1300 1314	3.4 ✓
1314 1324	3.2 ✓
1324 1336	3.0 ✓
1336 1350	2.8 ✓
1350 1405	2.6 ✓
1405 1424	2.4 ✓
1424 1435	2.2 ✓
1435 1447	2.0 ✓
1447 1504	1.8 ✓
1504 1516	1.6 ✓
1516 1536	1.4 ✓
1536 1555	1.2 ✓
1555 1624	1.0 ✓

June 18, 1945

D-Day

Time	Reducer
0800 0902	1.0 ✓
0902 0925	1.2 ✓
0925 0953	1.4 ✓
0953 1005	1.6 ✓
1005 1018	1.8 ✓
1018 1033	2.0 ✓
1033 1046	2.2 ✓
1046 1057	2.4 ✓
1057 1110	2.6 ✓
1110 1121	2.8 ✓
1121 1132	3.0 ✓
1132 1145	3.2 ✓
1145 1201	3.4 ✓
1201 1216	3.6 ✓
1216 1227	3.8 ✓
1227 1241	4.0 ✓
1241 1300	4.2 ✓
1300 1320	4.4 ✓
1320 1345	4.6 ✓
1345 1426	4.8 ✓

10 Minutes time subtracted from all Timescaled from Marigram.

June 20, 1945		
Time	F-Day	Reducer
	1135	1150 1.4 ✓
	1150	1202 1.6 ✓
	1202	1215 1.8 ✓
	1215	1226 2.0 ✓
	1226	1234 2.2 ✓
	1234	1245 2.4 ✓
	1245	1254 2.6 ✓
	1254	1305 2.8 ✓
	1305	1315 3.0 ✓
	1315	1326 3.2 ✓
	1326	1336 3.4 ✓
	1336	1346 3.6 ✓
	1346	1357 3.8 ✓
	1357	1408 4.0 ✓
	1408	1417 4.2 ✓
	1417	1439 4.4 ✓
	1439	1505 4.6 ✓
	1505	1525 4.8 ✓
	1525	1640 5.0 ✓

10 minutes time subtracted from  
all times scaled from Merrigram.

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June 25, 1945

J-Day		
Time		Reducer
0845	0900	4.6 ✓
0900	0911	4.4 ✓
0911	0922	4.2 ✓
0922	0932	4.0 ✓
0932	0945	3.8 ✓
0945	0957	3.6 ✓
0957	1009	3.4 ✓
1009	1019	3.2 ✓
1019	1030	3.0 ✓
1030	1044	2.8 ✓
1044	1059	2.6 ✓
1059	1113	2.4 ✓
1113	1123	2.2 ✓
1123	1135	2.0 ✓
1135	1149	1.8 ✓
1149	1208	1.6 ✓
1208	1233	1.4 ✓
1233	1300	1.2 ✓
1300	1342	1.0 ✓
1342	1400	0.8 ✓
1400	1420	1.0 ✓
1420	1437	1.2 ✓
1437	1452	1.4 ✓
1452	1502	1.6 ✓
1502	1516	1.8 ✓
1516	1527	2.0 ✓
1527	1534	2.2 ✓

\*\*\*\*\*

June 21, 1945		
Time	G-Day	Reducer
	0737	0755 2.1 ✓
	0755	0809 2.2 ✓
	0809	0822 2.0 ✓
	0822	0835 1.8 ✓
	0835	0852 1.6 ✓
	0852	0913 1.4 ✓
	0913	0933 1.2 ✓
	0933	0952 1.0 ✓
	0952	1041 0.8 ✓
	1041	1114 0.6 ✓
	1114	1150 0.8 ✓
	1150	1206 1.0 ✓
	1206	1217 1.2 ✓
	1217	1230 1.4 ✓
	1230	1243 1.6 ✓
	1243	1253 1.8 ✓
	1253	1301 2.0 ✓
	1301	1309 2.2 ✓
	1309	1320 2.4 ✓
	1320	1329 2.6 ✓
	1329	1338 2.8 ✓
	1338	1348 3.0 ✓
	1348	1354 3.2 ✓
	1354	1401 3.4 ✓
	1401	1412 3.6 ✓
	1412	1420 3.8 ✓
	1420	1430 4.0 ✓
	1430	1440 4.2 ✓
	1440	1456 4.4 ✓
	1456	1515 4.6 ✓
	1515	1535 4.8 ✓
	1535	1604 5.0 ✓

\*\*\*\*\*

June 27, 1945

K-Day		
Time		Reducer
0758	0820	5.2 ✓
0820	0940	5.4 ✓
0940	1002	5.2 ✓
1002	1021	5.0 ✓
1021	1032	4.8 ✓
1032	1043	4.6 ✓
1043	1056	4.4 ✓
1056	1103	4.2 ✓
1103	1113	4.0 ✓
1113	1124	3.8 ✓
1124	1135	3.6 ✓
1135	1146	3.4 ✓
1146	1158	3.2 ✓
1158	1207	3.0 ✓
1207	1215	2.8 ✓
1215	1223	2.6 ✓
1223	1233	2.4 ✓
1233	1250	2.2 ✓
1250	1301	2.0 ✓
1301	1315	1.8 ✓
1315	1332	1.6 ✓
1332	1400	1.4 ✓
1400	1553	1.2 ✓

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June 22, 1945		
Time	H-Day	Reducer
0810	0823	2.6 ✓
0823	0836	2.4 ✓
0836	0846	2.2 ✓
<del>0846</del>	0855	2.0 ✓
0855		
1133	1206	0.8 ✓
1206	1219	1.0 ✓
1219	1232	1.2 ✓
1232	1245	1.4 ✓
1245	1257	1.6 ✓
1257	1310	1.8 ✓
1310	1318	2.0 ✓
1318	1327	2.2 ✓
1327	1340	2.4 ✓
1340	1349	2.6 ✓
1349	1358	2.8 ✓
1358	1408	3.0 ✓
1408	1418	3.2 ✓
1418	1430	3.4 ✓
1430	1445	3.6 ✓
1445	1502	3.8 ✓
1502	1515	4.0 ✓
1515	1530	4.2 ✓
1530	1550	4.4 ✓

\*\*\*\*\*

June 28, 1945

I-Day		
Time		Reducer
0825	0848	5.0 ✓
0848	1030	5.2 ✓
1030	1047	5.0 ✓
1047	1059	4.8 ✓
1059	1114	4.6 ✓
1114	1128	4.4 ✓
1128	1138	4.2 ✓
1138	1148	4.0 ✓
1148	1158	3.8 ✓
1158	1209	3.6 ✓
1209	1220	3.4 ✓
1220	1230	3.2 ✓
1230	1240	3.0 ✓
1240	1251	2.8 ✓
1251	1301	2.6 ✓
1301	1315	2.4 ✓
1315	1329	2.2 ✓
1329	1342	2.0 ✓
1342	1359	1.8 ✓
1359	1418	1.6 ✓
1418	1445	1.4 ✓
1445	1516	1.2 ✓
1516	1610	1.0 ✓

\*\*\*\*\*

June 29, 1945

M-Day		Reducer
Time		
0803	0815	3.8✓
0815	0826	4.0✓
0826	0837	4.2✓
0837	0850	4.4✓
0850	0905	4.6✓
0905	0916	4.8✓
0916	0940	5.0✓
0940	1020	5.2✓
1020	1045	5.4✓
1045	1127	5.2✓
1127	1137	5.0✓
1137	1146	4.8✓
1146	1204	4.6✓
1204	1214	4.4✓
1214	1224	4.2✓
1224	1233	4.0✓
1233	1247	3.8✓
1247	1300	3.6✓
1300	1308	3.4✓
1308	1320	3.2✓
1320	1335	3.0✓
1335	1345	2.8✓
1345	1355	2.6✓
1355	1405	2.4✓
1405	1418	2.2✓
1418	1442	2.0✓
1442	1456	1.8✓
1456	1509	1.6✓
1509	1547	1.4✓
1547	1600	1.2✓
1600	1720	1.0✓

\*\*\*\*\*

July 12, 1945

S-Day		Reducer
Time		
0755	0808	4.0✓
0808	0820	4.2✓
0820	0837	4.4✓
0837	0857	4.6✓
0857	0918	4.8✓
0918	1038	5.0✓
1038	1058	4.8✓
1058	1110	4.6✓
1110		
1233	1248	2.8✓
1248	1258	2.6✓
1258	1312	2.4✓
1312	1321	2.2✓
1321	1332	2.0✓
1332	1345	1.8✓
1345	1402	1.6✓
1402	1423	1.4✓
1423	1443	1.2✓
1443	1510	1.0✓
1510	1625	0.8✓

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July 4, 1945

N-Day		Reducer
Time		
0805	0845	0.2✓
0845	0928	0.0✓
0928	0950	0.2✓
0950	1005	0.4✓
1005	1016	0.6✓
1016	1027	0.8✓
1027	1035	1.0✓
1035	1045	1.2✓
1045	1055	1.4✓
1055	1101	1.6✓
1101	1109	1.8✓
1109	1116	2.0✓
1116	1125	2.2✓
1125	1135	2.4✓
1135	1144	2.6✓
1144	1151	2.8✓
1151	1200	3.0✓
1200	1210	3.2✓
1210	1219	3.4✓
1219	1230	3.6✓
1230	1240	3.8✓
1240	1251	4.0✓
1251	1302	4.2✓
1302	1316	4.4✓
1316	1330	4.6✓
1330	1349	4.8✓
1349	1405	5.0✓
1405	1445	5.2✓
1445	1540	5.4✓
1540	1605	5.2✓

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July 10, 1945

R-Day		Reducer
Time		
0750	0850	5.4✓
0850	0912	5.2✓
0912	0931	5.0✓
0931	0945	4.8✓
0945	0958	4.6✓
0958	1011	4.4✓
1011	1020	4.2✓
1020	1030	4.0✓
1030	1043	3.8✓
1043	1053	3.6✓
1053	1103	3.4✓
1103	1112	3.2✓
1112	1121	3.0✓
1121	1130	2.8✓
1130	1139	2.6✓
1139	1148	2.4✓
1148	1158	2.2✓
1158	1207	2.0✓
1207	1219	1.8✓
1219	1233	1.6✓
1233	1248	1.4✓
1248	1300	1.2✓
1300	1314	1.0✓
1314	1335	0.8✓
1335	1504	0.6✓
1504	1520	0.8✓

July 5, 1945

P-Day		Reducer
Time		
0835	0855	0.6✓
0855	0915	0.4✓
0915	1045	0.2✓
1045	1100	0.4✓
1100	1114	0.6✓
1114	1122	0.8✓
1122	1129	1.0✓
1129	1137	1.2✓
1137	1147	1.4✓
1147	1157	1.6✓
1157	1205	1.8✓
1205	1210	2.0✓
1210	1217	2.2✓
1217	1228	2.4✓
1228	1237	2.6✓
1237	1246	2.8✓
1246	1252	3.0✓
1252	1301	3.2✓
1301	1308	3.4✓
1308	1319	3.6✓
1319	1326	3.8✓
1326	1335	4.0✓

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July 9, 1945

Q-Day		Reducer
Time		
0720	0755	5.2✓
0755	0815	5.0✓
0815	0831	4.8✓
0831	0842	4.6✓
0842	0855	4.4✓
0855	0906	4.2✓
0906	0916	4.0✓
0916	0927	3.8✓
0927	0938	3.6✓
0938	0950	3.4✓
0950	0958	3.2✓
0958	1010	3.0✓
1010	1020	2.8✓
1020	1031	2.6✓
1031	1043	2.4✓
1043	1054	2.2✓
1054	1103	2.0✓
1103	1113	1.8✓
1113	1128	1.6✓
1128	1144	1.4✓
1144	1200	1.2✓
1200	1212	1.0✓
1212	1233	0.8✓
1233	1255	0.6✓
1255	1409	0.4✓
1409	1423	0.8✓
1423	1439	0.8✓
1439	1449	1.0✓
1449	1458	1.2✓
1458	1508	1.4✓



July 13, 1945

T-Day		Reducer
Time		
0757	0809	3.4 ✓
0809	0821	3.6 ✓
0821	0832	3.8 ✓
0832	0846	4.0 ✓
0846	0900	4.2 ✓
0900	0915	4.4 ✓
0915	0937	4.6 ✓
0937	1000	4.8 ✓
1000	1113	5.0 ✓
1233	1243	3.8 ✓
1243	1255	3.6 ✓
1255	1308	3.4 ✓
1308	1321	3.2 ✓
1321	1332	3.0 ✓
1332	1345	2.8 ✓
1345	1358	2.6 ✓
1358	1411	2.4 ✓
1411	1421	2.2 ✓
1421	1435	2.0 ✓
1435	1449	1.8 ✓
1449	1505	1.6 ✓
1505	1528	1.4 ✓
1528	1550	1.2 ✓
1550	1615	1.0 ✓

\*\*\*\*\*

July 19, 1945

W-Day		Reducer
Time		
0752	0825	1.0 ✓
0825	0936	0.8 ✓
0936	1007	0.6 ✓
1007	1021	1.2 ✓
1021	1045	1.4 ✓
1045	1059	1.6 ✓

July 31, 1945

BB-Day		Reducer
Time		
0810	0820	1.2 ✓
0820	0833	1.4 ✓
0833	0843	1.6 ✓
0843	0850	1.8 ✓
0850	0858	2.0 ✓
0858	0907	2.2 ✓
0907	0917	2.4 ✓
0917	0925	2.6 ✓
0925	0933	2.8 ✓
0933	0942	3.0 ✓
0942	0950	3.2 ✓
0950	1001	3.4 ✓
1001	1015	3.6 ✓
1015	1024	3.8 ✓
1024	1032	4.0 ✓
1032	1045	4.2 ✓
1045	1100	4.4 ✓
1228	1342	5.6 ✓

July 16, 1945

U-Day		Reducer
Time		
0755	0812	0.8 ✓
0812	0824	1.0 ✓
0824	0835	1.2 ✓
0835	0849	1.4 ✓
0849	0901	1.6 ✓
0901	0910	1.8 ✓
0910	0921	2.0 ✓
0921	0931	2.2 ✓
0931	0945	2.4 ✓
0945	0955	2.6 ✓
0955	1005	2.8 ✓
1005	1015	3.0 ✓
1015	1029	3.2 ✓
1029	1041	3.4 ✓
1041	1056	3.6 ✓
1056	1113	3.8 ✓
1210	1335	4.4 ✓
1335	1412	4.2 ✓
1412	1425	4.0 ✓
1425	1450	3.8 ✓
1450	1508	3.6 ✓
1508	1522	3.4 ✓
1522	1540	3.2 ✓
1540	1558	3.0 ✓
1558	1615	2.8 ✓

July 20, 1945

X-Day		Reducer
Time		
0615	0635	2.6 ✓
0635	0653	2.4 ✓
0653	0713	2.2 ✓
0713	0731	2.0 ✓
0731	0746	1.8 ✓
0746	0804	1.6 ✓
0804	0833	1.4 ✓
0833	0900	1.2 ✓
0900	0940	1.0 ✓
0940	1033	0.8 ✓
1033	1057	1.0 ✓
1057	1115	1.2 ✓
1115	1133	1.4 ✓
1133	1144	1.6 ✓
1144	1158	1.8 ✓
1158	1209	2.0 ✓
1209	1222	2.2 ✓
1222	1231	2.4 ✓
1231	1245	2.6 ✓
1245	1254	2.8 ✓
1254	1305	3.0 ✓
1305	1314	3.2 ✓
1314	1326	3.4 ✓
1326	1338	3.6 ✓
1338	1348	3.8 ✓
1348	1359	4.0 ✓
1359	1411	4.2 ✓
1411	1434	4.4 ✓
1434	1458	4.6 ✓
1458	1537	4.8 ✓
1537	1553	5.0 ✓

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July 18, 1945

V-Day		Reducer
Time		
0800	0910	0.8 ✓
0910	0935	1.0 ✓
0935	0955	1.2 ✓
0955	1010	1.4 ✓
1010	1024	1.6 ✓
1024	1041	1.8 ✓
1041	1052	2.0 ✓
1052	1100	2.2 ✓
1211	1228	3.6 ✓
1228	1238	3.8 ✓
1238	1254	4.0 ✓
1254	1310	4.2 ✓
1310	1340	4.4 ✓
1340	1507	4.6 ✓

July 23, 1945

Y-Day		Reducer
Time		
0811	0828	4.0 ✓
0828	0838	3.8 ✓
0838	0845	3.6 ✓
0845	0901	3.4 ✓
0901	0918	3.2 ✓
0918	0932	3.0 ✓
0932	0948	2.8 ✓
0948	1003	2.6 ✓
1003	1023	2.4 ✓
1023	1051	2.2 ✓
1051	1105	2.0 ✓
1105	1135	1.8 ✓
1135	1202	1.6 ✓
1202	1334	1.4 ✓
1334	1351	1.6 ✓
1351	1402	1.8 ✓
1402	1411	2.0 ✓
1411	1420	2.2 ✓
1420	1430	2.4 ✓
1430	1438	2.6 ✓
1438	1447	2.8 ✓
1447	1455	3.0 ✓
1455	1501	3.2 ✓

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July 26, 1945

AA-Day		Reducer
Time		
1251	1311	1.4 ✓
1311	1328	1.2 ✓
1328	1400	1.0 ✓
1400	1520	0.8 ✓

ABSTRACT OF BARCHECKS

	6	12	18	24	30	36	42		
B-DAY	+0.15 ✓	-0.1 ✓	-0.15 ✓	-0.4 ✓	-0.5 ✓	-0.6 ✓			
	+0.2 ✓	-0.05 ✓	-0.45 ✓	-0.7 ✓	-0.8 ✓				
	0.0 ✓	-0.2 ✓	-0.3 ✓	-0.65 ✓	-0.8 ✓				
	+0.1 ✓	-0.1 ✓	-0.3 ✓	-0.6 ✓	-0.7 ✓	-0.6 ✓			
C-DAY	+0.1 ✓	-0.1 ✓	-0.35 ✓	-0.55 ✓	-0.9 ✓				
	-0.05 ✓	-0.35 ✓	-0.55 ✓	-0.9 ✓	-1.0 ✓				
	± 0.0 ✓	-0.2 ✓	-0.45 ✓	-0.7 ✓	-0.95 ✓				
D-DAY	+0.05 ✓	-0.05 ✓	-0.3 ✓	-0.55 ✓	-0.5 ✓				
	0.0 ✓	-0.3 ✓	-0.65 ✓	-0.7 ✓					
	± 0.0 ✓	-0.2 ✓	-0.5 ✓	-0.6 ✓	-0.5 ✓				
E-DAY	0.0 ✓	-0.3 ✓	-0.3 ✓	-0.4 ✓	-0.35 ✓	-0.5 ✓			
	+0.25 ✓	-0.05 ✓	-0.1 ✓	-0.3 ✓	-0.5 ✓	-0.3 ✓			
	+0.1 ✓	-0.2 ✓	-0.2 ✓	-0.35 ✓	-0.4 ✓	-0.4 ✓			
F-DAY	+0.05 ✓	-0.15 ✓	-0.15 ✓	-0.25 ✓	-0.35 ✓	-0.4 ✓			
	-0.05 ✓	-0.35 ✓	-0.45 ✓	-0.7 ✓	-0.6 ✓	-0.65 ✓	-1.0 ✓		
	0.0 ✓	-0.25 ✓	-0.3 ✓	-0.5 ✓	-0.5 ✓	-0.5 ✓	-1.0 ✓		
G-DAY	+0.05 ✓	-0.05 ✓	-0.15 ✓	-0.35 ✓	-0.55 ✓	-0.6 ✓			
	+0.1 ✓	-0.1 ✓	-0.1 ✓	-0.1 ✓	-0.3 ✓				
	0.0 ✓	-0.2 ✓	-0.25 ✓	-0.3 ✓					
	+0.05 ✓	-0.1 ✓	-0.2 ✓	-0.25 ✓	-0.4 ✓	-0.6 ✓			
H-DAY	0.0 ✓	-0.05 ✓	-0.2 ✓	-0.4 ✓	-0.3 ✓				
	+0.05 ✓	-0.1 ✓	-0.15 ✓	-0.3 ✓	-0.4 ✓				
	± 0.0 ✓	-0.1 ✓	-0.2 ✓	-0.35 ✓	-0.35 ✓				
J-DAY	0.0 ✓	-0.15 ✓	-0.35 ✓	-0.55 ✓	-0.8 ✓	-0.8 ✓			
	+0.05 ✓	-0.25 ✓	-0.45 ✓	-0.65 ✓	-0.75 ✓	-0.8 ✓			
	+0.05 ✓	-0.2 ✓	-0.4 ✓	-0.4 ✓	-0.35 ✓	-0.4 ✓			
	+0.05 ✓	-0.2 ✓	-0.4 ✓	-0.55 ✓	-0.65 ✓	-0.7 ✓			
K-DAY	-0.1 ✓	-0.25 ✓	-0.6 ✓	-0.85 ✓	-0.85 ✓				
	0.0 ✓	-0.3 ✓	-0.4 ✓	-0.7 ✓	-0.75 ✓	-1.0 ✓			
	-0.15 ✓	-0.35 ✓	-0.5 ✓	-0.6 ✓	-0.85 ✓	-0.9 ✓			
	-0.1	-0.3	-0.5	-0.7	-0.8	-0.95			

	6	12	18	24	30	36	42		
L-DAY	-0.05 ✓	-0.2 ✓	-0.3 ✓	-0.6 ✓	-0.6 ✓	—			
	-0.05 ✓	-0.1 ✓	-0.4 ✓	-0.5 ✓	-0.5 ✓	-0.8 ✓			
	0.0 ✓	-0.15 ✓	-0.3 ✓	-0.45 ✓	-0.6 ✓	-0.7 ✓			
	-0.05 ✓	-0.15 ✓	-0.35 ✓	-0.5 ✓	-0.6 ✓	-0.75 ✓			
M-DAY	+0.05 ✓	-0.15 ✓	—	—	—				
	+0.05 ✓	-0.25 ✓	-0.35 ✓	-0.65 ✓	-0.55 ✓	-0.7 ✓			
	0.0 ✓	-0.20 ✓	-0.4 ✓	-0.7 ✓	-0.4 ✓	-0.8 ✓			
	+0.05 ✓	-0.2 ✓	-0.4 ✓	-0.7 ✓	-0.55 ✓	-0.7 ✓			
- Mean	+0.02 ✓	-0.18 ✓	-0.35 ✓	-0.53 ✓	-0.58 ✓	-0.65 ✓	-1.0 ✓		
N-DAY	+0.1 ✓	-0.15 ✓	-0.15 ✓	-0.45 ✓	-0.4 ✓	-0.8 ✓			
	+0.1 ✓	0.0 ✓	-0.1 ✓	-0.25 ✓	-0.4 ✓				
	+0.05 ✓	+0.05 ✓	0.0 ✓	-0.05 ✓	-0.3 ✓				
	+0.1 ✓	-0.05 ✓	-0.1 ✓	-0.25 ✓	-0.35 ✓	-0.8 ✓			
P-DAY	0.0 ✓	-0.05 ✓	-0.2 ✓	-0.3 ✓	-0.3 ✓				
	+0.1 ✓	-0.05 ✓	-0.15 ✓	-0.25 ✓	-0.4 ✓				
	+0.05 ✓	-0.05 ✓	-0.2 ✓	-0.3 ✓	-0.35 ✓				
Q-DAY	+0.15 ✓	-0.05 ✓	-0.1 ✓	-0.2 ✓	-0.4 ✓	-0.3 ✓			
	+0.15 ✓	+0.05 ✓	-0.05 ✓	-0.05 ✓	-0.2 ✓				
	+0.2 ✓	0.0 ✓	-0.05 ✓	-0.2 ✓	-0.3 ✓	-0.3 ✓			
	+0.15 ✓	0.0 ✓	-0.05 ✓	-0.15 ✓	-0.3 ✓	-0.3 ✓			
R-DAY	+0.15 ✓	+0.05 ✓	0.0 ✓	-0.05 ✓	0.0 ✓	-0.1 ✓	-0.2 ✓		
	+0.15 ✓	+0.1 ✓	-0.05 ✓	-0.05 ✓	-0.25 ✓	-0.5 ✓			
	+0.15 ✓	+0.1 ✓	0.0 ✓	-0.05 ✓	-0.1 ✓	-0.3 ✓	-0.2 ✓		
S-DAY	+0.05 ✓	+0.05 ✓	-0.1 ✓	-0.25 ✓	-0.25 ✓	-0.3 ✓			
	+0.15 ✓	+0.05 ✓	-0.2 ✓	-0.25 ✓	-0.35 ✓				
	+0.1 ✓	-0.05 ✓	-0.05 ✓	-0.2 ✓	-0.3 ✓				
	+0.1 ✓	0.0 ✓	-0.1 ✓	-0.25 ✓	-0.3 ✓	-0.3 ✓			
T-DAY	+0.2 ✓	+0.05 ✓	0.0 ✓	-0.3 ✓	-0.2 ✓	-0.1 ✓			
	+0.2 ✓	-0.05 ✓	-0.15 ✓	-0.3 ✓	-0.3 ✓				
	+0.05 ✓	0.0 ✓	0.0 ✓	-0.2 ✓	-0.3 ✓	-0.3 ✓			
	+0.15 ✓	0.0 ✓	-0.05 ✓	-0.25 ✓	-0.25 ✓	-0.2 ✓			
W-DAY	+0.05 ✓	-0.1 ✓	-0.2 ✓	-0.3 ✓	-0.35 ✓				

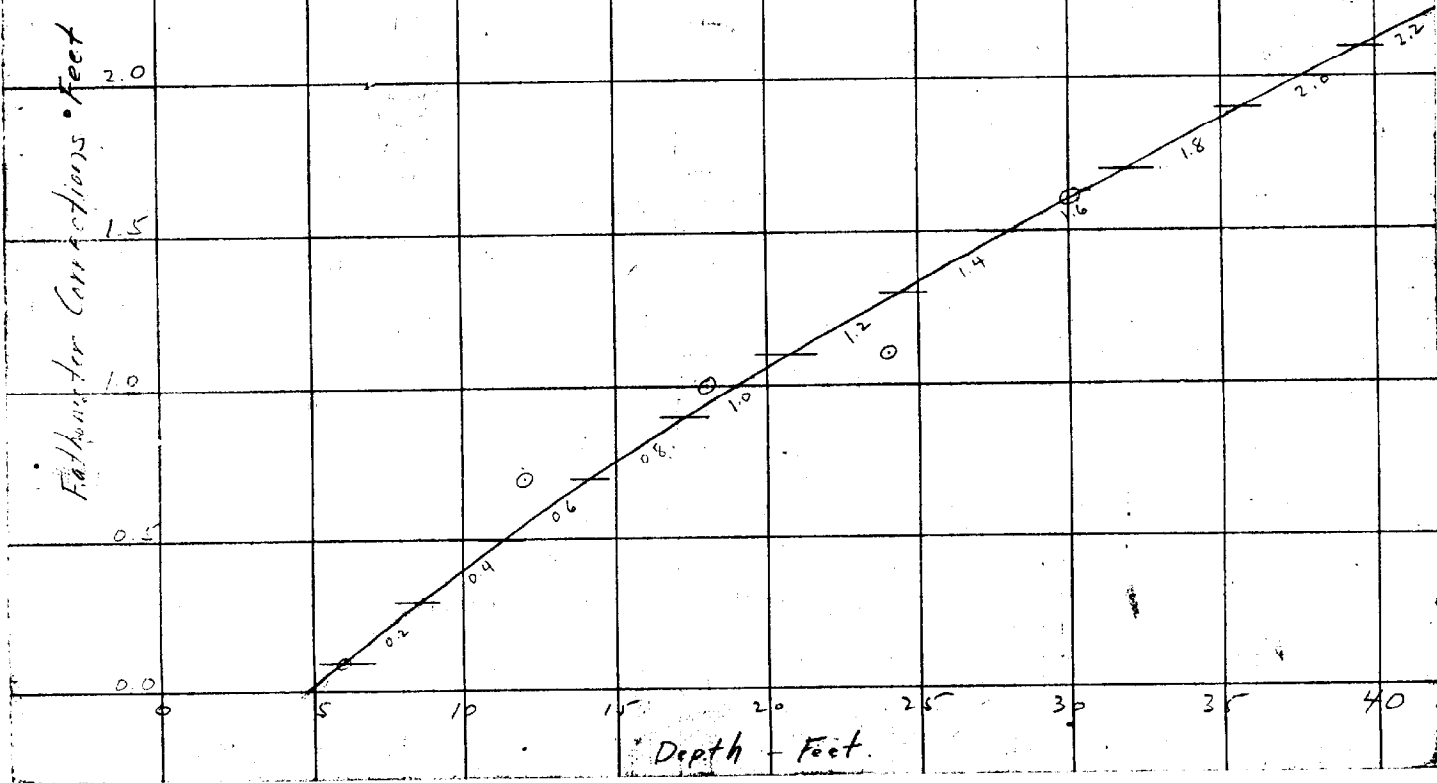
	6	12	18	24	30	36	42
BB-DAY	+0.2 <sup>✓</sup>	+0.05 <sup>✓</sup>	-0.1 <sup>✓</sup>	-0.3 <sup>✓</sup>	-0.4 <sup>✓</sup>	-0.5 <sup>✓</sup>	
	+0.1 <sup>✓</sup>	+0.15 <sup>✓</sup>	+0.05 <sup>✓</sup>	+0.0 <sup>✓</sup>	-0.15 <sup>✓</sup>	0.0 <sup>✓</sup>	-0.4 <sup>✓</sup>
	+0.15 <sup>✓</sup>	+0.1 <sup>✓</sup>	+0.0 <sup>✓</sup>	-0.15 <sup>✓</sup>	-0.3 <sup>✓</sup>	-0.25 <sup>✓</sup>	-0.4 <sup>✓</sup>
Y-DAY	+0.25 <sup>✓</sup>	+0.1 <sup>✓</sup>	0.0 <sup>✓</sup>	-0.15 <sup>✓</sup>	-0.4 <sup>✓</sup>		
	+0.1 <sup>✓</sup>	-0.05 <sup>✓</sup>	-0.2 <sup>✓</sup>	-0.4 <sup>✓</sup>	-0.45 <sup>✓</sup>	-0.7 <sup>✓</sup>	
	+0.05 <sup>✓</sup>	+0.15 <sup>✓</sup>	0.0 <sup>✓</sup>	-0.1 <sup>✓</sup>	-0.2 <sup>✓</sup>	-0.3 <sup>✓</sup>	
	+0.15 <sup>✓</sup>	+0.05 <sup>✓</sup>	-0.05 <sup>✓</sup>	-0.2 <sup>✓</sup>	-0.35 <sup>✓</sup>	-0.5 <sup>✓</sup>	
A-A DAY	+0.1 <sup>✓</sup>	+0.1 <sup>✓</sup>	-0.1 <sup>✓</sup>	-0.2 <sup>✓</sup>			
Sum	+1.15	+0.15	-0.85	-3.10	-2.08	-2.65	
MEAN	+0.115	+0.015	-0.085	-0.210	-0.294	-0.380	-0.30
R	+0.2	+0.05	-0.1	-0.3	-0.4	-0.5	
	+0.1	+0.15	+0.05	+0.0	-0.15	0.0	-0.4
	+0.15	+0.1	-0.08	-0.15	-0.28	-0.25	-0.4
	(+0.12)	+0.015	-0.085	-0.21	-0.294	-0.380	-0.30

FATHOMETER	CORRECTIONS - A-DAY - 8 JUNE - 1945				
	True	Fathometer		Mean	Correction
6	6.2	6.0	6.1	-0.1	Initial set for 2 1/2 Ft.
12	12.8	12.6	12.7	-0.7	
18	19.0	19.1	19.0	-1.0	
24	25.0	25.2	25.1	-1.1	
30	31.8	31.5	31.6	-1.6	

CORRECTION TABLE

Depth	Correction
0 - 6 ✓	+0.0 ✓
6 - 8.5 ✓	-0.2 ✓
8.6 - 11.4 ✓	-0.4 ✓
11.4 - 14.0 ✓	-0.6 ✓
14.1 - 17.2 ✓	-0.8 ✓
17.3 - 20.7 ✓	-1.0 ✓
20.8 - 24.4 ✓	-1.2 ✓
24.5 - 28.0 ✓	-1.4 ✓
28.0 - 31.8 ✓	-1.6 ✓
31.9 - 35.6 ✓	-1.8 ✓
35.7 - 39.4 ✓	-2.0 ✓
39.5 - 43 ✓	-2.2 ✓

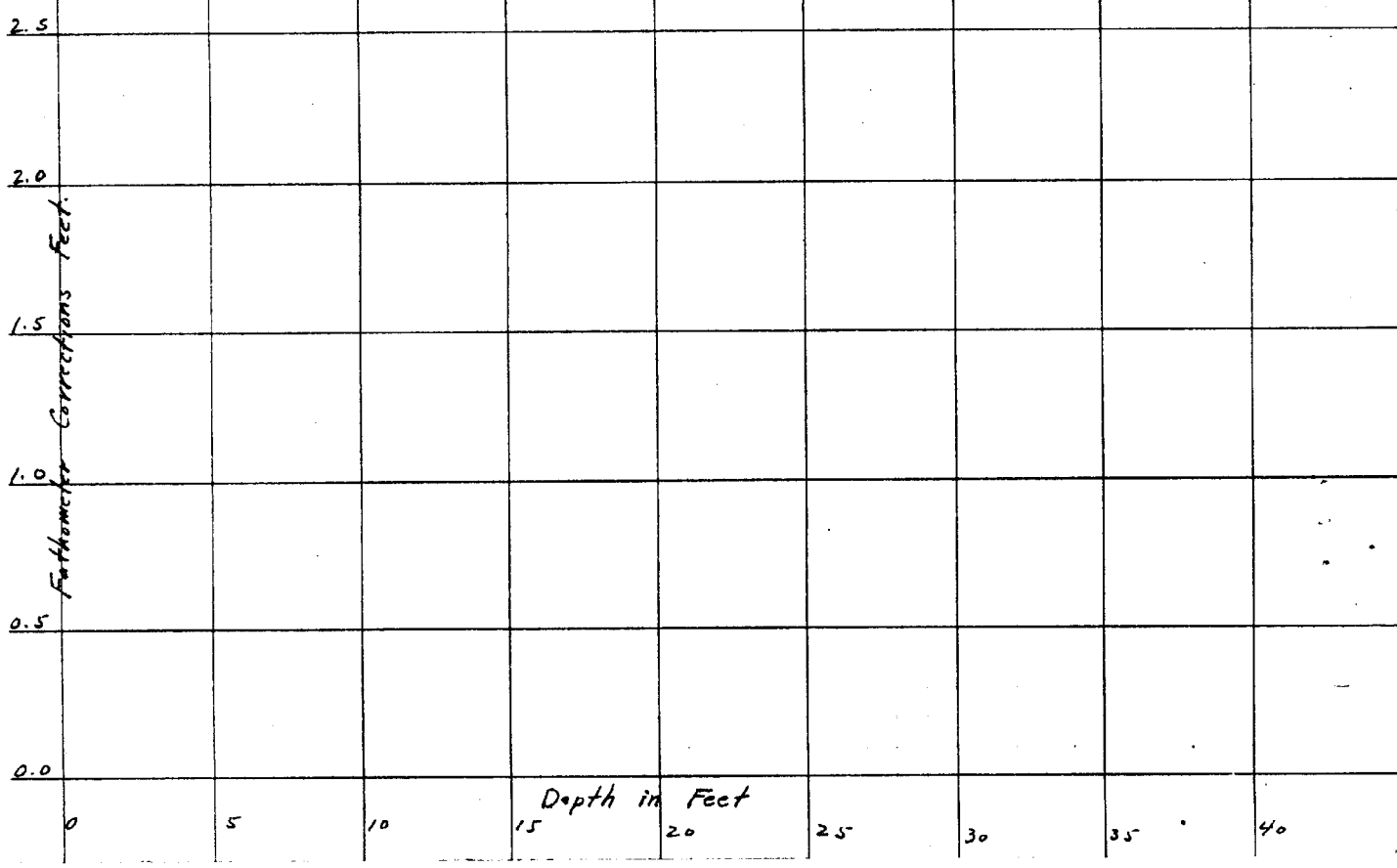
VR 98



12 June 1945

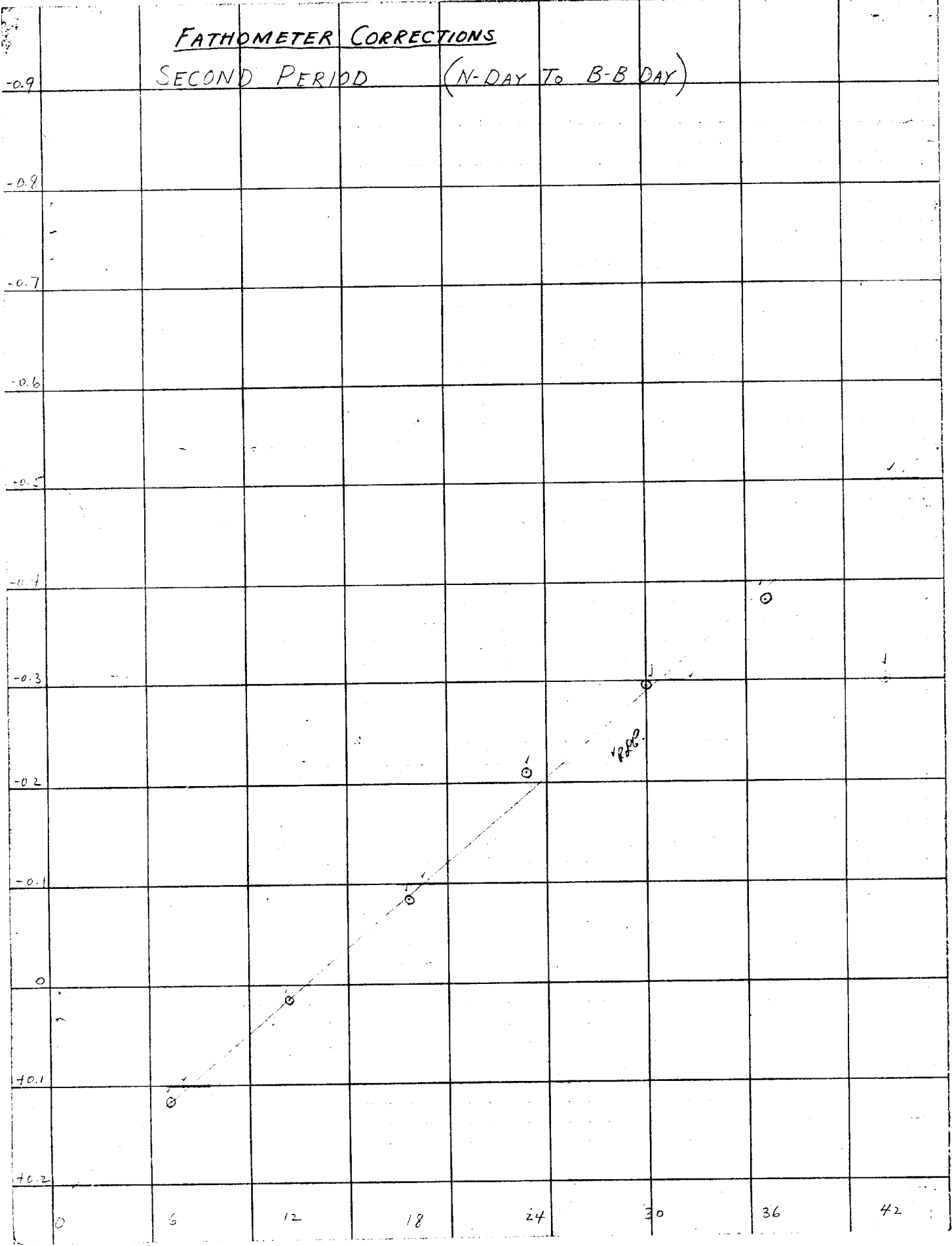
TRUE DEPTH	6.0	12.0	18.0	24.0	30.0	36.0
	5.9	12.2	18.2	24.5	30.6	36.6
	5.8	12.0	18.1	24.3	30.4	
	5.8	12.1	18.6	24.7	30.8	
	5.8	12.0	18.3	24.7		
	5.9	12.0	18.3	24.5	30.9	
	5.9	12.2	18.4	24.6		
Mean	5.85	12.08	18.32	24.55	30.68	36.6

These data used for Combined Curve B day - m day.  
Initial set for 2' for all days EXCEPT A day



# FATHOMETER CORRECTIONS

SECOND PERIOD (N-DAY TO B-B DAY)



TRUE DEPTH	- CORR	FATH. DEPTH
<del>3.6</del> - <del>9.5</del> ✓	0.0 ✓	3.6 - 9.6 ✓
<del>9.6</del> - <del>16.2</del> ✓	(-) 0.2 ✓	9.8 - 16.4 ✓
<del>16.3</del> - <del>24.6</del> ✓	(-) 0.4 ✓	16.6 - 25.0 ✓
<del>24.7</del> - <del>40.7</del> ✓	(-) 0.6 ✓	25.2 - 41.2 ✓
<del>40.8</del> - 70 ✓	(-) 0.8 ✓	41.4 - 70 ✓

✓ R.P.P.



# FATHOMETER CORRECTIONS

FIRST PERIOD

B-DAY THRU M-DAY

-1.0

-0.9

-0.8

-0.7

-0.6

-0.5

-0.4

-0.3

-0.2

-0.1

0

+0.1

0

6

12

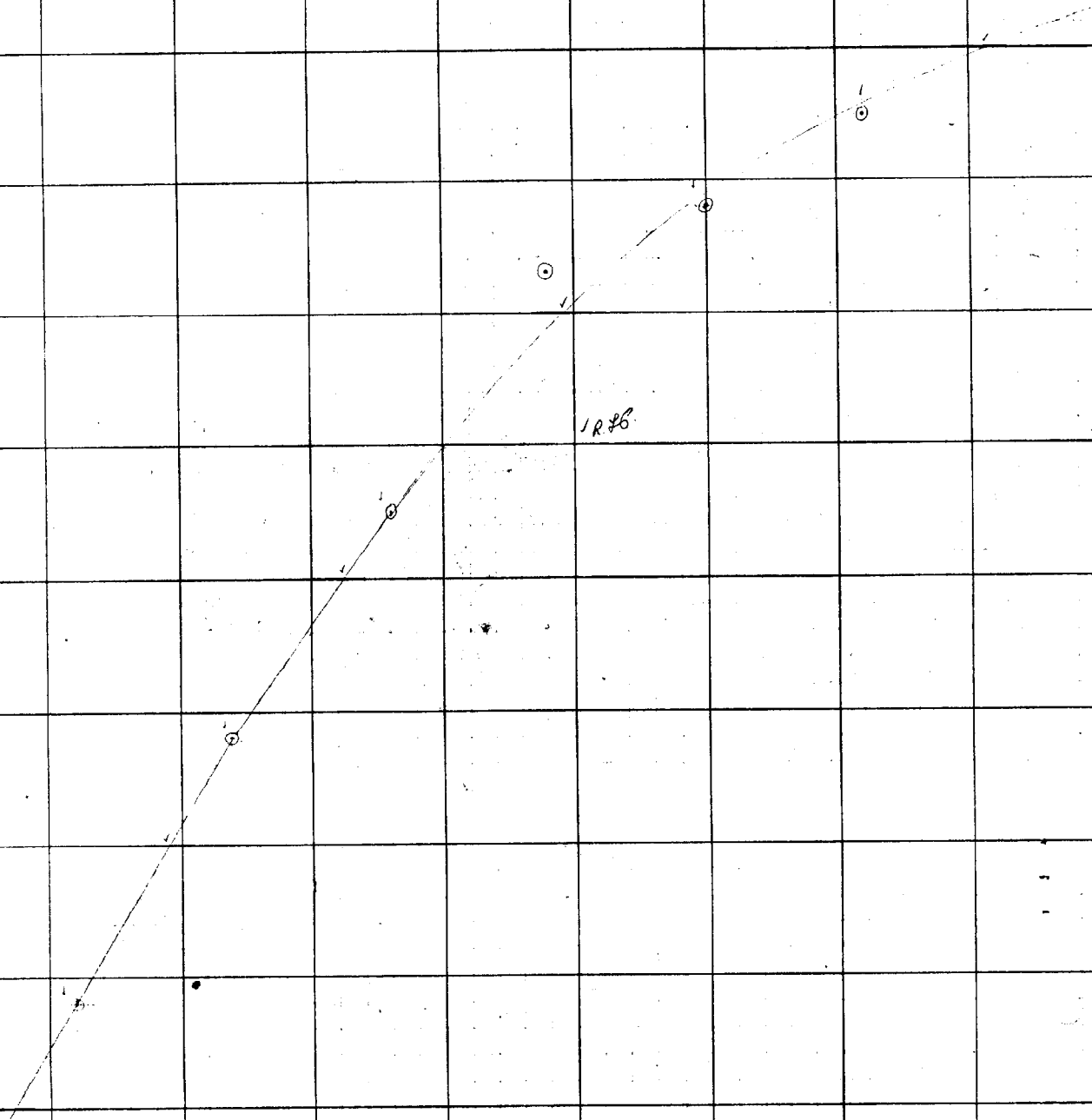
18

24

30

36

42



TRUE DEPTH	CORR.	FATH. DEPTH
1.1 - 7.0	+0.2 ✓	1.0 - 7.0 ✓
7.1 - 18.7	± 0.0 ✓	7.2 - 18.6 ✓
18.8 - 30.6	- 0.2 ✓	18.8 - 30.8 ✓
30.7 - 42.5	- 0.4 ✓	31.0 - 43.0 ✓
42.6 - 55.1	- 0.6 ✓	43.2 - 55.8 ✓
55.2 - 69	- 0.8 ✓	56.0 - 70.0 ✓

✓R26

43

54

60

70

7400

TIDE NOTE FOR HYDROGRAPHIC SHEET

15 November 1945.

~~Division of Hydrography and Topography:~~

Division of Charts: Attention: H. W. MURRAY

Plane of reference approved in  
/4 volumes of sounding records for

HYDROGRAPHIC SHEET 7046

Locality Gravesend Bay, New York Harbor

Chief of Party: R. L. Pfau in 1945  
Plane of reference is mean low water, reading  
2.6 ft. on tide staff at Norton Point.  
10.6 ft. below B. M. 3 (1934)

Height of mean high water above plane of reference is 4.7 feet.

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents.

DIVISION OF CHARTS

REVIEW SECTION -- NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. 7046

FIELD NO. FA-05145

New York, New York Harbor, Gravesend Bay  
Surveyed in May to August 1945 Scale 1:5,000  
Instructions: Director's letter of May 5, 1945

Soundings:

808 Fathometer  
Leadline

Control:

Three-point fix on shore signals

Chief of Party - R. L. Pfau  
Surveyed by - R. L. Pfau  
Protracted by - A. G. Atwill  
Soundings plotted by - A. G. Atwill  
Verified and inked by - A. R. Stirni  
Reviewed by - G. F. Jordan, Jan. 23, 1946  
Inspected by - H. W. Murray

1. Control and Shoreline

The source of the control and shoreline is adequately described in the descriptive report.

Additional piling and wreckage detail not shown on the map manuscripts has been plotted from information in the sounding records.

2. Sounding Line Crossings

The agreement of crossline depths is excellent.

3. Submarine Relief and Depth Curves

The bottom in the area of the present survey was originally smooth, sandy and muddy, with the exception of a natural deep in the vicinity of lat. 40° 36', long. 74° 01'. However, channel, anchorage and land-fill dredging has changed a considerable area of the bottom. Land fill along the northeastern shore has moved out the high water line as much as 250 meters since 1919.

All the depth curves were drawn satisfactorily.

4. Junctions with Contemporary Surveys

Junctional surveys are not included on this project.

5. Comparison with Prior Surveys

H-5736 (1934) 1:10,000

This recent survey shows satisfactory agreement of depths with the present survey in the undredged areas.

- a. The sunken wreck (Chart 369) at lat.  $40^{\circ} 34.97'$ , long.  $74^{\circ} 59.75'$  should be disregarded. Considerable time was spent on the present survey locating wrecks in this area and it is considered that this particular wreck was located 60 meters ESE beside the row of piling. The prior position was estimated at the turn of a sounding line.
- b. The sunken wreck (Chart 369) at lat.  $40^{\circ} 34.95'$ , long.  $74^{\circ} 59.8'$  has been carried forward. It was not investigated on the present survey, but may be substantiated by the 8-ft. sounding in 11-ft. depths shown as a sharp feature on the fathogram of a line on the north side of the wreck symbol.

The above prior survey is superseded within the area of the present survey.

6. Wire Drag Surveys

There are no wire drag surveys in this area.

7. Comparison with Chart 541 (Latest print of Oct. 6, 1945)  
Chart 369 (Latest print of Oct. 13, 1945)

A. Hydrography

The charted depths are from surveys previously discussed except where superseded by blueprints of dredged areas. A few soundings 1-ft. shoaler than present depths, such as the 6-ft. sounding at lat.  $40^{\circ} 35.0'$ , long.  $74^{\circ} 00.7'$  should be disregarded.

Chart 369

1. The 12-ft. sounding charted at lat.  $40^{\circ} 35.8'$ , long.  $74^{\circ} 00.8'$  from blueprint No. 39189 should be retained. The depth is not clear on the blueprint and may be 13.5 ft. instead of 12.5 ft. Investigation of the charted 12 is not indicated on the present survey which shows 14 ft. in general depths of 16 ft.

2. It is considered that the four piles charted in the pipeline area in the vicinity of lat.  $40^{\circ} 35.5'$ , long.  $74^{\circ} 00.3'$  should be disregarded. They originate from blueprint No. 33101 (1939) and are shown on a blueprint of dredging operations No. 35079 (1941). The present survey does not show or mention any one of the four piles, and it seems reasonable to assume that they have been removed.

3. The 7-ft. sounding charted at lat.  $40^{\circ} 35.5'$ , long.  $74^{\circ} 00.3'$  from blueprint No. 33101 (1939) should be disregarded. Falling in 11-ft. depths, the sounding is considered to have been taken on a small dump area and subsequently superseded by dredging operations. The sounding was obtained close to one of the piles referred to in the above paragraph.

4. The ruins of a pier previously connecting a dock or pier head with the waterfront at lat.  $40^{\circ} 35.38'$ , long.  $74^{\circ} 00.0'$  should be disregarded. Although there is no reference to this feature on the present survey, it is apparent that the pier had been removed in dredging operations.

5. No authority was found for what appears to be piling charted (Chart 541) at lat.  $40^{\circ} 36.24'$ , long.  $74^{\circ} 01.52'$  and in the vicinity of lat.  $40^{\circ} 36.18'$ , long.  $74^{\circ} 01.2'$ . The piling, or possibly bare rock symbols, were applied to the chart when shoreline corrections were made from blueprint No. 35062 (1941). The blueprint shows only riprap facing the seawall shoreline. The features should be disregarded.

6. The wrecks (Chart 369) for which the following positions are given should be disregarded. Although they were not specifically investigated on the present survey, the development in their vicinities indicate that the unverified wrecks no longer exist:

- a. Wreck awash - lat.  $40^{\circ} 35.63'$ , long.  $73^{\circ} 59.95'$ .
- b. Sunken wreck - lat.  $40^{\circ} 35.26'$ , long.  $73^{\circ} 59.60'$ .
- c. Sunken wreck - lat.  $40^{\circ} 34.90'$ , long.  $74^{\circ} 00.32'$ .

B. Channels

No dredged channels are charted.

C. Aids to Navigation

The aids to navigation located on the present survey agree with the charted aids and satisfactorily mark the features intended.

The red and white buoy charted at lat.  $40^{\circ} 35.86'$ , long.  $74^{\circ} 00.4'$  is believed to have been discontinued. It is not listed in the Light List, was not located on the present survey, and has no value as an aid since the shoreline has been moved out 250 meters by land fill.

8. Condition of the Survey

The sounding records and descriptive report are complete in all detail. The smooth plotting was very good.

The area of the survey was excellently covered including the acquisition

of bottom characteristics.


9. Compliance with Instructions


The survey satisfactorily complies with instructions for the project. Had paragraph 3234 of the Hydrographic Manual been complied with most of the discrepancies discussed in paragraph 7 of this review could have been cleared up in the field.

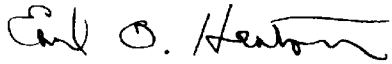
10. Additional Work

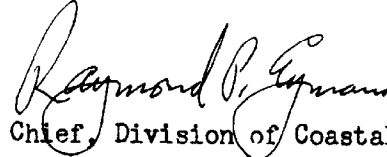
No additional field work is recommended for this basic survey.

Examined and approved:

  
Chief, Nautical Chart Branch

  
Chief, Chart Division

  
Chief, Section of Hydrography

  
Chief, Division of Coastal Surveys

# NAUTICAL CHARTS BRANCH

SURVEY NO.   H7046  

## Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
1/8/46	540	W.A. Bruders	Before <del>After</del> Verification and Review
1/31/46	540	J.F. Walker	<del>Before</del> After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.