6331

1214-2
1211-2
1400-3

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic } *Sheet No.* 6331

Approaches to New York.

State New York - Rhode Island

LOCALITY
Approaches to New York Harbor
South of Long Island & Block Island

193 8

CHIEF OF PARTY

Raymond P. Eyman

U.S. GOVERNMENT PRINTING OFFICE: 1934

6331

Form 537
Ed. Dec. 1930

REG. NO.

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.

Field No. 801

REGISTER NO. 6331 H6331

State New York -- Rhode Island.

General locality Approaches to New York Harbor

Locality South of ~~Long~~ Block Island and ~~Block~~ Long Island

Scale 1:80,000 Date of survey June - September, 1938

Vessel L Y D O N I A

Chief of Party Raymond P. Eyman

Surveyed by Ship's Officers (G. E. Boothe)

Protracted by M.O.Witherbee and J.C. Bose.

Soundings penciled by M.O.Witherbee and J.C.Bose.

Soundings in ~~fathoms~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by

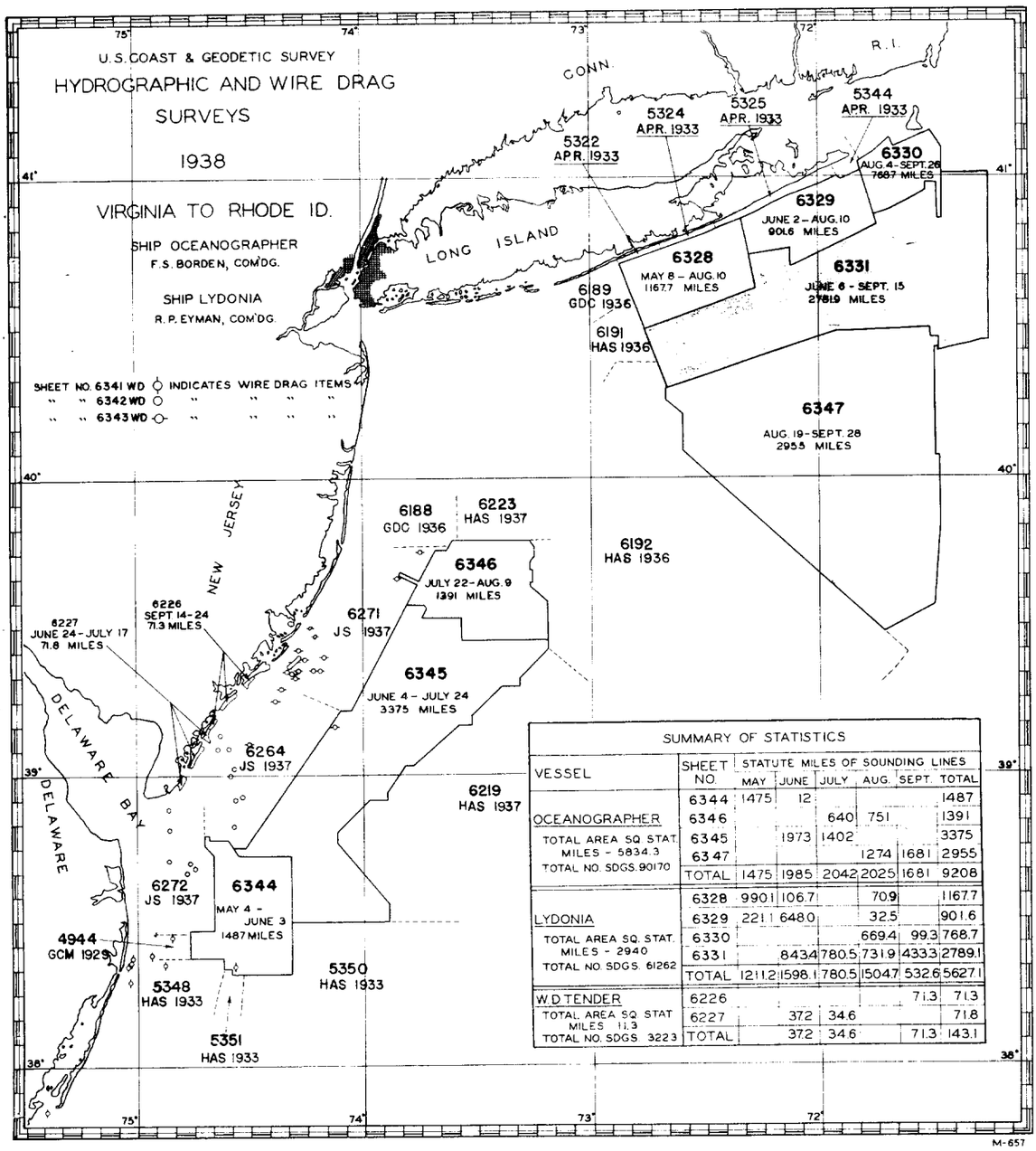
Inked by F. B. Kelly

Verified by F.B.K.

Instructions dated April 9, 1936 and March 4, 1938, 19

Remarks:

U. S. GOVERNMENT PRINTING OFFICE



SUMMARY OF STATISTICS

VESSEL	SHEET NO.	STATUTE MILES OF SOUNDING LINES MAY	JUNE	JULY	AUG.	SEPT.	TOTAL
OCEANOGRAPHER	6344	1475	12				1487
	6346			640	751		1391
TOTAL AREA SQ. STAT. MILES - 5834.3	6345		1973	1402			3375
TOTAL NO. SDGS. 90170	6347				1274	1681	2955
	TOTAL	1475	1985	2042	2025	1681	9208
LYDONIA	6328	990.1	106.7		70.9		1167.7
	6329	221.1	680		32.5		901.6
TOTAL AREA SQ. STAT. MILES - 2940	6330				669.4	99.3	768.7
TOTAL NO. SDGS. 61262	6331		843.4	780.5	731.9	433.3	2789.1
	TOTAL	1211.2	1598.1	780.5	1504.7	532.6	5627.1
W.D. TENDER	6226					71.3	71.3
TOTAL AREA SQ. STAT. MILES 11.3	6227		37.2	34.6			71.8
TOTAL NO. SDGS. 3223	TOTAL		37.2	34.6		71.3	143.1

M-657

DESCRIPTIVE REPORT

to accompany

SHEET No. 6331.

INSTRUCTIONS:

The survey was executed in accordance with Instructions from the Director dated April 9, 1936 and supplemental Instructions dated March 4, 1938.

LIMITS.

The area of sheet 6331 lies approximately 15 miles south of the eastern half of Long Island and is roughly bounded by four corners, as follows: Lat. 40° 33', Long. 72° 46" in the northwest; Lat. 40° 18', Long. 72° 41' in the southwest; Lat. 41° 00', Long. 71° 15' in the northeast; and Lat. 40° 26', Long 71° 15' in the southeast.

A line joining Nantucket and Fire Island Lightships passes across the sheet, hence the area contains much traffic.

SURVEY METHODS:

The soundings were taken with the Dorsey fathometer No. 1, while the control was furnished by R.A.R. through the medium of sono-radio buoys. The sono-radio buoys were in a chain of survey buoys connected by sun azimuths and taut wire distances. A detailed description of the buoy traverse appears elsewhere in this report. A discussion of the fathometer soundings also forms part of this report.

Most of the hydrography in the immediate vicinity of the buoy line was done by means of visual fixes taken on the buoys but, by far, the greater amount was controlled by R.A.R.

DISCREPANCIES:

There are no discrepancies in the locations of buoys, other than the usual small closing errors, for which adjustment was easily made.

Only a few discrepancies occured in the soundings, none of them serious.

An analysis of 373 crossings -- which is approximately the total number of crossings on the sheet -- discloses the following figures:

37% of the crossings checked exactly. 80.4% 1ft or less.
43.4% differed by 1 foot.
14% differed by 2 feet.
2.4% differed by 3 feet.
3.2% differed by more than 3 feet.

Many of these discrepancies can be improved by a slight shift in position.

A discussion of the larger discrepancies follows: Lat. 40°23' Long. 72°41'
A 5 foot discrepancy exists at the crossing between positions 14-15D (165 feet) and positions 22-23D (170 feet). This 170 ft. sounding is marked O.K. in the record book and a displacement of one sounding interval is all that is required to make the crossing check exactly. However is seems likely that the 170 ft. sounding is a fathom too deep in spite of the remark. (170 not plotted)

A 6 foot discrepancy occurs between pos. 20 - 21F (149 ft.) and pos. 6667F (143 ft.). The next sounding after 149 feet is 143 feet on pos. 21-F, so that a displacement of 1 sounding interval is all that is required to cause agreement. It seems likely that the 149 ft. sounding was read a fathom too deep. (147 plotted) Lat. 40°37' Long. 72°24'

A 5 foot discrepancy occurs between pos. 11-12A (134 ft.) and 16-17G (129 ft.). The first sounding preceding 129 feet is 133 feet, so that a displacement of one sounding interval will reduce the discrepancy to 1 foot. (129 plotted) Lat. 40°29' Long. 72°44'

A 4 foot discrepancy between 19-20C (171 feet) and 16 - 17H (167 feet). The next sounding after 167 is 169, so that a displacement of 1 sounding interval will reduce the discrepancy to 2 feet. (171 plotted) Lat. 40°21' Long 72°28'

A 4 foot discrepancy between 7-8L (169 feet) and 10-11M (173 feet). A displacement of one minute, or two sounding intervals of the soundings between 7-8L will bring the crossing into agreement. (169 plotted) Lat 40°35' Long 72°12'

A 4 foot discrepancy between pos. 24-25R (201 feet) and 25-26Z (205 feet). If each of the two soundings were shifted by one sounding interval, they would agree within 1 foot. (Plot 205) Lat. 40°35' Long 71°53'

A 4 foot discrepancy between pos. 39-40LL (216 feet) a nd 10-11U (220 feet). By shifting the LL line slightly southward, the crossing will be improved. (216 plotted) Lat 40°32' Long 71°53'

A 5 foot discrepancy between pos. 40-41LL (220 feet) and 12 -13U (227 feet). This crossing would be in better agreement if the LL line were shifted slightly southward (one or two sounding intervals.) (220 plotted) Lat 40°32' Long 71°49'

An 8 foot discrepancy between position 41 LL (226 feet) and 16-17W (234 feet). Shifting the LL line southward two or three sounding intervals will eliminate this discrepancy. (234 plotted) Lat. 40°32' Long. 71°48

A 4 foot discrepancy between pos. 1-2QQ (226 feet) and 11-12 NN (222 feet). A slight shift of either line would reduce the discrepancy to one half of the amount. The226 ft sounding is somewhat doubtful because the record, Volume 14, page 49, carries the remark "many strays in fathometer - signal uncertain. (222 plotted) Lat. 40°33' Long. 71°15'

A 5 foot discrepancy 15-16 QQ (226½ feet) and 74-75 LL (230½ feet). This discrepancy can not be eliminated by a small shift in position and is probably due to faulty performance of the fathometer. A note in the remarks column between pos. 15-16QQ, page 56, volume 14, says, "Many strays in fathometer". (230 plotted) Lat. 40°30' Long 71°22'

DANGERS.

There are no dangers in the limits of the sheet.

COMPARISON WITH OTHER SURVEYS

In the southwest corner of this sheet, a junction is made with sheet No 6192 (1936). Some of the soundings are in exact agreement, some differ by about half a fathom, and a few differ by a fathom or more. The soundings on sheet 6192 are shoaler than those on this sheet. This is probably due to the fact that they have been plotted in fathoms and that odd feet had been dropped. The bottom is rather irregular in this area, so that a small displacment may account for most of the discrepancy. As the soundings on sheet 6331 were taken with a more precise type of fathometer than the instrument used in 1936 on sheet 6192, the soundings on sheet 6331 should be more accurate. For H Review

A junction with sheet NO. 6191 is also made in the northwest corner of sheet 6331. This junction appears to be quite satisfactory.

Along the northern edge of this sheet, a junction is made with three sheets Nos. 6328, 6329 and 6330. All three of these junctions are very satisfactory.

Along the southern edge of the sheet, a junction is made with sheet no 6347 (OCEANOGRAPHER, 1938) This junction also is very satisfactory throughout.

COMPARISON WITH CHART.

All of the area of sheet 6331 comes within the limits of Chart No 1108 and some of the northwestern part comes within the limits of Chart No. 1211.

A comparison with Chart No. 1211 shows that some of the soundings are in good agreement, some differ by a few feet, and some differ by as much as 30 feet. The actual number of discrepancies are really too numerous to describe but a few of the worst ones are pointed out herewith.

In Lat. 40° 55.9, Long. 71° 28.1, the chart shows 204 feet while the new survey sheet shows 183 feet. From H-1782(1887)

In Lat. 40° 40.5, Long. 71° 43.0, the chart shows 180 feet while the sheet shows 217 feet. From H-101(1884)

In Lat. 40° 40.8, Long 72° 03.2, the chart shows 132 feet where this sheet shows 163 feet. From H-101(1884)

The bottom has considerable slope in the area common to chart 1211 and sheet 6331, so that any error in position of the soundings will cause discrepancies in depths. On the whole, however, the southernmost portion of chart 1211 is not very satisfactory and is in need of revision,

A comparison with chart No. 1108 also discloses some discrepancies. Some of the soundings on the chart are in good agreement with this survey but several are not.

From H-1782(1887)

The chart shows 28 fathoms in Lat. 40° 28.7', Long 71° 27.2'. Sheet 6331 shows about 39 fathms in this locality. However, not enough development was done on this sheet to completely disprove the existence of 28 fathoms. Additional development work around this area is planned for the 1939 season when a junction is made

with the present work.

In Lat. 40° 26', Long 71° 19.5 the chart shows 44 fathoms, while the new sheet shows about 40 fms. *From H-1782(1887)*

In Lat. 40° 31', Long. 72° 08' the chart shows 33 fms while the new survey shows about 30½ fms. *From H-1558(1882-83)*

There are other discrepancies besides the three named above and, on the whole, the chart needs to be revised.

J.C. Bose.

J.C. Bose,
H.& G. Engineer.

The two westernmost lines of sheet No. 6330 extend southward into the area of sheet No. 6331. These lines have been transferred to sheet No. 6331, so as not to show a gap, and can be identified by the blue position numbers. They lie in longitude 71° 28' and extend southward as far as latitude 40° 51'.

The soundings on these two lines have been inked in black on H6331 & omitted from H6330. and records properly marked. O.K.

J. B. Kelly
Aug. 1, 1939.

DETERMINATION OF R. A. R. VELOCITIES, SHEET NO. 6331.

In arriving at values of the velocities to be used in plotting the R.A.R. positions, the first step was to ma ke an overlay of tracing paper to fit over the boat sheet. As the sheet was done in two parts and had two boat sheets, two overlays were made. On this overlay were plotted the positions of all serial and bottom temperatures observed and the positions of all sono-radio buoys. The value of the theoretical bottom velocity and the depth of water were written down at each position so plotted. Lines of equal velocity were then sketched on the overlay so as to be in agreement with these plotted velocities and, at the same time, to be approximately parallel to the depth curves on the boat sheet.

A set of overlays was then prepared which covered the area controlled by each sono-radio buoy. There was one overlay for each sono-radio buoy. It consisted of a system of radial lines, radiating from the position of the buoy and covering the area controlled by it. The radial lines were arbitrarily drawn at intervals of ten degrees and each line marked off in units of two inches.

By superimposing the overlay of radial lines on the overlay showing the curves of equal velocity, the mean velocity from the sono-radio buoy to each point marked on each radial line was computed and written down beside that point. A system of curves was then sketched across the radial overlay, joining points of equal mean velocities. This system of curves was similar to that sketched on the first overlay but it is to be remembered that the first set of curves or lines connected points of equal velocity over the area of the sheet while the second set connected points of equal mean velocity as computed from the sono-radio buoy outward.

By superimposing the radial overlay, with its curves of mean velocities, directly on the boat sheet, the position numbers for the various days could be followed and the correct mean velocity for each bomb position read off the overlay and written down in the bomb record book.

A large number of experimental velocities were determined along the lines of buoys. For the line of buoys along the inshore edge of the sheet, these velocities were of value only in confirming the assumption that the theoretical velocities held good, because the buoys were in shallower water than the area surveyed and, therefore, these experimental velocities would be somewhat too high.

For the period June 6 to June 10 (A - D days), the theoretical velocities ranged from 1480 along the line of buoys to 1474 along the offshore edge of the area. The value of 1480 agreed well with the average of experimental velocities and the theoretical velocities give good intersections. The theoretical velocities were used.

For the period June 16 to June 21 (E - K days), the use of either theoretical or experimental velocities failed to give good intersections. During the survey it was thought that this was due to buoy CEL being out of position and a new position of CEL was determined by bombs. With this position of CEL and a velocity of 1481, fairly good intersections were obtained on the boat sheet. However, CEL was

later checked and found not to be out of position and the cause of the failure to obtain good intersections during this period had to be sought elsewhere. It was found that using a lower velocity would help materially and, as the theoretical velocities are several meters less than the 1481 used on the boat sheet, it was decided to use theoretical velocities for this period also. Most of the positions with three arcs during this period have small triangles of error.

For the period July 2 to August 9 (M - DD days), the theoretical velocities are confirmed both by experimental velocities and by good intersections of the arcs.

On August 16 and 17, a number of experimental velocities were taken which gave extremely low values, 1460 to 1470 meters per second, with a mean value of 1465. No hydrography was done on these days but from August 27 to August 31 (EE - HH days), it was found that the velocity needed to give good intersections lay between 1460 and 1470. The reason for this condition could not be determined. The theoretical velocities for this period lie between 1475 and 1480. The value used in plotting this part of the sheet was 1467.

a further confirmation of the need for 3 buoys whose positions are rigidly determined by fourwire CAS 6/29/39

For the rema inder of the season, September 7 to 14, the experimental velocities are inconclusive. Those taken to buoy COB give a very high velocity (1490 - 1512). Those to buoy BOX give values of 1480 to 1490 and those to buoy DUK 1472 to 1473. The average theoretical velocity for this period is 1478 meters per second. Since this work is in deep water, where the variation in bottom temperature is practically nil, it was not necessary to construct overlays for mean velocity curves. The theoretical value of 1478 gives good intersections and is used throughout this period. However, a number of simultaneous sextant fixes and bomb positions were taken on LLday, September 11, and on each of these positions the bomb fix plotted about 200 meters north of the sextant fix. A great deal of time was spent in trying to discover the reason for this but no definite conclusion could be reached.

We need to find out what causes this. It is doubtful that it can be found except by carefully planned exper. Not from hydrography CAS 6/29/39

There is a possibility that some connection exists between the abnormal velocities encountered in the latter part of August and the discrepancy between bomb and sextant fixes noted in September because the same line of buoys was used for control in each case. This line of buoys is part of a closed loop of taut-wire and azimuth traverse extending south from buoy XRAY, which was located by a sextant fix. The error of closure of this loop was less than one meter per mile.

The following possibilities were investigated in trying to account for the discrepancies:

(1) Possible error in the taut wire readings (an error in an azimuth would not materially affect the velocity unless it were very large, in which case the loop would not close). This seems very unlikely, since all counter readings were taken by two officers, who checked each other. Furthermore it would take erroneous readings on at least three buoys, readings which would be in error by 100 turns, to account for the discrepancy. There is also the fact that the bomb and sextant fixes indicate buoy COB was south of its plotted position, while velocity tests taken three days later tend to show that it was an equal distance north.

(2) Dragging of buoys. This is the most probable cause. It is known that one buoy dragged anchor during this period. Sono-radio buoy DUN was planted on September 7, 1939 about 450 meters northeast of the OCEANOGRAPHER's buoy HUB, and two days later was found to have dragged more than half a mile to a point 450 meters southwest of HUB. If the discrepancies were caused by dragging of buoys, they cannot be accounted for by the dragging of just one buoy. At least two or three would have to have been out of position. Such being the case, it was impossible to determine which buoys to hold fixed and which to assume as out of position.

(3) Abnormal velocities. This would seem more plausible if the velocities necessary to give good intersections were higher (rather than lower) than the theoretical velocities obtained from bottom temperatures. Abnormally high velocities were encountered by the OCEANOGRAPHER in September 1936 and again in September 1937. These were evidently due to the sound traveling through a warm layer of water. There seems to be no way of accounting for a velocity corresponding to a tempera ture severa l degrees lower than any observed.

(4) Buoy lags. If it were possible for one or more of the sono-radio buoys to have a lag as great as 0.10 second, the discrepancy could be readily accounted for. However, laboratory tests have proved conclusively that the lag of this type of buoy does not exceed 0.01 second.

It is realized that the failure to account for the abnormal velocities has resulted in an uncertainty in the plotting of the positions. This uncertainty is, on the average, about 200 meters; it may be somewhat greater than this along the extreme eastern edge of the work. It is possible that if this edge is generously overlapped by next season's work, a check on the accuracy of the plotting may be obtained.

Respectfully submitted,
M. O. Witherbee
M. O. Witherbee
H & G Engineer.

EXPERIMENTAL VELOCITIES
Sheet 801

Date 1938	From Buoy	To Buoy	Distance (meters)	Time (seconds)	Velocity (m/sec.)	Adopted Velocity
June 6	Ink	Dad	4651.1	3.16	1471.9	
	Ink	Dad	4651.1	3.14	1481.4	
	Hat	Dad	9220.4	6.24	1477.6	
	Hat	Dad	9220.4	6.24	1477.6	
	Hat	Dad	9220.4	6.24	1477.6	
	Gus	Dad	13858.5	9.36	1480.6	
	Gus	Dad	13858.5	9.34	1483.8	
	Gus	Dad	13858.5	9.34	1483.8	
	Fog	Dad	18794.1	12.68	1482.2	
	Fog	Dad	18794.1	12.67	1483.4	
	Bat	Dad	37017.3	24.95	1483.7	1481.7 (weighted mean)
9	Kit	Car	27852.1	18.82	1479.9	
	Kit	Bag	41403.1	28.11	1472.9	
	Kit	Dad	4349.8	2.94	1479.5	
	Kit	Car	27852.1	18.83	1479.2	1476.8 (weighted mean)
10	Gus	Car	9643.8	6.48	1488.2	
	Gus	Car	9643.8	6.48	1488.2	
	Gus	Car	9643.8	6.45	1495.2	
	Gus	Dad	13858.5	9.34	1483.8	
	Gus	Dad	13858.5	9.36	1480.6	
	Gus	Dad	13858.5	9.36	1480.6	
	Gus	Bag	23194.8	15.61	1485.8	
	Gus	Bag	23194.8	15.60	1486.9	
	Gus	Bag	23194.8	15.59	1487.6	
	Dad	Bag* *mean	37053.3	24.953	1484.9	1486.1 (weighted mean)
16	Dad	Bag	37053.3	25.00	1482.1	
	Dad	Bag	37053.3	25.01	1481.5	
	Dad	Bag	37053.3	25.07?		
	Dad	Bag	37053.3	24.99	1482.8	1481.5 (mean)
16	Hat	Cel	5008.1	3.32	1508.4	
	Hat	Cel	5008.1	3.33	1503.9	
	Hat	Cel	5008.1	3.33	1503.9	
16	Hat	Dad	9220.4	6.21	1484.8	
	Hat	Dad	9220.4	6.19	1489.6	
	Hat	Dad	9220.4	6.22	1482.4	
	Hat	Bag	27832.9	18.79	1481.3	
	Hat	Bag	27832.9	18.78	1482.1	
	Hat	Bag	27832.9	18.79	1481.3	
	Hat	Bag	27832.9	18.79	1481.3	
	Dad	Bag* *mean	37053.3	24.993	1482.5	1483.2 (weighted mean)
17	Egg	Cel	9573.8	6.51	1470.6	
	Egg	Bag	13249.0	8.79	1507.2	
	Cel	Bag	22822.8	15.30	1491.7	

EXPERIMENTAL VELOCITIES
Sheet 801

Date 1938	From Buoy	To Buoy	Distance (meters)	Time (seconds)	Velocity (m/sec.)	Adopted Velocity
June 19	Ink	Dad	4651.1	3.15	1476.5	
		Cel	9577.4	6.42	1491.8	
		Bag	32402.2	21.83	1484.4	
	Hat	Dad	9220.4	6.22	1482.5	
		Cel	5008.1	3.34	1499.4	
		Bag	27832.9	18.78	1482.1	
	Gus	Dad	13858.5	9.35	1482.2	
	Cot	Bag	4391.3	2.98	1473.6	
		Cel	18431.5	12.46	1479.4	
		Dad	32662.0	21.92	1490.1	1487.5 (weighted mean)
	Kit	Bed	10405	7.03	1480.1	
				7.06	1473.8	
				7.02	1482.3	
				7.00	1486.4	
				6.98	1490.8	
	Kit	Dad	4349.8	2.96	1469.6	
				2.97	1464.7	
				2.94	1479.5	
				2.95	1474.5	
				2.92	1489.7	
	Kit	Cel	18578.3	12.52	1483.9	
				12.51	1485.1	
				12.52	1483.9	
				12.52	1483.9	1482.4 (weighted mean)
July 2	Art	Cel	27175.8	18.23	1490.7	
				18.25	1489.1	
	Bat	Cel	22788.8	15.37	1482.7	
				15.30	1489.6	
		Dad	37013.3	24.96	1482.9	
	Cot	Cel	18431.5	12.35	1492.4	1487.5 (weighted mean)
8	Pay	Det	4785.0	3.22	1486.1	
				3.24	1477.0	
		Cig	9088.4	6.16	1475.4	
				(6.28)	(1447.1)R	
		Bed	22084.0	14.94	1478.2	
				14.92	1480.3	
				14.96	1476.2	1478.2 (weighted mean
19	Bed	Cig	12995.6	8.81	1475.1	
		Det	26869.0	18.20	1476.3	
	Pay	Det	4785.0	3.21	1490.6	
		Cig	9088.4	6.17	1473.0	
		Bed	22084.0	14.97	1475.2	
	Owe	Cig	4416.8	3.02	1462.5	
		Det	9456.6	6.37	1484.6	
		Bed	17412.4	11.78	1478.1	

(continued next sheet)

EXPERIMENTAL VELOCITIES
Sheet 801

Date 1938	From Buoy	To Buoy	Distance (meters)	Time (seconds)	Velocity (m/sec.)	Adopted Velocity
July 19	Nut	Bed	8487.7	5.73	1481.3	
		Det	18381.3	12.44	1477.6	
	Mat	Bed	4470.7	3.04	1470.6	
		Det	22398.3	15.16	1477.5	1477.0 (weighted mean)
21	Owe	Cig	4416.8	2.99	1477.2	
		Det	9456.6	6.44	1468.4	
	Pay	Det	4785.0	3.25	1472.3	
		Cig	9088.4	6.17	1473.0	
	Que	Det	5036.1	3.38	1490.0	
		Bib	13550.4	9.18	1476.1	
		Cig	18909.5	12.81	1476.2	1475.4 (weighted mean)
22	Mat	Cig	8524.9	5.73	1487.9	
		Det	22398.3	15.21	1472.6	
		Cig	8524.9	5.71	1493.0	
		Det	22398.3	15.19	1474.5	
		Bib	40984.8	(28.14)	(1456.4)R	
	Nut	Cig	4507.9	3.05	1478.0	
		Det	18381.3	12.53	1467.0	
	Owe	Cig	4416.8	3.02	1462.5	
		Det	9456.6	6.44	1468.4	
	Pay	Det	4785.0	3.26	1467.8	
		Cig	9088.4	6.20	1465.9	
		Bib	23371.5	(16.71)	(1398.2)R	
	Que	Det	5036.1	3.39	1485.6	
		Bib	13550.4	9.14	1482.5	
		Cig	18909.5	12.82	1475.1	
	Det	Bib	18568.5	12.55	1479.6	1475.4 (weighted mean)
25	Sad	Bib	4296.6	2.87	1497.1	
		Det	14289.9	9.70	1473.2	
		Cig	28163.3	19.13	1472.3	
	Rat	Bib	8951.4	6.03	1484.6	
		Cig	23508.5	15.83	1485.2	
	Que	Det	5036.1	3.40	1481.3	
		Bib	13550.4	9.14	1482.6	
		Cig	18909.5	12.78	1479.7	1479.5 (weighted mean)
23	Rat	Bib	8951.4	6.08	1472.3	
		Det	9635.1	6.51	1480.2	
Aug. 3	Xray	Bib	18328.5	12.36	1482.9*	40-56-30 : 71-37-30
		Det	36915.0	24.86	1484.9*	*mean of 3 40-54-30 71-42-30
5	Axe	Dip	13246	9.02	1468.6	40-58-30 71-24-30
				9.00	1471.8	1470.6-1470
				9.01	1470.2	
		Bib		12.23		
				12.26		
				12.21		

(continued next sheet)

EXPERIMENTAL VELOCITIES
Sheet 801

Date 1938	From Buoy	To Buoy	Distance (meters)	Time (seconds)	Velocity (m/sec.)	Adopted Velocity
Aug. 5	Axe	Det		22.50		
				22.52		
				22.49		
	Add	Bib		17.09		
		Dip	26844.1	17.97	1493.9	40-58-20 71-31-00
		Det		23.93		
	Yel	Dip	4399.5	(3.43)		Reject
		Det		23.62		
7	27CC (P.S.)	Det	34091	23.09	1476.4	
		Bib	15504	10.57	1466.8	
9	Add	Bib	3876	18.05		
		Det		23.93		
		Bib		17.95		
		Det		23.96		
	Dok	Add	18463.0	12.61	1464.2	40-39-10 71-30-30
				12.61	1464.2	
				12.59	1466.6	4395.0; 1466.0
		Bib		29.98		
		Dip	45286	30.77	1471.9	85-2 40-46-00 71-31-
16	Xray	Tar	18046.5	12.14	1486.6	40-56-30 71-35-20
	Dok	Add	18463	12.66	1459	40-39-00 71-30-30
				12.64	1460.7	
	Fat	Dok	4737	3.05		
		Add	13724.5	9.48		
	Eat	Dok		5.06		
		Add		7.52		
17	Tar	Add	26253	17.88	1468.3	40-48-00 71-37-
				17.89	1467.5	4404.1 1468.0
				17.88	1468.3	
		Dok	41918.3	28.59	1466.2	40-44- 71-36-30
				28.66	1462.6	
				28.74	1458.6	4397.9; 1462.4
	Xray	Add	27291.7	18.57	1469.7	40-51-0 71-34-05
				18.56	1470.5	4404.2 1470.1
		Dok	45741.9	30.98	1476.5	40-46-00 71-31-
				31.10	1470.8	4413.3 1473.6 1467.7
						(weighted mean)
Sept. 7	Dog	Dok	13725.6	9.28	1479.1	40-27-30 71-30-
	Eat	Dok	9265.0	6.23	1487.1	" "
	Fat	Dok	4737	3.20	1480.4	~~40-32- 71-28-~~
	Hub	Dok	24875	16.83	1478.0	40-27-30 71-31-30
	Bet	Cob	5189	(3.42)	(1517.3)R	~~40-47-30 71-34-10~~
		Box	23585	15.87	1486.1	40-42- 71-31-
		Duk	52533	35.57	1476.9	40-35- 71-32-
	Axe	Cob	9454.4	6.31	1498.3	40-49- 71-34-
		Box	27859.0	18.78	1483.4	40-43-30 71-36-
	Zip	Cob	13970.0	9.34	1495.7	40-[illegible] 71-29-
		Box	32373.5	21.82	1483.7	40-[illegible] 71-24-0
		Duk	61231.6	41.56	1473.3	1480.6 40-37- 71-28-
						(weighted mean)

EXPERIMENTAL VELOCITIES
Sheet 801

Date 1938	From Buoy	To Buoy	Distance (meters)	Time (seconds)	Velocity (m/sec.)	Adopted Velocity	
Sept.14	Xray	Cob	23132.6	15.45	1497.2	40 · 54 -	71-24 -
		Box	41552.9	27.92	1488.3	40 - 47-30	71 · 24
				28.01	1483.5		
				28.07	1480.3		
		Duk		47.66			
		Cob	23132.6	15.49	1493.4	40 · 54 -	71 - 24 -
				15.47	1495.3		
	Yel	Cob	18275.7	12.28	1488.3	40 · 54 -	71-24 -
				12.26	1490.7		
				12.26	1490.7		
				12.22	1495.6		
		Box	36695.4	24.74	1483.2	40 · 46 ·	71 - 24 -
				24.73	1483.8		
				24.79	1480.2		
	Zip	Cob	13970	9.30	1502.1	40 - 50	71 · 24 ·
				9.30	1502.1		
				9.30	1502.1		
		Box	32373.5	22.79	1485.7	40 · 45 ·	71 - 24 -
				21.78	1486.4		
		Duk	61231.6	41.60	1471.9	40 - 37 ·	71 - 22-30
				41.60	1471.9		
	Axe	Cob	9454.4	6.26	1510.3	40 - 48 - ·	71 · 24 ·
				6.24	1508.4		
				6.28	1505.5		
		Box	27859	18.71	1489.0	40 - 43-30	71 · 24 ·
				18.72	1488.2		
				18.69	1490.6		
		Duk	56764	38.52	1473.6	40 - 36	71-22-30
	Bet	Cob	5189	3.44	1508.4	40 · 47-30	71-24 ·
				3.41	1521.7		
				3.43	1512.8		
		Box	23585	15.82	1490.8	40 - 44-30	71 - 24 ·
				15.83	1490.2		
				15.88	1485.2		
				15.92	1481.5		
		Duk	52533	35.68	1472.3	40 · 30 ·	71 - 24
				35.68	1472.3		

FATHOMETER SOUNDINGS

Ship LYDONIA Raymond P. Eyman Commanding

Project 207 Year 1938

All soundings on this sheet (No. 6331), as well as those on sheets 6328, 6329, and 6330, were taken with the Dorsey Fathometer No. 1. Soundings were reduced by applying five corrections, namely tide, velocity (temperature and salinity), draft, settlement, and index.

TIDE.

The tide reducers were determined and applied in the customary manner. They are explained in the tidal note elsewhere in this report.

VELOCITY.

The corrections to the fathometer soundings for varying conditions of temperature and salinity of sea water were made substantially in accordance with Field Memorandum No. 3, dated June 11, 1936.

A large number of bottom and serial temperatures and salinities were taken during the season at widely distributed points in different depths.

These observations were tabulated on Form No. 717. As there is a gradual but marked seasonal increase in the temperature of the sea water in the vicinity of Long Island, it was not possible to combine all observations into one graph for the whole season. Instead, the temperatures and salinities were divided into periods by months and plotted on form M-146. A mean temperature curve and a mean salinity curve was drawn for each month. A Table I was made for each month as prescribed in Field Memorandum No. 3, page 7. As all hydrography was done in depths of less than 45 fathoms, no tables were made for any greater depths.

By previous tests, it had been determined that the LYDONIA's Dorsey fathometer is calibrated for a speed of 819.3 fathoms (1498.3 meters) per second. In computing the fathometer correction factors, the tables attached to the field memorandum were used and interpolation made for 819.3 between 800 and 820.

As prescribed in the Field Memorandum, curves were drawn from the results of Table I to show the relation between fathometer

corrections and depth of water. The corrections from column 8 were plotted against the depths in column 1. From these curves the depths corresponding to points of change of half-foot units of corrections were scaled off and the ranges of depth for the various corrections shown in tabular form. The temperature and salinity corrections to the fathometer soundings were taken from the tabulations on the green sheets and entered in the sounding volumes in the column headed "ECHO".

DRAFT.

The draft correction was kept to the lowest value by setting the initial flash on the indicator dial to correspond with the draft gage in the engine room at the beginning of each day's work. A comparison was also made at the end of the day. As a rule the comparison at the end of the day checked very closely. Where a discrepancy occurred, a mean value of one half the discrepancy was applied to the entire day. These draft corrections were obtained by drawing curves parallel to the temperature - salinity correction curves but offset from the main curve (corresponding to zero draft correction) by an amount equal to the mean draft discrepancy. Thus, if the engine room gage showed a draft of 9.2 feet in the morning, the initial flash on the fathometer was set to 9.2 feet. Then, at the end of the day, if the fathometer initial still read 9.2 but the draft gage read 9.0, then the draft correction was taken as -0.1 as the mean for the day, or half of the discrepancy at the end of the day.

I believe this should always be done CRS 6/24/39

Tabulations on the green fathometer correction sheet show the combined velocity and draft corrections to be used in reducing soundings corresponding to the draft correction applicable to the individual day.

SETTLEMENT.

The correction for "settlement" is a plus correction to be added to the sounding to offset the effect of the ship in lowering the level of the entire mass of water immediately surrounding the ship. This settlement occurs only when the vessel is under way and depends upon the shape of the hull and the speed. It is zero when the vessel is dead in the water and therefore does not apply where vertical casts and fathometer comparisons were made. To arrive at a probable value for the settlement correction, a computation was made according to the formula explained in Taylor's "Speed and Power of Ships", page 69. On this page are ten graphs showing changes of bow and stern levels with speed, for ten different models. Fig. 159 was found to resemble the shape of the LYDONIA's hull more than any of the other figures and hence the computation was made according to that figure. The computation was made for a speed of ten knots. The value of the settlement obtained was 0.41 ft or practically 1/2 foot.

and depth of water CRS

INDEX.

The index correction was obtained from the comparisons that were made between the fathometer and the vertical casts. For reasons necessary to determine the temperature and salinity corrections, the season was divided into periods by months and, since the index correction is computed as a by-product of the temperature-salinity corrections, the index correction was also computed for the various months.

The index error was determined by tabulating all comparisons between fathometer and hand lead in vertical casts. The fathometer soundings were then corrected for draft and temperature-salinity and the differences between the corrected fathometer soundings and the vertical casts tabulated. The mean of all the various differences was taken as the index error or lag of the instrument. Neither tide reducers nor settlement entered into the determination because the former would affect both soundings alike and the latter would naturally be zero when the ship was stopped. The mean index error of the LYDONIA's fathometer for each month is usually quite constant, not only from month to month but also between corresponding months of consecutive years. It usually is about 3/4 foot, becoming almost 1 foot at the end of the season. The mean of all the fathometer soundings is always greater than the mean of all the vertical casts, so that the index correction is always minus.

Within any single month, the index correction remained a constant. Except for large variations in speed of the ship, the settlement correction also was constant. Since both corrections, therefore, did not vary during any month while the ship was sounding at a speed of about ten knots, the two corrections could be combined and entered in the sounding record as a single correction. This correction is entered in the column headed I & S (index settlement).

RESUME.

Corrections are therefore entered in the sounding records as follows:

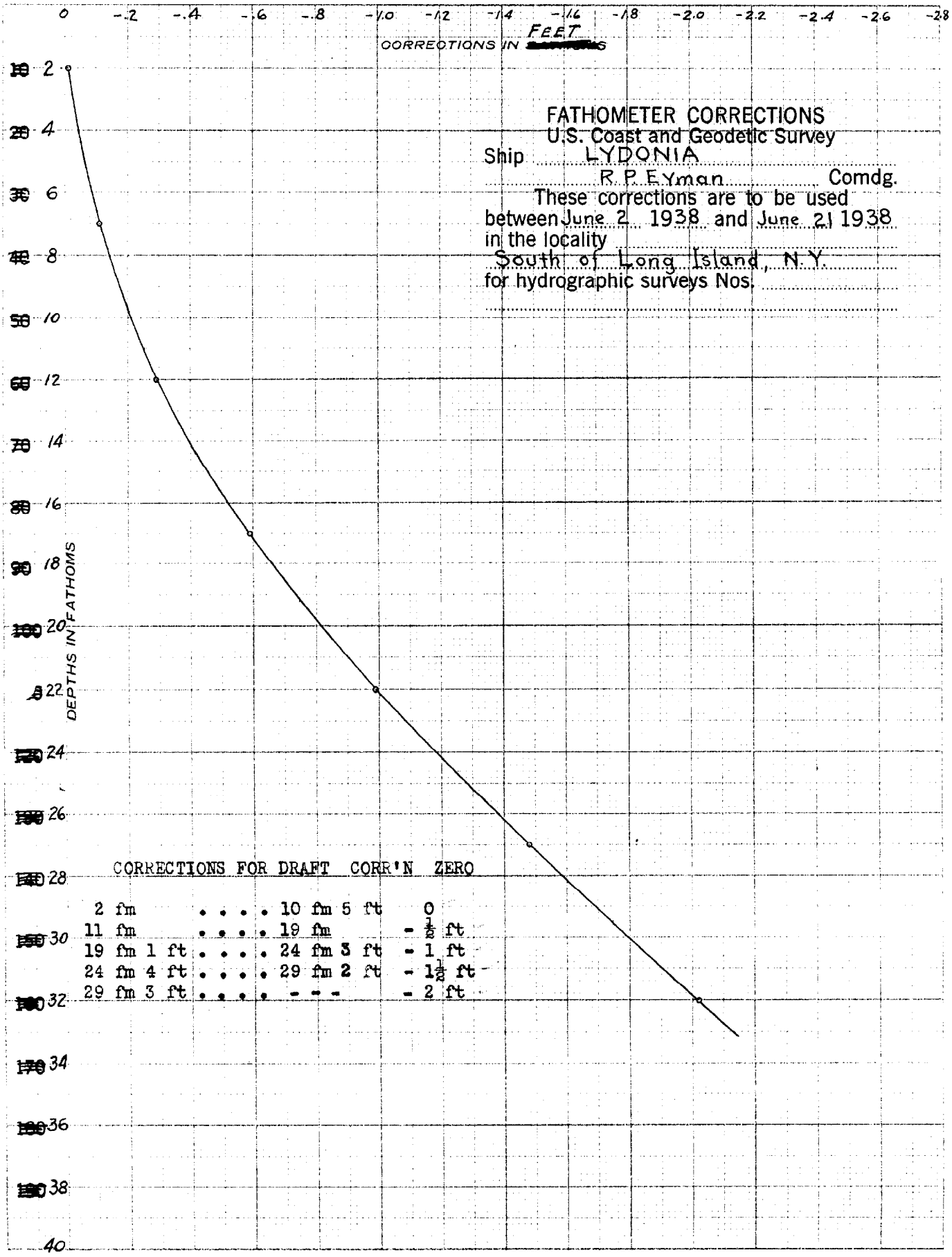
Column (1), headed ECHO, - combined velocity and draft.

Column (2) headed I & S - Index and Settlement.

Column (3) headed Tide - Tide.

J. C. Bose

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)



FATHOMETER CORRECTIONS

U.S. Coast and Geodetic Survey

Ship LYDONIA

R P Eyman Comdg.

These corrections are to be used between June 2 1938 and June 21 1938 in the locality South of Long Island, N.Y. for hydrographic surveys Nos.

CORRECTIONS FOR DRAFT CORR'N ZERO

2 fm	. . . . 10 fm 5 ft	0
11 fm	. . . . 19 fm	- ½ ft
19 fm 1 ft	. . . . 24 fm 3 ft	- 1 ft
24 fm 4 ft	. . . . 29 fm 2 ft	- 1½ ft
29 fm 3 ft	. . . . - - -	- 2 ft

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

+0.4 +.2 0 -.2 -.4 -.6 -.8 -1.0 -1.2 -1.4 -1.6 -1.8 -2.0 -2.2

CORRECTIONS IN FEET

FATHOMETER CORRECTIONS

U.S. Coast and Geodetic Survey

Ship LYDONIA

R. P. Eyman Comdg.

These corrections are to be used between July 2 1938 and July 28 1938 in the locality South of Long Island N.Y. for hydrographic surveys Nos. .....

(For deep water add a 0 to these figures)

DEPTHS IN FATHOMS

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

Draft Correction -0.1 Ft.

Draft Correction Zero

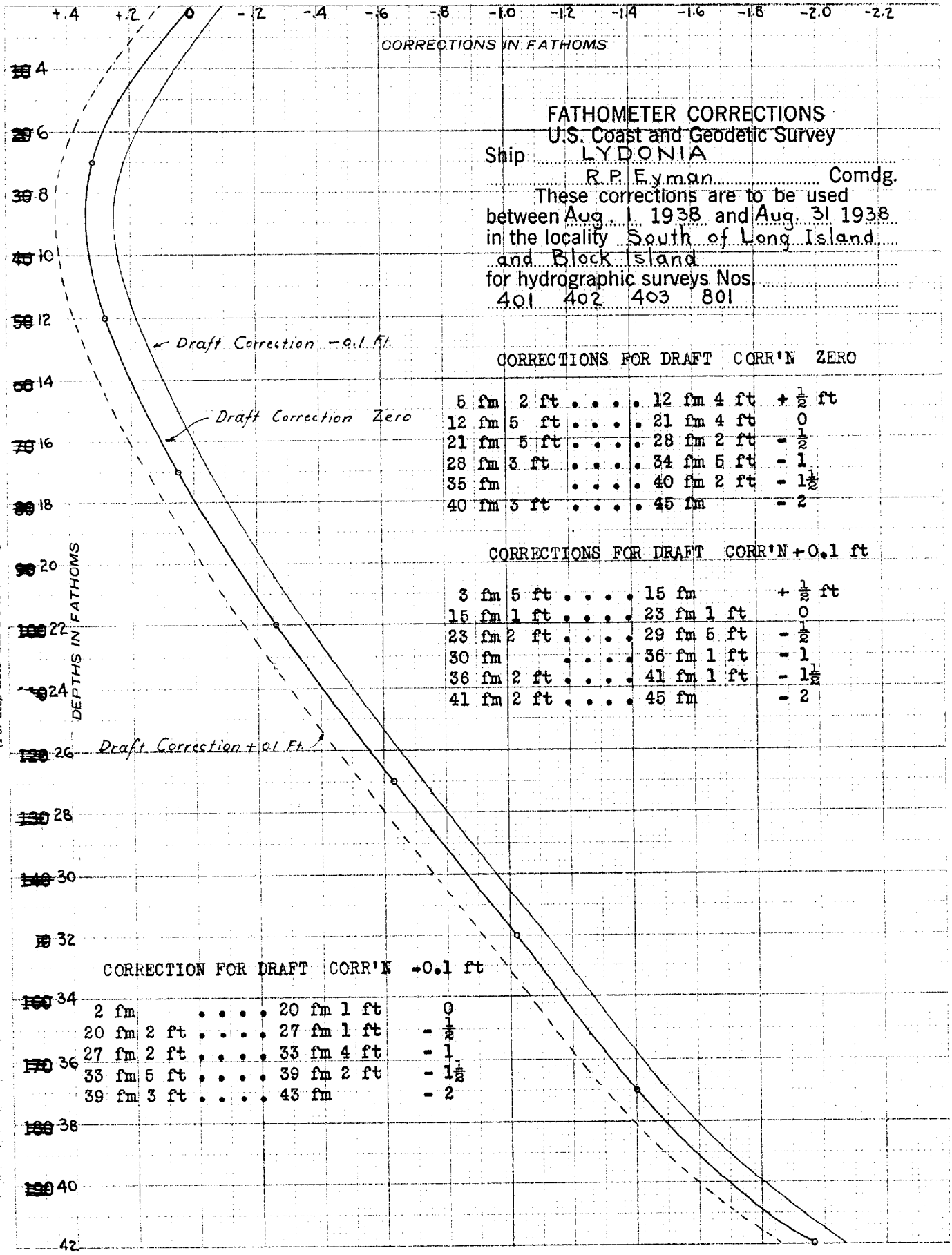
CORRECTIONS FOR DRAFT CORR'N ZERO

2 fm	18 fm 1 ft	- 0 ft
18 fm 2 ft	24 fm 1 ft	- ½ ft
24 fm 2 ft	29 fm 2 ft	- 1 ft
29 fm 3 ft	34 fm 1 ft	- 1½ ft
34 fm 2 ft	39 fm 2 ft	- 2 ft
39 fm 3 ft	- - -	- 2½ ft

CORRECTIONS FOR DRAFT CORR'N -0.1 ft

2 fm	16 fm 5 ft	0 ft
17 fm	23 fm 1 ft	-½ ft
23 fm 2 ft	28 fm 2 ft	-1 ft
28 fm 3 ft	33 fm 2 ft	-1½ ft
33 fm 3 ft	38 fm 2 ft	-2 ft
38 fm 3 ft	- - -	-2½ ft

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)



(For deep water add a 0 to these figures)

FATHOMETER CORRECTIONS
U.S. Coast and Geodetic Survey

Ship LYDONIA

R.P. Eyman Comdg.

These corrections are to be used between Aug. 1 1938 and Aug. 31 1938 in the locality South of Long Island and Block Island for hydrographic surveys Nos. 401 402 403 801

CORRECTIONS FOR DRAFT CORR'N ZERO

5 fm	2 ft	. . . .	12 fm	4 ft	+ ½ ft
12 fm	5 ft	. . . .	21 fm	4 ft	0
21 fm	5 ft	. . . .	28 fm	2 ft	- ½
28 fm	3 ft	. . . .	34 fm	5 ft	- 1
35 fm		. . . .	40 fm	2 ft	- 1½
40 fm	3 ft	. . . .	45 fm		- 2

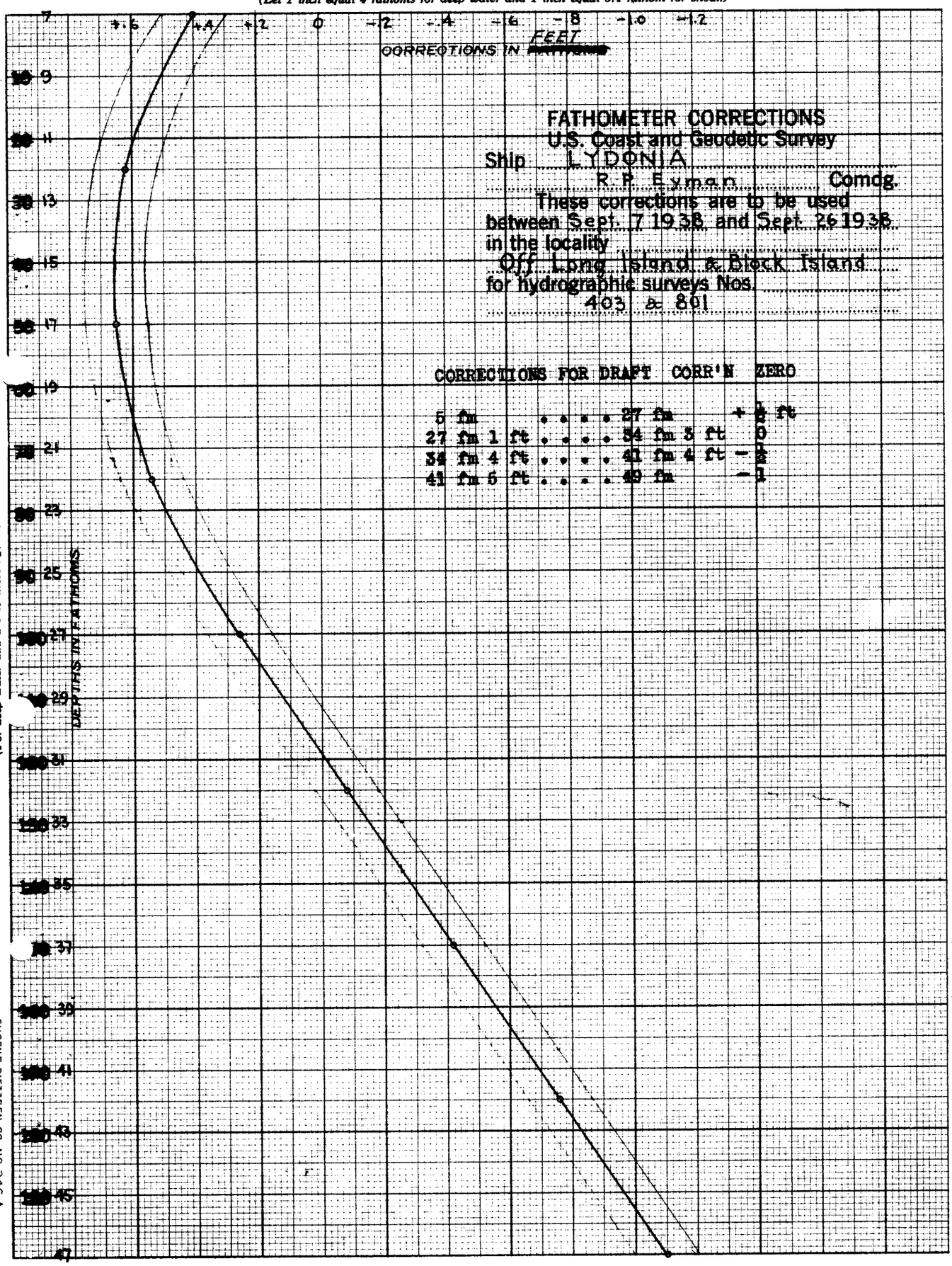
CORRECTIONS FOR DRAFT CORR'N +0.1 ft

3 fm	5 ft	. . . .	15 fm		+ ½ ft
15 fm	1 ft	. . . .	23 fm	1 ft	0
23 fm	2 ft	. . . .	29 fm	5 ft	- ½
30 fm		. . . .	36 fm	1 ft	- 1
36 fm	2 ft	. . . .	41 fm	1 ft	- 1½
41 fm	2 ft	. . . .	45 fm		- 2

CORRECTION FOR DRAFT CORR'N -0.1 ft

2 fm		. . . .	20 fm	1 ft	0
20 fm	2 ft	. . . .	27 fm	1 ft	- ½
27 fm	2 ft	. . . .	33 fm	4 ft	- 1
33 fm	5 ft	. . . .	39 fm	2 ft	- 1½
39 fm	3 ft	. . . .	43 fm		- 2

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)



(For deep water add 0 to these figures)

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

-.2 -.4 -.6 -.8 -1.0 -1.2 -1.4 -1.6 -1.8 -2.0 -2.2

CORRECTIONS IN FEET

FATHOMETER CORRECTIONS

U.S. Coast and Geodetic Survey

Ship LYDONIA

R. P. Eyman Comdg.

These corrections are to be used between May 8 1938 and June 1 1938 in the locality South of Long Island, New York for hydrographic surveys Nos. 6328

Draft Correction -0.1 Ft.

Draft Correction Zero

DEPTHS IN FATHOMS

(For deep water add 0 to these figures)

2 4 6 8 10 12 16 18 20 24 26

CORRECTIONS (FOR DRAFT CORR'N ZERO)

2 fm	....	4 fm 5 ft	0
4 fm 4 ft	....	11 fm 5 ft	- ½ ft
12 fm	....	17 fm 0 ft	- 1
17 fm 1 ft	...	22 fm	- 1½
22 fm 1 ft	...	- -	- 2

CORRECTIONS (FOR DRAFT CORR'N -0.1 ft)

2 fm	.....	3 fm	0
3 fm 1 ft	....	10 fm 4 ft	- ½
10 fm 5 ft	....	16 fm 0 ft	- 1
16 fm 1 ft	....	20 fm 5 ft	- 1½
21 fm	....	- -	- 2

Statistics for Sheet 6331 (801)

U. S. C. & G. S. Ship LYDONIA

- 1938 -

Day Letter	Date 1938	Number of Positions	Number of Soundings	Statute Miles	Volume Number
A	June 6	14	144	12.2	1
B	" 7	69	851	67.6	1
C	" 9	82	1209	122.6	1 & 2
D	" 10	79	1282	120.4	2
E	" 16	47	719	68.3	2
F	" 17	70	1148	108.4	3
G	" 18	44	676	55.2	3
H	" 19	34	483	45.0	3 & 4
J	" 20	50	912	86.1	4
K	" 21	93	1655	157.6	4 & 5
L4	July 2	20	327	30.1	5
M	" 4	22	289	26.8	5
N	" 6	29	532	107.5	5
P	" 8	70	1257	124.5	5 & 6
Q	" 9	75	1181	107.4	6
R	" 19	33	609	52.3	7
S	" 20	35	622	57.4	7
T	" 21	22	368	32.8	7
U	" 22	32	584	54.3	7
V	" 23	60	985	79.0	7 & 8
W	" 25	33	52o	48.7	8

Day Letter	Date 1938	Number of positions	Number of Soundings	Statute Miles	Volume number
X	July 26	33	602	54.2	8
Y	" 28	4	54	5.8	8
Z	Aug. 2	35	644	54.3	9
AA	" 3	68	1200	113.6	9
BB	" 4	43	762	73.1	9 & 10
CC	" 7	30	438	36.8	10
DD	" 9	31	380	34.5	10
EE	" 27	61	1192	116.5	10 & 11
FF	" 29	98	1092	98.0	11
GG	" 30	124	1474	131.1	11 & 12
HH	" 31	42	766	74.1	12
JJ	Sept. 7	23	331	27.2	12
KK	" 10	35	316	29.9	12
LL	" 11	109	1461	138.5	13
MM	" 12	73	1340	128.9	13 & 14
NN	" 13	31	515	42.9	14
PP	" 14	24	427	34.8	14
QQ	" 15	26	386	31.1	14
	Totals	1903	29734	2789.5	

Verifica Report for H 6331 (1938)

The records conform to the requirements of the General Instructions.

There are no topo signals on this sheet. The control was furnished by RAR from Smoo-Bumps except in the vicinity of the runway bridge along the northern edge of the runway where the control is by visual fix on the bridge.

The junction with H 6328 (1938) on the north is good, with H 6191 (1936) on the west is good, but with H.6192 (1936) on the south west is only fair.

Junctions are all satisfactory except H. 6192 1936. See Report L. S. S.

H6329, H6330, H6347 all (1938) have not as yet been verified.

The 2 westernmost lines of H6330 have been ruled on H6331 & should be omitted from on H6330.

Francis B. Kelly

August 2, 1939

HYDROGRAPHIC SURVEY NO. H6331

Smooth Sheet Yes

Boat Sheet Two

Records; Sounding 14 Vols., Wire Drag 0 Vols., Bomb 7 Vols.

Descriptive Report Yes

Title Sheet Yes

List of Signals Vol.#1

Landmarks for Charts (Form 567) ~~Yes~~

Statistics Yes

Approved by Chief of Party None

Recoverable Station Cards (Form 524) ---

Special Chart for Lighthouse Service ~~Yes~~
(Circular Nov.30, 1933)

Hydrography: Total Days 39 ; Last Date Sept. 15, 1938

Remarks

H-6531

	Remarks	Decisions
1		
2		411715
3	Location of tide guage	411715
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
M 234		

GEOGRAPHIC NAMES

Survey No. H6331

Name on Survey	On Chart No. A.	On previous survey No. B.	On U. S. quadrangle Maps C.	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Long Island										1
Block Island										2
Old Harbor										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
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										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27

Names underlined in red approved by L. Hecht on 5/29/34

N 234

28

FORM M-238

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT
~~PHOTOSTAT OF~~ No. H-6331
~~XXXXXXXXXX~~ No. T

received April 26, 1939
registered May 17, 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			
24			
25			
26			
30			
40			
62			
63			
82			
83			
88			
90			

RETURN TO

82	T. B. Reed

✓ JJSR

TIDAL NOTE (SHEET NO 6331)

A standard automatic tide gage was maintained during most of the season on the east side of Block Island, R.I. at Old Harbor.

This standard gage was destroyed by the hurricane of September 21, 1938 and with it the record dating from September 1st.

A portable automatice tide gage was installed in place of the destroyed standard gage on September 24 and maintained until the end of the season on September 30.

For the standard gage, the datum plane of mean low water corresponded to a reading of 3.0 feet on the tide staff, as stated in a letter from the Director dated November 13, 1938, Ref. 30-FLM.

For the portable gage, from September 24 to September 30, a reading of 2.8 feet on the staff corresponded to the plane of mean low water. However, no work was done on this sheet between those dates.

In accordance with a letter from the Director dated October 20, 1938, Ref. 34-CS, the soundings taken during the interval for which the Block Island gage record was lost, were reduced by the record obtained at Newport, R. I. The Newport heights were multiplied by 0.9 to reduce them to Block Island.

Block Island reducers were used from June 6 to August 31, 1938.

Newport reducers were used from September 7 to September 15.

No hydrography on this sheet was done between September 1 and September 6.

RAE

30

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

June 12, 1939.

Division of Hydrography and Topography:

Division of Charts: Attention: Mr. E. P. Ellis.

Plane of reference approved in
14 volumes of sounding records for

HYDROGRAPHIC SHEET 6331

Locality Block Island and Long Island, R. I. and N. Y.

Chief of Party: R. P. Eyman in 1938
Plane of reference is mean low water reading
3.0 ft. on tide staff at Block Island (standard gage)
~~ft. below B.M.~~
2.8 ft. on tide staff at Block Island (portable gage)

During the interval from September 7-15, for which the Block Island records were lost, Newport reducers were used by applying a range factor of 0.9.

Height of mean high water above plane of reference is 3.0 feet.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 154327

Field Records Section (Charts)

H6331

HYDROGRAPHIC SHEET NO. .....

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

Number of positions on sheet	1903
Number of positions checked	2
Number of positions revised	0
Number of soundings recorded	29734
Number of soundings revised	4
Number of soundings erroneously spaced	7
Number of signals erroneously plotted or transferred	0

Date: August 2, 1939

Verification by { Francis B. Kelly - - - - - - - - 104¾ hrs
Gordon Littlepage Time: - - 8 hrs.
Total Time on Verification - 112¾ hr.

Review by Time: 26 hr.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6331 (1938) FIELD NO. 801

Approaches to New York Harbor, South of Block Island and Long Island.
Surveyed in June - September 1938, Scale 1:80,000
Instructions dated Apr. 9, 1936 and Mar. 4, 1938
(LYDONIA)

No. 1 Dorsey Fathometer Soundings.

3 Point fixes on survey buoys. RAR control using Sono-Radio buoys.

Chief of Party - R. P. Eyman.
Surveyed by - R. P. Eyman, G. E. Boothe and E. O. Heaton.
Protracted by - M. O. Witherbee and J. C. Bose.
Soundings plotted by - M. O. Witherbee and J. C. Bose.
Verified and inked by - F. B. Kelly.

1. Shoreline and Signals.

   a. This is an offshore survey and no shoreline is shown.

   b. For origin of signals see pages 1, 6, 7 and 8 of the descriptive report and Buoy Control Data filed in the Library under accession No. S-1698.

2. Depth Curves.

   No depth curves are shown on this survey since all depths fall between 125 and 252 feet.

3. Sounding Line Crossings.

   The agreement of depths at line crossings is very good.

4. Junctions with Contemporary Surveys.

   The junctions with H-6328 (1938) on the north and H-6191 (1936) on the west, are satisfactory. The present survey overlaps a small area in the vicinity of lat. 40° 20', long. 72° 40', covered by H-6192 (1936). Several differences in depths from 1 to 6 feet are noted. This is undoubtedly due to the trouble that developed in the No. 312 fathometer on the OCEANOGRAPHER the same season. The Dorsey fathometer soundings of the present survey are considered more accurate and should be given preference in charting the overlapping area.

   The junctions with H-6329 (1938) and H-6330 (1938) on the north and H-6347 (1938) on the south will be

considered in the reviews of those surveys.

No contemporary work joins this survey on the east.

5. Comparison with Prior Surveys.

a. H-100 (1842) and H-101 (1844).

These surveys on a scale of 1:400,000 cover the entire area of the present survey with widely spaced sounding lines. Comparison of the old depths shows in general, poor agreement with those on the present survey. The method of control that was used in the offshore areas was undoubtedly dead reckoning and astronomic observations. The old surveys show no outstanding features which have not been adequately developed on the present survey and except for bottom characteristics should be disregarded in future charting of the common area.

b. H-670 (1859) scale 1:400,000.

This is a compilation of all previous surveys. It contains no original work.

c. H-1558 (1882-83) and H-1782 (1887) scales 1:300,000.

These surveys taken together cover the entire area of the present survey. The soundings on the old surveys are in very poor agreement with the present survey; in general they vary from 10 feet shoaler to 34 feet deeper than the present survey depths.

The 28 fathom sounding (168 feet) charted in lat. 40° 27.8', long. 71° 27.2', originates with H-1782 (1887). This old survey also shows a 31 fathom sounding just north of the 28 fathom sounding and a 34 just south of it on the same line. All of these soundings fall in depths of about 39 fathoms (234 to 238 feet) on the present survey. The old sounding line is controlled by astronomic observations and a note in the old records states that these observations at this position are "moderately good". The soundings on other lines in this vicinity on the old work are deeper than those on this line. The 28, 31 and 34 fathom soundings are probably erroneous and although there is not enough development on the present survey to definitely disprove them, they are not

carried forward to the present survey. Additional development in this area is planned during the 1939 season. (See last paragraph page 4 of the Descriptive Report).

Because of the better control and closer development on a much larger scale, the present survey, except for bottom characteristics, should within the common area, supersede H-1558 (1882-83) and H-1782 (1887) for charting purposes.

d. H-2227 (1895-96) Scale 1:40,000.

Only a small part of this survey overlaps the present survey along its northern limits. The soundings vary from 1 to 6 feet either shoaler or deeper than the present survey depths.

The present survey together with the overlap of the contemporary survey H-6330 (1938) adequately covers the area and should supersede H-2227 (1895-96) for charting purposes.

6. Comparison with Chart 1211 (New print dated Apr. 17, 1939)
Chart 1214 (New print dated Feb. 6, 1939)
Chart 1108 (New print dated Jan. 6, 1939).

Within the area of the present survey the charts are based on surveys discussed in the foregoing paragraphs and contain no other information that needs consideration in this review.

7. Condition of Survey.

a. The records are neat, legible and conform to the requirements of the Hydrographic Manual.

b. The descriptive report satisfactorily covers all items of importance. The comprehensive discussions of the methods of determination of RAR velocities and corrections to fathometer soundings are commended.

c. The field plotting was satisfactory.

d. Although 38 bottom characteristics were obtained none fall below lat. 40° 40', between long. 71° 45' and long. 72° 16', an area of about 280 square miles.

8. Compliance with Instructions for the Project.

This survey satisfies the instructions for the project except that a better distribution of bottom characteristics would have been desirable to verify the

characteristics from the old surveys and furnish new information in areas not well covered by the old surveys. (Par. 20 Instructions dated April 9, 1936 and par. 28 Instructions dated Mar. 4, 1938).

9. Additional Work Recommended.

No additional work is required except to investigate the 28 fathom sounding charted in lat. 40° 27.8', long. 71° 27.2' as recommended by the field party in the descriptive report.

10. Superseded Old Surveys.

H-100 (1842) in part	H-1558 (1882-83) in part
H-101 (1844) " "	H-1782 (1887) " "
H-670 (1859) " "	H-2227 (1895-96) " "

11. Reviewed by - Leo S. Straw, August 15, 1939.

Inspected by - H. R. Edmonston, August 18, 1939.

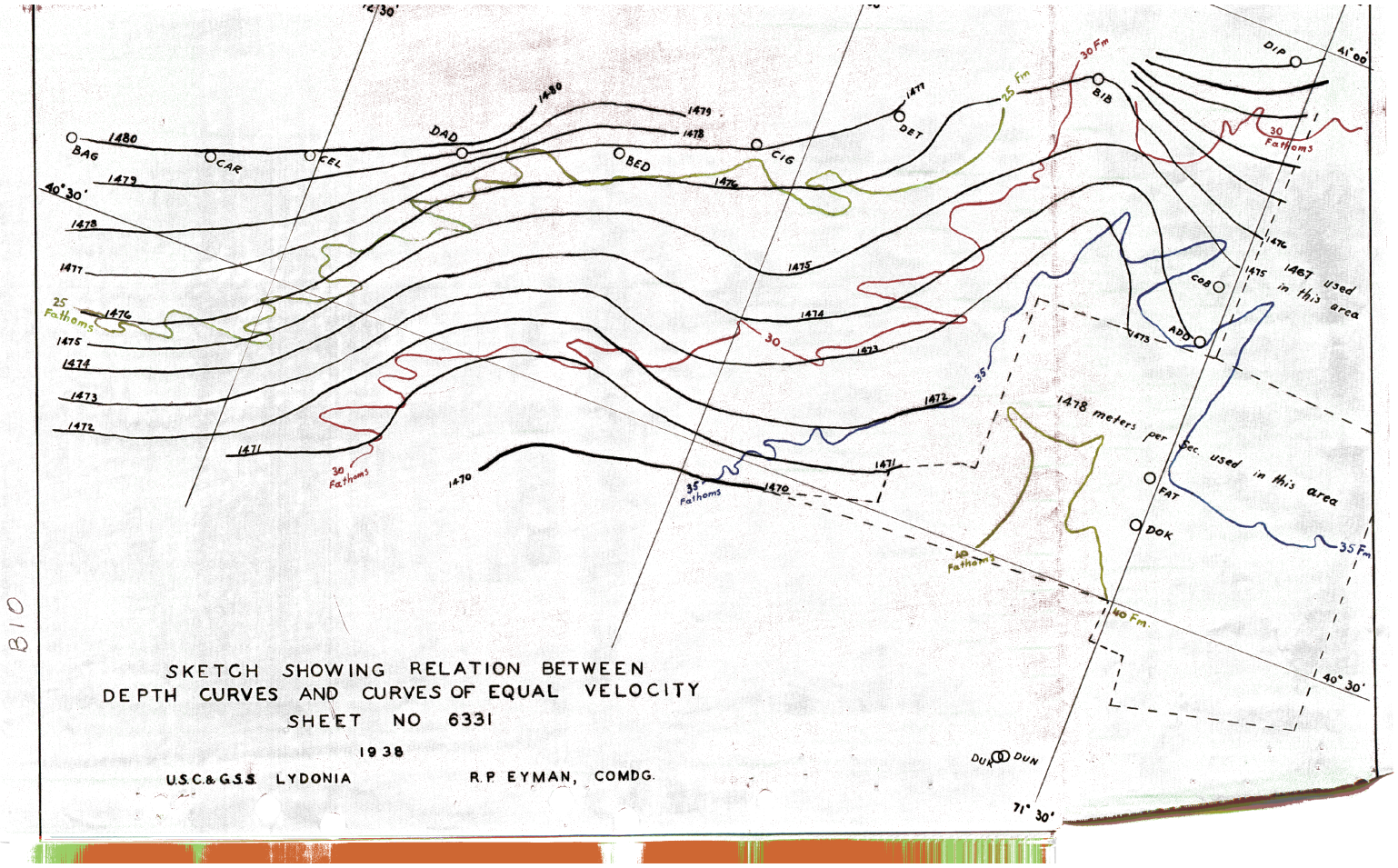
Examined and approved:

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

K. T. Adams
Chief, Division of Charts.

Fred. R. Peacock
Chief, Section of Field Work.

Chief, Division of H. & T.



SKETCH SHOWING RELATION BETWEEN
DEPTH CURVES AND CURVES OF EQUAL VELOCITY
SHEET NO 6331

1938

U.S.C.&G.S.S. LYDONIA R.P. EYMAN, COMDG.

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