

6564

6564

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey ..... HYDROGRAPHIC

Field No. 121 ..... Office No. H-6564

LOCALITY

State? ..... Massachusetts

General locality ..... Gulf of Maine

Locality ..... East of Cape Ann

194 0

CHIEF OF PARTY

Fred L. Peasock

LIBRARY & ARCHIVES

DATE .....

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. H-6564

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. 121

REGISTER NO. H-6564

**H6564**

State Massachusetts

General locality Gulf of Maine  
~~Atlantic Ocean~~

Locality East of Cape Ann  
~~Gulf of Maine, S. E. of Bath, Me.~~

Scale 1-120,000 Date of survey April - Sept., 1940

Vessel Ship OCEANOGRAPHER

Chief of Party Fred L. Peacock

Surveyed by Ship's Officers

Protracted by M. A. Axelton, A. L. Wardwell

Soundings penciled by M. A. Axelton

Soundings in fathoms ~~1000~~

Plane of reference Mean Low Water

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by Harold W. Murray

Verified by Harold W. Murray

Instructions dated March 8, 1940

Remarks: This sheet was plotted and the soundings penciled at  
the Norfolk Processing Office.

DESCRIPTIVE REPORT

TO ACCOMPANY

H6564

SHEET H - 6564  
(Field No. 121)

DATE OF INSTRUCTIONS

The hydrography on this sheet was executed in accordance with instructions, Project HT 248, dated March 8, 1940.

LOCALITY AND LIMITS

The area covered by this sheet is offshore in the Gulf of Maine, south and southeast of Bath, Maine, and lies approximately between longitude  $68^{\circ} 05'$  and  $70^{\circ} 34.5'$  and latitude  $42^{\circ} 10'$  and  $43^{\circ} 21'$ . The limits are outlined in red on the attached sketch of Proj. HT-248.

SURVEY METHODS

The work on this sheet was done with the ship OCEANOGRAPHER. The hydrography was controlled by RAR sono-radio buoys. The following in reference to control for this survey is quoted from the Season's Report, Project HT-248, Gulf of Maine, 1940, Comdr. Fred L. Peacock.

"A special adaptation of the usual offshore control scheme was designed particularly for the Gulf of Maine area. The preliminary step was a 76 mile taut wire, sun-azimuth traverse running offshore from an initial position determined by sextant angles on triangulation points a distance of 24 nautical miles, thence a distance of 34 nautical miles approximately parallel to the coast, thence 18 miles inshore to a final fixed position point off the Isle of Shoals. The buoys in this traverse were planted from three to three and one-half miles apart. This loop established an offshore base line, 30 nautical miles long, and 25 nautical miles off Cape Ann. It also located Jeffreys Ledge Whistle Buoy. From this base line the control was extended offshore by triangulation figures, and at the end of the season had been extended to a distance of 110 nautical miles east of the base line."

"In the extremely irregular bottom area surrounding and extending eastward from Cashes Ledge, the figures necessarily became more complex than had been originally contemplated. The lengths of all sides and some of the diagonals of each of the figures were measured by bomb distances. The length of at least one side of each figure was measured with the taut wire apparatus. In the irregular bottom area in the vicinity of Cashes Ledge, a large number of taut wire distances were measured because the velocity of sound through seawater in the area was erratic."

"A special taut wire , sun-azimuth traverse was run in approximately a north and south direction over Cashes Ledge to control the intensive local surveys of that feature. This traverse gives an intermediate azimuth check at a distance of 54 nautical miles from the base line."

"It is expected that this control scheme will ultimately have at least a point connection to land in the vicinity of Cape Sable."

"This control scheme enabled a strip of hydrography approximately 70 nautical miles wide to be carried eastward. This strip of hydrography makes a junction and overlap with the Georges Bank Surveys, 1930-32, on its southern edge."

### SMOOTH PLOTTING

#### Velocities

The method of obtaining the velocities used for the RAR distances on this sheet are described in the season's report for this project (HT-248). The following is quoted from this report:

"The determination of the actual RAR velocities for the smooth plotting of the 1940 surveys on this project was under the immediate charge of Lieut. John C. Mathisson."

"Due to the rather unusual temperature gradients and the extreme irregularities of the bottom in this area, the actual velocities were frequently erratic, and the empirical formula based on bottom temperatures was unsatisfactory."

"The method used during this season's work, to determine the best possible values of velocities for use in the several parts of the area, and to take into account seasonal variation, was based primarily on taut wire measurements combined with simultaneous bomb distances. The results of this method were studied in relation to the depths, sea water temperatures and salinities, and what appeared to be the most probable general velocities were adopted. A separate study was made for each two-week's trip to the working grounds."

The field party furnished the Norfolk Processing Office velocity curves for each buoy for each trip, and these velocities were used in plotting the positions on this sheet.

#### Fathometer Corrections

The corrections for draft, temperature and salinity were combined and entered in the sounding records as one correction, while that for index and settlement were combined and entered as another correction. The fathometer correction computations are being submitted with other miscellaneous data for this project.

Sediment

In the approximate area bounded by longitude 68° 40' to 69° 30' and latitude 42° 20' to 42° 30', there is an apparent discrepancy in some instances in the depths due to sediment. The Hughes Fathometer was used to supplement the Dorsey Fathometer III, and in some instances the soundings recorded represent the top of the sediment, while in other instances the bottom of the sediment was recorded. *Differences adjusted from Hughes HWM*

Buoy ZIG

The position of this buoy was determined by cuts from sounding lines as the ship passed the vicinity of the buoy. The location as shown on this sheet is the mean or most probable location as determined by these cuts.

Miscellaneous

*Pos. of 13 BA*  
Latitude 42° 29' and longitude 68° 08'; 13-21 BA and 1 - 2 BC. *← 42° 31.8, 68° 31.2*  
 These positions were not plotted as it was necessary to use buoys which were plotted on the adjoining sheet H-6565. It was not expedient to plot these buoys on this smooth sheet as they fell too far off the sheet. The area is well developed without this line; however, should it be deemed advisable to plot this line, it is requested that this be done by the Washington Office. *Line runs west, uniform bottom, not needed.*

*Pos. of 80 AZ*  
Latitude 42° 57.6' and longitude 68° 07.6'; 80 + 90 AZ.  
 Due to insufficient control, this line was run in by surrounding hydrography and dead reckoning. *Accepted*

*Pos. of 88 AE*  
Latitude 42° 45.3' and longitude 68° 45.7'; 88 - 101 AE.  
 Due to insufficient control, this line was run in by surrounding hydrography and dead reckoning. Although the sounding records show a maximum change in course of only 2 degrees between positions 89 to 94 AE, it was necessary to change the course 8 degrees between these positions in order that the hydrography on this line agree with the adjacent hydrography. *Line agrees well as adjusted, smooth bottom.*

*35*  
Latitude 42° 32.1' and longitude 69° 21.1'; 164 - 174 AF.  
 Due to poor control, it was necessary to plot this line by surrounding hydrography. Position 174 AF (3 arcs) was held at one end of the line while other end was made to fall on a single arc at 164 AF. *Accepted*

*Pos. of 3000* *16.5'*  
Latitude 43° 17.0' and longitude 69° 19.8'; 90 QQ - 18 RR.  
 This line was plotted according to the control. However, if it were moved about 1100 meters eastward, there would be better agreement between the hydrography on this line and the adjacent hydrography. *Line makes 100 crossings, considered excellent. HWM*

*Pos. of 2 BC*  
Latitude 42° 31.8' and longitude 68° 31.2'; 13 BA - 2 BC.  
 Due to poor control, this line was not plotted. The line begins on Sheet H-6565, which joins this sheet to the eastward, and runs westward across sheet H-6564. It is recommended that a tracing be made of that portion of this line which falls on H-6565 and the balance of the line which falls on H-6564 be plotted on this tracing. The whole line then may be adjusted to the two sheets. *See note at 1st par. above, same line.*

Latitude 42° 24.7' and longitude 68° 48.7': 52 - 55 FF and 38 - 43 EE.  
 The crossings on these two lines do not agree. The soundings on both of these lines were taken from the Hughes Fathogram which indicated sediment in this area. Soundings were taken to the top of the sediment on line 52 - 55 FF, while soundings were taken to the bottom of the sediment on line 38 - 43 EE. *Reverse these pos.*

*adjusted from Hughes*

Latitude 42° 29.3' and longitude 69° 17.8': 162 - 163 W. 4 - 5 NN.  
 Crossing in this vicinity does not agree due apparently to the top of sediment being read in one instance, while the bottom of the sediment was read in the other. See sounding records.

*Adjusted*

Latitude 42° 43.4' and longitude 68° 09.2': 1 BA - 12 BA.  
 Due to insufficient control, it was necessary to plot this line by dead reckoning and adjacent hydrography. *Plotting very good.*

CHANNELS:

No channels were developed on this survey.

SHOALS

On Fippennies Ledge there is a least depth of 37 fathoms. *φ 42° 47' λ 69° 20'*  
 On Platt Bank there is a least depth of 29 fathoms 1 foot. *φ 43 11.6 λ 69 40*  
 On Jeffrey Ledge, on that part which is developed on this sheet, there is a least depth of 27 fathoms. *φ 43 0.1 λ 70 93*  
 On Cashes Ledge, the outer limits of which are developed on this sheet, there is a least depth of ~~34~~ fathoms 5 feet. *φ 42 55 λ 68 58*

*See large scale development on H-6566 (1740)*

TIDE DATA

In accordance with the Director's letter, dated Oct. 25, 1940, reference 30-FLM, hourly heights of the Portland, Me., gage were used to determine tide reducers. The tide on the working grounds was assumed to occur one-half hour earlier than that at Portland with the range 0.8 that of Portland.

JUNCTION WITH CONTEMPORARY SURVEYS

This sheet joins H-6565<sup>(1740)</sup> on the southeast and surrounds H-6566<sup>(1740)</sup> (Cashes Ledge).

COMPARISON WITH PREVIOUS SURVEYS

There were no records of previous surveys available at this office, therefore, no comparisons could be made.

GEOGRAPHIC NAMES

There is no change in the geographic names as shown on the charts covering this area, except that Cashes Ledge is spelled Cashe Ledge on chart No. 1000, while it is spelled Cashes Ledge on all other charts and coast pilot.

*Penning with Dist. B. L.H.*

DISCREPANCIES

In general, considering the irregular bottom of the area covered by this survey, the crossings were in good agreement. Some of the apparent discrepancies in the area having sediment on the bottom, as mentioned above, were due to the soundings being read to the top of the sediment in some instances, while at other times they were read to the bottom of the sediment.

✓  
*Scaled and adjusted  
from Hughes where  
necessary.*

Respectfully submitted,

*Isadore M. Zeskind*  
Isadore M. Zeskind,  
Assoc. Cartographic Engineer

Norfolk, Va.  
August 17, 1942

Approved and forwarded.

*H. C. Warwick*  
H. C. Warwick  
Officer in Charge  
Norfolk Processing Office

STATISTICS FOR SHEET H-6564

Ship OCEANOGRAPHER 1940

Project HT-248

Letter Day	Date 1940	Statute Miles	Soundings	Positions
A	April 17	8.2	95	10 102-131
B	18	66.3	121	34 1-34, 62-92, 138-157
C	20	27.0	288	28 1-165
D	23	31.0	286	27 1-110
E	24	204.5	1942	122 7-93, 99-122
F	25	174.0	1159	103 1-27, 1103
G	26	54.0	475	30 1-30
H	May 3	117.0	1127	81 1-81
J	4	234.0	2443	150 1-99, 104-130, 139-150
K	5	206.0	2169	129 1-129, 66-129
L	6	88.0	1343	144 1-63, 64-87
M	7	60.0	552	37 1-11, 12-38
N	8	141.0	1385	105 1-70, 1-74, 77-104
P	9	195.0	1097	107 1-60, 61-104
Q	10	285.0	2575	163 1-92, 93-156, 157-163
R	11	286.0	2571	176 1-85, 86-176
S	12	297.0	2569	195 1-99, 104-195
T	13	75.0	692	48 1-48
U	18	63.0	610	34 4-31
V	19	314.0	2924	175
W	20	246.0	2714	164
X	21	245.5	2632	143
Y	22	165.0	1661	100 1-81, 100-104
Z	25	69.9	844	50 1-50
AA	May 26	188.6	2030	129 1-131
BB	27	30.0	289	24 1-24
CC	28	74.4	698	49 1-49
DD	June 5	14.0	126	8 1-5
EE	6	171.0	1643	98 1-101
FF	7	178.0	1649	100 1-58, 63-65, 67-99
GG	8	59.3	326	34 1-34
JJ	11	169.8	1628	114 1-114
KK	12	201.0	2194	148 1-35, 39-148
LL	13	209.0	2197	135 1-74, 75-135
MM	14	170.2	1572	119 1-119
NN	20	219.1	1981	128 1-63, 64-128
PP	21	263.1	2200	141 1-7, 70-141
QQ	22	187.0	1636	101 1-3, 85-101
RR	23	262.1	2498	158 1-23, 24-158
SS	24	225.0	2104	131 1-7, 101-131
TT	25	282.0	2699	194 1-97, 100-198
UU	26	222.0	2112	142 1-21, 28-26, 28-142
VV	27	220.0	2315	149 1-83, 84-149
WW	28	134.0	1215	92 1-92

*Handwritten signature or initials*



STATISTICS FOR SHEET H-656 - Sheet #2, continued.

Ship OCEANOGRAPHER 1940

Project HT-248

Letter Day	Date 1940	Statute Miles	Soundings	Positions <i>Hughes</i>
XX ✓ <i>Poor</i>	July 9	172.0	1585	108 <sup>1-67, 70-108</sup>
YY ✓	10	260.0	2359	177 <sup>1-37, 38-113, 115-177</sup>
ZZ ✓	11	196.8	1794	135 <sup>1-67, 68-135</sup>
AB ✓	12	319.0	3014	70-232 232 <sup>1-86, 87-171</sup>
AC ✓	13	270.8	2526	181 <sup>1-90, 91-181</sup>
AD ✓	14	297.0	2660	209 <sup>1-90, 91-190</sup>
AE ✓	15	164.8	1521	104 <sup>1-36, 37, 38-104</sup>
AF ✓	16	232.3	2321	174 <sup>1-89, 90-174</sup>
AG ✓	23	161.0	1670	103 <sup>1-16, 19-103</sup>
AH ✓	24	37.7	410	25 <sup>1-25</sup>
AJ ✓	25	187.0	2012	121 <sup>1-121</sup>
AK ✓	26	193.0	1789	135 <sup>1-99, 101-135</sup>
AL ✓	27	173.5	1607	117 <sup>1-102, 104-117</sup>
AM ✓	28	135.0	1995	93 <sup>1-25, 27-39</sup>
AN ✓	29	122.7	1347	98 <sup>1-67, 70-98</sup>
AP ✓	30	121.0	1315	98 <sup>1-98</sup>
AQ ✓ <i>Poor</i>	31	78.3	739	61 <sup>1-61</sup>
AR ✓	Aug 7	169.0	1600	136 <sup>1-47, 49-136</sup>
AS ✓	8	267.0	2757	180 <sup>1-86, 87-180</sup>
AT ✓	9	183.0	2040	Miss 81-99 183 <sup>1-86, 87-183</sup>
AU ✓	10	186.0	1725	153 <sup>1-80, 81-161</sup>
AV ✓	11	58.8	614	59 <sup>1-56, 57-64</sup>
AW ✓	12	52.3	557	39 <sup>1-26, 27-39</sup>
AX ✓	13	166.6	1708	96 <sup>1-14, 15-96</sup>
AY ✓	14	61.0	583	31 <sup>1-31</sup>
AZ ✓	21	157.5	1395	117 <sup>1-46, 47-117</sup>
BA ✓	Aug 22	24.0	301	21 <sup>1-3</sup>
BC ✓	23	147.8	1439	110 <sup>3-64, 65-110</sup>
BD ✓	24	214.0	2071	152 <sup>1-69, 70-152</sup>
BE ✓	25	249.5	2201	190 <sup>1-94, 95-190</sup>
BF ✓	26	281.0	2721	184 <sup>1-91, 92-181</sup>
BG ✓ <i>To 2 BG is also 43C</i>	27	190.0	1815	123 <sup>1-108, 110-123</sup>
BH ✓	28	222.8	2049	165 <sup>1-29, 30-55, 56-146</sup>
BJ ✓	Sept 24	23.9	259	14 <sup>1-13, See Nd</sup>

Totals 12908.1 123885 8673

Sediment thickness depths, plus 4070. 49,654  
 grand total = 173,539

**U.S. COAST & GEODETIC SURVEY**  
**L.O. COLBERT, DIRECTOR**  
**HYDROGRAPHIC SURVEYS**  
**PROJECT HT-248**

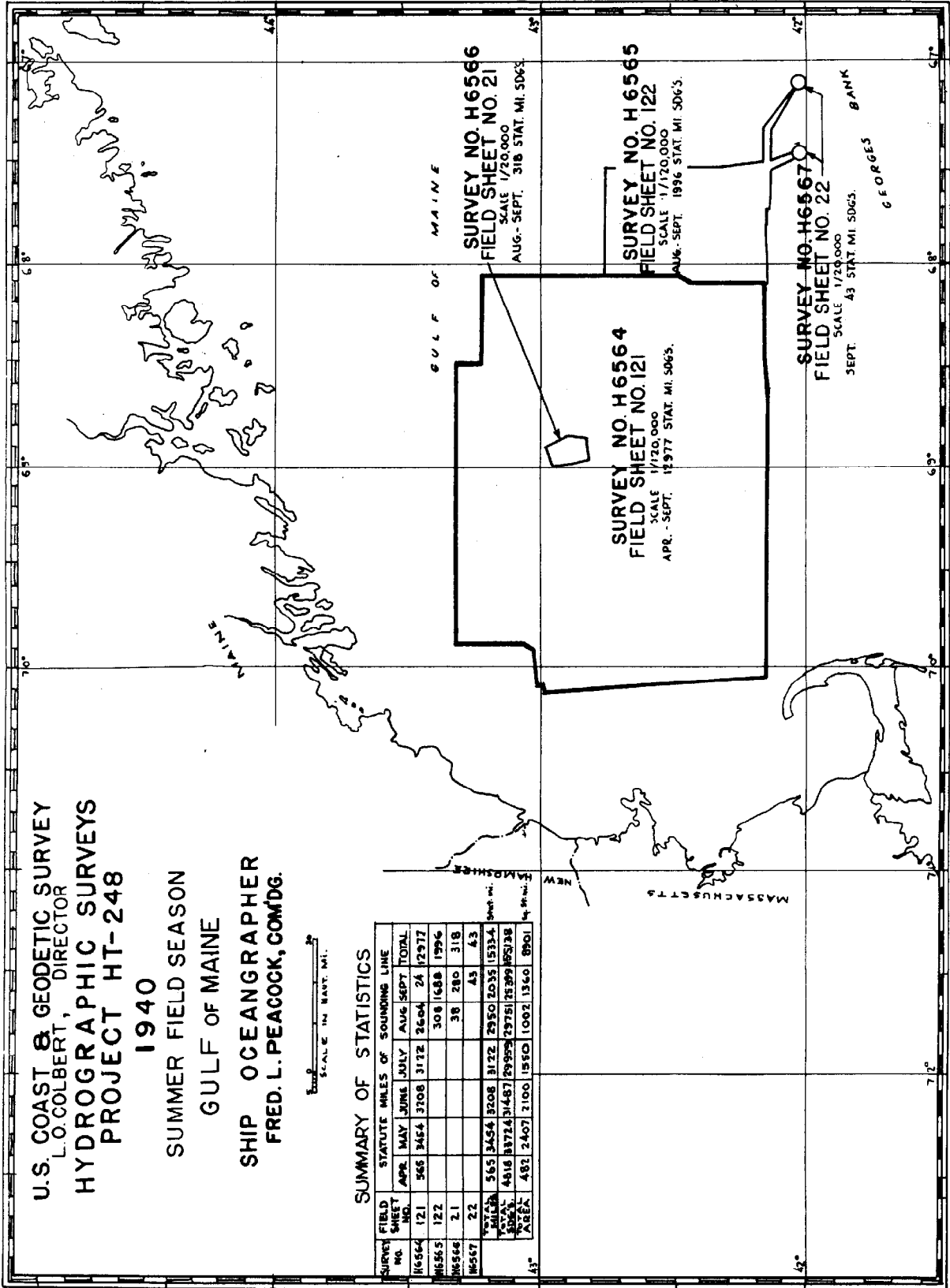
**1940**  
**SUMMER FIELD SEASON**  
**GULF OF MAINE**

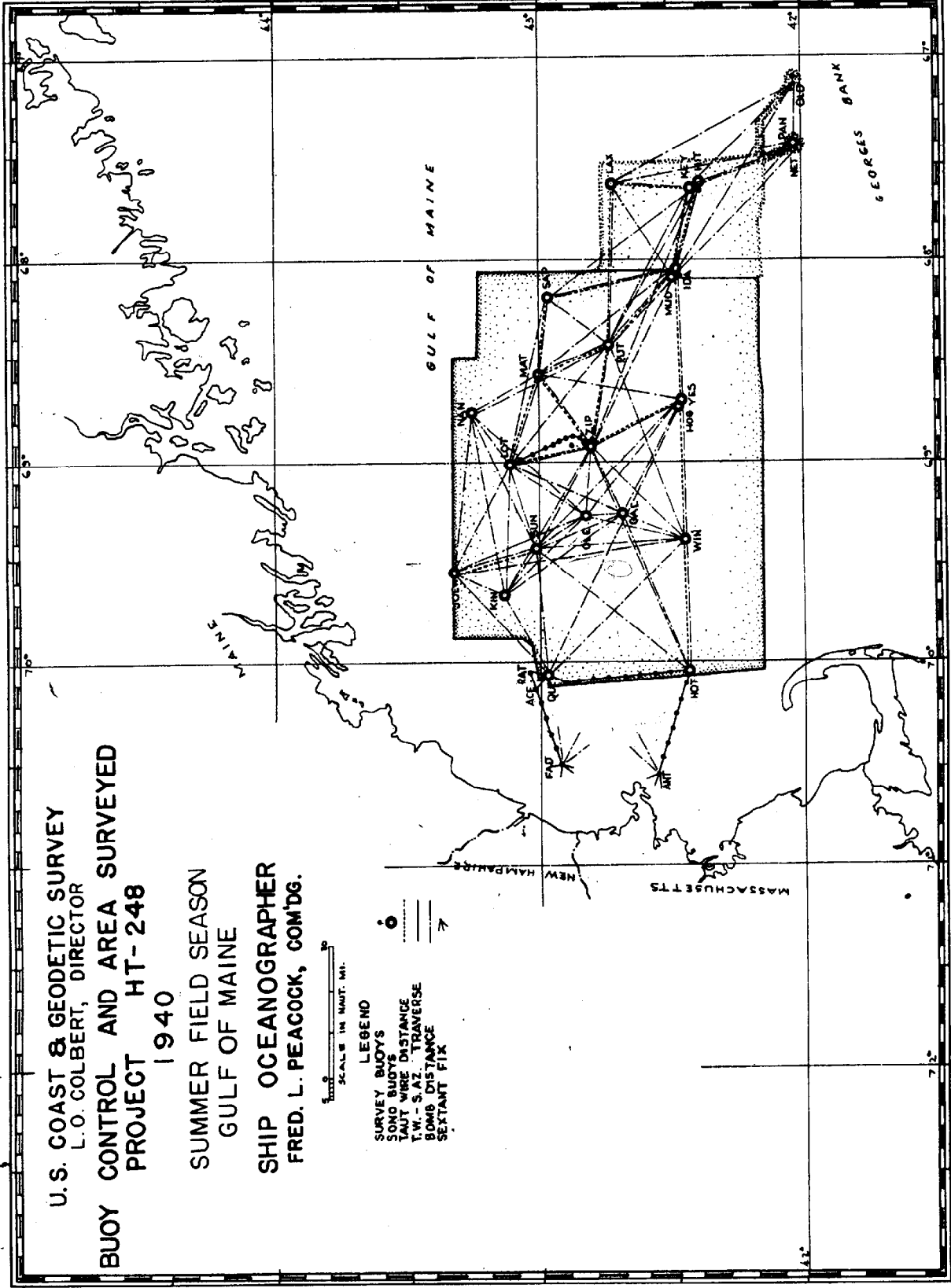
**SHIP OCEANOGRAPHER**  
**FRED. L. PEACOCK, COM'DG.**

SCALE IN NAUT. MI.

**SUMMARY OF STATISTICS**

SURVEY NO.	FIELD SHEET NO.	STATUTE MILES OF SOUNDING LINE				TOTAL		
		APR.	MAY	JUNE	JULY			
H6564	121	565	3454	3708	3172	2604	24	12977
H6565	122					308	1688	1996
H6566	21					38	280	318
H6567	22						43	43
<b>TOTAL</b>	<b>MILES</b>	<b>565</b>	<b>3454</b>	<b>3208</b>	<b>3172</b>	<b>2950</b>	<b>2035</b>	<b>15334</b>
<b>TOTAL</b>	<b>AREA</b>	<b>4818</b>	<b>83724</b>	<b>31487</b>	<b>29958</b>	<b>23751</b>	<b>25399</b>	<b>105238</b>
<b>TOTAL</b>	<b>AREA</b>	<b>482</b>	<b>2407</b>	<b>2100</b>	<b>1950</b>	<b>1002</b>	<b>1360</b>	<b>8901</b>





U.S. COAST & GEODETIC SURVEY  
 L.O. COLBERT, DIRECTOR  
**BUOY CONTROL AND AREA SURVEYED**  
**PROJECT HT-248**  
 1940  
 SUMMER FIELD SEASON  
 GULF OF MAINE  
 SHIP OCEANOGRAPHER  
 FRED. L. PEACOCK, COM'DG.

SCALE IN NAUT. MI.  
 0 1 2

- LEGEND
- SURVEY BUOYS
  - LONG BUOYS
  - TANT WIRE DISTANCE
  - T.W. - S. AZ. TRAVERSE
  - BOMB DISTANCE
  - SEXTANT FIX

CHIEF OF PARTY'S NOTES TO ACCOMPANY THE DESCRIPTIVE  
REPORT FOR SURVEY H-6564

Hydrography on this survey started in the deep basin which centers in the quadrilateral, formed by signals, HOT-QUE-SUN-WIN. It was at once noted that the hard sub-strata bottom of this basin is covered by sediment. The maximum depth of the sediment, found in the vicinity of the deepest part of the basin, is about twelve fathoms. The depth of the sediment decreases toward the edges of the basin, and little sedimentation was noted in depths less than one hundred fathoms.

See Recy/Br. 8  
for add'l notes

It was very difficult to read the Dorsey Model III Fathometer in this area, since the hard rock bottom beneath the sedimentation usually gave a better echo than the top of the sediment, although both echoes were apparent.

The Hughes Echo Sounder was commonly in operation whenever hydrography was in progress and both the sediment and sub-strata surfaces are apparent on the Hughes Fathograms.

After the first few days of sounding, the hydrographic records were revised with the Hughes Fathograms in an attempt to bring all recorded soundings to the depth over the top of the sediment and thereafter, the fathometer readers were under instructions to make every effort to record the soundings to the top of sedimentation only in all areas where this condition existed.

In the paragraph of the descriptive report, under the heading, "Sediment", Mr. Zeskind indicates that the party was not entirely successful in this attempt. Similar conditions of sedimentation were encountered in other limited areas and in the last paragraph of the descriptive report, Mr. Zeskind indicates that the fathometer readers may have had difficulty, at times, in reading the depth to the top of sedimentation in these other areas and that occasionally, the depth to the underlying rock was recorded.

It is respectfully recommended that during verification of this survey, the Hughes Fathograms be consulted constantly, especially in all areas where the underlying hard strata is covered by soft sediment and that all discrepancies in sounding line crossings be investigated with the Hughes Fathograms.

Constantly  
consulted and  
apparent discrepancies  
eliminated. HWM

It is further recommended that when this survey is applied to the chart, a suitable note be placed on the chart calling attention to the conditions to be encountered with respect to echo sounding navigation in the area of the deep basin mentioned in the first paragraph of these notes. This recommendation is in accord with previous correspondence between the field party and the Washington Office.

In general, means were found to obtain satisfactory RAR control for all parts of this survey in spite of difficulties caused by the extreme irregularities of the bottom in many parts of the area. It was inevitable, however, that some sounding lines were found to be lacking in desirable control. None of these sounding lines were rejected by the field party. It was believed that they could all be ultimately plotted in their correct position by means of the available control and the depths on adjacent well-controlled sounding lines. It is recommended that, in so far as practicable, all sounding lines be plotted since the more soundings plotted, the better the delineation of the bottom features. It is noted from Mr. Zeskind's report that all but a few sections of the poorly-controlled sounding lines were plotted in the Processing Office.

All adjusted,  
none rejected.

Mr. Zeskind mentions that, in plotting positions 89 to 94 AE day by adjacent hydrography, a discrepancy between the apparent course and the course by dead reckoning was indicated. In the entire area of this survey, east of Cashes Ledge, strong and erratic currents were frequently encountered. Presumably, the discrepancy noted could be due to currents of the character noted. *Accepted*

442° 45.2, λ 68° 43'

Some difficulty may be encountered in fitting the large scale survey of the immediate vicinity of Cashes Ledge, Survey No. H-6566, to Survey No. H-6564, especially as there is considerable overlap. While the large scale survey of H-6566 was controlled almost entirely by fixed position angles on survey buoys, these buoys had considerable scope and were subject to strong and erratic currents flowing in various directions at different buoys. The strength of current along Cashes Ledge, at times, was sufficient to tow survey buoys under. Counter currents, eddies, and areas of little current were frequently noticed in close proximity to a strong main current along the eastern edge of Cashes Ledge.

The position of navigation buoy "Zig", marking Ammen Rock, was located on Survey No. H-6564 by Gyro compass bearings from several positions on an RAR sounding line. On Survey No. H-6566, the position of this buoy was determined by three-point fixes on survey buoys. There may prove to be a discrepancy between these two determinations of the position of buoy "Zig".

Mean of all  
data used

The cost of wire drag investigations over Ammen Rock and other shoals on Cashes Ledge did not appear to be warranted at the time of this survey. At some future time, these wire drag investigations may be desirable.

The glaciation of the area of Survey No. H-6564, has produced a wealth of extremely interesting submarine features. Attention is particularly directed to the ice-planed surfaces on the summit of Fippennies Ledge and the summit of Platts Bank.

(1940)

-3-


83 | It is respectfully recommended that, when the results of Survey No. H-6564<sup>(1942)</sup> are charted, each ten fathom depth curve be drawn and charted in order to afford navigators of this area the maximum assistance obtainable from the survey.

These notes have been prepared with only a copy of the descriptive report and nautical charts of the area at hand.

Postscript: The Chief of Party desires it to be clearly understood that the Dorsey Model III Fathometer was the surveying echo sounder for the 1941 seasons work on project HT-248. The Hughes echo sounder is lacking in the desirable precision for independent hydrographic surveys. It is an excellent navigation instrument and its graphic records are a valuable asset, when it is operated in conjunction with the Dorsey Model III Fathometer, to assist in the investigation of discrepancies. Scaled soundings from the Hughes fathograms can be corrected and accepted where it is obvious that the recorded Dorsey fathometer soundings were read to a sub-strata. Scaled soundings from the Hughes fathograms may also be corrected and accepted for short intervals of sounding line in deep water when the Dorsey fathometer is temporarily not functioning provided there is a good simultaneous record from both instruments immediately before and after these intervals from which the correction to the scaled soundings from the fathograms can be determined. An offshore surveying echo sounder of the future will no doubt combine the precision, visual sounding features of the Dorsey fathometer, and the graphic recording feature of the Hughes instrument.

Hughes scaled  
as recommended  
H.W.M.

Respectfully submitted,

  
 Fred. L. Peacock  
 Chief of Party

August 26, 1942

Surveys Section (Chart Division)

H6564

HYDROGRAPHIC SURVEY NO. ....

Records accompanying survey:

- Boat sheets *two*; sounding vols. (50); wire drag vols. ....;
- bomb vols. *..(26)*; *Hughes* graphic recorder rolls *140*;
- special reports, etc. *(2)* cahier of fathometer corrections, .....
- (2)* cahiers containing R.A.R. and Dead Reckoning abstracts. ....

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

Number of positions on sheet	8673	
Number of positions checked	150	
Number of positions revised	18	
Number of soundings recorded	173,539	<i>{ includes soundings from Hughes }</i>
Number of soundings revised (refers to depth only)	300	
Number of soundings erroneously spaced	150	
Number of signals erroneously plotted or transferred		
Topographic details	Time ..0..	
<i>5 sheets</i> Junctions <i>(includes replattings + adjustment of R.R.)</i>	Time 27 days	<i>210 hrs</i>
Verification of soundings from graphic record - <i>Scouting Hughes</i>	Time 58 "	<i>348</i>
<i>(Contouring 12 days) included</i>		<i>1240</i>
Verification by <i>Harold W. Murray</i> .. Total time	155 "	Date 7/17/43
Review by <i>Harold W. Murray</i> ..... Time	14 "	Date 8/21/43

*and includes verification notes 300 only/sh.*

Remarks.

Decisions

	Remarks.	Decisions
1	For title	
2	" "	
3	3, 4, 5, 6 names are pending as to exact	
4	form with U.S.G.B. "OX" to apply as	
5	listed pending Board's action.	
6		
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9	Location of tide staff.	
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GEOGRAPHIC NAMES

Survey No. **H6564**

Name on Survey	Source											
	A	B	C	D	E	F	G	H	K			
<u>Gulf of Maine</u>												1
<u>Cape Ann</u>												2
Cashes Ledge												3
Fippenies Ledge												4
Platt Bank												5
Jeffrey Ledge												6
Jeffrey Bank												7
												8
<u>Portland</u>												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25
												26
												27

Also called "New Ledge"

Names underlined in red approved  
by L. Heck on 10/27/42

# MEMORANDUM

## IMMEDIATE ATTENTION

SURVEY  
 DESCRIPTIVE REPORT  
~~PHOTOSTAT OF~~

No. H **H6564**  
~~x Knox~~

received August 26, 1942  
 registered August 28, 1942  
 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	Pg 4	AK	Not critical depth.
88			
90			

RETURN TO

82	R. W. Knox
----	------------

✓ RWK

200  
C/K  
HAC

## TIDE NOTE FOR HYDROGRAPHIC SHEET

September 1, 1942

~~Division of Hydrography and Topography:~~

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

Plane of reference approved in  
50 volumes of sounding records for

HYDROGRAPHIC SHEET 6564

Locality East of Cape Ann, Gulf of Maine, Massachusetts.

Chief of Party: Fred L. Peacock in 1940

Plane of reference is mean low water reading

8.6 ft. on tide staff at Portland

(Time  $-\frac{1}{2}$  hr.; Range 0.8)

19.0 ft. below B. M. 1

Height of mean high water above plane of reference on working ground  
is 7.1 feet.

Condition of records satisfactory except as noted below:

*E. K. Green*

Chief, Division of Tides and Currents.

King 80  
Rude

821

22/MEK  
1993 NO 4

August 8, 1942.

To: Officer in Charge,  
U. S. Coast and Geodetic Survey  
Processing Office,  
1001 Monticello Avenue,  
Norfolk, Virginia.

From: Chief, Division of Coastal Surveys,  
U. S. Coast and Geodetic Survey.

Subject: Descriptive Report - Survey H-6564.

I have just noted, with satisfaction, that the processing of Project HT-248 - Gulf of Maine, Hydrographic Survey No. H-6564, has been completed with the exception of the Descriptive Report.

Please expedite the preparation of this report and submit the field data pertaining to this survey to this office as soon as practicable. It is hoped that you will be able to accomplish this before there is any interference from the field records from Projects CS-287 and CS-292, since the processing of records of these two projects must have a high degree of priority.

When the Descriptive Report of H-6564 is received at this office, I plan to have it sent to Commander F. L. Peacock, the Chief of Party doing the field work, for such comment and background notes as he may be in a position to prepare at that time.

(Signed) G. T. Rude.

Chief, Division of  
Coastal Surveys.

cc. Division of Charts ✓  
Lieut. Comdr. L. P. Raynor.

*PL*

IN REPLY ADDRESS THE DIRECTOR  
U. S. COAST AND GEODETIC SURVEY  
AND NOT THE SIGNER OF THIS LETTER

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

October 28, 1942.

AND REFER TO NO:

22/MEK  
720 Vc 5

*80 7813  
82 Ruck  
83 HET  
BLI HUC*

Memorandum to Chief, Division of Charts.

A note now attached to Hydrographic Smooth Sheet H-6564 states that 140 Hughes fathograms and other data may be destroyed after the sheet has been verified. It is recommended that the fathograms be kept on file since they will be useful in settling any questions that may arise at a later date regarding the depth of sediment overlying bed rock in certain areas on this sheet, as mentioned on page 3 of the Descriptive Report and on the first page of the Chief of Party's notes to accompany that report. This Division has no objection to the destruction of the other data mentioned after they have served their purpose in verifying the sheet.

*G. W. Hude*

Chief, Division of  
Coastal Surveys.



Mr. Harold W. Murray  
Room 1107

20-RS

December 10, 1942

AIR MAIL

Mr. George Friedl, Jr.,  
President, Bludworth, Inc.,  
92 Gold Street,  
New York, New York.

Dear Mr. Friedl:

In reviewing an offshore hydrographic sheet on which a Dorsey Fathometer No. 3 was used together with the Veslakari type Hughes recorder, I find that we have no scale in this office for scaling the fathograms of the Veslakari records. The OCEANOGRAPHER, on which this instrument is installed, has been transferred to the Navy and we shall be unable to get a scale from the ship. It is requested that you furnish this Bureau with a scale at your earliest convenience.

I am enclosing a photograph of a section of one of the records on which a celluloid scale is shown, which was made in this office but which has been misplaced. This photograph will indicate the scale desired if there is any question.

Please submit a statement of the cost of the scale.

Very truly yours,

(Signed) L. O. COLBERT

Director

Enclosure

Mr. Harold W. Murray  
Room 1107

20-RS  
1975 SE 4

December 10, 1942

AIR MAIL

To: Supervisor, Northwestern District  
U. S. Coast and Geodetic Survey  
601 Federal Office Building  
Seattle, Washington

From: The Director  
U. S. Coast and Geodetic Survey

Subject: Scale for Hughes Veslakari type echo sounder

In reviewing an offshore hydrographic sheet of the OCEANOGRAPHER in the Gulf of Maine, season of 1940, I find that we have no scale at this office for scaling the records of the Veslakari instrument. There is a scale attached to the instrument on the OCEANOGRAPHER. If that vessel has not sailed, it is requested that you have a tracing made of the scale and forward it to this office as soon as possible for reproduction on celluloid.

(Signed) L. O. COLBERT

Director

Mr. Harold W. Murray, Chart Div. *HM*

20-RCC  
1975 SE 4

December 11, 1942

AIR MAIL

To: Supervisor, Northwestern District  
U. S. Coast and Geodetic Survey  
601 Federal Office Building  
Seattle, Washington

From: The Director  
U. S. Coast and Geodetic Survey

Subject: Scale - Veslakari echo sounder

This refers to my letter of November 10. Since writing that letter it has come to my attention that a Veslakari echo sounder is installed on the Ship EXPLORER. You may have a tracing made of the scale of that instrument instead of the one on the OCEANOGRAPHER and forward it to this office for reproduction. Please expedite.

(Signed) J. H. HAWLEY

Acting Director



DIVISION OF CHARTS

REVIEW SECTION - SURVEYS BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. 6564  
Field No. 121

Massachusetts, Gulf of Maine, East of Cape Ann  
Surveyed April - September 1940; Scale 1:120,000  
Instructions dated March 8, 1940 (Project H. T. 248)

Soundings:

Control:

Dorsey and Hughes Fathometers R. A. R.

Chief of Party - Fred L. Peacock  
Surveyed by - Ship's Officers  
Protracted by - M. A. Axelton and A. L. Wardwell  
Soundings plotted by - M. A. Axelton  
Verified and inked by - Harold W. Murray  
Sedimentation thickness scaled, plotted and inked by  
Harold W. Murray  
Reviewed by - Harold W. Murray  
Inspected by - H. R. Edmonston, August 21, 1943

1. Shoreline

This is an offshore survey and no shoreline is shown.

2. Horizontal Control

This survey is principally controlled by R. A. R. sono-radio buoys located by a taut-wire, sun-azimuth traverse.

3. Sounding Line Crossings

Agreement of sounding line crossings is excellent.

The unusually high percentage of crossline development was obtained in runs necessary to servicing of sono-radio buoys. This procedure utilized unproductive runs and materially increased the sounding data at little or no appreciable survey cost.

4. Depth Curves

The relative intensity of the development permits adequate delineation of the depth curves.

A contoured bromide of the present survey (in 2 sections) accompanies this survey. A 5-fm. contour unit was selected to insure accuracy for the 10-fm. units now used on many of the recently revised charts. However, portions of the present survey are extremely irregular and the compiler will doubtless consider it advisable to both generalize and depart from the 10-fm. practice. In any event should the compiler ultimately decide on a 10, 15, 25, or some other contour unit it will most likely be some unit divisible by 5, which can be pantographed directly from the contoured bromide.

5. Junctions with Adjacent Surveys

- a. The junction on the east with H-6565 (1940) is excellent.
- b. The present survey makes a 5-mile overlap along the south with H-5276 (1932), H-5275 (1932) and H-5272 (1932). Agreement is acceptable for most practical purposes but differences of as much as 10% of depth occur at many crossings. Such conflicting soundings have been omitted in the transfer. These differences are not at all unreasonable since the earlier 1932 work, as contrasted with the present survey methods, is somewhat of experimental quality with respect to both the elementary R.A.R. control and the old 312 Fathometer soundings. For charting purposes, the present survey, including only such soundings as have been transferred to it from the 1932 work, should supersede the 1932 work in the common area.
- c. The present survey completely surrounds and supplements the H-6566 (1940) 20,000 scale development on Cashes Ledge. Some difficulty was anticipated with this junction because the large scale survey was controlled by 3-point fixes on buoy signals whereas the present survey R.A.R. control was in many cases limited to a single arc and, moreover, required an enlargement of 6 times. Adjustments were made by replotting all the present survey soundings (directly from the sounding records) on tracing paper and shifting where necessary. The resulting adjustment is very good. Considerable care was taken with this junction because it is believed that oceanographers will ultimately study the ledge with 1-fm. contours in order to ascertain if the lowering of the ocean level during the ice ages has left any traces of small benches or terraces on the side slopes of the ledge.

6. Comparison with Prior Surveys

H-440 (1854-56), H-516 (1854-55), H-593 (1857), H-700 (1858-59), H-861 (1863), H-1208 (1873), H-1302a (1874), H-1303a (1875), H-1303b (1875), H-1304 (1874) and H-1305 (1854-75); Scales 1:40,000 to 1:200,000

The above surveys each cover a portion of the present survey. Development on each is extremely sparse and usually consists of several lines controlled by dead reckoning and astronomic sights.

H-1305 is a master plotting sheet on a scale of 1:400,000. It contains replottings from most of the other sheets. Several errors made in plotting on the original sheets have been corrected on the master sheet but the discrepancies were not necessarily noted on the original sheets.

Considerable difficulty was encountered in obtaining the proper sounding records because of lack of proper library registration at this earlier period. It appears that some of the deep sea development was obtained as supplemental work while working on inshore sheets. These soundings were plotted on new small scale sheets and the sheets assigned new registry numbers. No cross references, however, were made to the original sets of sounding volumes containing the actual soundings. The reviewer has detected and corrected several such cases. Some records still remain to be found and include the development on Jeffries Bank which is plotted as a special development on H-700.

Agreement of depths with the present survey is quite poor and is probably due to discrepancies in both depth and position. In the latter instance it may be cited that the least depth on Cashes Ledge as plotted on H-1305 (astronomic control) is 4 miles northeast of the development on H-6566. When good agreement is noted it is apt to be a pure coincidence.

The present survey development is adequate to entirely supersede this old work. Bottom characteristics may be retained if deemed necessary, but their accuracy in position may vary 1 to 4 miles or more. Specific mention is made of the following more important sounding discrepancies:

a. H-516 and H-1303a

The charted 44 and 54-fm. sounding originating with H-1303a, a 46 from H-516 and a second 54

(origin cannot be readily ascertained, chart 1106) in the vicinity of Lat.  $42^{\circ}26'$ , Long.  $70^{\circ}00'$ , consistently fall in depths 8 to 50 fathoms deeper on the present survey. The present survey indicates that these soundings are probably too far eastward of their correct positions and may therefore be disregarded.

b. H-593

A 57-fm. sounding (not charted) in Lat.  $42^{\circ}28.5'$ , Long.  $68^{\circ}27'$  falls in a broad gentle depression of 117 fathoms on the present survey. This sounding is accompanied in the records by the notation "R- examine." The "R" is probably an abbreviation for reject and not "rock." In any event, the 57 was not specifically examined. However, it is noted that the standard sounding interval is  $1/2$  hour but that the following sounding of 95 fathoms (not plotted on sheet) was obtained at only half this interval. This sounding was probably taken as a check on the 57. The 57 is considered erroneous and should be disregarded.

c. H-700

The charted 48-fm. sounding on Jeffrey Bank in Lat.  $43^{\circ}14.5'$ , Long.  $68^{\circ}37'$  falls in depths of about 97 fathoms on the present survey. This 48 is the least depth of several other soundings obtained on the same line in the immediate vicinity, all soundings of which consistently vary 32 to 49 fathoms. too shoal. Although the sounding records for this line could not be readily located, it is evident from the consistent differences noted that the line is not in its correct position and probably belongs 8 or more miles to the northward where it falls outside the limits of the present survey but in the vicinity of other charted 46- to 49-fm. depths originating from other sheets. These soundings should be disregarded.

d. H-1303b

The charted 27-, 39- and 45-fm. soundings in Lat.  $42^{\circ}50'$ , Long.  $68^{\circ}51.5'$  fall in depths of about 90 fms. on the present survey but are only about 3 miles east of similar depths on the present survey. The precise source of the 27 could not be readily ascertained but it is noted that a 27 is shown on H-1303b about 1 mile northwest and that the present

survey shows two detached 27-fm. shoals about 4 miles southeast. These soundings are considered erroneous in position and should be disregarded.

e. H-1304

The charted 39, 65, and 63-fm. soundings in Lat.  $43^{\circ}07'$ , Long.  $69^{\circ}27'$  fall in depths consistently 25 to 40 fathoms deeper on the present survey. This dead reckoning line begins at Pos. 6 "O" (angleman stationed in crow's nest and using lighthouse towers 40 to 175 feet high for natural objects) trends eastward across Platts Bank, then turns north and ends at Pos. 34 "O" which is controlled by one bearing and one angle (bearing ignored in plotting). By holding positions 6 "O" and 34 "O" (replotted using rejected bearing) as fixed, shifting the 39, 65, and 63-fm. depths 5 miles northwest to the north side of Platts Bank and adjusting the other soundings by proportion, all soundings are in good agreement with the present survey. An exception is the 85 and 86-fathom depths (Pos. 11 to 12 "O") in Lat.  $43^{\circ}13'$ , Long.  $69^{\circ}50'$  which falls in fairly flat bottom of 90 to 95 fathoms on the present survey. Since these soundings are not far from a 3-point fix position and will not fit anywhere in this vicinity, they appear to be inaccurate as to depth. All the above soundings may be disregarded.

The 81-fm. sounding in Lat.  $42^{\circ}58'$ , Long.  $69^{\circ}37'$  is in error by 10 fathoms, the correct depth according to the sounding records is 91 fms. and is so charted.

f. H-1305

The 4-fm. sounding labeled Ammens Rock in Lat.  $42^{\circ}56'$ , Long.  $68^{\circ}51.5'$  falls in 73 to 85 fathoms on the present survey. The review of H-6566 (1940) covering Cashes Ledge was made before receipt of the present survey in the office. It contains a detailed discussion of this sounding and concluded that it was actually the least depth on Cashes Ledge although it was located about 4 miles northeast of its correct position. The subsequent receipt of the present survey does not in any way alter this decision.

7.	<u>Comparison with Charts</u>	50 (New Print date 4-14-1943)
	1106	( " " " 3-20-1943)
	1205	( " " " 4-30-1943)
	1206	( " " " 7- 7-1943)
	1207	( " " " 4- 5-1943)
	3076	( " " " 7- 1934)

a. Hydrography

These charts contain no additional information that has not already been considered in the preceding paragraphs of this review. Charts 1205, 1206 and 1207 are of the 80,000 scale series. These are plotted in feet and overlap the present survey as much as 4 miles on the west. For the convenience of the compiler, the present survey soundings in this vicinity have been inked in fathoms and feet and permit conversion to whole feet units.

b. Aids to Navigation

The buoys marking Cashes Ledge and Jeffry Ledge agree closely with their charted positions and satisfactorily mark the features intended.

8. Compliance with Project Instructions

Instructions for this project are quite brief and depend on the hydrographer's judgment and initiative. The resulting survey, particularly in view of the many difficulties encountered, is highly commendable.

9. Condition of Survey

- a. The consistent practice of anticipating R.A.R. positions at the even-minute time intervals is a decided convenience and materially reduced the time spent in boat sheet and smooth sheet plotting and the office verification.
- b. Numerous bottom characteristics were obtained and are combined with the temperature and salinity data submitted for this project. A number of these fall on the Cashes Ledge survey, H-6566 and on H-6565 on the east, and have therefore been plotted on those sheets. Since these were plotted subsequent to the application of those surveys to the charts, the compiler may find it advisable to add additional "bottoms" and also the kelp shown on H-6566.

- c. The Descriptive Report and, more especially, the appended remarks of the hydrographer are a model of conciseness and most pertinent to the processing and utilization of the survey data.
- d. The smooth sheet plotting was excellent.

#### 10. Sedimentation

Of particular interest is the surprising amount and thickness of sediment encountered. (See photographs of Hughes records attached to D. R. and reviewer's notations shown thereon in red.) This sediment varies from 1 to 18 fathoms in thickness and spreads over half the survey. It occurs at depths deeper than 80 fathoms but is more prevalent at 100 fathoms and particularly at 125 fathoms. Since the upper surfaces of both the sediment and the underlying sub-strata can be measured with ease with fathometers, this region has in reality "two bottoms." The top of the sediment is of navigational importance and is that surface portrayed by the standard soundings shown on the present survey in black. The sub-strata surface is of interest to oceanographers and will also be studied in reconstructing the past history of this region. Both surfaces are vividly portrayed on the Hughes recordings but since these profiles will not endure permanently, it was considered advisable to plot the sediment thickness directly on the smooth sheet. This was accomplished by scaling the actual thickness at each recorded sounding interval (about 60% more soundings are contained in the sounding records than are shown on the smooth sheet), recording the amount in the sounding records, and then plotting and inking the values on the smooth sheet in red color. The thickness, geographic position and extent of the sedimentation are now everywhere apparent and of permanent record.

Portions of the Hughes records have faded considerably and cannot be measured accurately. Since sediment is obvious in most of these cases, a plus sign "+" has been used in lieu of a figure. A considerable proportion of the verification time on this survey was spent in scaling, recording, plotting and inking of the sediment (approx. 49,000 additional scalings). At the same time hundreds of least depths and bottoms of depressions were systematically scaled, checked, and recorded in the sounding records where necessary. This joint combination of the Dorsey and Hughes data is a unique feature contributing to the excellent quality inherent in the present survey. In this

connection, it may be mentioned that a perusal of the Hughes records accompanying H-6565 (1940) on the east reveals very little sediment. Such sediment as is present is but a few fathoms in thickness and of insufficient importance to merit further consideration.

The Hughes fathometer was temporarily out of order on V, W, X and most of Y days. The development on these days is too scattered to warrant listing of specific positions but is somewhat confined to the south and southwestern portion of the present survey.

#### 11. Additional Field Work Recommended

This is a thoroughly complete and excellent fathometer survey.

The Chief of Party states in the Descriptive Report, page 11, that the cost of wire drag investigations of Ammen Rock, Cashes Ledge and other prominent banks or ledges was not warranted at the time of this survey but that such investigations may be desirable at some future date. The desirability of such an examination would appear to be strengthened by the recent reporting of a 5-3/4-fm. spot (Chart Letter 662, 1942) near the northern tip of Jeffries Ledge in Lat. 43°07.5', Long. 70°00.0'. This shoal rises from smooth depths of about 40 fms. and is 5 miles outside of the present survey limits. The existence of this shoal is deduced from the action of paravanes and is not therefore based on actual sounding evidence. The LYDONIA began a preliminary examination (F. E. No. 7, Oct. 1942) of this ledge but the development was curtailed because of difficulties in obtaining aerial protection from enemy submarines. As a result of this examination, the hydrographer is of the opinion that the outer end of this ledge apparently extends nearly true north instead of NNE. as now charted. This information, however, was considered as a reconnaissance and insufficient to warrant any corrections on the chart at this time.

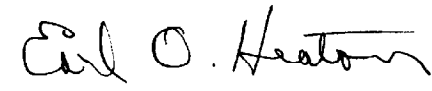
#### 12. Superseded Surveys

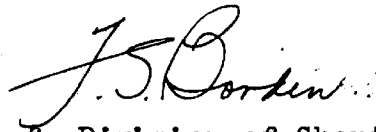
H- 440 (1854-56)	in part	H-1302a (1874)	in part
H- 516 (1854-55)	" "	H-1303a (1875)	" "
H- 593 (1857)	" "	H-1303b (1875)	" "
H- 700 (1858-59)	" "	H-1304 (1874)	" "
H- 861 (1863)	" "	H-1305 (1854-75)	" "
H-1208 (1873)	" "		




Examined and approved:

  
Chief, Surveys Branch

  
Chief, Section of Hydrography

  
Chief, Division of Charts

  
Chief, Division of  
Coastal Surveys

Partially applied to Cht. 1206 11-18-42 *H.P.*

applied to chart 3076 Dec. 11, 1943 *G.K.S.*

applied to chart 1106 Jan. 7, 1944 *G.K.S.*

applied to chart 59 Jan. 26, 1944 *G.K.S.*

applied to chart 1205 Jan. 27, 1944 *G.K.S.*

" " " 1206 " " *G.K.S.*

" " " 1207 " " *G.K.S.*

" " " 1000 Aug 29 1944 *H.F.S.*

Applied to ch 1205 reconstruction drawing Dec 8 1948 *H.P. Stegman*