

9010

Diag. Cht. No. 1207-2

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. PE-5-3-68
Office No..... H-9010

LOCALITY

State MASSACHUSETTS
General Locality VICINITY OF CAPE ANN
Locality SALEM HARBOR

1968

CHIEF OF PARTY
J. A. Yeager

LIBRARY & ARCHIVES

DATE March 31, 1970

9010

HYDROGRAPHIC TITLE SHEET

H-9010

INSTRUCTIONS - 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.

Pe 5-3-68

State MASSACHUSETTS

General locality VICINITY OF CAPE ANN

Locality SALEM HARBOR

Scale 1:5,000 Date of survey May 7 to Aug. 27, 1968

Instructions dated _____ Project No. OPR-473

Vessel USC&GS SHIP PEIRCE

Chief of party J. AUSTIN YEAGER

Surveyed by LTJG OLACK, ENS. SIGLEY, ENS. MOSTUE

Soundings taken by echo sounder, hand lead, pole

Graphic record scaled by SHIP PERSONNEL

Graphic record checked by SHIP PERSONNEL & PROCESSING BRANCH, AMC

Plotted by GERBER DIGITAL PLOTTER, PACIFIC MARINE CENTER

Soundings penciled by _____ " " " " " "

Soundings in ~~fathoms~~ feet at MLW MKW

REMARKS: Amended Project Instructions dated March 26, 1968 supercede all previous instructions.

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY PE 05-3-68
1968 FIELD SEASON

USC&GS SHIP PEIRCE

SCALE 1:5,000

J. AUSTIN YEAGER, LCDR USESSA

CHIEF OF PARTY

A. PROJECT

This survey was accomplished under Project OPR 473, Cape Ann to Cape Cod, Massachusetts. Amended Project Instructions dated March 26, 1968 supercede all previous instructions.

B. AREA SURVEYED

The area covered by this survey is a coastal harbor section in the proximity of Salem, Massachusetts. The southern and western limits of hydrography conform to the high water line in Salem Harbor. The survey extends north to $\phi 42^{\circ} 31'45''N$, and east to $\lambda 70^{\circ} 51'15''W$.

Hydrography extended north to junction with contemporary survey PE 5-1-68 and east to junction with contemporary surveys PE 5-2-68 and PE 5-4-68. (H-9009) (H-9012) & (H-9046)

Hydrography began on this sheet May 7, 1968 and was completed August 27, 1968.

C. SOUNDING VESSEL

Hydrography was performed by Launch PE-2 and by skiff. Position numbers for Launch PE2 are annotated in red ink, work done by the skiff is in green.

D. SOUNDING EQUIPMENT

One Raytheon (type 723) fathometer was used in this survey. Launch PE-2 used fathometer number 242. Echo soundings were taken in depths down to approximately 45 feet. A sixteen foot sounding pole was used for shallow water skiff work.

Launch PE-2 - Bar checks were taken once or twice a day as wind and sea conditions permitted. Bar check results were then tabulated and the mean fathometer error at each depth was determined. Values which differed greatly from the mean were rejected and a new mean value derived. These values were then placed on a graph and the fathometer error at given depths was taken from the graph in 0.2 foot increments.

Settlement and squat correctors were determined for launch work by using a level and rod.

The initial on the fathograms was held at 2.0 feet for this survey. Since the launches were refueled every other day, any draft correction due to fuel consumption was found to be negligible; thus, no draft corrector was required other than that incorporated in the initial. Also included in the initial is a reduction of one foot from the draft of the vessel as per a memorandum from the Chief, Instrument Division dated October 1, 1968.

There is no phase correction necessary as all depths were recorded on "A" scale of the fathometer.

E. SMOOTH SHEET

The smooth sheet will be plotted automatically at the Pacific Marine Center, Seattle, Washington by the Gerber Plotter. Field records were encoded on punched tapes designed for computer use. Two tapes were made from observations taken - a "position" tape providing position information obtained from three-point visual fixes, and a "sounding" tape providing depths. Additional corrector tapes were logged to provide all other data necessary to reduce these depths to final, correct values.

F. CONTROL

Visual control was used for all survey work. Three-point sextant fixes were utilized on triangulation and photogrammetric points. The fixes were plotted by three-arm protractor.

Photogrammetric signals were located from compilations furnished in accordance with instructions (Job PH-6601, Shoreline Mapping) contained in a letter from the Chief, Photogrammetry Branch to the Project Planning Staff Officer on March 5, 1968. The following photogrammetric compilations were used:

- Incomplete Manuscript T-12972 compiled January 1967
- Incomplete Manuscript T-12973 compiled January 1967
- Incomplete Manuscript T-12975 compiled February 1967
- Incomplete Manuscript T-12976 compiled September 1967

G. SHORELINE

Shoreline was transferred to the boat sheet from blue line manuscripts of the photogrammetric compilations listed in section "F".

The high water line was inspected and verified by the hydrographer. The low water line was determined by taking the survey vessels as close to shore as possible during times of calm water and high tide. When feasible, the shoreline was walked in order to obtain fixes defining the low water line.

H. CROSSLINES

Crosslines were run at 8.2% of the total mileage of sounding lines. All crossings were in good agreement.

I. JUNCTIONS

Junctions with contemporary surveys PE 5-1-68, PE 5-2-68 and PE 5-4-68 were excellent.

(H-9046)

(H-9009) (H-9012)

J. COMPARISON WITH PRIOR SURVEYS

Pre-Survey Review Item 77 (rocks awash at low water) was investigated for two hours and the following position and depths were determined:

Position 1. ROCK - ϕ 42° 31' 37.3", λ 70° 51' 23.6", depth of minus two and one half feet. *posn. 3411*

Position 2. ROCK with remains of old beacon on top -

ϕ 42° 31' 38.0", λ 70° 51' 27.7", depth 0.0 feet.

This was the most northwesterly of the group of rocks which are awash at low water. The position does not agree with the approximate position given in the pre-survey review. *pos. 3412*

Position 3. ROCK - ϕ 42° 31' 35.5", λ 70° 51' 26.5", depth of minus three and one half feet. *pos. 3413*

Pre-Survey Review Item 78 - Four hours were spent developing this area with normal sounding lines. A rocky area south and west of the PSR position was noted which had least depths of fifteen and thirteen feet. $\phi=42^{\circ} 31.43'$ $\lambda=70^{\circ} 51.43'$

fourteen

Pre-Survey Review Item 79 - Launch PE-2 spent two hours running spacing lines spaced at approximately 25 meters to delineate the intake channel. Nothing was found to indicate the existence of the channel; in fact depths as shoal as five feet were recorded in the area. Skiff PE-3 spent two hours running sounding lines in the area. Only along the power plant bulkhead was there any indication of dredging. Depths of thirteen feet were recorded next to the bulkhead. Nowhere in the area was a depth as great as the reported sixteen feet recorded.

$\phi=42^{\circ} 31.50'$ $\lambda=70^{\circ} 52.50'$

Centered at $\phi 42^{\circ} 31.10'$ $\lambda 70^{\circ} 53.60'$

Pre-Survey Review Item 81 - Skiff PE-3 spent one hour working in this area. Depths as shoal as two feet and as deep as six feet were recorded. Nothing to indicate the existence of a dredged channel was found. This area is characterized by a mud bottom and it appears that refuse is frequently dumped in this location. Several boats in ruins were noted in the area and numerous mooring lines span the channel.

Regarding the questionable soundings noted in the Pre-Survey Review, the following results were obtained:

Questionable Sounding in Feet	Location		Field Sounding in Feet
	Latitude North	Longitude West	
11	42° 31'28"	70° 52'07"	10
8	42° 31'30"	70° 51'23"	4.5 8.0
19	42° 31'31"	70° 51'39"	20
17	42° 31'15"	70° 52'13"	* ✓
6	42° 30'49"	70° 52'42"	4.5 5.0
6	42° 30'44"	70° 52'35"	6
4	42° 30'42"	70° 52'40" ^{52"}	4
BLW	42° 30'41"	70° 52'56"	1.5

* This questionable sounding was searched for and not located. PE-2 spent 2 hours in the area and although several rocks were seen on the fathogram, nothing approaching seventeen feet was found. Because of the numerous rocks in the area, the 17 foot sounding should remain on future charts.

K. COMPARISON WITH THE CHART

Comparison was made with C&GS charts 240 and 241 corrected through Notice to Mariners #18, May 4, 1968.

The charted two foot sounding (not included on Pre-Survey Review) at $\phi 42^{\circ} 31'17''N$, $\lambda 70^{\circ} 51'42''W$ was searched for and not located. Launch PE-2 spent 1-1/2 hours running over the area just north of Naugus Head. Nothing to indicate a two foot sounding was found.

The area shown as bareing at low water south of the entrance channel to the Palmer Point Yacht Yard on charts 240 and 241 no longer bares at low water and may be omitted from future charts.

Halftide Rocks just south of the Salem Coast Guard Base near Fort Pickering were verified.

No evidence of the sixteen foot intake channel (ϕ $42^{\circ} 32' 30''$ N, λ $70^{\circ} 52' 30''$ W) serving the New England Power generating plant was found.

L. ADEQUACY OF SURVEY

This survey is complete and adequate to supercede prior surveys of the area with one exception; the 28-1/2 and 30 foot ship channels leading to the Salem Terminal wharf were dredged under Army Corps of Engineers project during the months of August and September, 1968, after the survey of the channel had been completed by the PEIRCE. As there was not sufficient time remaining in the field season to resurvey this area, copies of the Army Engineer's final survey have been obtained and are forwarded along with the boat sheet. Soundings on the boat sheet in this channel should be revised in agreement with the Army Engineer's survey. The channel now has a reported controlling depth of 31-1/2 feet.

M. AIDS TO NAVIGATION

A total of eleven floating aids to navigation were located on this survey. All eleven buoys agreed in description and location with their charted positions on C&GS 241. Individual descriptions of these buoys may be found in Appendix "H" - Abstract of Hydrographic Data Located on Survey.

N. STATISTICS

<u>Vessel</u>	<u>Naut. Mi. Sdg. Line</u>	<u>Bottom Samples</u>	<u>No. of Pos.</u>	<u>Area Sur. Sq. Mi.</u>
PE-2	70.9	14	1114	2.8
Skiff	11.0	16	458	0.5
Total	81.9	30	1572	3.3

O. MISCELLANEOUS

Currents were measured at the entrance to Salem Harbor (Sta. 11) by means of a Geodyne Photo Current Meter. Observations were conducted for a fifteen day period commencing June 6, 1968 at ϕ $42^{\circ} 31.4'$ N, λ $70^{\circ} 51.9'$ W. Exposed film records from this station have been forwarded to Chief, Currents Division for developing and processing.

Tidal data for all survey work in Beverly, Salem and Marble-Head Harbors and vicinity was collected using a portable tide gage installed on the Salem Terminal Wharf. Its geographic position was ϕ $42^{\circ} 31'18''N$, $70^{\circ} 52'46''W$, which plotted on this boat sheet. Tides were observed on the $75^{\circ}W$ Meridian until April 28, 1968 at 0001 hours. Subsequently they were recorded at $60^{\circ}W$, Eastern Daylight Saving Time.

P. RECOMMENDATIONS

This survey is complete and any change in future charts should be referred to in Sections "J", "K" or "L".

Q. REFERENCES TO REPORTS

Report on Landmarks for Charts and Fixed Aids to Navigation, USC&GSS PEIRCE, 1968 Field Season.

Coast Pilot Report, USC&GSS PEIRCE, 1968 Field Season.

Season's Report, USC&GSS PEIRCE, 1968 Field Season.

Respectfully submitted,

A. Brian Mostue

A. Brian Mostue
ENS USESSA

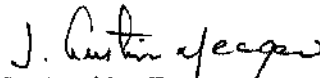
Approved and Forwarded

J. Austin Yeager
J. Austin Yeager
LCDR USESSA

APPROVAL SHEET

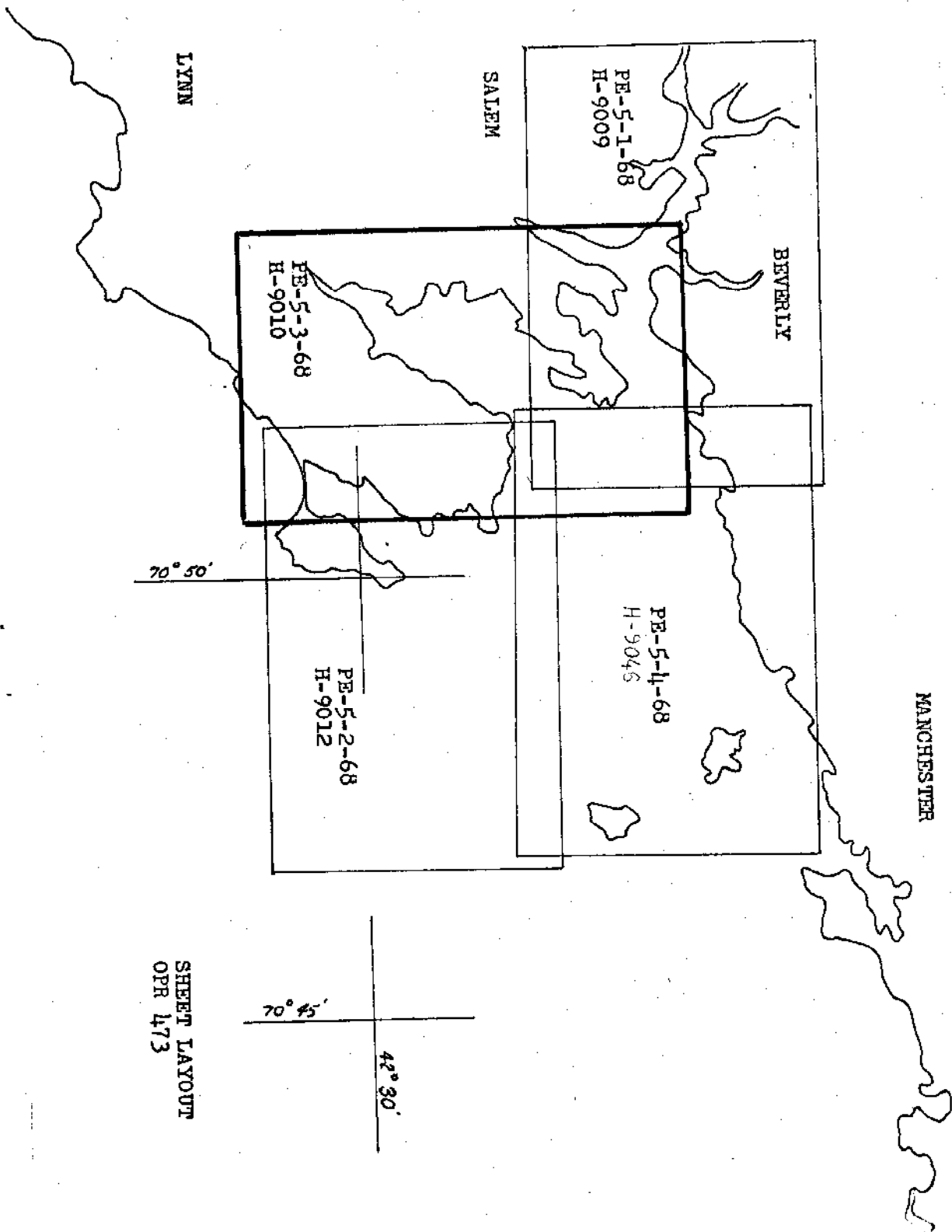
FIELD NUMBER PE-5-3-68

The field work and processing of data from this hydrographic survey was under my immediate, daily supervision. The boat sheet and all records have been reviewed and are approved by me. It is believed this survey is completely adequate to supercede all prior surveys and no additional field work is recommended.



J. Austin Yeager
LCDR, USESSA
Commanding Officer
USC&GSS PEIRCE

Date:



LYNN

SALEM

BEVERLY

MANCHESTER

70° 50'






70° 45'

42° 30'

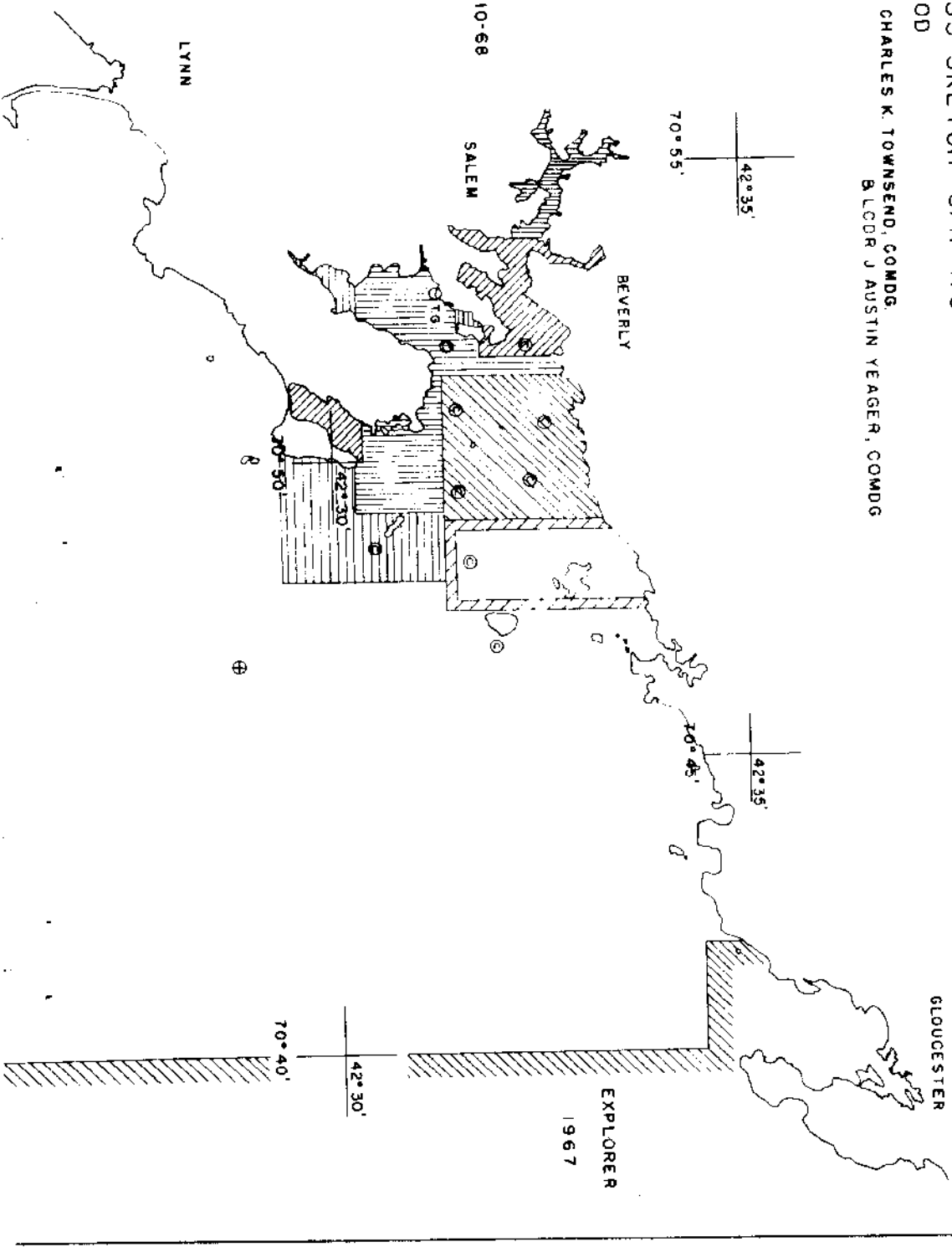
SHEET LAYOUT
OPR 473

COAST & GEODETIC SURVEY - JAMES C. TISON, DIRECTOR
 MONTHLY PROGRESS SKETCH - OPR-473
 CAPE ANN TO CAPE COD

USCGC 639 PEIRCE LCDR CHARLES K. TOWNSEND, COMDG.
 1968 FIELD SEASON B. LCDR J. AUSTIN YEAGER, COMDG.
 SCALE CHART 1207

-  APRIL
-  MAY
-  JUNE
-  JULY
-  AUGUST

NOT SHOWN: 40 DAY
 PROJECT SP-AMC-10-68

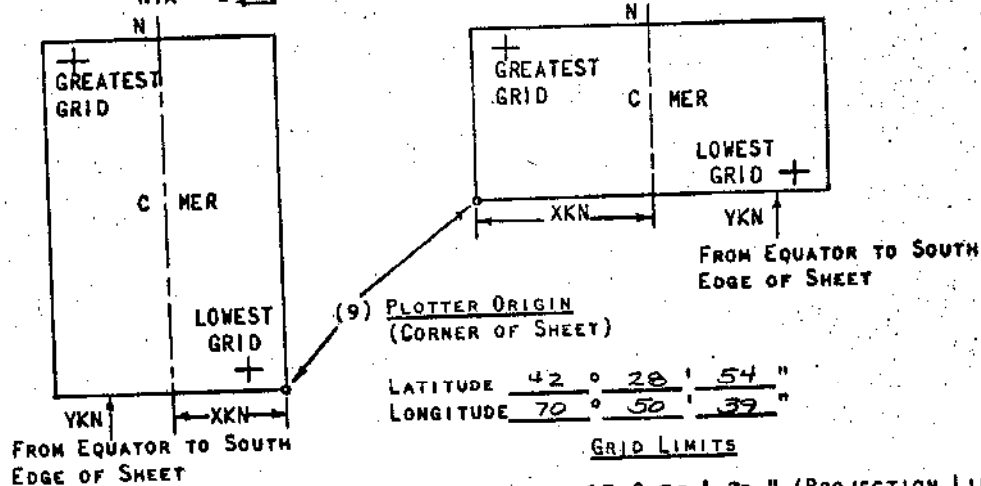


FORM # 1

FIG. 15

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

- (1) PROJECT No. OPR 473 (4) REQUESTED BY P.M.C.
 (2) H No. H 9010 (5) SHIP OR OFFICE PEIRCE
 (3) FIELD No. PE-5-3-68 (6) DATE REQUIRED ASAP
 (7) VISUAL (8) ELECTRONIC (FILL OUT FORM #3)
 (10) XKN (SP 5) DISTANCE FROM CMER TO EAST EDGE (NYX = 1) 2,306.1 METERS
 OR WEST EDGE (NYX = 0).
 (11) YKN (SP 241) DISTANCE FROM EQUATOR TO SOUTH EDGE OF SHEET. 4,704,925.085 METERS
70° 52' 20"
 (12) CENTRAL MERIDIAN
 (13) SURVEY SCALE 1: 5,000
 (14) SIZE OF SHEET (CHECK ONE) 36x54 42x60 OTHER
 (15) NYX, ORIENTATION OF SHEET (CHECK ONE) NYX = 1 NYX = 0



LIST G.P. OF ALL STATIONS TO BE PLOTTED ON THIS PROJECTION ON THE BACK OF THIS FORM. (DEG., MIN., METERS)

- GRID LIMITS
- (16) GREATEST LATITUDE 42° 32' 30" (PROJECTION LINE
 (17) LOWEST LATITUDE 42° 29' 00" INTERVAL, PAGE 4
 (18) DIFFERENCE 0° 3' 30" HYDRO MANUAL)
 (19) 0' 15"
 (20) 14 YSN
 (21) GREATEST LONGITUDE 70° 53' 45"
 (22) LOWEST LONGITUDE 70° 50' 45"
 (23) DIFFERENCE 0° 3' 00"
 (24) 0' 15"
 (25) 12 XSN

SEPARATES FOLLOWING TEXT:

APPENDIX A. TIDAL NOTE

B. ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

C. ABSTRACT OF CORRECTIONS TO DISTANCE
MEASUREMENTS

D. ABSTRACT OF TRA CORRECTORS

E. ABSTRACT OF DAILY CONSECUTIVE POSITION
NUMBERS BY VESSEL

F. LIST OF SIGNALS

G. ABSTRACT OF STANDARD FORMAT COLUMN HEADINGS

H. ABSTRACT OF HYDROGRAPHIC DATA LOCATED ON
THE SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

February 26, 1969

~~XXXXXXXXXXXXXXXXXXXX~~ Atlantic Marine Center

Plane of reference approved by
~~XXXXXXXXXXXXXXXXXXXX~~ for

HYDROGRAPHIC SHEETS 9009-9013

Locality: Salem Harbor, Massachusetts

Chief of Party: J. A. Yeager, 1968

Plane of reference is mean low water

Tide Station Used (Form C&GS-681):

Salem
Boston

Height of Mean High Water above Plane of Reference, ^{at the working grounds} is as follows:

Zone 1 = 9.0 feet
Zone 2 = 8.1 "
Salem = 8.8 "

8.8 feet on Salem staff applies to:

H-9009
H-9010
H-9012

Remarks

Tide reducers for Day No. 149, H.S./9009 have been revised and verified.

J. M. Seymour
XXXXXXXXXXXXXXXXXXXX

TIDAL NOTE

Tidal heights for this survey were obtained from marigrams at the portable tide gage the PEIRCE established in Salem, Massachusetts harbor, (ϕ $42^{\circ} 31'18''N$, λ $70^{\circ} 52'46''W$). Hourly heights were picked off and then verified by the Tides and Currents Branch. Tides for periods of time when hydrography was run but no marigrams were obtained have been supplied directly from the Tides and Currents Branch. All waters in this survey use the same tide zone. Times for the portable tide station at Salem, Massachusetts and the hydrography itself were on 60° west time zone. This procedure was followed because of national observance of Daylight Saving Time. Tides were placed on separate tapes because several vessels did hydrography at the same time.

Abstract of Tides follows as a copy of the Tide Tape Printout because of the length of the document. It is printed according to the standard tide tape format as detailed in Appendix "F"-Standard Format Column Headings.

PE-5-3-68, TIDE TAPE

090000 0 1064 0000 128 000000 000000
 090600 0 1062
 091300 0 1060
 092200 0 1058
 092900 0 1056
 093600 0 1054
 094300 0 1052
 094900 0 1050
 095700 0 1048
 100300 0 1046
 101000 0 1044
 101700 0 1042
 102400 0 1040
 103100 0 1038
 103800 0 1036
 104400 0 1034
 104900 0 1032
 105500 0 1030
 110000 0 1028
 110500 0 1026
 111100 0 1024
 111700 0 1022
 112300 0 1020
 113000 0 1018
 113600 0 1016
 114200 0 1014
 140400 0 1002
 142400 0 1004
 143600 0 1006
 145000 0 1008
 150000 0 1010
 150900 0 1012
 151300 0 1014
 152700 0 1016
 084700 0 1076 0000 129 000000 000000
 090600 0 1074
 091100 0 1072
 093200 0 1070
 094200 0 1068
 095100 0 1066
 095700 0 1064
 100200 0 1062
 101200 0 1060
 102000 0 1058
 102700 0 1056
 103400 0 1054
 104300 0 1052
 104700 0 1050
 105200 0 1048
 105900 0 1046
 110400 0 1044
 111000 0 1042
 111500 0 1040
 112000 0 1038
 113000 0 1036

113700 0 1024
114200 0 1032
114300 0 1030
115300 0 1028
120000 0 1026
145700 0 0902
150900 0 0000
152200 0 1002
084300 0 0010 0000 135 000000 000000
084900 0 0008
085500 0 0006
090000 0 0004
090600 0 0002
091100 0 0000
091700 0 1002
092200 0 1004
092700 0 1006
093200 0 1008
093600 0 1010
094100 0 1012
094600 0 1014
095000 0 1016
095500 0 1018
100000 0 1020
100400 0 1022
100900 0 1024
101300 0 1026
101800 0 1028
102300 0 1030
102700 0 1032
103100 0 1034
103600 0 1036
104100 0 1038
104500 0 1040
105000 0 1042
105400 0 1044
105900 0 1046
110400 0 1048
110900 0 1050
111300 0 1052
111800 0 1054
112200 0 1056
112600 0 1058
113000 0 1060
113700 0 1062
114100 0 1064
114700 0 1066
115100 0 1068
115600 0 1070
120000 0 1072
125000 0 1074
141700 0 1058
143100 0 1056
144100 0 1054
144500 0 1052
144500 0 1050
150100 0 1078
150700 0 1076
151300 0 1074
151900 0 1072
152400 0 1070
084200 0 0016 0000 136 000000 000000
090000 0 0914
091200 0 0012
092200 0 0010

000000 0 0000
 000000 0 0000
 000000 0 0000
 100000 9 1010
 100000 0 1014
 100000 0 1016
 104000 0 1018
 104000 0 1020
 104000 0 1022
 105300 0 1024
 105800 0 1026
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 111500 0 1034
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 112000 0 1038
 112500 0 1040
 113200 0 1042
 113600 0 1044
 117100 0 1046
 117500 0 1048
 118000 0 1050
 118000 0 1052
 120000 0 1054
 132000 0 1030
 132500 0 1032
 133000 0 1034
 134500 0 1036
 140000 0 1038
 150000 0 1040
 151500 0 1034
 152000 0 1036
 000000 0 0000 0000 137 000000 000000
 000000 0 0010
 000000 0 0012
 000000 0 0010
 000000 0 0000
 100000 0 1000
 100000 0 1004
 110000 0 1006
 110000 0 1008
 111000 0 1010
 111000 0 1012
 112000 0 1014
 113000 0 1016
 113000 0 1018
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 117000 0 1022
 117000 0 1024
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 131700 0 1074
 132000 0 1070
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 133000 0 1076
 134000 0 1078
 135000 0 1080
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 140100 0 1084
 140300 0 1086
 150000 0 1088
 000000 0 0000 0000 123 000000 000000
 000000 0 0000

100000	0	1075
101000	0	1074
101500	0	1072
110700	0	1060
111200	0	1058
112000	0	1056
112600	0	1054
113400	0	1052
114000	0	1050
114700	0	1048
115300	0	1046
120000	0	1044
132000	0	1016
138000	0	1014
140000	0	1012
142300	0	1010
153300	0	1008
090300	0	1032 0000 100 000000 000000
090800	0	1034
091300	0	1036
091800	0	1038
092400	0	1040
092900	0	1042
093600	0	1044
094200	0	1046
094900	0	1048
095600	0	1050
100200	0	1052
104100	0	1062
104900	0	1064
105700	0	1066
110300	0	1068
111400	0	1070
112600	0	1072
114200	0	1074
130000	0	1076
131700	0	1074
133000	0	1072
134100	0	1070
135100	0	1068
140000	0	1066
140000	0	1064
141600	0	1062
142400	0	1060
143000	0	1058
144000	0	1056
144700	0	1054
145200	0	1052
145300	0	1050
150300	0	1048
151200	0	1046
151900	0	1044
152500	0	1042
153000	0	1040
087700	0	1020 0000 100 000000 000000
087900	0	1022
090000	0	1024
090500	0	1026
091600	0	1028
092400	0	1030
093100	0	1032
093600	0	1034
094700	0	1036
095200	0	1038
100000	0	1040
100700	0	1042

101700	0	1047				
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102500	0	1048				
103500	0	1050				
104800	0	1052				
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113000	0	1062				
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115000	0	1068				
120000	0	1070				
135000	0	1076				
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141600	0	1072				
144700	0	1070				
145700	0	1068				
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152300	0	1056				
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090000	0	1010				
091500	0	1012				
091900	0	1014				
092800	0	1016				
093500	0	1018				
094800	0	1020				
097900	0	1022				
103400	0	1036				
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105100	0	1042				
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132200	0	1066				
133200	0	1068				
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064700	0	1030	0000	155	000000	000000
095200	0	1028				
090000	0	1026				
090600	0	1024				
091200	0	1022				
091900	0	1020				
092500	0	1018				
093400	0	1016				
095000	0	1014				
140300	0	1012				
105900	0	1010				
113700	0	1008				
120000	0	1010				
130100	0	1028				
133500	0	1030				
133700	0	1032				
137700	0	1034				
138200	0	1036				
140600	0	1038				
130800	0	1012	0000	156	000000	000000

131000 0 1014
132700 0 1016
133600 0 1018
134200 0 1020
135200 0 1022
140000 0 1024
100300 0 1038 0000 157 000000 000000
100800 0 1036
101200 0 1034
101800 0 1032
102400 0 1030
103000 0 1028
103500 0 1026
104500 0 1024
105000 0 1022
110100 0 1020
111000 0 1018
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112800 0 1014
113500 0 1012
114900 0 1010
120000 0 1008
120100 0 1006
123000 0 1004
132000 0 1002
134000 0 1004
135100 0 1006
140100 0 1008
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142500 0 1014
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143900 0 1018
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151100 0 1028
151800 0 1030
152400 0 1032
155100 0 1034
084700 0 1076 0000 155 000000 000000
090000 0 1074
090900 0 1072
091500 0 1070
092300 0 1068
093400 0 1066
103800 0 1044
104400 0 1042
105300 0 1040
105700 0 1038
110200 0 1036
110800 0 1034
111300 0 1032
111900 0 1030
112500 0 1028
113100 0 1026
113600 0 1024
117300 0 1022
118000 0 1020
115600 0 1018
120300 0 1016
130000 0 1004
141000 0 1002
142700 0 1000
143600 0 1006

142500 0 1008
145500 0 1010
150300 0 1012
151000 0 1014
151800 0 1016
152600 0 1018
090000 0 1086 0000 159 000000 000000
091800 0 1084
093100 0 1082
094100 0 1080
095000 0 1078
095700 0 1076
100300 0 1074
101100 0 1072
101900 0 1070
102800 0 1068
103500 0 1066
104200 0 1064
105100 0 1062
105900 0 1060
110700 0 1058
111100 0 1056
111700 0 1054
112300 0 1052
112900 0 1050
113500 0 1048
114100 0 1046
114600 0 1044
115200 0 1042
115800 0 1040
120300 0 1038
121000 0 1036
121600 0 1034
122100 0 1032
126000 0 1004
141200 0 1002
150000 0 0000
151700 0 1002
153100 0 1004
153800 0 1006
154700 0 1008
090000 0 1056 0000 160 000000 000000
095900 0 1088
101200 0 1056
102600 0 1084
103700 0 1082
104500 0 1080
105500 0 1078
110300 0 1076
111000 0 1074
111800 0 1072
112500 0 1070
113200 0 1068
113900 0 1066
114600 0 1064
124000 0 1080
137500 0 1018
135100 0 1016
135700 0 1014
140400 0 1012
141100 0 1010
141900 0 1008
142800 0 1006
143700 0 1004
144700 0 1002
150000 0 0000

123000	0	1070					
083400	0	1108	0000	161	000000	000000	
082600	0	1070					
082800	0	1070					
081500	0	1070					
090000	0	1070					
020700	0	1070					
091400	0	1080					
092000	0	1082					
092900	0	1084					
094000	0	1086					
102200	0	1088					
142300	0	1082	0000	190	000000	000000	
142900	0	1080					
143700	0	1018					
144400	0	1016					
145100	0	1014					
145700	0	1012					
150700	0	1010					
151200	0	1008					
085000	0	1080	0000	220	000000	000000	
111000	0	1074					
112100	0	1078					
115700	0	1086					
140500	0	1082					
083000	0	0000	0000	240	000000	000000	
092600	0	0000					
095400	0	1018					

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

All velocity corrections for this survey were obtained through bar checks taken daily as weather permitted. The velocity corrections were tabulated in tables which are supplied later in this Appendix, and also placed on a special corrector tape.

Each vessel established its own correctors. It became necessary to break velocity corrections of each vessel down further into tables for different times of the work year. The water temperature changed sufficiently during the course of the survey to necessitate this breakdown. The results of the bar checks were placed on graphs and values were picked off the graph in 0.2 foot increments for enclosure in the velocity tables and tapes mentioned above.

Raytheon type 723 fathometers were used in the launches for this survey. Launch PE-1 used fathometer #242. Launch PE-2 used fathometer #260. Soundings in the skiff were obtained with either a sounding pole or a leadline.

In this survey, table one is used for Launch PE-2 until 2400 hours, June 9 (Day 161). Table two is used for Launch PE-2 for all days after June 9 (Day 161). Table five is to be used for all days for skiff work.

TABLE ONE

<u>TO DEPTH</u>	<u>CORRECTION</u>
6.3	- 1.0
9.3	- 0.8
13.4	- 0.6
20.0	- 0.4
30.0	- 0.2
999.0	0.0

TABLE TWO

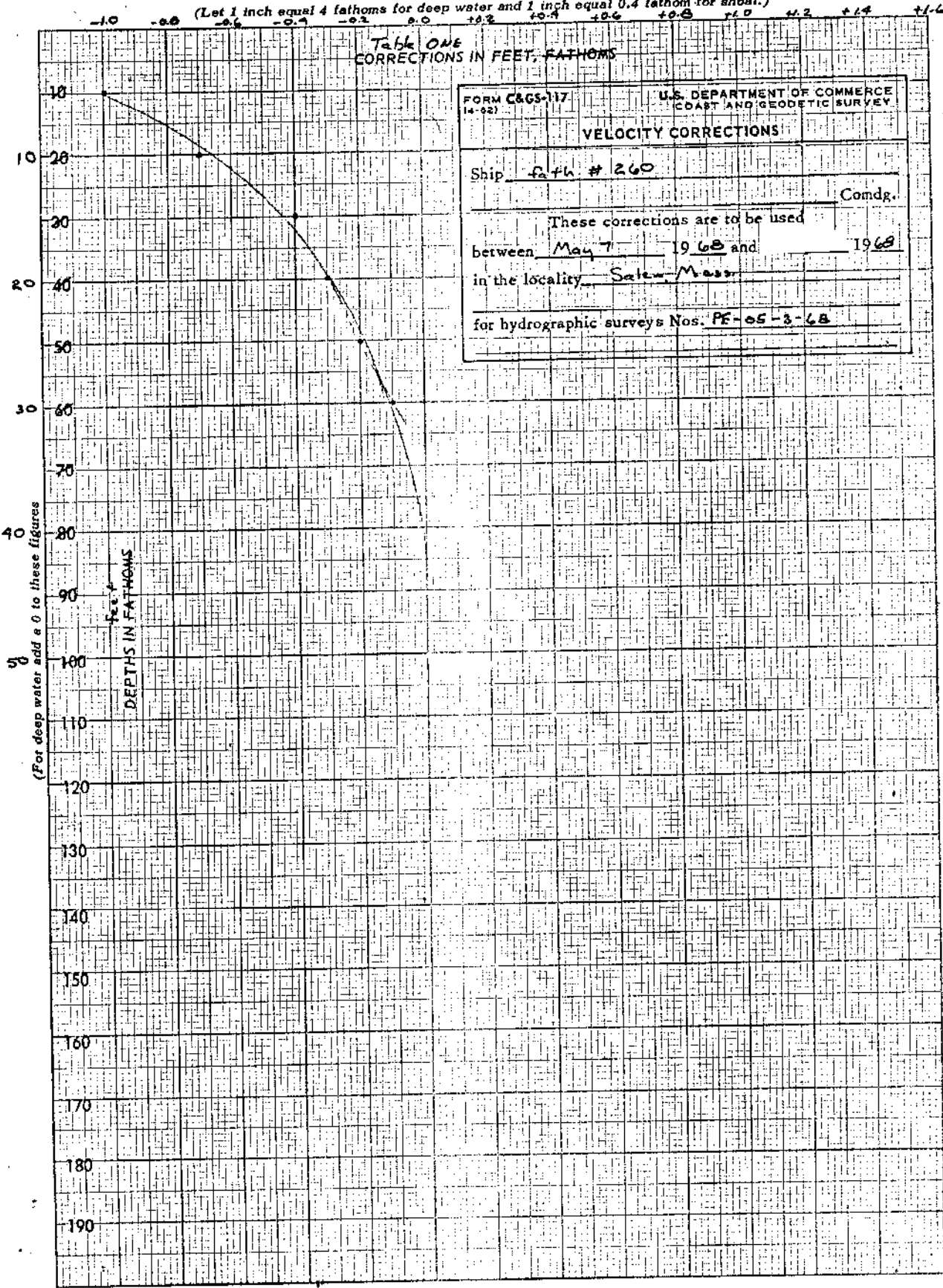
<u>TO DEPTH</u>	<u>CORRECTION</u>
5.0	- 0.8
7.3	- 0.6
11.6	- 0.4
16.0	- 0.2
25.0	0.0
999.0	+ 0.2

TABLE FIVE

<u>TO DEPTH</u>	<u>CORRECTION</u>
999.0	0.0

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

Table ONE
CORRECTIONS IN FEET, FATHOMS



FORM C&GS-117 14-62	U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY
VELOCITY CORRECTIONS	
Ship <u>fath # 260</u>	Comdg.
These corrections are to be used	
between <u>May 7</u> 19 <u>68</u> and	<u>1968</u>
in the locality <u>Salem, Mass.</u>	
for hydrographic surveys Nos. <u>PF-05-3-68</u>	

1240 U.S.A.
20 X 20 TO THE INCH
7 X 10 INCHES
KEUFFEL & ESSER CO.

0.8 0.6 -0.4 -0.2 0.0 -0.2 -0.4 -0.6 (quad 0.4 interval for shoal.)

TABLE TYPE 9
CORRECTIONS IN FEET, ~~PERCENTS~~

FORM CGS-177 (4-68)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship fath # 260

Camdg.

These corrections are to be used for
August 9 1968 and 19
in the locality Salem, Mass.

for hydrographic surveys Nos. PE-OS-3-68

60 For deep water add a 0 to these figures

DEPTH IN FEET

10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190

358-10 1/2
MADE IN U.S.A.

20 X 20 TO THE INCH
KEUFFEL & ESSER CO.



APPENDIX C

ABSTRACT OF CORRECTIONS TO DISTANCE MEASUREMENTS

There are no distance measurement correctors as all hydrography on this survey was visually controlled.

ABSTRACT OF TRA CORRECTIONS

The TRA corrector is a combination of several correctors that actually apply only to depths taken by electronic methods. Therefore, it should be noted that all skiff work has a zero TRA value and is logged as such. The TRA correctors are supplied in this descriptive report by the use of the T/TVI tape and tables. TRA is defined as follows:

TRA = Transducer draft + Instrumental error
+ Phase correction + Initial corrector
+ Settlement & squat + Fathometer speed corrector

The components of the TRA corrector are as follows:

TRANSDUCER DRAFT

Transducer draft for both launches (PE-1 and PE-2) is 3 feet. This draft has been eliminated by the setting of the initial on the fathometers at 2 feet in accordance with the memorandum dated October 1, 1962, from the Chief, Instrument Division. Any difference between the actual transducer draft and this pre-set draft is absorbed by the velocity correctors determined by the bar checks. (We have negative velocity corrections at depths of 5 feet giving preliminary credence to an incorrect pre-set transducer draft. Again we emphasize that this makes no actual difference because this error is absorbed by the bar check). Also, there is no appreciable draft change because of fuel consumption.

The launches are refueled at least every other day. Two days loss of fuel is not enough change in weight to effect the draft. As a result of all these considerations, the transducer draft correction is negligible.

INSTRUMENTAL ERROR

Velocity corrections for both fathometers were obtained by bar checks, thus instrumental error is non-existent.

PHASE CORRECTIONS

There is no phase correction necessary for this survey as the depths were not great enough to change scales.

INITIAL CORRECTION

The following corrections are applied to the indicated days work for each vessel:

LAUNCH PE-2

<u>DAY</u>	<u>TIME FROM</u>	<u>CORRECTION</u>
128	0000	0.0
129	0000	0.0
135	0000	0.0
136	0000	0.0
137	0000	0.0
143	0000	0.0
	083730	- 0.6
	083730	0.0
148	0000	0.0
	144015	- 0.3
	144045	0.0
149	0000	0.0
150	0000	0.0
152	0000	0.0
161	0000	0.0
222	0000	0.0

SETTLEMENT AND SQUAT

Settlement and squat data was obtained for Launch PE-2. Since Launch PE-1 is identical, the same data applies for it also. This data is supplied below. The actual corrections for settlement and squat were obtained by noting the speed changes in the sounding volumes.

<u>RPM</u>	<u>CORRECTOR IN TENTHS OF FT.</u>	<u>CORRECTOR IN INCHES</u>
0000	0.0	0.0
500	0.0	0.0
1000	- 0.1	- 1.0
1200	- 0.1	- 1.0
1500	- 0.2	- 2.0
1800	- 0.2	- 2.0
2300	- 0.1	- 1.0

APPENDIX D(3)

In compliance with the Hydrographic Manual, corrections for this type of survey should be in 0.2 foot increments plus or minus 0.1. Therefore, we have set the settlement and squat corrector to be a constant value of -0.1 so that at any speed used on the launches we would be within 0.1 as specified. Of course the skiff would have no settlement and squat corrector.

FATHOMETER SPEED CORRECTOR

The fathometers were maintained so that there was little speed corrector necessary. Any existing error was absorbed by the use of bar checks in obtaining velocity correctors.

The abstract of TRA corrections follows as a copy of the T/VTI Tape Printout because of the length of the document. It is printed according to the standard T/VTI Tape format as detailed in Appendix F - Standard Format Column Headings.

PE-5-3-68

OPR 473

T/VTI TAPE

LAUNCH

000000	0	1001	0000	128	000000	000000
000000	0	1001	0000	129	000000	000000
000000	0	1001	0000	135	000000	000000
000000	0	1001	0000	136	000000	000000
000000	0	1001	0000	137	000000	000000
000000	0	1001	0000	143	000000	000000
083630	0	1007				
083730	0	1001				
000000	0	1001	0000	148	000000	000000
144015	0	1004				
144045	0	1001				
000000	0	1001	0000	149	000000	000000
000000	0	1001	0000	150	000000	000000
000000	0	1001	0000	152	000000	000000
000000	0	1001	0000	161	000000	000000
000000	0	1001	0000	222	000000	000000

PE-5-3-68 T/VTI, Skiff

000000	0	0000	0000	157	000000	000000
000000	0	0000	0000	157	000000	000000
000000	0	0000	0000	157	000000	000000
000000	0	0000	0000	157	000000	000000
000000	0	0000	0000	157	000000	000000
000000	0	0000	0000	160	000000	000000
000000	0	0000	0000	190	000000	000000
000000	0	0000	0000	240	000000	000000

APPENDIX E

ABSTRACT OF DAILY CONSECUTIVE POSITION NUMBERS BY VESSEL

<u>VESSEL</u>	<u>DATE</u>	<u>DAY #</u>	<u>POSITION #'S</u>
Launch PE-2	May 7	128	0001-0071
	8	129	0072-0163
	14	135	0164-0310
	15	136	0311-0468
	16	137	0469-0588
	22	143	0589-0694
	27	148	0695-0830
	28	149	0831-0943
	29	150	0944-0975
	31	152	0976-1065
	June 9	161	1066-1108
	August 9	222	1109-1113
Skiff	June 3	155	3000-3066
	4	156	3067-3071
	5	157	3072-3142
	6	158	3143-3240
	7	159	3241-3373
	8	160	3374-3413
	July 8	190	3414-3455
	August 27	140	3456-3458

NORFOLK HYDROGRAPHIC PROCESSING BRANCH
LIST OF
TRIANGULATION STATIONS
SURVEY H-9010

SIG. NO.	NAME	TRIANGULATION STATIONS
107	⁸²⁸ PIC	FORT PICKERING L.H., 1877-1935
200	⁵² CUP	SALEM, COURTHOUSE, CUPOLA, 1934
337	⁸⁵⁴ NAU	^{SALEM} NAUM KEAG CHY., 1916-35
204	⁸⁷⁰ SAL	S. SALEM, NORMAL SCHOOL, CHY., 1919-33
105	⁸⁷¹ GAS	SALEM, GAS CO., S.W. CHY., 1919-35
114	⁸⁹¹ NEW	SALEM, NEW ENGLAND POWER CO., S. STACK, 1954
201	⁹³ MAC	SALEM, IMMACULATE CONCEPTION CATH. CH., SPIRE, 1934
106	⁵⁰⁷ LEE	LEE (USE.), 1914-35
219	⁸²⁷ DAY	GREAT AQUA VITAE, STONE BN., 1848
218	⁵⁰⁸ ACO	LITTLE AQUA VITAE BN., 1914
336	³²⁵ DER	DERBY WHARF L.H., 1887-1935
104	⁵⁰⁹ LOB	LOBSTER ROCKS BN., 1914-35
103	⁸⁷⁵ ART	BEVERLY, STUART'S FACTORY, YEL. CHY., 1919-35
209	²⁷ LEG	LEGG HILL, (MASS.) 1848-1932
206	⁵³ TAN	MARBLEHEAD, BLACK STANDPIPE, 1919-34
205	⁵³ LOW	MARBLEHEAD, YELLOW STANDPIPE, 1934
207	³⁴ TOW	MARBLEHEAD, ABBOTT TOWER, 1919-34
208	⁸⁷¹ REG	MARBLEHEAD, FIRST CONGREGATIONAL CHURCH, 1914-35
203	³² COD	CODDON, 1834-1919
202	⁸⁷⁰ HIM	SALEM, ELECTRIC LIGHT CO., STEEL CHIMNEY, 1919-35
109	⁸⁰³ TON	ABBOTT ROCK, STONE BEACON, 1848
219	DAY	(Topo. T-12973) GREAT AQUAVITAE DAYBEACON 1967
218	ACO	(Topo. T-12973) LITTLE AQUAVITAE DAYBEACON 1967

APPENDIX F

LIST OF SIGNALS (PR-5-3-68)

<u>NAME</u>	<u>SOURCE</u>	<u>CODE #</u>
ACO (Topo. T-12973)	Geographic Position	218
ADD	T-12975	311
ANT	975	332
△ ART	Geographic Position	103
BIB	975	312
BOX	975	333
△ COD	Geographic Position	203
COP	975	313
COW	975	334
△ CUP	Geographic Position	200
DAY (Topo. T-12973)	Geographic Position	219
DEL	976	432
△ DER	Geographic Position	336
DOG	975	314
EBB	975	315
EEL	972	179
EMO	976	433
FAR	976	340
FIG	972	181
FOE	975	316
FOR	975	335
△ GAS	Geographic Position	105
GUM	975	338
GUY	975	317
HAT	975	318
HAY	973	210
△ HIM	Geographic Position	202
JAR	975	339 319
JOB	975	319 339
IAD	973	341
△ LEE	Geographic Position	106
△ LEG	Geographic Position	209
LEO	975	320
LIZ	973	211
△ LOB	Geographic Position	104
△ LOW	Geographic Position	205

APPENDIX F (continued)

<u>NAME</u>	<u>SOURCE</u>	<u>CODE #</u>
△ MAC	Geographic Position	201
MAW	T-12975	321
MAX	973	342
MUG	973	212
△ NAU	Geographic Position	337
△ NEW	Geographic Position	114
NIP	975	322
OBI	975	323
OFF	973	213
PAR	975	324
△ PIC	Geographic Position	107
PIE	973	214
RAG	973	215
△ REG	Geographic Position	208
RUM	975	325
△ SAL	Geographic Position	204
SOX	975	326
△ TAN	Geographic Position	206
△ TON	Geographic Position	109
△ TOW	Geographic Position	207
TOY	973	216
TUB	975	327
VIM	975	328
WIN	975	329
YEA	975	330
ZAG	975	331

APPENDIX G

ABSTRACT OF STANDARD FORMAT COLUMN HEADINGS

Position Tape

Time	Pos#	Day	Left Angle	Right Angle	Left Ctr Obj.	Rt. Obj.
135800	0 0000	5000	189 035470	045450	0245	345 321

Sounding Tape

Time	Ind	Sdg	Tab.	Day	Vel.	Special Ind.
135100	1	0345	0002	189	000000 000000	0000 000 500

Transducer/Velocity Table Indicator (T/VTI) Tape

Time	TRA	Day
105200	0 1002 0000	195 000000 000000

Tide Tape

Time	Tide	Day
090000	0 0080 0000	135 000000 000000

Velocity Table Tape

Depth	Corrn	Table	Vel.	Vel
000100	0 0004	0003 000	000000	000000

Signal List Tape

EDP#	Latitude	Longitude	name
	° ' meters	° ' meters	
100	27 08 0899	080 09 0446	ANT

APPENDIX H

ABSTRACT OF HYDROGRAPHIC DATA LOCATED ON THE SURVEY

<u>POSITION NUMBER</u>	<u>DATA LOCATED</u>
0021	Lighted Channel Buoy, Black, "25"
0022	Black Can Buoy, "23"
0023	Lighted channel Buoy, Red, "10"
0024	Lighted Channel Buoy, Red, "26"
0025	Lighted Channel Buoy, Black, "27"
0026	Black Can Buoy, "29"
0027	Red Nun Buoy, "2"
0028	Red Nun Buoy, "4"
0029	Red Nun Buoy, "6"
0030	Black Can Buoy, "7"
0031	Black Can Buoy, "3"
0695	blk M
0696	blk M
0697	blk M
0698	blk M
0700	blk M
0968	blk M
0969	blk M
0970	blk M
0971	brn M
0972	blk M and Sh.
0973	blk M and gy Cl.
0974	Grs.
0975	Sh
3393	blk M
3394	blk M
3395	blk M
3396	Sh
3397	blk M
3398	Grs
3399	blk M and Sh.
3400	gy M
3401	blk M
3402	blk M
3405	blk M
3406	blk M
3407	blk M
3408	gy M
3409	Sh
3410	Rk

Norfolk, Va.
March 20, 1969

AMC PLOTTER NOTE TO EDAT
SURVEYS H-9009, H-9010 & H-9012

1. This Branch has reviewed the signal lists for these surveys which were compiled by the field party, and will have to ask for a third control overlay as there are a total of 19 errors in the positions of the signals on the three surveys.
2. Enclosed are three correction tapes and printouts, one for each survey, which should be used to correct your position data.
3. There was apparently a typographical error on the printout of signal names and those for OFF and MUG should be transposed. OFF should be number 213 and MUG should be number 212. Checks of the fixes you gave me by phone showed the positions to be logged correctly on the raw data tapes. *Applies To H-9009 & H-9010 only -*
4. Signal correction tapes are logged in BCD code.
5. After these corrections have been made please furnish this Branch new signal printouts for the 3 surveys.

Hugh L. Proffitt
Hugh L. Proffitt
Chief, Hydro Br. AMC

4/1/69
1 error
Signal # 451
H-9012
CH Lat.
WLD

CORRECTIONS MADE - 3RD H.S.O.'S PLOTTER
3/25/69

RETURN THESE PRINTOUTS WITH H.S.O.'S

AMC PLEASE NOTIFY ~~IF~~ THESE PLITS O.K. SO THAT
WE CAN ~~RE~~ RUN POSITION TAPES, ETC.
M.N. MARK

VERIFIER: H.R. Smith

Norfolk, Va.
May 16, 1969

AMC PLOTTER NOTE TO EDAT
SURVEY H-9010

As on the adjoining survey, in our last "Note" we asked that the signal names for stations MUG and OFF be transposed due to a field typographical error. This was done but the GPs were also changed and this left us in an identical situation. It is requested that the cards for these two stations be changed as follows:

212 42315882 070520780 MUG
213 42320113 070515543 OFF

The positions plotted on these stations have been marked for recomputation ~~max~~ of the geographic position only as the original logged data is correct. All positions so affected are marked with an asterisk

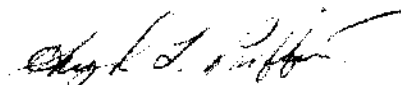
Due to our error station TON (109) was also misplotted and all positions using it should be recomputed as indicated on the print-out.

The card for this station should be changed as follows:

109 42314890 070514636 TON

Other routine position changes have been noted on the printout in red pencil.

Due to the large number of positional changes, it is requested that we be furnished a complete new position overlay. A sounding overlay will be requested when the position overlay has been checked.


Hugh L. Proffitt
Chief, Hydro Br., AMC

VERIFIER: Dan Munford


Norfolk, Va.
August 4, 1969

AMC PLOTTER NOTE TO EDAT
SURVEY H-9010

The preliminary position overlay for this survey has been verified and we find there are 20 corrections to be made.

We are enclosing a corrected position tape and printout for this purpose. The original position printout is being retained at this office.

When these positional corrections have been made, please furnish this office a preliminary sounding overlay.


Hugh L. Proffitt
Chief, Hydro. Br., AMC

VERIFIER: Fred Bean

* Norfolk, Va.
Oct. 29, 1969

AMC PLOTTER NOTE TO EDAT
SURVEY H-9010

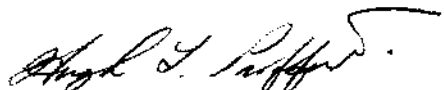
This office has completed the verification of the preliminary sounding and position overlays and we are returning the position and sounding card printouts for the application of corrections.

Three positional changes are to be made. They are positions 169, 172 and 826.

There are an unusually large number of changes to be made to the sounding cards. These can ~~be~~ be largely attributed to the following causes:

1. Field scanning and interpretation of depths in grassy areas on fathograms of marginal quality.
2. Changes in depths to delineate the edges of dredged and natural channels.
3. Logging errors, including the omission of minus signs on some soundings.
4. Soundings out of sequence. Soundings omitted during logging process.

When the above corrections have been made, please furnish this office a smooth plot of this survey.


Hugh L. Proffitt
Chief, Hydro Branch, AMC

GEOGRAPHIC NAMES
Survey No. H-9010

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
Cat Cove ✓											1
Cloutman Point ✓											2
Coddon Hill ✓											3
Fluer Point ✓											4
Fort Pickering ✓											5
Long Point ✓											6
Naugus Head ✓											7
Palmer Cove ✓											8
Palmer Point ✓											9
Pickering Point ✓											10
Salem ✓											11
Salem Harbor ✓											12
Salem Neck ✓											13
South Salem ✓											14
Winter Island ✓											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27

PREPARED BY

Frank W. Wright
CARTOGRAPHIC TECHNICIAN

APPROVED BY

A. Joseph Wright
CHIEF GEOGRAPHER

FORM C&GS-946
(REV. 11-65)
(PREP. BY
HYDROGRAPHIC
MANUAL 20-2,
6-94, 7-13)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
NAUTICAL CHART DIVISION

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9010

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		/	BOAT SHEETS		/	
DESCRIPTIVE REPORT		/	OVERLAYS <i>PLASTIC BOAT SHEET</i>		<i>1 + 7</i>	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS / SOURCE DOCUMENTS
ENVELOPES	3					
CAMERAS	1		3			
VOLUMES	7					
BOXES			1			
T-SHEET PRINTS (LIST)						
SPECIAL REPORTS (LIST)						

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				1572
POSITIONS CHECKED		453		
POSITIONS REVISED		408		
DEPTH SOUNDINGS REVISED				
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		55		
JUNCTIONS		8		
<i>Excessive re-plotting</i> VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS	78	47		
<i>Manual plotting - Positions & Soundings</i> SPECIAL ADJUSTMENTS		36		
ALL OTHER WORK		226		
TOTALS		372		
PRE-VERIFICATION BY <i>D.C. CALLAND, H.R. SMITH</i>	BEGINNING DATE SEPT. 11, 1969	ENDING DATE OCT. 3, 1969		
VERIFICATION BY <i>D.R. MUNFORD, F. BEAN, W.W. FEAZEL</i>	BEGINNING DATE JULY 30, 1969	ENDING DATE MAR 5, 1970		
REVIEW BY	BEGINNING DATE	ENDING DATE		

FORM C&GS-946A
(REV. 11-65)
(PRES. BY HYDROGRAPHIC
MANUAL, 6-941)

VERIFIER'S REPORT
HYDROGRAPHIC SURVEY, H-9010

U.S. DEPARTMENT OF COMMERCE
E55A
COAST AND GEODETIC SURVEY

INSTRUCTIONS - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

CL - Check List Items: should be checked as having been completed during the verification processes.

R - Report Item: This column refers to those items reported to the reviewer and is used to indicate the items discussed.

Part I - DESCRIPTIVE REPORT	CL	R	Part III - JUNCTIONS (Continued)	CL	R
<p>Note: The verifier should first read the Descriptive Report for general information and problems.</p> <p>1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken. Remarks Required: -- None</p>	✓		<p>10. Junctions with contemporary surveys were satisfactory except as follows: Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of Butt junctions and areas which are SUPERSEDED.</p>	✓	
<p>2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification. Remarks Required: -- None</p>	✓		<p>Part IV - VOLUMES</p> <p>11. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken and exceptions noted in the volumes. Remarks Required: -- None</p>	✓	
<p>3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None</p>	✓				
<p>Part II - SHORELINE AND SIGNALS</p> <p>4. Source of shoreline signals Remarks Required: -- List all surveys T-12422, T-12473, T-12475, T-12476 a. Give earliest and latest dates of photographs Nov. 1965 b. Field inspection date None c. Field Edit date Sept. Oct June 1967 d. Reviewed - Unreviewed</p>	✓	✓	<p>12. Condition of sounding records was satisfactory except as follows: Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following:</p> <p>(a) rocks (b) line turns (c) position values of beginning and ending of lines (d) bar check or velocity correctors (e) time recording (f) notes or markings on fathograms (g) was reduction of soundings accurately done? (h) was scanning accurate? <i>EXCESSIVE SCANNING - INACCURATE</i> (i) were peaks at uneven intervals missed? (j) were stamps completed? (k) references to adjacent features</p>	✓	✓
<p>The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.</p>	✓				
<p>6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet. Remarks Required: -- None</p>	✓				
<p>7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet. Remarks Required: -- List those signals still unidentified.</p>	✓		<p>Part V - PROTRACTING</p> <p>13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None</p>	✓	
<p>Part III - JUNCTIONS Note: Make a cursory comparison preliminary to inking soundings in area of overlap.</p> <p>8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical. Remarks Required: -- None</p>	✓				
<p>9. The notation in slanted lettering "JOINS H--- (19)" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil. Remarks Required: -- None</p>	✓		<p>14. The protracting and plotting of all unsatisfactory crossings were verified. Remarks Required: -- None</p>	✓	
			<p>15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None</p>	✓	

Fig. 20 (cont'd)
Form 946 A (back of form)

Part V - PROTRACTING (Continued)		CL	R	Part VIII - AIDS TO NAVIGATION		CL	R
16. The protracting was satisfactory except as follows: Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments.		✓		26. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey. Remarks Required: -- Conflicts of any nature listed.		✓	
17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number. <i>COURTS</i>		✓	✓	27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification. Remarks Required: -- None		✓	
Part VI - SOUNDINGS				Part IX - BOAT SHEET			
18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None		✓		28. The boat sheet was constantly compared with the smooth sheet with reference to notes, position of sounding lines and supplemental information. Remarks Required: -- None		✓	
19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments.		✓		29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information.		✓	
20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None		✓		Part X - GENERAL			
21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. Remarks Required: -- None		✓		30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2). Remarks Required: -- None		✓	
22. The smooth plotting of soundings was satisfactory except as follows: Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning.		✓		31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None		✓	
Part VII - CURVES				32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet. Remarks Required: -- None		✓	
23. The depth curves have been inspected before inking. Remarks Required: -- By whom was the penciled curves inspected. <i>W.W.F.</i>		✓	✓	33. The bottom characteristics are adequately shown. Remarks Required: -- None		✓	
24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following: a. From T-Sheet in dotted black lines b. From soundings in orange c. Approximate position of sketched curve in dashed orange d. Approximate position of shoal area not sounded in black dashed Remarks Required: -- None		✓		Part XI - NOTES TO THE REVIEWER			
25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn). Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient.		✓	✓	34. Unresolved discrepancies and questionable soundings.		✓	
				35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.		✓	
				36. Supplemental information.		✓	✓
Verified by <i>D.R. MUMFORD</i>						Date <i>FEB 3, 1970</i>	

Fig. 18.

DESCRIPTIVE REPORT DATA RECORD			
PART I SMOOTH SHEET PREPARATION		PREPARED BY/OPERATOR	DATE
A.	PLOTTER OPERATOR	EDAT	
B.	DISTORTION MARKS PLOTTED	EDAT	
C.	PROJECTION INTERSECTIONS PLOTTED	EDAT	
D.	POINTS OF ELECTRONIC CONTROL ARCS PLOTTED		
E.	OVERLAYS PREPARED BY		
1.	POSITION NUMBER	EDAT	
2.	EXCESS SOUNDINGS	EDAT	
3.	PRELIMINARY SMOOTH PLOT	EDAT	
4.	LIST OTHERS		
	A.		
	B.		
F.	SOUNDING SELECTION BY	EDAT	
G.	PLOTTER INPUT PREPARED	EDAT	
H.	CHECKED	EDAT	
I.	DESCRIPTIVE REPORT ADDENDUMS		
PART II SMOOTH SHEET COMPLETION		CARTOGRAPHER	DATE
A.	DISTORTION SCALE TICKS IDENTIFIED BY NOTE	D. R. MUNFORD	2 FEB 1970
B.	PROJECTION INTERSECTIONS VERIFIED BY	D. R. MUNFORD	18 DEC 1969
C.	PROJECTION LINES RULED BY	D. R. MUNFORD	22 DEC 1969
D.	ELECTRONIC CONTROL ARCS RULED AND LOCATION VERIFIED	NOT APPLICABLE	
E.	OVERLAYS COMPLETED BY		
1.	POSITION NUMBER LEADERS ADDED	D. R. MUNFORD	30 JAN 1970
2.	EXCESS SOUNDING OVERLAY COMPARED	F. BEAN	28 OCT 1969
3.	PRELIMINARY SMOOTH PLOTS COMPARED	F. BEAN	28 OCT 1969
4.	OTHERS UTILIZED		
	A.		
	B.		
F.	DESCRIPTIVE REPORT ADDENDUM	D. R. MUNFORD	3 FEB 1970
G.	CONTROL STATIONS VERIFIED	W. L. JOHNS	7 JAN 1969
H.	POSITIONS MANUALLY PLOTTED	H. R. SMITH	13 MAY 1969
I.	MANUAL PLOT VERIFIED	D. R. MUNFORD	9 JAN 1970
J.	SHORELINE APPLIED	D. R. MUNFORD	5 JAN 1970
K.	BOTTOM CHARACTERISTICS ADDED	D. R. MUNFORD	29 JAN 1970
L.	NOTES AND DEPTH CURVES ADDED	D. R. MUNFORD	27 JAN 1970

H-9010

A. Additions and corrections have been furnished the plotter
Except those listed for submission
center by the verification unit. by Review.
Signed Alfred J. Puffin
Date March 24, 1970 Title Chief, Hydro Br., AMC

B. Additions and corrections have been added to the survey
Review
records and the final smooth sheet forwarded to the ~~verification~~
~~tion~~ unit.

Signed Alfred J. Puffin
Date March 24, 1970 Title Chief, Hydro Br., AMC

C. The smooth sheet has been inspected, is complete, and
meets the requirements of the General Instructions for
automated surveys and the Hydrographic Manual. (Note:
All exceptions are listed in the verifier's report).

Signed Alfred J. Puffin
Date March 24, 1970 Title Chief, Hydro Br., AMC

D. Smooth sheet and records forwarded to Rockville, Maryland
Office.

Date March 25, 1970

NORFOLK HYDROGRAPHIC PROCESSING BRANCH
VERIFICATION NOTES
H-9010

CONTROL

Air-photo positions were used instead of the old triangulation intersection locations of Great Aqua Vitae, Stone Bn. 1848 (219) and Little Aqua Vitae Bn., 1914 (218). This positional discrepancy was not noticed until the smooth plot had been made and the final shoreline was being applied. Signal 219 is displaced about 3 MM from the triangulation location and is confirmed by hydro position 470. *At scale of Survey **

These changes affected 143 positions, of which, 122 were changed manually along with their soundings on the smooth sheet.

The positions changed are as follows:

687	874 to 878	958 to 959	1035 to 1038	3366 to 3372
689	925	964 to 967	1048 to 1052	3406 to 3410
831 to 833	938 to 942	976 to 978	1098 to 1099	
837 to 854	944 to 947	989 to 994	1104 to 1108	
859 to 861	949 to 951	1005 to 1009	3224 to 3239	
866 to 869	954 to 956	1015 to 1018	3362	
854 to 857				

GENERAL

After the above changes were made the survey appears to be adequate for charting purposes, although more development is badly needed around the channel and pier areas on the West side of the sheet.

Reference should be made to the preliminary overlays and to the Plotter Notes to EDAT to clarify other problems encountered during the verification process.

The new positions of signals 218 and 219 should be included in the final correction data sent to EDAT to complete their card files for this survey.


Hugh L. Proffitt
Chief, Hydro Branch, AMC

Norfolk, Va.
March 23, 1970

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9010

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

- 1. Letter all information.
- 2. In "Remarks" column cross out words that do not apply.
- 3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
241	6-12-70	E. Day	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>revised critical soundings & depth curves</i>
240	10-25-70	James Graham	Full Part Before After Verification ^{Before} Review Inspection Signed Via Drawing No. <i>21 App'd. misc. critical corrections thru ch't 241 Aug. #13 proof</i>
613-SC	11-27-70	James Graham	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>3 App'd. misc. critical corrections thru ch't 241 Aug. #13 proof & ch't 240 Aug. #2</i>
13276	6-2-82	Walter J. Egg	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>24 App'd. misc. critical soundings to drawing</i>
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
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TIDAL INFORMATION

Place	Height referred to datum of soundings (MLW)			
	Mean High Water	Mean Tide Level	Mean Low Water	Extreme Low Water
Gloucester	8.7	4.3	0.0	-3.5
Salem	8.8	4.4	0.0	-3.5
Boston	9.5	4.7	0.0	-3.5
Boston Light	9.0	4.5	0.0	-3.0
Cohasset Harbor	8.8	4.4	0.0	-3.5
Provincetown	9.1	4.5	0.0 </td <td>-3.5</td>	-3.5

(668)

70° 50'

STANDPIPE

CAUTION

Mariners are warned to stay clear of the protective riprap surrounding navigational light structures shown thus

SMALL CRAFT WARNINGS

Year around small-craft warnings will be displayed during daytime only on Metropolitan District Commission Police Patrol Boat, underway in Inner Boston Harbor from Nantasket Beach (42°16'2"N-70°51.5'W), to waters around Georges and Lovell Islands

OTHER BROADCASTS FOR MARINERS

ons with frequency of 162.55 megahertz and proximately 40 miles, are in continuous 24 hours daily broadcasting weather warnings, and reports from the WEATHER BUREAU follows.

35 Boston, Mass.

CAUTION

oved channels shown by broken lines are to shoaling, particularly at the edges.

CAUTION

orary changes or defects in aids to navi- re not indicated on this chart. ice to Mariners.

g some winter months or when endangered certain aids to navigation are replaced by es or removed. For details see Coast ight List"

RACING BUOYS

Racing buoys within the limits of is chart are not shown hereon. For e location and description see the O. Notices to Mariners, the Coast ard Local Notices to Mariners and ht List.

