

# 10178

Diagram No. 1203-3

NOAA FORM 70-35A

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

## DESCRIPTIVE REPORT

Type of Survey ... Basic Hydrographic

Field No. .... PE-10-3-85

Registry No. .... H-10178

### LOCALITY

State ..... Maine

General Locality .. Penobscot Bay

Sublocality ..... Fox Islands Thorofare

1985

CHIEF OF PARTY  
CDR A.E. Theberge

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DATE ..... September 21, 1987

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10178

## HYDROGRAPHIC TITLE SHEET

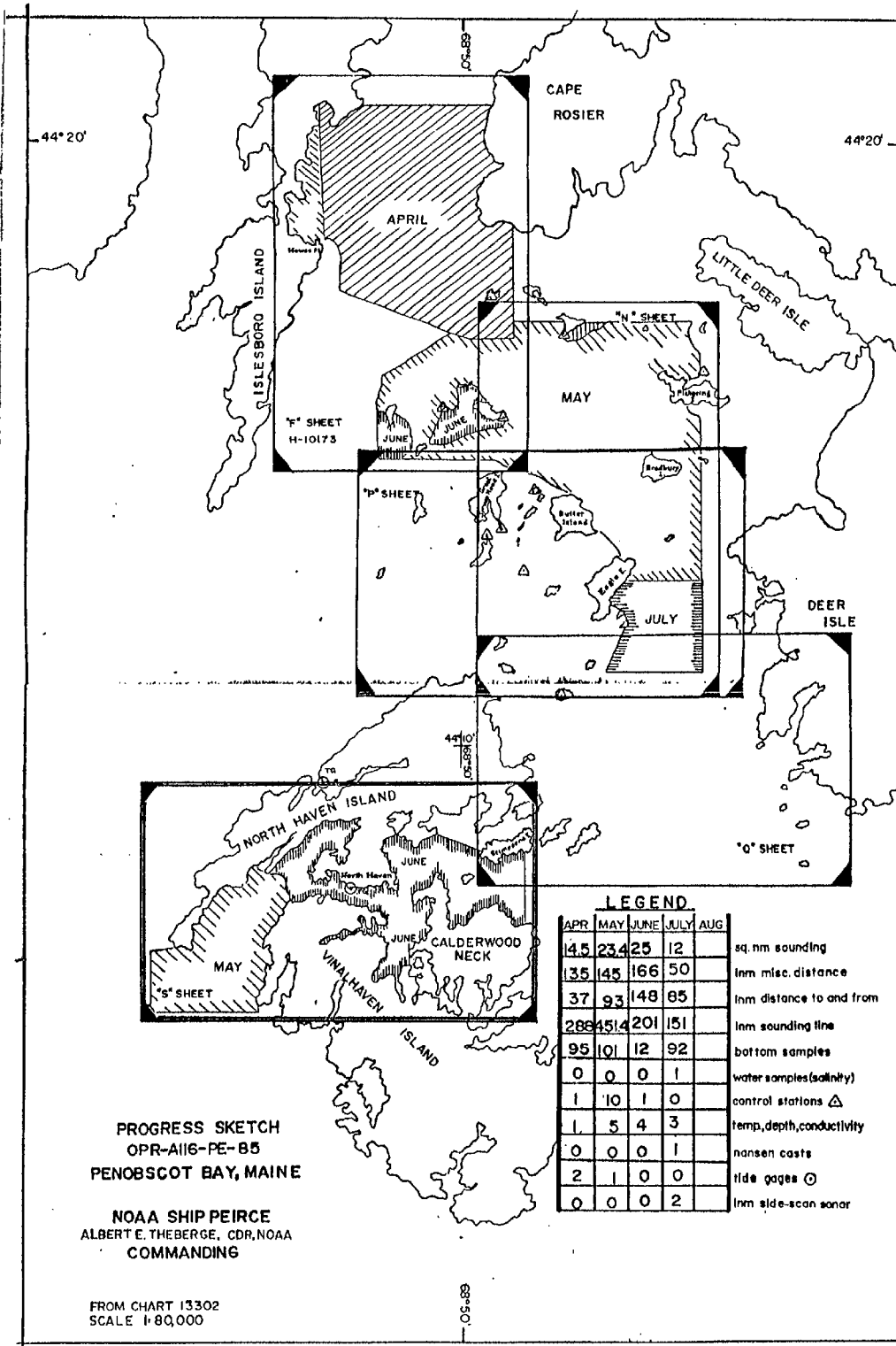
H-10178

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 10-3-85

State MaineGeneral locality Penobscot BayLocality Fox Islands ThorofareScale 1:10,000Date of survey May 20 - July 24, 1985Instructions dated March 28, 1985Project No. OPR-A166-PE-85Vessel Launches (2831), (2832), (2833), (2834)Chief of party Cdr. A. E. ThebergeSurveyed by D. Waltz, D. Ross, V. Barnum, J. Hill, B. LakeSoundings taken by echo sounder, ~~beam lead~~ pole Raytheon DSF6000N, Raytheon DE719BGraphic record scaled by AET, DAW, VDR, JHM, VAB, JAH, BAL, BM, MHB, MJBGraphic record checked by AET, DAW, VDR, JHM, VAB, JAH, BAL, BM, MHB, MJBVerification by M. Sanders Automated plot by PMC Xynetics PlotterEvaluation by C.R. DaviesSoundings in ~~fathoms~~ feet at ~~MLLW~~ MLLWREMARKS: All times are in Coordinated Universal Time. Marginal notes in black  
by evaluator. Separates are filed with the hydrographic data.Always p SURF ✓ 10/5/87 SSVSC4-7-97



PROGRESS SKETCH  
 OPR-A116-PE-85  
 PENOBSCOT BAY, MAINE

NOAA SHIP PEIRCE  
 ALBERT E. THEBERGE, CDR, NOAA  
 COMMANDING

FROM CHART 13302  
 SCALE 1:80,000

LEGEND					
APR	MAY	JUNE	JULY	AUG	
145	234	25	12		sq. nm sounding
135	145	166	50		lnm misc. distance
37	93	148	85		lnm distance to and from
288	451	201	151		lnm sounding line
95	101	12	92		bottom samples
0	0	0	1		water samples (salinity)
1	10	1	0		control stations Δ
1	5	4	3		temp, depth, conductivity
0	0	0	1		nansen casts
2	1	0	0		tide gauges ⊙
0	0	0	2		lnm side-scan sonar

DESCRIPTIVE REPORT  
TO ACCOMPANY HYDROGRAPHIC SURVEY  
H-10178 (PE-10-3-85)  
SCALE: 1:10,000 1985

Cdr. Albert E. Theberge, NOAA  
CHIEF OF PARTY

A. PROJECT ✓

This survey was performed in compliance with project instructions OPR-A166-PE-85 dated March 28, 1985. The AMC OPORDERS, PMC OPORDERS (Appendices G, P, and Q), and the Hydrographic Manual Fourth Edition also apply. This survey is Sheet "S" of the project sheet layout.

B. AREA SURVEYED ✓

The area surveyed is the Fox Islands Thorofare, which is the passage between North Haven Island to the north and Vinalhaven Island to the south. The area is in Penobscot Bay, Maine. The actual limits of the 1:10,000 scale survey are defined by these points:

SE	44°04' <sup>7 03</sup> 56"N	NE	44°09' <sup>00</sup> 49"N
	68°47' <sup>48 40</sup> 38"W		68°47' <sup>49 36</sup> 38"W
SW	44°04' <sup>5 15</sup> 56"N	NW	44°09' <sup>7 57</sup> 49"N
	68°57'48"W		68°57' <sup>6 0</sup> 38"W

The inshore limit of this survey is the six foot curve, where possible, or to the limit of safe Type 1 launch navigation, as per project instructions. The ship's two skiffs were used extensively to define the six-foot curve. See EVAL  
Report Sections  
3 & 4

All survey work was completed between May 20, 1985 (JD 140) and July 24, 1985 (JD 205.)

C. SOUNDING VESSEL ✓

Hydrography on this sheet was performed by PEIRCE Type 1 aluminum survey launches PE-1 (VESNO 2831, Hull No. 1009) and PE-2 (VESNO 2832, Hull No. 1017), PEIRCE 17' Monark, PE-3, (VESNO 2833), and PEIRCE 16' Boston Whaler, PE-4 (VESNO 2834). Bottom samples were taken by all boats used.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS ✓

PEIRCE survey launches were equipped with Raytheon DSF-6000N echo sounders. The 17' Monark (PE-3) used the Raytheon Model DE-719B portable fathometer. All echo sounders performed satisfactorily except as noted on the fathogram or master printout.

Fathometers DE719B, No. 5441 and 6212 both developed problems with the

"Calibrate" function--either a faulty motor speed circuit, a faulty motor, or the "Calibrate" circuitry itself. It is assumed the stylus drive motor speed did vary, therefore corrections were made. The operators attempted to keep the "Calibrate" line properly adjusted, however on a few occasions it deviated a significant amount before being detected and corrected. This correction is linear and cannot be entered on the TC/TI tape, therefore corrections are made via the corrector tape. This problem was not realized before the field sheet was plotted and corrections now shown on the corrector tapes for the "Calibrate" variance are not reflected on the field sheet. The following convention was followed to compensate for the variance in "Calibration." For each one-percent change in the speed of the stylus drive motor from a base speed - 3350 RPM - 4800 feet/second, the calibrate mark will change position by one-half foot. For example, if the stylus drive motor speed was increased by two percent, the calibrate mark would move from the 50-foot "Calibrate" line to the 51-foot graduation. Conversely, if the motor speed was decreased by four percent, the mark would move from the "Calibrate" line to the 48-foot graduation. It should be noted that the calibrate line, when properly adjusted for a speed of sound of 4800 feet/second, will appear 50 feet from the zero calibrate line. When the CAL ZERO is out of adjustment and deviates from the zero line, it will also deviate by the same amount at the 50-foot calibrate line. This was taken into account when determining the amount of correction to be applied. No corrections of less than 0.2 were made. Sounding volumes and fathograms indicate where corrections were made.

The sounding correctors for DSF-6000N's apply to both high frequency and low frequency beams. The DE-719 fathometer was used primarily for extreme shoal water work that was too dangerous for the Type I launches. Sounding poles were used for depths and elevations of rocks above and below the surface.

The following sounding equipment was used:

<u>VESSEL</u>	<u>VESNO</u>	<u>INSTRUMENT</u>	<u>MODEL</u>	<u>S/N</u>	<u>DAYS</u>
PE-1	2831	Raytheon	DSF6000N	A105N	140-205
PE-2	2832	Raytheon	DSF6000N	A112	155-165
PE-3	2833	Raytheon	DE719B	6212	172-200
PE-4	2834	Raytheon	DE719B	5441	143, 161-198
PE-4	2834	Raytheon	DE719B	6212	149-158

Sounding machine initials were maintained at 0.0 during survey operations or were corrected during scanning for initial variations. Bar checks were made by all vessels when good quality checks were possible. Bar checks were taken at 5-foot intervals over the maximum depth range possible for weather and sea conditions. This exceeds the requirements of provisional operating and processing instructions for the DSF-6000N echo sounder, which only require one 2-fathom check per day. Bar check correctors showed a marked tendency to vary as deeper depths were reached, which was probably caused by excessive movement of the bar at deep depths. Abstracts of all bar check data are included in the

Appendix D. Bar check data for each vessel were averaged and plotted on the same graph as the TDC curve, for the appropriate timeframe to obtain the instrument correction. These instrument corrections are applied via the TC/TI tape.

All Martek TDC casts were taken from the NOAA Ship PEIRCE (VESNO 2830), and were done roughly once per week. The Martek is a model 167 (S/N 177), calibrated on 26 March 1985. It was compared with a Nansen cast in the project area on 9 July 1985, with good results. The Nansen and Martek data sheets and computations are included with the survey records. A graph comparing the Nansen and TDC cast is included in Appendix D.

Martek correctors showed a progressive change in velocity correction with time, which is to be expected as the bay waters warm during the spring and early summer months during which this survey was conducted. Correction curves were grouped together and an average correction curve drawn for each group. Curves were grouped such that no sounding would be in error by more than 0.25% from velocity causes. Five hydroplot velocity correction tapes were made from these average curves, but not all five tapes were used on each survey of Project OPR-A166-PE-85. The following table shows how each correction tape was determined and to which survey it applies. Only the actual tapes needed for survey H-10178 are included with the data tapes.

Settlement and squat correctors were determined using the level methods described in the hydrographic manual. Two rod readings were taken at each of several speeds as the boat ran towards the level. The readings for each speed were averaged, the change in tide removed, and the adjusted reading compared to the reading observed with the boat engine out of gear. Each boat had full fuel tanks, two people, and all equipment usually used for hydrographic surveys. Both PE-1 and PE-2 had protective cages installed around their propellers to reduce the chance of fouling lobster pot lines. Settlement and squat correction curves are included in Appendix D.

Static drafts for the vessels were measured and are applied on the corrector tapes as follows: 1.6 feet for VESNO 2831 and 2832, and 0.8 feet for VESNO 2833 and 0.7 for VESNO 2834. A sketch showing the transducer placement and draft of the Monark PE-3 (VESNO 2833) and Whaler (VESNO 2834) is included in Appendix D. An incorrect draft of 0.5 for VESNO 2833 and 2834 was used to plot the field sheet. The correct drafts for these vessels are applied via the TC/TI tape. *Correct TRA correctors were applied during office processing.*

Predicted tide correctors for all surveys of project OPR-A166-PE-85 were applied using the RK500 predicted tide generator corrector. Correctors shown in the project instructions were used. *Final approved tides were used to plot the soundings on the smooth sheet.*

E. HYDROGRAPHIC SHEETS ✓

All field sheets were made aboard the PEIRCE with the PDP 8/e computers (serial numbers 5557-6 and 7486-22). Hydrographic data is presented on six (6) sheets. The survey was divided in two sheets for plotting purposes--north and south. Mainscheme work is plotted on 4 sheets--a range/range M/S sheet and a range/azimuth M/S sheet for both north and south survey areas. Each sheet also has an overlay sheet that depicts crosslines, splits, developments and bottom

samples. This many plotter sheets is unusual and will result in a loss of some reproducibility of the field sheets. This was unavoidable if all soundings were to be portrayed legibly. These sheets are at a scale of 1:10,000.

In addition, areas of development were enlarged to 1:2500 scale, and these are included as separate sheets. These areas are outlined in black ink on the mainscheme sheets and have been given names as listed below.

Significant and least depths from these developments have been plotted on the appropriate mainscheme field sheet. None of the soundings on these plots has been designated "NSP": All are to be plotted on the smooth sheet.

<u>Development Name</u>	<u>Plat/Plon</u>	<u>Position Numbers</u>
S.E of Widow Island	44/07/28 68/49/53	8917-8934
Crockett Ledge	44/05/27 68/54/48	8807-8820
Iron Point Ledge	44/07/13 68/51/45	4213-4313 4134-4162
Stimpson Rock and Bradstreet Rock	44/07/45 68/49/49	5564-5597
Kent Ledge	44/08/08 68/50/48	5534-5551
Southern Harbor Charted 2 ft.	44/07/42 68/54/21	4000-4037
Postoffice Ledge Charted 2 ft.	44/07/13 68/52/38	6039-6076 4213-4263
Dogfish Ledge Charted 18 ft.	44/05/53 68/55/40	930-952

Parameter tape printouts for all plotter sheets are included in the appendices.

All field records will be forwarded to PMC for final verification.

#### F. CONTROL STATIONS ✓

All horizontal control was referenced to the North American Datum of 1927 (NAD 27). Horizontal control was performed by the Coastal Surveys Branch of AMC Photogrammetry, N/MOA22. Other stations used were NGS data base third order positions. Photogrammetric control was used primarily for electronic control, and created no positioning problems. A list of all stations used, and their source, appears in Appendix F of this report.



# G. HYDROGRAPHIC POSITION CONTROL ✓

Hydrographic position control was accomplished using the Mini-ranger Falcon 484 system. Range/range and range/azimuth positioning were used. A Wild T-2 theodolite and HP3810B EDM were used for angular and distance measurements. The following mini-ranger equipment was used.

<u>VESNO</u>	<u>EQUIPMENT</u>	<u>S/N</u>	<u>JD</u>
2831	RANGE PROCESSING UNIT	D0018	140-151, 153-4, 197-205
	RANGE PROCESSING UNIT	D0017	152
	RANGE PROCESSING UNIT	D0004	166
	CONTROL DISPLAY UNIT	D0059	140-152
	CONTROL DISPLAY UNIT	D0057	153-205
	RECEIVER/TRANSMITTER	C2096	140-151, 153-205
	RECEIVER/TRANSMITTER	D2123	152
	RECEIVER/TRANSMITTER	D2128	166
2832	RANGE PROCESSING UNIT	D0017	155-165
	CONTROL DISPLAY UNIT	D0059	155-165
	RECEIVER/TRANSMITTER	D2123	155-165
2833	RANGE PROCESSING UNIT	D0019	172-200
	CONTROL DISPLAY UNIT	D0062	172-200
	RECEIVER/TRANSMITTER	C2000	172-197
	RECEIVER/TRANSMITTER	E2965	198-200
2834	RANGE PROCESSING UNIT	D0004	143-163, 165-198
	CONTROL DISPLAY UNIT	D0061	143-163, 165-198
	CONTROL DISPLAY UNIT	D0057	164
	RECEIVER/TRANSMITTER	D2128	143-198

## REFERENCE STATIONS:

	<u>S/N</u>
CODE 1	C2058
CODE 2	C2059
CODE 3	C2057
CODE 4	C2065
CODE 5	C2088
CODE 6	C2091
CODE 7	C2066
CODE 8	E2974
CODE 9	E2911
CODE 10	E2912
CODE 11	C1075



The following theodolites were used both for calibration and range/azimuth hydrography.

<u>Instrument</u>	<u>Serial Number</u>
Wild T-2	30694
Wild T-2	75507
HP3810B	1929A00361
HP3810B	1929A00358

The Mini-ranger Falcon 484 system used for this survey has the same distance measurement precision as the older Mini-ranger systems. The primary advantage of the Falcon system is its ability to output an X-Y position of the vessel based on multiple ranges, and to provide a numerical indicator of the quality of that position using the method of least squares. This equipment now makes it possible for a "non-automated", or non-hydroplot, skiff to steer straight lines in north, south, east, or west directions. The skiffs used in this survey took advantage of this feature. Notes in the sounding volumes often refer to the X or Y value of the line to be steered. Values for signal strengths are given by the Falcon system on a scale of zero to one hundred.

#### Mini-ranger Falcon Calibration ✓

This survey was conducted with no specific, formal guidance for calibrating the mini-ranger Falcon system other than the general provisions of the Hydrographic Manual for short range systems. There is no AMC OPORTER concerning the Falcon system, although a draft version has been written. The project instructions require the use of certain sections of the PMC OPORTER, but mini-ranger calibration is not among them. For this project, a combination of the draft AMC OPORTER, the PMC OPORTER Appendices S and M, and the hydrographer's best judgment have been used for Falcon calibration.

Only baseline calibration values have been used for the electronic corrector tapes. Baseline calibrations were performed to the standards of both the PMC and draft AMC OPORTERS, and records of these are included in Appendix E. These calibrations were performed as frequently as possible, with most units being checked from three to six times during the 3-month project. Calibration dates had to be staggered because it was impossible to check all combinations of ten codes and four mobile units during a single inport period. An abstract of the baseline calibrations follows, together with mean and standard deviation values for each code. The standard deviation values are less than five meters for all codes (except Code 7 for VESNO 2834) and are typically less than three meters. Although neither the PMC nor the AMC OPORTERS give rejection criteria for averaging baseline correctors, it seems that a single average of all baseline correctors is appropriate for use as final correctors. It should be noted that Codes 1 and 4 failed before a final baseline calibration could be performed.

### Daily System Checks ✓

Critical and noncritical daily system checks were performed according to the guidelines of both AMC (draft) and PMC OPORDERS concerning calibration. All critical checks were made using the HP3810B total station to provide a range and azimuth to the sounding vessel. These data were converted to a G.P. and inverse distances computed to mini-ranger stations using Hydroplot Program RK 300. Original data for these calibrations are included with the daily records.

The following tables show the daily system check values obtained by each boat. The symbol "D" in the tables indicates that a critical check was performed, and the value shown is "DELTA". As discussed in the draft AMC OPORDER, "DELTA" is the absolute value of the difference between the daily corrector and the latest baseline corrector.

The symbol "R" in the tables indicates values for a noncritical least squares systems check. The least squares system check is very similar in principle to the 3-range method discussed in the PMC OPORDER but is performed entirely on the Falcon system. No computations using hydroplot are needed. Since Falcon can display four ranges at once, three or four stations can be checked simultaneously. The least squares noncritical system check was used extensively in this survey. A discussion of the least squares system follows the ABSTRACT OF DAILY SYSTEM CHECKS.

The least squares system check requires at least three input ranges and the X-Y-Z positions of the reference stations. The vessel must be in position such that there is relatively good LOP geometry from the reference stations. The Falcon operator applies baseline correctors and selects plane range output. The Falcon screen then gives a position in X-Y-Z, the input ranges, and a "residual" value for each reference station, as well as other parameters. The system check is successful when residual values are no larger than 0.5mm at the survey scale.

The least squares method itself was first developed in the eighteenth century. It is a method for obtaining the most probable value for multiple sets of observed data. The simplest example of its application is finding the mean of a set of linear measurements. The mean is the most probable value for the "true" distance. The difference between the mean value and each separate measurement is termed a residual. In horizontal positioning, the most probable position is that position in which the sum of the squares of the residuals for each range is minimized. The size of each residual gives an indication of the error in each range comprising the position.

A copy of the positioning algorithm used by the Falcon system and the draft AMC OPORDER concerning calibration is included in this report. It should be noted that the Falcon also displays an "error circle radius" on the same screen as the least squares information. This error circle does not result from any by-product of the least squares process and has not been used in this survey.

A copy of the abstract of corrections to electronic position control is included in Appendix E. An abstract of the location of each code on each day of the survey is also included in the appendix. Correctors were applied via the normal hydroplot method rather than via the Falcon system.

H. SHORELINE ✓ see EVAL Report Section 2

Shoreline data were transferred to field sheets from shoreline manuscripts TP 01117 and TP 01118. Rocks and other shoreline features lying near the shoreline were verified by visual inspection. All shoreline detail from the "T" sheets was transferred to the field sheets in black rather than blue before verification, therefore making it difficult to determine which areas have not been verified. Off-lying features were verified and positioned by hydrographic methods. The only areas of shoreline that were verified were those immediately adjacent to the plotted soundings on the field sheet.

Detached positions were obtained on rocks using both range/range and range/azimuth positioning control. Range/azimuth was done using a Hewlett Packard HP3810B total station which gives both the distance and angle to the object. A prism was hand-held on the rock if it was possible to climb to the highest point or to both ends of a rock or group of rocks if access was limited. A check azimuth or range was taken when possible. This was not always the case, as islands often created obstructions that prevented seeing or receiving another control station or object for azimuth check.

Notes to hydrographer prints were not available for this survey area.

I. CROSSLINES ✓

Crosslines were run according to the Hydrographic Manual, Fourth Edition. 34.6 linear nautical miles of crosslines were run, which are equivalent to 10 percent of the total mainscheme miles acquired. Crossline soundings compared well with mainscheme hydrography, agreeing to within 3 feet for the most part, where the agreement is not within 3 feet is due to the irregular nature of the bottom. *CONCUR*

J. JUNCTIONS ✓

Junctions were made on the north sheet with H-10101 (1:10,000 scale dated 1983) in a small area north of Wooster Cove on the west side of this survey. The junction soundings agree well (within 2 feet) with this survey. *CONCUR*

Junctions were also made to the west of Stand In Point on the south sheet with survey H-8178 (1:20,000 dated 1954). Soundings from this survey agreed well (within 1-3 feet). *CONCUR*

K. COMPARISON WITH PRIOR SURVEYS ✓ *See EVAL Report Section 6*

No presurvey review was available for this area. The hydrographer examined the chart for specific items of interest. These are discussed in Section L.

Comparisons were made to prior surveys H-982 and H-983. H-983 (1:10,000 dated 1868) compares to the soundings on the north sheet of this survey in Southern Harbor to within 1 foot. H-983 compares to within 1-3 feet near North Haven on the north sheet of this survey. Other areas on the north sheet compare to within 1-4 feet of this prior survey.

H-982 (1:20,000 dated 1868) covers the thorofare and the area south of Stand In Point on the south sheet of this survey. Soundings from H-982 compared to within 1-5 feet of this survey in water less than 100 feet deep. In water greater than 100 feet, agreement was only within 10-20 feet. This could have been the result of inaccurate survey methods used (lead line in 120 feet of water) on survey H-982, or plotting error on this older survey.

The rocky nature of this area made for little change over the years on both sheets. Erosion along the shore did not have a significant effect. Any random disagreement that did arise is probably due to sounding methods and not actual depth or physical change.

Comparison was not made with prior survey H-2959, as it was a wire drag survey and of little specific comparison value.

L. COMPARISON WITH THE CHART ✓ *See EVAL Report Section 7*

A comparison was made with chart 13308, 9th Edition, September 11, 1982. This chart is printed at a scale of 1:15,000.

Discrepancies from Chart 13308 noted are listed as follows:

### South Sheet

(1) 44°07'51.7"  
68°54'11.0"  
2.2 20 ft. charted, surveyed at 12 ft.  
Recommend charting 12 ft.

(2) 44°05'51"  
68°56'15" 59 ft. charted, surveyed at 68 ft. *Do not concur. Chart according to smooth sheet.*  
~~Retain as charted.~~ (SSV 10/2/87)

### North Sheet

(1) 44°07'33"  
68°52'57" 19 ft. charted, surveyed at 35 ft. This area is on a steep slope and the discrepancy is probably due to positioning error on the old surveys. Recommend charting soundings from H-10178.

*Chart 19 ft depth as brought forward on smooth sheet.*  
(SSV 10/2/87)

A side scan sonar search was conducted for the wreck charted at latitude 44°07'35"N, longitude 68°52'56"W. Local resident, Barney Hollowel (Phone 867-2219) informed us that this wreck was a tugboat. The side scan search with launch PE-1 revealed a wreck at latitude 44°07'37.508"N, longitude 68°52'54.848"W. This is position 5509 (PE-1, JD199) in the hydrographic records. Least depth found over this wreck using a DSF6000N fathometer is 23 feet and is position 5513+3 (PE-1, JD199). The side scan records of this wreck were very clear and a Xerox copy of this position is included in this report. *See EVAL Report Section 7*

*Filed with the hydrographic data.*

A visual and fathometer search was made for "Stake Rep" at latitude 44°06'48"N, longitude 68°51'45"W. No obstruction was located in this vicinity. *Remove from chart. Revise to submerged.*  
A fathometer search using 50 meter line spacing was done for shoaling reported around latitude 44°06'49"N, longitude 68°51'20"W for a charted depth of 9 feet. *(SSV 10/2/87)*  
Least depth found over this area was 10 feet at latitude 44°06'48"N, longitude 68°51'18"W. *See EVAL Report Section 7*

### M. ADEQUACY OF SURVEY ✓

*See EVAL Report Section 6 and 7*

This survey is complete and adequate to supersede all prior surveys for charting purposes, except as noted in section L.

### N. AIDS TO NAVIGATION ✓

*See EVAL Report Section 7*

There are several fixed day markers within the survey area. Time and operations did not permit obtaining a third order position on each day marker. A position was obtained using hydrographic methods on those day markers that were easily approached by small boat and this position appears in the hydrographic records as a detached position. The 1985 U.S. Coast Guard Light List positions on these day beacons were verified as correct.

Buoys N"8", N"10", and N"12" were not located during the survey.

*The 1st Coast Guard District was contacted during office processing and the above buoys are in their charted position.*

All other floating aids to navigation were found to be on station and to adequately serve the purpose for which they were intended. The positions and characteristics of these aids have been checked against the data in the 1985 edition of the U.S. Coast Guard Light List and verified that data as correct.

characteristics of these aids have been checked against the data in the 1985 edition of the U.S. Coast Guard Light List and verified that data as correct.

The chart correctly shows a ferry dock at the town of North Haven. There is no ferry dock on Vinalhaven Island opposite the North Haven ferry dock. Remove the words "Ferry" from the chart on the north side of Vinalhaven Island. *WJF*

There are several cable crossing areas charted on this sheet. No search efforts were made during survey operations to locate these crossing points. The only cable crossing actually visually observed was a cable laid from Ames Point on North Haven Island and a sign indicating a cable crossing at that point. *Retain all submarine and overhead cable crossings on current chart.*

O. STATISTICS ✓

<u>VESSEL</u>	<u>NUMBER OF POSITIONS</u>	<u>LNH HYDROGRAPHY</u>
2831	1767	208.4
2832	238	22.3
2833	451	35.5
2834	634	56.3
Bottom samples:	56	
TDC casts:	14	
Nansen casts:	1	
Tide gauges:	2	

P. MISCELLANEOUS ✓

The area covered in this survey is a narrow, winding passage between two rocky islands. This thorofare is used by local fishermen, recreational sailors, and a daily car ferry service. The deeper center passage of the thorofare was surveyed with the two 28-foot launches, but the rocky shoreline and many small, shallow coves required the smaller boats and much range azimuth hydrography. The islands within the Fox Islands Thorofare are surrounded by mussel and kelp beds and at low tide some control stations were very difficult to access. The large tidal range (10-14 feet) required that detached positions on rocks and obstructions be obtained at low tide, and hydrography in shallow coves be run at high tide.

This survey is extremely complicated from both an operational and processing viewpoint. In particular, it brings out the inadequacies of the old Hydroplot system both to acquire and process data. Much range-azimuth work was done, often using survey lines too short for the RK 116 program to be efficient: hand logged data was used exclusively even in hydroplot equipped boats. Of course most range-azimuth work was done by the non-automated skiffs. The lack of a rapid plotting system with excess overlay capacity added tremendously to the shipboard processing workload. Many more plotter sheets were produced than would have been required with such a system.

There were no anomalous or dangerous currents observed in the survey area.

All bottom samples were submitted to the Smithsonian Institution.

There were no User Evaluation or Chart Inspection conducted.

Q. RECOMMENDATIONS ✓ *see ENAC Report Section 6, 7, 9.*

It is recommended that this survey supersede all previously existing charted soundings and prior surveys except as noted in Section L of this report. No additional field work is required.

R. AUTOMATED DATA PROCESSING ✓

<u>PROGRAM</u>	<u>PROGRAM NAME</u>	<u>VERSION</u>
112	Hyperbolic R/R Hydroplot	10-12-83
116	Range/Azimuth Hydroplot	10-12-83
201	Grid, Signal, and Lattice Plot	04-18-75
211	Range/Range Non-Real Time Plot	02-02-81
216	R/AZ Non-Real Time Plot	02-09-81
300	Utility Computations	10-21-80
330	Reformat and Data Check	05-04-76
360	Electronic Corrector Abstract	02-02-76
407	Geodetic Inverse/Direct Computation	09-25-78
500	Predicted Tide Generator	11-10-72
530	Layer Correction for Velocity	05-10-76
561	H/R Geodetic Calibration	12-01-82
602	Elinore - Extended Line Oriented Editor	12-08-82
612	Line Printer List	03-22-78

S. REFERRAL TO REPORTS ✓

Coast Pilot Report, OPR-A166-PE-B5

Horizontal Control Report, OPR-A166-PE-B5



FIELD TIDE NOTE  
A166-PE-85  
PENOBSCOT BAY, MAINE

Field tide reduction of soundings was based on predicted tides from Portland, Maine, interpolated on a pdp8/e computer using AM500 and corrected according to the preliminary zoning chart as follows:

H-10173, PE-10-1-85

-12 min HW  
-4 min LW  
X 1.08 Height

H-10177, PE-10-2-85

-12 min HW  
-4 min LW  
X 1.08 Height

H-10178, PE-10-3-85

-12 min HW  
-4 min LW  
X 1.08 Height

H-10157, Bucksport  
From Lat. 44°30'N to 44°35'N

-36 min HW  
-16 min LW  
X 1.18 Height

Above Lat. 44°35'N

-36 min HW  
-16 min LW  
X 1.25 Height

The times of all gauges was set on Eastern Standard Time. The control station was Rockland, Maine (841-5490) and was leveled at the beginning of the project.

Five recording tide gauges were installed during this project as follows

<u>Sta. #</u>	<u>Location</u>	<u>Type</u>	<u>Position</u>	<u>Survey</u>
841-4684	Bucksport	ADR	44°34'21' 68°48'40"	H10157
841-4692	Sandy Point	ADR	44°30'21" 68°48'19"	H10157

841-4821	North Haven	ADR	44°07'30" 68°51'25"	H10178
841-4888	Pulpit Harbor	Bubbler	44°09'22" 68°53'08"	H10173
841-5191	Belfast	ADR	44°25'45" 69°00'16"	H10177 & H10178

In addition, a tide staff was installed in the North Branch of the Marsh River at Treat Point to provide data for one day of hydrography in the Marsh River. No recommendations for zoning or time correctors could be made in the field. The times of hourly heights, recorded for the bubbler gauge are corrected for clock errors. No clock errors were observed during staff observations in the Marsh River.

An ADR tide gauge was installed at Bucksport, Maine, 841-4684, on 15 May 1985 (Day 135) and leveled the same day. The gauge functioned properly throughout the period of hydrography. The closing level loop was run on 17 June, the day after the last day of hydrography. The gauge was removed on 7 July 1985 (Day 188). A gauge was again installed on 23 July 1985 (Day 204) to provide tide data for one line of hydrography and bottom samples. This gauge was leveled and removed the following day without incident.

On 15 May 1985 (Day 135) an ADR gauge was installed at Sandy Point, Maine, 841-4692, and leveled the same day. This gauge was installed on an existing 6" floatwell which appeared to be in good condition. During the last week of May during routine tide gauge inspections a change in the staff to gauge differential was noticed. Therefore, the gauge was reset and checked every day until 30 May when it was removed. Apparently, the intake was partially clogged restricting the flow of water into and out of the floatwell. The Tidal Requirements Branch in Rockville was contacted to inquire about the necessity of a gauge at Sandy Point. The PEIRCE was told that this station could be discontinued. Change No. 5 the project instructions, dated 17 June 1985, was issued to allow the discontinuation of the Sandy Point tide station.

A tide gauge could not be easily installed at Iron Point, 841-4821. Permission was granted by the Tidal Requirements Branch in Rockville to install a gauge at the North Haven Ferry Terminal, at a previously established NOS tide gauge site 1/2 mile west of Iron Point. An ADR gauge was installed on the ferry pier on 11 May 1985 (Day 131) and removed on 25 July 1985 (Day 206). There are no known problems with the data.

An ADR gauge was installed and leveled at Belfast, Maine, 841-5191, on 18 April 1985 (Day 108). This particular site provided continuous problems during the project. The first gauge was inoperable from 25 May to 1 June (Days 145-152). The float wire "jumped" off the flywheel. The floatwell was replumbed and another gauge installed. The wire repeatedly came off the flywheel causing the site to be inoperable from 5-7 July (Days 186-188). When a different gauge was installed on 9 July, the residing gauge was

rewound; again on 17 July (Day 198) the wire was rewound onto the flywheel. This time the gauge operated without further trouble until it was leveled and removed on 24 July 1985 (Day 205).

A Metercraft Gas Purged Graphic Recording Tide Gauge was installed and leveled at the Pulpit Harbor Bridge on 18 April 1985 (Day 108). On 2 May (Day 122) the gauge was checked and the orifice was uncovering at low tide. The orifice was promptly moved. The staff was not moved and this gauge operated without serious problems for the rest of the project. The staff was releveled on 22 July and the gauge was removed on 25 July 1985 (Day 206). The staff value equivalent to zero on the gauge from 18 July (Day 108) through 2 May (Day 122) is 3.41 ft. The staff value equivalent to zero on the gauge from 3 May (Day 123) through 25 July (Day 206) is -1.92 ft.

# VINALHAVEN SIGNAL TAPE LISTING

H-10178

OPR-A166-PE-85

"S" SHEET

<u>Number</u>	<u>Station Name</u>	<u>Source</u>
001	Ames, 1984	N/MOA22
002	Baker, 1984	N/MOA22
004	Carver, 1982	N/MOA22
005	<del>Cal, 1982</del>	N/MOA22
010	Cat, 1984	N/MOA22
012	<del>Chit, 1984</del>	N/MOA22
013	Crab, 1984	N/MOA22
014	Crock, 1984	N/MOA22
018	Dump, 1984	N/MOA22
022	Golf, 1984	N/MOA22
023	<del>Grady, 1984</del>	N/MOA22
029	Hop, 1984	N/MOA22
031	Kent, 1984	N/MOA22
034	Perry, 1984	N/MOA22
044	Stand, 1984	N/MOA22
045	<del>Turn, 1984</del>	N/MOA22
048	Zeke, 1984	N/MOA22
051	<del>Vinalhaven Channel Rock Beacon, 1934</del>	Published
053	Dog Fish Beacon, 1934	Published
054	Goose Rocks Lighthouse, 1902	Published
057	Goose Island, 1911	Published
060	Browns Head Lighthouse, 1859	Published
061	Fiddlers Ledge Stone Beacon, 1859	Published
062	Joy, 1984	N/MOA22
063	<del>Hen, 1984</del>	N/MOA22
064	Thoro, 1984	N/MOA22
067	Owls Head Lighthouse, 1858	Published
068	Bab, 1984	N/MOA22
076	Dog, 1984	N/MOA22
077	South, 1984	N/MOA22

# VINALHAVEN SIGNAL TAPE LISTING

H-10178

OPR-A166-PE-85

"S" SHEET

001	6	44	07	43946	068	53	27743	139	0000	000000	-
002	6	44	07	37997	068	56	03223	139	0000	000000	-
004	6	44	07	22274	068	49	11454	139	0000	000000	-
005	6	44	06	57169	068	48	24459	139	0000	000000	-
010	6	44	05	27794	068	54	18120	139	0000	000000	-
012	6	44	05	36233	068	52	54961	139	0000	000000	-
013	6	44	06	35241	068	56	09664	139	0000	000000	-
014	6	44	06	22152	068	53	53745	139	0000	000000	-
018	6	44	07	38713	068	54	07611	139	0000	000000	-
022	6	44	08	11616	068	51	46578	139	0000	000000	-
023	6	44	08	16818	068	49	48112	139	0000	000000	-
029	6	44	06	51644	068	51	59009	139	0000	000000	-
031	6	44	08	37996	068	50	39970	139	0000	000000	-
034	6	44	06	55659	068	51	46762	139	0000	000000	-
044	6	44	06	45382	068	56	40636	139	0000	000000	-
045	6	44	06	00400	068	48	51924	139	0000	000000	-
048	6	44	07	31200	068	51	13397	139	0000	000000	-
051	6	44	07	48902	068	48	32521	139	0000	000000	-
053	6	44	05	44760	068	55	44010	139	0000	000000	-
054	6	44	08	07180	068	49	52024	139	0000	000000	-
057	6	44	11	03780	068	57	04380	139	0007	000000	-
060	6	44	06	42061	068	54	36065	139	0012	000000	-
061	6	44	06	05535	068	56	24052	139	0000	000000	-
062	6	44	06	07893	068	51	50495	139	0000	000000	-
063	6	44	05	52050	068	48	16864	139	0000	000000	-
064	6	44	07	25436	068	52	52503	139	0000	000000	-
067	6	44	05	31551	069	02	40620	139	0000	000000	-
068	6	44	08	12885	068	47	48383	139	0000	000000	-
076	6	44	05	02299	068	54	44990	139	0000	000000	-
077	6	44	08	40906	068	52	43388	139	0000	000000	-

NOAA FORM 76-40  
(8-74)

Replaces C&GS Form 567.

# NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

## ORIGINATING ACTIVITY

- ☐ TO BE CHARTED  
☐ TO BE REVISED  
☒ TO BE DELETED

REPORTING UNIT  
(Field Party, Ship or Office)

NOAA Ship PEIRCE

STATE

Maine

LOCALITY

Penobscot Bay

DATE

2 Nov 85

- ☒ HYDROGRAPHIC PARTY  
☐ GEODETIC PARTY  
☐ PHOTO FIELD PARTY  
☐ COMPILATION ACTIVITY  
☐ FINAL REVIEWER  
☐ QUALITY CONTROL & REVIEW GRP.  
☐ COAST PILOT BRANCH  
(See reverse for responsible personnel)

The following objects HAVE ☐ HAVE NOT ☐ been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.

OPR-A166-PE-85

JOB NUMBER

SURVEY NUMBER

H-10178

DATUM

NA 1927

## POSITION

LATITUDE

LONGITUDE

° / ' D.M. Meters

° / ' D.P. Meters

METHOD AND DATE OF LOCATION  
(See instructions on reverse side)

OFFICE

FIELD

CHARTS  
AFFECTED

CHARTING  
NAME

DESCRIPTION  
(Record reason for deletion of landmark or aid to navigation.  
Show triangulation station names, where applicable, in parentheses)

Microwave  
Tower

tower is barely visible above trees  
from all directions - difficult to see

44 06

25

68 53

30

scaled from  
chart

13308  
13305

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	CDR A.E. Theberge, NOAA Commanding Officer, NOAA Ship PEIRCE	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION' (Consult Photogrammetric Instructions No. 64,		
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><b>OFFICE</b></p> <p><b>I. OFFICE IDENTIFIED AND LOCATED OBJECTS</b>            Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.            EXAMPLE: 75E(C)6042                      8-12-75</p> <p><b>FIELD</b></p> <p><b>I. NEW POSITION DETERMINED OR VERIFIED</b>            Enter the applicable data by symbols as follows:            F - Field                      P - Photogrammetric            L - Located                   Vis - Visually            V - Verified            1 - Triangulation      5 - Field identified            2 - Traverse            6 - Theodolite            3 - Intersection      7 - Planetable            4 - Resection         8 - Sextant</p> <p>A. Field positions* require entry of method of location and date of field work.            EXAMPLE: F-2-6-L                      8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p> </div> <div style="width: 48%;"> <p><b>FIELD (Cont'd)</b></p> <p>B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.            EXAMPLE: P-8-V                      8-12-75                      74L(C)2982</p> <p><b>II. TRIANGULATION STATION RECOVERED</b>            When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.            EXAMPLE: Triang. Rec.                      8-12-75</p> <p><b>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH</b>            Enter 'V-Vis.' and date.            EXAMPLE: V-Vis.                      8-12-75</p> <p>**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p> </div> </div>		





**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
National Ocean Service  
NOAA Ship PEIRCE S-328  
439 West York Street  
Norfolk, Virginia 23510

April 17, 1986

TO: Commander, USCG 1st District  
447 Commercial Street  
Boston, Massachusetts 02113

FROM: Albert E. Theberge, Jr., CDR, NOAA  
Commanding Officer  
NOAA Ship PEIRCE S-328

*A. E. Theberge*

SUBJECT: Danger to Navigation, Uncharted Shoal in Fox Islands Thorofare,  
Maine

An uncharted shoal with a least depth of 12 feet in the vicinity of 20 foot to 27 foot soundings at MLLW was discovered; Chart number 13308; latitude N44°07'51.7"; longitude W068°54'11.0"; distance .2 of a nautical mile, bearing 014 degrees true from Browns Head Light, "F 39 ft 12M HORN."

cc: DMAHTC, NVS,  
Washington, DC 20315



Danger to Navigation, Uncharted Shoal,  
Southern Harbor, Fox Islands Thorofare, Maine

Chart 13308

An uncharted shoal in Southern Harbor at latitude 44°07'51.7", longitude 68°54'11.0" exists with a least depth of 12 feet. Charted depths in this vicinity range from 20 to 27 feet.

All depths were recorded on this feature with a Raytheon 719-B Survey Fathometer. The sounding vessel was positioned by range/azimuth methods using a Hewlett Packard - medium range total station - model 3810B. The least depth given is corrected for predicted tides and is subject to the application of final verified smooth tides.

Attached are sections of the survey sheets showing this uncharted shoal, along with a section of Chart 13308.

The above information is preliminary and subject to office verification.

cc: N/CG24  
N/CG222  
N/MOA2x1

68° 55'

54'

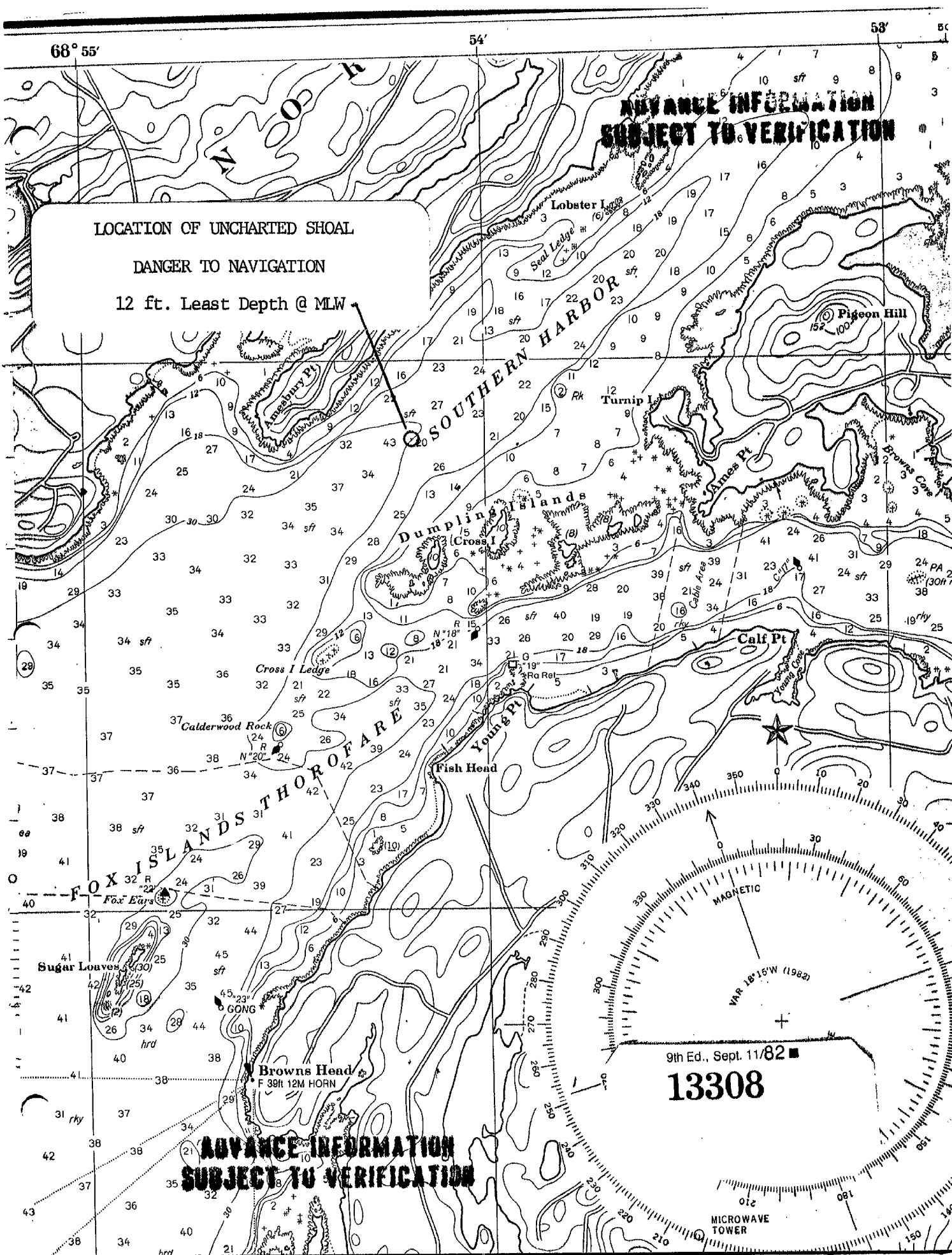
53'

**ADVANCE INFORMATION  
SUBJECT TO VERIFICATION**

LOCATION OF UNCHARTED SHOAL

DANGER TO NAVIGATION

12 ft. Least Depth @ MLW



**ADVANCE INFORMATION  
SUBJECT TO VERIFICATION**

9th Ed., Sept. 11/82

**13308**

MICROWAVE  
TOWER

86° 54' 00"

# **ADVANCE INFORMATION SUBJECT TO VERIFICATION**

44° 08' 00"

ROCK  
POS 8768  
POS 8769

ROCK POS 8770

ROCK  
POS 8351

ROCK POS 8771

ROCK POS 8419

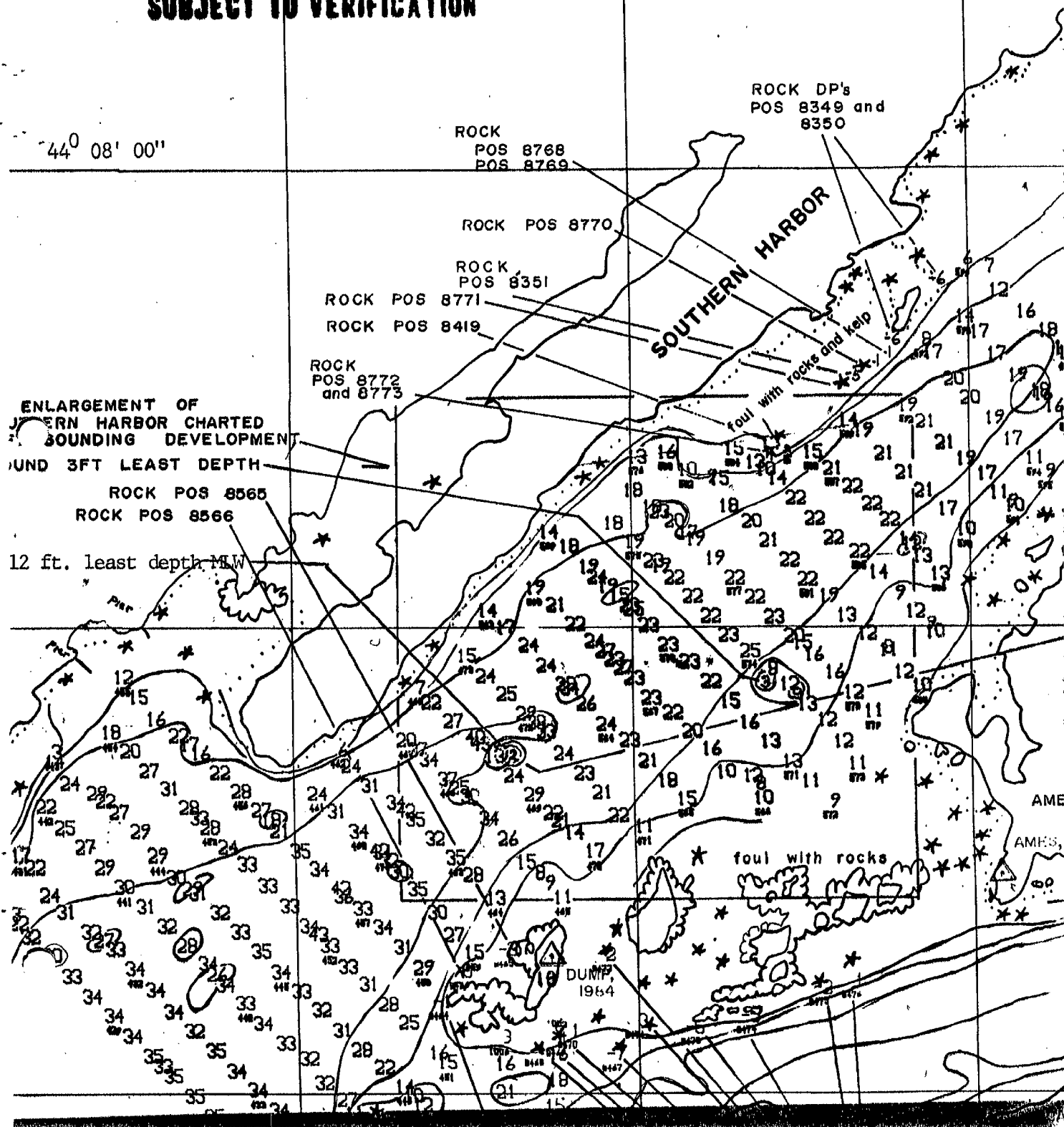
ROCK  
POS 8772  
and 8773

ROCK DP's  
POS 8349 and  
8350

ENLARGEMENT OF  
SOUTHERN HARBOR CHARTED  
SOUNDING DEVELOPMENT  
UND 3FT LEAST DEPTH

ROCK POS 8565  
ROCK POS 8566

12 ft. least depth MW



## 44 07 42

44 07 54

068 54 12

068 54 06

068 54 00

Pacific Marine Center  
1801 Fairview Avenue East  
Seattle, Washington 98102-3767

FEB 27 1987

N/MOP211C/CRD

Commander (OAN)  
First Coast Guard District  
150 Causeway Street  
Boston, Massachusetts 02114

Dear Sir:

During office processing of hydrographic survey H-10178 the following changes affecting chart 13308 were noted. Questions concerning the survey may be directed to Cdr. Thomas W. Richards, Chief, Nautical Chart Branch, telephone (206) 526-6835.

The following statement is recommended for inclusion in the Local Notice to Mariners:

A 9.0-foot sounding at MLW exists at latitude 44 degrees, 05 minutes, 17.12 seconds North, longitude 68 degrees, 55 minutes, 43.56 seconds West (NAD 27) on chart 13308; 850 meters, 179 degrees true from the charted position of Dogfish Ledges Daybeacon.

A 14.0-foot sounding at MLW exists at latitude 44 degrees, 05 minutes, 25.26 seconds North, longitude 68 degrees, 55 minutes, 44.43 seconds West (NAD 27) on chart 13308, 600 meters, 179 degrees true from the charted position of Dogfish Ledges Daybeacon.

Sincerely,

Robert L. Sandquist  
Rear Admiral, NOAA  
Director, Pacific Marine Center

APPROVAL SHEET

This survey is complete and adequate for the purpose of a basic hydrographic survey. The Commanding Officer continually supervised and examined all work.

APPROVED BY:

a. Thebeys



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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: 3/31/86

Marine Center: Pacific

OPR: A166

Hydrographic Sheet: H-10178

Locality: Fox Island Thorofare, Penobscot Bay, Maine

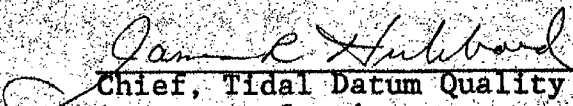
Time Period: May 20 - July 24, 1985

Tide Station Used: 841-4821 North Haven, Iron Pt. Fox Island, Maine

Plane of Reference (Mean Lower Low Water): 5.93 ft.

Height of Mean High Water Above Plane of Reference: 10.1 ft.

Remarks: Recommended Zoning:  
Zone Direct

  
Chief, Tidal Datum Quality  
Assurance Section

## GEOGRAPHIC NAMES

1 of 3

H-10178

Name on Survey										
	A	B	C	D	E	F	G	H	K	
AMES CREEK										1
AMES POINT										2
AMESBURY POINT										3
BIRCH ISLAND										4
BRADSTREET ROCK										5
BROOM LEDGE										6
BROWNS COVE										7
BROWNS HEAD										8
CALDERWOOD NECK										9
CALDERWOOD POINT										10
CALDERWOOD ROCK										11
CALF POINT										12
CARVER COVE										13
CRABTREE POINT										14
CRABTREE POINT LEDGE										15
CROCKETT COVE										16
CROCKETT POINT										17
CROSS ISLAND										18
CROSS ISLAND LEDGE										19
CUBBY HOLE										20
DOBBIN ROCK										21
DOGFISH ISLAND										22
DOGFISH LEDGES										23
DRUNKARD LEDGE										24
DUMPLING ISLANDS										25

## GEOGRAPHIC NAMES

H-10178

2 of 3

Name on Survey										
	A	B	C	D	E	F	G	H	K	
FIDDLER LEDGE									1	
FISH HEAD									2	
FISH POINT									3	
FISH POINT LEDGE									4	
FOX EARS									5	
FOX ISLANDS THOROFARE									6	
GOOSE ROCKS									7	
GRINDSTONE LEDGE									8	
HOPKINS POINT									9	
INDIAN POINT									10	
IRON POINT LEDGE									11	
KENT COVE									12	
KENT LEDGE									13	
LITTLE THOROFARE									14	
LOBSTER ISLAND									15	
LOBSTER LEDGE									16	
MAINE (title)									17	
MILL CREEK									18	
NORTH HAVEN									19	
NORTH HAVEN ISLAND									20	
PENOBSCOT BAY (title)									21	
PERRY CREEK									22	
POSTOFFICE LEDGE									23	
SEAL COVE									24	
SEAL LEDGE									25	

3 of 3

## GEOGRAPHIC NAMES

H-10178

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K
SOUTHERN HARBOR									1
STAND-IN POINT									2
STAND-IN POINT LEDGE									3
STIMPSONS ROCK									4
SUGAR LOAVES									5
TURNIP ISLAND									6
VINALHAVEN ISLAND									7
WATERMAN COVE									8
WATERMAN LEDGE									9
WEST PENOBSCOT BAY									10
WIDOW ISLAND									11
WOOSTER COVE									12
YOUNG COVE									13
YOUNG POINT									14
ZEKE POINT									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

Approved:

*Charles E. Harrington*  
Chief Geographer - N/C62x5

DEC 10 1986

NOAA FORM 77-27(H) (9-83)			U.S. DEPARTMENT OF COMMERCE			REGISTRY NUMBER  H-10178			
<b>HYDROGRAPHIC SURVEY STATISTICS</b>									
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.									
RECORD DESCRIPTION			AMOUNT		RECORD DESCRIPTION			AMOUNT	
SMOOTH SHEET			1		SMOOTH OVERLAYS: POS., ARC, EXCESS			11	
DESCRIPTIVE REPORT			1		FIELD SHEETS AND OTHER OVERLAYS			8	
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS				
ACCORDION FILES									
ENVELOPES									
VOLUMES							8		
CAHIERS							2		
BOXES									
SHORELINE DATA									
SHORELINE MAPS (List):			T-01117-18						
PHOTOBATHYMETRIC MAPS (List):									
NOTES TO THE HYDROGRAPHER (List):									
SPECIAL REPORTS (List):									
NAUTICAL CHARTS (List):			13308 9th Ed. September 11, 1982						
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>									
PROCESSING ACTIVITY				AMOUNTS					
				VERIFICATION	EVALUATION		TOTALS		
POSITIONS ON SHEET								3151	
POSITIONS REVISED								785	
SOUNDINGS REVISED								138	
CONTROL STATIONS REVISED									
				TIME-HOURS					
				VERIFICATION	EVALUATION		TOTALS		
PRE-PROCESSING EXAMINATION									
VERIFICATION OF CONTROL									
VERIFICATION OF POSITIONS				120			120		
VERIFICATION OF SOUNDINGS				208			208		
VERIFICATION OF JUNCTIONS									
APPLICATION OF PHOTOBATHYMETRY									
SHORELINE APPLICATION/VERIFICATION									
COMPILATION OF SMOOTH SHEET				121			121		
COMPARISON WITH PRIOR SURVEYS AND CHARTS						36	36		
EVALUATION OF SIDE SCAN SONAR RECORDS									
EVALUATION OF WIRE DRAGS AND SWEEPS									
EVALUATION REPORT				4	59			63	
GEOGRAPHIC NAMES									
OTHER* Digitizing									
*USE OTHER SIDE OF FORM FOR REMARKS			TOTALS		453	95			
Pre-processing Examination by <b>J. Wilder</b>				Beginning Date		Ending Date 6/4/86			
Verification of Field Data by <b>Matthew G. Sanders</b>				Time (Hours) 453		Ending Date 2/10/87			
Verification Check by <b>J. Stringham, B. Olmstead, J. Green</b>				Time (Hours) 135.5		Ending Date 3/9/87			
Evaluation and Analysis by <b>C.R. Davies</b>				Time (Hours) 95		Ending Date 3/6/87			
Inspection by <b>D. Hill</b>				Time (Hours) 14		Ending Date 3/25/87			

PACIFIC MARINE CENTER  
EVALUATION REPORT  
H-10178

1. INTRODUCTION

H-10178 was accomplished by the NOAA Ship PEIRCE in accordance with the project instructions for OPR-A166-PE-85, dated March 28, 1985

This is a basic hydrographic survey of Penobscot Bay, Maine. This survey encompasses an area called Fox Islands Thorofare which is a marked channel between North Haven and Vinalhaven Islands. The survey extends east from West Penobscot Bay, longitude 68°57'45"W to the western limit of East Penobscot Bay, longitude 68°48'45"W. The shore is generally fringed with ledges or is foul with rocks and boulders with numerous off-lying reefs and rocky shoals. The bottom is generally composed of mud, pebbles and sand. A maximum depth of 149 feet is located in the Fox Island Thorofare southwest of Zeke Point.

This survey was returned to the field for additional work as a result of the Preprocessing Examination and was subsequently resubmitted for office processing in May, 1986.

Predicted tides for Portland, Maine were used during field processing. Tide correctors used for the final reduction of soundings reflect approved hourly heights zoned from North Haven, Maine.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. Electronic control correctors have been revised during office processing to incorporate final baseline calibration values. The revised data is listed in the smooth position/sounding printout.

A digital file for this survey has been generated and includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain descriptive information, however, may not be included in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are adequately discussed in sections F and G of the hydrographer's report and in the Horizontal Control Report for OPR-A166-PE-85.

Positions of horizontal control stations used during hydrography are either published or field values based on the North American Datum of 1927.

The year of station establishment annotated on the smooth sheet originates directly from the hydrographer's signal list. These dates are subject to change following certification by NGS.

Applicable shoreline manuscripts are TP-01117 and TP-01118 at a scale of 1:20,000, which were photographically enlarged to the scale of the survey. These are registered Class III maps, and originate from photography dated June - September 1982.

On this survey, portions of the shoreline and alongshore features were not verified in accordance with the project instructions. Uncontrolled visual verification of these features did not include elevation data. As a result, some of the rocks shown on the smooth sheet were transferred directly from the manuscripts and do not show elevations.

Extensive areas of shoreline and offshore features originating from shoreline manuscripts have been added to the smooth sheet beyond the limits of hydrography. This decision was made in order to render the smooth sheet more cartographically complete. This additional detail is considered essential for assessing the extent of hydrography required to complete coverage of this general area.

### 3. HYDROGRAPHY

Except for the areas listed below, hydrography within the limits of the sheet is adequate to:

- a. Delineate the bottom configuration, determine least depths, and to draw the standard depth curves.
- b. Reveal that there are no significant discrepancies or anomalies requiring further investigation.
- c. Show that the survey had been properly controlled and soundings are plotted correctly.

The 6-foot depth curve was not defined in the following areas:

	<u>Latitude</u>	<u>Longitude</u>
	44°06'13"N	68°51'30"W
	44°06'45"N	68°51'03"W
	44°07'43"N	68°51'30"W
	44°07'39"N	68°54'06"W
	44°07'24"N	68°54'00"W
	44°06'15"N	68°54'40"W
	44°06'08"N	68°57'11"W
	44°07'46"N	68°56'09"W
	44°05'58"N	68°54'34"W
Between	44°07'07"N	68°54'18"W
and	44°06'33"N	68°54'33"W
Between	44°07'21"N	68°56'06"W
and	44°06'42"N	68°56'45"W

Numerous soundings originating from the prior surveys were not verified or disproven; therefore, they were brought forward from the prior surveys to H-10178.



#### 4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No.3, the Hydrographic Survey Guidelines, AMC OPORDERS, and applicable portions of the PMC OPORDER except as noted in the Preprocessing Examination Report, dated January 31, 1986 and as follows:

- a. Numerous areas warrant further development to locate the least depths. The investigation of these areas was incomplete (Hydrographic Manual, 4.3.4).
- b. Three floating aids to navigation were not located or described. All floating aids to navigation within the survey area are to be located and described (Hydrographic Manual 1.6.5 and 4.5.13.2).
- c. Two dangers to navigation were found during office processing. The hydrographer should review the final field sheet for possible dangers to navigation and should initiate the reporting of these dangers (Hydrographic Manual 1.6.5, 5.9).

#### 5. JUNCTIONS

H-10178 junctions with the following surveys:

Survey	Year	Scale	Area
H-8178	1954	1:20,000	West
H-10101	1983	1:10,000	Northwest

H-10101 and H-8178 have been processed and submitted to Rockville for charting. Junction comparisons were made using copies. Soundings were transferred from the two junction surveys to justify depth curves and to portray shoaler information. Depth curves should be adjusted to conform with those on this survey.

There are no contemporary surveys to the east and south; however, a comparison with charted depths reveals fair agreement with the present survey.

#### 6. COMPARISON WITH PRIOR SURVEYS

H-982(1868) 1:10,000  
 H-983(1868) 1:10,000  
 H-1086(1869-1907) 1:20,000

Comparison with the prior surveys is fair. This area has changed little since the prior surveys were accomplished. Present survey soundings compare between 1 to 2 feet of the prior soundings. The only significant change in the area has been the addition of cultural features in the vicinity of the town of North Haven.

Although some shoals were developed and critical depths confirmed, a number of shoals shown on the prior surveys were not investigated. Therefore, prior soundings were transferred to H-10178 in critical areas. In addition numerous soundings and rocks were transferred in depths less than six feet.

With the transfer of prior data to the smooth sheet, H-10178 is adequate to supersede these prior surveys in the area of common coverage.

H-2959WD(1908) 1:10,000  
H-3195WD(1910-11) 1:20,000

Comparison with the prior wire-drag surveys was fair. Shoals in the common area were confirmed but least depths were not obtained. Therefore soundings were transferred to H-10178 in critical areas.

There are no pre-survey review/AWOIS items originating from prior surveys applicable to this survey.

#### 7. COMPARISON WITH CHART

Chart 13308, 9th Edition, dated Sept.11, 1982; scale 1:15,000

a. Hydrography - Most charted information originates from the prior surveys discussed in Section 6 of this report. Other soundings and charted features originate from miscellaneous sources. For more details see section L of the hydrographer's report.

Shoaling was reported at latitude 44°06'49"N , longitude 68°51'20"W. This area is east of Hopkins Point. The area was investigated and depths range from 9 to 11 feet at MLLW with no indication of shoaling. Chart the area according to the smooth sheet and remove the "shoaling reported" note. ✓ WΔF

A rock is charted at latitude 44°07'35"N, longitude 68°56'17"W. This rock is located in survey depths of approximately 37 feet. The hydrographer did not verify or disprove this feature with a specific investigation although the existence of a rock awash in 37 feet of water is doubtful. It is recommended that the\*source of this rock be evaluated to determine if it is presently charted in its proper location. Pending that review it is recommended that the rock remain as charted. Concur \* T8023/41 RWD 3/94 ✓ WΔK

The following charted rocks originating from miscellaneous sources were not investigated and should remain charted:

Feature	Latitude	Longitude
1 Rock awash	✓ 44°07'46"N	68°54'56"W
2 submerged rock	✓ 44°07'54"N	68°54'50"W
3 submerged rock	✓ 44°07'59"N	68°54'38"W
✓ rock awash	✓ 44°07'42.5"N	68°53'18"W
✓ rock awash	✓ 44°07'43"N	68°53'15"W
✓ rock awash	✓ 44°07'44"N	68°53'13"W

} Check locations

Rocks

7 submerged rock	✓ 44°07'45.5"N	68°53'00"W
rock awash	✓ 44°07'34"N	68°51'50"W
submerged rock	✓ 44°07'50"N	68°51'32"W
rock awash	✓ 44°08'52"N	68°50'30"W
rock awash	44°07'20"N	68°49'28"W

Wreck GP  
and NotePA  
(22 ft re)

AWOIS item 02853, a sunken wreck, charted at latitude 44°07'36.0"N, longitude 68°52'56.0"W, on the 9th edition of chart 13308 was investigated with side scan sonar by the hydrographer. A wreck was located at latitude 44°07'36.7"N, longitude 68°52'54.5"W, and described by a local as a tugboat. A minimum observed depth of 22 feet at MLLW was obtained by echo sounder. The investigation was not adequate to determine the least depth which may be less than 22 feet. It is recommended that the position of the charted sunken wreck be revised to the above location and the "30 ft rep" note be removed *x* and ✓

"22 ft rep 1985" be added. (55V 10/1/87)

Geographic names appearing on the smooth sheet have been approved by the Chief Geographer and are plotted in accordance with this chart. It should be noted, that on chart 13308 there are two ledges with the same name, i.e., Seal Ledge. The chart of the area should be reviewed to ensure that the proper geographic names have been applied. Lobster Island charted at latitude 44°08'16.5"N, longitude 68°53'42"W is portrayed on the smooth sheet as three rocks awash.

H-10178 is adequate to supersede charted hydrography within the common area.

Except as  
noted above  
WJF

One Danger to Navigation Report (copy appended) was submitted by the hydrographer to the Coast Guard. Two additional dangers were identified during office processing and have been submitted to the First Coast Guard District and DMA (copy appended).

b. Controlling Depths - There are no channels with controlling depths within the limits of this survey.

c. Aids to Navigation - Charted aids to navigation have been located and adequately serve their intended purpose except the following which were not investigated:

<u>Light list Name</u>	<u>Latitude</u>	<u>Longitude</u>
Fox Islands Thorofare Buoy 12	44°07'27"N	68°51'38"W
Fox Islands Thorofare Buoy 10	44°07'35"N	68°51'21"W
Fox Islands Thorofare Buoy 8	44°07'51.5"N	68°51'12"W
Drunkard Ledge Daybeacon	44°06'08"N	68°57'09"W

The daybeacon was transferred to the smooth sheet directly from the shoreline manuscript.

#### 8. COMPLIANCE WITH INSTRUCTIONS

H-10178 adequately complies with the project instructions noted in section 1 except where noted in section 4 of this report.

9. ADDITIONAL FIELD WORK

This is anadequate basic hydrographic survey; however, additional field work is recommended on a non-priority basis to verify or disprove the shoal depths and rocks mentioned in sections 2, 3, 6 and 7 of this report.

Respectfully submitted,

*Charles R. Davis*

Cartographer

This survey has been examined and it meets Charting and Geodetic Services standards and requirements for use in nautical charting. The survey is recommended for approval.

Dennis Hill

*Dennis Hill*

Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10178

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

  
Chief, Nautical Chart Branch (Date)

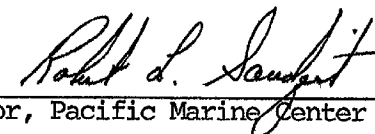
CLEARANCE:

SIGNATURE AND DATE:

N/MOP2:LWMordock



After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

  
Director, Pacific Marine Center (Date)

ADDENDUM TO EVALUATION REPORT FOR H-10178

The Evaluation Report, Section 2, Control and Shoreline is supplemented as follows:

In accordance with N/CG2 memorandum, dated December 12, 1986, an NAD 83 datum adjustment tick has been added to the smooth sheet, and accompanying overlays. The adjustment value was determined by N/CG121 and amounts to +0.296 seconds of latitude and -1.897 seconds of longitude for the geographic area common to this survey. Computed geographic positions contained in the survey digital file remain on NAD 27.

*Thomas W. R. Jones* 4/9/87  
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

*Larry V. Mordock* 4/10/87

Approved:

*Robert L. Sandt* 4.13.87  
Director, Pacific Marine Center (Date)

OCT 27 1987

N/CG241: SJV

MEMORANDUM FOR: Captain Walter S. Simmons, NOAA  
Chief, Marine Chart Branch

FROM: Commander Russell C. Arnold, NOAA /5/  
Chief, Hydrographic Surveys Branch

SUBJECT: Application of H-10178 to Chart 13308

During this office's cursory examination of hydrographic survey H-10178, several discrepancies were noted which critically affect its cartographic application to nautical chart 13308.

Attention is directed to a significant holiday in the vicinity of latitude 44°07'00"N and longitude 68°54'48"W on the present survey (between "Sugar Loaves" and "Fox Ears"). Specifically, the submerged rock originating with H-982 (1868) and marked by daybeacon R "22" (LLNR 4080) was not addressed by the present survey. Without additional data, it is recommended that this feature be retained as charted.

In addition, it is recommended that the hydrography from H-982 between "Sugar Loaves" and "Fox Ears" be considered when applying H-10178 to chart 13308. The 4- and 8-foot soundings on the shelf extending off the northern end of "Sugar Loaves" should also be reconsidered for charting since the present survey did not develop this area and indicates a depth of 12 feet in the vicinity.

A 50-percent reduction of chart 13308 (9th edition) is attached with soundings brought forward from prior surveys circled. These soundings were neither verified nor disproved by H-10178. This copy is meant merely to aid in the application of the present survey by emphasizing various discrepancies and should not be considered an official source document.

Attachment

CC:  
Descriptive Report H-10178 w/o attachment ✓

Hydrographic Index No. 60 H





