10177

Diagram No. 1203-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. PE-10-2-85

Registery No. H-10177

LOCALITY

State Maine

General Locality East Penobscot Bay

Sublocality Hog Island to South of Eagle Island

1985

CHIEF OF PARTY
CDR A.E. Theberge

LIBRARY & ARCHIVES

DATE February 3, 1987

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

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ACPG
CHTS
13309
13305
13302
13260-NC
} TO SIGN OFF SEE "RECORD OF APPLICATION"

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H-10177

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 10-2-85

State: Maine

General locality: East Penobscot Bay

Locality: Hog Island to South of Eagle Island

Scale: 1:10,000 Date of survey: May 2 - July 15, 1985

Instructions dated: March 28, 1985 Project No.: OPR-A166-PE-85

Vessel: NOAA Ship PEIRCE

Chief of party: CDR A. E. Theberge, NOAA

Surveyed by: D. Waltz, D. Ross, J. Maddox, V. Barnum, J. Hill, B. Lake

Soundings taken by echo sounder, hand lead, pole: DSF-6000N, DE719B

Graphic record scaled by: Ship Personnel

Graphic record checked by: Ship Personnel

~~Protracted by~~ Verification: M. Sanders, E. Domingo Automated plot by: PMC Xynetics Plotter

~~Verification by~~ I. Almacen

Soundings in ~~fathoms~~ feet at ~~MLW~~ MLLW (field sheet at MLW predicted tides)

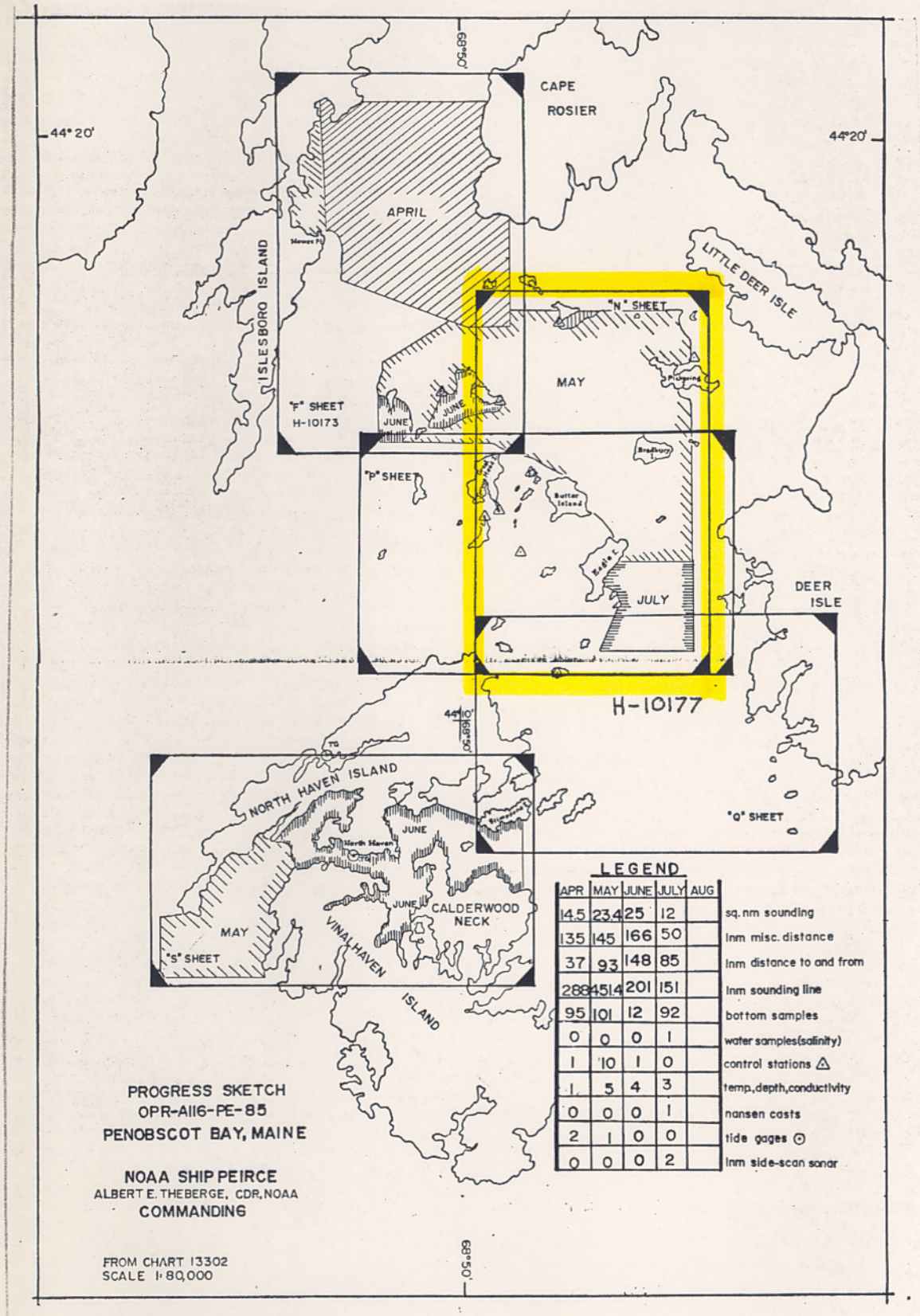
REMARKS: All times are Coordinated Universal Time. Marginal notes in black by evaluator. Separates are filed with hydrographic data.

AWOIS / SURF ✓ 9/10/87, SS✓

SC 4-7-97

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174



LEGEND

APR	MAY	JUNE	JULY	AUG	
14.5	23.4	25	12		sq. nm sounding
135	145	166	50		lnm misc. distance
37	93	148	85		lnm distance to and from
288	451.4	201	151		lnm sounding line
95	101	12	92		bottom samples
0	0	0	1		water samples(salinity)
1	10	1	0		control stations △
1	5	4	3		temp.,depth,conductivity
0	0	0	1		nansen casts
2	1	0	0		tide gages ⊙
0	0	0	2		lnm side-scan sonar

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

DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SURVEY

SCALE: 1:10,000

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 "N" Sheet of the project sheet layout.

B. AREA SURVEYED

The area surveyed is in Penobscot Bay, Maine, in the vicinity of Bradbury Island. The actual limits of the 1:10,000 scale survey are defined by connecting these points; starting with the NW corner and working clockwise.

NW	1.	44°17'24"N 068°48'54"W	2.	44°17'24"N 068°44'06"W	3.	44°10'42"N 068°44'06"W
	4.	44°10'42"N 68°46'30"W	5.	44°14'18"N 60°47'30"W	6.	44°15'00"N 68°48'54"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 limit on the southwestern side of the survey area was arbitrarily chosen to be a line roughly connecting Great Spruce Head, Butter, and Eagle Islands. Time restraints did not permit work to the west of this line, but this area can be covered on "P" sheet of the sheet layout. The completion of the present survey does provide modern data for the deep draft passage through east Penobscot Bay from ~~Deer Isle~~ lat. 44°10'45"N to ~~Green~~ Black Ledge.

All survey work was completed between May 2, 1985 (JD 122) and July 15, 1985 (JD 196).

C. HYDROGRAPHY

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). Shoreline hydrography was done by the PEIRCE 17' Monark, PE-3, VESNO 2833. 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 used the Raytheon Model DE-719B portable fathometer.

All echo sounders performed satisfactorily except as noted on the fathogram or printout. The sounding correctors for DSF-6000N's apply to both high frequency and low frequency beams.

The following sounding equipment was used:

VESSEL	VESNO	INSTRUMENT	MODEL	S/N	DAYS
PE-1	2831	Raytheon	DSF6000N	A105N	127-196
PE-2	2832	Raytheon	DSF6000N	A112N	122-196
PE-3	2833	Raytheon	DE719B	6212	133-196

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 five-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 requires 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. No bar check data was used for velocity corrections since oceanographic (TDC) data was available. Abstracts of all bar check data are included in the survey records.

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. Six hydroplot velocity correction tapes were made from these average curves, but not all six 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.

Velocity	Tape I	Tape II	Tape III	Tape IV	Tape V
Derived from TDC Dates	115 123	133 137	144, 148 155	161, 171 176, 184 190, 196	204
To Be Used Between Dates	113-123	126-137	140-158	161-200	204-206

To Be Used For Survey					
	H-10173 H-10177	H-10173 H-10177	H-10178	H-10173 H-10177 H-10178	H-10178

Martek TDC casts were taken at the following locations and dates:

JD	Latitude	Longitude	
115	44/21/30	68/50/30	
123	44/17/00	68/52/00	
133	44/17/12	68/52/24	
137	44/17/30	68/52/18	
144	44/05/30	68/58/42	
148	44/06/18	69/00/18	
155	44/05/42	68/58/00	
161	44/05/42	68/58/54	
171	44/05/42	68/58/00	
176	44/17/24	68/52/18	
184	44/10/18	68/55/00	
190	44/08/54	68/56/36	* Nansen Cast also
196	44/08/54	68/56/36	
206	44/06/30	68/58/24	

Settlement and squat tests for the vessels used for all the surveys of OPR-A166-PE-85 were run on the following dates:

VESNO	DATE	LOCATION	INSTRUMENT
2831	04-22-85	Rockland, Me.	Leitz-Sokkisha B17423
2832	04-09-85	Norfolk, Va.	"
2833	05-06-85	Rockland, Me.	"
2834	06-24-85	Rockland, Me.	"

Settlement and squat correctors were determined using the level method at 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 all vessels were measured and are applied on the corrector tapes as follows: 1.6 feet for VESNO 2831 and 2832, and 0.5 feet for VESNO 2833. A sketch showing the transducer placement and draft of the Monark PE-3 (VESNO 2833) is included in Appendix D. TC/TI tapes do not show transducer static draft as it is applied on the ~~electronic~~ sounding corrector tape.

See EVAL RPT sec. 1

Predicted tide correctors for all surveys of project OPR-A166-PE-85 were applied using the RK 500 predicted tide generator. Correctors shown in the project instructions were used.

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 6 sheets. The mainscheme work is plotted on 3 sheets--N-1, N-2, and N3. Each of these sheets has an overlay sheet that depicts crosslines, splits, developments, and bottom samples. These sheets are at a scale of 1:10,000.

Only two sheets oriented in a North-South direction could have been used, but this would have required survey boats to change plotter sheets while running sounding lines across the bay. Thus more boatsheets were used to allow more efficient launch operations.

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 have been designated "NSP". All are to be plotted on the smooth sheet. See Section L of this report for further discussion of these developments.

Development Name	Plat/Plon	Position Numbers
A	44°13'51"/068°45'42"	2282-2289, 2291-2307, 2310-2319, 2221-2242, 3158-3190
B	44°13'42"/068°44'57"	2243-2272
C	44°11'21"/068°46'16"	3086-3099
D	44°11'30"/068°46'36"	3235-3250
E	44°12'00"/068°46'00"	3225-3234

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, N/MOA2x1 (Gary Fredrick), and PEIRCE personnel. See PEIRCE Horizontal Control Report. No unconventional methods were used by the ship's personnel. The third order stations used to control this survey are listed on the signal tape printout in Appendix F. The source of each station is also listed. All horizontal control established by the PEIRCE and N/MOA2x1 (Gary Fredrick) was third order control meeting NGS standards. Control was accomplished by running a traverse from, and ending on, known NGS data base third order positions. Photogrammetric control was included in these

traverses, and positions checked via NGS established control. These photo positions created no closure problems and were used as electronic control stations for this survey. Equipment used included Wild T-2 theodolites, Hewlett Packard HP3810B total station, prisms, target sets, and steel tapes. Stations included in PEIRCE traverse work are indicated on the horizontal control sketch included in Appendix F. There were no anomalies in closures and ties. No original geodetic data is included in this report. All geodetic data will be sent to MOA2x1 in accordance with the project instructions. (Unadjusted field control positions were used to plot the smooth sheet)

G. HYDROGRAPHIC POSITION CONTROL

Hydrographic position control was accomplished using the Mini-ranger Falcon 484 system. Range/range and range/azimuth positioning was used. Both the T-2 and HP3810B theodolites were used for angular measurements. The following miniranger equipment was used.

VESNO	EQUIPMENT	S/N	JD
2831	RANGE PROCESSING UNIT	D0018	127-196
	CONTROL DISPLAY UNIT	D0059	127-190
	RECEIVER/TRANSMITTER	C2096	127-196
	CONTROL DISPLAY UNIT	D0057	171-196
2832	RANGE PROCESSING UNIT	D0017	122-196
	CONTROL DISPLAY UNIT	D0057	127-170
	RECEIVER/TRANSMITTER	D2123	122-196
	CONTROL DISPLAY UNIT	D0059	171-196
2833	RANGE PROCESSING UNIT	D0019	133-196
	CONTROL DISPLAY UNIT	D0062	133-196
	RECEIVER/TRANSMITTER	C2000	133-180
	RECEIVER/TRANSMITTER	E2965	195-196
	RANGE PROCESSING UNIT	D0004	181-185

REFERENCE STATIONS:

	S/N
CODE 1	C2058
CODE 2	C2059
CODE 4	C2065
CODE 5	C2088
CODE 6	C2091
CODE 8	E2974
CODE 9	E2911
CODE 10	E2912
CODE 11	C1075

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

Instrument	Serial Number
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.

Miniranger Falcon Calibration

This survey was conducted with no specific, formal guidance for calibrating the miniranger Falcon system other than the general provisions of the Hydrographic Manual for short range systems. There is no AMC OPORDER concerning the Falcon system, although a draft version has been written. The project instructions require the use of certain sections of the PMC OPORDER, but miniranger calibration is not among them. For this project a combination of the draft AMC OPORDER, the PMC OPORDER 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 OPORDERS, and records of these are included in the survey cahier. 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 and are typically less than three meters. Although neither the PMC nor the AMC OPORDERS 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.

RPU D0018 PE-1 - R/T C1096

CODES

JD	1	2	3	4	5	6	7	8	9	10	11
073	5.7	5.1			5.9		-1.5				
099			7.8	9.5		2.3		-0.5			
126			8.0		6.6	1.5	-1.4		-1.4		
148					3.2			-3.3	-1.4		
175		3.6	5.2		5.0	-1.1	-3.5	-2.7	-2.2		
186		1.1				-4.6					
189					6.4	-3.11		-4.5	-4.3	-5.3	-10.1
228		0.5			4.8	-4.3		-4.1	-5.9	-5.5	-11.0
SIGMA	-	2.15	1.56	-	1.26	2.95	1.18	1.57	1.99	0.14	-0.64
AVG	5.7	2.6	7.0	9.5	5.3	-1.6	-2.1	-3.0	-3.0	-5.4	-10.6

RPU D0017 PE-2 - R/T D2123

CODES

JD	1	2	3	4	5	6	7	8	9	10	11
073		5.2		9.3	7.0		0.5				
100	8.1		6.3			2.7		1.2			
126			7.8		7.6	1.9	-0.7		-0.3		
148					6.8			-0.2	-2.0		
186		1.5			5.5	-3.7		-3.5	-3.8	-3.9	-3.9
227		-0.2			7.3	-4.0		-4.1	-3.6	-5.3	-8.9
SIGMA	-	2.76	1.06	-	0.81	3.57	0.85	2.56	1.63	0.99	3.53
AVG	8.1	2.2	7.1	9.3	6.8	-0.8	-0.1	1.7	1.4	-4.6	-6.4

RPU D0019 MONARK - R/T C2000

CODES

JD	1	2	3	4	5	6	7	8	9	10	11
100	3.8	5.4	8.6	8.8							
101					6.3	1.0	-0.6	-1.2			
126			9.0		8.4	3.3	0.2		0.2		
SIGMA	-	-	0.28	-	1.48	1.63	0.56	-	-		
AVG	3.8	5.4	8.8	8.8	7.4	2.2	-0.2	-1.2	0.2		

RPU D0019 MONARK - R/T E2965

CODES

JD	1	2	3	4	5	6	7	8	9	10	11
186		5.1			8.7	1.1		-0.1	-0.9	-1.1	-6.5
228		4.8			7.8	-0.4		-1.2	-0.2	-2.4	-8.8
SIGMA		0.21			0.64	1.06		0.78	0.49	0.92	1.62
AVG		5.0			8.3	0.4		0.7	0.6	-1.8	-7.7

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 miniranger stations using Hydroplot Program RK 300. Original data for these calibrations is 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.

ABSTRACT OF DAILY SYSTEM CHECKS

	VESNO 2831		PE-10-2-85					H-10177	
JD	CODE 2	CODE 3	CODE 5	CODE 6	CODE 7	CODE 8	CODE 9	CODE 10	CODE 11
127		D=0.0	D-1.0	D=2.2	D=3.6	D=2.6			
129		R=0.2	R=2.0			R=1.8			
132			R=-0.7	D=3.07	R=-0.5	D=3.02	D=2.7		
133	R=0.1			R=0.0	R=-0.1				
134	R=0.4				R=-0.5				
136					D=6.4*		D-4.3	*Landpath problems	
137	R=-0.6					R=-1.9	R=2.4		
177			R=0.1			R=-0.6	R=0.5		
178			D=1.3						
180	R=-0.1		R=4.4			R=0.9	R=-4.2		
181	D=3.2		D=1.0	D-2.5			D-2.8		
182	D=2.7		D-3.4	D-0.0		D-0.5			

ABSTRACT OF DAILY SYSTEM CHECKS

VESNO 2831 PE-10-2-85 H-10177

JD	CODE 2	CODE 3	CODE 5	CODE 6	CODE 7	CODE 8	CODE 9	CODE 10	CODE 11
183	R=3.2		R=-3.1	R=		R=0.5			
191			R=0.2	R=0.3		R=-0.4			
192	R=1.9		R=2.9	R=1.5		R=0.2			
192	D=5.1*		D=4.6	D=1.3		D-6.5*	*Landpath problems		
195						D=1.7			
196							D=0.8	D-5.0	D=0.5
196							R=1.1	R=0.5	R=-2.5
127		D=1.9	D=1.4	D=0.8	D=3.0				
128		R=2.4	R=3.1	R=-1.3	R=-0.6				
129		R=-4.2	R=2.3		R=2.3	R=-3.3			
132	D=1.84		D=-3.3	D=2.0	D=-0.6				
136	NO SYSTEM CHECK THIS DAY								
137	R=-0.3		R=0.5			R=-0.5			
171	R=0.4				R=0.4	R=-0.1			
171				D=0.0	D=1.6	D=1.2	D=2.8		
191	R=0.0		R=0.0	R=0.0		R=0.1			
193							D=4.7		
196							D=3.5		D-5.7

ABSTRACT OF DAILY SYSTEM CHECKS

VESNO 2833 PE-10-2-85 H-10177

JD	CODE 2	CODE 3	CODE 5	CODE 6	CODE 7	CODE 8	CODE 9	CODE 10	CODE 11
132	D=0.3			D=0.4	D=3.2				
133	R=1.4		R=0.0		R=0.1	R=0.2	R=1.4		
135	R=1.4			R=-2.4	R=2.2	R=-2.2			
171							D=3.0		
180							D=2.3		
181							R=1.1		
181	D=3.3		D=0.74	D=1.1			D=2.6		
181						D=1.4	D=1.2		
182							D=0.9		
182	D=0.9		D=5.6*			D=4.1	D=1.3		
183	R=-1.8		R=0.9	R=-0.4		R=1.3	R=0.2		
195						D-1.20	D-1.9	D=1.1	
195							D=2.6	D=0.1	D=2.5

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

Shoreline data was transferred to field sheets from shoreline manuscripts ~~TP 01114~~ and TP 01115 at a scale of 1:10,000. Rocks and kelp beds were verified visually if attached to the shore line, or using electronically controlled detached positions if seaward of the shoreline. The only areas of shoreline that were verified were those within the actual survey limits and immediately adjacent to the plotted soundings shown 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 by kelp. 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.

I. CROSSLINES

Crosslines were run according to the Hydrographic Manual, Fourth Edition. 23.0 linear nautical miles of crosslines were run, which are equivalent to 9.8 percent of the total mainscheme miles acquired. Crossline soundings compared well with the mainscheme hydrography, agreeing to within 1-3 feet on all sheets.

J. JUNCTIONS

There were no junction surveys for this sheet, except for the concurrent PEIRCE survey H-10173 to the west. There is excellent agreement between the two surveys.

K. COMPARISON WITH PRIOR SURVEYS

This survey was compared with ~~three~~ four (4), H-1028, H-1261, H-1321 & H-2840 prior surveys. It was not compared to the wire drag surveys H-2911 and ~~H-3195.~~ see EVAL. RPT Sec. 6

Prior survey H-1321 was done in 1875 by the U.S. Coast Survey at a scale of 1:10,000. This survey covers almost the entire survey area. The majority of the soundings agree within 0-4'.

Prior survey H-1261 was completed in 1873 by the U.S. Coast Survey at the scale of 1:10,000. This survey covers the western area of the survey around Butter Island. There is good agreement within 0-4 ft. Where there is discrepancy greater than 4 ft., it occurs in very deep water. In the area between Butter and Pickering Islands, this older survey is from ten to thirty feet shoaler than the present survey in depths of approximately 200 feet.

Prior survey H-1028 was completed in 1869 by the U.S. Coast Survey at a scale of 1:20,000. This survey covers the area east of Eagle Island. The soundings agreed very well with 0-3 feet discrepancy.

L. COMPARISON WITH THE CHART

N sheet was compared with Chart 13305, 26th Edition, November 24, 1984, as per project instruction. No dangers to navigation were reported. & Chart 13309, 23rd Ed., dated March 24, 1984.

Charted soundings agreed very well within 3 feet except for the following:

Charted Sounding (ft.)	Approximate Latitude (N)	Approximate Longitude (W)	Least Depth Found	Charting Recommendations
132	44°15'.3 21" N	068°47'.7 46" W	~~121~~ 101	~~121~~ 101 ft.
54	44°15'.1 05" N	068°48'.5 32.5" W	89	54 ft.*
36	44°15'.3 18" N	068°48'.8 48" W	~~71~~ 42-61	~~71~~ 42-61 ft.
44	44°15'.5 30" N	068°48'.6 40" W	~~70~~ 52-66	~~70~~ 52-66 ft.
66	44°15'.6 36" N	068°47'.2 13" W	~~72~~ 70-75	~~72~~ 70-75 ft.
38	44°15'.8 48" N	068°45'.7 42" W	80 71	~~80~~ 71 ft.
27	44°14'.6 38" N	068°48'.6 38" W	19	19 ft.
5	44°15'.2 13.5" N	068°45'.3 20.5" W	10	5 ft.*
34	44°14'.4 26.0" N	068°47'.6 35.0" W	42 39	34 ft.*
60	44°16'.4 23.5" N	068°48'.4 22.5" W	69	~~69~~ 60 ft.*
37	44°14'.5 31.0" N	068°47'.7 47.0" W	65	~~65~~ 37 ft.*
51	44°16'.7 42" N	068°47'.0 54" W	56	56 ft.
39	44°16'.8 52.0" N	068°47'.1 05.5" W	63 0	~~63~~ 39 ft.*
198	44°14'.7 37" N	068°46'.3 19" W	143 2	143 2 ft.
96	44°14'.7 42" N	068°46'.9 54" W	116 5	116 5 ft.
63	44°13'.2 08.0" N	068°44'.2 19.0" W	~~110~~ 87-112	~~110~~ 63 ft.*

73	44°13.~~3~~18.0'N	068°44.~~6~~32.5'W	104	~~104~~ 73 ft. *
82	44°11.~~5~~30'N	068°45.~~2~~12'W	~~5~~2	~~5~~2 ft.

* These charted depths have been recommended for retention on the chart because there is some kind of shoaling indication on the present survey in the area. Other anomalous charted depths are recommended for supercession by this survey. This is only done when there is a sloping bottom or no indication of shoaling seen on the present survey. The primary cause of all disagreements is probably the methods used on the old surveys supporting the chart, and unavoidable transfer error from the 1:40,000 scale chart. See EVAL RPT sec. 6 & 7 for additional sndgs to be retained.

There were five special shoal investigations. They were investigated by running 25 meter or less line spacing. These items were delineated under section E and have been smooth plotted at 1:2500 scale on the development overlay. The areas of development are outlined in black ink on the mainscheme field sheet and labelled accordingly. A synopsis of the findings is as follows:

Development Name	Charted Depth	Finding	Charting Recommendations
A	18 ft.	Two shoal depths of ~~1~~6 and 18 feet. Positions No.s 3174+4 and 2316+3.	~~1~~6 and 18 ft. at plotted positions
B	18 ft.	19 foot least depth at Position No. 2249+3.	18 ft. See EVAL RPT Sec. 6
C	23 ft.	~~2~~3 foot least depth at Position No. 3251+4.	~~2~~3 ft.
D	26 ft.	26 foot least depth at Position No. 3243+~~2~~3.	26 ft.
E	32 ft.	~~3~~2 foot least depth at Position No. 3231+4.	32 ft.

M. ADEQUACY

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

N. AIDS TO NAVIGATION

The floating aids in the survey area agree with their charted positions and serve their intended purpose. No fixed aids were located by the field unit that fall within the survey area. (See attached copy of Light List (p.38) for aids to navigation names) See EVAL RPT Sec. 7 (c)

O. STATISTICS

VESSEL	NUMBER OF POSITIONS	LNM HYDROGRAPHY
2831	~~2596~~ 2329	251
2832	~~651~~ 630	80.3
2833	~~380~~ 317	32.5

Bottom samples:	80
TDC casts:	14
Nansen casts:	1
Tide stations:	2
Current stations:	0
Magnetic stations:	0

P. MISCELLANEOUS

The bottom of the survey area was found to be very irregular and unpredictable. Anomalous pinnacles forming hazardous shoals abruptly arise from safely navigable depths. Navigation in this area is further complicated by the significant tidal range and the frequent presence of fog. Overall, the bottom has not significantly changed since the prior surveys done at the turn of the century.

Bottom samples were submitted to the Smithsonian Institute.

Standard depth contours have been omitted from the field sheet in areas where steep bottom topography causes overcrowding of the curves.

This survey has duplicate position numbers for vessel numbers 2831 and 2832, as listed below:

JD	VESNO 2832	JD	VESNO 2831
122	2385-2450	181	2387-2436
127	2451-2466	182	2437-2674
128	2467-2505	183	2675-2849
129	2507-2678		
132	2679-2849		

Q. RECOMMENDATIONS

Specific recommendations were made in sections K and L of this report. No additional field work is required. See EVAL RPT sec. 9

R. AUTOMATED DATA PROCESSING

PROGRAM	PROGRAM NAME	VERSION
RK 112	Hyperbolic R/R Hydroplot	08-04-81
RK 116	Range/Azimuth Real Time Hydroplot	08-24-81
RK 201	Grid, Signal, and Lattice Plot	04-18-75
RK 211	Range/Range Non-Real Time Plot	02-02-81

RK 216	R/AZ Non-Real Time Plot	02-09-81
RK 300	Utility Computations	10-21-80
RK 330	Reformat and Data Check	05-04-76
RK 360	Electronic Corrector Abstract	02-02-76
RK 561	H/R Geodetic Calibration	12-01-82
RK 612	Line Printer List	03-22-78

S. REFERRAL TO REPORTS

Coast Pilot Report
Horizontal Control Report, OPR-A166-PE-85

Respectfully submitted;

Jennifer Hill, ENS, NOAA

Jennifer A. Hill, ENS, NOAA

PENOBSCOT BAY SIGNAL TAPE LISTING

H-10177

OPR-A166-PE-85

```
003 6  44 20 02633 068 49 31947  250 0012 000000
006 6  44 21 33822 068 51 59750  250 0002 000000
007 6  44 17 24345 068 49 44228  250 0006 000000
008 6  44 18 46210 068 54 01968  250 0000 000000
009 6  44 15 32220 068 54 27326  250 0001 000000
010 6  44 18 16142 068 53 15169  250 0027 000000
011 6  44 13 51521 068 55 49640  250 0005 000000
012 6  44 17 23952 068 49 43760  250 0000 000000
013 6  44 18 27581 068 46 57436  250 0007 000000
014 6  44 18 32716 068 44 36241  139 0000 000000
015 6  44 13 27987 068 45 17088  250 0023 000000
016 6  44 13 15963 068 43 59650  250 0000 000000
017 6  44 13 03242 068 46 05882  250 0000 000000
021 6  44 12 08900 068 43 54818  250 0000 000000
023 6  44 15 36560 068 50 30073  250 0019 000000
024 6  44 16 49620 068 47 43303  250 0007 000000
025 6  44 14 16653 068 48 23666  250 0012 000000
026 6  44 15 27240 068 49 05352  250 0000 000000
027 6  44 16 16716 068 44 03976  250 0014 000000
```

Number	Station Name (only those used)	Source	Use for Survey Sheet
003	Orrs Hill, 1911	Published	F
006	Flag, 1982	N/MOA22	F
007	Green Ledge, 1983	AMC/MM	F, N
008	Isles, 1982	N/MOA22	F
009	Dark, 1982	N/MOA22	F, N
010	Hewes, 1982	N/MOA22	F
011	Pen, 1982	N/MOA22	F
012	Green Ledge RM 1, 1985	Peirce	F
013	Spectacle Island, 1872	Published	F, N
014	Pumpkin Island Light House, 1862	Published	F, N
015	Hard, 1982	N/MOA22	N
016	Chensey, 1982	N/MOA22	N
017	Eagle Island Light House, 1861	Published	N
021	Dun, 1982	N/MOA22	N
023	Colt, 1985	Peirce	F, N
024	Hog, 1985	Peirce	F, N
025	Barred, 1985	Peirce	F, N
026	Sand, 1985	Peirce	F, N
027	Little, 1985	Peirce	F, N

1984 LIGHT LIST, ATLANTIC COAST, Volume I

(1) No.	(2) Name / Characteristic	(3) Location Lat. N.	Long. W.	(4) Nominal Range	(5) Ht. above water	(6) Structure Ht. above ground	Daymark	(7) Remarks	Year
	Penobscot Bay								
	ISLE AU HAUT BAY (Chart 13305)								
	Marsh Cove Ledges Buoy 1	In 66 feet					Green can		
	Rock T Buoy 4	In 84 feet					Red nun		
		44 02.3	68 40.3						
245	ISLE AU HAUT LIGHT **Fl R (W Sector)** 4s	At Robinson Point. 44 03.9	68 39.1	6R 8W	48	Tower, lower part conical, gray; upper part cylindrical, white, brick; white bridge to shore.		White from 034° to 060°, covers fairway to Isle au Haut Thorofare.	1907
	Sawyer Ledge Buoy 1	In 42 feet					Black can		
	Inner Ledge Daybeacon 3	On ledge					SG on iron spindle		
	ISLE AU HAUT THOROFARE (Chart 13305)								
	— Daybeacon 2	In 5 feet					TR on iron spindle		
	— Buoy 4, 5, 6, 7	In 8 to 14 feet					Odd numbered, black can; even numbered, red nun.		24
	NORTHEAST END (Chart 13305)								
	Ram Island Ledge Buoy 2	In 42 feet, north side of ledge.					Red nun		
		44 05.9	68 40.3						
	Merchant Island Ledge Buoy 1.	In 53 feet					Black can		
	North Bay Ledge Buoy 2	In 24 feet					Red nun		
	Bay Ledge Daybeacon	On ledge					NR on iron spindle		
	Birch Point Shoal Buoy 3	In 42 feet					Black can		
	Flake Island Buoy 1	In 43 feet					Black can		
	Birch Point Daybeacon	On ledge					NG on iron spindle	Ra ref.	
	EAST PENOBSCOT BAY (Chart 13305)								
	Brown Cow Ledge Whistle Buoy 2BC.	In 120 feet, southwest of ledge.					Red		
		44 06.7	68 43.9						
	(For Deer Island Thorofare, see No. 237)								
	(For Fox Islands Thorofare, see p. 41, 42)								
	Sellers Rock Buoy 2	In 50 feet, southwest of rock.					Red nun		
	Porcupine Ledge Bell Buoy 3	In 36 feet					Black		
246	EAGLE ISLAND LIGHT **Fl W** 4s	On bluff at northeast end of island.		9	106	White granite tower			1839—1858
		44 13.1	68 46.2						2
	Eagle Island Gong Buoy 3A	In 80 feet					Black	Replaced by can when endangered by ice.	
		44 13.1	68 45.9						
	Sylvester Cove Buoy 2	In 30 feet					Red nun		
	Middle Rock Buoy 4	In 39 feet, westerly of ledge.					Red nun		
	Fling Island Ledge Buoy 1	In 42 feet					Black can		
		44 12.5	68 48.3						
	Channel Rock Buoy 2	In 30 feet					Red nun		
	Great Spruce Head Ledge Buoy 3	In 36 feet					Black can		
	Gull Ledge Buoy 1	In 42 feet					Green can		
		44 14.0	68 43.5						
	Pressey Ledge Buoy 2	In 26 feet					Red nun		
	Swains Ledge Buoy 1	In 24 feet					Black can		
		44 17.3	68 44.2						
	Green Ledge Bell Buoy 2	In 78 feet					Red	Removed if endangered by ice.	
		44 17.2	68 50.0						
247	GREEN LEDGE LIGHT 4 **Fl R** 6s	On ledge west of western Island.		5	31	TR on white skeleton tower. 16			1936—1972
		44 17.4	68 49.7						2

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

DEC 5 1986 N/MOP211C/IA

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

Dear Sir:

During office review of hydrographic survey H-10177, Hog Island to south of Eagle Island, East Penobscot Bay, Maine, the following change affecting Chart 13305 was 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 shoal covered 16 feet at MLLW discovered; chart number 13305; latitude 44°12'20.3"N, longitude 68°46'10.6"W; 300 meters, bearing 045 degrees true from the northern most island of the Porcupines; in the area of a presently charted 17-foot depth."

Sincerely,

Original Signed By

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

bc:N/CG222

FILE COPY

CODE	SURNAME	DATE	CODE	SURNAME	DATE
N/MOP21	Richards TWR	12/4	N/MOP	Sandquist RLS	12/5
N/MOP2	Mordock MM	12/4			
N/MOPx1	Austin NOA	12/5			

NOAA FORM 61-2

* U.S. GPO: 1985-567-601

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. E. Theberge

A. E. THEBERGE, JR., CDR, NOAA
COMMANDING OFFICER
NOAA SHIP PEIRCE S 328

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: 03/31/86

Marine Center: Pacific

OPR: A-166

Hydrographic Sheet: H-10177

Locality: East Penobscot Bay, ME

Time Period: May 2 - July 15, 1985

Tide Station Used: 841-4888 Pulpit Harbor, North Haven Island, ME.

Plane of Reference (Mean Lower Low Water): 3.35 ft.

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

Remarks: Recommended Zoning:

Zone Direct

James R. Hubbard
Chief, Tidal Datum Quality
Assurance Section

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10177

GEOGRAPHIC NAMES

Name on Survey

Maine, East Penobscot Bay

	A ON CHART NO. 13305 & 13309	B ON PREVIOUS SURVEY NO. H-1028, H-1261, H-1821, H, 2840 (MD) (-2911)	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 TP-01115	
Barred Islands	x	x							x	1
Beach Island	x	x							x	2
Black Ledges	x								x	3
Bradbury Island	x	x							x	4
Butter Island	x	x							x	5
Crow Island	x	x							x	6
Deer Isle	x	x							x	7
Dunham Point	x								x	8
Dunham Point Ledge	x								x	9
Eagle Island	x	x							x	10
Eaton Island	x	x							x	11
East Penobscot Bay	x	X							x	12
Fiddle Head	x								x	13
Great Spruce Head Island	x	x							x	14
Hardhead Island	x	x							x	15
Hog Island	x	x							x	16
Little Eaton Island	x								x	17
Middle Rock	x									18
Pickering Island	x	x							x	19
The Porcupines	x	x							x	20
Scott Island	x	x							x	21
Sheephead Island	x	x							x	22
Two Bush Island	x								x	23
Maine (Title)										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H) (9-83)

U.S. DEPARTMENT OF COMMERCE

REGISTRY NUMBER H-10177

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	9
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	6

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2					
ENVELOPES						
VOLUMES	5					
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List): TP-01115

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			3276
POSITIONS REVISED			
SOUNDINGS REVISED			396
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	70.5		70.5
VERIFICATION OF SOUNDINGS	197.0		197.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	84.0		84.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS		19.0	19.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		65.0	65.0
GEOGRAPHIC NAMES			
OTHER* Digitizing			20.0
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	351.5	84.0	455.5

Pre-processing Examination by J. Wilder	*Beginning Date* 11/7/85	*Ending Date* 11/19/85
Verification of Field Data by M. Sanders, E. Domingo	*Time (Hours)* 340.5	*Ending Date* 10/1/86
Verification Check by T. Jones, J. Stringham, J. Green, B. Olmstead	*Time (Hours)* 86.5	*Ending Date* 12/1/86
Evaluation and Analysis by I. Almacen	*Time (Hours)* 84.0	*Ending Date* 11/3/86
Inspection by D. Hill	*Time (Hours)* 4.0	*Ending Date* 12/3/86

☆ U.S. GOVT. PRINTING OFFICE 1983: 764-006/6061

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10177

1. INTRODUCTION

H-10177 was accomplished by the NOAA Ship PEIRCE in accordance with the project instructions OPR-A166-PE-85, dated March 28, 1985. Pertinent sections of the PMC OPORDER and the draft of AMC OPORDER-85 were required by the project instructions (Section 1.6) to supplement the field procedures for the Mini-Ranger Falcon 484 system being used for the first time during this survey.

This is a basic hydrographic survey of the northern section of East Penobscot Bay from Hog Island at latitude 44°17'15"N south to latitude 44°10'45"N. The western limit is defined by longitude 68°46'30"W in the south, up to the northeastern coast of Eagle and Butter Islands to the northern tip of Great Spruce Head Island and then along longitude 68°49'00"W to Black Ledges. To the east the survey extends to longitude 68°44'00"W. This survey also covers the waters around Pickering Island, Scott Island, Crow Island, Bradbury Island, Hardhead Island, Two Bush Island and The Porcupines. The shores are partly fringed with ledges and off-lying isolated reefs and rocks. The inshore areas surrounding the islands are generally rocky with sand and mud bottom farther offshore. Depths range from 0 to 241 feet, with deeper depths lying along the middle strip of the main ship channel. The waters of Penobscot Bay and vicinity are an active place for various commercial fishing activities.

Predicted tides based on the Portland, Maine gage were used during field processing. Tide correctors used for the final reduction of soundings reflect approved hourly heights zoned from Pulpit Harbor, Maine (841-4888).

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The TC/TI correctors were amended to include the vessel draft. Some depths in the velocity tables were updated to correspond to the appropriate velocity curves. Electronic correctors for the Mini-Ranger system were revised, taking into consideration the 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 Section F, G and attachments to 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 applicable shoreline manuscript is TP-01115 at a scale of 1:20,000 photographically enlarged to 1:10,000. This map is registered Class III, and originates from photography dated June, July and August 1982.

During this survey, only a portion of the shoreline and alongshore features were verified in accordance with the project instructions. Uncontrolled visual verification had been accomplished; however, elevation data cross referenced to the verified features were not provided. Therefore, many rocks shown on the smooth sheet do not show elevations.

3. HYDROGRAPHY

Hydrography within the limits of this survey, except in some areas mentioned subsequently in this report, is adequate to:

a. Delineate the bottom configuration, determine least depths and draw the standard depth curves

b. Show that there are no significant discrepancies or anomalies existing on this survey.

c. Determine that the survey had been properly controlled and soundings are correctly plotted.

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, and the AMC OPORDERS, and applicable portions of the PMC OPORDERS, except as noted in the Preprocessing Examination Report, dated December 4, 1985, and:

Many shoal depths on the prior surveys and the chart were not verified or disproven. See Sections 6 and 7 of this report for a listing of the depths not disproven that were brought forward from the prior surveys.

5. JUNCTIONS

H-10177 junctions with H-10173 (1985), to the west. This junction has been accomplished. There are no contemporary surveys to the north, south and east; however, comparison with charted depths reveals good agreement with the present survey.

6. COMPARISON WITH PRIOR SURVEYS

H-1028 (1869), 1:20,000
H-1261 (1873), 1:10,000
H-1321 (1875), 1:10,000
H-2840 (1906), 1:20,000

Comparison with the prior surveys is excellent (within 2 feet on critical shoals), considering datum shifts, the differences in the method of surveying used and the physical changes that have occurred in this area of Penobscot Bay since 1869. Although many shoals were developed and critical depths confirmed, many shoals shown on the prior surveys were not investigated for minimum depth. Therefore, the following depths have been brought forward from these priors:

Depth	Latitude N	Longitude W
H-1028		
36	44°11'35.5"	68°46'11.5"
43	44°11'13.5"	68°46'30.5"
37	44°11'51.0"	68°46'21.5"
H-1261		
34	44°13'24.0"	68°46'39.0"
37	44°14'31.0"	68°47'47.0"
60	44°16'23.5"	68°48'22.5"
39	44°16'52.0"	68°47'05.5"
57	44°16'46.5"	68°45'30.0"
24	44°16'58.5"	68°45'34.0"
54	44°15'05.0"	68°48'32.5"
34	44°14'26.0"	68°47'35.0"
55	44°14'46.0"	68°48'21.0"
61	44°14'51.0"	68°47'48.0"
H-1321		
5	44°15'13.5"	68°45'20.5"
30	44°15'01.5"	68°44'48.0"
31	44°14'55.0"	68°45'04.5"
18	44°13'46.5"	68°44'45.0"
22	44°14'06.0"	68°44'25.5"
18	44°14'03.0"	68°45'17.5"
13	44°16'21.5"	68°44'20.5"
14	44°16'13.5"	68°44'33.5"
73	44°13'18.0"	68°44'32.5"
63	44°13'08.0"	68°44'19.0"
18	44°12'26.5"	68°46'22.0"
H-2840		
21	44°15'16.5"	68°44'54.5"
48	44°14'22.5"	68°44'19.5"

An additional rock charted at latitude 44°16'57.5"N, longitude 68°45'54.0"W may originate with H-1261; however, the poor quality of the copy provided for comparison precludes a positive determination. This rock was not carried forward to the present survey but it is recommended in Section 7 that it remain as charted. It is further recommended here that the original copy of this prior survey smooth sheet be reviewed to determine if the rock

originates with that survey and if so, that this report be amended to state that H-1261 is superseded by the present survey only with the transfer of the subject rock.

There are no AWOIS items originating from prior surveys applicable to this survey.

With the transfer of the soundings listed above, H-10177 is adequate to supersede these prior surveys within the areas of common coverage.

H-2911(WD) (1907-1911), 1:20,000

A comparison of depths indicates that all but two soundings were either verified or superseded by the present survey. A 31-foot sounding at latitude 44°12'58.5", longitude 68°44'07.0"; and a 36-foot sounding at latitude 44°12'37.0", longitude 68°44'07.0, were neither verified or disproved by the present survey and have been carried forward to the present smooth sheet. All other depths are considered verified by similar depths on the present survey or in the case of a 17-foot sounding at latitude 44°12'19.5"N, longitude 68°46'10.5" superseded by a 16-foot sounding on the present survey. With the transfer of soundings to the present survey smooth sheet,H-2911WD is considered superseded.

7. COMPARISON WITH CHART

Chart 13305, 25th Edition, dated November 24, 1984; scale 1:40,000.
Chart 13309, 23rd Edition, dated March 24, 1984; scale 1:40,000.

a. Hydrography - Most charted information originates from the prior surveys discussed in Section 6 of this report. Other charted features originate from miscellaneous sources not readily ascertainable.

The following soundings originate with unknown sources and were neither verified or disproved. They should remain as charted.

Charted Depth	Latitude N	Longitude W
11	44°17'02.0"	68°45'48.5"
49	44°13'51.5"	68°45'34.0"

The charted ledge in the vicinity of latitude 44°17'08.0"N, longitude 68°47'10.0"W, connecting Fiddle Head and Hog Island, was portrayed on TP-01115 as a photogrammetric low water line connecting the two islands. This change was neither verified nor mentioned in the hydrographer's report. This feature should be charted as portrayed on this survey.

The following charted rocks were not investigated and not verified or disproven:

(1) Latitude 44°16'18.0"N, Longitude 68°44'04.0"W
(2) Latitude 44°15'44.0"N, Longitude 68°44'26.5"W

(3) Latitude 44°15'36.0"N, Longitude 68°44'27.5"W
(4) Latitude 44°15'34.0"N, Longitude 68°44'28.0"W
(5) Latitude 44°16'57.5"N, Longitude 68°45'54.0"W
(6) Latitude 44°15'42.0"N, Longitude 68°45'16.0"W

These rocks should be retained as charted. Note that the rock listed as item (6) above is not shown on Chart 13309.

The low water line connecting Butter Island with the Barred Islands charted as, reported 1965, at latitude 44°14'08"N longitude 68°48'04"W, is confirmed by TP-01115 with only a minor change in position. This feature should be charted as shown on the topographic survey.

There are no AWOIS items originating from miscellaneous sources applicable to the survey.

Except for the 11-foot and 49-foot soundings and the rocks noted in this section, this survey is adequate to supersede charted hydrography within the common area.

Geographic names appearing on the smooth sheet originate with and are plotted in accordance with this chart. It should be noted however, that within the limits of chart 13305 there are two groups of islands with the same name; i.e., Barred Islands. One group is located in the vicinity of latitude 44°14'00"N, longitude 68°48'30"W, while the other group is located not more than 2.3 nautical miles to the northwest at latitude 44°16'00"N, longitude 68°50'00"W. It is recommended that the history of these names as they appear on the chart be reviewed to ensure that a charting error has not occurred, and if a charting error has not occurred, that an alternate name be considered for at least one of the groups. A distinctly different name will prevent confusion when attempting to locate mariners calling for assistance and referencing their location relative to one or the other groups of islands.

There has been one danger to navigation report submitted to the Coast Guard and DMA for this survey. A copy is attached.

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

c. Aids to Navigation - Eagle Island Light located at latitude 44°13'03.24"N, longitude 68°46'05.88"W is the only fixed aid to navigation located in the area. Four (4) floating aids located within the limits of this survey were verified. These charted aids were found to be in good condition and adequately serve the purpose intended.

8. COMPLIANCE WITH INSTRUCTIONS

Except for the items noted in this report and in the Preprocessing Examination Report, H-10177 adequately complies with the project instructions mentioned in Section 1 of this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic hydrographic survey. Additional field work is recommended on a non-priority basis to verify or disprove the shoal depths and charted rocks listed in Sections 6 and 7 of this report. Due to a lack of adequate development, additional work is also required in the following areas:

Latitude N	Longitude W
44°17'00"	68°45'48"
44°17'02"	68°44'36"
44°15'27"	68°44'18"
44°15'27"	68°45'12"
44°14'15"	68°48'12"
44°13'09"	68°46'21"
44°13'09"	68°46'03"

Isagani A. Almacen
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
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10177

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

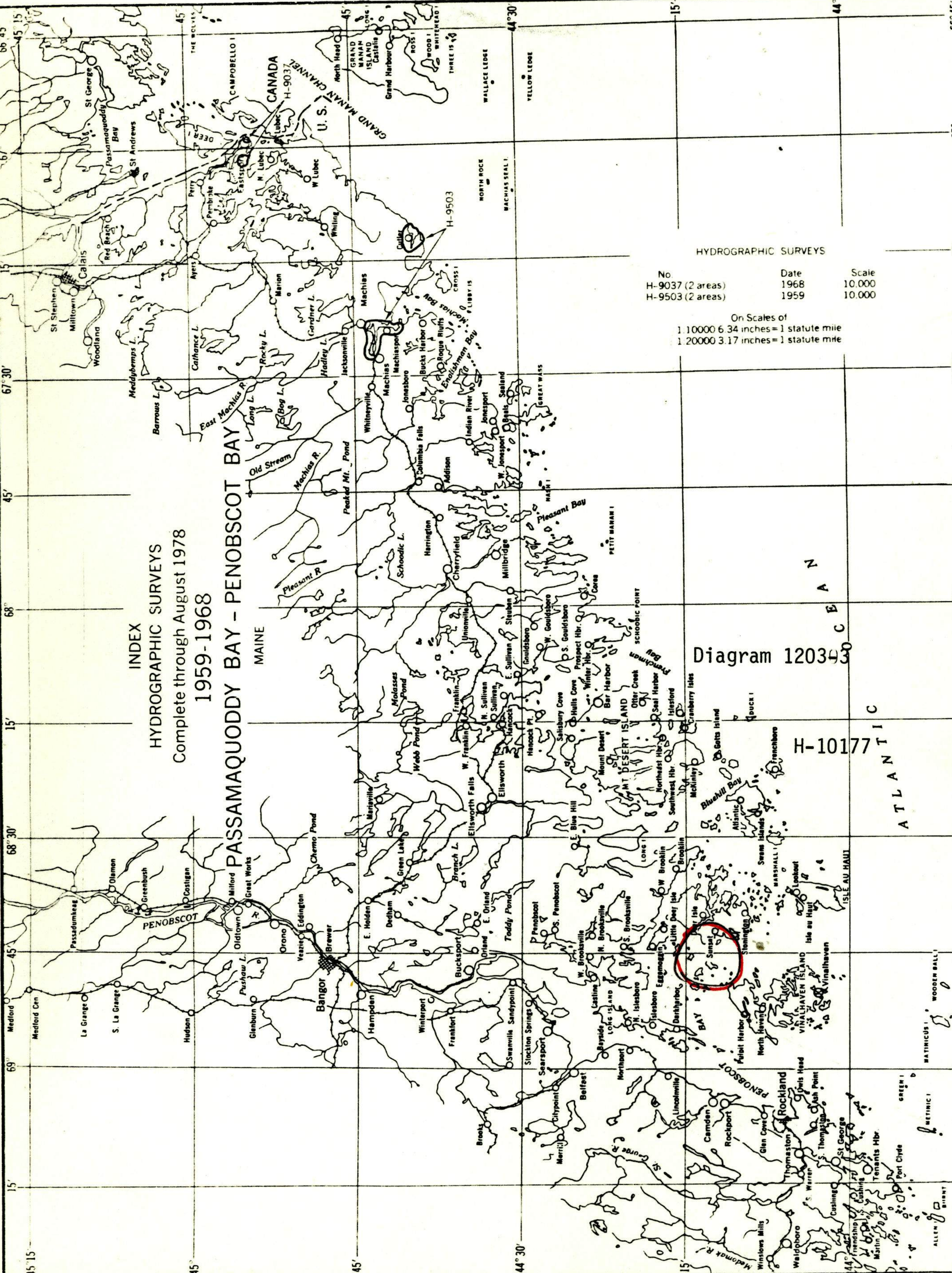
After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

12-12-86

Director, Pacific Marine Center (Date)

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 60 H



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NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10177

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
13309	1/12/88	T. Alexander	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 35 Fully appd, Revised soundings & curves
			in vicinity of survey.
			(Full) Part Before (After) Marine Center Approval Signed Via
13302	2-21-89	Barry Adams	Drawing No. 32 thru Ch 13309
13305	6-23-89	Russell P Kennedy	Full ~~Part Before After~~ Marine Center Approval Signed Via
			Drawing No. H35
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

Appd to Std 2-4-87 PSr