

10173

Diagram No. 311

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-10-1-85

Registry No. ... H-10173

LOCALITY

State Maine

General Locality .. Penobscot Bay

Sublocality Harborside to Great Spruce

Head Island

19 85

CHIEF OF PARTY
CDR A.E. Theberge

LIBRARY & ARCHIVES

DATE April 29, 1987

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

10173

ACPG
CHTS

13305

13309

13302

TO SIGN OFF SEE

"RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10173

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 10-1-85

State MaineGeneral locality Penobscot BayLocality Harborside to Great Spruce Head IslandScale 1:10,000 Date of survey 23 April to 12 July 1985Instructions dated March 28, 1985 Project No. OPR-A166-PE-85Vessel Launches PE-1 (2831), PE-2 (2832), PE-3, (2833)Chief of party Cdr. Albert E. ThebergeSurveyed by D. Waltz, D. Ross, V. Barnum, J. Hill, B. LakeSoundings taken by echo sounder, hand lead, pole Raytheon DSF 6000NGraphic record scaled by PEIRCE PersonnelGraphic record checked by PEIRCE PersonnelVerification by R. Shipley, J. Shofner Automated plot by PMC Xynetics plotter~~xxxxxx~~ Evaluation by I. AlmacenSoundings in ~~xxxxxx~~ feet at ~~MLLW~~ MLLWREMARKS: Marginal notes in black are by the evaluator. Separates are filed
with the hydrographic data.*AWASBURF ✓ 11/17/85 gsv**SC 4-7-97*

DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SURVEY
H-10173 (PE-10-1-85) 1985
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 Sheet "F" of the project sheet layout. ✓

B. AREA SURVEYED

The area surveyed is in Penobscot Bay, Maine, due east of Islesboro Island. The actual limits of the 1:10,000 scale survey are defined by these points: ✓

SE	44° ^{14 30} 13'50"N	NE	44° ^{20 45} 21'14"N
	68° ⁴⁵ 48'12"W		68° ^{49 20} 48'12"W
SW	44° ^{14 15} 13'50"N	NW	44° ^{20 40} 21'14"N
	68° ^{51 45} 55'00"W		68° ^{53 15} 55'00"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. ✓

All survey work was completed between April 23, 1985 (JD 113) and July 12, 1985 (JD 193.) ✓

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). 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 (PE-3) used the Raytheon Model DE-719B portable fathometer. All echo sounders performed satisfactorily except as noted on the fathogram or master printout. 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	115-181
PE-2	2832	Raytheon	DSF6000N	A105N	113
PE-2	2832	Raytheon	DSF6000N	A112	114-193
PE-3	2833	Raytheon	DE719B	5441	115-129, 170-193
PE-3	2833	Raytheon	DE719B	6221	133-136

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 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. 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/N177), 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.

	<u>Velocity Tape I</u>	<u>Tape II</u>	<u>Tape III</u>	<u>Tape IV</u>	<u>Tape V</u>
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
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To Be Used For Survey	H-10173 H-10177	H-10173 H-10177	H-10178	H-10173 H-10177	H-10178
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Martek TDC casts were taken at the following locations and dates:

<u>JD</u>	<u>Latitude</u>	<u>Longitude</u>
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
196	44/08/54	68/56/36
206	44/06/30	68/58/24

* Nansen Cast also

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

<u>VESNO</u>	<u>DATE</u>	<u>LOCATION</u>	<u>INSTRUMENT</u>
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 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 0.5 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 corrector tape.

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.

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--F-1, F-2, and F-3. 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.

<u>Development Name</u>	<u>Plat/Plon</u>	<u>Position Numbers</u>
Sabbathday Rock	44/40/09N 68/53/32W	9412-9417, 9403-9411 9830-9840
Ryder's Cove	44/20/16N 68/53/27W	9320-9331, 9267-9285 9306-9313, 9286-9291
Islesboro Harbor	44/18/37 68/54/01	9769-9801, 9210-9226 9365-9399
6 Ft. Sounding NW of Great Spruce Head Island	44/14/15N 68/50/00W	4047-4090
South of Green Ledge	44/16/38N 68/49/51W	4091-4106

West of Great Spruce	44/14/10N	3163-3165, 3274-3275
Head Island	68/50/46W	3173-3175, 5411-5416
		4027-4046

NW of Green Ledge	44/17/24N	5437-5478
	68/50/12W	

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.

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 mini-ranger equipment was used.

<u>VESNO</u>	<u>EQUIPMENT</u>	<u>S/N</u>	<u>JD</u>
2831	RANGE PROCESSING UNIT	D0018	115-135, 177-181
	RANGE PROCESSING UNIT	D0004	170-178
	CONTROL DISPLAY UNIT	D0059	115-135
	CONTROL DISPLAY UNIT	D0057	170-181
	RECEIVER/TRANSMITTER	C2096	115-135, 177-181
	RECEIVER/TRANSMITTER	D2128	170

2832	RANGE PROCESSING UNIT	D0017	113-170, 171, 193
	RANGE PROCESSING UNIT	D0004	170
	CONTROL DISPLAY UNIT	D0057	113-134
	CONTROL DISPLAY UNIT	D0059	169-193
	RECEIVER/TRANSMITTER	D2123	113-171, 193
	RECEIVER/TRANSMITTER	D2128	170
2833	RANGE PROCESSING UNIT	D0019	115-193
	CONTROL DISPLAY UNIT	D0062	115-193
	RECEIVER/TRANSMITTER	C2000	115-178
	RECEIVER/TRANSMITTER	E2965	193

REFERENCE STATIONS:

	<u>S/N</u>
CODE 1	G2058
CODE 2	G2059
CODE 3	G2057
CODE 4	G2065
CODE 5	C2088
CODE 6	C2091

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.

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 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 miniranger 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 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.

RPU D0018 PE-1 - R/T C1096

	<u>CODES</u>										
<u>JD</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
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

<u>JD</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
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

<u>JD</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
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

<u>JD</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
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	12.4	-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

	<u>VESNO 2831</u>			<u>PE-10-1-85</u>				<u>H-10173</u>	
<u>JD</u>	<u>CODE 2</u>	<u>CODE 3</u>	<u>CODE 5</u>	<u>CODE 6</u>	<u>CODE 7</u>	<u>CODE 8</u>	<u>CODE 9</u>	<u>CODE 10</u>	<u>CODE 11</u>
115			D=2.8	D=5.2	D=4.6	D=2.6			
116			R=0.9	R=0.4	R=0.3	R=0.6			
117			R=-0.7	R=-0.7	R=-0.5	R=-0.2			
118		D=1.2	D=2.1		D=2.5	D=3.1			
119			R=-1.2		R=-1.2	R=0.2			
135	No system check - bottom samples entire day.								
170	D=3.4	D=2.0		D=3.5	D=1.9	D=3.1	D=9.8		
136		D=3.6	D=2.8	D=3.0		D=0.7			
177			R=0.1			R=-0.6	R=0.9		
177							D=5.8		
178			D=1.9			D=2.0			
181	D-3.2		D-1.0	D-2.5			D-2.8		

ABSTRACT OF DAILY SYSTEM CHECKS

VESNO 2832

PE-10-1-85

H-10173

<u>JD</u>	<u>CODE 2</u>	<u>CODE 3</u>	<u>CODE 5</u>	<u>CODE 6</u>	<u>CODE 7</u>	<u>CODE 8</u>	<u>CODE 9</u>	<u>CODE 10</u>	<u>CODE 11</u>
113			D=2/8		D=3/2	D=3.4			
114			R=2.2	R=2.6	R=1.1	R=0.8			
115			R=2.9	R=2.8	R=0.7	R=0.6			
116			R=0.6	R=-0.6	R=0.1	R=0.6			
117			R=-0.6		R=0.7	R=0.6			
121		D=0.0	D=4.4		D=3.1	D=2.6			
122		D=4.0	D=1.5	D=0.8	D=5.0				
133			R=3.2		R=0.4	R=-0.1	R=2.9		
134		R=0.1			R=-0.5	R=-0.2	R=0.7		
136	D=4.0	D=3.7	D=1.6		D=2.5	D=2.6	D=3.9		
169	R=-0.4				R=-0.6	R=-0.2			
170									
171				D=0.6	D=1.22	D=1.8	D=2.8		
193	R=0.4		R=0.4	R=0.8		R=-0.6	R=L.0	R=-0.3	R=-0.8
193							D=4.2	D=10*	D=10*

*Poor quality systems check--much "skip" of miniranger rates.

ABSTRACT OF DAILY SYSTEM CHECKS

VESNO 2833

PE-10-1-85

H-10173

<u>JD</u>	<u>CODE 2</u>	<u>CODE 3</u>	<u>CODE 5</u>	<u>CODE 6</u>	<u>CODE 7</u>	<u>CODE 8</u>	<u>CODE 9</u>	<u>CODE 10</u>	<u>CODE 11</u>
115			R=+1.3		R=-1.5	R=1.3			
116			D=1.0						
117			R=0.2		R=-0.2	R=0.2			
118			D=1.3		D=2.6	D=3.7			
119	No calibration.								
120			R=1.1	R=1.8	R=0.9				
122		R=0.3	R=-0.4		R=0.3				
129		R=1.9	R=3.0	R=2.4	R=-1.4				
133	R=1.4		R=0.0		R=0.1	R=-0.2	R=1.4		
170		D=3.2		D=1	D=1				
171		D=2.6		D=1.7					
176			D=2.6	D=2.9		D=2.0			
177		D=0.4						D=1.4	
178									
193								D=2.1	D=0.5

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 OPORTER 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 01110, TP 01111, TP 01114 and TP 01115. Rocks and other shoreline features lying near the shoreline were verified by visual inspection. Off-lying features were verified and positioned by hydrographic methods. 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.

Notes to hydrographer prints were included for some shoreline manuscripts. The items noted on these prints are resolved as follows:

(1) TP 01111. Charted ~~bare rock~~^{islet} not shown on the shoreline manuscript, at approximate position $44^{\circ}20.2'N$, $68^{\circ}49.5'W$. No trace of this rock was seen by the hydrographer during visual inspection of the shoreline. Reference Position Numbers 072 to 075. Recommend removing the feature from the chart since it was not seen by the hydrographer and does not appear on the registered shoreline map. *concur.*

(2) TP 01110. Notes to hydrographer indicates that stone cribs are charted on the 22nd edition of Chart 13309 and do not appear on the shoreline manuscript at approximate position $44^{\circ}20.4'N$, $68^{\circ}53.0'W$. Chart 13309 (23rd edition) shows no cribs but pier ruins instead at this position. This agrees with the shoreline manuscript. The hydrographer found pier ruins at this position, as indicated on the field sheet (Position Number 9013). Recommend retain pier ruins as charted. *concur.*

(3) TP 01110. Charted submerged rock not shown on the shoreline

manuscript. The hydrographer found the rock as shown on the field sheet and "Sabbathday Rock" enlargement at 1:2500 scale. Reference position Numbers 9404-9411. *A rock covered 6 ft. @ MLW was found by the hydrographer.*

I. CROSSLINES

Crosslines were run according to the Hydrographic Manual, Fourth Edition. 23.8 linear nautical miles of crosslines were run, which are equivalent to 6 percent of the total mainscheme miles acquired. Crossline soundings compared well with mainscheme hydrography, agreeing to within 1-3 feet on all sheets. ✓

J. JUNCTIONS

Junctions were made on sheet F-1 with H-10098 (1:10,000 scale dated 1983) to the southwest and H-10131 (1:10,000 scale dated 1984) to the north. Sheet F-1 junctioned well with both surveys, agreeing to within 1-3 feet.

*See EVAL RPT
sec. 5.*

Junctions were made on sheet F-2 with H-10098 (1:10,000 scale dated 1983) to the south. Sheet F-2 junctioned well with both surveys agreeing to within 2 feet with H-10098 and 1-4 feet with sheet H-8178, (1:20,000 scale dated 1954).

Junctions were made on sheet F-3 with H-8178 to the north and west. Soundings from F-3 agreed to within 1-3 feet of H-8178.

K. COMPARISON WITH PRIOR SURVEYS

Only one presurvey review item was required for this survey. This was AWOIS Item Number 3013 for OPR-A166-PE-85. The item is a visible wreck with the bow pointing toward shore at 44°18'16.1"N, 68°53'54.6"W. The source of the item is 1941 photography (T8021). Survey requirements were a visual search at chart datum. This was done by Lt. Cdr. Waltz, Operations Officer, on 26 April 1985, (JD 116) with negative results. No trace of any wreck was seen at low tide. Recommend removal of the visible wreck symbol from the chart. Do not chart any type of wreck or obstruction symbol in its place.

*See EVAL RPT
sec. 6 d 7a*

concur.

Comparisons were made to prior surveys H-1143 and USCS H-1261 on sheet F-1. Survey USCS H-1261 (1:10,000 scale dated 1873-1905) covers only the eastern shoreline section of this sheet, along Cape Rosier. Soundings agreed to within 1-4 feet of this prior survey. The rocky nature of this area made for little change over the years on all 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. Prior survey H-1143 (1:20,000 scale dated 1871-1902) covers the entire area of sheet F-1. Soundings agreed to within 1-5 feet of this prior survey. Any larger difference is probably due to unavoidable transfer error (from 1:100,000 to 1:20,000).

*See EVAL RPT
sec. 6.*

Comparisons were made to prior surveys H-1143 and USCS H-1261 on sheet F-2. Survey USCS H-1261 covers the eastern third of this sheet--east of a line from Cape Rosier due south. Soundings agreed to within 1-5 feet of this prior survey. No changes in contours were noted. Survey H-1143 covers most of sheet F-2. Soundings agreed to within 1-5 feet of this prior survey. No anomalies noted.

*See EVAL RPT
sec. 6.*

Comparisons on sheet F-3 were made to prior surveys USCS H-1261 and H-1143. Survey USCS H-1261 covers the area east of Colt Head and Horsehead Islands. Soundings agreed to within 1-4 feet with this prior survey. Survey H-1143 covers the area west of Colt Head and Horsehead Islands. Soundings agreed to within 1-4 feet of this older survey. No anomalies noted in comparison to either of these prior surveys.

See EVAL RPT.
SEC. 6.

L. COMPARISON WITH THE CHART

Comparisons were made with Chart 13305, 25th Edition, November 24, 1984, and Chart 13309, 23rd Edition, March 24, 1984. Both charts are at a scale of 1:40,000. Chart 13309 covers the northern two-thirds of "F" sheet (sheets F-1 and F-2). Chart 13305 covers the southern third of this survey, (sheet F-3).

See EVAL RPT.
SEC. 7.

Discrepancies from Chart 13309 noted are listed as follows:

- | | | |
|-----|--|---|
| (1) | 44°20'09"
68°51'27" | 108 ft. charted, surveyed at ⁹⁶⁻⁹⁷ 97 ft.
Recommend charting 97 ft. according to present survey. |
| (2) | 44°20'18"
68°50'48" | 117 ft. charted, surveyed at 107 ft.
Recommend charting 107 ft. |
| (3) | 44°20'05"
68°49'52" | 222 ft. charted, surveyed at ¹⁵³⁻¹⁷¹ 171 ft.
Recommend charting 171 ft. according to present survey. |
| (4) | 44°19'33"
68°49'52" | 150 ft. charted, surveyed at ¹²⁷⁻¹³¹ 140 ft.
Recommend charting 140 ft. according to present survey. |
| (5) | 44°19'00"
68°49'52" | 198 ft. charted, surveyed at 89 ft.
Recommend charting 89 ft. <i>concur.</i> |
| (6) | 44°18'53"
68°53'27" | 36 ft. charted, surveyed at ³⁷ 48 ft.
Recommend charting 48 ft. since no shoaling indication found. <i>based on present survey.</i> |
| (7) | 44°20'18"
68°52'30"
₄ | 38 ft. charted, surveyed at 58 ft.
Recommend charting 58 ft. since no shoaling indication found. <i>Do not concur. Retain as charted</i> |

All other charted soundings compared with Sheet F-1 to within 1-3 feet. Discrepancies from Chart 13309 on Sheet F-2 are listed as follows:

- | | | |
|-----|---|--|
| (1) | 44°18'30"N
68°49'43"W | Charted as 228 ft., surveyed at ¹³³⁻¹⁶⁶ 177 ft.
Recommend charting at 177 ft. according to present survey. |
| (2) | 44°16'55"N
68°49'32" | Charted at 44 ft., surveyed at ⁵³⁻⁶³ 64 ft.
Recommend charting 64 ft. from present survey. <i>Do not concur. Retain as charted.</i> |
| (3) | 44°17'26"N
68°49'36"W
₅₄ | Charted at 23 ft., surveyed at 33 ft. <i>vicinity of 24-foot sounding.</i>
Recommend charting 33 ft. from present survey. <i>according to</i> |

All other charted soundings compared with Sheet F-2 to within 1-4 feet. Discrepancies from Chart 13305 noted on Sheet F-3 are listed as follows:

- | | | | |
|-----|---------------------------|---|---------|
| (1) | 44°15'48"N
68°50'45"W | Charted at 30 ft., surveyed at 45 ft.
Retain as charted. | concur. |
| (2) | 44°15'15"N
68°51'15" W | Charted as 33 ft., surveyed at 53 ft.
Recommend charting soundings from this survey.
<i>retain as charted.</i> | |

All other charted soundings compared with Sheet F-3 to within 1-3 feet.

All discrepancies between the chart and this survey appear to be because of either poor positioning and depth control on the old source surveys, or because of enlargement error from 1:40,000 to 1:20,000 scale. Many discrepancies arise on steep slopes in this very rugged area. *SEE EVAL RPT. SEC 6 & 7*

M. ADEQUACY

This survey is ~~complete and~~ adequate to supersede all prior surveys for charting purposes. *SEE EVAL RPT. SEC. 9.*

N. AIDS TO NAVIGATION

The only aid to navigation within this survey area is Green Ledge Light. This was included in a third order traverse done to establish additional horizontal control in the area. Its U.S. Coast Guard Light List position was verified as correct and this light was used as an electronic control station for this survey. (See signal tape listing.) ✓

Charted as:	Charted position	U.S. Light List, Volume I	<i>SEE EVAL RPT</i>
Green Ledge Lt	44°17.4'N, 068°49.7'W	#247	<i>SEC. 7(c)</i>

Project instructions included three aids to navigation/landmarks not actually within the project area to be positioned. Time and operational demands did not permit obtaining third order positions on these objects.

All of the floating aids 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. ✓

O. STATISTICS

<u>VESSEL</u>	<u>NUMBER OF POSITIONS</u>	<u>INM HYDROGRAPHY</u>
2831	315 401	33.5
2832	2460 2343	376.2
2833	80 668	9.0

✓

Bottom samples:	90
TDC casts:	14

Nansen casts: 1
Tide stations: 2
Current stations: 0
Magnetic stations: 0

P. MISCELLANEOUS

This survey found the area in Penobscot Bay to be lined with steep cliffs and rocky coves. The bottom nature followed this same pattern, exhibiting sharp pinnacles throughout the bay. Stations on rocky islands surrounded by kelp beds often had only one small pebble beach suitable for boat landings, and some islands had no real beach at all. Boats and equipment suffered the rigors of this environment. The rocky, up and down nature of Penobscot Bay, along with a large tidal range (10 feet) created a need for much small boat hydrography. Hydrography in shallow coves had to be run at high tides and detached positions on rocks and other obstructions had to be acquired at low tide.

All bottom samples were submitted to the Smithsonian Institution.

Q. RECOMMENDATIONS

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.

SEE EVAL RPT
SEC. 6 & 7 & 9.

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
Horizontal Control Report.

Respectfully submitted:

Victoria A. Barnum

Victoria A. Barnum, Lt. (jg), NOAA

PENOBSCOT BAY SIGNAL TAPE LISTING

H-10177

OPR-A166-PE-85

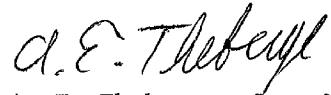
003	6	44	20	02633	068	49	31947	250	0012	000000
006	6	44	21	33822	068	51	59750	250	0002	000000
007	6	44	17	24345	068	49	44228	250	0006	000000
008	6	44	18	46210	068	54	01968	250	0000	000000
009	6	44	15	32220	068	54	27326	250	0001	000000
010	6	44	18	16142	068	53	15169	250	0027	000000
011	6	44	13	51521	068	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

<u>Station Name (only those used)</u>	<u>Source</u>	<u>Use for Survey Sheet</u>
Orrs Hill, 1911	Published	F
Flag, 1982	N/MOA22	F
Green Ledge, 1983	AMC/NM	F, N
Isles, 1982	N/MOA22	F
Dark, 1982	N/MOA22	F, N
Hewes, 1982	N/MOA22	F
Pen, 1982	N/MOA22	F
Green Ledge RM 1, 1985	Peirce	F
Spectacle Island, 1872	Published	F, N
Pumpkin Island Light House, 1862	Published	F, N
Hard, 1982	N/MOA22	N
Chensey, 1982	N/MOA22	N
Eagle Island Light House, 1861	Published	N
Dun, 1982	N/MOA22	N
Colt, 1985	Peirce	F, N
Hog, 1985	Peirce	F, N
Barred, 1985	Peirce	F, N
Sand, 1985	Peirce	F, N
Little, 1985	Peirce	F, N

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, Jr., 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: 3/31/86

Marine Center: Pacific

OPR: A166

Hydrographic Sheet: H-10173

Locality: East Penobscot Bay, Maine

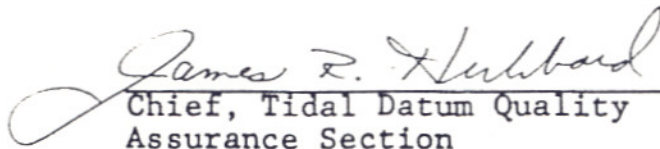
Time Period: April 23 - July 12, 1985

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

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


Chief, Tidal Datum Quality
Assurance Section

GEOGRAPHIC NAMES

H-10173

Name on Survey	ON CHART NO. 13305-13309 ON PREVIOUS SURVEY NO.									
	A	B	C	D	E	F	G	H	K	
Ames Cove									01115	1
Barred Islands	13305 13309								01115	2
Beach Island	13305 13309								01115	3
Billys Shore									01115	4
Black Ledges	13309								01115	5
Bounty Cove	13309								01114	6
Cape Rosier	13309								01111	7
Colt Head Island	13305								01114	8
Coombs Cove	13309								01110	9
Decker Point	13309								01110	10
East Penobscot Bay	13305 13309								01115	11
Fire Island									01114	12
Great Spruce Head Island	13305								01115	13
Green Ledge	13309								01115	14
Harborside	13309									15
Head of the Cape	13309								01115	16
Hewes Ledge	13309								01114	17
Hewes Point	13309								01114	18
Horsehead Island	13305								01114	19
Islesboro	13309								01114	20
Islesboro Harbor	13309								01114	21
Islesboro Island	13309								01114	22
Little Spruce Head Island	13305									23
Northeast Point									01114	24
North Islesboro	13309								01110	25

Manuscripts TP-

GEOGRAPHIC NAMES

H-10173

Name on Survey	A	B	C	D	E	F	G	H	I
	ON CHART NO.	ON PREVIOUS SURVEY	CON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND MANALLY ATLAS	U.S. LIGHT LIST	Manuscripts TP-
Maine, Penobscot Bay, Harborside to Great Spruce Head Island	13305	13309							
Orr Cove	13309							01115	1
Penobscot Bay	13305							01110	
	13309							01114	2
Pond Island	13309							01115	3
Redman Beach								01115	4
Resolution Island	13305							01114	5
	13309								
Ryder Cove	13309							01110	6
Sabbathday Harbor	13309							01110	7
The Bluffs								01110	8
The Narrows								01114	9
Thornplum Point								01114	10
Western Island	13309							01115	11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

HYDROGRAPHIC SURVEY STATISTICS

H-10173

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	7

DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES	7				
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List): TP-01110, TP-01111, TP-01114, TP-01115

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): 13305, 13309

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			3432
POSITIONS REVISED			302
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	145.0		145.0
VERIFICATION OF SOUNDINGS	238.5		238.5
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	60.0		60.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS		9.5	9.5
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		30.0	30.0
GEOGRAPHIC NAMES			
OTHER* Digitizing			29.0
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	443.5	39.5
			512.0

Pre-processing Examination by
J.D. WilderBeginning Date
9/27/85Ending Date
12/05/85Verification of Field Data by
R. Shipley, J. ShofnerTime (Hours)
1/28/86Ending Date
1/21/87Verification Check by
J. Stringham, B. Olmstead, J. GreenTime (Hours)
108.0Ending Date
1/23/87Evaluation and Analysis by
I. AlmacénTime (Hours)
39.5Ending Date
1/21/87Inspection by
D. HillTime (Hours)
2Ending Date
2/4/87

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10173

1. INTRODUCTION

H-10173 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 OORDER and the draft of AMC OORDER-85 were required by the project instructions (section 1.6) to supplement the field procedures for the Mini-Ranger Falcon 484 system used on this survey.

This is a basic hydrographic survey of Penobscot Bay, east of Islesboro Island, extending from the northern tips of Great Spruce Head Island and Little Spruce Head Island north to Harborside at latitude 44°20'45"N. It also includes Sabbathday Harbor and Islesboro Harbor and covers the area around Western Island, Barred Islands, Beach Island, Resolution Island, Horsehead Island and Colt Head Island. Penobscot Bay is mostly lined with steep cliffs and rocky coves. The shores are partly covered with ledges and off-lying isolated reefs and rocks with patches of pebble beaches. The bottom is generally made up of mud with depths ranging from 0 to 265 feet.

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 TRA field 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 positioning 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 manuscripts are TP-01110, TP-01111, TP-01114 and TP-01115 at scale 1:20,000 photographically enlarged to the scale of the survey. These maps are registered Class III, and originate from photography dated June, July and August 1982.

On this survey, portions of the shoreline and alongshore features were not verified in accordance with the project instructions. Although uncontrolled visual verification had been accomplished during this survey, elevation data cross referenced to the verified features were not provided by the hydrographer. As a result, some of the rocks shown on the smooth sheet were transferred directly from the manuscripts and 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, the AMC OPORDER and portions of the PMC OPORDER except as noted in the Preprocessing Examination Report, dated December 4, 1985, and as follows:

- a. Several 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 or recommended for retention as charted.
- b. AWOIS Item 02549 which is also charted as a reported position approximate feature was not investigated and its disposition was not discussed in the hydrographer's report.

5. JUNCTIONS

H-10173 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-8178	1954	1:20,000	West
H-10098	1983	1:10,000	West
H-10131	1984	1:10,000	North
H-10177	1985	1:10,000	East

Surveys H-8178, H-10098 and H-10131 had been previously processed and forwarded for charting. Office file copies of these surveys were used for comparison. Soundings are in good agreement; however, portions of the depth curves, particularly on H-8178, should be adjusted to conform with H-10173.

H-10177 was recently processed and forwarded for charting; however, a preliminary junction comparison was made prior to its submission and later confirmed using a file copy of the survey. The junction has been adequately effected.

There are no contemporary surveys to the south of H-10173. Comparison with charted depths along the southern limits of the survey reveals good agreement.

6. COMPARISON WITH PRIOR SURVEYS

H-1261 (1873-1905), 1:10,000

H-1143 (1871-1902), 1:20,000

H-2840 (1906), 1:20,000

Comparison with the prior surveys is satisfactory (within 2 feet on critical shoals). Datum shifts, the differences in the method of surveying used, the steepness of bottom profiles along the coast and the physical changes that have occurred in this area of Penobscot Bay since 1873 are the important factors considered during comparison. Although some shoals were developed and critical depths confirmed, several other shoals shown on the prior surveys still were not investigated and minimum depths determined. Therefore, the following depths have been brought forward from these priors:

<u>Depth, ft.</u>	<u>Latitude N</u>	<u>Longitude W</u>
H-1143		
39	44°16'19.5"	68°50'04.0"
38	44°20'19.0"	68°52'34.0"
26	44°20'40.0"	68°52'13.5"
30	44°15'47.5"	68°50'44.0"
H-1261		
26	44°14'33.0"	68°49'46.5"
56	44°14'33.0"	68°50'24.0"
56	44°14'34.0"	68°50'13.0"
45	44°14'26.5"	68°50'51.0"
36	44°15'18.0"	68°48'51.0"
42	44°16'01.5"	68°49'42.5"
65	44°16'12.5"	68°49'48.0"
45	44°15'05.0"	68°50'55.0"
4	44°17'25.0"	68°48'53.5"
27	44°17'33.5"	68°50'00.5"
29	44°17'07.0"	68°49'15.5"
17	44°15'55.0"	68°50'18.0"
44	44°16'57.0"	68°49'32.5"
H-2840		
6	44°14'28.5"	68°49'51.5"

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

With the transfer of the soundings listed above, H-10173 is adequate to supersede these prior surveys for the areas of common coverage.

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 charted soundings originate from unknown sources and were neither verified or disproven during this survey. They should be retained as charted.

<u>Charted Depth, ft.</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Chart</u>
33	44°15'12.0"	68°51'14.0"	13309
39	44°15'47.5"	68°50'44.0"	13309
48	44°16'37.0"	68°49'17.0"	13305
45	44°15'41.0"	68°52'00.0"	13305

The rock charted at latitude 44°15'28.0"N, longitude 68°51'37.0"W east of Resolution Island was not verified or disproven on this survey. This rock should be retained as charted.

ANOIS Item 02549, rocks reported in 1966, at latitude 44°15'49"N, longitude 68°49'44"W was not investigated during this survey. This feature is presently charted as "Rks rep (1966) PA". It should be retained as charted.

ANOIS Item 03013, a visible wreck, at latitude 44°18'26.1"N, longitude 68°53'54.6"W, was also investigated in 1983 on H-10098, where a 12-foot beam believed to be a portion of what was left of the wreckage was found. However, on this survey a visual search at low tide did not indicate any trace of the wreckage. This feature was located well above the low water line and the investigation is considered adequate for disproof. It is recommended that this feature be removed from the chart.

Except for the charted soundings and the rocks previously 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 these charts. It should be noted, as previously mentioned in the report for survey H-10177, that on chart 13305 there are two groups of islands with the same name, i.e., Barred Islands. The chart of the area should be reviewed to ensure that the proper geographic names have been applied.

There have been no danger to navigation reports submitted to the Coast Guard or DMA for this survey.

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

c. Aids to Navigation - Green Ledge Light 4 located at latitude 44°17'24.34"N, longitude 68°49'44.23"W is the only fixed aid to navigation in the area and was located to Third Order specifications. Two (2) floating aids located within the limits of this survey were verified as charted. These aids were found to be in good condition and adequately serve the purpose intended.

There are no overhead cables, pipelines, or bridges within the limits of this survey.

8. COMPLIANCE WITH INSTRUCTIONS

Except for the items noted in this report and in the Preprocessing Examination Report, H-10173 adequately complies with the project instructions mentioned in Section 1 of this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic hydrographic survey; however, 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.


Isagani A. Almacén
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-10173

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.

Thomas W. Pielmeier 2/13/87
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

[Signature] 2/13/87

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.

Robert L. Sargent 2/13/87
Director, Pacific Marine Center (Date)

ADDENDUM TO EVALUATION REPORT FOR H-10173

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 +0.286 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.

James W. Pridmore 4/9/87
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

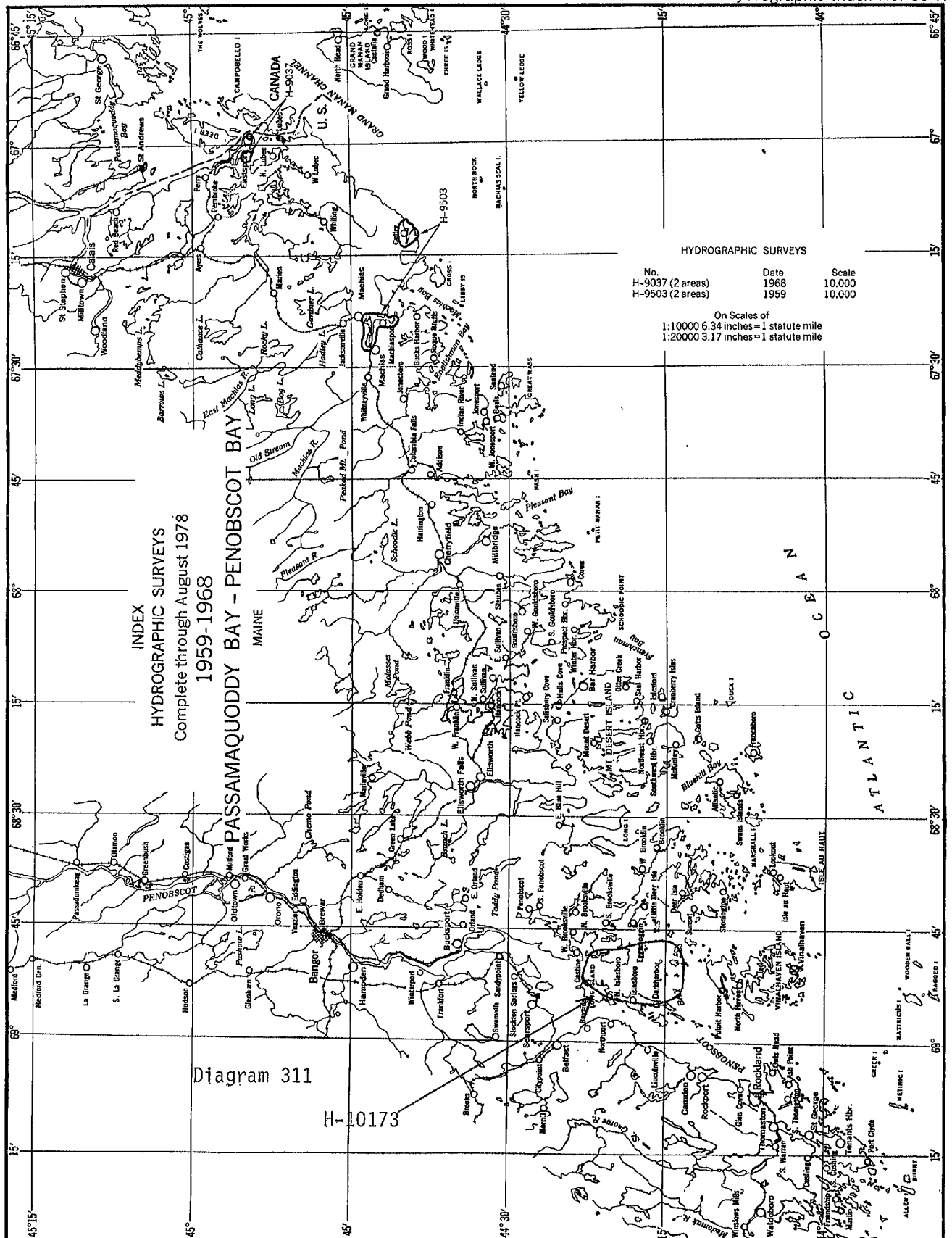
Larry P. Mordock 4/10/87

Approved:

Robert L. Sandert 4-13-87
Director, Pacific Marine Center (Date)

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

Hydrographic Index No. 60 H



FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10173

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.

[illegible]

Appl. to Std's 4-30-87 *pm*