

10157

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 ... Basic Hydrographic
Field No. HFP-10-4-84
Registry No. H-10157

LOCALITY

State Maine
General Locality .. Penobscot River
Sublocality Leaches Point & Verona
..... Park to Treat Hill
..... 19 84-85

CHIEF OF PARTY

..... CDR. A.E. Theberge & LCDR. R.W. Jones

LIBRARY & ARCHIVES

DATE February 10, 1987

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

ALPG
CHT

13309 - TO SIGN OFF SEE
"RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10157

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form,
filled in as completely as possible, when the sheet is forwarded to the Office.

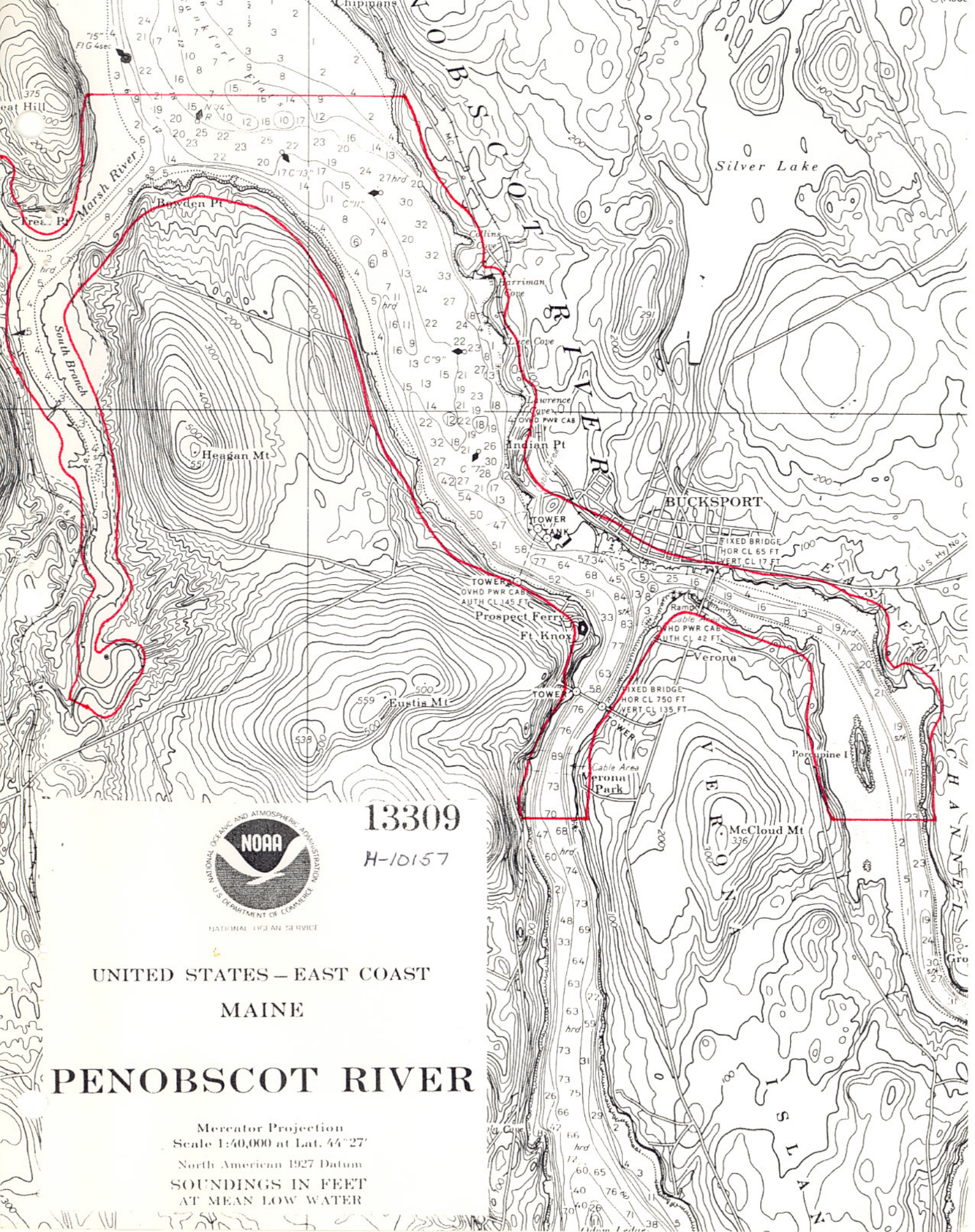
FIELD NO.

HFP-10-4-84

State MaineGeneral locality Penobscot RiverLocality Leaches Point and Verona Park to Treat HillScale 1:10,000Date of survey 11 Sept -30 Oct 1984
22 May -23 July 1985Instructions dated 20 March 1984, 3 April 1985 Project No. A166-MI/HFP-84
A166-PE-85Vessel PEIRCE, HFP-3Chief of party A.E. Theberge, R.W. JonesSurveyed by VDR, DBE, TMR, RTL, FWR, JPO, HH, LWSoundings taken by echo sounder, hand lead, poleGraphic record scaled by VDR, DBE, TMR, RTL, FWR, JPO, HH, LWGraphic record checked by VDR, DBE, TMR, RTL, FWR, JPO, HH, LWVerification J. W. ShofnerAutomated plot by PMC Xynetics PlotterEvaluation C.R. DaviesSoundings in ~~XXXXXX~~ feet at ~~XXXXXX~~ MLLW and tenths at MLLW

REMARKS: Times are UTC. North section of sheet surveyed by HFP-3 in 1984;
South section of sheet surveyed by PEIRCE detached party in 1985.
Marginal notes in black by evaluator. Separates are filed with the
hydrographic data.

SL 4-21-97Aubis SURF 3/2/89 ECM





**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

National Ocean Service
NOAA Ship PEIRCE S-328
439 West York Street
Norfolk, Virginia 23510

March 3, 1986

TO: N/MP021

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

SUBJECT: H-10157

Attached is an amended copy of the descriptive report to accompany survey H-10157.

Verification of aerotriangulation positions was performed by G. Frederick and J. Shea of AMC before HFP-3 began running hydrography. The project instructions do not state that proof of verification be included in the descriptive report. Contact the aforementioned people for more information.

Copies of the MiniRanger baseline calibrations have been included with the survey data. NOTE: The title page for each day's field work in the sounding volumes lists all serial numbers for the equipment used for that day. Do not compare baseline correctors for the wrong equipment.

See Section D of the descriptive report for an explanation of the problem taking bar checks. A sketch is attached to ensure proper visualization.

The velocity curve has been plotted at the same scale as the Martek cast curve obtained by the ship during the same time period for comparison. A new velocity tape has been made.



Descriptive Report
To Accompany Hydrographic Survey
H-10157

Scale: 1:10,000
Cdr. Albert E. Theberge
Chief of Party

A. PROJECT ✓

This survey was accomplished under Project Instructions OPR-A166-MI/HFP-84, Penobscot Bay and River, Maine, dated 20 March 1984; Hydrographic Project Instructions OPR-A166-PE-85, Penobscot Bay, Maine, dated 28 March 1985; Change No. 4, dated 3 April 1985; and Change No. 5, dated 17 June 1985. This survey was started by HFP-3 in 1984 and continued in 1985 by a detached party composed of two people from the PEIRCE and two people from HFP-3.

B. AREA SURVEYED ✓

The area surveyed by HFP-3 was the Penobscot River, Maine. The survey starts south of the town of Winterport, Maine in the Frankfort Flats section of the river. The survey continued south to just north of the town of Bucksport, Maine in 1984. The survey is bounded by the following points: *See EVAL Report Section 1*

Latitude: N44°36'30"
N44°35'00"
N44°33'00"
N44°36'30"

Longitude: W068°49'00"
W068°48'30"
W068°52'00"
W068°52'30"

This survey was conducted from 11 September 1984 (Day 255) to 3 October 1984 (Day 277) inclusive. The area surveyed in 1985 begins where HFP-3 stopped in 1984, north of the town of Bucksport near latitude N44°34'45". The PEIRCE field party continued surveying south and east, covering both eastern and western channels of the Penobscot River around both sides of the north end of Verona Island down to near latitude N44°33'00". This work was performed between 22 May 1985 and 17 June 1985. Bottom samples were taken on 23 July 1985.

The hydrography in the Marsh River was rerun by the PEIRCE field party at high tide as far south as latitude N44°34'45", the limit of visibility for horizontal control and where the boat began dragging bottom.

C. SOUNDING VESSELS ✓

All soundings obtained in 1984 for this survey were obtained on NOAA launch 0517 (EDP # 0517). All 1984 survey records are annotated with the vessel number 0517. All soundings obtained in 1985 for this survey were obtained on PEIRCE survey launch PE-3, VESNO 2833. All 1985 survey records are annotated with VESNO 2833.

Bottom samples were taken by PE-2, VESNO 2832 and PE-3 on 23 July 1985, Day 204.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The following Raytheon fathometer was used during the 1984 portion of the survey:

Day 255-277 Model #719C Serial # 5881

No unusual problems were encountered with this equipment. The fathometer was monitored continuously while sounding and was under constant adjustment to insure that no initial corrections were necessary.

Settlement and squat tests on launch 0517 were run on 10 July 1984 at Winterport, Maine (latitude N44°38', longitude W68°50'). The results of these tests are included in the appendices to this report. Settlement and squat corrections will be applied by the TC/TI tape during plotting of the smooth sheet at the Pacific Marine Center and were not applied to the field sheets.

Velocity and instrument corrections were determined by bar checks. One velocity table was constructed from the bar check data. A Velocity Corrector tape is provided with the survey data for smooth plotting by the Marine Center. Velocity correctors were not applied during the field processing of the 1984 data. The lengths of chain on the bar were checked on 31 May 1984 and 25 October 1984. The results of this inspection showed that the chain was accurately marked. *Velocity correctors were determined by Marked Asto.*

The soundings on the field sheet have been reduced for tides using the daily highs and lows from the Winterport, Maine tide gauge (station #841-4781). The tidal height and time were entered into the computer using AM500 to interpolate tide correctors. A request for actual tides was forwarded to N/OMS123 on 31 January 1985. These tides will be used by the Marine Center for the final plotting of the data. *See Section 1 of Final Report.*

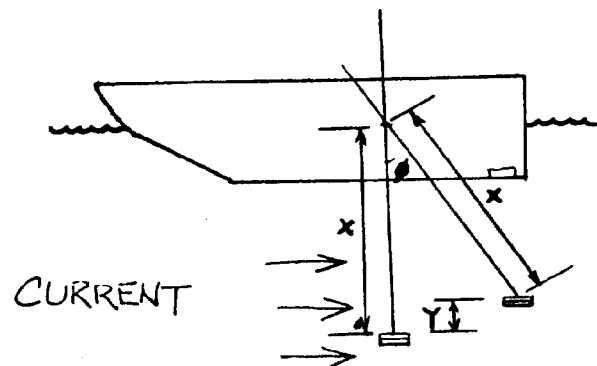
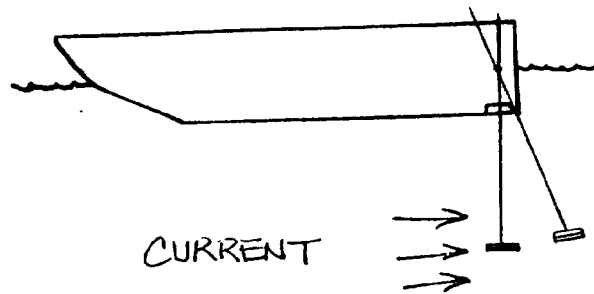
Raytheon fathometers, model 719B, were used for all 1985 soundings taken by PE-3 for this survey.

<u>Day</u>	<u>S/N</u>
142-143	6212
154-158	5441
162-168	6212
204	5441

PE-2, VESNO 2832 used a Raytheon DSF6000N, S/N A112N on Day 204 while taking bottom samples.

No unusual problems were encountered with the sounding equipment. The sounding machine was continually monitored to reduce instrument errors.

Settlement and squat tests for launch PE-3 were run on 6 May 1985 at Rockland, Maine. A settlement and squat report is appended and the corrections will be applied at the Marine Center using the TC/TI tape provided.



$$Y = x(1 - \cos \phi)$$

Velocity and instrument corrections were determined by bar checks. The marks on the bar's lines were checked in Norfolk before the beginning of the field season.

Due to the especially strong currents in the survey area, accurate bar checks could not be made every day. Also, some of the checks at greater depths, 20-40 feet, were ignored due to excessive uplift of the bar by the current, a pendulum effect, causing an exaggerated correction. Bar checks were attempted near "slack" water to try to compensate for the current's effects on the bar.

Predicted tides have been applied to the 1985^{field} soundings. A request for actual tides has been submitted.

E. SURVEY SHEETS ✓

The field sheets were prepared using a pdp8/e computer and a DP-3 Complot plotter. Work sheets, semi-smooth sheets, the final field sheet, and an overlay are included with this survey. Mainscheme hydrography is plotted on the smooth field sheets, while developments, splits, bottom samples, junction soundings, and aids to navigation are shown on the overlay sheet. Project parameter tape listings for the field sheets are included in the appendices to this report. The final smooth sheet and verification of this survey will be accomplished at the Pacific Marine Center.

F. CONTROL STATIONS ✓

Control stations used during this survey were Aero-triangulation stations, established in 1982, and supplementary stations established by N/MOA2x1 in 1984 from the Aero-triangulation network. All stations are referred to the North American 1927 datum. A list of all control stations used during this survey is included in the appendices to this report.

Station 118, WIN 1983, was searched for and not found. WIN is presumed lost.

Station PK LAMP 1984 was searched for but not found. A new station, TP-1 1985, was established near the area of PK LAMP 1984. The bridge on which these stations were established is being reconstructed. The survival of these stations is questionable, therefore a description of TP-1 1985 was not submitted. Third Order, Class I survey methods were used to establish TP-1 1985 and a new position for ROSEN 1982. The closure was better than 1:16,000.

G. HYDROGRAPHIC POSITION CONTROL ✓

The method used to control the survey work in 1984 was range/azimuth using a Del Norte Distance Measuring system and a 20-second NT-2D theodolite. A list of all positioning equipment used during this survey is contained in the appendices of this report. *Filed with the hydrographic data.*

The Del Norte system worked well during the survey. During the closing baseline calibration, the tens digit of the right channel of DMU S/N 429 was

inoperative. This problem was not observed during the hydrographic operations. This DMU was returned to the Atlantic Marine Center for repairs.

A baseline was established using the HP-3808A, from station 116, DOCK 1982, to a stake set on the eastern shore of the Penobscot River. This baseline, being 1865m long, was used for calibration on Days 227 and 261 near the beginning of work. The closing calibration was taken between station 115, STARDRILL 1984, and station 116. This baseline had an inverse distance of 1653 meters. The Del Norte baseline calibration forms are included with the survey data in the accordion file.

Daily system checks were static between two horizontal control stations. Daily checks during the survey were in excellent agreement, ± 1 meter. On three occasions during the survey, opening or closing daily checks were not obtained. Rough seas prevented the launch from obtaining an opening calibration on Day 262. The failure of the steering unit on Day 272 left the survey with no closing check for that day's work. Low tides caused a lack of a closing calibration on Day 277. An average of all the daily correctors were used by the hydrographer as the final corrector for plotting, 0 correction. An abstract of corrections to electronic position control is included in the appendices. Filed with the hydrographic data.

Hydrography run in 1985 was range/azimuth controlled using a Miniranger Falcon system; RPU S/N D0019, CDU S/N D0062, Master RT (Code 3) S/N C2000; and a Wild T-2 Theodolite S/N 30694.

The Miniranger Falcon was baseline calibrated at the beginning and ending of the Maine project. The master R/T on PE-3 was broken before the end of the Maine project. Therefore, no ending calibration was performed for the electronic equipment used for the 1985 work on H-10157. Critical and daily system checks were performed using an HP-3810 with good results.

H. SHORELINE ✓

Shoreline detail for this survey was obtained from Class III maps, TP-01107 and TP-01109, with a final review date of April 1984. The maps are at a scale of 1:10,000.

A visual verification of the shoreline was done. The shoreline manuscript accurately portrays the rocky nature of this area and the large expanses of marsh in the Marsh River. Individual rocks along the shoreline were not positioned because of the vast amounts of rocks in these areas. Also, to do so would be a monumental task taking weeks or months using more resources than were available in 1985. These rocks are along the shoreline out of the area of general navigation. See Sounding Volume #6, 1985, pg. 8.

Station BOWDEN, 1982 (Signal List #127) and Station OLD 12, 1982 (Signal List #120) are located on large boulders between the high and low water line. These stations often cover during high tide.

I. CROSSLINES✓

Crosslines constitute an equivalent of 9 percent of the total lineal nautical miles of mainscheme hydrography run in 1984. Ninety-one percent of the crossings agree with the main scheme hydrography to within +2 feet, with 30 percent being in exact agreement and 72 percent agreeing to within 1 foot. No soundings are in disagreement at crossings by more than three feet. The probable reason for the disagreement of these soundings is the tidal dynamics of the Penobscot River. Tidal reductions for the 1984 work were based on daily highs and lows taken from the Winterport tide gauge (Tide Station #841-4781). These values were entered into AM500 to provide tide correctors. AM500 calculates a cosine curve based on the daily highs and lows. The tidal cycle in the Penobscot River is not a pure cosine curve. The differences between the actual and calculated tides are the major cause of the differences between soundings. Note that soundings taken during the same day have marked difference due to the divergence of the actual and calculated tide curves.

Crosslines constitute an equivalent of 12-1/2 percent of the total lineal nautical miles of mainscheme hydrography run in 1985. Most of the crosslines agree with the mainscheme to within 2 feet. This difference is attributable to the use of predicted tides. There are instances on slopes where crosslines and mainscheme differ by more than 2 feet. The good agreement between the crosslines and the mainscheme hydrography shows consistency within the 1985 work.

J. JUNCTIONS✓

This survey junctions with the following surveys:

1. H10134 to the south; and
2. H10146 to the north.

The southern junction with H10134 was not made during 1984 by HFP-3. The northern junction, H10146, is a contemporary survey conducted by HFP-3 using launch 517 and range/azimuth positioning during the summer of 1984. The agreement between the two surveys is good except for Day 255. The soundings on Day 255 show a difference of 3 feet at the junction. A crossline run the same day (Day 255) shows differences of 1 foot. The problem is probably due to a tidal anomaly and should be corrected when actual tides are applied. Depth curves can be drawn continuously between the two surveys in all other areas. *No significant differences occurred between the junctions after smooth tides were applied.*

Hydrography run in 1985 junctions well with the hydrography run by HFP-3 in 1984. HFP-3 used actual highs and lows for input to AM500 for tide correctors; the PEIRCE field party used predicted tides. The soundings in the junction area agree by 2 feet or less. This particular area is relatively flat with less slope than most other areas in this survey area.

The Marsh River hydrography run in 1985 junctions well with the hydrography run by HFP-3 in 1984 in the Penobscot River where the two rivers meet. Soundings agree by 1 to 2 feet. However, there are about a half-dozen soundings near N44°36'05", W068°51'20" on a tidal flat where soundings do not agree

by 1 foot. This difference is probably due to the use of predicted tides and should be resolved when actual tides are applied. The shoreline in this area, as with most of this survey, is rock strewn. The Marsh River is narrow and shallow with a flat mud bottom and a small natural channel a bit east of center. *After smooth tides was applied to the smooth sheet the difference in the 1984 and 1985 work was resolved.*

This survey junctions with H-1013⁴ in two places; in the main channel on the west side of Verona Island, and in the eastern channel on the east side of Verona Island.

The surveys junction well in the main channel. Soundings differ by 2 feet or less. These differences are probably due to the use of predicted tides, the sloping, rocky bottom in this area, and also greatly different sounding machines.

The first junction line between the two surveys in the eastern channel do not agree. Differences of 4 and 5 feet exist. However, the next two sounding lines of this survey, H-10157, agree well with H-10134; differences being 1 to 2 feet as expected. This area has a fairly flat and muddy bottom with a relatively deep natural channel running along the east side of the river bed.

K. COMPARISON WITH PRIOR SURVEYS ✓

Survey H-10157 was compared to surveys 1257a and 1257b of 1874.

The area surveyed in 1984 by HFP-3 compares fairly well with 1257b. In general soundings agree within 2 to 3 feet. HFP-3 developed a shoal along the west bank of the river between latitude N44°35'30" and N44°36'00", where survey 1257b shows two 6-1/2 feet soundings. No evidence of these soundings was found. The shallowest depth found in 1984 in this area is 8 feet.

*See Section
6 of Final
Report*

The work done in 1984 stops near latitude N44°35'00". 1985 work junctioned well with the 1984 work and continued south. The 1985 work does not agree as well with 1257b. The southern end of the 18-foot curve shows a westward shift in the 1985 work. Both the 30-foot and 60-foot curves show considerable changes in shape as compared to the curves shown on 1257b. The differences in the 30-foot curve appears to be due to sparse soundings in the area on 1257b. The 60-foot curve appears to have shifted south and encloses less area indicating shoaling in that area. A paper mill is in this area which has been dumping wood pulp into the river for many years, which, according to local people, has made the river shoaler than it used to be.

In general, soundings on H-1257 are very sparse; therefore the depth curves show shifts. Where soundings overlap between the two surveys, the soundings usually agree within 3 feet. However, in several places large discrepancies exist. These differences are most likely due to greatly different surveying techniques, periodic dredging by the U. S. Army Corps of Engineers, and other changes to the bottom relief which could occur over 110 years. *CONCUR*

The soundings from this survey, H-10157, are 2 to 4 feet shallower than the soundings from 1257b in the Marsh River. Soundings on 1257b are sparse, especially when compared to this survey. Apparently the Marsh River has shoaled considerably. Hydrography from H-1257b is no longer adequate. *CONCUR*

L. COMPARISON WITH THE CHART ✓

This survey was compared with Chart #13309, 22nd edition, dated February 1982. Chart #13309 is a 1:40,000 scale chart. The 22nd edition of the chart was photographically enlarged to 1:10,000 and is included with the survey. The general comparison between the 1984 survey work and the chart is good.

The following areas were noted during the comparison:

1. The 10-foot sounding at N44°36'54", W068°50'10" was disproven during this survey. Least depth in this area is 14 foot. (See positions 414-425.)
In sufficient investigation. Retain as charted.

2. The shoal on the western side of the Penobscot River at N44°35'45", W068°49'30" is still present. Sounding lines were reduced to 50 meter line spacing to develop this area. The least depth in this area from the current survey is 8 feet. The hydrographer saw no evidence of the two 6-foot soundings in this area. *The two 6-foot soundings originate with H-12576 (1874).*

*See EMM
Report Section
6*

3. A tide anomaly appeared in Day 255, positions 1-64. Soundings along the shoreline appear deeper than the charted soundings. The hydrographer noted a difference between the mainscheme and crossline hydrography run on this day. The crossline in this area agrees with the chart. The application of actual tides should resolve this anomaly. *With the application of smooth tides, no significant differences occurred.*

4. Some slight shifts in the 12-foot depth curve are noted in the survey when compared to the chart.

CONCUR

The following PSR items were investigated by HFP-3 during 1984:

(a) #02955 is a wreck that bares 9.6 feet above MLW from T8093/44 and a field inspection in 1944. The wreck was ^{previously} positioned at N44°35'37", W068°48'46".

(b) #02956 is a grounded barge from T8039/44 and field inspection in 1944. The wreck was ^{previously} positioned at N44°35'36.8", W068°48'46.48".

A visual search was made at low tide of the area on Day 277. No evidence of the wreck was observed. No bottom sweep was made in this area because it bares at low tide for a distance greater than the required sweep area. These items were reinspected on day 167, 1985. See Sounding Volume # 6, 1985, pg. 8, #2011. The hydrographer recommends that these items be removed from the chart. *Do Not Concur, See EMM Report Section 7.*

(c) #02957 is a visible wreck from T8039/44 and a field inspection in 1944, latitude N44°35'22.2", longitude W068°51'54.6". A detached position was taken on the exposed wooden barge hull on Day 271, position 369 (latitude N44°35'21", longitude W068 51'53").

The hydrographer recommends that this item remain as currently charted.
Chart visible wreck according to this survey.

No investigations were made on PSR items 02958, 02959 and 03019 by HFP-3 during the 1984 field season.

PSR Item #2954, a pier in ruins on the chart at N44°36'07", W068°51'03" is

still present. The pier was composed of large rocks. The pier ruins appear on the shoreline map as a rock outcrop. Although no detached position was recorded in the sounding volumes, an angle and distance were written on the boat sheet when the pier ruins were exposed at low tide. The distance from station WINTER, 1984 (Signal #117) to the offshore end of the pier ruins was 2638 meters with an angle of 359 10' from WINTER, initialed on BOWDEN, 1982 (Signal #127). This angle and distance gives a position of N44°36'07", W068°51'03" for the offshore end of the pier. The submerged piles are still present. *Review to submerged ruins at charted position. Photographs are attached to this report.*

The charted hydrography south of latitude N44°35'00" in the main channel should be recompiled to show the general shoaling and shifting of the depth curves in the area. *CONCUR*

In the eastern channel, the bottom is accurately portrayed except the 19-foot sounding at N44°34'06", W068°47'13" should be changed to 16 feet. *CONCUR* Also, the 17-foot sounding at N44°33'16", W068°46'01" should be changed to 12 feet. No boat traffic of any kind was seen in this area during the 1985 work.

PSR Item #2958: The pier ruins do exist appearing as a groin. Piles do exist at the end of the ruins. A photograph was taken in 1985 which is included in the field records. The Bucksport waterfront has many piers in ruins. PSR Item #2958 is one of the smaller, less prominent, and less dangerous of the pier ruins along the shoreline. Detached positions and photographs of each pier ruins were taken and are included with the field records. Also, reference NOS Coast Pilot No. 1, page 140, under: Bucksport-Wharves. This PSR item is adequately portrayed on the chart. *Review was not investigated, See ERM Report Section 7. Photographs are attached to this report, pos. #521*

PSR Item #2959: The wreck was found at low water. A detached position and photographs were taken and are included in the field records. The wreck is above the low water line. The highest point of the wreck is 12 feet above the bottom. The charted symbol for this PSR item should be changed to a visible wreck symbol. The wreck can be reached on foot from shore at low tide. *CONCUR* Photograph is attached to this report

PSR Item #3019: A bottom drag for the 17-foot sounding could not be accomplished in 1985 due to a lack of time and resources. Also, the swift currents in the area would make a bottom drag difficult. No evidence of a 17-foot sounding was found while running hydrography. *See ERM Report Section 6*

The Corps of Engineers (C of E) who supplied the condition survey showing the 17-foot sounding in the 22-foot channel also supplied an after dredging survey a few months later to the Marine Chart Branch in Rockville, Maryland, showing that the 17-foot shoal had been removed. The after dredging survey shows 22-foot soundings in this area. H-10157 also shows 22-foot soundings where the 17-foot sounding is charted. The 17-foot sounding should have been removed from the chart as soon as the after dredging survey was received. The 17-foot sounding should have never been entered into the Automated Wreck and Obstruction Information System (wreck file). *See ERM Report Section 6*

Fortunately, the resources were not available for a bottom drag investigation. Otherwise, a lot of money and time would have been wasted looking for something that does not exist; especially since the documentation proving the

removal of the shoal had been received at headquarters. This item should have been resolved at headquarters by the Hydrographic Survey Branch, Requirements Section. Also, a bottom drag to locate a moving sediment shoal could not have possibly resolved anything. The bottom drag investigation requirement for such a situation is totally inappropriate. A shoal cannot be snagged; a rock or some sort of pinnacle feature could be.

Copies of the after dredging surveys^{*} are included with H-10157 and are readily available from the Marine Chart Branch, Nautical Data Unit. For more information contact Mr. Daniel Sullivan with the U. S. Army Corps of Engineers, New England Division, Navigation Section. His telephone number is (617) 647-7351. * BP 123734

An investigation of this item should have never been assigned to a field unit.

*See EVAL Report
Section 6.*

A ~~4~~⁵-ft sounding was found at N44°34'14", W068°47'46" near where a 5-ft sounding is charted, N44°34'12", W068°47'48". A complete development was not accomplished. The 5-foot sounding should be removed from the chart and the ~~5~~⁴-foot sounding should be charted at N44°34'14", W068°47'48". *Do not comply
Retain as charted*

H-10157 shows the 18 ft depth curve has moved east in the area of Luce Cove and Indian Pt., between latitudes N44°34'30" and N44°35'30". The U. S. Army Corps of Engineers maintains a 22 ft. by 350 ft. dredged channel in this area. See sections K and L of this report. Between these same latitudes but nearer the center of the river, H-10157 shows soundings deeper than the chart. *COMPLY*

Around N44°34'35", W068°48'45" H-10157 shows soundings shallower than the chart. *COMPLY*

The natural channel running along the center of the Marsh River shows considerable shoaling when compared to the chart. The 6-foot depth curve no longer extends as far into the Marsh River as the chart portrays. The soundings from this survey are 2 to 4 feet shallower than the soundings on the chart. The Marsh River appears considerably shoaler than 6 feet. The Marsh River is navigable for a very short distance by small craft only at high tide. The Marsh River has a soft, muddy bottom with isolated rocks scattered about. The shoreline north of Treat Pt. is very rocky and the shoreline south of Treat Pt. is mud banks and marsh grass. *COMPLY*

The hydrography in the Marsh River should be recompiled. *COMPLY*

M. ADEQUACY OF SURVEY ✓

The hydrography of this survey is adequate to supersede prior surveys of this area.

A ~~4~~⁵-foot sounding at N44°34'14", W068°47'46" was not completely developed. *COMPLY*

No landmark verification was done. No new landmarks were positioned. *See EVAL Report
Section 4*

A visual shoreline inspection was made; the notes to hydrographer were

completed. The general shape of the shoreline was verified with a sounding line run parallel to and as close as possible to the shore.

N. AIDS TO NAVIGATION ✓

There are no fixed aids to navigation in the area surveyed. *Concur*

Detached positions were taken on the floating aids. These buoys do not have positions in the 1984 Light List. Note that all the buoys have adequate scope to swing with the tide. All aids were found to adequately serve the apparent purpose for which they were established. No discrepancies were found between the charted and surveyed positions or with the descriptions found in the light list. *Do not Concur. See ENR Report Section 4 and 7*

<u>AID</u>	<u>POSITION</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>DESCRIPTION</u>
BUOY	233 *	N44°35'18" ⁶ 57	W068°48'51" ⁷ 67	Black Can #9
BUOY	240	N44°36'04" ⁷ 08	W068°49'32"44	Black Can #11
BUOY	241	N44°36'15"03	W068°50'09"47	Green Can #13
BUOY	***	N44°36'22"60	W068°50'44"04	Red Nun #14

* Note - This position does not agree with the charted position. This position was taken in 1984. The discrepancy cannot be explained by the author. The C of E 1984 position for this buoy is N44°35'16.6", W068°48'55.7"; very near the charted position. August 22, 1984, date of (COE) position of Buoy #9

See ENR Report Section 4

*** Note - Red Nun #14 was positioned during H-10146; no detached position was taken during this survey. *Transferred from H-10146*

Only one floating aid to navigation was within the 1985 working area. Black Can "7" was positioned during field work. This buoy does not have a position in the Light List. The surveyed position for Black Can "7" is N44°34'49", W068°48'52". No discrepancy was found between the surveyed and charted positions.

O. STATISTICS ✓

1984

Number of positions.....	485
Nautical miles of sounding lines.....	31.5
Nautical miles of crossline.....	2.8
Nautical miles of development.....	3.5
Total miles of hydrography.....	37.8
Number of bottom samples.....	18
Number of bar checks.....	10

1985

Number of positions.....	870
Nautical miles of sounding lines.....	40
Nautical miles of crossline.....	5
Nautical miles of development.....	2
Total miles of hydrography.....	47
Number of bottom samples.....	15
Number of bar checks.....	13

P. MISCELLANEOUS ✓

Mr. William, from the 1st Coast Guard District's Bridge Section, informed the field party that plans have been made to reconstruct the bridge between Bucksport and Verona Island. When the actual construction will begin is not known.

No circulatory data was obtained.

Predicted tides were applied to all 1985 soundings.

The area was formed by a retreating glacier. There are deep, narrow channels, steep drop-offs, jagged bottom relief, flat areas, and a great amount of very large stranded boulders.

Q. RECOMMENDATIONS ✓

Change the 10-foot sounding at N44°36'54", W068°50'10" to 14 feet. *Do not concur*
Retain as charted.

Remove the two 6-foot soundings on the shoal near N44°35'45", W068°49'30". *concur*
The least depth found in this area was 8 feet.

PSR Item #2954, a pier in ruins, should be charted as pier ruins with submerged piles, ^{and rocks} at the end. *concur*

PSR Item #2955, a visible wreck, should be removed from the chart. *concur*

PSR Item #2956, a grounded barge, should be removed from the chart. The remnants of the barge are well above the MLLW line and are not a danger to navigation. *Do not concur, retain as charted.*

See Sounding Volume # 6, 1985 "Field Edit Descriptions" # 2011, for details about these two PSR Items. *Abstracted to ERM Report section 7*

PSR Item #2957, a visible wreck, is adequately portrayed on the chart. *concur*

PSR Item #2958, a pier in ruins, is adequately portrayed on the chart. *concur*

PSR Item #2959, a submerged dangerous wreck, is visible at low tide. This item should be recharted as a visible wreck at position N44°33'59"^N, W068°47'44"^W. *concur*

PSR Item #3019, a 17-foot sounding should be removed from the chart. The C of E after-dredging survey received by the Marine Chart Branch shows that *concur*

this shoal has been removed. This item should be taken out of the Automated Wreck and Obstruction Information System. This is now a 22-foot sounding, as *cancel* shown on the after dredging survey and on H-10157.

Change the 19-foot sounding at N44°34'06", W068°47'13" to 16 feet. *cancel*

Change the 17-foot sounding at N44°33'16", W068°46'01" to 12 feet. *cancel*

Change the 5-foot sounding at N44°34'12", W068°47'48" to ⁵4 foot at *Do not change* N44°34'14", W068°47'46". *Retain as checked.*

The charted hydrography is based on surveys 1257a and 1257b of 1874. Soundings on the 1874 survey are very sparse by today's standards. Changes have been found in the areas between the north end of Verona Island and Indian Pt. and in the Marsh River. The hydrography on Chart #13309 needs to be recompiled using the new surveys. *cancel, except for the holiday mentioned in EVAR Report Section 3.* Prior survey soundings from H-1257 ~~a~~ were brought forward to H-10157.

R. AUTOMATED DATA PROCESSING ✓

Programs used during 1984 field data acquisition and field processing of this survey are as follows:

<u>PROGRAM</u>	<u>DESCRIPTION</u>	<u>VERSION DATE</u>
RK201	Grid, Signal, and Lattice Plot	04-18-75
RK212	Visual Station Table Load	04-01-74
RK216	Range/Azimuth Non-real Plot	02-05-76
RK300	Utility Computations	02-05-76
RK330	Reformat and Data Check	05-04-76
RK407	Geodetic Inverse/Direct Computation	09-25-78
AM500	Predicted Tide Generator	11-10-72
AM602	ELINORE-Line Oriented Editor	05-20-75

The party does not use the latest version of RK216, dated 02-09-81. The party has been unable to have the latest version of the tape plot by limits without having to restart the program each time a new limit is to be plotted.

The programs used for processing the 1985 data are:

<u>PROGRAM</u>	<u>DESCRIPTION</u>	<u>VERSION DATE</u>
RK201	Grid, Signal, and Lattice Plot	04-18-75
RK212	Visual Station Table Load	04-01-74
RK216	Range/Azimuth Non-real Plot	02-09-81
RK330	Reformat and Data Check	05-04-76
AM500	Predicted Tide Generator	11-10-72
AM602	ELINORE-Line Oriented Editor	12-08-82

S. REFERENCES TO REPORTS ✓

Descriptive Report for H-10146
Control Report for CM-8101
Horizontal Control Report, OPR-A166-PE-85
Coast Pilot Report, OPR-A166-PE-85

FIELD TIDE NOTE (H10157)

Field tide reduction of soundings were based on daily high and low water levels from the ADR gauge at Winterport, Maine (Station No. 841-4781). The values were reduced to mean low water using the bench mark elevations for the Winterport tide station. All times for the gauges installed by the field party are UTC.

The operating tide station at Rockland, Maine (841-5490) and Bar Harbor, Maine (841-3320) will serve as control for datum determination at all subordinate tide stations. The Rockland gauge was leveled by the NOAA Ship Mt. Mitchell at the beginning of OPR-A166 in 1984 and leveled out by HFP-3 on 8 October 1984.

Standard Fischer/Porter ADR tide gauges with tide staffs were installed, operated and observed by HFP-3 for the period indicated:

SITE	LOCATION	PERIOD
Winterport, Maine #841-4781	LAT 44°38!2N LON 68°50!5W	IN 18 Jun 84 OUT 9 Oct 84
Bucksport, Maine #841-4684	LAT 44°34!3N LON 68°48!1W	IN 24 Aug 84 OUT 8 Oct 84

Levels were run at the Winterport and Bucksport tide stations when the stations were installed and removed. There was no change in the tide staffs at Winterport or Bucksport from the level data.

ZONING

There are no recommendations for zoning by the field party. Zoning should be provided by the Tides and Water Levels Branch (N/OMS12).

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

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

H-10173, PE-10-1-85

-12 min HW
-4 min LW
X 1.08 Height

H-10177, PE-10-2-85

-12 min HW
-4 min LW
X 1.08 Height

H-10178, PE-10-3-85

-12 min HW
-4 min LW
X 1.08 Height

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

-36 min HW
-16 min LW
X 1.18 Height

Above Lat. 44°35'N

-36 min HW
-16 min LW
X 1.25 Height

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

Five recording tide gauges were installed during this project as follows

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

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

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

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

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

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

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

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

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

SIGNAL LIST
PENOBSCOT RIVER.ME

OPR A166

H-10157 (1984)

HFP 10-4-84

117	3	44	37	327 37	068	51	051 17	254	0000	000000	Winter, 1982
118	4	44	37	28465	068	50	33196	243	0000	000000	Win, 1983
119	4	44	36	17796	068	49	24792	254	0000	000000	Rebar, 1984
120	5	44	35	50469	068	49	57469	243	0000	000000	Old, 12, 1982
121	7	44	34	16463	068	47	43555	243	0000	000000	Rosen, 1982
122	3	44	35	28803	068	51	54309	254	0000	000000	Quarry, 1982
123	5	44	34	22804	068	48	57772	243	0000	000000	Stubbs, 1984
124	6	44	34	06583	068	47	22278	243	0000	000000	PK Lamp, 1984
127	7	44	36	04323	068	51	04827	254	0000	000000	Bowden, 1982

Note: All stations set in 1982 are aero-triangulation control.
Job CM-8101. Stations set in 1983 and 1984 are supplemental
stations established from the aero-triangulation. using
Third Order Class ONE methods.

STATION LIST (1985)

<u>SIG#</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>NAME</u>	<u>SOURCE</u>
119	44 36 17.796	068 49 24.792	REBAR 1982	Aero-Triang.
121	44 34 16.450	068 47 43.557	ROSEN 1982-1985	Field Party 1985
122	44 35 28.803	068 51 54.309	QUARRY 1982	Aero-Triang.
123	44 34 22.804	068 48 57.772	STUBBS 1984	N/MOA2x1
127	44 36 04.323	068 51 04.827	BOWDEN 1982	Aero-Triang.
200	44 34 23.703	068 48 24.873	TANK-1985 *	Field Party 1985
201	44 33 03.35326	068 48 13.22712	VERONA 1982	Aero-Triang.
202	44 34 06 071	068 46 34.136	GIFF 1982	Aero-Triang.
203	44 33 06.519	068 45 55.668	JERRY 1982	Aero-Triang.
204	44 33 56.380	068 48 10.010	FT KNOX, 1863	NGS
205	44 30 55.569	068 48 04.651	ODEN'S LEDGE **	NGS
206	44 34 11.738 ₅	068 47 19.628 ₃₅	TP-1 1985 ROSEN	Field Party 1985

* CHAMPION PAPER WATER TANK

** ODEN'S ODDM LEDGE BEACON

APPROVAL SHEET

The 1984 portion of this survey was conducted by HFP-3 under the supervision of Ronald W. Jones, LCDR, NOAA. The party OIC was Frederick W. Rossmann, LTJG, NOAA.

The 1985 portion of this survey was conducted by a detached field party operating from the NOAA Ship PEIRCE working in conjunction with two members of HFP-3. Work was supervised by Albert E. Theberge, CDR, NOAA. Detached field party OIC was V. Dale Ross, LT, NOAA.

This survey is complete and adequate to supersede prior surveys of the area.

Respectfully submitted,

A. E. Theberge

A. E. Theberge, CDR, NOAA

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: 10/01/86

Marine Center: Pacific

OPR: A166

Hydrographic Sheet: H-10157

Locality: Penobscot and Marsh Rivers, ME

Time Period: September 11 - October 5, 1984
May 22 - July 23, 1985

Tide Station Used: 841-4684 Bucksport, ME
841-4781 Winterport, ME

Plane of Reference (Mean Lower Low Water): 841-4684 = 7.76 ft.
841-4781 = ~~12.1~~ ft.
1.99 *

Height of Mean High Water Above Plane of Reference:
841-4684 = 11.3 ft.
841-4781 = 12.1 ft.,

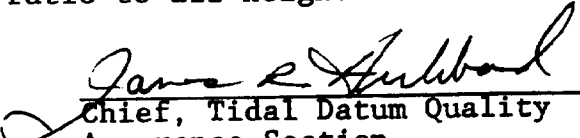
Remarks: Recommended Zoning:

I. For 1984 work:

- a) south of latitude $44^{\circ}37.0'$ to $44^{\circ}35.0'$ ^{AND IN THE MARSH RIVER *} zone on 841-4781
and apply x0.97 range ratio to all heights

II. For 1985 work:

- a) south of latitude $44^{\circ}36.5'$ to $44^{\circ}35.0'$ and in the Marsh River, zone on 841-4684 and apply x1.04 range ratio to all heights
- b) south of latitude $44^{\circ}35.0'$ to $44^{\circ}33.0'$ zone direct on 841-4684
- c) south of latitude $44^{\circ}33.0'$ to $44^{\circ}32.0'$ zone on 841-4684 and apply x0.98 range ratio to all heights


Chief, Tidal Datum Quality
Assurance Section

* = FROM PHONE CONV. W/ JOE MULLEN 10-7-86

GEOGRAPHIC NAMES

H-10157

Name on Survey Leaches Point and Verona Park to Treat Hill		A	B	C	D	E	F	G	H	K
		ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	RAND McNALLY ATLAS	U.S. LIGHT LIST	
Bowden Point	13309									1
Bucksport	"									2
Collins Cove	"									3
Eastern Channel	"									4
Fort Knox	"									5
Frankfort Flats	"									6
Harriman Cove	"									7
Indian Point	"									8
Lawrence Cove	"									9
Leaches Point	"									10
Luce Cove	"									11
Marsh River	"									12
North Branch	"									13
Penobscot River	"									14
Porcupine Island	"									15
Prospect Ferry	"									16
South Branch	"									17
Treat Hill	"									18
Treat Point	"									19
Verona	"									20
Verona Island	"									21
Verona Park	"									22
										23
										24
										25

HYDROGRAPHIC SURVEY STATISTICS

H-10157

RECORDS ACCOMPANYING SURVEY To be completed when survey is processed

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	6
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	5

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES	9				
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List): TP-01107 and TP-01109

PHOTOBATHYMETRIC MAPS (List)

NOTES TO THE HYDROGRAPHER (List)

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): Enlargement of chart 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			1355
POSITIONS REVISED	—	—	
SOUNDINGS REVISED	—	—	
CONTROL STATIONS REVISED	—	—	
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	—	—	—
VERIFICATION OF CONTROL	—	—	—
VERIFICATION OF POSITIONS	51.0	—	51.0
VERIFICATION OF SOUNDINGS	141.0	—	141.0
VERIFICATION OF JUNCTIONS	—	—	—
APPLICATION OF PHOTOBATHYMETRY	—	—	—
SHORELINE APPLICATION-VERIFICATION	—	—	—
COMPILED OF SMOOTH SHEET	53.0	—	53.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS	—	8.0	8.0
EVALUATION OF SIDE-SCAN SONAR RECORDS	—	—	—
EVALUATION OF WIRE SWATHS AND SWEEPS	—	—	—
EVALUATION REPORT	—	43.0	43.0
GEOGRAPHIC NAMING	—	—	—
OTHER: DIGITIZING	—	—	16.0
USE OTHER SIDE OF FORM FOR IN MARKS	TOTALS	245.0	51.0
Pre-processing Examination by J. Wilder	Beginning Date 10-23-85	Ending Date 4-10-86	312.0
Verification of Field Data by P. Niland, E. Domingo, J. Shofner, M. Sanders	Time (Hours) 245.0	Ending Date 12-05-86	
Verification Check by J. Stringham, B. Olmstead, J. Green	Time (Hours) 32.0	Ending Date 12-13-86	
Evaluation and Analysis by C. B. Davies	Time (Hours) 51.0	Ending Date 12-12-86	
Inspection by D. Hill	Time (Hours) 8.0	Ending Date 12-29-86	

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10157

1. INTRODUCTION

H-10157 was accomplished by the NOAA Ship PEIRCE and HFP-3 in accordance with the following project instructions:

OPR-A166-MI/HFP-84, dated March 20, 1984
Change Number 1, dated May 14, 1984
Change Number 2, dated December 7, 1984
Change Number 3, dated January 19, 1985
Change Number 4, dated April 3, 1985
OPR-A166-PE-85, dated March 28, 1985
Change Number 5, dated June 17, 1985

This is a basic hydrographic survey of the southern portion of Penobscot River, Maine. The survey extends from one half nautical mile north of Bowden Point in the Frankfort Flats region, latitude 44°36'40"N, to one nautical mile south of the northern tip of Verona Island including both the main and eastern channel of the Penobscot River, latitude 44°32'45"N. The shore is generally fringed with rocky ledges or foul with rocks and boulders. The bottom is generally mud and sand. A maximum depth of 83 feet is located just west of the northern tip of Verona Island in the main channel.

This survey was begun by Hydrographic Field Party Number 3 in 1984 and completed in 1985 by the NOAA Ship Peirce. The survey was returned to the ship for additional processing as a result of the Preprocessing Examination and was subsequently resubmitted in March 1986.

Predicted tides and real tides were used during field processing. Tide correctors used for the final reduction of soundings reflect approved hourly heights zoned from Winterport and Bucksport, Maine.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The sound velocity correctors have been revised during processing based on the Martek casts not on the bar check data as submitted by the field. Draft correctors were revised during office processing to include the draft of each vessel used during hydrographic operations. Electronic control correctors have been revised during office processing to reflect daily correctors on the 1984 field work and baseline values on the 1985 work. The revised data is listed in the smooth position/sounding printout.

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

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are adequately discussed in sections F and G of the hydrographer's report and the Horizontal Control Report for OPR-A166-PE-85. Positions of horizontal control stations used during hydrography are either published or aerotriangulation values based on the North American Datum of 1927.

Applicable shoreline manuscripts are TP-01107 and TP-01109. These are registered Class III maps, and originate from photography dated September 1982.

Foul limit lines were extended to include minus soundings in areas labeled as rocky on the topographic manuscripts.

3. HYDROGRAPHY

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

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

The areas below warrant further investigation to delineate the bottom configuration and to determine least depths:

<u>Latitude</u>	<u>Longitude</u>
44°34'17"N	68°47'54"W
44°34'14"N	68°47'48"W
44°34'08"N	68°47'45"W

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, AMC OPORDERS, and applicable portions of the PMC OPORDER except as noted in the Preprocessing Examination Report, dated December 4, 1985 and as follows:

- a. Floating aids to navigation should be located hydrographically with check observations. Black Can Buoy #9 was located 150 meters from its 1982 charted position. A check observation was not taken and the position is in question. This procedure resulted in the questioning of whether the buoy is mispositioned or in a new location. However, due to the seasonal nature of the buoys it is most likely that Buoy #9 was in a new location.

b. The investigation of AWOIS Item 2956 and 2958 and some piers was incomplete. The hydrographer did not supply adequate positions for these items, yet they were described as verified in the survey records.

c. Several areas warrant further development to locate the least depths (See Section 3, Hydrography). The investigation of these areas was incomplete (Hydrographic Manual, 4.3.4).

d. A number of soundings and shoreline features were not plotted on the field sheet. A completed field sheet should show all soundings and shoreline features where applicable. The hydrographer's interpretation of shoreline features would have greatly assisted the office processor in compiling the smooth sheet.

e. No investigation of landmarks was accomplished during this survey. All landmarks considered to be an aid to navigation should be located during hydrographic operations (Hydrographic Manual 5.3.5 section I).

5. JUNCTIONS

H-10157 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10134	1984	1:10,000	south
H-10146	1984	1:10,000	north

Junction comparisons were made using copies because these surveys have been submitted for charting. Soundings were transferred from H-10134 and H-10146 to justify depth curves and to portray shoaler information. Soundings and depth curves are in agreement.

6. COMPARISON WITH PRIOR SURVEYS

H-1257a (1874) 1:10,000
H-1257b (1874) 1:10,000

The present survey soundings compare within 1 to 4 feet of the prior soundings. This can be attributed to the relative accuracy of the data acquisition techniques, dredging by the U.S. Army Corps of Engineers, erosion and accretion and the dumping of wood chips into the river from the local pulp mill.

Five soundings were transferred from prior survey H-1257a (1874) into the areas mentioned in section 3, Hydrography.

AWOIS item 03019, a 17-foot depth, charted at latitude 44°34'57"N, longitude 68°48'51"W, is considered disproven. The present survey obtained soundings of 20-23 feet in the area. These soundings are consistent with those obtained by the Corps of Engineers during an after-dredge survey in 1984 (BP123734/84). It should be noted however, that there is evidence of renewed shoaling which may be related to the large shallow area immediately west of the main river channel.

The hydrographer's comments regarding the quality of the survey requirements contained in the AWOIS are supported. Charted features which have been previously surveyed by responsible authorities such as the Corps of Engineers (COE) should generally not be listed as requiring a Full investigation. The entire body of information pertaining to a feature should be considered in assigning a survey requirement. In this case there had been two previous COE surveys and a dredging operation. This information should have been sufficient to reduce the survey requirement to less than a Full investigation.

With the transfer of the soundings from prior survey H-1257a (1874), H-10157 is adequate to supersede the prior surveys within their common areas.

7. COMPARISON WITH CHART

Chart 13309, 22nd Edition, dated Feb. 20th, 1982; scale 1:40,000

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

The disposition of AWOIS items originating from miscellaneous sources is adequately discussed in section L of the hydrographers' report supplemented as follows:

Only one wreck was found in the area of AWOIS items 02955 and 02956. This was described by the hydrographer as a wooden platform, 36 by 100 feet, consisting of 6 by 6-inch lumber extending about 6 inches above the mud. No position was provided for the feature, therefore the wreck is depicted on the smooth sheet at the charted location, latitude 44°35'36.80"N, longitude 68°48'46.48"W. This feature verifies AWOIS item 02956. Item 02955 is considered disproven on the basis of a visual search throughout the area at low water.

AWOIS item 02958 a charted pier ruin at latitude 44°34'13"N, longitude 68°47'29"W was not investigated. Instead, a pier at latitude 44°34'14"N, longitude 68°47'25"W was investigated and determined to exist as charted. Item 02958 is considered to be incomplete and should be retained as charted.

Piers charted at latitude 44°34'14.27"W, longitude 68°47'34.36"W and latitude 44°34'14.46"W, longitude 68°47'41.32"W were verified by single detached positions. The piers have been added to the smooth sheet based on the charted configuration.

In addition the following piers and pier ruins should be retained as charted as they were not investigated by the hydrographer:

<u>Feature</u>	<u>Latitude</u>	<u>Longitude</u>
Pier ruins	44°34'21"N	68°47'59"W
Pier ruins	44°34'20"N	68°47'55"W
Pier	44°34'15"N	68°47'36"W
Pier	44°34'14"N	68°47'23"W

Submerged cable areas within the survey area were not investigated by the hydrographer; they should be retained as charted.

All overhead power cables were located and are shown on the smooth sheet except the one at latitude 44°34'09"N, longitude 68°47'20"W. It should be retained as charted.

H-10157 is adequate to supersede charted hydrography within the common area except for the above mentioned items.

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

Geographic names appearing on the smooth sheet originate with these charts and the topographic manuscripts.

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

c. Aids to Navigation - There are four floating aids to navigation within the survey area. All were located and adequately serve their intended purpose except Black Can #9. This buoy was located 150 meters from the 1982 charted position, at latitude 44°35'16.6"N, longitude 68°48'55.7"W.

8. COMPLIANCE WITH INSTRUCTIONS

H-10157 adequately complies with the project instructions noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic hydrographic survey. Additional field work is recommended on a low priority basis in the areas discussed in sections 3 and 7 of this report.

Respectfully submitted,

Charles R. Davies

Charles R. Davies
Cartographer

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

Dennis Hill

Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10157

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. Richards 12-29-86
Chief, Nautical Chart Branch (Date)

CLEARANCE:

for
N/MOP2:LWMordock

SIGNATURE AND DATE:

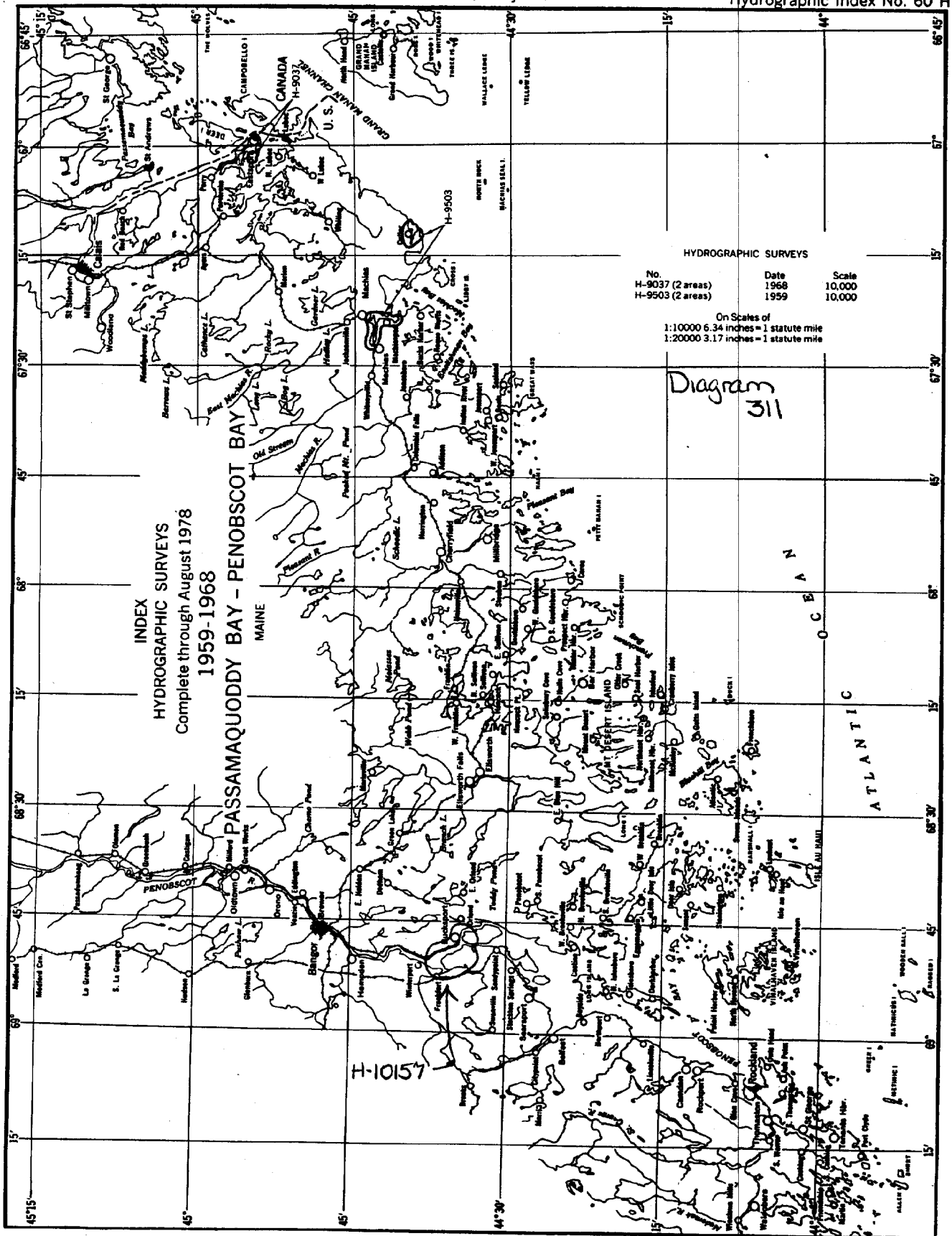
Gerald B. Mills 30 Dec 86

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. Saugitt 12-31-86
Director, Pacific Marine Center (Date)

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

Hydrographic Index No. 60 H



MARINE CHART BRANCH

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10157

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.

[illegible]