

10312

Diagram No. LS-61

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. AHP-10-10-89
Registry No. H-10132

LOCALITY

State Michigan
General Locality Potagannissing Bay
Sublocality Cherry Island to
Potagannissing River

19 89

CHIEF OF PARTY
LCDR V.D. Ross

LIBRARY & ARCHIVES

DATE November 4, 1991

10312

wc/c

CHTS

14882

14880

14860

HYDROGRAPHIC TITLE SHEET

H-10312

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-10-10-89

State MICHIGAN

General locality POTAGANISSING BAY

Locality CHERRY ISLAND TO POTAGANISSING RIVER

Scale 1:10000 Date of survey July 17 - September 21, 1989

Instructions dated APRIL 7, 1989 Project No. OPR-X278

Vessel ATLANTIC HYDROGRAPHY PARTY-2, LAUNCHES I292, 0517

Chief of party LT VINCENT DALE ROSS

Surveyed by MR. BRIAN A. LINK

Soundings taken by echo sounder, hand lead, pole RAYTHEON DE-719-C/WITH ODOM DIGITRACE

Graphic record scaled by ACB, MJM, BAL, TMR, VPL, KAB, RGR

Graphic record checked by ACB, MJM, BAL, TMR, VPL, KAB, RGR

Protracted by HDAPS Automated plot by AMC (SMOOTH SHEET)

XYNETICS 12 1/2 Plotter (AMS)

Verification by Atlantic Hydrographic Section personnel

Soundings in fathoms feet at MKW MLLW IGLD 1985: 576.8 feet

REMARKS: TIME MERIDIAN USED WAS UTC

LEAST DEPTHS WERE WITH LEAD LINE AND SOUNDING POLE

THE SHEET LETTER IS DESIGNATED AS "O"

Notes in the Descriptive Report were made in red during office processing.

AWOIS and SURF 11/91 RWD

*SL 1-30-97
X.W.W. 11/20/91*

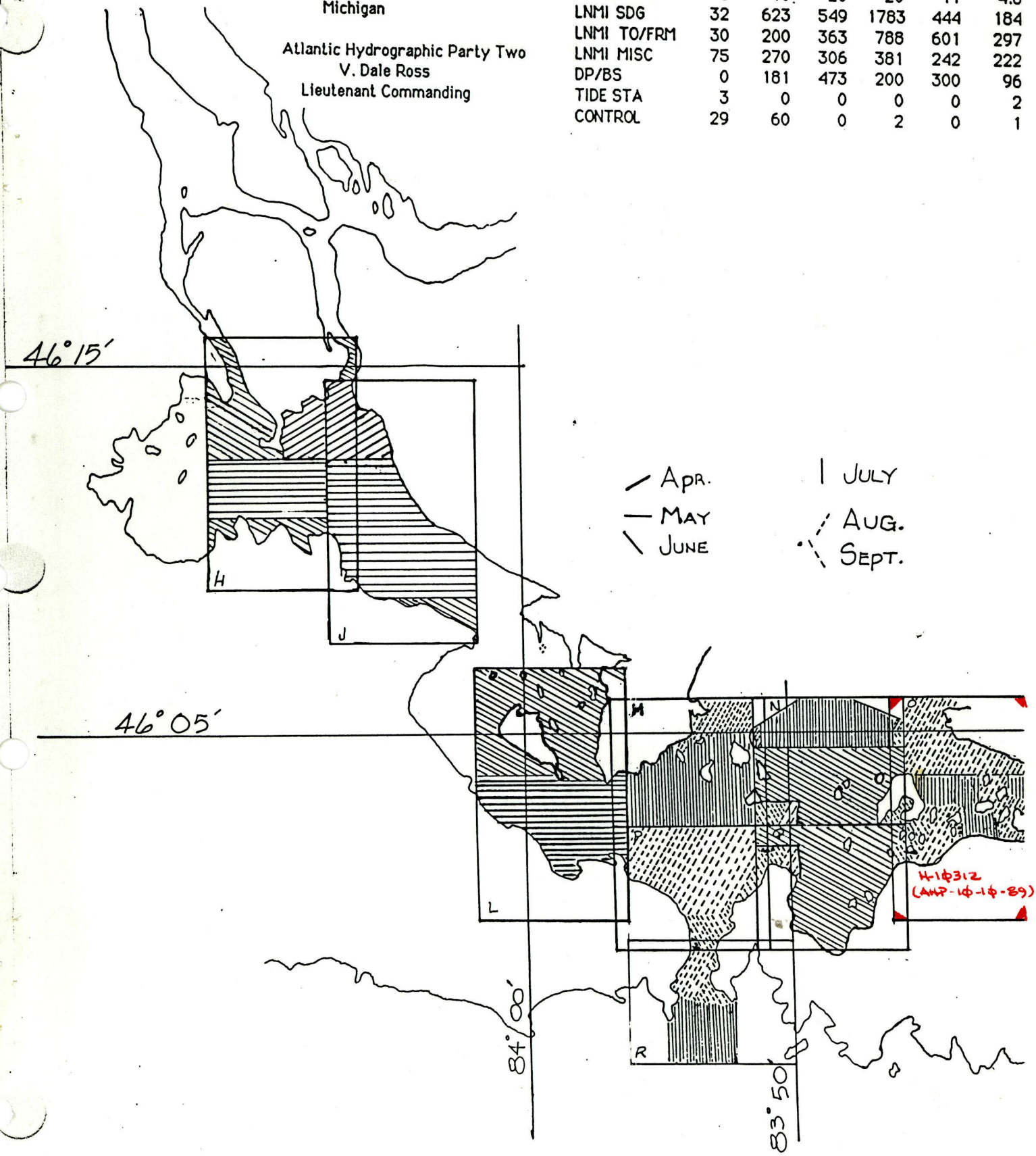
Progress Sketch

OPR-X278-HFP-89
St. Mary's River
Michigan

Atlantic Hydrographic Party Two
V. Dale Ross
Lieutenant Commanding

LEGEND

	APR	MAY	JUN	JUL	AUG	SEPT
SONMI SDG	3	10	20	20	11	4.6
LNMI SDG	32	623	549	1783	444	184
LNMI TO/FRM	30	200	363	788	601	297
LNMI MISC	75	270	306	381	242	222
DP/BS	0	181	473	200	300	96
TIDE STA	3	0	0	0	0	2
CONTROL	29	60	0	2	0	1



/ APR.
 — MAY
 \ JUNE
 | JULY
 - - - - - AUG.
 X X X X X SEPT.

H-1φ312
(AMP-1φ-1φ-89)

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY H-10312
HFP-10-10-89
OPR-X278-HFP
1989

Scale: 1:10,000
Atlantic Hydrographic Party Two
Chief of Party: Lt. Vincent Dale Ross

A. PROJECT

This survey was conducted in accordance with Hydrographic Project Instructions OPR-X278-HFP, St. Mary's River, Michigan, dated April 7, 1989, and Change Number 1, dated August 2, 1989.

The sheet letter is "O" as specified by the project instructions.

The purpose of project OPR-X278-HFP is to provide contemporary hydrography for the maintenance of existing charts and the construction of new large-scale charts. Also, to fulfill requests by the Lake Carriers Association, Great Lakes Pilots, Canadian Hydrographic Service, U.S. Coast Guard, U.S. Steel Great Lakes Fleet, commercial fisherman, and local marinas.

B. AREA SURVEYED

The area surveyed was Potagannissing Bay from Cherry Island to the Potagannissing River. The survey limits are as follows:

North - 46°05'^{46"}30"N
South - 46°01'~~30"~~^{23"N}
East - 083°40'~~00"~~^{12"W}
West - 083°45'~~30"~~^{55"}

This survey was conducted from July 17 (day 198) to September 21 (day 264), 1989. The survey area covers the eastern half of Potagannissing Bay; east of a north/south line from Cherry Island through Boulanger Island to the mouth of the Potagannissing River. The northern boundary is an east/west line from Cherry Island to Hay Point.

The bottom composition of the survey area is primarily mud with areas of rock and grass near the shoreline.

Depths on this survey range from zero to fifty-^{three}~~five~~ feet.

C. SOUNDING VESSELS

Vessels 0517 (EDP No. 0517) and 1292 (EDP No. 1292) are 21-foot MonArks which were used to collect all survey data. There were no unusual vessel configurations nor problems encountered.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The following Raytheon DE-719C fathometers, modified by the addition of an Odom Hydrographic Systems, Inc. Digitrace, were used for this survey:

<u>LAUNCH</u>	<u>S/N</u>	<u>Days</u>
0517	V5 10348	198-228
1292	3947	198-264

When using the Raytheon, Model DE-719C Fathometers, calibration checks were made frequently on each day of hydrography. The Digitrace readings were closely monitored for comparison with the analog trace to insure agreement between the two. Any necessary adjustments were made and noted on the fathogram.

Survey records were scanned by AHP-2 employees in accordance with the hydrographic manual. With the digital reading taking precedence over the analog trace, significant peaks and deeps which occurred between selected soundings, missed depths, incorrectly digitized soundings, and effects of sea and swell action were inserted or corrected while scanning.

The Raytheon DE-719C Fathometers were calibrated for a speed of sound through water of 4800 feet/second. Corrections for the speed of sound through water were computed from data obtained with the Odom Hydrographic Systems, Inc. Digibar electronic speed of sound probes (SN 154 and 155), and an Applied Microsystems Laboratory Inc., (AML) sound speed profiler (S/N 03003). NOS program "Velocity" was used for the speed of sound correction computations and zoning.

The following speed casts were taken during this survey:

<u>Cast</u>	<u>Day</u>	<u>Type</u>	<u>Depth</u>	<u>Days used</u>	<u>Table</u>
1	194	Digibar(154)	16 meters	198-200	5
2	201	Digibar(154)	10 meters	201-207	6
3	208	Digibar(154)	30 meters	208-222	7
4	223	AML	24.8 meters	223-228	8
5	229	AML	31.8 meters	229-264	9
6	237	AML	37.3 meters	not used	

Speed correctors were applied to the final field sheet.

Weather permitting, lead line comparisons were conducted each day of hydrography to determine an instrument corrector. The average corrector on both survey vessels was less than 0.1 foot. No instrument error was applied to the soundings on the final field sheet. Leadline comparison forms can be found in the separates of this report.*

The final field sheets were plotted using unverified actual water levels obtained from the DeTour Dock water level station (No. 907-5098) located at 46°01.0'N, 083°55.3'W. Smooth water levels were requested from the Sea and Lake Levels Branch, N/OMF12, in a letter dated October 16, 1989, a copy of which is in the Separates of this report.* *Approved water levels applied during office processing*

Settlement and squat correctors were determined on day 124 for launch 0517, and day 128 for launch 1292. All tests were run using the level method. Copies of the field data and graphs of the settlement and squat correctors vs. RPM are included in the separates. These correctors and the static draft corrector of 1.2 feet were applied on-line through the Complex computer offset table.

E. HYDROGRAPHIC SHEETS (*FIELD*)

The survey scale is 1:10,000. All sheets were produced by AHP 2 with the HDAPS on the Bruning ZETA 824 plotter. A list of sheets submitted for H-10312 follows:

<u>Sheet</u>	<u>Quantity</u>
Edited Trackline North	1
Edited Trackline South	1
Final Field Sheet North	1
Final Field Sheet South	1
Final Field Sheet Overlay North	1
Final Field Sheet Overlay South	1

*Removed from original Descriptive Report; filed with field records.

Boat sheets, trackline plots and rough plots were used to monitor and evaluate the survey data. The final field sheets contain main scheme hydrography, crossline, splits, signals and shoreline. The final field sheet overlays show detached positions, developments, and bottom samples. All soundings on the final field sheet are corrected for draft, water levels, settlement and squat, and the speed of sound through water.

All survey sheets have been submitted with the descriptive report to the Atlantic Hydrographic Section, Norfolk, Virginia.

F. CONTROL STATIONS - *See also section 2.2. of the Evaluation Report.*

Twenty-two monumented control stations (signals 117, 118, 127, 132, 134, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 156, 157, 158, and 159) were used to control this survey. All stations used to control this survey were established to third-order, class one standards by N/CG23322 in 1989. Control datum for this project is the North American Datum of 1927. All stations are listed in the separates following this report.

G. HYDROGRAPHIC POSITION CONTROL

The methods used to control this survey were: Range/azimuth using a Krupp Atlas Polarfix, model SW 1172 A001 (S/N00101) and Navitronic's Comflex Manual Range/Azimuth software using Motorola Falcon 484 Mini-Rangers and a Nikon NT2D Theodolite (s/n 031033); multiple lines of position using Motorola Falcon 484 Mini-Rangers. The following Falcon Mini-Ranger equipment was used:

<u>VESNO</u>	<u>EQUIPMENT</u>	<u>S/N</u>
0517	RPU	F0241
	RT	E2967
1292	RPU	E0154
	RT	E2917
	R/S	F3237
	R/S	E2977
	R/S	E2912
	R/S	E2909
	R/S	F3244
	R/S	E2907
	R/S	E2889

Baseline calibrations of the Motorola Falcon 484 equipment were performed on June 14 and June 19, 1989. The correctors were applied on-line through the Comflex "C-0" tables. Baseline calibration forms and the "C-0" tables are included in the separates.*

When using three or four lines of position, a critical system check is continuously being obtained by observing the error circle radius (ecr) and residual (res) values on the Comflex screen on the survey vessels. When the error circle radius (ecr) was greater than 15m (1.5m at the survey scale) or the residuals were greater than 5m (.5m at the survey scale) for more than three to five minutes, survey operations were suspended in that area until the problem could be resolved. Any positions which had high error circle radii or residuals in an otherwise good line were smoothed during processing. If any five consecutive soundings had high error circle radii or residuals the data were rejected.

On day 250, three main scheme lines of hydrography, a small foul limit line, and a detached position were taken with high ecr values in the northwest corner of the survey area between Cherry Island and Wilson Island. This was due to the poor geometric configuration of the only control available. Because this was the only control available, the data were retained.

Poor line of position intersections when only two LOP's were available is noted on day 200, Vesno 517, positions 3392-3399 where the lowest angle is 23°; and on day 205, positions 745-746, and day 219, positions 1159-1160, Vesno 1292, where the lowest angle of intersection is 26° and 17° respectively. The angle of intersection, when only two LOP's are used, cannot be monitored on the Comflex system.

High residuals, which cannot be smoothed when they occur at the ends of lines, were not rejected when they occurred at shore and the track plot looked reasonable. When high residuals caused a "flyer" at the end of hydrography lines and the distance to shore was noted in the records, the northing and easting values for the end fix were scaled and edited on the data tape.

The on-line computer in the three or four LOP mode estimates the vessel position prior to recording the precise location, in the event the system must edit an LOP or loses stations. When the system is relying on only two LOP's, and they are not entered into the "set-up survey" window left station first (looking from the survey area back at the stations), the computer will plot them on the wrong side of the baseline. When this occurred, the positions affected (detached positions only) were hand plotted using the LOP rates.

** Removed from the original Descriptive Report; filed with field records.*

The Polarfix was used within the following acceptable tolerances for the check initial angles:.

<u>Average of: Maximum planned survey range plus distance of sensing head to active target</u>	<u>Tolerance</u>
Less than 1000 meters	± 6.8'
1000-1999 meters	± 3.4'
2000-2999 meters	± 2.3'
3000 meters or greater	± 2.0'

H. SHORELINE - *See also section 2.b. of the Evaluation Report*

Shoreline drawn on the final field sheet originates from a 1:10,000 scale photographic enlargement of the final reviewed Class III shoreline manuscript TP-00431 and Blueprint No. 137196, also enlarged photographically to 1:10,000 scale.

Shoreline verification was accomplished by comparison of the main scheme hydrography which junctions at shore, or by visual inspections. Foul limit lines were run to define areas of rocks or grass along shore or where rocks or grass limited navigation. Foul limit lines that were not run with the vessel were drawn on the field sheet based on the main scheme hydrography ends of lines. The foul limit line on the north end of La Pointe Island was originally run with launch 1292. Poor control configuration made most of the line unusable. The line was machine plotted, with the bad section completed by hand on the final field sheet.

Verified shoreline is shown in black ink on the final field sheet.

Detached positions were taken on piers and other items located within the survey area along the shoreline. Items which are shown on the shoreline manuscript but which no longer exist, were referenced for deletion from another feature which was positioned. These notations are made on the final field sheet. Items located on the manuscript which still exist, and were not given detached positions, were visually verified and labeled with reference numbers. Problems with control configuration and the Complex software not showing the residual values for detached positions allowed for some misplotting of detached positions. These were rejected and reference numbers were assigned based on sketches and descriptions on the fathogram. Reference numbers are labeled on the final field sheet with a series '5000' number and an "R" suffix designation. The symbol for each item verified along the shoreline was drawn in black ink on the final field sheet.

Small detail changes are shown in red ink along the south shore of the survey area from Seastone Point east to Maxton. New piers are shown in red ink on Rutland and Ashmun Islands. A jetty extending from the south end of Howard Island, is also shown in red ink on the final field sheet overlay. The descriptions of these changes are marked with an asterisk on the final field sheet. The main scheme hydrography junctioning at shore shows a change to the eastern shoreline of Bald Island. Adjacent lines, both north and south of the changed area, show there is no reason to suspect control problems in this area. This change is shown as a dashed red line on the final field sheet. The islet charted at latitude $46^{\circ}03'45''N$, longitude $083^{\circ}44'24''W$, was not seen on the photographs used to compile the shoreline manuscript, but does exist. This is shown on the final field sheet as a dashed red line, based on the charted shoreline and the foul limit line run in this area.

Six control stations lie seaward of the high water line. Stations 140 and 148 are located on solid crib type piers. Stations 127, 137, 144, 146 and 156 were set very near the 1989 water line. The shoreline manuscripts were compiled from photographs taken in 1984, when the water level was 1-2 feet higher.

I. **CROSSLINES** - *See also section 3.2. of the Evaluation Report.*

A total of 15.1 linear nautical miles of crosslines were run on H-10312 which equals 8.3% of the main scheme hydrography. Crossline soundings agree to within 1 foot of the main scheme soundings.

Main scheme hydrography and crosslines were run with two sounding vessels. Soundings agree within 1 foot between the two vessels, in the areas where the bottom is not irregular.

J. **JUNCTIONS** - *See also section 5. of the Evaluation Report.*

This survey junctions with H-10307 (1989) and H-10311 (1989) to the west and with Canadian Hydrographic Survey FS-8081 (1981) to the north. The southern and eastern limits are bounded by shoreline.

Junction soundings between this survey and the junction surveys agree well*, varying no more than two feet.* The greatest difference is seen in areas with an irregular bottom.

** With the exception of the CHS survey. See section 5. of the Evaluation Report*

K. COMPARISON WITH PRIOR SURVEYS - *See also section 6. of the Evaluation Report*

This survey was compared with the following prior surveys:

<u>Registry No.</u>	<u>Scale</u>	<u>Year Surveyed</u>
LS-1770	1:10,000	1941
LS-859	1:10,000	1895-9
LS-862	1:10,000	1896

With LS-1770

In the area north of Harbor Island, only minor changes were noted. The 12-foot depth curve at latitude 46°04'15"N, longitude 083°45'06"W, shows a reduced size on the current survey. The 12-foot depth curve arm extending west from the south end of the shoal marked by buoy C "11" shows a break in the depth curve on the current survey, forming an isolated shoal.

In the area south of Harbor Island, agreement between the current and prior surveys is excellent, within 2 feet.

With LS-859

When the 3-foot sounding reduction is accounted for, the current survey generally agrees within 2 feet with the prior survey.

With LS-862

When the 3-foot sounding reduction is accounted for, the current survey agrees with the prior survey within one foot in depths to 10 feet and within 2 feet in depths deeper than 10 feet.

One AWOIS item, number 5595, appears on the prior surveys (1-862 and 1-1770). This is discussed in detail on the Item Investigation Reports in the separates following the text.

L. COMPARISON WITH THE CHART - *See also section 7. of the Evaluation Report*

This survey was compared with the 28th edition of chart 14882 dated August 2, 1986, using a 1:10,000 scale enlargement.

Five AWOIS items, numbers 5596, 5600, 5601, 5602 and 5603, which do not originate with the prior surveys, were addressed as part of this survey. These are discussed in detail on the Item Investigation Reports in the separates following the text.

Six uncharted shoals were discovered while conducting this survey. They are:

<u>FEATURE/L.D.</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>	<u>POSITIONS</u>
Rock Shoal/4' ✓	46°03'08.1"	083°42'45.6"	2852-2876
Shoal/11' ✓ <i>14'</i>	46°03'12.8"	083°42'53.8"	2798-2829
Shoal/10' ✓	46°03',25.7"	083°42'51.5"	2830-2851
Rock Shoal/4' ✓	46°04'32.9" ⁵	083°42'41.9" ^{42.4}	3077-3106
Rock Shoal/4' ✓	46°04'40.3" ^{39.8}	083°43'07.0" ^{46.28}	3113-3124
Rock Shoal/5' ✓	46°04'42.5"	083°43'10.2"	3125-3143
(South End)			
Rock Shoal/2' ✓	46°04'45.9"	083°43'12.0"	3125-3143
(North End) <i>covers 1-ft at LWD</i>			

A Danger to Navigation letter was sent to the Commander, Ninth Coast Guard District, Cleveland, Ohio, concerning these dangers to navigation. Copies of the letter were also sent to N/CG2443, N/CG2443x1, and N/CG221.

All charted shoal areas within the limits of the survey were developed by running 50-meter splits of the main scheme and 50-meter lines perpendicular to the main scheme. 25-meter lines were run in certain areas to better define depth curves.

West of longitude 083°44'00"W and north of latitude 46°04'00"N, surveyed depths generally agree within 2 feet of the charted depths. In the area east and north of this latitude and longitude, surveyed depths are as much as 5 feet shoaler than those charted. Significant changes in this area, covered by the North Final Field Sheet are:

1) The charted 15' near latitude 46°04'24", longitude 083°43'45", was located by reduced line spacing and a diver investigation found a least depth of 13' at LWD, at latitude 46°04'26"N, longitude 083°43'51"W. This feature is a 5-meter diameter single boulder, and should be charted as an isolated 13-foot sounding *on a rock.*

2) The charted 18' near latitude 46°04'33"N, longitude 083°43'55"W, was located by reduced line spacing with a least depth of 10' at LWD at latitude 46°04'35"N, longitude 083°43'54"W. This feature appears from the fathogram to be a rocky shoal. Chart the 10 foot sounding at latitude 46°04'54.0"N. longitude 083°45'09.9"W. *- Chart as shown on the present survey.*

3) The northern tip of a shoal currently charted as 14' at latitude 46°04'54"N, longitude 083°45'09" now forms an isolated shoal with a least depth of 10' at LWD. Chart the isolated 10 foot shoal. *as shown on the present survey*

4) Six uncharted isolated shoal soundings were recorded at:

<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>	<u>SURVEYED DEPTH</u>	<u>CHARTED DEPTH</u>
46°04'50. ⁵ 4 "	083°44'04. ⁷ 5 "	13 12 ft.	13 ft.
46°04'54.0"	083°44'00.0"	13 12 ft.	13 ft. - Not found on chart
46°04'57.0"	083°44'02.0"	15 12 ft.	15 ft.
46°05' 00.0 ^{05.1} "	083°44' 10.5 ^{11.2} "	14 11 ft.	14 ft.
46°05'16.5"	083°44'18.0"	17 ft.	22 ft.
46°05' 33.0 ^{32.5} "	083°44'03.0"	18 ft.	21 ft.

These surveyed depths should be charted as ~~isolated shoals~~, shown on the present survey.

5) The twelve foot depth curve at latitude 46°04'03"N, longitude 083°45'02"W, extends northward to latitude 46°04'24"N, longitude 083°45'05"W. A foul area composed of coarse sand and gravel, with parts awash at the time of this survey, extends northward from Harbor Island. This foul area encompasses the rock charted at latitude 46°03'58"N, longitude 083°45'03"W. These changes should be charted. *Concur.*

6) An area foul with rocks was delimited at latitude 46°04'54"N, longitude 083°43'37"W, (center of area) with parts awash at the time of this survey. This area should be charted as a shoal with dangerous rock symbols.

7) An area foul with rocks, with ~~least depths of 0.5 foot at the time of survey~~, was delimited at latitude 46°04'23"N, longitude 083°41'12"W. This area should be charted ~~with dangerous rock symbols~~. *as shown on the present survey.*

9) Four individual rocks were located near the north shore of Harbor Island at:

<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>	<u>ELEVATION (LWD)</u>
46°03'56.3"	083°45'36.4"	Bares 3 feet ✓
46°03'56.6"	083°45'36.9"	Awash ✓
46°03'57.2"	083°45'22.5"	Bares 0.5 feet
46°03'57.4"	083°45'21.6"	Awash ✓

These should be charted with rock symbols. - *Concur.*

In the area south of latitude 46°04'00"N, and west of longitude 083°45'30"W, covered by the South Final Field Sheet, depths are generally ~~1-2~~ feet shoaler on the current survey.

Other than the shoals reported as dangers discussed previously in this section, the only significant changes found regarding shoals and depth curves on the south sheet are:

1) The shoal at latitude $46^{\circ}03'45''N$, longitude $083^{\circ}44'21''W$, was developed with reduced line spacing to 25 meters. Green Can "9", marking the charted 1-foot sounding was located 175 meters west northwest of the currently charted position at latitude $46^{\circ}03'46.5''N$, longitude $083^{\circ}44'15.6''W$. No evidence of the charted 12-foot depth curve extending eastward from the buoy was observed. An area foul with rocks was delimited around this shoal. ~~Five~~^{Three} isolated rocks were also located near the shoal at:

<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>	<u>ELEVATION (LWD)</u>
46°03'45.3"	083°44'31.6"	Bares Awash
46°03'49.3"	083°44'21.6"	Bares 0.5 feet
46°03'49.0"	083°44'21.1"	Bares 1 foot
46°03'43.3"	083°44'32.2"	Bares 1.5 feet
46°03'47.3"	083°44'21.1"	Awash

The buoy at the surveyed location adequately marks this shoal. The ~~three~~^{Five} rocks found should be charted. This area should be charted as shown on the final field sheet. - *Concur.*

2) The area between the south end of La Pointe Island and the shoreline of Drummond Island shows ^{charted} depths six feet or less between these points. Mr. Lazarz, the owner of the Drummond Island Sports Center located in this vicinity, expressed concern over the charted depths in this area. Mr. Lazarz informed the hydrographer that larger vessels seeing the charted marsh symbols and shallow depth curves, avoid his place of business. This area was developed with reduced line spacing to fifty meters, with a centerline run of the natural channel splitting the two shorelines. Depths of seven to nine feet at LWD exist in this area. The chart should show a channel through this area, as depicted by this survey. - *Concur*

Concerning non-sounding features:

1) Foul limit lines were run to delimit areas foul with marsh grass, rocks, or a combination of both along both the shoreline of Drummond Island and the numerous islands in Potagannissing Bay. These areas incorporated all of the charted rock symbols, with a few exceptions, which were located by detached positions, separately.

- 2) The islet charted at the north end of Bald Island does not exist. A rock should be charted at this location based on position 1260, at latitude $46^{\circ}03'15.4''N$, longitude $083^{\circ}44'10.7''W$. - Do not concur. Chart as an islet
- 3) No position was obtained on the rock charted on the north end of Rogg Island, verified visually. This should be retained as charted. Concur
- 4) The rock charted at latitude $46^{\circ}02'52.8''N$, longitude $083^{\circ}41'21.0''W$, was searched for in the areas that were not foul with heavy marsh grass. The depths in this area are 0-1 foot at LWD (1-2 feet at the time of search). The origin of this feature is prior survey 1-862, on which the feature is barely recognizable as a wreck. No evidence of any kind of obstruction was found in this area and the dangerous rock symbol should be deleted. - See section 6.1 of the Evaluation Report
- 5) The platform-type symbol charted at latitude $46^{\circ}02'21''N$, longitude $083^{\circ}40'57''W$, which was first charted as a pier attached to shore on Feldschers 1954 Revisory survey does not exist and should be deleted. Wharf ruins were located in this area at latitude $46^{\circ}02'14.5''N$, longitude $083^{\circ}41'00.1''W$ (South End) and latitude $46^{\circ}02'16.1''N$, longitude $083^{\circ}40'59.1''W$ (North End). These ruins should be charted. - Concur
- 6) The three pile symbols charted at latitude $46^{\circ}02'15.6''N$, longitude $083^{\circ}40'54.0''W$ were searched for in the shallow water of Maxton Bay. No piles were found at the charted location and should be deleted. - Do not concur - chart submerged piles unless removal is documented. However, two piles were located at latitude $46^{\circ}03'15.0''N$, longitude $083^{\circ}40'48.2''W$, and should be charted. - Concur

Other non-sounding features are addressed as AWOIS items and discussed on Item Investigation Reports in the separates following the text of this report.

There are seven submerged cables shown on the chart. A plat of the cables was obtained from The Cloverland Electric Co-op and is submitted with this survey.

One overhead cable exists as charted over the mouth of the Potagannissing River. This is past the head of navigation and a clearance was not obtained.

There are no submarine pipelines, bridges, nor ferry routes in this survey area.

M. ADEQUACY OF SURVEY

This survey is a complete basic hydrographic survey and is adequate to supersede all prior surveys within the common area.

N. AIDS TO NAVIGATION

All floating aids to navigation in the survey area were located by detached positions and are adequate to serve their intended purpose. The LIGHT LIST, Volume VII, GREAT LAKES, 1989 Edition states that these aids are seasonal.

There are five U.S. Coast Guard maintained floating aids to navigation in the survey area and ~~four~~^{five} privately maintained floating aids. The only discrepancy between charted positions and surveyed position was that mentioned in Section L. of this report concerning buoy C"9", located 175 meters west northwest of the charted position. Privately maintained charted buoy W Or "A", latitude 46°01'53.4"N, longitude 083°44'37.5"W (1989 USCG Light List No.12085) was replaced by a green spar buoy "1", at latitude 46°01'47.4"N, longitude 083°44'43.3"W. Buoys S"3", latitude 46°01'35.0"N, longitude 083°44'49.1"W, and S"4", latitude 46°01'34.6"N, longitude 083°44'56.8"W, both privately maintained, are not shown in the light list.

There are no non-floating aids to navigation nor landmarks in this survey area.

O. STATISTICS

<u>DESCRIPTION</u>	VESNO		
	<u>1292</u>	<u>0517</u>	
Total Positions	3143	829	3972
Detached Positions	220	14	234
Duplicate Positions	155	16	171
Total Nautical Miles of Hydrography	244.7	85.0	329.7
Square Nautical Miles	7	1	8
Bottom Samples	19	22	41
Water Level Stations	--	--	5
Speed Casts	--	--	6
Days of Production	21	6	27

P. MISCELLANEOUS

Bottom samples taken were submitted to the Smithsonian Institution as directed in Section 6.7 of the project instructions. Bottom sample positions were plotted on the overlay with the developments and other detached positions. The bottom samples were listed on the Oceanographic Log Sheet - M, NOAA Form 75-44, and may be found in the Separates Following Text.

No anomalous currents were observed in the survey area.

Launch 1292 duplicated 144 position numbers used by launch 517, which started with the 3000 series of position numbers. All of the duplicated positions from launch 1292 are from day 264, positions 3000-3143, and are plotted on the North Final Field Sheet Overlay.

The hydrography run along the north and west faces of the pier at latitude $46^{\circ}02'09.0''N$, longitude $083^{\circ}41'19.5''W$, was computed on the wrong side of the baseline; see Section G of this report. These data were hand plotted by LOP values, the new positions scaled, and the northing and easting values edited on the data tape.

Q. RECOMMENDATIONS

Recommendations may be found in sections H, K, and L of this report and on the Item Investigation Reports in the separates following the text of this report.

R. AUTOMATED DATA PROCESSING

The office HDAPS currently in use, consists of the following system components: a Hewlett Packard (HP) 9000 Model 300 computer, an HP 9153C Disk Drive with a hard disk storage capacity of 20 Mbytes, an HP 7959B hard disk with a storage capacity of 300 Mbytes, an HP 98785A Color Monitor, a Bruning ZETA 824 plotter, an HP Ruggedwriter 480 printer, and an HP Model 9144 tape drive. On the 21-foot MonArks, the HDAPS is an IBM PC based system, using the Navitronic's Hyflex 1000 as the interface between the computer and the hydrographic sensors. Data are acquired and stored on launches 0517 and 1292 using a Comflex 1030 NX hard disk and written to $3\frac{1}{2}$ -inch double sided micro-floppy diskettes. A Navitronic Path Guidance Unit (PGU) functions both as a remote steering display for the coxswain and as a remote control for the HDAPS. All off-line software programs are written in HP BASIC while all on-line programs are

written in Quick Basic. The office and launch systems are not compatible. The Oswego "Lif" utility program must be used to convert the raw data collected on-line to Hewlett-Packard language.

In addition to the HDAPS, the following non-HDAPS computer programs were used:

VELOCITY Version 1.00	EXT Velocity Computations (IBM PC)	9/89
MTEN 3 w/Enhancements	Geodetic Computations (IBM PC)	6/86

S. REFERRAL TO REPORTS

<u>Title</u>	<u>Transmittal Information</u>
Descriptive Report To Accompany Survey H-10312	Atlantic Hydrographic Section Norfolk, Virginia 1989
Horizontal Control Report for OPR-X278-HFP	Field Photogrammetry Section Norfolk, Virginia 1989 Written by: C.M. Middleton Jr.
Danger to Navigation Report for H-10312	Commander, Ninth USCG District (Copy in separates of this report) 1989
Chart Sales Agent Report OPR-X278-HFP	Atlantic Hydrographic Section Norfolk, Virginia 1989
User Evaluation Report OPR-X278-HFP	Atlantic Hydrographic Section Norfolk, Virginia 1989
Chart Inspection Report OPR-X278-HFP	Mr. Rudolph D. Sanocki Atlantic Hydrographic Section Norfolk, Virginia 1989
Coast Pilot Report	Coast Pilot Section Mapping and Charting Branch Rockville, MD 1989
Submitted by:	
Brian A. Link, AHP-2	

LIST OF STATIONS

CONTROL STATIONS

No	Type	Latitude	Longitude	H	Cart	e	MM/DD/YY
101	0	046:03:47.153	083:56:56.094	0	250		06/12/89
102	0	046:01:49.775	083:58:52.629	0	250		06/12/89
103	0	046:03:55.604	083:58:29.453	0	250		06/12/89
104	0	046:02:19.338	083:56:09.755	0	250		06/12/89
105	0	046:02:19.700	083:54:15.004	0	250		06/12/89
106	0	046:02:19.324	083:58:09.885	0	250		06/12/89
107	0	046:01:46.674	083:56:40.732	0	250		06/12/89
108	0	046:03:57.528	083:55:46.925	0	250		06/12/89
109	0	046:03:51.474	083:54:24.161	0	250		06/12/89
110	0	046:02:20.158	083:54:15.056	0	250		06/12/89
111	0	045:59:53.714	083:52:14.371	0	250		06/12/89
114	0	046:04:21.441	083:52:42.708	0	250		06/12/89
115	0	046:03:33.789	083:51:13.519	0	250		06/12/89
116	0	046:04:43.790	083:51:01.182	0	250		06/12/89
117	0	046:04:40.660	083:48:35.105	0	250	NLONG	06/12/89
118	0	046:04:23.727	083:48:45.390	0	250	LONG	06/12/89
119	0	046:03:28.488	083:49:35.115	0	250		06/12/89
120	0	046:03:12.748	083:50:46.550	0	250		06/12/89
121	0	046:02:18.132	083:47:28.287	0	250		06/12/89
122	0	046:01:41.194	083:49:30.685	0	250		06/12/89
123	0	046:00:58.171	083:49:30.208	0	250		06/12/89
124	0	046:00:04.561	083:49:26.592	0	250		06/12/89
125	0	046:00:10.206	083:49:01.904	0	250		06/12/89
126	0	046:00:17.918	083:48:16.108	0	250		06/12/89
127	0	046:01:39.766	083:45:20.444	0	250	ROPP	06/12/89
128	0	046:00:25.171	083:47:23.777	0	250		06/12/89
129	0	046:00:46.634	083:46:47.557	0	250		06/12/89
130	0	046:02:03.387	083:47:33.559	0	250		06/12/89
131	0	046:02:21.853	083:49:39.413	0	250		06/12/89
132	0	046:02:11.567	083:45:24.424	0	250	BOUL	06/12/89
133	0	045:59:15.162	083:48:02.707	0	250		06/12/89
134	0	046:02:55.580	083:45:37.897	0	250	HARBOR	06/12/89
135	0	046:01:34.948	083:50:41.615	0	250		06/12/89
136	0	046:01:32.641	083:44:58.786	0	250	HAVEN	06/12/89
137	0	046:02:27.668	083:44:17.238	0	250	FIRE	06/12/89
138	0	046:02:47.304	083:44:25.043	0	250	BALD	06/12/89
139	0	046:02:39.051	083:43:13.668	0	250	GRAPE	06/12/89
140	0	046:02:08.923	083:41:37.933	0	250	KEMP	06/12/89
141	0	046:02:19.862	083:41:00.988	0	250	NOID	06/12/89
142	0	046:02:56.780	083:42:04.174	0	250	ASH	06/12/89
143	0	046:03:18.067	083:41:45.364	0	250	PIZZA	06/12/89
144	0	046:03:40.246	083:42:06.752	0	250	PENNER	06/12/89
145	0	046:03:46.008	083:40:37.048	0	250	PAW	06/12/89
146	0	046:04:04.747	083:42:01.883	0	250	PECK	06/12/89
147	0	046:04:50.010	083:43:16.024	0	250	RUNT	06/12/89
148	0	046:02:11.731	083:43:29.155	0	250	LAZARZ	06/12/89
149	0	046:04:30.329	083:53:11.449	0	250		06/12/89
152	0	046:03:33.878	083:51:14.067	0	250		06/12/89
153	0	046:01:34.328	083:53:29.240	0	250		06/12/89
154	0	045:59:29.346	083:54:13.666	0	250		06/12/89
155	0	046:00:58.404	083:53:58.394	0	250		06/12/89
156	0	046:05:27.266	083:45:19.499	0	250	CHERRY	06/12/89
157	0	046:04:08.844	083:46:14.414	0	250	STAND	06/12/89
158	0	046:03:49.347	083:47:32.379	0	250	MARE	06/12/89
159	0	046:05:40.112	083:48:47.400	0	250	PK BURNT	06/12/89
160	0	046:03:48.760	083:47:32.529	0	250		06/12/89
161	0	046:00:32.839	083:51:58.593	0	250		06/12/89
162	0	045:56:56.791	083:54:11.207	0	250		06/12/89
163	0	046:01:34.347	083:53:29.187	0	250		06/12/89
164	0	045:59:23.216	083:53:50.587	0	250		06/12/89
165	0	045:59:06.192	083:53:40.452	0	250		06/12/89
166	0	045:58:22.728	083:53:00.434	0	250		06/12/89



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

Atlantic Hydrographic Party 2
439 West York St.
Norfolk, VA 23510-1114

October 3, 1989

TO: Commander, Ninth Coast Guard District
1240 East 9th Street
Cleveland, OH 44199-2060

FROM: LT. V. Dale Ross, NOAA *V. Dale Ross*
Chief, Atlantic Hydrographic Party 2

SUBJECT: Danger to Navigation Notice

Enclosed is a report for dangers to navigation (Attachment 1) found while conducting a basic hydrographic survey of Potagannissing Bay, Michigan (Registry No. H-10312), from Cherry Island to the Potagannissing River.

These dangers to navigation constitute a correction to information shown on Chart 14882, 28th ed., Aug 2/86, for inclusion in the Local Notice to Mariners.

A chart section showing the location of these dangers is also included as part of this report.

THIS IS ADVANCE INFORMATION
SUBJECT TO OFFICE VERIFICATION

CC: N/CG2443
N/CG2443X2
N/CG221



REPORT OF DANGER TO NAVIGATIONHydrographic Survey Registry Number: H-10312

Survey Title - State: Michigan
 General Locality: Potagannissing Bay
 Sublocality: Cherry Island to Potagannissing River

Project Number: OPR-X278. Atlantic Hydrographic Party 2

The following uncharted items were discovered during hydrographic survey operations:

ITEM***	SURVEYED DEPTH*	SURVEYED POSITION**	
		LATITUDE (N)	LONGITUDE (W)
ROCKY SHOAL (1)	3.8 ft.	46°03'08.143"	83°42'45.630"
SHOAL (2)	10.8 ft.	46°03'12.790"	83°42'53.845"
SHOAL (3)	11.0 ft.	46°03'25.741"	83°42'51.468"
ROCKY SHOAL (4)	4.2 ft.	46°04'32.930"	83°42'41.895"
ROCKY SHOAL (5)	4.0 ft.	46°04'40.265"	83°43'06.996"
ROCKY SHOAL (6)	5.3 ft.	46°04'42.538"	83°43'10.245"
(South End)			
ROCKY SHOAL (7)	0.6 ft.	46°04'45.910"	83°43'12.047"
(North End)			

* Depth shown is least depth in feet over shoal and is reduced to Low Water Datum (IGLD 1955) using unverified actual water levels.

** Position shown is NAD 1927.

*** Number in () indicates location on attached chart section.

These items affect Chart 14882, 28th Edition, Aug 2/86.

Questions concerning this report should be directed to the Atlantic Marine Center, Atlantic Hydrographic Section, at (804) 441-6746.

SECTION FROM CHART
14882, 28th Ed., AUG 2/86
LOGARITHM
1:40,000 SCALE

To find SPEED, place one point of dividers on distance run (In or right point on 60 and left point will then indicate speed in units per h

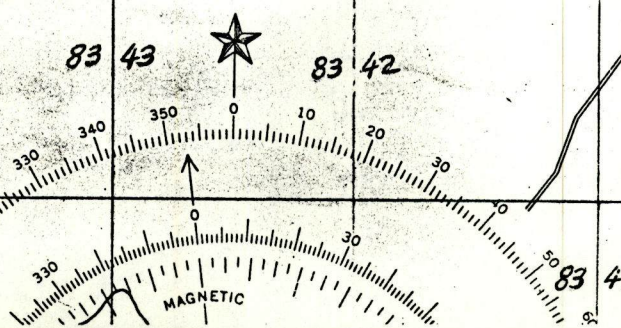


46
605

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04

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04



83 45

83 40

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1198
1199
1200

AWOIS REPORTS

CHART #14882

PRE-SURVEY REVIEW ITEM #5603
Un-identified Obstruction

SOURCE: TP-00431/84

INVEST. DATE: 8-31-89

TIME: 1656

VESSEL #1292

OIC: LT. V. Dale Ross

REFERENCE: H-10312 (OPR-X278 CY 89)

POSITION #:1853

VOLUME: Fathogram (DN 243)

CORRECTORS APPLIED: None

VELOCITY:

TRA CORRECTORS:

PREDICTED TIDES:

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°02'13.10"N

83°40'42.30"W

OBSERVED:

-- NOT FOUND --

POSITION DETERMINED BY: Range/Azimuth (Falcon 484/NT2D Theodolite)

METHOD OF ITEM INVESTIGATION: The area of the charted obstruction is foul with marsh grass with the exception of a small channel between the grass into a resort. A visual search offshore of the foul area in shallow water (less than 3') found nothing. A large plastic barrel float (see photo in Separates of Descriptive Report for H-10312) was located by detached position in this vicinity. This float was probably identified as an obstruction on the 1984 photographs. PSR Item 5602, is a similar situation. The owner of the the Birch Tree Resort, Fred Jensen, phone 906-493-5355, confirmed that no obstruction exists in the vicinity of the large barrel float. This resort is directly inshore from the item.

CHARTING RECOMMENDATIONS: Delete the charted obstruction.

Concur

COMPILATION USE

CHART:

APPLIED AS:

CHART #14882

PRE-SURVEY REVIEW ITEM #5602
Un-identified Obstruction

SOURCE: TP-00431/84

INVESTIGATION DATE: 8-31-89(DN 243) TIME: 1600Z VESSEL #1292

OIC: Lt. V. Dale Ross

REFERENCE: H-10312 (OPR-X278 CY 89 Ops)

POSITION #1814-1822 VOLUME: Fathogram (DN 243)

CORRECTORS APPLIED: None

VELOCITY:

TRA CORRECTORS:

PREDICTED TIDES:

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°02'11.70"N

83°40'35.90"W

OBSERVED:

-----Not Found-----

POSITION DETERMINED BY: Range/Azimuth (Falcon 484/NT2D Theodolite)

METHOD OF ITEM INVESTIGATION: The area of the charted obstruction is foul with marsh grass with the exception of a small channel between the grass into a resort. A visual search offshore of the foul area in shallow water (less than 3') found nothing. A white plastic bottle was located in this vicinity, and its possible that this or even a larger float was identified as an obstruction on the 1984 photographs. PSR Item 5603, a photo of which is in the Separates of the Descriptive Report for H-10312, is a similar situation.

CHARTING RECOMMENDATIONS: Delete Charted Obstruction

Concur

COMPILATION USE

CHART:

APPLIED AS:

CHART #14882

PRE-SURVEY REVIEW ITEM #5601
Un-identified Obstruction

SOURCE: TP-00431/84

INVEST. DATE: 8-16-89 (DN 228) TIME: 1930Z VESSEL #0517

OIC: LT. V. Dale Ross

REFERENCE: H-10312 (OPR-X278 CY 89 OPS)

POSITION: 3823

VOLUME: Fathogram (DN 228)

CORRECTORS APPLIED: NONE

VELOCITY:

TRA CORRECTORS:

PREDICTED TIDES:

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°03'29.00"N

83°40'12.30"W

OBSERVED:

46°03'29.57"N

83°40'12.76"W

POSITION DETERMINED BY: Polarfix

METHOD OF ITEM INVESTIGATION: A rock jetty was found at the location of the charted islet. The jetty, which bares ~~2~~⁴ ft. at the time of survey, was probably awash or even submerged during the high water levels of 1984, when the photographs for the manuscript were taken. This would have made identification uncertain.

CHARTING RECOMMENDATIONS: Delete islet and chart jetty at this location. *Concur*

COMPILATION USE

CHART:

APPLIED AS:

CHART #14882

PRE-SURVEY REVIEW ITEM #5600
Obstruction (Two Piles)

SOURCE: Unknown

INVEST. DATE: 7-25-89 (DN 206) TIME: 1425Z

VESSEL #1292

OIC: LT. V. Dale Ross

REFERENCE: H-10312 (OPR-X278 CY 89 OPS)

POSITION: 809-815 VOLUME: Fathogram (DN 206)

CORRECTORS APPLIED: None

VELOCITY:

TRA CORRECTORS:

PREDICTED TIDES:

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°02'11.00"N

83°41'21.00"W

OBSERVED:

-- Not Found --

POSITION DETERMINED BY: Multiple Lines of Position (Falcon 484)

METHOD OF ITEM INVESTIGATION: A new pier (when compared to the 28th edition of Chart 14882 has been constructed in this area. When the new pier was built, the charted piles were either covered over or removed. During a visual search around the offshore end of this new pier, in depths to five feet with good bottom visibility, no evidence of the piles were seen.

CHARTING RECOMMENDATIONS: Delete piles from chart.

Concur

COMPILATION USE

CHART:

APPLIED AS:

CHART:14882

PRESURVEY REVIEW ITEM #5595
Shoaling to 1 ft. Reported

SOURCE: CL572/82, PS 1-1771

INVESTIGATION DATE: 8/28-8/29/89 (DN 240 & 241) VESSEL: 1292

OIC: LT. V. Dale Ross

REFERENCE: H-10312 (OPR-X278 CY 89 OPS)

POSITION: 1437-1467 (DN 240) and 1511-1641 (DN 241)

CORRECTORS APPLIED:

VELOCITY: Yes

TRA CORRECTORS: Yes

UNVERIFIED ACTUAL WATER LEVELS: Yes

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°01'55.00"N

83°44'35.00"W

OBSERVED:

46°01'⁵22.50"N

83°44'39.00"W

POSITION DETERMINED BY: Multiple Lines of Position (FALCON 484)

METHOD OF ITEM INVESTIGATION: This area was developed with hydrography at no greater than 50 meter line spacing in both an east/west and north/south directions over the area of shoaling. The charted islet which bares ~~2.5~~³ ft. at LWD was defined by the hydrography, center at the above observed position. Least depths to 1' were found around the islet.

CHARTING RECOMMENDATIONS: This area should be charted based on the hydrography shown on survey H-10312, 1989. *Concur*

COMPILATION USE

CHART:

APPLIED AS:

CHART #14882

PRESURVEY REVIEW ITEM # 5596
Submerged Wreck

SOURCE: Feldscher 1957 RS

INVESTGATION DATE: 9-11-89 (DN 254) TIME: 1900Z VESSEL: 1292

OIC: LT. V. Dale Ross

REFERENCE: H-10312 (OPR-X278 CY 89)

Position: 2697

Volume: Fathogram (DN 254)

CORRECTORS APPLIED:

Velocity: N/A

TRA Correctors: N/A

Unverified Actual Water Levels: N/A

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°03'18.10"

83°45'33.80"

OBSERVED:

-- Not Found --

POSITION DETERMINED BY: HDAPS Manual Range Azimuth
NT2D Theodolite/Falcon 484

METHOD OF ITEM INVESTIGATION: A Fathometer and visual search of the area of the charted wreck was conducted in depths to six feet with good bottom visibility. An area foul with heavy marsh grass lies adjacent to the west of the charted location and precluded the use of a bottom drag. The search was conducted offshore of the marsh grass and within an approximate 100 meter radius of position 2697 (at charted location). No evidence of the wreck was seen.

CHARTING RECOMMENDATIONS: Delete the charted wreck symbol. *Concur*

COMPILATION USE

APPROVAL SHEET

APPROVAL SHEET

BASIC HYDROGRAPHIC SURVEY

OPR-X278

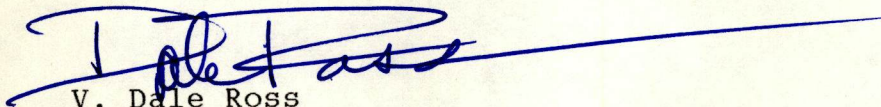
AHP-10-10-89

H-10312

1989

This basic hydrographic survey was conducted in accordance with the project instructions for OPR-X278-HFP, the hydrographic manual, the hydrographic survey guidelines, and the field procedures manual. The survey data and reports were completed and reviewed in their entirety and all supporting records were also checked.

This survey is a complete basic hydrographic survey for the area described in Section B of this report.



V. Dale Ross

LT NOAA

Chief, Atlantic Hydrographic Party Two

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: N/CG2441-Verification Section

Hourly heights are approved for: See Remarks
Water Level Station

Period: July 17, 1989 to September 21, 1989

HYDROGRAPHIC SHEET: H-10312

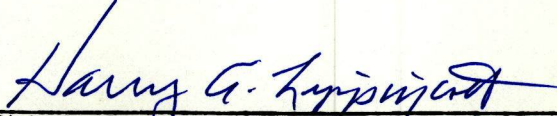
OPR-X278-AHP

Locality: St. Mary's River, MI

Plane of reference: Low Water Datum (IGLD ___ : ___ Feet)

Remarks: Use the following Water Level Station and corresponding Low Water Datum for this survey.

DETOUR DOCK, MI (907-5098) 576.8'


Chief, Great Lakes Acquisition Unit

GEOGRAPHIC NAMES

H-10312

Name on Survey	A ON CHART NO. 14882 B ON PREVIOUS SURVEY NO. C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G RAND McNALLY ATLAS H U.S. LIGHT LIST K										
	A	B	C	D	E	F	G	H	K		
ASHMAN ISLAND	X										1
BALD ISLAND	X										2
BAY ISLAND	X										3
BOULANGER ISLAND	X										4
BRUCE POINT	X										5
CEDAR ISLAND	X										6
CHERRY ISLAND	X										7
DRUMMOND	X										8
DRUMMOND ISLAND	X										9
FIRE ISLAND	X										10
GRAPE ISLAND	X										11
HARBOR ISLAND	X										12
HAY POINT	X										13
HOWARD ISLAND	X										14
JAMES ISLAND	X										15
JIM ISLAND	X										16
LA POINTE ISLAND	X										17
LITTLE ROGG ISLAND	X										18
MAXTON	X										19
MICHIGAN (Title)	X										20
PAW POINT	X										21
PECK ISLAND	X										22
POTAGANISSING BAY	X										23
POTAGANISSING RIVER	X										24
PROPELLER ISLAND	X										25

GEOGRAPHIC NAMES

H-10312

Name on Survey	Source of Information									
	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	TP-00431	
QUARRY ISLAND	X									1
ROGG ISLAND	X									2
RUTLAND ISLAND	X									3
SCOTT BAY	X									4
SEASTONE POINT								X		5
										6
										7
										8
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Approved:

Charles E. Harrington
Chief Geographer - N/CG 2x5

MAR 28 1991

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU
BY (Check):

ORDINARY MAIL AIR MAIL

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GBL (Give number) _____

TO:

Chief, Data Control Section, N/CG243
Room 151, WSC-1
Hydrographic Surveys Branch
National Ocean Service
Rockville, MD 20852

DATE FORWARDED

31 October 1991

NUMBER OF PACKAGES Two (2)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H-10312 (HFP-10-10-89)

OPR-X278, MICHIGAN, POTAGANISSING BAY
CHERRY ISLAND TO POTAGANISSING RIVER

Pkg. 1: (Tube)

- 4 Original Smooth Field Sheets
- 1 Original Smooth Sheet
- 1 Original Smooth Position Overlay
- 2 Smooth Excess Sounding Overlays
- 1 Original Descriptive Report

Pkg. 2: (Box)

- 1 Accordion folder containing echograms and printouts for Year Days 198, 199, 201, 205, 206, 208, 212, 219, 220, 233, 234, 240, 241, 243, 248, 249, 250, 254, 262, 263, and 264 for Launch #1292 and for Year Days 198, 200, 201, 214, 215, and 228 for launch #517 and an envelope of miscellaneous data.
- 1 Envelope containing data removed from the Descriptive Report.
- 1 Envelope containing sounding corrector data (TRA, Velocity, and Smooth Tides).
- 1 Cahier of Final Printouts.

FROM: (Signature)

Maurice B. Hickson III
Maurice B. Hickson, III

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Atlantic Hydrographic Section,
N/CG244
Atlantic Marine Center
439 West York Street
Norfolk, VA 23510-1114

10/30/91

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10312

NUMBER OF CONTROL STATIONS		22
NUMBER OF POSITIONS		3790
NUMBER OF SOUNDINGS		15933
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	59	11/29/89
VERIFICATION OF FIELD DATA	585	01/31/91
ELECTRONIC DATA PROCESSING	106	
QUALITY CONTROL CHECKS	214	
EVALUATION AND ANALYSIS	219	08/16/91
FINAL INSPECTION	28	07/29/91
TOTAL TIME	1211	
ATLANTIC HYROGRAPHIC SECTION APPROVAL		10/30/91

**COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT**

SURVEY NO.: H-10312

FIELD NO.: AHP-10-10-89

Michigan, Potagannissing Bay, Cherry Island to Potagannissing River

SURVEYED: July 17 through September 21, 1989

SCALE: 1:10,000

PROJECT NO.: OPR-X278

SOUNDINGS: RAYTHEON DE-719C Fathometer, Lead Line, and Sounding Pole

CONTROL: MOTOROLA Falcon 484 Mini-Ranger (Range/Range), MOTOROLA Falcon 484 Mini-Ranger and NIKON NT2D Theodolite KRUPP (Range/Azimuth), and ATLAS Polarfix (Range/Azimuth)

Chief of Party.....V. D. Ross

Surveyed by.....B. A. Link

Automated Plot by.....XYNETICS 1201 Plotter (AHS)

1. INTRODUCTION

- a. No unusual problems were encountered during the processing of this survey.
- b. Notes in the Descriptive Report were made in red during office processing.
- c. This survey contains one inset plotted on the smooth sheet.

2. CONTROL AND SHORELINE

- a. Horizontal control for the present survey is discussed in sections F., G., and S. of the Descriptive Report.

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1927 (NAD 27). Office processing of this survey is based on these values. Any sounding or feature that has been brought forward to the present survey has been adjusted to the present survey datum. The smooth sheet of this survey has been annotated with ticks showing the computed shift between the present survey datum and the North American Datum of 1983 (NAD 83).

To place this survey on the NAD 83 move the projection lines 0.051 seconds (1.6 meters or 0.16 mm at the scale of the survey) south in latitude, and 0.039 seconds (0.8 meters or 0.08 mm at the scale of the survey) east in longitude.

b. Shoreline for this survey originates with a 1:10,000 scale enlargement of 1:20,000 scale final reviewed Class III Shoreline Manuscript TP-00431 of 1985 and a 1:10,000 scale enlargement of 1:20,000 scale Blueprint #137196 of 1989. Shoreline changes found by the field unit are shown in red on the smooth sheet. Shoreline features which have been disproved by this survey were not transferred from the shoreline manuscripts to the smooth sheet.

3. HYDROGRAPHY

a. There is adequate agreement at crossings; however, there are no crosslines on this survey within the area bounded by the polygon formed by the following points:

<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
46°02'30"	83°45'00"
46°03'00"	83°45'00"
46°03'00"	83°43'15"
46°04'00"	83°43'15"
46°04'00"	83°40'15"
46°03'00"	83°40'15"
46°03'00"	83°42'45"
46°02'30"	83°42'45"

b. The 6, 12, 18, charted 24, and 30-foot depth curves could be drawn in their entirety. The zero curve was not completely defined on this survey due to the hazardous foul areas along the shoreline. The supplemental 3-foot curve and a brown curve were drawn in areas where the bottom topography is not adequately depicted by the standard depth curves.

c. The development of the bottom configuration and investigation of survey features and least depths is considered adequate except as follows:

1) Present survey features not adequately investigated

<u>ITEM (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>	
Foul Area	46°05'30"	83°45'40"	
Foul Area	46°05'20"	83°45'20"	Awois #
13 Shoal	46°04'51"	83°44'05"	8153
13 Shoal	46°04'31"	83°43'34"	8154
4 Shoal	46°04'02"	83°41'06"	8155
2 Shoal	46°03'43"	83°41'52"	8156
(FOUL) Rock/Shoaling	46°04'53"	83°43'30"	
Rock	46°04'38"	83°42'41"	
Spit	46°04'10"	83°45'05"	8157
13 Shoal	46°02'57"	83°42'49"	8158

Prior survey features not adequately investigated which were brought forward to the present survey.

<u>ITEM (FT)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
6 shoal	46°05'24.2"	83°45'33.0" 8159
11 shoal	46°05'05.2"	83°44'11.1" 8160
Rock (Fowl)	46°04'48.6"	83°44'51.1"
7 shoal	46°04'33.7"	83°45'31.0" 8161
4 shoal	46°02'21.6"	83°44'19.4" 8162
3 shoal	46°02'17.8"	83°44'17.0" 8163
2 shoal	46°02'15.0"	83°44'13.9" 8164

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records, and reports adequately conform to the applicable requirements except as noted in sections 3. and 8. of this report. The following should be noted:

Many shoal areas were adequately developed by echosounder on this survey, but no bottom samples were taken on these features. Additionally, where conditions permit, pole or leadline soundings for least depth should be obtained on shoal features.

5. JUNCTIONS

H-10307 (1989) to the southwest
 H-10311 (1989) to the northwest
FS-8081 (1981) to the north (Canadian)

Standard junctions were effected between the present survey and H-10307 (1989) and H-10311 (1989).

A standard junction could not be effected between the present survey and FS-8081 (1981). A butt junction has been effected with FS-8081 (1981) and the present survey. The present survey supersedes FS-8081 (1980) in the common area. It was noted during the junction process that the junctional soundings would be in reasonable agreement in the common area if the Canadian survey was shifted approximately 170 to the northeast. A positioning, control, or datum problem is suspected in the Canadian survey.

6. COMPARISON WITH PRIOR SURVEYS

LS-111 (1854)	1:15,840
LS-859 (1895-99)	1:10,000
LS-861 (1896)	1:10,000

LS-862 (1896-99) 1:10,000
LS-1770 (1941) 1:10,000

The prior surveys listed above cover the present survey area in its entirety.

a. The comparison with pre-1900 surveys reveals that present and prior hydrography are in poor agreement. The many hydrographic features within the common areas such as shoals show that the basic topography of this area remain similar, but, due to the differences in horizontal and vertical datums, comparisons are difficult. Comparisons were accomplished by aligning small islands as they would best fit. When like features were aligned, the latitude/longitude grids of prior surveys LS-859 (1895-99), LS-861 (1896), and LS-862 (1896-99) were found to be offset from the present survey grid by approximately 150 meters to the southwest.

1) LS-111 (1854) shows a general trend of being 2 to 12 feet deeper than the present survey. In shoal areas where steep relief is common some differences were as great as 28 feet.

2) LS-859 (1895-99), LS-861 (1896), and LS-862 (1896-99) show a general trend of being 0-4 feet deeper than the present survey in areas not adjacent to the shoreline. In areas adjacent to the shoreline the comparison indicates that the areas are presently deeper and the shoreline to be generally receding. The High Water Line or shoreline of these prior surveys is also subject to revision by the adjustment to LWD. Additionally, the following should be noted for these prior surveys:

a) A charted submerged rock, in latitude 46°03'17"N, longitude 83°44'08"W, is shown on the project markup as originating with LS-859 (1895-99). This rock is not shown on the copy of this prior survey available for comparison. The present survey shows a sounding line that was run approximately 10-15 meters from this position that shows no indications of this rock. There is insufficient coverage by the present survey to disprove this rock. It is recommended that the rock be retained as charted. 8165

(IN GRASS AREA)

b) Three (3) charted submerged rocks, in latitude 46°02'19.3"N, longitude 83°40'23.3"W, latitude 46°02'19.3"N, longitude 83°40'28.6"W, and latitude 46°02'21.2"N, longitude 83°40'37.7"W, are shown on the project markup as originating with LS-861 (1896). The charted positions of the submerged rocks do not agree with the prior survey nor are they in the same relationship to the surrounding land mass. The rocks coincide with one (1) crib and two (2) piles shown on the prior survey if the prior survey latitude/longitude grid is offset from the chart

approximately 172 meters northwest. The submerged rocks are not considered disproved by the present survey. The present survey found the area to be foul with grass, it is recommended that the charted rocks be retained and that the foul area be charted as shown on the present survey.

c) A charted submerged rock, in latitude $46^{\circ}02'51.0''N$, longitude $83^{\circ}43'05.5''W$, originates with LS-862 (1896-99) and is charted at the limit of a foul area delineated around Grape Island by the present survey. It is recommended that the charted rock be deleted and the foul area and appropriate notes be charted as shown on the present survey.

d) A charted rock awash and a submerged rock, in the vicinity of latitude $46^{\circ}01'45.5''N$, longitude $83^{\circ}43'55.0''W$ originate with LS-862 (1896-99). The present survey found two prominent rocks and a foul area to be at this location. It is recommended that the area be charted as shown on the present survey.

e) The charted rock, in latitude $46^{\circ}01'34.0''N$, longitude $83^{\circ}44'08.5''W$ originates with LS-862 (1896-99) as a group of four (4) submerged rocks. The present survey found an area foul with rocks with the most prominent rock, awash at LWD. It is recommended that the area be charted as shown on the present survey.

f) A charted rock, in latitude $46^{\circ}02'52.2''N$, longitude $83^{\circ}41'19.8''W$ is shown on the project markup as originating with LS-862 (1896-99). The only symbol on the prior survey that is similar to a rock in this area is in latitude $46^{\circ}02'52.0''N$, longitude $83^{\circ}41'13.3''W$. This symbol is quite indistinct. The charted rock is located in an area described as foul with grass on the present survey. The hydrographer made no mention of rocks in this area and present survey depths are 1-foot or less. It is recommended that the rock be deleted, and the area be charted as shown on the present survey.

g) A charted submerged rock, in latitude $46^{\circ}03'57.3''N$, longitude $83^{\circ}45'02.3''W$, originating with LS-859 (1895-99) is at the limit of the foul area delineated by the present survey. It is recommended that the rock be deleted, and the area be charted as shown on the present survey.

b. Prior survey LS-1770 (1941) agrees very well with the present hydrography, indicating little change in the bottom topography. The hydrographic features in the common area compare well in regard to size, shape, and least depths. Agreement between present and prior soundings is generally within 2 feet. Considerable cultural development has occurred since the prior

survey was conducted. It appears that the shoreline, particularly the small islands, is eroding or receding. Some small islands shown on the prior survey were found to be rocky shoals (foul areas) by the present survey. Additionally, the following should be noted:

1) An area, in the vicinity of latitude 46°05'00"N, longitude 83°45'00"W, is shown on the prior survey with the note "Swept to 12 feet". This area includes a charted 10-ft shoal, in latitude 46°05'01.0"N, longitude 83°45'00.0"W, that also originates with this prior survey. The shoal was verified by the present survey. It is recommended that the area be charted as shown on the present survey.

2) Three (3) charted islands originating with this prior survey were found to be rock shoals (foul areas) by the present survey. These rock shoals were found in the following locations:

<u>FEATURE</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
Island	46°05'37"	83°45'48"
Island	46°04'51"	83°44'52"
Island	46°01'52"	83°44'39"

It is recommended that these features be charted as shown on the present survey.

3) Two (2) charted rocks with a danger curve, in latitude 46°04'30"N, longitude 83°45'07"W, originate with this prior survey as three (3) rocks (elevation/depth unknown). The present survey found a shoal to be awash and described by the hydrographer as boulders. It is recommended that the area be charted as shown on the present survey.

4) Five (5) charted rocks, in the vicinity of latitude 46°03'45"N, longitude 83°44'30"W, originate with the prior survey. The present survey found this area to be foul with rocks. It is recommended that the rocks be deleted and the area be charted as shown on the present survey.

5) A charted rock, in latitude 46°05'34.8"N, longitude 83°45'47.0"W, on this prior survey is in an area defined as foul by the present survey. The present survey located a rock baring 3 feet at LWD in this area. It is recommended that the present survey results be charted in this area.

6) A mark, in latitude 46°02'23.5"N, longitude 83°43'55.0"W, shown on the copy of this prior survey could be either a blemish or an islet. The shoreline manuscript shows no

island. No island is charted. The field unit did not cover the specific location of this item; however, present sounding lines with 14 to 15-foot depths adjacent to this location do not indicate anything unusual. No change in charting status is recommended.

The present survey is adequate to supersede the above prior surveys within the common area except where prior survey data has been brought forward to supplement the present survey.

7. COMPARISON WITH CHART 14882 (28th Edition, Aug. 2/86)

a. Hydrography

The charted hydrography within the common area originates with the previously addressed prior surveys and from sources not readily available. The previously addressed prior surveys require no further consideration.

The chart was compiled from many sources with datums that are unspecified or not readily adjusted. Thus, many features, both exposed and submerged, show varying positional displacement. This displacement, while not consistent, is in many cases to the east or northeast of the present survey findings. This problem is particularly visible in the shoreline north of the coverage of TP-00431 (above latitude 46°05'N) and in the charted depth curves within the common area of this survey. The depth curves have not been adjusted but the landmasses (main shoreline and the offshore islands of TP-00431) have been and thus the depth curves show an offset. It is recommended that these discrepancies be corrected during chart compilation.

The alongshore areas of Drummond Island north of latitude 46°02'30"N and the offshore islands common to the present survey are, in general, charted as open shoreline with only a few isolated rocks being apparent. This survey reveals that the foreshore in this area is generally foul. Many additional rocks were positioned during this survey and are shown on the smooth sheet. Appropriate foul limit lines have been drawn on the smooth sheet portraying the findings of the hydrographer.

Numerous echogram spikes have been reduced and plotted on the smooth sheet. These spikes are considered to represent uncharted submerged rocks and are labeled as such on the smooth sheet.

Attention is directed to section L. of the Descriptive Report where charting issues are addressed by the hydrographer. The Automated Wreck and Obstruction Information System (AWOIS) items which are common to this survey are adequately addressed in

the Descriptive Report. Additionally, the following should be noted:

- 1) A charted submerged rock and islet, in the vicinity of latitude $46^{\circ}03'56.7''N$, longitude $83^{\circ}40'26.2''W$, originating with an unknown source, is within an area described by the hydrographer as foul. It is recommended that the foul area and appropriate notes be charted as shown on the present survey.
- 2) Two (2) charted submerged rocks, in latitude $46^{\circ}04'14.7''N$, longitude $83^{\circ}40'33.6''W$ and latitude $46^{\circ}04'12.7''N$, longitude $83^{\circ}40'34.5''W$, originating with an unknown source, were neither located nor investigated by the present survey. These submerged rocks are slightly seaward of the foul limit delineated by the hydrographer in this area. It is recommended these rocks be retained as charted and the foul limit be charted as shown on the present survey.
- 3) A charted rock awash, in latitude $46^{\circ}03'43.7''N$, longitude $83^{\circ}44'20.0''W$, originating with an unknown source, was not found by the present survey. This area was well covered by sounding lines but a submerged rock could have escaped detection. It is recommended that this feature be revised to a submerged rock.
- 4) A charted submerged rock, in latitude $46^{\circ}03'45.2''N$, longitude $83^{\circ}44'13.8''W$, originating with an unknown source, was not found by the present survey. The source of this rock is unknown. This area was well covered by sounding lines but a submerged rock could have escaped detection. It is recommended that the submerged rock be retained as charted unless subsequent information indicates otherwise. 8166
- 5) A charted pier, groin, or jetty, in the vicinity of latitude $46^{\circ}03'17.0''N$, longitude $83^{\circ}41'05.5''W$, originating with an unknown source, extends northward from north end of Jim Island. The present survey did not find a structure. The shoreline manuscript does not show any features extending from the north end of the island. It is recommended that the area be charted as shown on the present survey.
- 6) A charted rock, in latitude $46^{\circ}01'36.0''N$, longitude $83^{\circ}44'42.8''W$, originating with an unknown source, was located by the field unit as a small foul area in latitude $46^{\circ}01'35.0''N$, longitude $83^{\circ}44'47.5''W$. It is recommended that the foul limit and appropriate notes be charted as shown on the present survey.
- 7) A charted islet, in latitude $46^{\circ}02'27''N$, longitude $83^{\circ}41'01''W$ was neither found nor is it shown on the shoreline

manuscript. It is recommended that this islet be deleted from the chart.

8) A charted pier, in latitude $46^{\circ}02'26''N$, longitude $83^{\circ}41'11''W$, was found to be a small islet. It is recommended that this feature be charted as shown on the present survey.

9) A charted pier, in latitude $46^{\circ}02'10''N$, longitude $83^{\circ}41'20''W$, is not shown correctly on the chart. It is recommended that this feature be charted as shown on the present survey.

10) A charted islet, in latitude $46^{\circ}02'12''N$, longitude $83^{\circ}41'44''W$, does not exist. There are three groins in this location. It is recommended that this islet be deleted from the chart and that these groins be charted as shown on the present survey.

11) A charted pier, in latitude $46^{\circ}02'04.2''N$, longitude $83^{\circ}43'35.2''W$, was found to be an islet offshore of two small groins. It is recommended that this feature be charted as shown on the present survey.

12) Several features in the Drummond Island Yacht Haven and in the harbor area of Maxton were found to be different than charted. It is recommended that these areas be charted as shown on the present survey.

The present survey is adequate to supersede the charted hydrography in the common areas except as noted above.

b. AIDS TO NAVIGATION

Five (5) U. S. Coast Guard maintained and five (5) privately maintained floating aids to navigation were located by this survey and are plotted on the smooth sheet. The five U. S. Coast Guard aids to navigation are adequately described in the U. S. Coast Guard Light List. Two privately maintained aids to navigation are listed in the Light List for this area. It appears that one aid, Drummond Island Shoal Buoy A, no longer exists. Drummond Island Shoal Buoy B apparently was verified by the present survey although it was not specifically identified as this buoy. Four other privately maintained aids (buoys S"1", S"3", S"4", and an unmarked buoy in the harbor area of Maxton) which were located by this survey are not listed in the Light List. All floating aids to navigation located by this survey appear to serve their intended purposes. The U. S. Coast Guard buoys and Drummond Island Shoal Buoy B appear to be adequately charted but are affected with the same positional displacement as noted in "a." of this section. Drummond Island Shoal Buoy A

should be deleted from the chart and the uncharted private aids to navigation should be added to the chart.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions except as noted elsewhere in this report and the bottom sampling accomplished by this survey did not adequately comply with regard to sampling on shoals and in the near shore areas where the required spacing was not met.

9. ADDITIONAL FIELD WORK

Except as noted elsewhere in this report, this is an adequate basic survey. Additional field work at an opportune time is recommended to adequately develop and define the areas listed in section 3.c. of this report.

6 and 7

Douglas V. Mason
 Douglas V. Mason
 Cartographic Technician
 Verification of Field Data

Maurice B. Hickson, III
 Maurice B. Hickson, III
 Cartographer
 Evaluation and Analysis

Robert R. Hill, Jr.
 Robert R. Hill, Jr.
 Senior Cartographic Technician
 Verification Check

APPROVAL SHEET
H-10312

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert G. Roberson

Date: 30 October 1991

Robert G. Roberson
Chief, Evaluation and Analysis Team
Atlantic Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Christopher B. Lawrence

Date: 30 October 1991

Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Final Approval:

Approved: J. Austin Yeager

Date: 11/18/91

J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic
Survey

