

10141

Diagram No. LS-9

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. HFP-5-3-84
Registry No. H-10141

LOCALITY

State Michigan
General Locality ... St. Marys River
Sublocality Sault Ste. Marie

1984

CHIEF OF PARTY
LCDR R.W. Jones

LIBRARY & ARCHIVES

DATE February 7, 1986

☆U.S. GOV. PRINTING OFFICE: 1985-586-054

10141

Area 7
CHTS
14884 INSET
14883
14962 } *to sign off in*
Record of Applications

HYDROGRAPHIC TITLE SHEET

H-10141

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-5-3-84

State Michigan

General locality ~~St. Mary's River~~ St. Marys River

Locality Sault Ste Marie

Scale 1:5,000 Date of survey June 29 - Sept. 19, 1984

Instructions dated May 7, 1984 Project No. OPR-X278-HFP-84

Vessel Launch 519 and ~~812~~ Skiff 812
Hydrographic Field Party No. 2

Chief of party LCDR. R. W. Jones, NOAA

Surveyed by Lt. J. W. Humphrey, OIC-HFP2

Soundings taken by echo sounder, hand lead, pole Raytheon 719c Echo Sounder

Graphic record scaled by J.W. Humphrey, J.M. Robinett, M.J. McMann, T.A. Taylor, T.R. Owens

Graphic record checked by J.W. Humphrey, J.M. Robinett

Verification PMC

Produced by T. Jones Automated plot by Xynetics Plotter

Evaluation XXXXXXXX

Verification by C. R. Davies

Soundings in XXXXXXXX fathoms feet at XXX MLW XXXXX MLW LWD (IGLD) 1955, 599.8ft) above locks
LWD (IGLD 1955), 577.5ft) below locks

REMARKS: Marginal notes in black by evaluator. All times in UTC.

All separates are filed with the hydrographic data.

STANDARDS OK'D 2-11-86

C. Loy

✓ AWOIS and SURF - RWD 3/86

S94-2197

Notes in blue in the Descriptive Report were added during Examination, except as indicated by chart compiler on PSR item forms.

XWW 8/21/92

PROGRESS SKETCH

OPR-X278

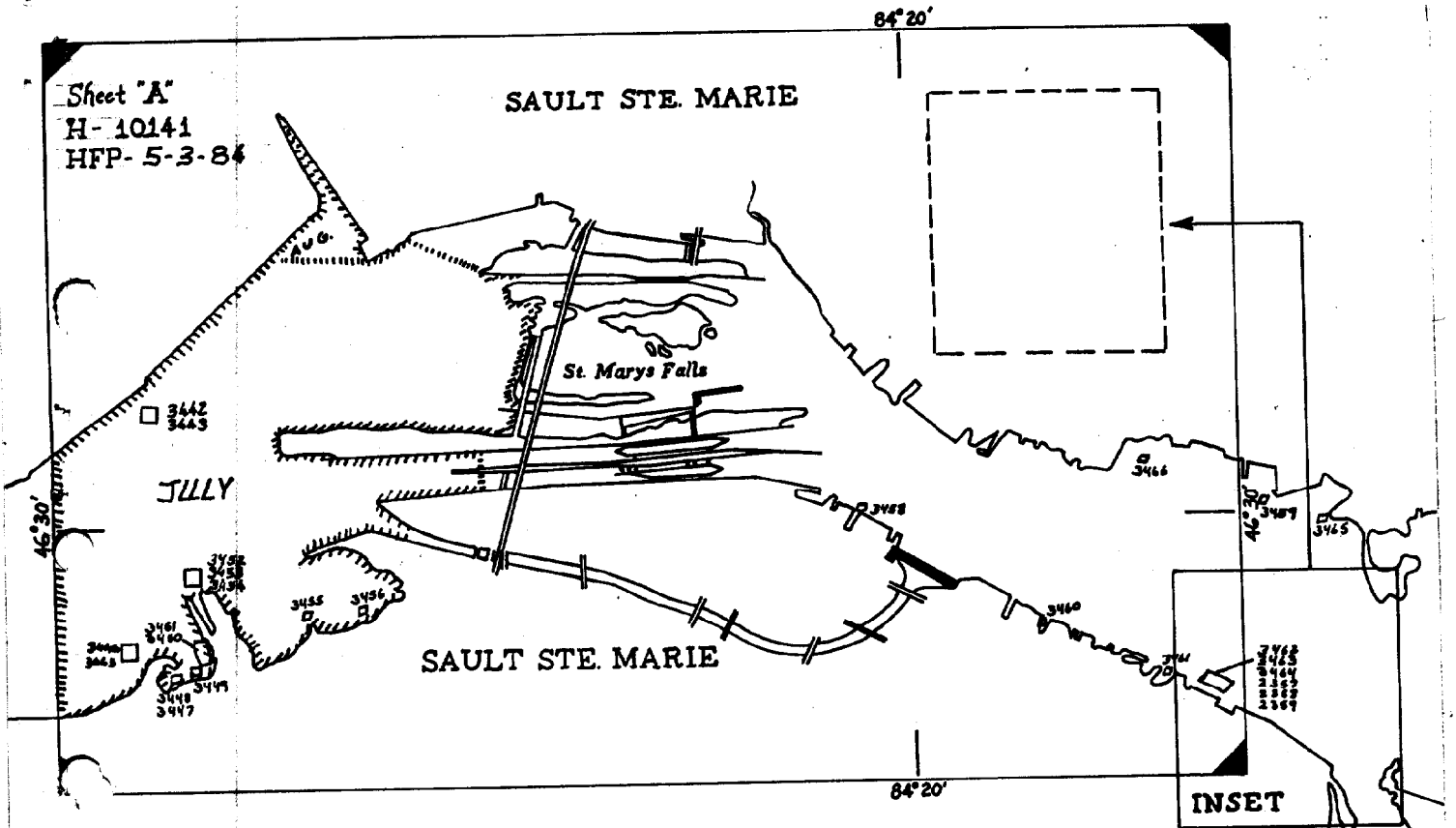
ST. MARYS RIVER, MI./ONT.

JUNE-SEPT 1984

HFPS, HFP 2

LCDR. Ronald W. Jones (COMD G)

from Chart 14962 (1:120,000 scale)



LEGEND

JUNE	JULY	AUG.			
0	1.2	0.3			
0	43.5	12.3			
1.0	11.0	70.0			
5.0	17.0	20.0			
0	0	5			
0	0	0			
2	0	0			
62	125	53			

- SQ NM Sounding
- LNM Sounding
- LNM Dist. to and from
- LNM Misc. Dist.
- Bottom Samples
- Control Stations
- Water Level Gages
- D.P.'s

□ Items Resolved

Descriptive Report to Accompany

Hydrographic Survey H-10141

Scale: 1:5,000

Chief of Party: Ronald W. Jones, LCDR, NOAA
Officer in Charge: John W. Humphrey, Jr., LT, NOAA
Hydrographic Field Party Section
Hydrographic Field Party 2

A. PROJECT

This project was carried out in accordance with Project Instructions for OPR-X278-HFP-84 dated 7 May 1984 and amended by change No. 1 dated 25 May 1984. Change No. 1 is the AWOIS printout and a geographic position listing from N/CG2323 of photo points. ✓

B. AREA SURVEYED

This survey was conducted in the St. Mary's River, bordering Michigan and Ontario, Canada. The Eastern survey limit was the entrance to the Canadian Lock on the North and the United States Lock to the South. The limit in the Central Eastern section bordering the compensating works at the head of St. Mary's Falls was the safe limit of navigation. The Western survey limit was 084°24'00"W. ✓

The only cultural development on the shore is in the vicinity of the locks on both the north and south shores. The remainder of the shoreline in the survey area is undeveloped. On the north shore west of the Algoma Steel plant, the shoreline and adjoining area is a waste dump to the western survey limit. On the south shore there is a small amount of tug and barge activity in the area of the Reiss Coal Co. dock. The pilot boat for the St. Mary's River also operates from this slip. Ashmun Bay is used only to transit to and from a public launch ramp on it's North shore and its shoreline is undeveloped. ✓

Bottom composition is rock and hard packed sand throughout the survey area. Depths in the survey area range from 0 to 55 feet. The area to the East of the locks was surveyed by a field party from the Canadian Hydrographic Service working from Sault Ste. Marie, Ontario. The Canadian Hydrographic Service western survey limit was the entrance to the United States Locks (at East center Pierhead Light) and the entrance to the lower Canadian Canal. Their eastern survey limit extended past the east limit of sheet "A" for this project. Hydrographic Field Party Two ran three channel lines in the maintained ✓

channel and one keel line of hydro along the United States shore from the USCOE boat basin immediately east of the lock, to the eastern survey limit of sheet "A" at 84°18'34"W.

The United States shoreline east of the locks is characterized by commercial wharfs for small ship repairs, electric power plant outfalls and tour boat services. Grass embankments and maintained piers, as well as pier ruins are found to the eastern survey limit. The Canadian shore is characterized by a mixture of commercial and government pier facilities as well as residential areas to the eastern survey limit. The remaining field work to the east of the locks was investigating presurvey review items.

This survey was conducted from 29 June 1984 (JD 181) to 19 September 1984 (JD 263) inclusive.

C SOUNDING VESSEL

NOAA Launch 0519 and skiff 0812 were used to obtain all survey data for this project.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

A Raytheon Fathometer Model 719C, Serial #9955 was the only echo sounding equipment used on Launch 0519.

All survey records were scanned and checked by trained field survey personnel. Peaks and deeps considered significant that occurred between soundings were inserted on the generated master or corrector tapes.

Fathometer calibration checks were made at frequent intervals on each day of hydrography. Any necessary adjustments were made and noted on the fathogram. Any departure of the trace from the initial zero was corrected during the scanning process. Velocity correctors were derived from bar check data (see Appendix D for velocity correction printout). Bar checks were taken on each day of hydrography, two whenever conditions permitted using Launch 0519. Bar check chains were measured to insure that the 5 ft. interval marks were accurate prior to the start and at the end of the project. No correctors were necessary.

A transducer draft of 1.2 ft. is applied to all Fathometer soundings obtained using Launch 0519. Only pole soundings were acquired using skiff 0812. Pole soundings were also obtained from Launch 0519.

Settlement and squat correctors were determined on 21 June 1984 using the level method. A copy of field data and a graph of the settlement and squat correctors vs RPM for Launch 0519 are included with this report in Appendix D. Settlement and

squat correctors will be applied via the TC/TI tape during the processing of the smooth sheet at the Atlantic Marine Center.

This survey was plotted using unverified actual water levels reduced to the low water datum (elev 600.0' IGLD) for the St. Mary's River. The low water elevation for the St. Marys River is a gage reading of 599.8 IGLD above the locks at Saute Ste. Marie, Michigan. Water levels were obtained from the gage at South West Pier, USCOE Base, Sault Ste. Marie, Michigan, station #907-6070. Smooth water levels were requested from the Water Level Section (N/OMS124) in a letter dated 25 September 1984.

See Sect 1
of Eval
Rpt

E. HYDROGRAPHIC FIELD SHEETS

All work is plotted on three mylar field sheets divided as follows:

NO. of SHEETS	TYPE	SKEW
1: West of locks	Mainscheme, splits, Signals	23/21/42
1: West of locks	Crosslines, DPs, PSR Items, Bottom Samples	23/21/42
1: East of locks	Channel line and keel line to check CHS data, Crosslines, DP's, Bottom Samples, PSR Items, and signals	143/21/23

An inset to the field sheet was necessary to plot the ship canal into the Algoma Steel Plant in Ontario. It is plotted at the same survey scale on the mainscheme sheet, but with a separate parameter tape.

Soundings on the final field sheet are corrected for transducer draft, unverified actual water levels and sound velocity in water. All field records and the following tapes have been forwarded to the Atlantic Marine Center:

- Generated Master Tapes
- Electronic Corrector Tapes
- Velocity Corrector Tapes
- Parameter Tapes
- ASCII Signal Tapes
- TC/TI Tapes

This survey was subsequently assigned to the Pacific Marine Center for processing

It is recommended the smooth sheet be plotted without the small inset as proposed on the sheet layout. The area between lon.84°20'30" and lon.84°21'30" was not surveyed by HFP4. The survey east of the locks with the crosslines and D.Ps. can be shifted westward into this unsurveyed area eliminating the need for an inset.

-5- An inset was used for eastern channel and keel line and detached positions. See smoothsheet for final layout.

F. CONTROL STATIONS

Nine horizontal control stations of third order accuracy were used for this survey. All stations were located by personnel from AMC Program Services Division except signals 108, 109 and 111 which were NGS positions. A signal list is included in the Appendix of this report. ✓

G. HYDROGRAPHIC POSITION CONTROL

Range/Azimuth position control was used with Del Norte electronic positioning equipment and a Nikon NT-2D 20" theodolite for all days of hydrography. The following Del Norte equipment was used: ✓

DMU/MASTER	REMOTES
121/263	1322
188/1060	222
172/263	
395/263	

Baseline calibration sheets are included in the fan folder with survey support data. Baseline distance between geographic positions (E center Pierhead light and DIKE) was determined using RK 407 (Geodetic Inverse/Direct Computation) program. An abstract of corrections to electronic control and equipment used is appended to this report. ✓

H. SHORELINE

East of the locks to the Eastern survey limit, prominent points along the shoreline were positioned to verify the manuscript, using a Hewlett Packard 3808A (modified w/theodolite yoke). After plotting these positions and overlaying the boatsheet on the manuscripts (TP 00363 and 00364), it was determined that the shoreline on the manuscript was not compiled accurately. When the grids on the boatsheet and the manuscripts are aligned, the Hewlett Packard shoreline positions are 1 to 2 mm to the south of the compiled shoreline. When the Hewlett Packard positions are shifted to correspond with where the reflectors were placed during data acquisition, these positions and the shoreline match all recoverable bulkhead corners and pier corners that were positioned. This shifts the grid of the field sheet to the north by 1mm. *No difference found between manuscript and final field sheet*

The shoreline features on the United States side are verified as shown on TP-00363 and 364. These are shown in black on the final field sheet. East of the locks, two control stations, Dike (Lat. 46°29'53.695"N, Lon. 84°18'56.200"W) and Bayfield Dike light (Lat. 46°29'53.721"N, Lon. 84°18'56.213"W)

are seaward of the shoreline and were used to control hydrography, field edit, and presurvey item investigations. Station "Dike" is located on the foundation of Bayfield Dike light and was positioned by AMC personnel in the Spring 1984. ✓

On the Canadian shoreline East of the locks to the eastern survey limit, minor shoreline changes were noted and shown in red on the final field sheet. The remainder of the shoreline features were inspected and verified as shown on manuscript TP-00364, with the exception of the pier shown at Lat. 46°30'13.50" N, Lon. 84°18'53.00" W and the piling shown at Lat. 46°30'07.50" N, Lon. 84°18'30.00" W. The pier does not exist and the piling was not observed during a visual inspection of the area. See Sect 2 of Eval Rpt ✓
Pier shown on SSC as ruin. Piling shown as submerged.

The shoreline area between the east ends of the canals to the west end of the canals on both the United States and Canadian sides, above the locks, was verified by field inspection. West of the locks on the United States side, some minor changes were observed on the south side of Ashmun Bay in the southeast corner of the bay. These are noted in red on the final field sheet. Changes shown on SSC according to field sheet. Chart according to SSC ✓

Control station #101 (USE W) is located on the west end of the southwest pier at the entrance to the South Canal entering the United States locks. The disk is located midway between the north and south side of the pier. When the position is plotted in relation to the shoreline manuscript, it plots in the water to the south of the pier. Control station #103 (BOLLARD) on the west end of the south pier at the western entrance to the Canadian Lock, plots approximately 6 meters farther east than it is actually located. Further investigation indicates that the 1:5000 manuscript west of the locks is also inaccurate. It is recommended that the compilation and enlargement process be checked on TP-00363 and 364. Shoreline features were verified during the survey and are shown in black except for the changes mentioned above. See Sect 2 of Eval Rpt ✓

I. CROSSLINES

Crosslines were run at 45° to 90° of the mainscheme hydrography and accounted for 19% of the total hydro mileage. Comparison shows good agreement throughout the entire survey. The use of unverified actual water levels for sounding reduction aided significantly in comparing mainscheme and crossline soundings and detecting possible control problems. Concur

J. JUNCTIONS

This survey junctions with a completed CHS survey east of the locks and a NOS survey being run concurrently. This last survey, H-10152, will remain incomplete until spring 1985. See Sect 5 of Eval Rpt ✓

H-10141

AREA OF JUNCTION	FIELD NO.	REG NO	SCALE	DATE
West	10-3-84	H-10152	1:10,000	Aug 1984-85
East	CHS Survey	---	1:5,000	Sep 1984

Comparison of junction soundings shows good agreement between the west end of sheet H-10141 and the east end of sheet H-10152. Continuation of contour lines shows no abrupt changes when crossing from one sheet to the other. The lines used for comparison from both sheets were controlled from station U-BOLT (signal #102) making the mainscheme of arcs continuous from H-10141 to H-10152.

See Sect 6
of Eval
Rpt

The area of the Michigan Wharfs was completely surveyed by the Canadian Hydrographic Service this year with 25 meter line spacing. A keel line and three channel lines were run across these sounding lines to verify these data. Agreement was good.

✓

K. COMPARISON WITH PRIOR SURVEYS

Twenty-six presurvey review items were resolved during the course of this survey. Individual item descriptions and recommendations are appended to this report.

✓

The following prior survey was used for comparison:

REGISTRY #	SCALE	DATE
X-1688	1:10,000	1935
LS-		

✓

In the extreme southwest corner of the survey area to the west of the Reiss Coal Co. pier, the bottom is hard sand and has shoaled considerably inside the present 18 ft contour. Moving north of the 18 ft contour up to the southern edge of the maintained channel into the United States Canal, contemporary depths range from 2 ft shoaler to 2 ft deeper than the prior soundings. To the immediate west of the center of the entrance to the Edison Sault Electric Co. Power Canal, depths are up to 24 ft deeper. However this Power Canal opening has had significant shoreline modifications since the time of the prior survey. A strong current is always present through this area from the Power Canal. A sand shoal extending to the northwest from the western tip of the finger of land forming the southern border of the canal opening is still present with shoal depths to 4 ft.

See Sect 6
of Eval Rpt

Contemporary soundings in Ashmun Bay show effects of shoaling with the range of soundings showing from 1 ft to 3 ft shoaler than priors. Ashmun Bay is hard sand with it's eastern end having a primarily weedy bottom and a marshy shoreline.

✓

Between the red [buoy line] United States Channel limit and the green [buoy line] limit of the Canadian Channel, the depths in the area of Vidal Shoals show little change (1 ft agreement). A greater change occurs while moving east toward the compensating works dam. Depths become deeper by 1 to 10 ft, with a 10 ft shoaler depth also seen in the region. The two rock shoal areas charted at Lat. 46°30'31"N., Lon. 84°22'22"W and Lat. 46°30'33"N., Lon. 84°22'19"W show little change in depth and shape. Areas bordering the maintained channel into the locks and canals on both the United States and Canadian sides, show deeper depths from continuous dredging maintenance. In general, the pool west of the compensating works shows only minor changes out to Lon. 84°22'45"W.

In the area from the red [buoy line] channel limit of the Canadian channel to the Canadian shoreline; from the western end of the survey limit to the entrance to the Canadian Power Canal, a wide variety of change is observed. From the western survey limit to Lon. 84°23'30"W, depths range from agreement to 1-6 ft deeper than priors. Shoal areas developed during the contemporary survey around Lat. 46°30'23"N, Lon. 84°23'30"W, are consistent with prior shoal soundings. From Lon. 84°23'15"W, depths range from agreement to 9 ft deeper and 6 ft shoaler. No pattern is consistent throughout this entire area north of the red Canadian Channel limit. The shoreline in this area has had significant change since the prior survey as it is a dumping ground for waste product from the Algoma Steel Plants and filling is constantly taking place.

L. COMPARISON WITH THE CHART

The current survey was compared with the following chart:

CHART	EDITION	DATE	SCALE
14884	33rd	26 Feb 1983	1:40,000 (inset 1:20,000)

Danger to Navigation letters were filed by the field party on 9 August and 24 September 1984. Copies were sent to the Chart Information Section N/CG222 and to the Commander, Ninth Coast Guard District, Cleveland, Ohio. The information was relayed to the Coast Guard District via teletype from USCG Base Sault Ste Marie, Michigan. Information from the August 9th letter was published in the Local Notice to Mariners (LNM 22/84) on 10 August 1984. The letters included chartlets and soundings from the current survey and list the following obstructions:

An additional danger was reported during processing

H-10141

9 August 1984

- 1. Single large rock 2.1 LD @ LWD Lat. 46°30'20.85⁴ N,
AWOIS # 3443 Lon. 84°23'32.95⁴ W
- 2. Single Large Rock 1.1 LD @ LWD Lat. 46°30'23.93² N,
AWOIS # 3442 Lon. 84°23'31.74² W

27 September 1984

- 1. Single Large Rock on Shoal 0.5ft. Lat. 46°30'31.41⁵ N,
LD @ LWD Per. # 1359 (o) Lon. 84°22'29.10⁵ W
- 2. Single Large Rock Exp. 0.3ft. Lat. 46°30'35.47⁵ N,
@ LWD Per. # 1424 (o) Lon. 84°22'33.27³ W
- 3. Submerged Crib 2.7ft. LD @ LWD Lat. 46°30'24.99⁵ N,
(pos 1425) shown on smoothsheet Lon. 84°21'52.28⁵ W
as Submerged Crib covered 3 ft
at LWD ruins
- 4. Submerged Crib Ruins 3.7ft. LD @ Lat. 46°30'27.59⁶ N,
LWD (pos 1426) shown on smoothsheet Lon. 84°21'51.79⁶ W
as Submerged Crib covered 3 ft
at LWD ruins
- 5. Submerged Crib Ruins 4.9ft. LD @ Lat. 46°30'30.29⁶ N,
LWD (pos 1427) shown on smoothsheet Lon. 84°21'52.22⁶ W
as Submerged Crib covered 5 ft
at LWD ruins
- 6. Submerged Crib Ruins 2.2ft. LD @ Lat. 46°30'19.18³ N, See Sec 7 of
LWD (pos 1428) Lon. 84°21'51.92⁸⁹ W Eval Rpt
- 7. Submerged Crib Ruins 19ft. LD @ Lat. 46°30'18.54¹ N, See Sec 7 of
LWD (pos 1429) Lon. 84°21'53.18⁵ W Eval Rpt

All of the above dangers are not shown on the current edition of the chart. Beginning with the area east of the Corps of Engineers locks, the charted representation of the shoreline is accurate. A minor shoreline change on the Canadian side from the manuscript (aside from shoreline discrepancies of the 1:5000 blowups mentioned in Section H) is shown on the final field sheet immediately to the west of the Bellevue Marine Park. This is the Sault Ste. Marie Ont. YMCA boathouse facility.

See Sec 2 of
Eval Rpt

Exposed platforms, charted at Lat. 46°29'24.60" N, Lon. 84°18'32.07" W and Lat. 46°29'24.00" N, Lon. 84°18'25.00" W were investigated as PSR items 3463 and 3464 respectively. They were recommended to be deleted based on the investigations. The pile charted at Lat. 46°30'10.9" N, Lon. 84°18'53.5" W was investigated as PSR item 3466 with negative findings. It is recommended that it be deleted from the chart. Remaining items investigated were verified and individual item reports appended. Piles charted at Lat. 46°30'53.9" N, Lon.

Do not concur
See Sect 7
of Eval Rpt

84°20'49.1" W, immediately west of the Canadian Lower Canal Entrance Front Range Light were investigated from shore and are not present. The piles were questioned on the "Notes to Hydrographer" manuscript. *concur, area is under construction*

On the west side of the locks on the Canadian side, the representation of the log boom separating the lock entrance canal from the Power Canal is incorrect. The log boom extends all the way to the northwest end of the lock canal bulkhead from the Algoma Steel Plant bulkhead. There is no access into the Power Canal from the west. Charted representation of the area around the Algoma Steel Plant and the adjoining waste dump to the west is accurate out to the western survey limit @ Lon. 84°24'00" W. *chart according to this survey*

On the United States side west of the locks, the log boom is shown having only one platform supporting it, between the north and south banks of the Edison Sault Power Canal. On the manuscript and the current survey final field sheet, the correct representation is shown with two platforms supporting the log boom. All piles shown in Ashmun Bay were addressed in PSR items 3456 and 3455. The shoreline representation on the chart west of Lat. 46°29'40.0"N, Lon. 84°22'42.2"W to the southwest corner of Ashmun Bay is inaccurate. The manuscript of this area is accurate and the chart should reflect what is shown on TP-00363. The area to the west of the C. Reiss Coal Co. facility should be updated to reflect the manuscript (TP-00363) from Lat. 46°29'31.8"N, Lon. 84°23'17.6"W to Lat. 46°29'32.9"N, Lon. 84°23'29.4"W. The remaining charted representation to the western survey limit is accurate. *Concur*

M. ADEQUACY OF THE SURVEY

This survey is considered complete and adequate to supersede prior surveys for charting. *Concur*

N. AIDS TO NAVIGATION

Seventeen floating aids to navigation were located during the course of the survey. Four of the 17 were in United States waters. Buoys #10 and 12 extend the northern channel limit of the entrance to the Canadian lock from the west and are small spar buoys. *✓*

The charted red and black buoy marking the junction of the channels from the Canadian and United States locks to the west was not in place at the time of survey. Serving the function of this red and black junction buoy is a black and yellow horizontally banded structure buoy with a radar reflector. ~~This buoy is found on page 34 of chart No. 1 under IALA Maritime Buoyage System "A".~~ *✓*

The following landmarks were verified as presently charted:

- | | |
|------------------------------|--|
| 1. Spire | Lat. 46°29'51.62" N, Lon. 84°20'47.62" W |
| 2. Spire | Lat. 46°29'54.00" N, Lon. 84°20'28.25" W |
| 3. OBS TR | Lat. 46°29'53.219" N, Lon. 84°20'25.932" W |
| 4. R MAST | Lat. 46°29'59.061" N, Lon. 84°20'19.691" W |
| 5. CHYS | Lat. 46°30'15.493" N, Lon. 84°19'13.309" W |
| 6. Spire | Lat. 46°30'26.938" N, Lon. 84°19'33.129" W |
| 7. RTR 2 vert
LTS FR | Lat. 46°30'30.00" N, Lon. 84°19'39.21" W |
| 8. STACK | Lat. 46°30'32.00" N, Lon. 84°19'58.01" W |
| 9. Relay TR
2 vert LTS FR | Lat. 46°30'46.150" N, Lon. 84°20'08.464" W |
| 10. Tank FR | Lat. 46°32'17.077" N, Lon. 84°19'01.059" W |

The following aids to navigation were inspected from seaward and verified as presently charted:

- | | | |
|--|--|--|
| 1. Bayfield Dike -
LT. (NGS) CGLL
#1601 | Lat. 46°29'53.721" N, Lon. 84°18'56.213" W | |
| 2. SE Pierhead LT -
CGLL #1601 | Lat. 46°30'04.733" N, Lon. 84°20'23.654" W | <i>not positioned during this survey</i> |
| 3. E Center
Pierhead LT
CGLL #1602 | Lat. 46°30'12.2 ² 66 " N, Lon. 84°20'19.386" W | |
| 4. NE Pierhead LT | Lat. 46°30'17.827" N, Lon. 84°20'28.785" W | <i>off sheet limits</i> |
| 5. SW Pierhead LT -
CGLL #1606
Vidal Shoals Channel | Lat. 46°30'01. ⁵⁶⁰ 578 " N, Lon. 84°22'40. ⁶⁵⁴ 595 " W | |
| 6. American Canal
RGE DBN CGLL
1609
Vidal Shoals Channel | Lat. 46°30'14.1" N, Lon. 84°22'01.5" W | <i>not positioned during this survey</i>
also known as Vidal Shoals Channel Range Day beacon |
| 7. American Canal
RGE R LT CGLL
#1609 | Lat. 46°30'22.6" N, Lon. 84°21'11. ⁵ " W | |
| 8. Canadian Canal -
Lower ENT RGE FR
LT (NGS) CGLL #1615 | Lat. 46°30'53.858" N, Lon. 84°20'45.754" W | <i>off sheet limits</i> |

- 9. Canadian Canal - Lat. 46°30'59.121" N, Lon. 84°20'51.606" W *off shore limit*
 Lower ENT RGE FR
 LT (NGS) CGLL #1616
- 10. Canadian Canal - Lat. 46°30'53.2" N, Lon. 84°22'17.5³" W ✓
 Upper ENT RGE FR
 FR LT CGLL # 1617
- 11. Canadian Canal - Lat. 46°30'58.2" N, Lon. 84°22'08.4³" W ✓
 Upper ENT RGE R
 LT CGLL #1618

Vidal Shoals Channel
 The ~~American Canal~~ Front Range Light (LL #1608) and Rear Range Light (LL #1609) are listed in some sources (e.g. FFA printout and published NGS data) as either the Vidal Shoal Ranges or the U. S. Canal Ranges. ✓

Four charted fixed aids to navigation were not present at the time of the survey. These aids are not listed in the USCG Light List, Vol IV, 1984. These are: ✓

Aid	Latitude	Longitude
Canadian Canal, NE, Light (FY)	46°30'46.8"N	84°20'39.0"W
Canadian Canal, SE, Light (FY)	46°30'40.2"N	84°20'34.8"W
Canadian Canal, NW, Light (FY)	46°30'48.0"N	84°21'57.0"W
Canadian Canal, SW, Light (FY)	46°30'43.2"N	84°22'16.2"W

The chimney charted at Lat. 46°30'17.793"N, Lon. 84°19'23.150"W was not seen from seaward and is recommended for deletion from the chart. ✓ *CONCUR*

A single chimney charted at Lat. 46°30'15.493"N, Lon. 84°19'13.309"W was seen from seaward and is recommended for retention on the chart. The notation CHYS should be changed to singular. ✓ *CONCUR*

Vidal Shoals Channel
 The ~~American Canal~~ Rear Range Light, SW Pierhead LT and both ranges for the Canadian Canal were not located due to restricting weather conditions and time constraints. They will be located when the project resumes in spring 1985. The position of the landmarks listed above are from the FFA printout except where noted. They are for identification purposes only and should not supersede any existing positions of higher accuracy. The position and descriptions of all fixed and floating aids were compared with the US Coast Guard Light List, Vol IV, 1984. *Located in attached addendum and 76-40 See Aug 85.*

Landmarks and fixed aids located during this survey to third order, Class I standards are listed on the appended 76-40 forms. ✓

All bridge and cable crossing clearances were found as charted. ✓

O. STATISTICS

Linear Naut. Miles of Hydrography	73.9	✓
Linear Naut. Miles of Crosslines	17.2	✓
Linear Naut. Miles of Hydrography (Total)	91.9	✓
Number of positions	1498	
Bottom Samples	6	
Bar Checks	21	
Presurvey Review Items Investigated	26	

P. MISCELLANEOUS

One trip was made by personnel from AMC Digital Branch to replace the PDP-8/e high speed reader/punch and computer. This was necessary because of problems during editing phases of processing using RK 330 and AM 602. ✓

Del Norte positioning equipment was extremely erratic throughout the entire project. The DMUs were regularly returned to AMC for repair (one of which had just been received from the Del Norte Company) and one master unit was returned. In the last 2 weeks of work, frequent interference was encountered with other equipment that completely blanked out our own remote units. ✓

Contact with the Canadian Hydrographic Service field party working from Sault Ste. Marie, Ontario, was maintained throughout the project. ✓

Currents in the vicinity of Sault Ste. Marie were observed during the course of the survey. No anomalies were noted. ✓

Q. RECOMMENDATIONS

See descriptions of individual Presurvey Review items for recommendations for each item (descriptions are appended to this report). ✓

Delete the pile symbols charted at Lat. 46°30'53.9" N, Lon. 84°20'49.1" W (these are immediately to the west of the Canadian Lower Canal entrance range front light. See Sec 7 of Eval Rpt ✓)

Delete contour lines drawn to the east of the log booms inside the Canadian Power Canal and the Edison Sault Electric Power Canal. These areas are not accessible to boaters. ✓

The current flows at 1-2 kts in the vicinity of the log booms. A current arrow (or warning to mariners such as the one directed toward the Edison Sault Power Canal) Should be charted

near the entrance to the Canadian Power Canal and especially to the immediate west of the compensating works and the United States Power Canal. * See the Coast Pilot Report with attached chartlet showing recommended speed and direction indicators for this survey. ✓

* See Coast Pilot Supplement 6

R. AUTOMATED DATA PROCESSING

Program	Version
===== RK 210 Grid, Signal and Lattice Plot	4/18/75
RK 212 Visual Table Load	4/01/74 ✓
RK 216 R/Az Non Real Time Plot	2/09/81
RK 300 Utility Computations	2/05/76
RK 330 Data Reformat and Check	5/04/76
AM 500 Predicted Tide Generator	11/10/72
AM 602 ELINORE	5/20/75

S. REFERENCE TO REPORTS

Descriptive report for H-10152 (to be completed in the summer of 1985). ✓

Horizontal control report to be submitted. ✓

Respectfully Submitted,

Robert Lewis

(or) John W. Humphrey, Jr., LT, NOAA
Officer-in-Charge, HFP-2

CHART # 14884

PRE-SURVEY REVIEW ITEM # 2357
subm. wreck

SOURCE TP00364 Rev Class III

INVESTIGATION DATE 7 August 1984

TIME 154300

VESSEL 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1124

VOLUME: 4

PAGE: 42

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'25.5"

84°18'36.0"

OBSERVED:

46°29'25.6"

84°18'36.1"

POSITION DETERMINED BY: Range/Azimuth (Del Norte - Nikon NT2D Theodolite)

METHOD OF ITEM INVESTIGATION: The wreck was located visually and verified. A hydro detached position was taken over the least depth of the item which is exposed ~~5~~ 5' at Low Water datum. The wreck is the remains of a sunken wooden barge with metal debris scattered throughout the barge structure. The barge sits flat on the bottom and is oriented in an east-west position.

CHARTING RECOMMENDATIONS: Retain exposed wreck symbol as charted and chart at the above observed position. Concur

COMPILATION USE

CHART

1488A

APPLIED AS

Examined NC

CHART # 14884

PRE-SURVEY REVIEW ITEM # 2358

wreck

SOURCE TP00364 Rev Class III

INVESTIGATION DATE 7 August 1984

TIME 154000

VESSEL 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1123

VOLUME: 4

PAGE: 42

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'26.2"
46°29'26.2"

84°18'38.7"
84°18'39.02"

POSITION DETERMINED BY: Range/Azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: Verified; The debris from the wreck (remains) were located visually and a hydro detached position was taken over the least depth. The ~~least depth~~ ^{depth is exposed} 3.0 ' at LWD. The wreck sits in 2.0 ' of water at LWD. Debris covers an area of approximately 100'x50' and sits flat on the bottom in an east-west orientation.

CHARTING RECOMMENDATIONS: It is recommended that the exposed wreck symbol be retained and charted at the above observed position. Concur

COMPILATION USE

CHART

APPLIED AS

14884

Examine NC

CHART # 14884

PRE-SURVEY REVIEW ITEM # 2359 ✓

Wreck (exposed @ LWD)

SOURCE TP 00364 Rev Class III

INVESTIGATION DATE 2, August 1984

TIME 145200

VESSEL 0519

OIC LT(JG) Humphrey

REFERENCE

POSITION # 987
#1120

VOLUME: 4
4

PAGE: 16
41

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'29.0" ✓

84°18'44.5" ✓

OBSERVED:

Pos# 987: 46°29'29.27" ✓

84°18'44.87" ✓

Pos#1120: 46°29'29.42" ✓

84°18'43.38" ✓

POSITION DETERMINED BY: Range/Azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: Verified. The item was located visually. It is debris from a wreck covering an area of 100'x30' lying in an east-west orientation. A hydro detached position was taken on the least depth. WRECK GAGES 4.2' @ LWD. (IN 3.1' OF WATER @ LWD). Position 1120 represents the northeast corner of the wreck debris.

CHARTING RECOMMENDATIONS: It is recommended that the exposed wreck symbol be retained and shown at the above observed position for position #987 Concur

COMPILATION USE

CHART

APPLIED AS

14884

Example NC

4 ✓

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3442 ✓

SOURCE TP00363 Rev. - Class III ; subm obstr

INVESTIGATION DATE 31 July 1984

TIME 154400

VESSEL launch 0519

OIC LT(j.g.) John W Humphrey Jr

REFERENCE

POSITION # 729

VOLUME: 3

PAGE: 21

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°30'24.00" ✓

84°23'31.7" ✓

OBSERVED:

46°30'23.93" ✓

84°23'31.74" ✓

POSITION DETERMINED BY: Range/azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The submerged obstruction was located after a visual search and a detached position was taken on the least depth of the item. The obstruction is a large flat topped boulder, 4x4 meters, with a least depth of 1.1' at Great Lakes Low Water Datum. ✓

CHARTING RECOMMENDATIONS: The hydrographer recommends that the chart show a submerged rock symbol - shoal sounding on isolated rock Chart #1, pg. 13 #5 - and chart at the above observed position. Chart or rocks covered 1 foot at LWD

COMPILATION USE

CHART

14884

APPLIED AS

charted as !! RK (1ft on isolated rock)

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3443 ✓

SOURCE TP00363-Rev Class III

INVESTIGATION DATE 31 July 1984

TIME 153900

VESSEL Launch 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 728

VOLUME: 3

PAGE: 20

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: yes (unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°30'21.00" ✓

84°23'33.0" ✓

OBSERVED:

46°30'20.8₄"

84°23'32.94" ✓

POSITION DETERMINED BY: Range/azimuth (Del Norte-Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The submerged obstruction was located during a visual search. A hydro detached position was taken on the least depth of the item which is 2.1' @ Great Lakes Low Water Datum. The obstruction is a large boulder with a flat top measuring 3x4 meters. ✓

CHARTING RECOMMENDATIONS: The hydrographer recommends that the chart show a submerged rock symbol (Chart #1 pp. 13 #5-shoal sounding on isolated rock) and chart at the above observed position. Chart or rock covered 2 feet at LWD

COMPILATION USE

CHART

14884

APPLIED AS

Charted as 2' RK (2ft on isolated rock)

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3445 ✓
obstruction

SOURCE TP-00363 Rev Class III

INVESTIGATION DATE 11 July 1984

TIME 144900

VESSEL Launch 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 199

VOLUME: 1

PAGE: 47

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'38.2" ✓

84°23'37.8" ✓

OBSERVED:

46°29'38.09" ✓

84°23'37.69" ✓₄

POSITION DETERMINED BY: Range/azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The item is a rock awash and was located visually. A hydro detached position was taken on the center of the rock (actually a pile of rocks). ✓
The surrounding water depth is 0.9' @ LWD and the rock bares 1.2' @ LWD

CHARTING RECOMMENDATIONS: The hydrographer recommends that the rock awash symbol remain as charted and shown at the above observed position. Chart as rock uncovered 2 feet at LWD

COMPILATION USE

CHART

14884

APPLIED AS

Examined NC. Already charted as Subm. Ruins

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3446 ✓

SOURCE LS1688/35 Visible piles

INVESTIGATION DATE July 11, 1984

TIME 143700-144500

VESSEL Launch 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 193-198, 5066-69

VOLUME: 1

PAGE: 46-47

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'40.00" ✓

84°23'31.0⁷⁸" ✓

OBSERVED:

East end 46°29'40.6" ✓

84°23'25.83" ✓

West end 46°29'38.29" ✓

84°23'38.21" ✓

POSITION DETERMINED BY: Range/Azimuth (Del Norte - Nikon NI2D)

METHOD OF ITEM INVESTIGATION: The item was located visually and 6 hydro detached positions were taken on the limits of the pier ruins. The piles which comprised the item ranged in height from awash to baring 7'. The depth of water that the piles sit in ranges from 1.1' to 2.5' at Great Lakes Low Water Datum.

CHARTING RECOMMENDATIONS: The hydrographer recommends that the piles be retained as charted with the submerged ruins notation

See Sec 6 of Eval Rpt

CHART

14884

COMPILATION USE

APPLIED AS

Examine NC

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3447 ✓
obstruction

SOURCE LS1688/35 vis. piles

INVESTIGATION DATE 10,23 August 1984

TIME 130000

VESSEL 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # N/A

VOLUME:

PAGE:

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS N/A

PREDICTED TIDES: N/A

ACTUAL TIDES:

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'32.1" ✓

84°23'19.8" ✓

POSITION DETERMINED BY: See Field Sheet Method

METHOD OF ITEM INVESTIGATION: The item is verified as presently charted and consists of square concrete piles approximately 12"x12" extending 30 meters from the shoreline. ✓

CHARTING RECOMMENDATIONS: It is recommended that the item remain as charted and that the northern limit of the piles be shown at the above position. They are presently shown extending to 46°29'33".

See Sec 6
of Eval Rpt

CHART

14884

COMPILATION USE

APPLIED AS

Examine NC

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3448 ✓

obstruction

SOURCE unknown

INVESTIGATION DATE 10,23 August 1984

TIME 130000 (8/23/84) VESSEL 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # N/A

VOLUME:

PAGE:

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES:

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'32.5" ✓

84°23'17.8" ✓

POSITION DETERMINED BY: See Field Sheet

METHOD OF ITEM INVESTIGATION: The pier was located visually during the investigation and is exposed. The pier bears 31 at Low Water Datum ✓

CHARTING RECOMMENDATIONS: Retain as charted at the above position.

Concur

CHART

14884

COMPILATION USE

APPLIED AS

Examine N.C.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3449 ✓
obstruction

SOURCE LS1688/35

INVESTIGATION DATE 10,23 August 1984

TIME 133000

VESSEL 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # N/A

VOLUME: N/A

PAGE: N/A

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: yes (unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'31.8"N ✓

84°23'12.4"W ✓

POSITION DETERMINED BY:

METHOD OF ITEM INVESTIGATION: The item was visually verified is a row of piles that are exposed 2' to awash at Low Water Datum ✓

CHARTING RECOMMENDATIONS: It is recommended that the pile symbols remain as charted at the above position.

See Sec 6 of
Eval Rpt

COMPILATION USE

CHART

APPLIED AS

14884

Moved row of piles to agree with topo.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3450
obstruction

SOURCE LS 1688/35

INVESTIGATION DATE 10,23 August 1984

TIME 1330

VESSEL 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # N/A

VOLUME: N/A

PAGE: N/A

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: yes(unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'35.6"N

84°23'11.8"W

POSITION DETERMINED BY:

METHOD OF ITEM INVESTIGATION: Items were visually verified and are piles from pier ruins that are exposed 3' to awash at Low Water Datum

CHARTING RECOMMENDATIONS: Retain as charted at above position.

See Sec 6
of Eval Rpt

CHART

14884

COMPILATION USE

APPLIED AS

Examine N.C.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3451
obstruction

SOURCE LS1688/35; RS 1954 Ruins

INVESTIGATION DATE 10 August 1984

TIME 173500

VESSEL Launch 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1300,1301

VOLUME: 5

PAGE: 12

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46° 29' 39.40"

84° 23' 13.8"

OBSERVED:

46° 29' 39.44"
46° 29' 38.98"

84° 23' 13.79"
84° 23' 13.13"

POSITION DETERMINED BY: Range/Azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: Pier ruins were verified. The ruins were located visually and two hydro detached positions were taken on the north and south limits of the ruins. The ruins consisted of deteriorated 10" piles and some 10"x 10" cross beams. The piles are exposed 3.4 ' at Low Water Datum.

CHARTING RECOMMENDATIONS: The chart representation shows ^{Subm. Ruins} a ~~structure~~ at the above charted position. It is recommended that this be deleted and replaced with a pile symbol at the mean of the above two observed positions. *Do not concur. Retain ruins as charted*

COMPILATION USE

CHART

14884

APPLIED AS

Examine NC

13 ✓

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3452 ✓

SOURCE RS 1954 - ruins; Scaled from chart 14884

INVESTIGATION DATE 31 July 1984

TIME 151700

VESSEL Launch 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 727

VOLUME: 3

PAGE: 20

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'46.00" ✓

84°23'18.00" ✓

OBSERVED:

46°29'49.62" ✓

84°23'17.98" ✓

POSITION DETERMINED BY: Range/azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: Item was located by a diver search and a hydro detached position on the least depth of 12.8' @ Great Lakes Low Water Datum. The position is on the north-western corner of the ruins consisting of piles and concrete slabs. ✓

CHARTING RECOMMENDATIONS: The hydrographer recommends charting a submerged ^{RUIN}~~crab~~ symbol ~~Conc~~ at the above observed position.

COMPILATION USE

CHART

APPLIED AS

14884

Applied as subm. Ruins. [1]

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3453 ✓

SOURCE TP00383 - Rev Class III

INVESTIGATION DATE 31 July 1984

TIME 144900

VESSEL launch 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 726

VOLUME: 3

PAGE: 20

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'47.6" ✓

84°23'16.5" ✓

OBSERVED:

46°29'47.62" ✓

84°23'16.27" ✓

POSITION DETERMINED BY: Range/azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The item was located by a diver search. A hydro detached position was taken on the least depth of the item which is 1.3' @ Great Lakes Low Water Datum. The item is the eastern limit of a submerged pile cluster where the position was taken. ✓

CHARTING RECOMMENDATIONS: The hydrographer recommends that the chart show the symbols and notation for submerged piles. Concur

COMPILATION USE

CHART

APPLIED AS

14884

Charted as subm. pile.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3454

SOURCE TP00383 - Rev Class III

INVESTIGATION DATE 31 July 1984

TIME 143800

VESSEL Launch 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 724-725

VOLUME: 3

PAGE: 20

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'48.5" ✓

84°23'15.0" ✓

OBSERVED:

Pos 724 -

46°29'49.21" ✓

84°23'14.96" ✓

Pos 725 -

46°29'48.93" ✓

84°23'15.17" ✓

POSITION DETERMINED BY: Range/azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The item was located by a visual and diver search and two hydro detached positions were taken on the northeast and southeast corners of the remains of a submerged crib. Both least depths were 6.8' @ Great Lakes Low Water Datum. The remains that were investigated extend eastward from the charted exposed crib at 46°29'49.2" - 84°23'16.0

CHARTING RECOMMENDATIONS: The hydrographer recommends that the submerged crib symbol be shown at the mean of the above two observed positions and butting against the east side of the exposed crib mentioned above.

Chart as obstructive covered 7 feet at LWD

COMPILATION USE

CHART

APPLIED AS

14884

Examine N.C.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3455 ✓
Obstruction

SOURCE LS1688/35; RS 1972;

INVESTIGATION DATE 1 August 1984

TIME 184300

VESSEL Launch 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 923

VOLUME: 3

PAGE: 59

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'43.3"₀₄
46°29'41.99"₉₉

84°22'44.0"₂
84°22'43.48"₈

POSITION DETERMINED BY: Range/azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The item is the remaining piles of pier remains; the item was located visually and a detached hydro position was taken on the offshore end of the row of piles the piles are awash to baring 7.4' at LWD. The depth of the surrounding water is 1.4' at LWD. ✓

CHARTING RECOMMENDATIONS: The hydrographer recommends that

See Sec 6 of
Eval Rpt

CHART

14884

COMPILATION USE

APPLIED AS

Examined N.C. ✓

CHART #14884

PRE-SURVEY REVIEW ITEM # 3456 ✓

SOURCE LS1688/35 Piles

INVESTIGATION DATE 1 August 1984

TIME 183800

VESSEL Launch 0519

OIC Lt(j.g.) Humphrey

REFERENCE

POSITION # 922

VOLUME: 3

PAGE: 59

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'46.3"
46°29'42.82"

84°22'30.5"
84°22'28.78"

POSITION DETERMINED BY: Range/azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The item (piles) were located visually. A hydro detached position was taken on the offshore end of the piles which extended to shore as shown on the chart. The piles ranged in height from awash to baring 6.4' at LWD. The depth of the surrounding water is 0.1' at LWD.

CHARTING RECOMMENDATIONS: The hydrographer recommends that the piles remain as charted and the offshore end of the piles be charted to show the above observed position.

See Sec 6 of
Eval Rpt

COMPILATION USE

CHART

14884

APPLIED AS

Examine N.C.

(61.)

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3458
Obstruction (piles)

SOURCE RS 1966

INVESTIGATION DATE 7 August 1984

TIME 142800 - 143700 VESSEL 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 1111, 1112, 1113, 1114

VOLUME: 4

PAGE: 40

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°30'00.30"

84°20'15.9"

OBSERVED:

Pos. 1111: 46°30'01.70"

84°20'14.74"

POSITION DETERMINED BY: Range/Azimuth (Del Norte-Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The item was verified. The piles were located visually.

Four prominent limits of the pile cluster were positioned by hydro detached position.

The range of pile heights is 14 ' submerged to 8.1 ' bare at LWD. The piles are old pier remains and are 8" in diameter.

CHARTING RECOMMENDATIONS: It is recommended that the piles remain as charted and also show them extending to the above observed position as it is the northern most limit of the pile ruins.

Revis chart as shown on 555

COMPILATION USE

CHART

14884

APPLIED AS

Examine N.C.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3459
obstruction

SOURCE CL 210/82; CES 14884 1981 confirmed

INVESTIGATION DATE 28 August 1984

TIME 155000

VESSEL Launch 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1348

VOLUME: 5

PAGE: 25

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°30'00.00"N
46°30'00.4"N

84°18'25.8"W
84°18'24.82"W
75

POSITION DETERMINED BY: Range (Del Norte) - Azimuth (Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The obstruction is a rock and was located visually from the launch and a hydro detached position taken on the least depth which is exposed 1.1' at Low Water Datum

CHARTING RECOMMENDATIONS: It is recommended that the rock remain charted as dangerous exposed at the above observed position.

Concur

COMPILATION USE

CHART

APPLIED AS

14884

Examine N.C. Revised through Canadian Hydro
Sp 127197

(63.)

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3460
Obstruction

SOURCE RS 1954

INVESTIGATION DATE 7 August 1984

TIME 145200-145800

VESSEL 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION #1115-1117

VOLUME: 4

PAGE: 40-41

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

CHARTED:
OBSERVED:

Pos#1117

LATITUDE

46°29'41.3"
46°29'41.39"

LONGITUDE

84°19'23.8"
84°19'24.37"

POSITION DETERMINED BY: Range/Azimuth (Del Norte-Nikon NT2D)

METHOD OF ITEM INVESTIGATION: Item Verified. The piles were located visually. They range in height from 3.1 ' - to (baring) 7.1 ' at the LWD. Three hydro detached positions were taken on the limits of these piles which are pier remains. The piles are 8 to 10" in diameter.

CHARTING RECOMMENDATIONS: It is recommended that the piles be retained as charted and the northernmost limit of the piles be shown at the above observed position.
Concur

COMPILATION USE

CHART

14884

APPLIED AS

Examine NC

(64)

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3461
obstruction

SOURCE RS 1941 rock awash

INVESTIGATION DATE 28 August 1984

TIME 154200

VESSEL launch 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1347

VOLUME: 5

PAGE: 25

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes(unverified)

GEODETIC POSITION:

CHARTED:
OBSERVED:

LATITUDE

46°29'29.4"N
46°29'29.32"
25

LONGITUDE

84°18'51.2"W
84°18'51.73"
36

POSITION DETERMINED BY: Range (Del Norte) - Azimuth (Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The obstruction is a rock and was located visually from the launch; a hydro detached position was taken over the least depth which is exposed 0.6' at Low Water Datum. The rock sits in 2.4' of water at LWD

CHARTING RECOMMENDATIONS: It is recommended that the rock remain as charted and shown at the above observed position.

Revise position on charted rock and add two others as shown on RSR

COMPILATION USE

CHART

14884

APPLIED AS

Examine NC

(65.)

CHART # 14884

PRE-SURVEY REVIEW ITEM #3462
Obstruction - rock awash

SOURCE RS 1966

INVESTIGATION DATE 7 August 1984

TIME 152600

VESSEL 0519

OIC LT(j.g.) Humphrey

REFERENCE

POSITION # 1119

VOLUME: 4

PAGE: 41

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes(unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'28.7" ⁴

84°18'44.6" ⁵

OBSERVED:

46°29'29.15" ⁴

84°18'43.15" ⁵

(position of wreck debris)

POSITION DETERMINED BY: Range/Azimuth (Del Norte - Nikon NT2D)

METHOD OF ITEM INVESTIGATION: One specific rock was not located however the charted position of the rock awash is amidst the debris of the wreck in PSR Item 2359. The above position bares 0.7 ' at the Low Water Datum and is located further offshore than the charted rock

CHARTING RECOMMENDATIONS: Retain rock awash symbol at charted position. (Exposed wreck symbol covers this area sufficiently as an area dangerous for mariners so that the rock awash symbol could be deleted without sacrificing chart accuracy)

See Sect 7 of Eval Rpt

COMPILATION USE

CHART

APPLIED AS

14884

Examine N.C.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3463
unknown

SOURCE CL 210/82; CES 14884 (1981)

INVESTIGATION DATE 28 August 1984

TIME 145800

VESSEL launch 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1344

VOLUME: 5

PAGE: 24

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: N/A

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:
OBSERVED:

46°29'24.6"N

84°18'32.7"W

POSITION DETERMINED BY: Range (Del Norte) - Azimuth (Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The area was investigated by divers conducting a circle search about the above observed position
No ruins or debris of any nature was seen in this area.

CHARTING RECOMMENDATIONS: It is recommended that the charted exposed crib symbol at the above position be deleted from the chart

COMPILATION USE

CHART

APPLIED AS

14884

Deleted crib symbol from chart

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3464 11
obstruction

SOURCE CL 210/82; CES 14884 1981 crib exposed 6'

INVESTIGATION DATE 28 August 1984 TIME 144500 VESSEL launch 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1340-1343 VOLUME: 5 PAGE: 24

CORRECTORS APPLIED:

VELOCITY: N/A TRA CORRECTORS: N/A

PREDICTED TIDES: N/A ACTUAL TIDES: N/A

GEODETIC POSITION: LATITUDE LONGITUDE
CHARTED: 46°29'24.0"N 84°18'25.0"W
OBSERVED:

POSITION DETERMINED BY: Range (Del Norte) - Azimuth (Nikon NT2D)

METHOD OF ITEM INVESTIGATION: A visual and diver search was conducted around the following positions 46/29/25.23 - 84/18/25.21, 2) 46/29/23.86, - 84/18/25.94 ✓
3) 46/29/23.05 - 84/18/25.00, 4) 46/29/24.69 - 84/18/23.68. There were no signs of an exposed crib at this position.

CHARTING RECOMMENDATIONS: The hydrographer recommends that the charted exposed crib at Concor 46°29'24.0"N - 84°18'25.0"W be deleted. Referring to the descriptive report for OPR-2451 a recommendation was made to chart an exposed crib at the above position and that it was exposed 6' at LWD. Chart 14884 30th Edition Apr 17 1976 which was used during ⁰⁰¹⁻²⁴⁷ did not show the crib at the above position nor did it show the large pile of rocks at 46° 29'24.9"N - 84°18'23.4W appearing to be a crib and exposed approximately ~~6-8'~~^{9'} at LWD. This large rock pile is shown (over

COMPILATION USE APPLIED AS

CHART 14884

Revised crib to 1st ed on chart

on TP 00364. The hydrographer believes that the crib to be charted from OPR-Z451 was actually this large pile of rocks. This is based on diver reports **visual** search (water clarity was excellent) and position of the large rock pile on the manuscript.

Require position of feature charted at $46^{\circ} 29' 29.9'' N$ $87^{\circ} 18' 23.9'' W$ to position shown on smooth sheet. Chart according to smooth sheet.

COMPLETION USE

DATE

Handwritten note: *Handwritten note or signature*

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3465

obstruction

SOURCE CL 210/82; CES 14884 1981

INVESTIGATION DATE 28 August 1984

TIME 170100

VESSEL launch 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1350

VOLUME: 5

PAGE: 26

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: Yes (unverified)

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°29'57.5"N

84°18'07.0"W

OBSERVED:

46°29'57.18"N
29 57.18

84°18'09.37"W
09.37
09.14

POSITION DETERMINED BY: Range (Del Norte) - Azimuth (Nikon NT2D)

METHOD OF ITEM INVESTIGATION: The obstruction is a large rock; a hydro detached position was taken over the least depth of the rock which is exposed 1.3' at Low Water Datum. This rock is in an area of many rocks extending out from the shore and represents the shoalest position in that area.

CHARTING RECOMMENDATIONS: It is recommended that the rock symbol (exposed) be charted at the above observed position.

BP128337 verifies rock at original position (Lat. 46°29'57.5"N; Long. 84°18'07.0"W) ^{Concur}

COMPILATION USE

CHART

APPLIED AS

14884

Charted one new rock and retained one.

CHART # 14884

PRE-SURVEY REVIEW ITEM # 3466
obstruction

SOURCE RS 1957

INVESTIGATION DATE 28 August 1984

TIME 162000

VESSEL launch 0519

OIC LT(jg) Humphrey

REFERENCE

POSITION # 1349

VOLUME: 5

PAGE: 26

CORRECTORS APPLIED:

VELOCITY: N/A

TRA CORRECTORS: N/A

PREDICTED TIDES: N/A

ACTUAL TIDES: N/A

GEODETTIC POSITION:

LATITUDE

LONGITUDE

CHARTED:

46°30'10.9"N ✓

84°18'53.5"W ✓

OBSERVED:

(Center of search) 46°30'10.5"N ✓

84°18'53.7"W ✓

POSITION DETERMINED BY: Range (Del Norte) - Azimuth (Nikon NT2D)

METHOD OF ITEM INVESTIGATION: A 25m radius diver investigation was conducted about the above observed position. No evidence of a pile was found. ✓

CHARTING RECOMMENDATIONS: It is recommended that the pile at the above charted position be deleted from the chart.

Do not concur. See Sec 7 of Eval Rpt

COMPILATION USE

CHART

14884

APPLIED AS

*Pile deleted from chart
Retained pile. SEE PHL EVAM*

(70.)



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL OCEAN SURVEY

Hydrographic Field Party 2

August 26, 1985

To: LCDR. K.W. Perrin, Chief, HFPS

From: *Brian A. Link*
 Brian A. Link, OIC, HFP 2

Subject: Addendum to H-10141, OPR-X278-HFP-84, St. Mary's River

As mentioned in the Descriptive Report for basic hydrographic survey H-10141, St. Mary's River, Michigan/Ontario (OPR-X278-HFP-84), the ~~American Canal~~ ^{Vidal Shoals Channel} Range Rear Light (1985 USCGLL #13555), SW Pierhead Light (1985 USCGLL #13540), and the Canadian Canal Upper Entrance Range Front (1985 USCGLL #13610) and Rear (1985 USCGLL #13615) Lights were located to Third-Order, Class I standards.

Also located to Third-Order, Class I standards was the SW Pier Light (1985 USCGLL #13535), requested to be located in the Preprocessing Examination for H-10141 by PMC, along with the Bayfield Channel Buoy 109 (USCGLL #13500). The lights were located August 15 and 16, 1985 and the buoy on August 22, 1985, by sextant fix with left and right angle checks.

The positions shown on the attached NOAA Form 76-40 reflect field computed positions and heights.

Bayfield Channel Buoy 109 was located by sextant fix using Bayfield Dike Light as the center object, Sault Ste. Marie Obs Tr F Pole as the left, and Bayfield Rock Range Front Light as the right object. A left check was obtained to Station NED and a right check to the Shingwauk Home Church Spire. Positions of the signals used are:

SIGNAL NAME	LATITUDE	LONGITUDE	OBJECT No.
Bayfield Dike Lt.	46°29'53"7209	84°18'56"2128	1
Sault Ste. Marie Obs Tr F Pole	46°29'53"2166	84°20'25"9362	2
Bayfield Rock Range Front Lt.	46°29'19"8215	84°16'58"7791	3
Station NED USE	46°30'19"2718	84°20'30"2254	4
Shingwauk Home Church Spire	46°30'03"8200	84°17'13"7600	5



Subject: Addendum to H-10141

The sextant fix data on buoy 109 was:

Object No.	Observed Angle
2	70° 13' (Left)
1	(Center)
3	104° 44' (Right)
4	52° 18' (Left Check)
5	71° 15' (Right Check)

The position for Bayfield Channel Buoy 109 was computed using the Resection Station Computation Using GP's program for the HP-41CV and is:

LATITUDE: 46° 29' 35.0"N

LONGITUDE: 84° 18' 54.4"W

This letter should be considered the original field record for the location of buoy 109, and included as part of H-10141 survey data.

Canadian Canal Upper Entrance spar buoy "8" was searched for on 9 September 1985 and was not found on station. It was not seen on station during the 1984 field season on survey H-10141. None of the spar buoys charted in the Canadian Channel are listed in the Great Lakes Light List.

APPROVAL SHEET

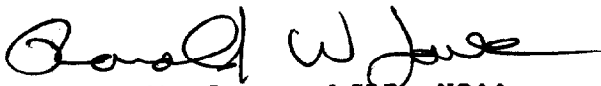
For

SURVEY H-10141 (HFP-5-3-84)

The hydrographic records transmitted with this survey are complete and adequate.

No direct supervision was given by me during the field work.

The survey is complete and adequate, with no additional field work recommended.



Ronald W. Jones, LCDR, NOAA
Chief, Hydrographic Field Parties Section



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

NATIONAL OCEAN SURVEY

439 W. York St.
Norfolk, VA 23510

MOA 233

Sault Ste Marie, MI Telephone (906)-632-3311 x442

Date : 9 August 1984
To : Commander, Ninth Coast Guard District, Cleveland, OH
From : LT(j.g.) John W. Humphrey Jr., OIC, Hydrographic Field Party #2
Subject : Danger to Navigation Report for the St. Marys River (Chart # 14884)

Two large submerged rocks have been found and positioned while conducting a basic hydrographic survey of the St. Marys River. These rocks are not charted and pose a danger to navigation.

o Single large rock (top of rock is 3x4 meters) with a 2.1' least depth at Low Water Datum at position: 46°30'20.85"N
84°23'32.95"W # 3443

o Single large rock (top of rock is 4x4 meters) with a 1.1' least depth at Low Water Datum at position: 46°30'23.93" N
84°23'31.74" W # 3442

Low Water Datum refers to the gage above the locks at Southwest Pier, Corps of Engineers Base, Sault Ste. Marie, Michigan when the gage reads 599.8', International Great Lakes Datum.

All position were obtained using range/azimuth control, third-order horizontal control stations, Nikon NT2D theodolite and Del Norte electronic range equipment.

This is advance information subject to office review.

See attached chart section.





U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
439 W. York St.
Norfolk, VA 23510
ATTN: MOA233

Date : 9 August 1984
To : Chief, Chart Information Section, N/CG222
Thru : LCDR R.W. Jones, Chief, Hydrographic Field Parties Section
From : LT(j.g.) J.W. Humphrey Jr., OIC Hydrographic Field Party #2 *J.W. Humphrey Jr.*
Subject : Danger to Navigation Report for OPR-X278-HFP-84, St Marys River
Chart 14884; Registry H-10141

The attached letter was sent to the Commander of the Ninth Coast Guard District, Cleveland, OH for inclusion in the Local Notice to Mariners. The Local Notice to Mariners office was also notified via teletype from the Sault Ste. Marie Coast Guard Station on this day.

Attached is a chart section of NOS Chart 14884 (1:20000 inset) showing the location of the two submerged rocks, and the representative area from the current survey showing surrounding depths. The chart section and survey sheet section also accompanied the letter sent to the Coast Guard office in Cleveland, OH.





U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
439 W. York Street (MOA233)
Norfolk, VA 23510

Date : 24 September 1984
To : Commander, Ninth Coast Guard District, Cleveland, OH
From : LT(j.g.) John W. Humphrey Jr., OIC, Hydrographic Field Party #2
Subject : Danger to Navigation Report for the St. Marys River (Chart 14884)

The following obstructions have been found and positioned while conducting a basic hydrographic survey of the St. Marys River. These obstructions are not charted and pose a danger to navigation.

- o Single large rock on shoal submerged 0.5' at the Low Water Datum
at position: 46°30'31.41"N
84°22'29.10"W
- o Single large rock exposed 0.3' at Low Water Datum
at position: 46°30'35.47"N
84°22'33.27"W
- o Crib ruins submerged 2.7' at Low Water Datum
at position: 46°30'24.99"N
84°21'52.28"W
- o Crib ruins submerged 3.7' at Low Water Datum
at position: 46°30'27.59"N
84°21'51.79"W
- o Crib ruins submerged 4.9' at Low Water Datum
at position: 46°30'30.29"N
84°21'52.22"W
- o Crib ruins submerged 2.2' at Low Water Datum
at position: 46°30'19.16"N
84°21'51.92"W
- o Crib ruins submerged 1.9' at Low Water Datum
at position: 46°30'18.54"N
84°21'53.18"W

Low water datum refers to the water level gage above the locks at Southwest Pier, Corps of Engineers base Sault Ste Marie, Michigan when the gage reads 599.8', International Great Lakes Datum.

All positions were obtained using range/azimuth control, third-order horizontal control stations, Nikon NT2D Theodolite and Del Norte electronic range equipment.

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW

See attached chart section





U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY

439 W. York St.
Norfolk, VA 23510
ATTN: MOA233

Date : 24 September 1984
To : Chief, Chart Information Section, N/CG222
Thru : LCDR R.W. Jones, Chief, Hydrographic Field Parties Section
From : LT(j.g.) J.W. Humphrey Jr., OIC-Hydrographic Field Party #2 *J.W. Humphrey Jr.*
Subject : Danger to Navigation Report for OPR-X278-HFP-84, St Marys River,
Chart 14884; Survey Registry # H-10141

The attached letter was sent to the Commander of the Ninth U.S. Coast Guard District Cleveland, OH for inclusion in the Local Notice to Mariners. The Local Notice to Mariners Office was also notified via teletype from the Sault Ste. Marie Coast Guard station on 26 September 1984.

Attached is a chart section of chart 14884 (1:20000 inset) showing the location of the obstructions, and the representative area from the current survey showing the surrounding depths. The chart section and the current survey sheet section also accompanied the letter sent to the Coast Guard office in Cleveland, OH.





**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

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

May 10, 1985 N/MOP211C/CDR

Commander (OAN)
Ninth Coast Guard District
1240 East 9th Street
Cleveland, OH 44199

Dear Sir:

During preliminary office review of hydrographic survey H-10141, Sault Ste Marie, St. Marys River, Michigan, an uncharted 6-foot sounding was noted and was considered a danger to navigation. Questions concerning the survey may be directed to Lt. Cdr. David W. Yeager, Chief, Nautical Chart Branch, telephone (206) 526-6835.

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

"An uncharted 6-foot sounding at Low Water Datum is at latitude 46°29'52.5"N, longitude 84°23'06.5"W, 220 degrees true, 0.5 miles from the charted position of North West Pierhead Light on Chart 14884".

Low Water Datum refers to the water level gage above the locks at Southwest Pier, Corps of Engineers base, Sault Ste Marie, Michigan, when the gage reaches 599.8' International Great Lakes Datum.

Sincerely,

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



Signal Tape Listing

H-10141

OPR-X278-HFP-84

101	0	46	30	01451	084	22	42733	250	0000	000000	USE W, (AMC, 1984)
102	0	46	29	23650	084	25	36081	250	0000	000000	U-Bolt, (AMC, 1984)
103	0	46	30	42998	084	22	15852	250	0000	000000	Bollard, (AMC, 1984)
104	0	46	29	20300	084	18	22411	250	0000	000000	Park, (AMC, 1984)
105	0	46	29	53695	084	18	56200	250	0000	000000	Dike, (AMC, 1984)
108	0	46	30	12226	084	20	19386	139	0000	000000	E Cen PierH LT, NGS, 1981
109	0	46	29	53721	084	18	56213	139	0000	000000	Bayfield Dike Light, NGS, 1981
110	0	46	29	28707	084	21	30935	139	0000	000000	Sault Ste. Marie Standpipe, (AMC, 1984)
111	0	46	29	15864	084	21	45742	139	0000	000000	Sault Ste. Marie Short Tank, NGS, 1981

Signals 101, 102, 103, 104, 105, and 110 located by AMC Geodetic Control Group.
Other control NGS published.

NOAA FORM 76-40
(8-74)

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

ORIGINATING ACTIVITY

Replaces C&GS Form 567.

REPORTS ON LANDMARKS FOR CHARTS

<input checked="" type="checkbox"/> TO BE CHARTED	REPORTING UNIT <i>(Field Party, Ship or Office)</i>	STATE	LOCALITY	DATE
<input type="checkbox"/> TO BE REVISED	Hydro Field Party #2	MICHIGAN	Sault Ste. Marie	9/84
<input type="checkbox"/> TO BE DELETED				

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

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM				METHOD AND DATE OF LOCATION <i>(See instructions on reverse side)</i>	CHARTS AFFECTED
			North American 1927					
CHARTING NAME	DESCRIPTION <i>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</i>	LATITUDE		LONGITUDE		OFFICE	FIELD	
		° /	//	° /	//			
			D.M. Meters		D.P. Meters			
X278		H-10141						
Standpipe	Sault Ste Marie, MI standpipe		28.707	46°29'	30.935		F-3-6-L	14884
	<i>Previously rec'd L-158(85)</i>							

(43.) NC L-158(85)

TYPE OF ACTION	RESPONSIBLE PERSONNEL	ORIGINATOR
	NAME	
OBJECTS INSPECTED FROM SEAWARD	LTjg John W. Humphrey Jr., OIC HFP-2	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	LT(jg) Humphrey, OIC, HFP-2	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
 Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
 EXAMPLE: 75E(C)6042
 8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
 Enter the applicable data by symbols as follows:
 F - Field P - Photogrammetric
 L - Located Vis - Visually
 V - Verified
 1 - Triangulation 5 - Field Identified
 2 - Traverse 6 - Theodolite
 3 - Intersection 7 - Planetable
 4 - Resection 8 - Sextant

A. Field positions* require entry of method of location and date of field work.
 EXAMPLE: F-2-6-L
 8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.**
 EXAMPLE: P-8-V
 8-12-75
 74L(C)2982

II. TRIANGULATION STATION RECOVERED
 When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
 EXAMPLE: Triang. Rec.
 8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
 Enter 'V-Vis.' and date.
 EXAMPLE: V-Vis.
 8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40
(6-74)

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

ORIGINATING ACTIVITY

Replaces C&GS Form 567.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)
HFPS-HFP2

STATE
Mich.

LOCALITY
Sault Ste Marie

DATE
9/84

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

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

CHARTING NAME	DESCRIPTION <small>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</small>	LATITUDE ° / ' / '' D.M. Meters	LONGITUDE		METHOD AND DATE OF LOCATION <small>(See instructions on reverse side)</small>	CHARTS AFFECTED				
			POSITION							
			° / ' / '' D.M. Meters	° / ' / '' D.P. Meters						
OPR PROJECT NO. X278		JOB NUMBER -----		SURVEY NUMBER H-10141		DATUM North American 1927		METHOD AND DATE OF LOCATION		CHARTS AFFECTED
DESCRIPTION		LATITUDE		LONGITUDE		OFFICE		FIELD		
LIGHT	American Canal West Center Pierhead Light LL#1604	46 30	9.827	84 22	7.135	unadjusted field pos.	9/84	F-2-6-L	14884	
LIGHT	American Canal Northwest Pierhead Light LL#1607	46 30	12.799	84 22	41.568	unadjusted field pos.	9/84	F-2-6-L	14884	
LIGHT	American Canal Vidal Shoals Channel Range Front Light LL#1608	46 30	16.123	84 21	49.279	unadjusted field pos.	9/84	F-2-6-L	14884	
	L-156(BS)									

42) NC

TYPE OF ACTION	RESPONSIBLE PERSONNEL NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	John W. Humphrey, LTJG, NOAA, OIC HFP2	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	John W. Humphrey, LTJG, NOAA, OIC, HFP2	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64.)

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

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

NOAA FORM 76-40
(8-74)

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

ORIGINATING ACTIVITY

NONFLOATING AIDS FOR CHARTS

Replaces C&GS Form 567.

<input checked="" type="checkbox"/> TO BE CHARTED	REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE	<input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> COMPILATION ACTIVITY <input type="checkbox"/> FINAL REVIEWER <input type="checkbox"/> QUALITY CONTROL & REVIEW GRP. <input type="checkbox"/> COAST PILOT BRANCH (See reverse for responsible personnel)
<input type="checkbox"/> TO BE REVISED	HFP 2	Michigan	St. Mary's River	Aug. 1985	
<input type="checkbox"/> TO BE DELETED		Ontario			

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED	
			POSITION		OFFICE	FIELD		
CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° /	// D.M. Meters	° /	// D.P. Meters			
X278-HFP-84		H-10141	North American 1927					
Range Light	Canadian Canal Upper Entrance Range Front Light (1985 LL #13610) Ht.=40'	46 30	53.1626	84 22	17.3297		F-3-6-L 8/85	14884
Range Light	Canadian Canal Upper Entrance Range Rear Light (1985 LL #13615) Ht.=62'	46 30	58.2290	84 22	08.3408		F-3-6-L 8/85	14884
Range Light	American Canal Range Rear Lt. (1985 LL #13555 as Vidal Shoals Channel Range Rear Light) Ht.=93'	46 30	22.5570	84 21	11.5248		F-3-6-L 8/85	14884
Light	SW Pier Light (1985 LL #13535) Ht.=5'	46 30	04.3950	84 22	26.0475		F-3-6-L 8/85	14884
Light	SW Pierhead Light (1985 LL #13540) Ht.=20'	46 30	01.5604	84 22	40.6538		F-3-6-L 8/85	14884
	Note: Positions are from unadjusted Field computations.							
	Heights shown are field computed above LWD for Lake Superior.							

NC 7-918-7 JN (58) 918-7 JN (85)

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

Field Water Level Note

Field water level reduction of soundings are based on unverified actual heights from the water level gage above the Corps of Engineers Locks, at Sault Ste. Marie, Michigan. This is station Southwest Pier (#907-6070). Data from this station was interpolated using program RK 500 on the Digital PDP/8e computer. Water level records were recorded in Eastern Standard Time, while computer output was in GMT.

Levels were run at station Southwest Pier and station Point Iroquois (#909-9004), prior to collecting data for hydrography and again after data collection had ended for the field season on OPR-X278. Beginning and ending levels were in agreement from both stations. Contact was made with all observers at the beginning of the project and no problems were encountered during the project.

Data from water level gage station U.S. Slip (#907-6060), located below the Corps of Engineers Locks was used to reduce sounding data from Pre-survey review item investigations and check channel lines run to overlay with data from the Canadian Hydrographic Service data in the area east of the locks.

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: MOA231

Hourly heights are approved for

Water Level Station Used: See remarks

Period: July 11, 1984, through September 20, 1984

HYDROGRAPHIC SHEET: H-10141

OPR- X278-HFP-84

Locality: St. Mary's River

Plane of reference: Low Water Datum (IGLD ^{See remarks} ----- Feet)

Remarks:

Above the Locks:

Station 907-6070, Southwest Pier, Michigan

Low Water Datum 599.8 Feet, IGLD 1955

Below the Locks:

Station 907-6060, U.S. Slip, Michigan

Low Water Datum 577.5 Feet, IGLD 1955

for Harry G. Haysworth
Chief, Water Levels Section

HYDROGRAPHIC SHEET: H-10141

Hourly Water Level Data for (907-6070) Southwest Pier, Sault St. Marie,
Michigan.

July 18, 1984

<u>Time EST</u>	<u>Level</u>
0400	601.33
0500	601.24
0600	601.32
0700	601.25
0800	601.21
0900	601.43
1000	601.35
1100	601.15
1200	601.47
1300	601.46
1400	601.18
1500	601.14

July 31, 1984

<u>Time EST</u>	<u>Level</u>
0400	601.02
0500	600.87
0600	600.84
0700	600.92
0800	601.11

The data provided on this sheet was obtained from a U.S. Army Corps of Engineers report because the NOS ADR gage was not operational during these times of hydrography.

GEOGRAPHIC NAMES

H-10141

Name on Survey	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	GRAND McNALLY ATLAS	U.S. LIGHT LIST	

ASHMUN BAY										1
BELLEVUE MARINE PARK (cultural feature)										2
										3
EDISON SAULT ELECTRIC CO CANAL										4
MICHIGAN										5
NORTH CANAL										6
ONTARIO										7
SAINT MARYS RIVER										8
SAULT STE MARIE (ON)										9
SAULT STE MARIE (MI)										10
SAULT STE MARIE (CANADA) CANAL										11
SOUTH CANAL										12
VIDAL SHOALS										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved:

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

AUG 5 1987

HYDROGRAPHIC SURVEY STATISTICS

H-10141

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		7
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		3
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	1				
ENVELOPES					
VOLUMES	6				
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List): **TP-00363, TP-00364**

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): **Chart 14884**

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			1498
POSITIONS REVISED			6010
SOUNDINGS REVISED			112
CONTROL STATIONS REVISED			

PROCESSING ACTIVITY	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	63.0		63.0
VERIFICATION OF SOUNDINGS	152.5		152.5
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	44.5		44.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS		24.0	24.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		62.0	62.0
GEOGRAPHIC NAMES			
OTHER* Digitizing			16.0
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	2600	86
			3686

Pre-processing Examination by C.R. Davies	Beginning Date 4/3/85	Ending Date 5/2/85
Verification of Field Data by T.O. Jones	Time (Hours) 280	Ending Date 12/23/85
Verification Check by J.L. Stringham, B.A. Olmstead, J.S. Green	Time (Hours) 35	Ending Date 1/8/86
Evaluation and Analysis by J.S. Green, C.R. Davies	Time (Hours) 86	Ending Date 1/8/86
Inspection by D. Hill	Time (Hours)	Ending Date 1/14/86

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10141

1. INTRODUCTION

H-10141 was accomplished by Hydrographic Field Party 2 in accordance with project instructions OPR-X278-HFP-84, dated May 7, 1984 and Change Number 1, dated May 25, 1984.

This is a basic hydrographic survey in the St. Mary's River, between Michigan and Ontario, Canada. The survey is bordered on the east by the Canadian and United States locks at Sault Ste. Marie and on the west by longitude 84°24'00"W.

In addition to the area of basic hydrography, three channel lines and a keel line of reconnaissance hydrography were acquired on the American side east of the survey area to longitude 84°18'30"W. The work east of the locks also included shoreline verification and the investigation of several AWOIS items. This area was currently being surveyed by a unit from the Canadian Hydrographic Service and the results of that survey are available as Field Sheet 8207. This survey has been forwarded to the Chart Information Section (N/CG222) for possible use in nautical charting.

→ BP 128337

In order to stay within maximum sheet size limitations, the area east of the locks is shown on the smooth sheet as an inset.

The field sheet was plotted using unverified actual water levels reduced to 600 feet above the International Great Lake Datum of 1955. The smooth sheet was plotted using the low water datum, zoning and water levels provided by the Water Levels Section, Office of Oceanography and Marine Services (N/OMS124) except for Day Number 222, where the NOS ADR gauge was not operational. Hourly water levels obtained from the U.S. Corps of Engineers were used during this period per guidance from N/OMS124 (see attached PMC Tide Status Record).

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. 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

Hydrographic control and positioning are adequately discussed in Sections F and G of the hydrographer's report and the Horizontal Control Report for OPR-X278-HFP-84.

Horizontal control station positions used during hydrography are either published or field positions based on North American Datum of 1927.

Applicable shoreline manuscripts are TP-00363 and TP-00364. These maps are registered Class III, and originate from photography flown in June 1982. There was no field edit.

The minor shoreline changes on the Canadian shore east of the locks noted in red on the field sheet at latitude 46°30'10"N longitude 084°18'33"W did not differ perceptively from the shoreline manuscript. The shoreline on the smooth sheet is as shown on the shoreline manuscript.

The discrepancies between the shoreline manuscript and field observations noted in Section H of the Descriptive Report have not been resolved. There are insufficient observations to revise the shoreline, therefore the manuscript shoreline has been transferred to the smooth sheet. In addition to the field observations a comparison to Canadian survey 8207 indicates shoreline problems which should be investigated by a review of manuscripts TP-00363 and TP-00364 by the Photogrammetry Branch, N/CG23.

3. HYDROGRAPHY

Soundings at line crossings are in good agreement. The depth curves could be completely and adequately drawn for the area of basic hydrography. Delineation of the bottom configuration and the determination of least depths are adequate.

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 Three, except as noted in the Preprocessing Examination Report, dated May 10, 1984, and as follows: ↖ not included in DR

- a. AWOIS items were investigated, however, the verification of items found during the survey were not always supported by positional data. As a result, features found to exist had to be brought forward from the prior survey. According to Section 4.5.15 of the Hydrographic Manual, "To merely prove the existence of charted features is insufficient; positions, least depths over submerged features, and elevations of exposed features must be determined."

- b. The shoreline manuscript discrepancies discussed in Section H of the Descriptive Report were not resolved. Additional information, such as detached positions along the shoreline and representation of this information on the field sheet, would possibly provide resolution for immediate charting. Although these discrepancies may not be readily reconcilable, the following statement in Section 1.6.2 of the Hydrographic Manual should be noted: "Failure to reconcile or explain differences between a shoreline manuscript and a hydrographic survey may cause errors, result in unnecessary delays and difficulties in verification, and in some cases require a field unit to return to the area to resolve a major discrepancy."
- c. Southwest Pierhead Light and ^{Vidal Shoals Channel} ~~American Canal~~ ^{Rear light} Range Daybeacon are not shown on the field sheet nor do they appear to have a third order accuracy position available as required by Section 4.2.2.1 of the project instructions for OPR-X278-HFP-84.

Above lights located 8/19/85 per Form 76-40 (attached)

5. JUNCTIONS

H-10141 junctions with H-10152 (1985) to the west. The junction has not been effected as H-10152 is in an early ⁸⁴⁻ stage of processing. The smooth sheet was compared with the field sheets and no discrepancies were noted.

There are no contemporary surveys to the east. This survey is bordered in this direction by St. Marys Falls and controlling depths within the locks. The charted controlling depths are consistent with the data acquired during this survey.

6. COMPARISON WITH PRIOR SURVEYS

LS-1688 (1935) 1:10000

A comparison between LS-1688 and H-10141 was accomplished. A dramatic change has taken place in both the bottom and shoreline features since LS-1688 was surveyed in 1935. The greatest shoreline change has occurred on the Canadian shoreline west of the locks. The shoreline has been extended up to 600 meters to the south. The bottom topography has also changed with the dredging of the entrances to both the American and Canadian locks. These changes have influenced the transportation of bottom materials and resulted in additional changes in water depths and bottom configurations. The present survey soundings compare within ± 1 to 20 feet throughout the survey limits. The greatest difference begins just west of St. Marys Falls between the American and Canadian locks. The least change has occurred in Ashmun Bay where the two surveys agree within 1 foot.

Several prior survey features that were neither confirmed or disproven during the survey have been brought forward to the smooth sheet.

AWOIS items found within the survey limits originating with the prior survey LS-1688(1935) were adequately discussed by the hydrographer except for the following:

AWOIS item 3444, a submerged wreck at latitude $46^{\circ}30'53.4''N$, longitude $84^{\circ}21'39.8''W$, is located beyond the limits of basic hydrography and in the area between this survey and the contemporary Canadian survey 8207 to the east. It was not investigated so should remain as presently charted from LS-1688(1935).

AWOIS item 3446, visible piles at latitude $46^{\circ}29'40''W$, longitude $84^{\circ}23'31.0''W$, were confirmed during the survey and detached positions acquired at the "limits of the pier ruins". However, the prior survey depiction of this feature encompasses a greater area than found during this survey and there is no indication that a search for submerged features beyond the limits of the visible piles was accomplished. Therefore, prior information from LS-1688 has been brought forward to conservatively portray this feature. It should be charted as now shown on this smooth sheet.

AWOIS item 3447, obstruction, visible piles were visually verified at latitude $46^{\circ}29'32.1''N$, longitude $84^{\circ}23'19.8''W$. A position was not determined therefore the piles have been brought forward from LS-1688.

AWOIS item 3449, obstruction, visible piles were visually verified at latitude $46^{\circ}29'31.8''N$, longitude $84^{\circ}23'12.4''W$. A position was not determined, therefore, the piles were brought forward to the present survey from LS-1688. The shoreline manuscript, TP-00363, shows that the shoreline south of the piles has changed since 1935. Therefore, the locations of these piles were offset from the HWL.

AWOIS item 3450, obstruction, visible piles and pier ruins were visually verified at latitude $46^{\circ}29'35.6''N$, longitude $84^{\circ}23'11.8''W$. An exact position was not determined and the features had to be brought forward to the present survey from LS-1688.

AWOIS item 3455, obstruction, visible piles were visually verified and a detached position was taken on the offshore pile at latitude $46^{\circ}29'42.04''W$, longitude $84^{\circ}22'43.42''W$. The prior survey has these piles extending 50 meters offshore from the above position. No search for these piles was accomplished. Therefore submerged piles extending to latitude $46^{\circ}29'43''N$, longitude $84^{\circ}22'44''W$ were brought forward to the present survey from LS-1688.

AWOIS item 3456, obstruction, visible piles were located visually and a detached position was taken on the offshore pile at latitude $46^{\circ}29'42.87''N$, longitude $84^{\circ}22'28.77''W$. The prior survey has these piles extending 110 meters offshore to latitude $46^{\circ}29'46''N$, longitude $84^{\circ}22'31''W$. No investigation was accomplished for these piles. Therefore, submerged piles were brought forward extending to the above location from LS-1688.

AWOIS Item 3457, a crib at latitude $46^{\circ}30'01.8''N$, longitude $84^{\circ}22'31.2''W$, was not investigated during this survey. It has been brought forward from LS-1688 as submerged. It should be charted as now shown on this survey.

With the transfer of the prior survey features to H-10141, this survey is adequate to supersede the prior survey within the area of common coverage.

7. COMPARISON WITH CHART

Chart 14884, 33rd Edition, dated February 26, 1983; scale 1:40,000
(Inset 1:20,000)

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

AWOIS item 3448, a pier charted at latitude $46^{\circ}29'32.5''N$, longitude $89^{\circ}23'17.8''W$, was confirmed visually as exposed. Unfortunately, no positions were taken. This feature should be retained as charted.

AWOIS item 3462, a rock awash charted at latitude $46^{\circ}29'28.7''N$, longitude $84^{\circ}18'44.6''W$, was not found during this survey. Its charted position falls amidst debris of the wreck in AWOIS item 2359. As its existence has not been disproven, it should remain as charted.

AWOIS item 3466, a pile charted at latitude $46^{\circ}30'10.9''N$, longitude $84^{\circ}18'53.5''W$, was searched for and not found. However, the 25-meter diver circle search was centered about 20 meters from the charted position. The feature is not considered disproven. The Canadian survey 8207 should be referred to for a possible resolution, otherwise the feature should continue to be charted, now as submerged. BP128337

The submerged crib ruins shown on the field sheet at latitude $46^{\circ}30'19.13''N$, longitude $84^{\circ}21'51.89''W$ and latitude $46^{\circ}30'18.51''N$, longitude $84^{\circ}21'53.85''W$ are shown on the smooth sheet as a submerged crib ruins extending between both positions. The echograms and the photo manuscript indicate obstructions extending between these positions.

The piles charted at latitude $46^{\circ}30'53.9''N$, longitude $84^{\circ}20'49.1''W$ were not seen from shore. There is no documentation of this search in the hydrographic records. These piles should continue to be charted as submerged, unless the Canadian survey 8207 provides additional information.

Do not concur
area is
under const.

files fall off present survey, TP-00363 shows location on land.

Two submerged cribs charted at latitude $46^{\circ}29'48''N$, longitude $84^{\circ}23'15''W$ and latitude $46^{\circ}29'46''N$, longitude $84^{\circ}23'18''W$ were ~~not found or disproven~~ during this survey. ~~Submerged obstructions consisting of a crib and ruins respectively, were found 30 and 50 meters north of these charted features, however, since other features in the area are charted accurately these possibly are not the same. The source for the charting of these submerged cribs should be reviewed, the positional accuracy evaluated and the features retained as charted unless it can be determined that the obstructions found to the north are indeed the same features.~~

#3454 -
#3452 -

at new locations, see items #3452 and 3454. Delete charted positions and chart present survey positions.

Two groups of three piles, charted at latitude 46°31'00"N, longitude 84°22'37"W and latitude 46°31'09"N, longitude 84°22'43"W, were not found or disproven during this survey. They should remain as charted.

A row of piles, charted at approximate latitude 46°29'40"N, extending between longitudes 84°22'30"W and 84°22'41"W, was not found nor disproven during this survey. Several piles in this area have been brought forward from LS-1688, ~~LS-1688~~ ~~#3455~~ however, the charted piles extend over a much greater area than shown on LS-1688. The source for the charting of these piles should be reviewed and, if still valid, this row of piles should remain as charted.

Several charted shoreline features within the area of reconnaissance hydrography and shoreline verification were not found or addressed during this survey. The contemporary Canadian survey 8207 should be referred to for possible resolution. The following features, unless resolved during the contemporary Canadian survey, should continue to be charted from their original charting source.

	<u>Latitude</u>	<u>Longitude</u>
pier ruins	46°30'13"N	84°18'57"W
pier	46°30'12"N	84°18'37.5"W
pier	46°30'12.5"N	84°18'39"W
pier	46°30'13"N	84°18'40.5"W
group of eight piles	46°29'23"N	84°18'35"W
row of piles	46°29'59"N	84°20'16.5"W #3456

Geographic names appearing on the smooth sheet originated with this chart.

Names originate with approved Geographic Names List.

✓ H-10141 is adequate to supersede charted hydrography within the common area. With the retention of several items noted above.

The following Dangers to Navigation Reports (copies appended) have been submitted.

<u>Originator</u>	<u>Date</u>	<u>Coast Guard District</u>
Hydrographic Field Party 2	August 9, 1984	Ninth, Cleveland, Ohio
Hydrographic Field Party 2	September 24, 1984	Ninth, Cleveland, Ohio
Pacific Marine Center	May 10, 1985	Ninth, Cleveland, Ohio (Information provided to DMA via Automated Notices to Mariners)

b. Controlling Depths - The data obtained during the survey are consistent with the charted controlling depths.

c. Aids to Navigation - Charted aids to navigation have been located and adequately serve their intended purpose. Southeast Pierhead Light and American Canal Range Daybeacon are plotted on the smooth sheet from the photo manuscript and are less than third order accuracy positions.

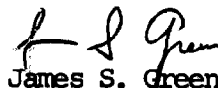
8. COMPLIANCE WITH INSTRUCTIONS

H-10141 adequately complies with the project instructions noted in Section 1 of this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic survey. No additional field work is recommended.

Respectfully submitted,



James S. Green
Supervisory Cartographer

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



Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10141

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.

Dennis Hill 1-16-86
For Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LAMordock

SIGNATURE AND DATE:

L. Mordock 1/22/86

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. Sanborn 1-22-86
Director, Pacific Marine Center (Date)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL OCEAN SERVICE
 OFFICE OF CHARTING AND GEODETIC SERVICES
 ROCKVILLE, MARYLAND 20852

N/CG242:SRB

August 4, 1988

TO: N/CG24 - Russell C. Arnold
 FROM: N/CG242 *George K. Myers, Jr.*
 SUBJECT: Examination of Hydrographic Survey H-10141 (1984), Michigan, St. Marys River, Sault Ste. Marie

Chief of Party R. W. Jones
 Field Unit Atlantic Hydrographic Field Party No. 2
 Processed by Pacific Marine Center
 Examined by S. R. Baumgardner

An examination of hydrographic survey H-10141 (1984) was accomplished to monitor the survey for adequacy with respect to data acquisition, conformance with applicable project instructions, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions made and actions taken by the evaluator, and the cartographic presentation of data.

Cartographic deficiencies and constructive comments are noted on a full-scale copy of the survey smooth sheet which will be forwarded to the marine center. Digital data on magnetic tape were not available during the examination of this survey. Therefore, an inspection of a graphic plot from the certified tape was not performed.

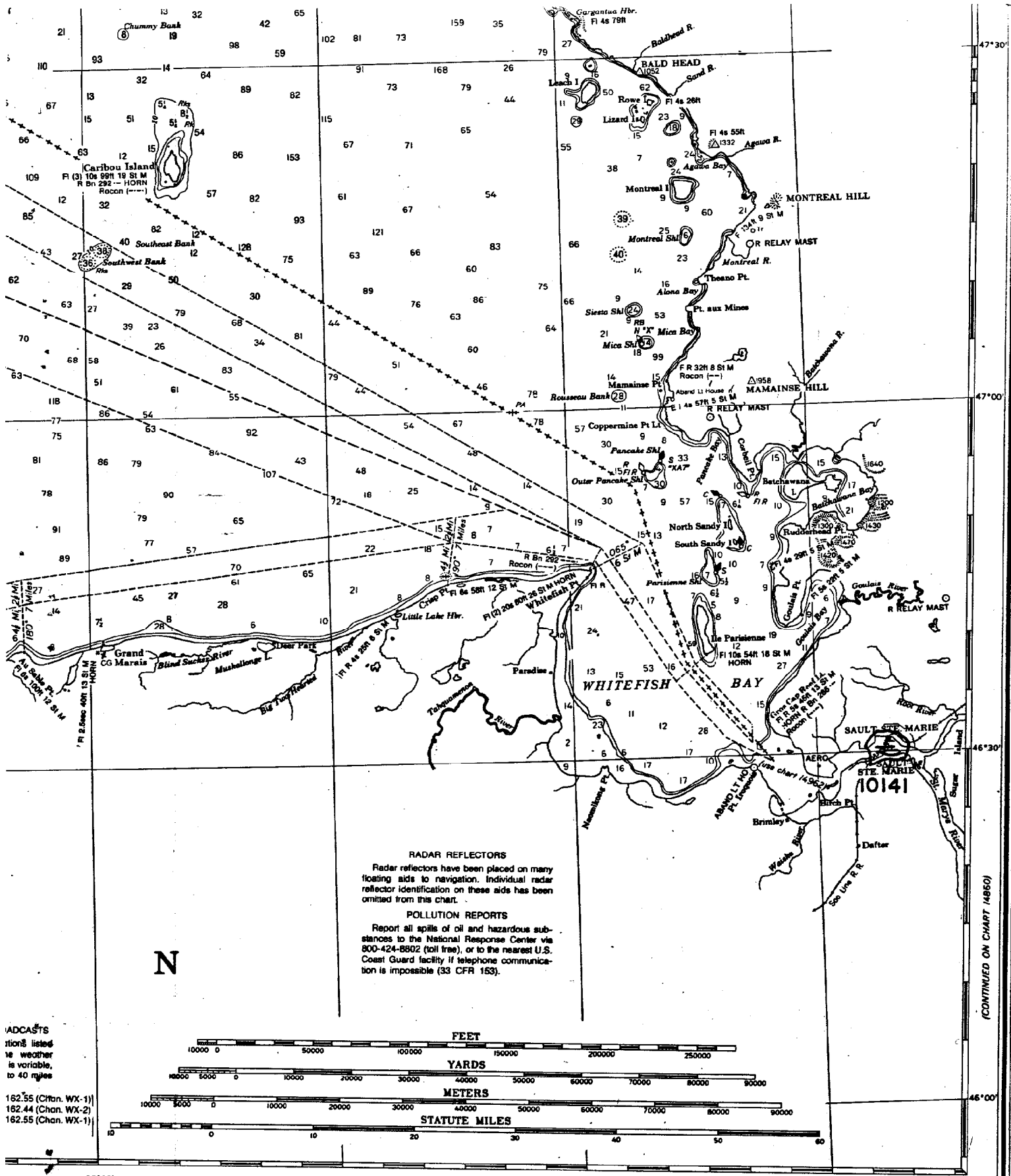
In general, the survey was found to conform to National Ocean Service standards and requirements except as stated in the Evaluation Report and as follows:

1. The Evaluation Report should be complete within itself and should not reference the Preprocessing Examination Report which is not made a part of the permanent record.
2. The NOAA Form 76-155 "Geographic Names" was not approved by the Chief Geographer as required. (See Hydrographic Survey Guideline No. 22.) Approval was obtained after some geographic names were added during examination.
3. The charted 24-foot depth curve was not shown on the smooth sheet as required.



4. The Rk charted in latitude $84^{\circ}22'19''\text{N}$, longitude $46^{\circ}30'33''\text{W}$, and originating with a 1954 Revisory Survey, should be revised to rky as it represents a bottom characteristic, not a submerged rock.

5. Some of the triangulation stations are not identified by the year of establishment on the survey as data and supporting documentation for these stations were not available during marine center processing. It is assumed that triangulation specifications were complied with and that the necessary records and computations will be forwarded to, and the stations accepted by, the National Geodetic Survey Division.



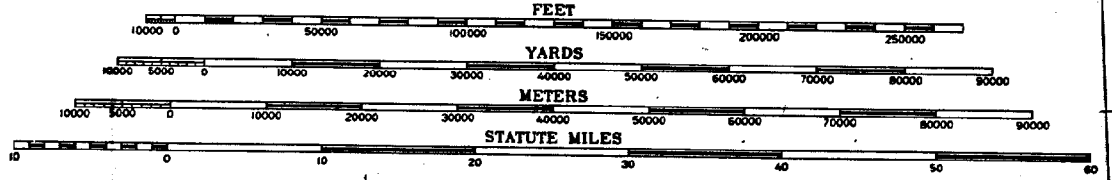
RADAR REFLECTORS
 Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart.

POLLUTION REPORTS
 Report all spills of oil and hazardous substances to the National Response Center via 800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (33 CFR 153).

N

ADCASTS
 Conditions listed in weather reports are variable, to 40 miles.

162.55 (Chan. WX-1)
 162.44 (Chan. WX-2)
 162.55 (Chan. WX-1)



(CONTINUED ON CHART 14850)

(Lake Superior)

SOUNDINGS IN FEET & FATHOMS - SCALE 1:600,000

LS-9

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10141

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
14884	4-4-86	Joseph P. Quinn	Full Part Before After Marine Center Approval Signed Via Drawing No. 5
14885	6-5-86	D. Ross	Full Part Before After Marine Center Approval Signed Via Drawing No. 4A
14884	9-12-88	B. Hanna	Part After Marine Center Approval Signed Via Drawing No. 5 Exam. for critical corr's only, no corr
14883	9-12-88	B. Hanna	Part After Marine Center Approval Signed Via Drawing No. 5; EXAM. FOR CRITICAL CORRS ONLY THRU 14884; N/C.
14962	9-12-88	B. Hanna	Part After Marine Center Approval Signed Via Drawing No. 5; EXAM FOR CRITICAL CORRS ONLY THRU 14884; N/C.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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