10194

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-10-5-85

Registery No. H-10194

LOCALITY

State .... Michigan--Ontario

General Locality .... St. Marys River

Sublocality .... Izaak Walton Bay to Point Iroquuois Shoals

1985

CHIEF OF PARTY
LCDR K.W. Perrin

LIBRARY & ARCHIVES

DATE .... July 25, 1988

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

10194

Area 7
L-685 (88)
CHT
14884
14862
CARTOG SIGN OF ON FM HDOCK

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-10194

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

FIELD NO.

HFP-10-5-85

State Michigan -- ONTARIO

General locality St. Marys River

Locality ~~Pt. Iroquois to Cedar Point~~ IZAAK WALTON BAY TO POINT IROQUOIS POINT

Scale 1:10,000 Date of survey 7/15/85 - 8/9/85 6/30/86 - 9/29/86

Instructions dated May 7, 1984* Project No. OPR-X278-HFP-85 and 86

Vessel HFP-2/3, Launch 519, Launch 1020, Launch 517

Chief of party LCDR. Kenneth W. Perrin

Surveyed by LTJG. Kenneth P. Peters

Soundings taken by echo sounder, hand lead, pole All

Graphic record scaled by KPP, BAL, MJM, DBE, WLS, JPO, TMR, CSW **

Graphic record checked by Same as scaled by

Protracted by PDP/8e (HFP-2, Field Sheet) Automated plot by AMC (Smooth Sheet)

Verification by ~~Atlantic Marine Center~~ J. B. WILSON

Soundings in ~~fathoms~~ feet at ~~MLW~~ ~~MLLW~~ Low Water Datum (599.8-FT-IGLD 1955)

REMARKS: *Change No. 1 - 5/25/84 **KPP - Kenneth P. Peters

Change No. 2 - 12/19/84 BAL - Brian A. Link

Change No. 3 - 5/9/85 MJM - Mark J. McMann

Change No. 4 - 3/21/86 DBE - David B. Elliott

Change No. 5 - 6/12/86 WLS - Wayne L. Sprye

CHANGE NO. 6 - 20 NOV 1986 JPO - John P. Oswald

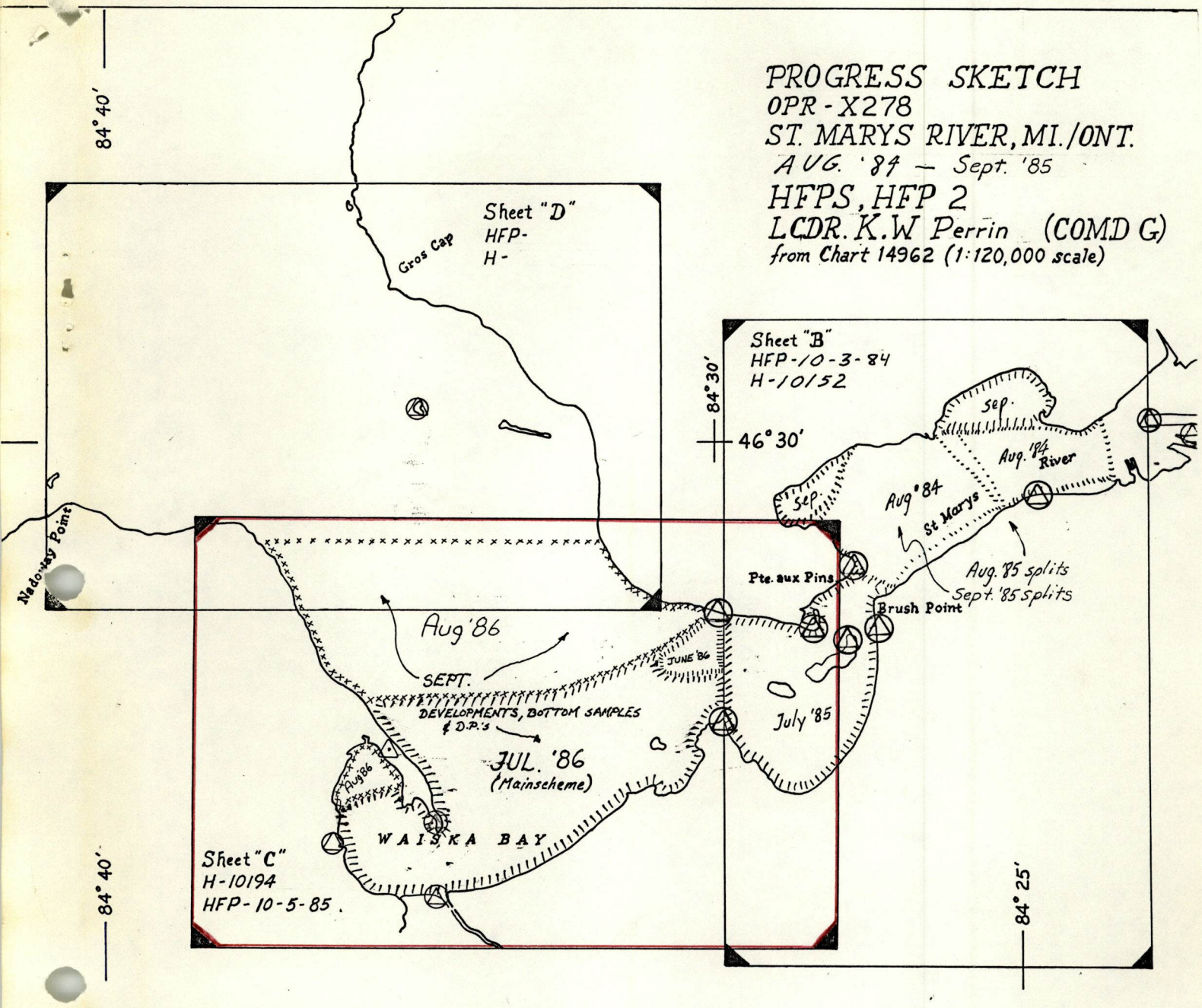
SC 4-15-97 TMR - Thomas M. Rybarski

STANDARDS CKD 8-4-88 CSW - Charles S. Weisner

AWOIS/SURF-M&M 9/8/88

NOTES IN DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE PROCESSING.

PROGRESS SKETCH
OPR-X278
ST. MARYS RIVER, MI./ONT.
AUG. '84 — Sept. '85
HFPS, HFP 2
LCDR. K.W Perrin (COMD G)
from Chart 14962 (1:120,000 scale)



JUNE '86	JULY '86	Aug '86	SEPT. '86		
1.0	2.0	11.5	0		
14.25	132.0	231.0	83.05		
10.0	50.5	141.0	92.0		
5.0	126.0	196.0	96.0		
0	0	47	76		
3	2	0	01		
2	0	0	0		
0	0	54	105		

Field work completed 9/29/86

LEGEND

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

INDEX

* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD DATA.

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-10194
HFP-10-5-85

Scale: 1:10,000
Chief of Party: Lt. Cdr. Kenneth W. Perrin
Officer in Charge: Lt. (jg) Kenneth P. Peters
Hydrographic Field Parties Section
Hydrographic Field Party 2 and 3
Launch # 1020, 0519, and 0517

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. 2, dated 19 December 1984; Change No. 3, dated 9 May 1985 (which updates the Project No. to 1985); Change No. 4, dated 21 March 1986 (which updates the Project No. to 1986), and Change No. 5, dated 12 June 1986, AND CHANGE NO. 6, DATED 20 NOV 1986.

This sheet letter specified in the project instructions is "C".

The purpose of this project is to provide contemporary hydrography for maintenance of existing charts and the construction of new large-scale charts.

B. AREA SURVEYED

This survey was conducted in the St. Marys River, between the Michigan, U.S.A. and Ontario, Canada borders. The eastern survey limit is long. 84°28'00"W (just east of Cedar Point). The western survey limit is long. 84°37'30"W (vicinity of Pt. Iroquois). The northern survey limit is lat. 46°28'50"N, (a line roughly connecting Pt. Iroquois with Pt. aux Chenes). The southern limit is lat. 46°24'45"N (south of Waiska Bay).

The Canadian shoreline within the survey limits is characterized by sand beach developed with private residences.

The American shoreline within the survey area is a rocky sand beach developed with private residences with the exception of the western shore of Waiska Bay, which is a low grassy bank.

Bottom composition varies widely and includes hard packed sand, rock, mud, and clay. Depths in the survey area range from 0 to ~~115~~ 112 feet.

This survey was conducted from 15 July 1985 (DN 196) to 9 August 1985 (DN 221) inclusive under OPR-X278-HFP-85 and from ~~30~~ 26 June 1986 (DN ~~181~~ 176) to ~~29~~ 30 September 1986 (DN 272) inclusive under OPR-X278-HFP-86.

C. SOUNDING VESSEL

NOAA Launch 0519 (EDP No. 0519) and NOAA Launch 0517 (EDP No. 0517), both 21-foot MonArks and NOAA Launch 1020 (EDP. No. 1020), a 29-foot Jensen, were used to collect all survey data. No unusual vessel configurations or problems with the vessels were encountered. Launch 0517 was only used to obtain bottom samples and for dive investigations.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Sounding equipment used on this survey was:

Manuf.	Model No.	Serial No.	Launch	Period
Raytheon	719-C	9955	519	1985 (All)
Raytheon	719-C	9221	519	DN 181 - 191(164845Z)
Raytheon	719-C	7881	519	DN 191(165500Z) - 272
Raytheon	DSF 6000N	A122N	1020	DN 218 - 221
Raytheon	DSF 6000N	B053N	1020	DN 224 - 260

A graduated sounding pole was used for soundings taken in shoal waters (two feet or less) with launch 0519. A graduated lead line was used to obtain some least depths on PSR Items and other features. Otherwise, the electronic equipment listed in the table was used to collect data.

When using a Raytheon Model 719-C 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.

The drive motor on Raytheon Model 719-C, S/N 9221, failed on DN 191 and was replaced with S/N 7881 to complete hydrography on that day and thereafter.

When using the Raytheon Model DSF 6000N, the instruments were operated on automatic high and low frequency gain settings with the exception of DN 221, when S/N A122N was operated on high frequency

auto and low frequency manual. This was due to problems with the low frequency gain circuit board. The unit was subsequently replaced before hydrography was run again with launch 1020. This did not affect the accuracy of the data.

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

One velocity correction table was generated from bar check data in 1985. One table was generated from bar check data only, for launch 0519, in 1986; one table from bar check and TDC cast data for launch 0519, in 1986, and one table from bar check and TDC cast data for launch 0519 and 1020 combined for 1986 (per section 4.9.5.3 of the Hydrographic Manual, 4th Ed.). The difference between the vessel drafts (0.4 ft.) is insignificant.

Bar checks were taken on each day of hydrography, two whenever conditions permitted using launch 0519 or launch 1020. Bar checks taken on launch 1020 were used only to check the operation of the Fathometer and to determine instrument error.

Bar check chains for both launches were measured to insure the five-foot interval marks were accurate prior to and at the end of the project each year. No corrections were necessary.

TDC casts were obtained using a Martek Mark VII, Model 167, S/N 205. This was last calibrated in 1985 and the report submitted with survey H-10185. The depth sensor of unit S/N 205 failed on DN 269. The sensor of unit 205 was lashed together with the sensor for S/N 222 and simultaneous readings taken. Agreement was good between the two units. Data from S/N 222 was used. A Nansen cast obtained on DN 269, along with the TDC cast, showed a difference of less that 0.55°C between reversing thermometers and TDC readings of S/N 205. A table listing the date and location of observations is appended.

Velocity corrections from Table 1 are to be applied to all 1985 data, from Table 2 to data from DN 181 - 191 (until 164845 Z) 1986, from Table 3 to data from DN 191 (after 164845 Z) to DN 197, all for launch 0519. SEE ALSO SECTION 4.9. OF THE EVALUATION REPORT.

Corrections from Table 4 are to be applied to all launch 1020 data and to 0519 data, from DN 210 - 272. SEE ALSO SECTION 4.9. OF THE EVALUATION REPORT.

Velocity correctors were not applied on the field sheet. When the velocity tape is used to plot with the PDP8/e, erroneous soundings are plotted. When the tape is eliminated soundings are plotted correctly. The velocity tapes are included with the survey data for plotting the smooth sheet at AMC. VELOCITIES WERE APPLIED DURING OFFICE PROCESSING.

Settlement and Squat correctors for launch 0519 were determined on 27 August 1985 and 23 July 1986, and on 3 September 1986 for launch 1020 using the level method. A copy of the field data and graphs of the settlement and squat correctors vs. RPM for both launches are

included in the appendix. These correctors will be applied via the TC/TI tape during processing of the smooth sheet at AMC. APPLIED DURING OFFICE PROCESSING.

This survey was plotted using unverified actual water levels reduced to Low Water Datum (LWD) when Lake Superior is at elevation 600.0 ft. (IGLD) and the gage above the locks reads 599.8 ft. Water levels were obtained from the gage at Southwest Pier, USCOE Base, Sault Ste. Marie, Michigan, Station No. 907-6070. VERIFIED WATER LEVELS WERE APPLIED DURING OFFICE PROCESSING.

E. HYDROGRAPHIC SHEETS (FIELD)

One boat sheet, one rough sheet (south) and one rough sheet (north) were prepared in the field office using the PDP8/e and Houston Instrument Complot DP-3 plotter to monitor and evaluate the survey data. Four sheets were prepared by the same method for the final field sheets. One north and one south sheet has mainscheme hydrography, signals, and shoreline. There is one overlay sheet for each manscheme showing detached positions, channel lines, crosslines, mainscheme splits, buoys, and bottom samples.

Soundings on the final field sheet are corrected for transducer draft and unverified actual water levels. Velocity correctors were not applied as explained in Section D.

All field records and data will be forwarded to the Atlantic Marine Center for verification and smooth sheet plotting.

F. CONTROL STATIONS

Eight monumented control stations (Signals 110, 113, 114, 115, 116, 117, 118, and 119), ~~four~~ TWO fixed aids to navigation (Signals ~~100~~, 111, 112, and ~~120~~) ~~and one landmark (Signal 122)~~ were used to control this survey. All control stations meet Third-order, Class I standards. Signals 110, 111, 112, 113, 114, 117, ~~120~~, 121 ~~and 122~~ are published NGS stations. Signals ~~100~~, 115, 116, 118, and 119 were located in 1986 by Hydrographic Field Party 2/3 to Third-order, Class I standards. The horizontal control data package was submitted to N/MOA222. A geodetic contol report will be forwarded by N/MOA222. The signal list is appended.

G. HYDROGRAPHIC POSITION CONTROL

Range/Range, Range/Azimuth, and See Field Sheet positioning methods were used to control this survey. During Range/Azimuth, initial azimuths checks were obtained and recorded at the beginning of each applicable day in 1985. An initial azimuth of 000°00.0′, used in all cases, was checked and recorded at frequent intervals throughout the day.

The following equipment was used to control the survey:
SEE ALSO SECTION 4.d. OF THE EVALUATION REPORT.

EQUIPMENT	MANUF.	MODEL NO.	S/N
DMU	Del Norte	R03C	162
DMU	Del Norte	R03C	505
Master	Del Norte	R03C	1060
Remote	Del Norte	R03C	222
Remote	Del Norte	R03C	247
Range Processor	Motorola	Falcon 484	E0146
Cent.Displ.Unit	Motorola	Falcon 484	E0006
Receiver/Trans.	Motorola	Falcon 484	C2096
Range Processor	Motorola	Falcon 484	E1039
Cent.Displ.Unit	Motorola	Falcon 484	E0003
Receiver/Trans.	Motorola	Falcon 484	C2000
Refer. Station	Motorola	Falcon 484	C2888
Refer. Station	Motorola	Falcon 484	C2912
Refer. Station	Motorola	Falcon 484	C2058
Refer. Station	Motorola	Falcon 484	C2889
Theodolite	Nikon	NT2D-20"	031033
EDM	H/P	3808A	723A00727
RPU	MOTOROLA	FALCON 484	E 0147
RECIEVER	MOTOROLA	FALCON 484	D 2123

Del Norte Equipment was calibrated over baselines of 1863, 2477, and 3312 meters. The baselines were measured with an HP-3808A or computed by inverse between Third-order, Class I stations. Baseline calibration abstracts for the 1985 work, for which Del Norte was used on H-10194, were submitted with H-10152. A copy of the abstract covering the days of hydrography on H-10194 is appended.

Daily static checks of the equipment were performed prior to and at the end of each day of hydrography, except DN 211, when DMU 162 failed and was replaced with S/N 505 for which beginning and ending checks were obtained on DN 211. This was the only failure of Del Norte equipment.

True distances for the daily checks of Del Norte were determined by inverse computation between Third-order stations used or measuring with the HP-3808A. Acceptable tolerances were observed throughout the survey and were supported by baseline values. Correctors were applied to the position data (via the corrector tapes) based on the daily check readings, which in the opinion of the hydrographer, can be considered near baseline calibrations on a daily basis.

The Electronic Corrector and Equipment Used Abstract for Del Norte is in the appendix of this report.

Motorola Falcon 484 equipment used in 1986 was calibrated over baselines of 844 and 2215 meters in accordance with the Draft Hydrographic Survey Guideline (Falcon 484 Calibration Procedures and Standard Forms) dated 16 December 1985.

Daily critical checks of the equipment were performed prior to every day of hydrography and again after hydrography except when precluded by rough seas and/or a long run to the check site. Attachment "12" reflects the mean corrector of the system checks and is included in the appendix of this report. DATA REMOVED FROM DESCRIPTIVE REPORT AND FILED WITH FIELD DATA.

Daily critical system check correctors were observed within rejection limit tolerances when compared with true distance values and were used on the corrector tapes.

Attachments "1" and "2" are included in the fan folder (field records) for survey H-10194.

Failures of Falcon 484 equipment included Reference station, S/N 2058, which was inoperable on the opening baseline for this survey. The unit was repaired by EEB and returned to the field party, baselined, and put into service. Reference station, S/N C2888, Code 1, showed signs of failure during closeout baselines. The unit did not show signal strengths greater than 15 when calibrated with equipment used on launch 0519; would not receive during calibration with equipment used on launch 0517; and showed a range error increase of 8.9 meters when calibrated with the equipment used on launch 1020. Due to time constraints at the end of the northern field season, calibrations took place on marginal weather days. Because of this, the unit will be retained for testing at the beginning of the southern field season.

H. SHORELINE SEE SECTION 2.b. OF THE EVALUATION REPORT.

Shoreline shown on the final field sheet was transferred from TP-00205 and TP-00204, 1:20,000-scale manuscripts, enlarged to 1:10,000 scale.

The shoreline was verified by detached positions or by the junction with shore of mainscheme hydrography. The shoreline is accurately shown on the shoreline manuscripts with the following two exceptions:

--The spoil island centered at lat. 46°27'06"N, long. 84° 28'45"W was found eroded along the northwestern shore. CONCUR

--A pond shown on Bay Mills point at lat. 46°25'57.6"N, long. 84°34'55.8"W is now an inlet from Waiska Bay. CONCUR

These two shoreline changes are shown in red ink on the final field sheet.

Shoreline details were verified by detached positions. These features were transferred to the final field sheet in black ink when verified or red ink if not shown on the manuscript.

Detail changes to the manuscript are:

--A pier not shown on the manuscript should be charted at lat. 46°25'51.~~75~~86"N, long. 84°35'05.~~05~~16"W (pos. 4618).

--A pier not shown on the manuscript should be charted at lat. 46°25'~~51.93~~52.03"N, long. 84°35'~~06.96~~07.07"W (pos. 4617).

--A pier not shown on the manuscript should be charted at lat. 46°25'~~55.95~~56.05"N, long. 84°35'11.~~28~~42"W (pos. 4616); while a pier shown on the manuscript 10 meters north, between pos. 4616 and 4615, should be deleted.

--A boathouse not shown on the manuscript should be charted at lat. 46°26'18.~~89~~97"N, long. 84°35'17.~~66~~88"W (pos. 4614).

--A pier not shown on the manuscript should be charted at lat. 46°26'18.~~86~~94"N, long. 84°35'18.~~23~~45"W (pos. 4613).

--Piers not shown on the manuscript should be charted at:

Lat. 46°26'21.~~16~~23"N, Long. 84°35'22.~~29~~53"W (pos.4611)
Lat. 46°26'26.~~57~~63"N, Long. 84°35'28.~~47~~73"W (pos.4610)
Lat. 46°26'33.06"N, Long. 84°35'37.85"W (pos.4606)
LAT. 46°26' 29.82"N, LONG. 84°35' 30.45"W (POS. 4609)

--Pier ruins not shown on the manuscript should be charted at:

Lat. 46°25'59.~~44~~37"N, Long. 84°30'52.~~42~~43"W (pos.4542)
Lat. 46°25'59.~~54~~47"N, Long. 84°30'50.54"W (pos.4543)

Piers shown on the manuscript which no longer exist and should not be charted are shown on the final field sheet in green ink at:

Lat. 46°25'56.4"N, Long. 84°35'10.8"W
Lat. 46°25'58.0"N, Long. 84°35'10.8"W
Lat. 46°26'01.1"N, Long. 84°35'10.5"W
Lat. 46°26'09.4"N, Long. 84°35'10.8"W
Lat. 46°26'16.7"N, Long. 84°35'15.0"W
Lat. 46°26'18.0"N, Long. 84°35'16.8"W
Lat. 46°26'20.3"N, Long. 84°35'19.8"W
Lat. 46°26'21.0"N, Long. 84°35'21.6"W
Lat. 46°26'05.0"N, Long. 84°31'07.2"W
Lat. 46°26'05.2"N, Long. 84°31'04.8"W
Lat. 46°26'00.5"N, Long. 84°30'47.4"W
LAT. 46°24' 48.6"N, LONG. 84°35' 21.6"W
LAT. 46°24' 48.3"N, LONG. 84°35' 18.3"W

I. CROSSLINES

Crosslines run accounted for 13.8% of the total nautical miles of hydrography run. Comparison of crosslines with mainscheme hydrography shows excellent agreement, within ± one foot, when there is little or no displacement of soundings compared. This excellent agreement applies throughout the survey area.

J. JUNCTIONS SEE SECTION 5. OF THE EVALUATION REPORT. See also section 4.e. of the Evaluation Report.

This survey junctions at the east limit with H-10152, a 1:10,000-scale survey completed in 1985.

Comparison of junction soundings shows good agreement between the west end of H-10152 and the east end of H-10194. Continuation of contour lines shows no abrupt changes to contour crossings from one sheet to the other. Junction soundings from H-10152 are shown on the final field sheet in red ink.

This survey is scheduled to junction to the north with Sheet "D" from OPR-X278. Sheet "D" is scheduled to begin in the Spring of 1987.

K. COMPARISON WITH PRIOR SURVEYS SEE SECTION 6. OF THE EVALUATION REPORT.

This survey was compared with prior survey LS-1962, a 1:20,000-scale survey from 1955. Very little change exists between the compared prior survey and H-10194 relative to depths on the two surveys. SEE ALSO SECTION 4.b. OF THE EVALUATION REPORT.

Contours between the two surveys are similar, with depth agreement within one to two feet throughout the survey area, with the following exceptions:

--The area seen on the prior survey in the vicinity of lat. 46°27′48"N, long. 84°34′30"W with least depths of 16 feet has been developed as an anchorage area with a charted least depth of 29 feet. The least depth found on H-10194 was also 29 feet at lat. 46°28′03"N, long. 84°34′39"W; lat.46°27′57"N, long. 84°34′49"W; and lat. 46°27′50"N, long. 84°34′35"W.

--A rock shown on the prior survey north of Cedar Point at lat.46°27′02"N, long. 84°29′51"W charted as Cedar Rock was located by detached position 4297 on H-10194 and bares three feet at LWD. (POS. 4297) LAT. 46°27' Φ2.Φ9"N, LONG. 84°29'5Φ.Φ2"W

--A rock northwest of Cedar Point at lat. 46°26′47"N, long. 84°30′24"W on the prior survey was addressed as PSR 3947. SEE PAGE 92 OF DESCRIPTIVE REPORT. SEE ALSO SECTION 6. OF THE EVALUATION REPORT.

--Other rocks not seen on the prior survey were located around Cedar and Birch Points and are discussed in Section "L".

All other features with the exception of piers seen east of Birch Point discussed in Section H were addressed as PSR items on this survey.

L. COMPARISON WITH THE CHART SEE SECTION 7.a. OF THE EVALUATION REPORT.

Eleven presurvey review items (No.s 03473, 03947, 03948, 03949, 03950, 03951, 03952, 03953, 03954, 03955, 03962) assigned to OPR-X278 lie within the limits of H-10194 and were resolved during the course of this survey. A complete discussion of these items on the Item Investigation Reports is included in the appendix of this report, PAGES 92-103. SEE SECTION 4.C. OF THE EVALUATION REPORT.

This survey was compared with Chart 14884, 33rd ED., FEB 26/83. This is a 1:40,000-scale chart. A 1:10,000-scale enlargement of Chart 14884; 33rd Ed., Feb. 1983 of the area covered by this survey was supplied for field sheet comparison.

The general agreement between charted soundings and those found on this survey is good, within ± two feet.

Discrepancies worth noting are:

--The charted spoil island centered at lat. 46°27'10"N, long. 84°29'00"W is considerably smaller and was found centered at lat. 46°27'06"N, long. 84°28'45"W as shown on TP-00205. Depths found in the area of the charted island are two to ~~four~~ THREE feet at LWD. (See also Section H.) CONCUR SURROUNDING DEPTHS RANGE FROM ZERO (0) TO TWO (2) FEET.

--The four-foot shoal charted at lat. 46°27'30"N, long. 84°30'00"W was developed with reduced line spacing. The charted shoal has reduced in size and now shows a least depth of five-feet at lat. 46°27'33.6"N, long. 84°29'56.4"W. Two isolated six-foot depths also remain in the area at lat. 46°27'31.5"N, long. 84°29'52.2"W and lat. 46°27'33.0"N, long. 84°29'46.5"W. CONCUR

--The six-foot shoal charted at lat. 46°27'32"N, long. 84° 30'29"W was developed with reduced line spacing. The least depth found was ~~seven~~ SIX feet at lat. 46°27'31.8"N, long. 84° 30'30.0"W. CONCUR OK

--The four-foot shoal charted at lat. 46°27'54"N, long. 84°31'33"W was developed with reduced line spacing. The least depth found was ~~seven~~ SIX feet at lat. 46°27'55.2"N, long. 84°31'31.2"W. CONCUR

--The charted seven-foot shoal centered at lat. 46°27'30"N, long. 84°31'48"W was developed with reduced line spacing. The shoal with a least depth of ~~12~~ 10 feet was found approximately 100 meters south of the charted location centered at lat. 46°27'~~57~~58"N, long. 84°31'49"W. CONCUR

--The charted seven-foot shoal centered at lat. 46°27'33"N, long. 84°32'04"W was developed with reduced line spacing. The least depth found was nine feet at lat. 46°27'33.0"N, long. 84°32'08.4"W. CONCUR

~~--The charted seven-foot shoal centered at lat. 46°27'30"N, long. 84°31'48"W was developed with reduced line spacing. The least depth found was nine feet at lat. 46°27'58.8"N, long. 84° 31'48.6"W.~~ SAME AS 7 FOOT SHOAL ON PAGE 11.

--The 12-foot shoal charted at lat. 46°26'42"N, long. 84°30'47"W developed with reduced line spacing and random crossings was found to have a least depth of nine feet at LWD. CONCUR

A Danger to Navigation letter dated 29 Sept 1986 was sent to the Commander, Ninth Coast Guard District, Cleveland, Ohio and to N/CG222, Chart Information Section. The letter (a copy of which is appended) describes the following uncharted dangers:

--A rock pile (investigated by divers) was found at lat. 46°26'17.46"N, long. 84°31'16.33"W with a lead line least depth of 5.3 feet at LWD (position 8033) in depths charted to 13 feet.

--A rock pile extending from lat. 46°26'36.01"N, long. 84°31'59.44"W (pos. 8034) southeast to lat. 46°26'34.80"N, long. 84°31'57.17"W (pos. 8035) was found and investigated by divers. A lead line least depth of 10.3 feet at LWD was found on the northwest limit of the rock pile with a depth of 15.3 feet at LWD on the southeast end. This is in an area currently charted at 21 feet. PRESENT SURVEY DEPTHS RANGE FROM 20 TO 23 FEET.

--A large single rock approximately five meters in diameter was found and investigated by divers at lat. 46°26'03.12"N, long. 84°31'47.00"W (pos. 8032) with a lead line least depth of 9.3 feet at LWD. This is in an area currently charted as 14 feet.

--A 12-foot shoal (at LWD) developed with reduced line spacing was found at lat. 46°26'18"N, long. 84° 32'03"W. This area is currently charted to 16 feet. PRESENT SURVEY DEPTHS 13 TO 15 FEET.

--A 12-foot shoal (at LWD) developed with reduced line spacing was found at lat. 46°26'09"N, long. 84°32'07"W. This area is currently charted to 14 feet. PRESENT SURVEY DEPTHS 13 TO 15 FEET

--A 12-foot shoal (at LWD) developed with reduced line spacing was found at lat 46°26'07"N, long. 84°32'20"W. This area is currently charted to 15 feet. PRESENT SURVEY DEPTHS 13 TO 15 FEET

--Zero-foot depths were found over the shoal arm extending south from Bay Mills Point into Waiska Bay at lat. 46°25'36"N, long. 84°34'45"W. This area was developed with reduced line spacing. SEE ALSO SECTION 3.C. OF THE EVALUATION REPORT.

The shoreline southeast of Cedar Point was found foul with marsh grass near shore and is defined by the ends of the hydro lines in this area. CHART AS SHOWN ON PRESENT SURVEY FROM LAT. 46°26'45"N, LONG. 84°29'47"W TO LAT. 46°26'44"N, LONG. 84°28'48"W.

Likewise, the western shoreline of Waiska Bay is foul with marsh grass defined by the ends of the hydro lines with detached positions between lines. Both areas are shown on the final field sheet as limit lines (see Section Q). CONCUR

Areas foul with rocks were defined around Birch point and Cedar Point. These are shown as limit lines connecting rocks located by detached positions. CONCUR

Other changes to charted features are addressed on the appended Item Investigations Reports or in Section H.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to warrant its use to supersede prior surveys for charting in the common areas.

N. AIDS TO NAVIGATION

All floating aids to navigation within the area covered by H-10194 were located by detached position. They are:

POS.	LATITUDE (N)	LONGITUDE (W)	DESCRIPTION
6197	46°27'30.~~38~~"34	84°29'27.~~25~~"29	RN #P26 (Canadian)
6198	46°27'19.~~43~~"40	84°29'21.~~95~~"99	GC #P27 (Canadian)
6199	46°27'~~19.43~~"17.88	84°29'29.~~52~~"56	GC #P27/5 (Canadian)
6200	46°27'10.~~89~~"87	84°30'04.~~36~~"40	G Lt. "29"
6201	46°27'22.~~04~~"02	84°30'10.~~02~~"07	R Lt. "P28"
6202	46°27'13.41"	84°30'51.~~75~~"80	RN "30"
6203	46°27'01.~~77~~"76	84°30'48.~~34~~"39	GC "33"
6204	46°26'50.~~96~~"97	84°31'39.~~56~~"61	G Lt. "33"
6206	46°26'~~42.99~~"43.01	84°32'17.~~21~~"26	GC "35"
6207	46°27'11.~~88~~"84	84°32'23.~~14~~"11	RN "36"
6208	46°27'07.~~23~~"19	84°32'47.~~27~~"24	RW Lt. (MoA)
6209	46°26'40.~~53~~"50	84°32'59.~~90~~"87	C "37"
6210	46°27'40.~~24~~"20	84°33'47.~~73~~"72	G Lt."39" (Bell)
6211	46°27'54.~~94~~"89	84°33'31.80"	RN "P40" (Canadian)
6212	46°28'25.~~40~~"36	84°34'46.~~95~~"94	GC "41"
6213	46°27'31.~~97~~"92	84°34'58.~~95~~"93	YC "A"
8036	46°27'19.~~72~~"71	84°32'47.~~26~~"25	R Lt. "38"

All floating aids were found to serve the apparent purpose for which they were established. Buoys (referenced by position numbers above) 6200, 6201, 6204, 6206, 6208, 6210, 6211, and 6212 were found at their charted locations. Buoys 6197, 6198, 6202, 6203, 6209, 6213, and 8036 were found within ten meters of their charted location. Buoy

6207 was found 20 meters east of the charted location. Buoys 6197, 6198, and 6211 lie within Canadian waters and are not shown in the Light List. Buoy 6199 which lies in Canadian waters is not charted nor shown in the Light List. Per telephone conversation with the Canadian Aids to Navigation Office, Sault Ste. Marie, Ontario and per Canadian Local Notice to Mariners #C2901, dated 9/9/86, Buoy P27/5 is a temporary buoy established for the 1986 - 1987 navigation seasons as a color test buoy. This buoy should not be charted.

Buoy 6213, Point Iroquois Anchorage Buoy "A" (Light List #13790), currently charted as White Can "A" has been changed to Yellow Can "A". Likewise, Buoy 6308, Round Island Traffic Lighted Buoy (Light List #13775), currently charted as B/W has been changed to Red and White. Round Island Lighted Buoy 32 (Light List #13745) has been replaced by a fixed aid to navigation constructed during this survey and located to Third-order, Class I standards by the field party. The position for this light is on the appended NOAA FORM 76-40.

The remaining fixed aids to navigation within the survey area were verified as currently charted with NGS positions. They are:

DESCRIPTION	LATITUDE (N)	LONGITUDE (W)	1986 LL#	SIG #
Birch Pt. Rge Front Lt.	46°26'01.19721"	84°31'23.90446"	13750	111
Birch Pt. Rge Rear Lt.	46°25'35.64750"	84°30'51.38673"	13755	112
Pt. Aux Pins Main Lt.	46°27'50.69626"	84°28'22.12728"	13690	121

An inverse was run between the Birch Point Range Light positions for comparison of azimuths and distances shown in th U.S.C.G. 1986 Light List, Vol VII. The Light List shows the Rear Range 3000 ft., 138°30' from the Front Range, versus a computed 3448 ft., 138°39'.

Three landmarks fall within or adjacent to the sheet limits of this survey. One of the three, Ontario Airport Control Tower, could not be seen from seaward in a small vessel in this survey area. As mentioned in Section N of the Descriptive Report for H-10152, the tower is not visible within that survey area. The control tower does exist, however, due to its poor value as a landmark a recommendation on NOAA Form 76-40 (appended) to delete the control tower is made. * DO NOT CONCUR
The Ontario Airport Tank listed below is a good landmark from most directions in this area. The Radar Screen mentioned in the Report for H-10152, to be addressed here, is also a poor landmark from this survey area. It was not located due to lack of visibility from existing control. This should remain charted with the DIPFILE position: lat. 46°29'31.69"N, long. 84°29'27.20"W.
* THE CONTROL TOWER MAY BE SEEN BY LARGE MERCHANT VESSELS. IT IS RECOMMENDED THE ITEM BE RETAINED AS CHARTED.

The two landmarks verified as presently charted with NGS positions are:

Description	Latitude(N)	Longitude(W)	Source/Year
Ontario Airport Tank	46°29'10.72172"	84°29'38.27612"	NGS 1981
Brimley Tank	46°24'06.38028"	84°34'16.75759"	NGS 1981

No submarine cable, pipelines, or ferry routes lie within the survey area. One bridge and three overhead power cables are charted, crossing the Waiska River in Brimley. They are:

Description	Latitude(N)	Longitude(W)	Clearance
Bridge	46°24'40.8"	84°34'18.0"	17 feet
Ovhd Cab (N of Bridge)	46°24'41.4"	84°34'18.0"	No Longer There (Delete)
Ovhd Cab (S of Bridge)	46°24'39.6"	84°34'18.0"	58 feet
Ovhd Cab	46°24'27.0"	84°33'57.0"	No Longer There (Delete)

The clearances shown are above low water datum. The bridge clearance was measured by tape to the water surface and reduced for water level. The cable clearance was obtained by sextant angles.

O. STATISTICS

Type of Production	Launch> 0519	1020	0517	TOTAL
Number of Positions	3116	1243	37	4396
Days of Production (Days at Sea)	35	9	2	42
Nautical Miles of Sounding Line	339.25	174.25	0	513.5
Number of Detached Positions	142	17	4	163
Number of Bottom Samples	87	26	32	145
Square Miles of Hydrography	11	7	0	18.0
PSR Item Investigations	11	0	0	11

Note: Total for days of production does not allow for two boats running the same day and is therefore lower than the sum totals for individual launches.

P. MISCELLANEOUS

While running hydrography on the western limit of H-10152, collected data exceeded the sheet size constraint of 76 centimeters. The over run data were rejected from survey H-10152 and transcribed in sounding volumes for H-10194. Data were split in such a way as to avoid dividing days. When this was necessary (DN 221 and DN 214 because of overlapping data) the fathogram was cut leaving the original data as part of H-10152 and a copy of the graphic record as part of H-10194. The transcribed records were checked for accuracy.

Bottom samples were submitted to the Curator, Dept. of Paleobiology, Natural History Museum, Smithsonian Institution.

The note "St. Marys R. Nav Reg. Part 92" seen on Chart 14884, became obsolete in 1983 and was replaced by 33 CFR, Part 161. This information was obtained per conversation with the USCG Station, Sault Ste Marie, Michigan.

No anomalous currents were observed in the survey area. The current information contained in the U.S. Coast Pilot 6 was verified as accurate through interviews with QMC Howard, USCG Vessel Traffic Service, Captain J. Wellington of the Saint Marys River Pilots Association, and R. Pierce, Chief of the U.S. Corps of Engineers Survey Division.

Q. RECOMMENDATIONS

Specific recommendations concerning hydrography, hydrographic features, presurvey review items, and aids to navigation are made in Sections H, K, L, M, and N of this report.

Concerning the marsh grass areas discussed in Section H of this report, a recommendation is made to use the small area symbol, page 2, No. 17, of Chart No. 1, with blue tint to chart these areas. This symbol is currently used in some areas around Sugar Island on Chart 14884.

R. AUTOMATED DATA PROCESSING

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

PROGRAM	DESCRIPTION	VERSION
RK112	Range/Range and Hyperbolic Real Time Hydroplot	4/23/84
RK201	Grid, Signal, and Lattice Plot	4/18/75
RK212	Visual Station Table Load	4/01/74
RK216	Range/Azimuth Non-Real Time Plot	2/24/84
RK300	Utility Computations	2/05/76
RK330	Reformat and Data Check	10/21/80

PROGRAM	DESCRIPTION	VERSION
PM360	Electronic Corrector Abstract	2/02/76
RK407	Geodetic Inverse/Direct Computation	9/25/78
RK561	H/R Geodetic Calibration	2/19/75
RK562	Geodetic Calibration	9/10/74
RK530	Velocity Correction Computations	5/10/76
AM602	ELINORE - Line Oriented Editor	12/08/82

S. REFERENCE TO REPORTS

The Descriptive Report for H-10152 submitted in 1985 and the Horizontal Control Report for OPR-X278 should be reviewed in conjunction with this survey.

The following reports are appended:

Coast Pilot Report
Saint Marys River, Michigan User Evaluation Report.

Respectfully Submitted,

for Kenneth W. Peters
Kenneth P. Peters, LTJG, NOAA
OIC, HFP-2/3

SIGNAL TAPE LISTING
OPR-X278
HFP 10-5-85
H-10194

```
100 0   46 27 02143 084 31 53003   139 0000 000000 ROUND ISLAND LT.32 1986
110 5   46 26 01421 084 31 24023   250 0000 000000 BIRCH POINT,1981
111 7   46 26 01197 084 31 23904   250 0000 000000 BIRCH POINT F.RGE,1981
112 O   46 25 35648 084 30 51387   139 0000 000000 BIRCH POINT R.RGE,1981
113 5   46 26 48739 084 29 49311   250 0000 000000 15 RIPLEY,1893
114 1   46 28 08877 084 30 33671   250 0000 000000 10A USE,1981
115 3   46 25 25231 084 36 04141   250 0000 000000 GORDON,1986
116 0   46 25 39756 084 34 28382   250 0000 000000 BAY MILLS,1986
117 3   46 26 38064 084 35 24796   250 0000 000000 IR USLS 2,1981
118 6   46 24 48290 084 34 35260   250 0000 000000 NEVIEW,1986
119 0   46 30 24878 084 34 56202   250 0000 000000 EGG,1986
120 0   46 27 49881 084 27 18996   139 0000 000000 BRUSH PT.RALT.1981
121 0   46 27 50696 084 28 22127   139 0000 000000 PT. AUX PINS LT.,1981
122 0   46 24 06380 084 34 16757   139 0000 000000 BRIMLEY TANK,1981
```

All signals are Third Order,Class 1,established by HFP 2/3(1986)
or published NGS

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [X] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
Field Party # 2/3	Michigan	St. Mary's River, G.Lakes	9/30/86

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-X278		H-10194	N. American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Tower	Sault Ste. Marie, Ontario Airport Control Tower. Not visible from seaward (Poor landmark) DO NOT CONCUR	46 29	05.59	84 29	58.55			14884
	SEE PAGE 14 OF THIS DESCRIPTIVE REPORT. ~~and Section 4.~~							

82

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Brian Link Asst.OIC HFP 2/3	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ 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.

☆ U.S.GPO:1975-0-665-080/1155

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
Field Party # 2/3	Michigan	St. Mary's River, G.Lakes	9/25/86

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-X278		H-10194	N.American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	* POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Light	Round Island Light "32" Elev = 39 Ft. above LWD ** (1987 USCGLL #13745)	46 27	02.143	84 31	53.003		F-3-6-L 9/25/86	14884
	* Note: Position shown is from field computation and is unadjusted.							
	** Note: As per phone con. with C.G. A to N Officer Light List No. to remain the same.							

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L-685(88)

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Brian Link Asst. OIC HFP 2/3	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ 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.

☆ U.S. GPO:1975-0-665-080/1155

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Atlantic Marine Center
439 W. York St.
Norfolk, Va. 23510
N/MOA233

September 29, 1986

To: Commander, Ninth Coast Guard District
Cleveland, Ohio

From: LT(jg) Kenneth P. Peters, OIC-HFP 2/3

Subject: Danger to Navigation Notice for inclusion in the Local Notice to Mariners, Chart 14884, 33rd Ed., St. Marys River

The following obstructions and shoals were found while conducting a basic hydrographic survey of the St. Marys River (Registry No. H-10194), between Cedar Point and Point Iroquois, and are not currently charted:

A rock pile (investigated by divers) was found at Lat. 46°26'17.46" N, Lon. 84°31'16.33" W, with a least depth of 5.3 ft. a low water datum. Charted depths in this area are 13 ft.

A rock pile extending from Lat. 46°26'36.01" N, Lon. 84°31'59.44" W, southeast to Lat. 46°26'34.80" N, Lon. 84°31'57.17" W, was found and investigated by divers. A lead line least depth of 10.3 ft. at low water datum was found on the northwest limit of the rock pile. A lead line least depth of 15.3 ft. at low water datum was found on the southeast end. This is in an area currently charted at 21 ft.

A large single rock, approximately 5 meters in diameter was found and investigated by divers at Lat. 46°26'03.12" N, Lon. 84°31'47.00" W, with a lead line least depth of 9.3 ft. at low water datum. This is in an area currently charted at 14 ft.

A 12 ft. shoal, at low water datum, was found at Lat. 46°26'18.0" N, Lon. 84°32'03.0" W. This area is currently charted at 16 ft.

A 12 ft. shoal, at low water datum, was found at Lat. 46°26'09.0" N, Lon. 84°32'07.0" W. This area is currently charted at 14 ft.

****
* THIS IS ADVANCE INFORMATION *
* SUBJECT TO OFFICE VERIFICATION *
****

Subject: Danger to Navigation Notice, Chart 14884

A 12 ft. shoal, at low water datum, was found at Lat. 46°26'07.0" N, Lon. 84°32'20.0" W. This area is currently charted at 15 ft.

Zero foot depths, at low water datum, were found over the shoal arm extending south from Bay Mills point into Waiska Bay, Lat. 46°25'36.0" N, Lon. 84°34'45.0" W.

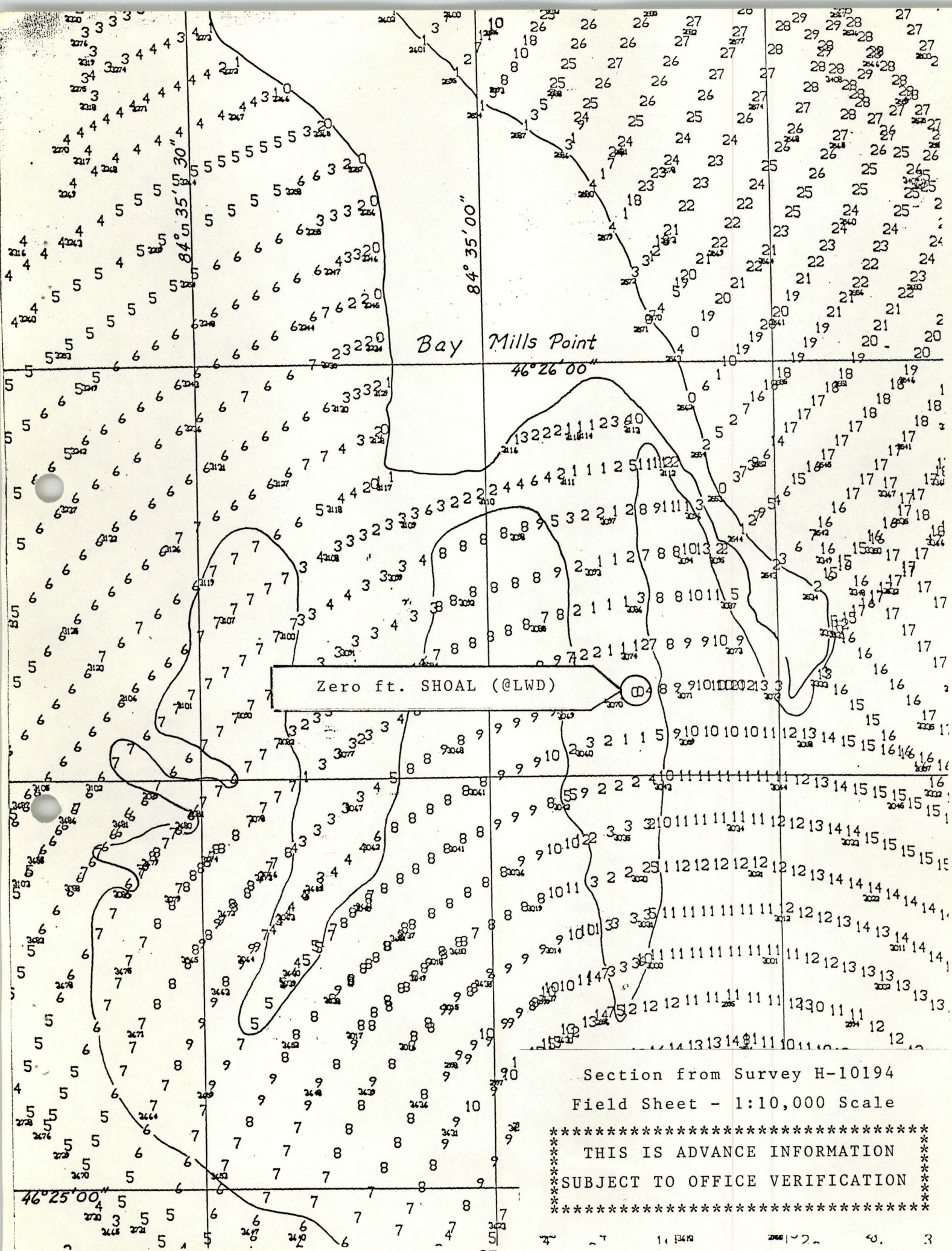
These dangers to navigation were located using Range/Range positioning methods, from Third Order, Class I, geodetic control stations. Motorola Falcon 484 electronic positioning system was used to obtain distances. Depths were recorded using a Raytheon 719C Survey Fathometer or a calibrated lead line. Depths were reduced to Low Water Datum using unverified actual water levels from the USCOE SW Pier gage (Sta. No. 906-6070).

A chart section from 14884, 33rd Ed. and a section from the survey field sheet, showing the location of these dangers, is attached.

****
* THIS IS ADVANCE INFORMATION *
* SUBJECT TO OFFICE VERIFICATION *
****

Note: The information contained in this letter was delivered to USCG Station Sault Ste. Marie, for RAPIFAX to the Local Notice to Mariners Office, Cleveland, Ohio.

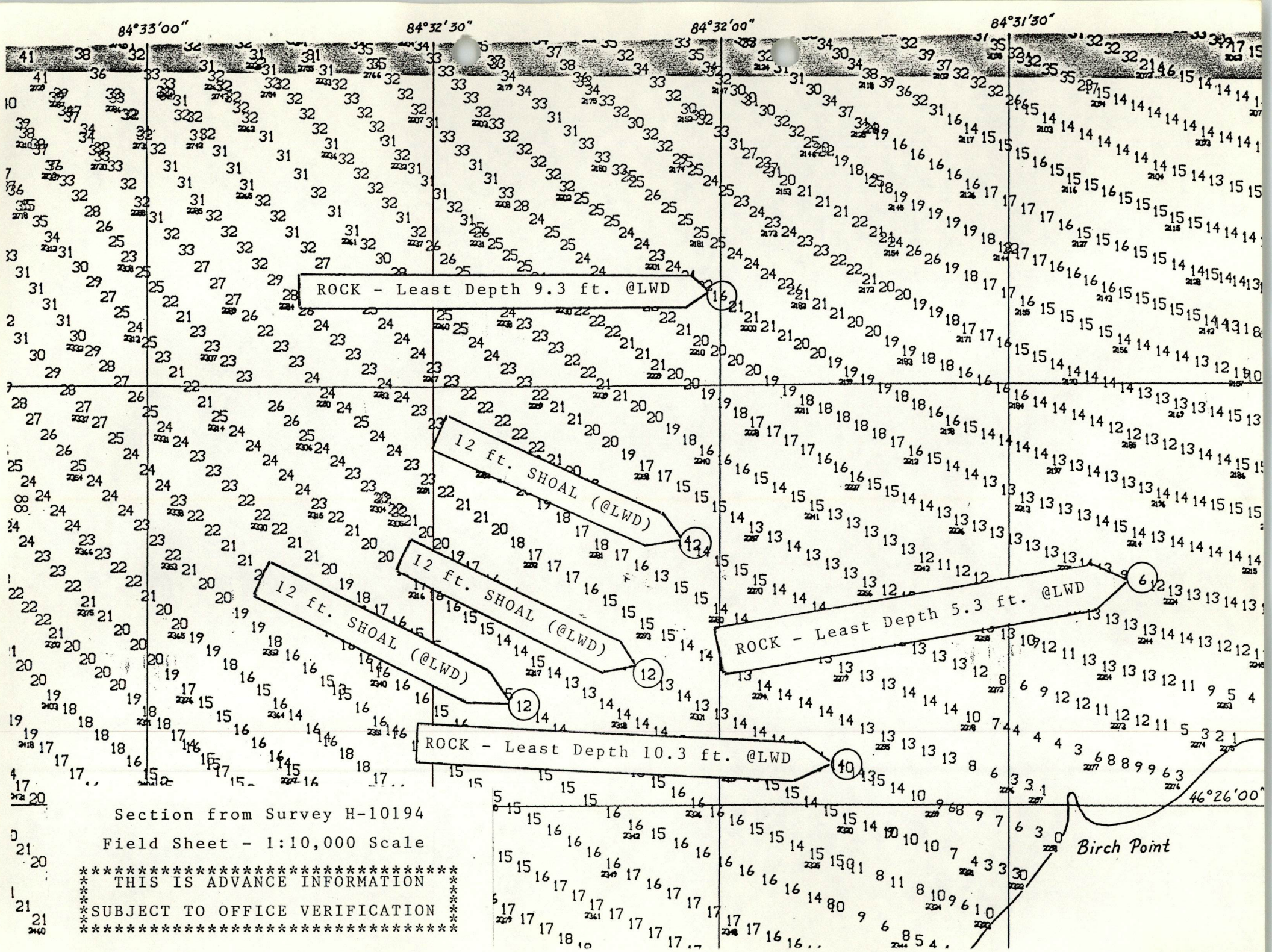
cc: MOA233
MOA2X1
N/CG222



Section from Survey H-10194

Field Sheet - 1:10,000 Scale

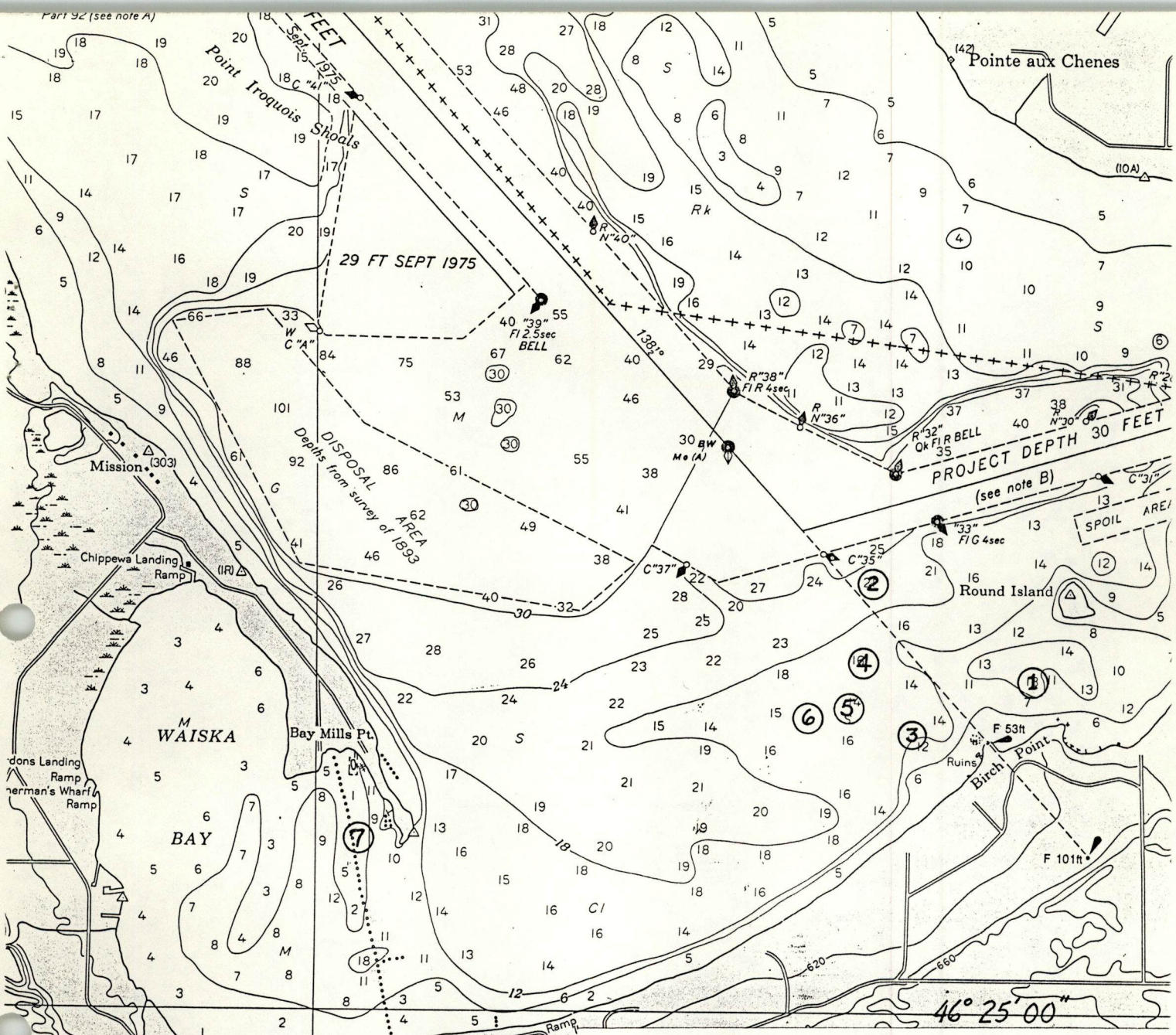
****
THIS IS ADVANCE INFORMATION
SUBJECT TO OFFICE VERIFICATION
****



Section from Survey H-10194

Field Sheet - 1:10,000 Scale

****
* THIS IS ADVANCE INFORMATION *
*SUBJECT TO OFFICE VERIFICATION *
****



Section from Chart 14884

33rd. Ed.,1:40,000 Scale

Key to Numbered Dangers

1) Rock - least depth 5.3 ft.
2) Rock - least depth ~~10.3~~ 9.3 ft.
3) Rock - least depth ~~9.3~~ 10.0 ft.
4) 12 ft. shoal
5) 12 ft. shoal
6) 12 ft. shoal
7) Zero ft. shoal

Depths are at LOW WATER DATUM

****
* THIS IS ADVANCE INFORMATION *
* SUBJECT TO OFFICE VERIFICATION *
****

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Atlantic Marine Center
4 August 1986

TO: N/CG243

THRU: N/MOA2X1

FROM: N/MOA233 - Kenneth P. Peters, OIC HFP-2/3

SUBJECT: User Evaluation of St. Marys River Charts

A user evaluation of the St. Marys River and Whitefish Bay was performed to determine if the product fulfills the requirements of its users. The information was acquired through interviews with representatives of the U.S. Coast Guard, St. Marys River Pilots, Corps of Engeneers, and local chart dealers.

Ron Pierce,Chief of the Corps of Engeneers Survey Branch, Sault Ste. Marie, MI. (Phone # 906-932-3311, ext. 279), stated that the charts were accurate and complete. Mr. Pierce's only complaint with the charts was that the local names for bays and features were not always used. This complaint was shared Coast Guard Group Soo (Sault Ste. Marie) Control who have frequent requests for charted names of features. The Coast Guard maintains a data base of charted names cross referenced to the local names.

LT. Boyd, the commanding officer of the U.S.C.G. Cutter KATAMAI BAY would like to see a large scale chart of Whitefish Bay. The KATAMAI BAY performs ice breaking operations in the bay. LT. Boyd also stated that he would like to see loran lines in a color more visible under the bridge's red night lights. LT. Boyd and CWO Dougherty, the commander of the U.S.C.G. Cutter BUCKTHORNE agreed that loran lines should appear on the charts of the St. Marys River. CWO Dougherty also thought that larger scale charts of the river would be valuable.

Captain John P.Wellington, a St. Marys River pilot and president of Seaway Towing, Inc. said the charts were adequate and that no changes to the color schemes or formats were necessary.

Local chart venders were asked if there were complaints with the charts. One observation made was that the charts were too large to be easily handled by recreational boaters. It was suggested that "flip-charts" of the river, for non-navigational use, would be more useful to recreational boaters. The only complaint raised by venders was the delay in recieving ordered charts. This complaint is raised by chart dealers everywhere the field party has operated

CHART #14884 PRE-SURVEY REVIEW ITEM #03473

SOURCE: TP-00205 DESCRIPTION: Obstruction

INVEST. DATE: See Method of investigation VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: OPR-X278-HFP-86
H-10194

POSITION: VOLUME: PAGE:

CORRECTORS APPLIED:

VELOCITY: TRA CORRECTORS:

UNVERIFIED ACTUAL WATER LEVELS:

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°26'22.70"	84°29'23.00"
OBSERVED:	N/A	N/A

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: The location of the obstruction shown on TP-00205 lies within an area defined as foul with marsh grass found while conducting survey H-10194. A thorough investigation of this item was impractical, because of the grass in the area.

CHARTING RECOMMENDATIONS: A recommendation is made to chart this obstruction, based on the T-Sheet location, within the foul area defined. CONCUR REVISE SHORELINE TO REFLECT PHOTOGRAMETRIC MANUSCRIPT AND CHART THE OBSTRUCTION AS SHOWN ON THE PRESENT SURVEY SEE ALSO SECTION 7.9.2) OF THE EVALUATION REPORT.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884

PRE-SURVEY REVIEW ITEM #03947
Obstruction(Submerged Rock)

SOURCE: LS1697/36

INVEST. DATE: 9/22/86 (DN 265) TIME: 180815Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: OPR-X278, H-10194

POSITION #: 4308 VOLUME: 12 PAGE: 41

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: NO

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°26'46.40"	84°30'23.90"
OBSERVED:	46°26'46.60" 54	84°30'23.47" 32

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: A detached position was taken on the least depth of an area of large rocks. Least depth found was 1 ft. @ LWD.

CHARTING RECOMMENDATIONS: ~~Rock symbol should remain charted based on position 4308.~~ SEE SECTION 6. OF THE EVALUATION REPORT.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884 PRE-SURVEY REVIEW ITEM #03948✓

SOURCE: LS1687/36 DESCRIPTION: Obstruction(Pier)

INVEST. DATE: 9/17/86(DN 260) TIME: 180300Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION: 4146 VOLUME: 11 PAGE: 68

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: NO

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°25'57.70"	84°31'26.40"
OBSERVED:	46°25'57.~~51~~66"	84°31'25.~~73~~67"

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: The ruins were found by visual inspection of the charted area. A detached position was taken on the offshore center end of ruins extending from shore, pos. 4146, the observed position listed above. The crib ruins bare ~~0.5~~0.2 ft. @LWD. Ruins consist of a 2 meter X 3 meter rock filled crib, with a line of rocks extending south to shore.

CHARTING RECOMMENDATIONS: ~~Retain ruins on chart based on pos. 4146.~~
IT IS RECOMMENDED THE CHARTED PIER RUINS BE DELETED AND A CRIB RUINS BE CHARTED AS SHOWN ON PRESENT SURVEY.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884

PRE-SURVEY REVIEW ITEM #03949 ✓
Obstruction (Visible Piles)

SOURCE:LS1687/36

INVEST. DATE: 9/17/86 TIME: 1740Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION #4143-4145 VOLUME: 11 PAGE: 68

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: No

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°24'57.50"	84°33'59.70"
OBSERVED:	46°24'56.~~84~~ 14"	84°33'59.~~65~~ 48"

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: Piles were found by a visual and fathometer search of the charted area. Detached positions were taken on the inshore of three exposed piles, pos. 4144 - Lat. 46°24'55.~~54~~ 03" N, Lon. 84°33'58.~~54~~ 31 W, 8"dia., bares 2 ft. @LWD, the offshore exposed pile, pos. 4143 - Lat. 46°24'55.~~30~~ 41" N, Lon. 84°33'58.84" W, 8"dia., bares ~~2.5~~ 3.0 ft. @LWD and on the offshore submerged pile (piles are submerged north of pos. 4143) at pos. 4145, Lat. 46°24'56.84" N, Lon. 84°33'59.~~65~~ 48" W, with a pole least depth of ~~2.9~~ 3.0 ft. @LWD.

CHARTING RECOMMENDATIONS: ~~Retain piles on chart, exposed at positions 4143 and 4144 and submerged on position 4145.~~ IT IS RECOMMENDED THE CHARTED VISIBE PILES BE DELETED AND THE AREA BE CHARTED AS SHOWN ON PRESENT SURVEY.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884

PRE-SURVEY REVIEW ITEM #03950 ✓
Obstruction

SOURCE:TP-00204

INVESTIGATION DATE:8/25/86(DN 237) TIME:181200Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION #3741 - 3745 VOLUME: 10 PAGE:31-32

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: YES

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°24'51.00"	84°35'10.00"
OBSERVED:	46°24'52.~~22~~ 21"	84°35'~~11.15~~ 10.96"

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: The area in the vicinity of this item shown on TP-00204 was found to be a small patch of marsh grass. This area was defined by detached positions as follows:

Pos.3741 - Lat. 46°24'52.~~22~~ 21" N, Lon. 84°35'~~11.15~~ 10.96" W
Pos.3742 - Lat. 46°24'53.~~34~~ 33" N, Lon. 84°35'10.~~57~~ 58" W
Pos.3743 - Lat. 46°24'53.~~26~~ 25" N, Lon. 84°35'08.~~58~~ 59" W
Pos.3744 - Lat. 46°24'51.~~49~~ 48" N, Lon. 84°35'08.~~75~~ 56" W
Pos.3745 - Lat. 46°24'51.~~35~~ 3" N, Lon. 84°35'10.~~43~~ 24" W

Depths for the above positions are 0-1 ft. @LWD.

CHARTING RECOMMENDATIONS: ~~Chart the area defined above using symbol No. 17, page 2, from Chart No. 1 (Marsh).~~ CHART AS SHOWN ON PRESENT SURVEY.

COMPILATION USE

CHART: APPLIED AS:

CHART # 14884

PRESURVEY REVIEW ITEM #03951 ✓
Obstruction (Railroad Bridge)

SOURCE: LS754/1893, LS1687/36

INVEST. DATE: 8/19/86(DN 231,1986) TIME:185500 UTC VESSEL: #0519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION : 3420-3425 VOLUME: 9 PAGE: 8

CORRECTORS APPLIED:

VELOCITY: No TRA CORRECTORS: Yes

UNVERIFIED ACTUAL WATER LEVELS: Yes

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°25'30.00"	084°34'45.40"
OBSERVED:	-See Method of Item Investigation-	

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: Divers investigated the area to determine the extent of ruins that remained. Divers entered the water at the junction of exposed piles extending from the south shore with the point at which they continue submerged to the north (pos. 3424 - lat. 46°24'59.11"N, long. 84°34'37.25"W), thence swimming northerly along the submerged ruins to the northern end, found at pos. 3420 - lat. 46°25'19.88"N, long. 84°34'42.64"W, with a least depth of 10.1 ft. @LWD. The least depth found by divers was at pos. 3421 - lat. 46°25'17.66"N, long. 84°34'42.82"W and was 8.3 ft. @ LWD. The junction of the ruins with the south shore was located at pos. 3425 - lat. 46°24'48.39"N, long. 84°34'33.98"W. The area north of pos. 3420 was also visually searched with no evidence of piles. Any remaining ruins north of 3420 are presumed covered by the shoal which extends from the north shore, with depths from 0-3 ft. Least depths were determined by lead line. (PSR 3952 is a related item.)

CHARTING RECOMMENDATIONS: ~~Ruins should remain as charted from the south shore, north to pos. 3420, thence deleted to the north shore.~~ SEE SECTION 6. OF THE EVALUATION REPORT.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884

PRE-SURVEY REVIEW ITEM #03952 ✓
Obstruction (Railroad Pier)

SOURCE: LS754/1893, LS1687/36

INVEST. DATE: 8/19/86(DN 231) TIME: 1907 VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION #: 3422-3423 VOLUME: 9 PAGE: 9

CORRECTORS APPLIED:

VELOCITY: No TRA CORRECTORS: Yes

UNVERIFIED ACTUAL WATER LEVELS: Yes

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°25'12.40"	84°34'32.90"
OBSERVED:	46°25'09.~~48~~ 50"	84°34'~~37.02~~ 36.78"

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: During the diver investigation for PSR Item 3951, the west end of the railroad pier ruins at its junction with the railroad bridge ruins was located at pos. 3422, lat. 46°25'08.46"N, long. 84°34'~~40.16~~ 39.93"W, with a lead line least depth of ~~3.7~~ 2.6 ft. @LWD. The east end of these ruins is marked by a privately placed sign, and was located at pos. 3423, lat. 46°25"09.48"N, long. 84°34'~~37.02~~ 36.78"W. This east end consists of a cluster of about 28, 12 inch diameter piles, exposed 1.9 ft. @LWD. (PSR 03951 is a related item.)

CHARTING RECOMMENDATIONS: ~~The railroad pier ruins should remain as charted based on positions 3422 and 3423.~~ CHART AS SHOWN ON PRESENT SURVEY.

COMPILATION USE

CHART: APPLIED AS:

DIVE INVESTIGATION REPORT
PROJECT NUMBER OPR-X278
SURVEY H-10194
FIELD NUMBER HEP-10-5-85

DIVE NUMBER 19.1, 19.2 DIVE DATE Aug. 19, 1986

I. AREA OF INVESTIGATION

A. State/Country MICHIGAN Sub-Locality WHISKEY BAY, LAKE SUPERIOR

B. Position: Latitude 46°25'09."48 Longitude 84°34'37."02
(Dive site or center of search area)

C. Method of Positioning FALCON - MINI RANGER

II. PURPOSE OF INVESTIGATION

A. AWOIS item number: #3951, #3952

B. Source of item being investigated (if other than AWOIS listing): _____

C. Contacts (e.g. USCG, C of E, Harbor Masters, Owners, etc.):

D. Names, Addresses and Phone Numbers etc. of contacts:

III. SURVEY PROCEDURES

A. Determination of dive site (e.g. wire drag, side scan, development): ASSIGNED ITEM

B. Search Procedure(e.g. following a groundwire, circle search, sweep along known feature, etc.)
COMPASS COURSE ON ACTUAL ITEM.

C. Known reference to features nearby:

D. Area and depths covered:

IV. DIVE DATA

A. Divers: TOM BYBORSKI, DAVID ELLIOTT

B. Time of Dive (in UTC) - Real 1400
Elapsed 1600

C. General Bottom Depths (units and method of determination):
17'-3' LEADLINE & PRESS. GAUGE

D. Current and conditions: 2 KTS, CALM WATERS

E. Visibility (number of feet - horizontally and vertically):
5' HOR. 5' VERT.

F. Bottom type (mud, sand, rocks, etc.): MUD, ROCKS, GRASS

IV. RESULTS (ON ATTACHED REPORTS)

A. Detached Positions Number(s): 3420 - 3425

Time of D.P.'s (UTC): Describe if other time zone: 1855 - 1917

Least Depth and Fix Numbers (raw depth):

Method of determining depth (The raw sounding should be recorded. The reduced least depth should be plotted on the field sheet.)

B. Description of findings:

C. Dimensions of item or feature (attach sketch if appropriate):

D. Unusual Conditions:

VI. CHARTING RECOMMENDATIONS (ON ATTACHED REPORTS)

Position Lat. _____ Long. _____

Reduced Depth _____

Type of Feature (Reference Chart No.1) _____

CHART #14884

PRE-SURVEY REVIEW ITEM #03953
Obstruction (Visible Piles)

SOURCE: LS770/1893, LS1687/36

INVEST. DATE: 9/26/86(DN 269) TIME: 1434Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION #4631 - 4632 VOLUME: 13 PAGE: 55

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: NO

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°25'40.50"	84°34'33.00"
OBSERVED:	-See METHOD OF ITEM INVESTIGATION-	

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: Detached positions were taken on the offshore northern end of large area of piles at Lat. 46°25'40.89" N, Lon. 84°34'34.46" W, (pos. 4631) baring ~~5~~ 6 ft. at low water datum and on the offshore southern end at Lat. 46°25'39.46" N, Lon. 84°34'33.62" W, (pos. 4632) also baring ~~5~~ 6 ft. at low water datum. The area between these positions and eastward to shore is foul with numerous piles. A dolphin in ruins was also located at Lat. 46°25'39.06" N, Lon. 84°34'~~30.95~~ 31.06" W (pos. 4633) baring ~~5~~ 6 ft. at low water datum.

CHARTING RECOMMENDATIONS: ~~Piles should remain as charted based on positions 4631 - 4633. This incorporates the dolphin as part of the same area of ruins. The dolphin is shown separately on the 1:10,000 scale survey.~~ IT IS RECOMMENDED THAT THE CHARTED PILES BE DELETED AND THE AREA BE CHARTED AS A FOUL AREA AS SHOWN ON PRESENT SURVEY. IT IS ALSO RECOMMENDED THAT A DOLPHIN BE CHARTED AS SHOWN ON PRESENT SURVEY.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884

PRE-SURVEY REVIEW ITEM #03954
Submerged Wreck

SOURCE: RS1966

INVEST. DATE: 9/26/86(DN 269) TIME: 1424Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION #4627-4628 VOLUME: 13 PAGE:54

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: NO

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°25'55.00"	84°34'45.00"
OBSERVED:	-See METHOD OF ITEM INVESTIGATION-	

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: Detached positions were taken on the north end of wreck at Lat. 46°25'56.74" N, Lon. 84°34'45.20" W, (pos. 4627) baring 0.7 ft. at low water datum, and on the south end of wreck at Lat. 46°25'55.93" N, Lon. 84°34'44.75" W, (pos. 4628) baring 0.2 ft. at low water datum. Depths were determined by pole.

CHARTING RECOMMENDATIONS: ~~Wreck should remain charted as submerged between positions 4627 and 4628.~~ CHART AS SHOWN ON PRESENT SURVEY.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884

PRE-SURVEY REVIEW ITEM #03955
Obstruction (Visible Piles)

SOURCE: LS1687/36

INVESTIGATION DATE: 8/20/86(DN 232) TIME: 1602Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION #3475-3477 VOLUME: 9 PAGE:21-22

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: NO

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°25'51.20"	84°34'34.00"
OBSERVED: (POS #3476	46°25'51.~~90~~78"	84°34'36.~~46~~21"

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: Detached positons were taken on this item as follows: Pos. 3475-lat. 46°25'51.~~90~~78"N, long. 84°34'36.~~46~~21"W, was taken over the offshore end of the row of pilings, found by visual search, with a pole least depth of 0.~~7~~0 ft. @LWD. Pos. 3476 - lat. 46°25'53.~~60~~49"N, long. 84°34'37.~~55~~31"W, was taken on the inshore end (at shore) and is exposed 1 ft. above sand beach (~~2.8~~3.0 ft. above LWD). Pos. 3477 - lat. 46°25'52.~~70~~59"N, long. 84°34'36.~~86~~62"W, was taken at the point at which the piles become submerged offshore (last pile exposed is ~~5.8~~6 ft. above LWD).

CHARTING RECOMMENDATIONS: ~~Retain piles on chart, using the exposed pile symbol for positions 3476 and 3477, and the submerged pile symbol for position 3475.~~ SEE SECTION 6. OF THE EVALUATION REPORT.

COMPILATION USE

CHART: APPLIED AS:

CHART #14884

PRE-SURVEY REVIEW ITEM #03962
Obstruction (Pier Ruins)

SOURCE: LS754/1893, LS1687/36

INVEST. DATE: 9/26/86(DN 269) TIME: 1401Z VESSEL #519

OIC: LT(jg) Kenneth P. Peters

REFERENCE: H-10194 (OPR-X278)

POSITION #4625 - 4626 VOLUME: 13 PAGE: 54

CORRECTORS APPLIED:

VELOCITY: NO TRA CORRECTORS: YES

UNVERIFIED ACTUAL WATER LEVELS: YES

GEODETIC POSITION:	LATITUDE	LONGITUDE
CHARTED:	46°25'52.00"	84°34'47.00"
OBSERVED: 4625 (North End)	46°25'58.~~21~~19"	84°34'46.~~13~~24"
4626 (South End)	46°25'56.~~48~~47"	84°34'44.~~72~~82"

POSITION DETERMINED BY: Range/Range (Falcon 484)

METHOD OF ITEM INVESTIGATION: Detached positions were taken on the north end of the pier in ruins (pos. 4625), baring ~~7.7~~ 8.0 ft. @ LWD, and on the south end of the pier in ruins (pos. 4626), baring ~~11.7~~ 12.0 ft. @ LWD.

CHARTING RECOMMENDATIONS: Pier ruins should remain charted based on pos. 4625 - 4626. CHART AS SHOWN ON PRESENT SURVEY. SEE ALSO SECTION 6. OF THE EVALUATION REPORT.

COMPILATION USE

CHART: APPLIED AS:

APPROVAL SHEET

For

SURVEY H-10194 (HFP-10-5-85)

The hydrographic records transmitted with this survey are complete and adequate to supersede prior surveys for charting with no additional field work recommended.

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

Approved and forwarded.

Kenneth W. Perrin

Kenneth W. Perrin
LCDR, NOAA
Chief, Hydrographic Field Parties Section

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: N/MOA23

Hourly heights are approved for: See remarks.
Water Level Station

Period: July 15, 1985, to August 9, 1985, and June 30, 1986, to September 19, 1986.

HYDROGRAPHIC SHEET: H-10194

OPR-X278-HFP-85 and 86

Locality: St. Marys River

Plane of reference: Low Water Datum (~~IGLD-----:------Feet~~) See Remarks.

Remarks:

Above the Locks:

Station 907-6070 Southwest Pier, MI.

Low Water Datum 599.8 feet, IGLD 1955

Harry A. Lippincott
Chief, Great Lakes Acquisition Unit

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10194

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
BACK BAY										1
BAY MILLS POINT										2
BIRCH POINT										3
CEDAR POINT										4
CHENES, POINTE AUX										5
IZAAK WALTON BAY										6
LOUISE, POINTE										7
MICHIGAN (title)										8
MISSION										9
ONTARIO (title)										10
POINT IROQUOIS SHOALS										11
ROUND ISLAND										12
ROUND ISLAND POINT										13
ST MARYS RIVER (title)										14
WAISKA BAY										15
WAISKA RIVER										16
CEDAR ROCK										17
										18
					Approved:					19
					Charles E. Harrington					20
					Chief Geographer - N/CG2x5					21
					AUG 31 1987					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.
MOA23-62-88

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

☐ ORDINARY MAIL ☐ AIR MAIL
☒ REGISTERED MAIL ☐ EXPRESS
☐ GBL *(Give number)* _____

DATE FORWARDED
9 JUNE 1988

NUMBER OF PACKAGES
Three (3)

TO:

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

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

H-10194 (HFP-10-5-85)
OPR-X278-HFP-85/86, Michigan--Ontario, St. Marys River,
Izaak Walton Bay to Point Iroquois Shoals

PKG. 1 (TUBE)
~~1~~ ORIGINAL DESCRIPTIVE REPORT
~~1~~ SMOOTH SHEET
~~1~~ POSITION OVERLAY
~~2~~ EXCESS OVERLAYS
~~4~~ FINAL FIELD SHEETS

PGK. 2 (BOX)
~~1~~ CAHIER containing FINAL POISITON PRINTOUT
~~1~~ CAHIER containing FINAL SOUNDING PRINTOUT
~~15~~ NOAA FORM 77-44 (SOUNDING VOLUMES)
~~1~~ ENVELOPE containing SUPPLEMENTAL DATA FROM PRINTOUTS
~~1~~ ENVELOPE containing DATA REMOEVED FROM DESCRIPTIVE REPORT
~~1~~ ENVELOPE containing FIELD VELOCITY DATA
~~1~~ ENVELOPE containing FIELD DATA

FROM: *(Signature)*

NORRIS A. WIKE Norris A. Wike

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
N/MOA23
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

RECEIVED THE ABOVE
(Name, Division, Date)

Dwayne S. Clark
July 25, 1988
N/CG243

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆U.S.GPO:1983-0-664-008/1192

NOAA FORM 61-29
(12-71)

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

LETTER TRANSMITTING DATA

REFERENCE NO.
MOA23-62-88

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

☐ ORDINARY MAIL ☐ AIR MAIL
☐ REGISTERED MAIL ☐ EXPRESS
☐ GBL *(Give number)* _____

DATE FORWARDED
9 JUNE 1988

NUMBER OF PACKAGES
Three (3)

TO:

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Room 151, WSC-1
National Ocean Service - NOAA
Rockville, MD 20852

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H-10194 (HFP-10-5-85)
OPR-X278-HFP-85/86, Michigan--Ontario, St. Marys River,
Izaak Walton Bay to Point Iroquois Shoals

PKG. 3 (BOX)
2 ~~1~~ ACCORDION FILE containing MASTER TAPE PRINTOUTS, CORRECTOR TAPE PRINTOUTS, and FATHOGRAMS for following VESNO 519: JD's:
(1985) 196, 198, 200, 211, 214, 221
(1986) 181-182, 188-189, 191, 196-197, 210-211, 213, 219, 230-232, 234, 237, 246-248, 252, 260, 262, 265, 267-269, 272---VESNO 1020: JD's:
(1986) 218-219, 221,224-225, 228, 230, 246, 260,
VESNO 517: JD's: (1986) 266

FROM: *(Signature)*
NORRIS A. WIKE Norris A. Wike

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Chief, Hydrographic Surveys Branch,
N/MOA23
Atlantic Marine Center
439 W. York Street
Norfolk, VA 23510-1114

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆U.S.GPO:1983-0-664-008/1192

06/08/88

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H-10194

NUMBER OF CONTROL STATIONS	9
NUMBER OF POSITIONS	4332
NUMBER OF SOUNDINGS	21242

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	85	12/05/86
VERIFICATION OF FIELD DATA	369	07/17/87
QUALITY CONTROL CHECKS	135	
EVALUATION AND ANALYSIS	79	11/18/87
FINAL INSPECTION	33	10/29/87
TOTAL TIME	701	

MARINE CENTER APPROVAL 11/18/87

ATLANTIC MARINE CENTER
EVALUATION REPORT

SURVEY NO.: H-10194 FIELD NO.: HFP-10-5-85

Michigan--Ontario, St. Marys River, Izaak Walton Bay to Point Iroquois Shoals

SURVEYED: 15 July through 9 August 1985 and 30 June through 29 September 1986

SCALE: 1:10,000 PROJECT NO.: OPR-X278-HFP-85/86

SOUNDINGS: RAYTHEON DE-719C Fathometer, RAYTHEON DSF-6000N Fathometer, Sounding Pole, Leadline

CONTROL: DEL-NORTE (Range/Range), MOTOROLA Mini-Ranger Falcon 484 (Range/Range), DEL-NORTE/NIKON NT2D-20 Theodolite and HP-3808A (Range/Azimuth)

Chief of Party.....K. W. Perrin

Surveyed by.....K. P. Peters
.....B. A. Links
.....M. J. McMann
.....D. A. Elliott
.....W. L. Sprye
.....J. P. Oswald
.....T. M. Rybarski
.....C. S. Weisner

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

1. INTRODUCTION

a. No unusual problems were encountered during office processing.

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

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections F., G., and S. of the Descriptive Report.

b. Shoreline originates with 1:20,000 scale final reviewed Class III Photogrammetric Manuscripts TP-00204 and TP-00205 of 1982-84. The manuscripts were enlarged to 1:10,000 scale.

c. Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1927. Office processing of this survey is based on these values. The

smooth sheet has been annotated with ticks showing the computed mean shift between the survey datum and the NAD83 datum. To place this survey on the NAD83 datum move the projection lines 0.069 seconds (2.1 meters) south in latitude, and 0.172 seconds (3.7 meters) east in longitude.

3. HYDROGRAPHY

a. Soundings at crossings are in excellent agreement and comply with the criteria found in sections 4.6.1 and 6.3.4.3. of the HYDROGRAPHIC MANUAL.

b. The standard six (6), twelve (12), eighteen (18), thirty (30), and sixty (60) foot depth curves could be drawn in their entirety. The standard zero (0) curve was not completely delineated because of vessel safety. Supplemental three (3) and twenty-four (24) foot curves were drawn to show additional bottom relief. Some brown and dashed curves were also drawn to delineate bottom relief.

c. The development of the bottom configuration and determination of least depths is considered adequate with the following exceptions:

The following shoal soundings and shoal areas were not adequately developed:

Shoal Depths	Latitude	Longitude	Surrounding Depths
30	46°26'52.12"N	84°34'10.30"W	31-49
30	46°27'23.15"N	84°34'03.56"W	35-49
7	46°28'33.61"N	84°33'17.43"W	10-12
5	46°27'56.39"N	84°31'37.15"W	7-10
7	46°26'53.38"N	84°30'48'13"W	10-14
7	46°26'22.16"N	84°30'41.00"W	9-11
2	46°27'04.62"N	84°29'44.44"W	4-12
12	46°26'19.58"N	84°31'59.59"W	13-16
1-3	46°26'58.54"N	84°30'18.79"W	4-10
3-6	46°27'06.77"N	84°29'34.04"W	7-13
5-6	46°27'13.55"N	84°28'35'63"W	7-9
4-6	46°27'06.78"N	84°28'33.58"W	7-9
6	46°26'57.88"N	84°28'44.61"W	8-9

Additional lines of hydrography in the vicinity of the items discussed above would have provided a better delineation of the bottom configuration. The lack of developments of the items discussed above does not degrade the overall quality of this survey.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the

requirements of the HYDROGRAPHIC MANUAL with the following exceptions:

a. Four (4) of the six (6) TDC casts taken were averaged to make one (1) table by the field unit. During office processing each cast was plotted separately, and the plots varied as much as 0.2 of a foot at a depth of 0 feet to 0.6 of a foot at a depth of 20 feet. The range of velocity in meters also exceeded the limit of 4 meters per second as stated in section 4.9.5.of the HYDROGRAPHIC MANUAL. Dates of TDC's were compared with dates of hydrography and a determination was made for application of TDC's to specific days of hydrography. Subsequently, six tables were constructed and applied to the sounding data during office processing.

b. The prior survey comparison made by the hydrographer is incomplete. Three (3) prior surveys cover the present survey area. Prior survey LS-1687 (1936) and LS-1829 (1944) were not compared with by the hydrographer. It is imperative that the hydrographer ensure that all necessary prior surveys are available. Prior survey LS-1687 (1936) was listed in the Project Instructions dated 7 May 1984, along with LS-1692 (1936). LS-1692 (1936) was also discussed in Change No. 3 , dated 9 May 1985. Additionally, it should be noted that charts in the Great Lakes are a compilation of <u>all</u> prior surveys. LS-1829 (1944) was not listed in the Project Instructions.

c. Discussions of the items investigated during the present survey operations in the Descriptive Report were not adequate. Hydrographic Survey Guideline No. 21 outlines the necessary information to be provided in the Descriptive Report.

d. Section G. of the Descriptive Report did not provide the required information on position equipment. Identification of types and serial numbers were listed but vessels on which equipment was used were not. Section 5.3.4.(G) of the HYDROGRAPHIC MANUAL outlines the necessary information to be provided in the Descriptive Report.

e. In the vicinity of junction with H-10152 (1984) few lines overlap. As stated in section 4.3.2. of the HYDROGRAPHIC MANUAL surveys of different years must have overlap of several lines of hydrography. The only overlap is in deep water. This does not degrade the overall quality of the present survey.

f. Sounding lines were run parallel to the depth curves in the following vicinities:

<u>Latitude</u>	<u>Longitude</u>
46°25'37"N	84°33'48"W
46°25'50"N	84°32'30"W
46°27'33"N	84°31'31"W
46°26'36"N	84°30'43"W

46°27'08"N	84°30'11"W
46°26'55"N	84°29'15"W

Section 4.3.5.1. of the HYDROGRAPHIC MANUAL outlines the correct procedure for running sounding lines.

5. JUNCTIONS

H-10152 (1984-85) 1:10,000

A standard junction could not be effected with junctional survey H-10152 (1984-85). The junctional survey is archived at National Ocean Service (NOS) Headquarters, Rockville, Maryland. Survey H-10152 (1984-85) is in substantial agreement with the present survey. Depths generally agree to within one (1) foot. Any adjustments to the depth curves in the junctional areas will have to be made at headquarters on the chart during compilation.

There is no contemporary survey to the northwest of the present survey. Charted hydrography and the present survey soundings are in harmony.

6. COMPARISON WITH PRIOR SURVEYS

LS-1687 (1936) 1:20,000
LS-1829 (1944) 1:20,000
LS-1962 (1955) 1:20,000

The three (3) prior surveys listed above cover the present survey area in its entirety.

Prior survey depths from LS-1687 (1936) compare favorably and show a general trend of being one (1) foot shoaler than present survey depths. A six (6) foot shoal in the vicinity of Latitude 46°27'27.00"N, Longitude 84°28'45.00"W falls within the limits of the charted channel. Soundings in the vicinity of Latitude 46°27'50.00"N, Longitude 84°34'30.00"W are ten (10) to fourteen (14) feet shoaler than present survey depths.

AWOIS Item #3947, a charted submerged rock in Latitude 46°26'46.40"N, Longitude 84°30'23.00"W originates with prior survey LS-1687 (1936). A rock awash covered one-foot at LWD was located in Latitude 46°26'46.54"N, Longitude 84°30'23.32"W. The charted submerged rock is 13.11 meters from the rock found by the present survey. As stated on page 92 of the Descriptive Report the rock located by the field unit is in an area of large rocks. The bottom characteristic rocky was added to the smooth sheet based upon this information. The field unit should have delineated the entire area of rocks. It is recommended the area be charted as shown on present survey.

AWOIS Item #03951, a charted row of visible piles from Latitude 46°24'51"N, Longitude 84°34'34"W to Latitude

46°25'58"N, Longitude 84°34'55"W originates with prior survey LS-1687 (1936). The row of piles were verified by the present survey with dive investigation from Latitude 46°24'48.41"N, Longitude 84°34'33.74"W, to Latitude 46°25'19.89"N, Longitude 84°34'42.40"W. A visual search was performed from Latitude 46°25'19.89"N, Longitude 84°34'42.40"W, to Latitude 46°25'57.0"N, Longitude 84°34'54.3"W, but no bottom drag or dive investigation was performed north of Latitude 46°25'19.89"N, Longitude 84°34'42.40"W as required by AWOIS listing. The section of piles not found was brought forward from prior survey LS-1687 (1936) as submerged piles to supplement the present survey. It is recommended the row of piles and submerged piles be charted as shown on present survey.

AWOIS Item #03955, a charted row of visible piles in Latitude 46°25'51.20"N, Longitude 84°34'34.00"W originates with prior survey LS-1687 (1936). The row of piles was not verified by the present survey. A row of ~~submerged~~ piles found by the present survey in Latitude 46°25'52.59"N, Longitude 84°34'36.62"W is not considered the charted row of visible piles. The present survey row of ~~submerged~~ piles are 70.507 meters southwest of the charted row of visible piles. It is recommended the charted row of visible piles be revised to row of submerged piles and retained in the charted location. The row of submerged piles was brought forward from prior survey LS-1687 (1936) to supplement the present survey. It is also recommended the row of ~~submerged~~ piles found by the present survey be charted as shown on present survey.

AWOIS Item #03962, a charted pier ruins in Latitude 46°25'52.00"N, Longitude 84°34'47.00"W originates with prior survey LS-1687 (1936). The search area of the pier ruins was not adequately developed to verify or disprove the item. The field unit found a row of ~~submerged~~ piles from Latitude 46°25'58.19"N, Longitude 84°34'46.24"W, to Latitude 46°25'56.47"N, Longitude 84°34.44.82. The row of ~~submerged~~ piles found by the present survey is 61.153 meters northeast of the charted pier ruins. It is recommended the charted pier ruins be retained as charted. The pier ruins were brought forward from prior survey LS-1687 (1936) to supplement the present survey. It is also recommended that the row of ~~submerged~~ piles found by the present survey be charted as shown on present survey.

Prior survey LS-1829 (1944) covers a small area of the present survey east of Longitude 84°30'00"W. Depths form LS-1829 (1944) compare favorably and show a general trend of being one (1) foot shoaler than present survey depths. Soundings from prior survey LS-1829 (1944) in the following vicinities are ten (10) to twenty five (25) feet shoaler than present survey depths.

Corrections in red on this page per telecon with N/MOA232 9/8/88 MSM

Prior Depths	Latitude	Longitude	Present Depths
18-19	46°27'16"N	84°29'40"W	29-32
5-6	46°27'23"N	84°29'03"W	27-30
4-8	46°27'29"N	84°28'38"W	30-32

The soundings discussed above are along the south edge of the charted channel. It is apparent that the channel has been widened. These soundings are considered disproved.

Izaak Walton Bay was formerly Mosquito Bay as shown on prior survey LS-1829 (1944). It is recommended that the bay remain Izaak Walton Bay as verified by NOAA FORM 76-155, GEOGRAPHIC NAMES, dated 31 August 1987.

Prior survey depths from LS-1962 (1955) compare favorably and show a general trend of being one (1) to two (2) feet shoaler than present survey depths.

The difference between the present and prior surveys can be attributed to dredging operations in the present survey area and improved hydrographic methods and equipment.

Except as noted above the present survey is adequate to supersede the above prior surveys within the common area.

7. COMPARISON WITH CHART (14884 33rd Ed., 26 Feb. 1983)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and miscellaneous sources not readily available. The previously discussed prior surveys require no further consideration. The hydrographer makes adequate chart comparisons in section L. and pages 91-103 of the Descriptive Report. In addition to the recommendations in the Descriptive Report the following should be noted:

1) The following uncharted obstructions were detected during office processing. These obstructions were neither verified nor disproved by the field unit. It cannot be assured that the least depth was obtained. The obstructions are shown on the present survey in the following positions:

Obstruction Depth	Latitude	Longitude	Surrounding Depths
✓ 38	46°27'51.63"N	84°33'28.52"W	43-46
✓ 35	46°27'47.71"N	84°33'21.44"W	42-44
✓ 36	46°27'48.88"N	84°33'16.78"W	43-44
✓ 33	46°27'41.23"N	84°33'21.79"W	43-46
✓ 35	46°27'38.72"N	84°33'18.83"W	43-46
✓ 33	46°27'36.83"N	84°33'16.27"W	43-46
✓ 7	46°26'20.08"N	84°28'25.27"W	9

It is recommended the items listed above be charted in present survey locations. It is also recommended that a wire drag/side scan sonar investigation of these items be conducted at an opportune time.

2) AWOIS Item #3473, an obstruction in Latitude 46°26'22.70"N, Longitude 84°29'23.00"W originates with a 1:20,000 scale final reviewed Class III Photogrammetric Manuscripts TP-00205 of 1982-84. The obstruction was neither verified nor disproved by the field unit. The obstruction falls in an area behind the presently charted shoreline. As shallow as the water was the field unit could have performed a walking search. It is recommended the charted shoreline be revised as shown on the manuscript and, a submerged obstruction be charted as shown on present survey.

3) Spoil areas and small islands north of Cedar Point in the vicinity of Latitude 46°27'00"N, Longitude 84°30'00"W were not found by the present survey. Adequate developments of the area were not performed. Shoal depths to one (1) foot were found in the vicinity. It is recommended these items be retained as charted.

4) A large charted spoil island in the vicinity of Latitude 46°27'10"N, Longitude 84°29'00"W is much smaller. It is recommended the island be charted as shown on present survey.

5) Shoreline in the vicinity of Mission (Latitude 46°26'45"N, Longitude 85°35'30"W) has receded as much as 100 meters. The south tip of Bay Mill Point has accreted approximately 200 meters. It is recommended these areas be charted as shown on present survey.

Except as may be noted above the present survey is adequate to supersede the charted hydrography in the common area.

b. Controlling Depths

There are no conflicts between the present survey depths and project depths of a channel that runs through the St. Marys River shown on the chart.

c. Aids to Navigation

The hydrographer located fifteen (15) floating aids and five (5) fixed aids to navigation in the survey area. These aids appear adequate to serve their intended purpose.

8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions except as noted in section 4.b. of this report.

9. ADDITIONAL FIELD WORK

This is a good basic survey. Additional work is requested for items discussed in sections 6 and 7. of this report at an opportune time.

James B. Wilson
Cartographic Technician
Verification of Field Data

Norris A. Wike
Cartographer
Evaluation and Analysis

Robert R. Hill
Senior Cartographic Technician
Verification Check

Inspection Report
H-10194

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

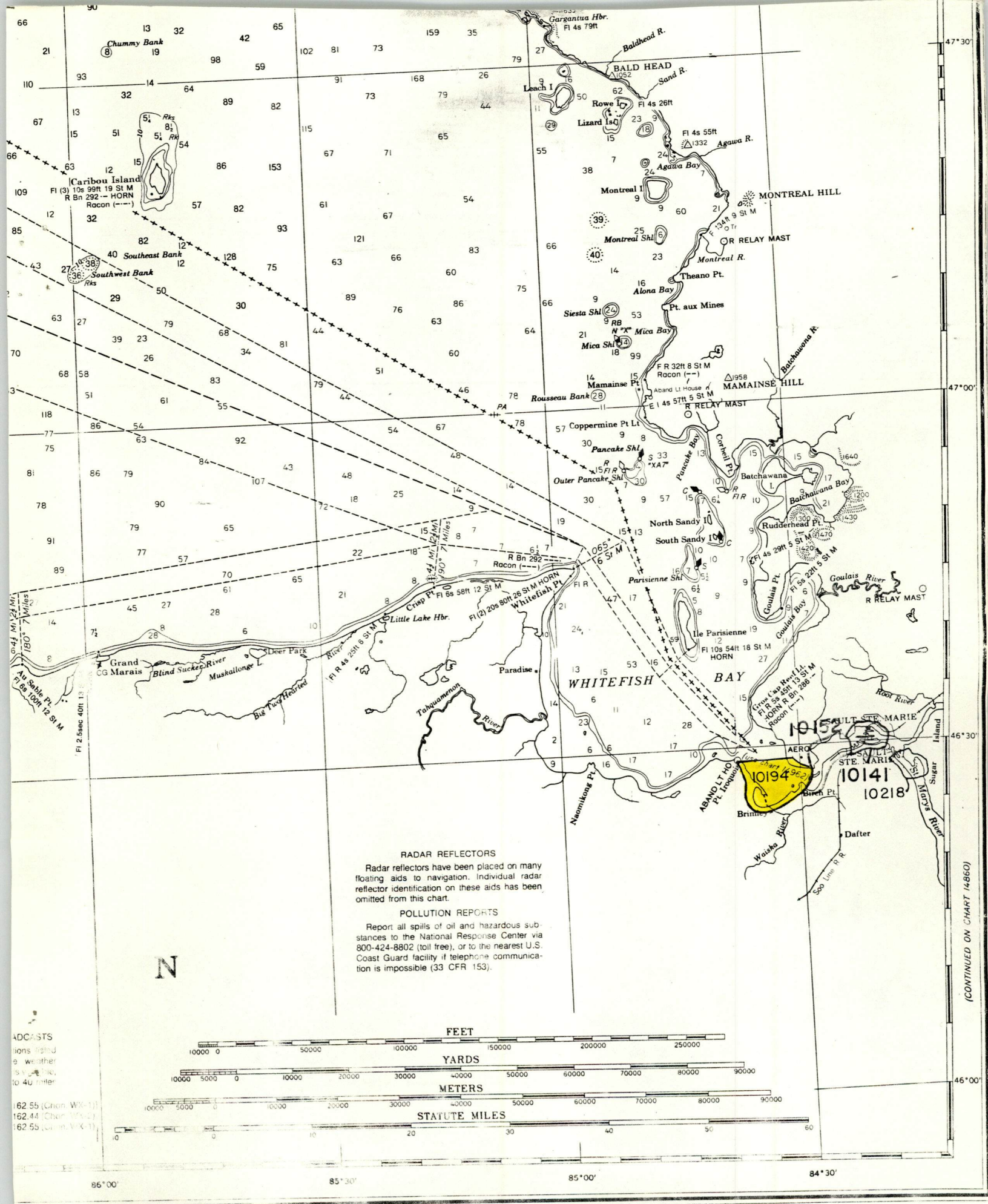
Inspected

Robert G. Roberson
Chief, Evaluation and Analysis Group
Hydrographic Surveys Branch

R. D. Sanocki
Acting Chief, Hydrographic Surveys Branch

Approved: 19 November 1987

Ray E. Moses, RADM, NOAA
Director, Atlantic Marine Center



(Lake Superior)

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

LS-9

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10194

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	10/27/89	Domingo	Full ~~Part Before~~ After Marine Center Approval Signed Via full application
			Drawing No. of soundings from SS
			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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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.