

9895

Diagram No. LS-5

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ... Hydrographic
Field No. WH-20-1-80
Office No. H-9895

LOCALITY

State Michigan
General Locality Lake Huron
Locality Northeast of Lakeport

1980

CHIEF OF PARTY
CDR F.P. Rossi

LIBRARY & ARCHIVES

DATE February 19, 1982

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

AREA 7
CHARTS:
14862
14865
14860

Received NOV 21 1983
GREAT LAKES SECTION

9895

HYDROGRAPHIC TITLE SHEET

H-9895

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.

WH-20-1-80

State Michigan

General locality Lake Huron

Locality Northeast of Lakeport
Southwest Coast BETWEEN LEXINGTON AND PORT HURON

Scale 1:20,000 Date of survey 7 July - 14 October 1980

Instructions dated 31 March 1980 Project No. OPR X115-WH/HSB-80

Vessel NOAA Ship WHITING, Launches 1014 (2932) and 1015 (2931)

Chief of party CDR Frank P. Rossi

Surveyed by N. Prahl, D. Mason, R. Mann, J. Gardner, D. Bland, J. Grant

Soundings taken by echo sounder, hand lead, ~~pole diver~~, Ross Model 5000

Graphic record scaled by WHITING Personnel

Graphic record checked by NP, DM, RM, JG, DB, JG Verification Branch (AMC)

Protracted by _____ Automated plot by HYDROPLOT

Soundings ^{verified} penciled by D.V. Mason & L.G. Cram Smooth Sheet by XYNETICS 1201 PLOTTER (AMC)

Soundings in ~~xxxxxx~~ feet at ~~xxxx~~ ~~xxxx~~ ^{Low Water Datum} Lake Level (IGLD 1955: 576.8 FEET)

REMARKS: All times are Coordinated Universal Time

Notes and changes made in red ink during verification.

STANDARDS CK'D 10-25-83

C.W.J.

DESCRIPTIVE REPORT
TO ACCOMPANY SURVEY
H-9895
WH-20-1-80

A. PROJECT

Hydrographic Survey H-9895, WH-20-1-80 was conducted under Project Instructions for Operation X115-WH/HSB-80, Lake Huron, dated March 31, 1980, as amended by the following changes:

<u>Change No.</u>	<u>Date</u>
1	04/04/80
2	04/11/80
3	04/23/80
4	05/21/80
5	07/16/80
6	07/23/80
7	09/09/80

The intent of this project was to complete contemporary basic hydrographic coverage of the inshore area from the five-fathom curve to the twenty meter curve, or until this survey junctioned satisfactorily with the U.S. Lake Survey to the West and the CHS surveys to the East.

B. AREA SURVEYED

The area surveyed was Lake Huron, Southwest Coast, bounded by 43°05.0'N latitude to the South, 43°13.3'N latitude to the North, 82°19.6'W longitude to the East, and 82°28.0'W longitude to the West. The survey was conducted from 7 July 1980 to 14 October 1980.

C. SOUNDING VESSELS

Sounding vessels for this survey were WHITING Launches 1015 and 1014, EDP numbers for these vessels are 2931 and 2932 respectively, and the NOAA Ship WHITING, EDP number 2930. All vessels were equipped with standard hydrographic equipment. Neither of the vessels encountered any mechanical problems during the survey.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Launches 1014 and 1015 are equipped with a Ross Model 5000 ^{Echo Sounders} Fathometer, serial numbers 1049 and 1087 respectively. The WHITING was also equipped with a Ross Model 5000 ^{echo sounders} fathometer, serial number 1052. Phase check calibrations were performed on the Ross Model 5000 in accordance with the Hydrographic Manual. These calibrations were conducted regularly and are noted on all fathograms. Analog and digital output compared satisfactorily and no instrument errors were observed. Bar checks were taken daily, weather and sea conditions permitting. The quality of bar checks varied with wind and sea conditions.

Velocity corrections were based on bar check averages checked with TDC casts at various times during the survey with a Martek Model 167 unit (s/n 127), one Nansen cast and one XBT cast. Data from

bar checks and TDC casts were compiled in direct comparison logs, and velocity corrections were computed in accordance with the Hydrographic Manual. All velocity corrections for Tables I and II were based on bar check averages, TDC cast data, Nansen cast data and XBT cast data. Velocity corrections for Tables III and IV were based on bar check averages and TDC cast data only. Velocity corrections were zero for the data run by VESNO 2930, ^{Table #5 was added by verifier} ~~so there is no velocity table~~. Velocity and TRA corrections were applied to all soundings on the field sheet. The launches were run at a variety of speeds from 1500 RPM's to 2600 RPM's, and the Ship was run at 300 RPM's with six foot of Pitch. Settlement and Squat Trials were run on Launch 1014 on 10 July 1980, JD 192, on Launch 1015 on 1 September 1980, JD 251 and on 2930 on 22 September 1980, JD 266. The graphs and corresponding tables for settlement and squat are included in the appendix. All depths noted in this report are referenced to low water datum. (1610'1955) See Verification Report section 4.a.

E. HYDROGRAPHIC SHEETS

The field sheets were prepared by WHITING personnel using a Houston Instruments DP-3 Roll Plotter, s/n 4860-1. For processing purposes, the area was divided into two plotter sheets. Plotter origins for the sheets are as follows:

<u>NORTH</u>	<u>SOUTH</u>
43°08'12"N	43°03'30"N
82°33'06"W	82°33'06"W

A total of four plotter sheets are submitted with this survey. One pair covers the main scheme lines and crosslines, the other pair contains

The developments, bottom samples, buoys, and detached positions done on H-9895.

F. CONTROL STATIONS

The following signals were used for electronic positioning sites, or for calibration signals.

<u>SIGNAL</u>	<u>DESCRIPTION</u>	<u>YEAR</u>	<u>LIGHT LIST NO.</u>
100	Casey (Port Sanilac Argo)	1980	
102	Poth (Bayfield Argo)	1980	
113	Lexington Harbor East Breakwater Lt.	1979	1232
114	Lexington Harbor West Breakwater Lt.	1979	1232.1
241	H-32-MI-80-CAL		
133	H-33-MI-79		
136	H-36-MI-79		
137	H-37-MI-79		
138	H-38-MI-79		
201	Ton, 1980		
401	Harbor Beach Light	1858	1235
402	Harbor Beach S. Pier Light	1912	1236
405	Harbor Beach Cable TV Mast	1980	
406	Harbor Beach Edison Stack	1980	

Stations 100 and 102 were used as electronic control sites and positions for these two stations were obtained from NGS published horizontal control data. *concur*

Stations 113, 114, 133, 136, 137, 138, 401, 402, 405, and 406 were used as calibration signals. Positions for all stations were obtained from NGS published horizontal control data. *These stations were deleted from the control file. They were not used to control the survey and they fell off the sheet limits.*

Stations 241 and 201 were also used as calibration signals. Station 201 was established by WHITING personnel in 1980 to third order, second class standards by means of traverse. Station 201 was monumented and is recoverable.

Station 241 was established by WHITING personnel in 1980 and is a non-recoverable calibration point. All computations will be submitted to Operations Division, Atlantic Marine Center, Norfolk, Virginia upon completion of OPR-X115-WH-80.

G. HYDROGRAPHIC POSITION CONTROL

The range-range hydrography was performed by Launches 1015 and 1014, and the WHITING. Both launches and the WHITING were equipped with an Argo Control and Display Unit, Range Processing Unit and Chart Recorder. The hydroplot system was used in all range-range work. Slave Argo stations were chosen so that hydrography was run where intersections of rates was greater than 30° and less than 150° . Ranges and depths were recorded in real time using RK-112.

Calibrations were taken two to three times daily, in accordance with the Hydrographic Manual. Daily correctors were computed by three-point fixes and by known ranges from Stations 241 and 113 to Stations 100 and 102. Distances of 222.60 lanes to Station 100

and 824.26 lanes to Station 102 were computed for calibrating with the bow of the launch next to the signal on Station 241. The following CDU/RPU, Chart Recorder pairs were used during the Project:

<u>JD</u>	<u>VESSEL</u>	<u>CDU S/N</u>	<u>RPU S/N</u>	<u>CHART RECORDER S/N</u>
189-232	2931	C074824	R047851	S097948
191-193	2932	C037953	R047840	S097958
193-240	2932	C047822	R047840	S097958
199,288	2930	C037953	R0379118	S097948

H. SHORELINE

No shoreline or inshore features are within the survey limits. *Concur*

I. CROSSLINES

The percentage of crosslines run on this survey was 9.0%. Forty-one nautical miles of crosslines were run. Agreement with main scheme lines was excellent, with agreement of 0-2 feet in all cases.

Crosslines were run in a North to South direction to the East and West main scheme lines. *Concur*

J. JUNCTIONS

H-9895 junctions to the Southwest with Sheet No 1 of 7, File #1-1968, 1:10,000 scale, 1956; to the West with Sheet No 2 of 7, File #1-1969, 1:10,000 scale, 1956; to the Southwest with COE 1930, 1:20,000 scale, 1952; to the east with CHS Sheet 3918, 1:50,000 scale, 1976; and to the northwest with Sheet No 3 of 7, File #1-1970,

1:10,000 scale, 1956. The survey also junctions to the north with unverified survey, H-9898, which was completed in 1980 by the WHITING. During the entire period of this survey, the lake level was approximately 3.0 feet above datum. The difference in depth was not applied to the smooth data, but was taken into consideration when junctioning with the prior surveys.

H-9895 was junctioned with Sheet No 1 of 7, File #1-1968, 1:10,000 scale, 1956, to the southwest. Junctioning was done in the area bounded by:

North:	43°07.1'N	East:	82°23.0'W
South:	43°05.0'N	West:	82°26.0'W

Junctioning agreement was within 0-2 feet in all areas.

H-9895 was junctioned with Sheet No 2 of 7, File #1-1969, 1:10,000 scale, 1956, to the west. Junctioning was done in the area bounded by:

North:	43°10.8'N	East:	82°25.0'W
South:	43°07.4'N	West:	82°28.0'W

Junctioning was excellent. Agreement was within 0-1 foot in all areas.

H-9895 was junctioned with COE 1930, 1:20,000 scale, 1952, to the southwest. Junctioning was done in the area bounded by:

North:	43°05.9'N	East:	82°24.9'W
South:	43°05.0'N	West:	82°26.3'W

Junctioning agreement was within 0-1 foot in all areas.

H-9895 was junctioned with CHS Sheet 3918, 1:50,000 scale, 1976,
to the east. Junctioning was done in the area bounded by:

North: $43^{\circ}09.9'N$	East: $82^{\circ}19.8'W$
South: $43^{\circ}05.0'N$	West: $82^{\circ}22.5'W$

Junctioning agreement was within 0-2 foot in all areas.

H-9895 was junctioned with Sheet No 3 of 7, File #1-1970, 1:10,000
scale, 1956, to the northwest. Junctioning was done in the area
bounded by:

North: $43^{\circ}13.2'N$	East: $82^{\circ}27.2'W$
South: $43^{\circ}10.9'N$	West: $82^{\circ}28.0'W$

Junctioning agreement was within 0-2 feet in all areas.

H-9895 was junctioned with Survey H-9898, 1:20,000 scale, 1980,
to the north. Junctioning agreement was within 0-2 foot in all
areas. *See Verification Report, section 5.*

K. COMPARISON WITH PRIOR SURVEYS

No prior surveys were available for comparison with H-9895.
See Verification Report, sections 4.d. and 6.

L. COMPARISON WITH THE CHART*See Verification Report, section 7*

Survey H-9895 was compared with NOS Chart 14865, 1:15,000 scale, 11th Edition, January 12, 1980. Comparisons were made in the area bounded by:

North: 43°08'23"N	East: 82°20'50"W
South: 43°05'00"N	West: 82°27'20"W

Overall comparison with the Chart was within 0-3 feet in all areas.

There was a ~~nine-foot~~ discrepancy in the area surrounding the charted "crib" centered at 43°07.6'N, 82°23.5'W. The charted depth in the area is 37 feet whereas the survey found the depths to be ^{from 41-6} ~~49~~ feet. Accounting for the 3 feet above normal lake level at the time of the survey, it is determined that the actual depth is ^{4.6} ~~4~~ feet deeper than the charted depth. The depth over the crib is charted as 41 feet. The survey found it to be ^{38.0} ~~35.5~~ feet which (Pas #1094) is ³ ~~2~~ feet shallower than the charted depth. The remainder of the depths in that area agree within 0-3 feet. *The least on the crib is 38.0 feet. See p. 14 of this Report.*

A ⁷ ~~5~~ foot discrepancy was found in the shoal area charted at 43°05.9'N, 82°24.⁵ ~~4~~'W. The charted depth in the area is 28 feet while the survey depth in that area was found to be ^{from 35} ~~33~~ feet. Taking into consideration the increase in lake level during the survey, the survey depths ^{are from 7 to 5} ~~is~~ ⁵ feet deeper than the charted depth. *concur*

*See Verifier's Rpt.
Sec. 7.a.5*

Another area bounded by:

3 North: $43^{\circ}07'20''\text{N}$ East: $82^{\circ}22'15''\text{W}$
 South: $43^{\circ}06'50''\text{N}$ West: $82^{\circ}23'00''\text{W}$

has charted depths of from 33 feet to 46 feet. The survey depths in that area were found to be from 37 to ⁴⁹50 feet. Depths of from

5 to 7 feet deeper than the charted depths were found in this area.

This is in the area described on page 14 (mounds) Development #5 of this Report. However the development does not include the 33, 30, 34 ft. charted depths. See Verification Report section 7. a. X2

Survey H-9895 was compared with NOS Chart 14862, 1:120,000 scale,

23rd Edition, July 29, 1978. Comparisons were made in the area

bounded by:

North: $43^{\circ}13.3'\text{N}$ East: $82^{\circ}19.6'\text{W}$
 South: $43^{\circ}05.0'\text{N}$ West: $82^{\circ}28.0'\text{W}$

In general, depths agree within 1-4 feet in all areas.

There are three areas where there are discrepancies greater than

four feet. The first is centered at $43^{\circ}08.6'\text{N}$, $82^{\circ}25.1'\text{W}$. The

charted depths in the area are 25-29 feet. The survey depths found

in the area are from ²⁸43 to ³³47 feet. Taking into consideration

the 3-foot increase in lake level during this survey, the actual

depths found were from ²⁸40-³³44 feet. Depths of as much a ⁸9 feet

deeper than those on the chart can be found in this area.

5 The second area is centered at $43^{\circ}07.1'N$, $82^{\circ}23.8'W$. The charted depth in the area is 37 feet. The corrected depths found during this survey were 42-44 feet. Depths of as much as 7 feet deeper than the charted depths were found in this area.
See Verification Report, Section 7. a. 4.

6 The third area is an area surrounding a charted wreck. The charted depth over the wreck, which is centered at $43^{\circ}09.1^{\frac{2}{1}}'N$, $82^{\circ}21.4^{\frac{4}{1}}'W$, is 29 feet. The corrected least depth found during this survey over the wreck was 37.4 feet. This was a diver * This is the "Price" wreck, 700' ore ship lying upside down on the bottom. leadline least depth which was measured by divers holding a leadline on the shoalest part of the wreck. The survey depth is 8.4 feet deeper than the charted depth over the wreck.
See page 12, Item 15 of this report.

~~Survey H-9895 was compared with NOS Chart 14860, 27th Edition, February 9, 1980, 1:500,000 scale. Comparisons were made in the area bounded by:~~

North: $43^{\circ}13.3'N$	East: $82^{\circ}19.6'W$
South: $43^{\circ}05.0'N$	West: $82^{\circ}28.0'W$

~~The entire survey was compared with NOS Chart 14862, 1:120,000 scale. There were no discrepancies found on Chart 14860 which were not discussed under the comparisons with Chart 14862.~~

Item Investigation:

Pre-Survey Review Items:

Item #15

Charted Item: Wreck - "PRICE", 700' ore ship
*sunk lying upside down.*Charted Position: 43°09.25'N
82°21.8'W

Charted Least Depth: 29 feet

Source: Undetermined, 1946-1948.

Signs of PSI #15 were first noted on the fathogram on JD 191.

A 19-foot spike ^{from the bottom} was noted at position 5176.⁺¹ The ~~least~~ depth was ⁴³44 feet in 63 feet of water. The wreck was developed on

JD 233, Positions 1095-1122 to 100 meter spacing East to West

lines and to 100 meter spacing North to South lines. The least echosounder

depth found over the wreck at this time was ^{1.6}52.9 feet atPosition 1122.⁺⁵

On JD 198 and 199 diving was done on PSI #15. The diver leadline

least depth over the wreck was 40.2 feet. ^(uncorrected) The GP over theleast depth of the wreck is 43°09'06.⁹⁵46"N, 82°21'44.^{45.31}70"W atPosition 903.³ It is recommended that the charts affected bere-evaluated and updated according to the findings of this survey. *concur**The ^{corrected} least depth for this wreck is 37-ft. at Pos #903, by divers & leadline. There are a number of indications of this wreck; both on the main scheme hydro (Pos #5176+1) and the developmental hydro. (Position numbers 1097+4, 1121+5) but none shallower than the depth at Pos #903. These positions and/or soundings all fall within the 700-ft. length of this wreck.*

PSI #16

Charted Item: Wreck

Charted Position: 43°02.85'N, 82°23.01'W

Charted Least Depth: 15 feet

Source: Undetermined (prior to 1952)

See insert in this report ✓Diving was performed on ^{PSI}PSI #16 by the WHITING divers on JD 240.

One diver leadline least depth and two DP's were taken on the

wreck to determine its limits. The ^{corrected} least depth was ¹⁰21.0 feet
at lat. 43°02'40.97"N, long. 82°23'17.42"W~~on the bow of the wreck at~~ (Position 1125). The GP for the bow(position 1124) of the wreck is 43°02'39.⁷⁶07"N, 82°23'18.^{18 28}93"W. * Another DP was obtainedon the stern of the wreck at Position 112^{3*}. The GP for the sternis 43°02'4^{42.18}1.48"N, 82°23'1^{16.56}8.20"W. The divers determined that the

length of the wreck is 132.0 feet, the width is 22.0 feet and that

the wreck's orientation is SW/NE. * Pos. No. 1123 is the northeast end of debris of this wreck
* Pos. No. 1124 is the southwest " " " " " "*The distance between these two positions is approximately 258 ft. This note added by L.G. Crow
after discussion with Lt. J.G. Gardner, O.I.C. 1/9/82.*

It is recommended that the Charts affected be re-evaluated and updated

according to the findings of this survey. *concur! This wreck was plotted on
seperate overlay and is included with this report.*Charted Features:Development "4A"

Charted Item: Water Intake Crib

Charted Position: 43°07.6'N
82°23.5'W ✓

Source: NOS Charts 14862, 14860, 14865

On JD 233 the area of the crib was developed from Position 1087-1093

at 100-meter East to West spacing, and one North to South crossline

was run in the center of the development. A DP was taken and a ~~least~~ echosounderdepth of ^{38.0}35.5 feet was obtained on the crib at Position 1094,GP 43°07'3^{85 29}4.49"N, 82°23'3^{28.82}0.27"W. ✓

The charted least depth over the crib is 41 feet, while the survey least depth was ^{38.0}35.5 feet. This depth is $\frac{2}{3}$ feet shoaler than the charted depth. It is recommended that the charts be re-evaluated and updated according to the findings of this survey. ¹⁶⁶
See Verification Report, section 7. a. 1)

New Items:

Development "5" ✓

Diving was performed on an area, which was found during the survey indicating a wreck or a spoil area, on JD 199. The divers found the area to be clay mounds rather than a wreck. On the same day the area was developed from Position 907-942 at 100-meter spacing North to South lines, and East to West lines, and a DP at Position 906 was obtained over the center of the clay mounds. The GP for this position is 43°08'01.61"N, 82°22'15.15"W. The analog trace for that day's work was misplaced*, so the development was rerun on JD 233 from Position 1036-1074, to 100-meter spacing North to South and East to West lines. The ^Aleast depth found during this run of the development was ^{42.0}40.0 feet at Position 1036. ¹¹²GP for that position is 43°07'^{25.24}24.86"N, 82°22'^{09.83}11.25"W. * Data found during verification of survey. The data was looked at and was not plotted. * This area was rerun as stated and nothing significant was not found on the rerun. * (rejected by field) ?

It was found through discussions with the Corps of Engineers, that the area is in fact clay mounds, which are dredge spoils from the St.

Clair River. The area had been previously indicated as a spoil

The shallowest depth on these mounds is at position number 456+1 (Lat. 43°06'53.72" Long 82°22'36.82") and is a 37-ft. sounding. This was found on a main scheme line.

area on the NOS Charts, but when the Charts were updated, the spoil area was deleted from the charts. Since the spoil area is being used by the Corps of Engineers, it is recommended

that Charts 14862 and 14865 depict the spoil area.

Chart editions from the present back to the early 1960s do not indicate the subject spoil area.

DEVELOPMENT "WRECK"

Diving was performed on JD 203 by WHITING divers on an area pointed out to WHITING divers by local divers as having a non-charted wreck. The diver least depth obtained on the wreck was ⁶49.0 feet. The wreck was developed on JD 204 from Positions 1008-1035 at 100-meter spacing East to West lines, and to 50-meter spacing North to South lines. The development least depth over the wreck was ¹²50.5 feet at Position 1027¹², GP 43°08'48.58⁹"N,

82°22'20.76"W. * This depth is corrected for -3.0-ft. water level but not for TRAF Velocity. The reduced value is 52.0 ft. The ^{46.0}49.0 ft uncorrected leadline depth was inserted here as no positional data exists for that depth.

The charts should be re-evaluated and updated and the wreck be put on the chart at the position above. CONOUR
See enclosed copy of fathogram for a description of the wreck.

SIX FOOT SPIKE

On JD 268 diving was performed on a spike found on the fathogram for JD 194 at Position 5745-5746. The spikes indicated a wreck or a spoil area. Ridges of clay mounds were found by the divers. The least depth found over the area was 56 feet at Position 6045, GP ^{5745+3 also 56'} 43°09'03.12⁴"N, 82°21'10.08⁴"W. (by fathometer) This area is probably more dumping

46 FT WRECK
ON HYDRO SWATH
9895
N. TO M. PUT OUT
ON THIS
WITH 46 FT
4-15-82

from the St. Clair River. It is recommended that the charts affected be evaluated and updated according to the findings of this survey. ~~See Verification Report, section 7. a. b. concur.~~

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supercede prior surveys.

N. AIDS TO NAVIGATION

The following is a list of aids to navigation on H-9895.

<u>Position No.</u>	<u>Geographic Position</u>	<u>Description</u>
1004	43°04'26.5 ⁵ "N 82°24'56.1 ⁷ "W	"9" Fl 4 sec.
1005	43°04'25.3 ⁸ "N 82°24'44.7 ⁸ "W	R "10" FIR 4 sec.
1006	43°05'27.9 ⁹ "N 82°24'37.2 ⁴ "W	R "12" FIR 4 sec.
1007	45°05'28.8 ² "N 82°24'47.5 ⁸ "W	"11" Fl 4 sec. horn

⁴ Positions for the remainder of the aids to navigation, buoys "1" QK fl through R "8" QK FIR, which were not on the limits of H-9895 were obtained and are included in the records. All positions are in excellent agreement with the chart. *Concur * Plotted on separate overlay and inserted in this report.*

O. STATISTICS

<u>VESNO</u>	<u>NUMBER OF POSITIONS</u>	<u>TOTAL MILES</u>
2931	978	255.891
2932	947	236.595
2930	50	2.253

Total Miles of Hydro : 497.739
 Water Levels Established: 1
 Total Positions : 1,975

P. MISCELLANEOUS

On JD 199 Bottom Samples were done on the South survey sheet by Launch 2931 * (positions 1000-1013). On JD 203 positions were obtained of the Buoys on the South survey sheet by Launch 2932 (positions 996-1007). * These position renumbered during verification.

On JD 204 development "Wreck" was run on the South survey sheet by Launch 2932 (positions 1008-1035). * Positions 1000-1013 are therefore duplicated because they were run at different times by two different launches on the same sheet. * renumbered

On JD 190 one mainscheme line and crosslines were run on the South survey sheet by Launch 2932 from Positions 1-82. There were control problems with the data, so all of it was rejected. The data is included in the records, but it was not used in smooth plotting.

concur

On JD 199 developments were run on the South survey sheet by Launch 2932 from Positions 907-995. The analog trace was scanned and noted on the Raw Data Printout, but the ^{*}analog record was later borrowed during an open house so the data was rejected. The developments were rerun on JD 233. The data for JD 199 is included in the records but was not used for the smooth plot of the sheet.

** This record found during E & A see page 14 of this report.*

On JD 197 developments were run on the North survey sheet by Launch 2931, from Positions 5799-5869. The closing calibration for that day's data was 29 lanes lost on P_1 and 7 lanes gained on P_2 . The days data and the lost and gained lanes could not be accounted for, so the data was rejected. On JD 212 and 232 from Positions 5952-6044, the developments were rerun using Launch 2931. The data from all three days is included in the records, but only JD 212 and 232 development data was smooth plotted. *concur*

On JD²⁸⁸~~283~~ Vesno 2930 ran two mainscheme pick-ups on the North survey sheet, Position 9039-9046. The opening calibration was done using sextant cuts at Harbor Beach, the closing calibration was by whole lane count at Buoy R"12". The P_2 station had apparently lost one lane which could not be found on the sawtooth graph. The data was rejected. On JD ²⁸⁸~~233~~ the same two pick-ups were rerun by VESNO 2930, Position 9047-9052. The opening calibration was done by whole lane count at Buoy R"12" and the closing calibration was done with sextant fixes at Harbor Beach. The data was hand plotted on the smooth^{field} sheet with velocity and TRA corrections applied.

Q. RECOMMENDATIONS

Refer to Item Investigation recommendations.

R. AUTOMATED DATA PROCESSING

<u>Program No.</u>	<u>Description</u>	<u>Version Date</u>
RK112	R/R Real Time Hydroplot	04/11/80
RK201	Grid & H/R Lattice Plot	04/18/76
RK300	Utility Computations	07/25/78
RK330	Reformat & Data Check	05/04/76
AM530	Layer Corrections for Velocities	05/10/76
AM602	Extended Line Oriented Editor	05/21/75
AM407	Geodetic Inverse/Direct Computation	09/25/78
RK612	Line Printer Listing	03/22/78
RK211	R/R NRT Plot	07/25/80
RK561	Geodetic H/R Calibration	02/19/75
PM360	Electronic Corrector Abstract	02/02/76

S. REFERENCES TO REPORTS

None.

APPROVAL

Supervision of all field and office work on this hydrographic survey was continuous on a day to day basis to ensure completeness of the survey and that all work was done in accordance with the Project Instructions.

Approved/Forwarded

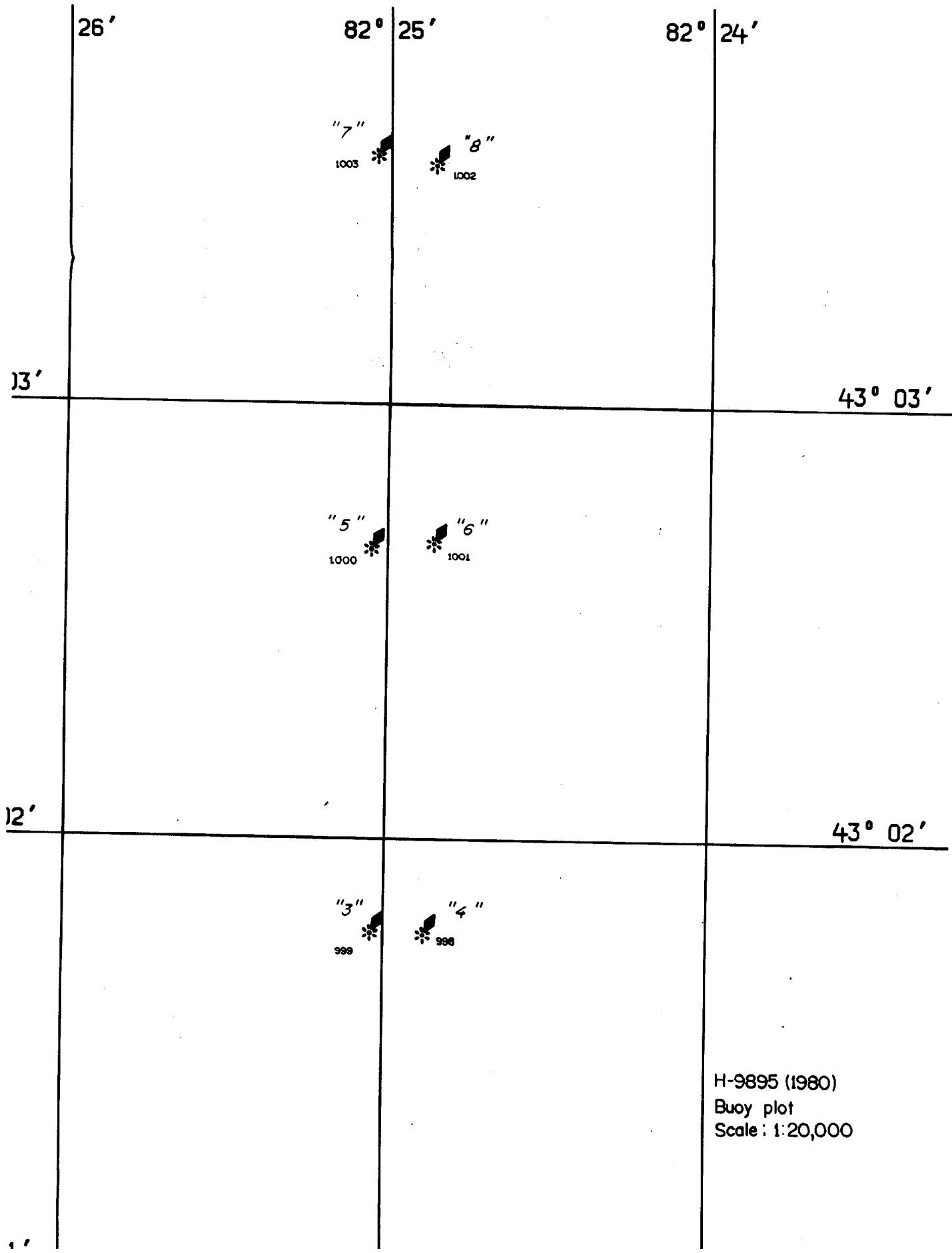
Frank P. Rossi

Frank P. Rossi
CDR, NOAA
Commanding Officer, NOAA Ship WHITING

Respectfully submitted

Deborah A. Bland, LTJG, NOAA

Deborah A. Bland, LTJG, NOAA



26'

82° 25'

82° 24'

"7"

1003

"8"

1002

13'

43° 03'

"5"

1000

"6"

1001

12'

43° 02'

"3"

999

"4"

998

H-9895 (1980)
Buoy plot
Scale: 1:20,000

82° 24'

82° 23'

82° 22'

43° 03'

1123
1125
1124

43° 02'

H - 9895
PSR NO. 16
SOUNDING PLOT
Scale: 1:20,000

43° 01'

SPL11-18-81°
82° 24'

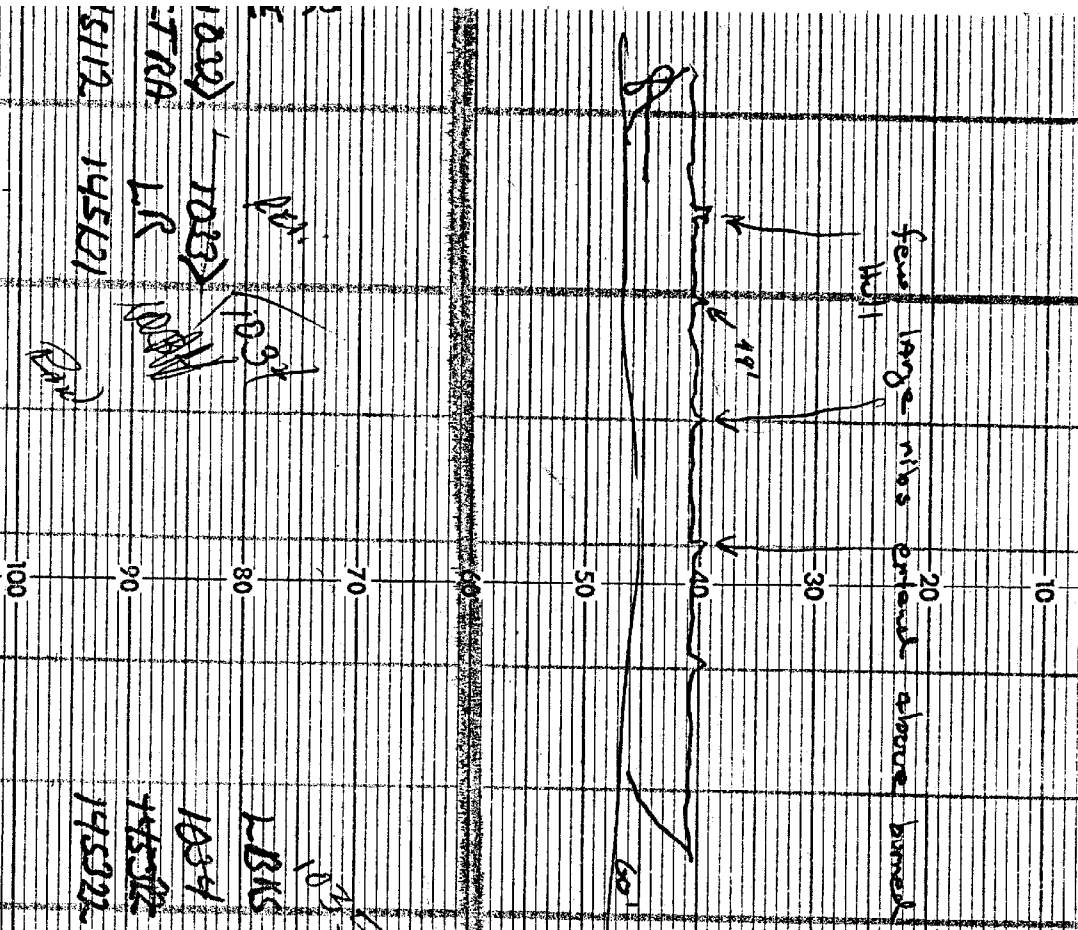
82° 23'

82° 22'

DIVER'S notes:

WRECK IN 60' OF WATER. STURGE Gaps... OLD WOODEN
 LAKE IN BEACHES FOR REEF. SCHEDULE THE
 STRIPED OF RIGGING AND USED AS BRIDGE. FINALLY
 ALL DECK MACHINERY TOWED OFF AND SHIP
 BURNED TO WATERLINE AND SUNK. SHIP TO DOUBLE
 HULLED SITTING ON REEF ON BOTTOM (MELT DOWN
 ON INSIDE OF HULL (LONG SPACES THRUOUT EMBLE
 etc.) OUTSIDE HULL CATCHES SWAY (BURNED TO
 WATERLINE) LEAST DEPTH 49.0 FT WITH LOCAL LINE

50 CSR 33-21X



END of Development
 GARDNER'S WRECK

1032 1033 1034
 TRA L.R. 1034
 15112 145121
 1034
 145322
 145322

70
 sounding volume shows
 that 49.3' ^{*may have} diameter 3.8'
 DECK ON T.D. - 203
 *see Descriptive
 Report



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
NOAA Ship WHITING
439 W. York Street
Norfolk, Virginia 23510

November 14, 1980

TO : AMC Processing, OA/CAM

FROM : *Frank P. Rossi*
Commander Frank P. Rossi, NOAA
Commanding Officer, NOAA Ship WHITING

SUBJECT: 1980 Lake Huron Surveys: Depth Discrepancy between
WHITING's Surveys and Canadian Surveys.

In late October I talked with Ross Douglas, Canadian Hydrographic Service, Burlington, Ontario, about our junction problem with the Canadian Surveys. He said that they were having problems with these Canadian Surveys, and indicated they were rejecting some of the work. The surveys were primarily for limnological studies and hydrographic use of them was secondary.

The fact that our junctions get worse the further one is from Port Huron - Sarnia would indicate that the CHS may be experiencing a problem with the propagation velocity they used. They did not calibrate the Mini-Fix on the United States side of their work. A modest error in the propagation velocity will produce a considerable position error when carried to distances greater than 30 miles.

The WHITING generally did not work more than 15 miles from a calibration site; therefore, there should be little error (less than 10 meters) in the WHITING's positions.

✓



WH-20-1-80

SIGNAL TAPE

100	6	43	26	00309	082	32	20465	250	0000	164510	CASEY (Pt. Sanilac Argo)
102	6	43	34	20443	081	42	30102	250	0000	164510	POTH (Bayfield Argo)
113	6	43	15	59799	082	31	22233	139	0000	000000	LEXINGTON E. BRK. LT.
114	6	43	16	02819	082	31	24754	139	0000	000000	LEXINGTON W. BRK. LT.
241	6	43	15	04550	082	31	26101	139	0000	000000	H-32-MI-80-CAL
133	6	43	14	28565	082	31	25148	139	0000	000000	H-33-MI-79
136	6	43	10	23631	082	30	15509	139	0000	000000	H-36-MI-79
137	6	43	08	49889	082	29	42935	139	0000	000000	H-37-MI-79
138	6	43	08	27344	082	29	37144	139	0000	000000	H-38-MI-79
201	6	43	09	50557	082	30	02200	139	0000	000000	TON
401	6	43	50	44300	082	37	53101	139	0000	000000	HARBOR BEACH LIGHT
402	6	43	50	37701	082	37	51970	139	0000	000000	HARBOR BEACH S PIER LT
405	6	43	51	28535	082	39	29230	139	0000	000000	HARBOR BEACH CABLE TV ANTENNA
406	6	43	51	06495	082	38	37261	139	0000	000000	HARBOR BEACH EDISON STACK

*deleted
from
file, not
used on
survey*

VELOCITY TAPE I

VESSEL 2931

JD 189-212

000070	0	0000	0001	000	293100	009895
000200	0	0002				
000340	0	0004				
000560	0	0006				
001150	0	0008				
999999	0	0000				

VELOCITY TAPE II

VESSEL 2932

JD 191-212

000010 1 0000 0002 000 293200 009895

000030 1 0002

000700 1 0004

001150 1 0002

999999 0 0000

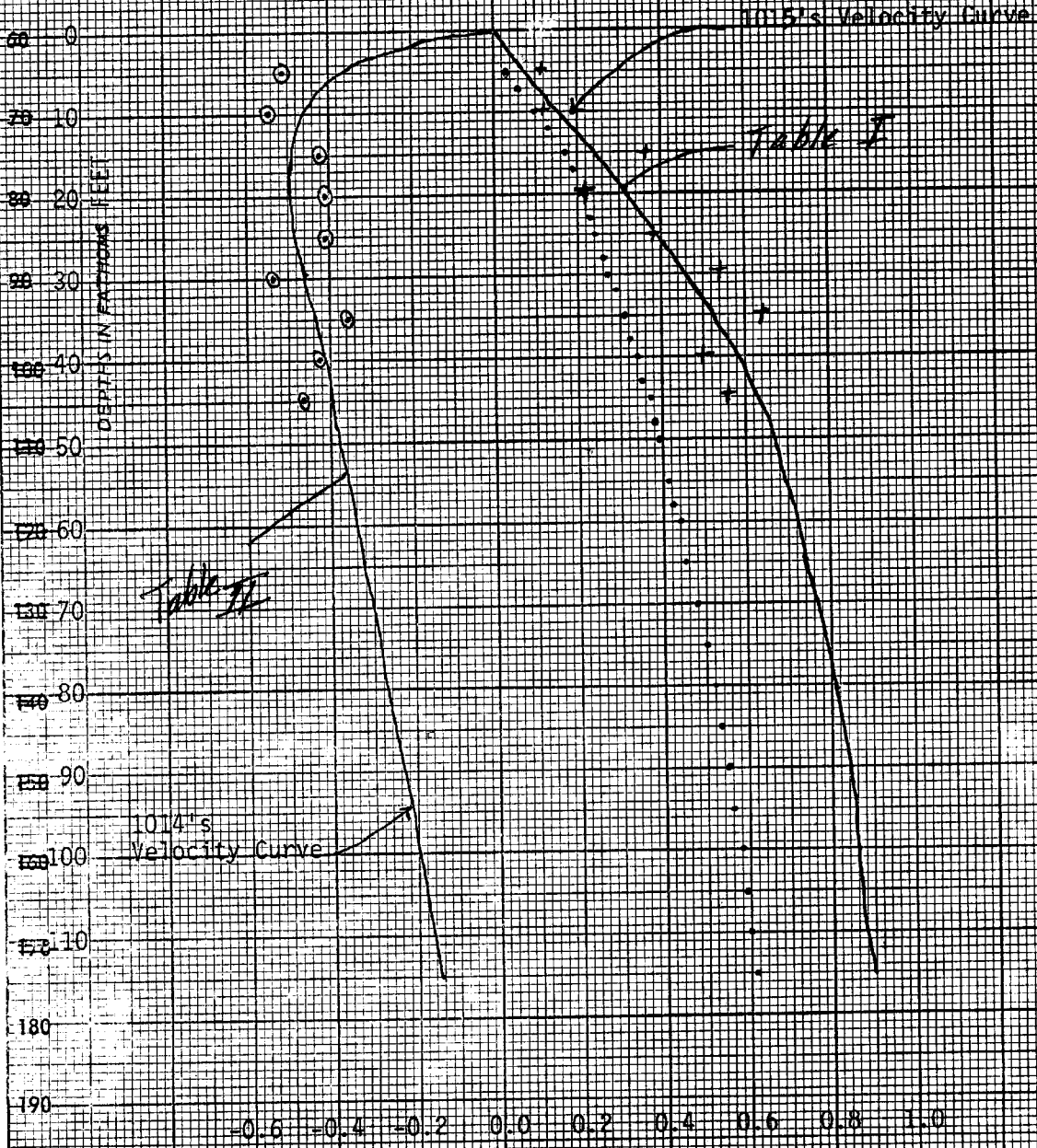
(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET ESTIMATED

1014 Bar Check Averages
 1015 Bar Check Averages
 Average of: Six ADC casts
 One XBT
 One Nansen
 cast

NOAA FORM 12-21	U.S. DEPARTMENT OF COMMERCE	
NOAA	NATIONAL OCEANIC SURVEY	
VELOCITY CORRECTIONS		
Ship	NOAA SHIP WHITING	
Officer	CDR Frank P. Rossi	
These corrections are to be used		
between JD 189 1980 and JD 212 1980		
in the locality of Lake Huron		
Southwest Coast		
for hydrographic surveys No. H-9835		

(For deep water add a 0 to these figures)



NO. 20 1/2 TO 1 1/2 INCH
 KEUPLER & PEPPER CO.

6 1240
 IN U.S.A.

VELOCITY TAPE III

VESSEL 2931

JD 232-233

000020	0	0000	0003	000	293100	009895
000132	0	0002				
000205	0	0004				
000307	0	0006				
000482	0	0008				
000592	0	0006				
000730	0	0004				
000850	0	0002				
999999	0	0000				

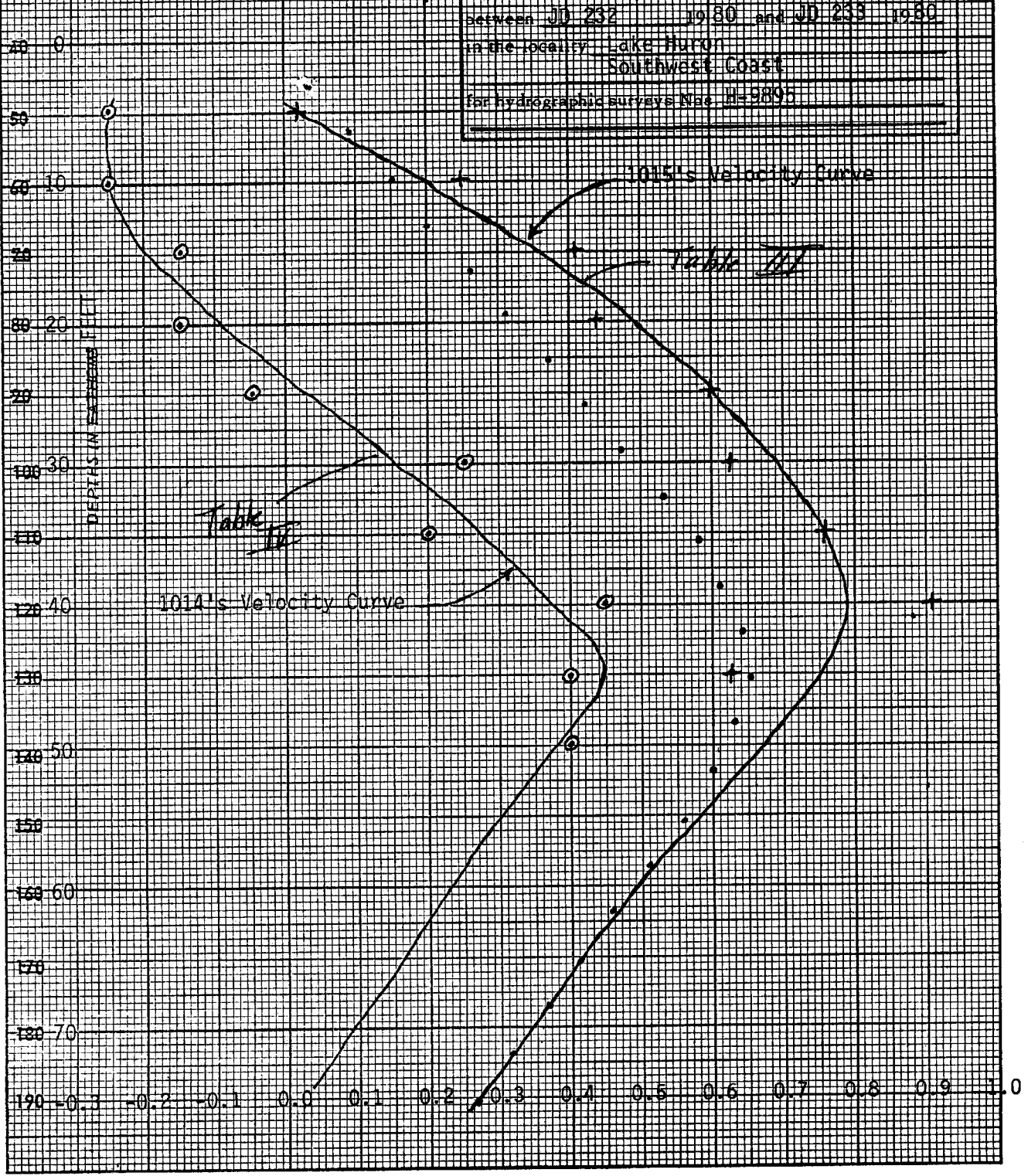
(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET FATHOMS

10 1014 Bar Check Averages
 20 1015 Bar Check Averages
 30 TIC JD 233

NOAA FORM 1122-1 11/82	U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY
VELOCITY CORRECTIONS	
SHIP <u>NOAA SHIP WHITING</u>	
CDR Frank P. ROSSI	Comdr.
These corrections are to be used	
between JD 232 1980	and JD 233 1980
in the locality <u>Lake Huron</u>	
<u>Southwest Coast</u>	
for hydrographic surveys No. <u>W-9895</u>	

(For deep water add a 0 to these figures)



20 X 20 TO THE INCH 16 1240
 7 X 10 INCHES
 KEUFFEL & ESSER CO.

SETTLEMENT AND SQUAT TRIALS

Settlement and squat trials were run on launches 1014 and 1015 in Lake Huron, Michigan, in July and September 1980. Trials were run at a point of known depth, marked by a buoy. Results are the average of one run towards the buoy and one run away from the buoy with marks being taken when the buoy was abeam the transducer. The speeds and results are listed below.

<u>SPEED IN RPM's</u>	²⁹³¹ <u>CORRECTION 1014</u>	²⁹³² <u>CORRECTION 1015</u>
600	+0.10	+0.00
800	+0.10	+0.10
1000	+0.30	+0.10
1200	+0.30	+0.20
1400	+0.30	+0.20
1600	+0.30	+0.30
1800	+0.30	+0.40
2000	+0.40	+0.10
2200	+0.20	+0.10
2400	-0.10	-0.20
2600	-0.40	-0.40

Corrections for settlement and squat are made on the TC/TI Tape. Periods of reduced speed during actual hydrography are noted in the sounding volumes and on the printouts.

See the attached graph of the correctors versus RPM's for each vessel.

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET, FATHOMS

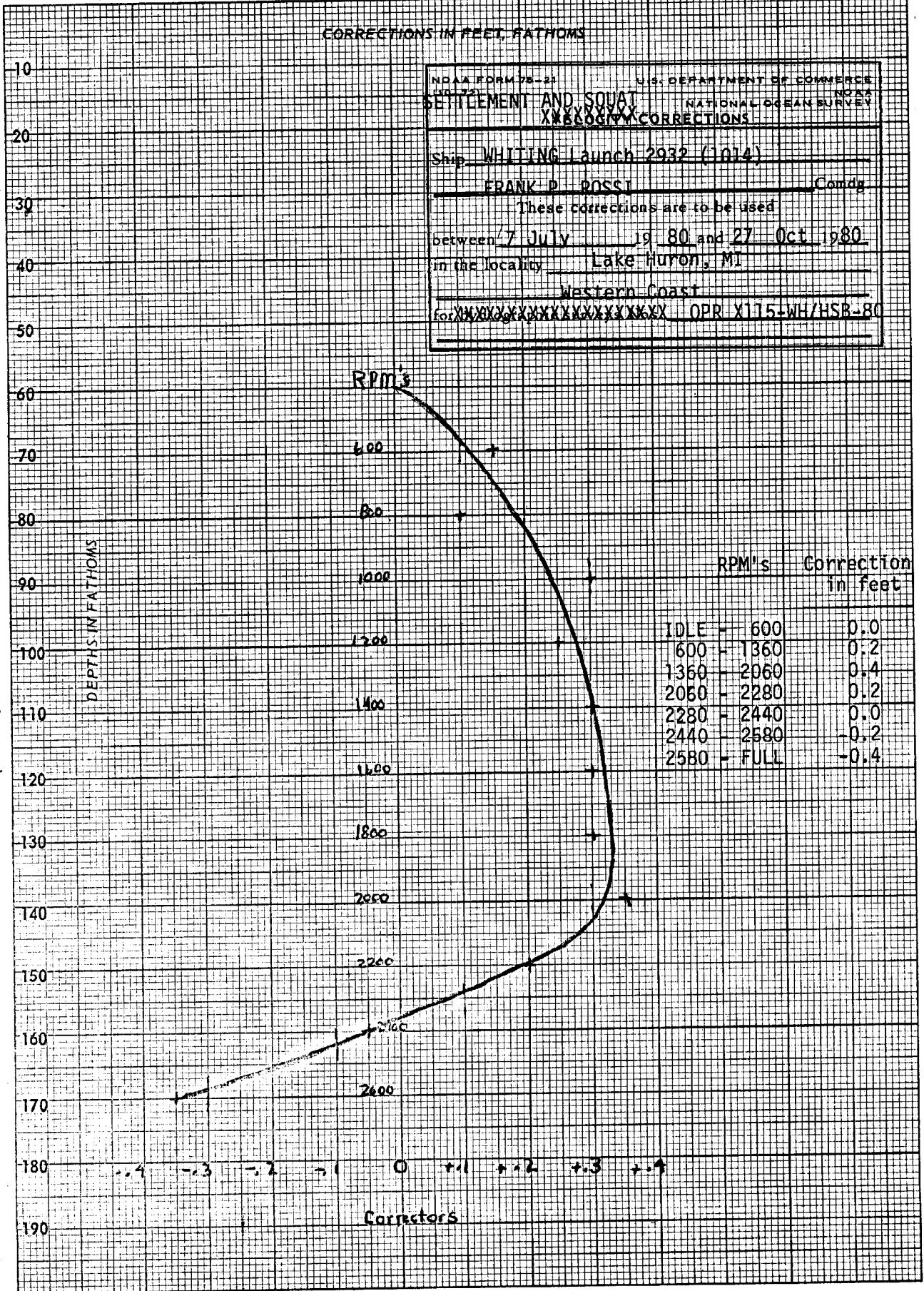
NOAA FORM 78-23 U.S. DEPARTMENT OF COMMERCE
 SETTLEMENT AND SOUND NATIONAL OCEAN SURVEY
 CORRECTIONS

Ship WHITING Launch 2932 (1014)

FRANK D. ROSSI Comdg

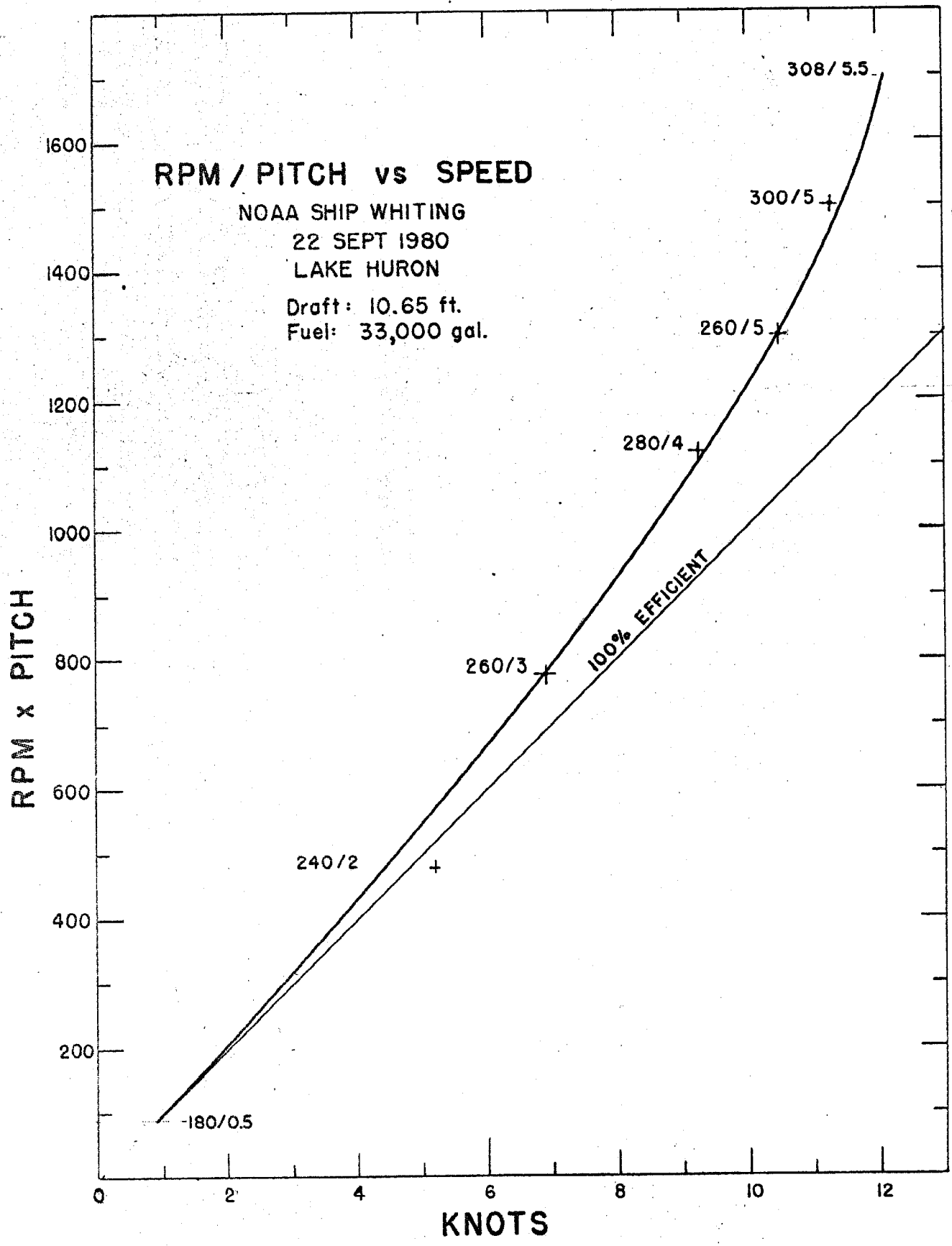
These corrections are to be used
 between 7 July 1980 and 27 Oct 1980
 in the locality Lake Huron, MI
Western Coast
 for ~~XXXXXXXXXXXXXXXXXXXX~~ OPR X115-WH/HSB-80

(For deep water add a 0 to these figures)



1240

20 X 20 TO THE INCH KEUFFEL & ESSER CO. MA. U.S.A.



NOAA SHIP WHITING

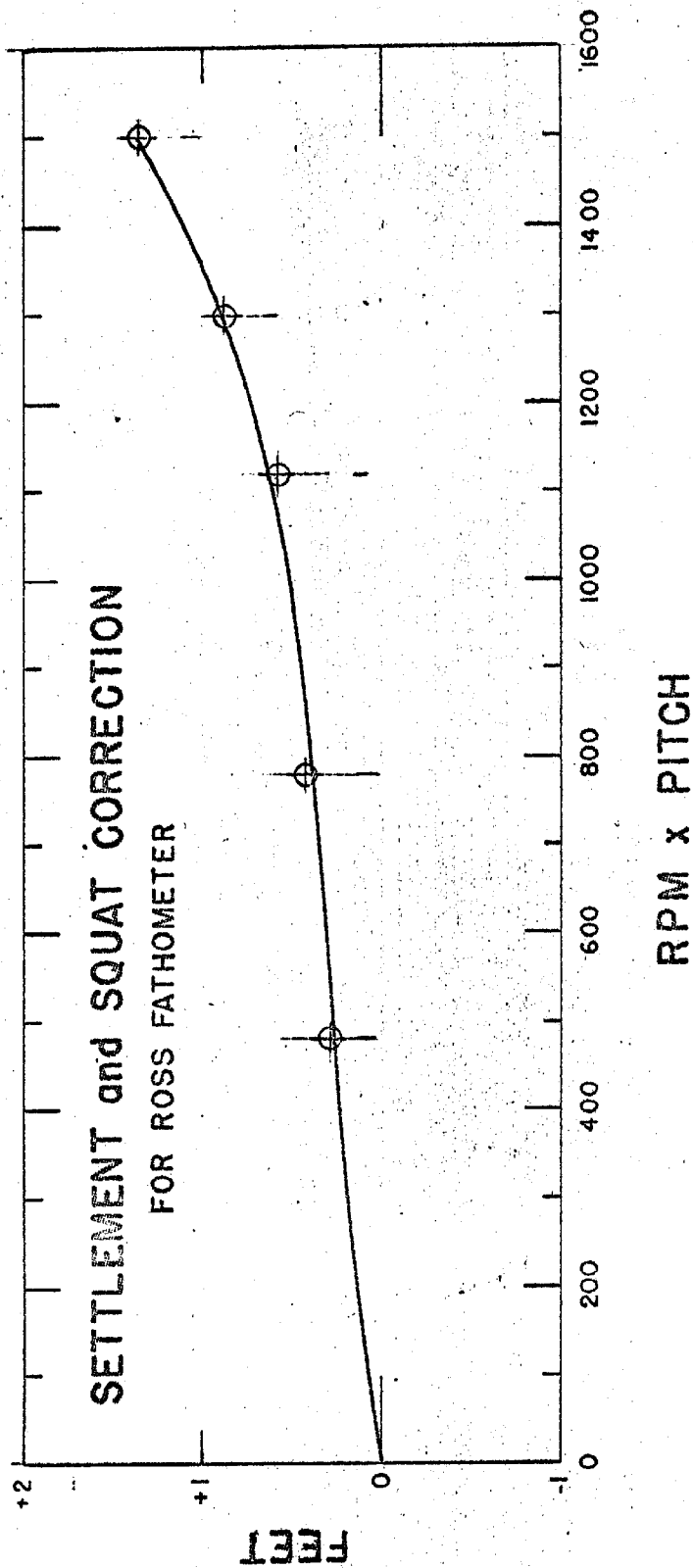
22 SEPT 1980

LAKE HURON

Fuel: 33,000 gal.

Draft to ROSS Transducer: 10.65 ft.

Depth of Water Below ROSS Transducer: 14 ft.



ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2931

SHEET : WH-20-1-80N

TIME	DAY	PATTERN 1	PATTERN 2
172659	189	+00024	+00005
142407	190	-00001	-00003
135302	191	-00005	-00002
140639	192	+00002	-00045
141255	193	-00003	-00013
133212	194	-00005	-00004
145149	195	+00001	-00001
134527	197	+00003	-00008 Deleted, no hydro
173205	198	+00000	-00010
130501	199	-00001	-00024
133511	212	-00007	-00009
140512	232	-00009	-00043
143248		-00009	+00058
144748	268	+00000	-00002

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2931

SHEET : WH-20-1-80S

TIME	DAY	PATTERN 1	PATTERN 2
171748	199	-0000 ⁶ ₁	-0002 ⁴ ₈

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2932

SHEET : WH-20-1-80S

TIME	DAY	PATTERN 1	PATTERN 2
135330	191	+00068	-00018
151127	192	+00073	+00077 ⁸
145240	193	+00067	+00077
133132	194	+00071	+00084 ⁵
140142	195	+00071 ⁶	+00081
131016	196	+00066	-00023
134152	197	+00070	+00077
191537	198	+00073 ²	-00421
182336	203	-00048	+00009
142236	204	-00031	-00137 ⁵
142301	233	+00027	-00032
173814	240	-00011	-00045

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2930

SHEET : WH-20-1-805

TIME	DAY	PATTERN 1	PATTERN 2
144838	199	+00035	+00036

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2930

SHEET : WH-20-1-80N

TIME	DAY	PATTERN 1	PATTERN 2
190650	283	+00023	+00024
150119	288	+00008	-00086

FIELD WATER LEVEL NOTE

Field water level reductions were not performed on hydrographic survey H-9895. WHITING personnel installed and monitored a secondary ADR gage at a seasonal water level gage site in Port Sanilac, located at $43^{\circ}26.0'N$ and $82^{\circ}32.2'W$. This gage was in proper operating order throughout the survey. A gage was installed by the Army Corps of Engineers at Lakeport and monitored by a paid observer. This was located at $43^{\circ}08.5'N$ and $82^{\circ}29.5'W$.

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

WATER LEVEL NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center: CAM3

Hourly heights are approved for

Water Level Station Used: Lakeport, Michigan (907-5002)

Period: July 9, 1980 - September 26, 1980

HYDROGRAPHIC SHEET: H - 9895

OPR- X115-WH/HSB - 80

Locality: Lake Huron

Plane of reference: Low Water Datum (IGLD 1955 : 576,8 Feet)

Remarks: Zoning not required. Data from other gages on Lake Huron indicates no unusual water level movement during the survey period.

Philip C. Morris
Chief, Water Level Branch

APPROVAL SHEET
FOR
SURVEY H-9895 (1980)

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has ~~XXXXXX~~ been made. A new final sounding printout has ~~XXXXXX~~ been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the HYDROGRAPHIC MANUAL. Exceptions are listed in the Verification Report.
- Date: 2-4-82


Chief, Verification Branch

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS 6 sheets	6
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	3

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS			2 & 7a			
VOLUMES						
BOXES			1 - Smooth Plo, 4 - Sou Vol., Cal., Misc.			

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	VERIFICATION	TOTALS
POSITIONS ON SHEET			1975
POSITIONS CHECKED		10	
POSITIONS REVISED			
SOUNDINGS REVISED		30	
SOUNDINGS ERRONEOUSLY SPACED			
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			

TIME - HOURS

CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	18		
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS		87	
VERIFICATION OF SOUNDINGS		159	
COMPILATION OF SMOOTH SHEET		80	
APPLICATION OF TOPOGRAPHY			
APPLICATION OF PHOTOBATHYMETRY			
JUNCTIONS		5	
COMPARISON WITH PRIOR SURVEYS & CHARTS		46	
VERIFIER'S REPORT		8	
OTHER			
TOTALS	18	385	403

Pre-Verification by RHW	Beginning Date 11/21/80	Ending Date 11/24/80
Verification by RHW, MWH, RRH, DVM, LGC	Beginning Date 1/15/81	Ending Date 1/19/82
Verification Check by GFT	Time (Hours) 43	Date 12/21/81
Marine Center Inspection by Hydrographic Inspection Team	Time (Hours) 10	Date Jan. 22/82
Quality Control Inspection by J.P. Baumgardner	Time (Hours) 63	Date July 2, 1982
Requirements Evaluation by Stephen J. Vermy	Time (Hours) 4.0	Date 8/26/83

B. Meyer this 2/8/83

REGISTRY NO. 9895

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

ATLANTIC MARINE CENTER
VERIFICATION REPORT

REGISTRY NO.: H-9895
Northeast of Lakeport
Michigan, Lake Huron, ~~Between Lexington and Port Huron~~

FIELD NO.: WH-20-1-80

SURVEYED: July 7 through October 14, 1980

SCALE: 1:20,000

PROJECT NO.: OPR-X115

SOUNDINGS: Ross Digital Echo Sounder, Diver
and Lead Line

CONTROL: ARGO (Range-Range)

Chief of Party F. P. Rossi
Surveyed by N. A. Prah
..... C. D. Mason
..... J. C. Gardner, Jr.
..... D. A. Bland
..... J. B. Grant

Automated Plot by Xynetics 1201 Plotter (AMC)

1. INTRODUCTION:

- a. There were no unusual problems encountered on this survey.
- b. Notes and changes were made in red ink in the Descriptive Report during verification.

2. CONTROL AND SHORELINE:

- a. The source of control is adequately described in sections "F" and "G" of the Descriptive Report.
- b. No contemporary shoreline was available for this survey, nor was it necessary for this offshore survey.

3. HYDROGRAPHY:

- a. The agreement of crosslines on this survey is adequate, depths agree within the limits prescribed by the Hydrographic Manual.

b. The standard curves could be drawn in their entirety. Dashed curves, and ^{36ft supplemental curves} brown curves were used to better delineate some features on this survey. There were a few areas of irregular bottom and developed areas where deeper soundings in excess could not always be included in the curves. The congestion of soundings on the smooth sheet precluded bringing these soundings to the zero excess level and in most cases they were within one foot of the shoaler soundings.

c. This survey is considered adequate to delineate the basic bottom configuration and to determine least depths except for the following:

(1) In the vicinity of LAT. $43^{\circ}07'$ LONG. $82^{\circ}23'$ described as an old spoil area (clay mounds) by the hydrographer, from information obtained from the U. S. Army Corps of Engineers, some additional development would have been desirable. There are indications that this spoil area has shoaler depths (charted depths) by from 7 to 10-ft. than found on the present survey. (See section 7.a.2) of this report.)

(2) In the vicinity of LAT. $43^{\circ}09'$ LONG. $82^{\circ}21'$ there could have been some North-South lines run to better delineate the 60 foot curve and to investigate the 58 and 59-ft. shoal depths in this area.

4. CONDITION OF SURVEY:

The smooth sheet and accompanying overlays, hydrographic records reports comply with the requirements of the Hydrographic Manual with the exceptions listed elsewhere in this report and the following:

a. The vessel, NOAA Ship WHITING ran one day (288) of hydrography on this survey but submitted no velocity tape for the work. The velocities were determined during verification and applied based on a T.D.C. cast taken on that day.

b. The field located and dove on three wrecks on this survey. They took leadline least depths on all three wrecks but obtained no positional data on these least depths.

c. No landmarks were investigated on this survey as required with section 4.2.2. of the Project Instructions.

d. No comparisons with prior surveys was made by the field as required by section 6.10.1 of the Project Instructions. The hydrographer's comments that none were available, is in conflict with the statement from the Project Instructions.

e. Section M of the Descriptive Report states that the survey is adequate to supersede the prior surveys without a comparison with the prior surveys.

f. Shoal soundings in approach to channel not developed. The five soundings discussed under section 7.a.(~~2~~) of this should have been developed.

5

5. JUNCTIONS:

An adequate junction was made with H-9898 (1980) to the north, with a few soundings (3) being brought forward to the present survey to clarify some shoal depths and curves.

Canadian survey 3918 (1976) 1:50,000 to the southeast was looked at from a junctional standpoint. The agreement between the present survey (H-9895) and this survey is good (\pm 1-foot), some additional work would be necessary in the area of the 60-ft. curve. Not available during Q.C.

← Not available during A.C.

The Canadian survey 3831 (1974) 1:100,000 to the southeast of the present survey was prescribed as a junctional survey for the ship WHITING by the Project Instructions. Where the sounding lines of the Canadian survey overlap with the present survey discrepancies are apparent. A letter from the Commanding Officer, NOAA Ship WHITING dated November 14, 1980, describes the problem. A copy is included following the Hydrographer's Report. This survey (CHS-3831, 1974) should not be considered a junctional survey and should be superceded in the area common with the present survey.

There are no contemporary surveys to the west. U. S. Lake surveys covering the area are discussed below in Comparison with Prior Surveys.

6. COMPARISON WITH PRIOR SURVEYS

LS-1290	(1914)	1:20,000
LS-1291	(1914)	1:20,000
LS-1847	(1946)	1:120,000
LS-1930	(1952)	1:20,000
LS-1968	(1956)	1:10,000 ✓
LS-1969	(1956)	1:10,000 ✓
LS-1970	(1956)	1:10,000 ✓

The above surveys taken together cover the entire survey area. In general about 95% of the soundings are deeper on the present survey by one foot or less. The remaining 5% appear to agree within ± 2 to 3-ft. The basic bottom configuration and least depths are in fair agreement. These changes could be attributed to natural changes and to a lesser degree the improved control methods in use on the present survey.

The prior surveys ^{and LS-1291 (1914)} LS-1290 (1914) ^{them} has some wire swept areas on it. There is no conflict between these swept areas and the present survey depths.

There was one sounding carried forward from prior survey LS-1970 (1956). A 30-ft. depth in the vicinity of LAT. $43^{\circ}12'27''$ LONG. $82^{\circ}27'33''$. This depth is in an area on the present survey that has indications of shoal areas.

With the addition of the sounding described above the present survey is adequate to supercede these prior surveys.

7. COMPARISON WITH CHARTS #14865 (11th Edition, January 12, 1980) #14862 (23rd. Edition, July 29, 1978)

a. Hydrography

The charted hydrography (70%) originates with the previously discussed prior surveys. The remaining 30% originate with sources not ascertainable during verification. Except as listed below these remaining soundings appear to agree in the range of from ± 1 to 3 feet.

Attention is directed to the following:

(1) The 37-ft. depth charted in the vicinity of LAT. $43^{\circ}07'34''$, LONG. $82^{\circ}23'26''$, in the vicinity of the charted crib. The field located a 38-ft.

~~echo sounder~~ shoal depths of 41-46 ft were obtained during the development. ~~least~~ depth over the crib and ~~a least depth of 43 ft. in the area of the charted~~ 37-ft. The least depth from the chart for the crib is 41-ft. Recommend the chart compiler research the source of this 37-ft. charted depth. The ~~least~~ depth over the crib should be changed to ~~the~~ 38-ft. ~~least depth~~ from the present survey. concur The charted 31 ft sounding is not considered disproved and should be retained

(2) There are three charted depths (33, 38 and 34 feet) in the vicinity of LAT. $43^{\circ}07'04''$, LONG. $82^{\circ}22'48''$ that are considerably shoaler than depths on the present survey. This is just outside an area the field developed because of numerous shoal indications found on hydro lines. This area is an old spoil area. Recommend the source of these depths be ascertained by the chart compiler for retention on the chart ~~if warranted.~~ concur

(3) A charted 25-ft. depth in the vicinity of LAT. $43^{\circ}07'26''$, LONG. $82^{\circ}25'12''$. This area was split by the field unit but it appears that the area should have been better delineated. Recommend the source of this depth be ascertained by the chart compiler for retention on the chart if warranted. concur

(4) The 37-ft. charted on chart number 14862 in the vicinity of LAT. $43^{\circ}07'06''$, LONG. $82^{\circ}23'48''$ is not shown on Chart 14865. The source of this depth should be ascertained and evaluated by the chart compiler as it's shoaler by 6 to 7-ft. than the depths found on the present survey and 4 ft. concur shoaler than depths on Chart #14865.

(5) There are five charted depths (30, 30, 29, 29, 28 feet) in the vicinity of LAT. $43^{\circ}05'30''$ LONG. $82^{\circ}24'45''$ that are shoaler than soundings in this area on the present survey. They are in the approaches to the 30-ft. project depth channel to Port Huron. Recommend the source of these depths be ascertained by the chart compiler for retention on the chart if warranted. concur

(6) A wreck was located at Lat. $43^{\circ}02'40.97''$; Long. $82^{\circ}23'17.48''$ with a least depth of 18 ft. that falls off the limits of the present survey. The wreck is plotted on an overlay and included in the Descriptive Report.

b. Aids to Navigation

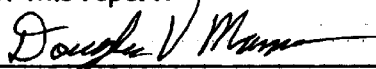
The floating aids to navigation as located by the hydrographer on this survey adequately mark the intended features. It is noted that eight buoys located by the field fall off the physical limits of the survey. These buoys are plotted on an overlay included in the Descriptive Report.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions with the exceptions noted elsewhere in this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic survey. Additional work is recommended if it is desirable to investigate the shoal sounding carried forward to the present survey and the charted soundings described in section 7.a.1), 2), 3), 4), 5), and 6) of this report.



Douglas V. Mason
Cartographic Technician
Verification of Field Data



Guy F. Trefethen
Senior Cartographic Technician
Verification Check



Leroy G. Cram
Cartographer
Evaluation and Analysis
January 19, 1982

INSPECTION REPORT
H-9895

The completed survey has been inspected by the Hydrographic Inspection Team with regard to survey coverage, delineation of depth contours, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The Verification Report has presented the facts accurately and properly, the procedures used were appropriate, and the recommendations are logical and justifiable. The survey complies with National Ocean Survey requirements except as noted in the Verification Report. The survey records comply with NOS requirements except where noted in the Verification Report. The Hydrographic Inspection Team concurs with the verifier's findings, actions, and recommendations.

Examined and Approved
Hydrographic Inspection Team



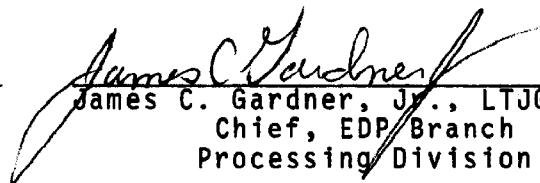
Karl Wm. Kieninger, CDR, NOAA
Chief, Processing Division



Evelyn J. Fields, LT, NOAA
Quality Control Officer
Operations Division

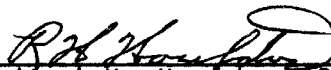


R. D. Sanocki
Chief, Verification Branch
Processing Division



James C. Gardner, Jr., LTJG, NOAA
Chief, EDP Branch
Processing Division

Approved/Forwarded
February 2, 1982



Richard H. Houlder, RADM, NOAA
Director, Atlantic Marine Center



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352:SRB

July 2, 1982

TO: Glen R. Schaefer *GS*
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch *gm*

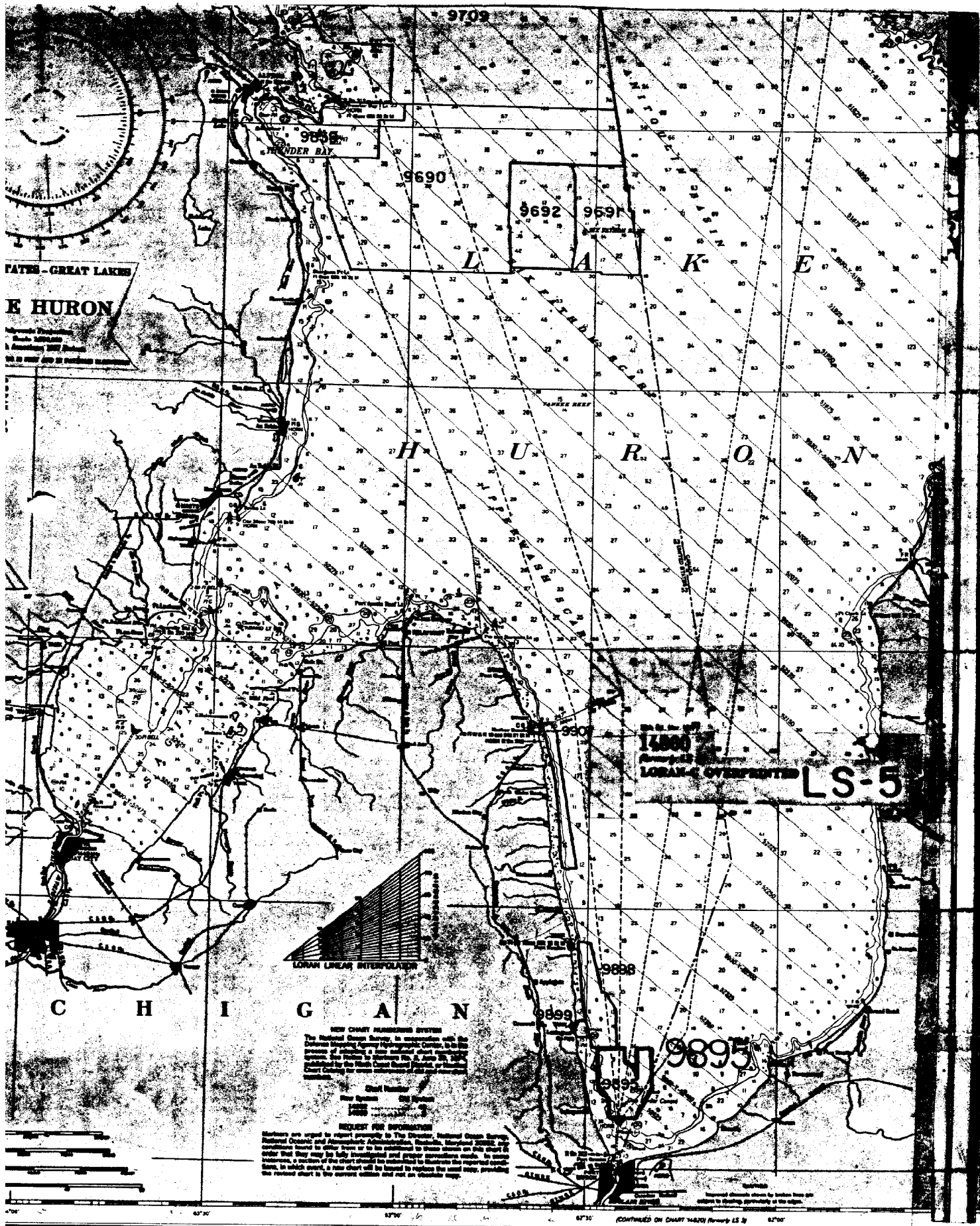
FROM: *S R Baumgardner*
S. R. Baumgardner
Quality Evaluator

SUBJECT: Quality Control Report for H-9895 (1980), Michigan, Lake Huron,
Northeast of Lakeport

A quality control inspection of H-9895 was accomplished to monitor the survey for adequacy with respect to data acquisition, 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 verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a one-half scale copy of the survey to be furnished the verifier. In general, the survey was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report.

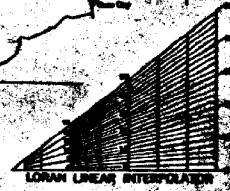
cc:
C351





FATHS - GREAT LAKES
E HURON
 Revised Projection
 Scale 1:50,000
 1:50,000
 1:50,000
 1:50,000

LORAN-A OVERPRINTED LS-5



NEW CHART NUMBERING SYSTEM
 The National Ocean Survey, in cooperation with the
 Defense Mapping Agency, has adopted a new system of
 numbering charts and publications. This new system
 is being used on all charts and publications published by the
 National Ocean Survey, the Defense Mapping Agency, and the
 Hydrographic Office of the United Kingdom.

Chart Number: 14500
 New System: 14500
 Old System: 14500

REQUEST FOR INFORMATION
 Mariners are urged to report promptly to The Director, National Ocean Survey,
 National Oceanic and Atmospheric Administration, Washington, D.C. 20543, or
 their nearest office, any errors or omissions in this chart or to advise them of
 any changes in the data. In order that they may be fully investigated and proper
 corrections made, in some cases a section of the chart should be submitted to
 illustrate the reported error. In which event, a new chart will be issued to
 replace the used one, providing the returned chart is in correct condition and not
 an obsolete copy.

CONTINUED ON CHART 14500 (formerly LS 3)

SOUNDINGS IN FEET AND FATHOMS

Published at Washington, D.C.
 U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL OCEAN SURVEY



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
CHARTING AND GEODETIC SERVICES
Rockville, Md. 20852

SEP 30 1983

N/CG241:SJV

TO: N/MOA - Wesley V. Hull

FROM: *for* N/CG2 - C. William Hayes *Simon R. Peters*

SUBJECT: Report of Compliance for Survey H-9895

The smooth sheet and Descriptive Report for survey H-9895 (1980), Michigan, Lake Huron, Northeast of Lakeport, have been reviewed. This survey, except as noted in the Quality Control Report, dated July 2, 1982 (copy attached), and the Hydrographic Survey Inspection Team Report, dated February 2, 1982, is complete and adequate for the purposes intended and is in compliance with Project Instructions OPR-X115-WH/HSB-80, dated March 31, 1980.

Attachment

cc:
N/CG242 w/o att.



