9907

Diagram 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-20-4-80

Office No. H-9907

LOCALITY

State Michigan

General Locality Lake Huron

Locality Harbor Beach to Forestville

1980

CHIEF OF PARTY
CDR Frank P. Rossi

LIBRARY & ARCHIVES

DATE November 10, 1981

☆U.S. GOV. PRINTING OFFICE: 1980—668-537

9907

AREA 7

CHTS:
14862 + INSET
14860

} See Record of Application to sign off.

FORM C&GS-537 (5-66)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

REGISTER NO.
H-9907

HYDROGRAPHIC TITLE SHEET

FIELD NO.
WH-20-4-80

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

State Michigan

General locality Lake Huron

Locality Harbor Beach to Forestville

Scale 1:20,000, 1:5,000 (Inset) Date of survey 09/19/80 to 10/17/80

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

Vessel NOAA Ship WHITING, Launches 2931 and 2932

Chief of party Commander Frank P. Rossi, Commanding Officer

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

Soundings taken by echo sounder, ~~hand lead, pole~~ 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
Smooth Plot: Xynetics 1201 Plotter (AMC)

Soundings ~~penciled~~ Verified by Frank L. Saunders

Soundings in ~~fathoms~~ feet at ~~MLW~~ ~~MLLW~~ I.G.L.D.

REMARKS: All times are coordinated Universal Time.

All notes in red made during verification

Notes in blue made during C.C. evaluation

STANDARDS CK'D 1-3-84
C. Loy

USCOMM-DC 37009-P66

DESCRIPTIVE REPORT

TO ACCOMPANY

SURVEY H-9907

Field No. WH-20-4-80

A. PROJECT

Hydrographic survey H-9907 was performed in accordance with Project Instructions OPR-X115-WH/HSB-80, Lake Huron, dated March 31, 1980 as amended by the following changes:

Change No.	Date
1	04/04/80
2	04/11/80
3	04/23/80
4	05/31/80
5	07/16/80
6	07/23/80
7	09/09/80

B. AREA SURVEYED

Survey H-9907 covers the area between the 5-fathom (30-foot) contour and the ~~20-meter~~ 11 fathom (66-feet) contour on the east coast of Michigan from Latitude 43°38.0'N to Latitude 43°52.5'N. The hydrography was run from September 19, 1980, to October 17, 1980, (Julian Days 263-291). The scale of the survey is 1:20,000. Also included is the area of Harbor Beach, Michigan, inside the breakwater. This covers the area from the 6-foot contour east to the breakwater.

This is a 1:5,000 scale survey to be used as an inset on future charts.
See telex authorizing addition work of Harbor Beach ~~will~~ included with this report before Hydrographers Approval Sheet.

C. SOUNDING VESSELS

The following vessels ran hydrography with the following positions:

Vessel No.	EDP No.	From Position	To Position
1015	2931	1	302
		5301	5362
1014	2932	5000	5300
		5363	5682
		9000	9438
	2930	3000	4105

No major mechanical problems were encountered in any vessel.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings were acquired by Ross Model 5000 Fineline Recorders. The following serial numbers applied:

Vessel No.	S/N
2931	1087
2932	1049
2930	1052

Phase check calibrations were performed on the fathometers in accordance with the Hydrographic Manual. These calibrations were performed regularly and noted on the fathograms.

Bar checks for the launches (2931 and 2932) were taken daily, weather and sea conditions permitting. TDC's and XBT's were also taken throughout the duration of the survey. Four velocity tapes were used in smooth plotting the sheets. Below is a list of the tape numbers, its vessel number and the dates it corresponds with.

Velocity Tape No.	Vessel No.	Julian Dates
1	2932	263-268
2	2931	263-268
3	2932	274-290
4	2930	267-291

Velocity tapes #2 and #4 were taken directly from the TDC curves which compared favorably with the bar checks. Velocity tapes #1 and #3 were taken from the displaced curves from tapes #2 and #4. These were displaced to account for the relatively large negative bar check correctors computed from Vessel No. 2932. Thus, all velocity tapes were computed from TDC curves with the bar check correctors from Vessel No. 2932 used only for initialization purposes for tapes #1 and #3. All bar check and TDC data is included with the hydrographic data. Graphs and tables for velocity corrections are in the appendix.

Settlement and squat correctors for 2931 and 2932 were obtained from trials performed by WHITING personnel in July and September 1980 in Lake Huron. Settlement and squat trials for 2930 (WHITING) were performed on September 21, 1980, in Lake Huron by WHITING personnel. Since the settlement and squat correctors were not applied on the smooth field sheet plot, there is a discrepancy between the hydrography performed by the ship (VESNO 2930) and that performed by the launches (VESNO 2931 and 2932). The 30-foot contour is irregular over the hydro performed between the different vessels with the discrepancy being approximately two feet. The settlement

and squat corrector for VESNO 2930 for the speed at which it was run (300 RPM's, 5-6 foot pitch) is +1.4 feet. The correctors for the launches run at full speed is -0.4 feet. When these correctors are applied by the TC/TI tape, the difference will total 1.8 feet and a smooth contour should result. All graphs and tables for settlement and squat are in the appendix and applied on the TC/TI tapes. Concur

The draft for VESNO 2930 (WHITING) was computed by leadline to be 10.6 feet with the launches aboard and 10.3 feet without the launches. Only two days of hydro (JD 282, Pos. 3922-3993 and JD 291) were performed with the launches aboard and a draft of 10.6 feet was applied. All other hydro by VESNO 2930 was performed without the launches aboard and a draft of 10.3 feet was applied.

Throughout the duration of the survey, the lake level was approximately 3 feet above the normal lake level or I.G.L.D.

E. HYDROGRAPHIC SHEETS

The area excluding Harbor Beach harbor was plotted on two 1:20,000 scale sheets (north and south) on a Houston Instruments DP-3 roll plotter (s/n 5557-6). The plotter origin for the south sheet is Lat. 43°38.0'N, Long. 82°32.0'W. The skew for both sheets is 90, 21, 30.

The soundings inside the breakwater at Harbor Beach were plotted on the same plotter at 1:5,000 scale. The plotter origin is 43°49'53"N and 82°37'40"W. The skew is 90, 21, 27.

Field records will be sent to the Atlantic Marine Center, Norfolk, Virginia, (CAM3) for verification and final smooth plotting.

F. CONTROL STATIONS

The following signals were used for electronic positioning, initial positions for range-azimuth control or for calibration:

Signal No.	Name	Source			
		AMC	OPS	DIV	1980 ~~1979~~
100	CASEY	"	"	"	"
102	POTH	"	"	"	"
401	Harbor Beach Light	"	"	"	"
414	USE 60	"	"	"	"
411	USE 56	"	"	"	"
406	Harbor Beach Edison Stack	"	"	"	"
407	Harbor Beach Hercules Tank	"	"	"	"
405	Harbor Beach Cable TV Mast	"	"	"	"
402	Harbor Beach South Pier Light	"	"	"	"

G. HYDROGRAPHIC POSITION CONTROL

All hydrography on the 1:20,000 scale sheet was controlled by ARGO range-range positioning equipment. The following units were used:

Vessel No.	CDU S/N	RPU S/N
2931	C037953	R0879119
2932	C047822	R047843
2930	C047824	R0379118

Signal No. 100 (CASEY) and 102 (POTH) were the shore stations for all ARGO range-range hydrography.

All hydrography inside the breakwater at Harbor Beach was controlled by the range-azimuth method using Del Norte equipment and a WILD T-2 theodolite (s/n 35052). Launch 1014 (2932) ran all hydro inside Harbor Beach breakwater. It was equipped with a master unit (s/n 169) and a distance measuring unit (DMU s/n 162). The remote unit and the T-2

were set up on signal number 414 (pos. 9000 - 9331), signal number 411 (pos. 9332 to 9396) and signal number 410 (pos. 9397 to 9438). All range-azimuth hydro was logged using program FA-181, Real-Time Range Azimuth Hydrolog.

Calibrations were made twice daily in accordance with the Hydrographic Manual. All calibrations were made using program RK-561, Hyperbolic and Range-Range Geodetic Calibration. The remote was set up on signal 414, 411, or 410 for all calibrations. Baseline calibrations were performed in accordance with the manufacturers specifications and the Hydrographic Manual. The Del Norte master units and DMU's remained paired between baseline calibrations.

H. SHORELINE See Verification Report sections 2b.and 4.a.

There was no shoreline on H-9907 (1:20,000). Harbor Beach (1:5,000) inset shoreline was run in accordance with the Project Instructions. Shoreline was transferred from Chart No. 14862 (23rd Edition, July 29, 1978) for orientation purposes only. Instructions stated that only the 6 foot contour needed to be defined.

I. CROSSLINES See Section 3 of the Verification Report

The percentage of crosslines run was 14. The nautical miles of crosslines run was 36. Crosslines were run normal to mainscheme lines in all range-azimuth hydrography. Agreement with mainscheme on all range-range hydro was generally within one foot except on JD 267 when VESNO 2930 (WHITING) ran crosslines over mainscheme lines which were run by VESNO's 2931 and 2932. These agreed within two feet and will agree better when the sheet is plotted with the TC/TI tape. See Section D.

J. JUNCTIONS See section 5 of the Verification Report

This survey junctions with contemporary survey H-9906 to the south. The junctions are in excellent agreement with approximately 95% of the soundings agreeing to within one foot. This junction survey was conducted by WHITING personnel this year and has not been verified.

This survey also junctions with survey L-1971 (1:10,000). In all areas the prior survey soundings were four to five feet shoaler than on this survey. The lake level was not applied in this comparison. Disregard - does not junction this survey

Survey H-9907 also junctions with Canadian Hydrographic Survey Field Sheet No. 3831, dated 1974. The Canadian survey did not agree well with this survey. The discrepancies varied between four and 9 feet. See letter ~~in appendix~~ D. The lake level was not applied in making this comparison. included in this Report before Hydrographers approval sheet.

K. COMPARISON WITH PRIOR SURVEYS

There were no prior surveys. See Project Instructions (6.10.1) and Verification Report, section 6.

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

The comparison was made with Chart No. 14862 (23rd Edition, July 29, 1978). All depths appeared to be three to four feet shoaler on the chart than on this survey. The lake level was not applied.

A development ("1N") was run on JD 290 be VESNO ~~2032~~ 2932 over a charted 14-foot depth between the 24 and 30 foot contour at Lat. 43°50.4'N and Long. 82°37.0'W. The line spacing used was 20 meters and the least depth found was 2~~8~~6.~~1~~0 feet. The recommendation is made to perform a wire drag operation over the area to verify its existence. This sounding originated with Canadian Survey No. 3831 (1974) and in light of those statements made by Canadian officals it is considered superseded by the present survey.

A development ("N") was run on JD 291 by VESNO 2930 in an attempt to define a 30-foot depth surrounded by 36-40 foot depths found while running mainscheme. This was at Lat. 43°4~~7~~8.3'N and Long. 82°36.4'W. The least depth found was 30 feet at the same position. chart present survey depths

The Harbor Beach survey (1:5,000) was compared to the inset of Harbor Beach found on Chart 14862. The soundings on the inset were found to be 2 feet shoaler than on this survey. The lake level was not applied. See Verification Report, section 6. and 7.

M. ADEQUACY OF SURVEY

This survey is adequate for charting purposes and supercedes all pervious surveys. See sections 4.d. and 6 of the Verification Report.

N. AIDS TO NAVIGATION

* The following is a list of all fixed aids to navigation and their geographic positions (GP):

Description	GP	Signal No.
Harbor Beach Light	43°50'44.3"N 82°37'53.1"W	401
Harbor Beach South Pier Light	43°50'37.7"N 82°37'51.9"W	402

These signals are fixed aids to navigation and are charted in their correct positions. The positions given here were derived from third-order triangulation by Operations Division, AMC, 1979. These positions and characteristics agree with the Coast Guard Light List. * See Verification Report, section 7.b.

O. STATISTICS

Vessel No.	No. Of Positions	Total Nautical Miles Hydrography
2931	1106	100
2932	1060	179
2930	365	234
TOTAL	2531	513

Total square miles of soundings: 24

Bottom Samples: 80

P. MISCELLANEOUS

None.

Q. RECOMMENDATIONS

None.

R. AUTOMATED DATA PROCESSING

The following data processing programs were used in this survey.

Program No.	Name	Version Date
RK-201	Grid & H/R Lattice Plot	04/18/76
FA-181	Range-Azimuth Hydrolog	02/23/78
RK-212	Visual Station Table Load	04/01/74
RK-216	R/Az Position & Sounding Plot	05/15/74
RK-300	Utility Computations	02/10/76
RK330	Data Reformat & Check	05/04/76
AM-530	Layer Corrections for Velocities	05/10/76
RK-561	Hyperbolic & R/R Geodetic Calibration	02/19/75
AM-602	Extended Line Oriented Editor	03/10/72
AM-402	Geodetic Inverse/Direct Computation	10/23/75
RK-211	Range-Range Off Line Plot	01/15/76
RK-112	Range-Range Real Time Plot	08/22/80

S. REFERRAL TO REPORTS

~~None~~ Control Report, OPR-X115-WH-HSB-80, LAKE HURON

APPROVAL

Supervision of all field and office work on this hydrographic survey was continuous and on a day to day basis to ensure completeness. All work was done in accordance with the Project Instructions and the Hydrographic Manual. This survey is complete and adequate for charting purposes.

Approved/Forwarded

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

Respectfully submitted

Robert G. Mann, LT, NOAA

X O
+ cwF

103

TO

AUTHORIZED ADDITIONAL WORK
2 SEP 80
1.
ONLY
2. ADDITIONAL WORK TO BE ACCOMPLISHED ON TIME AVAILABLE BASIS WHEN WEATHER PRECLUDES WORK OUTSIDE HARBOR.
3. ADDITIONAL WORK NTE 6 DAYS. ADVISE CMMI IF WORK LIKELY TO EXCEED.
4. SURVEY TO BE CONDUCTED AT SCALE OF 1 TO 5000. WORK WILL BE SHOWN AS INSET TO REGISTRY NO 20,002 SHEET ADJOINING HARBOR BEACH REA.
5. LIMITS AS NOTED REF. A. EXCEPT THAT 6 FT CURVE SHALL BE DEFINED.
6. CHANGES TO PROJECT INSTRUCTIONS FOR OPR-X115 WILL BE FORWARDED TO CONFIRM THIS RECALL.

TOD
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Radio Message from AMC to NOAA Ship Whiting Concerning Harbor Beach Survey — 6' Curve-Survey
F.S. AMC - 5/11/81

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

SUBJECT: 1980 Lake Huron Surveys: Depth Descrepency 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 propagtion 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.

SIGNAL NAMES LIST

Signal No.	Name	Source			
		AMC	Ops.	Div.	1980 ~~1979~~
100	Casey, 1980	"	"	"	"
102	Poth, 1980	"	"	"	"
401	Harbor Beach Light, 1980	"	"	"	"
402	Harbor Beach South Pier Light, 1980	"	"	"	"
403	Harbor Beach N. Brk. Antenna, 1980	"	"	"	"
404	Harbor Beach Mun. Pier Radio Twr., 1980	"	"	"	"
405	Harbor Beach Cable TV Mast, 1980	"	"	"	"
406	Harbor Beach Edison Stack, 1980	"	"	"	"
407	Harbor Beach Hercules Water Tank, 1980	"	"	"	"
408	Harbor Beach Water Tank, 1980	"	"	"	"
409	H-61-MI, 1980	"	"	"	"
410	H-62-MI, 1980	"	"	"	"
411	56 USE, 1980	"	"	"	"
412	57 USE, 1980	"	"	"	"
413	59 USE, 1980	"	"	"	"
414	60 USE, 1980	"	"	"	"

✓ LEC

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
- XX 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 ☐ TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
	NOAA ShipWHITING	Michigan	Lake Huron	11/24/80

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
X115-WH-80		H-9907	I.G.L.D.

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
Harbor Beach Light	Alt. Fl. W. & R., 10 sec	43 50	44.3N	82 37	53.1		F-1-6-L	14860 14862
Harbor Beach South Pier Light	Fl. W., 4 sec	43 50	37.7N	82 37	51.9W		F-1-6-L	14862 14860
	Dup L-642(83)							

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD		☐ 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

VELOCITY TAPES
H-9907

```
000140 0 0000 0001 000 293100 009907
000400 0 0002
001270 0 0004
999999 0 0000


000270 1 0006 0002 000 293200 009907
000600 1 0004
000970 1 0002
001200 1 0004
999999 0 0000


000140 0 0000 0001 000 293000 009907
000400 0 0002
001270 0 0004
999999 0 0000


000240 1 0002 0004 000 293200 009907
000720 1 0004
001050 1 0006
999999 0 0000


000280 0 0000 0006 000 293000 009907
000760 1 0002
001140 1 0004
999999 0 0000
```

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.

SPEED IN RPM's	CORRECTION 1014	CORRECTION 1015
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.

FIELD WATER LEVEL NOTE

Field water level reductions were not performed on hydrographic survey H-9907. A reference gage located at Lat. 43°50'~~47~~ 46.5"N and Long. 82°38'~~36~~ 35.5"W in Harbor Beach, MI. was monitored daily and found in proper working order. This was monitored by a paid observer.

APPROVAL SHEET
FOR
SURVEY H-9907

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 been made. A new final sounding printout has 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: Octobter 15,1981

Chief, Verification Branch

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: Harbor Beach, Michigan (907-5014)

Period: September 21, 1980 - October 19, 1980

HYDROGRAPHIC SHEET: H - 9907

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. Marris

Chief, Water Level Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9907

GEOGRAPHIC NAMES

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	
FORESTVILLE ✓	14862									1
HARBOR BEACH (Popul. Place)	"									2
LAKE HURON ✓	"									3
~~MICHIGAN~~	"									4
PURDY BAY			X							5
SHARPE BAY			X							6
WHITE ROCK (Popul. Place)			X							7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
					Approved:					18
										19
					Chas. E. Harrington					20
					Chief Geographer - C3x5					21
					2 Sept. 1982					22
										23
										24
										25

NOAA FORM 77-27 (5-77)	U. S. DEPARTMENT OF COMMERCE NOAA	HYDROGRAPHIC SURVEY NUMBER
HYDROGRAPHIC SURVEY STATISTICS		H-9907

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	5 BOAT SHEETS & PRELIMINARY OVERLAYS 1 roll	5 parts
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. 1 ARC, 3 EXCESS	4

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES	2		2 (field)			
CAHIERS			2 Raw P/o & Fathograms & Misc			
VOLUMES	4					
BOXES			1 - sm po P/o, 45-vol, 2-env, misc, 3 ou Annulars			

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			2531
POSITIONS CHECKED		25	
POSITIONS REVISED		5	
SOUNDINGS REVISED		40	
SOUNDINGS ERRONEOUSLY SPACED			
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	15		
VERIFICATION OF CONTROL		–	
VERIFICATION OF POSITIONS		108	
VERIFICATION OF SOUNDINGS		110	
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Pre-Verification by JL	*Beginning Date* 12/12/80	*Ending Date* 12/13/80
Verification by JL, JLS, LGC	*Beginning Date* 1/19/81	*Ending Date* 9/28/81
Verification Check by HRS	*Time (Hours)* 6	*Date* 7/30/81
Marine Center Inspection by HIT	*Time (Hours)* 20	*Date* 10/13/81
Quality Control Inspection by S Baumgardner	*Time (Hours)* 55	*Date* June 4, 1982
Requirements Evaluation by Stephen J Perry	*Time (Hours)* 2.0	*Date* 10/13/83

G. Myers 11 hrs 7/11/82

REGISTRY NO. 9907

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:

VERIFICATION REPORT
ATLANTIC MARINE CENTER

REGISTRY NO.: H-9907 FIELD NO.: WH-20-4-80

Michigan, Lake Huron, Harbor Beach to Forestville

SURVEYED: September 19 through October 17, 1980

SCALE: 1:20,000 PROJECT NO.: OPR-X115

SOUNDINGS: Ross Digital Echo Sounder CONTROL: Argo (Range-Range)
Del-Norte/Theodolite (Range-Azimuth)

Chief of Party	Frank P. Rossi
Surveyed by	N. A. Prahl
	C. D. Mason
	J. C. Gardner, Jr.
	D. A. Bland
	R. G. Mann
	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" & "G" of the Descriptive Report. There is a control report (included with the survey) that covers some of the stations on this sheet. filed with field records.

b. No contemporary shoreline was available for this survey. Shoreline for the Harbor Beach Inset on the smooth sheet is shown in brown from Chart 14862, 23rd. Ed., dated July 29, 1978. This shoreline is shown for orientation purposes only.

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 depth curves could be drawn in their entirety with the exceptions of the charted supplemental 24 foot curve and the 6 foot curve on the inset. Dashed curves and 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 shoaler soundings 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 main entrance channel to Harbor Beach, Latitude 43°50'40", Longitude 82°37'55", it would have been desirable to run some additional lines to better delineate the approaches to this channel between the inset and the offshore hydrography.

2) A small channel in Latitude 43°51'20", Longitude 82°38'35" was not adequately developed. The survey did not cover the intervening area between the channel and the area surveyed directly offshore. It would have been desirable to at least have some lines into the harbor from the area surveyed at 1:20,000 scale.

4. CONDITION OF SURVEY

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

a. A Geographic Names report (NOAA form 76-155) was not submitted by the field as specified under section 5.3.5.c of the Hydrographic Manual.

b. The Nonfloating Aids or Landmarks for charts form (form 76-40) that was submitted for this survey is not complete when compared to the charted information. The form submitted has only two items listed, the chart (No. 14862) shows at least 14 items that fall in this category. This is not in compliance with the Project Instructions, section 4.2.2. Charted landmarks were not evaluated by the hydrographer in the vicinity of this survey.

c. It appears the field had a difficult time deciding what electronic correctors applied to what stations. The daily calibration listings in the hydrolog format have the pattern 1 and pattern 2 correctors reversed and on some raw data printouts the stations themselves were reversed. The results appears to be that some of the hydrography plotted on the boatsheet may have the wrong daily correctors applied. The abstract of daily electronic correctors in the Descriptive Report and the rates applied to the smooth sheet appear to be correct. Those corrections were applied to the survey.

d. The field failed to make any comparisons with prior surveys as instructed by section 6.10.1 of the Project Instructions. It is unclear whether prior surveys were provided to the unit or why comparisons were not done. This resulted in numerous soundings from the prior surveys being brought forward from prior surveys to the present survey. Shoaler soundings were brought forward from prior surveys when the present survey depths indicated or supported the likelihood of their existance. If the prior surveys were used in the field, the hydrographer could have developed those shoaler prior survey depths to verify or disprove their existence.

e. The hydrographer states in section H of the Descriptive Report that the shoreline shown on the field sheet for Harbor Beach was transferred from the current nautical chart. However, the field sheet indicates the shoreline transferred in blue is from survey LS-2004 (1957). It appears this shoreline is a compilation of LS-2004 and unknown sources. The charted shoreline should have been shown on the field sheet for resolution of differences between the hydrography and the charted shoreline and verification in the field of charted shoreline features. There was a discrepancy between four detached positions taken at the ends of the finger piers extending from

the Coast Guard base in the vicinity of Latitude 43°50'58", Longitude 82°38'35" and the charted locations of the piers. The detached positions of the survey shift the charted ends of the piers approximately 2.5mm southeast at the survey scale. The survey detached positions do not have detectable errors. However, to adjust the charted positions to survey positions would result in a substaintial shift in the charted configurations. It is recommended, that without a contemporary shoreline map, the charted piers remain as is unless subsequent shoreline data reveals otherwise. It was determined to be inappropriate to shift the charted shoreline to the survey positions without a contemporary shoreline map during verification.

5. JUNCTIONS

An adequate junction was made with H-9906 (1980) to the south. This junction is complete and no further work is necessary. There are no contemporary surveys to the north, west, or east.

Junctions with the 1957 Lake Survey surveys was not done as they were considered noncontemporary. The Canadian survey number 3831 (1974) should not be considered a junctional survey and should be superseded in the area common with the present survey.

6. COMPARISON WITH PRIOR SURVEYS

LS-1768	(1941)	1:10,000
LS-1823	(1944)	1:10,000
LS-1847	(1946)	1:120,000
LS-2001	(1957)	1:10,000
LS-2002	(1957)	1:10,000
LS-2003	(1957)	1:10,000
LS-2004	(1957)	1:5,000

Survey No-3831 (1974) 1:100,000 Canadian Hydrographic Survey not available during O.C.

These are the most recent prior surveys in this area that provide complete coverage.

Several problems were encountered while making the comparison with these surveys. One of the most significant is that data on these prior surveys were brought forward from a black and white copy of these surveys and it was not possible to ensure what source the depths originated with. Another problem was that the Canadian Survey No. 3831 was primarily a limnological survey and the Canadians rejected some of this data on these surveys (See section J. of the Descriptive Report). See also a letter from CO, NOAA Ship WHITING to AMC Processing, dated November 14, 1980 included in the Descriptive Report.

In general about 90% of the soundings are deeper on the present survey by 1 foot or less. The remaining 10% appear to agree withing 2 to 3 feet with some differences up to 6 feet, with the present survey being deeper. The basic bottom configuration and least depths are in fair agreement. Difference from 7 feet shoaler to 9 feet deeper occur in the area of Harbor Beach. These differences may be attributed to cultural changes, dredging, and natural changes.

It is reasonable to attribute some small amount of difference to natural changes in the area, and to the fact that the survey area apparently contains large numbers of boulders and rocks. Also the scale and development on the present survey does not lend itself to revealing the extent or nature of the boulder and rocky alongshore area.

There were numerous soundings brought forward from these priors surveys to the present survey, as well as two wrecks in the Harbor Beach area.

Most of these soundings were not charted, possibly due to the scale limitations of the chart. It is recommended these soundings be given consideration by the chart compiler for charting on future editions of the chart if larger scale charting is proposed.

With the addition of the bottom characteristics and these ~~se~~ soundings brought forward to supplement the present survey it is adequate to supercede these prior surveys within the common area.

7. COMPARISON WITH CHART #14862 (23rd. Edition JULY 29, 1978)

a. Hydrography

The charted hydrography (70%) originates with the previously discussed prior surveys and the only further consideration is the charted soundings (approx. 12 depths) originating with Canadian Survey No. 3831 (1974). See recommended disposition of these depths in section 5 of this report. The remaining 30% originate with sources not ascertainable during verification. Most of these soundings are in the area of Harbor Beach and appear to be within the range of 1 to 2 feet with the charted depths being shoaler by that amount.

Attention is directed to the following:

(1) The sunken wreck, covered by 3 ~~f~~ feet, charted in Latitude 43°50'36.86" Longitude 82°38'32.86" appears on three of the prior surveys (LS-1768, LS-1823, LS-2004). It was difficult to ascertain at the time of verification if this wreck originated with or was located by any or all of these prior surveys. The wreck was found on the present survey (position 9052) with a ~~least~~ depth of 1 foot. Recommend this item be revised on the chart using the present survey information. originating source: LS-1704 (1935) concur
Evidence of the charted wreck is identified by a spike on the echogram which plots at the same location.

(2) The sunken wreck, covered by 6 feet, charted in Latitude 43°50'54.76", Longitude 82°38'30.23" originating with an unascertainable source is not verified or disproven by the present survey. Recommend retaining this item as charted unless subsequent investigations or information reveal otherwise. concur originating source: LS-1704 (1935)

(3) The visible wreck, charted in Latitude 43°51'21", Longitude 82°38'41" apparently originates with survey LS-2004 (1957). It is not verified or disproven by the present survey. The hydrographer did show on the field sheet that the breakwater is being reinforced by rock (riprap) in the vicinity of the visible wreck. The riprap is shown on the smooth sheet surrounding the northern portion of the breakwater in the vicinity of Latitude 43°51'30", Longitude 82°38'45". Recommend this item be retained as charted unless subsequent investigations or information have revealed otherwise. originating source: LS-1704 (1935) concur

Except as indicated above and discussed elsewhere in this report the data shown on the present survey is adequate to supersede the charted hydrography in the common area.

Items (1) through (3) have been carried forward from LS-1704 (1935) as described above. These wrecks were not mentioned by the hydrographer.

b. Controlling Depths

There are no conflicts between the controlling depth note on the chart and the present survey.

c. Aids to Navigation

The field failed to locate all the floating aids to navigation in the area of Harbor Beach. Only three out of the charted six were located with no discussion as to why the remaining three were not. The aids located by the hydrographer do mark the intended features.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions with the execptions listed 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 wrecks, ~~aids to navigation~~ and shoal soundings carried forward to the present survey. Additional work is required in the inshore portion of Harbor Beach.

concur

See O.C. Report

abrent

Franklin L. Saunders
Cartographic Technician
Verification of Data

Leroy G. Cram

Leroy G. Cram
Cartographer
Evaluation and Analysis
September 28, 1981

for R. O. Samuelson

Harry R. Smith
Senior Cartographic Technician
Verification Check

INSPECTION REPORT
H-9907

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. However, attention is directed to the following:

Several conflicts between the charted shoreline annd survey data are noted in the Verification Report. The surveying of harbor areas without contemporary shoreline maps exacerbates the potential for conflicts and lessens the likelyhood of solutions in the field or office.

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

R. D. Sanocki
Chief, Verification Branch
Processing Division

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

Approved/Forwarded
October 14, 1981

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

June 4, 1982

TO: Glen R. Schaefer GRS
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch gm

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

SUBJECT: Quality Control Report for Survey H-9907 (1980), Michigan, Lake Huron, Harbor Beach to Forestville

A quality control inspection of survey H-9907 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 from chart, 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 National Ocean Survey standards and requirements except as stated in the Verifier's Report, the HIT Report, and as follows:

1. The charted wrecks at latitude 43°50'36.86"N, longitude 82°38'32.86"W; latitude 43°50'54.76"N, longitude 82°38'30.23"W; and latitude 43°51'21"N, longitude 82°38'41"W were not investigated by the hydrographer as required.

2. The project instructions state that junctions should be made with surveys LS-2001 through 2003 (1957). Depth disagreements between these surveys and the present survey prevent the above from being accomplished. It is recommended that the area inshore of the present survey be scheduled for future survey work. Consideration should also be given to resurveying the inshore area south of the present survey.

cc:
C351

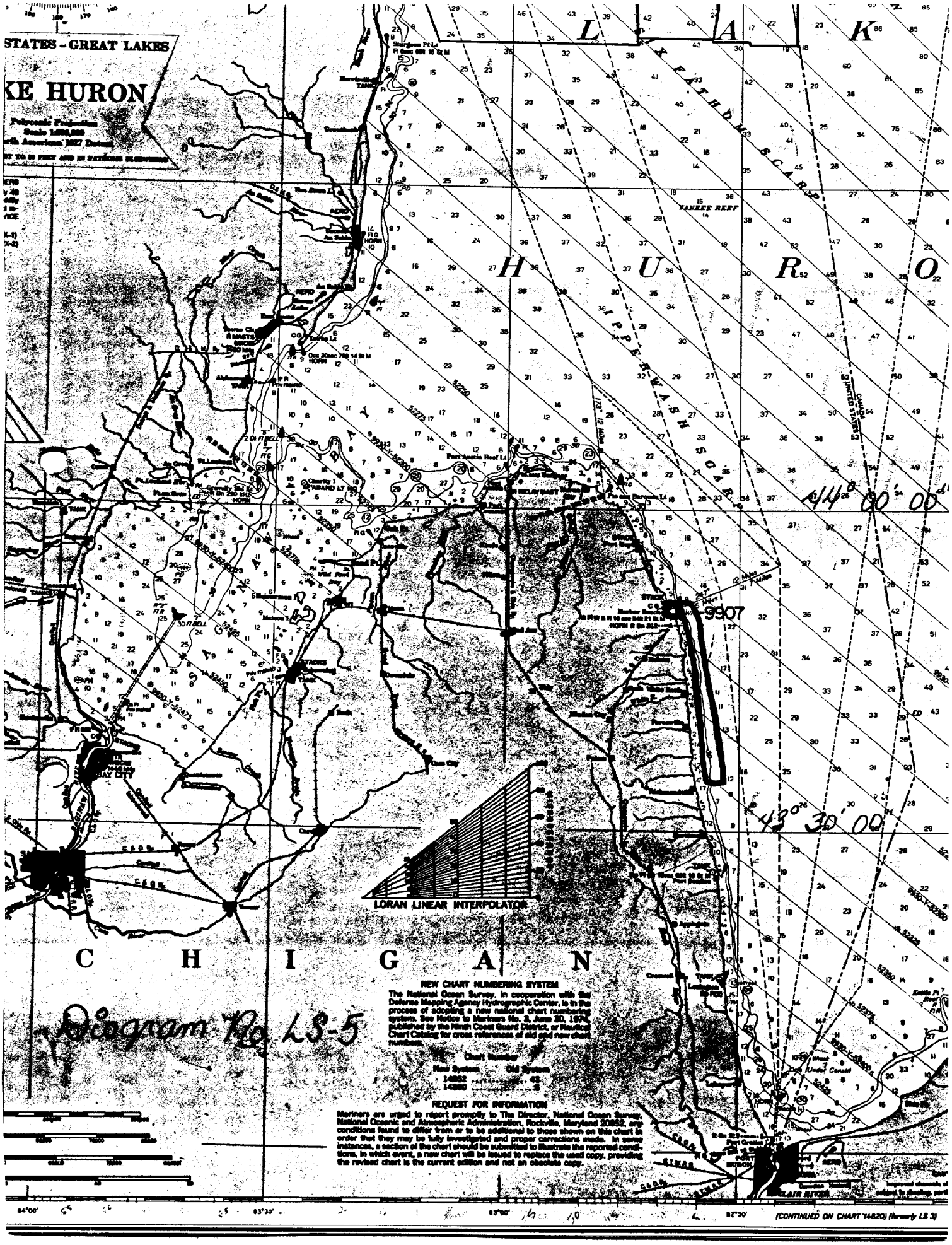

Diagram No. LS-5

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

DEC 15 1983

N/CG241:SJV

TO: N/MOA - Wesley V. Hull

FROM: for N/CG2 - C. William Hayes

SUBJECT: Report of Compliance for Survey H-9907

The smooth sheet and Descriptive Report for survey H-9907 (1980), Michigan, Lake Huron, Harbor Beach to Forestville, have been reviewed. This survey, except as noted in the Quality Control Report, dated June 4, 1982 (copy attached), and the Hydrographic Survey Inspection Team Report, dated October 14, 1981, 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.

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9907

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
14862 & Inset	12-17-84	Ralph B. Ross	Full ~~Part Before~~ After Verification Review Inspection Signed Via Drawing No. 4
14860	5-5-87	Joseph Purvis	Full ~~Part Before~~ After Verification Review Inspection Signed Via Drawing No. 7 Applied in full thru 14862
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
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FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63