

FE366

Diagram No. LS-7

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey . . . Hydrographic
Field No. AHP2-10-14-91
Registry No. FE-366

LOCALITY

State Michigan
General Locality . St. Joseph River
Sublocality St. Joseph

19 91

CHIEF OF PARTY
LT T.R. Waddington

LIBRARY & ARCHIVES

DATE January 15, 1992

FE366

wel

CHT
14930 ✓
14905 ✓
14901 ✓

HYDROGRAPHIC TITLE SHEET

FE-366

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.

AHP2-10-14-91

State Michigan

General locality ~~Lake Michigan~~ ST. JOSEPH RIVER

Locality St. Joseph River

Scale 1:20,000 - 1:10,000 Date of survey August 1, 1991

Instructions dated June 10, 1991* Project No. OPR-S-Y934-AHP2-91

Vessel NOAA Launch 1292 (VESNO 1292)

Chief of party Lt. Thomas R. Waddington, NOAA

Surveyed by Brian A. Link

Soundings taken by echo sounder, ~~hand lead, pole~~ echo sounder

Graphic record scaled by BAL, JLB, GAB

Graphic record checked by Jan L. Budlong

Protracted by N/A Automated plot by Bruning Zeta 824 (AHP2) ^{XYNECTICS 1241 POSTER(AHP2)}

Verification by Atlantic Hydrographic Section

Soundings in ~~fathoms~~ ~~feet~~ at ~~MLW~~ ~~MLLW~~ ^{LWD} meters at (IGLD 1955: 576.8 FEET)

REMARKS: * Change No. 1, dated July 24, 1991

BAL - Brian A. Link

JLB - Jan L. Budlong

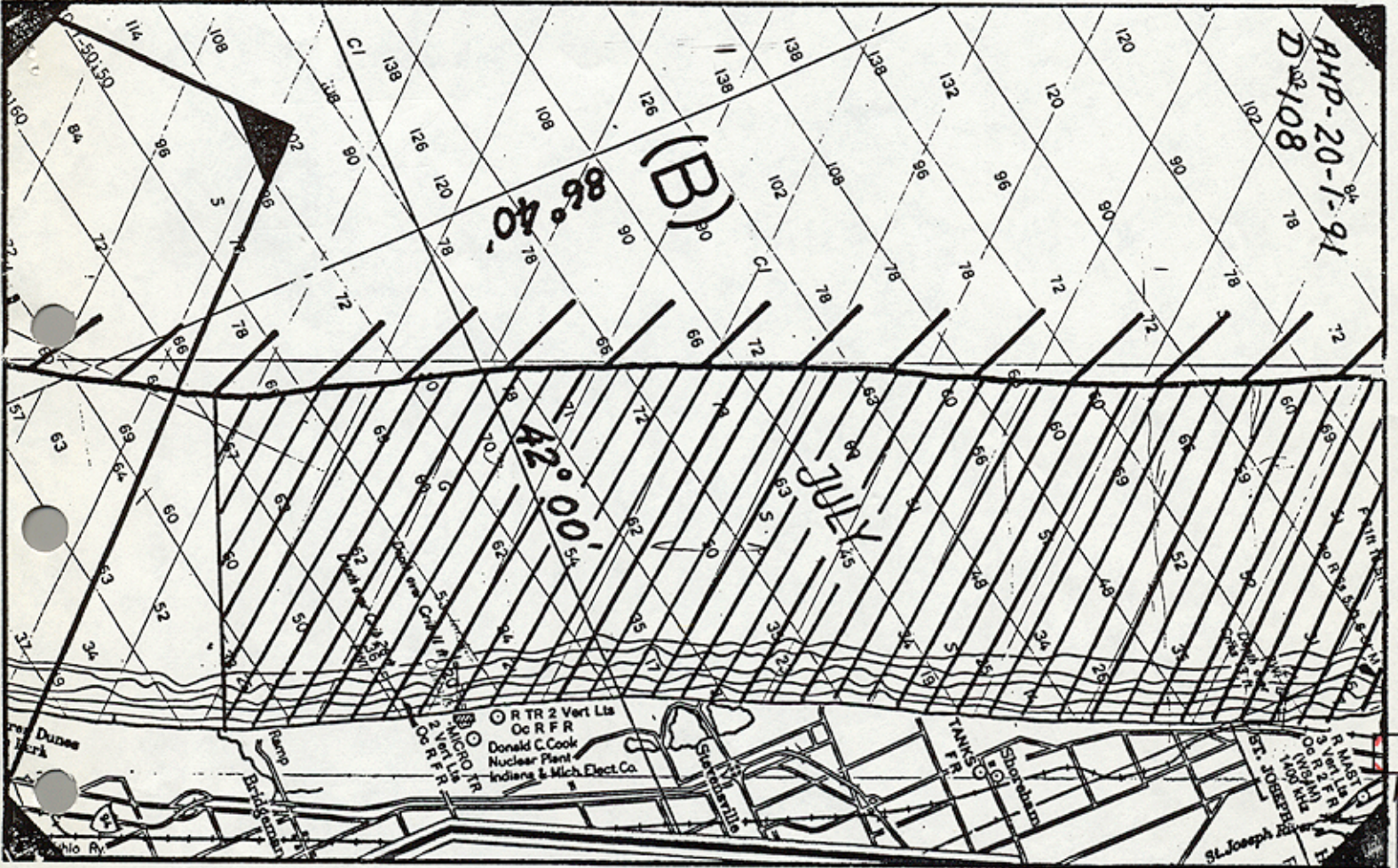
GAB - Ens. Glenn A. Brainard

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

AWON + SURF PWD 1/92

XWW 1/27/92

Monthly Progress Sketch
 OPR-Y934-AHP2
 Reconnaissance Survey D-108
 AHP2-20-1-91
 Michigan - Lake Michigan
 Benton Harbor to Warren Dunes State Park
 Sheet "B"



N/A	
JULY	AUG
39.0	
27.0	
66.0	
205.3	
N/A	
1	
3	
2	

- LEGEND**
- SQ NM SOUNDING
 - LNM MISCELLANEOUS DISTANCE
 - LNM DISTANCE TO AND FROM
 - LNM SOUNDING LINE
 - BOTTOM SAMPLES
 - CONTROL STATIONS
 - DIGIBAR CASTS
 - TIDE GAUGES

FE-366 (1991)
 SURVEY AREA

DESCRIPTIVE REPORT TO ACCOMPANY
FE-366
AHP-10-14-91
S-Y934-AHP2
Scale: 1:10,000
Atlantic Hydrographic Party Two
Chief of Party: LT. Thomas R. Waddington, NOAA
1991

A. PROJECT

This survey was conducted in accordance with Hydrographic Project Instructions S-Y934-AHP2, New Buffalo to Benton Harbor, Lake Michigan, Michigan, dated June 10, 1991.

The purpose of project S-Y934-AHP2 is to provide hydrographic data to be used for the construction of updated and accurate large-scale maps of the shoreline and coastal zone for a systematic regional assessment of erosion, sedimentation, and flooding. This is in response to a need expressed by the "International Joint Commission for updated and accurate large-scale maps of the shoreline and coastal zone" and Public Law 100-200, the "Great Lakes Shoreline Mapping Act of 1987".

This field examination addresses a shoreline change affecting chart 14930, in the St. Joseph River.

B. AREA SURVEYED

The area surveyed for FE-366 lies between the inner end of the south breakwater and the railroad swing bridge crossing the St. Joseph River. The area is bounded by the following geographic points:

Northwest - Latitude $42^{\circ}06'44''$ ⁴⁵N, Longitude $086^{\circ}29'06''$ W
Southwest - Latitude $42^{\circ}06'40''$ N, Longitude $086^{\circ}29'07''$ W
Northeast - Latitude $42^{\circ}06'44''$ N, Longitude $086^{\circ}29'00''$ W
Southeast - Latitude $42^{\circ}06'41''$ W, Longitude $086^{\circ}29'01''$ W
⊕⊕

This survey was conducted on August 1, 1991 (DN 213).

C. SURVEY VESSELS

NOAA launch 1292 (EDP No. 1292), a 21-foot MonArk, was used to collect all data on this survey. No problems were encountered with the vessel.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Hewlett-Packard HDAPS Programs:

<u>Program</u>	<u>Version</u>	<u>Date</u>
Survey	5.00	02/15/91
Postsur	5.00	02/20/91
Printout	2.24	02/15/91
Baseline	1.04	02/15/91
Backup	2.00	02/15/91
Quick	1.04	11/28/90
Diagnostic	2.70	02/15/91
Point	1.30	02/15/91
Plotall	1.80	02/15/91
Loadnew	1.27	02/15/91
Convert	2.37	02/15/91
Filesys	2.00	02/15/91
Inverse	1.23	02/15/91
Bigabst	1.01	02/20/91
Listawois	1.20	02/15/91
Reject	1.00	02/15/91
Carto	1.11	02/20/91
DP Editor	1.00	02/20/91
Global	1.01	02/15/91
Disc_Util	1.00	02/15/91
Makefix	1.00	02/15/91
Reapply	1.01	02/15/91
Backold	1.04	02/15/91
Newcont	1.01	02/15/91
Predict	1.00	02/15/91
Readprojs	1.04	02/15/91
Softcheck	1.00	02/15/91
Manu_Data	1.00	02/15/91

PC-DAS programs, in the NOAAEXE directory, Version 4.0 were used for on line data acquisition on the survey vessel. This new version adds DGPS capabilities.

In addition to the HDAPS and PC-DAS software, the following computer programs were used:

VELOCITY (IBM PC)	Version 1.11 (3/9/90)
MTEN 3 with enhancements (IBM PC)	Version 6/88
NADCON	Version 1.01 (1/9/89)
Wordperfect	Version 5.1
Volkswriter Deluxe	Release 2.0
Ashtech Multi-Site Mission Planner	Version 2.0, 1990, 1991

E. SONAR EQUIPMENT

Not Applicable.

F. SOUNDING EQUIPMENT

An Innerspace depth sounder, model 448, serial number 188, was used for data collection for the entire survey. No problems were encountered with the depth sounder.

Depths on this survey ranged from 1-3 meters.

G. CORRECTIONS TO SOUNDINGS

A lead line comparison conducted on the day of this survey to determine an instrument corrector was 0.1 meters for depth sounder S/N 188. Correctors determined for this instrument while conducting reconnaissance survey D-108 concurrently with this survey were zero. No instrument corrector was applied. The lead line calibrated in meters was checked on 7/11/91. No lead line corrections were necessary. A lead line comparison form, as well as the lead line calibration form, can be found in the "Separates to be Included With Survey Data".

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

The depth sounder was calibrated for a speed of sound through water of 1500 m/sec. Corrections for the speed of sound through water were computed from data obtained with Odom Hydrographic Systems, Inc. DIGIBAR electronic speed of sound probe serial number 154. Data quality assurance tests were performed prior to the casts. Program "Velocity" version 1.11 was used for the speed of sound corrections computations.

The digibar cast taken on day 212 for reconnaissance survey D-108 was used to determine the speed of sound for this survey. The original cast records and computations are included in the descriptive report for D-108. A copy of the velocity table is in the "separates to be included with survey data".

Speed of sound corrections were applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function of the "Post-Survey" program as required by the "Field Procedures Manual".

A static draft of 0.3 meters was applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function of the "Post-Survey" program as required by the "Field Procedures Manual". The draft was measured from a punch mark on the side of launch 1292, 0.6 meters above the transducer, to the water surface, then subtracting the difference.

Settlement and squat measurements for vessel 1292 were performed on August 28, 1991 (day 240). The level method was used. Settlement and squat correctors were applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function of the "Post-Survey" program as required by the "Field Procedures Manual". Data from the settlement and squat test are included in the "Separates to be Included With Survey Data".

The final field sheet was plotted using daily water level correctors determined by a reading taken from the ETC at station 908-7036, St. Joseph, Michigan, and reducing the readings to the IGLD for Lake Michigan of 576.8 feet (175.81 meters). An abstract of the determination of the daily corrector is included in the "Separates to be Included With Survey Data". APPROVED WATER LEVELS APPLIED DURING OFFICE PROCESSING.

Actual water level heights were requested from the Great Lakes Water Levels Unit, N/OMA1211, in a letter dated October 4, 1991. A copy of the letter is included in the appendices of this report. REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS

H. CONTROL STATIONS SEE ALSO SECTION 2.9. OF THE EVALUATION REPORT.

The horizontal control datum for this project is the North American Datum of 1983. Station 001 was used as the base station antenna site for the Global Positioning System (GPS).

Station 001, St. Joseph Lighthouse Eccentric, was located from station CAP to Third Order, Class I methods using a Topcon ET-1, serial number F30983. The elevation was determined by zenith distance observations. This station was located by Atlantic Hydrographic Party 2. Field records were submitted to the Coastal Surveys Unit, N/CG23322. Station CAP was located by the Coastal Surveys Unit, N/CG23322 using GPS. A signal list is included in the appendices of this report. A control station table is not required by the HDAPS when using the differential GPS.

The horizontal control report was written and submitted by the Coastal Surveys Unit employees under the title "GPS SURVEY, LAKE MICHIGAN, GREAT LAKES MAPPING PROGRAM" for GPS-324.

I. HYDROGRAPHIC POSITION CONTROL

Differential Global Positioning System (DGPS) was used as the method of positioning for all hydrographic data on this survey. Ashtech model XII receivers, serial numbers 700270C1075 and 700270C1076, were used as the base and remote stations respectively.

To meet the requirement for a daily system check the following procedure was recommended by LCDR. David H. Minkel, NOAA, from the Nautical Charting Research and Development Laboratory, in a memorandum to Captain Dean R. Seidel, NOAA, dated 12 July 1991.

Using the DGPS positioning system on board the sounding vessel a reference position is established at a convenient location. This position must be determined under the following conditions; 1) there are 5 or more satellites being used to determine the reference position, 2) there are DGPS correctors for all satellites being used to determine the position, and 3) the HDOP of the position solution is less than 2.0. This position should be established as soon as practicable upon arrival in the survey area. The position agreement criteria used for DGPS should conform to the requirements prescribed for the scale of the survey.

The daily system check should be performed under similar GPS conditions (5 satellites, low HDOP) at least once daily. Due to the 4 minute precession of the GPS constellation, the time of day when these system checks can be performed will change.

While this method can not insure that all positional data will be within survey specifications, it can detect degradation of the performance of the GPS sub-system. This procedure is recommended for use until a data integrity monitoring system, appropriate for hydrographic survey operations, is developed.

The above recommended procedure was adopted on this survey. An abstract of the daily system checks is included in the "Separates to be Included With Survey Data".

As directed by DGPS operating specifications, the horizontal dilution of precision (HDOP) value for 1:10,000 scale surveys should not exceed 3.0. Because of a high rise condominium forming a horizon obstruction to the south, HDOP values exceeded the 3.0 value during sounding acquisition. When this occurred, the affected data was smoothed using the HDAPS. HDOP values for detached positions were maintained below 3.0.

Two positions, numbers 928 and 930, did not plot well in relation to the field sketch, and were scaled to fit, rather than rejecting them. This was done to aid in applying the shoreline and shoreline detail on the final field sheet. These positional errors, probably caused by inaccurate bearings and distances entered in the PC-DAS change window prior to accepting the detached positions, were magnified on this large scale plot. On a smaller scale, the original positions would have been acceptable. The field sketch is included in the "Supplemental Correspondence" section of the Descriptive Report Appendices.

J. SHORELINE SEE ALSO SECTION 2.6 OF THE EVALUATION REPORT.

Shoreline and shoreline detail shown in red on the final field sheet ^{WERE} transferred by hand, based on the detached positions taken on the survey. Shoreline shown in brown is for reference only, and is based on currently charted shoreline shown on chart 14930.

This field examination was performed centered at latitude 42°06'42"N, longitude 086°29'04"W. At this location, on the south side of the St. Joseph River near the inner end of the south breakwater, a new marina has been constructed. Detached positions were taken on enough points inside the new marina to delineate the shape of the basin and location of the piers. Representative soundings were also taken in the marina basin. This data should be sufficient to make a chart correction until verified shoreline photography becomes available. A more exhaustive locating of shoreline points was prohibitive because of the horizon obstruction mentioned in section I. of this report, which made obtaining quality HDOP positions very time consuming or impossible.

K. CROSSLINES SEE SECTION 3.9. OF THE EVALUATION REPORT.

Not Applicable.

L. JUNCTIONS SEE SECTION 5. OF THE EVALUATION REPORT.

Not Applicable.

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

Not Applicable.

N. COMPARISON WITH THE CHART SEE ALSO SECTION 7. OF THE EVALUATION REPORT.

⁹³⁰This survey area and shoreline change does not appear on chart 14390, 22nd edition, dated January 14, 1989. CONCUR
IT IS RECOMMENDED THAT THE AREA BE CHARTED AS SHOWN ON PRESENT SURVEY.

No dangers to navigation were identified on this survey.
SEE SECTION 7.D. OF THE EVALUATION REPORT.

O. ADEQUACY OF SURVEY SEE ALSO SECTION 8. OF THE EVALUATION REPORT.

This field examination survey is adequate to update nautical chart 14390, St. Joseph River, Michigan, in the area described in section B of this report. CONCUR

P. AIDS TO NAVIGATION SEE SECTION 7.C. OF THE EVALUATION REPORT.

Not Applicable.

Q. STATISTICS

Description

Total Positions Taken	20
Detached Positions	14
Rejected Positions	0
Omitted Positions	0
Total Miles of Hydrography	0.1
Sq. Nautical Miles of Hydrography	0
Bottom Samples	0
Total Miles of Bottom Drag	0
Velocity Casts	1*
Water Level Stations	1
Days of Production	1

*From Reconnaissance Survey D-108.

R. MISCELLANEOUS

The data for this field examination was collected on the end of the graphic record for day 213 operations on reconnaissance survey D-108, before it was determined that a separate field examination registry number would apply. Therefore, the graphic record for this field examination was submitted with Reconnaissance Survey D-108. An HDAPS data listing for this field examination is included in the records for FE-366.

S. RECOMMENDATIONS

Not Applicable.

T. REFERRAL TO REPORTS

<u>Title</u>	<u>Transmittal Information</u>
Descriptive Report for D-108	Atlantic Hydrographic Section (N/CG244) Norfolk, Virginia
Horizontal Control Report for S-Y934-AHP2	Field Photogrammetry Section Norfolk, VA (N/CG233)
User Evaluation Report S-Y934-AHP2	Atlantic Hydrographic Section (N/CG244) Norfolk, Va.
Coast Pilot Report	Atlantic Hydrographic Section (N/CG244) Norfolk, Va.

Submitted by: Brian A. Link, Launch Hydrographer in Charge

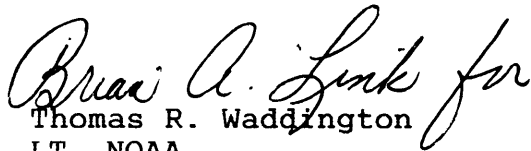
CONTROL STATIONS as of 11 Sep 1991

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code MM/DD/YY	Station Name
1		042:06:57.924	006:29:36.439	0	250	0.0	0.0	07/03/91	ST JOSEPH LIGHTHOUSE ECC
2		041:43:48.503	006:53:39.435	0	250	0.0	0.0	08/05/91	CONDO ECC
3		041:58:24.112	006:34:04.295	0	250	0.0	0.0	07/01/91	HUKE
4		041:58:55.000	006:33:26.000	0	250	0.0	0.0	07/01/91	PUKE

Approval Letter
Reconnaissance Hydrographic Survey
S-Y934-AHP2
AHP2-10-14-91
FE-366

This field examination survey was conducted in accordance with the project instructions for S-Y934-AHP2, the hydrographic manual, the hydrographic survey guidelines, and the field procedures manual. The survey data and reports were completed and reviewed in their entirety and all supporting records were also checked.

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



Thomas R. Waddington
LT. NOAA
Chief, Atlantic Hydrographic Party Two

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

Water Level Note for Hydrographic Sheet

Processing Division : Atlantic Hydrographic Section (N/CG244)

Hourly heights are approved for: St. Joseph, MI (908-7036)
Water Level Station

Period: 8/1/91

Hydrographic Sheet: FE-366

OPR-S-Y934

Locality: Lake Michigan

Plane of reference: Low Water Datum (IGLD 1955 : 576.8 Feet)

Remarks:

Zoning not required, data from other gages indicates no unusual water level movement during the survey period.

for Brooks E. Widder
Chief, Great Lakes Section

GEOGRAPHIC NAMES

FE-366

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

Name on Survey	A	B	C	D	E	F	G	H	K
MICHIGAN (title)	X								1
ST. JOSEPH (title)	X								2
ST. JOSEPH RIVER	X								3
									4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

01/13/92

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-366

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	20
NUMBER OF SOUNDINGS	40

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	2	10/30/91
VERIFICATION OF FIELD DATA	11	12/11/91
ELECTRONIC DATA PROCESSING	5	
QUALITY CONTROL CHECKS	13	
EVALUATION AND ANALYSIS	17	12/19/91
FINAL INSPECTION	4	12/19/91
TOTAL TIME	52	
ATLANTIC HYDROGRAPHIC SECTION APPROVAL		12/23/91

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

SURVEY NO.: FE-366

FIELD NO.: AHP2-10-14-91

Michigan, St. Joseph River, St. Joseph

SURVEYED: 1 August 1991

SCALE: 1:10,000

PROJECT NO.: S-Y934-AHP2-91

SOUNDINGS: INNERSPACE Model 448 Depth Sounder

CONTROL: ASHTECH Model XII Global Positioning System (GPS)
(Differential Mode)

Chief of Party.....T. R. Waddington

Surveyed by.....G. A. Brainard
.....B. A. Link
.....J. L. Budlong

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

1. INTRODUCTION

a. No unusual problems were encountered during office processing.

b. A 1:1,000 scale page size smooth plot was generated during office processing and is appended to this report.

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

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H., I., and T. of the Descriptive Report.

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the survey datum and the North American Datum of 1927 (NAD 27). To place this survey on the NAD 27 datum move the projection lines 0.143 seconds (4.407 meters or 0.44 mm at the scale of the survey) north in latitude, and 0.083 seconds (1.907 meters or 0.19 mm at the scale of the survey) west in longitude.

b. Brown shoreline applied to the smooth sheet originates with NOS Chart 14930 22nd Edition, 14 January 1989 and is for

orientation purposes only. All other shoreline was delineated by the field unit and is shown in red on the smooth plot.

3. HYDROGRAPHY

- a. No crosslines were run during survey operations.
- b. No depth curves were delineated by the present survey data.
- c. The development of bottom configuration and determination of least depths is considered adequate.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports conform to the requirements of the HYDROGRAPHIC MANUAL and the FIELD PROCEDURES MANUAL.

5. JUNCTIONS

There are no junctional surveys. There is no charted hydrography in the junctional area.

6. COMPARISON WITH PRIOR SURVEYS

LS-1729	(1937)	1:10,000
<u>LS-2267</u>	<u>(1965)</u>	<u>1:10,000</u>

The prior surveys listed above are common to the present survey. The present survey defines a new marina; the marina was not in existence when the prior survey data were acquired.

The present survey is adequate to supersede the above prior surveys in the common area.

7. COMPARISON WITH CHART 11451 (24th Edition Oct. 13/91)

a. Hydrography

There is no charted hydrography within the limits of the present survey, and no discussion is required in this report. The hydrographer makes an adequate chart comparison in section N. of the Descriptive Report.

The present survey is adequate to supersede the charted shoreline within the common area.

b. Dangers to Navigation

There were no dangers to navigation submitted by the field unit. No dangers to navigation were noted during office processing.

c. Aids to Navigation

There were no fixed or floating aids to navigation located in the present survey area.

8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

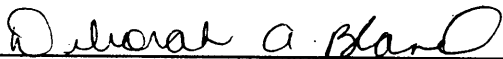
No additional work is required.



Robert Snow
Cartographic Technician
Verification of Field Data



Norris A. Wike
Cartographer
Evaluation and Analysis



Deborah A. Bland
Senior Cartographic Technician
Verification Check

APPROVAL SHEET
FE-366

Initial Approvals:

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

Robert G. Roberson

Date: 23 December 1991

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

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

Christopher B. Lawrence

Date: 23 December 1991

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

Final Approval:

Approved: _____

J. Austin Yeager

Date: 1/23/92

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

86°29'06"

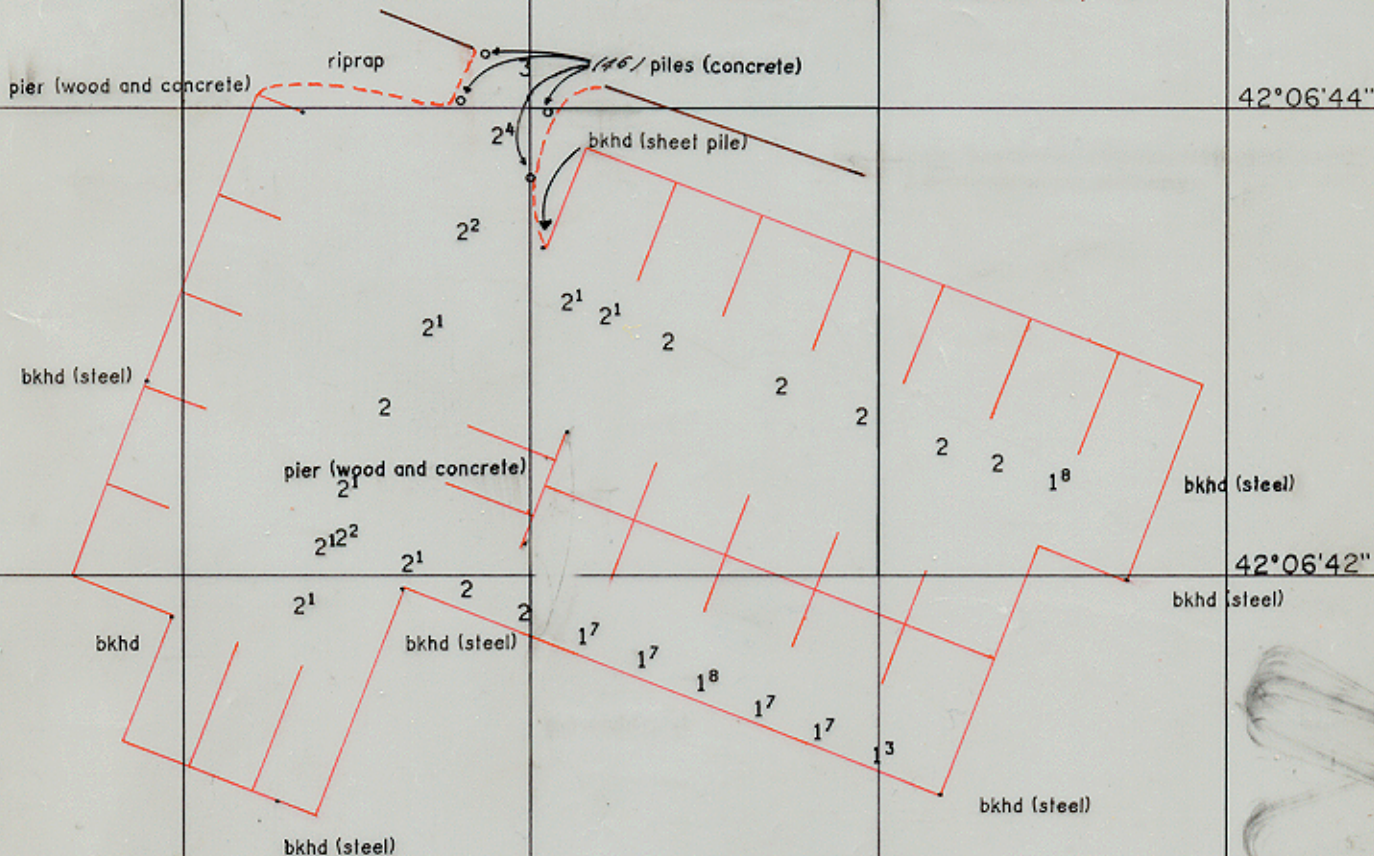
86°29'04"

86°29'02"

86°29'00"

42°06'46"

FE-366
 MICHIGAN
 ST JOSEPH RIVER
 ST JOSEPH
 1 AUG, 1991
 SCALE 1:1,000
 SOUNDINGS IN METERS AT LWD (IGLD 1955 : 576.8 FEET)
 HORIZONTAL DATUM: NAD 1983
 SHEET 1 OF 1
 Shoreline in brown from NOS Chart #14930, 22nd,
 Edition, January 14, 1989 for orientation only.



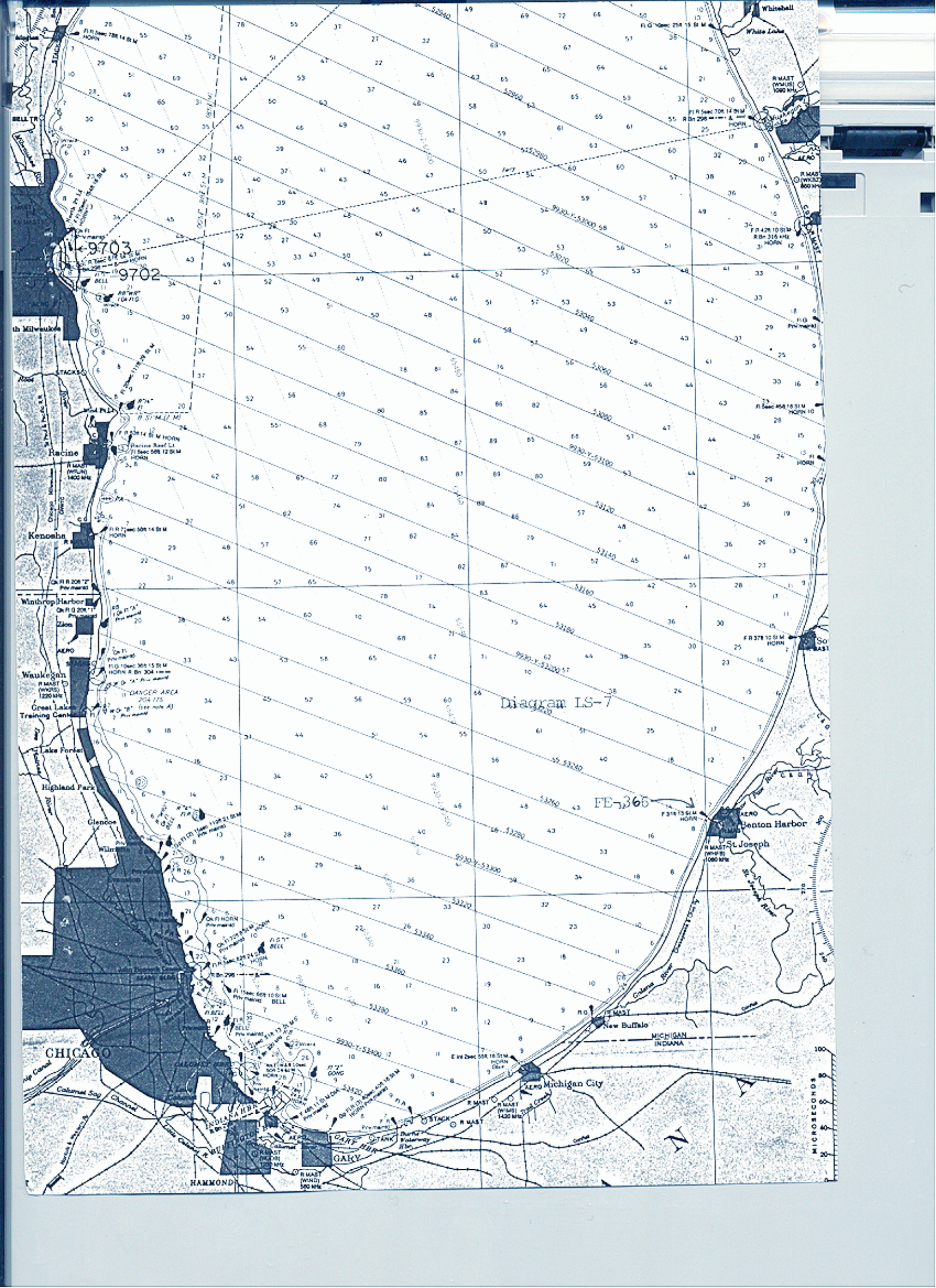
42°06'44"

42°06'42"

bkhd (steel)

86° 29' 02"
 NAD 27
 XYNETICS 1201
 ✓ RS 12-2-91
 42° 06' 40"

42°06'40"



MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-366

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
14930	3/16/92	R. Winfield	Full Part Before After Marine Center Approval Signed Via
	3-16-92	D. Harp	Drawing No. 5 Appa Hydro
14905	3/16/92	R. Winfield	Full Part Before After Marine Center Approval Signed Via
14905	3/16/92	D. Harp	Drawing No. 9 No Corrections to this Scale Chart
14901	3/16/92	R. Winfield	Full Part Before After Marine Center Approval Signed Via
	3-16-92	D. Harp	Drawing No. 8 No Corrections to this Scale Chart
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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