

FE380

Diagram No. IS-7

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Field Examination
Field No. AHP2-10-9-92
Registry No. FE-380

LOCALITY

State Indiana
General Locality Lake Michigan
Sublocality Vicinity of Michigan City &
Burns International Harbor

1992

CHIEF OF PARTY
LT T.R. Waddington

LIBRARY & ARCHIVES

DATE March 22, 1994

★U.S. GOV. PRINTING OFFICE: 1987-756-980

FE380

D-113 Report not located

CHTS

CP 6
14926 pgs 17 + 30 - Applied 10-19-94 wot
14901
14905 + inset - Applied 10-19-94 wot

NOAA FORM 77-28

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

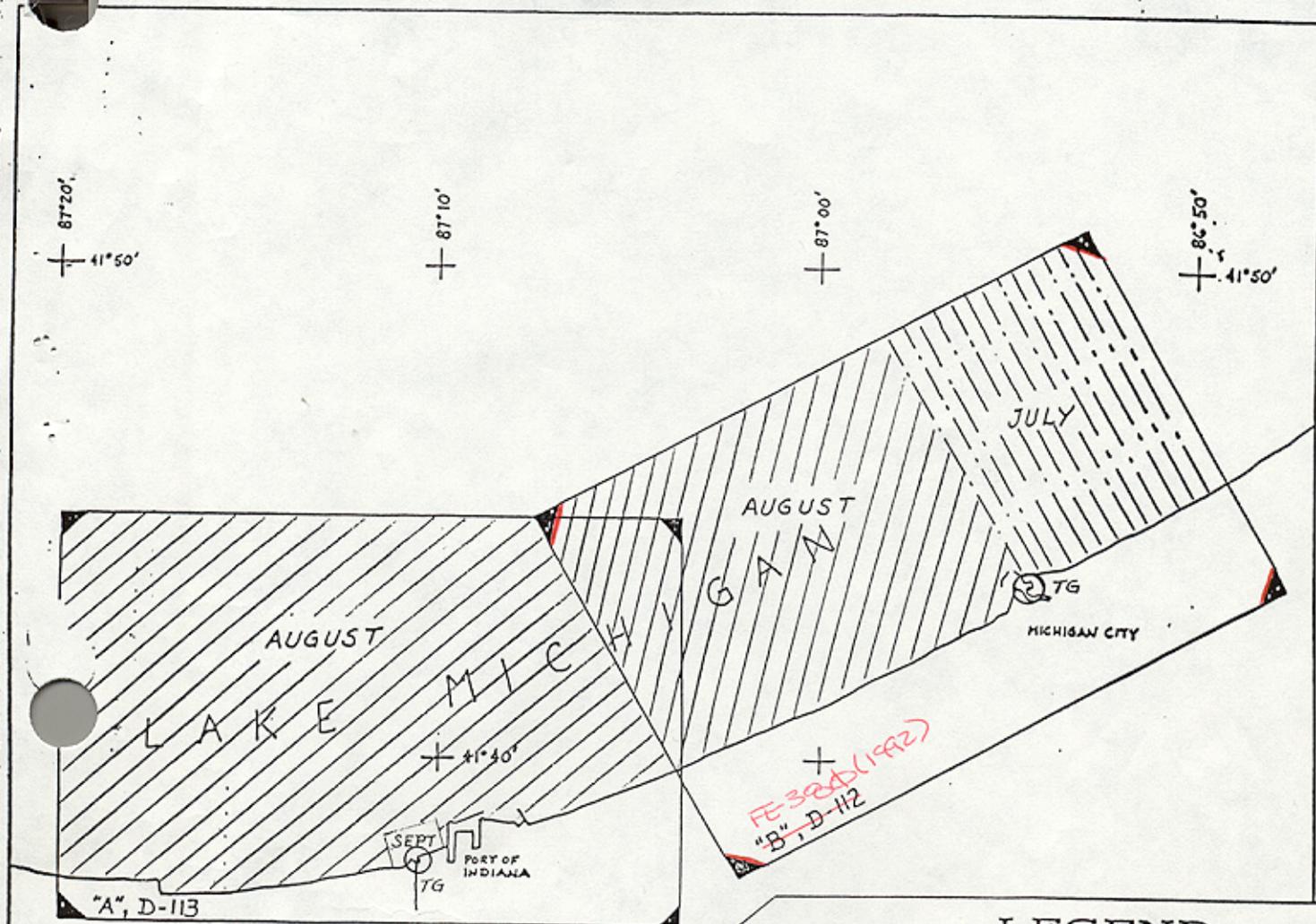
REGISTER NO.

FE-380

HYDROGRAPHIC TITLE SHEET

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. AHP2-10-⁹8-92State IndianaGeneral Locality Lake MichiganLocality vicinity of Michigan City and Burns International HarborScale 1:10,000 Date of Survey August 7 to September 4, 1992Instructions Dated June 2, 1992 Project No. S-Y939-AHP2Vessel Atlantic Hydrographic Party, Launch 1292Chief of Party LT. Thomas R. Waddington, NOAASurveyed By BAL, TMR, TTM, CBMSoundings taken by echo sounder, hand lead, pole Innerspace Model 448, Raytheon Model 719CM, PoleGraphic record scaled by CBM, TTMGraphic record checked by BALProtracted by Not Applicable Automated plot by Bruning Zeta Model 824 (FIELD)
*KINETICS 1201 PLOTTER (AHS)*Verification by Atlantic Hydrographic SectionSoundings in meters at IGLD 1985REMARKS: BAL - Brian A. LinkTMR - Thomas M. RybarskiTTM - Timothy T. Madsen, LT(jg), NOAACBM - Cory B. MillerNOTES IN THE DESCRIPTIVE REPORT WERE MADE IN RED DURING
OFFICE PROCESSING.X.W.M. 5/23/94 AWOIS and SURF ✓ 3/94 RWD

Progress Sketch
 OPR-S-Y939-AHP2
 Reconnaissance Survey
 Lake Michigan
 MI/IN State Line to Gary, IN
 NOAA Launch 1292
 Thomas R. Waddington, LT, NOAA
 COMMANDING



LEGEND

July	Aug	Sept
12	69	2
14	46	3
14	49	5
88.4	307.5	23.3
0	0	0
1	1	0
3	3	0
2	0	2

- Soundings (SQNM)
- LNM Miscellaneous Distance
- LNM Distance to and from
- LNM Sounding Line
- Bottom Samples
- Control Stations
- Velocity Casts
- Water Level Stations

DESCRIPTIVE REPORT TO ACCOMPANY
FE-380
AHP2-10-~~8~~¹92
S-Y939-AHP
Scale: 1:10,000
Atlantic Hydrographic Party Two
Chief of Party: LT. Thomas R. Waddington, NOAA
1992

A. PROJECT

This survey was conducted in accordance with Hydrographic Project Instructions for S-Y939-AHP, South Shore of Lake Michigan, Indiana, dated June 2, 1992. No changes to these instructions were issued.

The purpose of project S-Y939-AHP 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 the two AWOIS items assigned to S-Y939, charted cribs located within the survey limits of S-Y939, uncharted wrecks discovered as a result of local knowledge, and shoal sounding investigations found while conducting reconnaissance survey D-113.

B. AREA SURVEYED

The area surveyed for FE-380 extends from Long Beach, Indiana, just east of Michigan City, Indiana westward to the vicinity of Burns International Harbor, along the southern shore of Lake Michigan. The area is bounded by the following geographic points:

Northwest - Latitude 41°39'00"N, Longitude 087°12'00"W
Southwest - Latitude 41°37'45"N, Longitude 087°12'00"W
Northeast - Latitude 41°45'00"N, Longitude 087°52'00"W
Southeast - Latitude 41°44'00"N, Longitude 087°52'00"W

This survey was conducted from August 7, 1992 (DN 220) to September 4, 1992 (DN 248).

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

The Hydrographic Data Acquisition and Processing System (HDAPS) was used to process all hydrographic data for this survey. Listings of version numbers for the various HP-DPS programs used for all data processing are provided in the Appendix VI.* In addition to the HDAPS, the following non-HDAPS computer programs were used:

VELOCITY (IBM PC)	Ver. 1.11 (3/9/90)
MTEN 3 with enhancements (IBM PC)	Ver. 6/88
NADCON (IBM PC)	Ver. 1.01
WORDPERFECT (IBM PC)	Ver. 5.1
Monitor Program	Ver. Monogga

PC-DAS programs, in the NOAAEXE directory, Version 4.02 were used for on line data acquisition on the survey vessel for the entire survey. This version has DGPS capabilities, including the new sensor initialization program.

*DATA FILED WITH FIELD RECORDS.

E. SONAR EQUIPMENT

Not Applicable.

F. SOUNDING EQUIPMENT

An Innerspace depth sounder, model 448, serial number 187, was used for data collection on day 220. This depth sounder failed thereafter and was replaced by a Raytheon echo sounder, model DE-719CM, S/N 8652, received from the Atlantic Marine Center, Electronics Engineering Branch. The Raytheon echo sounder was used for the remainder of the survey; no problems were encountered.

A standard lead line calibrated in meters, serial number 1292, was used during this survey for comparison readings with the echo sounder. No pole soundings were obtained on this survey.

Depths on this survey ranged from 5 - 16 meters.

G. CORRECTIONS TO SOUNDINGS

Corrections for the speed of sound through the water column were computed from data obtained with an Odom Hydrographic Systems Inc., Digibar Model DB1100 speed of sound probe, serial number 154. This instrument was calibrated by the manufacturer on May 13, 1991. A copy of this calibration may be found in the Survey Separates, section IV.*

Program "Velocity" was used for computing the speed of sound correctors. Speed of sound corrections were applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function as required by the Field Procedures Manual. Copies of the tables and support documentation are in the Survey Separates, section IV.*

The following speed of sound casts were taken on this survey:

```

=====
                                     Depth
No.  DN    DATE      Latitude   Longitude  Actual/Extended
=====
  4  219    8/6/92    41°44.6'N 086°56.0'W 18m/23.4m
  5  233    8/21/92   41°44.2'N 087°11.2'W 18m/20.8m
  6  239    8/26/92   41°40.2'N 087°14.0'W 16m/20.8m
  7  245    9/1/92    41°41.0'N 087°10.0'W 14m/15.6m
=====

```

The following table shows the Velocity Tables used for field processing, which is also recommended for final processing at the Atlantic Marine Center:

```

=====
Cast No.      Table No.      Use for Days
=====
      4              4             220
      7              7            247, 248
=====

```

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.

Lead line comparisons were conducted each day of hydrography to determine an instrument corrector. The average corrector for the Innerspace depth sounder S/N 187 was zero. The average corrector for the Raytheon DE-719CM depth sounder, S/N 8652, was

* DATA FILED WITH FIELD RECORDS.

also zero. The lead line, calibrated in meters, was checked on 7/15/92. No lead line corrections were necessary. A lead line comparison form, as well as the lead line calibration form, can be found in the survey Separates.*

A static draft of 0.3 meter was applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function. The draft was measured by subtracting the difference from a punch mark on the side of launch 1292, 0.6 meters above the transducer, to the water surface.

Settlement and squat measurements for vessel 1292 were performed on June 26, 1992 using the level method. Settlement and squat correctors were applied to the final field sheet soundings using the HDAPS "Reapply Depth Correctors" function. Data from the settlement and squat test are included in the Survey Separates, section IV.*

The final field sheets were plotted using daily water level correctors determined by readings taken from the ETG at station 908-7038, Michigan City, Indiana on days 220 and 248 and by readings taken from the ETG at station 908-7039, Burns Harbor, Indiana on day 247, then reducing the readings to the IGLD of 1985 for Lake Michigan of 176.0 meters. An abstract of the determination of the daily correctors is included in the survey Separates.*

Actual water level heights were requested from the Datums Section, N/OES231, in a letter dated September 14, 1992. A copy of the letter is included in the appendices of this report.*

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. Stations 001 and 002 were used as the base station antenna sites for the Global Positioning System (GPS). Station 001 was used on day 220. Station 002 was used on days 247 and 248.

Station 001, CONDO 1991, was located by resection to Third Order Class I methods using the Topcon ET-1, serial number F30983. A static baseline was observed using the Ashtech Model XII GPS receivers as a check on station CONDO and for determination of the elevation. These receivers were not modified to meet NGS standards requiring carrier phase, two channel operation. This station was located by Atlantic Hydrographic Party 2, during the S-Y934, 1991 field season. Field records were submitted to the Coastal Surveys Unit, N/CG23322.

* DATA FILED WITH FIELD RECORDS.

Station 002, MW 1992, was located by GPS observations between NGS second order stations and MW 1992. The Horizontal Control Report was written by AHP and submitted with the field records to

the Coastal Surveys Unit, N/CG23322. The HDAPS Control Station Table is included in the appendices of this report. DATA APPENDED TO THIS REPORT.

I. HYDROGRAPHIC POSITION CONTROL SEE ALSO SECTION 2.4. OF THE EVALUATION REPORT.

Differential GPS was used as the method of positioning for all hydrographic data on this survey. An Ashtech model XII receiver, serial number 700283E1389 was used for the reference station. An Ashtech Sensor, serial number 700417A1039 was used for the remote station on vessel 1292. Ashtech supplied Maxxon VHF radios using channel one (Frequency 170.200 Mhz) were used as the data link between reference and remote stations.

To confirm the reference site as required by section 3.4.6.3 of the Field Procedures Manual, program Monitor was run for 24 hours starting on June 29, 1992 at station 001. The GPS availability at this site was determined to be 100% from the test. The Monitor program was run for 24 hours starting on August 12, 1992 at station 002. The GPS availability at this site was determined to be 99.9% from the test. A copy of the outlier.sum files from both tests, showing the statistics, as well as the Plots of Radial Error in Position, are included in section III of the survey separates.

Performance checks, as required by section 3.4.4 of the Field Procedures Manual, were accomplished by comparing the DGPS position of the vessel to aero-triangulated positions on fixed objects within the survey area. Performance checks were obtained daily. Abstracts of these checks are included in section III of the survey separates.* Information concerning the aero-triangulated positions is included in Appendix VI of this report.*

* DATA FILED WITH FIELD RECORDS.

As directed by DGPS operating specifications in the Field Procedures Manual, hydrographic operations ceased whenever the horizontal dilution of precision (HDOP) values exceeded 7.5. This was calculated by the formula found in the Field Procedures Manual, using an ESE value of 4m, an EPE value of 30m, and an EDE value of 0.2m. The periods of poor satellite geometry causing high HDOP values were minimal on this survey, with no more than twenty minutes per day lost.

The only unusual method of system operation was the inability of the vessels data link VHF radio to receive correctors with squelch applied to the radio. No data was lost as a result of this problem. Otherwise, the system worked well. Occurrences of "lost

lock" were minimal and caused by periods of high HDOP. Operations were suspended during these periods, until the HDOP returned to a usable value.

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

Not Applicable.

K. CROSSLINES

Not Applicable.

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

Not Applicable.

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

There were no items assigned to this survey which originated from a prior survey.

A formal comparison with prior surveys was not required for this project.

N. COMPARISON WITH THE CHART

This survey was compared with Chart 14905, 1:120,000 scale, 26th edition, dated March 9, 1991 and Chart 14926 SC, 5th edition, January 20, 1990.

Two AWOIS items, numbers 8247 and 8248, were investigated as part of this survey. These are discussed on Item Investigation Reports in Appendix VI of this report. DATA APPENDED TO THIS REPORT.

A dangers to navigation letter was sent to the Commander, Ninth U.S. Coast Guard District, Cleveland, Ohio. This letter outlines the following dangers discovered while conducting this survey.

▶ The wreck "Muskegon" was located by detached position at latitude 41°42'47.33"N, longitude 086°56'04.89"W, (PN 788, DN 247). A least depth of 5.3m at IGLD 1985 was obtained by echo sounder. The source of the name and location was obtained by local knowledge of Don Loyd, Professional Diving Services Inc., phone (219)874-8979). He stated the wreck was approximately 110' long, lying in a southwest to northeast orientation. The wreck lies in approximately 8 meters of water, and is recommended for charting on both charts 14905 and 14926. CONCUR SEE SHEET 1 OF 3.

#8883
14926 830
14905

► The wreck "Wheeler" was located by detached position at latitude 41°44'45.71"N, longitude 086°51'55.67"W, (PN 828, DN 248). A least depth of 4.0m at IGLD 1985 was obtained by echo sounder. The source of the name and location was obtained by local knowledge of Don Loyd, Professional Diving Services Inc., phone (219)874-8979). No further information was available. The wreck lies in approximately 6.5 meters of water, and is recommended for charting on both charts 14905 and 14926. *CONCUR SEE SHEET 2 OF 3.*

► An extension to a currently charted intake crib and pipeline was located by detached position at latitude 41°39'14.64"N, longitude 087°07'36.8"W, (PN 778, DN 247). A least depth of 11.96m (39 FT) at IGLD 1985 was obtained by echo sounder. The hydrographer was informed of the new location of the most westerly of three charted cribs (one lighted) offshore of the Burns Harbor Plant, Bethlehem Steel, by divers from the vessel Marian E., Cleveland, Ohio, cleaning zebra mussels off them. The currently charted crib at latitude 41°39'09"N, longitude 087°07'42"W, was reportedly removed, when the new crib was constructed further offshore. The charted crib should be deleted and the new crib, position 778, charted. *CONCUR ITEM INCORPORATED INTO SURVEY D-113(1992). SEE SECTION 7.9.1) OF THE EVALUATION REPORT FOR D-113(1992) FOR CHARTING RECOMMENDATION.*

► An uncharted shoal sounding was developed with reduced line spacing at latitude 41°37'57.62"N, longitude 087°11'42.34"W. This spike like shoal was first discovered while conducting survey D-113. The least depth of 4.3m at IGLD 1985 was obtained by echo sounder between positions 672 and 673 on DN 245 on survey D-113. Divers were not available for further investigation on this survey. *THIS ITEM WAS INCORPORATED INTO SURVEY D-113(1992). SEE SECTION 7.9.2) OF THE EVALUATION REPORT FOR D-113(1992) FOR CHARTING RECOMMENDATION.*

► An uncharted and unidentified obstruction was discovered on survey D-113, and searched for unsuccessfully as part of this survey. An attempt was made to locate the narrow spike seen on the graphic record on day 234, survey D-113, by running reduced line spacing hydrography. The spike was not detected. Neither divers nor a bottom drag were available. Time constraints prevented having a bottom drag sent from the AHP detachment in Florida. An obstruction, with a least depth of 12.3m (42 FT) at IGLD 1985 is recommended for charting at latitude 41°39'26.48"N, longitude 87°08'02.14"W. *CONCUR THIS ITEM WAS INCORPORATED INTO SURVEY D-113(1992). SEE SECTION 7.9.4) OF THE EVALUATION REPORT OF D-113(1992) FOR CHARTING RECOMMENDATION.*

Four charted cribs, listed in the following table, were also located as part of this survey. The positions found on this survey agreed with the charted positions.

Crib Locations

PN	Latitude(N)	Longitude(W)	Chart Depth	Survey Depth
*748	41°38'24.32"	087°10'44.78"	28 ft	29.2-28.5' / 8.7m
*779	41°39'15.06"	087°07'28.56"	33 ft	38.4-37.4' / 11.4m
*781	41°38'58.32"	087°07'21.33"	Bares 4m on light	3m crib
1829	41°44'08.46"	086°54'03.04"	21 ft	22.9-28.2' / 8.6m

* THE ABOVE ITEMS WERE INCORPORATED INTO SURVEY D-113(1992). SEE SECTIONS LISTED BELOW OF EVALUATION REPORT FOR D-113(1992) FOR CHARTING RECOMMENDATION.

748-6.4) 781-7.9.3) 779-7.9.1)

14905
#1959
14926 P. 20
14905
#8860
14926 to 30
14905 P. 20
74 FT
P. 20 April 1992
L-1556(1992)
14926 P. 30
14905
#8861

The above cribs ^{is} are recommended for retention as charted.* While the least depth over crib, PN1829, closely matches the most westerly of three offshore from Michigan City, the position is the middle of the three. All three cribs should remain as charted. CONCUR
 One other charted crib, at latitude 41°37'48.0"N, longitude 87°12'11.0"W which was not detected, is also recommended for retention on the chart. CONCUR 41°38'00" 87°12'11" } error
 *DO NOT CONCUR *IT IS RECOMMENDED THAT THE CRIB BE CHARTED AS SHOWN ON PRESENT SURVEY SEE SHEET 3 OF 3.

Recommendations for changes to scale, coverage and format are described in the "User Evaluation Report", a copy of which is in the appendix of this report.

O. ADEQUACY OF SURVEY SEE ALSO SECTION 9. OF THE EVALUATION REPORT.

This field examination survey is complete and adequate for use in nautical chart updating.

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

Aero-triangulation positions were furnished to the Atlantic Hydrographic Party, by Gregory L. Fromm, from the Production Requirements Group, Photogrammetry Branch, for use as DGPS performance check points. A question arose as to the location of the privately maintained crib light, located offshore of the Bailey Generating Plant at Burns Harbor. This light was located by detached position 781, DN 247, at latitude 41°38'58.3"N, longitude 087°07'21.3"W. This position agrees with the chart, on the northern circumference of the crib. Item 19, on page two of the memorandum supplying the aero-triangulated positions, states the light was not measured photogrammetrically at the charted location. The light should remain as charted. A memorandum to Mr. Fromm, regarding the hydrographic findings was sent September 16, 1992. Copies of the furnished aero-triangulated data and the memorandum are included in Appendix VI of this report. DATA FILED WITH FIELD RECORDS.

Q. STATISTICS

Description

Total Positions	121
Detached Positions	10
Rejected Positions	5
Omitted Positions	1
Total Miles of Hydrography	11.25
Sq. Nautical Miles of Hydrography	--
Bottom Samples	0
Total Miles of Bottom Drag	0
Velocity Casts	4
Water Level Stations	2
Days of Production	3

R. MISCELLANEOUS

No bottom samples were taken on this survey.

Because many of the field examination items were first discovered while conducting Reconnaissance Surveys D-112 and D-113, the least depth after development on the Field Examination turned out to be from the reconnaissance surveys. When this was the case, a copy of the data was extracted from the Reconnaissance Survey and included as part of the Field Examination, also. This occurred with DN 234 (PN 127.48), for which an obstruction seen on this day was searched for as part of the Field Examination and not found. This obstruction is discussed as part of this survey. Also, a shoal development of a spike originally seen on day 245, failed to find a lesser depth than that found on the Reconnaissance Survey at position 672.

Plotter sheets 20-23, 25 and 26 were used to depict the data on this Field Examination Survey at appropriate scales. The original data was collected on both plotter sheets 1 and 2 associated with the Reconnaissance Surveys, then copied as Plotter Sheet 3. Plotter sheet 3 was then used as the source sheet for all Field Examination Plotting.

S. RECOMMENDATIONS SEE ALSO SECTION 9. OF THE EVALUATION REPORT.

Charting recommendations are made in section N and P of this report. If a field unit returns in the 1993 season to this general vicinity, diving resources are available, and time in the schedule permits, further investigation of the *spike like shoal and *unidentified obstruction discussed in section ~~N~~_N should be done.

* Addressed in survey D113.

T. REFERRAL TO REPORTS

<u>Title</u>	<u>Transmittal Information</u>
Horizontal Control Report for S-Y934-AHP2	Field Photogrammetry Section Norfolk, VA (N/CG233)
User Evaluation Report S-Y939-AHP	Atlantic Hydrographic Section (N/CG244) Norfolk, Va.
Coast Pilot Report S-Y939-AHP	Atlantic Hydrographic Section (N/CG244) Norfolk, Va.
Descriptive Report for D-112	Atlantic Hydrographic Section (N/CG244) Norfolk, Va.
Horizontal Control Report for S-Y939-AHP2	Coastal Surveys Unit (N/CG23322) Norfolk, VA
Descriptive Report for D-113	Atlantic Hydrographic Section (N/CG244) Norfolk, Va.

Submitted by: Atlantic Hydrographic Party Two

AWOIS NO: 8247

Item Description: Obstruction

Source: LNM30/77 (7/26/77) 9th USCG District

AWOIS Position: Lat 41°42'48"N Lon 86°56'00"W

Required Investigation: BD,DI,ES,##

Charts Affected: 14905, 14926

INVESTIGATION

Date(s): 9/03/92

DN(s) 247

Position Numbers: 784-787

Launch Number: 1292

Investigation Used: Local Knowledge, Visual Search N/A

Position Determined By: DGPS

Investigation Summary: A local knowledge investigation of this item was conducted prior to attempting a field investigation. Several residents of the Beverly Shores area reported the obstruction to be one of many sections of the old road, which collapsed into the water due to erosion, in the 1950's. Originally lying directly adjacent to the shoreline, continued erosion left the rubble further and further offshore. One resident reported seeing a slab nearly exposed one year and covered over the next.

The field investigation of this item area located 3 pieces of concrete remains and a submerged wreck in the area of this item. Position 784, latitude 41°42'06.8"N, longitude 086°57'24.9"W, was located near the point where the road ends on the chart and uncovers 0.5 m^(1.6 FT) at IGLD 1985. Position 785, latitude 41°42'09.1"N, longitude 087°57'20.1"W, which uncovers 0.5 m^(1.6 FT) at IGLD 1985, and position 787, latitude 41°42'19.2"N, longitude 086°56'50.8"W, least depth 0.6 m^(1.9 FT) at IGLD 1985, were located on a line which the old road into Michigan City would have taken. Also located in this area was a ^{visible} submerged wreck at position 786, latitude 41°42'15.3"N, longitude 086°57'00.6"W. This wreck, which uncovers 0.5 m^(1.6 FT) at IGLD 1985, is composed of three 25cm by 25cm timbers with large steel bolts #8884 protruding, lying parallel to shore.

CHARTING RECOMMENDATION

The Hydrographer recommends retention of the original obstruction rock symbol only (remove the obstr notation and dangerous symbol) at the currently charted location. Add rock symbols at positions 784, 785, and 787. Add a dangerous submerged wreck symbol at position 786, parallel to shore. Depths listed above are corrected with preliminary water level correctors only. **DO NOT CONCLUDE ***

COMPILATION NOTES

Chart

Applied As

* IT IS RECOMMENDED THAT THE AREA BE CHARTED AS SHOWN ON PRESENT SURVEY. SEE SHEET 1 OF 3.

Handwritten notes:
Correction
Scale 1:1000

Handwritten notes:
ok
we
shell
on
land

AWOIS NO: 8248

Item Description: Artificial Reef

Source: CL1281/86--COE Permit

AWOIS Position: Lat 41°44'47"N Lon 86°52'37"W

Required Investigation: BD,DI,ES

Charts Affected: 14905

INVESTIGATION

Date(s): 8/07/92 & 9/03/92

DN(s) 220, 247

Position Numbers: 787-828 (DN 220)

Launch Number: 1292

788-826 (DN 247) Duplicated Positions

Investigation Used: Local Knowledge, Echo Sounder Investigation

Position Determined By: DGPS

Investigation Summary: A local knowledge investigation of this item with the Indiana Department of Natural Resources (219)879-5710, who originally established the artificial reef, reportedly no longer maintains it.

The field investigation of this item involved running hydrography over the charted location of the artificial reef at 10 meter line spacing. The orientation of the lines was such that if the described 30 foot by 100 foot sections, perpendicular to shore, were not covered over by bottom movement, the hydrography would detect the artificial reef. The results of the echo sounder investigation show the charted location and surrounding area to have shoaled to depths less than or equal to the original authorized minimum clearance of 34 feet (10.4m). No unusual bottom configuration was detected, which would indicate the presence of an artificial reef in the charted area.

CHARTING RECOMMENDATION

The Hydrographer recommends deleting the charted fish haven and authorized depth notation and charting representative soundings from the hydrography in this area. CONCUR

COMPILATION NOTES

Chart

Applied As

Delete F/H & chrt note
14905

Stand
mandat



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

Coast and Geodetic Survey
Atlantic Hydrographic Party
439 West York St.
Norfolk, VA 23510-1114

September 18, 1992

**ADVANCE
INFORMATION**

L-1156(92)

Commander, (OAN)
Ninth U. S. Coast Guard District
1240 East 9th Street
Cleveland, Ohio 44199-2060

Dear Sir,

While conducting reconnaissance survey D-113 and field examination survey FE-380, along the south shore of Lake Michigan, between Michigan City and Burns International Harbor, Indiana the following uncharted items, considered dangers to navigation, were identified.

► The wreck "Muskegon" was located at latitude 41°42'47.33"N, longitude 086°56'04.69"W. A least depth of 17.4 feet at IGLD 1985 was obtained by echo sounder. The wreck is approximately 110' long, lying in a southwest to northeast orientation. The wreck lies in approximately 26.2 feet of water.

11905
2/27

► The wreck "Wheeler" was located at latitude 41°44'45.71"N, longitude 086°51'55.67"W. A least depth of 13.1 feet at IGLD 1985 was obtained by echo sounder. The wreck lies in approximately 21.3 feet of water.

► An extension to a currently charted intake crib and pipeline was located at latitude 41°39'14.63"N, longitude 087°07'36.77"W. The new crib has a least depth of 38 feet at IGLD 1985, obtained by echo sounder. The currently charted crib at latitude 41°39'09"N, longitude 087°07'42"W, was reportedly removed, when the new crib was constructed further offshore.

► An uncharted shoal was located at latitude 41°37'57.62"N, longitude 087°11'42.34"W. A least depth of 14.1 feet at IGLD 1985 was obtained by echo sounder on the shoal.

► An uncharted obstruction was located at latitude 41°39'26.4"N, longitude 87°08'02.1"W. A least depth of 40 feet at IGLD 1985 was obtained by echo sounder.



The geographic positions for all reported items are North American 1983 Datum. The difference between NAD 1927 and NAD 1983 at the scale of the affected charts is negligible. Depths reported are corrected to Lake Michigan Low Water Datum. These features were located using Differential Global Positioning System.

This report constitutes a correction to information shown on Charts 14926, 5th Ed., January 20th, 1990 and 14905, 26th Ed., March 9th, 1991 and should be included in the Local Notice to Mariners.

Chart sections of these areas, showing the locations of these dangers, are attached.

Questions concerning this report should be directed to me at (904) 267-1713 or Mr. Rudolph Sanocki at the Atlantic Hydrographic Section, Norfolk, Virginia, at (804) 441-6319.

Sincerely,



Brian A. Link

Atlantic Hydrographic Party

Attachments

cc: N/CG221
N/CG2441
DMAHTC

THIS IS ADVANCE FIELD INFORMATION
SUBJECT TO OFFICE VERIFICATION

L-1156(a2)

A
K
E
M
I
C
H
I
G
A
N

INTAKE CRIB - least depth 39.0 ft

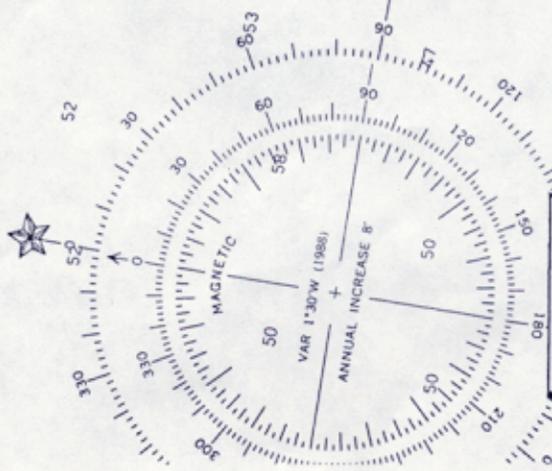
OBSTRUCTION - least depth 40.4 ft

UNCHARTED SHOAL SOUNDING - 14.1 ft

ADVANCE
INFORMATION

L-1156(99)

THIS IS ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW



41°40'

39.0

40.4

OGDEN DUNES

Burns Harbor Plant
Bethlehem Steel

For more detail see
Sheet 16 & 17.

Indiana
Port
Commission

Midwest Steel Div
National Steel Corp.

47 Burns International Harbor
Pipe PA

(use sheer 16)

BEING FILLED

R O 48 47 6 81 M

ON FI

Depth over
Crib 33 ft

Depth over
Crib 33 ft

STACK
3 Vert Lts
Occ R FR

R TR 2 Vert Lts
Occ R FR

15'

10'

5'

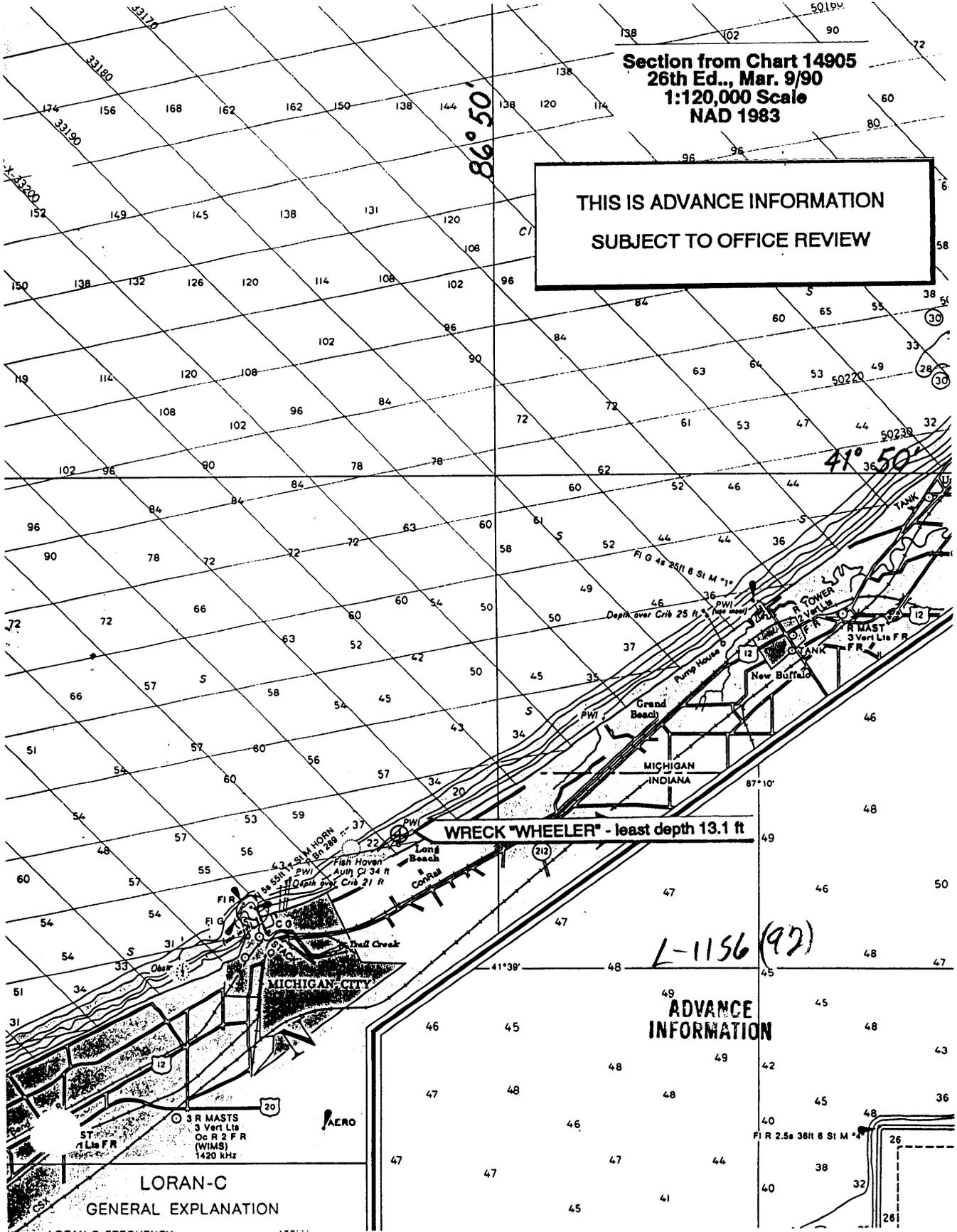
Section from Chart 14905
26th Ed., Mar. 9/90
1:120,000 Scale
NAD 1983

THIS IS ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

WRECK "WHEELER" - least depth 13.1 ft

ADVANCE
INFORMATION

LORAN-C
GENERAL EXPLANATION



APPROVAL SHEET
FIELD EXAMINATION SURVEY
FE-380
S-Y939-AHP2
AHP2-10-8-92

This field examination survey was conducted in accordance with the project instructions for S-Y939-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 survey is complete and adequate for nautical chart updating of the area described in Section B of this report.



Brian A. Link
Supervisory Surveying Technician
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: Michigan City, IN (908-7038)
Burns Waterway, IN (908-7039)
Water Level Stations

Period: 8/7/92 - 9/4/92

Project: OPR-S-Y939

Hydrographic Sheet: AHP-20-1-92

Registry No: FE-380

Locality: Lake Michigan

Plane of reference: Low Water Datum (IGLD 1985 : 176.0 Meters)

Remarks:

Zoning required, for locations east of 87°00' use Water Level Station Michigan City, IN (908-7038) and for locations west of 87°00' use Water Level Station Burns Waterway, IN (908-7039). Data from other gages indicates no unusual water level movement during the survey period.


Chief, Great Lakes Section

GEOGRAPHIC NAMES

Name on Survey	A	B	C	D	E	F	G	H	K
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	RAND McNALLY ATLAS	U.S. LIGHT LIST	

INDIANA (title)										1
MICHIGAN CITY (title)										2
MICHIGAN, LAKE (title)										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved:

Charles P. Hamilton
Chief Geographer - N/CG 245

FEB 14 1994

03/01/94

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-380

NUMBER OF CONTROL STATIONS	3
NUMBER OF POSITIONS	118
NUMBER OF SOUNDINGS	300

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	50	03/30/93
VERIFICATION OF FIELD DATA	89	10/06/93
ELECTRONIC DATA PROCESSING	18	
QUALITY CONTROL CHECKS	31	
EVALUATION AND ANALYSIS	40	02/15/94
FINAL INSPECTION	5	02/15/94
TOTAL TIME	233	
ATLANTIC HYDROGRAPHIC SECTION APPROVAL		02/28/94

N/CG244-15-94

LETTER TRANSMITTING DATA

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

ORDINARY MAIL AIR MAIL

REGISTERED MAIL EXPRESS

GBL (Give number) _____

TO:

┌
N/CG243, Data Control Section
NOAA/National Ocean Service
Station 6815, SSMC3
1315 East-West Highway
Silver Spring, MD 20910
└

DATE FORWARDED

01 MARCH 1994

NUMBER OF PACKAGES

1 box

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

FE-380

Indiana, Lake Michigan
Vicinity of Michigan City and Burns International Harbor

1 Box containing:

- Original Descriptive Report for FE-380, and 1 binder of miscellaneous Data removed from the original Descriptive Report
- Envelope containing sounding correctors (velocity, tide and TRA data)
- Accordion file containing: fathograms and daily printouts for VESNO 1292 for DNS:220,247,248

FROM: (Signature)

Robert Snow

Robert Snow

RECEIVED THE ABOVE

(Name, Division, Date)

Return receipted copy to:

┌
Atlantic Hydrographic Section, N/CG244
439 W. York Street
Norfolk, VA 23510-1114
└

Scott Clark
3/22/94

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

SURVEY NO.: FE-380

FIELD NO.: AHP2-10-9-92

Indiana, Lake Michigan, Vicinity of Michigan City and Burns International Harbor

SURVEYED: 7 August through 4 September 1992

SCALE: 1:10,000

PROJECT NO.: OPR-S-Y939-AHP2

SOUNDINGS: INnerspace 448 Echosounder and RAYTHEON DE-719CM Fathometer

CONTROL: ASHTECH Sensor/ASHTECH Model XII Receiver Global Positional System (GPS) (Differential Mode)

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

Surveyed by.....B. A. Link
.....T. M. Rybarski
.....C. B. Miller
.....T. T. Madsen

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

1. INTRODUCTION

a. The purpose of this survey is to verify or disprove two Automated Wreck and Obstruction Information System (AWOIS) items, uncharted features noted during data acquisition on reconnaissance surveys D-112 (1992) and D-113 (1992).

b. Data acquired by the field unit, applicable to survey D-113 (1992) has been applied to that survey.

c. Three 1:10,000 scale page size plots were generated during office processing and are attached to this report.

d. The vertical datum for this survey is ILGD 1985 (Lake Michigan: 176.0 Meters).

e. No unusual problems were encountered during office processing.

f. 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 plots have been annotated with ticks showing the computed mean shift between the survey datum and the North American Datum of 1927 (NAD 27).

To place the plots on the NAD 27 datum, move the projections lines 0.054 seconds (1.658 meters or 0.17 mm at the scale of the survey) south in latitude, and 0.233 seconds (5.013 meters or 0.50 mm at the scale of the survey) west in longitude.

All geographic positions listed in this report are on the NAD 83 datum unless otherwise specified.

b. There is no shoreline shown on any of the smooth plots.

3. HYDROGRAPHY

a. Determination of least depths of items located and shown on the smooth plots is considered adequate.

b. A standard depth curve was drawn in it's entirety.

4. CONDITION OF SURVEY

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

5. JUNCTIONS

The present survey addresses two AWOIS items and several features identified for additional development during data acquisition for surveys D-112 (1992) and D-113 (1992). No junctions will be effected.

6. COMPARISON WITH PRIOR SURVEYS

D-112	(1992)	1: 10,000
<u>D-113</u>	<u>(1992)</u>	<u>1: 10,000</u>

The prior surveys listed above cover the present survey area in its entirety. Additional work items from those surveys were investigated by the present survey. A discussion of each item and charting recommendation can be found in section N., pages 6 through 8 of the Descriptive Report.

The present survey is adequate to supersede/supplement the above noted prior surveys within the common areas.

7. COMPARISON WITH CHARTS 14905 (26th Edition, March 9/91) 14926SC (5th Edition, Jan. 20/90)

a. Hydrography

The charted hydrography originates with prior surveys superseded by surveys D-112 (1992) and D-113 (1992) and require no discussion in this report.

The present survey is adequate to supersede/supplement the charted hydrography in the common areas.

b. Danger to Navigation

The hydrographer identified five dangers to navigation and submitted information for inclusion into a Local Notice to Mariners, to the Commander (oan), Ninth U. S. Coast Guard District, Cleveland, Ohio. A copy of the letter was forwarded to Chart Information Section, N/CG222, Rockville, Maryland. After office processing it is recommended that the information be retained.

c. Aids to Navigation

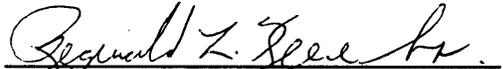
One fixed aid to navigation was located by the present survey. This aid appears adequate to serve it's intended purpose.

8. COMPLIANCE WITH INSTRUCTIONS

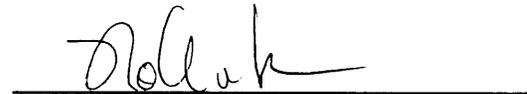
This survey adequately complies with the Project Instructions.

9. ADDITIONAL WORK

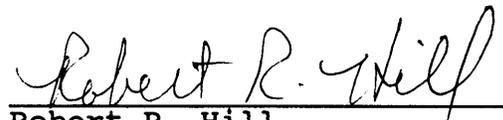
This is an adequate field examination survey. No additional work is recommended.



Reginald L. Keene, Sr.
Cartographic Technician
Verification of Field Data



Norris A. Wike
Cartographer
Evaluation and Analysis



Robert R. Hill
Cartographer
Verification Check

APPROVAL SHEET
FE-380

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 disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.



Leroy G. Cram
Chief, Hydrographic Processing Team B
Atlantic Hydrographic Section

Date: 02/15/94

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.



Nicholas E. Perugini, LCDR, NOAA
Chief, Atlantic Hydrographic Section

Date: 28 Feb 1994

Final Approval:

Approved: 

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

Date: 5/17/94

86° 57' 30" 86° 57' 00" 86° 56' 30" 86° 56' 00"

5³ Wk "MUSKEGON"

17 Fy
67

86° 56' 30"
41° 42' 30"
NAD 27
XYNETICS 1201
✓ R.L.K. 8/25/93

41° 42' 30"

1 Obstr (concrete rubble)

10⁴
1/2 FT

FE-380
INDIANA
LAKE MICHIGAN
VICINITY OF MICHIGAN CITY
DATE OF SURVEY: 04 SEP 1992 TO 04 SEP 1992
SCALE: 1:10000
SOUNDINGS IN METERS AT IGLD 1985
HORIZONTAL DATUM: NAD 1983
SHEET 1 OF 3
AWOIS ITEM NUMBER 8247

10⁴ Obstr (concrete rubble)
10⁴ Obstr (concrete rubble)

41° 42' 00"

86° 52' 30"

86° 52' 00"

86° 52' 00"

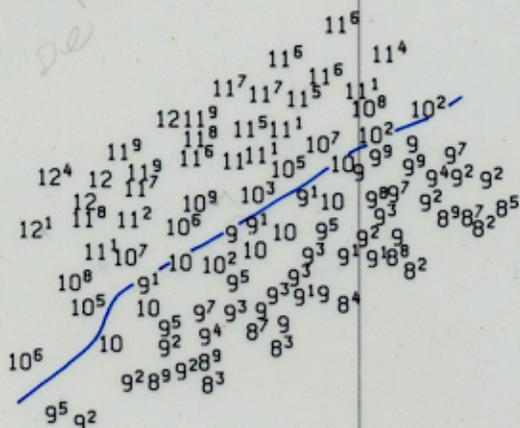
NAD 27

41° 45' 00"

41° 45' 00"

XYNETICS 1201

R.L.K. 8/26/93



45 WK "WHEELER"

41° 44' 30"

FE-380
 INDIANA
 LAKE MICHIGAN
 VICINITY OF MICHIGAN CITY
 DATE OF SURVEY: 08 AUG 1992 TO 04 SEP 1992
 SCALE: 1:10000
 SOUNDINGS IN METERS AT IGLD 1985
 HORIZONTAL DATUM: NAD 1983
 SHEET 2 OF 3
 AVOIS ITEM NUMBER 8248

41° 44' 00"

86° 54' 30"

86° 54' 00"

86° 53' 30"

86° 54' 00"

NAD 27

41° 44' 30"

41° 44' 30"

XYNETICS 1201
✓ R.L.K. 8/27/93

23 *KT*

7Obstr (crib)

41° 44' 00"

FE-380
INDIANA
LAKE MICHIGAN
VICINITY OF MICHIGAN CITY
DATE OF SURVEY: 08 AUG 1992 TO 08 AUG 1992
SCALE: 1:10000
SOUNDINGS IN METERS AT IGLD 1985
HORIZONTAL DATUM: NAD 1983
SHEET 3 OF 3

41° 43' 30"

+

