

**H11452**

NOAA FORM 76-35A

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

**DESCRIPTIVE REPORT**

*Type of Survey:* **Basic Hydrography**

*Field No.:* **NRT4**

*Registry Number:* **H11452**

**LOCALITY**

*State:* Illinois

*General Locality:* Lake Michigan

*Sub-locality:* Calumet Harbor

**2005**

CHIEF OF PARTY

**Lucy Massimillo, Team Leader**

LIBRARY & ARCHIVES

DATE:

NOAA FORM 77-28 U.S. DEPARTMENT OF COMMERCE (11-72) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  <p style="text-align: center;"><b>HYDROGRAPHIC TITLE SHEET</b></p>	REGISTRY NUMBER:  <p style="text-align: center;"><b>H11452</b></p>
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 NUMBER: N/A
<p>State/Territory: <b>Illinois</b></p> <p>General Locality: <b>Lake Michigan</b></p> <p>Sub-Locality: <b>Calumet Harbor</b></p> <p>Scale: <b>1:5,000</b>                      Date of Survey: <b>Oct. 12 to Nov. 21, 2005</b></p> <p>Instructions Dated: <b>August 2, 2005</b>                      Project Number: <b>OPR-Y387-NRT4-05</b></p> <p>Vessel: <b>NOAA Launch 3001</b></p> <p>Chief of Party: <b>Lucy Massimillo</b></p> <p>Surveyed by: <b>Lucy Massimillo, Sarah Borakove, Jason McDannold</b></p> <p>Soundings by: <b>ODOM CVX2 Vertical Beam Echosounder</b></p> <p>Graphic record scaled by: <b>N/A</b></p> <p>Graphic record checked by: <b>N/A</b></p> <p>Protracted by: <b>N/A</b>                      Automated Plot: <b>N/A</b></p> <p>Verification by: <b>Atlantic Hydrographic Branch <i>Personnel</i></b></p> <p>Soundings in: <b>meters at Low Water Datum</b></p> <p>Remarks: <i>1) All Times are UTC.</i></p> <p style="padding-left: 40px;"><i>2) This is a basic Hydrographic Survey under the Navigable Area Concept.</i></p> <p style="padding-left: 40px;"><i>3) Projection is UTM Zone 16N.</i></p> <p style="padding-left: 40px;"><i>4) LWD is at elevation 176.00 meters International Great Lakes Datum of 1985 (IGLD85).</i></p> <p><b><i>Red, Bold, Italic notes in the Descriptive Report were made during office processing.</i></b></p>	

## TABLE OF CONTENTS

A. AREA SURVEYED .....	1
B. DATA ACQUISITION AND PROCESSING .....	3
B.1. EQUIPMENT .....	3
B.2. QUALITY CONTROL .....	3
B.3. CORRECTIONS TO ECHO SOUNDING .....	4
C. VERTICAL AND HORIZONTAL CONTROL .....	5
C.1. VERTICAL CONTROL .....	5
C.2. HORIZONTAL CONTROL .....	5
D. RESULTS AND RECOMMENDATIONS .....	6
D.1. CHART COMPARISON .....	6
D.2. ADDITIONAL RESULTS .....	7

## **DESCRIPTIVE REPORT**

to accompany  
Hydrographic Survey H-11452  
OPR-Y387-NRT4-05

Scale of Survey 1:5,000  
Year of Survey: 2005  
Navigation Response Team 4  
NOAA Launch S3001  
Lucy Massimillo - Team Leader

### **A. AREA SURVEYED**

This Basic Hydrographic survey was conducted in accordance with the Port Letter Instructions for project OPR-Y387-NRT-05, Calumet Harbor, Illinois. The instructions are dated August 5, 2005.

Calumet (South Chicago) Harbor is located on the SW coast of Lake Michigan, 14 miles NW of Gary Harbor and about 333 miles by water from the Straits of Mackinac. The harbor is located in the southern part of the City of Chicago, IL and comprises an outer harbor protected by breakwaters and the Calumet River. Chicago Harbor and Calumet Harbor together make one of the largest inland ports in the world. Barges and deep-draft vessels are the primary traffic in this harbor. The Southwest coast of Lake Michigan has extensive commercial facilities, public utilities and marinas. Principal commerce in Calumet Harbor includes receipt of iron ore, coal, and limestone.

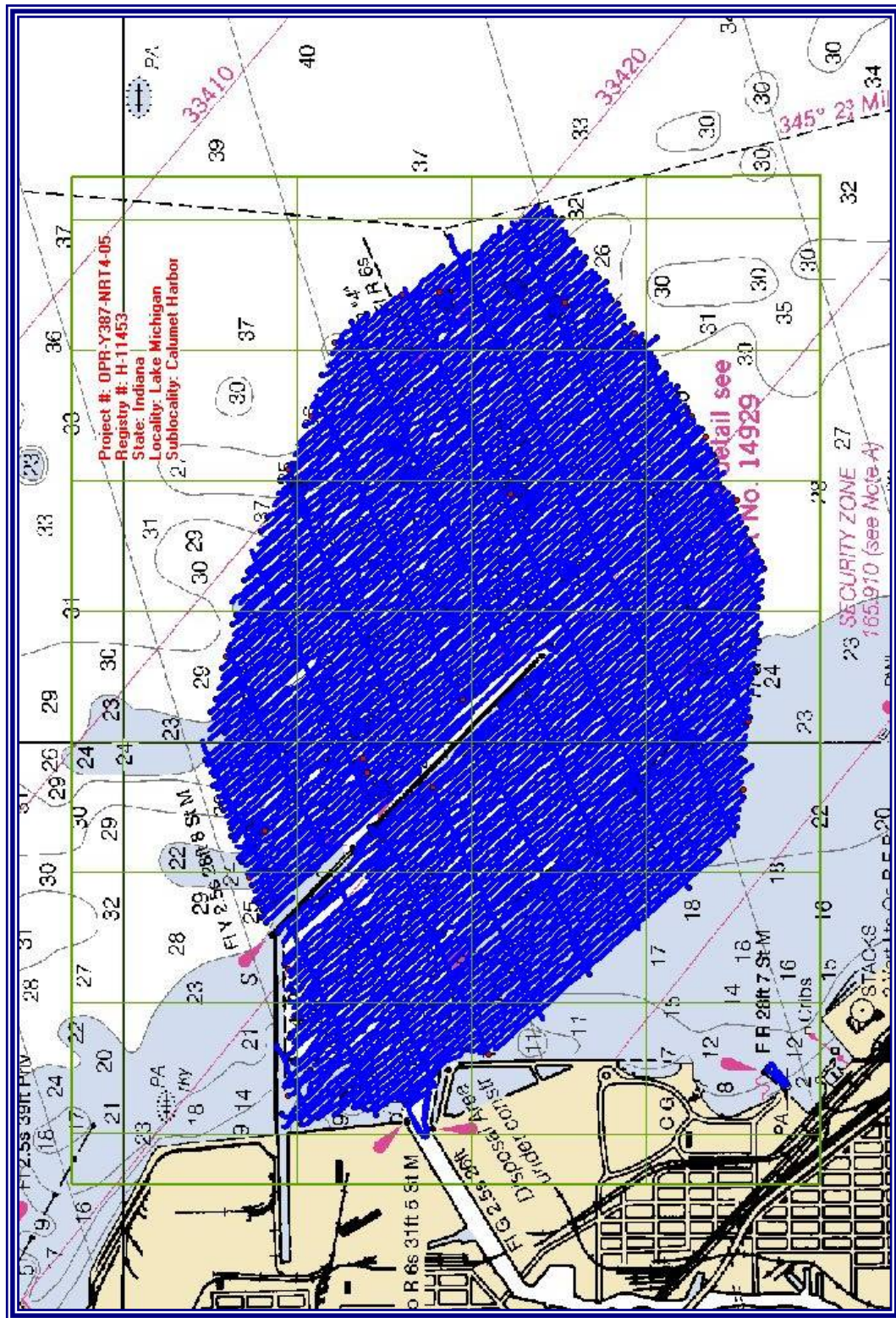
The area, surveyed by NRT4, consisted of approximately 4 SNM inside and directly east of the breakwater.

Survey Limits for Sheet B, H-11452 are as follows:

41° 45' 10" N	087° 32' 01" W
41° 42' 35" N	087° 27' 24" W

Survey Dates: October 12, 2005 (DN: 285) to November 22, 2005 (DN: 326)

Survey limits are displayed graphically on the following page.



**B. DATA ACQUISITION AND PROCESSING** *SEE ALSO THE EVALUATION REPORT.***B.1. EQUIPMENT**

Data were acquired by Navigation Response Team 4 using survey Launch 3001. The vessel was configured as described in the Data Acquisition and Processing Report (DAPR)\* for this project. Major data acquisition systems are summarized below.

NOAA Survey Launch 3001 was used to acquire position, soundings, imagery, and sound velocity data. Positions were acquired with a Trimble DSM212L Differential GPS (DGPS) beacon receiver. Soundings were acquired with an ODOM CVX2 single-beam echosounder (SBES) system. Imagery was acquired with a stern-towed KLEIN 3000 side scan sonar (SSS) system. Water column sound velocity data was acquired with an ODOM Digibar Pro DB1200 sound velocity profiler.

There were no unusual vessel configurations encountered during this project.

**B.2. QUALITY CONTROL** *SEE ALSO THE EVALUATION REPORT.*

Following the Field Procedures Manual v2.1 Beta, dated February 3, 2006, and the NOS Hydrographic Surveys Specifications and Deliverables Manual, dated March 2003, has insured the integrity of the survey data for H11452.

Differential GPS (DGPS) was used for all hydrographic data acquired on this survey.

**Side Scan Sonar Quality Control**

The side scan sonar system frequencies used were 100kHz and 500kHz. The recorder was set to 50 meter range scale. There were no water depths greater than 15 meters in areas where side scan data was collected

Daily confidence checks were conducted by observing side scan imagery in the vicinity of known contacts, such as buoys or sand waves. Side scan data were considered satisfactory if these contacts could be distinguished throughout the entire range of the side scan trace. The confidence checks were performed daily at both frequencies. Coverage of 200% was obtained wherever possible in the required survey areas and where water depth and/or hazards permitted. Side scan sonar coverage was conducted to the 12-foot depth curve where possible.

When operating in shoal waters, a short tow is required for the Klein system. When cable-out was approximately 7 meters or less, minor degradation of the side scan imagery was noted due to cross-talk between the Klein and the Odom echosounder.

*\*Data filed at Atlantic Hydrographic Branch (AHB).*

## **Crosslines**

Eleven checklines for a total of 18.55 linear nautical miles were acquired by the field party. This is approximately 10 percent of mainscheme acquisition. A visual inspection of crossline data and main scheme data showed good comparison.

## **Junctions**

No junctioning surveys were provided for comparison with this project.

## **B.3. CORRECTIONS TO ECHO SOUNDING**

Corrections to echo soundings did not deviate from the method explained in the Data Acquisition and Processing Report (DAPR).\* A table detailing all sound velocity casts is located in Separate II.

## **C. VERTICAL AND HORIZONTAL CONTROL *See also the Evaluation Report.***

### **C.1. VERTICAL CONTROL**

All soundings were reduced to Low Water Datum with verified water levels and preliminary zoning.

The operating National Water Level Observation Network (NWLON) station at Calumet Harbor, IL (908-7044) served as datum control for the survey area. LWD for Calumet Harbor is at elevation 176.00 meters International Great Lakes Datum of 1985 (IGLD 85).

Verified water levels from the N/OPS1 CO-OPS website were downloaded and applied to all soundings for this sheet. Water level corrections were applied to the soundings using CARIS HIPS and SIPS v5.4.

Zoning was provided on the project CD. Field personnel made no changes to zoning, time correctors, or range ratios.

A Request for Approved Water Levels letter was sent to N/OPS1 on February 3, 2006 and is included in Appendix IV.\*

### **C.2. HORIZONTAL CONTROL**

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 16. The control reference station used for this survey was the USCG DGPS Beacon in the auto-select mode.

*\*Data filed at Atlantic Hydrographic Branch (AHB).*



Horizontal dilution of precision (HDOP) was monitored daily on Hypack. At no point did HDOP exceed 4.00, and adequate satellite coverage was maintained throughout the survey period.

All positioning equipment was operated in a manner consistent with the manufacturer requirements and as described in the DAPR.\* There were no equipment malfunctions which affected the positional quality of the data.

*\*Data filed at Atlantic Hydrographic Branch (AHB).*

## **D. RESULTS AND RECOMMENDATIONS** *See also the Evaluation Report.*

### **D.1. CHART COMPARISON**

There are six charts affected by this survey:

<b>Chart</b>	<b>Edition</b>	<b>Print Date</b>	<b>Scale</b>
14901	14th	10/01/2002	1:500,000
14905	30th	8/1/2003	1:15,000, 1:120,000
14926	10th	4/1/2003	1:10,000
14927	24th	2/2/2002	1:60,000, 1:15,000
14929	24th	2/1/2003	1:15,000
14500	27th	10/01/2002	1:1,500,000

### **General Agreement with Charted soundings**

In general, survey soundings compared favorably with charted depths within 1-2 feet. *Concur*  
There were three notable cases in which a survey depths differed from charted depths.

The following is a list of notable sounding discrepancies on the chart:

The shoal charted "Calumet Shoal" between 41° 44' 38" N, 087° 29' 57"W, and 41° 44' 18" N, 087° 29' 59"W, has migrated eastward approximately 100m. A depth of ~~22~~ **24** feet was found in an area charted as ~~30~~ **32** feet. *\*\*Concur*

The 18 foot contour at 41° 43' 35" N, 087° 30' 52"W and 41°43' 11" N, 087° 30' 33" W, appears to have migrated westward approximately 150 meters. Many 20 foot soundings were found within the 18 foot contour. *\*\*Concur*

The region charted 21 foot at 41°43' 19" N, 087°30'29" W, now reflects a shoal sounding of 17 foot. *\*\*Concur*

*\*\*Chart present survey soundings.*



**AWOIS Item Investigations** *Final charting recommendations can be found in this report.*

There were four AWOIS items assigned within the sheet boundaries. AWOIS items 13,036, 13,037, & 13,038 were investigated by the field party. AWOIS item 13,035 will be investigated as part of Field Examination F00502. Results of these investigations are contained in Appendix II.

**Dangers to Navigation** *Final charting recommendations can be found in this report.*

Two Dangers to Navigation (DTONs) were identified by the field party. The first DTON was submitted to the Marine Charting Division (MCD) on January 18, 2006. The second DTON was submitted to MCD on February 9, 2006. Refer to Appendix I for detailed information on these items.

**D. 2. ADDITIONAL RESULTS****Aids to Navigation and Other Detached Positions**

All Aids to Navigation in the survey area were found to be on station and serving their intended purpose. The field party has no recommendations on these Aids to Navigation. *Concur*

**Ferry Routes**

There are no Ferry routes within the survey area. *Concur*

**Submarine Cables and Pipelines**

There are one submarine cable and one pipeline charted in the southwest corner of this sheet. There is one pipeline charted in the northwest corner of this sheet. No submarine cables or pipelines were investigated by the field party. *Concur*

**Bridges and Overhead Cables**

There are no bridges or overhead cables in the survey area. *Concur*

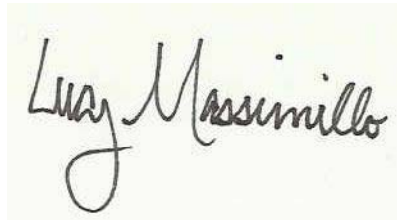
**APPROVAL SHEET**

**OPR-Y387-NRT4-05**  
**Hydrographic Survey**  
**Lake Michigan**  
**Calumet Harbor**  
**Illinois**  
**Field Examination Registry No. H11452**

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

Respectfully,  
Submitted:

A handwritten signature in black ink on a light-colored background. The signature reads "Lucy Massimillo" in a cursive script. The first name "Lucy" is written in a larger, more prominent hand, and "Massimillo" follows in a similar but slightly smaller cursive style.

Lucy Massimillo  
Team Leader, Navigation Response Team 4

# H11452 Danger to Navigation

**Registry Number:** H11452  
**State:** Illinois  
**Locality:** Lake Michigan  
**Sub-locality:** Calumet Harbor  
**Project Number:** OPR-Y387-NRT4-05  
**Survey Date:** 11/16/2005

This report contains information concerning a Danger to Navigation for survey H11452.

## Charts Affected

Number	Version	Date	Scale
14926	10th Ed.	04/01/2003	1:10000
14929	24th Ed.	02/01/2003	1:15000
14927	24th Ed.	02/02/2002	1:60000
14905	30th Ed.	08/01/2003	1:120000
14901	14th Ed.	10/01/2002	1:500000
14500	27th Ed.	10/01/2002	1:1500000

## Features

Feature Type	Survey Depth	Survey Latitude	Survey Longitude
SSS	[None]	041° 43' 37.038" N	87° 28' 53.190" W

## **1 - Danger To Navigation**

## 1.1) Contact/Point - 0002/1 from h11452 / 3001sss500k / 2005-305 / c051101141200

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 041° 43' 37.038" N, 87° 28' 53.190" W  
**Least Depth:** [None]  
**Timestamp:** 2005-320.03:07:05 (11/16/2005)  
**Survey Line:** h11452 / 3001sss500k / 2005-305 / c051101141200  
**Contact/Point:** 0002/1  
**Charts Affected:** 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

#### Remarks:

An obstruction of unknown least depth, with a sidescan sonar shadow measuring approximately 1.3 meters, was located in the tabulated channel using 200% side scan sonar. The field party investigated this region using a star-pattern search and was unable to locate the item using single beam echosounder. There is no least depth for this position.

#### Hydrographer Recommendations

Chart obstruction as per present survey findings. The hydrographer recommends further investigation of this item to determine if the least depth is shoaler than the controlling depth of this channel.

#### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 2:depth unknown  
TECSOU - 2:found by side scan sonar  
VERDAT - 13:Low water  
WATLEV - 3:always under water/submerged

**See Descriptive Report for final charting recommendation.**

# H11452 Danger to Navigation

**Registry Number:** H11452  
**State:** Indiana  
**Locality:** Lake Michigan  
**Sub-locality:** Calumet Harbor  
**Project Number:** OPR-Y387-NRT4-05  
**Survey Date:** 11/01/2005

This report contains information concerning a Danger to Navigation for survey H11452.

## Charts Affected

Number	Version	Date	Scale
14929	24th Ed.	02/01/2003	1:15000
14926	10th Ed.	04/01/2003	1:60000
14927	24th Ed.	02/02/2002	1:60000
14905	30th Ed.	08/01/2003	1:120000
14901	14th Ed.	10/01/2002	1:500000
14500	27th Ed.	10/01/2002	1:1500000

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude
1.1	Shoal	6.80 m	041° 44' 25.138" N	87° 29' 55.559" W

**1.1) Profile/Beam - 20119/1 from h11452 / 3001sb / 2005-305 / 273\_1639****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 041° 44' 25.138" N, 87° 29' 55.559" W  
**Least Depth:** 6.80 m  
**Timestamp:** 2005-305.17:02:09.165 (11/01/2005)  
**Survey Line:** h11452 / 3001sb / 2005-305 / 273\_1639  
**Profile/Beam:** 20119/1  
**Charts Affected:** 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

**Remarks:**

This area was surveyed with 200% SSS and single beam echosounder. A chart comparison found shoaling. Echosounder data was corrected to IGLD using predicted water levels.

**Hydrographer Recommendations**

Chart as per present survey findings.

**Cartographically-Rounded Depth (Affected Charts):**

22ft (14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1)

3 ¾fm (14500\_1)

22ft (14901\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** TECSOU - 1:found by echo-sounder  
VERDAT - 25:International Great Lakes Datum 1985

**Concur**



# H11452 2005

**Registry Number:** H11452  
**State:** Illinois  
**Locality:** Lake Michigan  
**Sub-locality:** Calumet Harbor  
**Project Number:** OPR-Y387-NRT4-05  
**Survey Dates:** 11/21/2005 - 01/19/2006

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
14926	11th	05/01/2006	1:60,000 (14926_31) 1:20,000 (14926_11) 1:10,000 (14926_27)	[L]NTM: ?
14929	24th	02/01/2003	1:15,000 (14929_1)	USCG LNM: 03/06/2007 (02/26/2008) CHS NTM: None (01/25/2008) NGA NTM: 03/20/1999 (03/01/2008)
14927	25th	08/01/2006	1:60,000 (14927_1)	[L]NTM: ?
14905	31st	01/01/2007	1:120,000 (14905_1)	[L]NTM: ?
14901	15th	08/01/2006	1:500,000 (14901_1)	[L]NTM: ?
14500	27th	10/01/2002	1:1,500,000 (14500_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	863/1 - 30 Rk rep 2005	Rock	10.43 m	41° 43' 37.0" N	087° 28' 53.3" W	---
2.1	270/1 - Dangerous 28 Rk	Rock	8.59 m	41° 44' 06.2" N	087° 30' 12.7" W	---
2.2	0001 - rky	Rock	[None]	41° 43' 10.2" N	087° 30' 26.5" W	---
3.1	AWOIS 13037 - OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
3.2	AWOIS 13038 - IRENE	AWOIS	[no data]	[no data]	[no data]	---
3.3	AWOIS 13036 - 14 Wk	Wreck	4.29 m	41° 44' 32.7" N	087° 30' 23.3" W	13036

# **1 - Charted Features**

## 1.1) 863/1 - 30 Rk rep 2005

### Survey Summary

**Survey Position:** 41° 43' 37.0" N, 087° 28' 53.3" W  
**Least Depth:** 10.43 m (= 34.21 ft = 5.701 fm = 5 fm 4.21 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2005-325.17:00:40.116 (11/21/2005)  
**Survey Line:** h11452 / 3001sb / 2005-325 / 023\_1659  
**Profile/Beam:** 863/1  
**Charts Affected:** 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

#### Remarks:

An obstruction of unknown least depth, with a sidescan sonar shadow measuring approximately 1.3 meters, was located in the tabulated channel using 200% side scan sonar. The field party investigated this region using a star-pattern search and was unable to locate the item using single beam echosounder. There is no least depth for this position.

SB investigation conducted in star pattern. Contact not located with echosounder.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11452/3001sb/2005-325/023_1659	863/1	0.00	000.0	Primary
h11452/3001sss500k/2005-305/c051101141200	0002	2.08	270.4	Secondary
h11452/3001sss500k/2005-286/c051013141900	0003	4.35	254.5	Secondary

### Hydrographer Recommendations

Chart obstruction as per present survey findings. The hydrographer recommends further investigation of this item to determine if the least depth is shoaler than the controlling depth of this channel.

#### Cartographically-Rounded Depth (Affected Charts):

34ft (14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1)

5 ¾fm (14500\_1)

5fm (14901\_1)

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)

**Attributes:** QUASOU - 1:depth known  
SORDAT - 20051121  
SORIND - US,US,SURVY,H11452  
STATUS - 1:permanent  
TECSOU - 1:found by echo-sounder  
VALSOU - 10.426 m  
VERDAT - 5:Mean low water  
WATLEV - 3:always under water/submerged

### Office Notes

Do not concur - During office processing the obstruction was determined to be a rock. It is recommended that a rock determined from side scan sonar with a reported depth of 30.0 feet in Latitude 41°43'37.039"N, longitude 87°28'53.280"W be charted. Delete dangerous submerged obstruction. Chart a 30 Rk rep 2005.

## **2 - New Features**

## 2.1) 270/1 - Dangerous 28 Rk

### Survey Summary

**Survey Position:** 41° 44' 06.2" N, 087° 30' 12.7" W  
**Least Depth:** 8.59 m (= 28.18 ft = 4.696 fm = 4 fm 4.18 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2005-325.19:19:57.903 (11/21/2005)  
**Survey Line:** h11452 / 3001sb / 2005-325 / 078\_1919  
**Profile/Beam:** 270/1  
**Charts Affected:** 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

#### Remarks:

A rock was located using 200% side scan sonar and single beam echosounder. Echosounder data was corrected to LWD using observed water levels with preliminary zoning.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11452/3001sb/2005-325/078_1919	270/1	0.00	000.0	Primary
h11452/3001sss500k/2005-286/c051013182000	0003	3.36	187.3	Secondary
h11452/3001sss500k/2005-306/c051102161200	0003	3.44	150.1	Secondary

### Hydrographer Recommendations

Chart rock as per current survey findings.

#### Cartographically-Rounded Depth (Affected Charts):

28ft (14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1)

4 ¾fm (14500\_1)

28ft (14901\_1)

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** QUASOU - 1:depth known  
 SORDAT - 20051121  
 SORIND - US,US,SURVY,H11452

STATUS - 1:permanent

TECSOU - 1:found by echo-sounder

VALSOU - 8.588 m

VERDAT - 5:Mean low water

WATLEV - 3:always under water/submerged

## Office Notes

Concur Chart a rock with a depth of 28 feet in Latitude 41°44'06.225"N, Longitude 87°30'12.720"W. Chart 28 Rk and danger curve.



## 2.2) 0001 - rky

### Survey Summary

**Survey Position:** 41° 43' 10.2" N, 087° 30' 26.5" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-019.03:21:28 (01/19/2006)  
**Survey Line:** h11452 / 3001sss500k / 2005-306 / c051102190100  
**Contact/Point:** 0001/1  
**Charts Affected:** 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

#### Remarks:

The feature is a large rock of unknown least depth. Although there is a side-lobe hit from a singlebeam echosounder indicating a least depth of less than 17 feet, the position of this object is derived from sidescan sonar. The field party was unable to investigate this item. Soundings were corrected to LWD with preliminary water levels.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11452/3001sss500k/2005-306/c051102190100	0001	0.00	000.0	Primary
h11452/3001sb/2005-291/148_1757	4414/1	55.08	173.7	Secondary (grouped)

### Hydrographer Recommendations

The hydrographer recommends either charting a submerged rock or charting "Rky" at this location because there are several large rocks in the vicinity. The hydrographer also recommends further investigation of this rock.

### S-57 Data

**Geo object 1:** Underwater rock / awash rock (UWTROC)  
**Attributes:** INFORM - Chart as rky area  
 QUASOU - 1:depth known  
 SORDAT - 20051121  
 SORIND - US,US,SURVY,H11452  
 STATUS - 1:permanent  
 TECSOU - 1:found by echo-sounder  
 VERDAT - 5:Mean low water

WATLEV - 3:always under water/submerged

## **Office Notes**

It is recommended that the area be charted as rocky.

## **3 - AWOIS Features**

### 3.1) AWOIS #13037 - AWOIS 13037 - OBSTRUCTION

#### No Primary Survey Feature for this AWOIS Item

**Search Position:** 41° 44' 04.0" N, 087° 31' 40.0" W  
**Historical Depth:** [None]  
**Search Radius:** 150  
**Search Technique:** S2,MB,ES  
**Technique Notes:** [None]

#### History Notes:

L83/85-- 1/30/85; A ROCK COVERED 18 INCHES WAS REPORTED IN THE GENERAL AREA OF LAT. 41/44/04N, LONG. 87/31/40W. LANDFILL IN THIS AREA WAS ALSO REPORTED BY A MEMBER OF THE COAST GUARD AUXILLARY. ■ LNM 05/85-- ADD DEPTH 1 FT, DANGER CURVE AND LABEL RK REP IN PA POSITION LAT. 41/44/04N, LONG. 87/31/40W. (ENTERED 3/05 CEH)

#### Survey Summary

**Charts Affected:** 14926\_27, 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

#### Remarks:

The field party was unable to investigate the full AWOIS search radius with SSS and SBES due to shallow depths in the search area.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChicagoAwois	AWOIS # 13037	0.00	000.0	Primary
ChartGPs - Digitized	1	0.69	147.2	Secondary (grouped)

#### Hydrographer Recommendations

Retain this AWOIS item as charted.

#### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** SORDAT - 20030201  
 SORIND - us,us,graph,14929  
 WATLEV - 4:covers and uncovers

## Office Notes

Concur - Retain charted 1 Rk rep PA.

### 3.2) AWOIS #13038 - AWOIS 13038 - IRENE

#### No Primary Survey Feature for this AWOIS Item

**Search Position:** 41° 42' 42.8" N, 087° 31' 34.4" W  
**Historical Depth:** [None]  
**Search Radius:** 150  
**Search Technique:** VS,SD  
**Technique Notes:** [None]

**History Notes:**

L699/79-- 6/8/79; WRECK, SMALL VESSEL NAMED IRENE ALONGSIDE PIER. SCALED OFF CHART14929 AT POSITION OF LAT. 41/42/42.8N, LONG. 087/31/34.45W. (ENTERED 3/05 CEH)

#### Survey Summary

**Charts Affected:** 14926\_27, 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

**Remarks:**

A visual investigation of this charted exposed wreck was conducted by the field party. No exposed wreck was observed. This AWOIS item was partially investigated w/ SBES, but could not be completed due to time restraints and deteriorating seasonal field conditions.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
ChicagoAwois	AWOIS # 13038	0.00	000.0	Primary

#### Hydrographer Recommendations

Hydrographer recommends deleting visible wreck PA and charting a submerged wreck PA.

#### S-57 Data

**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 2:dangerous wreck  
 SORDAT - 20030201  
 SORIND - us,us,graph,14929  
 WATLEV - 3:always under water/submerged

## Office Notes

Concur Delete charte visible wreck PA. Chart dangerous sunken wreck, PA in charted location.



### 3.3) AWOIS 13036 - 14 Wk

#### Primary Feature for AWOIS Item #13036

**Search Position:** 41° 44' 33.0" N, 087° 30' 23.9" W  
**Historical Depth:** [None]  
**Search Radius:** 150  
**Search Technique:** S2,MB,ES,DI  
**Technique Notes:** [None]

#### History Notes:

L249/81-- A WRECK WAS FOUND IN POSITION OF LAT. 41/44/33.0N, LONG. 87/30/23.9W NAD 83. THE WRECK WAS A 250 FT MATERIAL SERVICE BARGE, COMPOSED OF WOOD AND STEAL AND STILL ENACT. THE WRECK HAS A LEAST DEPTH OF 13.4 FT AND LIES IN A NE-SW ORIENTATION IN 33 FT OF WATER. (ENTERED 3/05 CEH)

#### Survey Summary

**Survey Position:** 41° 44' 32.7" N, 087° 30' 23.3" W  
**Least Depth:** 4.29 m (= 14.07 ft = 2.346 fm = 2 fm 2.07 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2005-325.19:40:19.102 (11/21/2005)  
**Survey Line:** h11452 / 3001sb / 2005-325 / 101\_1940  
**Profile/Beam:** 80/1  
**Charts Affected:** 14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1, 14901\_1, 14500\_1

#### Remarks:

AWOIS item 13036 was located with 200% side-scan sonar and single-beam echosounder. Echosounder data was corrected to LWD using observed water levels with preliminary zoning.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11452/3001sb/2005-325/101_1940	80/1	0.00	000.0	Primary
h11452/3001sss500k/2005-305/c051101162700	0002	10.35	337.1	Secondary
h11452/3001sss500k/2005-286/c051013164200	0004	15.89	001.6	Secondary
ChicagoAwois	AWOIS # 13036	17.09	130.0	Secondary
h11452/3001sss500k/2005-305/c051101165400	0001	28.91	034.5	Secondary

## Hydrographer Recommendations

Retain as charted.

### Cartographically-Rounded Depth (Affected Charts):

14ft (14929\_1, 14926\_11, 14926\_31, 14927\_1, 14905\_1)

2 ¼fm (14500\_1)

14ft (14901\_1)

## S-57 Data

**Geo object 1:** Wreck (WRECKS)

**Attributes:** CATWRK - 2:dangerous wreck

CONVIS - 2:not visual conspicuous

INFORM - SB investigaton conducted to cover entire blue tint area of charted wreck. Wreck is charted in correct location.

SORDAT - 20051121

SORIND - US,US,SURVY,H11452

STATUS - 1:permanent

TECSOU - 1:found by echo-sounder

VALSOU - 4.290 m

VERDAT - 5:Mean low water

WATLEV - 3:always under water/submerged

## Office Notes

Concur with clarification - Chart a wreck with a depth of 14 feet in Latitude 41°44'32.675"N, Longitude 87°30'23.290"W. Delete charted 13 Wk with danger curve. Chart 14 Wk with danger curve in above location.



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
National Ocean Service  
Silver Spring, Maryland 20910

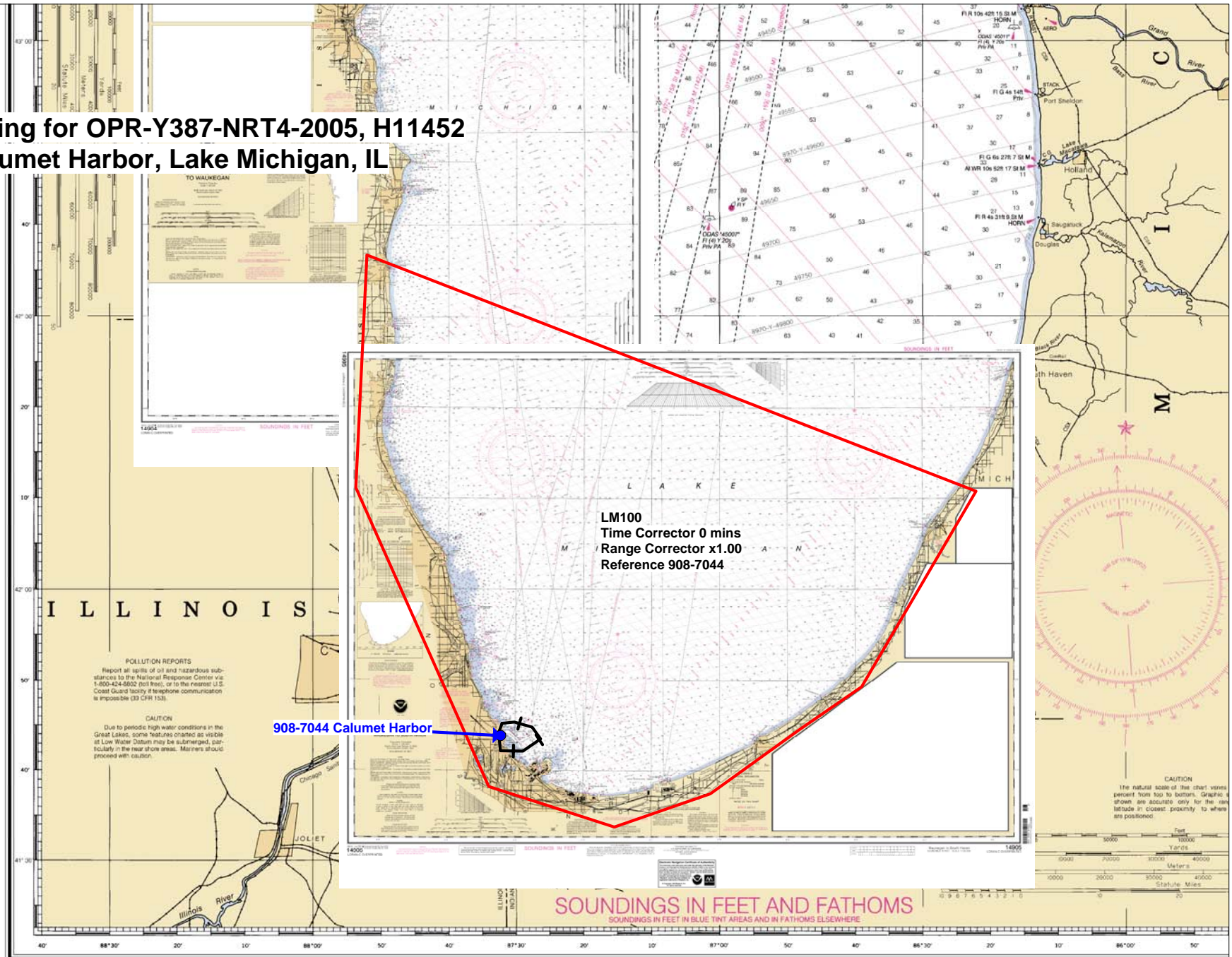


**Final tide zone node point locations for OPR-Y387-NRT4-2005, H11452**

Format:                   Tide Station (in recommended order of use)  
                              Average Time Correction (in minutes)  
                              Range Correction  
                              Longitude in decimal degrees (negative value denotes Longitude West),  
                              Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone LM100	908-7044	0	1.00
-87.867545 42.610412			
-87.894816 42.185909			
-87.567561 41.635871			
-87.258487 41.560806			
-87.022135 41.622229			
-86.803183 41.740456			
-86.649428 41.819747			
-86.367625 42.179147			
-87.186569 42.414984			
-87.867545 42.610412			

# Final Zoning for OPR-Y387-NRT4-2005, H11452 Calumet Harbor, Lake Michigan, IL



14th Ed. Oct. / 02 ■ Corrected through NM Oct. 19/02  
Corrected through LNM Oct. 09/02

**14901**  
LORAN-C OVERPRINTED

**CAUTION**  
This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Imagery and Mapping Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast District director to the status shown in the latest last issue correct.

This nautical chart has been designed to promote safe navigation. The National Ocean Service encourages users to submit corrections, additions, or comments for improving this chart to the Chief, Marine Chart Division (NCGS), National Ocean Service, NOAA, Silver Spring, Maryland 20910-3282.

**Electronic Navigation Certificate of Authenticity**  
This electronic chart was produced under the authority of the National Oceanic and Atmospheric Administration (NOAA). NOAA is the national hydrographic office for the United States of America. The digital data

FATHOMS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
FEET	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300
METERS	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	12.9	13.2	13.5	13.8	14.1	14.4	14.7	15.0

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT to Accompany  
Surveys H11452 (2005)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**B. DATA ACQUISITION AND PROCESSING**

**B.1 DATA PROCESSING**

The following software was used to process and review data at the Atlantic Hydrographic Branch (AHB):

CARIS HIPS/SIPS version 6.1  
CARIS BASE Manager 2.1  
CARIS HOM 3.3 SP3  
PYDRO, version 7.3  
CARIS S-57 Composer 1.0

**B.2 QUALITY CONTROL**

**H-Cells**

The AHB source depth grid was generated as a 2m resolution BASE surface. Survey scale soundings were extracted from AHB generated 2m Base surface at a 1:15000 scale using a radius of 1.75m. Soundings were selected for charting by hand using the latest raster chart (14929) and smooth contours as background for sounding placement. Soundings were then checked for conflicts, corrected to remove conflicts, and edited to allow for proper sounding compilation placement with respect to existing charted depths outside the survey area. The BASE surface was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

Depth curves were created from a BASE Editor shifted surface sourced from the 2m product surface using a single shift value of 0.229m. The curves were utilized during chart scale sounding selection at AHB.

The compilation products and Stand Alone HOB Files (SAHOB) are detailed in the Compilation Process Log of this document. All individual SAHOB files were assembled in BASE Editor during H-Cell compilation.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (ENC\_CS.000) with all values measured in feet following NOAA sounding rounding rules.

The H11537 CARIS H-Cell final deliverables include the following products:

US511452_CS.000	1:15,000 Scale	H11452 Selected Soundings (Chart Scale)
US511452_SS.000	1:5,000 Scale	H11452 Selected Soundings (Survey Scale)
US511452_BlueNotes.000	1:15,000 Scale	H11452 Cartographic Notes

**C. VERTICAL AND HORIZONTAL CONTROL**

Final vertical correction processing was completed by office personnel. Office personnel applied verified water levels in conjunction with the final tidal zoning which was accepted and approved by N/OPSI CO-OPS as the final zoning for H11452. Sounding datum is Low Water Datum (LWD). Vertical datum is Mean High Water (MHW).

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 16. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. The horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84) during CARIS Base Manager processing.

**D. RESULTS AND RECOMMENDATIONS**

Chart Comparison 14926 (11<sup>th</sup>.Edition, May./06  
Corrected through NM May. 27/06  
Corrected through LNM May. 16/068  
Scale 1:20,000

**14927 (25<sup>th</sup>. Edition, Aug./06**

Corrected through NM Aug. 26/06  
Corrected through LNM Aug. 22/06  
Scale 1:60,000

**14929 (24<sup>th</sup>. Edition, Feb. /03)**

Corrected through NM Feb. 1/03  
Corrected through LNM Dec. 17/02  
Scale 1:15,000

**ENC Comparison**

**US5IN11M**

Chicago and Vicinity  
Edition 5  
Update Application Date 2007-07-25  
Issue Date 2007-07-25  
References: Charts 14926

**ENC Comparison**

**US4IL10M**

Chicago Lake Front  
Edition 3  
Update Application Date 2008-06-09  
Issue Date 2008-06-09  
References: Charts 14927

**ENC Comparison**

**US5IL21M**

Calumet and Indiana Harbors  
Edition 5  
Update Application Date 2007-04-03  
Issue Date 2007-04-03  
References: Charts 14929

**Hydrography**

The charted Hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in Section D. of the Descriptive Report.

**Adequacy of Survey**

The present survey is adequate to supersede the charted bathymetry within the common area. However survey developments within the limits of the survey were inadequate. Charted depths were brought forward to supplement the present survey.



Any features not specifically addressed either in the H-Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further survey requirements recommended by the hydrographer.

**Miscellaneous**

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

---

**Norris A. Wike**  
Cartographer  
Verification of Data  
Evaluation and Analysis Report

## AHB PRE-COMPILATION PROCESS H11452

Components	File Names
<i>Product Surface</i>	H11452_PS_2M.hns
<i>Shifted Surface</i>	H11452_PS_Shifted_2M.hns
<i>Contour Layer</i>	H11452_Contours.hob
<i>Survey Scale Soundings</i>	H11452_SS_Soundings.hob
<i>Chart Scale Soundings</i>	H11452_CS_Soundings.hob
<i>Feature Layer</i>	H11452_Features.hob H11452_DEPARE.hob H11452_SBARE.hob
<i>Meta-Objects Layer</i>	H11452_MQUAL.hob H11452_MCOVR.hob
<i>Blue Notes</i>	H11452_BlueNotes.hob



### META-OBJECTS:

#### M\_COVR attributes

Acronym	Value
CATCOV	1-coverage available
SORDAT	20051121
SORIND	US,US,SURVY,H11452

#### M\_QUAL attributes

Acronym	Value
CATZOC	Zone of confidence B
INFORM	H11452, OPR-Y387-NRT4-05, NRT4, NOAA
SURSTA	200510
SUREND	20051121
POSACC	10
SORDAT	20051121
SORIND	US,US,SURVY,H11452

 H11452\_AHB\_2M\_SB\_Final  
 H11452\_AHB\_2M\_SB\_Final.hns

8 KB XML Document  
 83,796 KB HNS File

**APPROVAL SHEET**  
**H11452**

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. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

---

Norris A. Wike  
Cartographer,  
Atlantic Hydrographic Branch

All final products have undergone a comprehensive review as per the Atlantic Hydrographic Branch Processing Manual and are verified to be accurate and complete except where noted in the Evaluation Report.

I have reviewed the Base Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Approved: \_\_\_\_\_

Lt. Commander Shepard M. Smith, NOAA  
Chief, Atlantic Hydrographic Branch