

H11342

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey: **Navigable Area**

Registry Number: **H11342**

LOCALITY

State: Texas and Louisiana

General Locality: Flower Garden Banks National
Marine Sanctuary

Sub-locality: Southeast of East Flower
Garden Banks

2004

CHIEF OF PARTY
LCDR Donald W. Haines, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11342

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

State: **Texas and Louisiana**

General Locality: **Flower Garden Banks National Marine Sanctuary**

Sub-Locality: **Southeast of East Flower Garden Banks**

Scale: **1:40,000** Date of Survey: **05/15/04 to 05/19/04**

Instructions Dated: **04/08/04** Project Number: **OPR-K366-TJ-04**

Vessel: **NOAA Ship THOMAS JEFFERSON, S-222**

Chief of Party: **LCDR Donald W. Haines, NOAA**

Surveyed by: **THOMAS JEFFERSON Personnel**

Soundings by: **Kongsberg Simrad EM1002 multibeam echosounder**

Graphic record scaled by: **N/A**

Graphic record checked by: **N/A**

Protracted by: **N/A** Automated Plot: **N/A** *Hewlett Packard Design Jet 2500CP (office)*

Verification by: **Atlantic Hydrographic Branch *Personnel***

Soundings in: **~~Meters~~ *Fathoms* at MLLW**

Remarks: ** Bold, Italic, Red notes in Descriptive report were made during office processing.*

- 1) All Times are UTC.*
- 2) This is a Navigable Area Hydrographic Survey.*
- 3) Projection is UTM Zone 15.*

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**Data filed with original field records.*

DESCRIPTIVE REPORT

to accompany
HYDROGRAPHIC SURVEY H11342

Scale of Survey: 1:40,000
Year of Survey: 2004
NOAA Ship THOMAS JEFFERSON
LCDR Donald W. Haines, Commanding

A. AREA SURVEYED

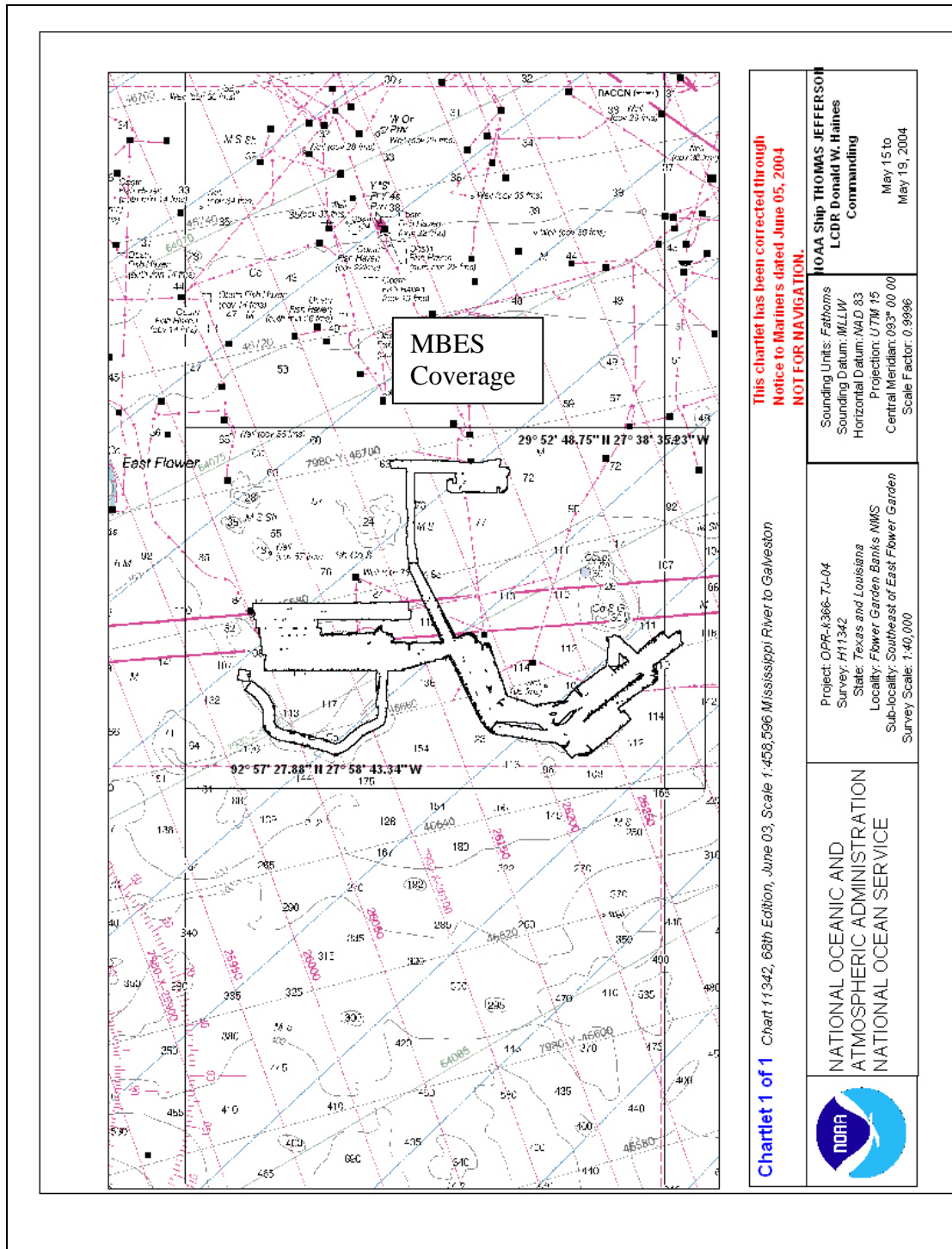
This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions for project OPR-K366-TJ-04, Flower Garden Banks National Marine Sanctuary. The original instructions are dated April 08, 2004. *Concur.*

Sheet "D" Registry number H11342 was added to this survey at the request of the Flower Garden Banks National Marine Sanctuary (see E-mail in appendix V).
Concur.

This project is being conducted to provide multibeam data in support of the National Oceanic and Atmospheric Administration's (NOAA) Flower Garden Banks National Marine Sanctuary requirements and National Ocean Service (NOS) nautical charts. Though the area has been surveyed numerous times in the past, much of the Flower Garden Banks sanctuary has yet to be mapped with high resolution multibeam sonar. These data acquired will provide invaluable information on habitat distribution and classification to further the knowledge of the area and the individuals making management decisions for this natural resource. *Concur.*

For complete survey limits, see the chartlet on the following page.

Figure 1: Complete Survey Limits & Data Coverage



**This chartlet has been corrected through
Notice to Mariners dated June 05, 2004
NOT FOR NAVIGATION.**

NOAA Ship THOMAS JEFFERSON
LCDR Donald W. Haines
Commanding

Sounding Units: Fathoms
Sounding Datum: MLLW
Horizontal Datum: NAD 83
Projection: UTM 15
Central Meridian: 93° 00' 00"
Scale Factor: 0.9996

Chartlet 1 of 1 Chart 11342, 68th Edition, June 03, Scale 1:458,596 Mississippi River to Galveston

Project: OPR-K386-TJ-04
Survey: H11342
State: Texas and Louisiana
Locality: Flower Garden Banks NMS
Sub-locality: Southeast of East Flower Garden
Survey Scale: 1:40,000

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE



B. DATA ACQUISITION AND PROCESSING *See also Evaluation Report.*

EQUIPMENT

Data were acquired by NOAA Ship THOMAS JEFFERSON. NOAA Ship THOMAS JEFFERSON is a 63.4-meter hydrographic survey vessel with an average transducer draft of 4.6 meters.

NOAA Ship THOMAS JEFFERSON acquired multibeam echosounder (MBES) data with a SIMRAD 1002.

NOAA Ship THOMAS JEFFERSON positioning and attitude data were determined with a TSS POS/MV 320 Version 3 GPS-aided inertial navigation system.

No unusual vessel configurations or problems were encountered. Refer to the Data Acquisition and Processing Report (DAPR)* for detailed equipment and vessel configuration information.

** Data filed with original field records.*

QUALITY CONTROL

Side Scan Sonar Quality Control

No side scan sonar data were acquired for this survey. *Concur.*

Shallow Water Multibeam Quality Control

There were no faults with the MBES system which affected data integrity. Daily confidence checks examining the internal consistency of the MBES were made by comparing overlapping lines. Refer to this project's DAPR* for detailed discussion of MBES system calibrations, data acquisition, and data processing. *Concur.*

** Data filed with original field records.*

Base Surfaces

CARIS HIPS BASE (Bathymetry Associated with Statistical Error) surface, which incorporate each sounding's total propagated error (TPE), was created according to depth intervals. Depths of 0-105 meters are contained in a finalized 6-meter resolution surface (H11342_6m_Final). Depths of 99-160 meters are contained in a

finalized 8-meter resolution surface (H11342_8m_Final). Depths of 154-600 meters are contained in a finalized 12-meter resolution surface (H11342_12m_Final). * *See also Evaluation Report.*

Crosslines

NOAA Ship THOMAS JEFFERSON acquired 5.63 nautical miles of crosslines (about 2% of the 203.84 nm of main scheme MBES data). No traditional crossline comparison was performed on the multibeam data because quality control procedures have been incorporated into the depth and uncertainty models produced by CARIS 5.4. * *See also Evaluation Report.*

Junctions

This survey junctions with H11324. There is excellent correlation between the present survey and H11324. * *See also Evaluation Report.*

CORRECTIONS TO ECHO SOUNDING

All methods or instruments used were as described in the project DAPR.* The positions of all the sound velocity casts are loaded into the survey's PSS as individual "generic position" features (GP's), with the depth versus sound velocity information contained in the remarks.

* *Data filed with original field records.*

C. VERTICAL AND HORIZONTAL CONTROL

VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating tide station at Galveston Pleasure Pier, TX served as a datum control for the survey area.

Predictions are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time.

<u>Zone Name</u>	<u>Time Corrector (min)</u>	<u>Range Ratio</u>	<u>Predicted Reference</u>
WGM260	+6	x0.71	877-1510
WGM291	+6	x0.76	877-1510
WGM292	+6	x0.76	877-1510
WGM293	+6	x0.81	877-1510
WGM305	+6	x0.81	877-1510
WGM306	+6	x0.76	877-1510

This sheet was originally made up of two sheets, “Y” and “Z”. Two Requests for Approved Tides have been sent for this survey, one for sheet “Y” and the other for sheet “Z”. Both requests were sent on May 28, 2004. *Concur.*

Verified tides were downloaded from the N/OPSI CO-OPS website on June13, 2004. These levels were applied to all sounding data using preliminary zoning. *See also Evaluation Report. No water level corrections were applied during office processing.*

HORIZONTAL CONTROL * *See also Evaluation Report.*

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 15. *Concur.*

Horizontal position was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary and only DGPS beacon used for this survey was Aransas Pass, TX (877-1510) (site ID = 816, transmission frequency = 304). No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily on the ship and launches. That value did not exceed 4.00, and adequate satellite coverage was maintained throughout the survey period.

D. RESULTS AND RECOMMENDATIONS

CHART COMPARISON

There is one chart affected by this survey:

Table 1: Affected Chart

Number	Edition	Edition Date	Scale
11340	68 th Ed.	Jun. 03	1:458,596

General Agreement with Charted Soundings, Features, and Notes

The soundings were compared to the depths on chart 11340. In general there is good agreement between the soundings and the charted depths. Some areas have about a 15-fathom discrepancy between the charted depth and the soundings. These areas are deeper than the charted depths. ** See also Evaluation Report.*

There a general agreement between the charted contours and the survey soundings.

Item Investigation Reports

There are no Item Investigation Reports for this Navigable Area survey. *Concur.*

ADDITIONAL RESULTS

Prior Surveys

This navigable area survey is outside of the original project area. No prior survey information is available. *Concur.*

Aids to Navigation and Other Detached Positions

There were no Aids to Navigation or Detached Positions in the survey area to be considered. *Concur.*

Bridges and Overhead Cables

There were no bridges or overhead cables in the survey area to be considered.
Concur.

Ferry Routes

There were no ferry routes in the survey area to be considered. *Concur.*

Submarine Cables and Pipelines

There are pipelines in the survey area which were not observed in the MBES data. There were oil platforms that appear in the survey area. The hydrographer has no recommendations. *Defer to MCD Update Services Branch for charting platforms.*

Shoreline/Near Shore LIDAR

There were no shoreline or near shore LIDAR *Concur.*

E. APPROVAL SHEET

**OPR-K366-TJ-04
Texas and Louisiana
Flower Garden Banks National Marine Sanctuary**

Survey Registry No. H11342

Field operations for this Navigable Area hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All bathymetry models, 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.

Also submitted in association with this descriptive report has been a series of reports and data:

- SEPARATES TO ACCOMPANY PROJECT OPR-K366-TJ-04, SHEET D, H11342
- DATA ACQUISITION AND PROCESSING REPORT (*dated March-June, 2004; submitted pending*)
- OPR-K366-TJ-04 HORIZONTAL AND VERTICAL CONTROL REPORT (*dated 6/14/2004, submitted 6/18/2004*)

Respectfully Submitted:



Kimberly Glomb
Hydrographer

Approved and Forwarded:



LT Marc S. Moser, NOAA
Field Operations Officer



LCDR Donald W. Haines, NOAA
Commanding Officer

APPENDIX I

ITEM INVESTIGATION REPORTS

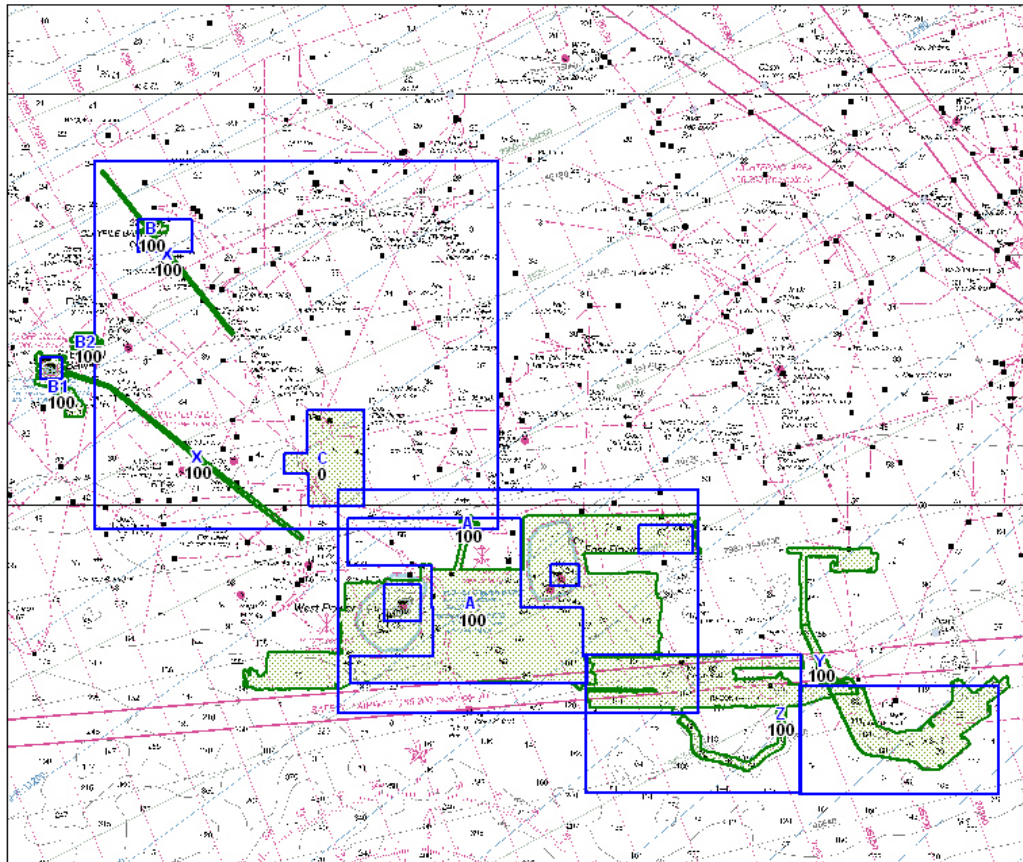
- 1) There are no Item Investigation Reports for this Navigable Area Survey.

APPENDIX II**LIST OF GEOGRAPHIC NAMES**

Geographic names as displayed on chart were observed in common usage. Hydrographer has no particular recommendation on geographic names.

APPENDIX III

PROGRESS SKETCH



Project	Sheet_Letter	H_num	HO_Est_SHM	CumIPercCompPre	CumIPercCompC	SHM_CompCur	CumSHMcon
K366	X	none	0	100	100	3	3
K366	B	FE00496	0	100	100	1	1
K366	B2	FE00496	2	100	100	2	2
K366	B1	FE00496	9	100	100	7	7
K366	X	none	0	100	100	6	6
K366	A	H11324	155	100	100	236	236
K366	A	H11324	0	100	100	0	0
K366	Z	none	0	100	100	67	67
K366	Y	none	0	100	100	50	50
K366	C	none	31	0	0	0	0

Project	Month	LHM_Hydr	LHM_MB	SV_Casts	Bottom_Sam	AWOIS_Items	Tide_Gauge_Inst	DAS	DTIME equip_H	DTIME_Weather	D_Time_other
K366	May	6.41	1,482.67	58.00	0.00	3.00	0.00	12.00	10.00	0.00	0.00

Progress Sketch S-K366-TJ-04
May, 2004

APPENDIX IV

TIDES AND WATER LEVELS

- 1) Field Tide Note (Section 5 of Project Instructions)

- 2) Smooth tide request

- 3) Times of hydrography

- 4) Final tide note

Have not received final tide note.

May 26, 2004

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: Donald W. Haines, LCDR/NOAA, NOAA Ship THOMAS JEFFERSON S222

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final zoning in MapInfo and .MIX format
3. Six Minute Water Level data (Co-ops web site)

Transmit data to:

NOAA/NOS/Atlantic Hydrographic Branch
N/CS33, Building #2
439 West York Street
Norfolk, VA 23510
ATTN: Chief AHB

These data are required for the processing of the following hydrographic survey:

Project No.: OPR-K366-TJ-04
Registry No.: None
State: Texas and Louisiana
Locality: Flower Garden Banks National Marine Sanctuary
Sublocality: 90 miles SSE of Galveston, TX

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from pydro on CD/diskette

cc: N/CS33

Year_DOY	Min Time	Max Time
2004_136	21:43:25	23:56:43
2004_137	00:03:05	09:33:15
2004_138	02:43:22	10:30:02
2004_140	00:47:48	03:04:58

APPENDIX V**SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES****V.1. COAST PILOT REPORT, NOAA FORM 77-6**

The hydrographer has no recommended changes to the Coast Pilot.

V.2. BOTTOM SAMPLE, NOAA FORM 75-44

No bottom samples were acquired during this survey.

V.3. NONFLOATING AIDS OR LANDMARKS FOR CHARTS, NOAA FORM 76-40

No nonfloating aids or landmarks were positioned during this survey.

V.4. E-mail correspondence

Subject: [Fwd: Re: Request for Registry numbers OPR-K366-TJ-04]
Resent-From: survey.thomas.jefferson@noaa.gov
Date: Thu, 03 Jun 2004 23:27:48 -0400
From: "Marc Moser" <marc.s.moser@noaa.gov> **Internal**
Organization: NOAA/Thomas Jefferson
To: Survey <survey.thomas.jefferson@noaa.gov>

----- Original Message -----

Subject: Re: Request for Registry numbers OPR-K366-TJ-04
Date: Thu, 03 Jun 2004 15:39:57 -0400
From: David Scharff <David.Scharff@noaa.gov>
To: Michael Riddle <Michael.Riddle@noaa.gov>
CC: Marc Moser <marc.s.moser@noaa.gov>, Don Haines <Don.Haines@noaa.gov>, Jeremy McHugh <Jeremy.McHugh@noaa.gov>, Roberson Robert <Robert.G.Roberson@noaa.gov>, Allen Corey <Corey.Allen@noaa.gov>
References: <40BF34AF.6050207@noaa.gov> <40BF6418.50B4AFC8@NOAA.gov>

Mike,

Please see below for registry numbers.

Michael Riddle wrote:

>
> Hi Dave,
> Please provide registry numbers for the following surveys under project
> Number OPR-K366-TJ-04. Please fill in survey number row and CC all on
> the list,
> Thanks
>
> Survey Number: H11342
> Sheet Letter: D
> State: Texas and Louisiana
> General locality: Flower Garden Banks National Marine Sanctuary
> Sublocality: Southeast of East Flower Garden Banks
> Scale: 1:40,000
>
> Survey Number: H11343
> Sheet Letter: X
> State: Texas and Louisiana
> General locality: Flower Garden Banks National Marine Sanctuary
> Sublocality: Trackline from Claypile Bank to East Flower Garden Banks
> Scale: 1:40,000
>
>> Marc Moser wrote:
>>
>> Mike,
>>
>> We are under the gun to finish our surveys. We still need registry
>> numbers for the following:
>>
>> K366 - Flower Gardens
>> Sheet D (the combined sheet you proposed for Z and X)
>> Sheet X (recon track survey)
>>
>> H903 - Dry Tortugas
>> Sheet B - Tortugas South
>> Sheet ? - trackline along 50-fathom curve

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H11342 (2004)**

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

The following software was used to process data at the Atlantic Hydrographic Branch:

MapInfo, version 6.5
CARIS HIPS/SIPS version 5.4 SP1
CARIS Bathy Database Manager 2.1 HF3
CARIS HOM ENC Version 3.3 SP3 HF7

Office processing entailed the use of CARIS Bathy Database Manager to generate a Bathymetry Associated with Statistical Error (BASE) Hydrographic Navigation Surface (HNS) model. H11342 is AHB's first survey to be processed using the new Electronic Navigation Chart (ENC) processing pipeline. Based upon specifications changes and the evolution of H-Cell processing, it was required to re-process H11342 using the H-Cell Specifications version 2.0. The BASE Surface model serves as source for all cartographic components incorporated within the submitted ENC exchange file.

The field unit submitted a series of surface models generated at different resolutions based upon depth ranges that allowed the highest resolution possible. AHB generated surface models at 5 meter and 10 meter resolutions; the two individual surface models were combined into one surface with a resolution of 10 meters. AHB selected the resolutions of 5 and 10 meters so that lack of multibeam coverage could be minimized. Lack of echo sounder coverage created data gaps that had to be addressed during CARIS Hydrographic Object Manager (HOM) ENC processing.

BASE Manager processing included the generation of the combined surface model and extraction of sounding data sets for survey scale and chart scale. The combined 10 meter resolution surface model was created at a scale of 1:40,000 (survey scale).

Soundings were extracted from the combined surface using an interval of 5mm at a scale of 1:40,000. Chart scale sounding selections were obtained by using the CARIS HOM sounding suppression routine using the straight suppression method of 5mm at a scale of 1:458,596 (chart scale). The chart scale sounding selection was then evaluated and modified based upon comparison of the existing charted sounding as a reference.

The Caris Environment Variable **uslxsounding_round** was set to -1,-1,T during data processing and exporting the Caris HOM*.des file to an S-57 exchange file (*.000). The same variable was changed to 11,11,N during the final stage of converting the metric ENC to Chart Units ENC (*.000).

Caris HOM (*.des) Layering

<u>Layer</u>	<u>Data Type</u>
20	Soundings
200	Skin of the Earth
555	Retained Charted Features
600	Meta Object Layer

C. VERTICAL CONTROL

Final vertical correction processing was not required by AHB for H11342. The field unit had used revised preliminary zoning and verified water levels that were compared to the final approved zoning and water level data provided by N/OPSICO-OPS. The revised preliminary zoning and verified water levels matched the final zoning and approved water levels, thus eliminating re-application of water level and zoning correction.

HORIZONTAL CONTROL

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83), UTM projection zone 15. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. During CARIS HOM processing the horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84). The S-57 ENC format serves as the exchange file submitted to Marine Chart Division.

D. RESULTS AND RECOMMENDATIONS

CHART COMPARISON 11340 (72nd Edition, July/07)
Corrected through NM July 07/07
Corrected through LNM June 26/07

ENC Comparison

US3GC03M Ed. 10

Update Application Date: 2007-06-13

Issue date: 2007-09-24

CROSS LINES

The field unit failed to acquire the required amount of crossline data for quality assurances and system assessment as specified in the *NOS Hydrographic Surveys Specifications and Deliverables (NOS HHSSD)*, 2003 Edition. New procedures and products being implemented by NOAA field units have been applied to H11342. The new survey methods and philosophies have been incorporated into official NOS and Office of Coast Survey (OCS) policy. H11342 does not technically meet the conventional standards set forth in the *NOS HHSSD*. However, an OCS and Hydrographic Surveys Division (HSD) memorandum from Captain Parsons, dated 12/11/03, has given approval that NOAA field units vary from the established procedures and documentation.

JUNCTIONS

H11324 (2004) to the west

A standard junction was effected between the present survey and H11324. The junction comparison indicates excellent agreement between surveys H11342 and H11324. There are no junctional surveys to the north, east or south. Present survey depths are in harmony with the charted hydrography to the north, south, and to the east.

SOUNDINGS

Inspection of H-Cell sounding spacing was performed using the raster chart sounding spacing as reference. The H-Cell sounding selection is adequate for both raster and ENC chart production.

Survey scale sounding data set was extracted from the 1:40,000 scale HNS at an interval of 5mm @ scale. The chart scale sounding selection was extracted from the 1:40,000 generalized. The final processing routines were performed using CARIS HOM and followed standard CARIS processing routines for S-57 ENC production.

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 (DR). Current survey soundings are generally shoaler than the charted depths; the depth variance between charted depths and survey soundings can be attributed to modern positioning systems, echo sounder systems, and new processing philosophies, software, and programming algorithms.

COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

ADEQUACY OF SURVEY

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area. This is an adequate navigable area survey with full bottom multibeam coverage. No additional field work was recommended by the hydrographer nor noted during office processing.

MISCELLANEOUS

ENC products (H-Cell) were created by Atlantic Hydrographic Branch personnel, Norfolk, Virginia using CARIS HOM v3.3. H-Cell ENC products and electronic data will be digitally transmitted Hydrographic Surveys Division and Marine Chart Division, Silver Spring, Maryland.

APPROVAL SHEET
H11342

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof 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.

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.

Castle Eugene Parker
Physical Scientist
Atlantic Hydrographic Branch

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:

LCDR Shep Smith, NOAA
Chief, Atlantic Hydrographic Branch