9096

South Copy

Lek 1257 Work

9096

FORM C&GS-504

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

ADDENDUM TO THE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. WH 20-3-70 *Office No.* H-9096

LOCALITY

State North Carolina

General locality Long Bay

Locality South of Holden Beach,

North Carolina

19 70

CHIEF OF PARTY
CDR Melvin J. Umbach, USESSA, C. O.
LCDR Ralph J. Land, USESSA, O. I. C.

LIBRARY & ARCHIVES

DATE

FORM C&GS-537 (5-66)

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

REGISTER NO.

H-9096

ADDENDUM TO THE 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.

WH 20-3-70

State North Carolina

General locality Long Bay

Locality South of Holden Beach, North Carolina

Scale 1:20,000 Date of survey 4/19/70 - 5/13/70

Instructions dated 16 January 1970 Project No. OPR-437

Vessel USC&GSS Launch 1257

Chief of party CDR Melvin J. Umbach, USESSA

Surveyed by LCDR Ralph J. Land, LT C. Dale North, Franklin L. Saunders Charles L. Brown

Soundings taken by echo sounder, ~~machine, hand~~ Raytheon DE-723 (Digital)

Graphic record scaled by LT C. Dale North, Franklin L. Saunders

Graphic record checked by LCDR Ralph J. Land

Protracted by _____ Automated plot by Complot AMC

Soundings penciled by _____

Soundings in ~~fathoms~~ feet at MLW ~~MLLW~~

REMARKS: This report is intended as an Addendum to the previously written Descriptive Report on H-9096 covering the portion of the survey done by Launch 1257.

USCOMM-DC 37009-P66

AN ADDENDUM

To The

Descriptive Report

To Accompany

HYDROGRAPHIC SURVEY H-9096

WH20-3-70

OPR-437

Coast of North Carolina

Scale 1:20,000

A. PROJECT:

No changes in the text of the original Descriptive Report are pertinent.

B. AREA SURVEYED:

Launch 1257 junctions with contemporary boatsheet WH40-1-70 on the south, WH20-1-70 on the east, and WHITING's Launch work on the same sheet to the north. Several lines were added to the top of two plotter sheets to insure junction with the WHITING's work on the same sheet.

The survey was accomplished between 4/19/70 and 5/13/70.

C. SOUNDING VESSEL:

Launch 1257 performed all soundings in the portion of the survey assigned to her.

D. SOUNDING EQUIPMENT:

A Raytheon DE-723 (Digital) Fathometer, S/N1904, was used throughout the survey.

The Launch Hydroplot System recorded all soundings in real time.

E. SMOOTH SHEET:

No changes.

F. CONTROL:

Launch 1257 used Hi-Fix in the Hyperbolic Mode for control.

G. SHORELINE:

No shoreline was in the area surveyed by Launch 1257.

H. CROSSLINES:

Crosslines composed 10% of the total length of sounding lines. The agreement was excellent in all areas except one where 1-2 foot differences occurred which were readily attributable to using predicted tides.

I. JUNCTIONS:

Junctions with contemporary boatsheets were good. Any discrepancies are due to the use of predicted tides.

J. COMPARISON WITH PRIOR SURVEYS:

H-4454 (1:40,000,1924) was used for comparison with the new survey revealed one-to-two foot differences in the soundings generally. A few soundings may vary as much as 3 ft.

K. COMPARISON WITH THE CHART:

Very good agreement was attained with charted soundings when the final TRA and velocity correctors were added to the boatsheet soundings.

L. ADEQUACY OF THE SURVEY:

No changes.

M. AIDS TO NAVIGATION:

No changes.

N. STATISTICS:

All bottom samples were taken by the WHITING.

433 miles of sounding line with 1541 positions represents 66.6 square nautical miles of hydrography accomplished.

O. MISCELLANEOUS:

Line spacing was doubled for the large area of the survey assigned to Launch 1257 in accordance with provisions in the project instructions. 400 meter line spacing, with splits in areas with slight irregularities was maintained over the entire area.

Additional hydrography was run normal to the basic pattern of sounding lines to insure proper junctions with WHITING launch work.

P. RECOMMENDATIONS:

None

Q. REFERENCES TO REPORTS:

Besides the reports listed in the main text, the Report on Corrections to Echo Soundings and Report on Corrections to Distance Measurements submitted by Launch 1257 for OPR-437 are pertinent.

SEPARATES FOLLOWING TEXT

Page

OPR - 437

COAST OF NORTH CAROLINA

ABSTRACT OF HI-FIX CORRECTORS

LOCATION	DATE	JULIAN DAY	MEAN PI	MEAN PII	REMARKS
YAUPON PIER (S)	3/21/70	80	-.35	-.15	
YAUPON PIER(S) & C	3/25/70	84	-.39	+.02	REJECT DAYS WORK HI-FIX LANE BOAT OF UNKNOWN AMOUNT
YAUPON PIER (SE)	4/3/70	93	-.32	+.13	
YAUPON PIER(SE)	4/4/70	94	-.36	+.13	
YAUPON PIER (S)	4/6/70	96	+.35	+.10	FOR POS.# 5489 - 5713
			-.65	+.10	FOR POS# 5424 - 5488
YAUPON PIER (S)	4/7/70	97	+.35	+.12	
YAUPON PIER (S)	4/8/70	98	+.34	+.12	
YAUPON PIER (SW of)	4/15/70	105	-.42	+.11	
YAUPON PIER (SW)	4/16/70	106	-.44	+.15	
YAUPON PIER (SW)	4/17/70	107	-.43	+.13	
Signal 132 (South of)	4/18/70	108	-.41	+.14	
Signal 168 (South of)	4/19/70	109	-.40	+.16	
Signal 168 (S)	4/22/70	112	-.43	+.10	
Signal 168 (S)	4/23/70	113	-.39	+.13	
Signal 168 (S)	4/29/70	119	-.43	+.12	
Signal 168 (S)	4/30/70	120	-.42	+.14	
Signal 168 (S)	5/1/70	121	-.43	+.13	
Signal 168 (S)	5/5/70	125	-.43	+.12	
Signal 113 (SE)	5/6/70	126	-.42	+.10	
YAUPON PIER(S)	5/7/70	127	-.42	+.14	

ABSTRACT OF Hi-Fix CORRECTORS (cont'd)

LOCATION	DATE	JULIAN DAY	MEAN PI	MEAN PII	REMARKS
YAUPON PIER(S) & C'1'	5/9/70	128	-.40	+.12	
C '1'	5/10/70	130	-.42	+.12	
C '1'	5/11/70	131	-.39	+.13	
			-.39	+1.13	Pos # 6254 -
	5/12/70	132	-.40	+.12	
	5/13/70	133	-.39	+.12	
OAK ISLAND(NW)	5/14/70	134	-.42	+.14	

(4-30-57)

BAR CHECK

Launch 1257

OPR-437

COAST OF NORTH CAROLINA

1970

Date	5'	10'	15'	20'	25'	30'	35'
3/21/70							
FATH	5.0	9.5	14.1	18.9	23.5		
DIG	-	-	-	-	-		
DIG	-	-	-	-	-		
FATH	-	-	-	19.0	23.5		
3/25/70							
FATH	4.2						
DIG	4.1						
DIG	-						
FATH	-						
4/3/70							
FATH	4.7	8.4					
DIG	4.4	8.3					
DIG	4.5	8.5					
FATH	4.7	8.8					
4/3/70							
FATH	4.3	9.3					
DIG	4.2	9.2					
DIG	4.4	9.4					
FATH	4.5	9.6					
4/4/70							
FATH	4.4	9.6	14.3	19.0	23.9	28.9	
DIG	4.4	9.4	14.15	19.0	23.8	28.6	
DIG	4.45	9.2	14.15	19.0	23.8	-	
FATH	4.8	9.5	14.2	19.1	23.9	-	
4/6/70							
FATH	4.7	9.3	14.2	19.0	23.9		
DIG	4.5	9.2	14.3	19.0	23.85		
DIG	4.55	9.45	14.3	18.8	-		
FATH	4.8	9.5	14.3	18.9	-		

BAR CHECK
Launch 1257
OPR 437
COAST OF NORTH CAROLINA
1970

Date	5'	10'	15'	20'	25'	30'	35'
4/7/70							
FATH	4.6	9.4	14.0	18.8	23.7		
DIG	4.45	9.35	14.05	19.0	23.8		
DIG	4.35	9.3	14.0	18.9	-		
FATH	4.4	9.3	14.0	18.9	-		
4/8/70							
FATH	4.6	9.5	14.3	19.2	23.9	28.7	33.0
DIG	4.4	9.35	14.2	19.15	23.8	28.6	33.05
DIG	4.5	9.3	14.25	19.1	23.95	28.8	-
FATH	4.8	9.4	14.3	19.2	24.0	28.8	-
4/16/70							
FATH	4.4	9.3	14.0				
DIG	4.3	9.3	13.9				
DIG	4.4	9.4	-				
FATH	4.6	9.6	-				
4/17/70							
FATH	4.6	9.5	14.0	18.7	23.3	28.2	
DIG	4.5	9.3	14.0	18.6	23.4	28.2	
DIG	4.65	9.35	14.1	18.7	23.2	-	
FATH	4.8	9.4	14.2	18.7	23.3	-	
4/18/70							
FATH	4.8	9.3	14.3	19.0	23.8	28.4	
DIG	4.55	9.2	14.2	19.0	23.8	28.45	
DIG	4.4	9.1	14.2	18.9	23.9	-	
FATH	4.6	9.2	14.3	18.9	23.9	-	
4/19/70							
FATH	4.4	9.1	13.7	18.6	23.1		
DIG	4.3	9.05	13.5	18.45	22.9		
DIG	4.4	9.0	13.55	18.55	-		
FATH	4.5	9.0	13.6	18.7	-		

BAR CHECK
Launch 1257
OPR 437
COAST OF NORTH CAROLINA
1970

Date	5'	10'	15'	20'	25'	30'	35'
4/22/70							
FATH	4.6	9.3	14.2	18.9	23.8		
DIG	4.45	9.15	14.2	18.9	23.55		
DIG	4.45	9.15	14.1	18.95	23.6		
FATH	4.5	9.2	14.2	19.0	23.8		
4/30/70							
FATH	4.5	9.0	13.5				
DIG	4.4	9.1	13.4				
DIG	4.45	9.1	13.6				
FATH	4.7	9.2	13.7				
5/1/70							
FATH	4.6	9.0					
DIG	4.45	8.95					
DIG	4.5	9.1					
FATH	4.7	9.2					
5/5/70							
FATH	4.7	9.3					
DIG	4.45	9.2					
DIG	4.4	9.1					
FATH	4.6	9.1					

Compiled 11/12/70

ABSTRACT OF DAILY POSITION NUMBERS USED

H-9096

JULIAN DAY	POSITION NUMBERS
109	5000-5323
112	5324-5646
113	5647-5805
119	5806-6002
120	6003-6092
121	6093-6287
125	6288-6409
133	6410-6541

APPROVAL SHEET

The Officer-in-Charge participated in every aspect of this survey. Approval is thereby attested.

Ralph J. Land
LCDR, NOAA

Approval:

Melvin J. Umbach
CDR, NOAA
Chief of Party

9096

9096

FORM C&GS-504

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. WH-20-3-70 Office No. H-9096

LOCALITY

State North Carolina

General locality Coast of North Carolina

Locality Shallotte Inlet, N. C.

1971

CHIEF OF PARTY

CDR. Charles H. Nixon

LIBRARY & ARCHIVES

DATE

USCOMM-DC 37022-P68

FORM C&GS-537 (5-66)

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

REGISTER NO.
H-9096

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.
WH-20-3-70, BOATSHEET J-1

State ~~North Carolina~~

General locality Coast of North Carolina

Locality Shallotte Inlet, North Carolina

Scale 1:20,000 Date of survey 2 March to 7 May 1971

Instructions dated 8 January 1971 Project No. OPR-437-71

Vessel NOAA Ship WHITING

Chief of party CDR. Charles H. Nixon

Surveyed by * CDR. C. H. Nixon, LCDR J.W.Carpenter, LT P.L.Campbell, Ltjg J.D.Busman, Ltjg D.W.Nostrant, ENS D.W.Yeager, CST W.A.Hill

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

Graphic record scaled by * As above

Graphic record checked by * As above

Protracted by N/A Automated plot by AMC - CALCOMP

Soundings penciled by * As above

Soundings in ~~fathoms~~ feet at MLW ~~MLLW~~ Feet at MLW

REMARKS: Boatsheet J-1 completes all hydrography required to finish boatsheet WH 20-3-70. NOAA Ship WHITING and NOAA Launch 1257 both submitted reports in 1970 describing work on the remainder of WH 20-3-70.

USCOMM-DC 37009-P66

DESCRIPTIVE REPORT

To Accompany

Hydrographic Survey H-9096

WH 20-3-70 Boat Sheet J-1

Scale 1:20,000

2 March 1971 to 7 May 1971

Coast of North Carolina

OPR 437

NOAA Ship WHITING

Charles H. Nixon, CDR, NOAA, Commanding

A. PROJECT:

NOAA Ship WHITING accomplished this survey in accordance with the Project Instructions for OPR 437 dated 8 January 1971 and the amendments to them dated 5 February, 7 February, and 8 March 1971.

B. AREA SURVEYED:

The area surveyed extends from Shallotte Inlet westward seven miles. It includes the area two miles southward from the shoreline. See the attached sketch showing the boat sheet location. This work is on WH 20-3-70, H-9096, boat sheet J-1. The survey commenced on 2 March 1971 and concluded on 7 May 1971.

The 1971 work on boatsheet J-1 completed the work on WH 20-3-70. NOAA Ship WHITING submitted a descriptive report describing its work on WH 20-3-70 at the end of the Carolina project in 1970. NOAA Launch 1257 also submitted a report describing the work it did on WH 20-3-70 at the conclusion of the 1970 Carolina project. This report only describes the work the WHITING launches did in 1971 to complete boatsheet WH 20-3-70.

The boat sheet junctions on the east with WH 20-3-70, H-9096, scale 1:20,000, boat sheet J-2 and on the south with WH 20-3-70, Launch 1257 (Descriptive report J-1257, 1970). On the west the sheet junctions with prior survey H-4450, 1924, scale 1:20,000 and contemporary survey WH 20-1-71.

C. SOUNDING VESSEL:

Tne sounding vessels were Launch I (1205) and Launch II (1204). The skiff was utilized in taking detached positions along the shoreline.

D. SOUNDING EQUIPMENT:

The launches used DE-723D fathometers for sounding. Launch I, WH-I used fathometer number 37019, Launch II, WH-2 used fathometer 37018. The skiff took shoreline detached positions using a sounding pole. Sounding corrections for the launches equipment were determined by daily bar checks and lead line comparisons in conjunction with TDC and Nansen casts. Fathometer operators continually checked for proper initial settings, stylus arm length, sensitivity anomalies, and A-F scale comparisons.

E. SMOOTH SHEET:

Tne smooth sheet will be plotted on the computer plotter system at the Atlantic Marine Center, Norfolk, Virginia.

F. CONTROL:

The launches surveyed the sheet using both visual and hypervisual control. The major portion of the work used hypervisual control with visual control used for shoreline, crosslines, detached positions, etc. In hypervisual control the launch follows a hyperbolic lane. At each position, a single sextant angle establishes the vessels position along the hyperbolic arc. The objects used for the single angle must straddle the inshore extension of the arc.

Launch personnel calibrated the Hi-Fix at least five times per day, or at any time when discrepancies were suspected by comparing visual and electronic positions.

The Hi-Fix stations were located using third order methods. Their positions follow:

STATION	NAME	LATITUDE	LONGITUDE
Master	Cabana, 1970	33°49'33.004"N.	78°38'57.788"W.
Slave 1	Pawley, 1970	33°25'57.764"N.	79°07'09.929"W.
Slave 2	Ben, 1970	33°53'26.790"N.	78°01'50.950"W.

Frequency = 1799.6 kcs.

See Hi-Fix layout.

Mr. Joseph Wilson's photogrammetry party number 62 located visual signals using third order traverse methods. A list of signals appear in the appendix.

G. SHORELINE:

Shoreline was approximated by walking the mean low water and taking visual detached positions using a sextant. This is only to be considered as an aid to the hydrographer and not to be used for the smooth sheet. Smooth sheet shoreline should be taken from the 1969 photography which was not available to the hydrographer at the time of the survey.

Substantial differences between the old manuscript and new aerial photography should be expected. Day to day observations of the shoreline show constant shifting of shoreline features.

H. CROSSLINES:

Crosslines comprised 8.2% of the total mileage of sounding lines.

Agreement between crosslines and normal sounding lines is within two feet. This agreement should become better when smooth tides are used in the smooth plot.

I. JUNCTIONS:

Soundings along the eastern and southern edges of the sheet agree within two feet when compared to H-9096, NOAA Launch (1257), 1970 except in the area of Shallotte Inlet. The area of Shallotte Inlet indicates the shoals building toward the north. This area, however, is subject to constant shifting of the sand bars.

Soundings along the western edge of the sheet agree within two feet when compared to contemporary survey WH 20-1-71.

Agreement with these surveys should improve when all data is plotted using smooth tides.

J. COMPARISON WITH PRIOR SURVEYS:

Comparison of the survey with H-4450, 1924, scale 1:20,000 indicates excellent agreement except in the Shallotte Inlet area already mentioned.

There were no pre-survey review items on WH 20-3-70, boat sheet J-1.

K. COMPARISON WITH THE CHART:

WH 20-3-70, boat sheet J-1 compares favorably with C&GS chart 1236 except in the Shallotte Inlet area already mentioned.

L. ADEQUACY OF THE SURVEY:

The survey is complete, accurate, and adequate.

M. AIDS TO NAVIGATION:

No aids to navigation exist on WH 20-3-70, boat sheet J-1.

N. STATISTICS:

VESSEL	NAUTICAL MILES OF SOUNDING LINE	NO. OF POSITIONS
Launch 1	75.7	341
Launch 2	65.0	301
Skiff	0.0	85
TOTALS	140.7	727

Area of sheet = 11.0 square nautical miles

Total bottom samples = 12

The statistics include 1971 work only. Fix numbers continue from the 1970 field season to avoid confusion for smooth plotting.

O. MISCELLANEOUS:

All hypervisual data for OPR 437 utilizes corrector tapes for plotting the smooth sheet.

Skiff hydro was limited to detached positions along the shoreline.

P. RECOMMENDATIONS:

The hydrographer recommends the area of Shallotte Inlet be marked appropriately for its constant shifting shoals and sand bars.

Q. REFERENCE TO REPORTS:

1. Hi-Fix report, OPR 437, Coasts of North and South Carolina.

2. Corrections to Echo Soundings, OPR 437, Coasts of North and South Carolina.

3. Sounding Line Comparison Report, NOAA Ship WHITING, Coasts of North and South Carolina, 1971 field season.

4. Descriptive Report, 1970, H-9096.

5. Coast Pilot Report, OPR 437-71, Coasts of North and South Carolina, NOAA Ship WHITING, 1971 field season.

TIDE NOTE

Smooth tides for WH 20-3-70, boat sheet J-1 were obtained from a fixed bubbler tide gage located at Ocean Crest Pier, Long Beach, N. C., latitude 33°54'48"N., longitude 78°08'50"W.

Ship personnel installed the gage on 22 February 1971 and maintained it. Mean low water was 4.1 feet on the staff as determined by Tides Division (C3312), Rockville, Maryland.

Ship personnel scaled hourly heights. A program, using a parabolic fit routine, computed correctors. All tides used Greenwich Mean Time in accordance with Project Instructions.

All boat sheet soundings used predicted tides for Shallotte Inlet, North Carolina.

GEOGRAPHIC NAME LIST

1. Ocean Isle Beach

2. Shallotte Inlet

3. Tubbs Inlet

PARAMETER TAPE LISTING

WH20-3-70

FEST=70000

CLAT=3674000

CMER=282600

GRID=1/0

PLSCL=20000

PLAT=33/46/55

PLON=78/30/05

MLAT=33/49/33.004

MLON=78/38/57.788

S1LAT=33/25/57.764

S1LON=79/07/09.929

S2LAT=33/53/26.794

S2LON=78/01/50.951

Q=1799.6

VES=2930

YR=71

NOAA SHIP WHITING 1971

OPR 437 COAST OF NORTH AND SOUTH CAROLINA

VELOCITY USE TABLE

TABLE NO.	FATHOMETER	DAYS (JULIAN)
1	DE 723	060-098
3	DE 723	099-132
2	ROSS	060-098
4	ROSS	099-132

VOLOCITY CORRECTOR TABLES
OPR--437

```
3000082 0 0000 0001 000 000000 000000
000181 0 0002
000277 0 0004
000375 0 0006
000474 0 0008
000572 0 0010
000669 0 0012
000770 0 0014
000060 0 0000 0002 000 000000 000000
000119 0 0002
000175 0 0004
000235 0 0006
000292 0 0008
000358 0 0010
000422 0 0012
000487 0 0014
000552 0 0016
000616 0 0018
000680 0 0020
000745 0 0022
000050 0 0000 0003 000 000000 000000
000148 0 0002
000246 0 0004
000343 0 0006
000439 0 0008
000535 0 0010
000631 0 0012
000729 0 0014
000031 0 0000 0004 000 000000 000000
000090 0 0002
000146 0 0004
000206 0 0006
000269 0 0008
000335 0 0010
000400 0 0012
000465 0 0014
000526 0 0016
000591 0 0018
000656 0 0020
000720 0 0022
```

CFN3-2
4-6-71

ATLANTIC MARINE CENTER

ELECTRONIC CONTROL PARAMETERS

1. Project # OPR- 437 2. Reg. # H-9096 3. Field # WH 20 - 3 - 70

4. Type of Control HI-FIX (Hi-Fix, Raydist, EPI, etc.)

5. Frequency 1799.6 (for conversion of electronic lanes to meters)

6. Mode of Operation (check one):

Range-Range [ ] Range-Visual [ ]

Range One (R_1) Station I.D.		Lat.	° ' "
		Long.	° ' "
Range Two (R_2) Station I.D.		Lat.	° ' "
		Long.	° ' "

Hyperbolic (3-station) [ ] Hyper-Visual [X]

Slave One Station I.D.	PAWLEY	Lat.	33 ° 25 ' 57.764 "
		Long.	79 ° 07 ' 09.929 "
Master Station I.D.	CABANA	Lat.	33 ° 49 ' 33.004 "
		Long.	78 ° 38 ' 57.788 "
Slave Two Station I.D.	BEN	Lat.	33 ° 53 ' 26.794 "
		Long.	78 ° 01 ' 50.951 "

7. Location of Survey:

Range-Range [ ] Imagine an observer is standing at R_1 Station and looking directly at R_2 (check one):

Survey area is to observer's Right [ ] A=Ø

Survey area is to observer's Left [ ] A=1

Hyperbolic [X] Looking from survey area toward Master Station:

Slave One must be to observer's Left.

Slave Two must be to observer's Right.

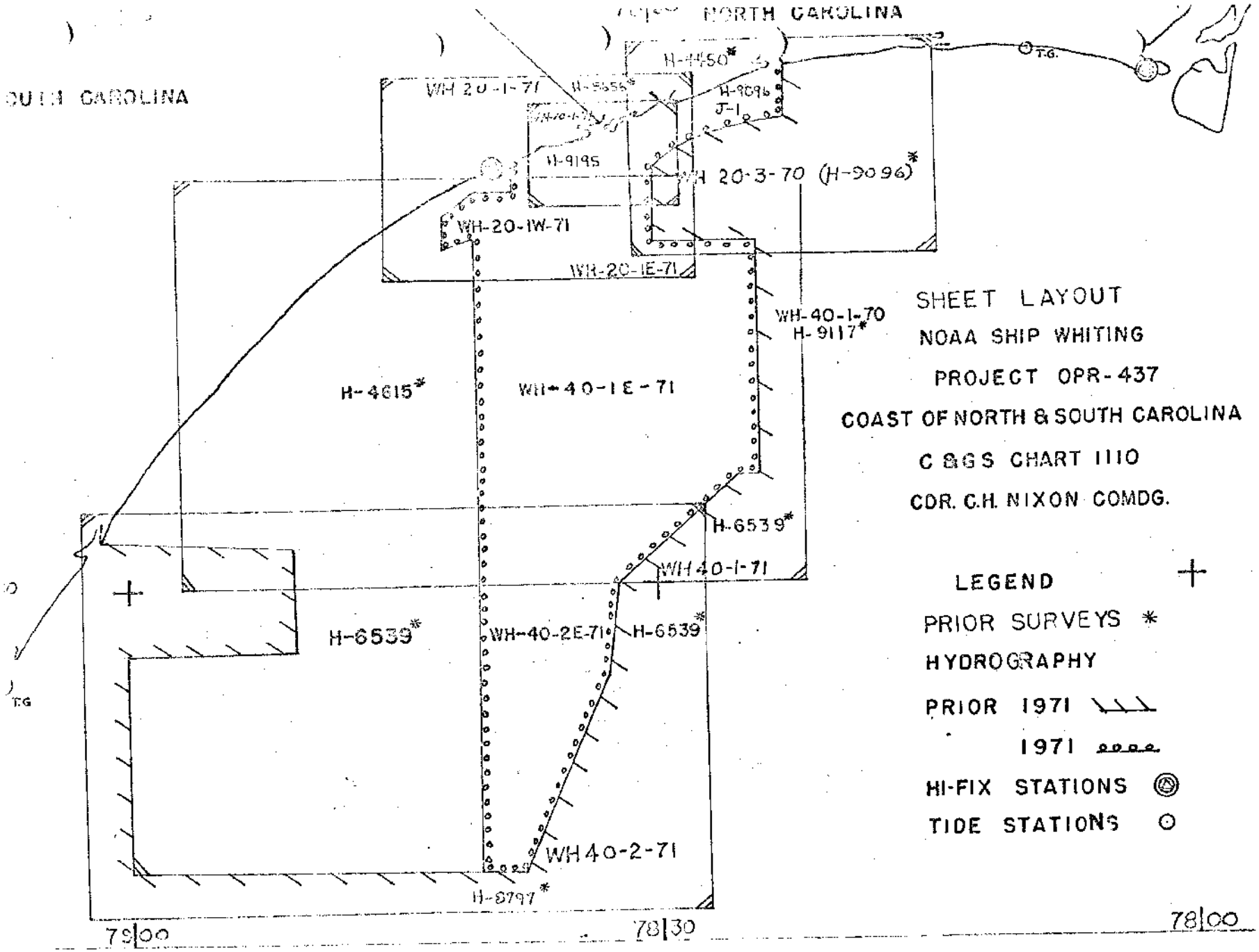
8. [ ] This form is submitted as an aid in preparing a boat sheet.

[X] This form applies to all data on this survey.

[ ] This form applies to part of the data on this survey.

Vessel EDP #	From Time	Day	To Time	Day	Position Numbers (inclusive)	
						to
						to
						to

9. Remarks:


NORTH CAROLINA
SOUTH CAROLINA
H-4450*
WH 20-1-71
H-9096
J-1
H-9195
H 20-3-70 (H-9096)*
WH-20-1W-71
WH-20-1E-71
WH-40-1-70
H-9117*
H-4615*
WH-40-1E-71
H-6539*
WH 40-1-71
H-6539*
WH-40-2E-71
H-6539*
WH 40-2-71
H-8797*
T.G.
T.G.
79|00
78|30
78|00
SHEET LAYOUT
NOAA SHIP WHITING
PROJECT OPR-437
COAST OF NORTH & SOUTH CAROLINA
C&GS CHART 1110
CDR. C.H. NIXON COMDG.
LEGEND
PRIOR SURVEYS *
HYDROGRAPHY
PRIOR 1971
1971
HI-FIX STATIONS
TIDE STATIONS

CALIBRATION ABSTRACT
HYPERVISUAL
WH 20-3-70

LAUNCH

061	USE	-.14	I						
061	"	-.07	II						
068	"	-.69	II	(to 1830)					
068	"	+.37	II	(after 1830)					
068	"	-.16	I						
069	"	-.30	II	(to 1830)					
069	"	+.31	II	(after 1830)					
070	"	-.17	I						

APPROVAL SHEET

Submitted by

John D. Busman

John D. Busman
LTJG, NOAA

Supervision of field and office work on this hydrographic survey was continuous on a day to day basis to insure completeness of the survey and to insure that the work was in accordance with instructions.

Hydrography completed on this boat sheet during the 1971 field season is complete and adequate to supersede prior surveys for charting.

Approved/Forwarded

Charles H. Nixon

Charles H. Nixon
CDR, NOAA
Commanding Officer, NOAA Ship WHITING

C&GS-733M
01

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

COAST OF NORTH CAROLINA - LONG BAY

LAUNCH I	PROJ. NO. OPR-437	YEAR 1970	J-2	CHECKED BY	DATE CHECKED

NO.	DATE 126 DAY	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)		OBS. INIT.
1501	5/6/70	33° 54' 24"	78° 18' 33"	17.0					fine br S	PATT II 388.52	220-214 123-50	
1502	"	33°54'24"	78-19-24	15.8					fine br S	371.62	226-222 117-08	
1503	"	33 53 43	78-19-17	33.5					br S, brk Sh	372.45	238-214 112-40	
1504	"	33 53 43	78-20-07	32.9					br S, brk Sh	357.49	238-214 120-20	
1505	"	33 53 43	78-20-57	31.2 ~~34.5~~					br S, brk Sh	342.49 ~~343.49~~	238-232 57-03	
1506	"	33 53 43	78 21 46	26.2 ~~32.5~~					br S, brk Sh	327.54 ~~326.64~~	262-238 122-25	
1507	"	33 53 02	78 22 26	34.3 ~~23.0~~					br S, brk Sh	312.46	262-238 115-25	
1508	"	33 53 02	78 21 40	34.8 ~~24.5~~					br S, brk Sh	328.60	262-238 91-43	
1509	"	33 53 02	78 20 57	35.5 ~~30.4~~					br S, brk Sh	342.57	238-214 73-22	
1510	"	33 53 02	78-20-00	34.0 ~~32.7~~					br S, brk Sh	357.92	238-214 87-00	
1511	"	33 53 02	78 19 10	32.5 ~~33.3~~					br S, brk Sh	372.45	238-214 83-32	
1512	"	33 53 02	78 18 22	35.3 ~~29.6~~					br S, brk Sh	387.68	238-214 69-03	
1513	"	33 53 43	78 18 27	31.6 ~~24.3~~					br S, brk Sh	387.41	238-214 92-00	
1514	"	33-54-24	78 17 44	20.5					br S, brk Sh	402.48	214-210 96-02	
1515	"	33 53 43	78 17 39	30.0					br S, M	402.58	214-206 41-03	
1516	"	33-53-02	78-17-33	32.9					br S, M	402.46	214-206 24-00	
1517	"	33 53 02	78-16-45	34.5					br S, brk Sh	417.58	214-200 49-54	

(Not one line per sample if necessary.

USCOMM-DC 8220-P62

WH-20-3-70

C&GS-733M
501

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

COAST OF NORTH CAROLINA - LONG BAY

VESSEL	PROJ. NO.	YEAR	CHECKED BY	DATE CHECKED
LAUNCH I	[illegible] 432	1970	J-Z.	

SERIAL NO.	DATE (126)	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
1518	5-6-70	33-53-43	78-16-50	32.5					br S, brk Sh	PATT II 214-200 417.45 75-04	
1519	"	33-54-21	78-16-55	23.0					br S	206-204 417.46 45-37	
1520	"	33-54-39	78-16-95	24.5					br S	200-196 431.44 54-00	
1521	"	33-53-43	78-16-00	30.4					br S, brk Sh	200-196 432.43 22-08	
1522	"	33-53-02	78-15-55	32.7					br S, brk Sh	214-186 432.51 79-44	
1523	"	33-53-02	78-15-05	33.3					br S, brk Sh	214-186 447.47 70-04	
1524	"	33-53-43	78-15-10	29.6					br S, brk Sh	200-186 447.48 60-17	
1525	"	33-54-24	78-15-16	24.3					br S	192-188 447.41 53-14	

than one line per sample if necessary.

USCOMM-DC 8220-P62

COAST AND GEODETIC SURVEY

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

COAST OF NORTH & SOUTH CAROLINA

WHITING | PROJ. NO. ODP-437 | YEAR 1970 | Sheet J-1257 | CHECKED BY | DATE CHECKED

	DATE 112 DAY	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.) PATT. I	PATT. II	OBS. INIT.
9601	1-22-70 1700	33-50-25.83	78-15-47.81						fne gy S, Silt	36.27	437.16	
9602	" 1701	33-50-29.31	78-17-22.94						crs. gy S, Sh	34.05	406.87	
9603	" 1702	33-50-30.67	78-19-03.13						crs. bca S, Sh	31.79	375.04	
9604	" 1703	33-50-55.36	78-19-06.94						Co & Spg	29.64 ~~30.~~	375.07	
9605	" 1704	33-50-31.00	78-22-11.31						fne gy S	27.39	315.64	
9606	" 1705	33-51-54.56	78-22-13.79						fne gy S, sea life	20.56	318.82	
9607	" 1706	33-51-49.91	78-20-33.13						crs. S, Sh	23.36	350.35	
9608	" 1707	33-51-48.84	78-18-51.00						crs. S, Sh	25.67	380.84	
9609	" 1708	33-51-51.88	78-17-28.56						fne gy S	27.42	409.31	
9610	" 1709	33-51-48.17	78-15-46.94						fne gy S, ~~brk Sh~~	29.85	442.05	
9611	1710	33 50-27.22	78 23-53.06						fne gy S, brk Sh	25.17	283.53	
9612	1711	33 50-38.34	78 25-18.75						fne gy S, brk Sh	21.90	257.19	
9613	1712	33 50-27.11	78 26-50.75						fne gy S, brk Sh	20.35	227.96	
9614	1713	33 50-27.80	78 28-30.81						fne gy S, brk Sh	17.35	196.80	
9615	1714	33 50-12.47	78 29-49.25						fne gy S, brk Sh	16.37	171.71	
9616	1715	33 49-15.47	78 29-57.75						fne gy S, brk Sh	22.40	168.97	
9617	1716	33 49-11.33	78 28-24.69						crs. br S	25.49	195.88	

ple if necessary.

USCOMM-DC 8220-P62

C&GS-733M
(3-50)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

Sheet J-1257

SEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
HITING	OPR-437	70	Coast of North Carolina		

L NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, deposition, etc.)		OBS. INIT.
9618	1717 4-22-70	33 49-08.39	78 26-46.00						crs. br. S	28.49	220.46	
9619	1718 "	33 49-08.11	78 25-06.38						crs br S, Sh	31.10	257.42	
9620	1719 "	33 49-10.55	78 23-35.38						fne br S.	33.03	285.87	
9621	1720 "	33 49-09.56	78 22-09.38						fne br S, Sh	35.16	312.63	
9622	1721 "	33 49-11.08	78 20-34.13						fne br S, Sh	37.11	342.44	
9623	1722 "	33 49-08.75	78 18-55.81						fne br S, M, Sh	39.38	373.11	
9624	1723 "	33 49-05.41	78 17-20.75						crs br S, Sh	41.56	402.74	
9625	1724 "	33 49-08.39	78 15-45.38						fne br S, M	43.06	432.97	
9626	1725 "	33 47-40.17	78 15-46.63						crs br S, M, S, Pb	51.52	426.36	
9627	1726 "	33 47-49.05	78 17-25.00						fne br S	49.03	396.77	
9628	1727 "	33 47-47.20	78 19-07.81						fne gy S, Sh	47.46	365.06	
9629	1728 "	33 47-47.83	78 20-33.81						fne gy S, M	43.85	338.66	
9630	1729 "	33 47-47.20	78 22-05.56						crs br S, Sh	44.19	310.45	
9631	1730 "	33 47-47.52	78 23-36.06						crs br S, Sh	42.37	282.67	
9632	1731 "	33 47-48.29	78 25-14.00						fne crs br S, Sh	40.24	252.63	
9633	1732 "	33 47-47.77	78 26-48.06						fne br S, Sh	38.24	223.79	
9634	1733 "	33 47-49.73	78 28-29.50						crs. br S, Sh, M	35.74	192.78	

e than one line per sample if necessary.

USCOMM-DC 8220-P62

C&GS-733M
-60)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

Sheet T-1257

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
Whiting	OPR-437	70	Coast of North Carolina		

LAB. NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
9635	4-22-70	33 47-49.91	78 29-58.75						fine br S	33.56 165.54	
9636	"	33 51-19.06	78 25-18.00						fine br S	18.49 259.36	
9637	"	33 51-41.89	78 23-35.06						fine br S	19.45 292.68	

Use one line per sample if necessary.

USCOMM

CAM2-1
2-18-71

ATLANTIC MARINE CENTER

PROJECTION PARAMETERS

POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

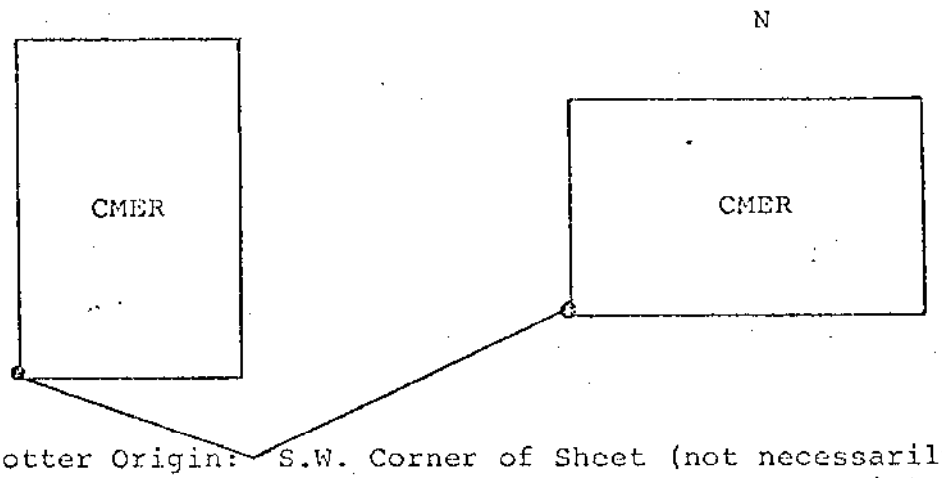
1. Project No. OPR 437
2. Reg. No. H-9096
3. Field No. (WH 20-3-70)
4. Requested By VERIFICATION BR.
5. Ship or Office AMC
6. Date Required

7. Polyconic [X] Modified Transverse Mercator [ ]
8. Central Meridian of Projection 78 ° 25 ' 00 "
9. Survey Scale: 1: 20,000
10. Size of Sheet (check one):

36 x 54 [ ] 36 x 60 [X] Other [ ] Specify

11. Sheet Orientation (check one):

NYX = 1 [ ] NYX = Ø [X]



12. Plotter Origin: S.W. Corner of Sheet (not necessarily a grid intersection)
Latitude 33 ° 46 ' 00 "
Longitude 78 ° 31 ' 00 "
13. G.P.'s of triangulation and/or signals attached [ ]
14. Material Desired: Tracing Paper [ ] Mylar [ ]
Smooth Sheet [X] Other [ ] Specify
15. Remarks:

ATLANTIC MARINE CENTER
APPROVAL SHEET
FOR
AUTOMATED SURVEY H- 9096

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout ~~has~~/has not been made. A new final sounding printout ~~has~~/has not been made.

Date: January 28,1974

Signed: C Dale North Jr.
C.Dale North,LCDR,NOAA
Title: Chief, Verification Branch

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic and AMC Manuals. Exceptions are listed in the verifier's report.

Date: January 28,1974

Signed: William L Jonns
William L.Jonns
Title: Chief, Processing Division

VERIFICATION NOTES
SURVEY H-9096

GENERAL

This appears to be an excellent basic survey. Soundings are in good agreement at crossings and the depth curves adequately delineate the features except in the area of Shallette Inlet, where the hydrography was accomplished during two field seasons. Disagreement is as much as 6 feet. As stated in the 1971 Descriptive Report of the Ship Whiting, paragraph I this is within the area of constantly shifting sandbars. Because of the disagreement of soundings the depth curves in this area was left in pencil.

Problems encounted during the verification and the methods used to resolve them are explained in the accompanying "Plotter Notes".

William L Jonns

Norfolk, Va.
January 28, 1974

William L. Jonns
Chief, Verification Br. AMC

VERIFIER: W.L. Jonns

Norfolk, Va.
July 7, 1971

VERIFICATION BRANCH
PLOTTER NOTE TO EDP(AMC)

SURVEY H-9096 (WH 20-3-70)

Prior to plotting, the Branch check seamned the fathograms for this survey.

Needed changes were marked in BLUE on the master tape printouts as a corrector tape printout was not furnished by the field. Also, a list of sounding changes is attached.

On Day 126 soundings were scaled for about 24 detached positions locating bottom samples.

Position 16, Day 106, should be changed as marked on the master tape printout.

Hugh L. Proffitt
Chief, Verification Br., AMC

Verifier:Dorothy Galland

Norfolk,Va.
April 17,1973

VERIFICATION NOTE TO EDP AMC
SURVEY H-9096 (WH-20-3-70) OPR 437

This branch has completed the verification of the control overlay. All of the plotted control is considered correct, however signal 238 needs to be changed to a triangle symbol (punched card herewith)and twenty nine ~~299~~ 30 signals need to be added (punched cards herewith)

Location of signal 258 from seasons control report
" " signals243,245,247 &249 scaled from Boat Sheet
" " " 264 -304 from descriptive report of H -9229 (WH -20-1-71)

After the above stations have been added, please furnish this branch with a position overlay and a new control listing.

Hugh L. Proffitt
Chief, Verification Branch, AMC

DCC

May. 1, '73
The above Corrections have been checked, and are applied as requested.

VERIFIER: E. J.FIELDS June 8,1973

VERIFICATION BRANCH
PLOTTER NOTE TO EDP (AMC)
SURVEY H-9096 (WH-20-3-70)

This branch has completed the verification of the position overlay. There are about 28 positional changes, 4 deletions, 1 time and course and about 40 inserts to be made. The cards for these corrections have been punched and accompany this note, however the pattern corrector for record numbers 852, 3927-3986 and 5749-5777 have to be corrected. No cards were punched for these corrections. All corrections are made in purple peneil in the printout.

After the above changes are made please furnish this office with a sounding overlay and one level of the excess overlay.

Evelyn J. Fields

EVELYN J. FIELDS
VERIFICATION BRANCH

STOCK NO. 37
(4-30-57)
COMM-DC 28424

Abstract of Hi-Fix Correctors

WH-20-3-70 H-9096 Launch I.

Day	Time	Path II
120	122600	
	124440	.20
	130020	1.20
	140140	.20
	142520	-.80
	142900	-1.80
124	134500	
	140100	.09
	141440	-.91
	151100	-1.91
	154620	.09
	164700	1.09
	171200	.09
	173900	1.09
	184900	.09
125	074920	
	075720	.14
	081900	-.86
	082720	1.14
	083440	2.14
	085740	-1.86
	085840	.14
	~~090040 -1.86~~	
	090120	1.14
	094400	2.14
	100600	-2.86
	104200	.14
	105940	-.86
	110500	.14
	122840	1.14
	130420	.14
	131640	1.14
	142310	-.86
	145410	.14
	152610	1.14
126	073912	
	075217	-.86
	082813	.14
	084049	-.86

Day	Time	Path II
126	085248	1.14
	105924	.14
	110609	1.14
	124041	.14
	124031	-.86
	125519	1.14
	130235	.14
	151700	.14
127	074400	

Compiled by CCM
Checked by GFT & WLJ
AMC

6-8-73

Verifier: H. R. Smith

Note to EDP-AMC
H-9096 (WH-20-3-70)
OPR-437

This office has completed a check of the correctors for this survey, with the following changes noted:

The TRA was changed from 0.0 to 0.4 as follows;

Vessel 1257 year 1970
Day 112 time from 143900 to 145118

Vessel 2931 year 1970
Day 120 time 122600 to 142900
Day 124 time 134500 to 184900
Day 125 time 074900 to 152610
Day 126 time 073912 to 151700

Vessel 2932 year 1970 — should this be 082900
Day 106 time 082940 to142300
Day 108 time 090100 to 155600
Day 124 time1132640 to 184800
Day 125 time 083720 to 132840

Vessel 2931 year 1971
Day 061 time 174300 to 191700.

The tides for day 061 from the Long Beach Gage, 1971 are Questionable. Use the tides from the Myrtle Beach Gage for this day

After all Corrections have been made, please make the soundings.

by F Topkin
for
W. L. Jonns
Chief Verification Br.

Could have been punched for all Surfy. changes.

Note to EDP-AMC
H-9096 WH-20-3-70
OPR-437

H. R. Smith, Verifier

The preliminary sounding Overlay for this Survey has been verified with the following corrections noted:

Positions 6134 thru 6152 are missing from the Survey. These position are on the plot dated 4-23-73, but are missing on all plots after that date. Please plot.

~~Two (2) signals have added to the list of signals, 080 and 081.~~

Please plot all signal numbers to the NW of the symbols.

Cards have punched for all corrections noted.

After all corrections have been made, Please plot the Smooth Sheet.

W. L. Jonns

Chief, Verification Branch

12-10-73

ATLANTIC MARINE CENTER
VERIFICATION OF SMOOTH TIDES

SURVEY H-9096 (WH 20-3-70)

PLANE OF REFERENCE MLW ~~XXXXXX~~
TIME MERIDIAN 75th & GMT
HEIGHT DATUM ON STAFFS 1.4.6 (1970) 3.9 (1970).
8.4 (1971) 4.0 (1971)

TIDE STATIONS	POSITION	TYPE GAGE	TIME CORR. H.W.	TIME CORR. L.W.	HEIGHT CORR. * H.W.	HEIGHT CORR. * L.W.
1. MYRTLE BEACH S.C.	ø 33-41.0 Y 78-53.1	STD				0.0
2. OCEAN CREST PIER LONG BEACH, N.C.	ø 33-54.8 Y 78-08.8	BUBBLER				0.0
3.	ø Y					

HOURLY HEIGHTS [X] FROM ROCKVILLE OFFICE
[ ] FROM FIELD MARIGRAMS VERIFIED BY: HRS

TIDE ZONING [ ] NOT APPLICABLE
[X] BY COMPUTER
[X] FROM TWO OR MORE GAGES

LIMITS AND DESCRIPTION OF ZONING METHODS

33-46-00 North to 33-55-30 NORTH
78-12-00 West to 78-31-00 West

TIDE CORRECTIONS COMPILED [X] BY COMPUTER VERIFIED BY: HRS
[ ] MANUALLY VERIFIED BY:

HEIGHT OF MEAN ABOVE PLANE OF REFERENCE 1. [5.1] 2. 4.8

TIDE CORRECTIONS VERIFIED ON SOUNDING PRINTOUT BY: HRS

DATE OF VERIFICATION OCT 11, 1973

*OR RATIO

EXAMINED & APPROVED

7575

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: ATLANTIC Marine Center

Hourly heights are approved for

Tide Station Used (NOAA form 77-12): Long Beach, N.C.

Period: March-May 1971

HYDROGRAPHIC SHEET: H-9096 H 9115 H-9195

OPR: 437

Locality: COAST of North Carolina

Plane of reference (mean ~~lower~~ low water): 4.0 ft.

Height of Mean High Water above Plane of Reference is 4.8 ft.

Remarks:

Recommend use of multiple gage zoning between Long Beach and Myrtle Beach, South Carolina.

1970 DATUM 3.9

Robert A. Cummings
Chief, Tides Branch

7/17/73

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center

Hourly heights are approved for

Tide Station Used (NOAA form 77-12): Myrtle Beach, S.C.

Period: Feb. 18-May 14, 1970

HYDROGRAPHIC SHEET: H-9096 H-9115 H-9195

OPR: 437

Locality: Coast of S.C.

Plane of reference (mean ~~lower~~ low water): 4.6 ft. *for*

Height of Mean High Water above Plane of Reference is 5.1 ft.

Remarks: Zoning:

Recommend use of multiple gage zoning between Long Beach and Myrtle Beach.

Myrtle Beach -
subtract from hourly heights
1970 4.6
1971 8.4
1972 7.6
Per. Instruction w. H. Hubbard, 8/10/73. A memo will follow. WFT

Robert A. Cummings
Chief, Tides Branch

FORM C&GS-712
(3-9-64)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Chief, Division~~ Director, Atlantic Marine Center

Plane of reference approved ~~of according~~ for hourly heights of tide for
Feb. 12 - May 14, 1970
Mar. 2 - Apr. 27, 1971

HYDROGRAPHIC SHEET

WHITING SURVEYS - OPR-437

Locality: North Carolina Coast

H-9096
H-9115
H-9116
H-9117

~~Chief of Party~~ Year: 1970 - 71

Plane of reference is mean low water

Tide Station Used (Form C&GS-681): Long Beach, North Carolina

Height of Mean High Water above Plane of Reference is as follows: 4.8 feet

Remarks: Hourly heights have been revised in red and verified as follows:

Day	Time	Date	Time
2/20/70	1000 & 1100	5/7/70	1300
3/26/70	0300		
4/4/70	0900 - 1900		
4/29/70	0900		

Robert A. Cummings

Chief, Tides and Currents Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9096

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
Lockwoods Folly Inlet										1
Long Bay										2
Ocean Isle Beach										3
Shallotte Inlet										4
Tubbs Inlet										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
				Approved by:						19
				Chas E. Harrington						20
				Staff Geographer						21
				27 March 1974						22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

* U.S. G.P.O. 1972-769-565/516 REG.#6

FORM C&GS-946 (REV. 11-65) (PRESC. BY HYDROGRAPHIC MANUAL 20-2, 6-94, 7-13)

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-9096 (WH 20-3-70)*

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET *PNO.	1	BOAT SHEETS	3
DESCRIPTIVE REPORT	1	OVERLAYS	4

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES Accordion	Folders 3					1
CAHIERS	1		1			
VOLUMES	8					
BOXES			2 & 1 package			

T-SHEET PRINTS *(List)*

SPECIAL REPORTS *(List)*

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS: PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				3003
POSITIONS CHECKED		200		
POSITIONS REVISED		80		
DEPTH SOUNDINGS REVISED		300		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		80		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0		
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		8		
JUNCTIONS		6		
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS		24		
SPECIAL ADJUSTMENTS * Key Punch		6		
ALL OTHER WORK		354		
TOTALS		398		

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION BY E.J. FIELDS, D.C. CALLAND, H.R. SMITH	4-14-73	12-15-73
VERIFICATION BY B.J. STEPHENSON	1-10-74	1-24-74
REVIEW BY		

USCOMM-DC

Fig. 20.

FORM C&GS-946A
(REV. 11-65)
(PRES. BY HYDROGRAPHIC MANUAL, 6-24)

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

VERIFIER'S REPORT

HYDROGRAPHIC SURVEY, H-9096 (WH20-3-70)

INSTRUCTIONS - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

CL - Check List Items: should be checked as having been completed during the verification processes.

R - Report Item: This column refers to those items reported to the reviewer and is used to indicate the items discussed.

Part I - DESCRIPTIVE REPORT	CL	R
Note: The verifier should first read the Descriptive Report for general information and problems.		
1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken. Remarks Required: -- None	*	
2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification. Remarks Required: -- None	*	
3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None	*	
Part II - SHORELINE AND SIGNALS		
4. Source of shoreline signals SIGNALS Remarks Required: -- List all surveys	*	
a. Give earliest and latest dates of photography Shoreline penciled on from		
b. Field inspection date imcomplete manuscripts		
c. Field Edit date		
d. Reviewed-Unreviewed		
5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.	*	
6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet. Remarks Required: -- None	*	
7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet. Remarks Required: -- List those signals still unidentified.	*	
Part III - JUNCTIONS		
Note: Make a cursory comparison preliminary to inking soundings in area of overlap.		
8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical. Remarks Required: -- None	*	
9. The notation in slanted lettering "JOINS H---- (19)" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil. Remarks Required: -- None	*	

Part III - JUNCTIONS (Continued)	CL	R
10. Junctions with contemporary surveys were satisfactory except as follows: Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of Butt junctions and areas which are SUPERSEDED.	*	
Part IV - VOLUMES		
11. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken and exceptions noted in the volumes. Remarks Required: -- None	*	
12. Condition of sounding records was satisfactory except as follows: Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following:	*	
(a) rocks		
(b) line turns		
(c) position values of beginning and ending of lines		
(d) bar check or velocity correctors		
(e) time recording		
(f) notes or markings on tathograms		
(g) was reduction of soundings accurately done?		
(h) was scanning accurate?		
(i) were peaks at uneven intervals missed?		
(j) were stamps completed?		
(k) references to adjacent features		
Part V - PROTRACTING		
13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None	*	
14. The protracting and plotting of all unsatisfactory crossings were verified. Remarks Required: -- None	*	
15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None	*	

USCOMM-DC 36272-P65

Fig. 20 (Cont'd.)
Form 946A (back of form)

Part V - PROTRACTING (Continued)	CL	R
16. The protracting was satisfactory except as follows: Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments.	*	
17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number.	*	
Part VI - SOUNDINGS		
18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None	*	
19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments.	*	
20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None	*	
21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. Remarks Required: -- None	*	
22. The smooth plotting of soundings was satisfactory except as follows: Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning.	*	
Part VII - CURVES		
23. The depth curves have been inspected before inking. Remarks Required: -- By whom was the penciled curves inspected.	*	
24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following: a. From T-Sheet in dotted black lines b. From soundings in orange See Para. 4 c. Approximate position of sketched curve is dashed orange d. Approximate position of shoal area not sounded in black dashed Remarks Required: -- None		
25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn). Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient.	*	

Part VIII - AIDS TO NAVIGATION	CL	R
26. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey. Remarks Required: -- Conflicts of any nature listed.	*	
27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification. Remarks Required: -- None	*	
Part IX - BOATSHEET		
28. The boat sheet was constantly compared with the smooth sheet with reference to notes, position of sounding lines and supplemental information. Remarks Required: -- None	*	
29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information.	N.A.	
Part X - GENERAL		
30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2). Remarks Required: -- None	*	
31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None	*	
32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet. Remarks Required: -- None		
33. The bottom characteristics are adequately shown. Remarks Required: -- None	*	
Part XI - NOTES TO THE REVIEWER		
34. Unresolved discrepancies and questionable soundings.	*	
35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.	*	
36. Supplemental information.	*	

Verified by B.J. STEPHENSON

Date 1-24-74

FORM C&GS-946A (11-65) USCOMM-DC 34272-P65

A 17' in φ 33°54.5' λ 78°15.4' and 19' in φ 33°53.9' λ 78°18.7' were removed from 55 before review.
RHC

Fig. 18.

DESCRIPTIVE REPORT DATA RECORD		
PART I SMOOTH SHEET PREPARATION	PREPARED BY/OPERATOR	DATE
A. PLOTTER OPERATOR		
B. DISTORTION MARKS PLOTTED		
C. PROJECTION INTERSECTIONS PLOTTED		
D. POINTS OF ELECTRONIC CONTROL ARCS PLOTTED		
E. OVERLAYS PREPARED BY		
1. POSITION NUMBER		
2. EXCESS SOUNDINGS		
3. PRELIMINARY SMOOTH PLOT		
4. LIST OTHERS		
A.		
B.		
F. SOUNDING SELECTION BY		
G. PLOTTER INPUT PREPARED		
H. CHECKED		
I. DESCRIPTIVE REPORT ADDENDUMS		
PART II SMOOTH SHEET COMPLETION	B.J. STEPHENSON	1-24-74
	CARTOGRAPHER	DATE
A. DISTORTION SCALE TICKS IDENTIFIED BY NOTE		
B. PROJECTION INTERSECTIONS VERIFIED BY	EDP-AMC B.J. STEPHENSON	1-10-74
C. PROJECTION LINES RULED BY	EDP-AMC	4-18-73
D. ELECTRONIC CONTROL ARCS RULED AND LOCATION VERIFIED	EDP-AMC B.J. STEPHENSON	1-21-74
E. OVERLAYS COMPLETED BY		
1. POSITION NUMBER LEADERS ADDED		
2. EXCESS SOUNDING OVERLAY COMPARED		
3. PRELIMINARY SMOOTH PLOTS COMPARED	B.J. STEPHENSON	1-14-74
4. OTHERS UTILIZED		
A.		
B.		
F. DESCRIPTIVE REPORT ADDENDUM	W.L. JONNS	1-28-74
G. CONTROL STATIONS VERIFIED	D.C. CALLAND	4-18-73
H. POSITIONS MANUALLY PLOTTED		
I. MANUAL PLOT VERIFIED		
J. SHORELINE APPLIED	Pencil only (imcomplete manuscripts)	
K. BOTTOM CHARACTERISTICS ADDED	B.J. STEPHENSON	1-23-74
L. NOTES AND DEPTH CURVES ADDED	" "	1-22-74

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9096

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
1236 (11536)	9-18-74	C. Moore	~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection~~ Signed Via Drawing No.
1110 (11520)	9-18-74	C. Moore	~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection~~ Signed Via Drawing No.
8355CT	10-8-74	D.A. Clements	~~Full~~ Part ~~Before~~ After Verification ~~Review~~ ~~Inspection~~ Signed Via Drawing No.
835 SC	4/22/76	Jay Sherman	~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection~~ Signed Via Drawing No. Adequately appl'd
11536	24 July 79	Alex Radicfovich	~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection~~ Signed Via el. Drawing No. 11534 (835) and MOSTLY DIRECTLY from H-sheet — ADEQUATELY APPLIED
11520	10/21/82	Mark Frise	~~Full Part~~ Before ~~After Verification~~ Review Inspection Signed Via Drawing No. 41 Adequately appl thru Chart 11536 Adequate
~~[illegible]~~	~~12-8-[illegible]~~	~~[illegible]~~	~~Full Part~~ Before ~~After Verification Review Inspection Signed Via~~ Drawing No. ~~49 Adequately appl through [illegible]~~
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.

9096

Diag. Cht. No. 1236-2

FORM C&GS-504

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. WH-20-3-70 Office No. H-9096

LOCALITY

State North Carolina

General locality Long Bay

Locality Lockwoods Folly Inlet to Tubbs Inlet

1970-71

CHIEF OF PARTY

CDR C.H. NIKON
CDR. Melvin J. Umbach, USESSA

LIBRARY & ARCHIVES

DATE 2-3-74

USCOMM-DC 37022-P66

9096

Hart 835SC A
1236
1110

FORM C&GS-537 (5-66)

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

REGISTER NO. H-9096

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. WH-20-3-70

State North Carolina

General locality Long Bay

Locality South of Holden Beach, North Carolina — See other Title Sheets

Scale 1:20,000 Date of survey 4/16/70 - 5/5/70 4/19/70 - 5/5/70 3/2/71-5/7/71

Instructions dated 16 January, 1970 Project No. OPR-437

Vessel USC&GS Ship WHITING

Chief of party CDR. Melvin J. Umbach, USESSA & C.H. Nixon

Surveyed by *CDR. M.J. Umbach, LT G.C. Chappell, LT J.L. Wallace, LT G.L. Boyack, LTjg L.T. Gillman, LTjg G.J. Cinpinski, ENS D.W. Nosrrant, CST W.A. Hill (Additional on other Title Sheets)

Soundings taken by echo sounder, hand lead, pole Echo Sounder

Graphic record scaled by Same as *

Graphic record checked by Same as *

Protracted by N/A Automated plot by CALCOMP 618 Atlantic Marine Center

Soundings penciled by N/A

Soundings in ~~fathoms~~ feet at MLW ~~MLLW~~

REMARKS: The portion of this survey accomplished by LAUNCH 1257 is described in an addendum to this report.

AREA #3

Chart 1236 4th 1110 835sc A

Applied to stds 3-15-74 CAB

USCOMM-DC 37008-P66

DESCRIPTIVE REPORT

To Accompany

HYDROGRAPHIC SURVEY H-9096

WH-20-3-70

OPR-437

Coast of North Carolina

April 16, 1970 to May 5, 1970

Scale 1:20,000

USC&GSS WHITING

CDR M. J. Umbach, USESSA, Commanding

- -

A. PROJECT:

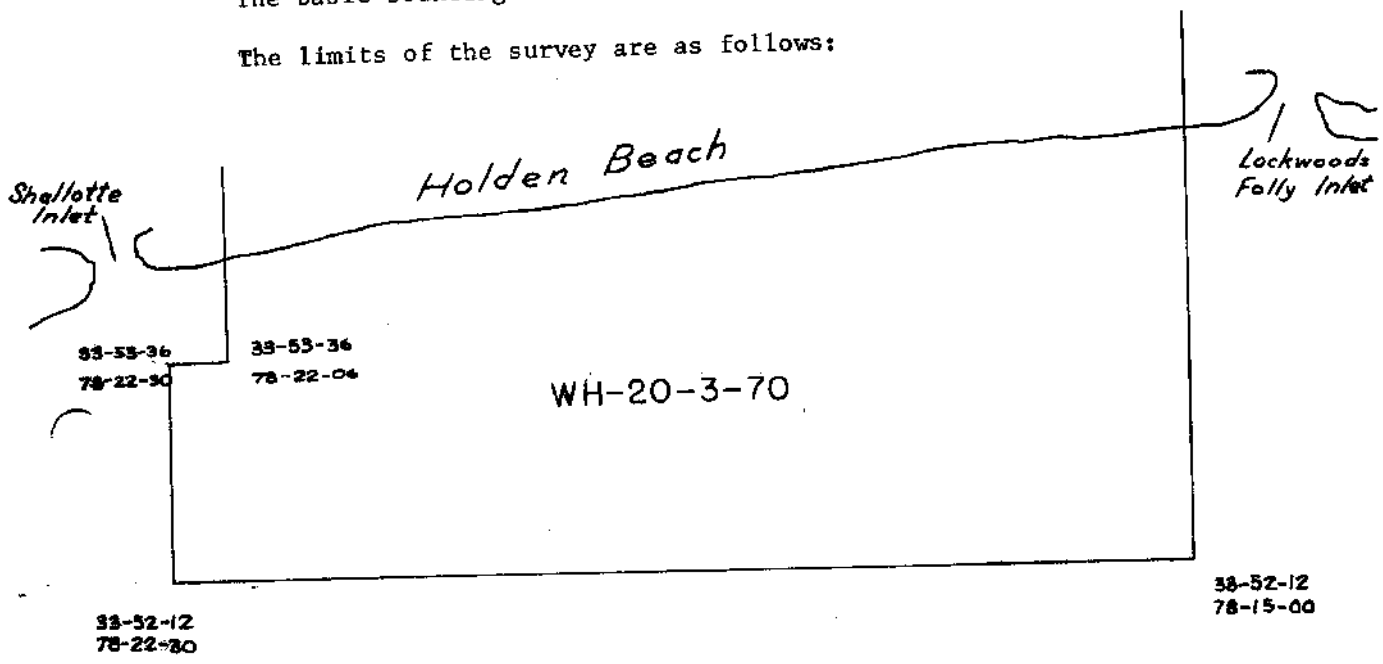
This survey was accomplished in accordance with PROJECT INSTRUCTIONS FOR OPR-437, Coast of North and South Carolina, dated 16 January, 1970, as amended 22 January and 11 February, 1970.

B. AREA SURVEYED:

The area surveyed extends seaward from the shoreline for a distance of approximately two miles and westward from Lockwoods Folly Inlet, N. C. to Shallotte Inlet, N. C., a distance of approximately 6½ miles. The eastern limit of the sheet junctioned with a contemporary survey by the ship's launches on sheet WH-20-1-70 (H-9115), field referenced as sheet K-1. The southern limit of the sheet junctioned with that portion of a contemporary survey of WH-20-3-70 (H-9096) run by LAUNCH 1257 which was field referenced as sheet J-1257. The western limit of the sheet junctioned with the prior survey H-4450 of 1924. A diagram showing the limits of the various sheets is included in the report.

The survey was accomplished between April 16, 1970 and May 5, 1970. The basic sounding lines were run at 200 meter spacing.

The limits of the survey are as follows:



C. SOUNDING VESSEL:

The sounding vessels used in the survey were WHITING LAUNCH #1 and WHITING LAUNCH #2.

D. SOUNDING EQUIPMENT:

The sounding instruments used were Raytheon DE-723D survey fathometers. The "D" suffix denotes a unit with digitized output. The fathometer used in LAUNCH #1 was serial no. 37019. The fathometer used in LAUNCH #2 was serial no. 37018.

Bar checks were taken and recorded daily in the deepest water of the survey as sea conditions permitted. The depths as measured by the bar check, fathogram trace, and digitized output were recorded. When the system would not register a digitized output of the depth to the bar, a vertical cast was taken.

The fix postions were plotted by the WHITING's computer plotter system on a 1:20,000 scale. Soundings in feet, were inked in by hand at a later time. Soundings were plotted in integral feet except on both sides of the low water line, when they were plotted to the nearest ½ foot. The soundings on the sheet were reduced from smooth tides on the

portable tide gauge on Ocean Crest Pier at Long Beach, N. C. A velocity corrector of 0.0 ft. was applied on the boatsheet. The true corrections should be made prior to plotting of the smooth sheet. A table of velocity corrections is appended to this report.

E. SMOOTH SHEET:

The smooth sheet will be plotted on the computer plotter system at the Atlantic Marine Center in Norfolk, Virginia. Position corrections have already been applied.

F. CONTROL:

Two basic methods of control were used during the survey: visual and hyper-visual.

The major portion of the survey was controlled hyper-visually. The sounding vessel would follow the hyperbolic lane running normal to the depth curves. The position of the vessel on the arc was located by a single sextant angle shot to signals which straddle the inshore extension of the hyperbolic arc. The signals were located by third order traverse from existing second order triangulation stations.

Detached positions on aids to navigation, visible wrecks, and the end of one pier were done visually.

The master station was located west of the sheet limits at Cherry Grove Beach, S. C. Slave #1 was located west of the master at Pawley's Island near Georgetown, S. C. Slave #2 was located east of the sheet limits on Oak Island near Fort Caswell, N. C. The stations were located by third order methods.

STATION	NAME	LATITUDE	LONGITUDE
Master	CABANA, 1970	33°49'33.004"	78°38'57.788"
Slave 1	PAWLEY, 1970	33°25'57.764"	79°07'09.929"
Slave 2	BEN, 1970	33°53'26.79"	78°01' 50.95"

Frequency: 1799.6 kcs.

G. SHORELINE:

Shoreline was pencilled from Advance Manuscript T-12289, dated December, 1966 and Advance Manuscript T-12288 dated November, 1966. It was used only as an aid to the hydrographer. The shoreline for the smooth sheet should be taken from the 1969 aerial photography, which had not been compiled at the time of the survey. Substantial difference between the old manuscripts and the new aerial photography is expected as great concern has been expressed by the local residents about the eroding shore.

H. CROSSLINES:

Crosslines composed 12.1% of the total length of sounding lines. The agreement between crosslines and the main system of lines was excellent in all areas.

I. JUNCTIONS:

The agreement on the eastern edge of the sheet where it junctions with sheet WH-20-1-70 is good, as both this sheet and the western half of sheet WH-20-1-70 were plotted with smooth tides.

Along the southern limit of the sheet, differences of one to three feet exist between sheets surveyed by the WHITING and those surveyed by LAUNCH 1257. These discrepancies are due to the difference between smooth and predicted tides and will be rectified when all sheets are re-plotted with smooth tides.

Along the western limit of the sheet there exists a constant two to three foot difference between this survey and the prior survey H-4450 of 1924. This is expectedaas throughout the new survey there is a two to three foot shoaling of the depth as compared with the prior survey.

J. COMPARISON WITH PRIOR SURVEYS:

Comparison was made with the prior survey H-4450 of 1924 at a scale of 1:20,000 and with prior survey H-4454 of 1924 at a scale of 1:40,000. A two to three foot shoaling of the depths exists throughout the entire sheet. Mary's Inlet, previously locatedaat longitude 78-17-55 W, and Bacon Inlet, previously located at longitude 78-19-50 W, are now closed. Both inlets were shown on survey H-4450 and no longer exist.

There exists off Holden Beach the wreck of the vessel "RANGER." There are three separate sections of the wreck. The western section is located at 33-54-43.36 N, 78-15-32.44 W, consists of a jagged metal plate, and bares 2.2 feet at MLW. The center section is located at 33-54-43.49 N, 78-15-30.71 W, consists of five vertical spars and bares 2.2 feet at MLW. The eastern section is located at 33-54-43.61 N, 78-15-2981 W, and has a least depth of 0.8 ft. as determined by leadline. The western section is postion number 2314; the center portion is position number 2311; and the eastern portion is position number 2310.

K. COMPARISON WITH THE CHART:

The boatsheet was compared with the sixth edition of USC&GS Chart No. 1236, dated February 17, 1969. There exists a two to three foot shoaling of the depth throughout the survey.

L. ADEQUACY OF THE SURVEY:

The survey is complete and adequate and should be considered to supercede any prior surveys for charting.

M. AIDS TO NAVIGATION:

One black and white vertically striped snag buoy was located. No comparison was made with previous known position as snag buoys are not charted due to frequent change in position.

BUOY	LATITUDE	LONGITUDE
"S"	33°54'11.48"N	78°15'43.44"W

N. STATISTICS:

VESSEL	NAUTICAL MILES OF SOUNDING LINES	NUMBER OF POSITIONS
Z-BIRD	0.0	2
LCH #1	69.0	385
LCH #2	84.5	311
TOTALS	153.5	698

Area of Sheet = 12.5 sq. nautical miles

TOTAL BOTTOM SAMPLES = 25

O. MISCELLANEOUS:

The Hi-fix arcs drawn on the boatsheet are of non-integral values due to a change in the computer-plotter system of drawing arcs. The change involves using a dummy station location and saves computer time. The arcs drawn were extensively used on the launch sheets as lanes were run on 2.5 lane increments starting with an even lane number (i.e. 600.0, 602.5, 605.0, 607.5, etc.)

There are no corrector tapes for the hyper-visual data. All master tapes were re-edited since the only program available at the time of the survey was one which does not have the corrector tape feature.

The only work done in this survey by the "ZEEBIRD", a 15-foot rubber raft powered by a 15HP outboard motor, was one detached position on

the wreck of the vessel "RANGER". This was position number 2310.

Shallotte Inlet and shoals will be surveyed during the 1971 field season, and shown in its entirety on adjoining boat sheet J-1.

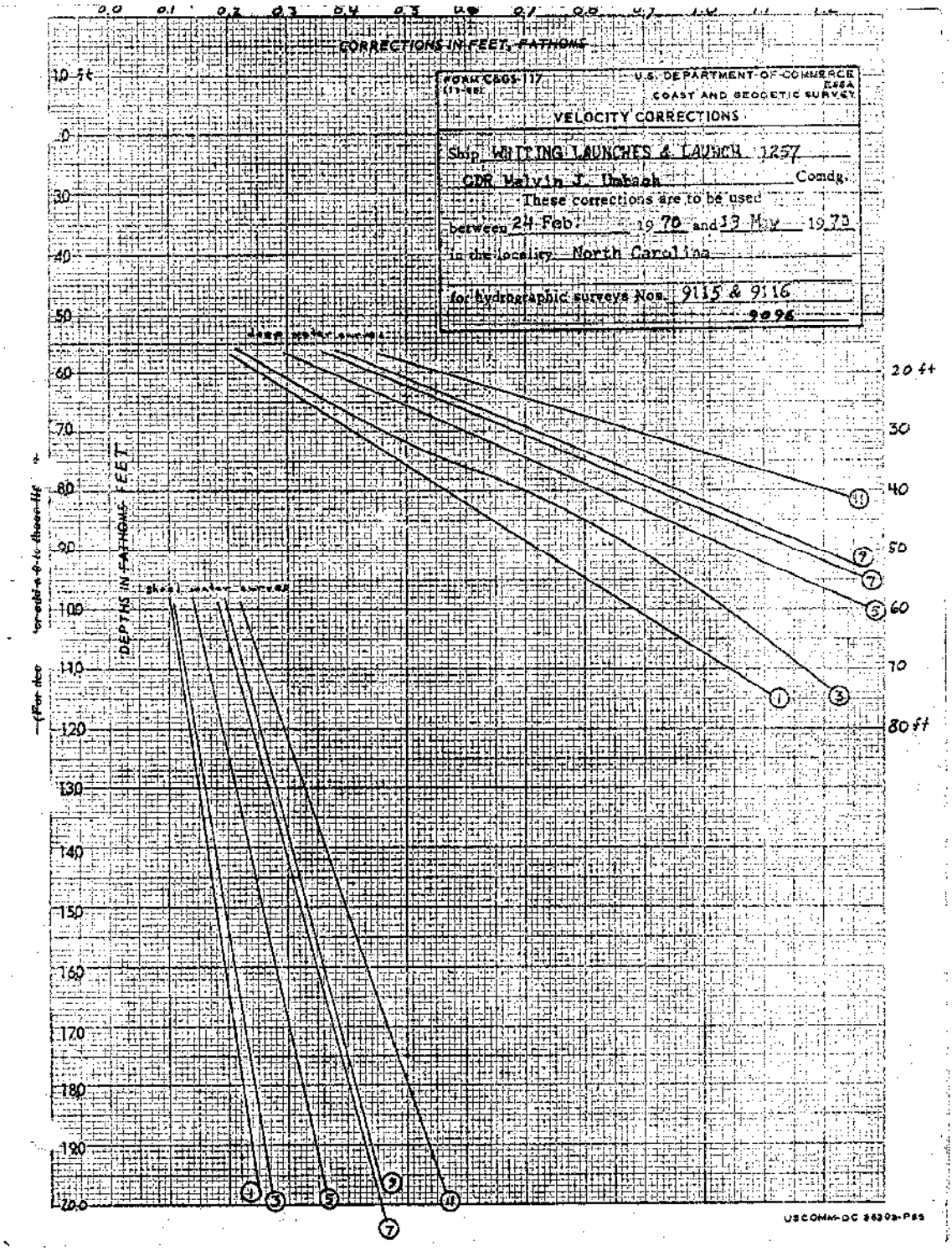
Field work in 1971 will complete J sheet. A 1971 Descriptive Report will be submitted describing the remaining Hydrography. The Report will carry annotation as WH-20-3-70, H-9096, Boat Sheet J-1.

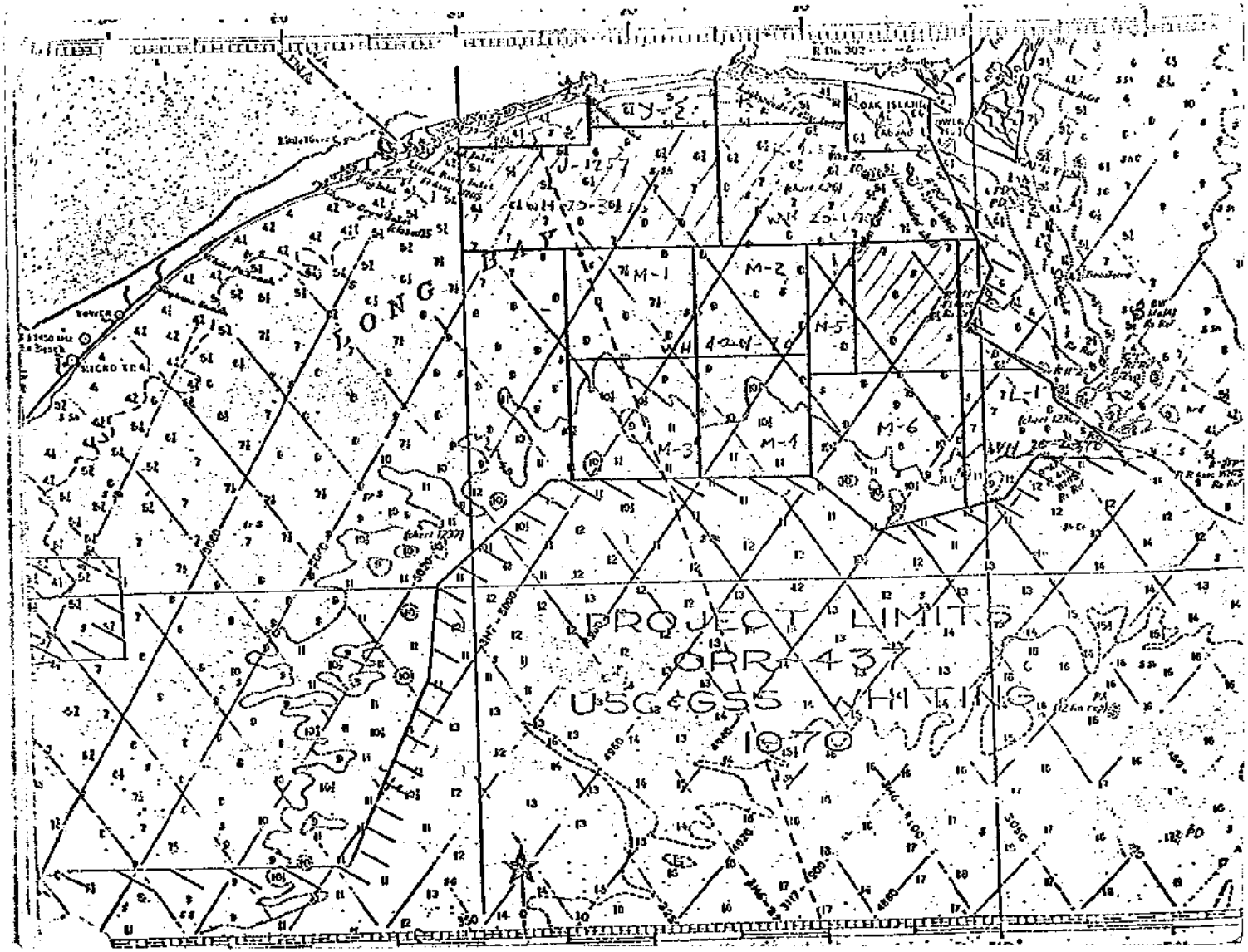
P. RECOMMENDATIONS:

None.

Q. REFERENCES TO REPORTS:

1. 1970 Field Edit
2. Descriptive Report H-9115
3. Descriptive Report J-1257
4. Hi-Fix Report
5. Corrections to Echo Soundings


CORRECTIONS IN FEET, FATHOMS
FORM C&GS 117
(11-68)
U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY
VELOCITY CORRECTIONS
Ship WRITING LAUNCHES & LAUNCH 1257
CDR Melvin J. Umbach Comdg.
These corrections are to be used
between 24 Feb. 1970 and 13 May 1970
in the locality North Carolina
for hydrographic surveys Nos. 9115 & 9116
9096
DEPTHS IN FATHOMS FEET
20 ft
30
40
50
60
70
80 ft
USCOMM-DC 56290-P68


PROJECT LIMITS
ORR 437
USC&GS WHITING
1970
M-1
M-2
M-3
M-4
M-5
M-6
L-1

TIDE NOTE

Smooth tides for WH-20-3-70 were obtained from a fixed bubbler tide gage located at Ocean Crest Pier, Long Beach, N. C., latitude 33-54-48 N, longitude 78-08-50 W.

The gage was installed on February 7, 1970 and maintained by ship's personnel. Mean Low Water was 3.9 feet on the tide staff as determined by Tides Division (C3312), Rockville, Maryland.

Hourly heights were scaled by ship's personnel and correctors made by computer, using a parabolic fit program. The time meridian used was 75°W and no time or height corrections were applied. A list of smooth tide correctors is included with this report.

GEOGRAPHIC NAME LIST

1. Holden Beach
2. Shallotte Inlet

FORM C&GS-712
(3-8-64)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Director, Atlantic Marine Center

Plane of reference approved for hourly heights of tide for
Feb. 12 - May 14, 1970
Mar. 2 - Apr. 27, 1971

HYDROGRAPHIC SHEET: **WHITING SURVEYS - OPR-437**

Locality: North Carolina Coast

H-9096
H-9115
H-9116
H-9117

Year: 1970 - 71

Plane of reference is mean low water

Tide Station Used (Form C&GS-681): Long Beach, North Carolina

Height of Mean High Water above Plane of Reference is as follows: 4.8 feet

Remarks: Hourly heights have been revised in red and verified as follows:

Day	Time	Date	Time
2/20/70	1000 & 1100	5/7/70	1300
3/26/70	0300		
4/4/70	0900 - 1900		
4/29/70	0900		

Robert A. Cummings

Chief, Tides and Currents Branch

Ship WHITING 1970

OPR 437 North Carolina

VELOCITY USE TABLE

TABLE NUMBER	INSTRUMENT	DAYS (JULIAN)
1	DE 723	055-089
2	Ross	055-089
3	DE 723	090-094
4	Ross	090-094
5	DE 723	095-107
6	Ross	095-107
7	DE 723	108
8	Ross	108
9	DE 723	109-114
10	Ross	109-114
11	DE 723	115-133
12	Ross	115-133

The DE 723 data was used for the launches, including the High-speed Launch. The Ross data was used for the Ship WHITING.

STOCK NO. 37
(4-30-57)
COMM-DC 28424

SHEET J-2 OF

WH 20-3-70

(H-9096)

JULIAN DAY	DATE	POSITION NUMBERS	NUMBER OF POSITIONS	NAUT. MI. SOUNDINGS	LAUNCH NO.	CONTROL	NOTES
106 am	4-16-70	1-25	25	9	II	H-VIS	
106 pm	4-16-70	26-55	30		II	H-VIS	
108 am	4-18-70	56-112	57	15	II	H-VIS	
108 pm	4-18-70	113-164	52	15	II	H-VIS	
120	4-30-70	165-216	52	15	I	H-VIS	X-Lines
124	5-4-70	217-289	73	22.5	II	H-VIS	
124	5-4-70	2000-2071	72	16	I	H-VIS	X-Line
125	5-5-70	290-363	74	16	II	H-VIS	
125	5-5-70	2072-2223	151	30	I	VIS	6' CURVE
126	5-6-70	1501-1525	25	0	I	VIS	B.S.
126	5-6-70	2224-2249	25	2	I	H-VIS	Development
127	5-7-70	2250-2308	59	6	I	VIS	Shoreline

APPROVAL SHEET

Submitted by

Donald W. Nostrant
Ensign USESSA

Approved and forwarded

Melvin J. Umbach
CDR USESSA
Commanding USC&GS Ship WHITING

```
000047 0 0000 0001 000 000000 000000
000130 0 0001
000199 0 0002
000262 0 0003
000326 0 0004
000390 0 0005
000454 0 0006
000516 0 0007
000578 0 0008
000640 0 0009
199999 0 0000
000046 0 0000 0003 000 000000 000000
000123 0 0001
000182 0 0002
000234 0 0003
000291 0 0004
000338 0 0005
000375 0 0006
000420 0 0007
000476 0 0008
000538 0 0009
000610 0 0010
000689 0 0011
199999 0 0000
000059 0 0000 0005 000 000000 000000
000103 0 0001
000146 0 0002
000190 0 0003
```

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000312 0 0007
000356 0 0008
000395 0 0009
000438 0 0010
000480 0 0011
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000066 0 0001
000106 0 0002
000135 0 0003
000164 0 0004
000193 0 0005
000224 0 0006
000255 0 0007
000285 0 0008
000316 0 0009
000347 0 0010
000380 0 0011
000410 0 0012
000444 0 0013
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000505 0 0015
000535 0 0016
000565 0 0017
000595 0 0018
199999 0 0000
```

```
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000278 0 0005
000320 0 0006
000364 0 0007
000410 0 0008
000450 0 0009
000493 0 0010
000538 0 0011
000581 0 0012
000625 0 0013
000669 0 0014
199999 0 0000
000052 0 0000 0007 000 000000 000000
000088 0 0001
000124 0 0002
000160 0 0003
000202 0 0004
000233 0 0005
000285 0 0006
000327 0 0007
000370 0 0008
000410 0 0009
000452 0 0010
000496 0 0011
000540 0 0012
199999 0 0000
000047 0 0000 0009 000 000000 000000
000091 0 0001
000119 0 0002
000156 0 0003
000192 0 0004
000230 0 0005
```

COAST OF NORTH AND SOUTH CAROLINA

VELOCITY TAPE # 1, 3, 5, 7, 9, 11

SHEETS WH. 20-1-70 (H-9115)
WH. 20-3-70 (H-9096)

```
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000320 0 0006
000364 0 0007
000410 0 0008
000450 0 0009
000493 0 0010
000538 0 0011
000581 0 0012
000625 0 0013
000669 0 0014
199999 0 0000
000052 0 0000 0007 000 000000 000000
000088 0 0001
000124 0 0002
000160 0 0003
000202 0 0004
000233 0 0005
000285 0 0006
000327 0 0007
000370 0 0008
000410 0 0009
000452 0 0010
000496 0 0011
000540 0 0012
199999 0 0000
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000091 0 0001
000119 0 0002
000156 0 0003
000192 0 0004
000230 0 0005
```

```
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000438 0 0010
000480 0 0011
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000224 0 0006
000255 0 0007
000285 0 0008
000316 0 0009
000347 0 0010
000380 0 0011
000410 0 0012
000444 0 0013
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000535 0 0016
000565 0 0017
000595 0 0018
199999 0 0000
```

```
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000199 0 0002
000262 0 0003
000326 0 0004
000390 0 0005
000454 0 0006
000516 0 0007
000578 0 0008
000640 0 0009
199999 0 0000
000046 0 0000 0003 000 000000 000000
000123 0 0001
000182 0 0002
000234 0 0003
000291 0 0004
000338 0 0005
000375 0 0006
000420 0 0007
000476 0 0008
000538 0 0009
000610 0 0010
000689 0 0011
199999 0 0000
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000103 0 0001
000146 0 0002
000190 0 0003
```

ABSTRACT OF HI-FIX CORRECTORS

WH 20-3-70 H-9096 J-2

LAUNCH II

Day	Time	PAT II
106	082900	+ .18
	101800	+ .15
108	090100	+ .22
	104900	+ .14
	132120	+ .12
124	090100	+ .22
	104900	+ .14
	132120	+ .12
	132640	+ .09
	135840	+ .08
	145820	+ .07
	171800	+ .08
	183400	+ .06
125	083720	+ .13
	093200	+ .12
	123040	+ .11

Day	Time	PAT II
126	073912	- .86
	075217	+ .14
	082813	- .86
	084049	+1.14
	085243	+ .14
	105924	+1.14
	110609	+ .14
	124041	- .86
	124831	+1.14
	125519	+ .14
	143840	+ .14
127	074400	+ .13
	074740	+1.13
	075000	+ .13
	080020	+1.13
	080300	+2.13

FORM # 1 FIG. 15

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

(1) PROJECT NO. 437
(2) H NO. 9096
(3) FIELD NO. WH 20-3-70
(4) REQUESTED BY
(5) SHIP OR OFFICE WHITING
(6) DATE REQUIRED
(7) VISUAL ☐
(8) ELECTRONIC [X] (FILL OUT FORM #3)

(10) XKN (SP 5) DISTANCE FROM CMER TO EAST EDGE (NYX = 1) OR WEST EDGE (NYX = 0). 11,830,988 METERS

(11) YKN (SP 241) DISTANCE FROM EQUATOR TO SOUTH EDGE OF SHEET. 3,741,283.445 METERS

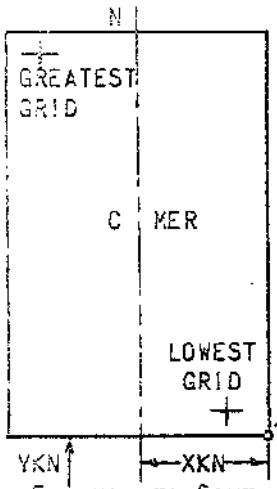
(12) CENTRAL MERIDIAN 78 ° 30 ' 00 "

(13) SURVEY SCALE 1: 20,000

(14) SIZE OF SHEET (CHECK ONE) 36x54 [X] 42x60 ☐ OTHER ____ ☐

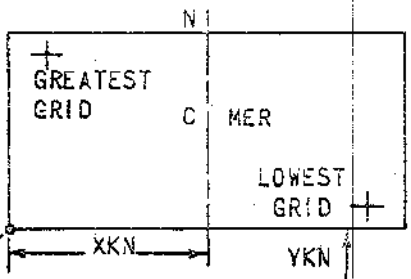
(15) NYX, ORIENTATION OF SHEET (CHECK ONE)

NYX = 1 ☐



FROM EQUATOR TO SOUTH EDGE OF SHEET

NYX = 0 [X]



FROM EQUATOR TO SOUTH EDGE OF SHEET

(9) PLOTTER ORIGIN (CORNER OF SHEET)

LATITUDE 33 ° 48 ' 00 " N
LONGITUDE 78 ° 23 ' 36 " W

LIST G.P. OF ALL STATIONS TO BE PLOTTED ON THIS PROJECTION ON THE BACK OF THIS FORM. (DEG., MIN., SEC.)

GRID LIMITS

(16) GREATEST LATITUDE 33 ° 56 ' 00 "
(17) LOWEST LATITUDE 33 ° 49 ' 00 "
(18) DIFFERENCE ° 7 ' 00 "

(PROJECTION LINE INTERVAL, PAGE 4 HYDRO MANUAL)

(19) 1 ' 00 "
(20) 7 YSN

(21) GREATEST LONGITUDE 78 ° 23 ' 00 "
(22) LOWEST LONGITUDE 78 ° 13 ' 00 "
(23) DIFFERENCE ° 10 ' 00 "

(24) 1 ' 00 "
(25) 10 XSN

COAST OF NORTH AND SOUTH CAROLINA

OPR 437 1970

POSITIONS OF HYDRO SIGNALS

099	33 55 1666	078 01 1292	TOWER (FT CASWELL BAPTIST ASSEM CH CAMP TANK) 1962
100	33 52 2406	078 00 0234	BALD HEAD LIGHTHOUSE, 1851
101	33 53 3573	078 01 0989	SOUTHPORT MUNICIPAL W.T., 1962
102	33 53 3354	078 02 0677	OAK ISLAND LIGHTHOUSE, 1962
103	33 53 3172	078 02 0448	
104	33 53 3692	078 02 3478	
105	33 53 4545	078 03 0626	
106	33 53 5219	078 03 3368	
108	33 53 5996	078 04 0073	
109	33 54 0728	078 04 2890	
110	33 54 0451	078 04 5906	
111	33 54 1584	078 05 0467	POND, 1934
112	33 54 2328	078 05 3996	
113	33 54 2652	078 06 0437	
114	33 54 2963	078 06 2482	
119	33 54 1975	078 05 2324	
120	33 54 2472	078 05 5076	
124	33 54 3004	078 06 3238	
126	33 54 3260	078 06 4638	
128	33 54 3520	078 07 0434	

00751

1	30	33	54	3732	078	07	1617
1	32	33	54	3904	078	07	3099
1	34	33	54	4111	078	07	4634
1	36	33	54	4289	078	08	0009
1	38	33	54	4415	078	08	1350
1	40	33	54	4548	078	08	2874
1	42	33	54	4643	078	08	4306
1	44	33	54	4767	078	08	5788
1	46	33	54	4888	078	09	1464
1	48	33	54	4967	078	09	2616
1	50	33	54	5050	078	09	4244
1	52	33	54	5084	078	09	5802
1	54	33	54	5113	078	10	1348
1	56	33	54	5131	078	10	2934
1	58	33	54	5130	078	10	4917
1	60	33	54	5120	078	11	0277
1	62	33	54	5114	078	11	2102
1	64	33	54	5079	078	11	3580
1	66	33	54	5058	078	11	4972
1	68	33	54	5044	078	12	0648
1	70	33	54	4965	078	12	1911
1	72	33	54	4864	078	12	3518
1	74	33	54	4800	078	12	4986
1	76	33	54	4750	078	13	0141
1	78	33	54	4676	078	13	1846
1	80	33	54	4629	078	13	2941
1	82	33	54	5150	078	13	5406

WOLTZ, 1962

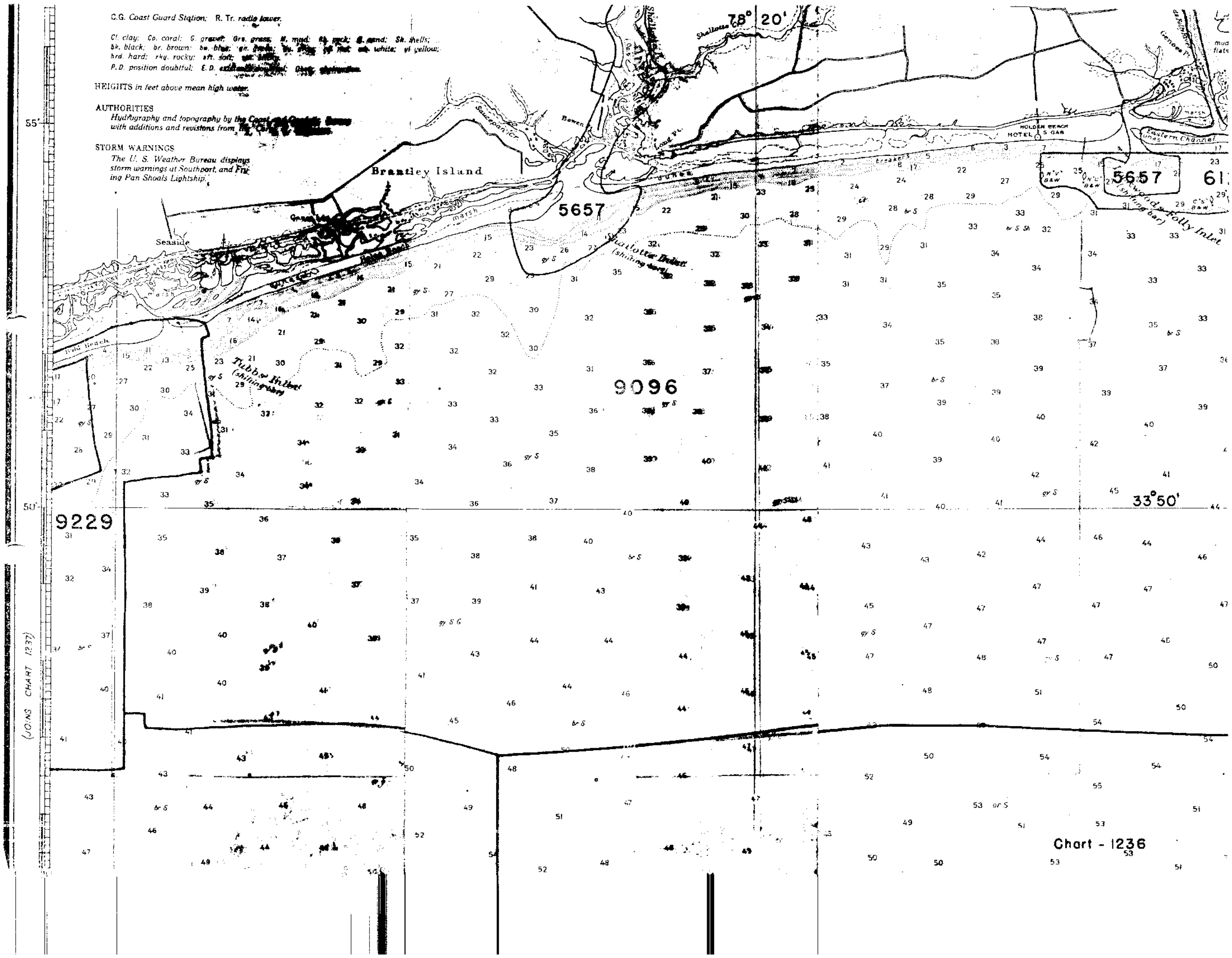
TRAVERSE STATION ESTABLISHED 1970

183	33 54 5345	078 13 5675	
184	33 54 5807	078 14 2741	
186	33 54 5071	078 14 4370	
188	33 54 5080	078 14 5925	
190	33 54 5038	078 15 1451	
192	33 54 5023	078 15 3045	
194	33 54 5130	078 15 3771	
196	33 54 4926	078 15 4782	
198	33 54 4806	078 16 0218	
200	33 54 4695	078 16 1758	
202	33 54 4563	078 16 3336	
204	33 54 4445	078 16 4765	
206	33 54 4320	078 17 0593	
208	33 54 4149	078 17 2061	
210	33 54 4070	078 17 3246	
212	33 54 3922	078 17 4688	
214	33 54 3737	078 18 1007	
216	33 54 3611	078 18 2438	
218	33 54 3498	078 18 3801	
220	33 54 3319	078 18 5464	
222	33 54 3180	078 19 0983	
224	33 54 3008	078 19 2563	
226	33 54 2897	078 19 4390	
228	33 54 2727	078 19 5864	
230	33 54 2537	078 20 1654	
232	33 54 2367	078 20 3277	
234	33 54 2221	078 20 5136	
236	33 54 1978	078 21 0672	

238	33	54	2121	078	21	2446
240	33	54	1695	078	21	3829
242	33	54	1441	078	22	0058
243						
244	33	54	1147	078	22	3029
245						
246	33	54	0591	078	23	0712
247						
248	33	53	5086	078	23	2270
249						
250	33	53	4687	078	23	3981
252	33	53	4538	078	23	5536
254	33	53	4339	078	24	0947
256	33	53	4119	078	24	2292
258						
260	33	53	3114	078	25	0127
262	33	53	2781	078	25	1459

BOONE, 1962

Pickup



C.G. Coast Guard Station; R. Tr. radio tower.
HEIGHTS in feet above mean high water.
AUTHORITIES
Hydrography and topography by the
with additions and revisions from
STORM WARNINGS
The U. S. Weather Bureau displays
storm warnings at Southport, and Fry
ing Pan Shoals Lightship.
78° 20'
Brantley Island
Seaside
5657
9096
9229
Tubbs Inlet
(shifting bars)
HOLDEN BEACH
HOTEL
Eastern Channel
5657
33°50'
(JOINS CHART 1237)
Chart - 1236