

9296

WIRE DRAG

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey ... WIRE DRAG
Field No. ... RH-20-3-72WD
Office No. ... H-9296

LOCALITY

State ... DELAWARE
General Locality ... APPROACHES TO DELAWARE BAY
Locality ... EAST OF FENWICK ISLAND

1972

CHIEF OF PARTY
JAMES COLLINS, CDR.

LIBRARY & ARCHIVES

DATE ... 12-12-72

☆U.S. GOVERNMENT PRINTING OFFICE: 1974-763-098

Charts 1000
1109
1219
1220

9296

WIRE DRAG

H-9296

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.

Sheet E
RH-20-3-72 W.D.

State DELAWARE

General locality APPROACHES TO
EAST OF FENWICK ISLAND

Locality ~~CAPE HENLOPEN TO DELAWARE TRAFFIC LANE~~

Scale 1:20,000 Date of survey 25 APRIL - 24 MAY 1972

Instructions dated ~~25 JUNE 1970~~ 4 MAY 1971 ^{Amended by Change No. 1, 11 June 1971} Project No. OPR 480

Vessel NOAA SHIPS RUDE & HECK

Chief of party CDR JAMES COLLINS

Surveyed by L.E. Pickens, A.Y. Bryson, M.M. Etheridge, S.H. Manzo, B.L. CDR JAMES COLLINS Wescott

Soundings taken by ~~echo sounder, hand lead, etc~~ Wire Drag Survey

Graphic record scaled by N.A.

Graphic record checked by N.A.

Protracted by EVELYN FIELDS Automated plot by N.A.

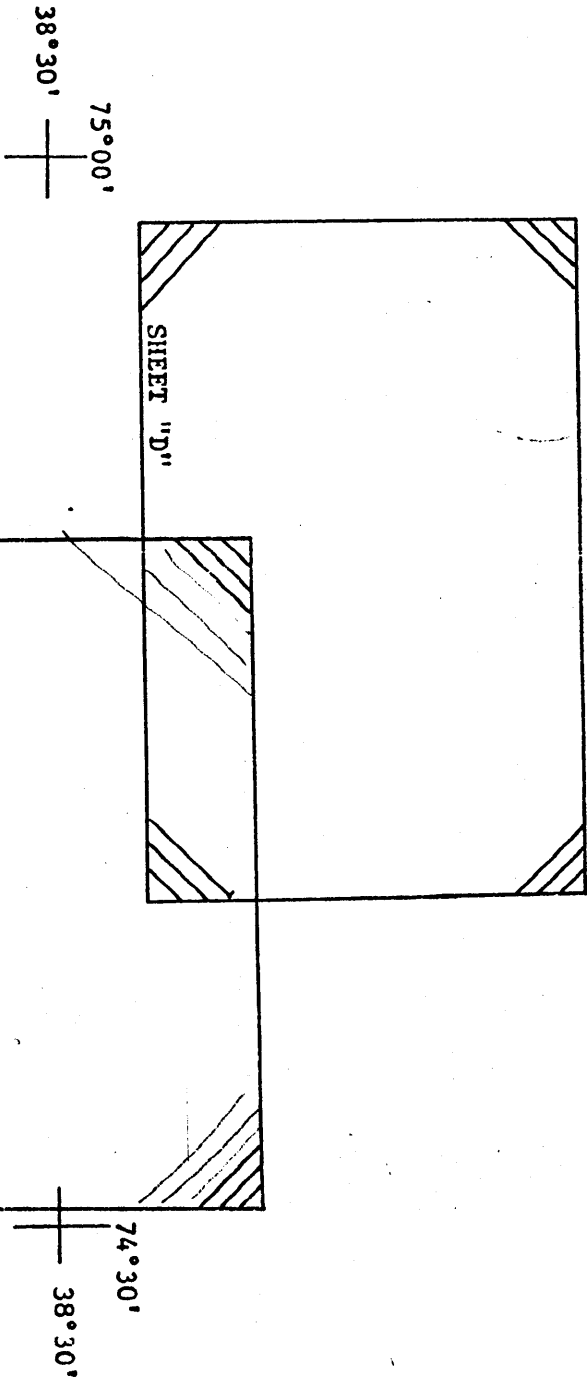
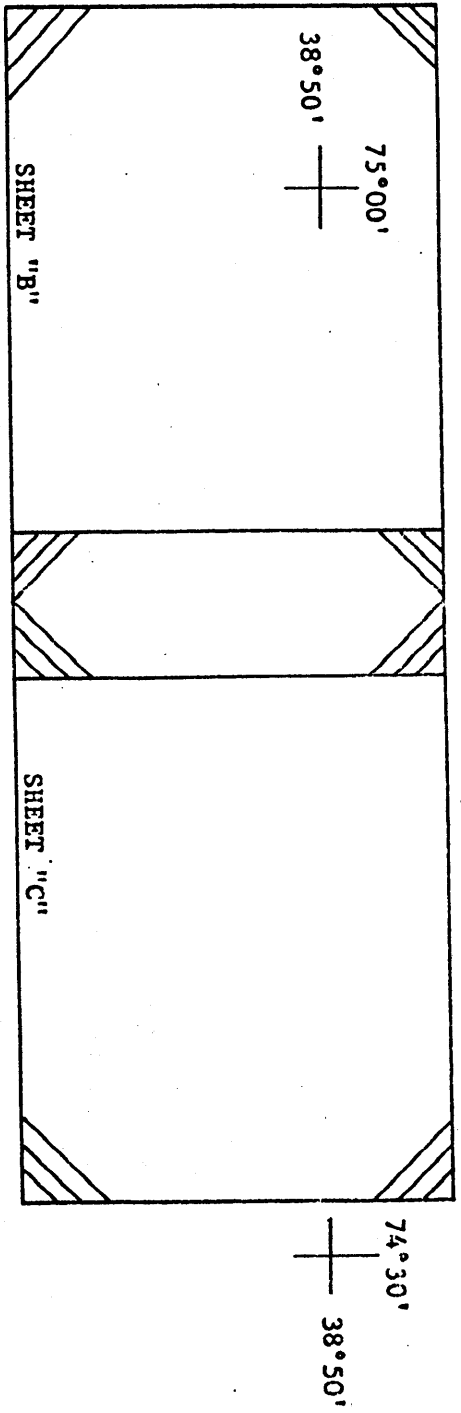
Drag strips inked by B.J. STEPHENSON
~~Soundings plotted by~~

Soundings in ~~feet~~ feet at MLW MLW

REMARKS:

*Applied to Stds 12/22/72
CAR*

INDEX OF SHEETS



*All Sheets 36 X 54
1:20,000

DESCRIPTIVE REPORT
TO ACCOMPANY
WIRE DRAG FIELD NUMBERS
~~RH-20-3-70 Sheet "C"~~
~~RH-20-4-71 Sheet "D"~~
RH-20-3-72 Sheet "E" (H-9296 WD.)
PROJECT OPR-480
DELAWARE BAY ENTRANCE
1970-1972
LCDR MERRITT N. WALTER
CDR JAMES COLLINS
NOAA SHIPS RUDE & HECK

- A. AUTHORITY - This project was authorized under Project Instructions OPR-480 -- Wire Drag and Wire Sweep, Delaware Bay Entrance, ~~dated 25 June 1970; Amendment to Instructions dated 6 July 1970; Amendment to Instructions dated 13 July 1970; Memorandum to Director, AMC dated 16 October 1970; and subsequently superseded by Project Instructions dated 4 May 1971 and Amendment to Instructions dated 11 June 1971.~~
- B. CHARACTER AND LIMITS OF THE WORK - The purpose of this project was to clear the sea lanes, including the buffer zones, off the entrance to Delaware Bay. This report covers Field Numbers RH-20-3-70, RH-20-4-71, and RH-20-3-72 (Sheets "C", "D", and "E" respectively).

The locality of the survey, covered by C&GS Chart 1219 is as follows: Sheet "C" is used to cover the eastern portion of the Cape Henlopen to Five Fathom Bank sea lane from latitude 38°52'N to 38°43'N and from longitude 74°50'W to 74°32'W. Sheets "D" and "E" were used to cover the Cape Henlopen to Delaware Lightship sea lanes: Sheet "D" covers the northwestern portion from latitude 38°41'N to 38°33'N and from longitudes 74°57'W to 74°40'W and Sheet "E" covers the southeastern portion from latitude 38°34'N to 38°25'N and from longitude 74°49'W to 74°31'W.

The entire survey was conducted on a scale of 1:20,000 using Raydist DR-S Navigational control. The effective depths covered by the survey are as follows: Sheet "C" has a minimum of 37 feet and a maximum of 75 feet; Sheet "D" has a minimum of 31 feet and a maximum of 80 feet; Sheet "E" has a minimum of ⁵⁷~~51~~ feet and a maximum of ⁷⁸~~80~~ feet.

- C. CONTROL AND SHORELINE - Raydist control was utilized at all times on all three sheets. The Raydist was operating on a frequency of 3300.4 KHZ thus giving a lane width of 45.39904 meters. There was no shoreline on any of the sheets.

Three Raydist shore stations - CHAP, COTTON PATCH II, and FEN were utilized to get adequate control for the three sheets. CHAP - (located on Cape Henlopen) was always used as the RED station. COTTON PATCH II (located south of Rehoboth Beach) and FEN (located on Fenwick Island) were both used as GREEN stations.

BLUE (GREEN station shown with blue arcs)

The sheets were controlled in the following manner: Sheet C used CHAP (Red) and COTTON PATCH II (^{Blue}Green) for all 1970 work and used CHAP (Red) and FEN (^{Blue}Green) for all 1972 work; Sheet D used CHAP (Red) and COTTON PATCH II (^{Blue}Green) for all work; Sheet E used CHAP (Red) and FEN (Green) for all work.

Upon completion of the surveys, all three stations were dismantled and only COTTON PATCH II is recoverable - a disc remains. No discs were left at CHAP or FEN.

A listing of all signals used is given in Attachment I.

- D. DATE OF SURVEY: - Dragging for OPR-480 on SHEET "C" began on 1 October 1970 and stopped on 23 October 1970. Operations on sheet "C" were resumed on 6 June 1972 and completed on 27 June 1972.

Sheet "D" was begun on 10 May 1971 and stopped on 28 June 1971. Sheet "D" was resumed and completed on 21 April 1972.

Sheet "E" was begun on 25 April 1972 and completed on 24 May 1972.

- E. TIDAL REDUCERS - Preliminary reduction of each days data was made using predicted tides for the standard gauge at Breakwater Harbor, Lewes, Delaware (LAT. 38°47'N, LONG 75°06'W).

The predicted tides were corrected for time with respect to Breakwater Harbor as follows: *See Tide Note for actual tides*

- 1) For Sheet "C", during 1970, a -40 minute corrector was applied to the time of both high and low water.
- 2) For Sheet "C" during 1972, and for Sheets "D" and "E", a -43 minute corrector was applied to the time of high water and a -38 minute corrector was applied to the time of low water. These are the standard time correctors listed for Five Fathom Bank, based on Breakwater Harbor.

The predicted tides were not corrected for height with respect to Breakwater Harbor.

Actual tidal data for 1970 and 1971 work has been furnished by the Rockville Office from the standard tide gauge at Breakwater Harbor. Tidal data for 1972 have been requested through the Rockville Office and will be forwarded. This smooth tidal data consists of hourly heights, the actual determining of smooth tide correctors and the smooth tide tape will be done by the processing office at AMC.

- F. JUNCTIONS - Sheet "C" junctions with sheet "B" (RH-20-2-70). Sheets "D" and "E" junction with each other.

G. SPLITS: 1) SHEET "C": - There is one split on Sheet "C", directly west of "FA" buoy located at LAT 38°47'17"N LONG 74°45'32"W. This area was inaccessible due to numerous fishpots which were never moved. ✓

2) SHEET "D": There is one small split on sheet "D" lying just outside the project limits at LAT 38°33'33"N LONG 74°47'42"W. This might affect the necessary overlap requirements. There were two groundings that were not cleared, both were charted shoal areas. They are located at:

1) LAT 38°40'47"N LONG 74°55'20"W

2) LAT 38°40'59"N LONG 74°51'23"W

Sheet "E": There is one small split on sheet "E" ^{to the southwest} ~~just south~~ of "LSD" Buoy. The split is located at LAT 38°27'12"N LONG 74°35'18"_{21"}W. ✓

H. GROUNDINGS AND SHOALS - See Attachment II. ✓

I. GENERAL NOTES: - Morning and evening RAYDIST calibrations at Lewes, Delaware were made by running the Lewes West Oil Factory Chimney - Fort Miles Observation Tower #8 range and turning the right angle to Harbor of Refuge Lighthouse. ✓

When the ships docked at Cape May, New Jersey, calibration was accomplished in one of three ways: 1) Running the Cape May Harbor range and turning the right angle to the Loran Tower (STATION #755) 2) Running the Cape May Harbor range and turning the left angle to the Cape May Coast Guard West Tank (higher of two tanks, STATION #753) and 3) Taking a three point fix with a check angle using the following objects: Cape May Lighthouse (STATION #756) Cape May Coast Guard West Tank (STATION #753), LORAN TOWER (STATION #755), and Cape May Municipal Water Tank (STATION #750). The three point fixes were solved by computer on the WHITING.

In addition to daily calibrations, frequent lane count checks were made on navigation buoys whenever practicable.

The distance from the Raydist antenna to the end buoy varied as follows: for a 800 ft. towline 265 meters and for a 1000 ft. towline 326 meters. The following occurrences should be noted when verifying these surveys:

SHEET C - On C day, (5 October 1970) 200 feet of extra wire was put out in the section between buoys #10 and #11, causing that section to be 800 feet instead of the regular 600 foot sections that were used that day.

D and E days, (6 and 8 October 1970) were spent doing reconnaissance hydrography, this should not be used for charting.

All work from 15 October 1970 through 23 October 1970 was rejected.

On N Day (19 June 1972), HECKS (End Vessel) gyro repeater went out between fixes 56N and 65N causing errors in bearings. The errors were corrected in the following manner: positions of both ships were plotted

using Raydist, and the bearing from the HECK to the RUDE was determined from these plotted positions. A corrector was determined by comparing this bearing with the bearing read on the gyro repeater when shooting the RUDE. This same corrector was applied to bearings taken from the HECK to the FAR buoy.

On Q Day, (26 June 1972) RUDE (Guide Vessel) lost three GREEN lanes after the work day ended, but while on the way to anchor out. On R day, (27 June 1972) in the morning before work began, RUDE went to "FA" buoy and set in the lane count that was previously determined for "FA" buoy. The RUDE then went on to normal drag operations. That same evening, after completing the days work, but prior to calibration the RUDE again lost lanes. This can all be verified by the sawtooth records. Accordingly, we have used the morning calibration on Q day for both Q and R days. The correctors for the RUDE are: -0.2 Red, -0.4 Green.

SHEET "D" - On E Day (14 May 1971) at Fix 40E, F buoy broke loose causing the towline to be effectively lengthened by 600 feet or approximately 197 meters. An 800 ft. towline was being used, thus the distance from the Raydist Antenna to the End buoy was originally 265 meters. From fix 40E through 58E, this distance is now 462 meters from the HECK (E.V.) antenna. On F Day (17 May 1972) at fix 50F, the HECKS (E.V.) Raydist failed, so single vessel control was utilized from fix 50F through 52F.

On N Day (1 June 1971) the HECK (E.V.) gained seven Green lanes prior to beginning work. This is verified by sawtooth record.

On AA Day (22 June 1971) the HECK (E.V.) Raydist failed, single vessel control was utilized on both strips I and II.

SHEET E: - A Day (25 April 1972) Sections N-1 and 15-F were rejected due to excessive lift. This was caused by strain on the end buoys while towing perpendicular to the current. As the current shifted more in the direction of the drag, the excessive lift subsided.

See Verification Note

B Day (27 April 1972) HECKS (E.V.) Raydist was erratic, three red lanes were lost during the strip while green functioned properly. Since the green lanes represented the width measurement in the strip, the strip was claimed. Adjacent strips were run with double overlap insuring good coverage.

- J. CURRENTS - Drag strips planned with the use of C&GS Tidal Current and Tide Tables gave satisfactory results for wire drag. No other observations as to currents were made.
- K. DISCREPANCIES AND COMPARISON WITH PREVIOUS SURVEYS AND CHARTS - There was no item investigation on any of these sheets, so no comparisons are made as to location of wrecks.

The survey does agree with past surveys in the following manner: drag depths were planned using previous charts and generally the depths indicated by these charts were correct - many of our groundings were anticipated by using depths from previous charts. ✓

- L. PERSONNEL & EQUIPMENT: - During the entire period covered by these three sheets, the RUDE & HECK acted as Guide Vessel and End Vessel respectively. The RUDE & HECK launches equipped with Raytheon DE-723 Fathometers were alternated as drag tenders. During calm weather, the RUDE & HECK skiffs were used as drag tenders. ✓

Bearings to end buoys and to opposite vessel were made on the Sperry Gyro Repeaters. Course heading are now recorded on every fix only. This differs from past policy of recording every 10° course change. It is felt that recording the course at each fix adequately defines the route followed by the ship.

Standard wire drag equipment was used throughout the survey.

Officers onboard during work on OPR-480 were:

1970-71-LCDR Merritt N. Walter, LT G.R. Schaefer, LTJG A.Y. Bryson, ENS. M.M. Ethridge. CDR James Collins also worked part of 1971 season.

1972 CDR James Collins, LCDR L.E. Pickens, LT A.Y. Bryson, LTJG M.M. Ethridge, ENS S.H. Manzo, ENS B.L. Wescott.

- M. MISCELLANEOUS - All work done on sheet C in 1970 was done on 60th meridian time. Sheet C was completed in 1972 using GMT. Sheets D and E use only GMT throughout the project. ✓

Four days were spent diving on the wreck "VENTURE" located near Breakwater Harbor but not on any of these boatsheets. The location was known from previous years, but a least depth was difficult to get with a leadline because of heavy currents. The wreck was relocated using sextant fixes and a least depth determined by using the "Bryson Gauge". The final results achieved on 3 May 1972 are: LAT 38°48'09"N, LONG 75°07'21"W with a least depth of 15.2 feet (already corrected for smooth tides.) The data for this work was included in the accordion folders for both sheet D and sheet E as well as in the daily journals for sheets D and E.

- N. RECOMMENDATIONS - The survey is considered adequate with respect to the wire drag requested. ✓

APPROVAL SHEET

All records of this survey prior to smooth plotting are hereby approved. The 1971-72 field work was personally supervised by the undersigned and the boat sheet and records were inspected daily. This survey is considered complete and adequate for charting. No additional field work is recommended. ✓



CDR James Collins
Commanding Officer
NOAA Ships RUDE & HECK

VERIFICATION BRANCH AMC

TIDE NOTE

H-9296 (RH-20-3-72) WD

Tide corrections for this survey were compiled from verified hourly heights from the gage at Breakwater Harbor, Lewes, Delaware. They were corrected according to instructions in enclosed letter, dtd July 18, 1972: Ref; 228-NOAAD.

SUMMARY OF TIDE DATA

Standard gage(75th mer.)	Breakwater Hbr., Lewes, Del.
Height datum on staff	2.54 ft.
Height correction	None
Meridian time 1972 season	GMT
Time corr. time 1972 season	- 1 hr 07 minutes

5/23/75

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): Lewes, Delaware

Period: April and May, 1972

HYDROGRAPHIC SHEET: H-9296WD

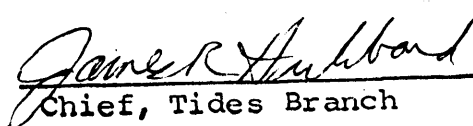
OPR: 480

Locality: Cape Henlopen Delaware

Plane of reference (mean ~~lower~~ low water): 2.5 ft.

Height of Mean High Water above Plane of Reference is 4.1 ft.

Remarks: See letter dated 18 July 1972 for time corrections.


Chief, Tides Branch

H-9296 WD

OPR 480



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

Date: July 18, 1972

Reply to
Attn of: C3312-228-NOAAD

Subject: Lewes, Delaware Tidal Data

To: Commanding Officer
NOAA Ships RUDE & HECK

Enclosed are copies of hourly heights for Breakwater Harbor, Lewes, Delaware for the months of April and May 1972. The June 1972 marigram is not yet available for processing.

Time corrections for the three working areas are as follows:

1. Eastern section of the Cape Henlopen-Five Fathom Bank sea lanes, 40-55 minutes earlier than Lewes. 47.5
2. Northwestern section of the Cape Henlopen-Delaware sea lanes, 40-55 minutes earlier than Lewes.
3. Southeastern section of the Cape Henlopen-Delaware sea lanes, 60-75 minutes earlier than Lewes. 67.5

Should you wish to compute or check time correction, paragraphs 253 and 254 of the Manual of Tide Observations are used.

Saul C. Berkman

Saul C. Berkman
Acting Chief
Processing Section
Tides Branch
Oceanographic Division

(Tide correctors filed in folder with W.D. Info.)

Enclosures

LIST OF ATTACHMENTS

I CONTROL SIGNALS

- II A.) GROUNDINGS AND HANGS - SHEET C
- B.) GROUNDINGS AND HANGS - SHEET D
- C.) GROUNDINGS AND HANGS - SHEET E (H-9296 W.D.)

III FLOATING AIDS TO NAVIGATION

- IV A.) STATISTICS - SHEET C
- B.) STATISTICS - SHEET D
- C.) STATISTICS - SHEET E (H-9296 W.D.)

- V A.) DAILY RAYDIST CORRECTORS - SHEET C
- B.) DAILY RAYDIST CORRECTORS - SHEET D
- C.) DAILY RAYDIST CORRECTORS - SHEET E (H-9296 W.D.)

VI ELECTRONIC CALIBRATION DATA

ATTACHMENT I

A. RAYDIST
CONTROL SIGNALS

STATION NAME	LATITUDE	LONGITUDE	REMARKS
CHAP	38°47'29.9108"N	75°05'23.9437"W	Located on Cape Henlopen - Not recoverable
COTTON PATCH II	38°34'46.64106"N	75°03'33.77434"W	Located South of Rehoboth - Recoverable by disc.
FEN	38°27'13.0889"N	75°03'13.2264"W	Located on Fenwick Island - Not Recoverable

B. CONTROL SIGNALS

NAME	STATION	SOURCE	YEAR	REMARKS
FACT	LEWES WEST OIL FACTORY CHIMNEY	G-13691	1962	LEWES RANGE
OBS 8	FT. MILES OBSERVATION TOWER #8	G-13691	1962	
HARB	HARBOR OF REFUGE LIGHT HOUSE	G-3016	1927	LEWES RIGHT OBJECT
REAR RAN	CAPE MAY HARBOR REAR RANGE	*SEE NOTE BELOW		CAPE MAY RANGE
FRONT RA	CAPE MAY HARBOR FRONT RANGE	*SEE NOTE BELOW		
755	LORAN TOWER (CAPE MAY U.S. COAST GUARD ELECTRONICS MAST I)	G-12973	1962	CAPE MAY RIGHT OBJ.
753	CAPE MAY COAST GUARD WEST TANK (TALLER TANK OF TWO)	G-10824	1969	CAPE MAY
756	CAPE MAY LIGHT HOUSE	G-1447	1957	CALIBRATION
750	CAPE MAY MUNICIPAL WATER TANK	G-12973	1962	OBJECTS

*NOTE: DATA CONCERNING THE LOCATION OF CAPE MAY RANGE HAS BEEN INCLUDED ALONG WITH OTHER DATA THAT HAS BEEN TRANSMITTED TO AMC FOR VERIFICATION. THE LOCATIONS ARE:

NAME	LATITUDE	LONGITUDE
REAR RANGE	38°57'31.285"N	74°52'42.660"W
FRONT RANGE	38°57'14.807"N	74°52'56.305"W

ATTACHMENT II

GROUNDINGS AND HANGS

OPR-480
SHEET E

POS. NO. & DAY LETTER	BUOY NO.	LAT.	LONG.	GROUND EFF. DEPTH	CLEAR BY STRIP	CLEAR EFF. DEPTH	CHART DEPTH	REMARKS
C		38°48'09"	75°07'31"				18	WRECK VENTURE
27D	11-12	38°30' ³ 02"	74°39' ¹ 00"	² 62	F-X1	⁷ 58	(approx) 64	ITEM A ANCHOR 6' OFF BOTTOM
46H	12-13	38°27'22"	74°35' ³ 12"	75			100	LSO NAV. BUOY ADJA- CENT TO DELAWARE LT
^K 37H - ^K 46H	13-F	38°29' ^{8 45"} 04"	74°39' ^{06"} 34"	65	G-1 J-1	64 66-67	6 68	BUOY CHARTED SHOAL SEE DAILY JOURNAL

ATTACHMENT III

FLOATING AIDS TO NAVIGATION

A. SHEET C

NAME	LATITUDE	LONGITUDE
Buoy "LSFF"	38°47'25"N	74°35'25"W
Buoy "FA"	38°47'23"N	74°44'12"W

N A

B. SHEET D

NAME	LATITUDE	LONGITUDE
Buoy "DB"	38°37'26"N	74°48'52"W

C. SHEET E

NAME	LATITUDE	LONGITUDE
BUOY "LS" "LS" "D"	38°27'22"N ✓	74°35'12 ³ "W
BUOY "D"	38°27'30"	74°35'06"
BUOY "DA"	38°32'27"	74°41'55"

NOTE: These locations were determined by taking RAYDIST readings at the site of each buoy.

ATTACHMENT IV

OPR-480
SHEET E

STATISTICS

DATE	DAY LETTER	STRIP	VOL. NO.	POSITIONS	L.N.M.	S.N.M.
25 APR 72	A	1	1	106	8.5	13.6
27 APR 72	B	1		104	8.0	13.6
1 MAY 72	C		ITEM A VISUAL			
8 MAY 72	D	1	2	27	1.8	3.6
11 MAY 72	E	1	2	52	3.9	6.8
12 MAY 72	F	1	2	27	2.7	5.1
16 MAY 72	G	1	2 & 3	67	5.1	4.3
17 MAY 72	H	1	3	46	3.7	5.9
23 MAY 72	J	1	3	57	5.2	7.8
24 MAY 72	K	1	3	48	5.2	7.8
TOTAL						68.5

ATTACHMENT V

DAILY RAYDIST CORRECTORS
SHEET E
1972

DATE	DAY LETTER	RED	RUDE	GREEN	RED	HECK	GREEN
4-25-72	A	+0.6		-0.1	0.0		+0.4 Fix 1-69 +1.4 Fix 70 +2.4 Fix 71-106
4-27	B	-0.1		-0.1			
5-1	C	ITEM A WRECK VENTURE					
5-8	D	+0.1		0.0	0.0		+0.2
5-11	E	-0.1		0.0	-0.1		+0.3
5-12	F	+0.1		0.0	-0.1		+0.1
5-16	G	0.0		0.0	0.0		0.0
5-17	H	-1.2		-1.2	-1.2		-0.8
5-23	J	+0.1		+0.2	-0.1		+0.1 Fix 1-15 +1.1 Fix 16-27 +2.1 Fix 28-57
5-24	K	+0.1		0.0	-0.2		+0.1

2-18-71

ATLANTIC MARINE CENTER

PROJECTION PARAMETERS

POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

- 1. Project No. OPR 480
- 2. Reg. No. H-9296 W.D.
- 3. Field No. RH 20-3-72 WD
- 4. Requested By BJ. STEPHENSON
- 5. Ship or Office VERIFICATION
- 6. Date Required Oct 25
~~NOV 1~~, 1972

7. Polyconic Modified Transverse Mercator

8. Central Meridian of Projection 74° 40' 00"

9. Survey Scale: 1: 20,000

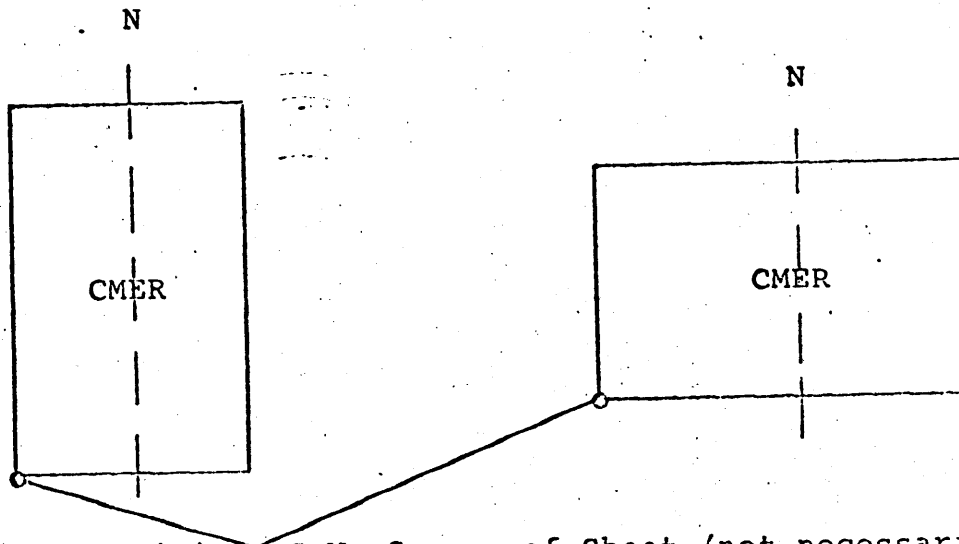
10. Size of Sheet (check one):

36 x 54 36 x 60 Other Specify 40 X 54
SEE REMARKS FOR MORE DETAILS.

11. Sheet Orientation (check one):

NYX = 1

NYX = 0



12. Plotter Origin: S.W. Corner of Sheet (not necessarily a grid intersection)

Latitude 38° 24' 36"

Longitude 74° 49' 12"

13. G.P.'s of triangulation and/or signals attached

14. Material Desired: Tracing Paper Mylar

Smooth Sheet Other Specify _____ PLEASE PREPARE

15. Remarks: A & D SHEET ON TRACING CLOTH WITH SMOOTH SHEET.

SPECIAL NOTE Need projection across sheet at the 39 inch line, because I have a wire drag strip that goes up to the 38 inch line. Will trim off extra 3 inches.

ELECTRONIC CONTROL PARAMETERS

1. Project # OPR- 480 2. Reg. # H- 9296 W.D. 3. Field # RH 20-3-72WD
4. Type of Control: RAYDIST (Hi-Fix, Raydist, EPI, etc.)
5. Frequency 3300.4 ^{KHz} ~~Hz~~ (for conversion of electronic lanes to meters)
6. Mode of Operation (check one):

Range-Range

Range-Visual

Range One (R₁)
 Station I.D. CHAP

Range Two (R₂)
 Station I.D. FEN

Lat.	<u>38</u> °	<u>47</u>	<u>29.9108</u> "
Long.	<u>75</u> °	<u>05</u>	<u>23.9437</u> "
Lat.	<u>38</u> °	<u>27</u>	<u>43.0889</u> "
Long.	<u>75</u> °	<u>03</u>	<u>43.2264</u> "

Hyperbolic (3-station)

Hyper-Visual

Slave One
 Station I.D. _____

Master
 Station I.D. _____

Slave Two
 Station I.D. _____

Lat.	_____ °	_____	_____ "
Long.	_____ °	_____	_____ "
Lat.	_____ °	_____	_____ "
Long.	_____ °	_____	_____ "
Lat.	_____ °	_____	_____ "
Long.	_____ °	_____	_____ "

7. Location of Survey:

Range-Range Imagine an observer is standing at R₁ Station and looking directly at R₂ (check one):

Survey area is to observer's Right A=0

Survey area is to observer's Left A=1

Hyperbolic 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.
- This form applies to all data on this survey.
- This form applies to part of the data on this survey.

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

9. Remarks: _____

GEOGRAPHIC NAMES

Survey No. **H-9296** W.D.

Name on Survey												
	A	B	C	D	E	F	G	H	K			
Atlantic Ocean												1
												2
												3
												4
												5
												6
												7
												8
												9
												10
												11
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												26
												27

Names Checked 1-26-73
Charles Harrington, CARTOGRAPHER

Names Approved 1-26-73
A. J. Whright, CHIEF GEOGRAPHER

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. 9296 W.D.

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET (Also A & D Sheet)		1	BOAT SHEETS		1	
DESCRIPTIVE REPORT		1	OVERLAYS		2	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS						
VOLUMES	6					
BOXES						1
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				1068
POSITIONS CHECKED		160	10	
POSITIONS REVISED		7	0	
DEPTH SOUNDINGS REVISED		N.A.	0	
DEPTH SOUNDINGS ERRONEOUSLY SPACED		N.A.	0	
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		N.A.	0	
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS			0	
JUNCTIONS			25	
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS			0	
SPECIAL ADJUSTMENTS (effective depths, etc)		82	0	
ALL OTHER WORK			47	
TOTALS		82	72	
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
VERIFICATION BY <i>B.J. Stephenson</i> <i>G.F. Trefethen</i>	BEGINNING DATE		ENDING DATE 12-6-72	
REVIEW BY <i>H.W. Wellman</i>	BEGINNING DATE 5-27-75		ENDING DATE 6-16-75	

Inspect. by *D. R. Engle*

13 hrs

3-14-76
carstairs 2hr 4/13/76

OFFICE OF MARINE SURVEYS AND MAPS
MARINE SURVEYS DIVISION
HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9296 W.D.

FIELD NO. RH-20-3-72 W.D.

Delaware, Approaches to Delaware Bay, East of Fenwick Island

SURVEYED: April 25 - May 24, 1972

SCALE: 1:20,000

PROJECT NO.: OPR-480

SOUNDINGS: Wire Drag

CONTROL: Raydist
(Range-Range)

Chief of Party	J. Collins
Surveyed by	J. Collins
.....	L. E. Pickens
.....	A. Y. Bryson
.....	M. M. Ethridge
.....	S. H. Manzo
.....	B. L. Wescott
Protracted by	E. Fields
Drag Strips Plotted by	B. J. Stephenson
Verified and Inked by	B. J. Stephenson
.....	G. F. Trefethen
Reviewed by	K. W. Wellman
.....	Date: June 16, 1975
Inspected by	D. R. Engle

A. Purpose of the Survey

The purpose of this survey is to clear the sea lanes, including the buffer zones, off the entrance to Delaware Bay.

B. Shoreline and Control

No shoreline is shown on this offshore survey.

The source of control for this survey is adequately described in the Descriptive Report.

C. Junctions with Wire Drag Surveys

Adequate junctions were effected with H-9295 W.D. (1971-72) to the north and Field Edit No. 5 W.D. (1950) to the southeast. The present survey extends to the southeastern limit of the project.

D. Comparison with Hydrographic Surveys

The effective depths on this wire drag survey do not conflict with depths on hydrographic surveys H-5349 (1933) and H-6272 (1937).

Comparison between the present cleared depths and H-6344 (1938) reveals a 64-foot sounding in latitude $38^{\circ}30.17'$, longitude $74^{\circ}38.39'$ and several 62-foot soundings in the vicinity of latitude $38^{\circ}29.40'$, longitude $74^{\circ}39.00'$ in conflict with present cleared depths of 65 and 63 feet, respectively. Inasmuch as the bottom wire could have slid over the bottom without any apparent effect on the buoys, these conflicting soundings are not necessarily disproved by the 1-foot greater cleared depths on the present survey. A 73-foot sounding in latitude $38^{\circ}26.75'$, longitude $74^{\circ}37.80'$ on H-6344 is disproved by a cleared depth of 76 feet on the present survey and should be disregarded in future charting.

The deeper cleared depths retained on the present A. and D. sheet from junctional sheet F.E. No. 5 (1950), in the south-east, were compared with H-6344 (1938) at the time of the review of F.E. No. 5 and no further consideration is necessary.

E. Comparison with Charts 12200 (formerly chart 1109), latest print date, June 1, 1974
 12214 (formerly chart 1219), latest print date, March 8, 1975

1. Hydrography

Except as noted below, there are no conflicts between the charted depths and the effective wire drag depths of the present survey.

The 62-foot sounding charted in latitude $38^{\circ}29.85'$, longitude $74^{\circ}38.79'$, on chart 12214, originates with H-6344 (1938). The area of the 62-foot sounding was cleared to an effective depth of 63 feet on the present survey; however, due to reasons stated in section D above, the charted 62-foot sounding should be retained on the chart.

2. Aids to Navigation

The aids to navigation on the present survey adequately mark the intended feature.

F. Condition of Survey

1. Field Work

Except as noted in section G of this report, the field work is satisfactory.

2. Records

The records are complete and comprehensive.

3. Descriptive Report

The Descriptive Report is complete and comprehensive with the exception that the reasons for the split, discussed in section G of the Descriptive Report, were not given as required by section 5-8-G of the Wire Drag Manual.

4. Field Plotting

The survey was accurately and neatly smooth plotted.

G. Compliance with Project Instructions

The survey adequately complies with the project instructions except that a small split, with its resultant area of insufficient overlap, remains on the smooth sheet in the vicinity of latitude $38^{\circ}27.20'$, longitude $74^{\circ}35.35'$ contrary to the requirements of paragraph 13 of the project instructions.

H. Additional Field Work

This is a good wire drag survey and no additional field work is recommended.

I. Miscellaneous

1. The verifier failed to obtain the Tide Note (Form 712), thus necessitating an examination of the survey records by the Tides Branch as a condition to its acquisition during review.

2. Contrary to accepted processing procedures, the verifier failed to label the station name and frequency on the corresponding electronic control arc on the smooth sheet.

Examined and Approved:

a. J. Patrick

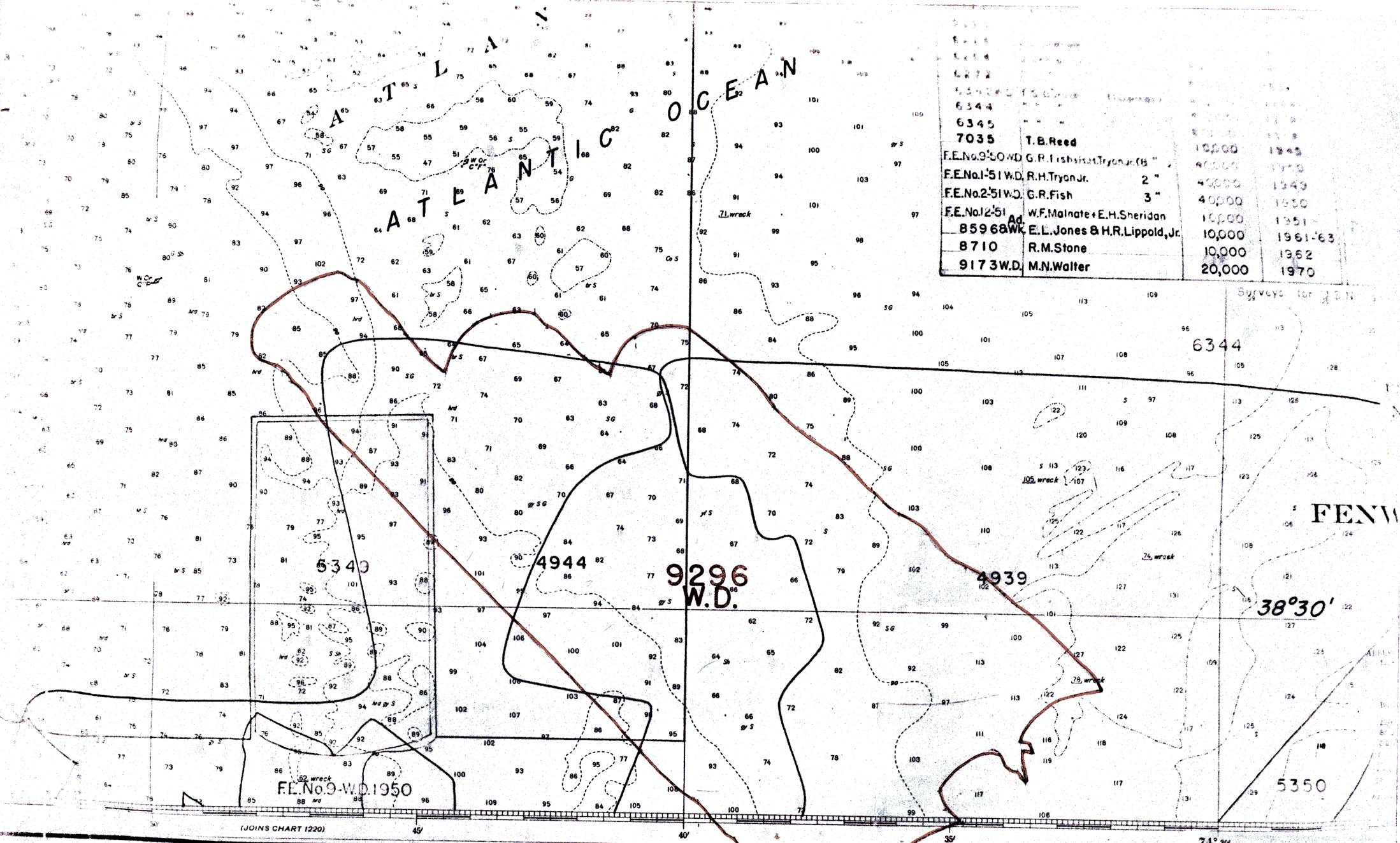
Chief
Marine Surveys Division

R. H. Houlston

Associate Director
Office of Marine Surveys
and Maps

ATLANTIC OCEAN

6344	T.B. Reed	10,000	1945
F.E.No. 9-50 W.D.	G.R. Fish & R.H. Tryon, Jr.	40,000	1949
F.E.No. 1-51 W.D.	R.H. Tryon, Jr.	40,000	1949
F.E.No. 2-51 W.D.	G.R. Fish	40,000	1950
F.E.No. 12-51 W.D.	W.F. Malnate & E.H. Sheridan	10,000	1951
859 68 W.D.	E.L. Jones & H.R. Lippold, Jr.	10,000	1961-63
8710	R.M. Stone	10,000	1962
9173 W.D.	M.N. Walter	20,000	1970



(JOINS CHART 1220)

Published at Washington, D. C., July 1948 (16th Edition)
 (First Edition 1889)
 U. S. COAST AND GEODETIC SURVEY
 R. F. A. Shufeldt, Director

LIGHTS, BEACONS, BUOYS, AND EMBARKS OBSERVED
 FOR INFORMATION PERTAINING TO THE FOLLOWING DATE

Cape May, N.J.

Chart - 1219

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. W-9296 W.D.

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
1219	1/17/73	B. Ferrowders	Full Part Before ^{Before} After Verification Review Inspection Signed Via Drawing No. 1219 No critical corrections
1109	1/17/73	B. Ferrowders	Full Part Before ^{Before} After Verification Review Inspection Signed Via Drawing No. Exam for critical corr only. No critical corr.
1000	7-31-73	J. Bailey	Full Part Before ^{Before} After Verification Review Inspection Signed Via Drawing No. Exam. for critical corrs. Added 19 1/2 sng.
1109	4/16/76	R. J. Sunday	Full Part Before ^{Before} After Verification Review Inspection Signed Via Drawing No. Exam for critical corrections
1219	11/9/76	Paul J. J. J.	Full Part Before ^{Added 19 1/2 sng.} After Verification Review Inspection Signed Via Drawing No.
1109	12/22/76	Joseph Pinone	Full Part Before ^{Before} After Verification Review Inspection Signed Via Drawing No. Applied corrections thru 1219
13003	2-14-80	Ed Martin	Full Part Before ^{Before} After Verification Review Inspection Signed Via Drawing No. Col Adequately applyd. no further processing required.
			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.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.