

9294

Diag. Cht. No. 1219-2.

FORM C&GS-504

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

DESCRIPTIVE REPORT

Type of Survey **WIRE DRAG**
RH-20-3-70
Field No. **WD** Office No. **H-9294 WD**

LOCALITY

State **DELAWARE**
General locality **APPROACHES TO DELAWARE BAY**
Locality **CAPE HENLOPEN TO FIVE FATHOM**
BANK TRAFFIC LANE

19 70-72

CHIEF OF PARTY

MERRITT N. WALTER & JAMES COLLINS

LIBRARY & ARCHIVES

DATE **DEC 5 1972**

USCOMM-DC 37022-P66

WIRE DRAG

241
Charts
1000
1109
1219
411
1218

H-9294

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.

RH-20-3-70WD

State DELAWARE

General locality APPROACHES TO DELAWARE BAY

Locality CAPE HENLOPEN TO FIVE FATHOM BANK TRAFFIC LANE

Scale 1:20,000 Date of survey 1 to 23 October 1970
6 to 27 June 1972

Instructions dated 6/25/70 & 5/4/71 Project No. OPR-480

Vessel NOAA SHIPS RUDE & HECK

Chief of party MERRITT N. WALTER & JAMES COLLINS
S.H. MANZO, B.L. WESCOTT

Surveyed by G.R. SCHAEFER, A.Y. BRYSON, M.M. ETHERIDGE, L.E. PICKENS

Soundings taken by ~~XXXX~~ XXXX, hand lead, ~~XXXX~~

Graphic record scaled by NA

Graphic record checked by NA

Protracted by B.J. Stephenson Automated plot by _____

Drag strips inked

Soundings penciled by B.J. Stephenson

Soundings in ~~XXXX~~ feet at MLW ~~XXXX~~

HDEG Cat. 1

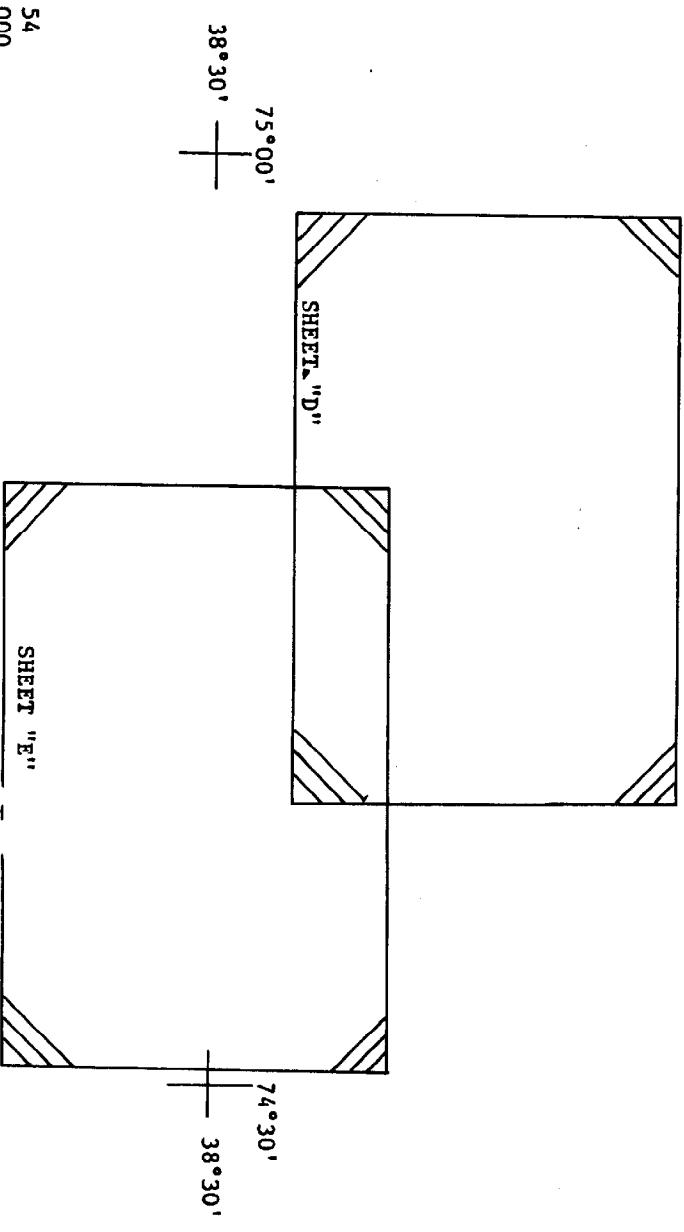
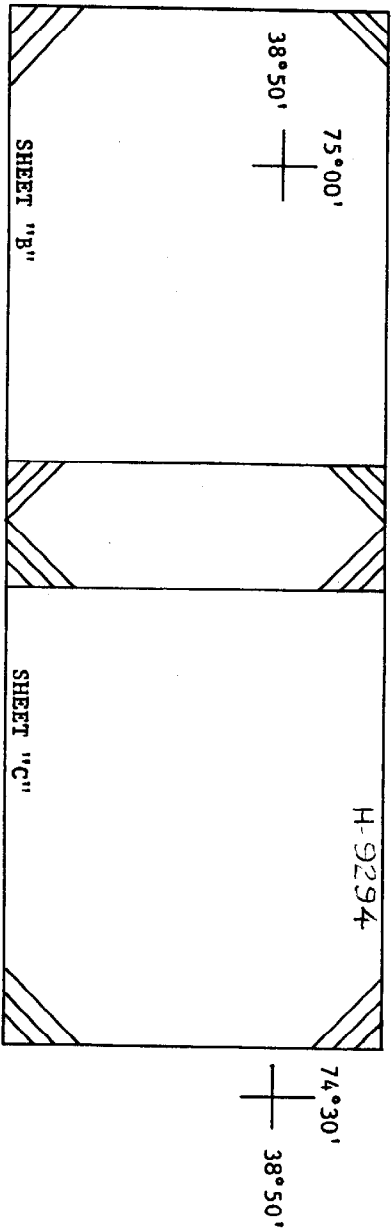
REMARKS: _____

See Report on limited reverification dated Oct. 20, 1978 inserted in this Descriptive Report following the original Verification Notes. *X.W.W. 10-20-78*

Applied to stds 12/18/72

CSB

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" H-9294
~~RH-20-4-71 Sheet "D"~~
~~RH-20-3-72 Sheet "E"~~
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" had a minimum of 37 feet and a maximum of 75 feet; Sheet "D" had a minimum of 31 feet and a maximum of 80 feet; Sheet "E" had a minimum of 51 feet and a maximum of 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.

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

- 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.

H-9173

*See Tide
Notes -*

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", just south of "LSD" Buoy. The split is located at LAT 38°27'12"N LONG 74°35'18"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.

Not plotted
Records forwarded

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. N.A.

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. N.A.

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.

See Notes to Reviewer

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.

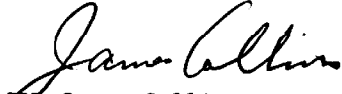
- M. MISCELLANEOUS - All work done on sheet C in 1970 was done on 60th meridian time. Sheet C was completed in 1972 using GMT. Sheets D and E use only GMT throughout the project.

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

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
- III FLOATING AIDS TO NAVIGATION
- IV A.) STATISTICS - SHEET C
B.) STATISTICS - SHEET D
C.) STATISTICS - SHEET E
- V A.) DAILY RAYDIST CORRECTORS - SHEET C
B.) DAILY RAYDIST CORRECTORS - SHEET D
C.) DAILY RAYDIST CORRECTORS - SHEET E
- 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 1)	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 C

*See smooth sheets
for logs and of logged
Notes in smooth sheet.*

NC = Not Cleared

POS. NO. & DAY LETTER	BUOY NO.	LAT.	LONG.	GROUND EFF. DEPTH	CLEAR BY STRIP	CLEAR EFF. DEPTH	CHART DEPTH	REMARKS
Disregard 1A - 3A	N-5	38° 48' 08"	74° 48' 40"	55		42544	49856	Grounding uninvestigated
3A - 15A	N-3	38° 48' 00"	74° 48' 38"	55-56	A-2	42744		hang
✓ 15L 3	N	38° 48' 00" 9	74° 38' 20" 43	476	J-1	46 37	46	ANTICIPATED GROUNDING
48L	6-7	38° 47' 25"	74° 35' 25"	48-52			76	HANG BUOY LS FF (run)
✓ 45M 59P and 1m	7-8 6-7	38° 45' 56" 38° 45' 55"	74° 45' 11" 74° 45' 11"	47 ⁸ 46	Q DAY STRIP 22	44 22	58	UNINVESTI- GATED HANG
77N	5-6	38° 47' 23"	74° 44' 12"	44			45	HANG "FA"
41P	N	38° 46' 40" 9	74° 44' 29" 4	47 39	N K DAY STRIP 2	45 39	45	BUOY E TO W GROUNDING ANTICIPATED
40R	2-3	38° 47' 23"	74° 44' 12"	40			45	HANG "FA" BUOY W TO E
✓ 1E	14	38° 45' 48"	74° 33' 53"	72 ft	K-1	52	72	Least depth = 48 ft.
✓ 2E	12	38° 45' 39"	74° 33' 59"	72 ft				
✓ 1h (D.P)		38° 47' 20"	74° 45' 27"	51 ft		NC		
✓ 30-31H	N	38° 47' 36"	74° 45' 09"	51 ft	R-1	45		

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

B. SHEET D

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

C. SHEET E

NAME	LATITUDE	LONGITUDE
BUOY "LSD"	38°27'22"N	74°35'12"W

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

ATTACHMENT IV

STATISTICS

OPR-480
SHEET C

DATE	DAY	LETTER	STRIP	VOL. NO.	POSITIONS	L.N.M.	S.N.M.
1	OCT 70	A	1		15 ⁴	1.0	0.7
		A	2		51	3.9	3.1
2	OCT 70	B	WRECK VENTURE				
5	OCT 70	C	1		43	4.0	4.3
6	OCT 70	D			83	32.7	
8	OCT 70	E	1		27	11.3	
		E	1		64	4.5	5.4
		E	2		22	1.0	1.0
9	OCT 70	F	1		42	3.4	4.1
13	OCT 70	G	1		14	1.4	1.1
		G	2		3	0.9	0.4
14	OCT 70	H	1		32	2.6	3.4
6	JUN 72	J	1	I	70	6.3	12.0
7	JUN 72	K	1	I	70	7.1	15.3
8	JUN 72	L	1	I	48	4.5	7.1
15	JUN 72	M	1	I	46	3.9	6.6
19	JUN 72	N	1	II	30	3.0	4.8
		N	II	II	47	3.4	4.8
20	JUN 72	P	I	II	17	1.0	1.5
20	JUN 72	P	II	II	42	3.7	7.4
26	JUN 72	Q	I	II	18	2.0	1.6
		Q	II	II	11	1.2	0.7
		Q	III	II	14	1.5	0.9
		Q	IV	III	20	1.8	1.6
27	JUN 72	R	I	III	14	1.3	0.7
		R	II	III	26	2.0	2.4
		R	III	III	21	1.7	1.4
TOTALS						111.1	92.3

ATTACHMENT V

DAILY RAYDIST CORRECTORS
SHEET C
1970 - 72

DATE	DAY LETTER	RUDE		HECK	
		RED	GREEN	RED	GREEN
11-1-70	A	+0.1	+0.6	-0.4	-0.1
11-2	B	0.0	-0.1	WRECK VENTURE	
				SMOOTH TESTER VOLUME	
11-5	C	0.0	0.0	-0.4	-0.1
11-6	D	-0.1	0.0		
11-8	E	+0.2	-0.3	-0.3	+0.1
11-9	F	-0.1	-0.3	+0.5	-13.4
11-13	G	-0.2	-0.2	+0.1	0.0
11-14-70	H	-0.2	-0.1	-0.1	+0.2
6-6-72	J	-0.1	+0.9	+0.1	-0.1
6-7	K	-0.1	+0.9	+0.1	-0.1
6-8	L	-0.1	+0.9	+0.1	-0.1
6-15	M	-0.4	+0.1	-0.2	+0.7
6-19	N	-0.2	+0.2	-0.2	-0.1
6-20	P	-0.2	+0.3	-0.2	0.0
6-26	Q	-0.2	-0.4	0.0	-0.3
6-27	R	-0.2	-0.4	0.0	-0.2

7/15/75

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 Form 411

Tide Station Used (NOAA Form 77-12): Lewes, Delaware

Period: Oct. 1-14, 1970 and June 6-27, 1972

HYDROGRAPHIC SHEET: H-9294 WD

OPR: RH 20-3-70 WD

Eastern section of the Cape Henlopen - Five Fathom
Locality: Bank sea lanes

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

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

Remarks: Time corrections:

<u>1970</u>	<u>1972</u>
- 30 min.	- 47 min.

The following reducers have been revised in blue
and verified:

<u>Volume</u>	<u>Position</u>
III	1J-46M
IV	1N-43Q
V	44Q-61R

*revisions as
great as 1.5 ft*

C. S. Hurlow

Chief, Tides Branch

VERIFICATION BRANCH AMC

TIDE NOTE

H-9294 (RH 20-3-70WD)

Tide corrections for this survey were compiled from verified hourly heights from the gage at Breakwater Harbor, Lewes, Del. They were corrected according to instructions in enclosed letters dated Mar. 31, 1972 and July 18, 1972; Ref; C3312-99 and 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 1970 season	60th
Time correction " "	-30 minutes
Meridian time 1972 season	GMT
Time corr. " "	-47 minutes



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

Date: March 31, 1972

Reply to
Attn of: C3312-99-NOAAD

Subject: Lewes, Delaware

To: Commanding Officer
RUDE & HECK

Enclosed are tidal data for Lewes for October 1970.
To reduce tabulated heights to mean low water
reference subtract 2.54 feet.

The time of tide is about 30 minutes earlier at
the offshore area of interest.

Saul C. Berkman

→ Used 1970 Season only -
HLP

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

Enclosures



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

CPR4

Date: July 18, 1972

Reply to
Aim 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' used on 1972 work - 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

Enclosures

TIDES: HOURLY HEIGHTS

HOURLY VALUES ARE IN TENTHS OF A FOOT

STATION LEWES, DELAWARE TIME MERIDIAN 75 W MONTH OCTOBER YEAR 1970

HEIGHT DATUM IS 7.54 ft. below MLLW HIGHEST DAILY SEA LEVEL DATE 27 HT. 4.69 FT. Nov 1970
 LOWEST DAILY SEA LEVEL DATE 13 HT. 4.00 FT. MEAN FOR MONTH = 5.12 FT.

	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	01	02	03	04	SUM
1	018	037	032	035	040	049	059	059	075	077	072	054	053	044	038	033	035	014	054	064	070	072	070	063	1294
2	053	042	035	034	038	045	054	055	074	078	076	068	059	048	037	032	034	040	048	058	066	070	070	065	1290
3	056	045	036	032	033	037	045	055	065	072	073	071	063	052	041	033	029	031	036	048	053	059	063	059	1189
4	055	048	039	034	032	033	042	049	059	067	071	071	068	058	047	037	031	030	032	037	044	052	059	060	1155
5	058	051	043	035	031	030	034	040	050	060	067	071	070	064	055	044	035	030	029	032	036	046	054	058	1125
6	060	056	050	041	034	030	031	035	043	051	060	068	070	068	063	054	044	036	032	031	034	039	047	054	1131
7	057	056	054	048	041	035	031	030	035	041	051	060	066	069	067	062	053	044	036	031	030	033	038	045	1113
8	051	054	055	053	047	040	033	030	031	035	042	051	060	067	070	068	063	055	046	037	031	030	033	040	1122
9	046	052	057	059	056	051	044	037	032	032	035	041	051	060	067	072	071	066	058	048	038	031	030	033	1167
10	039	047	055	050	042	031	026	027	038	032	030	033	039	049	060	068	074	074	070	061	050	038	031	029	1203
11	032	039	049	058	065	067	065	058	050	039	031	027	030	037	047	059	059	075	076	071	052	050	037	028	1221
12	026	031	040	053	063	069	071	067	059	046	035	026	024	026	036	047	060	070	078	075	068	057	043	030	1202
13	023	024	031	042	054	066	072	074	071	061	046	034	023	021	026	035	047	060	071	076	074	066	054	040	1194
14	028	021	024	033	045	058	070	076	078	073	062	047	033	023	021	026	035	048	052	071	074	072	063	050	1193
15	035	025	021	025	034	047	061	073	079	079	073	061	045	031	022	022	028	037	049	061	059	071	069	050	1177
16	046	035	028	024	030	039	050	063	073	062	051	075	064	030	026	029	028	034	044	056	064	068	063	053	1230
17	054	044	033	027	027	033	043	055	067	075	078	076	068	056	043	031	023	026	032	041	051	059	063	063	1168
18	057	046	037	026	020	021	027	036	048	060	066	066	064	056	044	031	020	017	019	024	031	040	048	052	960
19	051	046	039	030	024	021	023	031	041	054	064	069	070	066	059	048	039	033	031	033	038	046	053	060	1069
20	061	060	055	048	040	034	032	036	042	051	061	069	074	072	068	061	051	044	038	035	036	040	047	053	1208
21	057	059	058	054	049	041	035	034	037	043	051	059	066	071	071	066	051	052	045	041	037	037	042	045	1213
22	053	050	062	061	058	052	044	039	038	041	045	052	060	067	070	068	065	059	051	043	039	037	039	043	1246
23	049	055	060	062	062	058	052	046	041	040	042	047	053	061	069	071	072	069	062	064	046	040	037	038	1286
24	042	048	053	051	063	062	050	031	044	036	036	037	042	049	056	062	066	066	063	056	048	039	034	033	1209
25	035	041	049	054	062	064	063	059	053	045	040	039	041	047	054	061	069	073	073	069	063	054	048	043	1299
26	044	048	054	062	071	075	077	075	069	060	052	047	045	050	055	064	072	079	093	093	079	072	065	056	1539
27	053	055	059	064	073	081	086	086	082	075	061	056	051	049	051	056	064	073	078	060	079	072	064	055	1606
28	043	045	047	053	061	070	077	081	080	074	065	053	044	036	038	043	050	059	067	071	071	066	058	047	1406
29	038	033	035	040	043	058	068	074	075	071	063	052	040	023	031	024	040	030	060	067	070	069	063	055	1267
30	046	038	036	040	047	056	057	076	062	031	075	068	053	042	030	034	058	045	054	063	069	069	056	059	1337
31	049	039	034	035	039	047	059	070	076	079	076	069	057	045	045	050	053	059	048	057	064	067	056	060	1270

TABULATED BY Frank Johnson DATE 12/15/70 SUM FOR MONTH 3208.9

492.95
20.471
20.372

TIDES: HOURLY HEIGHTS

480
LA 38°47'
LONG 75°06'

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

STATION LEWES, DELAWARE TIME MERIDIAN 75 MONTH APRIL YEAR 1972

HEIGHT DATUM IS 2.54' below MLLW HIGHEST DAILY SEA LEVEL DATE 8 HT. 5.97 FT.
LOWEST DAILY SEA LEVEL DATE 6 HT. 4.32 FT. MEAN FOR MONTH = 4.97 FT.

	0	1	2	3	4	5	6	7	8	9	10	11	NOON	13	14	15	16	17	18	19	20	21	22	23	SUM
1	068	056	045	037	034	037	043	051	060	067	068	067	060	050	040	034	033	038	044	053	064	073	076	074	1272
2	067	056	047	037	033	032	035	042	050	059	064	064	060	051	042	035	031	032	037	044	054	063	069	070	1174
3	066	059	049	040	032	029	031	036	043	050	056	059	057	052	045	036	030	028	031	037	044	053	061	066	1090
4	066	061	053	044	036	032	032	035	044	051	057	061	062	059	054	046	040	036	034	037	043	050	059	066	1158
5	068	065	059	051	043	037	033	033	036	043	049	054	056	055	052	048	042	035	030	029	031	035	043	050	1077
6	055	057	057	052	045	038	032	029	029	032	038	043	050	053	055	053	048	043	036	033	032	036	043	049	1038
7	056	060	062	062	057	050	042	036	033	035	040	047	055	061	065	069	069	065	060	056	052	052	055	060	1299
8	067	075	079	081	079	074	066	059	051	047	046	048	052	058	063	068	070	066	060	054	047	042	040	040	1432
9	044	054	059	065	070	070	065	057	048	041	035	034	037	042	049	058	062	063	061	055	046	036	029	028	1208
10	031	037	046	055	062	067	065	059	050	039	030	026	027	032	040	049	058	063	064	060	052	040	029	022	1103
11	021	026	033	044	055	064	066	065	058	046	035	024	020	024	032	042	055	065	072	073	067	058	046	034	1125
12	027	026	032	041	053	065	072	074	070	061	047	033	023	020	026	035	048	062	072	078	077	070	058	044	1214
13	030	022	024	031	042	055	068	075	077	072	063	048	033	026	021	030	041	054	068	077	083	079	070	058	1247
14	042	029	023	024	032	043	057	068	076	075	069	058	043	028	019	021	030	042	056	070	079	082	079	068	1213
15	054	039	027	021	024	033	045	058	070	076	075	070	059	044	032	025	028	039	052	065	077	087	087	080	1267
16	070	055	041	029	025	027	034	044	058	066	069	067	059	049	036	027	022	026	038	054	069	082	088	088	1223
17	081	069	053	043	036	031	037	044	053	063	071	075	075	066	055	044	035	030	035	042	051	064	074	081	1308
18	080	074	064	051	039	031	028	030	037	046	056	061	064	062	056	046	036	028	026	029	036	046	057	066	1149
19	071	070	066	058	046	035	027	024	026	032	040	049	055	057	057	052	044	034	027	024	025	032	041	051	1043
20	059	064	066	062	054	045	034	028	026	028	033	042	050	057	061	062	058	055	048	041	040	042	049	056	1160
21	066	073	078	079	076	068	057	047	038	034	034	039	045	053	058	062	063	058	052	043	036	033	033	038	1263
22	045	054	062	067	067	065	057	048	040	032	030	033	039	048	057	065	069	070	068	060	049	040	036	036	1237
23	041	046	055	063	066	069	066	060	051	043	037	035	036	043	052	061	067	070	069	063	055	043	036	033	1262
24	034	039	044	053	060	056	065	063	056	047	038	032	032	036	043	052	062	068	070	069	062	053	045	036	1225
25	032	033	039	045	055	063	066	067	062	054	044	036	033	032	040	048	058	067	073	073	069	060	050	040	1239
26	034	032	035	041	049	058	064	068	068	061	054	045	039	036	039	044	053	063	071	075	072	067	057	046	1271
27	036	030	030	033	041	050	058	064	066	063	055	046	037	031	032	036	044	055	065	071	074	071	062	052	1202
28	040	032	027	028	033	041	050	058	062	062	056	048	039	032	028	030	036	044	055	064	070	070	065	055	1126
29	043	032	024	022	025	032	040	050	056	058	057	050	041	032	026	025	030	037	048	058	066	071	069	062	1054
30	051	040	031	025	026	031	038	047	055	059	060	055	047	038	029	026	028	034	042	052	062	069	071	067	1083
31																									

TABULATED BY PV DATE 6/30/72

SUM FOR MONTH 35762

OPR-480
 RU-HE 20-3-70, 20-4-71
 20-3-72

U.S. DEPARTMENT OF COMMERCE
 1964
 COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS
 HOURLY VALUES ARE IN TENTHS OF A FOOT

STATION LEWES, DELAWARE TIME MERIDIAN 75 W MONTH MAY YEAR 1972

HEIGHT DATUM IS 2.54' below MLLW HIGHEST DAILY SEA LEVEL DATE HT. FT.
 LOWEST DAILY SEA LEVEL DATE HT. FT. MEAN FOR MONTH FT.

135
136

	0	1	2	3	4	5	6	7	8	9	10	11	NOON	13	14	15	16	17	18	19	20	21	22	23	SUM
1	059	048	038	030	027	029	033	041	049	055	058	056	052	044	035	029	028	031	037	046	055	063	068	068	1079
2	062	053	042	033	028	026	028	034	043	051	056	057	055	050	041	035	030	031	034	042	052	061	069	072	1085
3	070	063	054	044	036	032	033	036	042	050	056	060	061	057	049	042	037	035	035	039	045	055	064	069	1164
4	071	070	062	052	043	037	034	035	038	046	053	060	063	059	054	048	040	035	034	036	040	047	057	064	1178
5	069	069	066	056	049	039	031	027	029	034	041	047	050	053	053	049	043	037	032	031	032	037	045	055	1076
6	062	067	067	063	056	046	038	032	029	030	034	041	049	055	058	057	052	046	038	032	029	032	037	043	1093
7	051	059	063	063	060	053	042	033	027	025	027	032	040	048	055	058	058	053	044	035	028	025	027	032	1058
8	039	049	058	062	063	059	052	042	033	028	027	030	037	047	056	064	068	067	062	052	043	036	032	034	1140
9	040	049	061	072	079	082	076	070	058	048	042	040	044	054	063	074	082	088	086	080	071	061	051	046	1517
10	043	048	056	065	074	079	080	076	066	055	043	034	034	039	048	060	072	081	086	083	075	062	048	037	1444
11	031	030	035	045	056	066	072	072	067	057	044	038	034	031	042	055	068	076	079	075	065	052	037	1235	
12	025	019	019	025	036	048	058	056	065	060	051	037	024	018	020	028	040	054	068	076	079	074	064	050	1104
13	034	021	016	019	027	038	050	061	066	066	061	060	037	025	020	023	033	045	060	074	083	085	079	068	1141
14	053	037	026	021	025	031	043	055	063	068	066	059	047	034	024	019	025	035	047	064	076	084	066	1141	
15																			040	052	067	078	082	080	
16	075	063	048	036	026	025	028	037	047	058	065	069	067	058	048	037	029	028	032	041	053	065	075	080	1192
17	078	072	061	048	037	029	028	033	039	048	058	065	068	065	067	048	038	031	029	034	041	052	064	073	1195
18	077	076	070	060	048	038	031	030	034	041	049	058	063	066	063	057	048	039	033	033	037	043	053	063	1210
19	072	078	072	063	053	044	038	034	036	040	046	054	063	069	070	069	064	058	052	048	047	050	058	063	1337
20	070	078	079	077	073	065	055	048	042	041	044	048	056	064	069	071	069	064	056	049	043	041	043	048	1391
21	055	062	069	071	070	064	055	047	040	035	035	038	045	052	060	065	067	065	060	051	043	038	032	039	1262
22	043	050	059	065	068	066	061	054	044	039	035	036	040	047	056	066	070	072	069	062	055	046	041	040	1284
23	043	047	054	061	066	068	068	063	056	047	041	039	040	046	053	061	069	075	077	072	066	055	047	041	1356
24	039	040	044	052	060	063	066	065	059	050	042	036	034	037	043	052	061	066	073	072	057	058	048	040	1270
25	036	037	040	046	055	063	069	073	070	066	059	052	048	049	051	059	068	077	084	087	085	079	071	061	1485
26	053	048	040	031	025	023	020	017	013	009	004	000	000	000	000	000	000	000	000	000	000	000	000	000	1465
27	046	038	035	036	040	047	056	061	064	063	057	049	040	034	032	036	042	052	062	071	079	072	058	057	1231
28	045	035	029	027	031	036	045	054	059	060	057	050	041	033	028	029	034	043	053	064	071	074	071	073	1132
29	052	041	031	027	029	033	041	049	056	060	060	055	048	039	032	030	033	040	049	060	070	076	075	071	1158
30	062	050	039	033	031	033	039	047	056	062	063	061	054	045	035	030	031	036	044	055	066	074	077	073	1196
31	067	056	045	037	032	032	036	044	053	060	063	062	058	051	041	034	030	034	039	050	060	068	076	079	1207

764
143
155
635

TABULATED BY Pat Viora DATE 7-14-72

SUM FOR MONTH

GEOGRAPHIC NAMES

Survey No. H-9294 W.D.

Name on Survey											
	A	B	C	D	E	F	G	H	K		
Atlantic Ocean											1
Five Fathom Bank											2
											3
											4
											5
											6
											7
											8
											9
											10
											11
											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27

Names Checked 1-26-73
 Chas. Hamington, CARTOGRAPHER
 Names Approved 1-26-73
 A. J. Wright, CHIEF GEOGRAPHER

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-9294 (1970)

Records accompanying survey:	Smooth sheets	1	..;
boat sheets ¹ (blank);	sounding vols. ² <i>RECON. Not plotted</i> ;	wire drag vols.	10
Descriptive Reports ¹	graphic recorder envelopes	1	..;
special reports, etc.			

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

Number of positions on sheet	1662
Number of positions checked	194
Number of positions revised	6
Number of positions revised (refers to depth only)	
Number of soundings/erroneously spaced	
Number of signals erroneously plotted or transferred	
Topographic details	Time
Junctions	Time
Verification of soundings from graphic record	Time
Special adjustments	Time

Verification by Bernie T. Davis Total time ..56.. Date 11/22/72
Pre-Review K.W. Wellman 12 hrs 8-15-75
 Reviewed by Limited Reverification by K.W. Wellman Time ..26 hrs Date 12-20-78
Inspect reverification Carstens 5 hrs 2/12/79

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. **H-9294 W.D.**

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & A&D Sheet		1	BOAT SHEETS (2A&D sheets)		1	
DESCRIPTIVE REPORT		1	OVERLAYS (Drag Strips)		1 Roll	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS						
VOLUMES	12					
BOXES						2
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				
POSITIONS CHECKED				
POSITIONS REVISED				
DEPTH SOUNDINGS REVISED				
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS				
JUNCTIONS				
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS				
SPECIAL ADJUSTMENTS				
ALL OTHER WORK				
TOTALS				
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
VERIFICATION BY	BEGINNING DATE		ENDING DATE	
REVIEW BY	BEGINNING DATE		ENDING DATE	

see preceding sheet

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H-9294

The verifier should deal with the present hydrographic survey only, as the reviewer considers its relation to previous surveys and published charts. He should be thoroughly familiar with Chapters 3, 7 and 9 of the Hydrographic Manual.

1. ✓ The descriptive report was consulted and appropriate notes were made in soft pencil regarding action taken.
2. ✓ Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude.
3. ✓ All reference to survey sheets mentioned in the descriptive report include the registry number and year.
4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical lettering.
N.A.
5. ✓ 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.
6. ✓ All positions verified instrumentally were check marked in the sounding records.
7. All critical soundings are clear and legible and are a little larger than the adjacent soundings.
N.A.
8. The metal protractor has been checked within the last three months.
Electronic control & courts protractor
9. ✓ The protracting and plotting of all bad crossings were verified.
N.A.
10. ✓ All detached positions locating critical soundings, rocks or buoys were verified.
11. ✓ The boat sheet was compared with the smooth sheet.

12. The spacing of soundings as recorded in the records was closely followed.
N.A.
13. The bottom characteristics were shown on outstanding shoals.
N.A.
14. The reduction and plotting of doubtful soundings were checked.
N.A.
15. The transfer of contemporary topographic information was carefully examined.
N.A.
16. All junctions were transferred and overlapping curves made identical.
Junctional survey was not available. Joins H-9173, 1970
17. The notation "JOINS H- (19--)" was added in ink for all contemporary adjoining or overlapping sheets now registered. Those not verified are shown in pencil.
18. The depth curves have been inspected before inking.
N.A.
19. All triangulation stations and transfer of topographic and hydrographic signals were checked.
N.A.
20. Heights of rocks were checked against range of tide.
N.A.
21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve.
N.A.
22. Unnecessary pencil notes have been removed.
23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet.
N.A.
24. The low water line and delineation of shoal areas have been properly shown.
N.A.
25. Degree and minutes values and symbols have been checked.
N.A.
26. Questionable soundings have been checked on the fathograms.
N.A.

27. Source of shoreline and signals (when not given in report).
N.A.
28. All notes on sheet are in accordance with figure 171 in
the ~~Hydrographic~~ Manual.
WIRE DRAG
29. All aids located, with those on contemporary topographic
sheets, have been shown on survey.
30. Depth curves were satisfactory except as follows:
N.A.
31. Sounding line crossings were satisfactory except as follows:
N.A.
32. Junctions with contemporary surveys were satisfactory
except as follows:
N.A.
33. Condition of ~~sounding~~ ^{WIRE DRAG} records was satisfactory except as
follows:
34. The protracting was satisfactory except as follows:
35. The field plotting of soundings was satisfactory except
as follows:
N.A.
36. Notes to reviewer:
Attached

Verified by Bernie T. Davis

Date 11/22/72

VERIFICATION NOTES

H-9294 (RH 20-3-70WD)

GENERAL

Wire drag records were processed by personnel of the Verification Branch.

Field plotting of drag strips was done ^{on} tracing paper overlays which should be used with the accompanying Mylar boat sheet.

Effective depths on all hangs are flagged on the smooth and A & D sheets on leadered notes.


CHART COMPARISON

A comparison was made with chart 1219 and, in four instances, effective drag depths were found to be one foot greater than charted depths. These discrepancies are assumed to have been caused by changes since the last hydrographic survey.

Data on these discrepancies are as follows:

<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>CHART DEPTH</u>	<u>DRAG DEPTH</u>	<u>LETTER DAY</u>
38-48.20'	74-38.90'	37'	38'	"J"
38-46.60'	74-48.50'	47'	48'	"H"
38-45.05'	74-44.80'	45'	46'	"P"
38-47.45'	74-43.80'	43'	44'	"N"

All drag strips were smooth plotted on tracing paper overlays which are being forwarded. They contain numerous notes explaining how various problems were handled.


Hugh L. Proffitt
Chief, Verification Br., AMC

Norfolk, Va.
Nov. 27, 1972



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

C352/KWW

October 20, 1978

TO: *A. J. Patrick*
A. J. Patrick
Chief, Marine Surveys Division

FROM: K. W. Wellman *Kenneth W. Wellman*
Inspector - HDEG Surveys

SUBJECT: Report on Limited Reverification of H-9294 (1970) W.D.

During the initial stages of the formal review of the present survey in June of 1975 it was discovered that the formal Tide Approval Note was not included in the Descriptive Report. Preliminary to the review, therefore, the necessary records were submitted to the Tides Branch to effect formal approval of the tide correctors used during verification and the acquisition of the Formal Tide Note (Form 712). During the course of the examination of the tide correctors it became necessary to make significant revisions to the tide correctors used during verification thus altering the accuracy of the plotted effective depth diagrams. (See Tide Note dated July 15, 1975.) Necessary reverification of the present survey was delayed pending comparison with the next hydrographic survey which, at that time, was scheduled in 1976 under OPR-516. The referenced hydrographic survey is registered as H-9723 (1977).

On the basis of a comparison between the present survey and H-9723, the present survey was reclassified as a Category 2--HDEG survey. The comparison reveals a few areas of conflicts which are attributed to inherent inaccuracies in the plotted present survey data, slight shifting of bottom sediments, and/or limitations of wire-drag field procedures. In addition, the comparison between the present survey and other prior surveys as well as H-9723 revealed numerous hangs and groundings to be on known shoals, thus obviating the need for their final verification and inking on the present survey. Due to the reclassification of the present survey, further processing was limited to significant soundings, groundings, hangs, and clearances only. The verified information is indicated by red-violet lettering on the listing of Groundings and Hangs (Attachment II) in the Descriptive Report. In addition, red-violet inked check marks and annotations on the smooth sheet and A&D sheet denote the items that were verified during the present limited processing. The smooth plotted positions and/or effective depths of some groundings, hangs, and clearances were revised during the present processing. Actual replotting of data



on the smooth and A&D sheets, however, was limited to that necessary to show the verified positions and values of the significant items only.

The cleared areas on the A&D sheet as well as unannotated groundings and hangs should not be regarded as verified and are to be used for reference purposes only. No further processing of the present survey is planned.

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9294 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 Revision.

CHART	DATE	CARTOGRAPHER	REMARKS
1219	1/8/73	B. Fernandens	Full Part Before After Verification, Review Inspection Signed Via Drawing No. <u>Appd Critical corr. only</u>
1109	1/8/73	B. Fernandens	Full Part Before After Verification, Review Inspection Signed Via Drawing No. <u>Appd critical corr. only</u>
1109	1/8/73	B. Fernandens	Full Part Before After Verification, Review Inspection Signed Via Drawing No. <u>Appd critical corr. only</u>
1000	7-31-73	J. Bailey	Full Part Before After Verification, Review Inspection Signed Via Drawing No. <u>Exam. for critical corrs. No corr.</u>
411	9/23/76	MIKE PANAS	Full Part Before After Verification, Review Inspection Signed Via Drawing No. <u>APPLD CRITICAL CORR ONLY (WRK)</u> (ITEM M)
1219	9-23-76	MIKE PANAS	Full Part Before After Verification, Review Inspection Signed Via Drawing No. <u>APPLD CRITICAL CORR. (ITEM M)</u>
1199	12/21/76	Joseph Pirone	Full Part Before After Verification, Review Inspection Signed Via Drawing No. <u>Exam for critical corr. No corr.</u>
1219 (12214)	3-23-79	M. PANAS	Full Part Before After Verification Review Inspection Signed Via Drawing No. <u>ADEQUATELY APPLIED</u>
411 (12216)	3-23-79	M. PANAS	Full Part Before After Verification Review Inspection Signed Via Drawing No. <u>EXAM NO CORR. (ITEM "M")</u>
1218 (12304)	3-23-79	M. PANAS	Full Part Before After Verification Review Inspection Signed Via Drawing No. <u>EXAM NO CORR (ITEM "M")</u>
1109 (12200)	3-23-79	M. PANAS	Full Part Before After Verification Review Inspection Signed Via Drawing No. <u>ADEQUATELY APPLIED</u>
1108 (12300)	4-10-79	M. PANAS	Full After Verification Review Inspection Signed Via Drawing No. <u>ADEQUATELY APPLIED</u>
1000	8-31-79	R.G. Wainfield	Full After verification Review Inspection signed via Drawing No. 56