

H09814

NOAA FORM 78-36A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. PE-10-01-80
Registry No. H-9814

LOCALITY

State Virginia
General Locality Chesapeake Bay Entrance
Sublocality Lynnhaven Roads

19 80

CHIEF OF PARTY
CDR D.E. Nortrup

LIBRARY & ARCHIVES

DATE August 10, 1984

HYDROGRAPHIC TITLE SHEET

H-9814

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.

PE-10-1-80

State VIRGINIA

General locality CHESAPEAKE BAY ENTRANCE

Locality LYNNHAVEN ROADS

Scale 1:10,000 Date of survey 3 July 1980 thru 9 October 1980

Instructions dated 20 February 1980 Project No. OPR-D103-PE-80

Vessel NOAA Ship PEIRCE S-328

Chief of party Donald E. Nortrup, CDR, NOAA, Commanding Officer

Surveyed by T.W. Ruszala, E.J. Fields, W.T. Dewhurst, L.F. Simoneaux, J.T. Rodstein, J.W. Bailey

Soundings taken by echo sounder, ~~HOLOGRAPHIC~~ Ross Model 5000, Raytheon Model DE-719B

Graphic record scaled by EJF, WTD, LYS, JTR, JWB, WRM, RH, CMV, WP, DM

Graphic record checked by EJF, WTD, DM

Projected by _____ Automated plot by XYNETICS 1261 Plotter
(AMC)

Verification by _____

Soundings in ~~xxxxxx~~ feet at MLW ~~XXXXXX~~

REMARKS: All times are recorded in Greenwich Mean Time.

Notes in the Descriptive Report were made in red during office processing.

STANDARDS CK'D 8-16-84

C. Loy

AWOIS MSM 11/28/84

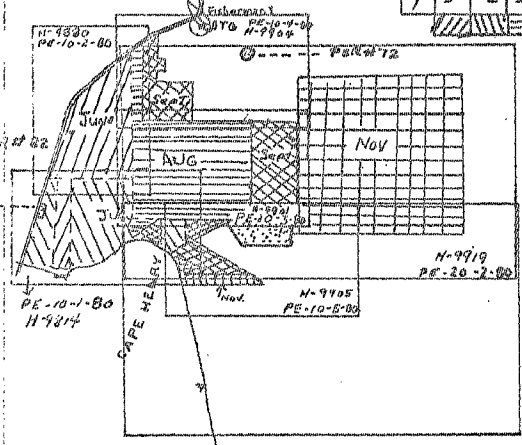
SURE MSM 11/28/84

PROGRESS SKETCH
 OPR-DIO3
 CHESAPEAKE BAY ENTRANCE, DELMARVANC
 MAY - NOVEMBER
 NOAA Ship PEIRCE
 C. DALE NORTH, CDR NOAA
 COMD'G. MAY - SEPT.
 From Chart 12200
 DONALD E. NORTRUP, CDR. NOAA
 COMD'G. SEPT - NOV.

75° 30'
 +
 37° 30'

LEGEND

	MAY	JUN	JUL	AUG	SEP	OCT	NOV
SQ. NM SOUNDING	25.0	40.0	60.0	32.0	3.0	24.0	
LN M MISC. DISTANCE	2514	356	390	187	500	1100	
LN M DIST. TO AND FROM	145.0	254	221	307	98	200	
LN M SOUNDING LINE	112.5	70.5	140.0	43.7	189.6	760.0	
BOTTOM SAMPLES (GRAB)	-	178	70	72	12	17	
WATER SAMPLES ANALYZED (‰)	-	3	4	4	-	-	
CONTROL STATIONS	1	-	-	-	-	-	
NANSEN CAST	-	1	1	1	-	1	
TIDE GAGE	1	-	-	-	1	1	



75° 30'
 +
 37° 00'

	AUG	SEP	OCT	NOV
NO. OF ITEMS DRAGED	-	-	2	-
DIVER INVESTIGATIONS	2	1	4	-

76° 00'
 +
 36° 40'

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Descriptive Report
To Accompany
Hydrographic Survey H-9814
Field Number PE-10-1-80

A. PROJECT

This survey is part of OPR-D103-PE-80, Atlantic Seaboard Area Project (ASAP), DELMARVANC Phase. It was conducted in accordance with Project Instructions dated February 20, 1980 and the following changes:

- | | | |
|--------------|-------|---|
| Change No. 1 | ----- | Supplement to Instructions ✓
dated March 27, 1980 |
| Change No. 2 | ----- | Supplement to Instructions ✓
dated May 8, 1980 |
| Change No. 3 | ----- | Amendment to Instructions ✓
dated June 23, 1980 |
| Change No. 4 | ----- | Supplement to Instructions ✓
dated August 12, 1980 |
| Change No. 5 | ----- | Supplement to Instructions ✓
dated August 15, 1980 |

B. AREA SURVEYED

This survey was conducted on the south side of the entrance to the Chesapeake Bay. The approximate limits of hydrography were defined as follows:

The west boundary of the survey area was the Chesapeake Bay Bridge and Tunnel. The north boundary was latitude $36^{\circ}58'30''$ extending from the intersection of this latitude and the Chesapeake Bay Bridge and Tunnel eastward

B. AREA SURVEYED (Cont'd)

to the intersection of this latitude and longitude $76^{\circ}01'45''$. The area is further bounded eastward from longitude $76^{\circ}01'45''$ to longitude $75^{\circ}59'15''$ following latitude $36^{\circ}57'00''$. The most easterly boundary of the area is longitude $75^{\circ}59'15''$. The closing boundary was a line connecting the point at latitude $36^{\circ}55'45''$ and longitude $75^{\circ}59'15''$ with the point at latitude $36^{\circ}55'50''$ and longitude $75^{\circ}59'50''$. The inshore limits of hydrography were determined by the limits of safe navigation. The shore bounded the survey area to the south.

The hydrography was conducted between 3 July 1980 and 9 October 1980 (Julian Days 185-283).

C. SOUNDING VESSELS

Hydrography was conducted by two type I aluminum survey launches (Jensen) and a Monark skiff. The Jensen launches were both equipped with automated hydroplot systems. The Monark was equipped with a Raytheon Model DE-719B fathometer. All data from the Monark were manually obtained.

<u>Vessel Hull No.</u>	<u>Electronic Data Processing VesNo.</u>
Launch 1009	2839
Launch 1017	2837
Monark	2835

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings were acquired using either a Ross Digital ^{echo sounder} fathometer (Model 5000) or a Raytheon Analog fathometer (Model DE-719B).

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS (Cont'd)

<u>Type of Station</u>	<u>VesNo.</u>	<u>JD</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
TDC #3	2830	213	36°56.6'	76°05.9'
TDC #4	2837	219	36°56.3'	76°00.7'
TDC #5	2830	223	36°57.1'	76°59.8'
TDC #6	2830	224	36°55.5'	76°04.9'
TDC #8	2830	235	36°56.4'	76°02.4'
TDC #10	2837	248	36°57.0'	76°00.0'
TDC #17	2830	283	36°56.2'	76°02.6'
Nansen Cast #2	2830	223	36°57.1'	75°59.7'

*Note: A Martek TDC Model 341, S/N 116, calibrated in January 1980 and a Martek Mark VII Model 167-10, S/N 177 and Martek Sensor Model 167-20 which was factory calibrated were used to obtain the TDC data.

All TDC, Nansen cast, and bar check data is included in the supplemental data. There is also a velocity data report included as supplemental information for all of the sheets from this project.

There were no changes in draft of any of the launches. Settlement and Squat Corrections for the Jensen launches were determined on the 27th of May 1980. The corrections were incorporated into the TC/TI Tape and included in the survey data. A printout of the TC/TI Tape was included in the appendices. The settlement and squat was determined for the Monark during the 1979 field season. Settlement and Squat data and calculations are included in the supplemental data.

E. HYDROGRAPHIC SHEETS

This survey was plotted on three mylar complot roll plotter sheets by the hydroplot system on the NOAA Ship PEIRCE. The survey data were plotted off line using a corrector tape and a Predicted Tide Tape. Soundings on the field sheets are corrected for draft, initial and digitizing errors and predicted tides. Velocity correctors were not applied. (See Section D of this report).

E. HYDROGRAPHIC SHEETS (Cont'd)

The final smooth sheet of this survey will be plotted by the Processing Division, Atlantic Marine Center. Projection Parameters are included in the appendix to this report.

All of the field records and the following punch tapes were furnished to the Processing Division with this report:

Master Range/Range Data Tapes
Corrector Tapes
Velocity Correction Tape
Parameter Tapes
ASCII Signal Tapes
Transducer Corrector/Table
Indicating Tape

F. CONTROL STATIONS

Four electronic control stations were employed for this survey. The electronic control stations were as follows:

<u>Station Number</u>	<u>Name</u>	<u>Reference</u>
001	FEN 1960	NGS
019	2-75 Raydist	AMC
025	H-56-VA	AMC
*010	H-55-VA	AMC

These horizontal control stations were published by NGS or established by the Operations Division, AMC. All stations established by AMC are of third order accuracy and have been filed with NGS. A complete description and listing of all electronic and visual control stations as included in the Appendix.

*Note: Station H-55-VA was used only in the Range/Azimuth mode using Del Norte.

G. HYDROGRAPHIC POSITION CONTROL

Cubic Western Argo and Del Norte electronic positioning control was used for navigation control during this survey. Range/Azimuth techniques employing Del Norte were used with the Monark for control.

The following Argo and computer equipment was employed:

<u>Equipment</u>	<u>S/N</u>	<u>Vessel or Shore Station</u>
Range Processing Units (RPU)	R047855	See Note
	R047844	"
	R047859	"
	R0379117	"
	R0379115	"
	R047864	"
	R0379120	"
Control Display Units (CDU)	C037944	"
	C037948	"
	C047821	"
	C047823	"
Antenna Loading Units (ALU)	A047859	"
	A047847	"
	A0379106	"
	A0379120	"
	A047854	"
Strip Chart Recorder	S097959	2839
	S097944	2837
Thermal Printer	A02825	2839
	A02842	2837
Power Supplies	V0478101	See Note
	V0379119	"
	V0379110	"
Digital Computer PDP 8/E	09219	2839
	07872	2837
Hydroplot Controller	700023	2839
	700005	2837

G. HYDROGRAPHIC POSITION CONTROL (Cont'd)

The following DeI Norte equipment was employed:

<u>Equipment</u>	<u>S/N</u>	<u>Vessel</u>
Master	281	2835
DMU	190	2835
Remote	188	N/A

Note: The vessel and shore station equipment was changed and repaired on an almost daily basis. Some of the equipment was changed twice in one day. This made accurate record keeping very difficult. A record of Argo failures on the launches and shore stations can be found in the Sounding Volumes and the Faillogs submitted to AMC by the Electronic Technicians.

The Argo positioning equipment was calibrated by visual three point sextant fix comparisons using Program RK 561, Geodetic Calibration. The whole lanes were first determined and applied directly to the Argo CDU via either the Range or Delta Range feature. A series of visual fixes were taken, all with a 5 meter inverse or less, and the partial correctors averaged. This partial corrector was applied to the data via Program RK 112, "Range-Range and Hyperbolic Real Time Hydroplot" via the NAVCAL feature. The partial correctors for a given day were determined by averaging the beginning and ending calibrations for that day. Any lane jumps encountered were corrected either on-line via the NAVCAL feature or off-line via the corrector tape.

If a visual calibration was not possible the fixed point calibration method was used (Hydrographic Manual, 4th Edition 4.4.3.3). Two fixed points were used during this survey. They were:

Lynnhaven Day Beacon #2 ECC East
Chesapeake Bay Calibration Point ECC East

These calibration points were located by the Operations Division, AMC and were submitted to NGS. Further information on these eccentric stations can be found with Jim Shea, Operations Division, AMC.

Whole lane checks were made when deemed appropriate by the Launch Officer-in-Charge. They were done at either of the fixed points mentioned above.

G. HYDROGRAPHIC POSITION CONTROL (Cont'd)

Hydrography was not run or was rejected if any question existed with regards to the accuracy of the navigation system.

As was mentioned before many problems were encountered with the Argo navigation system. Signal wave interface were used in an attempt to rectify the problem of several different frequencies. These frequencies appear as follows:

<u>Frequency</u>	<u>Julian Day</u>
1646.7	185-192
1677.5	194-283

An abstract of navigation correction values appears in the Appendix of this report (Abstract of Corrections to Electronic Position Control). For a further description of the Electronic Positioning Control please see the Electronic Control Report submitted with the data from the ship for this project.

Del Norte equipment was calibrated by the baseline calibration method and daily by the fixed point method for this survey. The daily calibration correctors were used to plot the data obtained using Del Norte control. No significant drift was encountered (less than 2 meters) during this survey.

H. SHORELINE - *See section 2.6 of the Evaluation Report.*

All shoreline for this survey was transferred directly from Chart 12222 blowups provided by Rockville OA/C351. The present shoreline compared well with the chart. The shoreline as it appears on the chart with the exceptions noted below adequately represents the survey area.

A field edit was not made of the shoreline during this survey. The few discrepancies found with the charted shoreline appear on the Field Sheets. Detached Positions were used to define such features as fish traps and pilings. As stated above very few discrepancies were found; most of the discrepancies found were uncharted fish traps.

I. CROSSLINES - See section 3.2 of the Evaluation Report.

Crosslines represented 13.5% of the total electronic hydrography run. The crosslines were in excellent agreement (1 to 2 ft.) throughout the survey area.

J. JUNCTIONS - See section 5 of the Evaluation Report

The survey junctions with surveys PE-10-2-80 to the north, PE-10-3-80 to the northeast and PE-10-5-80 to the southeast.

PE-10-2-80 was submitted to the Processing Division, AMC prior to the completion of this survey. Junction comparisons with PE-10-2-80 will be made by the Processing Division, AMC.

Junction comparisons with PE-10-3-80 were generally fair. Differences of 2-3 feet were common. Some differences of four feet were noted. These differences were probably caused by the non-application of velocity correctors to the data of PE-10-1-80. This junction was considered satisfactory.

Junction comparisons with PE-10-5-80 were generally good. Differences of 1-2 feet were common. Differences of 3-4 feet were obtained in the deeper water. Again, the differences were probably caused by the lack of velocity correctors as noted above. This junction was considered satisfactory.

K. COMPARISON WITH PRIOR SURVEYS - See sections 6 and 7 of the Evaluation Report

The following presurvey review items, all obtained from the Presurvey Review Sheet dated 21 April 1980, were investigated during this survey. See section 7.2 of the Evaluation Report.

PSR #81 Visible Wreck of a 30 foot sailboat grounded and broken up on the first island of the Chesapeake Bay Bridge Tunnel. Location: latitude 36°58'00" N, longitude 76°06'48" W. This PSR item was searched for by a fathometer and dive search. It is recommended that this wreck be removed from the chart as no trace of it was discovered during this survey. For further information please see the Dive Report (appended) for this item. - It is recommended that this wreck be charted as a dangerous sunken wreck, P.D.

K. COMPARISON WITH PRIOR SURVEYS (Cont'd)

PSR #82 Submerged Obstructions, 19 feet Reported. This item was reported as submerged debris caused by a collision of the USS YANCEY with trestle "A" at location latitude 36°57'30" N and longitude 76°07'00" W. A sounding, drag, and dive search was made to determine a least depth on the debris. A least depth of 164 feet was found. It is recommended that this least depth be charted within a rectangular area delineated by the following:

Latitude 36°57'30" N to 36°57'33" N
Longitude 76°06'52" W to 76°06'54" W

For further information concerning this item please see the appended Dive Report. See section 7.2 of the Evaluation Report also. ✓

PSR #83 Dangerous Sunken Wreck, PD of the F/V MINNIE V at approximate location latitude 36°57'19.4" N, longitude 76°04'04" W. This was a limited investigation item and it was treated as such during this survey. A sounding search was conducted at one half the line spacing (45 m). No trace of the wreck was found. ^{AW015 11/13/84 msm} The RUDE and HECK also searched for this item during project year 71/22 OPR-467RH (RUDE and HECK, item 13). ^{AW015 11/13/84 msm} They recommended that this item be removed from the chart. It is also recommended from this survey that this item be removed. - Do not concur - See Evaluation Report for H-9255 (1971-72) and section 7.2 of the Evaluation Report for H-9814

PSR #84 Dangerous Sunken Wreck at location latitude 36°57'00" N and longitude 76°03'36" W. This was a limited investigation item. The 90 m line spacing was split to 45 m. No trace of the wreck was found. ^{AW015 11/13/84 msm} It is recommended as it was during the RUDE and HECK's investigation year 71/72 OPR-467RH (Project OPR-467 Item 14) that this item be removed from the chart. - See Evaluation Report, section 7.2

PSR #85 Dangerous Sunken Wreck, PA at latitude 36°56'15" N and longitude 76°06'19" W. This wreck was a 24 foot boat sunk in 24 ft. of water. This was a limited investigation item; the 90 meter line spacing was split to 45 meters during this investigation. No trace of this item was found. ^{AW015 11/13/84 msm} It is recommended that this item be charted as ED rather than PA since this investigation was not extensive or conclusive enough to disprove this item's existence. Concur - See section 7.2 of the Evaluation Report

PSR #86 Dangerous Sunken Wreck, PA at latitude 36°55'48" N, longitude 76°05'24" W. This wreck was a 27 ft. pleasure craft sunk in 26 ft. of water. The investigation and recommendation are the same as those for

PSR #85. - Concur - Source NM 35/78. Recommend charting as ^{AW015 11/13/84 msm} ED. ^{OK}

K. COMPARISON WITH PRIOR SURVEYS (Cont'd)

PSR #87 Non Dangerous Sunken Wreck at latitude 36°56'18" N, longitude 76°03'54" W. The nature of this wreck is unknown. The investigation ~~and recommendation are~~ the same as ~~those for~~ PSR #85. This item was also investigated by the RUDE and HECK (Project Year 71/72 OPR-467RH). ~~item 53). A similar recommendation was made at that time. See section 7.2 of the Evaluation Report.~~

AWOL
11/19/84
MSM

PSR #88 Dangerous Sunken Wreck, PA at latitude 36°55'58" N, longitude 76°02'30" W. This wreck was a 35 ft. amphibious craft sunk in 40 ft. of water. This investigation ~~and recommendation are~~ the same ~~as~~ those PSR #85. Source LNM 47/73. Recommend that the wreck be retained as charted.

AWOL
11/13/84
MSM

PSR #89 Visible Wreck at latitude 36°55'00" N, longitude 76°05'10" W. This wreck was a 32 ft. cabin cruiser, partially submerged and lodged in fish nets and stakes. This was a limited investigation item. A fathometer and dive search was conducted. No trace of the wreck was found. It is recommended that this wreck be deleted from the chart. For further information please see the Dive Report for this item. -Source NM 38/74. Recommend wreck be revised to dangerous sunken wreck, PD.

AWOL
11/13/84
MSM

PSR #90 Dangerous Sunken Wreck at latitude 36°54'50" N, longitude 76°05'50" W. This wreck was a 12 ft. boat which had been previously wire swept for without success. A limited fathometer search was performed on this item as indicated in the Project Instructions. No trace of this wreck was found. It is recommended that this wreck be removed from the chart, retained as charted. Not considered sufficiently extensive to disprove. Source LNM 23/73.

D
AWOL
11/13/84
MSM

PSR #91 Submerged Obstruction at latitude 36°54'48" N, longitude 76°05'25" W. The obstruction was a 100-200 year old sailing warship with a reported least depth of 8⁵ ft. The RUDE and HECK also investigated this item during project year 1971/72 OPR-467RH item 54D. Their recommendation of charting this least depth as above still holds. This was a limited investigation item for the PEIRCE and the line spacing was split to 45 meters. This investigation was not sufficient to disprove this items existence even though no trace of it was found. -Chart SWK - See section 7.2 of the Evaluation Report.

AWOL
11/14/84
MSM

PSR #92 Submerged Pipe at latitude 36°54'36" N, longitude 76°05'42" W. A search was performed for this item by walking this area (approximately a 300 meter radius) at MLW. The depths at low water varied from bare to approximately 3 ft. No trace of this item was found. It is recommended that this item be removed from the chart, especially considering the depth of water it was reported. - Do not concur - See section 7.2 of the Evaluation Report.

AWOL
11/14/84
MSM

PSR #93 Shoaling Reported 1977 at latitude 36°54'38" N, longitude 76°05'37" W. This area is under constant change. Shoaling is apparent, especially on the eastern side of the channel to Lynnhaven inlet. This area appears bare at low water in places. Please see the Field Sheets See section 7.2 of the Evaluation Report.

AWOL
11/14/84
MSM

K. COMPARISON WITH PRIOR SURVEYS (Cont'd)

for further clarification on the depths in the area. It is recommended that this area be delineated as indicated in the survey records since this shoaling was verified.

Four prior surveys were available for comparison: See section 6.2 of the Evaluation Report.

<u>Survey</u>	<u>Scale</u>	<u>Date</u>
H-7089	1:10,000	1946
H-8724	1:10,000	1962
H-6962	1:20,000	1944
H-7750	1:40,000	1948-50

Comparisons with survey H-7089⁽¹⁹⁴⁶⁾ were generally very good to excellent (0-3 ft.). Some major discrepancies (approximate 10 ft.) were found along the Bay Bridge Tunnel. These differences were undoubtedly caused by the existence of the Bay Bridge Tunnel since it (the bridge) did not exist in 1946.

Comparisons with survey H-8724⁽¹⁹⁶²⁾ were generally good (0-5 ft.) with the worst of the comparisons in the Lynnhaven inlet area. Differences of 4-5 ft. in vicinity of Lynnhaven Roads were common. This area is subject to shoaling (see also PSR #93).

Comparisons with survey H-6962⁽¹⁹⁴⁴⁾ were generally good (0-3 ft.). A noticeable difference was apparent in the vicinity of Thimble Shoals Channel. This difference was probably due to the fact that Thimble Shoals channel is subjected to periodic dredging. Differences of 10 feet were common in this area. It should also be noted that there was some discussion of dredging this channel to a new minimum depth in the near future. There were no particulars available at the time of the survey.

Comparisons with survey H-7750⁽¹⁹⁴⁸⁻⁵⁰⁾ yielded similar results to those found with survey H-6962.

It should be noted when making comparisons with other surveys that all soundings on these field sheets were plotted without velocity correctors.

L. COMPARISON WITH THE CHART - See section 7 of the Evaluation Report

Comparisons with Charts 12222 (1:40,000) and 12254 (1:20,000) were made. In general the hydrographic comparisons were good (0-3 ft.) There were some poor comparisons (4-5 ft.) in the deeper water offshore Cape Henry. These poor comparisons were probably caused by the nonapplication of velocity correctors to the survey data.

An extensive investigation of all charted obstructions and wrecks was made. Also numerous investigations and developments were conducted to verify a feature, depth contour or determine a least depth.

The following charted items were investigated as indicated:

Item	Charted Positions		Remarks
	Latitude	Longitude	
1. Obstr. 31 ft of water	36°57'38"	76°05'24"	Line spacing reduced to 45 m - No trace found.
<p>Items 1 through 4 were located by RUDÉ/HECK in 1969, 1971 and 1972 by FE-233WD and H-9255WD, respectively. H-9255WD (1971-72) Evaluation Report should be consulted for charting recommendations.</p>			<p>Recommend retention of item on next chart due to limited investigation during this survey.</p>
2. Obstr. clear to 34 ft.	36°57'38"	76°05'09"	Same as item 1.
3. Obstr. clear to 35 ft.	36°57'31"	76°04'32"	Same as item 1.
4. Obstr. 36 ft. of water	36°57'18"	76°03'50"	Same as item 1.
5. Piles PA	36°55'48"	76°00' ²⁷ 30"	<p>Not found at this location. Submerged pilings located this survey at 36°55'15" N, 76°04'22.73" W (pos. 7698). Recommend piles be charted where located as shown on chart during this survey.</p>
6. Obstr. clear to 16 ft. Source - H-7628WD	36°55'35"	76°04'04"	<p>Same as item 1 Retain as charted.</p>

(See Evaluation Ref for above items)

L. COMPARISON WITH THE CHART (Cont'd)

<u>Item</u>	<u>Charted Positions</u>		<u>Remarks</u>
	<u>Latitude</u>	<u>Longitude</u>	
7. DOLS	36°54'38" 36.2	76°05'40" 38.4	Relocated this survey. See pos. 9096-9102. Recommend DOLS be charted where located during this survey.
8. Piling	36°54'45" 49.3	76°06'34" 32.9	Relocated this survey. See pos. 9107 and 9118.

See section 6 of Evaluation Report for source.

The following is a listing of all developments conducted in the determination of uncharted features:

<u>Development</u>	<u>Approximate Positions</u>		<u>Remarks</u>
	<u>Latitude(N)</u>	<u>Longitude(W)</u>	
A	36°58'15"	76°06'40"	Search to define contours and least depth around Island #1, Bay Bridge Tunnel. Least depth found was 12 ¹² ft. at approx. 36°58'10" N, 76°06'45" W. Recommend least depth be charted as surveyed.
B	36°56'00"	76°07'10"	Search made to define depth contours.
C	36°54'50"	76°05'40"	Search made to determine least depth near stray sounding of 3 ft. (pos. #369). Least depth found was 3 ft. at approx. 36°54'50" N, 76°05'42" W. Recommend least depth be charted as surveyed.
D	36°57' ¹⁵ 20"	76°05'25"	Search made to define the bottom topography and least depth. Least depth found was 32 ³² ft. at 36°57' ¹⁵ 20" N, 76°05'25" W. Recommend least depth be charted as surveyed.

L. COMPARISON WITH THE CHART (Cont'd)

<u>Development</u>	<u>Approximate Positions</u>		<u>Remarks</u>
	<u>Latitude(N)</u>	<u>Longitude(W)</u>	
E	36°57'00"	76°04'15"	Search made to define depth contours.
F	36°55'50"	76°03'15"	Search made to define depth contours.
G	36°56'10"	76°00'45"	Fathometer and dive search made to determine least depth and nature of stray sounding near pos. 2645. Obstruction appeared to be rubble. Least depth was 22 ft. at 36°56'10" N, 76°00'45" W. See Dive Report appended. Recommend least depth be charted as surveyed.
H	36°56'50"	76°01'20"	Search made to define the depth contours. Depth of 68 feet found at 36°56'58" N, 76°01'20" W. Recommend this depth be charted as surveyed.

*Auvs
1/11/54
Mesa*

*30 ft. as Diving
Report and on
Smooth Sheet*

In addition to the above developments and investigations numerous fish traps and other charted and uncharted features were located by detached positions. These positions appear on the accompanying overlay sheets.

M. ADEQUACY OF SURVEY - See section 9 of the Evaluation Report.

This survey is complete and adequate to supersede all prior surveys for charting purposes.

N. AIDS TO NAVIGATION - See section 7.c of the Evaluation Report.

All navigation buoys within the survey area were verified and located by detached positions. These detached positions appear on the overlay sheets accompanying the Field Sheets.

N. AIDS TO NAVIGATION (Cont'd)

The displayed characteristics and locations of all these navigation buoys agree with their charted and recorded characteristics in the Light List. Some of the observed positions varied slightly from the locations depicted on the chart however, all of the navigation buoys as observed, serve the apparent purpose for which they were established.

In addition to the above buoys several other aids were verified and or positioned.

^{1 light, two day beacons and 1 buoy}
A series of ~~four Daymarks~~ mark the channel to Lynnhaven Inlet. Three of these aids were positioned by third order methods. The survey records for Daymark #1 and #3 were included in the supplemental data. The data for the position determination of Daymark #2 can be found with the Operations Division, AMC. This daymark also served as a fixed point calibration location. Daymark #4 was not in place at the time of this survey; Buoy #4 was substituted by the Coast Guard in its location. A detached position was taken at Buoy #4. All of these daymarks are subject to involuntary removal. Several times during this survey Daymark #1 and #3 were destroyed by either weather or collision. Daymark #2, which is lighted as appears on the chart, was not destroyed during this survey. The Coast Guard was very prompt about replacing a destroyed daymark with a buoy. The observed daymarks and buoys serve the purpose for which they were established.

There were two navigational openings through the Chesapeake Bay Bridge and Tunnel. These openings were verified but not positioned during this survey. The charted positions and characteristics are adequate for navigation.

Two mooring buoys, PA, appear in the survey area. These buoys were located by detached positions. Their observed positions varied significantly with the charted locations. It is recommended that these new locations be used in the compilation of the next chart.

A privately maintained Light (No. 2969, Light List) was verified by photogrammetric methods during this survey. The charted position and characteristic of this aid is adequate. Lynnhaven Roads Fishing Pier Light, p. 321, Vol. I, CG-158, 1984.

The Photogrammetric Branch of the Coastal Mapping Division, AMC verified all shore based Landmarks and Aids to Navigation in addition to the verification provided by this survey. A list of these landmarks and aids appears in the Appendix.

O. STATISTICS

<u>Category</u>	<u>VesNo.</u> <u>2837</u>	<u>VesNo.</u> <u>2839</u>	<u>VesNo.</u> <u>2835</u>	<u>Total</u>
Positions	4265	3018	119	7402
Nautical Miles of Sounding Lines	543	339	23	905
Square Nautical Miles of Hydrography	16	6	0.5	22.5
Bottom Samples	0	52	0	52

P. MISCELLANEOUS

Due to an oversight the density of bottom samples on Field Sheet #2 of 3 does not meet the standards in the Hydrographic Manual. ~~It is believed, however, that the bottom samples that were obtained verify the nature of the sediments and should prove adequate for charting.~~

Irregular depth curves appear on Sheet #2. Differences between real and predicted tides may be the cause of this irregularity. ✓

A revision of the limits of the restricted area (207.158a Coast Pilot) off Cape Henry at the entrance to Chesapeake Bay is being considered and is expected to be changed. See Appendix M.

Q. RECOMMENDATIONS

None

R. AUTOMATED DATA PROCESSING

The following programs were used in acquiring and processing data:

<u>Program No.</u>	<u>Program Name</u>	<u>Version</u>
RK 112	Range-Range Hyperbolic and Real Time Hydroplot	06/15/80
RK 201	Grid, Signal and Lattice Plot	04/18/75

R. AUTOMATED DATA PROCESSING (Cont'd)

<u>Program No.</u>	<u>Program Name</u>	<u>Version</u>
RK 211	Range-Range Non Real Time Plot	01/15/76
RK 212	Visual Station Table Load	04/01/74
RK 216	Range-Azimuth Non Real Time Plot	02/05/76
RK 300	Utility Computations	02/05/76
RK 330	Reformat Data Check	05/04/76
PM 360	Electronic Corrector Abstract	02/02/76
RK 407	Geodetic Inverse/Direct Computation	09/25/78
AM 500	Predicted Tide Generator	11/10/72
RK 530	Layer Corrections for Velocity	05/10/76
RK 561	H/R Geodetic Calibration by 3-Point Fix	02/19/75
AM 602	ELINORE - Line Oriented Editor	05/20/75

S. REFERENCE TO REPORTS

An Electronic Control Report and a Velocity Report was furnished to the Processing Division, AMC. Both of these reports discusses their respective topics for all sheets associated with this project.

Respectfully submitted,

for Warren T. Dewhurst
Warren T. Dewhurst
Lieutenant, NOAA

SIGNAL TAPE LISTING

OFR-D103 CHESAPEAKE BAY ENTRANCE LYNNHAVEN ROADS

H-9814 FE-10-1-80

001	7	37	05	36243	075	58	17556	250	0050 ⁰⁰⁰⁰	167750
002	7	36	55	57125	076	10	35961	250	0070	000000
003	3	36	55	34335	076	00	27216	250	0050 ¹³⁹	000000
004	3	36	54	58985	076	05	23774	139	0000	000000
005	4	36	55	34302	076	00	27323	250	0050	000000
006	6	36	55	49332	076	01	03347	250	0001	000000
007	6	36	55	49573	076	01	54070	250	0000	000000
008	6	36	55	31272	076	02	39211	250	0000	000000
009	6	36	54	59010	076	03	32751	250	0000	000000
010	6	36	54	30153	076	05	51095	250	0000 ³⁸	000000
011	6	36	54	17009	076	07	14013	139	0000	000000
012	6	36	55	14934	075	59	46481	250	0001	000000
013	6	36	55	32330	076	00	30516	139	0000	000000
014	6	36	52	08381	075	59	02012	139	0000	000000
015	3	36	55	06190	076	11	22544	139	0000	000000
016	3	36	55	14382	076	09	42063	139	0000	000000
017	3	36	54	31740	076	08	53000	139	0000	000000
018	3	37	02	44500	076	03	46565	250	0000	000000
019	3	36	55	49585	076	01	01393	250	0000	167750
020	3	37	07	22007	075	54	24576	250	0000	000000
021	3	36	56	51663	076	15	33886	250	0000	000000
022	3	36	59	51427	076	05	59605	250	0000	000000

DESCRIPTION OF STATIONS (Cont'd)

024 Cape Charles 771ST AN/FPS & South Tower Dome, 1962

025 H-56-VA, (~~Argo Freq. 1677.5~~) 1984

026 FEN, 1960 (Argo Freq. 1646.7)

027 2-75, ~~Reydist~~ (Argo Freq. 1646.7) } Used From
1984 } JD 185 thru
192 }

028 H-56-VA (Argo Freq. 1646.7)

030 Lynnhaven ~~Daybeacon No. 1, 1984~~
~~Daymark #1~~

031 Lynnhaven ~~Daybeacon No. 3, 1984~~
~~Daymark #3~~

DESCRIPTIONS OF STATIONS

001 FEN, 1960 (~~Argo Freq. 1677.5~~)

002 Little Creek, 1929

003 Cape Henry Lighthouse, 1887

004 Lynnhaven Day Beacon ^{No. 2,} #2 1984

005 Cape Henry ^{LH} ~~Lighthouse~~ ECC. SW, 1984

006 H-51-VA-80, 1984

007 H-52-VA-80, 1984

008 H-53-VA-80, 1984

009 H-54-VA-80, 1984

010 H-55-VA-80, 1984

011 Shore Drive Standpipe, 1984

012 H-50-^{VA,} ~~80-VA~~ 1984

013 Cape Henry ^{LT. HO.} ~~Lighthouse~~ {Old}, 1869

014 Cavalier Hotel, Cupola, 1929

015 Little Creek ^{Amphibious} ~~Amph~~ Base Tank, 1952

016 Little Creek ^{NA.B.} ~~NAV~~ Dessert Cove, Tank, 1955

017 Little Creek ^{Naval Amphibious} ~~NAV~~ Amph Base, Tank, 1952

018 H-6-VA-77, (~~Island #4~~) 1977

019 2-75 Raydist, (~~Argo Freq. 1677.5~~) 1984

020 Cape Charles ~~Light~~ New Lighthouse, 1887

021 ~~Oceanview Tank~~ Ocean View, Municipal Water Tank, 1956

022 ~~Bridge Tunnel Calibration Point~~ Day Bridge Piling, 1984

023 Cape Charles 771ST AN/FPS ~~#~~ North Tower Dome, 1962

APPENDIX F

LIST OF SIGNAL



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
NOAA Ship PEIRCE S-328
439 West York Street
Norfolk, Virginia 23510

December 16, 1980

TO: Chief, Tides and Water Levels Branch (C234)

FROM: *Donald E. Murphy*
Commanding Officer
NOAA Ship PEIRCE S-328

SUBJECT: Request for Verified Hourly Heights of Tides

Please provide hourly heights of tides and the value of MLW on the tide staff for the period of hydrography on H-9814, OPR-D103, as follows:

Period of Hydrography: 3 July 1980 (JD 185) thru
9 October 1980 (JD 283)

Control Station: Chesapeake Bay Bridge, Virginia
(863-8883)

Please forward the requested information directly to the Atlantic Marine Center, ATTN: CAM 33.

Attachment: Progress Sketch

cc: CAM 1
CAM 3



FIELD TIDE NOTE

Field Tide Reduction of soundings was based on predicted tides from Hampton Roads, Virginia, and as interpolated by the PDP 8/E computer utilizing AM 500. All times of both predicted and recorded tides are GMT.

One Bubblers Gage was installed in the project area. Location and period of operation are as follows:

<u>Site</u>	<u>Location</u>	<u>Period</u>
Fisherman's Island	37°05.1' N 76°57.6' W	12 May - 15 May
		20 May - 29 May
		30 May - 14 June
		20 June - 22 June
		27 June - 3 July
		7 July - 13 July
		13 July - 31 July
		1 Aug. - 12 Aug.
		15 Aug. - 27 Aug.

Fisherman's Island - Gage (S/N 7603-686-71 Metercraft) was installed and began operation on 12 May 1980. The staff was installed on the same day and leveled shortly thereafter. Due to the exposure to storms, the tide staff and tubing/orifice were destroyed or damaged on several occasions. The staff was replaced and releveled on 27 June and 3 August after such incidents. Other outages were caused by damage to hoses, fittings, etc. The marigram and staff read the same. The gage was removed at the end of the field season.

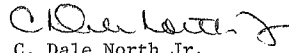
Zoning - Correctors should be applied to PE-10-1-80 from this gage and the standard gage on Chesapeake Bay Bridge.

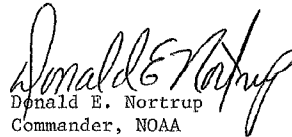
APPENDIX B

FIELD TIDE NOTE

APPROVAL SHEET

The field work on this Basic Survey, Registry No. H-9814, Field No. PE-10-1-80, was accomplished under my daily supervision. This report and field records have been reviewed by me on a routine basis. The survey is complete and adequate for the area investigated.


C. Dale North Jr.
Commander, NOAA
Commanding Officer
NOAA Ship PETRCE S-328


Donald E. Nortrup
Commander, NOAA
Commanding Officer
NOAA Ship PETRCE S-328

April 29, 1981

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): 863-8863 Chesapeake Bay Bridge Tunnel,
Virginia

Period: July 3 - October 9, 1980

HYDROGRAPHIC SHEET: H-9814

OPR: D103

Locality: Chesapeake Bay Entrance

Plane of reference (mean ~~XXXX~~ low water): 24.75 ft.

Height of Mean High Water above Plane of Reference is 2.62 ft.

REMARKS: Recommended Zoning :

Using latitude $36^{\circ}59.0'$ as the northern limit, and $36^{\circ}54.0'$ as the southern limit of the H-sheet.

In the Chesapeake Bay:

From longitude $76^{\circ}08.5'$ east to $76^{\circ}01.5'$ zone direct.

From $76^{\circ}01.5'$ east to $75^{\circ}59.0'$ apply -15 minute time correction and x1.15 range ratio.

From $75^{\circ}59.0'$ east to $75^{\circ}57.5'$ apply -25 minute time correction and x1.23 range ratio.


Chief, Datums and Information Branch

GEOGRAPHIC NAMES

H-9814

Name on Survey	ON CHART NO. 12218 1254 OR ON PREVIOUS SURVEY CON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP ATLAS U.S. LIGHT LIST										
	A	B	C	D	E	F	G	H	K		
CAPE HENRY	X										1
CHESAPEAKE BAY (title)	X										2
CHESAPEAKE BEACH (locale)	X										3
INLET (locale)	X										4
LYNNHAVEN INLET	X										5
LYNNHAVEN ROADS	X										6
LYNNHAVEN SHORES	X										7
OCEAN PARK (locale)	X										8
THE DESERT	X										9
THIMBLE SHOAL CHANNEL	X										10
VIRGINIA (title)	X										11
TAIL OF THE HORSESHOE											12
CAPE STORY BY THE SEA (locale)											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25

Approved:

Charles E. Huntington
Chief Geographer - N/C&2x5

6 MAY 1983

NOAA FORM 77-27		U.S. DEPARTMENT OF COMMERCE			REGISTRY NUMBER	
HYDROGRAPHIC SURVEY STATISTICS					H-9814	
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.						
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS		3
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS		6
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDIAN FILES	2					
ENVELOPES					1	
VOLUMES					4	
CAHIERS	2					
BOXES						
SHORELINE DATA						
SHORELINE MAPS(List):						
PHOTOBATHYMETRIC MAPS(List):						
NOTES TO THE HYDROGRAPHER(List):						
SPECIAL REPORTS(List):						
NAUTICAL CHARTS(List): 12205, 12221, 12254						
OFFICE PROCESSING ACTIVITIES						
The following statistics will be submitted with the cartographer's report on the survey						
PROCESSING ACTIVITY				AMOUNTS		
				VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET						7000
POSITIONS REVISED				1932		1932
SOUNDINGS REVISED				1194		1194
CONTROL STATIONS REVISED						
				TIME - HOURS		
				VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION				49	24	73
VERIFICATION OF CONTROL				8		8
VERIFICATION OF POSITIONS				48		48
VERIFICATION OF SOUNDINGS				255	10	265
VERIFICATION OF JUNCTIONS				10	32	42
APPLICATION OF PHOTOBATHYMETRY						
SHORELINE APPLICATION/VERIFICATION					8	8
COMPILATION OF SMOOTH SHEET				44	24	68
COMPARISON WITH PRIOR SURVEYS AND CHARTS					98	98
EVALUATION OF SIDESCAN SONAR RECORDS						
EVALUATION OF WIRE DRAGS AND SWEEPS					40	40
EVALUATION REPORT					71	71
OTHER					20	20
TOTALS				430	327	757
Pre-processing Examination by R. Roberson, J. Wilson, J. Lehner, M. Holloway				Beginning Date 24 DEC 1980	Ending Date 15 JULY 1981	
Verification of Field Data by D.V. Mason				Time(Hours) 365	Ending Date 24 JUNE 1982	
Verification Check by G. F. Trefethen				Time(Hours) 44	Ending Date 9 JULY 1982	
Evaluation and Analysis by R.G. Roberson				Time(Hours) 327	Ending Date 13 MAR 1984	
Inspection by R. D. Sanocki				Time(Hours) 40	Ending Date 3 MAR 1984	

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-9814

FIELD NO.: PE-10-1-80

Virginia, Chesapeake Bay Entrance, Lynnhaven Roads

SURVEYED: July 3 through October 9, 1980

SCALE: 1:10,000

PROJECT: OPR-D103-PE-80

SOUNDINGS: Ross Digital Echo Sounder,
Raytheon 719 B Fathometer

CONTROL: Argo (Range/Range),
Del Norte-Theodolite (Range/
Azimuth)

Chief of Party.....D. E. Nortrup

Surveyed by.....T. W. Ruzala
.....E. J. Fields
.....W. T. Dewhurst
.....L. F. Simoneaux
.....J. T. Rodstein
.....J. W. Bailey

Automated Plot by.....Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

a. During verification of this survey a large shoal water velocity correction appeared for echo sounder 1078. The large correction was approximately 0.8 foot and was found during an in depth examination of direct comparison data submitted by the PEIRCE. This 0.8 foot correction appeared only to a depth of about five (5) feet. When applied as a constant to the survey data, the depths taken using echo sounder 1078 were different by the 0.8 foot corrector in comparison to depths taken using the other echo sounders. The possibility of an instrument error of this magnitude applied only to a depth of five (5) feet is highly unlikely. It is therefore felt, that in this case, the bar check apparatus used for direct comparisons was in error. During verification of the sounding overlay and smooth sheet, careful attention was paid to depths fifteen (15) feet and shoaler for manifestations of this error. None appeared nor were any problems encountered in junctional areas within the depth range mentioned.

b. Notes in the Descriptive Report were made in red during verification.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections F and G of the Descriptive Report and is supplemented by "Project Report, Atlantic Marine Center, Third Order Traverse, Cape Henry, Virginia, DELMARVANC, MT MITCHELL, PEIRCE, 1980" and "Electronic Control Report, NOAA Ship PEIRCE (S-328), OPR-D103."

b. Shoreline for this survey originates with NOAA/NOS-CERC COOPERATIVE SHORELINE MOVEMENT STUDY MAP 43 (Cape Henry). This shoreline is supplemented

west of Longitude 76°07'30"W by an enlargement of chart 12254. The shoreline from the chart is brown and is for orientation purposes only.

3. HYDROGRAPHY

a. Depths at crossings are in good agreement and the depths vary from one (1) to two (2) feet.

b. The standard depth curves could be adequately drawn. The supplemental three (3), twenty-four (24) and thirty-six (36) foot depth curves were drawn to conform with the chart. The low water line, zero (0) curve, was not delineated.

c. The development of the bottom configuration and determination of least depths is considered adequate except as noted in section 4 of this report.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports comply with the Hydrographic Manual except as follows:

a. The two (2) daily bar checks required by section 1.5.2 of the Hydrographic Manual were not taken. TDC data was used for velocity corrections for this survey. Forty-seven (47) launch days of work were done with a total of twenty-six (26) bar checks taken.

b. The distance between bottom samples was 9 to 14 cm rather than the 6 cm prescribed by section 1.6.3 of the Hydrographic Manual.

c. The hydrographer did not locate the fixed navigation lights on the Lynnhaven Inlet Bridge and Thimble Shoal Tunnel South Light (Light List number 2911). It is recommended that they be located at an opportune time.

d. The hydrographer improperly identified Lynnhaven Inlet Light 2 as a daybeacon (daymark). The Light List name was placed on the smooth sheet to properly identify the light.

e. Daily electronic correctors had to be revised during verification for thirteen (13) out of thirty-five (35) days of hydrography. There were no electronic calibrations for the end of the day on nine (9) days. The submitted data was used to establish daily correctors that were used on this survey.

f. The TC/TI tape was not properly formatted with a resultant double application of the vessel draft to the soundings. This was corrected during verification of this survey.

g. The "Non-Floating Aids or Landmarks for Charts" forms (NOAA Form 76-40) submitted by the hydrographer were not properly prepared. Section 5.5 of the Hydrographic Manual states, "Separate Forms 76-40 are submitted for:

1. Landmarks to be charted.
2. Landmarks to be deleted.
3. Non-floating aids to navigation.

A copy of each form must be provided to the hydrographic survey

verifier."

Information on the forms submitted came from an office source and only two (2) of the fourteen (14) objects were actually observed by field personnel. Contrary to this information, the box for comment regarding evaluation from seaward was marked in the "have" box and the note "verified" was in parenthesis under ten (10) of the fourteen (14) objects. The geographic positions of thirteen (13) of the objects were taken from a letter dated November 19, 1980 from Billy H. Barnes to Lts. Evelyn Fields and Warren Dewhurst, Ship PEIRCE. Of the thirteen (13) objects listed on the letter, seven (7) are published triangulation stations. Section N of the Descriptive Report states, "The Photogrammetric Branch of the Coastal Mapping Division, AMC verified all shore based Landmarks and Aids to Navigation in addition to verification provided by this survey."

h. Section N of the Descriptive Report addresses the four (4) aids to navigation that mark the entrance to Lynnhaven Inlet. The hydrographer first states that there are four (4) "daymarks" that mark the channel. Later it is stated that one (1) aid was a light, two (2) were daymarks and one (1) a buoy. The hydrographer also states that three (3) of these aids were located by third order methods. Later it is stated that two (2) of the daybeacons located were destroyed. Since no supplemental data for location of these aids was found and they were reported destroyed there is considerable doubt about their location on this survey. They are shown on the smooth sheet insofar as the data submitted by the field indicates.

i. The signal list submitted did not have an elevation for station H-55-VA, 1980 (38.1 meters) and an incorrect elevation, fifty (50) meters, for station FEN, 1960. These were corrected during verification.

j. In the area west of Lynnhaven Inlet (approximate Latitude $36^{\circ}54'45''N$, Longitude $76^{\circ}05'45''W$) it would have been desirable to split the main scheme (range/azimuth) hydrography and to extend some of the lines run. This would have helped to better delineate the bottom configuration of the western approach to Lynnhaven Inlet.

k. Two charted piers in the vicinity of Latitude $36^{\circ}55'38''N$, Longitude $76^{\circ}00'30''W$, were not discussed in section L of the Descriptive Report. A telephone conversation with Mr. Harris, Public Works Department, Fort Story, Virginia, (804) 422-7756, revealed that these two piers were destroyed by a storm in 1962. See section 7a (4) of this report.

l. Section L of the Descriptive Report failed to note which chart editions were used for comparison. The submitted enlargements were not the proper editions. Finally, the hydrographer comments in section L of his report, "In addition to the above...other charted and uncharted features were located by detached positions." These uncharted features should have been detailed completely in the Descriptive Report.

m. Three (3) shoal soundings were found in the entrance channel to Lynnhaven Inlet. A three (3) foot sounding was found in Latitude $36^{\circ}54'37.06''N$, Longitude $76^{\circ}05'28.50''W$, a seven (7) foot sounding in Latitude $36^{\circ}54'37.75''N$, Longitude $76^{\circ}05'28.95''W$, and a six (6) foot sounding in Latitude $36^{\circ}54'31.47''N$, Longitude $76^{\circ}05'31.59''W$. None of these were investigated fully to verify or disprove their existence. A subsequent condition survey was performed by the by the U.S. Army Corps of Engineers, Norfolk District with no indication of these

shoals in the channel. It is felt that the positions of these soundings are erroneous because of a poor control configuration and as a result they were rejected by office personnel. It is recommended that this area be resurveyed at an opportune time in order to obtain a more accurate delineation of the bottom configuration in this area.

5. JUNCTIONS

H-9880 (1980) to the north
H-9901 (1980) to the east
H-9905 (1980) to the east
H-9910 (1981) to the west

Adequate junctions were effected with the above surveys.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic Surveys

H-6595 (1940)	1:40,000
H-6962 (1944)	1:20,000
H-7089 (1946)	1:10,000
H-7703 (1948)	1:10,000
H-7721 (1949)	1:10,000
H-7750 (1948-50)	1:40,000
H-8218 (1954)	1:25,000
<u>H-8724 (1962)</u>	<u>1:10,000</u>

The above surveys taken together cover the entire survey area. The present survey is generally deeper than the prior surveys. The following should be noted:

H-6595 (1940) covers only a small portion of the present survey south of Latitude 36°57'00"N. The present survey depths are up to ten (10) feet shallower than the prior survey.

H-6962 (1942) - the present survey is two (2) to four (4) feet deeper except in the vicinity of Thimble Shoal Channel where the present survey is deeper by as much as fourteen (14) feet.

H-7089 (1946) - the present survey is one (1) to two (2) feet deeper in depths greater than twenty (20) feet. Along the Chesapeake Bay Bridge Tunnel depths compare well up to depths of approximately thirty (30) feet. In depths greater than thirty (30) feet along the bridge tunnel, the present survey is three (3) to five (5) feet deeper. In the vicinity of the first island of the bridge tunnel, the present survey is as much as twenty (20) feet deeper. Several fish nets and the note "fish trap(s)" appear on the prior survey in the vicinity of Latitude 36°56'00"N, Longitude 76°08'00"W. These are not charted but are represented by a "caution note" and delimiting lines on the chart. They were not brought forward to the present survey smooth sheet.

H-7703 (1948) - the present survey is one (1) to five (5) feet deeper than the prior survey. Seaward of the eighteen (18) foot curve the greatest deepening has occurred.

H-7721 (1949) - the present survey is one (1) to two (2) feet shoaler than the prior survey in some inshore areas where the shoreline has changed. Between Longitudes 76°01'30"W and 76°03'21"W, the shoreline has accreted considerably. In the vicinity of Latitude 36°55'50"N, Longitude 76°02'24"W, the shoreline has accreted approximately 120 meters. Three areas of net stakes extending offshore in the vicinity of Latitude 36°55'15"N, Longitude 76°04'00"W, Latitude 36°55'35"N, Longitude 76°03'06"W, and Latitude 36°55'42"N, Longitude 76°02'45"W are not charted but are represented by a "caution note" and delimiting lines on the chart. They were not brought forward to the present survey smooth sheet. Two piers shown on the prior survey in approximate Latitude 36°55'48"N, Longitude 76°00'45"W, were destroyed by a storm in 1962 and the remains removed in 1963. This information was obtained from Mr. Harris of the Public Works Division, Fort Story, Virginia via telephone, (804) 422-7765.

H-7750 (1948-50) - the present survey is generally deeper than the prior survey. Greater depth variances occur in the area of the first island of the bridge tunnel and Thimble Shoal Channel.

H-8118 (1954) - the present survey is two (2) feet deeper throughout the common area on the prior survey.

H-8724 (1962) - the present survey is generally two (2) to three (3) feet deeper. In the area around Lynnhaven Inlet comparison is poor because the bottom shifts with wind, tide, and current. The shoreline on the east side of Lynnhaven Inlet has accreted approximately eighty-five (85) meters (approximate Latitude 36°54'33"N, Longitude 76°05'21"W). Shoreline on the west side of the Lynnhaven Inlet bridge has accreted between thirty (30) and eighty (80) meters; shoreline on the east side of the Lynnhaven Inlet bridge (the west point) has accreted approximately one hundred (100) meters toward the east. These shoreline changes can be attributed to the construction of a four-lane highway bridge across Lynnhaven Inlet.

The pile and row of piling in Latitude 36°54'50.04"N, Longitude 76°06'35.24"W, and Latitude 36°54'49.35"N, Longitude 76°06'32.90"W, on the present survey are shown as two rows of piling on the prior survey. Presently the westernmost row of piling is not visible; only the most seaward piling of that row is visible and the eastern row is still visible.

Assoc
11/9/84
msm

The present survey is adequate to supersede the prior surveys in the common area except as noted above.

b. Wire Drag Surveys

F.E. 154 W.D. (1956)	1:20,000
F.E. 233 W.D. (1969)	1:20,000
H-7028 W.D. (1945-50)	1:40,000
H-7177 W.D. (1947-48)	1:20,000
H-9255 W.D. (1971-72)	1:20,000

1) A comparison with F.E. 154 W.D. (1956) and the present survey revealed two (2) charted (Chart 12221) wire drag clearances of thirty-four (34) and thirty-nine (39) feet in Latitude 36°57'00"N, Longitude 76°03'00"W and Latitude 36°56'45"N, Longitude 76°02'37"W, respectively. The thirty-nine (39) foot clearance originates from the prior survey and was listed as Item 100 in Project

Instructions for Project CS-377, dated 28 January 1955. These clearances were not brought forward to the present survey. The charted thirty-nine (39) foot clearance should remain charted unless subsequent data indicates otherwise. The charted wire-drag clearance of thirty-four (34) feet in Latitude $36^{\circ}57'00''N$, Longitude $76^{\circ}03'00''W$ has subsequently been cleared to a depth of thirty-nine (39) feet by H-9255WD (1971-72) and should be so revised. (000)

There are no conflicts between the present survey depths and F.E. 154 W.D. (1956) effective depths.

2) A comparison with F.E. 233 W.D. (1969) and the present survey revealed three (3) hangs within the common area. Sections 5.a.2.a, 5.a.2.b, and 5.a.2.c of the Verification Report for F.E. 233 W.D. (1969) makes specific recommendations for each of the three (3) hangs. These recommendations are:

a. Uninvestigated hang, 34 ft. in Latitude $36^{\circ}57.73'N$, Longitude $76^{\circ}05.30'W$, not cleared. This item was brought forward to the present survey as an obstruction as recommended in FE-233 WD (1969) and should be charted as such unless subsequent data indicates otherwise. 1/4 AWJ 11/19/84 msm

b. Uninvestigated hang, 38 ft. cleared to thirty-five (35) feet, in Latitude $36^{\circ}57.06'N$, Longitude $76^{\circ}03.70'W$, displayed the characteristics of a bottom hang. This hang was not brought forward to the present survey. It is recommended that this not be charted as recommended in FE-233 WD (1969) unless subsequent data indicates otherwise.

c. Uninvestigated temporary hang, 38 ft., cleared to thirty-eight (38) feet in Latitude $36^{\circ}57.17'N$, Longitude $76^{\circ}03.30'W$, was thought to be an obstruction. This hang was brought forward to the present survey. It is recommended that this be charted as an obstruction cleared to thirty-eight (38) feet as recommended in H-9255WD (1971-72). AWJ 11/19/84 msm

There is a one (1) foot conflict between the present survey depths and F.E. 233 W.D. (1969) in Latitude $36^{\circ}57'25.62''N$, Longitude $76^{\circ}05'23.13''W$. After a close examination of the survey records it appears that the bottom has a slightly irregular feature in this vicinity.

3) A comparison with H-7028 W.D. (1945-50) with Add. Wk. and the present survey revealed two charted features in the common area which are discussed below:

a. A charted obstruction, cleared to 16 feet (chart 12254), in Latitude $36^{\circ}55'32.4''N$, Longitude $76^{\circ}04'04.8''W$, hung at nineteen (19) feet, was carried forward to the present survey and retention on the chart is recommended unless subsequent data indicates otherwise. AWJ 11/19/84 msm

b. A charted 43-foot depth (chart 12254), in Latitude $36^{\circ}56'42''N$, Longitude $76^{\circ}02'04.8''W$, is an uninvestigated hang which was not cleared on the prior survey. When plotted on the present survey the forty-three (43) foot depth falls in depths of fifty (50) to fifty-one (51) feet. It is recommended that the the charted forty-three (43) foot depth be retained as charted. ✓

There are two (2) conflicts between the effective depths of H-7028 W.D. (1945-50) with Add. Wk. and present survey depths. These conflicts fall in

Latitude 36°55'05.63"N, Longitude 76°05'20.97"W and Latitude 36°55'05.28"N, Longitude 76°05'03.73"W, where the present survey has depths of seven (7) and eighteen (18) feet respectively. Considering the area that the soundings fall in, it is recommended that the two (2) shoal depths from the present survey take precedence.

4) A comparison with H-7177 W.D. (1947-48) with Add. Wk. and the present survey revealed a cleared hang, a 35-foot sounding on an obstruction, and several conflicts between present survey depths and effective depths. These are discussed below:

a. A charted obstruction, cleared to 35 feet, in Latitude 36°57'33"N, Longitude 76°04'32"W, falls in present survey depths of thirty-nine (39) to forty (40) feet. This was identified as an old hulk. The 34-ft. hang depth was brought forward to the smooth sheet and should be charted as recommended by Survey H-9255WD (1971-72) as a wreck cleared by 35 feet.

D
AWO/S
11/19/84
msm

b. A charted obstruction with a cleared depth of 34 feet in Latitude 36°57'38"N, Longitude 76°05'09"W was cleared by a depth of 32 feet by H-7177WD (1947-48), 34 feet by FE-233WD (1969), and by 35 feet by H-9255WD 1971-72). The obstruction with a sounding of 35 feet originates with survey H-7177WD (1947-48) and was brought forward to the present survey. It should be charted as an obstruction cleared by 35 feet as recommended by H-9255WD (1971-72).

11/17
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11/19/84
msm

c. The conflicts between the effective depths and present survey depths fall in the vicinity of Latitude 36°58'00"N, Longitude 76°06'42"W, the first island of the Chesapeake Bay Bridge Tunnel. They require no further consideration.

5) A comparison with H-9255 W.D. (1971-72) revealed twenty-one (21) hangs in the common area and some conflicts with effective depths. A discussion of salient information and charting recommendations follows:

Hang, 35-ft. (estimated), not cleared, on a pipe (one (1) foot in diameter extending four (4) feet above the bottom) in Latitude 36°57'47"N, Longitude 76°04'41.5"W. It is recommended that this be charted as an obstruction (pipe, extending four (4) feet above the bottom) unless subsequent data indicates otherwise.

H
AWO/S
11/20/84
msm

Hang, 38-ft., cleared to thirty-five (35) feet, on an obstruction (4 ft. by 4 ft. clump of metal extending 3 ft. above the bottom) with a least depth of thirty-six (36) feet in Latitude 36°57'18"N, Longitude 76°03'48"W. It is recommended that this be charted as an obstruction with a least depth of thirty-six (36) feet unless subsequent data indicates otherwise.

F
AWO/S
11/19/84
msm

Hang, 32-ft., temporary, not investigated, not cleared in Latitude 36°57'17"N, Longitude 76°05'35"W. A grapnel hook was recovered in the ground wire. It is recommended that this be charted as an obstruction unless subsequent data indicates otherwise.

E
AWO/S
11/26/84
msm

Hang, 43-ft. (estimated), cleared thirty-six (36) feet, on an obstruction (anchor extending two (2) feet above the bottom), with a shoalest depth of forty-three (43) feet in Latitude 36°57'11"N, Longitude 76°03'18"W. It is recommended that this anchor be charted as an obstruction with a depth of

G
AWO/S
11/20/84
msm

forty-three (43) feet unless subsequent information indicates otherwise.

Hang, 35-ft., not investigated, cleared to thirty-two (32) feet, called a mud hang by the hydrographer in Latitude $36^{\circ}57'10''N$, Longitude $76^{\circ}04'37''W$. It is recommended that this be charted as an obstruction unless subsequent data indicates otherwise. A
11/20/84
msm

Hang, 26-ft., cleared to nineteen (19) feet, on an obstruction (pipe one (1) foot diameter, extending four (4) inches above the bottom), in Latitude $36^{\circ}57'04''N$, Longitude $76^{\circ}05'39''W$. It is recommended that this be charted as an obstruction (pipe one (1) foot in diameter) unless subsequent data indicates otherwise. A
11/20/84
msm

Hang, 31-ft. and 33-ft., cleared to thirty (30) feet, on an obstruction (iron pipe, one (1) foot in diameter, extending eight (8) feet above the bottom) with a least depth of thirty-one (31) feet, in Latitude $36^{\circ}57'37''N$, Longitude $76^{\circ}05'22''W$. It is recommended that this be charted as an obstruction (pipe, one (1) foot in diameter) with a least depth of thirty-one (31) feet unless subsequent data indicates otherwise. A
11/20/84
msm

Hang, 39-ft., cleared to thirty-six (36) feet, not investigated, in Latitude $36^{\circ}56'56''N$, Longitude $76^{\circ}03'27''W$. It is recommended that a wire drag clearance of thirty-six (36) feet be charted unless subsequent data indicates otherwise. A
11/20/84
msm

Hang, 37-ft., cleared to thirty-four (34) feet, on an obstruction (scrap metal extending 1.5 feet above the bottom) in Latitude $36^{\circ}56'45''N$, Longitude $76^{\circ}03'13''W$. It is recommended that this be charted as an obstruction (scrap metal) unless subsequent data indicates otherwise. M
A
11/27/84
msm

Hang, 38-ft., cleared to thirty-seven (37) feet, on an obstruction (concrete clump anchor extending four (4) feet above the bottom) in Latitude $36^{\circ}56'44''N$, Longitude $76^{\circ}03'11''W$. It is recommended that this be charted as an obstruction (concrete anchor) unless subsequent data indicates otherwise. A
11/27/84
msm

Hang, 34-ft., cleared to thirty-four (34) feet, on an obstruction (scrap metal extending 0.5 feet above the bottom) in Latitude $36^{\circ}56'42.5''N$, Longitude $76^{\circ}03'16''W$. It is recommended that this be charted as an obstruction (scrap metal) unless subsequent data indicates otherwise. A
11/27/84
msm

Hang, 34-ft., cleared to thirty-four (34) feet, on an obstruction (not investigated) in Latitude $36^{\circ}56'42''N$, Longitude $76^{\circ}03'13''W$. It is recommended that this be charted as an obstruction unless subsequent data indicates otherwise. P
A
11/27/84
msm

Hang, 34-ft., cleared to thirty-four (34) feet, on an obstruction (not investigated) in Latitude $36^{\circ}56'34.5''N$, Longitude $76^{\circ}03'19''W$. It is recommended that this be charted as an obstruction unless subsequent data indicates otherwise. A
11/27/84
msm

Hang (temporary), 31-ft., cleared to thirty (30) feet, on an obstruction (not investigated) in Latitude $36^{\circ}56'34.5''N$, Longitude $76^{\circ}03'41''W$. It is recommended that this be charted as an obstruction unless subsequent data indicates otherwise. A
11/27/84
msm

Hang, 33-ft., cleared to thirty (30) feet, on an obstruction (8 feet by 8 feet by 1 foot clump of aluminum) in Latitude 36°56'28"N, Longitude 76°03'27"W. It is recommended that this be charted as an obstruction unless subsequent data indicates otherwise.

✓
A0015
11/28/84
msm

Hang (temporary), 24-ft., cleared to twenty-two (22) feet, on an obstruction (not investigated), in Latitude 36°56'20.5"N, Longitude 76°04'26.5"W. It is recommended that this be charted as an obstruction unless subsequent data indicates otherwise.

✓
A0015
11/28/84
msm

Hang, 24-ft., not cleared, on an obstruction (old anchor, extending two (2) feet above the bottom) in Latitude 36°55'55"N, Longitude 76°05'03"W. It is recommended that this be charted as an obstruction (anchor) unless subsequent data indicates otherwise.

✓
A0015
11/28/84
msm

Hang, 20-ft. (estimated), cleared to eighteen (18) feet, wreck (steel vessel) in Latitude 36°55'50"N, Longitude 76°06'24"W. It is recommended that this be charted as a wreck unless subsequent data indicates otherwise.

X
A0015
11/28/84
msm

The comparison with H-9255 W.D. (1971-72) and the present survey reveals two (2) areas of conflict between effective depths and present survey depths. The first and largest area follows a line running from Latitude 36°57'03"N, Longitude 76°05'30"W to Latitude 36°56'30"N, Longitude 76°03'57"W with conflicts of one (1) to two (2) feet. The second small area is located in Latitude 36°56'42"N, Longitude 76°04'06"W with conflicts of one (1) to two (2) feet.

Given the nature of the bottom (sand) and possible currents and an eight (8) to nine (9) year difference in survey dates, it is reasonable to attribute changes to natural causes. It is recommended that the depths from H-9814 (1980) be charted in the common area except where supplemented by information from H-9255 W.D. (1971-72). It should also be noted that these two (2) surveys were processed during the same time period and should be viewed in conjunction with one another.

The items listed above as hangs were brought forward to the smooth sheet to more completely portray the characteristics of the bottom.

Hang, 38-ft., cleared to thirty five (35) feet, diver verified as a mud hang in Latitude 36°57'01"N, Longitude 76°03'55.5"W. It is recommended that the hydrography from the present survey be charted in this position because the hydrography is in agreement with the grounding unless subsequent data indicates otherwise.

Hang, 30-ft., cleared thirty (30) feet, diver verified as a mud hang in Latitude 36°56'59.5"N, Longitude 76°04'59.5"W. It is recommended that the hydrography from the present survey be charted in this position since the hydrography and grounding are in agreement unless subsequent data indicates otherwise.

Hang, 22-ft., not cleared, not investigated, in Latitude 36°56'49"N, Longitude 76°06'37"W, was said to be a hang on the bottom. It is recommended that the depths from the hydrographic survey be charted in this location unless subsequent data indicates otherwise.

The three hangs listed above were not brought forward to the present survey smooth sheet and should not be charted.

c. Shoreline Manuscripts

T-11704 (1962-63)	1:10,000
T-11705 (1962-63)	1:10,000
T-11706 (1962-63)	1:10,000

For a discussion of shoreline west of Longitude 76°03'30"W see section 6.a of this report. East of Longitude 76°03'30"W the shoreline has accreted from thirty (30) to one hundred ten (110) meters. Between Longitude 76°01'00"W and Longitude 76°01'30"W the shoreline has receded up to sixty (60) meters. East of Longitude 76°01'00"W general agreement is good. The two (2) charted piers mentioned in section 4.k and 6.a of this report do not appear on the prior shoreline manuscript T-11705 (1962).

7. COMPARISON WITH CHARTS

12205 (14th Edition, Jan. 19/80)
12221 (47th Edition, Sept. 15/79)
12222 (24th Edition, Mar. 08/80)
12254 (28th Edition, June 16/1979)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and miscellaneous sources. Attention is directed to the following items:

- 1) See sections K and L of the Descriptive Report for charting recommendations made by the hydrographer.
- 2) A charted low water line in approximate Latitude 36°55'30"N, Longitude 76°02'45"W falls behind the presently applied shoreline. The charted shoreline should be revised as shown on the present survey.
- 3) The charted piers in Latitude 36°55'45"N, Longitude 76°00'36"W and Latitude 36°55'42"N, Longitude 76°00'24"W are discussed in sections 4.k and 6.a of this report. These piers should be deleted from the chart.
- 4) A charted 6 foot 1977 in Latitude 36°55'36"N, Longitude 76°02'45"W was not located by the hydrographer. A narrow channel leading inshore was found in Latitude 36°55'54"N, Longitude 76°02'22"W. This may be the charted channel in its correct location. It is recommended that the chart compiler determine the source for the charted 6 foot 1977 and ascertain its applicability to the chart. *Cont. 2/1/82*
- 5) The spoil area charted in the vicinity of Latitude 36°55'06"N, Longitude 76°07'36"W, was not investigated or mentioned by the hydrographer and should be retained as charted unless subsequent information indicates otherwise.
- 6) The following Pre-survey Review items were searched for using reduced line spacing and were also covered by H-9255 W.D. (1971-72) with negative results:

19
83 - Dangerous sunken wreck, PD: Latitude 36°57'¹⁹17"N, Longitude 76°04'04"W approximate from Notice to Mariners 17/60. Recommend charting as a wreck, ED with a notation in parentheses: (cleared to 36 feet) in accordance with survey H-9255WD (1971-72) Evaluation Report. *Always 11/14/84 msm*

84 - Dangerous sunken wreck: Latitude 36°57'00"N, Longitude 76°03'36"W from Notice to Mariners 33/70. Recommend charting as a wreck, ED with a notation in parentheses: (cleared to 36 feet) in accordance with survey H-9255WD (1971-72) Evaluation Report. *Always 11/14/84 msm*

85 - Dangerous sunken wreck, PA: Latitude 36°56'15"N, Longitude 76°06'19"W from Notice to Mariners 36/66. Recommend charting as a wreck, ED with a notation in parentheses: (cleared to 36 feet) in accordance with survey H-9255WD (1971-72) Evaluation Report. *Always 11/14/84 msm*

87 - Non-dangerous sunken wreck: Latitude 36°56'18"N, Longitude 76°03'54"W from 1957 Wreck List, Wreck No. 1322. The wreck is charted on Chart No. 12221 (wreck chart). However, the wreck is located in an anchorage area on Chart No. 12254 and it is recommended it be charted as a non-dangerous sunken wreck with the notation in parentheses: (cleared to 26 feet) in accordance with survey H-9255WD (1971-72) Evaluation Report. *Always 11/14/84 msm*
should be ED
2005/77
49255
Always 11/14/84 msm

Don
Pre-Survey Review Item 82, submerged obstructions, 19 FEET REPORTED, in Latitude 36°57'19"N, Longitude 76°07'00"W was located by the hydrographer using an improvised chain drag. Divers obtained a least depth of fourteen (14) feet. The hydrographer notes that the area delineated by the chain drag may not encompass all of the debris. It is recommended that the area limits for the submerged obstructions remain as charted with the least depth of fourteen (14) feet charted. The least depth is located in Latitude 36°57'32.57"N, Longitude 76°06'52.51"W. *Always 11/14/84 msm*

Pre-survey Review Item 91 - submerged obstruction in Latitude 36°54'48"N, Longitude 76°05'25"W from Chart Letter 200/71 was searched for with reduced line spacing with negative results. H-9255 W.D. (1971-72) located this item in Latitude 36°54'50"N, Longitude 76°05'24"W and found it to be a wreck with a least depth of five (5) feet. It is recommended that a wreck be charted with a least depth of five (5) feet by leadline in the new location. *Always 11/14/84 msm*

Presurvey Review Item 92 - submerged pipe in Latitude 36°54'36"N, Longitude 76°05'42"W from Local Notice to Mariners 7/72 was searched for visually by the hydrographer during low water. Nothing was seen. With the changeable nature of the bottom in this area, this item should remain as charted unless subsequent data indicates otherwise. *Always 11/14/84 msm*

Presurvey Review Item 93 - shoaling reported 1977 in Latitude 36°54'38"N, Longitude 76°05'37"W approximate from Chart Letter 2005/77 is correct. It is recommended that the charted note be removed from the chart and the present survey depths be charted with a note "Subject to frequent change". *Always 11/14/84 msm*

An uncharted obstruction with an echo sounder least depth of twenty (20) feet was located in Latitude 36°56'04.08"N, Longitude 76°00'46.43"W by the hydrographer. It is recommended that this obstruction be charted in its present location. It is also recommended that a wire drag survey or side scan sonar *Always 11/14/84 msm*

search be made at an opportune time to determine the extent and least depth of the obstruction.

The charted piles, PA in approximate Latitude $36^{\circ}55'46''N$, Longitude $76^{\circ}00'27''W$ were searched for and found in Latitude $36^{\circ}54'43.71''N$, Longitude $76^{\circ}00'22.73''W$. The hydrographer did not obtain a depth on these piles. It is recommended that submerged piles be charted as shown on the present survey.

APR 15
11/15/84
M SM

8) A Lookout Tower charted in Latitude $36^{\circ}55'49.5''N$, Longitude $76^{\circ}01'53''W$ was found in Latitude $36^{\circ}55'49.45''N$, Longitude $76^{\circ}01'58.26''W$ and should be revised on the chart.

9) A Chimney charted in Latitude $36^{\circ}54'45''N$, Longitude $76^{\circ}04'15''W$ no longer exists and should be deleted from the chart. A Building, 160 feet tall, should be charted in Latitude $36^{\circ}54'47.06''N$, Longitude $76^{\circ}04'16.05''W$.

b. Controlling Depths

There are no conflicts between the tabulated controlling depths and the present hydrographic survey. Present survey channel depths have been superseded by the U.S. Corps of Engineers Project Condition Survey of March and April 1981 and After Dredging Survey of May and June 1982.

c. Aids to Navigation

The aids to navigation located on this survey are adequate to serve their intended purpose. It should be noted that Lynnhaven Inlet Channel has been dredged subsequent to the hydrography and the aids changed.

Three (3) mooring buoys were located on this survey and are located in the following positions:

<u>Latitude</u>	<u>Longitude</u>
$36^{\circ}56'18.90''N$	$76^{\circ}00'15.89''W$
$36^{\circ}56'03.02''N$	$76^{\circ}02'45.97''W$
$36^{\circ}55'57.00''N$	$76^{\circ}02'43.18''W$

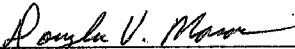
These should be charted in these locations unless subsequent floating aids information indicates otherwise.

8. COMPLIANCE WITH PROJECT INSTRUCTIONS


This survey adequately complies with the Project Instructions except as noted in section 4 of this report.

9. ADDITIONAL WORK


This is a good basic survey; additional field work is recommended in sections 4.j, 4.m and 7 of this report.



Douglas V. Mason
Cartographic Technician
Verification of Data



Robert G. Roberson
Cartographer
Evaluation and Analysis




Guy F. Trefethen
Senior Cartographic Technician
Verification Check

INSPECTION REPORT
H-9814

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey complies with National Ocean Service requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected




Rudolph D. Samocki
Chief, Hydrographic Surveys
Processing Section



Karl Wm. Kieninger, CDR, NOAA
Chief, Hydrographic Surveys Branch

Approved March 14, 1984



Wesley V. Hull, RADM, NOAA
Director, Atlantic Marine Center

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 70 M

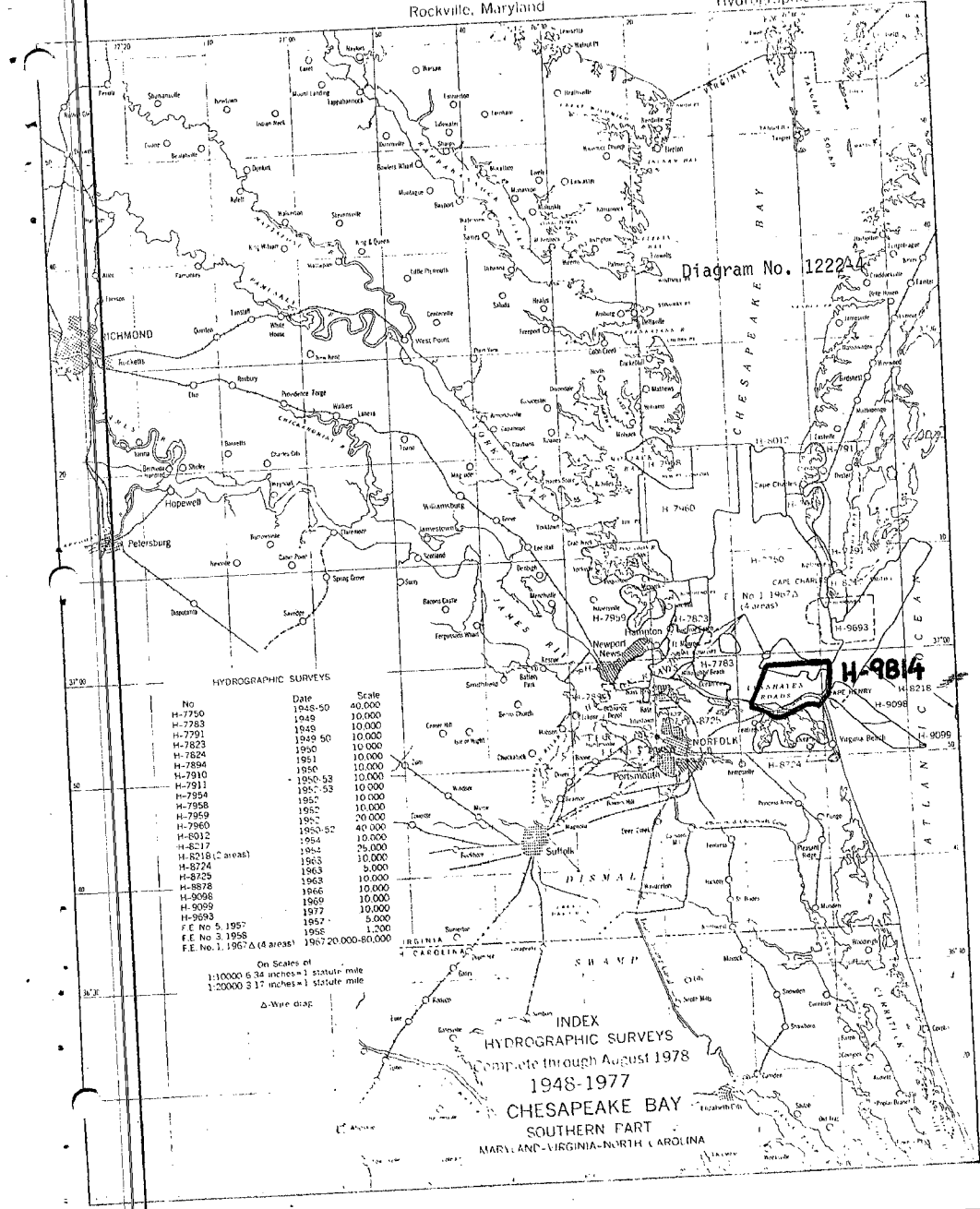


Diagram No. 1222A

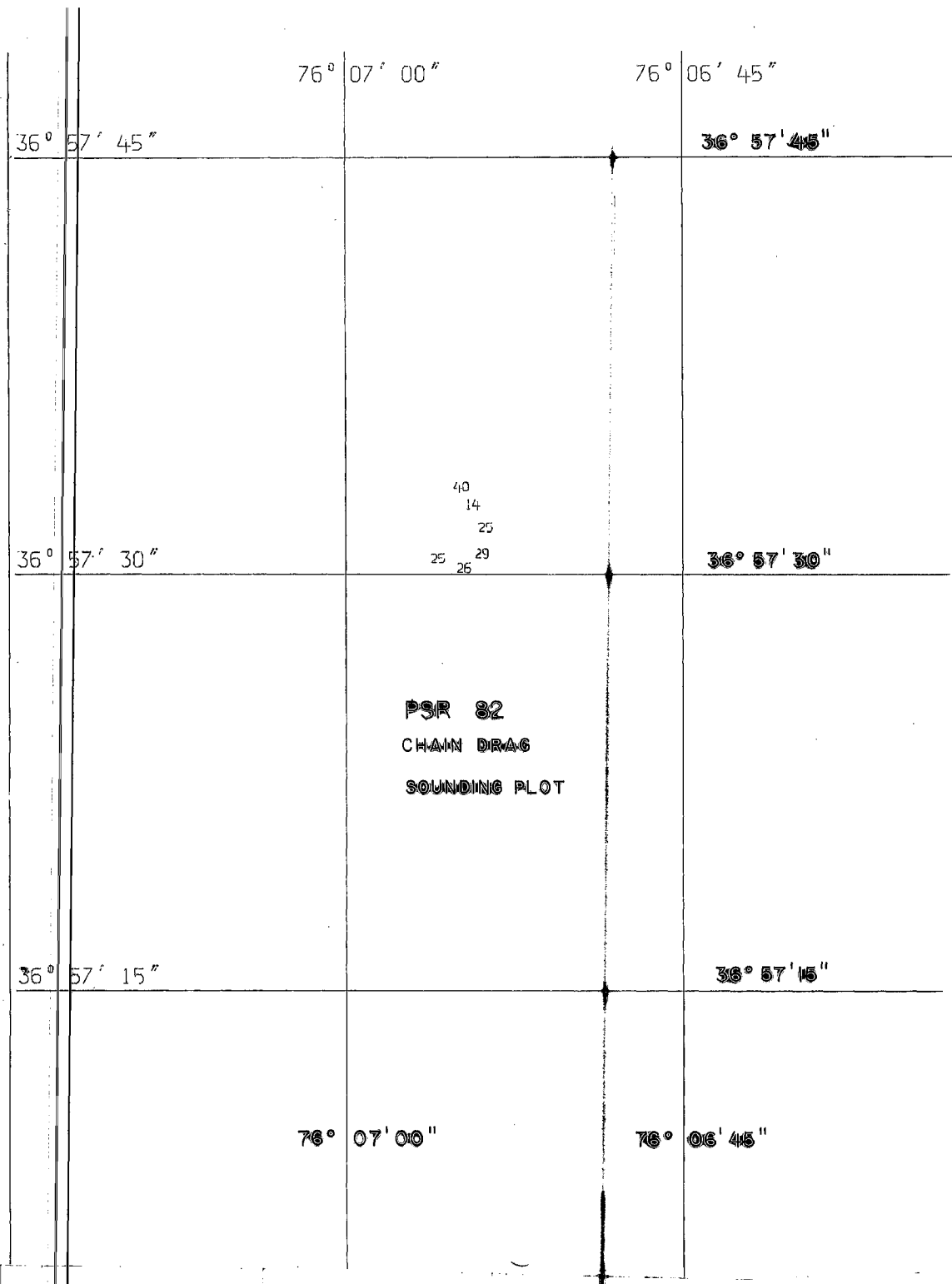
H-9814

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-7750	1948-50	60,000
H-7783	1949	10,000
H-7791	1949	10,000
H-7823	1949-50	10,000
H-7824	1950	10,000
H-7894	1951	10,000
H-7910	1950-53	10,000
H-7911	1951	10,000
H-7954	1952	10,000
H-7958	1952	10,000
H-7959	1952	20,000
H-7960	1950-52	40,000
H-8012	1954	10,000
H-8217	1963	25,000
H-8218 (4 areas)	1963	10,000
H-8274	1963	5,000
H-8725	1963	10,000
H-8878	1966	10,000
H-9098	1969	10,000
H-9099	1977	10,000
H-9593	1957	5,000
F.E. No. 5, 1957	1956	1,500
F.E. No. 3, 1958	1956	1,500
F.E. No. 1, 1967 (4 areas)	1967	20,000-80,000

On Scales of
1:10000 6 34 inches = 1 statute mile
1:20000 3 17 inches = 1 statute mile
Δ Wire drag

INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1948-1977
CHESAPEAKE BAY
SOUTHERN PART
MARYLAND-VIRGINIA-NORTH CAROLINA



76° 07' 00"

76° 06' 45"

36° 57' 45"

36° 57' 45"

40
14
25

36° 57' 30"

25 29
26

36° 57' 30"

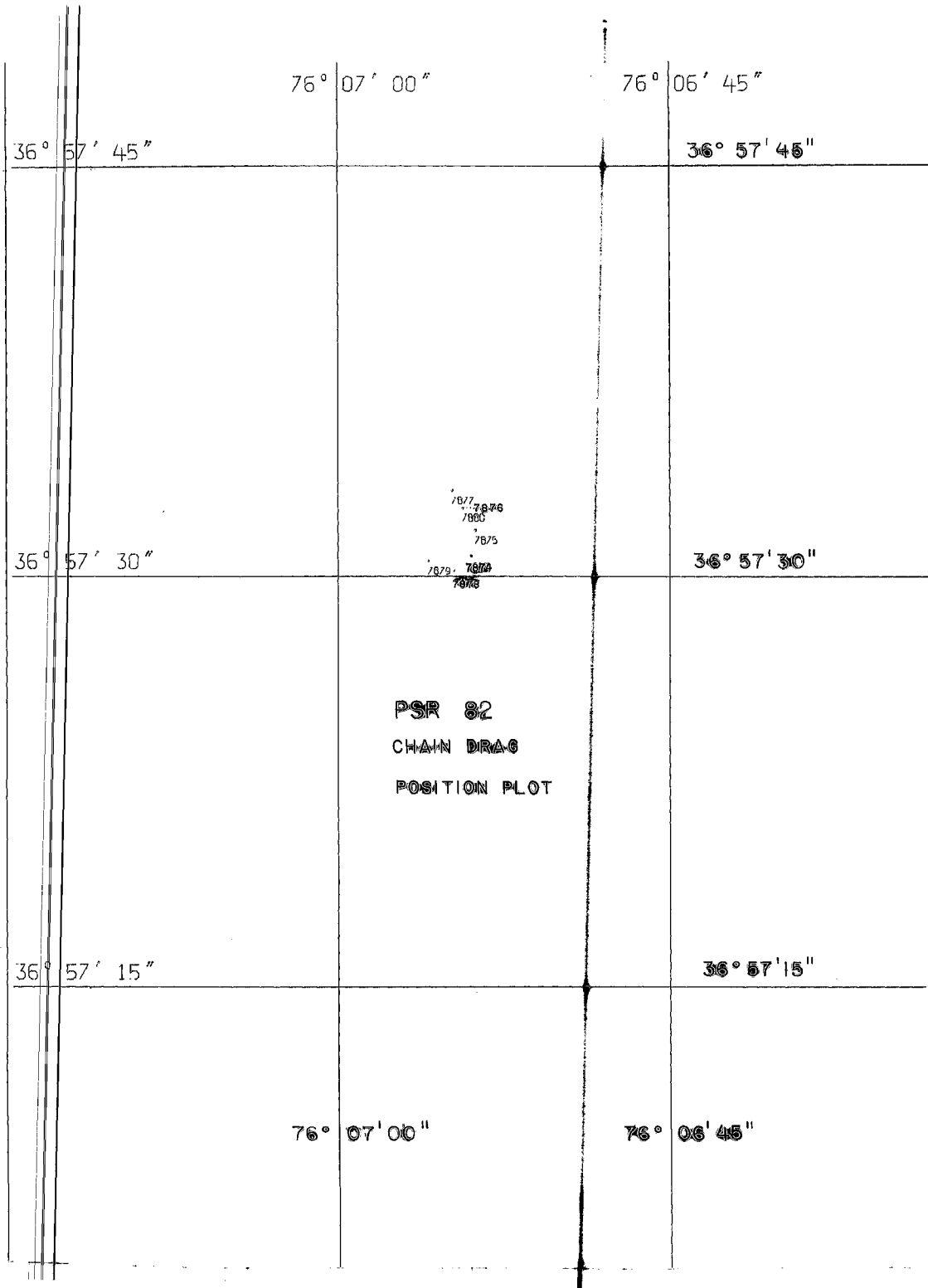
PSR 82
CHAIN DRAG
SOUNDING PLOT

36° 57' 15"

36° 57' 15"

76° 07' 00"

76° 06' 45"



RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9814

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
12205A	5-10-85	Russell P. Kennedy	Full Part Before After Verification Review Inspection Signed Via Drawing No. 19A Forward
12201 Prototype	10-1-85	E. J. Graham	Full Part Before After Verification Review Inspection Signed Via Drawing No. 55
12254	3/10/86	Russell P. Kennedy	Full Part Before After Verification Review Inspection Signed Via Drawing No. 55
12220	3-24-86	J. C. Purson	Full Part Before After Verification Review Inspection Signed Via Drawing No. 52 Applied through 12254
12222	6-17-86	Russell P. Kennedy	Full Part Before After Verification Review Inspection Signed Via Drawing No. 31
12221	9-19-86	Russell P. Kennedy	Full Part Before After Verification Review Inspection Signed Via Drawing No. 83
12207	2-7-90	Don Ackman	Full Part Before After Verification Review Inspection Signed Via Drawing No. 25
			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.

APPENDIX N

APPROVAL SHEET

U47:WMP:js
5820

Subj: Change to Code of Federal Regulation; request for

3. The needs of NAVSWC are the only ones addressed by this letter. Army personnel at Fort Story also use the large restricted area and have indicated a continuing need to having the entire area remain restricted for their use.

Wm Pettitt Jr
W. M. PETTITT, JR.

Copy to:
Director, NOAA Atlantic Marine Center
Commander, 5th Coast Guard District
Director of Defense Map Agency
Commanding Officer, Fort Story

Subj: Change to Code of Federal Regulation; request for

longitude 76 16'11", thence to latitude 36 59'18",
longitude 76 17'52", thence to latitude 37 00'05",
longitude 76 18'18", and thence north along the sea
wall to the point of beginning.

(b) The regulations. (1) Anchoring, Trawling,
fishing, and dragging are prohibited in the danger
zone, and no object either attached to a vessel or
otherwise, shall be placed on or near the bottom.

(2) This section shall be enforced by the Commander
in Chief, U. S. Atlantic Fleet and such agencies as
he may designate.

b. All of the large restricted area at the entrance to the Chesapeake Bay is not necessary to protect the present cablefield used by NAVSWC. Discussions with the Captains of several ships indicate that a smaller restricted area would be more effective and more easily enforced. Therefore, it is requested that a paragraph covering an area restricted for the protection of the NAVSWC range and cablefield be inserted as follows:

207.158a Chesapeake Bay entrance restricted area.
Commander in Chief, U. S. Atlantic Fleet and U. S.
Naval Surface Weapons Center.

(a) The area. Beginning at latitude 36 55'04",
longitude 75 59'37", thence to latitude 36 55'31";
longitude 75 57'27" (CBJ Buoy); thence to 36 56'13",
longitude 75 58'24" (R "2" Buoy); thence to
latitude 36 57'18", longitude 76 00'00"; and
thence northwest along the shoreline to the point
of beginning.

(b) The regulations. (1) Anchoring, trawling,
fishing, and dragging are prohibited in the danger
zone, and no object, either attached to a vessel
or otherwise, shall be placed on or near the bottom.

(2) This section shall be enforced by the
Commander in Chief, U. S. Atlantic Fleet and such
agencies as he may designate.

NAVAL SURFACE WEAPONS CENTER
FORT MONROE FACILITY
P. O. Drawer 127
Fort Monroe, Virginia 23651

U47:WMP:js
5820
5 Dec 80

From: Facility Manager
To: Commander in Chief, U. S. Atlantic Fleet, Attn: MAJ Baybrook,
Bldg NH95

Subj: Change to Code of Federal Regulation; request for

1. The Fort Monroe Facility of the Naval Surface Weapons Center maintains two cablefields in restricted areas, one at the entrance to the Chesapeake Bay and the other in the Thimble Shoal Channel. Experimental ordnance is planted in the ships channel and connected to instrumentation on shore to evaluate response to ship targets. Periodically a vessel drags its anchor through these cablefields and damages the ranges established there. Even when a vessel is observed anchored or dragging in the restricted area, getting the Coast Guard to respond is difficult, as our right to be in these restricted areas are not readily apparent. Once I explain that the Naval Surface Weapons Center was formed in Sep 74 when the Naval Ordnance Laboratory and the Naval Weapons Laboratory combined I usually get action on vessels in the restricted area off Fort Monroe. To get action on the area off Cape Henry takes a different tactic and most of the time the response is to late.

2. I met with Major Baybrook of CINCLANTFLT and LCDR Yeager of NOAA and discussed my problems with enforcement. Our conclusion was to formally request the changes as noted below.

a. The Restricted Area in the Thimble Shoal Channel is covered in Title 33, Code of Federal Regulations paragraph 204.50 and is satisfactory except that the enforcing agencies should be changed as follows:

204.50 Chesapeake Bay off Fort Monroe, VA restricted area. Commander in Chief, U. S. Atlantic Fleet and U. S. Naval Surface Weapons Center

(a) The danger zone. Beginning at latitude 37 00'30", longitude 76 18'05", thence to latitude 37 00'38", longitude 76 17'42", thence to latitude 37 01'00", longitude 76 17'15", thence to latitude 37 01'00", longitude 76 16'11", thence to latitude 36 59'43",

8 DE 80
8 DEC REC'D

APPENDIX M

Highway Bridge Markers

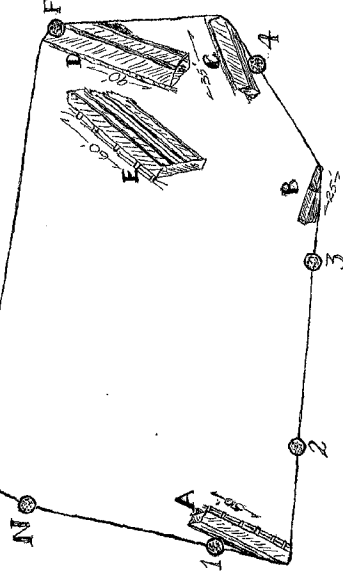
Chesapeake Bay Bridge Tunnel

CHAIN DRAG

Length — 550 FT.

Uprights — 30 FT.

PSR 82



BUOY	LATITUDE - N	LONGITUDE - W	DEBRIS	L. D.
N	36°-57'-34" ^{34.63"}	76°-06'-54"	A	25'
1	36°-57'-30"	76°-06'-53"	B	26'
2	36°-57'-34" ^{34.81"}	76°-06'-52" ^{52.4"}	C	29'
3	36°-57'-32" ^{29.87"}	76°-06'-52" ^{51.41"}	D	25'
4	36°-57'-33" ^{32.57"}	76°-06'-53" ^{52.51"}	E	16'
F	36°-57'-53" ^{33.24"}	76°-06'-53"	F	44'
Location	36°-57'-32.57"	76°-06'-52.51"		14'

DIVE REPORT (Cont'd)

VI. RECOMMENDATIONS

- A. The existence of debris outside the hang area was not disproven, however, the upright settings and actual hang depths recorded satisfactorily indicate that no additional pieces of debris have a least depth of less than 30 feet (corrected for tides at 1030, ZD + 4 on 9 October 1980).
- B. The following points square-off the area encompassed by the drag. (Lat: $36^{\circ}57'30''$ N to $36^{\circ}57'33''$ and Long: $76^{\circ}06'52''$ W to $76^{\circ}06'54''$ W). For practical charting purposes, this western line should coincide with the actual bridge position.
- C. It is recommended that the above defined area be charted with an assigned least depth of 16 feet (corrected for tides at 1215, ZD + 4 on 9 October 1980).
- D. This area is approximately 300 ft. by 150 ft, the longest axis being in the N-S direction. If the original area as determined by the Corps of Engineers is retained, i.e. 788 X 220 feet, least depth as given in "C" above be assigned in preference to the 19 feet determined by the Corps of Engineers.

DIVE REPORT (Cont'd)

III. SURVEY PROCEDURE

- E. Divers proceeded by N-buoy upright and followed the drag around surfacing at the F-buoy. Each piece of debris was measured, depths taken and its position relative to the nearest upright noted.

IV. DIVE DATA

	<u>Dive 1</u>	<u>Dive 2</u>
Divers	T. Ruzsala/L. Simoneaux	T. Ruzsala/L. Simoneaux
Time	1051-1140 = 49 Min.	1159-1233 = 34 Min.
Depth	40 ft. max.	40 ft. max.
Current	Flood @ 0.2 kts.	Slack
Visibility	10 feet	10 feet

V. RESULTS

- A. As observed the drag ranged from 1 to 10 feet above the bottom, relative to the natural bottom and scoured sections adjacent to debris, respectively.
- B. The depth of the uprights were equal to or 1 foot deeper relative to the settings. The depth of hang along a section of bottom chain 20 or more feet from an upright was 2 to 3 feet greater than the upright settings, i.e. 32 to 33 feet.
- C. As illustrated in the attached diagram, 5 sections of bridge were located, ranging in length from 35 to 90 feet. Orientation of the sections as well as dimensions and depths are provided in the diagram.
- D. The least depth recorded throughout this survey was 16 feet (lead line) at 1215, ZD + 4, all other least depths were greater than 16 feet.
- E. Argo positions were obtained at buoys N, 1, 2, 3, 4, and F.

DIVE REPORT

Dive Report: OPR-D103-PE-80/DV6

Dive Date: 9 October 1980

I. AREA OF INVESTIGATION

- A. Location - East side of the Chesapeake Bay Bridge - Tunnel between highway bridge markers 205 and 209 on Trestle A.
- B. Position - from Lat. $36^{\circ}57'30''$ N to $36^{\circ}57'33''$ N
from Lat. $76^{\circ}06'52''$ W to $76^{\circ}06'54''$ W
- C. Sheet - 10-1-80

II. PURPOSE

Investigation of PSR item 82, given as submerged debris scattered over the bottom throughout a 220 X 788 foot area as determined by a Corps of Engineers survey. The debris consists of bridge sections resulting from a collision of the USS Yancey with Trestle A.

Approved
11/18/80
R.S.M.

III. SURVEY PROCEDURE

- A. This area was subject to hydrographic development prior to diver investigation.
- B. The above indicated any significant debris to be located between highway markers 205 and 209. The depth of water varied from 32 to 36 feet. An initial chain drag was set at 32 feet, however, groundings necessitating setting the uprights at 30 feet. The length of the drag was 550 feet (5 sections at 110 ft. each). Due to currents and the proximity of the bridge to the survey area (approximately 50 ft.) the only feasible approach was from the east, dragging in a westerly direction.
- C. The drag was deployed parallel to and about a quarter of a mile east of the bridge. Using the bridge pilings as a range, the guide vessel proceeded westerly, in line with highway marker 204A. The end vessel used the pilings at 209A as their range.
- D. Upon hanging, the toelines of the drag were brought to a common point between markers 205 and 206 and directly under the bridge. The drag was then kept under constant tension.

DIVERS REPORT (Cont'd)

V. RESULTS

- A. An area of 17, 671 sq. feet was searched with no indication of the wreck or any random wreckage. The entire area consisted of a bare sand bottom.
- B. Bottom depth varied about 2 feet. Depth around the deployed buoy weight was shallowest at 13 feet. Depth gradually increased as one proceeded away from the marker, i.e, towards the circumference.

VI. RECOMMENDATIONS

Based on diver investigations relative to the given positional accuracy of the wreck, the following recommendations are given in decreasing priority.

- A. Symbol be removed from chart. *Do not concur. Extent of search inadequate.*
- B. Symbol be changed to a *dangerous sunken* ~~submerged~~ wreck, Position Doubtful. *concur*

RDS

*AWOS
11/21/64
msm*

DIVE REPORT

Dive Report: OPR-D103-PE-80/DV4

Dive Date: 5 October 1980

I. AREA OF INVESTIGATION

- A. Location - approximately 1300 yards on an bearing of 028^oT from Lynnhaven Bridge.
- B. Position - Lat. 36^o55'00" N
Long. 76^o05'10" W
- C. Sheet - 10-1-80

II. PURPOSE

To investigate the existence of PSR item 89, given as a visible wreck, a 32 foot cabin cruiser, partially submerged with bow out of water reported in 1974.

III. SURVEY PROCEDURE

- A. Area was located using Argo. Suspect fathometer trace was also observed at location.
- B. A buoyed weight was deployed atop the fathometer trace at the position referenced.
- C. Divers proceeded down buoyed line and conducted sweeps of 35, 45, 55 and 70 foot radius circles.

IV. DIVE DATA

Team 1

Divers	T. Ruzala/L. Simoneaux
Time	0925 to 0956 = 31 Min.
Depth	15 ft. max.
Current	Slack
Visibility	4 feet

DIVE REPORT (Cont'd)

V. RESULTS

- A. A definite description of the item is not possible due to limited visibility, turbulent currents and entangling nature of the item. In general, it consisted of wooden and steel debris lying in an E-W direction for approximately 85 feet, without an organized or discernible shape. Material consisted of beams up to 8 inches wide and 10 feet in length and sections of pipe, 4 to 5 feet long and about 2 inches in diameter. There were sundry sections of line and fishing nets fouled in debris.
- B. A least depth of 20 feet was recorded atop the highest point of the debris at 1000 (ZD + 4). Deepest depths were 37 feet, located along the bottom side at the last end due to scouring.

*Always
11/19/74
msm*

VI. RECOMMENDATIONS

- A. Item should be charted as an obstruction in position $36^{\circ}56'04.08''$ N and $76^{\circ}00'46.43''$ W with a least depth of 20 feet (corrected for tides) assigned to it.
- B. A charted wreck symbol is inappropriate as there is no conclusive evidence.

DIVE REPORT

Dive Report: OPR-D103-PE-80/DV3

Dive Date: 6 September 1980

I. AREA OF INVESTIGATION

- A. Location - Approximately 0.3 nm north of the Fort Story police headquarters.
- B. Position - Lat. 36°56'04.08" N
Long. 76°00'46.43" W
- C. Sheet - 10-1-80

II. PURPOSE

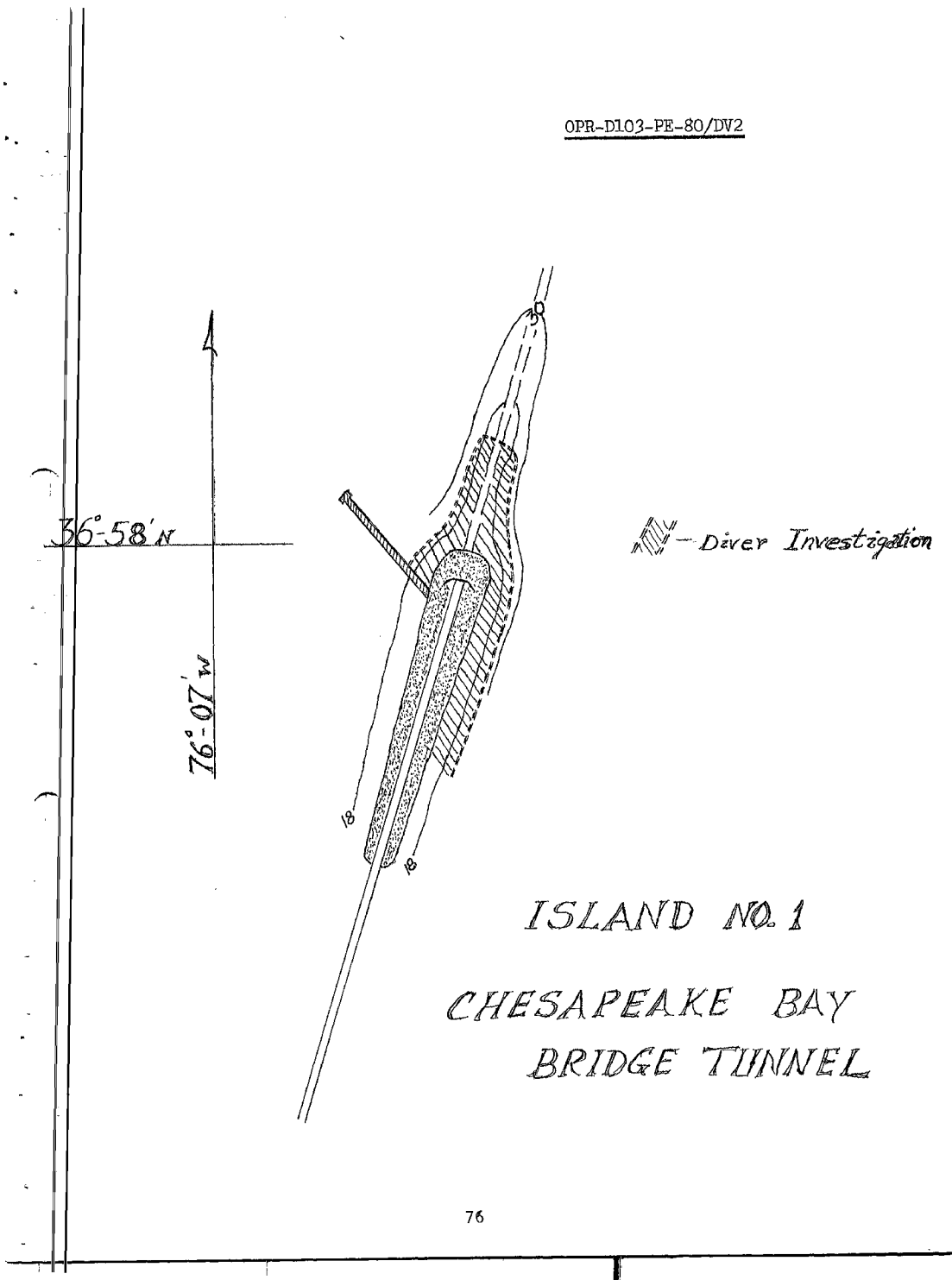
Irregular soundings were obtained while running mainscheme hydro lines into the beach. Subsequent development indicated the presence of an obstruction. This is not a PSR item nor is its position in proximity to another charted item.

III. SURVEY PROCEDURE

- A. Item was relocated using previously acquired Argo rates. In addition, the position was cross-checked by sextant fixes to known calibration points.
- B. The launch was maneuvered atop the item, as determined by Argo rates and fathometer traces. A buoyed weight was deployed on the item.
- C. Divers descended to the item and commenced both reconnaissance as to nature and acquisition of depths.

IV. DIVE DATA

	<u>Team 1</u>	<u>Team 2</u>
Divers	T. Ruzala/C. Volkert	L. Simoneaux/J. Rodstein
Time	0923-1012 = 49 Min.	1039-1100 = 21 Min.
Depth	37 ft. max.	37 ft. max
Current	Ebb @ 0.2 kts.	Ebb @ 0.7 kts.
Visibility	2 ft.	1 ft.



one, providing overlap in the ascent/descent area and progressed in a southerly direction along a similar junction on the east side of the island for a distance of approximately 450 yards (75% of island length). Search axis was 20 to 22 feet and extended upward to a depth of 5 feet and outward for 10 feet.

IV. DIVE DATA

Team 1: Divers.....LCDR Ruszala & LTJG Rodstein

Time.....1420 to 1451 = 31 minutes

Depth.....28 to 30 feet

Current.....0.1 to 1.0 knots Ebb

Visibility.....6 to 8 feet

Team 2: Divers.....LTJG Simoneaux & AB Volkert

Time.....1509 to 1532 = 23 minutes

Depth.....20 to 22 feet

Current.....0.5 knots

Visibility.....6 to 8 feet

V. RESULTS

No wreck, debris or indication of same found in the search area.

VI. RECOMMENDATIONS

It is recommended that the item, charted as a visible wreck be removed ~~concur~~ from the chart. There is no wreck or wreckage on or around the island.

There is no wreck or wreckage on the rip-rap from the surface to the bottom or along the natural bottom for a distance of approximately 15 to 20 feet.

Wire drag within the area encompassed by the pier and northerly extension of rip-rap is not practical because of the confined area, presence of large boulders adjacent to rip-rap, currents, and inability to test the drag.

The wreck may have been taken by the currents away from the rip-rap. The extent of the search is not considered sufficient to disprove its possible existence as a sunken wreck. See hydrographer's report for recommendations.

RDS

DIVE REPORT: OPR-D103-PE-80/DV2

DATE: 31 JULY 1980

PSR #81

I. AREA OF INVESTIGATION

- A. The area surveyed was Island No. 1 of the Chesapeake Bay Bridge Tunnel. Specifically, the location encompassed a zone clockwise from the fishing pier, around the rip-rap and about 320 yards southward along the eastern side of the island.
- B. LAT. 36°- 58'- 00" N, LONG. 76°- 06'- 48" W is charted position of wreck being searched for.
- C. Survey Sheet 10-1-80

II. PURPOSE

To determine the existence and location of a visible wreck charted on the NW side of the island. The wreck is that of a 30 foot sailboat which went aground and broke up on the rip-rap and given as PSR Item #81.

III. PROCEDURE

The investigation was conducted by two teams of ^{divers} ~~divers~~. The first team descended at the junction of the fishing pier and the rip-rap. This team then progressed in a northerly direction to a point approximately 150 yards beyond the cement bulkhead of the island. The main axis of the survey was along the junction of the rip-rap and the natural bottom (average depth of 30 feet). The divers used a rope drag between them which created an effective survey width from this axis up and along the rip-rap to a depth of about 5 feet below the surface and parallel to the rip-rap line outward for 15 feet.

The second team entered at about the same location as the exit point of team

APPENDIX L

DIVER INVESTIGATION REPORT

NOV. 19, 1980

TO: LT. EVELYN FIELDS
LT. WARREN DEWHURST
SHIP PETRCE

FROM: Billy H. Barnes *Billy H. Barnes*
Chief, Photogrammetric Branch

SUBJ: Information on landmarks and aids near Lynnhaven Inlet

Stereo-models were set and the objects you questioned on the enclosed chart 12222 were positioned and their elevations determined. You should make a comparison between the published positions for certain of the objects dropped and our position to ascertain relative accuracy.

There were 13 objects positioned by holding the stereo-bridge. Their descriptions, positions and elevations follow:

#	DESC.	HGT. ABOVE MHW	LAT.	LONG.
1.	LOOKOUT TOWER	125 ft.	36° 55' 49.45"	76° 01' 53.26"
2.	TANK	170 ft.	36° 55' 32.31"	76° 01' 00.28"
*3.	LT HO	170 ft.	36° 55' 34.31"	76° 00' 27.24"
4.	TANK	150 ft.	36° 52' 26.11"	75° 59' 13.25"
5.	LOOKOUT TOWER	100 ft.	36° 53' 35.78"	75° 59' 18.20"
*6.	LYNNHAVEN ROADS FISHING PIER LIGHT		36° 54' 58.93"	76° 04' 43.13"
7.	TANK	150 ft.	36° 53' 55.42"	76° 03' 47.23" (NEW)
8.	BUILDING	160 ft.	36° 54' 47.06"	76° 04' 16.05" (NEW)
9.	BUILDING	190 ft.	36° 54' 30.69"	76° 05' 13.80"
10.	BUILDING	180 ft.	36° 54' 29.23"	76° 05' 17.46"
11.	BUILDING	140 ft.	36° 54' 29.76"	76° 05' 50.85"
12.	TANK	160 ft.	36° 54' 17.00"	76° 07' 14.04"
*13.	LIGHT 2		36° 54' 59.02"	76° 05' 23.74" (Check position)

*3. The position of the Cape Henry Light House 1887 checks by:
Latitude $-.03''$ or approximately +2.9 ft.
Longitude $+.02''$ or approximately -1.6 ft.

*6. and 13. The positions shown on these objects check the published positions in the 1980 light ^{log} by the nearest tenth of a minute.

The above data was derived from 1:40,000 scale photography taken on 8 Dec. 1979. The photos were 79BP 2717 through 2721.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 U.S. DEPARTMENT OF COMMERCE

REPORTING UNIT
 (If field Party, Ship or Office)
 NOAA Ship PEIRCE S-328
 STATE
 Virginia

LOCALITY
 Chesapeake Bay Entrance
 DATE
 11/28/80

CHARTING PROJECT NO.
 D-103

REPORTING UNIT (continued)
 NOAA Ship PEIRCE S-328
 STATE
 Virginia

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED
 The following objects HAVE BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.
 ALL SURVEYS FOR OPR-DH03-80

CHARTING NAME
 Description
 (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)

CHARTING NAME	DESCRIPTION	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION (See instructions on reverse side)	CHARTS AFFECTED
		D.M. Meters	° / ' "	D.M. Meters	° / ' "		
Lookout Tower	125 foot Lookout Tower (Verified)	36°55'	49.45" 76°01'	58.26"	79BP217-2721 8 Dec. 1979	12222 12254	
Tank	170 foot Tank (Verified)	36°55'	32.31" 76°01'	00.28"	"	"	
Light-house	170 foot Lighthouse (Verified) Cape Henry Lighthouse 1887	36°55'	34.31" 76°00'	27.24"	"	"	
F 24 foot Priv. Main'd.	Lynnhaven Roads Fishing Pier Light (Verified)	36°54'	58.93" 76°04'	43.13"	"	"	
None	150 foot Tank (New Landmark)	36°53'	55.42" 76°03'	47.23"	"	"	
None	160 foot Building (New Landmark)	36°54'	47.06" 76°04'	16.05"	"	"	
BEDE CONDO	190 foot Building (Verified)	36°54'	30.69" 76°05'	13.80"	"	"	
BEDE CONDO	180 foot Building (Verified)	36°54'	29.23" 76°05'	17.46"	"	"	
BEDE CONDO	140 foot Building (Verified)	36°54'	29.76" 76°05'	50.85"	"	"	
Tank	160 foot Tank (Verified) (Virginia Beach Standpipe)	36°54'	17.00" 76°07'	14.04"	"	"	

ORIGINATING ACTIVITY
 HYDROGRAPHIC PARTY
 GEODETIC PARTY
 PHOTO FIELD PARTY
 COMPILATION ACTIVITY
 FINAL REVIEWER
 QUALITY CONTROL & REVIEW GRP.
 COAST PILOT BRANCH
 (See reverse for responsible personnel)

See L-1016 (84)

APPENDIX I

LANDMARKS FOR CHARTS

ABSTRACT OF POSITIONS

VesNo. 2835

DAY	POSITIONS	CTRL	S1	M	S2	R E M A R K S
277	9000-9031	03	10	0	0	Mainscheme Sheet #1
278	9032-9095	03	10	0	0	Mainscheme Sheet #1
278	9096-9105	03	10	0	0	DP's Sheet #1
279	9106-9118	03	10	0	0	DP's Sheet #1

Positions 9113 and 9114 - rejected

ABSTRACT OF POSITIONS

VesNo: 2839

DAY	POSITIONS	CTRL	S1	M	S2	R E M A R K S
239	7197-7318	4	025	0	001	Mainscheme Sheet #2
252	7319-7326	4	025	0	001	Mainscheme Sheet #3
252	7327-7350	4	025	0	001	Dev. "G" Sheet #3
252	7351-7390	4	025	0	001	Mainscheme Sheet #3
252	7395-7435	4	025	0	001	Crosslines Sheet #3
252	7436-7447	4	025	0	001	Mainscheme Sheet #3
252	7448-7470	4	025	0	001	Dev. "H" Sheet #3
252	7471-7627	4	025	0	001	Mainscheme Sheet #2
253	7628-7667	4	025	0	001	Mainscheme Sheet #3
253	7668-7697	4	025	0	001	Mainscheme Sheet #3
253	7698	4	025	0	001	DP Sheet #3
253	7699-7701	4	025	0	001	Mainscheme Sheet #2
255	7702-7712	4	025	0	001	Bottom Samples Sheet #3
265	7713-7734	4	025	0	001	Lynnhaven Channel Lines Sheet #1
265	7735-7740	4	025	0	001	DP Sheet #1
276	7741-7812	4	025	0	001	Dev. PSR #82 Sheet #1
277	7813-7835	4	025	0	001	Dev. PSR #86 Sheet #1
277	7836-7855	4	025	0	001	Dev. PSR #89 Sheet #2
282	-	4	025	0	001	Wire Drag PSR #82
283	--	4	025	0	001	Wire Drag PSR #82

Reject Positions: 7290-7291, 7391-7394, 7501-7503, 7625-7627, 7719-7723,
~~7735-7737, 7741-7812, 7780-7782~~, 7844, 7852.

Position 7881 inserted

ABSTRACT OF POSITIONS

VesNo. 2839

DAY	POSITIONS	CTRL	S1	M	S2	R E M A R K S
221	6129-6484	4	025	0	001	Mainscheme Sheet #2
234	6485-6540	4	025	0	001	Crosslines Sheet #1
234	6541-6568	4	025	0	001	Dev. "A" Sheet #1
234	6569-6575	4	025	0	001	Mainscheme Sheet #2
234	6576-6584	4	025	0	001	Dev. "D" Sheet #1
234	6585-6596	4	025	0	001	Dev. "C" Sheet #1
234	6597-6598	4	025	0	001	Mainscheme Sheet #1
234	6599-6610	4	025	0	001	Dev. "B" Sheet #1
234	6611-6787	4	025	0	001	Crosslines Sheet #2
235	6788-6794	4	025	0	001	Bottom Samples Sheet #1
236	6795-6827	4	025	0	001	Bottom Samples Sheet #1
237	6828-6929	4	025	0	001	Mainscheme Sheet #1 (Shorelines)
237	6930-7065	4	025	0	001	Mainscheme Sheet #2
238	7066-7166	4	025	0	001	Mainscheme Sheet #2
238	7167-7180	4	025	0	001	Dev. "F" Sheet #2
238	7181-7192	4	025	0	001	Dev. "E" Sheet #2
238	7193-7197	4	025	0	001	Bottom Samples Sheet #2

Rejected Positions: 6353-6354, ⁶³⁸⁵ ~~6385-6388~~, 6453-6454, 6756-6757, ~~6795~~
 6809, 6815, ~~7193~~, 7194, 7159-7160.
 Duplicate Position: ~~7197~~

ABSTRACT OF POSITION

VesNo. 2839

J.D.	POSITIONS	CTRL	S1	M	S2	REMARKS
206	1124-1180	4	025	0	001	Mainscheme Sheet #2
207	1181-1263	4	025	0	001	Mainscheme Sheet #2
211	15001-15163	4	025	0	001	Mainscheme Sheet #1
213	15164-15458	4	025	0	001	Mainscheme Sheet #1
218	5159-5422	4	025	0	001	Mainscheme Sheet #1
218	5423-5479	4	025	0	001	Channel Lines (Thimble Shoal Sheet #1)
220	5800-6128	4	025	0	001	Mainscheme Sheet #2

Omitted Positions: 5317-5318

~~Duplicate Positions: 5001-5047, 5159-5458~~ Added 10,000 to position numbers

Rejected Positions: ~~1175-1180, 1262-11, 1263, 1233, 1234, 5062-14-5064,~~
~~15024-15025, 5217-11-5218, 5244-5251, 5162-11-5165, 5200-11-5212, 5360-~~
~~5376, 5869-5870, 5884 +1-5885, 5998, 6022-6023, 6070-6074, 6110-6111.~~
~~15317-15318, 5191-5194~~

ABSTRACT OF POSITIONS

VesNo. 2837

Control Code: 04 - R/R

J.D.	POSITIONS	CTRL	S1	M	S2	REMARKS
224	4238	4	25	-	1	Detached Position
224	4239-4265	4	25	-	1	Mainscheme

ABSTRACT OF POSITIONS

VesNo. 2837

Control Codes: 04 - R/R

J.D.	POSITIONS	CTRL	S1	M	S2	R E M A R K S
217	2600-2654	4	25	-	1	Mainscheme Sheet #3
218	2655-2856	4	25	-	1	Mainscheme Sheet #3
220	2857	4	25	-	1	Detached Positions #3
220	2858-2871	4	25	-	1	Mainscheme Sheet #3
220	2872-2904	4	25	-	1	Crosslines Sheet #3
220	2905-3181	4	25	-	1	M/S and Splits Sheet #3
221	3182-3459	4	25	-	1	M/S and Splits Sheet #3
222	3460-3566	4	25	-	1	M/S & Channel Lines Sheet #3
222	3567-3574	4	25	-	1	DP's (Reject 3567-68)
222	3575-3611	4	25	-	1	Channel Lines Sheet #2
223	3612-3581	4	25	-	1	M/S, Splits & Channel Lines, Sheet #2
223	3582	4	25	-	1	Detached Position #2
223	3583-3895	4	25	-	1	M/S & Splits Sheet #2
223	3896-3897	4	25	-	1	Detached Positions
223	3898-4009	4	25	-	1	M/S & Splits Sheet #2
224	4010-4200	4	25	-	1	M/S & Splits Sheet #2
224	4201-4221	4	25	-	1	Detached Positions
224	4222-4229	4	25	-	1	Mainscheme on Sheet #1
224	4230	4	25	-	1	Detached Position
224	4231-4237	4	25	-	1	Mainscheme

Rejected Positions: 2608, 2611-2614, 2672, 3223-3226, ³²⁵⁹~~3258~~-3260, 3452-3459, 3567-3568, 3760-3761, 3875, 3987, 3988, 4089-4090, 4136-4137.

ABSTRACT OF POSITIONS

VesNo. 2837

Control Codes: 04 - R/R
03 - R/A

DAY	POSITIONS	CTRL	S1	M	S2	R E M A R K S
185	1-117	4	1	-	19	Mainscheme Sheet #1
189	118-455	4	1	-	19	Mainscheme Sheet #1
190	456-732	4	1	-	19	Mainscheme Sheet #1
191	5000-5047	4	19		25	Mainscheme Sheet #3
194	733-920	4	1	-	19	Mainscheme Sheet #1
195	921-986	4	1	-	19	Crosslines Sheet #1
198	987-1069	4	25	-	1	Crosslines Sheet #2
199	1070	4	25	-	1	D.P. Sheet #2
199	1071-1123	4	25	-	1	Mainscheme Sheet #2
208	1264-1362	4	25	-	1	Mainscheme Sheet #2
209	1363-1617	4	25	-	1	Mainscheme Sheet #2
210	1618-1924	4	25	-	1	Mainscheme Sheet #2
210	1925	4	25	-	1	Detached Position
210	1926-1949	4	25	-	1	Mainscheme Sheet #2
210	1950-1958	4	25	-	1	Detached Positions
211	1961-2181	4	25	-	1	Mainscheme Sheet #2
211	2182	4	25	-	1	Detached Position
211	2183-2360	4	25	-	1	M/S and Splits Sheet #2
213	2361-2594	4	25	-	1	Mainscheme Sheet #3

Rejected Positions: 24-40, 5000-~~5047~~⁵⁰¹⁵, 733-774, 930, 931, 1096, 1097, 1951-1956.

Duplicate Positions: ~~5000-5047~~

Omitted Positions: 1784, 1959-1960

APPENDIX G

ABSTRACT OF POSITIONS

SIGNAL TAPE LISTING (CON'T)

023	3	37	08	03976	075	57	04192	250	0000	000000
024	3	37	08	02246	075	57	04291	250	0000	000000
025	3	37	01	26366	076	17	49680	250	0000	167750
026	7	37	05	36243	075	58	17556	250	0000	164670
027	3	36	55	49585	076	01	01393	250	0000	164670
028	3	37	01	26366	076	17	49680	250	0000	164670
030	3	36	54	58616	076	05	20174	139	0000	000000
031	3	36	54	44525	076	05	24680	139	0000	000000