8601

Diag. Cht. No. 1107 and 1209-3.

Form 504

U. S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. EX 40-3-61 *Office No.* H-8601

LOCALITY

State Massachusetts

General locality East Coast of Massachusetts

Locality Nantucket Shoals

19 61

CHIEF OF PARTY

CAPT E. L. Jones

LIBRARY & ARCHIVES

DATE FEB281962

USCOMM-DC 5087

Form 537
(Ed. June 1946)

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

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

REGISTER No. H-8601

Field No. EX 40-3-61

State Massachusetts

General locality East Coast of Massachusetts

Locality Nantucket Shoals

Scale 1:40,000 Date of survey 29 Aug. - 30 Sept. 1961

Instructions dated 27 November 1959

Vessel EXPLORER

Chief of party CAPT E. L. Jones

Surveyed by Ship's Officers

Soundings taken by fathometer, graphic recorder, hand lead, wire DE-723, 808

Fathograms scaled by Ship's Personnel

Fathograms checked by Ship's Personnel

Protracted by Ship's Officers

Soundings penciled by R. Lynn, O.C. Swindell, D.R. Munford

Soundings in ~~fathoms~~ feet at MLW ~~XXXXXX~~

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 16—66520-1

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SURVEY

Field No. EX 40-3-61

H-8601

SCALE 1: 40,000

USC&GSS EXPLORER

EDMUND L. JONES, CAPT, C&GS, Comdg.

1961 SEASON

A. Project

Hydrography was done in accordance with Revised Instructions for Project CS-401, Nantucket Shoals (1960), dated 27 November 1959; Supplemental Instructions - Project OPR-401, Nantucket Shoals, dated 15 December 1960; Supplemental Instructions, dated 17 March 1961; Amended Instructions, dated 1 August 1961.

B. Area Surveyed

This survey covers the western edge of Nantucket Shoals between latitudes 40°-42'N and 41°-10'N and between longitude 69°-58'W and a line drawn from lat. 41°-10'N, long. 70°-15' W to lat. 40°-42'N, Long. 70°-02'W.

Field work was done between August 29 and September 30, 1961. Junction was made with prior survey GI-2157 (1:20,000), and with contemporary surveys EX 20-1-61, EX 20-2-61, EX 20-2-61A, and EX 40-2-61.

C. Sounding Vessel

All hydrography was done by the Ship EXPLORER.

D. Sounding Equipment

A Raytheon DE 723, serial number 61-29, fathometer was used to obtain all soundings with the exception of brief time intervals when it was necessary to change paper during a sounding line. These intervals were covered by use of a Model 808 fathometer, serial number 57-20.

- A & B days were at 60 CPS and several other days were at variable frequency

The DE 723 was calibrated at a speed of 800 fps (60.0 cps) except for "A" and "B" days when the variable frequency power supply was functioning properly. On these two days the frequency was maintained at a setting corresponding to the actual speed of sound in water. The calibrated speed of the Model 808 was 820 fps.

wrong

The initial was set at 2.0 fms when sounding in fathoms, and a draft correction applied. On "A" and "B" days, when sounding in feet, the initial was set at 10.9; no draft correction was applied, but a constant 3.0 feet initial correction was applied.

The actual speed of sound in water was determined at weekly intervals with a model TR-2 Velocimeter. Bathythermographs were taken a 4 hour intervals while running hydrography.

For details on sounding equipment and determination of corrections to soundings, refer to Special Report, Corrections To Echo Soundings, USC&GSS EXPLORER, Project OPR-401.

Copies of Summary of Velocity Corrections, and Summary of Draft Corrections are attached.

E. Smooth Sheet

The smooth sheet was made by ruling machine in the Washington Office. The Raydist curves were also drawn by the Washington Office.

It was originally intended that this sheet be a concurrently plotted smooth sheet, but, due to the bubbler tide gage equipment being inoperative during the dates of the survey, soundings could not be penciled on the sheet at the time of plotting. Refer to Special Report on Concurrent Plotting in the Field.

The maximum probable error of positioning resulting from final computation of calibration data did not exceed 1.5 mm.

F. Control

For horizontal control, Raydist Model GA-38 No. 022 was used on the ship during favorable atmospheric conditions.

The 1961 Raydist shore stations were located by the Boston District Office as follows:

Station CHAT (Red)	Lat.	41°-40'-11.59" N
	Long.	69°-59'-53.78" W
Azimuth, CHAT-MART		53°-17'-10.0"
Station MART (Green)	Lat.	41°-22'-08.225" N
	Long.	70°-31'-54.232" N
Azimuth, MART-CHAT		232°-55'-57.0"
Base Line, MART-CHAT:		55,677.26 mtrs or 1,226.40 Lanes

The Raydist partial lane corrections for this survey were determined by visual fix calibration on Nantucket Island on 8-17-61:

Station	Partial Lane Corr.
CHAT	∱0.2
MART	∱0.3

3300.4 kc.
from field report

Three lane-count buoys were anchored in the survey area, and their position determined by Raydist ties from the Nantucket Island calibration area. Calibration of the ship's set for whole lane count was made at one of these buoys usually twice during every 24 hour period of sounding.

Calibration proceedures are discussed in detail in Special Report, Raydist Operations 1961, Project OPR-401, USC&GSS EXPLORER. A copy of Summary of Raydist Corrections, Sheet EX 40-3-61 is attached.

There were 341 positions replotted on the smooth sheet after the final calibration data changed the Raydist corrections originally applied:

13-78E	58-114G
113-129F	110-136H
275-283F	30-200K

G. Shoreline

There is no shoreline within the limits of this sheet.

H. Crosslines

Crosslines made up 8% of the hydrography. Crosslines on "A" and "B" days were in feet; all other crosslines were in fathoms.

Crosslines were in good agreement with the rest of the hydrography.

I. Junctions

Soundings were in good agreement at all junctions made with prior and contemporary surveys.

J. Comparison With Prior Surveys

There is good agreement between this survey and the following prior surveys of the area:

H-6439 (1:60,000 - 1939)
H-6446 (1:40,000 - 1939)
H-6447 (1:80,000 - 1939)
H-6558 (1:40,000 - 1940)

Least depths obtained in 1961 on the two most prominent shoals are:

28.8 ft
4.8 fms at lat. 40°-57.9' N long. 70°-00.4' W
4.2 fms at lat. 41°-02.2' N long. 70°-00.5' W
25.2 ft

K. Comparison With Chart

This survey is in good agreement with C&GS Chart Number 1107, revised edition 3-20-61.

A half hour investigation for the wreck of the ANNA C. PERRY was made on 9 September at latitude 40°-48.5' N, longitude 69°-59.0' W, the approximate position as shown on chart 1107. No indication of a wreck was recorded on the fathogram. This investigation, from position 178D through position 185D, was plotted on an overlay and the overlay attached to the corresponding page in the sounding volume. The shoalest sounding obtained, 77 feet, was transferred to the smooth sheet.

There are no newly found dangers to navigation.

L. Adequacy of Survey

This survey is complete and adequate for charting purposes.

M. Aids to Navigation

One floating aid to navigation was located:

Buoy	Lat.	Long.
Davis South Shoal Lighted Whistle Buoy R "4DS" Fl 4 sec WHIS	40°-42.75' N 40° 43.2 N	70°-00.1' W 70°-00.5' W

Vol I 1961 Atlantic Coast Light List

N. Statistics

Total number of positions	2539
Total nautical miles of sounding line	1661
Total area of hydrography in square nautical miles	225
Total number of bottom samples taken	30
Oceanographic Stations were Observed	2

Station #	No. of Observations	Latitude	Longitude
8	5	40°-53' N	70°-04' W
9	3	41°-10' N	70°-18' W

O. References to Reports

The following reports have been submitted separately:

Report	Date Forwarded
Special Report, Corrections to Echo Soundings, USC&GSS EXPLORER, Project OPR-401	6 November 1961 " " "
Special Report, Raydist Operations 1961, USC&GSS EXPLORER, Project OPR-401	19 October 1961
Special Report, Concurrent Smooth Plotting in the Field, USC&GSS EXPLORER, Project OPR-401	19 October 1961

February 16, 1962

Submitted by:

Robert E. Williams

Robert E. Williams, LCDR, C&GS

TIDE NOTE

TO ACCOMPANY HYDROGRAPHIC SURVEY

H-8601, EX 40-3-61

USC&GSS EXPLORER

Project OPR-401

In accordance with letter 2221-204-982ex from the Marine Data Division, Washington Office, tide reducers were based on the hourly heights at the standard tide gage in Boston, Massachusetts, using a time difference of -4.0 hours and a height ratio of 0.3.

LIST OF SIGNALS

TO ACCOMPANY HYDROGRAPHIC SURVEY

H-8601, EX 40-3-61

USC&GSS EXPLORER

Project OPR-401

There were two stations used in the Raydist controlled, off-shore survey as follows:

CHAT:	Red Station (R1)	Lat: 41-40-11.59N Long: 69-59-53.78W
MART:	Green Station (R2)	Lat: 41-22-08.225N Long: 70-31-54.232W

SUMMARY OF DRAFT CORRECTIONS

SHEET EX 40-3-61

PROJECT OPR-401

USC&GSS EXPLORER E. L. JONES, COMDG.

1961

DATE	DAY	CORRECTIONS
8/29	A	0.0
8/30	B	0.0
9/15	C	+0.3
9/16	D	+0.3
9/17	E	+0.3
9/18	F	+0.2
9/19	G	+0.2
9/24	H	+0.4
9/25	J	+0.4
9/27	K	+0.3
9/28	L	+0.3
9/29	M	+0.2
9/30	N	+0.2

SUMMARY OF RAYDIST CORRECTIONS

SHEET 40-3-61

PROJECT OPR-401

USC&GSS EXPLORER E. L. JONES, COMDG.

1961

DATE	DAY	POSITIONS	R_1	R_2
8/29	A	1-2	+0.2	-0.7
		3-18	+2.2	-0.7
		19-30	+2.2	-1.7
		31-51	+2.2	-3.7
8/30	B	1-114	+1.2	+1.3
9/15	C	1-161	+0.2	-7.7
9/16	D	1-345	+0.2	-7.7
9/17	E	1-271	+0.2	-7.7
9/18	F	1-268	+0.2	-7.7
		269-274	+0.2	-9.7
		275-283	+0.2	-8.7
		284-323	+0.2	-9.7
		324-325	+0.2	-10.7
9/19	G	1-57	+0.2	-10.7
		58-133	+0.2	-9.7
		134-161	+0.2	-7.7
9/24	H	1-109	+2.2	+3.3
		110-134	+2.2	+5.5
		135-136	+2.2	+7.7
9/25	J	1-3	+2.2	+7.7
9/27	K	1-341	-4.8	+10.3
9/28	L	1-8	-4.8	+10.3
		9-32	-6.8	+18.3
9/29	M	1-150	-6.8	+18.3
		151-	-6.8	+16.3
		152-334	-4.8	+8.3
9/30	N	1-54	-4.8	+8.3
		55-257	-4.8	+9.3
		258-290	-4.8	+8.3

SUMMARY OF VELOCITY CORRECTIONS

SHEET EX 40-3-61

PROJECT OPR-401

USC&GSS EXPLORER E. L. JONES, COMDG.

1961

DATE	DEPTH		CORRECTIONS 800 f/s		CORRECTIONS 820 f/s
AUGUST					
	2-7		0.0		-0.1
	7.1-12		+0.1		-0.2
	12.1-17	Table #1	+0.1	Table #2	-0.3
(Fathoms)	17.1-22		+0.2		-0.3
	22.1-27		+0.2		-0.4
	27.1-32		+0.3		-0.4
	32.1-40		+0.3		
	12-32		0.0		
	32.1-82		+0.5		
(Feet)	82.1-132	Table #3	+1.0		
	132.1-182		+1.5		
	182.1-200		+2.0		
	12-38				0.0
	38.1-62				-0.5
(Feet)	62.1-87			Table #4	-1.0
	87.1-112				-1.5
	112.1-~~132~~ 140				-2.0
SEPTEMBER					
	2-7		+0.1		0.0
	7.1-12		+0.3		0.0
	12.1-17	Table #5	+0.4	Table #6	0.0
(Fathoms)	17.1-22		+0.6		0.0
	22.1-27		+0.7		0.0

U.S. DEPARTMENT OF COMMERCE
Coast and Geodetic Survey
Washington 25, D.C.

October 1,1962

MEMORANDUM

To: All U.S.C.& G.S. Ships

From: Chief, Instrument Division

Subject: Setting of "Initial" on DE-723 Survey Fathometer

A direct signal path to the "D.C. Write" circuit in t
the DE-723 Survey Fathometer provides a reference mark which is independent of the gain and by-passes the receiving amplifier circuitry. We have found that in order to get a correct depth recording, the initial (draft) setting should be set one foot less than the active draft of the ship. For example, if the ship's draft is 12 feet, the "initial" of the D
DE-723 Fathometer should be set for 11 feet.

T. J. Hickley
Chief, Instrument Division

APPROVAL SHEET

TO ACCOMPANY HYDROGRAPHIC SURVEY

H-8601, EX 40-3-61

USC&GSS EXPLORER

Project OPR-401

The smooth sheet for this survey and the accompanying records have been examined and are approved. This work was done under close personal supervision with an examination of the ship boat sheet and records several times during each day. The field work is considered complete and adequate and no additional work is recommended.

Edmund L. Jones
CAPT, C&GS
Comdg., Ship EXPLORER

FORM 197
(3-16-55)

GEOGRAPHIC NAMES

Survey No. H-8601

Name on Survey	On Chart No. 1107 A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	BGN K	
Nantucket Shoals	✓								✓	1
										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27

George S. Boone
Geographic Names
April 11, 1962

Form 946

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8601

Records accompanying survey: Smooth sheets 1;

boat sheets 1; sounding vols. 14; wire drag vols. ;

Descriptive Reports 1; graphic recorder envelopes 9;

special reports, etc. 1 Cahier - Raydist Tapes

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

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

Verification by ..... Total time ..... Date .....

Reviewed by ..... Time ..... Date .....

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H-8601

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

1. The descriptive report was consulted and appropriate notes were made in soft pencil regarding action taken. ✓

2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude. ✓

3. All reference to survey sheets mentioned in the descriptive report include the registry number and year. ✓

4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical lettering. None

5. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken. ✓

6. All positions verified instrumentally were check marked in the sounding records. ✓

7. All critical soundings are clear and legible and are a little larger than the adjacent soundings. ✓

8. The metal protractor has been checked within the last three months.

9. The protracting and plotting of all bad crossings were verified. ✓

10. All detached positions locating critical soundings, rocks or buoys were verified. Boat sheet location of Davis South Shoal Lighted whistle Buoy "4DS" does not match plotted location of Hydro fixes.

11. The boat sheet was compared with the smooth sheet. ✓

12. The spacing of soundings as recorded in the records was closely followed.

13. The bottom characteristics were shown on outstanding shoals.

14. The reduction and plotting of doubtful soundings were checked.

15. The transfer of contemporary topographic information was carefully examined.

16. All junctions were transferred and overlapping curves made identical.

17. The notation "JOINS H- (19--)" was added in ink for all contemporary adjoining or overlapping sheets now registered. Those not verified are shown in pencil.

18. The depth curves have been inspected before inking.
P.H. Carstens

19. All triangulation stations and transfer of topographic and hydrographic signals were checked. None

20. Heights of rocks were checked against range of tide.
none

21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve.
none

22. Unnecessary pencil notes have been removed.

23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet.
None

24. The low water line and delineation of shoal areas have been properly shown.
none

25. Degree and minutes values and symbols have been checked.

26. Questionable soundings have been checked on the fathograms.

27. Source of shoreline and signals (when not given in report).

- None

28. All notes on sheet are in accordance with figure 171 in the Hydrographic Manual. ✓

29. All aids located, with those on contemporary topographic sheets, have been shown on survey. ✓

30. Depth curves were satisfactory except as follows:

OK

31. Sounding line crossings were satisfactory except as follows:

OK

32. Junctions with contemporary surveys were satisfactory except as follows:

OK

33. Condition of sounding records was satisfactory except as follows:

OK

34. The protracting was satisfactory except as follows:

OK

35. The field plotting of soundings was satisfactory except as follows:

OK

36. Notes to reviewer: This sheet Covers a portion of H-6446 (1939) and will supersede this area.

Verified by J.F. Cosgrove Date 12/14/71

R1tG

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. Apr. 1950

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Coast Survey~~ April 6, 1962

Division of Charts: R. H. Carstens

Plane of reference approved in
14 volumes of sounding records for

HYDROGRAPHIC SHEET 8601

Locality Nantucket Shoals, Massachusetts

Chief of Party: E. L. Jones (1961)
Plane of reference is mean low water reading
ft. on tide staff at
ft. below B. M.

Height of mean high water above plane of reference at the working ground is 2.9 feet.

Condition of records satisfactory except as noted below:

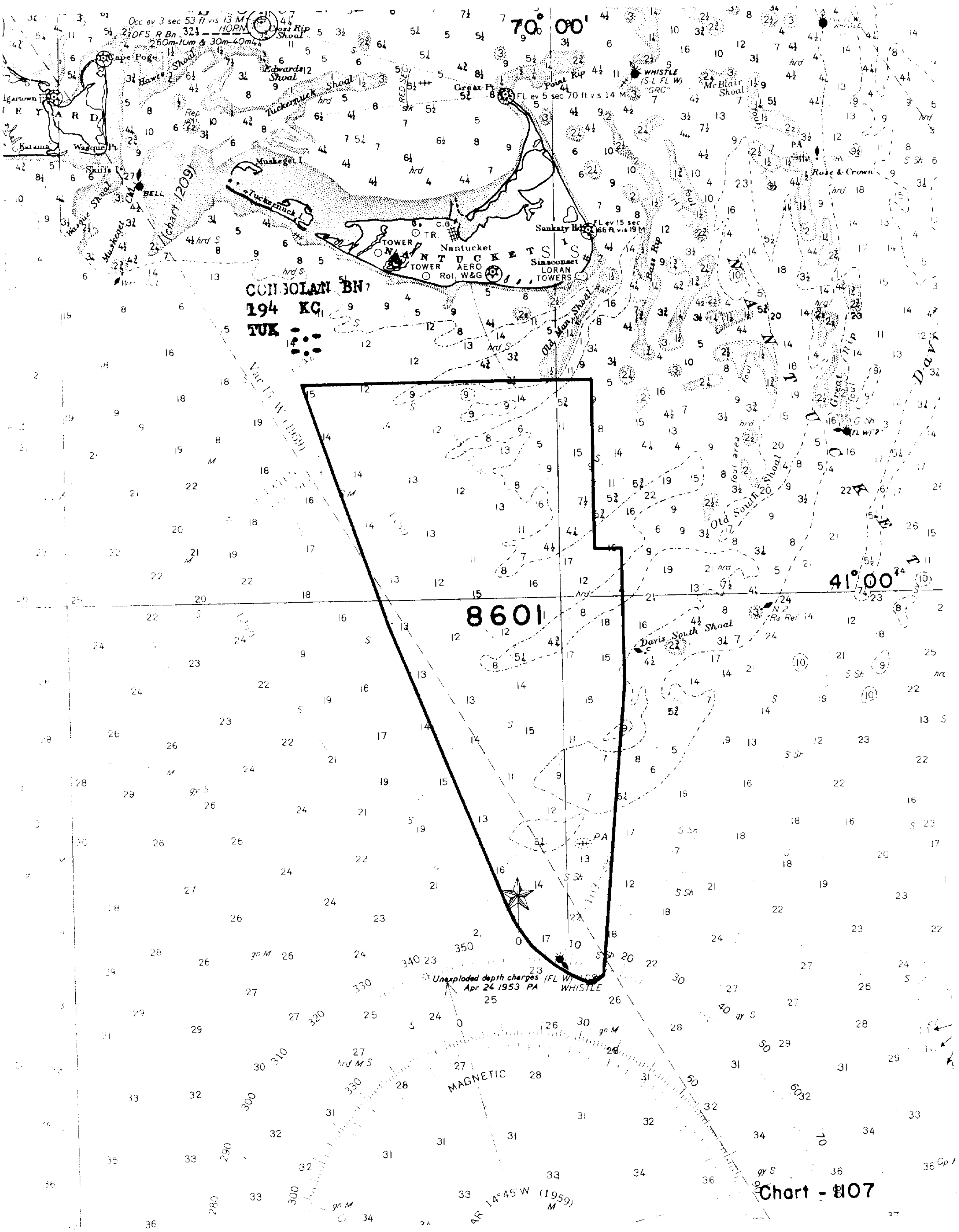
NOTE: Tide reducers for positions listed below have been revised in blue and verified.

Vol.	Pos.
1	1A to 51A
1	1B to 24B
1	35B to 114B

J. M. Symons
Chief, Tides and Currents Branch

~~Chief, Division of Coast Survey~~

U. S. GOVERNMENT PRINTING OFFICE 877938


70° 00'
41° 00'
8601
CONSOLAN BN
194 KC
TUK
Nantucket
Siasconset
LORAN TOWERS
Sankaty Hd.
Great Pt.
Muskeget I.
Tuckernuck
Tuckernuck Shoal
Cape Poge
Wasque Pt.
Old Man Shoal
Davis South Shoal
Old South Shoal
McBlair Shoal
Rose & Crown
Point Rip
Great Rip
Unexploded depth charges (FL W) Apr 24 1953 PA
WHISTLE
MAGNETIC
VAR 14°45'W (1959)
Chart - 8107

NAUTICAL CHARTS BRANCH

SURVEY NO. H-8601 1961

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
3-22-62	1107	E. P. Bogoyo	Before ~~After~~ Verification and Review Exam No Cart Corr. Added 4¾ sndg at 40°59'N, 69°58.5'W. deleted 8
3-22-62	1000	E. P. Bogoyo	Before ~~After~~ Verification and Review Exam No Cart Corr from Dwg cht 1107
4-16-62	1209	R. K. McLaughlin	Before ~~After~~ Verification and Review No correction
9-19-62	1108	G. R. Johnson	Before ~~After~~ Verification and Review Part. Appl'd No Correction Applied Through Cht. 1107
9-24-62	71	G. R. Johnson	Before ~~After~~ Verification and Review Partly Applied Through cht 1108. No Correction
10-17-62	70	G. R. Johnson	Before ~~After~~ Verification and Review Partly Applied Through cht 71 drg #16. No Correction.
12/4/78	1108	Bill Wanless	Before ~~After~~ Verification and Review Class #1 Adequate Application
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.