8957

Diag. Cht. No. 1247.

FORM C&GS-504

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

DESCRIPTIVE REPORT

Type of Survey Florida

Field No. PE-20-3-67 *Office No.* H-8957

LOCALITY

State Florida

General locality East Coast of Florida

Locality Vicinity St. Lucie Shoal

19 67

CHIEF OF PARTY

C. K. Townsend

LIBRARY & ARCHIVES

DATE June 1, 1969

USCOMM-DC 37022-P66

8957

FORM C&GS-537
(8-15-59)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REGISTER NO.

H-8957

HYDROGRAPHIC TITLE SHEET

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

FIELD NO.

PE-20-3-67

State Florida

General locality East Coast of Florida

Locality VICINITY ST. LUCIE SHOAL ~~Coastline South of Fort Pierce Inlet~~

Scale 1:20,000 Date of survey August, 1967 - September, 1967

Instructions dated March 8, 1967 Project No. CPR-447

Vessel USC&GS SHIP PEIRCE

Chief of party LCDR. Charles K. Townsend

Surveyed by LT. T. Wyzewski, LTJG. K.A. Boe, LTJG. L. L. Greve, ENS. R.T. Olack, ENS. N.D. Smith, ENS. K.W. Sigley

Soundings taken by echo sounder, hand lead, pole Echo Sounder, Pole, and Hand Lead

aphic record scaled by Ship Personnel

Graphic record checked by Ship Personnel

Protracted by AUTOMATED - GERBER DIGITAL PLOTTER

Soundings penciled by " " " "

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

REMARKS: Revised Project Instructions dated March 8, 1967, supersede all previous instructions.

J.J.L.

USCOMM-DC 8272-P62

DESCRIPTIVE REPORT

To Accompany

Hydrographic Survey PE-20-3-67

1967 Field Season

USC&GS Ship PEIRCE — Scale 1:20,000

Charles K. Townsend; LCDR., USESSA — Chief of Party

A. PROJECT

This survey was accomplished under Project OPR-447, East Coast of Florida; Revised Instructions dated March 8, 1967, supersede all previous instructions.

B. AREA SURVEYED

The area covered by this survey is an open coastal section along the East Coast of Florida. It extends south along the coast to Latitude 27 17' 35" N, north along the coast to Latitude 27 26' 00" N, and seaward from the coast to Longitude 80 03' 00" W. The survey was performed on two boat sheets. Sheet A was used by the ship PEIRCE for offshore work, and Sheet B was used for inshore launch and skiff work.

Hydrography extended south to junction with Contemporary Survey PE-20-2-67 (H-8956), and Prior Survey (1964) H-8783; north to junction with Contemporary Survey PE-20-4-67 (H-8958), and prior Survey H-8783; and east to junction with Prior Survey H-8783 (1964). see "Junctions" this D.R.

Hydrography was begun in this area on August 14, 1967, and completed on September 28, 1967.

C. SOUNDING VESSEL

Hydrography in this area was performed by ship, two launches, and a skiff. Ship PEIRCE work was denoted

Reviewer

* Stylus arm error of various amounts is evident on ship work and remains uncorrected. Apply corrections for stylus arm. - generally max. of about 1 ft. - only where needed to resolve apparent discrepancies where diff line beginning at pos. 1 where 44's between lines of 47-48.

RHCarstens 6/13/67

by violet color. Launch PE-1 work was denoted by blue color. Launch PE-2 work was denoted by red color. Skiff PE-3 work was denoted by green color.

D. SOUNDING EQUIPMENT (See Appendix "B", "D" and Review)

Three Raytheon (type 723) fathometers were used in this survey. The ship Peirce used number 246. Launch PE-1 used fathometer number 242 and Launch PE-2 used fathometer 260. Echo soundings were taken in depths up to 50 feet with fathometers 242 and 260, and in depths up to 100 feet with fathometer 246. A 16 foot sounding pole was used for shallow water skiff work.

USC&GS Ship PEIRCE - The velocity corrections for the ship were obtained by taking Nansen cast oceanographic stations. Depth and temperature data were recorded in the field and salinity data was obtained from an analysis of the samples by the Land and Sea Interaction Laboratory in Norfolk, Virginia. Results of the oceanographic stations were graphed and velocity corrector values were picked off in 0.5 foot increments. The initial on the ship's fathograms was held at 9.0 feet in accordance with a memorandum from the Chief, Instrument Division dated October 1, 1962, and a draft corrector of 0.2 feet was calculated for the ship (see appendix D). Careful maintenance of the fathometers eliminated instrumental error and phase correction, and settlement and squat for the ship were found to be negligible.

Launches PE-1 and PE-2 - Bar checks were taken once or twice a day as wind and sea conditions permitted. Bar check results were then tabulated and the mean fathometer error at each depth was determined. Values which differed greatly from the mean were rejected and a new mean value derived. These values were then placed on a graph and the fathometer error at given depths was taken from the graph in 0.5 foot increments.

Settlement and squat correctors were determined for launch work by using rod and level.

The initial on the fathograms was held at 2.0 feet for this survey. Since the launches were refueled every other day, any draft correction due to fuel

consumption was found to be negligible; thus, no draft corrector was required other than that incorporated in the initial. Also included in the initial is a reduction of one foot from the draft of the vessel transducers as per instructions in a memorandum from the Chief, Instrument Division dated October 1, 1962.

There is no phase correction necessary as the fathometers were carefully maintained as per instructions of a correspondence from the Chief, Engineering Division dated December 22, 1966.

E. SMOOTH SHEET

The smooth sheet will be plotted automatically at the Pacific Marine Center, Seattle, Washington by the Gerber Plotter. Field records were encoded on punched tapes designed for computer use. Two tapes were made for launch and skiff work, a "position" tape providing position information obtained from three-point visual fixes, and a "sounding" tape providing depths and all data required to reduce these depths to final, correct values. Two tapes were also made for ship work, a "raw data" tape providing position information obtained from HI-FIX recording and depths, and a "corrector" tape providing corrections to HI-FIX readings as well as all data necessary to reduce the depths to final, correct values. The tapes will be integrated by the computer to obtain data for the Gerber Plotter.

F. CONTROL

Visual control was used for launch and skiff work. Three-point sextant fixes were utilized on triangulation and photogrammetric points, and the fixes were plotted by three-arm protractor.

Photogrammetric signals were located from compilations furnished in accordance with instructions (Job PH-6710, Shoreline Mapping) contained in letters from the Chief, Photogrammetry Division to the Project Planning Staff Officer, Hydrography and Oceanography on October 28, 1966; and to the Chief, Photogrammetric Branch on April 6, 1967. The following photogrammetric compilations were used:

Incomplete Manuscript	T-13108	photographed in November, 1966 and February, 1967
Incomplete Manuscript	T-13109	photographed in November, 1966

Reviewer had access to Advance Manuscripts

Form CD-121 (8-63) (Prea. by A.O. 206-10)

UNITED STATES GOVERNMENT

Memorandum

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TO : Pacific Marine Center
Hydro Processing Division

DATE: February, 1968

In reply refer to:

FROM : Field Works Officer
USC&GSS PEIRCE

SUBJECT: Overlay of visual signals for PE-20-3-67

Signal # 421 did not get plotted on the overlay. A copy of the Preliminary Signal List Tape indicates that the signal was present on the tape. A revised tape was not deemed necessary.

Signal # 441 did not plot on the overlay. It appears that the overlay was not constructed with the proper origin position. The indicated origin on Form # 1 listed a latitude of 27°16'38". The origin used looks like 27° 16' 30". If the indicated origin were used, Signal 441 would plot.

PRELIMINARY SIGNAL LIST PE-20-3-67

324	27	16	1466	080	12	0820	YET
325	27	16	1848	080	12	1000	ZAG
326	27	17	0467	080	12	1162	ANT
327	27	17	0749	080	12	1329	RAN
328	27	17	1255	080	12	1484	BUT
329	27	17	1569	080	12	1606	CAT
330	27	18	0155	080	13	0116	DOT
331	27	18	0443	080	13	0232	EVA
401	27	18	0880	080	13	0406	FIG
402	27	18	1371	080	13	0612	GAS
403	27	18	1706	080	13	0743	JUG
404	27	19	0258	080	13	0907	KEY
405	27	19	0757	080	13	1088	LOG
406	27	19	1262	080	13	1248	MUF
407	27	19	1667	080	13	1405	HUD
408	27	20	0106	080	13	1516	NEW
409	27	20	0557	080	13	1663	OWL
410	27	20	0850	080	14	0102	PUD
411	27	20	1211	080	14	0259	RAG
412	27	20	1735	080	14	0478	SEX
413	27	21	0185	080	14	0619	THY
414	27	21	0600	080	14	0800	HAY
415	27	21	1008	080	14	0972	VAL
416	27	21	1368	080	14	1144	WIZ
417	27	21	1748	080	14	1317	ZOO
418	27	22	0205	080	14	1461	ANN
419	27	22	0598	080	14	1654	BOX

ERROR ON TAPE 21 appears as 3

420	27	22	1003	080	15	0206	COW
421	27	22	1475	080	15	0434	GAL
422	27	22	1801	080	15	0596	DOG
423	27	23	0233	080	15	0721	EGG
424	27	23	0568	080	15	0877	FIX
425	27	23	0925	080	15	1043	GUM
426	27	23	1257	080	15	1179	IVY
427	27	23	1595	080	15	1310	JOB
428	27	24	0143	080	15	1478	CAR
429	27	24	0496	080	15	1613	LOW
430	27	24	0874	080	16	0094	MAX
431	27	24	1181	080	16	0219	NUT
432	27	24	1583	080	16	0359	ORB
433	27	24	1859	080	16	0457	PIE
434	27	25	0340	080	16	0571	RUB
435	27	25	0615	080	16	0688	SUE
436	27	25	0936	080	16	0795	TOY
437	27	25	1268	080	16	0902	USE
438	27	25	1643	080	16	1020	WIG
439	27	26	0206	080	16	1151	NED
440	27	26	0666	080	16	1313	WED
441	27	26	0927	080	16	1392	JOY

HI-FIX was used for positioning control of the ship hydrography from its junction with launch work to the outer limits of the survey. HI-FIX stations "DOC" and "EMO" were used from August 14 to September 28. These stations were located in accordance with the project instructions by the photogrammetric field party. Distances from the stations were taken to determine the ship's position. "DOC" is HI-FIX station "FRANZ R.M.4"

HI-FIX calibration was accomplished through three-point sextant fixes. Prior to operations the ship was brought close enough to shore so as to be able to obtain a good three-point fix. There a series of fixes were taken by sextants (a fix consisted of a three-point fix taken by sextant men and a check angle taken by a third sextant man). The fixes were then plotted by a three-arm protractor on the calibration sheet for HI-FIX scaled 1:10,000 of the area. With the sextant fixes plotted on the calibration sheet, corresponding HI-FIX values were read from the sheet. Simultaneously with the fixes, HI-FIX values were read from the HI-FIX console. The difference between the values corresponding to the sextant fixes and the values from the HI-FIX console for the fixes were meaned, and this mean value was recorded at the error for the HI-FIX system for the particular day's calibration.

For final, smooth positions, these mean errors between the two stations were meaned again with regard to natural features along the shoreline which ~~were found to~~ influence the HI-FIX system. These final mean values were the correctors used for smooth processing. A discussion of these corrector compilations is found in Appendix C. (Appendix "C" claims no interference from natural features). HI-FIX lines 1/2 miles or more from shore

G. SHORELINE

Shoreline was transferred to the boat sheet (sheet B) from blue line manuscripts of the photogrammetric compilations listed in section F.

The high water line was inspected and verified by the hydrographer. The low water line was determined by taking the survey vessels as close to shore as possible during times of calm sea and high water.

H. CROSSLINES

Crosslines were run at 8.7% on sheet A and at 17.1% on sheet B. Crosslines were in good agreement.

I. JUNCTIONS

Junction with Contemporary Surveys PE-20-2-67 (H-8956) and PE-20-4-67 (H-8958) were good; however, there was disagreement in the junctional soundings with HY-100-2-64 (H-8783). Even when smooth soundings were compared, there still were junctional discrepancies. In accordance with a memorandum from the Acting Associate Director, Hydrography and Oceanography, dated June 8, 1967, hand lead soundings were taken in an attempt to resolve these discrepancies. A summary of the hand-lead soundings versus fathometer soundings is included in Appendix B. Comparison of the soundings in Appendix B indicates a reasonably good agreement and supports the validity of the echo soundings recorded by the Ship PEIRCE. Also, considerable checks on the HI-FIX control aboard the Ship PEIRCE were made, and crosslines checked very well with the normal system of lines. (See Review)

J. COMPARISON WITH PRIOR SURVEYS

Pre-Survey Review Item 11 (numerous rock awash symbols) was investigated and the presence of rocks in the areas indicated was verified. It was found that the symbols were used not to show individual rocks, but groups of rocks protruding from the sandy bottom. This area of rocks is approximately 30 yards to 80 yards from shore in various places. A typical example would be a 2 foot rock in 4 feet of water. In no instance did we find that any of these rocks would actually be awash.
Appropriate note added to smooth sheet.

Pre-Survey Review Item 12 (sunken wreck) was searched for and not found. Eleven miles of sounding lines were run at 100 meter spacing over the pre-survey position of the wreck (lat. 27° 23', long. 80° 08'). Lines were extended over a one-half mile distance in all directions from the pre-survey position. One-and-a-half hours were spent developing this area and nothing to indicate the existance of a wreck was found. Buoys R "12" and N "12" (located near the given pre-survey position) were located and plotted on the boat sheet. Development pos. 2740 - 2784, day 265, neither logged nor plotted. - Area well-covered by regular sound lines.

Buoy R-12, pos. 2785, Lat. 27°23'15" - Long. 80°07'48"
Buoy N-12, pos. 2786, Lat. 27°23'09" - Long. 80°07'49"
Note paragraph 3, Sect. "K", and Second paragraph Section "M"
Buoy R-12 is a lighted whistle buoy; see Light List 1967 and 1968

Wreck not disproved.

Pre-Survey Review Item 13 (sunken wreck PA, 24 feet reported) was located by the ship PEIRCE. ~~Launch PE-1 then spent one hour running north-south, east-west lines and drifting over the wreck.~~ The wreck was located at lat. 27° 20.18' long. 80° 04.5[4]6' W some distance from the indicated approximate position. Least depth of 25[4] feet (after smooth correctors) was found. Lead lines were dropped to locate a pinnacle with no success. This wreck should be relocated on all area charts. "PEIRCE" 237 day, pos. 651-652; 238 day, pos. 865-898; 242 day, pos. 1799-1836; peak at pos. 1837, time 12:36:00; 265 day, peak at pos. 2739, time 11:09:45

Pre-Survey Review Item 14 (two sunken wrecks) was searched for and not found. Though no development was run, this area was covered well on regular sounding lines.

Regarding the questionable soundings noted in the Pre-Survey Review, the following results were obtained:

Questionable sounding in feet	Location latitude north	Location longitude west	Field Sounding in feet	Sounding after Smooth Correctors
	pos. on Smooth sheet			
a) 30	27° 18.85'	80° 12.28[30]	29	~~28.3~~ 29
b) 30	27° 19.[4]32'	80° 12.3[5]40'	29	28.8[3] 28
c) 44	27° 19.[6]40'	80° 05.33'	4[6]3	4[5]2.7* 42
d) 49	27° 21.0[9]-21.2'	80° 05.4[10]56'	51	51.7 (several 50 & 51 fb soundings here on Smooth Sheet
e) 57	27° 21.[4]25'	80° 04.[1]35'	82	~~85.2~~** See note below
f) 31	27° 21.0'	80° 08.9'	35	3[4].2 34 ← See Review
g) 36	27° 20.9'	80° 11.15'	36	36.7 {smooth sheet shows several 36 ft depths here.
h) 30	27° 23.[10]5'	80° 09.[4]35'	30 pos. 1779-80	30.7 30' ← "Peirce" 242 day
i) 32	27° 23.4'	80° 12.4'	27	27.7 27
j) 32	27° 24.[0]65'	80° 11.60'	31	31.2 31
k) 60	27° 22.3'	80° 04.8'	59	60.2 48 {27°22.10' 80°04.77'
l) 60	27° 22.65'	80° 05.35'	60[2]	62.2 61 {27°22.55' 80°05.48' and 59'
m) 60	27° 22.75'	80° 04.6'***	} see next page	
n) 60	27° 23.9'	80° 05.3'****		
"h" →	27° 22.98'	80° 09.35'	29	29.7 ← See "Peirce" 242 day, pos. 1781-82

* Questionable sounding "c" The 44 foot sounding was not verified; however, just south at lat. 27° 19.56', long. 80° 05.3' a 45.7 ft smooth sounding was found. Also at lat. 27° 19.[38]4', long. 80° 05.33' a smooth sounding of 42 feet was found.

** "e" Questionable sounding "e" was not verified, however, the shoal on Chart 1247 (lat. 27° 21.4' N, long. 80° 04.2' W) was verified with a minimum depth of 5[7] feet. Narrow SW to NE ridge in greatest depths

*** Questionable sounding "m" was not verified; however, a minimum depth of 62 feet was located close by at lat. 27° 22.7' N, long. 80° 04.52' W.

**** Questionable "n" was not verified; however, a ~~several minimum~~ depth of 62 feet ~~were~~ was found close by at lat. 27° 23.85'N, long. 80° 05.81', W.

K. COMPARISON WITH THE CHART

Comparison was made with C&GS Chart 1247, corrected through Notice to Mariners 16, April 22, 1967, for both sheet A and sheet B. Reviewer's comparison with 4th Edition 2-17-69

BOAT SHEET A Four changes are evident:

1) The southern most part of the three main blue areas of the St. Lucie Shoal seems to have broadened itself to the seaward side of buoy R N "14" and extended north to a new latitude of 27° 19.25', N.

2) Pierce Shoal located at lat. 27° 21.7' N, long. 80° 12.5' W has extended itself north to latitude 27° 23.5' N with a minimum depth of 28 feet (all smooth correctors applied) at its northern most latitude, and several 21-ft depths approx., 1½ miles southward.

3) Buoy R N"12" plotted on the boat sheet at lat. 27° 23.26'N, long. 80° 07.80' W, 0.2 of a mile seaward from the position plotted on chart 1247. Also, the wreck supposedly located near there was not found. Note second paragraph, Section "M", next page, and second paragraph, Section "J"

Lighted Whistle Buoy See Light List 1967-68

4) The location of the wreck on chart 1247 at lat. 27° 20.44' N, long. 80° 04.88' W is incorrect (see section J, patag. 3, (pre-survey item 13) and section "P", patag. 2

All other features on chart 1247 correlated well with our findings.

BOAT SHEET Features on chart 1247 agree well with our findings.

Buoy N-12 neither charted nor in Light List 1967 - 1968

L. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys of the area.

M. AIDS TO NAVIGATION

The Aid to Navigation N "14" marking the southern part of the St. Lucie Shoal was found at lat. 27° 18.46' N, long. 80° 08.94' W.

A pair of buoys ~~were~~ was found at the northern tip of the St. Lucie Shoal. The northern most buoy was marked R "12" and the more southern of the two was marked N "12". The positions of the two buoys respectively are as follows:

R "12" lat. 27° 23.25' N long. 80° 07.80' W
N "12" lat. 27° 23.15' N long. 80° 07.80' W

Patag. 3, Sect. "K".
Patag. 2, Sect. "J".

Aid to Navigation R "WR 12A" marking a wreck was located at lat. 27° 23.7' N, long. 80° 02.8' W.

N. STATISTICS

Vessel	Nautical miles of Sounding Lines	Bottom Samples	Number of Positions
Ship PEIRCE	968.9	61	2912
Launch PE-1	10.9	21	58
Launch PE-2	231.5	0	1104
Skiff PE-3	8.9	0	48
Totals	1220.2	82	4122

Area Surveyed by boat sheet

Boat Sheet A (Ship PEIRCE) 65.8 Sq. Mi.
Boat Sheet B (Launches and Skiff) 16.6 Sq. Mi.
Total 82.4 Sq. Mi.

O. MISCELLANEOUS

Oceanographic Station # 5 was taken at lat. 27° 24.4' N, long. 80° 03.2' W.

Current station # 4 was proposed for lat. 27° 20' N, long. 80° 02' W, but the geodyne current meters necessary for the study were unavailable from the Atlantic Marine Center.

P. RECOMMENDATIONS

We recommend that the Pierce Shoal located at lat. 27° 21.7' N, long. 80° 12.5' W be extended on the appropriate charts to a lat of 27° 23.5' N and that the minimum depth of water at this new northern most area be 27 feet in accordance with our findings (see section K).

We recommend that the wreck presently plotted at lat. 27° 20.44' N, long. 80° 04.88' W (wrecked

chart revised

labeled sunken wreck PA) be replotted on the appropriate charts to the position of lat. 27° 20.18' N, long. 80° 04.5½' W(see section J, pre-survey review item 13) and that consideration be given to the placing of an aid to navigation marking the location of this wreck because of its nearness to shipping lanes and its minimum depth of 2¾ feet. See Reviewr

Q. REFERENCES TO REPORTS

Report on Landmarks for Charts and Fixed Aids to N Navigation, USC&GS ship PEIRCE

Coast Pilot Report, USC&GS Ship PEIRCE, 1967 Field Season

Season's Report, USC&GS Ship PEIRCE, 1967 Field Season

Respectfully submitted,

Kenneth W. Sigley

Kenneth W. Sigley
Ensign, USESSA
March, 1968

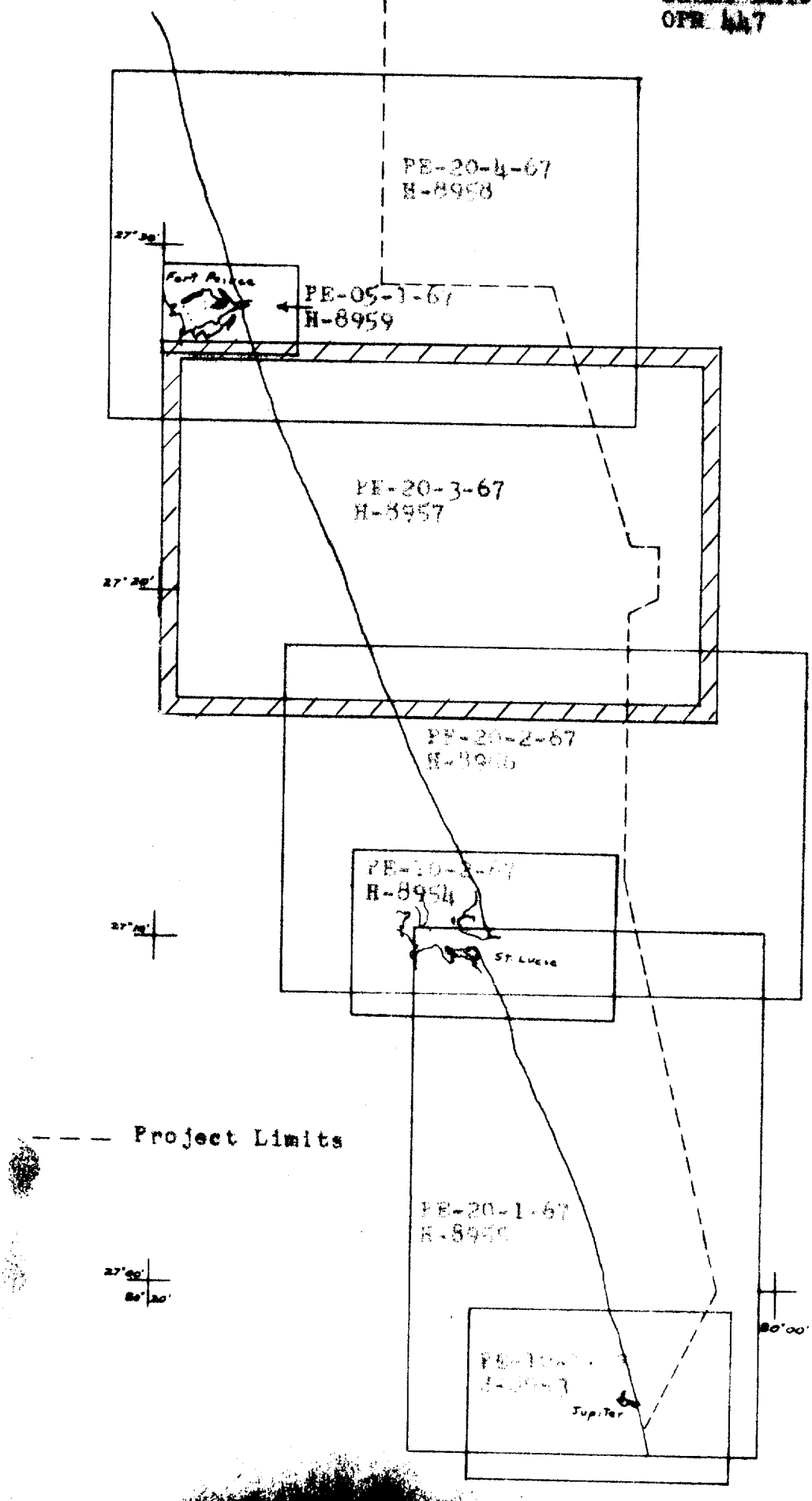
Approved and Forwarded

Charles K. Townsend

Charles K. Townsend
LCDR, USESSA
Commanding Ship PEIRCE

Date: March 28, 1968

SHEET LAYOUT
OPR 447



FORM # 1 FIG. 15

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

(1) PROJECT NO. OPR 447
(2) H NO. 8957
(3) FIELD NO. PE-20-3-67
(4) REQUESTED BY Pacific Marine Center
(5) SHIP OR OFFICE Peirce
(6) DATE REQUIRED ASAP
(7) VISUAL [XX]
(8) ELECTRONIC [ ] (FILL OUT FORM #3)

(10) XKN (SP 5) DISTANCE FROM CMER TO EAST EDGE (NYX = 1) OR WEST EDGE (NYX = 0). 15,347 METERS

(11) YKN (SP 241) DISTANCE FROM EQUATOR TO SOUTH EDGE OF SHEET. 3,018,179.5 METERS

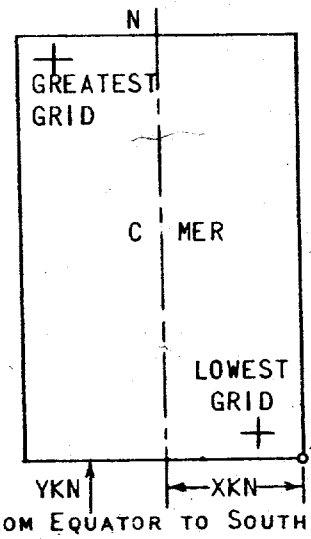
(12) CENTRAL MERIDIAN 80 ° 12 ' 00 "

(13) SURVEY SCALE 1: 20,000

(14) SIZE OF SHEET (CHECK ONE) 36X54 [ ] 42X60 [ ] OTHER [X] 36x60

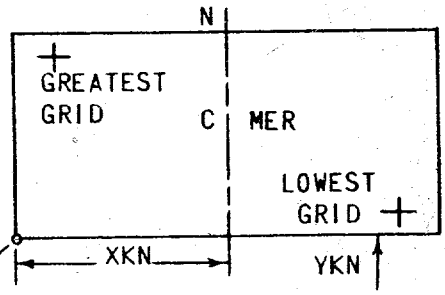
(15) NYX, ORIENTATION OF SHEET (CHECK ONE)

NYX = 1 [ ]



FROM EQUATOR TO SOUTH EDGE OF SHEET

NYX = 0 [X]



FROM EQUATOR TO SOUTH EDGE OF SHEET

(9) PLOTTER ORIGIN (CORNER OF SHEET)

LATITUDE 27 ° 16 ' 38 "
LONGITUDE 80 ° 21 ' 18 "

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

GRID LIMITS

(16) GREATEST LATITUDE 27 ° 26 ' 00 "
(17) LOWEST LATITUDE 27 ° 17 ' 00 "
(18) DIFFERENCE ° 9 ' 00 "

(PROJECTION LINE INTERVAL, PAGE 4 HYDRO MANUAL)

(19) 1 ' 00 "
(20) 9 YSN

(21) GREATEST LONGITUDE 80 ° 21 ' 00 "
(22) LOWEST LONGITUDE 80 ° 03 ' 00 "
(23) DIFFERENCE ° 18 ' 00 "

(24) 1 ' 00 "
(25) 18 XSN

G.P. of all signals is listed on signal tape printout.

FORM # 3 FIG. 7

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

(1) PROJECT NO. OPR 447 (2) H- NO. 8957 (3) FIELD NO. PE-20-3-67

(4) TYPE OF CONTROL: ____ SHORAN, ____ RAYDIST, XXXX HI-FIX, ____ RADAR
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) 1718.59 KC

(5) RANGE ONE (R1) Same as Franz RM4 - LATITUDE 27 ° 17 ' 24.347"
STATION NAME DOC 327 LONGITUDE 80 ° 12 ' 48.338"

(6) RANGE TWO (R2) EMO 442 LATITUDE 27 ° 26 ' 49.452"
STATION NAME _____ LONGITUDE 80 ° 16 ' 59.258"

(7) AZIMUTH FROM R1 TO R2 158 ° 23 ' 25.898"

(8) BASELINE LENGTH IN METERS 18710.4 M.

(9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE
(TO DETERMINE: IMAGINE AN OBSERVER STANDING AT R1 AND LOOKING DIRECTLY AT R2 --- IF THE SURVEY AREA IS TO THE OBSERVER'S LEFT THEN A IS NEGATIVE; IF THE SURVEY AREA IS TO THE OBSERVER'S RIGHT THEN A IS POSITIVE.)

_____ -A (MINUS) XXXXX +A (PLUS)

(10) IF SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION, K(X) + C = D, WHERE X IS SHORAN DISTANCE AND D IS TRUE DISTANCE, ENTER THE CONSTANT COEFFICIENTS OF THE EQUATIONS HERE:

K(R1) _____, C(R1) _____, K(R2) _____, C(R2)_____

(11) NUMBER OF VELOCITY TABLES TO BE USED:
___NONE, XX ONE, ___MORE THAN ONE.

(12) _____THIS FORM IS SUBMITTED ONLY AS AN AID IN PREPARING A BOAT SHEET PROJECTION.

_____THIS FORM APPLIES TO ALL DATA ON THIS SURVEY.

XXXX THIS FORM APPLIES TO PART OF THE DATA ON THIS SURVEY -

TIME AND DATE LIMITATIONS: FROM 16 August TO 24 September

POSITION NUMBER LIMITATIONS: FROM 0001 TO 2970

THIS IS FORM #3 SHEET # 1 OF 1 SHEETS FOR THIS SURVEY.

(13) OTHER REMARKS:

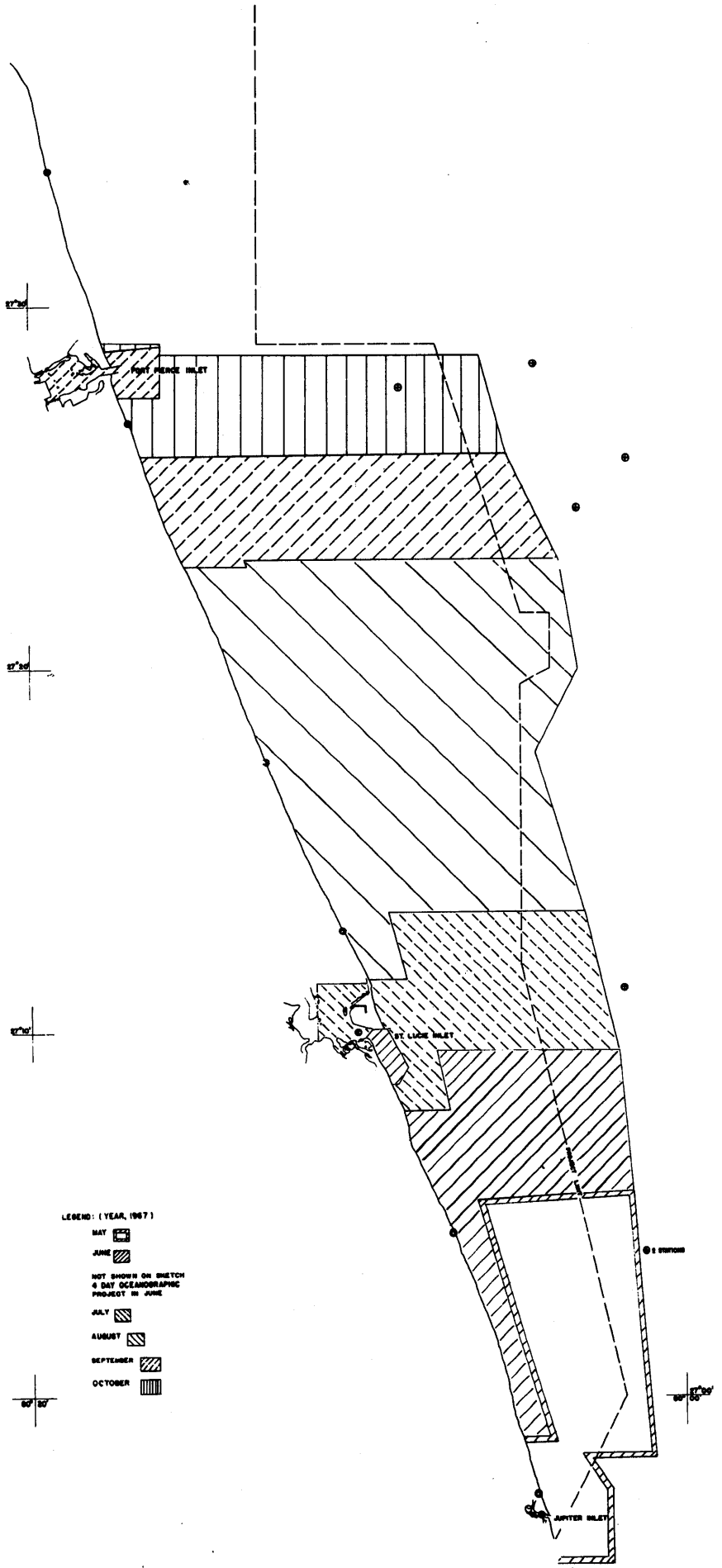
All ship work was electronic. Launch work was visual

Only one velocity table was used for electronic work, but more than one was used for the boat sheet as a whole.

MONTHLY PROGRESS SKETCH
HYDROGRAPHIC SURVEY
EAST COAST OF FLORIDA, OPR 447

USC & GS PERCE CHARLES K. TOWNSEND, COMDR.

SCALE CHART 1246



29 March 1968

APPROVAL SHEET

Field Number PE-20-3-67

The field work and processing of data from this hydrographic survey was under my immediate, daily supervision. The boat sheet and all records have been reviewed and are approved by me. It is believed this survey is completely adequate to supersede all prior surveys and no additional field work is recommended.

Charles K. Townsend
LCDR, USESSA
Commanding Officer
USC&GS Ship PEIRCE

APPENDIX A

TIDAL NOTE

Tidal heights for this survey were obtained by one corrector zone based upon the Miami Beach, Florida tide station. This corrector zone and the hourly heights from the Miami Beach tide station were supplied by the Tides and Currents Branch.

This corrector zone is described as follows:

Zone One — Zone 1 includes all coastal water in this survey.

All times used in this entire survey are on the 60° West time meridian. This was so done because of national observance of daylight savings time. Miami Beach, Florida tide station did not use daylight savings time and thus remained on 75° West time meridian. In order for all times to be in the same zone, we applied +1 h 00 m correction to all times given us for Miami Beach tide station. It should be noted that the time correctors for the above-mentioned corrector zone (zone one) are in addition to the time meridian difference.

Two types of tapes were prepared that were to have tide height information on them. One is "Electronic Control - Corrector Tape" for the USC&GSS PEIRCE and the other type of tape is "Visual - Sounding Tape" for Launch PE-1, PE-2, and Skiff PE-3. Since more than one vessel uses the same tide heights, zeroes were placed in the two above-mentioned types of tapes and the special "Tide Tape" was prepared.

FORM C&GS-712
(10-67)

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

8/1/68

~~xxxxxxxxxxxxxxxx~~ Atlantic Marine Center

Plane of reference approved ~~xx~~
~~xxxxxxxxxxxxxxxxxxxxxxxx~~ for

HYDROGRAPHIC SHEETS 8953-59 inclusive

Locality: East coast of Florida

Chief of Party: C. K. Townsend, 1967

Plane of reference is mean low water

Tide Station Used (Form C&GS-681): Miami Beach, Florida

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

Zone 1 = 2.5 ft. ← Zone 1 applicable to this survey
Zone 2 = 2.2 "
Zone 3 = 1.8 "
Zone 4 = 2.0 "
Zone 5 = 1.2 "
Zone 6 = 0.8 "
Zone 7 = 1.8

Remarks Tide reducers for Day No. 282, H.S. 8959 have been revised in red and verified.

J. M. Symons
Chief, Tides and Currents Branch

FORM C&GS-8502 (5-64) USCOMM-DC P64

ABSTRACT OF TIDE CORRECTIONS

(See instructions on reverse side)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

1. HYDRO. SURVEY NO:	2. FIELD NO.	3. SURVEY LOCATION	4. TIME MERIDIAN
H- 8957	PE-20-3-67	East Coast of Florida	60° W

a. MO. DAY YR. OR DAY NO. (Date)	b. POSITION NUMBER	c. TIME FROM	c. TIME TO	d. TIDE REDUCERS FT.	d. TIDE REDUCERS FMS. XXX	e. MACHINE ENTRY FT.	e. MACHINE ENTRY FMS.	f. TIDE STATION USED (Ao Form 681)	g. CORRECTION USED ZONE DESIGNATION
8-14-67 (226)			1107	0.0				Tides based on gage at Miami Beach, Florida	ZONE ONE Correction applied to Miami Beach tide gage is as follows: Time difference -0 h 20 m Range ratio 1.0 (supplied by the Datum Planes Section, Oceanography Division)
			1205	-0.5					
8-15-67 (227)			0848	-1.0					
			0959	-0.5					
			1132	0.0					
			1244	-0.5					
			1338	-1.0					
			1423	-1.5					
			1500	-2.0					
8-16-67 (228)			0746	-2.0					
			0830	-1.5					
			0922	-1.0					
			1026	-0.5					
			1324	0.0					
			1400	-0.5					
			1445	-1.0					
			1537	-1.5					
8-23-67 (235)			0946	-2.5					
			1150	-3.0					
			1256	-2.5					
			1347	-2.0					
			1435	-1.5					
			1533	-1.0					
			1700	-0.5					
8-24-67 (236)			0800	-1.0					
			0852	-1.5					
			0947	-2.0					
			1314	-2.5				Plane of Reference Approved Datum Planes Section Date 7-29-68	
			1414	-2.0					
			1502	-1.5					
			1559	-1.0					
			1800	-0.5					

5. CHECKED

APPROVED

INSTRUCTIONS FOR PREPARATION AND SUBMITTAL

The information entered on this form shall be derived from associated tide records and together with those records be forwarded to the Washington Office for administrative approval by Tides and Currents Branch, Marine Data Division, Office of Oceanography.

Instructions by item number.

1. Enter the survey number
2. Enter the field number.
3. Enter the survey locality.
4. Enter the time meridian used.
5. Checked: Enter field approval
   Approved: Indicate Washington Office approval.

Instructions by columns (letters):

a. Enter the day of the year. A coded entry must be identifiable in the Washington Office.

b. Enter the position number of the sounding line where the reducer is to first apply.

c. Enter the time in hours and minutes that the reducer listed in "d" is used.

d. Enter the tide reducer necessary to correct the sounding to the plane of the reference.

The value entered by the field personnel shall be certified by the Washington Office, or corrected and returned to the originator. Only approved information can be entered into the smooth (edited) tape.

e. Enter the tide value from the previous column (Tide reducer) applied to a tide base of +60.0.

Example:

+60.0	
- 3.1	(from column d.)
+56.9	(into column e.)

This summed value shall be punched into the paper tape.

f. Enter the origin of the tidal record from which the reducers in column "d" were derived. The entry must be identical with the terminology expressed in form 681.

g. Enter the additional information used to determine the corrections: Ratio of Range, ± time necessary to correct for the gage position, and zone designation.

FORM C&GS-8502 (5-64) USCOMM-DC P64

ABSTRACT OF TIDE CORRECTIONS

(See instructions on reverse side)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

1. HYDRO. SURVEY NO:	2. FIELD NO.	3. SURVEY LOCATION	4. TIME MERIDIAN
H- 8957	PE-20-3-67	East Coast of Florida	60° W

a. MO. DAY YR. OR DAY NO. (Date)	b. POSITION NUMBER	c. TIME FROM	c. TIME TO	d. TIDE REDUCERS FT. FMS. XXX	e. MACHINE ENTRY FT. FMS.	f. TIDE STATION USED (As Form 681)	g. CORRECTION USED ZONE DESIGNATION
8-25-67 (237)			0744	-0.5			ZONE ONE (cont.)
			0838	-1.0			
			0934	-1.5			
			1050	-2.0			
			1345	-2.5			
			1450	-2.0			
			1548	-1.5			
			1700	-1.0			
8-26-67 (238)			0824	-0.5			
			0939	-1.0			
			1028	-1.5			
			1150	-2.0			
			1430	-2.5			
			1538	-2.0			
			1645	-1.5			
			1800	-1.0			
8-27-67 (239)			0828	-0.5			
			0959	-1.0			
			1102	-1.5			
			1215	-2.0			
			1502	-2.5			
			1648	-2.0			
			1740	-1.5			
8-28-67 (240)			0950	-0.5			
			1121	-1.0			
			1222	-1.5			
			1633	-2.0			
			1800	-1.5			

Plane of Reference Approved
Datum Planes Section
Date 7-29-68

5. CHECKED

APPROVED

INSTRUCTIONS FOR PREPARATION AND SUBMITTAL

The information entered on this form shall be derived from associated tide records and together with those records be forwarded to the Washington Office for administrative approval by Tides and Currents Branch, Marine Data Division, Office of Oceanography.

Instructions by item number.

1. Enter the survey number
2. Enter the field number.
3. Enter the survey locality.
4. Enter the time meridian used.
5. Checked: Enter field approval
   Approved: Indicate Washington Office approval.

Instructions by columns (letters):

a. Enter the day of the year. A coded entry must be identifiable in the Washington Office.

b. Enter the position number of the sounding line where the reducer is to first apply.

c. Enter the time in hours and minutes that the reducer listed in "d" is used.

d. Enter the tide reducer necessary to correct the sounding to the plane of the reference.

The value entered by the field personnel shall be certified by the Washington Office, or corrected and returned to the originator. Only approved information can be entered into the smooth (edited) tape.

e. Enter the tide value from the previous column (Tide reducer) applied to a tide base of +60.0.

Example:

+60.0	
- 3.1	(from column d.)
+56.9	(into column e.)

This summed value shall be punched into the paper tape.

f. Enter the origin of the tidal record from which the reducers in column "d" were derived. The entry must be identical with the terminology expressed in form 681.

g. Enter the additional information used to determine the corrections: Ratio of Range, ± time necessary to correct for the gage position, and zone designation.

FORM C&GS-8502 (5-64) USCOMM-DC [illegible]-P64

ABSTRACT OF [illegible]DE CORRECTIONS

(See instructions on reverse side)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

1. HYDRO. SURVEY NO:	2. FIELD NO.	3. SURVEY LOCATION	4. TIME MERIDIAN
H- 8957	PE-20-3-67	East Coast of Florida	60° W

a. MO. DAY YR. OR DAY NO. (Date)	b. POSITION NUMBER	c. TIME FROM	c. TIME TO	d. TIDE REDUCERS FT.	d. TIDE REDUCERS FMS.	e. MACHINE ENTRY FT.	e. MACHINE ENTRY FMS.	f. TIDE STATION USED (As Form 681)	g. CORRECTION USED ZONE DESIGNATION
8-29-67 (241)			1120	-0.5					ZONE ONE (cont.)
			1227	-1.0					
			1322	-1.5					
			1800	-2.0					
8-30-67 (242)			0808	-1.0					
			1200	-0.5					
			1302	-1.0					
			1429	-1.5					
			1630	-2.0					
9-07-67 (250)			1213	-3.5					
			1307	-3.0					
			1342	-2.5					
			1418	-2.0					
			1453	-1.5					
			1550	-1.0					
			1700	-0.5					
9-08-67 (251)			0823	-1.5					
			0900	-2.0					
			0935	-2.5					
			1015	-3.0					
			1110	-3.5					
			1211	-4.0					
			1309	-3.5					
			1357	-3.0					
9-19-67 (262)			1047	-3.0					
			1129	-2.5					
			1219	-2.0					
			1307	-1.5					
			1358	-1.0					
			1621	-0.5					
			1700	-1.0				Plane of Reference Approved Datum Planes Section Date 7-29-68	

5. CHECKED

APPROVED

INSTRUCTIONS FOR PREPARATION AND SUBMITTAL

The information entered on this form shall be derived from associated tide records and together with those records be forwarded to the Washington Office for administrative approval by Tides and Currents Branch, Marine Data Division, Office of Oceanography.

Instructions by item number.

1. Enter the survey number
2. Enter the field number.
3. Enter the survey locality.
4. Enter the time meridian used.
5. Checked: Enter field approval
   Approved: Indicate Washington Office approval.

Instructions by columns (letters):

a. Enter the day of the year. A coded entry must be identifiable in the Washington Office.

b. Enter the position number of the sounding line where the reducer is to first apply.

c. Enter the time in hours and minutes that the reducer listed in "d" is used.

d. Enter the tide reducer necessary to correct the sounding to the plane of the reference.

The value entered by the field personnel shall be certified by the Washington Office, or corrected and returned to the originator. Only approved information can be entered into the smooth (edited) tape.

e. Enter the tide value from the previous column (Tide reducer) applied to a tide base of +60.0.

Example:

+60.0	
- 3.1	(from column d.)
+56.9	(into column e.)

This summed value shall be punched into the paper tape.

f. Enter the origin of the tidal record from which the reducers in column "d" were derived. The entry must be identical with the terminology expressed in form 681.

g. Enter the additional information used to determine the corrections: Ratio of Range, ± time necessary to correct for the gage position, and zone designation.

FORM C&GS-8502 (5-54) USCOMM-DC P64

ABSTRACT OF TIDE CORRECTIONS

(See instructions on reverse side)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

1. HYDRO. SURVEY NO:	2. FIELD NO.	3. SURVEY LOCATION	4. TIME MERIDIAN
H- 8957	PE-20-3-67	East Coast of Florida	60° W

a. MO. DAY YR. OR DAY NO. (Date)	b. POSITION NUMBER	c. TIME FROM	c. TIME TO	d. TIDE REDUCERS FT.	d. TIDE REDUCERS FMS.	e. MACHINE ENTRY FT.	e. MACHINE ENTRY FMS.	f. TIDE STATION USED (As Form 681)	g. CORRECTION USED ZONE DESIGNATION
									ZONE ONE (cont.)
9-20-67 (263)			0847	-2.5	✓				
			1050	-3.0	✓				
			1153	-2.5	✓				
			1243	-2.0	✓				
			1322	-1.5	✓				
			1408	-1.0	✓				
			1700	-0.5	✓				
9-21-67 (264)			0826	-2.0	✓				
			0947	-2.5	✓				
			1110	-3.0	✓				
			1225	-2.5	✓				
			1318	-2.0	✓				
			1410	-1.5	✓				
			1518	-1.0	✓				
			1700	-0.5	✓				
9-22-67 (265)			0900	-2.0	✓				
			1246	-2.5	✓				
			1338	-2.0	✓				
			1433	-1.5	✓				
			1552	-1.0	✓				
			1700	-0.5	✓				
9-23-67 (266)			0938	-2.0	✓				
			1310	-2.5	✓				
			1400	-2.0	✓				
			1518	-1.5	✓				
			1650	-1.0	✓				
9-24-67 (267)			0920	-1.5	✓				
			1032	-2.0	✓				
			1335	-2.5	✓				
			1445	-2.0	✓			Plane of Reference Approved Datum Planes Section Date 9-29-68	

5. CHECKED

APPROVED

INSTRUCTIONS FOR PREPARATION AND SUBMITTAL

The information entered on this form shall be derived from associated tide records and together with those records be forwarded to the Washington Office for administrative approval by Tides and Currents Branch, Marine Data Division, Office of Oceanography.

Instructions by item number.

1. Enter the survey number
2. Enter the field number.
3. Enter the survey locality.
4. Enter the time meridian used.
5. Checked: Enter field approval
   Approved: Indicate Washington Office approval.

Instructions by columns (letters):

a. Enter the day of the year. A coded entry must be identifiable in the Washington Office.

b. Enter the position number of the sounding line where the reducer is to first apply.

c. Enter the time in hours and minutes that the reducer listed in "d" is used.

d. Enter the tide reducer necessary to correct the sounding to the plane of the reference.

The value entered by the field personnel shall be certified by the Washington Office, or corrected and returned to the originator. Only approved information can be entered into the smooth (edited) tape.

e. Enter the tide value from the previous column (Tide reducer) applied to a tide base of +60.0.

Example:

+60.0	
- 3.1	(from column d.)
+56.9	(into column e.)

This summed value shall be punched into the paper tape.

f. Enter the origin of the tidal record from which the reducers in column "d" were derived. The entry must be identical with the terminology expressed in form 681.

g. Enter the additional information used to determine the corrections: Ratio of Range, ± time necessary to correct for the gage position, and zone designation.

FORM C&GS-117
(4-62)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship PEIRCE, fathometer # 246

LCDR. Charles K. Townsend Comdg.

These corrections are to be used

between May 1967 and October 1967

in the locality East Coast of Florida

for hydrographic surveys Nos. PE-20-1-67
PE-20-2-67, PE-20-3-67, PE-20-4-67

Ocean Stations 1, 2, 4, 5, 6, 7, and composite average

(For deep water add a 0 to these figures)

DEPTHS IN FEET

10
15
20
25
30
35
40
45
50
55
60
65
70
75

+0.5 +1.0 +1.5 +2.0 +2.5 +3.0 +3.5

AVERAGE

Latitude and longitude of the seven Nansen cast oceanographic stations are as follows (stations one and two were at the same location):

Oceanographic station	latitude	longitude
number one	27° 04' 05"	80° 01' 13"
number two	27° 04' 05"	80° 01' 13"
number three	27° 11' 14"	80° 01' 52"
number four	27° 25' 48"	80° 01' 38"
number five	27° 24' 26"	80° 03' 12"
number six	27° 28' 28"	80° 04' 27"
number seven	27° 27' 49"	80° 08' 40"

Launches PE-1 and PE-2 Velocity corrections for the launches used in this survey were obtained through bar checks taken once or twice daily as weather permitted. The results were averaged throwing out values of great variance from the mean, and then tabulated in 0.5 of a foot increments for enclosure in the velocity tables and tapes. These increments were picked off of the graphs labeled "Table 0002 for launch PE-2 and off the graph labeled "Table 0003" for launch PE-1. These graphs are included in this appendix.

Table 0002

FORM C&GS-117 (4-62)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship Fathometer # 260

Comdg.

These corrections are to be used

between _____ 19___ and _____ 19___

in the locality EAST COAST OF FLORIDA

for hydrographic surveys Nos. PE-20-1-67
PE-20-2-67 PE-20-3-67

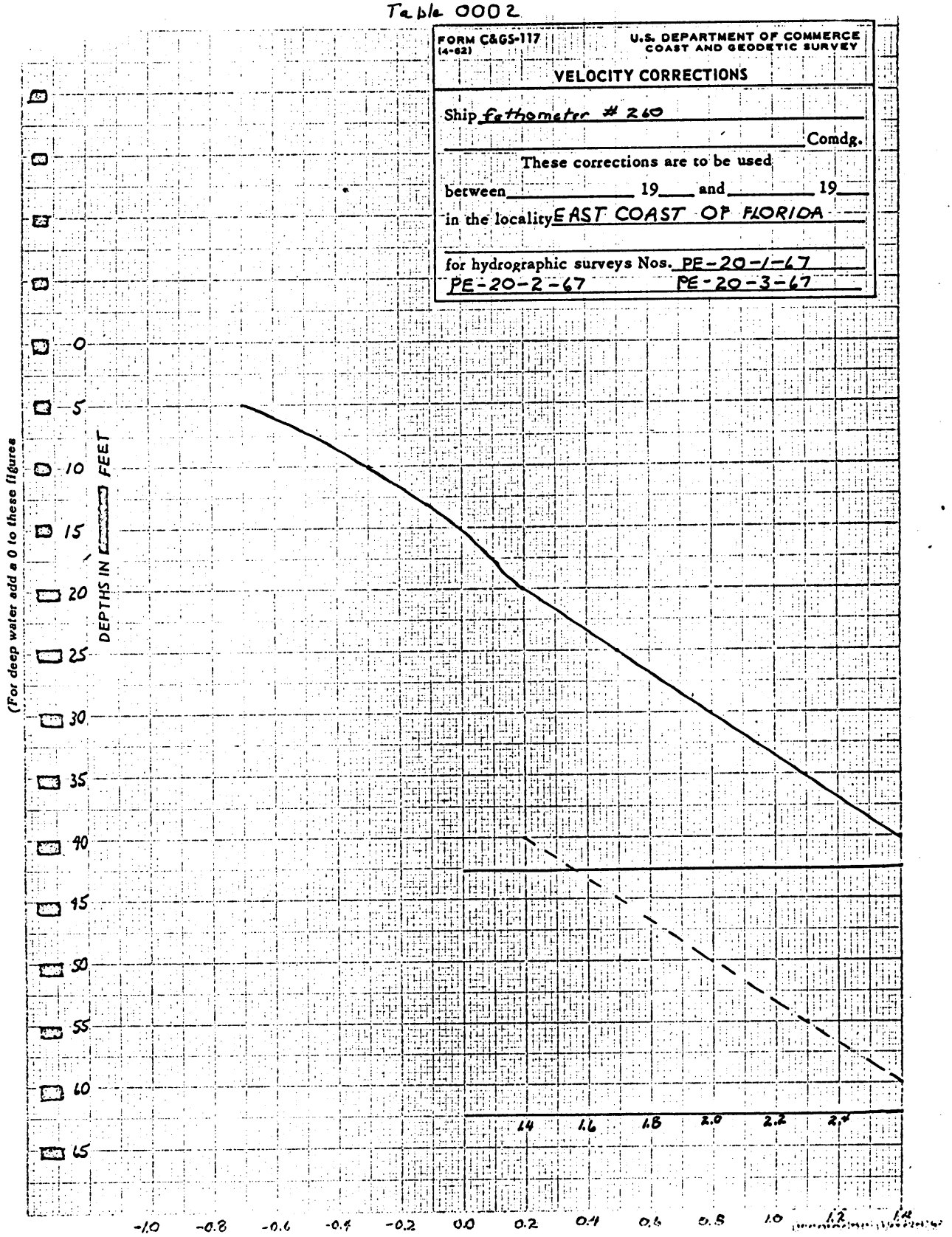


TABLE [redacted] 0003
CORRECTIONS IN FEET, [redacted]

FORM C&GS-117
(4-62)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

[redacted] fathometer # 242

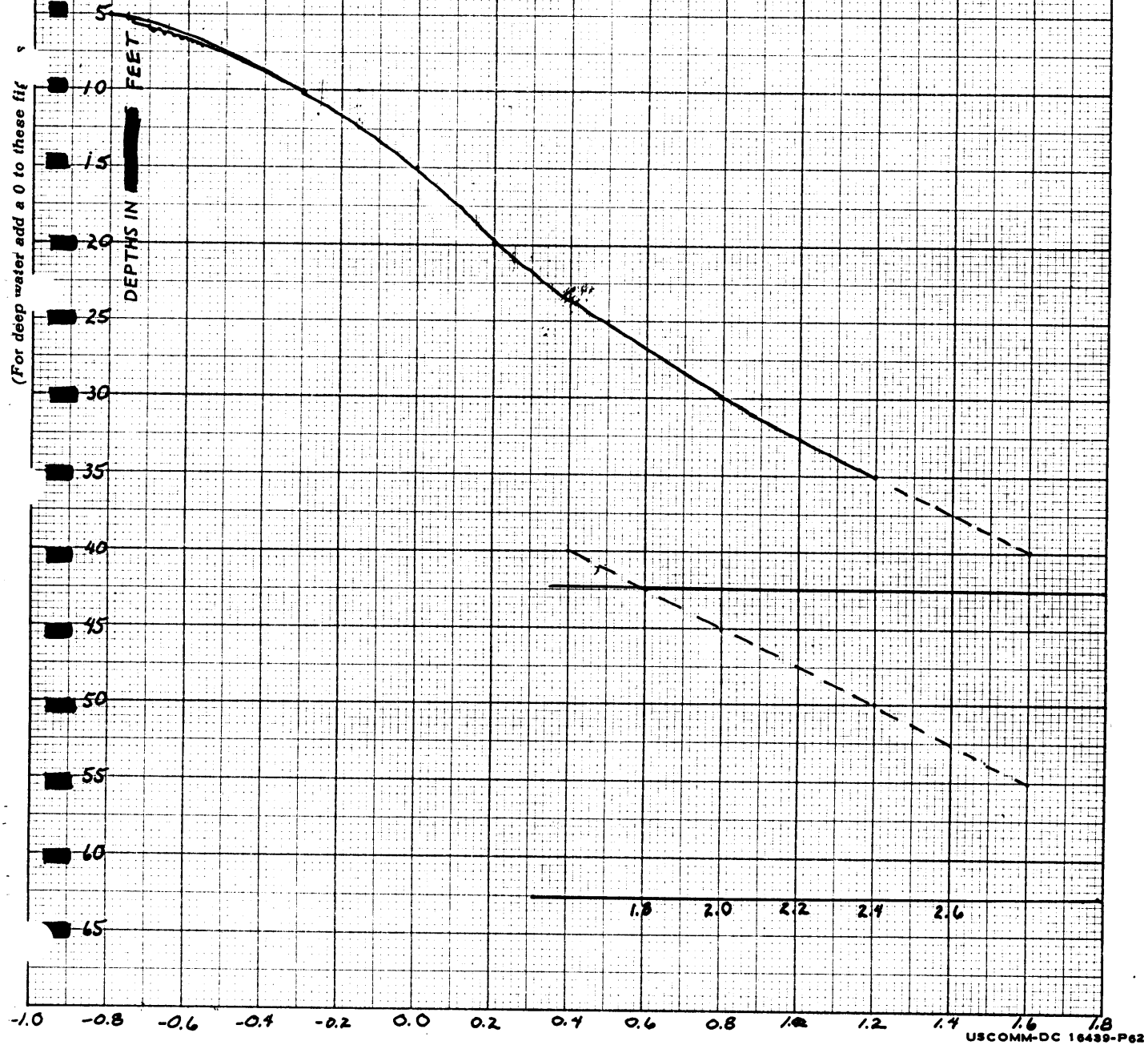
_____ Comdg.

These corrections are to be used

between _____ 19___ and _____ 19___

in the locality EAST COAST OF FLORIDA

for hydrographic surveys Nos. PE-20-3-67
PE-20-4-67 PE-05-1-67



USCOMM-DC 16439-P62

Three Raytheon (type 723) fathometers were used in this survey. USC&GSS PEIRCE used fathometer number 246. Launch PE-1 used fathometer number 242. Launch PE-2 used fathometer number 260. Echo soundings were taken up to 50 feet in the launches and up to 100 feet with the ship.

Four velocity correction tables are included in this report. they are tables 0002, 0004, 0005, and 0006. The velocity correction tables were numbered for the entire field season and only those which apply to this survey were included with this report.

Table 0002 is for fathometer number 260 (launch PE-2). Table 0004 is for the skiff PE-3. No fathometer was used since all soundings in the skiff were taken with a 16 foot sounding pole. Table 0005 is for fathometer number 242 (launch PE-1). Table 0006 is for fathometer number 246 (USC&GSS PEIRCE).

Negative values for velocity corrections appear in the graphs for tables 0002 and 0005. In keeping with instructions found in section 5-10, page 29, of Instruction Manual - Automated Hydrographic Surveys, of October, 1967, we have added a positive one (1) to every corrector in this table. Thus all velocity correctors are now positive. This information also appears on the velocity tape print-out. It should also be noted that the depth given on the tape and print-out is the deepest depth to which the accompanying correction is applied.

VELOCITY CORRECTION TABLES

Table 0002

Fathometer # 260, Launch # 2, correctors used are inked in red

From	To	Correction used		From	To	Correction used	
0.0	10.8	0.5	-0.5	37.9	45.8	2.5	+1.5
10.9	20.8	1.0	0.0	45.9	54.2	3.0	+2.0
20.9	29.3	1.5	+0.5	54.3		3.5	+2.5
29.4	37.8	2.0	+1.0				

Table 0004

Skiff - no fathometer

Velocity correction is zero (0) for all depths.

Table 0005

Fathometer # 242, Launch # 1, correctors used are inked in red

0.0	10.8	0.5	-0.5	35.8	41.8	2.5	+1.5
10.9	20.7	1.0	0.0	41.9	48.2	3.0	+2.0
20.8	29.0	1.5	+0.5	48.3		3.5	+2.5
29.1	35.7	2.0	+1.0				

Table 0006

Fathometer # 246, Ship "PEIRCE", correctors used are checked.

0.0	20.2	0.5 ✓	50.8	60.8	2.5 ✓	
20.3	30.3	1.0 ✓	60.9	71.2	3.0 ✓	
30.4	40.5	1.5 ✓	71.3	80.8	3.5 ✓	
40.6	50.7	2.0 ✓	80.9		4.0 ✓	

APPENDIX B

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

Velocity corrections for this survey were obtained by two different methods, depending upon whether the vessel used was the ship or the launch.

USC&GSS PEIRCE The velocity corrections for the ship were obtained by taking Nansen cast oceanographic stations. Temperature and depth data was obtained in the field and salinity data obtained by having the casts analyzed by the Land and Sea Interaction Laboratory. There were a total of seven Nansen cast oceanographic stations taken.. Results were obtained on six of the seven stations (Locations of the oceanographic stations are shown on the monthly progress sketch placed just before the start of Appendix A by circles with a plus sign in the center). Results were never sent back to us on oceanographic station number 3. However this is not too important as the results of the other six oceanographic stations agreed quite closely and in most cases graphed (see enclosed table and graph) on top of one another. Results to the nearest 0.5 of a foot were picked off. Enclosure of these values appear in both velocity tables and velocity tapes.

Data used for making the velocity correction tables and tapes for the USC&GSS PEIRCE is as follows:

Velocity Corrections
from Oceanographic Stations

mid-depth	# 1	# 2	# 4	# 5	# 6	# 7
12.5					0.25	0.25
15.0	0.49	0.49	0.48	0.52		
20.0					0.74	0.74
25.0	0.99	0.98	0.96	1.04		
30.0					1.25	1.23
35.0	1.48	1.46	1.44	1.56		
40.0					1.75	1.72
45.0	1.96	1.93	1.92	2.08		
55.0	2.45	2.38	2.34	2.60		
65.0	2.90	2.82		3.13		

Verification of USC&GSS PEIRCE fathometer readings was made by comparing 114 lead line depths with their corresponding fathometer readings. This information is included below. As can be seen, all lead lines agree within 3 feet with the corrected fathometer readings. 90.4% of all corrected soundings agree within 2 feet and 64.9% of the soundings agree within 1 foot. Considering the difficulty of keeping the lead line straight in the locale we were operating in (because of currents) these soundings are an extremely good indication of the reliability of the USC&GSS PEIRCE fathometer.

The fathometer soundings have not been corrected for styles arm correction of ± 1% to 2% or unknown instrumental corr.

There were nine lead line comparisons which were rejected which are not included in the enclosed data. All except one had the fathometer depth greater than the lead line depth which was obviously caused by incorrectly reading the lead line. Rather than try to guess what should have been read on the lead line, we thought it better to reject those comparisons.

Lead Line Comparisons
by boat sheet

PE-20-1-67

Day	Position number	Fathometer depth	Velocity correction	Corrected fath. depth	Lead line depth
177	2055	74.0	3.5	77.5	79.0
	2056	67.0	3.0	70.0	75.0
	2057	56.0	2.5	58.5	60.0
	2058	45.0	2.0	47.0	49.0
	2059	40.0	1.5	41.5	44.0
	2060	38.0	1.5	39.5	41.0
	2061	44.0	2.0	46.0	48.0
	2062	59.0	2.5	61.5	64.0
	2063	70.0	3.0	73.0	74.0
	2064	53.0	2.5	55.5	58.0
	2065	44.0	2.0	46.0	46.0
	2066	43.0	2.0	45.0	48.0
	2067	43.0	2.0	45.0	46.0
	2068	39.0	1.5	40.5	42.0
	2069	53.0	2.5	55.5	56.0
	2070	58.0	2.5	60.5	62.0

Lead Line Comparisons by boat sheet

PE-20-2-67

Day	Position number	Fathometer depth	Velocity correction	Corrected fath. depth	Lead line depth
211	0649	46.0	2.0	48.0	50.0
	0650	50.0	2.0	52.0	53.0
	0651	54.0	2.5	56.5	57.0
213	0872	44.0	2.0	46.0	47.0
	0913	68.0	3.0	71.0	72.0
	0914	60.0	2.5	62.5	63.0
	0915	43.0	2.0	45.0	45.0
	0916	56.0	2.5	58.5	59.0
	0917	64.0	3.0	67.0	68.0
	0918	61.0	3.0	64.0	64.0
	0919	54.0	2.5	56.5	57.0
	0920	44.0	2.0	46.0	46.0
226	1989	60.0	2.5	62.5	65.0
	1991	56.0	2.5	58.5	59.0
	1992	55.0	2.5	57.5	59.0
	1993	58.0	2.5	60.5	61.0
	1994	55.0	2.5	57.5	60.0
	1995	55.0	2.5	57.5	58.0
	1996	59.0	2.5	61.5	62.0
	1997	67.0	3.0	70.0	70.0
	1998	55.0	2.5	57.5	59.0
	1999	61.0	3.0	64.0	65.0
	2000	56.0	2.5	58.5	59.0
	2001	59.0	2.5	61.5	63.0
	2002	60.0	2.5	62.5	63.0
	2003	64.0	3.0	67.0	68.0
	2004	69.0	3.0	72.0	73.0
	2005	66.0	3.0	69.0	72.0
	2006	71.0	3.0	74.0	75.0
	2007	63.0	3.0	66.0	67.0
	2008	63.0	3.0	66.0	67.0
	2009	57.0	2.5	59.5	60.0
	2010	62.0	3.0	65.0	67.0
	2011	61.0	3.0	64.0	66.0
	2012	58.0	2.5	60.5	62.0

PE-20-3-67

266	2916	57.0	2.5	59.5	62.0	+2.5
	2917	56.0	2.5	58.5	59.0	+0.5
	2918	55.0	2.5	57.5	58.0	+0.5
	2919	62.0	3.0	65.0	66.0	+1.0

Lead Line Comparisons
by boat sheet

PE-20-3-67
continued

Stylus arm correction not applied.

← to whole feet only

Day	Position number	Fathometer depth	Velocity correction	Corrected fath. depth	Lead line depth	
266	2920	57.0	2.5	59.5	60.0	+0.5
	2921	55.0	2.5	57.5	59.0	+1.5
	2922	60.0	2.5	62.5	64.0	+1.5
	2923	49.0	2.0	51.0	51.0	0
	2924	53.0	2.5	55.5	56.0	+0.5
	2926	59.0	2.5	61.5	62.0	+0.5
	2927	59.0	2.5	61.5	63.0	+1.5
	2928	62.0	3.0	65.0	66.0	+1.0
	2929	50.0	2.0	52.0	54.0	+2.0
	2930	28.0	1.0	29.0	30.0	+1.0
	2931	40.0	1.5	41.5	42.0	+0.5
	2932	46.0	2.0	48.0	50.0	+2.0
	2933	45.0	2.0	47.0	48.0	+1.0
	2934	36.0	1.5	37.5	39.0	+1.5
	2935	40.0	1.5	41.5	44.0	+2.5
	2936	40.0	1.5	41.5	43.0	+1.5
267	2937	39.0	1.5	40.5	43.0	+2.5
	2938	32.5 33.0	1.5	34.0	35.0	+0.5 +1.0
	2939	44.0	2.0	46.0	47.0	+1.0
	2940	46.0	2.0	48.0	50.0	+2.0
	2941	44.0	2.0	46.0	47.0	+1.0
	2942	49.0	2.0	51.0	51.0	0
	2943	40.0	1.5	41.5	43.0	+1.5
	2945	42.0	2.0	44.0	46.0	+2.0
	2946	56.0	2.5	58.5	59.0	+0.5
	2947	54.0	2.5	56.5	58.0	+1.5
	2948	54.0	2.5	56.5	57.0	+0.5
	2949	29.0	1.0	30.0	30.0	0
	2957	67.0	3.0	70.0	70.0	0
	2958	65.0	3.0	68.0	68.0	0
	2959	69.0	3.0	72.0	72.0	0
	2960	67.0	3.0	70.0	72.0	+2.0
	2961	70.0	3.0	73.0	73.0	0
	2962	64.0	3.0	67.0	67.0	0
	2963	66.0	3.0	69.0	70.0	+1.0
	2964	54.0	2.5	56.5	57.0	+0.5
	2965	67.0	3.0	70.0	70.0	0
	2966	54.0	2.5	56.5	57.0	+0.5
	2967	48.0	2.0	50.0	51.0	+1.0
	2968	37.0	1.5	38.5	39.0	+0.5
	2969	41.0	2.0	43.0	44.0	+1.0
	2970	36.0	1.5	37.5	38.0	+0.5

readings only to whole feet

+ 0.94 MEAN

46 | 43.50
9 | 414
414 | 210
184
260
46
8
984

Lead Line Comparisons
by boat sheet

PE-20-4-67

Day	Position number	Fathometer depth	Velocity correction	Corrected fath. depth	Lead line depth
283	6017	41.0	2.0	43.0	44.0
	6018	44.0	2.0	46.0	47.0
	6019	52.0	2.5	54.5	56.0
	6020	52.0	2.5	54.5	56.0
	6021	66.0	3.0	69.0	70.0
	6022	61.0	3.0	64.0	64.0
	6024	57.0	2.5	59.5	60.0
	6025	59.0	2.5	61.5	62.0
	6026	66.0	3.0	69.0	70.0
	6030	37.0	1.5	38.5	39.0
	6031	43.0	2.0	45.0	47.0
	6032	53.0	2.5	55.5	57.0
	6033	54.0	2.5	56.5	57.0
	6034	54.0	2.5	56.5	57.0
	6035	49.0	2.0	51.0	54.0
	6036	56.0	2.5	58.5	59.0
	6037	64.0	3.0	67.0	68.0
	6038	60.0	2.5	62.5	65.0

APPENDIX C

ABSTRACT OF CORRECTIONS TO DISTANCE MEASUREMENTS

HI-FIX was used for position control of the ship hydrography from its junction with launch work to the outer limits of the survey.

HI-FIX stations FRANZ RM 4 called "DOC" (Pattern one) and EMC #2 called "EMO" (Pattern two) were used from August 15, 1967, to September 24, 1967. It became necessary at 1220 on September 19 to change receivers, thus there is a change of correctors at this time as noted in the table below. Neither HI-FIX station had any interference from physical features. Thus calibration errors for pattern one were meaned together from calibration at both stations. Likewise calibration errors for pattern two were also meaned together from calibration at both stations. The corrections used were as follows:

Last paragraph, Sec. "F." of field report (Control) claims interference.

Dates	Corrections Pattern One	Pattern Two
16 August - 19 September (1220)	0.38	0.59
19 September (1220) - 24 September	0.38	0.36

APPENDIX D

ABSTRACT OF TRA CORRECTORS

The TRA corrector is a combination of various correctors to be applied only to those soundings taken by electronic equipment. It should be noted, then, that all skiff work has a zero TRA value.

TRA corrections for this survey are placed on T/VTI tapes for both electronic and visual control. The TRA corrections also appear at the end of this appendix. The reason for the TRA corrections appearing on T/VTI tapes instead of on "corrector" tapes and "sounding" tapes (for electronic and visual control respectively) is that there are negative TRA correction values.

TRA=Transducer draft+Instrumental error+Phase correction +Initial corrector+Settlement and squat+Fathometer speed corrector.

The components of the TRA corrector are as follows:

Transducer Draft

USC&GSS PEIRCE The transducer draft used for the USC&GSS PEIRCE during field operations was 10.0 feet. This 10.0 foot transducer draft was eliminated by setting the initial at 9.0 feet in accordance with the memorandum dated October 1, 1962, from the Chief, Instrument Division. 10.0 feet is the actual transducer draft of the ship after expending approximately 12,000 gallons of fuel. It has been found and verified that after taking on board 12,000 gallons of fuel the draft then became 10' 4" to 10' 6". Thus the ship rises out of the water at 0.4 of an inch per thousand gallons of fuel expended. The average cruise found the ship using 10,000 gallons of fuel. The chief engineer reported that 1600 - 2000 gallons of fuel were required for the ship to go one way on the trip to the working grounds. Thus variance of the draft during the actual hydrography done by the ship is 2 inches (a change from 10' 4" to 10' 2"). The mid-point of most cruises where the ship was involved with hydrography found 4000 - 5000 gallons of fuel consumed. 0.4 times 4 or 5 equals 2 inches (rounded off to the nearest inch). The average draft of the ship, then, is 10' 3" which would require a transducer draft correction of 3 inches added to every depth. We can use an average since at no time will the actual transducer draft be more than 1/12 of a foot from this mean transducer depth. Three inches equals 0.25 of a foot. Rounding

this should not eliminate instrumental correction determination

this figure off for the shoaler depth, we obtain a corrector in tenths of+0.2.

Launches PE-1 and PE-2 Actual transducer draft on the launches is 3 feet. This draft has been eliminated by setting the initial on the fathometers at 2 feet in accordance with the memorandum dated October 1, 1962, from the Chief, Instrument Division. There is no appreciable draft change on the launches due to fuel consumption since the launches are refueled every other day. The loss of weight due to two day's fuel consumption was found to be not enough to affect the draft.

Instrumental Error (should have been determined in field)

USC&GSS PEIRCE Careful maintenance of the fathometer kept instrumental error negligible.

Launches PE-1 and PE-2 Velocity corrections for the fathometers were obtained by bar checks, thus instrumental error is non-existant.

Phase Correction

There is no phase correction necessary as all fathometers were carefully maintained as per instructions given in a memorandum from the Chief, Engineering Division dated December 22, 1966.

Initial Correction

The initial setting on all fathometers was carefully maintained so that with no exceptions the initial correction for all days is 0.0. (Initial error of one foot, "PEIRCE", 264 day, pos. 2620-2625 plus first cast, corrected by reviewer.)

Settlement and Squat

USC&GSS PEIRCE Settlement and squat was determined for the ship and found to be negligible.

Launches PE-1 and PE-2 Settlement and squat was obtained for launch PE-2 by rod and level. Launch PE-1 is identical with PE-2 so that settlement and squat data is the same for both launches. This data is supplied below. The actual corrections for settlement and squat were obtained by noting the speed changes in the sounding volumes. Occasional rpm speeds were used which were not checked by rod and level. In such cases the larger of the two surrounding corrections was used to give the more conservative depth,

Settlement and Squat obtained by rod and level

RPM	Corrector in tenths of feet	Corrector in inches
0000	0.0	0.0
0500	0.0	0.0
1000	-0.1	-1.0
1200	-0.1	-1.0
1500	-0.2	-2.0
1800	-0.2	-2.0
2300	-0.1	-1.0

SETTLEMENT AND SQUAT CORRECTORS by vessel

USC&GSS PEIRCE

All days have a corrector of 0.0.

Launch PE-1

Day	Time from	Corrector
237	110400	0.0
238	074700	0.0
	083630	-0.2
238 (cont.)	084300	0.0
	085800	-0.2
	095600	0.0
	101900	-0.2

Launch PE-2

Day	Time from	Corrector
226	091600	0.0
	091930	-0.2
227	081900	-0.2
228	074230	-0.2
235	090030	-0.2
236	080630	-0.2
239	080130	-0.2
241	132530	-0.2
242	073830	-0.2
250	124100	-0.2
262	092800	-0.1
263	085900	-0.1
264	084100	-0.2
265	082700	-0.2

Fathometer Speed Corrector

The fathometers were maintained so that there is no speed corrector necessary.
Stylus arm correction +2 to +3% applied by reviewer on "PEIRCE" work on some portions of lines.

TRA CORRECTION by vessel

USC&GSS PEIRCE

Day	Time from	Correction	Day	Time from	Correction
228	095830	+0.2	250	114530	+0.2
235	100400	+0.2	251	080800	+0.2
236	075130	+0.2	262	150300	+0.2
237	073530	+0.2	263	080800	+0.2
238	074030	+0.2	264	080500	+0.2
239	093000	+0.2	265	081530	+0.2
240	073130	+0.2	266	084230	+0.2
241	073400	+0.2	267	084400	+0.2
242	090600	+0.2			

Launch PE-1

237	110400	0.0	238 (cont.)	084300	0.0
				085800	-0.2
238	074700	0.0		095600	0.0
	083630	-0.2		101900	-0.2

Launch PE-2

226	091600	0.0	241	132530	-0.2
	091030	-0.2	242	073830	-0.2
227	081900	-0.2	250	124100	-0.2
228	074230	-0.2	262	092800	-0.1
235	090030	-0.2	263	085900	-0.1
236	080630	-0.2	264	084100	-0.2
239	080130	-0.2	265	082700	-0.2

TRA CORRECTION
by vessel

Skiff PE-3

Day	Time from	Correction
240	072930	0.0

APPENDIX E

ABSTRACT OF DAILY CONSECUTIVE POSITION NUMBERS BY VESSEL

Vessel	Date	Day #	Position #'s
Ship PEIRCE	8/16/67	228	0001 - 0137
	8/23/67	235	0139 - 0308
	8/24/67	236	0309 - 0573
	8/25/67	237	0574 - 0809
	8/26/67	238	0810 - 1035
	8/27/67	239	1036 - 1245
	8/28/67	240	1246- 1507 , 1511 - 1519
	8/29/67	241	1520 - 1749
	8/30/67	242	1750 - 1855
	9/07/67	250	1856 - 1995
	9/08/67	251	1996 - 2160[7]
	9/19/67	262	2168 - 2194
	9/20/67	263	2195 - 2434
	9/21/67	264	2435 - 2681
	9/22/67	265	2682 - 2828
	9/23/67	266	2829 - 2936
	9/24/67	267	2937 - 2970
Launch PE-1	8/25/67	237	8000 - 8012
	8/26/67	238	8013 - 8057
Launch PE-2	8/14/67	226	5000 - 5068
	8/15/67	227	5069 - 5198
	8/16/67	228	5199 - 5323
	8/23/67	235	5324 - 5412
	8/24/67	236	5413 - 5523
	8/27/67	239	5524 - 5635
	8/29/67	241	5636 - 5668
	8/30/67	242	5669 - 5781
	9/07/67	250	5782 - 5858
	9/19/67	262	5859 - 5964
	9/20/67	263	5965 - 6075
	9/21/67	264	6076 - 6167
	9/22/67	265	6178 - 6226
Skiff PE-3	8/28/67	240	4500 - 4547

APPENDIX F

LIST OF SIGNALS

PE-20-3-67 (H-8957)

Name	Source	Code Number	
ANN	T-1309	418	
ANT	Geographic Position *	326	* Traverse by Photo Party -
BOX	T-13108	419	
BUT	Geographic Position	328	
CAR	T-13108	428	
CAT	Geographic Position	329	
COW	T-13108	420	
DOG	T-13108	422	
DOT	Geographic Position	330	
(H) EGG	Cut in with sextants	423	
EVA	Geographic Position	331	
FIG	T-13109	401	
FIX	T-13108	424	
GAL	T-13108	421	
GAS	T-13109	402	
GUM	T-13108	425	
HAY	T-13109	414	
HUD	T-13109	407	
IVY	T-13108	426	
JOB	T-13108	427	
JOY	Geographic Position	441	
JUG	T-13109	403	
KEY	T-13109	404	
LOG	T-13109	405	
LOW	T-13108	429	
MAX	T-13108	430	
MUF	T-13109	406	
NED	Geographic Position	439	
NEW	T-13109	408	
NUT	T-13108	431	
ORB	T-13108	432	
OWL	T-13109	409	
PIE	T-13108	433	
PUD	T-13109	410	
RAG	T-13109	411	
RAN	Geographic Position	327	
RUB	T-13108	434	
SEX	T-13109	412	
SUE	T-13108	435	
THY	T-13109	413	
TOY	T-13108	436	

Name	Source	Code Number
USE	T-13108	437
VAL	T-13109	415
WED	T-13108	440
WIG	T-13108	438
WIZ	T-13109	416
YET	Geographic Position	324
ZAG	Geographic Position	325
ZOO	T-13109	417

Geographic positions were accomplished by Photogrammetric Field Party 62, and all data concerning them was forwarded by the party.

APPENDIX G

ABSTRACT OF STANDARD FORMAT COLUMN HEADINGS

Raw Data Tape

Time	Ind	Sndg	Pos#	Day	Ft Fm	R1	R2
140200	01	1250	0001	129	0	551830	235640

Corrector Tape

Time	Ind	Sngs	Pos#	Day	Ft Fm	R1C	R2C	Tide	TRA	
140200	00	1250	0001	129	0	100050	000150	1012	005	000

Position Tape

Time	Ind	Sndg	Pos#	Day	Ft Fm	LA	RA	LO	CO	RO
135100	00	0000	5000	187	0	016200	022570	0256	100	103

Sounding Tape

Time	Ind	Sndg	Vel Tab.	Day	Ft Fm	R1	R2	Tide	TRA	Spec Ind
135100	01	0420	0001	189	0	000000	000000	0000	000	000

Transducer/Velocity Indicator (T/VTI) Tape

Time		TRA	Vel Table Ind	Day			
105200	00	1002	0000	198	0	000000	000000

Tide Tape

Time		Tide		Day			
080000	00	0010	0000	178	0	000000	000000

Signal Control Tape

100 27 08 1777 080 09 0336 ANY

columns	Description
1-3	Position Number
7-8	Degrees of Latitude
10-11	Minutes of Latitude
13-16	Seconds of Latitude in Meters
19-21	Degrees of Longitude
23-24	Minutes of Longitude
26-29	Seconds of Longitude in Meters
32-34	Name of Station
4-6, 12, 17-18, 22, 25, 30-31	Left Blank
35	Carriage Return

APPENDIX H

ABSTRACT OF HYDROGRAPHIC DATA LOCATED ON THE SURVEY

Position Number	Data Located
0308	buoy - R N "14"
2738	buoy - R "WP12A"
2739 also 1837	wreck
2785	buoy - R "12"
2786	buoy - R N "12" See Para. 2 under "M"
2910	brk Sh
2911	fne gy S
2912	fne gy S, brk Sh
2913	brk Sh
2914	fne gy S, brk Sh
2915	fne gy S, brk Sh - bottom rock
2916	fne brn S, brk Sh
2917	fne gy S, brk Sh
2918	brk Sh
2919	M, brk Sh
2920	fne gy S, brk Sh
2921	fne gy S, brk Sh
2922	fne gy S
2923	fne brn S, brk Sh
2924	fne brn S, brk Sh
2925	brk Sh
2926	brk Sh
2927	fne brn S, brk Sh
2928	fne gy S, brk Sh
2929	fne brn S, brk Sh
2930	fne gy S, brk Sh
2931	fne gy S, brk Sh
2932	fne gy S, brk Sh
2933	fne gy S, brk Sh
2934	fne gy S, brk Sh
2935	fne gy S, brk Sh
2936	fne gy S, brk Sh
2937	brk Sh
2938	brk Sh
2939	brk Sh
2940	brk Sh
2941	brk Sh
2942	brk Sh
2943	brk Sh
2944	brk Sh
2945	brk Sh
2946	M

Position Number	Data Located
2947	brk Sh
2948	brk Sh
2949	fne brn S, brk Sh
2950	fne brn S, brk Sh
2951	brk Sh
2952	brk Sh
2953	brk Sh
2954	fne gy S, brk Sh
2955	brk Sh
2956	brk Sh
2957	brk Sh
2958	brk Sh
2959	brk Sh
2960	brk Sh
2961	fne brn S, brk Sh
2962	fne brn S, brk Sh
2963	brk Sh
2964	fne brn S, brk Sh
2965	brk Sh
2966	brk Sh
2967	fne brn S, brk Sh
2968	brk Sh
2969	brk Sh
2970	fne brn S, brk Sh
4511	rocks
5000 N.P.	buoy - R "14" same as pos. 0308
8000	fne br S
8001	fne brn and gy S
8002	brk Sh
8003	fne brk Sh
8004	fne brn S, Sh
8005 N.P. Questionable	fne gy S
8006	brk Sh
8007	crs S, brk Sh
8008	crs S, brk Sh
8009	crs S, brk Sh
8010	fne gy S
8011	brk Sh
8012	fne gy S
8013	fne brk Sh
8014	fne gy S, brk Sh
8015	brk Sh
8016	fne brk Sh
8017	brk Sh
8022	fne gy S
8028	brk Sh
8029	brk Sh

FORM 197
(3-16-55)

GEOGRAPHIC NAMES

Survey No. H-8957

Name on Survey	On Chart No. 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	K	
Capron Shoal										1
Pierce Shoal										2
St. Lucie Shoal										3
										4
			Names approved							5
			June 24, 1969							6
			Frank W. Hackett							7
										8
										9
										10
										11
										12
										13
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										27

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

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-8957 (PE-20-3-67)

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET & 1 Pos. Overlay	1	BOAT SHEETS	2
DESCRIPTIVE REPORT	1	OVERLAYS	2 + 7

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES			3			
CAHIERS	1		1			
VOLUMES	6	1-Celerities				
BOXES						

T-SHEET PRINTS (Line)

SPECIAL REPORTS (Line)

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				4122
POSITIONS CHECKED		411	12	
POSITIONS REVISED		62	0	
DEPTH SOUNDINGS REVISED			149	
DEPTH SOUNDINGS ERRONEOUSLY SPACED			3	
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		None	0	
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		6	1 hr.	
JUNCTIONS		2	19 hr.	
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS		57	10 hr.	
SPECIAL ADJUSTMENTS			0	
ALL OTHER WORK		234	146	
TOTALS		299	176	

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION BY G. F. Trefethen, A.K. Schugeld & W.W. Feazel	4/10/68	10/12/68
VERIFICATION BY A.K. Schugeld & W.W. Feazel	12/16/68	4/17/69
REVIEW BY S. Rose	Sept. 9, 1969	Oct. 9, 1969
Inspect Carstens 42 4/71		

H-8957 (PE-20-3-67)

A. Additions and corrections have been furnished the plotter center by the verification unit. Except those marked on printouts for submission by Review.

Signed Hugh D. Ruffin

Date April 21, 1969

Title Chief, Hydrographic Br., AMC

B. Additions and corrections have been added to the survey records and the final smooth sheet forwarded to the verification unit.

Signed _____

Date _____

Title _____

✓ C. The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the verifier's report).

Signed Hugh D. Ruffin

Date April 21, 1969

Title Chief, Hydrographic Br., AMC

D. Smooth sheet and records forwarded to Rockville, Maryland Office.

Date April 22, 1969

Reg. No. _____

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE 9/28/82 TIME REQ'D _____ INITIALS JHC

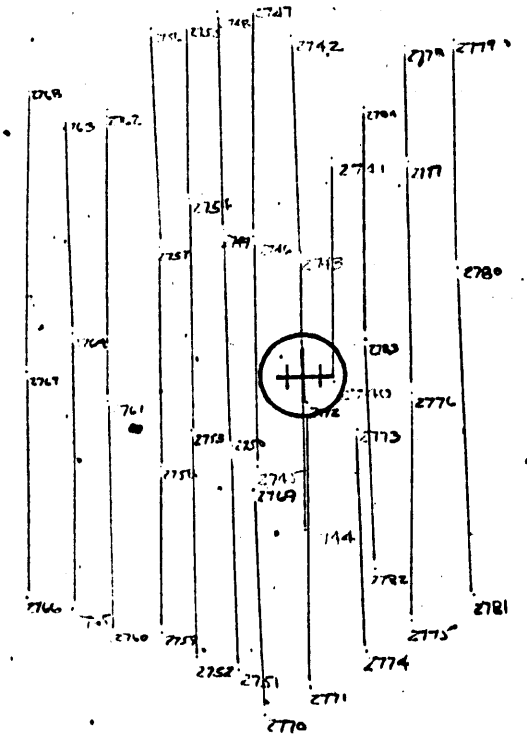
REMARKS:

27°24'

80°09'

27°24'

80°07'



27°22'

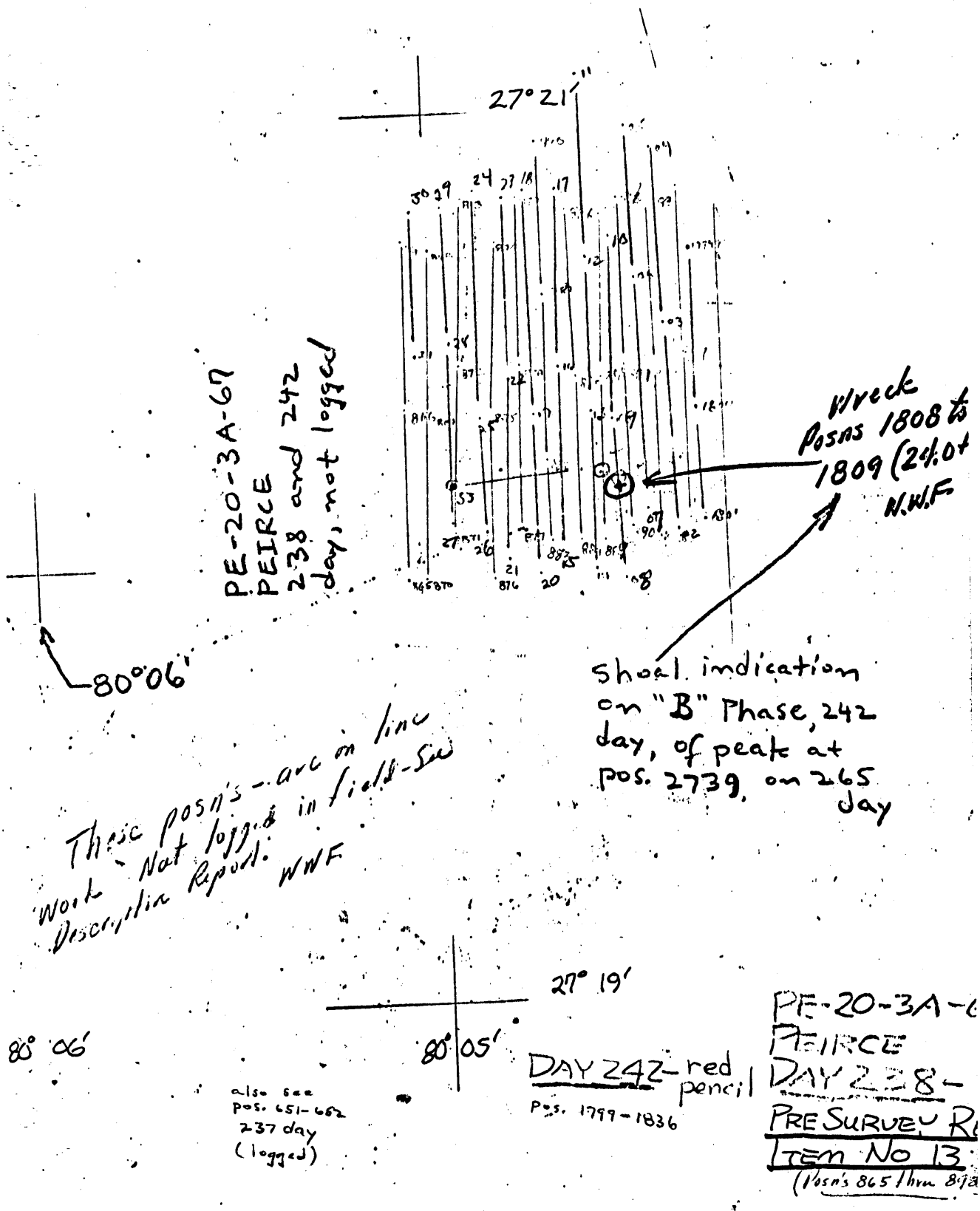
80°09'

27°22'

88°07'

DEVELOPMENT - BLACK PENCIL
PRE-SURVEY LOCATION - RED PENCIL

PE-20-3A-67
SHIP PEIRCE
DAY 265
PRE-SURVEY REVIEW
ITEM No. 12, 2784 Not /


27° 21'
PE-20-3A-67
PEIRCE
238 and 242
day, not logged
Wreck
Posns 1808 to
1809 (24.0+
N.W.F.
80° 06'
Shoal indication
on "B" Phase, 242
day, of peak at
pos. 2739, on 265
day
These posn's - are on line
Work - Not logged in field - See
Descriptive Report.
WWF
27° 19'
80° 06'
80° 05'
DAY 242 - red pencil
Pos. 1799 - 1836
also see
Pos. 651-652
237 day
(logged)
PE-20-3A-6
PEIRCE
DAY 238 -
PRE SURVEY R
ITEM NO 13
(Posn's 865 thru 87

OFFICE OF HYDROGRAPHY AND OCEANOGRAPHY

MARINE CHART DIVISION

HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-8957 FIELD NO. PE-20-3-67

Florida East Coast -- Vicinity St. Lucie Shoal

SURVEYED: August 14, 1967, through September 28, 1967

SCALE: 1:20,000 PROJECT NO.: OPR-447

SOUNDINGS: Handlead and Raytheon DE-723 Depth Recorders

CONTROL: Sextant fixes on shore signals and HI-FIX (Range-range)

Chief of Party	C. K. Townsend
Surveyed by	T. Wyzewski
	K. A. Boe
	L. Greve
	R. T. Olack
	N. D. Smith
	K. W. Sigley
Protracted by (Automated)	Gerber Digital Plotter
Soundings Plotted by (Automated)	Gerber Digital Plotter
Verified and Inked by	A. K. Schugeld (AMC)
	W. W. Feazel (AMC)
Reviewed by	S. Rose
	Date: October 9, 1969
Inspected by	R. H. Carstens

1. Description of the Area

This survey off the East Coast of Florida includes St. Lucie Shoal, Pierce Shoal and the southern end of Capron Shoal. The survey extends from the shoreline south of Fort Pierce Inlet eastward approximately to 75-ft. depths.

The bottom slopes uniformly from shore to 30-ft. depths about 0.3 mile offshore. Beyond this out to about 60-ft. depths, 6 to 7 miles offshore, the area contains three major ridges extending in a northerly direction and numerous lesser irregularities. The bottom is largely sand and broken shell. Close inshore some areas contain submerged rocks.

2. Control and Shoreline

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

The shorelines originates with Advance Manuscripts T-13,108 and T-13,109 based upon years 1966 and 1967 photography, and field edited in May 1968.

3. Hydrography

A. Depths at crossings are in good agreement. The reviewer applied a correction factor for a stylus arm error on significant lines and improved a number of crossings previously in conflict.

B. The standard depth curves are adequately delineated.

C. The development of the bottom configuration and least depths is adequate.

4. Condition of the Survey

The sounding records, automated plotting, the Descriptive Report, and the Atlantic Marine Center verification are adequate and conform to the requirements of the Hydrographic Manual and the Automated Hydrographic Survey Instruction Manual, except as follows:

A. The length of the stylus arm of the fathometer used by the PEIRCE was generally set too short by 1% to 3% and no compensating corrections were applied. No adequate vertical cast comparisons in shoal water were made for determination of an instrumental correction. Differences with the inshore launch soundings indicate that many ship soundings may be shoal by 1 to 2 feet. Inasmuch as the dangers developed by the ship would not be made less hazardous by these deficiencies the hydrography was considered acceptable for charting.

B. The scanning of graphs containing severe chop was often in the shoal direction.

5. Junctions

Adequate junctions were effected with the following surveys:

H-8956 (1967) on the south
H-8958 (1967) on the north

Present depths are generally about 2 to 3 feet shoaler than the overlapping depths from H-8783 (1964) on the east. Because of the more detailed development and larger scale, the present survey supersedes H-8783 in the common area.

6. Comparison with Prior Surveys

H-1523"a" and "b"	(1882)	1:40,000
H-2920"b"	(1882-86)	1:1,200,000
H-5026	(1930)	1:20,000
H-5031	(1930)	1:20,000
H-5040	(1930)	1:20,000
H-5057	(1930)	1:40,000

Portions, or all, of these surveys comprise the prior coverage of the area of the present survey. There are minor differences between the present depths and prior depths which are attributed to the methods of surveying. In general present depths are 1 to 3 feet shoaler than prior depths. Under item 4 there is discussed the possibility of errors of 1 to 2 feet in present depths which are related to deficiencies on the present survey. Crossing discrepancies on survey H-5057 reveal inaccuracies in soundings of that survey as well. These result from currents affecting the leadline soundings and erratic operation of the early fathometers.

St. Lucie Shoal was surveyed intensely on survey H-5026. The present survey does not disprove 3 shoaler depths on H-5026 which were carried forward.

With the addition of the soundings and supplementary bottom characteristics carried forward, the present survey supersedes the prior surveys in the common area.

7. Comparison with Chart 1247, Fourth Ed., February 17, 1969 and with Chart 845-SC, Seventh Ed., August 17, 1968

A. Hydrography

The charted hydrography within the area of the present survey is from the previously discussed prior surveys, and from the boatsheet of the present survey. Some of the soundings charted from the boatsheet differ by 1 or 2 feet with present depths because of being uncorrected for velocity, as for example, the 19 charted in lat. 27°21.70', long. 80°12.45' from the boatsheet, is shown on the smooth sheet as 21 feet.

Attention is directed to the following:

(1) The charted 10-fm. curve, originating mostly with H-5057, does not change its general direction but changes its position in several areas; the isolated 10-fm. curve charted in the vicinity of lat. 27°25.70', long. 80°07.50' is discredited by present depths and should be disregarded.

(2) The wreck of the tanker HALSEY, charted at lat. 27°23.00', long. 80°08.00', originates with No. 506 of the U.S. Navy Wreck List. Although no evidence of this wreck was found it is not considered disproved and it should not be removed from the chart.

(3) The wreck, charted at lat. 27°20.18', long. 80°04.56', from N.M. No. 29 (1953) was located, but due to weak and indefinite traces on the fathograms the exact depth of water covering this wreck is questionable. A least depth of 24 feet was obtained on this wreck by the present survey.

(4) The two wrecks charted at lat. 27°19.10', long. 80°13.46' and lat. 27°18.73', long. 80°13.30' originate with T-4542 (1928). No conclusive investigation of these wrecks was made and they should be retained as charted.

The present survey supersedes the charted hydrography in the common area.

B. Aids to Navigation

The charted positions of floating aids to navigation within the area of the present survey adequately mark the features intended.

Buoy No. "N 12" in lat. 27°23.15', long. 80°07.8' is not mentioned in the Light List. It is probably a marker buoy for the Lighted Whistle buoy 300 meters north of it.

It is recommended that a buoy be established to mark the wreck discovered by the present survey in lat. 27°20.18', long. 80°04.56'.

8. Compliance with Instructions

The present survey adequately complies with Project Instructions except as discussed in item 4.

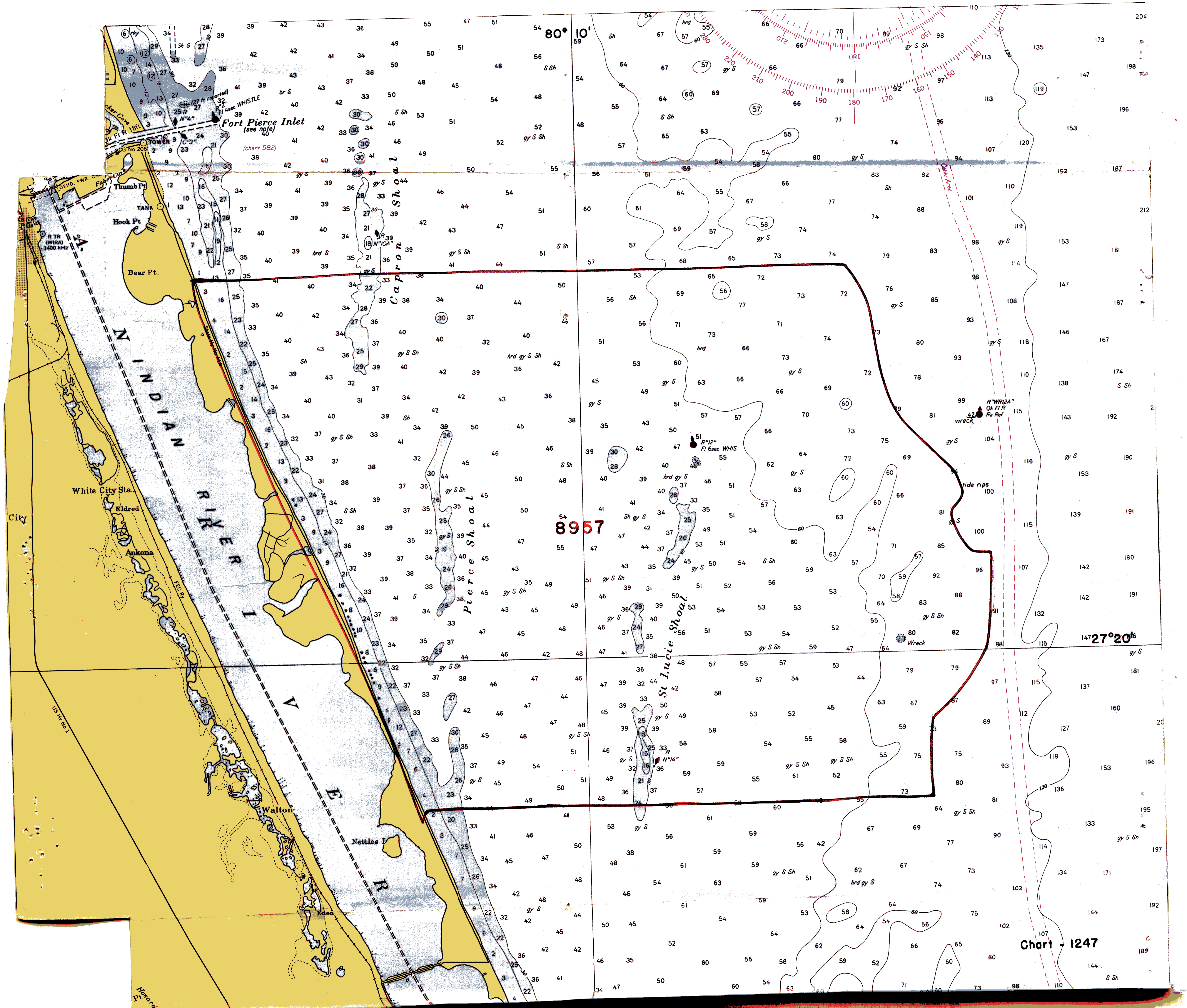
9. Additional Field Work

The present survey is an adequate survey for charting and no additional hydrography is required. At a convenient time a wire-drag investigation should be made to determine the least depth over the wreck at lat. 27°20.18', long. 80°04.56' and to determine the position and least depth over the wreck charted in lat. 27°23.0', long. 80°08.0'.

Examined and Approved:

Chief
Marine Chart Division

Associate Director
Office of Hydrography
and Oceanography



80° 10'
27°20'
Fort Pierce Inlet
(see note)
(chart 582)
Thumb Pt
Hook Pt
Bear Pt.
TANK
TOWER
R TR (WIRA) 1400 kHz
INDIAN RIVER
Capron Shoal
Pierce Shoal
St Lucie Shoal
White City Sta.
Eldred
Ankona
Walton
Nettles I
Eden
City
US Hy No 1
FEC Ry
Cable Area
tide rips
Wreck
wreck
R "12" Fl 6sec WHIS
R "WR12A" Qk Fl R Ra Ref
N "14"
8957
Chart - 1247

(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-8957

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
1112	9/13/69	Fernandez	~~Full~~ Part Before ~~After~~ Verification Review Inspection Signed Via
			Drawing No. 30
1002	10/3/69	Fernandez	~~Full~~ Part Before ~~After~~ Verification Review Inspection Signed Via
			Drawing No. 30 No Corr.
1007	9-4-70	Eric Fry	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via before
			Drawing No. No critical corrections per review
			Hold for full application to large scale charts
1002	11/4/70	O. Williams	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No# 32 Examined No corr. - only a small segment of 10fm
			curve falls with in the limit of this chart. Prudently Appl'd to CH#1247
845sc	5/18/71	R. Ross	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. applied in Full to 845sc A&B.
~~1249~~	~~7-14-71~~	~~W J Stephen~~	~~Full Part Before After Verification Review Inspection Signed Via~~
			~~Drawing No. Fully applied~~
1001	7-16-71	W J Stephen	~~Full~~ Part ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. ~~Fully~~ Review only
1112	8-30-71	C. E. Harrington	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. ONLY REVIEW CORR. ~~EXAM~~ AT THIS TIME - NO CORR -
			APPLY HYDRO THRU LARGE SCALES WHEN COMPLETED
1247	1-20-72	G. Moore	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. Appld Review Corr. only
1247	7-25-73	R. A. Lillis	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No.
1112	8/15/73	J. Sherman	Fully appld after verifications, Reviews Inspection thru Chart 1247
1002	10-31-73	R. A. Lillis	Fully applied after verification, Review & Insp. thru chart 1112 Dwg#36
411	9/12/90	D. Clark	Exam, ~~No Correction~~ Applied thru #11012 ~~Drawing #2.~~

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63