

9931

DIAGRAM NUMBER 526

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey .. HYDROGRAPHIC ..
Field No. PE-10-1-81 ..
Office No. H-9931 ..

LOCALITY

State N/A ..
General Locality .. WEST INDIES ..
Locality .. NAVASSA ISLAND AND VICINTY ..

1981

CHIEF OF PARTY
CDR DONALD E. NORTRUP

LIBRARY & ARCHIVES

DATE AUGUST 5, 1981 ..

1981

1-26194
CAT
3

HYDROGRAPHIC TITLE SHEET

H-9931

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

FIELD NO.

PE-10-1-81

State N/A

General locality West Indies

Locality Navassa Island and Vicinity

Scale 1:10,000 Date of survey 15 March 1981

Instructions dated 8 January 1981 Project No. S-I103-PE-81

Vessel NOAA Ship PEIRCE (2830), Launches 1017 (2837), 1009 (2839)

Chief of party CDR Donald E. Nortrup, Commanding

Surveyed by T.W. Ruszala, E.J. Fields, E.S. Varney, L.F. Simoneaux, J.W. Bailey, R.B. Harris

Soundings taken by echo sounder, hand lead, pole Universal Graphics Recorder *196C-23 Ross #5000

Graphic record scaled by E.J.F., E.S.V., L.F.S., J.W.B., R.B.H., C.M.

Graphic record checked by E.J.F., J.W.B., C.M.

Protracted by _____ Automated ^{smooth} plot by XYNETICS/TZOI(AMC)

Verification by _____

Soundings in fathoms ^{and tenths} feet at MLW MLW Low Water Datum

REMARKS: All times recorded in this survey are GMT.

DIGITAL DATA COMPLETED BY AMC

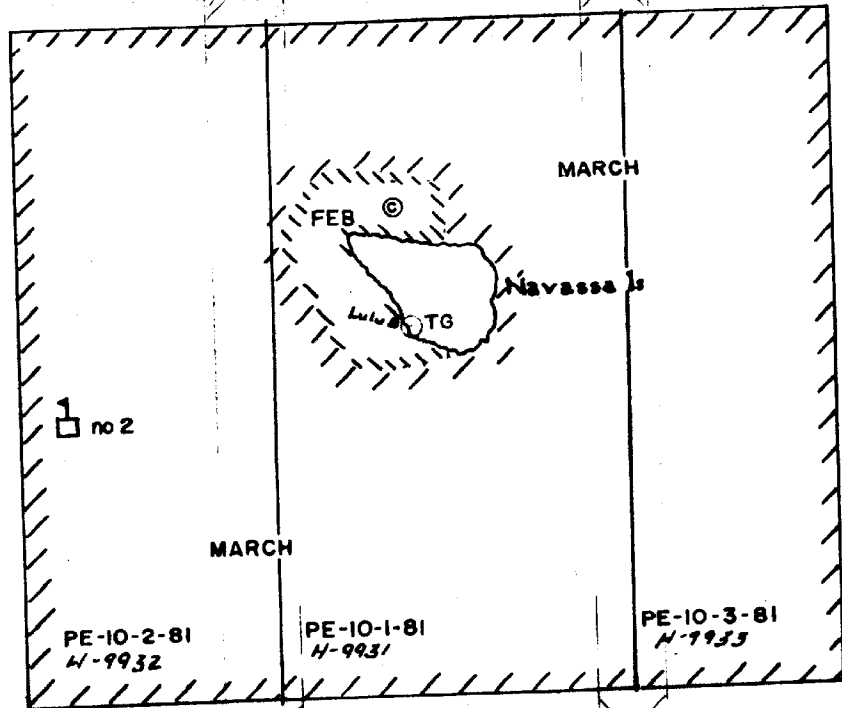
notes in black made during Q.C.

Appl'd to Standards
2-4-82
CLOF

PROGRESS SKETCH
 OPR-S1103
 NAVASSA ISLAND, WEST INDIES
 17 FEB - 15 MAR, 1981
 NOAA Ship PEIRCE
 DONALD E. NORTRUP, CDR NOAA
 COMD'G.

From Chart 26191

75° 00'
 + 18° 30'



74° 55'
 + 18° 20'

LEGEND

□ no 1

FEB	MAR	
15	670	SQ N M SOUNDING
34.0	109.0	LN M MISC DISTANCE
0	33.0	LN M DIST TO AND FROM
59.7	383.2	LN M SOUNDING LINE
0	17	BOTTOM SAMPLES (GRAB)
10	7	WATER SAMPLES ANALYZED (salinity)
7	0	CONTROL STATIONS
1	1	NANSEN CAST
1	0	TIDE GAGE
0	1	CURRENT OBSERVATIONS

75° 00'
 + 18° 15'

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9931
FIELD NUMBER PE-10-1-81

A. PROJECT

This survey is part of Project S-I103-PE-81, Navassa Island, Caribbean Sea and was conducted in accordance with Project Instructions dated 8 January 1981 and Change Number 1, dated 28 January 1981.

B. AREA SURVEYED

This survey was conducted in the West Indies, approximately 86 NM south of Guantanamo Bay, Cuba, and 30 NM west of the coast of Haiti. The actual survey limits are as follows:

18°20'00"N Latitude to 18°27'24"N Latitude
75°02'47"W Longitude to 74°58'42"W Longitude

The hydrography was conducted between the dates 17 February 1981 (JD 048) and 15 March 1981. (JD 074)

C. SOUNDING VESSELS

The hydrography was performed by the ship and the ship's type I aluminum survey launches. All vessels were equipped with the Hydroplot System. The EDP designation numbers are as follows:

NOAA SHIP PEIRCE S-328	Vesno 2830
Launch 1017	Vesno 2837
Launch 1009	Vesno 2839

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings obtained by the ship's launches (1017, 1009), were taken via the Ross Digital Fathometer Model 5000. The serial numbers for the individual equipment were as follows:

<u>VESSEL</u>	<u>VESNO</u>	<u>FATHOMETER S/N</u>	<u>J.D.</u>
Launch 1017	2837	1078	048-071
Launch 1009	2839	1079	062-074

The launches worked the inshore portion encountering depths of 2-195 fathoms. The launches' fathometers were maintained at a zero initial with complete phase checks being taken at the conclusion of each hydrographic line.

All soundings acquired by the ship, (Vesno 2830), were via ship's "U.G.R.", (Universal Graphic Recorder), S/N 164, EDO Western Digital Model 261C, S/N 227, and the Raytheon P.T.R. S/N 162. The ship encountered depths of 28-730 fathoms. A minimum of three scale checks per day were maintained on the U.G.R. for recorder accuracy.

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

Launch work was carried out to approximately 195-198 fathoms. The Raytheon UGR system, with its 33° beam width transducer, consistently recorded shoaler depths than did the Ross system, with its 7° beam width transducer, in areas where junctions were made over steep bottom slopes. This difference is normal and exactly as expected. In the junction area the Ross soundings are considered to be more truly representative of depth at the plotted position whereas the Raytheon UGR soundings are consistently conservative.

Because of their relative accuracy, Ross system soundings were favored in the construction of depth contours to 150 fathoms, the nominal maximum range of the system. Raytheon UGR soundings were favored in the construction of all deeper contours.

The velocity of sound corrections were based upon two Nansen casts taken by the ship. The following is a list of the stations observed:

<u>NANSEN CAST NO.</u>	<u>VESNO</u>	<u>J.D.</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
1	2830	057	18°19'30"N	75°05'42"W
2	2830	074	18°23'42"N	75°04'54"W

A comparison was made with both Nansen cast and direct comparison data indicating good agreements. Bar checks were taken daily to a depth of nine fathoms.

All velocity correction tables and graphs are included in Section K of the appendices. Velocity correctors were applied in the following increments:

<u>DEPTHS (FATHOMS)</u>	<u>SCALED (FATHOMS)</u>
0 - 20	.1
20 - 110	.2
110 -	1.0

Settlement and squat corrections were determined for both launches at Guantanamo Bay, Cuba on the following dates:

LAUNCH 1017	VESNO 2837	J.D. 054
LAUNCH 1009	VESNO 2839	J.D. 065

Speed changes were noted in the daily sounding records and the settlement and squat correctors were entered on the sounding correction abstract. These correctors were found to be less than .1 of a fathom therefore were not entered on TC/TI tape.

Settlement and squat was not performed on the ship due to the insignificant corrector values in the deep waters. (Section 4.9.2 of the Hydrographic Manual).

The sounding correction abstracts were used to generate the TC/TI tape. The TC/TI tape listing and sounding correction abstract are appended to this report in Appendix D and Appendix J. *Filed with survey records.*

E. HYDROGRAPHIC SHEETS

The field sheets for this survey were constructed and drawn on board the PEIRCE. The sheets were prepared by the Digital PDP 8/E computer and plot system utilizing Program RK 201.

The survey area was divided into two plotter sheets, with one overlay sheet covering the inshore work. The two sheets contain the mainscheme hydrography while the overlay contains the crosslines, developments and bottom samples.

All three sheets are at a 1:10,000 scale. The skew on the overlay sheet is 00,18,40 and the skew on the other two sheets is 90,18,60.

The smooth sheet will be drawn up by the Atlantic Marine Center. All appropriate data and records will be forwarded to AMC for final verification and smooth plot.

F. CONTROL STATIONS

The datum used was North American 1927. All horizontal control on Navassa Island was based upon Doppler Station 51196 and Azimuth mark 51196 established by Satellite Tracking Team G-2 of NGS in May of 1977. All additional horizontal control was established by Mr. J.G. Frederick, LCDR Yeager and the officers and crew of the NOAA Ship PEIRCE. Six days were dedicated to the extension of horizontal control for the support of sounding operations. All positions were computed via EDM/Traverse procedures in compliance with Project Instructions and Section 3.1.2. of the Hydrographic Manual.

In addition to the control stations set by the ship and AMC, an additional station was located and cut in from Station East Side. This station, #009, East Side Offset, was used as an additional T_2 observation station. This station is entered on signal tape and the computation can be found in the supplemental data.

There was no photogrammetric support available for this project. All field sheets and shoreline were derived from the existing chart 26194. Photo panels were established and mapping photography flown during the course of the survey.

A listing of stations and names are appended to this report.

G. HYDROGRAPHIC POSITION CONTROL

Positioning control for hydrography was by means of range/azimuth. An alternative method of positioning control was instituted to establish control in two areas inaccessible by range/azimuth. This method of control will be described later in this section. The equipment and serial numbers used at the different stations are as follows:

(Table continued on following page.)

G. HYDROGRAPHIC POSITION CONTROL

<u>EQUIPMENT</u>	<u>S/N</u>	<u>VESNO</u>
Master	162	2837
DMU	192	2837
Remote	Code: 72 256	2837, 2839
	74 262	2837, 2830
	76 1135	2837, 2839, 2830
	78 188	2839
	74 1316	2830
Master	1068	2839
DMU	515	2839
Master	169	2839
DMU	188	2830
T ₂	22153	2830, 2837, 2839
T ₂	75507	2830, 2837, 2839

Baseline calibrations were performed on the following dates:

<u>DATE</u>	<u>J.D.</u>	<u>LOCATION</u>	<u>DISTANCE</u>
2 Feb 81	060	Guantanamo Bay, Cuba	3625.5
6 Mar 81	065	Guantanamo Bay, Cuba	3625.0

Daily calibration checks were performed by 3-point sextant fixes with check angle using program RK 561. All correctors and inverse distances were monitored with respect to hydrographic specifications as per Section 4.4.3 of the manual. Due to the existing island terrain, which inhibited additional horizontal positioning control, all calibration checks were performed on the southwest side of the island. Once the checks were complete, equipment was transferred to their respective control stations for the daily work.

Calibration checks performed at the beginning and end of each day remained within acceptable limits at the scale of the survey. Therefore, baseline calibration data was applied to positioning data as correctors.

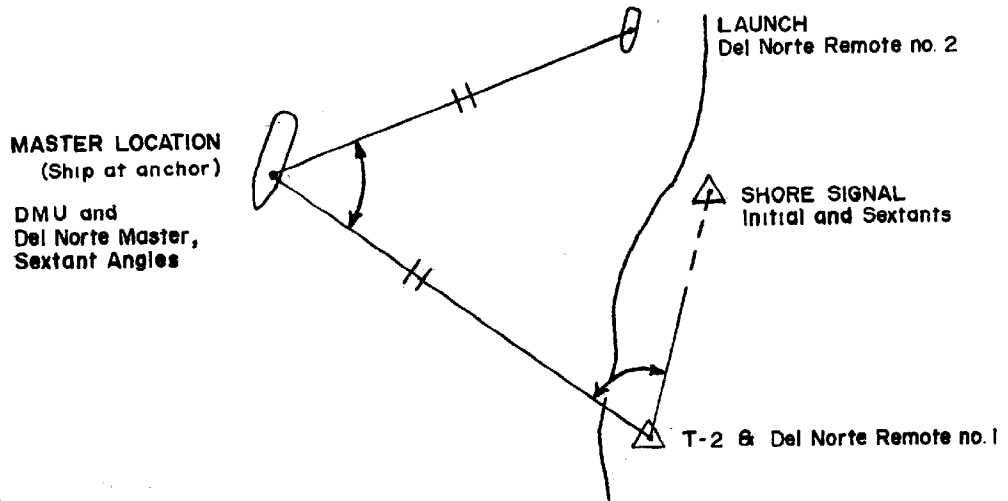
An alternative method of positioning the launch was used on PE-10-1-81 for two areas. Area one is the reef south of Northwest Point and area two is off South Point. Both areas were small and were inshore. These areas could not be controlled by range/azimuth because they were obscured visually and electronically from all control stations by island terrain.

Position data for these areas was determined as follows:

The ship, while at anchor, was used as the master station with a Del Norte remote at the azimuth station and the other Del Norte remote on the launch. For each position, a sextant angle was cut from the ship between the launch and a horizontal control signal on the beach. The range was observed to the launch from the ship and at the same time, ranges and azimuths were recorded for the ship's position. The position of the ship was determined from the range and azimuth taken to the ship, and knowing the ship's positions, positions

G. HYDROGRAPHIC POSITION CONTROL (Cont'd)

were determined for the launch by a secondary range and azimuth computation. Range/range rates were then determined for the launch from the launches geographic position and the data was plotted with RK211 offline range/range plot program. Computations are included in the supplemental data.



H. SHORELINE

The shoreline within this survey included Navassa Island. The existing shoreline was derived from a chart blow up of Chart 26194.

The charted shoreline is based on local datum. All control for this survey was adjusted to NAD 1927 and there is an apparent datum shift. The shoreline was adjusted to fit the final field sheets. This adjustment was based upon station locations and hydrography and is a best fit.

It is recommended that all future shoreline and related aids, landmarks for Navassa Island be based upon the control data from this project.

The shoreline along Navassa Island consisted of jagged, irregular, undercut rock formations. This undercutting is primarily due to the sea and swell action characteristic to this area. Photographs of the shoreline were taken to better depict the actual shoreline features. These photos are appended to this section.

I. CROSSLINES

Throughout this survey, a total of 73.0 nautical miles of crosslines were run. This constitutes 28% of the total nautical miles of sounding lines.

Crosslines run by the launches (1017, 1009) maintain very good agreement up to the 50 fathom curve. Discrepancies in less than 50 fathoms range from 0-3 fathoms. The discrepancies in deeper than 50 fathoms are due to the steepness of the bottom. The crossline, mainscheme agreement is therefore misleading outside of 50 fathoms. Once outside of 150 fathoms, crossline, mainscheme comparisons are based upon the ship's work.

Crossline agreement with respect to the ship's work is very good. The largest notable disagreement is 4 fathoms.

I. CROSSLINES (Cont'd)

All other crossline, mainscheme intersection is less than 4 fathoms. The one 4 fathoms discrepancy is in 228 fathoms of water. Again, the difference is due to the extreme bottom contours.

~~A large discrepancy of 21 fathoms was noted in the approximate location of 18°26'57" north, 75°00'21" west. Fathogram traces for both the mainscheme and the crossline were rechecked. Indications of a quick drop were found on both traces. The 21 fathom difference is also a product of the factors previously stated.~~

See Q.C. report, item 2

The same sounding equipment was used throughout the entire survey.

J. JUNCTIONS

This survey junctions with H-9933⁽¹⁹⁸⁾ to the east and H-9932⁽¹⁹⁸⁾ to the west. These surveys (H-9931, 9932, 9933) were accomplished concurrently therefore no overlapping sounding lines were run between the surveys. The trends are consistent from this survey (H-9931) and surveys (H-9932, H-9933) indicating no breaks or irregularities in the bottom contours.

K. COMPARISONS WITH PRIOR SURVEYS

There are no NOS prior surveys available. The prior survey dates back to 1803. Therefore, comparisons with prior surveys is not applicable.

The following pre-survey items were investigated during the survey period. The pre-survey items were obtained from pre-survey review (S-I103 Navassa Island, Caribbean Sea) dated 12 December 1980. The items and information are as follows:

Pre-Survey Review Item #1 Dangerous Sunken Wreck

Ø 18°23'34"N / 75°00'06"W "Fergarth" 1921 (charted position)

This item has been described as being a British steamer sunk 700 yards from the shore.

A fathometer search was conducted by launch 1009 on J.D. 072. The fathogram trace was the only data retained for this PSR item. No electronic or visual control was logged throughout this investigation.

Range/azimuth control was utilized to provide the launch control during the fathogram search. The search began on the 980 meter arc and continued to 1300 meter arc at 20 meter intervals between the 240° azimuth and the 280° azimuth. Radials were also run to further delineate this "wreck" search. The radials were run from the 245° radial to the 273° radial at 2° intervals.

After fathogram search and scan, no indications of the wreck Fergarth were noted at this time. 500 meter radius requirement not met 5/13

It is recommended that the wreck Fergarth, PSR #1, be deleted from the chart.

See addendum to Descriptive Report ~~letter page 58 of this Report~~ Do not concur. See Verifiers Report.

Pre-Survey Review Item #2 20 Fathom Sounding

Ø 18°23'19"N / 75°00'11"W (charted position)

K. COMPARISONS WITH PRIOR SURVEYS (Cont'd)

This 20 fathom sounding was investigated on J.D. 073^{pos: 6220-6265,} by launch 1009. The launch reduced line spacing to 20 meters covering an area of approximately 250 500 meters east and west and 250 meters to the north and south. Results of the search indicated a 276 fathom sounding, ~~but this sounding is located within the vicinity of other 20-21 fathom soundings which is the trend of of bottom in this location.~~ It is recommended that this item be deleted from future charts. Concur Present depths discredit charted 21 fm sdg.

Pre-Survey Item #3 16 Fathom Sounding
Ø 18°23'29"N / 75°01'02"W (charted position)

~~No investigation was run due to the lack of previously run sounding data in the area . The 16 fathom sounding plotted within the area of other 16 fathom sounding during this survey. It is recommended that this item be deleted from future charts. Concur~~

On J.D. 074, 15 March 1981, while launch 1009¹⁰⁰⁹ (Vesno 283⁹) was conducting routing mainscheme hydrography, a 201 fathom shoal sounding was uncovered in surrounding 24-25 fathoms of water. This spike^(pos: 6257-6) was located approximately Ø 18°23'07" / 75°00'14". The launch conducted further investigation via detached positions. Six DP's were taken in the area of the spike. A^{corrected} least depth of 20.2^{20.3} fathoms was obtained via fathogram search. (pos: 6306) Lat. 18°23'10" Long. 75°00'11"

~~This shoal sounding is located between PSR Item #1 and PSR Item #2. It is believed that both shoal soundings are related if not directly connected to the PSR Item #1, Ferngrath. None of the PSR items on shoal soundings found are a hazard or danger to navigation, and as previously recommended, should be deleted from the chart.~~

L. COMPARISON WITH THE CHART

Comparisons are being made with Chart Number 26194, 3rd Edition, Scale 1:12,000 and dated 8 July, 1978.

Because of the lack of sounding data and the age of the latest chart, comparisons are not applicable with this survey.
See Addendum to Descriptive Report (filed after page 54 of this report)

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede the presently charted soundings for this area.

N. AIDS TO NAVIGATION

One aid to navigation was located within the survey limits. Navassa Island lighthouse at position 18°23'47.922"N, 75°00'47.560"W. Its characteristics conformed to U.S. Coast Guard Light List 1981. The lighthouse was visible to 6.0 NM during daytime navigation, with visibility being extended to 12 NM during night time navigation. All other pertinent information was filed with the Coast Pilot Report.

O. STATISTICS

<u>CATEGORY</u>	<u>VESNO 2837</u>	<u>VESNO 2839</u>	<u>VESNO 2830</u>	<u>TOTAL</u>
Positions	890	369	514	1773
NM of Sounding Lines	90.1	59.2	119.4	268.7
Square Miles of Hydrography	9.2	5.4	12.5	27.1
Nansen Casts	---	---	2	2
Bottom Samples	---	---	17	17
Tide Stations	---	---	1	1

P. MISCELLANEOUS

Current velocity observations were taken on 14-15 March 1981 while the ship was at anchor in the 14-16 fathoms of water, 1.34 miles from Navassa Island Light bearing 158°T approximately 650 yards offshore. Observations were made with a current pole constructed from a 14-foot sounding pole, with a 10 lb. weight anchoring the base. The 2 inch diameter pole extended 12 feet below the water's surface to which a graduated line was attached. The current readings and observations are appended to this report.

Seventeen bottom samples were taken in proximity of the island by Vesno 2830. Ranges and bearings to the Navassa Island Lighthouse were used to obtain GP's through RK 300. A copy of the oceanographic log sheet-M is included in Appendix H.

Q. RECOMMENDATIONS

It is recommended that data compiled for this survey supersede all existing charts and information. Specific recommendations regarding charted features and shoreline have been made in Sections K and H.

R. AUTOMATED DATA PROCESSING


The following programs were used in acquiring and processing data:

<u>PROGRAM</u>	<u>VERSION</u>
RK 181	2/23/78
RK 211	2/02/81
RK 212	4/01/74
RK 216	2/05/76
RK 300	10/21/80
RK 330	5/04/76
RK 360	2/02/76
RK 407	9/25/78
AM 500	11/10/72
RK 530	5/10/76
AM 602	5/20/75
RK 606	8/22/74
RK 612	3/22/78

S. REFERENCE TO REPORTS

Ship's personnel installed one tide gage during this survey (See Field Tide Note Appended). This report, leveling records and monthly tide records have been submitted to the Tides and Water Levels ~~Branch~~,
Rockville, Maryland. *Division*

Respectfully Submitted,


Jonathan W. Bailey
ENS, NOAA

APPROVAL SHEET

H-9931

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and the final field sheet have been closely reviewed and found to represent a complete survey adequate to supersede all prior surveys for charting purposes.



D.E. Nortrup
CDR., NOAA
Commanding Officer
NOAA Ship PEIRCE S-328

CAMI CWF
103 RJ
3



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

July 2, 1981

TO: CDR Carl W. Fisher
Chief, Operations Division, CAMI

FROM: *Samuel E. Hartney*
Commanding Officer,
NOAA Ship PEIRCE S-328

SUBJECT: Descriptive Report, H-9931

The following information is provided to supplement and clarify the subject Descriptive Report as per your request of 01 July 1981:

Section L. Comparison with the Chart

NOS Chart 26194 depicts three small exposed reef features off the north side of the island at approximate latitude 18°25'.05 N, longitude 75°01'.50 W. No indication of these features was found during the course of the survey nor was there any indication of a subsurface feature effect on wave motion. Recommend that these features be deleted entirely from future charts. *concur (See Verifiers' Sec 7.a.2)*

Section K. Comparison with Prior Surveys

The ~~20~~² fathom shoal sounding referred to in the discussion of PSR item #3, although not diver investigated, was visible from the surface. The hydrographer did view the feature while snorkeling and described it as a pile of "rubble". Although there was no definitive evidence identifying this item as the remains of FERNGARTH, all the circumstantial evidence, including the dimensions of the item, tend to indicate the association. Recommend that the wreck symbol be deleted and that the reduced least depth be charted. *See Verifiers' Rep, Sec 7.a.3) do not concur*

Since the narrow beam Ross sounding system is particularly sensitive to pointing errors and since pointing errors are ultimately a function of sea conditions, attached hereto are copies of the ship's "Deck Log - Weather Observation Sheet(s)" for the period of time of the survey. Two characteristics should be noted:

1. That the weather entry on the raw data printout header calls for "sea...ft" whereas the Deck Log calls for "sea wave height" and "Swell wave height", and
- 2.* The ship's Deck Log reflects conditions in the most protected area available, ie. off the southwest side of the island. Swells in this area were often refracted by the island. The anchorage was often protected from the prevailing sea condition by the island.

* Filed in accordance file under misc. field records.



10TH ANNIVERSARY 1970-1980
National Oceanic and Atmospheric Administration

A young agency with a historic
tradition of service to the Nation

JUL 6 1981

DESCRIPTION OF SIGNALS
H-9931
PE-10-1-81

- 001 LULU, 1981
- ~~002 ANCHORAGE, 1981~~
- 003 PHOSPHATE, 1981
- ~~004 UPPER, 1981~~
- ~~005 NAVASSA, 1981~~
- 006 NORTHWEST POINT, 1981
- 007 EAST SIDE, 1981
- 008 NAVASSA ISLAND LIGHTHOUSE, 1981
- 009 EAST SIDE OFFSET, 1981

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

- TO BE CHARTED
- TO BE REVISED
- TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)

PEIRCE (S-328)

STATE

LOCALITY
West Indies
Navassa Island

DATE

15 MAR 81

OPR PROJECT NO.

JOB NUMBER

HAVE HAVE NOT

been inspected from seaward to determine their value as landmarks.
DATUM

SURVEY NUMBER

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

ORIGINATING ACTIVITY

- HYDROGRAPHIC PARTY
- GEODETIC PARTY
- PHOTO FIELD PARTY
- COMPILATION ACTIVITY
- FINAL REVIEWER
- QUALITY CONTROL & REVIEW GRP.
- COAST PILOT BRANCH

(See reverse for responsible personnel)

METHOD AND DATE OF LOCATION
(See instructions on reverse side)

FIELD

F-1-6-L
02/17/81

POSITION

LATITUDE

LONGITUDE

° / ' " //

D.M. Meters

° / ' " //

D.P. Meters

18 23

47.922

75 00

47.560

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

(Navassa Island Lighthouse, 1981)

*Duplicate B
L-865/81*

CHARTS
AFFECTED

26194

VELOCITY TAPE LISTING

H-9931

PE-10-1-81

TABLE #1

000110 0 0000 0001 001 283000 010181

000300 0 0010

000490 0 0020

000670 0 0030

000850 0 0040

001040 0 0050

001270 0 0060

001510 0 0070

001780 0 0080

002050 0 0090

002330 0 0100

002610 0 0110

002900 0 0120

003210 0 0130

003600 0 0140

004010 0 0150

004450 0 0160

004900 0 0170

005400 0 0180

005880 0 0190

006360 0 0200

006870 0 0210

007410 0 0220

007970 0 0230

008560 0 0240

999999 0 0240

VELOCITY TAPE LISTING

H-9931

PE-10-1-81

TABLE #2

000028 0 0001 0002 001 283000 010181

000048 0 0002

000066 0 0003

000084 0 0004

000104 0 0005

000120 0 0006

000138 0 0007

000156 0 0008

000175 0 0009

000194 0 0010

000212 0 0011

000228 0 0012

000272 0 0014

000308 0 0016

000344 0 0018

000380 0 0020

000418 0 0022

000452 0 0024

000488 0 0026

000524 0 0028

000562 0 0030

000598 0 0032

000634 0 0034

000672 0 0036

TABLE #2 CONT'D

000708 0 0038

000744 0 0040

000782 0 0042

000820 0 0044

000864 0 0046

000906 0 0048

000950 0 0050

000992 0 0052

001034 0 0054

001078 0 0056

001122 0 0058

001358 0 0068

001598 0 0078

001852 0 0088

002000 0 0098

999999 0 0098

OPR S-1103

SOUNDING CORRECTION ABSTRACT

FIELD NO. PE-10-1-81
REGISTRY NO. H-9931

VESSEL 2830

(NOTE: TRA Corr. is the algebraic sum of these columns)									
Julian Date	From Time (GMT)	To Time (GMT)	Velocity Corr. Table No.	Draft Corr.	Instrument Error Corr.	Initial Corr.	S & S Corr.	TRA Corr. $\frac{2}{fms}$	Remarks
058	162409	191703	1	1.8	-----	-----	-----	1.8	6.8 Knots
060	143559	174602	1	1.8	-----	-----	-----	1.8	6.8 Knots
069	192321	193427	1	1.8	-----	-----	-----	1.8	6.8 Knots
070	145351	205728	1	1.8	-----	-----	-----	1.8	6.8 Knots

* Note: TRA applied on corrector tape.

OPR S-1103

SOUNDING CORRECTION ABSTRACT

FIELD NO. PE-1-1-81

REGISTRY NO. H-9931

VESSEL 2837

Julian Date	From Time (GMT)	To Time (GMT)	Velocity Corr. Table No.	(NOTE: TRA Corr. is the algebraic sum of these columns)				Remarks	
				Draft Corr.	Instrument Error Corr.	Initial Corr.	S & S Corr.		TRA Corr. $\frac{ft}{fms}$
048	154700	170500	2	0.2	---	---	---	0.2	1700 RPM
048	170500	172000	2	"	---	---	---	"	1500 RPM
048	172000	173030	2	"	---	---	---	"	1700 RPM
048	173030	181400	2	"	---	---	---	"	1800 RPM
049	141507	141818	2	"	---	---	---	"	1500 RPM
049	141818	143315	2	"	---	---	---	"	1000 RPM
049	143315	185857	2	"	---	---	---	"	1200 RPM
050	132005	142700	2	"	---	---	---	"	1000 RPM
050	142700	172245	2	"	---	---	---	"	1200 RPM
056	203408	213003	2	"	---	---	---	"	1200 RPM
057	134416	195225	2	"	---	---	---	"	1200 RPM
058	135551	201513	2	"	---	---	---	"	1200 RPM
059	140333	170025	2	"	---	---	---	"	1200 RPM
061	140642	215649	2	"	---	---	---	"	1200 RPM
062	135401	165700	2	"	---	---	---	"	1200 RPM

* Note: TRA applied on corrector tape.

OPR S-1103

SOUNDING CORRECTION ABSTRACT

FIELD NO. PF-10-1-81
 REGISTRY NO. H-9931

VESSEL 2839

Julian Date	From Time (GMT)	To Time (GMT)	Velocity Corr. Table No.	(NOTE: TRA Corr. is the algebraic sum of these columns)							Remarks
				Draft Corr.	Instrument Error Corr.	Initial Corr.	S & S Corr.	TRA Corr. ft/fms			
062	144956	195242	2	0.2	---	---	---	---	0.2		1500 RPM
071	160809	193342	2	0.2	---	---	---	---	0.2		1200 RPM
072	143042	150120	2	0.2	---	---	---	---	0.2		1200 RPM
073	150926	160214	2	0.2	---	---	---	---	0.2		1200 RPM
073	224930	225830	2	0.2	---	---	---	---	0.2		1500 RPM
074	140030	173600	2	0.2	---	---	---	---	0.2		1500 RPM
074	173600	175530	2	0.2	---	---	---	---	0.2		1000 RPM

* Note: TRA applied on corrector tape.

SIGNAL TAPE LISTING
H-9931
PE-10-1-81

001	2	18	23	42652	075	01	09209	250	0013	000000
002	2	18	23	57915	075	01	19236	139	0000	000000
003	7	18	24	37484	075	01	43958	139	0047	000000
006	7	18	24	46978	075	01	42932	250	0042	000000
007	5	18	23	55726	075	00	16480	250	0069	000000
008	2	18	23	47922	075	00	47560	139	0000	000000
009	2	18	23	55888	075	00	16430	252	0069	000000

FIELD TIDE NOTE

Field tide reduction of soundings was based on predicted tides from Galveston, Texas and were interpolated by the PDP 8/E computer utilizing AM 500. All times of both predicted and reported tides are GMT. Times on the marigram and daily station record were local (+4) and were converted to GMT.

One Metercraft bubbler gage was installed in the project area. Location and period of operation were as follows:

<u>SITE</u>	<u>LOCATION</u>	<u>PERIOD</u>
Lulu Bay, Navassa Island	18°24.0'N 75°01.2'W	14-16 Feb 16-24 Feb 25 Feb-8 Mar 9-15 Mar

Lulu Bay (Metercraft Mod 7601, S/N 7536-22) Gage was installed and began operations on 14 February 1981. The staff was installed and leveled the same day. Marigram times during the period 14-16 February and for the last day of operation (15 March...0800 local, 1200 GMT) are suspect due to improper paper advance. On 16 February, 1130 hr. GMT, the orifice tubing pulled free at a swage-lok fitting. At this time, repairs were made to the orifice and the paper was reset at 1623 hr. The paper was apparently coming off or out of line with the sprocket mechanism. No further timing problems were encountered until (as noted) 15 March.

The trace was lost on 25 February, 1235 hr. due to repairs on the staff which was damaged by severe (8-10') surge activity in Lulu Bay. The staff was repaired and re-leveled on 25 February and the gage continued in operation until 8 March 1115 hr. when it and the site at Lulu Bay were vandalized by a party of Haitian fishermen. The gage was re-started on 9 March and continued in operation until removal on 15 March.

The marigram was set at the mean of the high/low points of the constant surge and reads within a foot of the mean of the staff values (the average is approximately .44' lower than the staff).

Levels In a comparison of level records, the staff agreed to within allowable limits (.011') over the period in which it was installed.

Zoning No tide correctors are appropriate.

5/11/81

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 974-2222 Navassa Island, Caribbean Sea.

Period: February 17-March 15, 1981

HYDROGRAPHIC SHEET: H-9931, H-3932, H-9933

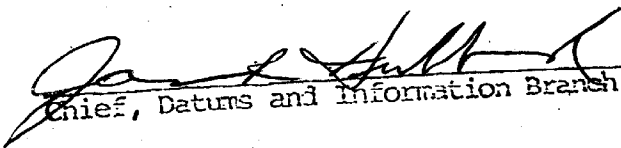
OPR: S-1103

Locality: Navassa Island

Plane of reference (~~mean low water~~ ^{low water datum}): 2.7 ft.

Height of Mean High Water above Plane of Reference is 0.9 ft.

REMARKS: Zone Direct


Chief, Datums and Information Branch

APPROVAL SHEET
FOR
SURVEY H-9931

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has/~~has not~~ been made. A new final sounding printout has/~~has not~~ been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the Verification Report.

Date: June 9, 1981

Signed: _____

R. D. Swadlow
Chief, Verification Branch

GEOGRAPHIC NAMES

Name on Survey	<div style="display: flex; justify-content: space-between;"> A ON CHART NO. B ON PREVIOUS SURVEY NO. C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G RAND McNALLY ATLAS H U.S. LIGHT LIST K </div>											
	Lulu Bay	26194										
Northwest Point	"											2
Northeast Point	"											3
East Point	"											4
South Point	"											5
Navassa Island	"											6
CAROLAN SEA												7
												8
												9
												10
												11
												12
												13
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												25

Approved:

Chas. L. Harrington
Chief Geographer - C3x5

23 Nov 1981

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS & PRELIMINARY OVERLAYS		4 & 0	
DESCRIPTIVE REPORT		1	SMOOTH OVERLAYS: POS. ARE, EXCESS		3	
DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES	11 - gray envelopes					
CAHIERS	1 - With Fath. & misc. data		Raw & 1 - misc.			
VOLUMES	11 - in box & misc. data					1 - vol.
BOXES			1 - Smooth Pos. & Sndg. & 7 envelopes of Fathograms			1 - vol. misc.
T-SHEET PRINTS (List)		TP-01104 (copies)		1 - Cht. enlargement (26194)		1 - survey
SPECIAL REPORTS (List)				1 - Bundle of Charts		prior survey 7/17/04

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	VERIFICATION	TOTALS
POSITIONS ON SHEET			1773
POSITIONS CHECKED		25	
POSITIONS REVISED		5	
SOUNDINGS REVISED		500	
SOUNDINGS ERRONEOUSLY SPACED			
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			
	TIME -- HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	69		
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS		6	
VERIFICATION OF SOUNDINGS		118	
COMPILATION OF SMOOTH SHEET		7	
APPLICATION OF TOPOGRAPHY			
APPLICATION OF PHOTOBATHYMETRY			
JUNCTIONS		1	
COMPARISON WITH PRIOR SURVEYS & CHARTS		2	
VERIFIER'S REPORT		6	
OTHER			
TOTALS	69	140	209

Pre-Verification by	LGC MWH JBW RLK	Beginning Date	May 1, 1981	Ending Date	May 15, 1981
Verification by	DVM LGC	Beginning Date	May 17, 1981	Ending Date	July 10, 1981
Verification Check by	RDS	Time (Hours)	4	Date	June 8, 1981
Marine Center Inspection by	HIT	Time (Hours)	24	Date	June 8, 1981
Quality Control Inspection by	JRB Baumgardner	Time (Hours)	56	Date	Sept. 21, 1981
Requirements Evaluation by	Steph J. Verry	Time (Hours)	12	Date	Jan 4, 1981

J. Myers 11/13/81 20 hrs.

Reg. No. H-9931 (1981)

DIGITAL DATA CERTIFICATION

The digital data for this survey have been completed by Marine Center personnel.

A microfilm record of the digital file (printout) and a digital data check plot have been made at NOS headquarters. The digital data are hereby certified for use in the NOS Automated Information System (AIS) for nautical charting.

Signature

Title

Date

ATLANTIC MARINE CENTER
VERIFICATION REPORT

REGISTRY NO.: H-9931

FIELD NO.: PE-10-1-81

West Indies, Navassa Island and Vicinity

SURVEYED: February 17, through March 15, 1981

SCALE: 1:10,000

PROJECT NO.: S-1103-PE-81

SOUNDINGS: Raytheon Universal Graphic Recorder,
Ross Digital Echo Sounder

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

Chief of Party	.....	D. E. Nortrup
Surveyed by	.....	T. W. Ruzala
	.....	E. J. Fields
	.....	E. S. Varney
	.....	L. F. Simoneaux
	.....	J. W. Bailey
	.....	R. B. Harris
Automated Plot by	.....	Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

a. The sounding datum in this area is a local low water datum and is referred to as Low Water Datum. Tidal conditions are such that Mean Low Water is not definable.

b. ~~Tide correctors were applied in accordance with section 4.9.2 of the Hydrographic Manual.~~

c. All notes in red in the Descriptive Report were made during verification.

2. CONTROL AND SHORELINE

a. The control is adequately described in sections "F" and "G" of the Descriptive Report and is supplemented by "Project Report, Navassa Island, Caribbean-Sea" and "Report on Doppler Station 51196, Navassa Island, Caribbean Sea". These two reports will be submitted with the survey and survey data.

b. Shoreline originates with Class III unviewed photogrammetric manuscript TP-01104 of 1981. It is shown on the smooth sheet as drawn by Xynetics 1201 plotter.

3. HYDROGRAPHY

a. Agreement at crossings is adequate, they agree with the limits prescribed by the Hydrographic Manual.

b. The standard depth curves could be drawn in their entirety with the following exceptions. Only very limited portions of the 10 fathom curve and the other curves to shore could be drawn. These areas were not surveyed due to the nature of undercutting that has occurred around the island and the resulting surge present in these areas. Also, this area was probably obscured electronically and visually by the high cliffs.

c. The development of the basic bottom configuration and investigation of least depths is considered adequate with the following exceptions:

~~1) At approximate Latitude 18°24'50", Longitude 75°01'15" just offshore from station Northwest Point, 1981 there were 6.2 and 9.2 fathom shoal soundings.~~ See Q.C. report item 1

2) In an area from Latitude 18°24'42", Longitude 75°00'42" to Latitude 18°23'24", Longitude 75°00'36" there exist a band where no soundings were obtained. This band extends from approximately the 17 fathom curve to shore. Again, it is believed that due to the steep cliffs in the vicinity and sea conditions precluded effective control in these areas.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports comply with the Hydrographic Manual.

Because of some discrepancies between the ships and launches' soundings, some soundings from the launches' work were considered misses. This was done where the analog record was poor and the digital record was inconsistent.

5. JUNCTIONS

An adequate junction was made with H-9933 (1981) to the east and H-9932 (1981) to the west.

6. COMPARISON WITH PRIOR SURVEY

Section 6.10 of the Project Instructions states, "Prior surveys are from other than NOS sources and in most cases date to 1803; therefore, no comparison is required", see section 7 of this report.

7. COMPARISON WITH CHART NUMBERS 26191 (15th Edition, August 30/75) 26194 (3rd Edition, July 8/78)

a. Hydrography

The charted hydrography on chart 26191 is from surveys conducted in 1908-1915. There are only five soundings from this chart in the survey area and they appear to be from 10 fathoms shoaler to 64 fathoms deeper.

The charted hydrography on chart 26194 (NOS) is from a British survey of 1803. The field discussed some of the charted hydrography under section "K" of the Descriptive Report. The charted depths in general appear to be within the 0 to 1 fathom range inside the 20 fathom curve. The area outside the 20 fathom contour to the limits of the comparison is in very poor agreement, differences from 50 to 170 fathoms is the rule.

1) On chart 26194 the "Coral Rocks" charted in approximate Latitude $18^{\circ}24'50''$, Longitude $75^{\circ}01'50''$ have a slightly different orientation and configuration than shown on the smooth sheet. Recommend this area be charted from the present survey. concur

2) Three reefs are shown on chart 26194 in approximate Latitude $18^{\circ}25.1'$, Longitude $70^{\circ}01.5'$. The field did not address the disposition of these reefs. However, soundings in the area of the charted reefs do not substantiate the existence of awash or bare reefs in the area. Depth obtained at tides close to low water datum. concur

3) Presurvey Review Item #1 the dangerous sunken wreck "Fergarth" should be revised to a non-dangerous wreck, Position Doubtful, based upon the hydrographer's investigation and comments. concur

This survey is considered adequate to supersede the charted data in the common area with the exceptions discussed above.

b. Aids to Navigation

There is only one ^{charted} aid to navigation in the survey area, and it is adequately addressed under section "N" of the Descriptive Report.

8. COMPLIANCE WITH INSTRUCTION

This survey adequately complies with the Project Instructions with the exceptions listed elsewhere in this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic survey. ~~Additional field work is only recommended if it is desirable to further delineate the shoal area north of Northwest Point as addressed in section 3.C.(1) of the Verification Report. See Q.C. report, item 1~~


L. G. Cram
Cartographer

INSPECTION REPORT
H-9931

The completed survey has been inspected by the Hydrographic Inspection Team with regard to survey coverage, delineation of depth contours, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The Verification Report has presented the facts accurately and properly, the procedures used were appropriate, and the recommendations are logical and justifiable. The survey complies with National Ocean Survey requirements except as noted in the Verification Report. The survey records comply with NOS requirements except where noted in the Verification Report. However, the following should be noted:


1. The smooth field sheet contained large unresolved discrepancies in the displayed sounding data. These discrepancies occurred where sounding lines crossed, on adjacent sounding lines, and cross-lines. Had the field sheets been contoured in accordance with the Hydrographic Manual, abnormal and improbable data would have been evident. These discrepancies should have been resolved in the field.


2. Discrepancies in the slope area of 50 to 200 fathoms occur between launch and ship sounding systems. Observations for comparison purposes should have been made at various depths in this area by sounding simultaneously with the Ross and UGR systems aboard the ship.

The Hydrographic Inspection Team concurs with the verifier's findings, actions, and recommendations.

Examined and Approved
Hydrographic Inspection Team


Karl Wm. Kieninger, CDR, NOAA
Chief, Processing Division


Ronald W. Jones, LCDR, NOAA
Field Procedures Officer
Operations Division


R. D. Sanocki
Chief, Verification Branch
Processing Division

Approved/Forwarded
July 13, 1981


Richard H. Houlder, RADM, NOAA
Director, Atlantic Marine Center



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

OA/C352:SRB

September 21, 1981

TO: Glen R. Schaefer *G.R.S.*
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch *gm*

FROM: S. R. Baumgardner *S.R. Baumgardner*
Quality Evaluator

SUBJECT: Quality Control Report for H-9931 (1981), West Indies, Navassa Island
and Vicinity

A quality control inspection of H-9931 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions made and actions taken by the verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a one-half scale copy of the survey to be furnished the verifier. In general, the survey was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report, the HIT Report, and as follows:

1. Portions of two sounding lines were considered to be plotted in error due to erroneous control data furnished in the survey records. Position 1 at latitude $18^{\circ}24'59.49''N$, longitude $75^{\circ}01'37.10''W$ displaces the beginning of a line some 300 meters north of its intended start as stated in the sounding volumes. Position 745 at latitude $18^{\circ}24'52.95''N$, longitude $75^{\circ}01'43.49''W$ was plotted in error due to an inadvertent use of a time (GMT) value in place of a range observed at the fix. Depths on both line segments affected by the questionable data are in conflict with a number of crossings considered valid on this survey. Therefore, soundings on the erroneous line segments were rejected.
2. The 21-fathom difference between crossing soundings at latitude $18^{\circ}26'57''N$, longitude $75^{\circ}00'21''W$, mentioned by the hydrographer in the Descriptive Report, is nonexistent. A rescan of the graphic depth record during quality control disproved the existence of a conflict in the area.

cc:
OA/C351





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

JAN 19 1982

OA/C351: SJV

TO: OA/CAM - Richard H. Houlder
FROM: /OA/C3 - Roger F. Lanier
SUBJECT: H-9931 (1981), West Indies, Navassa Island and Vicinity, Report of Compliance with Project Instructions

The smooth sheet and Descriptive Report for the subject survey have been examined. This survey, except as noted in the Quality Control Report, dated September 21, 1981 (copy attached), and the Hydrographic Survey Inspection Team Report, dated June 8, 1981, is complete and adequate for the purposes intended and is in compliance with Project Instructions S-I103-PE-81, dated January 5, 1981.

Attachment

cc:
OA/C352 w/o att.



