

# 10456

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NOAA FORM 76-35A U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
<b>DESCRIPTIVE REPORT</b>	
Type of Survey	Hydrographic
Field No.	PHP-10-1-93
Registry No.	H-10456
<b>LOCALITY</b>	
State	California
General Locality	San Francisco Bay
Sublocality	Golden Gate Bridge to Yerba Buena Island
19 93	
CHIEF OF PARTY LT. G. T. Noll	
<b>LIBRARY &amp; ARCHIVES</b>	
DATE	November 16, 1994

NOAA FORM 77-28  
(11-72)

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

REGISTER NO.

H-10456

### HYDROGRAPHIC TITLE SHEET

FIELD NO.

PHP-10-1-93

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

State California

General locality San Francisco Bay

Locality Golden Gate Bridge to Yerba Buena Island

Scale 1:10,000

Date of survey March 9 to April 21, 1993

Instructions dated December 29, 1992

Project No. OPR-L344-PHP

Vessel Jensen Launch 1101 (0651), MonArk Launch 1102 (0652)

Chief of party LT Guy T. Noll, NOAA

Surveyed by LT G. Noll, LT D. Neander, LT R. Fletcher, ET E. Wernicke,  
ST R. Adams, ST K. Simmons

Soundings taken by echo sounder, hand ~~hydrox~~ Innerspace Model 448

Graphic record scaled by PHP Personnel

Graphic record checked by PHP Personnel

Verification by: I. Almacen

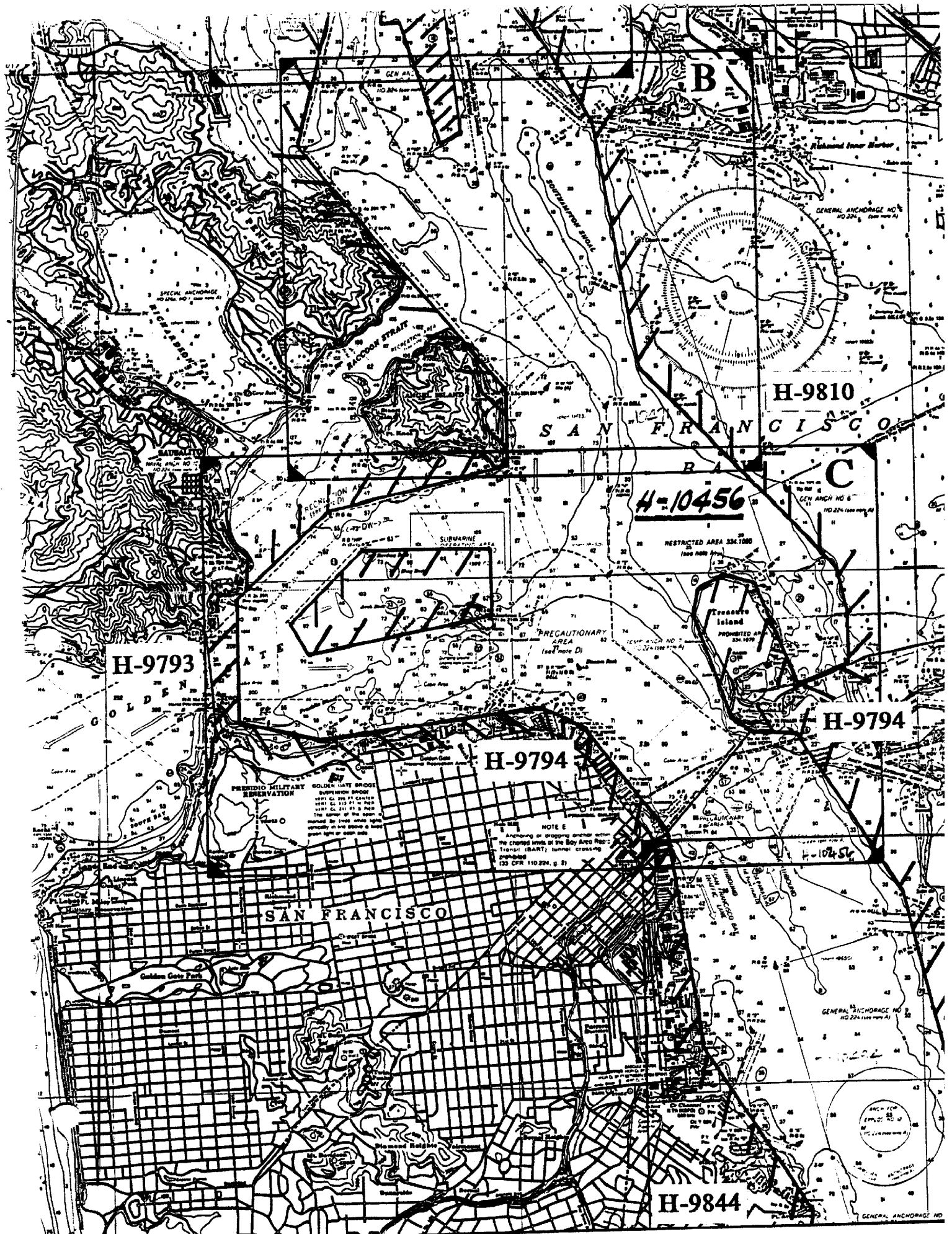
Automated plot by PHS Xynetics Plotter

Evaluation by: I. Almacen

Soundings in fathoms feet at MKW MLLW

REMARKS: Time in UTC. Revisions and marginal notes in black were generated during office processing. Some separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

*AWOIS + SURF - RWD 1/95*



B

H-9810

SAN FRANCISCO

C

H-10456

RESTRICTED AREA 334100  
(see note D)

H-9793

GOLDEN GATE

H-9794

H-9794

PRESERVED MILITARY RESERVATION

GOLDEN GATE BRIDGE

SUPPLEMENT BRIDGE

NOTE E

ANCHORING OR DROPPING ANCHOR WITHIN THE CHOPPED LEVELS OF THE BAY AREA NEAR TRANSBAY (BART) TUNNEL CROSSING (33 CFR 110.204, g. 8)

SAN FRANCISCO

H-9844

GENERAL ANCHORAGE NO. 224 (see note A)

GENERAL ANCHORAGE NO.

**Descriptive Report to Accompany Hydrographic Survey H-10456**

Field Number PHP-10-1-93  
Scale 1:10,000  
1993

Pacific Hydrographic Party  
Chief of Party: LT Guy T. Noll

**A. PROJECT**

This survey was conducted in accordance with Hydrographic Project Instructions OPR-L344-PHP, San Francisco Bay, California, dated December 29, 1992. ✓

Hydrographic survey H-10456 was conducted to obtain data to update coverage of the designated traffic lanes in San Francisco Bay which are frequently transited by deep-draft vessels and to obtain data for the maintenance of existing nautical charts. This project also responds to the Harbor Safety Committee of the San Francisco Bay Region, the San Francisco Bar Pilots, the State of California Department of Fish and Game, Office of Oil Spill Prevention and Response, and the U.S. Coast Guard (USCG). Deposition of waste materials and continuous dredging in specific areas have resulted in shoaling in some areas and deepening in others. San Francisco Bay was last surveyed by the National Ocean Service (NOS) from the late 1970's to the early 1980's. Throughout the project area the U.S. Army Corps of Engineers (COE) maintains dredging projects and provides NOS with supplemental data. ✓

This survey's sheet letter is "C", as specified by the project instructions. Sheet C is the first survey for Project OPR-L344. ✓

**B. AREA SURVEYED** (*See EVAL RPT, SEC 1*)

The area surveyed for H-10456 extends from approximately latitude 37°47'10"N north to latitude 37°51'20"N and from longitude 122°28'45"W eastward to longitude 122°20'30"W. Because of the configuration of the survey area and size constraints of the HDAPS plotter, Sheet "C" was subdivided north/south at longitude 122°25'00"W. The western section was designated "CW", the east "CE". ✓

To accommodate all data on two HDAPS sheets, the plotter sheet CW was skewed to 90°, with the overall limits of hydrography measuring 58.5cm by 70cm at the scale of the survey. Plotter sheet CE was skewed 61.5° with the overall limits of hydrography measuring 58.5cm by 100cm at the scale of the survey. Hydrographic limits for H-10456 are within those required by the Hydrographic Manual (Section 1.2.4, p. 1-6). ✓

Data acquisition for mainscheme and crossline hydrography was conducted from March 9 (DN 068) through April 21 (DN 111). ✓

### C. SOUNDING VESSELS

NOAA Launch 1101 (EDP No. 0651), a 29-foot Jensen, and NOAA Launch 1102 (EDP No. 0652), a 22-foot SeaArk, were used for all hydrography. NOAA Launch 1101 was used for all velocity casts. No shoreline verification or bottom drags were required. No changes to the standard vessel sounding configuration were necessary. ✓

### D. AUTOMATED DATA ACQUISITION AND PROCESSING

The standard HDAPS software suite was used throughout this survey. Program names and versions are listed in the appendix.

The following non-HDAPS computer programs were used:

<u>Program Name</u>	<u>Program Version</u>	<u>Version Date</u>
VELOCITY	2.00	1992
NADCON	1.01	1989
MTEN 4	20	1991
GEOID90	1.00	1990

 ✓

The PC-DAS SURVEY Program, version 4.03 (GPS implementation), was used for all data acquisition. The master printout was annotated whenever software problems affected the data.

### E. SONAR EQUIPMENT

Not applicable. ✓

### F. SOUNDING EQUIPMENT

During this survey, the following Innerspace Model 448 (IN-448) echosounders, modified with custom EPROMS for HDAPS, were used:

<u>Echosounder Type</u>	<u>Vessel EDP No.</u>	<u>Serial No.</u>	<u>DN Used</u>
IN-448	0651	236	068-117
IN-448	0652	239	103-106

 ✓

Soundings were recorded in meters, with an assumed speed-of-sound through water of 1500 m/sec. Depths encountered in the survey

area ranged from 8.8 meters to 96.0 meters based on <sup>actual</sup> predicted tides.

The digitized soundings displayed on-line were compared in real time with the analog trace to ensure reasonable agreement. No on-line calibration adjustments were required for the IN-448. Occasional breaks in the on-line echogram occurred when changes in range scale were required, especially where the bottom rose or fell steeply. These breaks are not considered significant unless greater than 6mm at survey scale or unless they occurred over a shoal (potential missed peak), in which cases the section or line was resurveyed.

Metric leadlines were made by PHP in accordance with HSG 69. Each leadline is 7/16-inch double-braided dacron line. Markings are at one-meter intervals from 0 to 19, and are shrink-tubing secured with epoxy glue. This deviation from HSG 69 makes for a more rugged leadline. Markings were calibrated during fabrication with a steel surveyor's tape while the line was under six pounds of constant tension. The throwing end is a standard six-pound lead shackled to a stainless steel thimble bent to the bitter end. Leadlines were used for depth comparisons with the echosounders. Calibration forms are included in Separate IV \* (Sounding Equipment Calibration and Corrections).

#### G. CORRECTIONS TO SOUNDINGS

##### Velocity of Sound

Corrections for the speed of sound through the water column were computed from data obtained with an Applied Microsystems Laboratories (AML) Velocity of Sound Profiler (S/N 03004). The VELOCITY Program was used to determine the speed of sound correctors. The following casts were used to determine the velocity correctors.

Cast	DN	Depth*	DN		Cast Position	
			Range	HDAPS Tables	Latitude	Longitude
1	068	104.9	068-073	1 (CW)	37°48'55"N	122°28'30"W
3	078	122.7	074-084	3 (CW)	37°48'30"N	122°28'00"W
4	092	68.4	085-097	4 (CE)	37°50'48"N	122°25'00"W
5	104	60.7	098-117	5 (CE)	37°50'30"N	122°25'00"W

\*Extrapolated depth.

Copies of all velocity cast data and HDAPS Velocity Corrector Tables are included in Separate IV. \*

The AML instrument was calibrated by Northwest Regional Calibration Center on March 17, 1993. A copy of this calibration report is included in Separate IV. \*

\* Filed with the hydrographic data.

### Leadline Comparisons

Leadline comparisons were taken daily to determine proper digitization of the echosounder depth and are annotated on the echograms. No systematic drift or error was observed. ✓

### Static Draft

A static draft for VN 0651 was determined on January 19, 1993, in two steps. The first step determined the depth of the transducer face from a reference mark on the hull. The second step involved measuring the depth from this reference mark to the launch's waterline with the launch in water (fuel tanks half full and two crew aboard). A static draft of 0.5 meter was determined. ✓

A static draft for VN 0652 was determined in March 15, 1993 using a method similar to above. A static draft of 0.3 meters was determined. ✓

### Dynamic Draft

Settlement and squat measurements for VN 0651 were conducted on March 17, 1993, in San Francisco Bay at the Tiburon Fisheries Laboratory in Tiburon, CA. Settlement and squat measurements for VN 0652 were conducted on April 13, 1993, at the same location. ✓

Settlement and squat correctors are applied online to all survey data via the HDAPS Offset Tables. Offset Table 1 corresponds to VN 0651; Offset Table 2 corresponds to VN 0652. Field records are included in Separate IV. Settlement and squat correctors are reapplied during field processing using the REAPPLY program in HDAPS. ✓

### Tide Correctors

SHEET CW: Two field-determined tidal zones based on data for reference station Fort Point, CA, were applied to sounding data for sheet CW. Tide Table 1 includes no zonal corrections and was applied to all data west of longitude 122°26'43"W (Segment Line 1). Tide Table 2 was corrected for Alcatraz Island and was applied to sounding data east of the segment line. Reference lines east of segment line 1 are positive; reference lines on the west are negative. Correctors selected for crosslines correspond to the zone in which the longest section of the line falls. Tide Table 7 is an update of Tide Table 2 for the month of April and was applied to data collected on DN 092. ✓

SHEET CE: Two field-determined tidal zones based on data for reference station Fort Point, CA, were applied to sounding data for sheet CE. Tide Table 3 was corrected for Angel Island and was applied to sounding data collected north of latitude 37°50'00" (Segment Line 2) during March (DN 089-090). Tide Table ✓

5 is an update of Tide Table 3 and was applied to sounding data collected during April (DN 091-117). Tide Table 4 was corrected for Yerba Buena Island and was applied to sounding data south of the segment line collected during March (DN 089-090). Tide Table 6 is an update of Tide Table 4 and was applied to sounding data collected during April (DN 091-117). Correctors selected for crosslines correspond to the zone in which the longest section of the line falls. Reference lines north of the segment line are negative; reference lines to the south are positive. ✓

#### H. CONTROL STATIONS (See EVAL RPT., Sec 2)

##### Horizontal Datum

The horizontal control datum for this project is North American Datum of 1983 (NAD 83). <sup>LIST</sup> A copy of the HDAPS Control Station Table is included in ~~Appendix III~~ <sup>THIS REPORT</sup> (List of Horizontal Control Stations). A separate Horizontal Control Report OPR-L344, San Francisco Bay, accompanies this Descriptive Report. ✓

#### I. HYDROGRAPHIC POSITION CONTROL (See EVAL RPT., Sec. 2)

##### Position Control

Differential GPS (DGPS) was used for position control throughout this survey. The DGPS reference station, Alcatraz DGPS, 1993, was installed as described in the Horizontal Control Report in accordance with FPM Section 3.4.6. Per FPM Section 3.4.6.3, the reference site was confirmed using the program MONITOR. A copy of the scatter plot and the outlier.sum file on floppy are included in Separate III (Horizontal Position Control and Corrections to Position Data). Note that the ellipsoidal height of the GPS receiver was -13.5 meters during the monitor test; the correct ellipsoidal height, as noted in the Horizontal Control Report, is 36.2 meters. The GPS availability and amount of multi-path at the site are unaffected by the ellipsoidal height, and because the Ashtech sensor was co-located, there was no effect on the position produced by the sensor. The Mean Sea Level elevation of Alcatraz Lighthouse should be updated in the NGS data base. ✓

GPS signals were partially blocked and/or distorted by the San Francisco-Oakland Bay Bridge during periods of data acquisition in the vicinity of the bridge on the following days: DN 097 (Pos. Nos. 7564-7570, VN 0651), DN 099 (Pos. Nos. 7819-7924, VN 0651), DN 102 (Pos. Nos. 7925-8103, VN 0651), and DN 103 (Pos. Nos. 1000-1029, VN 0652). Mainscheme lines 1800-1900 and 3000-4700 were affected. In most cases the interference was sufficiently intermittent that it was possible to smooth the aberrant positions. In cases where inadequate position control. ✓



would necessitate smoothing in excess of 4 continuous centimeters at the scale of the survey, or where accurate positioning was not recoverable, the data was rejected and the lines, or sections of lines, were rerun. ✓

#### DGPS Performance Checks

Per FPM Section 3.4.4.1, DGPS performance checks were obtained at the beginning and end of each survey day using Sausalito Channel Light "4", a fixed aid to navigation positioned to Third Order, Class I standards (see Horizontal Control Report). All DGPS performance checks were successful. DGPS performance check forms are located in the data files. ✓

#### Positioning Equipment

The following GPS equipment was used:

<u>Equipment Location</u>	<u>Type of Receiver/Antenna</u>	<u>Receiver Serial No.</u>	<u>Antenna Serial No.</u>
PHP1 (DGPS Ref. Sta.)	Trimble 4000SST	2952A00459	2951A00123
Spare (used for geodetic work)	Trimble 4000SST	2952A00461	2951A00008
VN 0651	Ashtech Firmware 1E06D	700417B1045 (DN 068-095)	700378A0272
VN 0651	Ashtech Firmware 1E08D	700417B1139 (DN 096-111)	700378A0272
VN 0652	Ashtech Firmware 1E08D	700417A1141	700378B0402

 ✓

The unique numbers for all equipment serial numbers are annotated on the daily master printout.

#### **J. SHORELINE**

#### **K. CROSSLINES**

A total of 32.7 nautical miles of crosslines were run, representing 8.6% of the hydrography on H-10456. ✓

L. JUNCTIONS (See EVAL RPT., Sec. 5)

M. COMPARISON WITH PRIOR SURVEYS (See EVAL RPT., Sec 6)

N. COMPARISON WITH THE CHART (See EVAL RPT., Sec. 7)

This survey was compared to a stable-based 1:10,000-scale enlargement of Chart No. 18650 SC, 1:40,000, 44th edition, October 31, 1992.

There were <sup>9</sup>10 AWOIS items within the limits of H-10456 (HDAPS Plotter Sheets 21/22). Of these, two items (AWOIS Item Nos. 50562 and 51154) were fully developed in conjunction with Sheet CW. Reports of these investigations are submitted in Separate VI. AWOIS Item No. 50112 is within the limits of Sheet CW and appears on the survey boat sheet; however, it was not assigned to the project and was not developed. AWOIS Item 51988 appears on Sheet CE as well as Sheet D and will be developed during hydrography on Sheet D. AWOIS Item 50571 is within the limits of Sheet CE but was not assigned to the project and was not developed. AWOIS Items Nos. 51153, 51155, 51985, 51986 and 51987 were investigated during hydrography on Sheet CE.

Item Investigation Reports for the following features are included in ~~Separate VI~~  
*this report.*

50112	N1	Fernstream Wreck
50562	N2	31-foot Sounding
51153	N3	32-foot Sailboat
51154	N4	26-foot Sailboat
51155	N5	Barge
51985	N6	21-foot Sailboat
51986	N7	Wreck
51987	N8	Accommodation Barge
Shoal	N9	12.2-meter Sounding
Shoal	N10	Anomalous Feature
Shoal	N11	Charted 43-foot Depth
Shoal	N12	Alcatraz Disposal Site
Shoal	N13	Alcatraz Shoal
Rock	N14	Harding Rock
Rock	N15	Shag Rocks
Rock	N16	Arch Rock

Dangers to Navigation

No dangers to navigation were identified within the limits of this survey. *See EVAL RPT., Sec. 7(f)*

**O. ADEQUACY OF SURVEY** (See EVAL RPT., Sec. 687)

This navigable area survey is complete and adequate to supercede prior surveys in their common areas

**P. AIDS TO NAVIGATION** (See EVAL RPT., Sec 7,d)

Detached Positions were taken on all buoys and lights within the project area. Hydrographic positions confirmed the charted position of these aids to navigation. The Light List reports that no horn exists on LL 4175 Lighted Buoy 4 and that LL 4165 is Lighted Whistle Buoy 2. The hydrographer found that LL 4175 does have a horn, and that LL 4165 has no horn. *Concur.*

**Q. STATISTICS**

<u>Description</u>	<u>Quantities</u>
Total Positions, VN 0651	3601
Total Positions, VN 0652	357
Total Detached Positions:	26
Total Nautical Miles of Hydrography	384.0
Sq. Nautical Miles of Hydrography	13.1
Velocity Casts	5
Days of Production	27

**R. MISCELLANEOUS**

**S. RECOMMENDATIONS** (See EVAL RPT., Sec. 9)

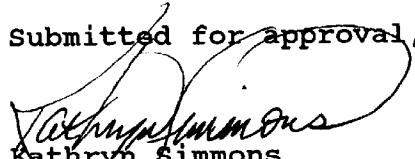
The U. S. Army Corps of Engineers conducts daily, ongoing hydrography in San Francisco Bay dredged channels and also monitors disposal sites monthly. In light of this, together with the minimal contour changes over the last ten years as observed during this survey, it does not appear that full-scale surveys at ten-year intervals are warranted.

T. REFERRAL TO REPORTS


<u>TITLE</u>	<u>DATE</u>
1993 Horizontal Control Report, OPR-L344-PHP	March 1993

No separate Electronic Control Report or Corrections to Echo Soundings Report is scheduled for submittal.

Submitted for approval,

  
Kathryn Simmons  
Survey Technician

Approved and Forwarded,

 LT, NOAA  
Guy T. Noll  
Lieutenant, NOAA  
Chief of Party

ITEM INVESTIGATION REPORT

ITEM NO.: N/A

CHART NO.: 18650,18649,18650  
EDITION: 44th, 56th, 28th  
CHART DATE: 10/31/92, 7/4/92,  
7/25/92

SURVEY: H-10456

SOURCE: Local Notice To Mariners, 47/92(17 November 1992)

AWOIS #  
52174

SOURCE POSITION: Chart 18652, Page B, lat. 37°50'/41.0" N,  
lon. 122°22'/06.0" W

BRIEF DESCRIPTION OF ITEM: Submerged Wreck

METHOD OF INVESTIGATION: Dive Investigation

RESULTS OF INVESTIGATION:

Dive investigation-- near low water, a weight with a float was dropped at the above position. PHP personnel conducted a circle search around the anchor of the marker buoy and discovered a 30' wooden hulled vessel lying on the bottom in a NW-SE direction. A leadline was attached by diver to the starboard rail which was the highest protruding feature of the wreck. After divers were secured NOAA Launch 1101 was positioned over the feature and a detached position of the submerged wreck was obtained. The leadline measured 7.0 meters from the rail to the water surface which agreed with the echosounder depth.

A yellow buoy named "WR" marking the wreck was found at latitude 37°50'41.422" longitude 122°22'08.760". A Danger to Navigation report was not submitted due to the existence of the wreck buoy.

The investigation information was provided to USCG ANT San Francisco, BMC Charles F. Tanski, Officer in Charge (415-399-3515). BMC Tanski said the USCG will remove the wreck buoy and issue a Notice to Mariners reflecting the removal of the buoy and charting the wreck.

<u>Least Depth</u>	<u>Position Number</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Description</u>
20 FEET (6.2 meters)	1496	37°50'41.004"N	122°22'10.850"W	Submerged Wreck

CHARTING RECOMMENDATION: Chart a dangerous submerged wreck with a depth of 20 feet at latitude 37°50'41.004"N longitude 122°22'10.850"W. *Concur.*

AWOIS INVESTIGATION - N1

AWOIS # 50112

DN:

CHART # 18649

VN: 0651

DESCRIPTION: Fernstream Wreck

SOURCE: ~~NM4/53~~ (COE) H9713/78

\*\*\*\*\*

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	037°49'12.240"N	122°27'34.890"W	

OBSERVED:

POSITIONED BY:

METHOD OF INVESTIGATION: Although this item is within the limits of Sheet CW and appears on the survey boat sheet, it was not assigned to the project and was not investigated.

FINDINGS:

\*\*\*\*\*

DIVING INVESTIGATION

None.

\*\*\*\*\*

CHARTING RECOMMENDATIONS: *Retain wreck as charted.*

..... COMPILATION USE ONLY

CHART

APPLIED

AWOIS INVESTIGATION - N2

AWOIS # 50562 DN: 083, 084, 090  
CHART # 18650 VN: 0651

DESCRIPTION: 31-foot Sounding at LW

SOURCE: H7621/47--CS256

\*\*\*\*\*

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°48'33.440"N	122°27'33.390"W	
OBSERVED:	37°48'33. <sup>5</sup> <del>38</del> "N	122°27'33. <sup>10</sup> <del>02</del> "W	6748+2 ✓

POSITIONED BY: DGPS DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 5-Meter Echosounder Development

FINDINGS: Least depth observed was <sup>9.9</sup>10.2 meters (<sup>2</sup>33.5 feet, Pos. No. 6748+2, DN 084) located at 37°48'33.<sup>5</sup>~~38~~"N, 122°27'33.<sup>10</sup>~~02~~"W. The charted 31-foot sounding is located within the Presidio Shoal which has deepened along its northern limit. Observed depths are 4-8 meters deeper than charted depths; the 20-meter contour has shifted southward 400 meters in the vicinity of Anita Rock.

\*\*\*\*\*

DIVING INVESTIGATION

None.

\*\*\*\*\*

CHARTING RECOMMENDATIONS: The hydrographer believes the charted shoal at the AWOIS target was adequately defined and recommends soundings from this survey supersede charted soundings in this area. *Concur.*

..... COMPILATION USE ONLY

CHART

APPLIED

AWOIS INVESTIGATION - N3

AWOIS # 51153

DN: 109

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

ITEM DESCRIPTION: Sunken 32-foot sailboat { ED - on chart 18650 (PA) - uscg listing

SOURCE: Local Notice to Mariners 24/82 (6/11/82) 12th CGD

\*\*\*\*\*

GEOGRAPHIC POSITION

LATITUDE LONGITUDE POSITION #
CHARTED: 37°47'41.64"N 122°22'16.59"W
OBSERVED: No evidence found.

POSITIONED BY: DGPS DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 12-meter Echosounder Development

FINDINGS: Development was conducted within 250-meter radius of the target to 12-meter spacing (Pos. Nos. 8238-8362). No evidence of a sunken vessel was observed. Depths within the target radius range from 18.8 meters (60 feet) to 21.8 meters (70 feet).

\*\*\*\*\*

CHARTING RECOMMENDATIONS

The target area is transited daily by deep-draft vessels, none of which have reported observing or encountering an obstruction over the past ten years. Given this, together with the depths of the water in the area, the hydrographer believes no hazard to navigation is present and recommends removing the "dangerous" designation from the chart. Do not concur. Retain wreck as charted.

A full coverage of the area was not accomplished with 12-meter development using Innerspace 400 echo sounder. The wreck is still considered dangerous because the depth of water in the area is less than 11 fathoms or 20 meters and it was charted in an area frequented by deeper draft vessels.

..... COMPILATION USE ONLY



AWOIS INVESTIGATION - N4

AWOIS # 51154

DN: 088

CHART # 18650

VN: 0651

DESCRIPTION: Submerged Wreck (PA); 26' Sailboat reported sunk in 40 feet of water.

SOURCE: LNM42/85 (10/17/85) 12th CGD

\*\*\*\*\*

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°48'52.740"N	122°24'42.890"W	
OBSERVED:	37°48'52.5 <sup>10</sup> <del>56</del> "N	122°24'42.8 <sup>10</sup> <del>61</del> "W	6982

POSITIONED BY: DGPS

DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 12-Meter Echosounder Development

FINDINGS: On DN 088 a development was conducted within a 150-meter radius of the target to a spacing of 12 meters. No evidence of a sunken wreck was found. Depth at the AWOIS target (Pos. No. 6982) was 18.8<sup>5</sup> meters\*(62° feet) at MLLW; depths within a 100-meter radius ranged from 16 meters (52 feet) near shore to 22 meters (72 feet) offshore.

\* This sounding was exceeded by a shallower sounding of 17.4 meters (57 ft) @ Lat 37°48'51.95"N, Long. 122° 24' 43.04"W.

\*\*\*\*\*

DIVING INVESTIGATION

None.

\*\*\*\*\*

CHARTING RECOMMENDATIONS: No trace of the sunken sailboat was found in this extremely high-traffic area. The hydrographer believes it would not in any event constitute a hazard to navigation in view of the depths of the surrounding waters and recommends removing the "danger" symbol. Also recommend labeling the wreck "existence doubtful." Do not concur. Retain as dangerous wreck and revise note to "ED" (existence doubtful). A full coverage of the area of the charted wreck was not attained with a 12-meter development using Innerspace 448 echo sounder. The wreck is still considered dangerous being charted within less than 11 fathoms (20m) of water and in an area expected to be navigated by deeper draft vessels.

..... COMPILATION USE ONLY.

CHART

APPLIED

AWOIS INVESTIGATION - N5

AWOIS # 51155

DN: 104, 111

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

ITEM DESCRIPTION: Submerged wreck, PA, Flat Barge 100x30 feet

SOURCE: Local Notice to Mariners 45/86 (11/5/86) 12th CGD

\*\*\*\*\*

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°49'01.54"N	122°24'09.89"W	
OBSERVED:	37°49'00.5 <sup>5</sup> 42"N	122°24'07.9 <sup>20</sup> 19"W	8471+3 (excessed)
	37°49'00.67"N	122°24'07.99"W	8216+4
POSITIONED BY:	DGPS	DATUM:	MLLW (NAD 83)

METHOD OF INVESTIGATION: 5 meter echosounder development

FINDINGS: On DN 098 the submerged wreck was observed at Pos. No. 7690+3 at a depth of 25.7 meters (84 feet). On DN 104 development hydrography at 12-meter spacing was conducted within a radius of 100 meters of the AWOIS target (Pos. Nos. 8210-8237). On DN 111 additional development lines were run perpendicular to the prior development at 5-meter spacing to define the limits of the wreck (Pos. Nos. 8465-8482). The barge is centered at latitude 37°49'00.542"N, longitude 122°24'07.919"W (Pos. No. 8471+3, DN 111) at a depth of 23.8 meters (78 feet) and measures approximately 30 meters (98 feet) by 12.5 meters (41 feet)

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CHARTING RECOMMENDATIONS

The hydrographer recommends charting the wreck at latitude 37°49'00.542"N, longitude 122°24'07.919"W. The barge rests in, 26-29 meters of water and, at a least depth of 23.8 meters (78 feet), does not constitute a hazard to navigation. The hydrographer therefore recommends removing the "danger" symbol from the wreck designation. Do not concur. Chart feature as 77 Wk (23.7 meters) based on approved tides. (without danger blue tint)

..... COMPILATION USE ONLY

AWOIS INVESTIGATION - N6

AWOIS # 51985

DN: 092, 096

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

ITEM DESCRIPTION: Sunken 21' Sailboat, PA

SOURCE: Local Notice to Mariners 30/81 (7/24/81) - 12th CGD

\*\*\*\*\*  
GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°49'59.73"N	122°25'03.89"W	
OBSERVED:	No evidence of sailboat.		

POSITIONED BY: DGPS

DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: Mainscheme (100 m) Echosounder

FINDINGS: The item was assigned for information only. Mainscheme hydrography was conducted by echosounder within a 500 meter radius of the target. No evidence of a sunken sailboat was observed. Depths within the target radius range from <sup>61</sup>~~16.8~~ meters (55 feet) to <sup>83</sup>~~120~~ meters (120 feet).

\*\*\*\*\*  
CHARTING RECOMMENDATIONS

The AWOIS target area is regularly transited by deep-draft vessels, none of which have reported observing or encountering an obstruction. Given the depths in this area, the hydrographer believes the existence of a sunken 21-foot sailboat in these waters does not present a hazard to navigation and recommends removing the wreck (PA) as charted. *Do not concur. Retain wreck as presently charted. The field investigation is not adequate to disprove the existence of the charted 21-foot sailboat and this sunken wreck was charted in an area frequently navigated by deep draft vessels.*

AWOIS INVESTIGATION - N7

AWOIS # 51986

DN: 104, 109, 117

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

ITEM DESCRIPTION: Wreck, believed to be a metal barge

SOURCE: Chart Letter 579/61

\*\*\*\*\*

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°48'58.74"N	122°22'56.89"W	
OBSERVED:	37°48'58. <sup>3</sup> 120"N	122°22'56. <sup>70</sup> 966"W	8456+ <sup>4</sup> 5
	37°48'58.980"N	122°22'57.206"W	8558+5

POSITIONED BY: DGPS DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 12 meter echosounder development

FINDINGS: On DN 104 (Pos. Nos. 8199-8209) and DN 109 (Pos. Nos. 8411-8464) development hydrography was conducted within 150-meter radius of the target. A feature was observed in the target area at a least depth of 22.9 meters at MLLW located at latitude 37°48'58.120"N, longitude 122°22'56.966"W (Pos. No. 8456+4). The feature is approximately 75 meters (246 feet) long and 30 meters (98 feet) wide (Pos. Nos. 8448, 8445) and its size and configuration conform to that of a barge. During mainscheme hydrography, an anomalous sounding was observed separate from the primary feature and located at 37°48'58.387"N, 122°22'58.274"W (Pos. No. 7640<sup>2</sup>, DN 098). On DN 117 additional hydrography was conducted in the vicinity of this sounding to define the feature. Least depth of this feature, possibly a piece of the barge, is 23.4 meters, and is located at latitude 37°48'58.980"N, longitude 122°22'57.206"W (Pos. No. 8558+5).

\*\*\*\*\*

CHARTING RECOMMENDATIONS

The hydrographer recommends charting the wreck at the position of least depth at latitude 37°48'58.120"N, longitude 122°22'56.966"W (Pos. No. 8456+<sup>4</sup>5, DN 117). The wreck is at sufficient depth that it does not constitute a hazard to navigation and the "dangerous" designation should be removed. *Concur. Chart as 75 WK (23.0 meters) (without danger blue tint)*

..... COMPILATION USE ONLY

**AWOIS INVESTIGATION - N8**

AWOIS # 51987

DN: 103, 109, 117

CHART # 18650, 44th Ed., 10/31/92

VN: 0651, 0652

ITEM DESCRIPTION: Submerged accommodation barge

LN 21/90 (5/21/90) II<sup>TD</sup> CGD

SOURCE: ~~Chart Letter 716/76 - CAS~~

~~CL 579/61 - Obstruction reported - NM 20/61~~

\*\*\*\*\*

**GEOGRAPHIC POSITION**

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°47'24.00"N	122°22'54.00"W	
OBSERVED:	37°47'27. <sup>80</sup> <sub>169</sub> "N	122°22'59. <sup>80</sup> <sub>378</sub> "W	8581+2 (20.9m.) Excessed
	37°47'26.18"N	122°22'59.01"W	8595+2 (20.7m)

POSITIONED BY: DGPS

DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 6-meter Echosounder Development

FINDINGS: On DN 103 (Pos. Nos. 1094-1216, VN 0652) and DN 109 (Pos. Nos. 8363-8406, VN 0651) development hydrography was conducted within a radius of 200 meters of the target with 12-meter spacing. Soundings characteristic of a barge were observed digitally and on the echogram at 37°47'28.<sup>30</sup><sub>828</sub>"N, 122°23'03.<sup>30</sup><sub>922</sub>"W (Pos. No. 8364+2, VN 0651). On DN 117 additional development was conducted over this position with 6-meter spacing (Pos. Nos. 8577-8598, VN 0651) in order to define the feature limits. The feature measures approximately 12x25 meters (39x82 feet) and is centered at latitude 37°47'27.<sup>80</sup><sub>169</sub>"N, longitude 122°22'59.<sup>80</sup><sub>378</sub>"W (Pos. No. 8581+2, VN 0651) at a depth of 20.9 meters (68 feet). The sunken barge lies just northwest of a ridge which trends southeast to northwest and which was surveyed in conjunction with the wreck. The ridge extends from a 12.6-meter shoal depth at latitude 37°47'15.081"N, longitude 122°22'49.918" (Pos. No. 1157+3, DN 103, VN 0652) northwest 450 meters to a 14.6 meter sounding at latitude 37°47'25.162", longitude 122°23'01.815"W. Least depth along the ridge is 11.2 meters (37.<sup>6</sup><sub>40</sub> feet) located at latitude 37°47'18.<sup>40</sup><sub>972</sub>"N, longitude 122°22'54.539"W (Pos. No. 1143+0, VN 0652, DN 103).

\*\*\*\*\*

. . . . . **COMPILATION USE ONLY** . . . . .

**CHARTING RECOMMENDATIONS**

The hydrographer believes the barge itself, at a depth of 20.9 meters, does not represent a hazard to navigation. Recommend charting the wreck at latitude  $37^{\circ}47'27.169''N$ , longitude  $122^{\circ}22'59.378''W$ , and removing the "dangerous" designation. Also recommend superceding the charted depth of 42 feet with the least depth from this survey. *Do not concur. Chart dangerous wreck at Lat.  $37^{\circ}47'26.18''N$ , Long.  $122^{\circ}22'59.01''W$ , as ~~68~~ <sup>68</sup> Wk. Chart the surrounding area based on the present survey.*

20.1 m

..... **COMPILATION USE ONLY**

ITEM INVESTIGATION - N9

ITEM: 12.2 meter shoal (40 feet) DN: 106  
CHART # 18650, 44th Ed., 10/31/92 VN: 0652

ITEM DESCRIPTION: Shoal East of Alcatraz Island  
transited by deep-draft vessels

SOURCE: Mainscheme hydrography

\*\*\*\*\*

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	N/A		
OBSERVED:	37°49'42.9 <sup>70</sup> <sub>89</sub> "N	122°24'47.0 <sup>100</sup> <sub>90</sub> "W	1239+10 - 12.3 m (40')

POSITIONED BY: DGPS DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 12-Meter Echosounder Development

FINDINGS: On DN 106 (VN 0652) echosounder development of the area was conducted to 12-meter spacing to define the limits of the shoal and to determine least depths (Pos. Nos. 1217-1281).  
 \* The southwest limit is defined by a depth of 14.0 meters (46 feet) located at latitude 37°49'37.3<sup>80</sup><sub>67</sub>"N, longitude 122°24'59.0<sup>80</sup><sub>72</sub>"W (Pos. No. 7582+1, VN 0651, DN 097). A depth of 14.3<sup>80</sup> meters (47 feet) marks the northeast limit of the shoal at latitude 37°49'51.8<sup>80</sup><sub>66</sub>"N, longitude 122°24'34.6<sup>80</sup><sub>74</sub>"W (Pos. No. 1218+0, DN 106). Least depth along the 750 meters of the shoal is 12.2<sup>80</sup> meters (40 feet) located at latitude 37°49'42.9<sup>80</sup><sub>89</sub>"N, longitude 122°24'47.0<sup>80</sup><sub>90</sub>"W (Pos. No. 1239+10).  
 \* SW LIMIT @ Lat. 37°49'37.54"N, Long. 122°24'58.98"W - 13.6 m (44') - Pos # 5965+2

\*\*\*\*\*

CHARTING RECOMMENDATIONS

The hydrographer recommends that soundings from this survey supercede charted soundings. *Concur.*

..... COMPILATION USE ONLY

ITEM INVESTIGATION - N10

ITEM: Anomalous Feature DN: 109, 111  
CHART # 18650, 44th Ed., 10/31/92 VN: 0651

SOURCE: Mainscheme Hydrography

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GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	N/A		
OBSERVED:	37°48'42.109"N	122°22'54.058"W	8495+3

POSITIONED BY: DGPS DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 5-meter Echosounder Development

FINDINGS: A feature was observed during mainscheme hydrography at latitude 37°48'42.285"N, longitude 122°22'54.234"W (Pos. No. 7765+3, DN 098). On DN 111, the mainscheme hydrography was re-acquired to confirm the existence of the feature. Development hydrography was then conducted with north/south lines and 5-meter spacing within a 25-meter radius of the target position to define the feature's limits (Pos. Nos. 8483-8496). The feature, though confirmed digitally and by echogram, could not be identified; nor, at a least depth of 33 meters (108 feet), does it represent a hazard to navigation. However, the 33-meter depth (108 feet) is shoaler than the charted depth of 124 feet (38 meters).

\*\*\*\*\*  
CHARTING RECOMMENDATIONS

The hydrographer recommends that soundings from this survey supercede charted soundings. *Concur.*

..... COMPILATION USE ONLY



ITEM INVESTIGATION - N11

ITEM: Charted 43-foot Depth DN: 099, 104, 111  
CHART # 18650, 44th Ed., 10/31/92 VN: 0651

SOURCE: Chart

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GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°47'59.000"N	122°22'06.000"W	
OBSERVED:	Not confirmed.		

POSITIONED BY: DGPS DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: Echosounder

FINDINGS: A charted depth of 43 feet (13.1 meters) located at latitude 37°47'59.00"N, longitude 122°22'06.00"W, was not confirmed. A sounding of 17.0 meters (56 feet) was observed at the position of the charted 43-foot depth. Least depth within a 50-meter radius of this position is 14.9 meters (49 feet) located at latitude 37°48'00.862"N, longitude 122°22'07.992"W (Pos. No. 8539+10, DN 111), which marks the southwest end of a ridge trending 500 meters northeast. An observed sounding of 14.9 meters (49 feet) marks the northeast extent of the ridge at latitude 37°48'10.474"N, longitude 122°21'50.703"W (Pos. No. 8526+1). Least depth observed along the ridge is 13.2 meters (43 feet) located at latitude 37°48'03.204"N, longitude 122°21'54.354" (Pos. No. 7892+10, DN 099). Deepening appears to be the general trend.

\*\*\*\*\*

CHARTING RECOMMENDATIONS

The hydrographer recommends removal of the charted 43-foot sounding and that soundings from this survey supercede charted soundings. *Concur.*

..... COMPILATION USE ONLY

ITEM INVESTIGATION REPORT - N12

Awois: 50571  
ITEM: Alcatraz Disposal Site DN: 083, 084  
CHART # 18650, 44th Ed., 10/31/92 VN: 0651

SOURCE: Chart

\*\*\*\*\*  
GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°49'16.20"N	122°25'21.50"W	
OBSERVED:	37°49'19.369"N 37°49'18.93"N	122°25'23.859"W 122°25'22.55"W	6541+4 9.1 m. (29.8 ft.) 6984 (DP) 8.8 m. (28.8 ft.) **

POSITIONED BY: DGPS DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 10-meter Echosounder development

FINDINGS: The charted 29-foot (8.8 meters) sounding at latitude 37°49'16.2"N, longitude 122°25'21.5"W, was ~~not~~ confirmed. \*Least depth observed was 9.1 meters (30.3 feet) at MLLW located at latitude 37°49'19.369"N, longitude 122°25'23.859"W (Pos. No. 6541+4, DN 083) based on predicted tides. This area is surveyed monthly by the U. S. Army Corps of Engineers based in Sausalito, CA.

\*\*\*\*\*  
CHARTING RECOMMENDATIONS

The hydrographer recommends using Corps of Engineers survey data on a regular basis. Shoal changes daily. *Chart the area according to this survey and update soundings using Corps of Engineers data on a regular basis. Update charted information to "Depths from NOS survey of 1993".*  
\* Least depth at present survey position.

..... COMPILATION USE ONLY

ITEM INVESTIGATION REPORT - N13

ITEM: Alcatraz Shoal

DN: 070, 075

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

SOURCE: Mainscheme Hydrography

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GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	N/A		
OBSERVED:	37°49'07. <sup>60</sup> 250"N	122°26'27.1 <sup>40</sup> 35"W	5412+3 - 14.4 m. (47')
	37°49'22.1 <sup>75</sup> 43"N	122°26'14.6 <sup>30</sup> 44"W	5358+5 - 12.5 m. (41')
	37°49'21.2 <sup>25</sup> 42"N	122°26'14.3 <sup>85</sup> 86"W	5835+5 - 12.5 m. (41')
	37°49'16.5 <sup>50</sup> 50"N	122°26'19.0 <sup>20</sup> 20"W	5375+2 - 13.0 m. (42')
	37°49'09.2 <sup>70</sup> 70"N	122°26'25.1 <sup>30</sup> 30"W	6275+3 - 13.0 m. (43')
POSITIONED BY:	DGPS	DATUM:	MLLW (NAD 83)

METHOD OF INVESTIGATION: 25-meter Echosounder Development

FINDINGS: A ridge approximately 600 meters long tending southwest to northeast was observed within the Alcatraz Shoal. Its southwest limit is defined by a shoal depth of 14.8 meters (48 feet) positioned at latitude 37°49'07.250"N, longitude 122°26'27.135"W (Pos. No. 5412+3). A depth of 12.5 meters (41 feet) located at latitude 37°49'22.143"N, longitude 122°26'14.644"W (Pos. No. 5358+5, DN 070) marks the northeast extent. Least depth along the ridge (12.4 meters) occurs at latitude 37°49'21.242"N, longitude 122°26'14.386"W (Pos. No. 5835+5, DN 075). This shoaling has occurred westward of the Alcatraz Island disposal site where, in spite of heavy use, increased shoaling is not apparent since the prior survey. This suggests movement of the disposed material on the strong ebb tide and resulting deposition along a developing ridge.

\*\*\*\*\*

CHARTING RECOMMENDATIONS

The hydrographer recommends soundings from this survey supercede charted soundings. *Concur.*

..... COMPILATION USE ONLY

ITEM INVESTIGATION REPORT - N14

ITEM: Harding Rock

DN: 088

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

SOURCE: Chart

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GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°50'13.2"N	122°26'44.2" W	
OBSERVED:	37°50'12.6 <sup>70</sup> <del>64</del> "N	122°26'44.5 <sup>40</sup> <del>34</del> "W	6873+3 - 11.0 m. (36.1 feet)

POSITIONED BY: DGPS

DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 10-meter Echosounder development

FINDINGS: Harding Rock charted at latitude 37°50'13.2"N, longitude 122°26'44.2"W, at a depth of 36 feet (11 meters) was developed to 10-meter spacing. Least depth of 11.2 meters (36.7 feet) was observed at latitude 37°50'12.6<sup>70</sup>~~64~~"N, longitude 122°26'44.5<sup>40</sup>~~34~~"W (Pos. No. 6873+3, DN 088).

\*\*\*\*\*

CHARTING RECOMMENDATIONS

The hydrographer recommends retaining Harding Rock at the depth and position charted. Do not concur. Chart Harding Rock with the 36-foot shoal at Lat. 37°50'12.67"N, Long. 122°26'44.54"W, and the surrounding area based on the present survey.

..... COMPILATION USE ONLY

ITEM INVESTIGATION REPORT - N15

ITEM: Shag Rocks

DN: 088

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

SOURCE: Chart

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GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	37°50'03.0"N	122°26'22.5"W <sup>3</sup> (37 feet)	
	37°50'04.2"N	122°26'25.5"W <sup>7</sup> (36 feet)	
OBSERVED:	37°50'01.98 <sup>90</sup> <sub>5</sub> "N	122°26'24.43 <sup>40</sup> <sub>8</sub> W	6928+6 - 11.3 m. (37 feet)
	37°50'04.65 <sup>82</sup> <sub>0</sub> "N	122°26'28.20 <sup>10</sup> <sub>1</sub> W	6924+4 - 11.2 m. (36 feet)

POSITIONED BY: DGPS

DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 10-meter Echosounder Development

FINDINGS: Shag Rocks are depicted on the chart with two peaks, the first at a depth of 37 feet (11.3 meters) at latitude 37°50'03.0"N, longitude 122°26'22.5"W, the second at a depth of 36 feet (11.0 meters) located at latitude 37°50'04.2"N, longitude 122°26'25.5"W. The rocks were developed to 10-meter spacing. Least depths encountered during this survey were 11.3<sup>7</sup> meters (37 feet) at MLLW positioned at latitude 37°50'01.98<sup>90</sup><sub>5</sub>"N, longitude 122°26'24.43<sup>40</sup><sub>8</sub>W (Pos. No. 6928+6, DN 088), and 11.2<sup>6</sup> meters (36 feet) at MLLW positioned at latitude 37°50'04.65<sup>82</sup><sub>0</sub>"N, longitude 122°26'28.20<sup>10</sup><sub>1</sub>W (Pos. No. 6724+4, DN 088).

\*\*\*\*\*

CHARTING RECOMMENDATIONS

The hydrographer recommends Shag Rocks remain as charted. *Do not concur.*  
*Chart Shag Rocks with the 36' & 37' shall depths and the surrounding area based on the present survey.*

..... COMPILATION USE ONLY

ITEM INVESTIGATION REPORT - N16

ITEM: Arch Rock

DN: 084

CHART # 18650, 44th Ed., 10/31/92

VN: 0651

SOURCE: Chart

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GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED: ( <i>33 feet</i> )	37°49'43.2"N	122°26'23.5"W	
OBSERVED:	37°49'45.0 <sup>50</sup> 40"N	122°26'25.9 <sup>70</sup> 66"W	6796+4 - 10.9m. ( <i>35'</i> )

POSITIONED BY: DGPS

DATUM: MLLW (NAD 83)

METHOD OF INVESTIGATION: 10-meter Echosounder Development

FINDINGS: Arch Rock charted at latitude 37°49'43.2"N, longitude 122°26'23.5"W, at a depth of 33 feet (10.1 meters) was developed to 10-meter spacing. Least depth observed was 11.2 meters (37<sup>5</sup> feet) at latitude 37°49'45.0<sup>50</sup>40"N, longitude 122°26'25.9<sup>70</sup>66"W (Pos. No. 6796+4, DN 084).

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CHARTING RECOMMENDATIONS

The hydrographer recommends Arch Rock remain as charted. *CONCUR.*

..... COMPILATION USE ONLY



FILE COPY



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Coast and Geodetic Survey  
Seattle, Washington 98115-0070

October 12, 1993

ADVANCE  
INFORMATION

Commander (OAN)  
Eleventh Coast Guard District  
Federal Building  
501 W. Ocean Blvd  
Long Beach, CA 90822-5399

Dear Sir:

During office processing of hydrographic survey H-10456, San Francisco Bay, it was determined that shoaling has occurred northeast of Alcatraz Island. This potential danger affects the following charts.

Chart Number	Edition		Horizontal Datum
	No.	Date	
18650	44	10/30/91	NAD83
18649	56	07/04/92	NAD83
18652SC	28	07/25/92	NAD83

It is recommended that this information be included in the Local Notice to Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

Sincerely,

Douglas G. Hennick  
Commander, NOAA  
Chief, Pacific Hydrographic Section

Enclosure

cc: DMA/TC  
N/CG221





Report of Danger To Navigation

**ADVANCE  
INFORMATION**

Hydrographic Survey Registry Number: H-10456

Survey Title

State: California

General Locality: San Francisco Bay

Sublocality: Golden Gate to Vicinity of Yerba Buena Island

Project Number: OPR-L344-PHP

The following was discovered during survey operations:

A charted shoal northeast from Alcatraz Island has further shoaled to a minimum depth of 40 feet.

Affected nautical charts:

Chart Number	Edition		Survey Depth	Charted Horizontal Datum	Geographic Position	
	No.	Date			Latitude	Longitude
18650	44	10/30/91	40 feet	NAD83	37/49/43.5N	122/24/43.5W
18649	56	07/04/92	40 feet	NAD83	37/49/43.5N	122/24/43.5W
18652SC	28	07/25/92	40 feet	NAD83	37/49/43.5N	122/24/43.5W

Depths have been reduced to Mean Lower Low Water.

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
 NATIONAL OCEAN SERVICE  
 COAST AND GEODETIC SURVEY

PACIFIC HYDROGRAPHIC PARTY  
 TIBURON FISHERIES LAB.  
 3150 PARADISE DRIVE  
 TIBURON, CA 94920-1211  
 (415) 435-9509  
 FAX (415) 435-9511

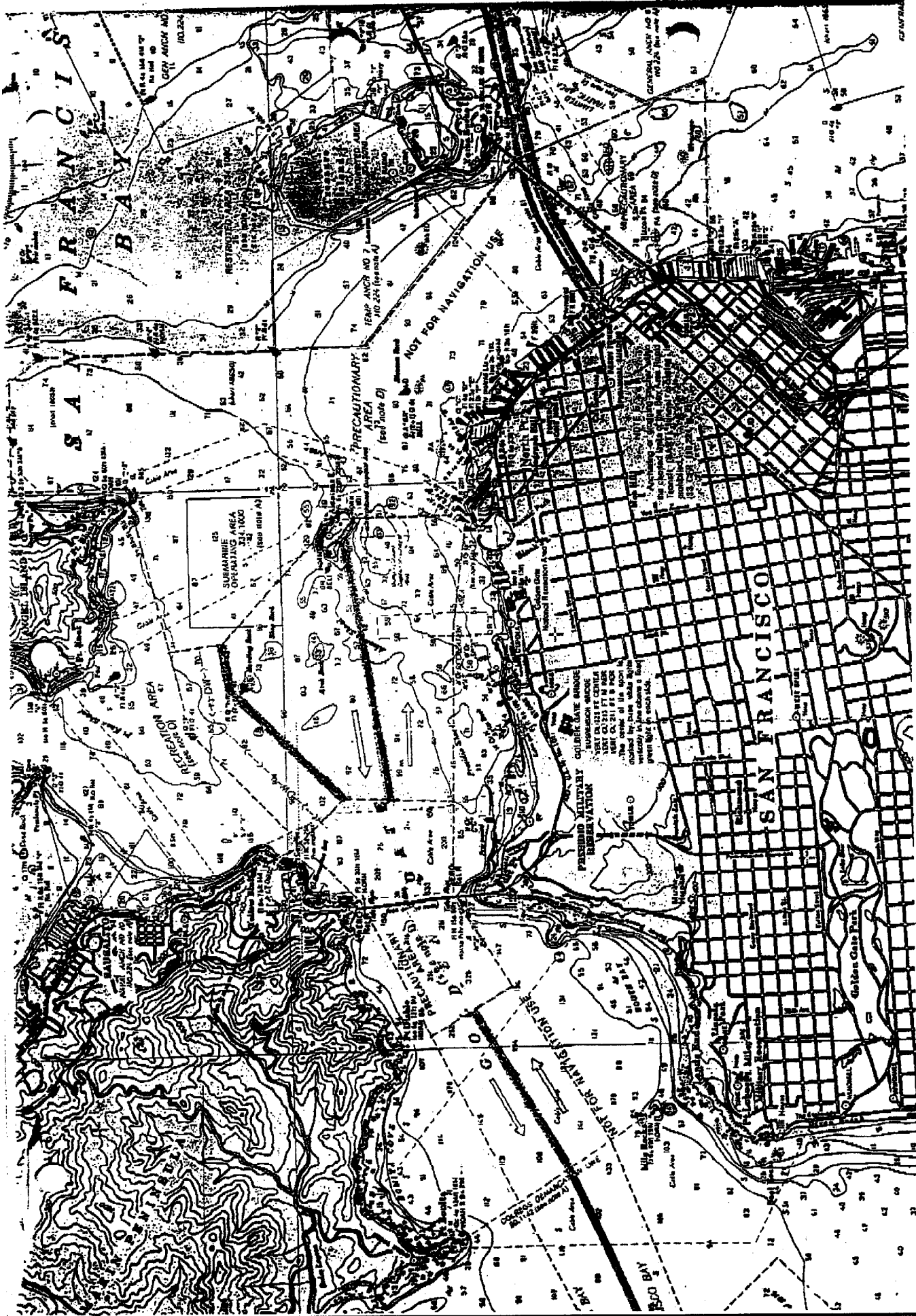
TELEFAX COVER SHEET

DATE: 13 AUG 1993  
 ORIGINATOR: LT NOLL  
 ADDRESSEE: LT HAINES  
 TELEPHONE: \_\_\_\_\_  
 FAX #: \_\_\_\_\_

NUMBER OF PAGES : 2 (INCLUDING THIS PAGE)

REMARKS:

NEW VTS SCHEME - NOTE  
 NO CHANNEL DELIMITED ~~WEST~~ EAST OF  
 ALCATRAZ; PRECAUTIONARY AREA ONLY.  
 THIS IS NEW (AS OF JULY 1993) AND  
 SUPPORTS ~~THE~~ PRESENT USE OF VTS BY  
 LARGE VESSELS.



The U.S. Coast Guard is revising the Traffic Routing Scheme in San Francisco Bay. The revised routing scheme is defined in the Chart Corrections section (Sect. M) of Local Notices to Mariners 28993, dated 06 July 1993. The revised scheme is depicted on the enclosed chartlet. This chartlet shall not be used for navigation. These changes will be reflected on all new editions of applicable charts.

**NOT FOR NAVIGATION USE**

APPROVAL SHEET

for

SURVEY H-10456

Standard field surveying and processing procedures were followed in producing this survey in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1993. The data were reviewed daily during acquisition and processing.

The field sheets and supporting data have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CG245, Pacific Hydrographic Section.

Approved and Forwarded,

DATE: April 30, 1993



Guy T. Noll  
Lieutenant, NOAA  
Chief, Pacific Hydrographic Party

ORIGINAL



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: July 15, 1993

MARINE CENTER: Pacific

OPR: L344

HYDROGRAPHIC SHEET: H-10456

LOCALITY: California, San Francisco Bay, Golden Gate to the  
vicinity of Yerba Buena Island

TIME PERIOD: March 9 - April 27, 1993

TIDE STATION USED: 941-4290 Fort Point, San Francisco, Ca.  
Lat.  $37^{\circ} 48.4'N$  Lon.  $122^{\circ} 27.9'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 5.77 feet  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 5.2 feet

TIDE STATION USED: 941-4782 Yerba Buena Island, Ca.  
Lat.  $37^{\circ} 48.6'N$  Lon.  $122^{\circ} 21.6'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 8.97 feet  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 5.6 feet

REMARKS: RECOMMENDED ZONING

1. East of the Golden Gate Bridge, west of  $122^{\circ} 26.0'W$  and south of  $37^{\circ} 50.0'N$ , times and heights are direct on San Francisco, Ca. (941-4290).
2. West of  $122^{\circ} 26.0'W$ , north of  $37^{\circ} 50.0'N$  and south of  $37^{\circ} 51.7'N$ , apply a +15 minute time correction and a X0.95 range ratio to San Francisco, Ca. (941-4290).
3. East of  $122^{\circ} 26.0'W$ , west of  $122^{\circ} 22.3'W$ , north of  $37^{\circ} 48.5'N$  and south of  $37^{\circ} 50.0'N$ , apply a +15 minute time correction and a X1.02 range ratio to San Francisco, Ca. (941-4290).



**HYDROGRAPHIC SHEET:** H-10456 (continued)

4. East of  $122^{\circ} 26.0'W$  and north of  $37^{\circ} 50.0'N$ , apply a +30 minute time correction and heights are direct on San Francisco, Ca. (941-4290).
5. In the area east of  $122^{\circ} 22.3'W$  and south of  $37^{\circ} 50.0'N$ ; and in the area south of  $37^{\circ} 48.5'N$  and north of  $37^{\circ} 47.0'N$ , between San Francisco and Oakland, times and heights are direct on Yerba Buena Island, Ca. (941-4782).

**NOTE:** Hourly heights are tabulated on Pacific Standard Time.

  
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**CHIEF, DATUMS SECTION**



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**ORIGINAL**

**DATE:** August 31, 1993

**MARINE CENTER:** Pacific

**OPR:** L344

**HYDROGRAPHIC SHEET:** Item investigation in H-10456

**LOCALITY:** California, San Francisco Bay, Golden Gate to the  
vicinity of Yerba Buena Island  
(37° 50'41.004"N Latitude, 122° 22'10.85"W Longitude)

**TIME PERIOD:** August 24, 1993 @ 18:30:33 GMT

**TIDE STATION USED:** 941-4290 Fort Point, San Francisco, Ca.  
Lat. 37° 48.4'N Lon. 122° 27.9'W

The height of tide at the time of the hydrographic measurement  
was estimated to be 2.83 feet above Mean Lower Low Water.

*William M. Gibson*  
ACTING CHIEF, DATUMS SECTION



H-10456

GEOGRAPHIC NAMES

Name on Survey	ON CHART NO: 18649, 18650										
	CON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP RAND McNALLY ATLAS U.S. LIGHT LIST										
	A	B	C	D	E	F	G	H	K		

ALCATRAZ ISLAND	X										1
ALCATRAZ SHOAL	X										2
ANITA ROCK	X										3
ARCH ROCK	X										4
BLOSSOM ROCK	X										5
CALIFORNIA (title)	X										6
*GOLDEN GATE BRIDGE (title)	X										7
HARDING ROCK	X										8
PRESIDIO SHOAL	X										9
SAN FRANCISCO BAY	X										10
*SAN FRANCISCO-OAKLAND BAY BRIDGE	X										11
SHAG ROCKS	X										12
TREASURE ISLAND	X										13
YERBA BUENA ISLAND	X										14
											15
											16
											17
											18
*Cultural feature											19
											20
											21
											22
											23
											24
											25

Approved:

*Charles E. Huntington*  
Chief Geographer - N/Ch 2x5

SEP 28 1993



NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER H-10456	
HYDROGRAPHIC SURVEY STATISTICS					
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.					
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION	
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS	
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS	
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					
SHORELINE DATA					
SHORELINE MAPS (List):					
PHOTOBATHYMETRIC MAPS (List):					
NOTES TO THE HYDROGRAPHER (List):					
SPECIAL REPORTS (List):					
NAUTICAL CHARTS (List):					
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>					
PROCESSING ACTIVITY			AMOUNTS		
			VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET					3761
POSITIONS REVISED					
SOUNDINGS REVISED					
CONTROL STATIONS REVISED					
			TIME-HOURS		
			VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION					
VERIFICATION OF CONTROL					
VERIFICATION OF POSITIONS			144.0		144.0
VERIFICATION OF SOUNDINGS			78.5		78.5
VERIFICATION OF JUNCTIONS					
APPLICATION OF PHOTOBATHYMETRY					
SHORELINE APPLICATION/VERIFICATION					
COMPILATION OF SMOOTH SHEET			58.0		58.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS				37.0	37.0
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT				109.0	109.0
GEOGRAPHIC NAMES					
OTHER*					
*USE OTHER SIDE OF FORM FOR REMARKS			TOTALS	280.5	146.0
					426.5
Pre-processing Examination by LT D. Haines			Beginning Date 5/6/93	Ending Date 5/13/93	
Verification of Field Data by I. Almacen, L. Deodato, J. Stringham			Time (Hours) 280.5	Ending Date 1/11/94	
Verification Check by			Time (Hours)	Ending Date	
Evaluation and Analysis by I. Almacen			Time (Hours) 146.0	Ending Date 4/22/94	
Inspection by D. Hill			Time (Hours) 4	Ending Date 8/9/94	

## EVALUATION REPORT H-10456

### 1. INTRODUCTION

Survey H-10456 is a navigable area survey accomplished by the Pacific Hydrographic Party under the following Project Instructions.

OPR-L344-PHP, dated December 29, 1992

This survey was conducted in San Francisco Bay, California, to update coverage of the designated traffic lanes within the bay area which are frequently transited by deep-draft vessels. It was also undertaken in response to the request of the Harbor Safety Committee of the San Francisco Bay Region, the San Francisco Bar Pilots, the State of California Department of Fish and Game, Office of Oil Spill Prevention and Response and the U.S. Coast Guard. This survey extends from the San Francisco waterfront to latitude 37/51/20N and stretches from longitude 122/20/30W to longitude 122/28/25W, covering the area off Alcatraz Island, Treasure Island and Yerba Buena Island. This area is characterized by strong currents and continuously changing sea floor. Depths range from 1.8 to 96.0 meters.

Predicted tides for Fort Point, California, gage 941-4290, were used for the reduction of soundings during field processing. Approved hourly heights zoned from this same gage and Yerba Buena Island, California, gage 941-4782, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. NAD 83 is used as the horizontal datum for plotting and position computation. The offset table and sound velocity correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey as required by the specifications contained in Hydrographic Survey Guideline No. 52, Standard Digital Data Exchange Format, April 15, 1986. Certain descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for a complete depiction of the survey data.

### 2. CONTROL AND SHORELINE

Sections H and I of the hydrographer's report and the 1993 Horizontal Control Reports for OPR-L344-PHP, contain adequate discussions of horizontal control and hydrographic positioning.

Differential GPS(DGPS) was used to control this survey. GPS station Alcatraz DGPS, 1993 was established to Third-Order accuracy and served as DGPS reference station. Sausalito Channel Light 4, 1978, was used as a calibration point during this survey.

Positions of horizontal control stations used during this survey are based on NAD 83. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined with the NGS program, NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -0.259 seconds (-7.989 meters)  
Longitude: 3.897 seconds (95.300 meters)

The year of establishment of control stations shown on the smooth sheet originates with the previously referenced horizontal control reports.

There are 119 positions where the maximum allowable horizontal dilution of precision (HDOP) limits of 3.75 have been exceeded particularly in areas close to shore. The positions are randomly scattered throughout the survey area. A review of the data, however, shows that the positioning of soundings located by these fixes is consistent with the surrounding information and is considered acceptable. None of these survey positions are used to locate dangers to navigation. Daily DGPS performance checks were conducted in the field and found adequate.

There are no shoreline maps required for this survey. The shoreline depicted in brown on the smooth sheet originates from chart 18650 and is shown for orientation purposes only.

### 3. HYDROGRAPHY

Except for the specific items mentioned elsewhere in this report, hydrography is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. show the survey was properly controlled and soundings are correctly plotted.

### 4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, March 1991 Edition.

### 5. JUNCTIONS

Survey H-10456 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10471	1993	1:10,000	North
H-10494	1993	1:10,000	South

Junction surveys H-10471 and H-10494 are still in a preliminary processing stage. Comparisons were made using their respective office preliminary sounding plots and found to be satisfactory. These junctions will be addressed in the Evaluation Reports for surveys H-10471 and H-10494.

## 6. COMPARISON WITH PRIOR SURVEYS 7

H-9793(1978), 1:10,000  
H-9794(1978), 1:10,000  
FE-242(1983), 1:10,000

Surveys H-9793, H-9794 and field examination FE-242, provides the basic coverage of the entire area of this survey. Comparison with this 1978 and 1983 surveys is considered good. The present soundings are generally within 0.3 meter (1 foot) compared with the prior surveys except around the areas where prevailing strong current exists or where periodic dredging was undertaken by the Corps of Engineers causing significant changes in the configuration of the bottom.

The following significant changes were noted during this survey.

- a. The area of Presidio Shoal has appreciably deepened by approximately 4 to 7 meters (13 to 23 feet) along its northern extremities. The presently charted 60-foot depth curve has changed direction and shifted further inshore parallel to the coastline.
- b. The configuration of Alcatraz Shoal has greatly changed as observed during this survey. An apparent ridge was developed extending about 600 meters in a NE to SW direction with a least depth of up to 12.5 meters (41 feet). The eastern portion of the shoal is now connected with the western section of the charted dumping ground south of Alcatraz Island.
- c. The continuous shoaling northeast of Alcatraz Island in the vicinity of latitude 37/49/43.0N, longitude 122/24/47.0W, was noted during this survey. Shoal depths of up to 12.3 meters (40 feet) were found along length of the shoal area. A danger to navigation report was sent to USCG concerning this item.

The following shoal depths originating from surveys H-9793, H-9794 and FE-242 are not considered disproved by the present survey, although indications of their existence were noted by shoaling in these areas. These prior soundings were carried forward on the smooth sheet.

<u>Depth(ft.)</u>	<u>Depth(m.)</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>	<u>Survey</u>
15.0	4.5	37/49/52.0	122/22/45.0	H-9794
20.0	6.1	37/49/44.0	122/21/27.0	H-9794
24.0	7.3	37/51/02.0	122/25/12.5	FE-242
47.0	14.3	37/48/50.0	122/24/10.0	H-9794
48.0	14.6	37/49/42.5	122/27/04.0	H-9793
59.0	18.0	37/50/11.0	122/27/09.0	H-9793
62.0	18.9	37/50/12.0	122/25/49.0	H-9794
75.0	22.8	37/49/22.5	122/28/13.0	H-9793
87.0	26.5	37/49/05.0	122/24/26.0	H-9794

The submerged wreck, known as Fernstream wreck (AWOIS Item 50112), charted in 99 feet (30.2 meters) of water at latitude 37/49/13.0N, longitude 122/27/35.0W, originating from survey H-9793, was not investigated during this survey and was carried forward on the smooth sheet. See Item Investigation Report for AWOIS Item 50112.

With the transfer of the soundings listed above, survey H-10456 is adequate to supersede the prior surveys for the area of common coverage.

## 7. COMPARISON WITH CHART

Chart 18650, 44th edition, dated Oct. 31, 1992; scale 1:20,000

### a. Hydrography

The charted hydrography on the 44th edition of chart 18650 originates mostly with prior surveys mentioned in the preceding section of this report and the rest from miscellaneous sources.

The 1983 field examination (FE-242) of the charted prohibited disposal area and dumping ground located south of Alcatraz Island was superseded by a 1992 Corps of Engineers survey. The Corps of Engineers are tasked with conducting periodic surveys to monitor the changes in depths around this particular area. Survey H-10456 agrees well with the 1992 survey and a least depth of 8.8 meters (29 feet) was also found during hydro development. It is recommended that the charted limits and notes be retained and the area be charted based on this latest survey.

The area of Arch Rock at latitude 37/49/43.0N, longitude 122/26/23.5W, with a charted least depth of 33 feet (10.1 meters) was developed on this survey with 10-meter line spacing using an Innerspace Model 448 echosounder. A least depth of 10.9 meters (35 feet) at latitude 37/49/45.05N, longitude 122/26/25.97W, was found which confirms its existence. However, the beamwidth for the Innerspace 448 is eight (8) degrees and, therefore, full coverage of the area was not attained with the above line spacing. The charted 33-foot depth originating from the Corps of Engineers survey of 1949 is not considered disproven and it should still be retained as charted.

The charted 40-foot depth over Blossom Rock at latitude 37/49/07.5N, longitude 122/24/09.0W, was not adequately investigated during this survey. A shoal depth of 15.1 meters (49 feet) at latitude 37/49/05.04N, longitude 122/24/12.25W, was found in the area. This depth confirms the existence of the feature; however, due to the lack of adequate development over the location of the rock, the 40-foot least depth is not considered disproven. This depth should remain charted.

The charted \*55 and 96-foot shoal soundings at latitude 37/49/49.0N, longitude 122/25/12.5W and latitude 37/49/58.0N, longitude 122/27/46.0W, respectively, originating from miscellaneous source were not verified or disproven by the present survey. These depths should be retained as charted.

\*55 FT  
AWOIS #  
52175

Anita Rock was not investigated on this survey. A 2.9 meters (9.5 feet) sounding was found in the vicinity of the rock which confirms its existence. No further development was conducted in the area. This rock, covered 3 feet at MLLW, should be retained as charted.

The following wrecks charted in the areas frequently navigated by deep draft vessels in San Francisco Bay were investigated during this survey. Based on the adequacy of its individual hydrographic investigations, the following charting dispositions are recommended.

(1) The sunken 32-foot sailboat (ED) charted at latitude 37/47/41.64N, longitude 122/22/16.59W, should be retained as charted. See Item Investigation Report for AWOIS Item 51153.

(2) The submerged wreck (PA), a 26-foot sailboat reported sunk in 40 feet of water, charted at latitude 37/48/52.74N, longitude 122/24/42.89W, should be retained as a

dangerous wreck and revised to "ED" (existence doubtful). See Item Investigation Report for AWOIS Item 51154

(3) The submerged wreck (PA), a flat barge, charted at latitude 37/49/01.54N, longitude 122/24/09.89W, should be charted as 77Wk at latitude 37/49/00.67N, longitude 122/24/07.99W. See Item Investigation Report for AWOIS Item 51155 .

(4) The sunken 21-foot sailboat (PA) at latitude 37/49/59.73N, longitude 122/25/03.89W, should be retained as charted. See Item Investigation Report for AWOIS Item 51985.

(5) The wreck, believed to be a metal barge, charted at latitude 37/48/58.74N, longitude 122/22/56.89W, should be charted as 75Wk at latitude 37/48/58.13N, longitude 122/22/56.97W. See Item Investigation Report for AWOIS Item 51986

(6) The submerged accommodation barge charted at latitude 37/47/24.00N, longitude 122/22/54.00W, was found about 130 meters northwest of its charted location. This feature should be charted as a dangerous wreck at latitude 37/47/26.18N, longitude 122/22/59.01W, and the note "PA" deleted from the chart. See Item Investigation Report for AWOIS Item 51987.

With the exception of the features mentioned above, survey H-10456 is adequate to supersede charted hydrography within the common at area.

#### b. AWOIS

There are seven (7) AWOIS items investigated during this survey. AWOIS Item 50562 originates with prior survey H-7621 (1947) and the rest with miscellaneous sources. Discussion and disposition of each of these items is included in the hydrographer's report.

AWOIS items 50112 and 50571, although located within the area, were not assigned for investigation on this survey. These items should be retained as charted.

#### c. Controlling Depths

The depths found along the area of Bar Channel which was partially covered by this survey are consistent with or deeper than its published controlling depths.

There are no other channels with controlling depths located within the area of this survey.

#### d. Aids to Navigation

There are fourteen (14) federally maintained aids to navigation located during this survey. The detached positions taken on each of the following listed aids using DGPS positioning system confirms its presently charted locations. They were found in good condition and adequately serve their intended purpose.

<u>Name of aid</u>	<u>Lt.List #</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
Presidio Shoal Buoy 2	4285	37/48/27.35	122/27/38.94
Harding Rk Lighted Buoy HR	4330	37/50/18.67	122/26/44.64
Racoon Strait Lighted Buoy 1	4340	37/50/38.35	122/27/12.13

Raccoon Strait Lighted Buoy 2	4345	37/51/10.80	122/26/38.01
Sausalito Channel Light 2	4385	37/51/21.24	122/28/07.25
Blossom Rock Lighted Bell Buoy BR	4415	37/49/06.52	122/24/13.10
Pier B North Buoy	4430	37/47/48.41	122/22/54.18 140
Pier D North Buoy	4450	37/48/06.84	122/22/35.10 142
Pier D South Buoy	4455	37/48/01.09	122/22/27.55 141
Treasure Is. E. Channel Lt. Buoy 4	4603	37/49/21.48	122/21/11.55
Oakland Hbr. Bar Ch. Lighted Bell Buoy 1	4605	37/48/14.21	122/21/25.47 143
North Channel Lighted Buoy 2	5350	37/50/00.01	122/23/47.04
(13) North Channel Buoy 3	5355	37/50/59.41	122/25/02.84
North Ch. Lighted Horn Buoy 4	5400	37/50/48.83	122/23/47.63

There are five (5) privately maintained white and orange buoys charted in the vicinity of Anita Rock. Two (2) of these aids (buoys C and D) were located, but were erroneously annotated in the field records as "mooring buoys". Buoys C and D were positioned at latitude 37/48/38.09N, longitude 122/27/58.33W, and latitude 37/48/30.70N, longitude 122/27/14.16W, respectively. Mr. Matt Jones of St. Francis Yacht Club who owned and regularly maintained these aids was contacted concerning their present condition. According to him, these aids are in good condition and they are primarily used as racing buoys.

Sausalito Channel Light 2, although situated outside of the survey limits, was positioned during this survey.

The charted bell buoy northeast of Alcatraz Island was visually verified during this survey. However, due to the strong current around the area at the time of this survey, no fix was taken to verify the present position of this aid.

See section P of the hydrographer's report for additional information concerning aids to navigation on this survey.

A new Traffic Routing Scheme in San Francisco Bay was issued by the Coast Guard, effective July 1993. The revised routing scheme was published in the Local Notice to Mariners on July 6, 1993. This changes will be reflected on all future editions of applicable charts. A copy of the chartlet depicting the new traffic routing scheme is included in this report.

#### e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation

Further shoaling was discovered northwest of Alcatraz Island and in the vicinity of the presently charted shoal at latitude 37/49/45.0N, longitude 122/24/45.0W. A danger to navigation report concerning this item was sent to USCG on October 12, 1993. A copy of the report is attached.

A dangerous submerged wreck situated about 800 meters southwest of Berkeley Marina Channel Light 2 and marked by a yellow buoy was investigated on this survey. It was located at latitude 37/50/41.0N, longitude 122/22/10.85W, at a depth of 6.2 meters (20 feet) of water. The result of this investigation was provided to the Coast Guard for their information. According to the Coast Guard, the yellow buoy will be removed soon and a notice to mariners concerning the removal of the same will be submitted following the subsequent charting of the submerged wreck at its recently determined position.

AWOIS #  
52174

No additional dangers were found during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10456 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is an adequate hydrographic survey and no additional field work is required. However, because of the periodic dredging operations in the channels and the continuous disposal of waste materials within the designated sites in the bay, contact must be maintained with the Corps of Engineers and the Coast Guard to regularly update the chart of the area.

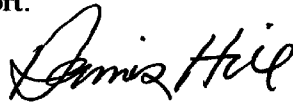
  
Isagani A. Almacén  
Cartographer



APPROVAL SHEET  
H-10456

Initial Approvals:


The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.



Date: 8/9/94

Dennis J. Hill  
Chief, Hydrographic Processing Unit  
Pacific Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.



Date: 8/16/94

Commander, Kathryn Timmons, NOAA  
Chief, Pacific Hydrographic Section

\*\*\*\*\*

Final Approval

Approved:



Date: 12-1-1994

J. Austin Yeager  
Rear Admiral, NOAA  
Director, Coast and Geodetic Survey

MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10456

**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
18650			Full Part Before After Marine Center Approval Signed Via Drawing No.
18653	5-15-95	R. Elliott	Full Part Before After Marine Center Approval Signed Via Drawing No. 5
18649	1/26/96	A. Chappell	Full Part <del>Before</del> After Marine Center Approval Signed Via Drawing No. 3rd - no con - snags applied New SCARS 18650 H. drawing
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10456

**INSTRUCTIONS**

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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
18022	12/13/94	Mr. Isajani Almacen	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
550	12/13/94	Mr. B. A. Olmstead	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
18020	12/19/94	Bruce A. Olmstead	Full Part Before After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
18007	12/19/94	Bruce A. Olmstead	Full Part Before After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
18680	12/20/94	Bruce A. Olmstead	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
18656	4/19/95	ALMACEN	Full <del>Part Before</del> After Marine Center Approval Signed Via Full application Drawing No. from smooth sheet.
18640	4/19/95	Bruce A. Olmstead	Full <del>Part Before</del> After Marine Center Approval Signed Via Examined, no Drawing No. corrections and soundings applied.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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