

10080

Diagram No.s 5532 & 5533

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. .... RA-10-2-83  
Office No..... H-10080

LOCALITY

State ..... California  
General Locality San Pablo Strait  
Locality ..... San Rafael Bay to Gallinas  
Creek

1983

CHIEF OF PARTY  
CAPT. R.J.Land

LIBRARY & ARCHIVES

DATE ..... January 14, 1985

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

TO SIGN OFF SEE  
"RECORD OF APPLICATION"

10080

Area 5  
18654  
18649  
1860232 c  
Dinset 6

HYDROGRAPHIC TITLE SHEET

H-10080

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.

RA-10-2-83

State California

General locality San Pablo Strait

Locality San Rafael Bay to Gallinas Creek

Scale 1:10,000

Date of survey 28 March - 29 April 1983

Instructions dated 4 February 1983

Project No. OPR-L123-RA-83

Vessel NOAA Ship RAINIER and launches 2123, 2124, 2125, 2126

Chief of party R. J. Land, Capt., NOAA

Surveyed by LT S. Iwamoto, LT S. Ludwig, LTJG M. Mathwig, ENS R. Koehler, ENS B. Postle, ENS J. Judson, ENS W. Logue, ENS K. Barton, SSI R. Hastings

Soundings taken by echo sounder, hand lead, pole Ross Fineline Fathometer Systems

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by C. R. Davies

Automated plot by PMC Xynetics Plotter

Evaluation by K. M. Scott

Soundings in ~~meter~~ feet at ~~MLLW~~ MLLW

REMARKS: Revisions and marginal notes in black by evaluator.

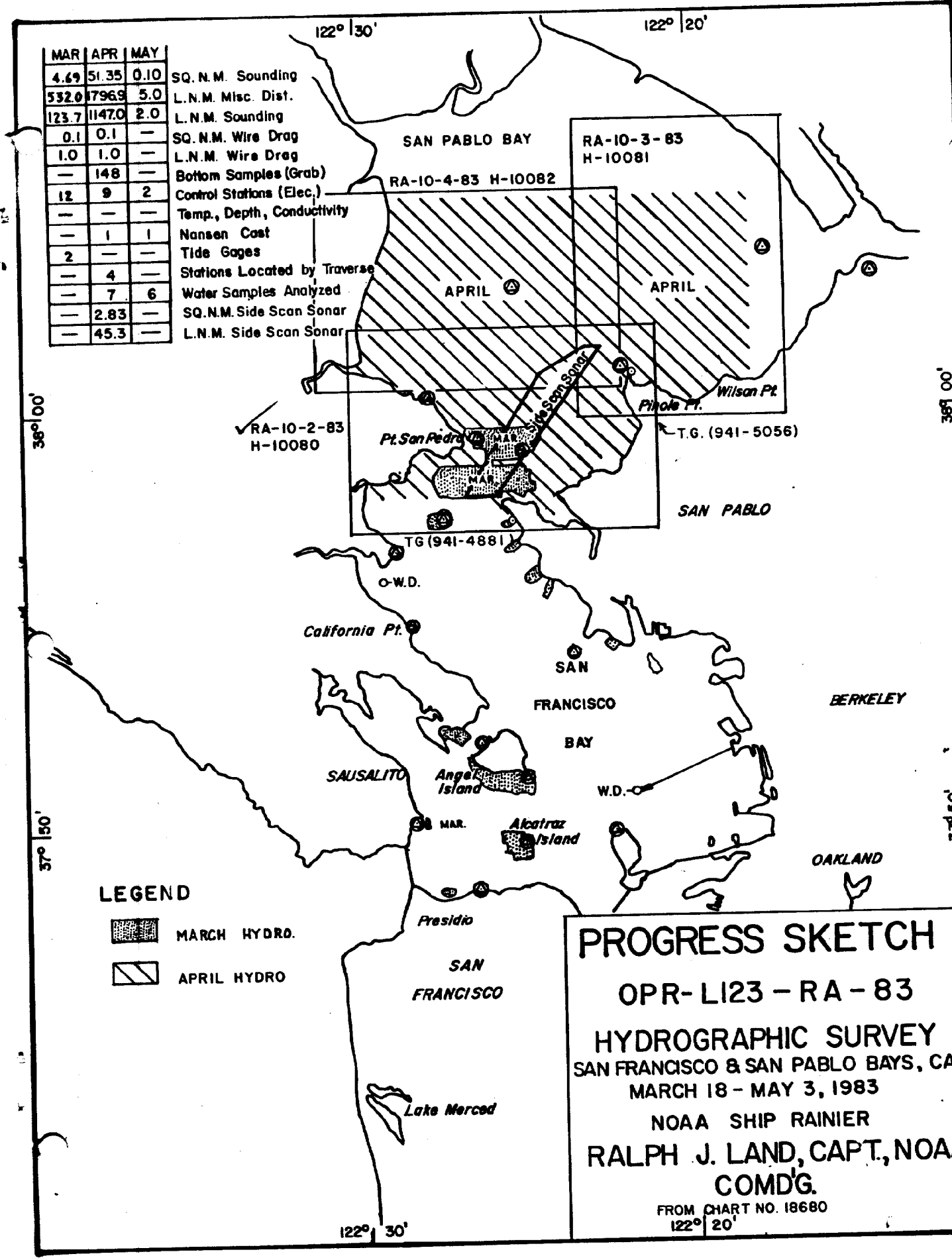
✓ AWOIS and SURE; RWD 3/11/85

Appl to Sigs 1-15-85



RWW 8/26/92

MAR	APR	MAY
4.69	51.35	0.10
532.0	796.9	5.0
123.7	1147.0	2.0
0.1	0.1	—
1.0	1.0	—
—	148	—
12	9	2
—	—	—
—	1	1
2	—	—
—	4	—
—	7	6
—	2.83	—
—	45.3	—

- SQ. N.M. Sounding
- L.N.M. Misc. Dist.
- L.N.M. Sounding
- SQ. N.M. Wire Drag
- L.N.M. Wire Drag
- Bottom Samples (Grab)
- Control Stations (Elec.)
- Temp., Depth, Conductivity
- Nansen Cast
- Tide Gages
- Stations Located by Traverse
- Water Samples Analyzed
- SQ. N.M. Side Scan Sonar
- L.N.M. Side Scan Sonar



**LEGEND**

-  MARCH HYDRO.
-  APRIL HYDRO

**PROGRESS SKETCH**  
 OPR- L123 - RA - 83  
 HYDROGRAPHIC SURVEY  
 SAN FRANCISCO & SAN PABLO BAYS, CA.  
 MARCH 18 - MAY 3, 1983  
 NOAA SHIP RAINIER  
 RALPH J. LAND, CAPT., NOAA  
 COMD'G.  
 FROM CHART NO. 18680

A. PROJECT

Hydrographic Survey RA-10-2-83 (H-10080) was conducted in accordance with Project Instructions OPR-L123-RA-83, San Francisco Bay and San Pablo Bay, California dated 4 February 1983, with the following changes: Change No. 1, Supplement to Instructions, dated 11 March 1983, and Change No. 2, Supplement to Instructions, dated 29 March 1983.

B. AREA OF SURVEY

Survey H-10080 covers San Rafael Bay, San Pablo Strait and the southwestern portion of San Pablo Bay, California from approximately 37° 57.5' North to 38° 02.6' North and from 122° 19.5' West to 122° 22.3' West. This survey was conducted between JD 87 and JD 123, inclusive (28 March 1983 to ~~3 May 1983~~ 29 Apr 1983).

C. SOUNDING VESSELS

All sounding data, developments, detached positions and bottom samples were obtained by RAINIER's aluminum survey launches RA-3 (2123), RA-4 (2124), RA-5 (2125) and RA-6 (2126). RA-5 collected all bottom samples.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All information contained in this section is applicable to RA-10-2-83. Sounding equipment is discussed as well as correctors which include sound velocity, launch draft, launch settlement and squat, instrument corrections for blanking, and phase and initial drift errors.

Sounding Equipment

Echo soundings obtained during RA-10-2-83 were taken by RAINIER launches RA-3 (2123), RA-4 (2124), RA-5 (2125) and RA-6 (2126). Each launch was equipped with Ross Fineline Fathometer systems. The systems included the following Ross components:

Model 400 transceivers  
Model 5000 analog trace recorders  
Model 6000 digitizers  
100 khz transducers

The serial numbers of the components are summarized in Table I:

Table I

<u>Launch</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>
Transceiver	1041	1040-6	1042	1080
Analog	1042/1070	1070	1071	1040-6
Digitizer	1041	1080	1042	1040-3

Multiple analog recorders were utilized in RA-3 due to occasional failures of the principal recorder (#1040). The principal recorder was used in RA-3 except on JD 115 when recorder (#1070) was used.

Analog recorder (#1070) did not always advance the paper at a constant speed. Digital soundings were used and no peaks were missed due to this problem.

RA-3 was equipped with a Klein Side Scan system (S/N 254). The side scan system was used in proving or disproving the existence of certain bottom features in San Pablo Strait.

#### Sound Velocity Correctors

A Nansen cast was performed to determine the sound velocity correctors for this survey. The cast was conducted on 3 May 1983 at 37° 58.4' North and 122°26.1' West.

Water samples obtained from the Nansen cast were analyzed for salinity using a Beckman model No. RS-7B salinometer (S/N 59265) and standard laboratory procedures (see H.O. 607, Instructions for Obtaining Oceanographic Data, Third Edition, U.S. Naval Oceanographic Office, 1968). The salinometer was last calibrated in March 1983 by the Northwest Regional Calibration Center, Bellevue, Washington. The calibration results are provided in the separates following the text.

Velocity corrections were determined by inserting the Nansen cast results into computer program RK 530: Velocity Correction Computations (May 10, 1976 version) which was run on RAINIER's PDP 8/e digital computer system. A list of computed correctors is provided in the separates following the text.

The standard velocity correctors for this survey were determined by graphing the actual depths (minus velocity corrections) versus velocity correction and scaling off depths that corresponded to standard correction intervals (see Sec. 4.9.5.2.6, Hydrographic Manual, Fourth Edition, 1976). Copies of both the graph and the velocity table (Velocity Table No. 2) are provided in the separates following the text. The smooth field sheets for this survey were plotted using these velocity correctors.

#### Launch Draft Correctors

Corrections for launch draft were determined from standard bar checks. Bar checks were performed twice daily except when conditions prevented acquisition of accurate bar check data (see Sec. 1.5.2, Hydrographic Manual, Fourth Edition, 1976).

Mean fathometer depth values were corrected for velocity and subtracted from the true bar depths. There was good agreement between

the resulting values and the historic TRA value of 1.8 feet for all survey launches. The smooth field sheets were plotted using a TRA value of 1.8 feet. ✓

#### Launch Settlement and Squat Correctors

Settlement and squat tests were conducted at Shilshole Bay Marina in Puget Sound, Washington on February 14 and 15, 1983. A list of final correctors is provided in the separates following the text as well as a TC/TI tape listing. The smooth field sheets were plotted without these correctors. ✓

#### Sounding Instrument Correctors

During survey operations the blanking depth was set to a value shoaler than the shoalest bottom expected and was adjusted as the depth changed. Corresponding analog depths were substituted for missing or erroneous digital soundings as part of standard scanning procedures. ✓

The initial trace on the analog recorders was maintained at zero and was monitored to prevent errors caused by a drifting initial. Whenever the initial was found to be off during scanning, inserted depths (e.g. missed depths, peaks, deeps) were scaled off accordingly. Phase calibrations were performed in accordance with Section AH 1.2 of the Hydrographic Manual (Fourth Edition, 1976) and PMC OORDER Appendix B. ✓

#### Manual Soundings

Manual soundings were obtained by the use of hand-held lead lines where required. Depth markings on these lines were compared with a steel measuring tape prior to survey operations and were found to be accurate. ✓

#### E. HYDROGRAPHIC SHEETS

Three field sheets were used to cover the survey area. RA-10-2S-83 and RA-10-2N-83 cover the entire area while a separate sheet (RA-10-2C-83) was prepared for the side scan data obtained within the survey limits. RA-10-2C-83 is discussed in detail in section L of this report. Five expansion sheets are included at a scale of 1:2,500 for development areas. The limits of these sheets are outlined on the final smooth sheets. ✓

All sheets were prepared on board the RAINIER using the PDP 8/e hydroplot system. The sheets were based on modified transverse Mercator projections. ✓

The smooth field sheets for this survey were plotted at a scale of 1:10,000. A list of parameters used to define the hydrographic sheets is provided in the separates following the text. A "dog-ear" exists on RA-10-2S-83 in the vicinity of Castro Creek. *Since hydro within Castro Creek extended beyond the parameters of the field sheet, shoreline and soundings were plotted in the marginal area of the field sheet.* Reconnaissance hydrography in Gallinas Creek was plotted on a chartlet which is submitted to accompany this report. ✓

*See  
Eval Rpt  
Section 4*

No noticeable distortion of the mylar sheets was observed during plotting of hydrographic data on the smooth field sheets. ✓

All field records will be sent to the Pacific Marine Center, Seattle, Washington for verification. ✓

#### F. CONTROL STATIONS

No new horizontal control stations were established for this survey. A copy of the Master Station List is provided in the separates following the text. ✓

#### G. HYDROGRAPHIC POSITION CONTROL

Range/Azimuth and Range/Range were the methods used for hydrographic position control. Positioning instruments included Motorola Mini-Ranger III Systems and Wild Theodolites. The tables below summarize the location of all Mini-Ranger mobile and shore equipment. ✓

Table I

#### Mini-Ranger-Mobile Equipment

<u>Vessel</u>	<u>Console</u>	<u>R/T S/N</u>
2123	720	2710
2124	30269	B1388 ✓
2125	715	B1108
2126	711	1646

Table II

#### Mini-Ranger Shore Equipment

<u>Code</u>	<u>Transponder S/N</u>	<u>Station #</u>
A	1645	150, 151, 152, 154
B	4951	Not Used
C	1628	157 ✓
E	911721	154
F	911711	152
1	C1680*	115
2	B1106	Not Used

#### Mini-Ranger Calibrations and System Check

Initial Mini-Ranger baseline calibration for these codes were conducted in Seattle, Washington on February 24, 1983 and March 7, 1983. Vessel 2125 had its R/T unit replaced just before work began on this survey. An initial calibration for the New R/T unit was performed on April 6, 1983 in San Pablo Bay, California. This calibration was done by locating the R/T at a Third Order control station and computing inverse distances to the transponders established at various Third Order stations in the survey area. ✓

Baseline calibrations for all systems were performed on Mare Island, California on May 3, 1983. Only initial correctors were used to plot the smooth field sheet. The initial baseline calibration for each R/T console pair and transponder combination also determined minimum signal strength cutoff values for each system. The data for all baseline calibrations are included in the Electronic Control Report. For more information concerning initial and ending calibrations, refer to Electronic Control Report OPR-L123-RA-83.

Daily system checks were used to confirm baseline corrections for this survey. All system checks were critical checks using the static calibration method.

#### Mini-Ranger Performance

All shore stations were positioned on existing Third Order, Class I or better geodetic stations. Power was supplied by two 12-volt batteries connected in series. Frequent problems with erratic Mini-Ranger rates made data acquisition difficult at times. Numerous transponders were located in the survey area to permit selection of the most stable pair. Overall, shore transponder units and all mobile equipment performed well with few problems.

#### H. SHORELINE

The shoreline for this survey was transferred from enlargements of three maps: BP116943, TP-00526 and TP-00527. The T-sheets were enlarged from a 1:20,000 scale to a scale of 1:10,000. The shoreline for RA-10-2S-83 came from TP-00526 and TP-00527 only. Changes to the shoreline made by the hydrographer are indicated in red on the smooth field sheets. No major changes were found.

\* TP-00524  
Revision  
Print

#### I. CROSSLINES

Crosslines run for this survey equal 7% of the mainscheme sounding lines. Agreement of crossline and mainscheme soundings is excellent based on the criteria stated in Section 4.6.1 of the Hydrographic Manual (Fourth Edition, 1976).

All four RAINIER launches ran crosslines in addition to mainscheme lines.

#### J. JUNCTIONS

This survey junctioned with contemporary surveys H-9811 (1979), H-10081 (1983) and H-10082 (1983). All statements on agreement are based on Section 4.6 of the Hydrographic Manual (Fourth Edition, 1976).

See  
Eval Rpt  
Sect. 5

#### H-9811

Junction agreement between H-9811 and this survey is excellent except for soundings in San Rafael Creek Channel (pos. 5115-5122). This channel has shoaled and soundings in the channel are generally 2-3 feet shoaler on this survey than on H-9811.



H-10081

Junction agreement between H-10081 and this survey is excellent. ✓  
Contours are coincident and agreement of depths are within one  
foot.

H-10082

Junction agreement between H-10082 and this survey is fair. The  
soundings on H-10082 are generally 1-2 feet deeper than on the ✓  
present survey.

K. COMPARISON WITH PRIOR SURVEYS

The present survey area contained thirty-two presurvey (PSR) items. Information pertaining to each item is contained in the following list, along with comments and charting recommendations. All visual investigations were conducted at low water.

PSR Item No.	AWOIS Description	AWOIS Position	Investigation Results	Pos. No.	Comments and Recommendations
* / 50493	Pile	38°01'04.80" N 122°27'46.50" W	Disproved by 50m radius bottom sweep.	<del>5648</del> 5648	Charted as a submerged pile; delete from chart. <i>concur</i>
* / 50494	Wreck	38°01'04.50" N 122°27'46.80" W	Verified by DP.	<del>5648</del> 5648	Remain as charted. <i>concur</i> <i>Revise position to 38°01'05"N Long 122°27'46"W</i>
* / 50495	Rock Awash	38°00'41.51" N 122°28'35.88" W	Verified by DP.	<del>5648</del> 5648	Remain as charted. <i>concur</i>
* / 50500	Duck Blind	38°01'19.39" N 122°28'24.01" W	Visually verified.	---	Remain as charted. <i>concur</i>
* / 50501	Duck Blind	38°01'07.65" N 122°28'19.70" W	Visually disproved.	---	Delete from chart. <i>concur</i>
* / 50506	Duck Blind	38°01'19.80" N 122°29'06.80" W	Visually verified.	---	Remain as charted. <i>concur</i>
* / 50507	Duck Blind	38°01'13.00" N 122°28'06.00" W	Verified by DP. Observed from a beam of pos. 4330	4330	Chart Duck Blind as "ruins" at survey position. <i>Retain at charted position</i>
* / 50511	Wreck	38°00'30.80" N 122°28'08.00" W	Verified by DP.	5579	Remain as charted. <i>concur</i>
* / 50512	Wreck Awash	38°00'45.50" N 122°28'51.00" W	Visually verified.	---	Remain as charted. <i>concur</i>
* / 50513	Pile and Markers	38°00'23.70" N 122°27'54.30" W	Pile and one marker verified by DPs.	<del>5580</del> 5580	See "Note 1".

*all items off record*

PSR Item No.	AWOIS Description	AWOIS Position	Investigation Results	Pos. No.	Comments and Recommendations
✓ 50514	4 Dolphins	38°00'27.10" N 122°28'21.50" W	Verified by DP. Observed 10m 2 beam 4 about pos 4498	4499	Remain as charted. <i>concur</i>
✓ 50515	Stake	38°00'50.50" N 122°28'11.50" W	Visually disproved	5647	Delete from chart. <i>concur</i>
✗ 50517	2 Rocks Awash.	37°58'42.00" N 122°28'25.00" W	Visually disproved	----	<sup>1786/50 SHOWS TWO RKS. ONLY ONE CHARTED</sup> One rock; delete <i>concur</i> rock awash symbol from chart.
✗ 50518	Loch Lomond Boat Harbor Channel markers (15)	37°58'01.50" N 122°28'56.80" W	12 Markers verified.	5127- 5138	Chart only the 12 <i>concur</i> markers as positioned by this survey.
✗ 50519	Rock Awash (PA)	37°59'20.20" N 122°26'33.20" W	Visually verified.	----	Remain as charted. <i>concur</i> <sup>Smooth sheet position from TP-00526</sup>
✗ 50520	Rock Awash (PA)	37°59'19.50" N 122°26'29.00" W	Visually verified.	----	Chart at AWOIS position. <i>concur</i> <sup>Smooth sheet position from TP-00526</sup>
✗ 50521	Rock Awash	37°57'59.20" N 122°25'38.00" W	<del>Disproven by least depth of 3.7 feet (1st Out)</del>	6703	Symbol from rock awash Do not to submerged rock (see RA-10-2S-83, expansion No. 4). <i>Rock carried forward from H-7867</i>
✗ 50522	Pile	37°57'58.00" N 122°27'33.10" W	Disproven by 50m radius bottom sweep.	2518	Delete from chart. <i>concur</i>
✗ 50523	Pile	37°57'54.50" N 122°25'10.20" W	Verified by DP.	6403	Pile marks channel; revise chart label from "piles PA" to "markers". Reposition at survey position.

*John ...*

PSR Item No.	AWOIS Description	AWOIS Position	Investigation Results	Pos. No.	Comments and Recommendations
50524	Pile	37°57'58.30" N 122°25'09.50" W	Verified by DP.	6402	Same as PSR item No. 50523. <i>Retain as charted</i>
50525	Wreck	37°57'58.80" N 122°25'07.80" W	Verified by DP.	6404	Revise chart symbol from submerged wreck to wreck awash at survey position. <i>chart as wk uncovers 5 ft ALLW</i>
50526	Breakwater of grounded hulls	37°57'53.40" N 122°25'05.50" W	Visually verified.	6716-6717 (see notes between)	See "Note 2".
50527	Breakwater of grounded hulls	37°57'55.40" N 122°24'59.20" W	Verified by DP.	6407	See "Note 2".
50528	8 Markers	37°57'54.40" N 122°25'01.40" W	8 Markers verified by DP.	6405, 6406, 6408, 6409, 6431, 6432, 6444, 6445.	See "Note 3".
50544	Iron Pipe	38°00'28.60" N 122°22'03.80" W	Disproved by 50m radius bottom sweep.	5658	Delete pipe symbol from chart. <i>concur</i>
50545	Iron Pipe	38°00'21.70" N 122°22'08.20" W	Disproved by 50m radius bottom sweep.	5659	Delete from chart. <i>concur</i>
50546	Pile	38°00'00.60" N 122°22'13.10" W	Pile really a pipe; verified by DP.	6075	Revise chart, label from "pile" to "pipe". <i>have 5.6 ft ALLW</i>
50547	Obstruction	37°59'52.50" N 122°22'24.20" W	Disproved by 50m radius bottom sweep.	2517	See "Note 4".
50548	Iron Pipe	37°59'47.60" N 122°22'25.70" W	Disproved by 50m radius bottom sweep.	2516	Delete from chart. <i>concur</i>

PSR Item No.	AWOIS Description	AWOIS Position	Investigation Results	Pos. No.	Comments and Recommendations
✓ 50549	Iron Pipe	37°59'34.00" N 122°22'01.40" W	Verified by DP	6113	Remain as charted. <i>concur</i>
✓ 50550	Iron Pipe	37°58'01.40" N 122°22'09.60" W	Verified by DP	6113	Remain as charted. <i>concur</i>

"Note 1" - PSR No. 50513

This item required verification of piles and markers. Investigation revealed one (1) pile, one (1) permanent channel marker and numerous temporary channel markers.

The pile was located at 38°00'24.03" N and 122°21'53.81" W. This position is within 100 meters of three charted piles while only one pile was located in this area. Varying reports on the position of a single pile is the probable cause of the non-existent albeit charted piles. It is recommended that the charted pile symbols be deleted and superceded by one pile symbol at the above stated position.

A permanent marker was located at 38°01'04.41" N and 122°29'18.31" W. No other permanent markers exist. It is recommended that a marker symbol be added to the chart at this location. It is further recommended that all other marker symbols charted along Gallinas Creek be deleted from the chart. Temporary markers (e.g. twigs or 4x4s stuck in the mud) were visually verified but were not positioned due to their temporary nature. Therefore, the label "MARKERS" should remain as charted on the north side of Gallinas Creek. *concur*

"Note 2" - PSR No. 50526, 50527

PSR item No.s 50526 and 50527 each required the verification or disproval of a visible wreck, reported and positioned by the DAVIDSON in 1976 (OPR-511-DA-76). These wrecks were visually verified and in both cases it was determined that they were part of breakwaters made of grounded hulls. These breakwaters are included on survey H-7867 (1950). It is recommended that the two charted visible wreck symbols be deleted from the chart and that the breakwater be shown as indicated on the field sheet. *Do not concur. Retain wk at lat 37°57'55.4" N long 122°25'05.5" W. Retain wk at lat 37°57'53.1" N long 122°25'05.5" W. Wk is not shown on the survey. Retain as charted.*

"Note 3" - PSR No. 50528

This item required verification or disproval of eight (8) channel markers east of Pt. San Pablo. All markers were verified by detached position. On JD 119 a 50m bottom sweep was conducted around one marker (pos. no. 6409) to ensure there was not an additional submerged pile in the area. No other markers or obstructions were located. *2/85 RWD*

There are five (5) charted markers in this area, four (4) of which are labeled "PA" (Position Approximate). It is recommended that the chart be revised to show only the eight (8) markers as located by this survey. Delete "PA" label from chart. *concur*

✓ "Note 4" - PSR No. 50547

This PSR item required the verification or disproval of an obstruction. A 50 meter radius bottom sweep investigation was conducted. No obstruction was located. *Delete obstruction*

There is a charted pile at the same location as PSR No. 50547. It is recommended that the charted pile should be deleted from the chart. *Do not concur. Bottom sweep does not cover pile location. Chart pile as covered MLLW.*

The source of all the above PSR items is the AWOIS listing. PSR item No. 18\* is also contained within the survey limit. Change *\* SAN RAFAEL CREEK* No. 1 of the project instructions is the source of this item. Results *See* of this item investigation are contained in Field Examination RA-10- (FE-242) 1-83. Hydrography in Gallinas Creek is submitted as a chartlet. *Chartlet could not be found, hydrography included in the survey records is plotted on the smooth sheet.* This survey was compared to prior surveys H-7867 (1950), H-~~8796~~<sup>7897</sup> (1951) and H-7899 (1951). These surveys were at a scale of 1:10,000. Quality of sounding agreement is based on the criteria stated in Section 1.1.2, part B.II.1 of the Hydrographic Manual (Fourth Edition, 1976). The results of the comparisons are as follows:

#### H-7867

Agreement of soundings between H-7867 and this survey is fair. A general deepening trend is apparent, especially in the San Francisco Traffic Lanes and inshore areas (areas of less than 12 feet on H-7867). Within the traffic lanes, two (2) areas that indicated a deepening trend were developed (see RA-10-2S-83, Expansions No. 2 and 3)\*. Expansion No. 2 shows a least depth of 41.1 feet (pos. No. 2459, 3rd out, reduced to 39\*\* feet) in an area H-7867 shows as 37 feet. Expansion No. 3 shows two (2) least depths: 39.4 feet and 38.6 feet (pos No. 2483, 2nd out and No. 2505, 2nd out, respectively). Both these depths were reduced to 38\* feet and are located in an area shown on H-7867 as 35 feet. The reduced least depth from each expansion has been transferred to the final smooth sheet. *\* 37.1 and 36.6 ft MLLW respectively field \*\* 38.3 ft MLLW*

Shoaling has occurred in a few areas. San Rafael Creek and Castro Creek have shoaled 1-2 feet. Shoaling is also indicated in the vicinity of The Sisters (see RA-10-2S-83, Expansion No. 1). The least depth in this area was 7.9 feet (pos. No. 5416, 2nd out, reduced to 6 feet). H-7867 shows a reduced least depth of 7 feet in this area. H-7867 shows a 94 foot sounding south of The Sisters. No indication of depths greater than 57 feet reduced were found in this area.

It is recommended that soundings from the present survey supersede soundings from H-7867 for charting purposes. *concur*

Survey H-7867 indicates channel stakes in the Castro Creek area. These markers are present but are of a temporary nature and, therefore, were not positioned during survey operations. It is recommended that the word "Markers" be added to the chart to indicate the existence of these markers without indicating their positions along Castro Creek Channel. A note on the advisability of local knowledge is also recommended. *concur*

Three floating (temporary) duckblinds were located during survey operations between Pt. San Pablo and Pinole Point. Duckblinds are located in this area on H-7867 but at different positions. Due to the temporary nature of the duckblinds in this vicinity, it is recommended that the label "DUCKBLINDS" be added to the chart in this area. Specific duckblind symbols should not be charted. *Do not concur*

*All duckblinds are shown on the smooth sheet*  
Chart at Lat 37°59'00"N Long 122°22'08"W  
37°58'55"N 122°22'06"W  
37°57'58"N 122°24'35"W

H-7897

Agreement of soundings on H-7897 and those on this survey is fair. A general deepening trend exists in the San Francisco Bay Traffic Lanes while shoaling to 30 feet has occurred in the area between The Sisters and San Pablo Channel Light 5. This shoaling was reported to the United States Coast Guard on 6 May 1983 for publication in the Local Notice to Mariners (LNM) as a Danger to Navigation. A copy of the message is contained in the separates following the text. ✓

See  
Eval Rpt  
Sect 6

A 31<sup>\*</sup> foot shoal which is not on H-7897 was located at 38°00'55" N and 122°24'25" W (see RA-10-2N-83, Expansion No. 1). This shoal lies on the outer limit on the southbound San Francisco Traffic Lane and was reported as a 30 foot shoal that constituted a Danger to Navigation (see separates following text). The least depth on the expansion sheet has been transferred to the final smooth sheet. \*30' at MLW

It is recommended that the present survey soundings supersede the soundings on survey H-7897 for charting purposes. *concur*

H-7899

Comparison of soundings on H-7899 and this survey was fair. A general deepening trend exists in this area. The only indication of shoaling is in the Gallinas Creek Channel north of 38°00'30" N. ✓

It is recommended that the present survey soundings supersede the soundings on survey H-7899 for charting purposes. *concur*

H-7899 shows two (2) piers on the mainland west of Rat Rock. The most westerly of the piers no longer exists while the easterly pier is in ruins. The fence shown on H-7899 west of the piers was also visually disproven at low water. No changes to the chart are recommended for these items. ✓

A permanent duckblind was located at 38°00'57.3<sup>3</sup>" N and 122°27'52.8<sup>9</sup>" W (pos. No. 5562). There is no duckblind at this location on H-7899 or the latest edition of the chart (NOS Chart No. 18654, 31st Edition, 5 June 1982). It is recommended that a duckblind symbol be charted at the above position. *concur*

A catwalk appears on H-7899 south of Gallinas Creek Channel and was visually verified as a ruins during survey operations. No revision of charting is necessary for this item. *concur*

L. COMPARISON WITH THE CHART

This survey was compared to NOS chart No. 18654, 31st Edition, 5 June 1982 (1:40,000 scale, enlarged to 1:10,000). Only items not previously addressed in section K of this report are included in this section. ✓

A visible rock was located in San Rafael Bay at 37°58'31.2<sup>9</sup>" N and 122°28'27.8<sup>9</sup>" W (pos No. 9114) and was reported as a Danger to Navigation (see separate following text). A rock is shown at the same location on prior survey H-7867 as a survey control position "DOG". ✓



It is recommended that a visible rock symbol be charted at the above position. A rock ledge bares in the same area and is adequately *concur* charted.

A rock awash symbol was transferred to the smooth <sup>field</sup> sheet from TP-00526 along the north shore of Point San Pablo (37°57'57" N and 122°25'38" W). The chart should be revised to indicate this as a foul, rocky area. *concur*

Symbols for rock awash and pile are charted at 37°59'39" N and 122°22'33" W. A dive investigation (50 meter radius bottom sweep) was done at this location (pos No. 2514). A steel drum, partially buried in the sand was found along with a PVC pipe, one (1) meter away. The pipe was intended to mark the steel drum but was broken and no longer served any purpose. The pipe was removed by the divers. It is recommended that the chart be revised from pile and rock to obstruction at this location. Milk crate floats (2) now mark the steel drum but do not require charting. *concur*  
*Chart subm? exists at lat 38°01'29"N Long 122°22'41.8"W*  
*Do not concur. Charting of float is left to the discretion of the compiler*

The three (3) mooring buoys charted northwest of The Sisters were visually disproved during survey operations. Detached positions were taken on two (2) sets of seven (7) piles (pos No. 5378 and No. 5380). The mooring buoys should be deleted from the chart and two (2) dolphin symbols should be charted at the survey position. *concur*  
*Chart dots at Lat 37°59'38.7"N Long 122°27'01.7"W*  
*37°59'40.0"N 122°27'03.3"W*

Within the limits of RA-10-2S-83, four (4) private, temporary floats were positioned (pos Nos. 6088, 6115, 6450 and 6451). Due to the temporary nature of these floats, they should not be carried forward to the chart. *Do not concur. Charting of temporary features is left to the discretion of the compiler.*

The three (3) duckblinds south of Gallinas Creek should be carried forward as charted. The platforms charted along shore north of Gallinas Creek are actually duckblinds. The chart should be so revised. *concur*

A temporary stake (pos 6449) was located west of Castro Creek Channel. No revision of the chart is recommended. *Do not concur. Charting of temporary features is left to the discretion of the compiler.*

The most easterly pier charted on East Marin Island was visually verified as in ruins. The pier should be deleted from the chart and be replaced by a symbol for ruins. *Chart as ruins uncovering at HLLW*

An uncharted dolphin was located at 37°59'07.<sup>5</sup>" N and 122°26'44.<sup>5</sup>" W (pos No. 5332). It is recommended that a dolphin symbol be added to the chart at the above position. *concur, Chart dol visible HLLW*

An uncharted pile was located at 38°00'04.<sup>8</sup>" N and 122°27'32.<sup>4</sup>" W (pos No. 5632). It is recommended that a pile symbol be added to the chart at the above position. *concur, Chart pile visible HLLW*

Two piles visually located north of East Marin Island are discussed in section N of this report (see CABLE CROSSING).

The symbol for a channel is charted north of Point San Pablo and is labelled "12 ft rep 1983". Revision of this label to read "9 ft rep 1983" is recommended (see RA-10-2S-83, Expansion No. 4). *Do not concur*  
*\* Significant depths transferred to smooth sheet Chart 1677 as controlling depth.*  
A dead head was found lodged in the bottom in six (6) feet of water and awash at most stages of tide near Point San Pablo at 37°58'06.8" N and 122°25'30.0" W. The dead head was reported as a Danger to Navigation (see separate following text). No chart revision is necessary. *Do not concur Chart the deadhead.*

The two (2) piles north of the pier at Pinole Point do not exist and were the result of miscompilation. *Do not concur. See Eval Rpt Sect X7*

The charted foul area west of Pinole Point was visually investigated at low water and found to no longer be foul. It is recommended that this "foul" designation be deleted from the chart. *Concur. See AW01S 50594 for a bottom sweep in area.*  
*Delete foul limit line; add "boulders" note*

An initial area side scan sonar investigation was run in the San Pablo Bay traffic ~~channel~~ <sup>lane</sup> on JD 102, 104, 105, 108, 109, 110, and 111, as required in Section 7 of the Project Instructions.

The water depth in the ~~channel~~ <sup>traffic lane</sup> area varied between ~~20~~ <sup>22</sup> and ~~15~~ <sup>13</sup> feet. All side scan sonar lines were run using the 100 meter range scale with a line spacing of 100 meters. A 50 meter diameter area at 37°59'55" N and 122°24'40" W was missed by sidscan sonar. However, a survey line from the mainscheme hydrography crosses this location with depths of 45 feet and no indication of shoaling. The side scan lines prior to the starting positions at this location showed no contacts. There is little possibility a Danger to Navigation could have been missed. *Do not concur (See Eval Rpt Sect. 5)*

For this project the towfish was deployed from the stern of the launch. The launch towing speed varied between 3 knots (900 rpm) and 4 knots (1200 rpm). A 20° beam width and 20° down angle was used to obtain the best sonar return. The launch used range/range positioning method, employing computer program RK 112. The Ross fathometer was operated during the entire investigation.

A position plot for the side scan search is included in the hydrographic field sheets submitted for this survey.

A review of the side scan sonargrams revealed strong returns from a variety of bottom features attributed to scouring by the currents present in the shipping channel. For charting purposes, the mainscheme hydrography run in the side scan area was sufficient. The side scan provided no new information for developing an accurate picture of the bottom topography in the shipping channel. *See Eval Rpt Sect 7 for a discussion of shoaling conditions*

#### M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede all prior surveys for charting. *not back*

#### N. AIDS

A comparison was made between the survey, the latest edition of the Light List and the largest scale chart of the area.

The following fixed and floating aids are entered in the hydrographic records (Light List No. is in parentheses):

662  
48  
710

Comments and Recommendations

Light Characteristics

Survey Position \*\*

Name

San Rafael Creek Light 1 (Fixed)	37/57/42.16N 122/28/08.20W 27	Fl. G., 2.5s (760)	* Pos. No. 5126 - Survey position is within 0.5m of charted position. Retain as charted. <i>concur</i>
San Rafael Creek Light 3 (Fixed)	37/57/50.35N 122/28/32.51W 49	Fl. G., 4s (761)	Pos. No. 5125 - Survey position is 66m north and 100m west of charted position. Light List longitude is in- <i>Revise Charted Position</i> correct. Recommend survey position supersede prior position. Recommend correction to Light List. NOAA Form 76-40 included in separates.
San Rafael Creek Light 5 (Fixed)	37/57/59.57N 122/28/59.24W 22	Fl. G., 6s (762)	* Pos. No. 5124 - Survey position is 25m north and 19m east of charted position. <i>Revise Charted Position</i>
San Rafael Creek Daybeacon 6 (Fixed)	37/58/07.26N 122/29/18.20W 17	TR (pg. 59)	Pos. No. 6918 - Survey position is 15m north and 40m west of charted position. See 76-40.
San Rafael Creek Daybeacon 7 (Fixed)	37/58/11.81N 122/29/34.14W 08	SG (pg. 59)	Pos. No. 6917 - Survey position is 64m north and 30m east of charted position. See 76-40.
Point San Pablo Terminal Light 4 (Fixed)	37/57/55.04N 122/25/42.12W 05	E. Int.R., 2.5s (763.10)	Pos. No. 9119 - Survey position 66m south of charted position. Charted PA. Recommend survey position <i>concur</i> supercede charted position. Remove PA from chart - NOAA Form 76-40 included in separates.

\* Survey positions for these lights verify the photogrammetric positions previously determined on H-9811(1979). The photogrammetric positions should be used for charting. See attached listing of geographic positions from H-9811(1979). Do not *concur* Chart from present survey.

\*\* Positions were determined hydrographically and are not 3rd order.

<u>Name</u>	<u>Survey Position</u>	<u>Light Characteristics</u>	<u>Comments and Recommendations</u>
San Pablo Bay Lighted Buoy 2 (Floating)	37/58/04 <sup>82</sup> <del>37</del> N 122/15/40 <sup>22</sup> <del>25</del> W	Fl. R., 4s (764)	Pos. No. 6712 - Survey <i>concur</i> position 14m north and 36m <i>Retain</i> east of charted position. <i>as Charted</i> This difference is acceptable for a floating aid. Light List has this aid in 55 ft now in about 40 ft. Recom- mend correction to Light List.
San Pablo Bay Channel Lighted Buoy E (Floating)	38/00/36 <sup>69</sup> <del>37</del> N 122/24/08 <sup>3W</sup> <del>3</del> W	Mo. (A) W. (766)	Pos. No. 3686 - Survey position 44m south and 58m <i>concur</i> west of charted position. <i>Retain as</i> This difference is acceptable for a floating aid. Light List has this aid in 30 ft; now in about 44 ft. Recom- mend correction to Light List.

The San Rafael Creek range was run and the Azimuth of the range is correct as published in the Light List and on the chart.

Three additional fixed aids were located within the survey area: San Pablo Bay Light 4, San Pablo Bay Channel Light 5 and Point Pinole Light P.

These aids are charted at their NGS (Third Order) positions except for San Pablo Bay Light 4. The charted position of this light is 43 meters north and 4 meters east of the NGS position. It is recommended that the NGS position supercede the charted position. *concur. Charted positions do not agree with NGS. Revise chart in accordance with Sect 9, Eval Rpt*

The Light List shows depths of 20 feet and 36 feet for San Pablo Bay Light 4 and San Pablo Bay Channel Light 5, respectively. This survey indicates that the respective depths at these aids are now approximately 17 and 30 feet. It is recommended that the Light List be updated with this data. *concur*

Each aid to navigation (fixed and floating) within the survey area adequately serves the apparent purpose for which it was established. *concur*

Cable Crossing

A cable crossing is located between East Marin Island and the mainland to the northwest (between San Rafael Creek and Pt. San Pedro). This information was obtained through conversation with a resident of the island. The inshore ends of the cable could not be located precisely due to the inaccessability of these areas. The piles located north of East Marin Island on JD 119 may mark the southern end of the cable. A cable crossing symbol should be added to the chart from approximately 37°58'30" N and 122°28'26" W to 37°57'55" N and 122°28'02" W. In addition, two (2) piles should be added to the chart with the following positions: 37°57'55" N and 122°28'01" W, 37°57'55" N and 122°28'02" W. These positions should be considered adequate for charting purposes. *Cable crossing not verified. Compiler should obtain supporting info prior to charting. Positions are not supported by fix data and are considered approximate, chart accordingly*

0. STATISTICS

SURVEY LAUNCH	LNM of HYDRO	SQ. NM of HYDRO	NO. of POSITIONS
2123	199.8	-----	1484 1804
2124	76.7	-----	578 561
2125	111.2	-----	662 615
2126	57.6	-----	3159 1107
<u>TOTAL</u>	<u>445.3</u>	<u>20.9</u>	<u>5849 4087</u>

Bottom samples: 38                      Velocity casts: 1  
Tide stations: 2                        Magnetic stations: 0  
Current stations: 0                      LNM side scan sonar: 40

*To Stats 2-10-87  
Reply as per.  
J. Dool v  
sl.*

P. MISCELLANEOUS

As required by the project instructions, currents were visually observed during field operations. No anomalous currents were observed nor were any reported via local knowledge. ✓

Swift currents are known to occur in this area. The scouring of the bottom can easily be seen on the side scan sonargrams. These currents are undoubtedly the major cause of the bottom dynamics in this area. ✓

All NAV DOWN errors generated during the course of hydrography were corrected on the corrector tapes. ✓

San Rafael Creek Channel is monitored and maintained by the United States Army Corps of Engineers. ✓

Q. RECOMMENDATIONS

Duck blinds should be charted only as discussed in sections K and L of this report. Charted duck blinds that were not visible during this survey should not be carried forward to the chart. *concur*

No Third Order position was obtained for Point San Pablo Terminal Light 4. The position of this light as stated in section N of this report, was calculated from Range/Azimuth data (a sextant fix was also recorded). This position is adequate for charting purposes. *concur*

This survey area is subject to strong currents and a changing bottom. A Chart Evaluation Survey should be scheduled for this area within ten years. *concur*

The small area not insonified by sidescan in San Pablo Strait need not be further investigated. No further sidescan work need be scheduled. *concur*

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished in accordance with the Hydrographic Manual (Fourth Edition, 1976), Manual of Automated Hydrographic Surveys, the PMC OORDER, Hydrographic Survey Guidelines and the Hydrographic Data Requirements for 1983. ✓

Soundings and positions were taken by hydrologger ASI logger and a Hydroplot system using programs RALOGD and RK112. There are daily master tapes and corresponding corrector tapes which include the TRA for the launches and electronic control baseline correctors for the MiniRanger consoles and R/T units and all depth corrections. ✓  
Velocity tapes were generated from Nansen cast data. The following

is a list of all computer programs and version dates used for data acquisition or processing:

<u>PDP 8/e PROGRAMS</u>	<u>VERSION DATE</u>
RALOGD Hydrologger	03/11/83
RK112 Range/Range, Hyperbolic Hydroplot	08/04/81
RK201 Grid, Signal, and Lattice Plot	04/18/75
RK211 Range/Range Non-Real Time Plot	02/02/81
RK212 Visual Station Table Load	04/01/74
RK215 Visual Non-Real Time Plot	02/11/81
RK216 Range/Azimuth Non-Real Time Plot	02/09/81
RK300 Utility Computations	10/21/80
RK330 Reformat and Data Check	05/04/76
PM360 Electronic Corrector Abstract	02/02/76
RK407 Geodetic Inverse/Direct Computation	09/25/78
AM500 Predicted Tide Generator	11/10/72
RK530 Layer Corrections for Velocity	05/10/76
RK561 H/R Geodetic Calibration	12/01/82
AM602 Elinore--Line Oriented Editor	12/08/82
RK606 Tape Duplicator	08/22/74
AM607 Self-Starting Binary Loader	08/10/80
RK610 Binary Tape Duplicator	12/01/82
RK612 Line Printer List	03/22/78
DA903 Diagnostic--Instruction Timer	02/27/76
RK905 Hydroplot Controller Checkout	03/18/81
RK935 Hydroplot Hardware Tests	03/15/82
RK950 Hardware Tests (Documentation Only)	06/02/75

The Wang Series 700, the HP97 and the HP9815A programmable calculators were used to compute geographic positions of electronic control stations and visual signals for calibrations.

S. REFERRAL TO REPORTS

The following reports contain information related to this survey,

ECHO SOUNDINGS REPORT	OPR-L123-RA-83
ELECTRONIC CONTROL REPORT	OPR-L123-RA-83
HORIZONTAL CONTROL REPORT	OPR-L123-RA-83
COAST PILOT REPORT	OPR-L123-RA-83

Respectfully submitted,

*Joyce L. Judson*

Joyce L. Judson, ENS, NOAA

1847z bmc de wtef 1. 1 of 1

NMC	063385
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gn	06 MAY 83
	1847z

rttzyuw ruhptef0044 1261801-uuuu--ruhpsuu.  
 znr uuuuu  
 r 061801z may 83  
 fm noaas rainier  
 to ccgdtwelve alameda ca  
 info dir pmc noaa seattle wa  
 noaa rockville md n/cg2  
 acct cm vcaa  
 bt

unclas  
 ra-pmc-017.

request the following dangers to navigation be published in the local notice to mariners for noaa charts 18649, 18650, 18652, and 18654. indicated least depths are reduced to mllw based on predicted tides.

- 1. a 30 foot shoal on the outer limit of the southbound san francisco bay traffic lane in san pablo strait at 38/00/55n, 122/24/25w. (18652, 18654)
- 2. shoaling to 30 ft in the area between sisters rock and san pablo bay channel light 5. (18652, 18654)
- 3. a 16 foot depth 200 meters south of angel island at 37/51/10.0n, 122/25/56.0w (18649, 18650, 18652)
- 4. a visible concrete obstruction 300 meters north of castro point at 37/56/21.0n, 122/25/01.0w (18649)
- 5. a submerged obstruction near castro point with a least depth of 9 feet at 37/56/14.1n, 122/24/52.6w (18649)
- 6. a previously visible pile east of point pinole is now submerged 1 foot at 38/00/41.2n, 122/21/37.6w (18652, 18654)
- 7. a 3 foot shoal east of point pinole at 38/00/53.0n, 122/21/25.5w (18652, 18654)
- 8. visible pile east of pt pinole at 38/00/25.5n, 122/20/27.0w (18652, 18654)
- 9. a dead head lodged in the bottom and awash at most stages of tide near pt san pablo at 37/58/06.8n, 122/25/30.0w in 6 feet of water (18649, 18652, 18654)
- 10. a visible rock in san rafael bay at 37/58/31.2n, 122/28/23.0w (18649, 18654)

bt  
 #0044

nnnn

k



# DEPARTMENT OF TRANSPORTATION



## COAST GUARD

NOV 23 1981

CPM 1 2 1

### LOCAL NOTICE TO MARINERS

ISSUED BY: COMMANDER, TWELFTH COAST GUARD DISTRICT  
630 Sansome Street, San Francisco, California 94126; Telephone (415) 556-2560

#### BROADCAST NOTICE TO MARINERS

Information concerning aids to navigation promulgated by the following broadcasts has been incorporated into this notice if still significant: ENM 766 to 809

LIGHT LIST REFERENCE: CG 162 Light List, Vol. III, 1981 Edition.

SPECIAL NOTICE - NONE

#### AIDS ESTABLISHED, DISCONTINUED OR CHANGED

##### CALIFORNIA-SAN FRANCISCO BAY-SAN PABLO BAY-REBUILDING OF AIDS TO NAVIGATION

Below is a list of precise positions by latitude and longitude of the aids to navigation recently rebuilt or established in San Pablo Bay. LNM 40/81 provided a listing of the aids and their best known positions at the time of printing. All precise positions vary no more than four feet from the approximate positions printed in LNM 40/81.

AID NAME	DEPTH	LATITUDE	LONGITUDE
San Pablo Bay Channel Light 5 (LL 765)	36	38°00'43.0018"N	122°24'50.9948"W
Point Pinole Light P (LL 766.50)	13	38°00'59.9218"N	122°21'58.9537"W
San Pablo Bay Channel Light 7 (LL 767)	40	38°01'51.9440"N	122°22'22.4753"W
San Pablo Bay Channel Light 8 (LL 768)	40	38°01'45.2670"N	122°22'15.1790"W
San Pablo Bay Channel Light 10 (LL 770)	34	38°02'22.4705"N	122°20'59.9532"W
San Pablo Bay Channel Light 12 (LL 772)	33	38°02'59.2623"N	122°19'43.0731"W
San Pablo Bay Channel Light 13 (LL 773)	30	38°03'22.1921"N	122°18'26.4769"W
San Pablo Bay Channel Light 14 (LL 774)	34	38°03'14.2336"N	122°18'25.0548"W
San Pablo Bay Channel Light 15 (LL 775)	34	38°03'33.0067"N	122°17'23.6267"W

All aids were positioned by survey positioning methods.

(LNM 40/81, CG San Francisco, 2 October 1981)

Charts: 18654, 18652

#### ADVANCE NOTICE OF CHANGES IN AIDS TO NAVIGATION

##### CALIFORNIA-SAN FRANCISCO BAY-SAN PABLO BAY-PRIVATE AID TO BE ESTABLISHED/DATE POSTPONED

Point San Pablo Terminal Light 4 (LL 763.10) showing an equal interval red light (2.5 second flash, 2.5 second dark), nominal range of 4 miles, will be established during the week of 29 November 1981 in position 37°57'55"N, 122°25'41"W. The light will be exhibited 12 feet above the water from a concrete mooring dolphin built in 35 foot depth of water. Aid is privately maintained by the Port of Richmond.

(LNM 51/80, CG San Francisco, 19 December 1980)

Charts: 18649, 18654, 18652

REPORT DEFECTS IN AIDS TO NAVIGATION TO NEAREST COAST GUARD UNIT

DATE: 20 November 1981

NOTICE NO. 47

APPROVAL SHEET

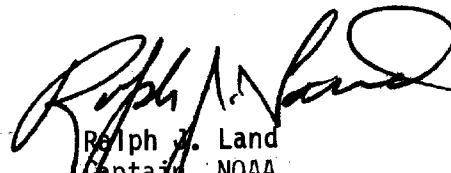
DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

H-10080

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OORDER, and the Instruction Manual for Automated Hydrographic Surveys. The data was examined daily during the execution of the survey.

The boatsheet and the accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.

  
Ralph J. Land  
Captain, NOAA  
Commanding

MASTER STATION LIST  
OPR-L123-RA-83, SAN PABLO BAY

FINAL VERSION

112	3	37	56	42339	122	28	48272	250	0000	000000	
/QUENTIN 1979											
									FIELD UNADJUSTED G.P.		
115	3	37	57	26104	122	27	21596	250	0005	000000	
/SAN FRANCISCO BAY N CHAN LT 17, 1979											
NGS LISTING											
117	4	37	57	47807	122	25	56701	250	0015	000000	
/EAST BROOKER ISLAND LIGHT FIELD UNADJUSTED G.P.											
1981											
150	3	37	58	52626	122	24	59882	250	0005	000000	
/SAN PABLO BAY LT 4, 1979											
NGS LISTING											
151	3	37	59	17835	122	26	25887	250	0000	000000	
/SISTER 1941											
NGS LISTING											
152	6	38	00	16372	122	27	39336	250	0000	000000	
/CHINA 1951											
NGS LISTING											
153	3	38	00	43002	122	24	50994	139	0005	000000	
/SAN PABLO BAY CHAN LT 5, 1981											
NGS LISTING											
154	3	38	00	59919	122	21	58952	250	0005	000000	
/POINT PINOLE LIGHT P											
NGS LISTING											
155	4	38	00	42148	122	21	56319	139	0021	000000	
/POINT PINOLE 4 1940											
NGS LISTING											
<del>156</del>	<del>6</del>	<del>38</del>	<del>02</del>	<del>42019</del>	<del>122</del>	<del>25</del>	<del>39605</del>	<del>250</del>	<del>0005</del>	<del>000000</del>	
<del>/PETALUMA RIVER ENT LT 1</del>											
									<del>FIELD UNADJUSTED G.P.</del>		
157	3	38	02	56998	122	25	15400	250	0005	000000	
/PETALUMA RIVER ENT LT 2											
<del>158</del>	<del>3</del>	<del>38</del>	<del>03</del>	<del>49700</del>	<del>122</del>	<del>26</del>	<del>52960</del>	<del>139</del>	<del>0007</del>	<del>000000</del>	
<del>/SOW USE 1951</del>											
<del>NGS LISTING</del>											
159	3	38	04	03724	122	19	39200	139	0007	000000	
<del>/MARE ISLAND RADAR TARGET 1951</del>											
<del>NGS LISTING</del>											

~~160 3 38 01 51942 122 22 22470 139 0000 000000  
/SAN PABLO BAY CHAN LT 7 NGS LISTING~~

~~161 3 38 02 22473 122 20 59958 139 0000 000000  
/SAN PABLO BAY CHAN LT 10 NGS LISTING~~

~~162 3 38 03 48384 122 17 41396 250 0000 000000  
/END 1951 NGS LISTING~~

~~163 3 38 01 44754 122 22 15194 139 0000 000000  
/SAN PABLO BAY CHAN LT 8 FIELD UNADJUSTED G.P.~~

~~164 3 38 02 30620 122 21 06568 139 0005 000000  
/SAN PABLO BAY CHAN LT 9 FIELD UNADJUSTED G.P.~~

~~165 3 38 03 11119 122 19 46663 139 0005 000000  
/SAN PABLO BAY CHAN LT 11 FIELD UNADJUSTED G.P.~~

~~166 3 38 03 12510 122 14 32212 250 0115 000000  
/TURNEY 1929 NGS LISTING~~

~~167 3 37 59 38486 122 16 23617 139 0166 000000  
/FARIA (ERMUD) 1954 NGS LISTING~~

~~168 3 38 04 36342 122 15 14142 139 0086 000000  
/HARE ISLAND SOUTHEAST 1852 NGS LISTING~~

~~169 3 38 02 48132 122 30 23320 139 0050 000000  
/HAMILTON FIELD 2 1951 NGS LISTING~~

~~170 3 38 04 50678 122 45 51820 139 0150 000000  
/HAMILTON FIELD STANDPIPE 1951 NGS LISTING~~

~~171 3 38 02 04256 122 31 32586 139 0200 000000  
/BALLINAS ST VINCENT ORP SPIRE 1951 NGS LISTING~~

~~172 3 38 11 51149 122 23 21683 139 0020 000000  
/KAGGS ISLAND U.S. NAVY TANK 1951 NGS LISTING~~

NOAA FORM 76-40  
(8-74)

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

NONFLOATING AIDS ~~FOR~~ CHARTS

Replaces C&GS Form 567.

TO BE CHARTED  
 TO BE REVISED  
 TO BE DELETED

REPORTING UNIT  
(If not Party, Ship or Office)

NOAA SEA RAIDER

STATE

CALIFORNIA

LOCALITY

SAN FRANCISCO BAY

DATE

6/9/83

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)

The following objects HAVE  BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.

OPR PROJECT NO.

OPR-1123-BA-83

JOB NUMBER

U.A.

HAVE NOT

U.A.

DATUM

U.A.

POSITION

U.A. 1927

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

OFFICE

FIELD

CHARTS AFFECTED

CHARTING NAME

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

LATITUDE

LONGITUDE

CHARTS AFFECTED

LIGHT

SAN RAFAEL CREEK LIGHT 3  
LL # 761

37 57

50.31

37 57

1551

Hydro Pds. No.

5125

4/8/83

18649  
18654  
18652

LIGHT

POSITION ERRORS ON FFAID  
AND LIGHT LIST VOL. III, 1983  
POINT SAN PABLO TERMINAL  
LIGHT 4

37 57

53.04

37 57

1635

Hydro Pds. No.

9119

4/28/83

18649  
18654  
18652

DAYBEACON

LL # 763.10  
POSITION ERROR ON FFAID  
SAN RAFAEL CREEK DAYBEACON 6  
NO LL #

37 58

07.46

37 58

230

Hydro Pds. No.

6918

4/25/83

18649  
18654  
18652

DAYBEACON

SAN RAFAEL CREEK DAYBEACON 7  
NO LL #

37 58

11.92

37 58

367

Hydro Pds. No.

6917

4/25/83

18649  
18654  
18652

Duplicate, L-568/83

RESPONSIBLE PERSONNEL		ORIGINATOR
TY OF ACTION	NAME	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
OBJECTS INSPECTED FROM SEAWARD	J. J. Ludwig	FIELD ACTIVITY REPRESENTATIVE
POSITIONS DETERMINED AND/OR VERIFIED	R. L. Hastings / MR. HATHAWAY	OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'  
 (Consult Photogrammetric Instructions No. 64.)

OFFICE	FIELD (Cont'd)
<b>I. OFFICE IDENTIFIED AND LOCATED OBJECTS</b> Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	<b>B. Photogrammetric field positions** require</b> entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
<b>FIELD</b> <b>I. NEW POSITION DETERMINED OR VERIFIED</b> Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75 *FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	<b>II. TRIANGULATION STATION RECOVERED</b> When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 <b>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH</b> Enter 'V-Vis.' and date. EXAMPLE: V-VIS. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

## FIELD TIDE NOTE

Field tide reduction of soundings for survey H-10080 was based on predicted tides from San Francisco (Golden Gate), California. Corrections were obtained from Preliminary Tidal Zoning OPR-L123-RA-83. The predicted tides were derived using program AM500. Two subordinate tide stations provided data for survey H-10080.

An ADR tide gage was installed at the historical gage site on the Standard Oil Company fuel pier at Point Orient, California (941-4881), Lat.  $37^{\circ}57.5'N$ , Long.  $122^{\circ}25.5'W$ . The gage was installed on March 24, 1983 and removed on May 2, 1983. The existing floatwell from the 1979 installation by the NOAA Ship McARTHUR was raised for cleaning and inspection. It was reinstalled on an adjacent piling which was a more suitable location for the gage and staff. The floatwell and staff were attached to the pier piling with lag bolts.

The gage at Point Orient operated well throughout the period of hydrography. The gage began to lose time due to low battery voltage after all hydrography was completed in the area.

As stated in the Project Instructions, third-order levels were required from the tide staff to a minimum of three bench marks on installation and removal of each station. Three permanent benchmarks were recovered as previously described and leveled to during the installation of this tide gage. A fourth benchmark (San Pablo BM2 1917) was searched for but not recovered. During final leveling, San Pablo BM2 1917 was found and connected with the other three marks.

Initial levels for the Point Orient gage were run on March 25, 1983. Final levels were run on May 2, 1983. Initial and final levels showed excellent agreement, with no indication of tide staff movement.

The second subordinate tide station for survey H-10080 was located at the historical gage site on the pier ruins at Point Pinole, California (942-5056), Lat.  $38^{\circ}00.9'N$ , Long.  $122^{\circ}21.8'W$ .

The ADR tide gage at Point Pinole was installed on March 26, 1983 and removed on May 2, 1983. The existing floatwell and staff from the 1979 installation by the NOAA Ship McARTHUR was used. This gage operated well throughout the period of hydrography.

Three permanent benchmarks were recovered as described and leveled to during the installation of the Point Pinole tide gage. The initial levels were run on March 26 and 27, 1983. Final levels were run on May 2, 1983. Comparison of initial and final levels indicated that the staff stop elevation changed by 8 mm during the course of this survey. This is not surprising considering the poor condition of the piling at the gage site. The time meridian used for records annotation at both sites was  $0^{\circ}$  (UTC).

DATE: 10-28-83

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for 941-4881 Point Orient, Ca.  
941-5056 Point Pinole, Ca.

Tide Station Used (NOAA Form 77-12):

Period: March 28- April 29, 1983

HYDROGRAPHIC SHEET: H-10080

OPR: L123

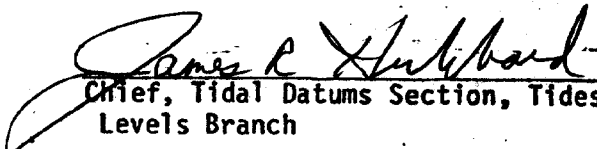
Locality: San Pablo Bay Entrance, California

Plane of reference (mean lower low water): 941-4881 = 3.94' ft.  
941-5056 = 6.96' ft.

Height of Mean High Water above Plane of Reference is 941-4881 = 5.4' ft.  
941-5056 = 5.4' ft

REMARKS: Recommended Zoning.  
In San Pablo Bay

- 1) North of Latitude  $38^{\circ}00.0'$  Zone direct on 941-5056 Point Pinole, Ca.
- 2) South of  $38^{\circ}00.0'$  to  $37^{\circ}59.0'$  Zone on 941-4881 Point Orient and apply +15 minutes time correction.
- 3) South of  $37^{\circ}59.0'$  Zone direct on 941-4881 Point Orient, Ca.

  
Chief, Tidal Datums Section, Tides & Water  
Levels Branch



GEOGRAPHIC NAMES

Name on Survey	<p>A CHART NO. 18634 31st Ed. 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 MANUSCRIPTS</p>								TP-00526
California (Title) Castro Creek	X								TP-00526
China Camp	X								TP-00526
East Marin Island									TP-00526
Gallinas Creek	X								TP-00524 TP-00526
McNears Beach	X								TP-00526
Nitro	X								TP-00527
Point Orient	X								TP-00526
Pinole Point	X								8
Point San Pablo	X								TP-00526
Point-San Pedro	X								TP-00528
Rat Rock	X								TP-00526
San Pablo	X								TP-00527 TP-00526
San Pablo Bay	X								TP-00527
San Pablo Creek	X								TP-00526
San Pablo Strait	X								TP-00526
San Rafael	X								TP-00526
San Rafael Bay	X								TP-00526
The Brothers	X								TP-00526
The Sisters	X								TP-00526
West Marin Island									TP-00526
San Rafael Creek									Approved 21
									22
									Charles E. Harrison 23
									Chief Geographer - W/CG 2x5 24
									14 Feb. 1984 25

PACIFIC MARINE CENTER  
EVALUATION REPORT

REGISTRY NO: H-10080

FIELD NO: RA-10-2-83

California, San Pablo Strait, San Rafael Bay to Gallinas Creek

SURVEYED: March 28 - April 29, 1983

SCALE: 1:10,000

PROJECT NO: OPR-L123-RA-83

SOUNDINGS: Ross Fineline Fathometer

CONTROL: Mini-Ranger  
Range/Range  
Range/Azimuth

Chief of Party.....CAPT R. J. Land

Surveyed By.....LT S. Iwamoto  
LT S. Ludwig  
LTJG M. Mathwig  
ENS J. Judson  
ENS B. Postle  
ENS W. Logue  
ENS K. Barton  
ENS R. Koehler  
SST R. Hastings

Automated Plot By.....PMC Xynetics Plotter

Verified By.....C. R. Davies

Evaluated By.....K. M. Scott

1. INTRODUCTION

H-10080 was accomplished by NOAA Ship RAINIER and launches in accordance with Project Instructions OPR-L123-RA-83, San Francisco Bay and San Pablo Bay, California, dated February 4, 1983, Change No. 1 dated March 11, 1983, Change No. 2 dated March 29, 1983, and Change No. 3 dated July 27, 1983.

This survey is a basic survey of San Pablo Strait with reconnaissance hydrography in San Rafael Creek, Gallinas Creek and Castro Creek.

Predicted tides based on the San Francisco (Golden Gate), California, gage were utilized during shipboard processing. Tide correctors used for the reduction of final soundings reflect approved hourly heights zoned from Point Orient (941-4881) and Point Pinole (941-5056) gages.

TC/TI tables have been extended to accommodate leadline depths. These tables are listed with the smooth sounding printout.

**HYDROGRAPHIC SURVEY STATISTICS**

H-10080

**RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.**

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		10
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		8
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES	4				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES		1			

**SHORELINE DATA**

- SHORELINE MAPS(List):
- PHOTOBATHMETRIC MAPS(List):
- NOTES TO THE HYDROGRAPHER(List):
- SPECIAL REPORTS(List):
- NAUTICAL CHARTS(List):

**OFFICE PROCESSING ACTIVITIES**

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			4087
POSITIONS REVISED	1109		
SOUNDINGS REVISED	312		
CONTROL STATIONS REVISED			
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	2		2
VERIFICATION OF CONTROL	13	1	14
VERIFICATION OF POSITIONS	60	13	73
VERIFICATION OF SOUNDINGS	90	11	101
VERIFICATION OF JUNCTIONS	2	2	4
APPLICATION OF PHOTOBATHMETRY			
SHORELINE APPLICATION/VERIFICATION	4	0	4
COMPILATION OF SMOOTH SHEET	69	29	98
COMPARISON WITH PRIOR SURVEYS AND CHARTS		17	17
EVALUATION OF SIDESCAN SONAR RECORDS	9	3	12
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	7	29	36
OTHER Rework		31	31
Digitization		19	19
<b>TOTALS</b>	<b>256</b>	<b>155</b>	<b>411</b>

Pre-processing Examination by	Beginning Date	Ending Date
Verification of Field Data by C. R. Davies	10/3/84	7/19/84
Verification Check <del>by</del> & evaluation checks by J. L. Stringham, T. A. Jones, J. S. Green	Time(Hours) 37	Ending Date 10/12/84
Evaluation and Analysis by K. M. Scott	8/8/84	Ending Date 12/7/84
Inspection by D. Hill	Time(Hours) 35	Ending Date 12/12/84

The electronic control correctors were revised during verification to reflect the appropriate baseline correctors for station pairs. These tables are listed with the smooth position printout.

The projection parameters were revised during verification to meet smooth sheet specifications. Parameters used to plot the smooth sheet are listed in the smooth printouts accompanying the survey.

## 2. CONTROL AND SHORELINE

Geodetic positions for control stations used during hydrography are preliminary adjusted field positions and published geodetic positions adjusted to the North American 1927 datum.

Mini-Ranger electronic control was employed in range/range and range/azimuth modes during hydrographic operations. Baseline calibration correctors were applied to the positions. Calibration and system checks are discussed in Section G of the hydrographer's report.

Shoreline used for photogrammetric locations of offshore features are as follows:

T-Sheet	Date of Photography	Date of Field Edit	Date of Final Review
TP-00524	Mar 1977 -	None	Sept 1981 -
TP-00526	Mar 1977 -	Nov 1978 - Apr 1979 -	Nov 1981 -
TP-00527	Mar 1977 -	Apr 1979 -	Nov 1981 -

Shoreline and most Geographic Names are not shown on the smooth sheet in an effort to expedite the survey verification/evaluation processes. (See memo Reduction of Marine Center Hydrographic Survey Processing Backlog, Feb. 16, 1984, copy appended.)

The rocky area shown on shoreline manuscript TP-00527 west of Pinole Point is no longer considered foul. The boulders note is carried forward to the smooth sheet without the foul limit line.

The following features were transferred to the smooth sheet from the smooth field sheet without supporting positional information.

<u>Feature</u>	<u>Latitude</u>	<u>Longitude</u>
#7899 1 ruins	38°00'48.0"N ✓	122°29'11.0"W ✓
2 duckblind	38°00'32.5"N ✓	122°28'53.0"W ✓
3 ruins	38°00'13.5"W ✓	122°27'49.6"W ✓
4 *wreck	38°00'11.4"N ✓	122°27'45.5"W ✓
5 *pile	37°57'55.0"N ✓	122°28'02.0"W ✓
6 *pile	37°57'55.0"N ✓	122°28'01.0"W ✓
7 duckblind	38°00'29.5"N ✓	122°28'36.5"W ✓

\* These features have been visually located only and positions may be approximate. The compiler should use discretion during charting.

The deadhead at latitude 37°58'06.8"N, longitude 122°25'30.0"W was plotted on the smooth sheet from the hydrographer's report, Section L.

### 3. HYDROGRAPHY

Soundings at line crossings are in good agreement.

Side scan sonar was utilized to identify features that may constitute Dangers to Navigation. Hands Off Tuning was used during its operation. Recent experience proves Hands Off Tuning is not adequate for feature detection due to lack of definition by contrast. However, based on data obtained during conventional hydrographic operations, it is unlikely that Dangers to Navigation exist in the traffic lanes.

Delineation of the bottom configuration, development of shoal soundings, determination of least depths, and delineation of standard depth curves are adequate. Brown depth curves have been added to further delineate isolated features.

Development within San Rafael Creek was deferred by the hydrographer to FE-242. Subsequent development on that survey is of reconnaissance quality only and not adequate for junctioning purposes.

### 4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change Three, with the following exceptions.

The hydrographer's report, Section E, states that reconnaissance hydrography in Gallinas Creek was plotted on a chartlet accompanying the report. No chartlet was found. All data included in the hydrographic records are plotted on the smooth sheet.

The hydrographer's report, Section L, addresses a deadhead awash in 6 feet of water at latitude 37°58'06.8"N and longitude 122°25'30.0"W. There is no indication on the fathograms nor is it noted elsewhere in the raw data records. Further, it was not plotted on the smooth field sheet. Yet, the hydrographer considered it a danger to navigation and sent a notice. This obstruction should have been properly located and documentation submitted with the survey records.

### 5. JUNCTIONS

Junctions with H-10080 have been adequately effected as follows:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Note</u>	<u>Junctions</u>
H-10081 ✓	1983	1:10,000	Joins	Northeast
H-10082 ✓	1983	1:10,000	Joins	North
FE-242 ✓	1983	1:10,000	Joins	South
H-9811 ✓	1979	1:10,000	Adjoins	South

The adjoining survey, H-9811, was forwarded to Rockville in 1981. Changes have occurred in the junction area as a result of shifting of the mud bottom. The six-foot and sixty-foot curves supersede those shown on H-9811.

6. COMPARISON WITH PRIOR SURVEYS

H-7867 (1950) 1:10,000

Changes have occurred throughout the area with the greatest change occurring in depths greater than about 12 feet. Here, shoaling has taken place particularly in the vicinity of The Sisters where depths have decreased by as much as 48 feet. Depths less than 12 feet have deepened slightly, except to the east of San Pablo Strait where the bottom has remained relatively stable.

H-7897 (1951) 1:10,000

Between The Sisters and San Pablo Bay Channel Light 5 north of the main channel, depths have decreased as much as twelve feet. South of the channel there has been some overall deepening by as much as 4 feet.

H-7899 (1951) 1:10,000

Depths in Gallinas Creek have decreased as much as 7 feet while the area north of Gallinas Creek and west of the twelve-foot curve is generally deeper two to four feet.

There appears to be scouring action to the north and east of Rat Rock, latitude 38°00'16.4"N, longitude 122°27'39.4"W. Soundings on H-10080 are as much as six feet deeper.

Presurvey review items are adequately discussed in Section K of the hydrographer's report with the following exception:

50521 -- The rock awash charted at latitude 37°57'59.20"N, longitude 122°25'38.00"W was investigated by the hydrographer. An echo sounder depth of 3.7 feet was recorded indicating the existence of the rock. The minimum depth over the feature was not obtained, therefore, the rock awash symbol and note have been transferred to the smooth sheet from H-7867 (1950).

H-10080 is adequate to supersede the prior survey, within the common area.

7. COMPARISON WITH CHART

18654 (31st Ed., June 5, 1982)

a. Hydrography - Most charted soundings originate with the prior surveys discussed in Section 6 of this report. Other soundings originate with miscellaneous sources not readily ascertainable and unless discussed below or in the hydrographer's report should be charted at the discretion of the chart compiler.

Two piles charted north of the pier at Pinole Point, latitude 38°00'57.5"N, and longitude 122°21'57.5"W, and latitude 38°00'58.0"N, longitude 122°21'56.5"W, and addressed in the hydrographer's report, Section L, were not disproven by the hydrographer. There is no evidence of a search in the area. These piles originate with sources other than prior surveys available at Pacific Marine Center, and their continued charting is left to the discretion of the compiler. A review of Chart 18654, 32nd Edition, October 29, 1983, indicates that they have been removed from that edition.

The present hydrography indicates a significant shoaling trend affecting the navigability of the San Francisco Bay Traffic Lanes in San Pablo Strait. Based on the fact that the Pinole Shoal Channel project depth is 35 feet there is a good possibility that vessels expecting to use that channel near that depth will experience difficulty approaching the channel entrance from the south. Charted depths from about latitude 38°00'45"N, longitude 122°24'20"W, northeastward along the traffic lane, have shoaled to present depths of 30-31 feet. Shoal depths should be charted as required to delineate the present conditions and future editions of charts should carry an advisory note that shoaling is occurring in the traffic lanes.

In addition to the cable crossing discussed by the hydrographer in section N, an attached photograph indicates that a submerged cable crossing begins in the vicinity of Point San Pablo Terminal Light 4. The compiler is advised to obtain supporting information regarding the cable route prior to charting.

H-10080 is adequate to supersede charted hydrography within the common area.

Dangers to navigation have been identified and a message was forwarded to the 12th USCG District by the hydrographer. (See Descriptive Report attachment)

b. Controlling Depths - The controlling depth charted as 7 feet for the midwidth of 100 feet from the channel entrance at latitude 37°57'30"N, longitude 122°27'30"W, to the mouth of San Rafael Creek is now 4 feet.

Controlling depths of 10 feet, 1 foot and 4 feet have been observed at latitude 37°58'01.0"N, longitude 122°25'35.6"W, latitude 37°57'41.1"N, longitude 122°24'36.3"W, and latitude 37°58'12.8"N, longitude 122°28'57.5"W, respectively, within the maintained channels charted at each location.

c. Aids to Navigation - The following comments supplement information contained in section N, Aids, of the hydrographer's report.

The charted positions of the following fixed aids were found to be at variance with survey positions. The 3rd Order survey positions are as follows:

	<u>Latitude North</u>	<u>Longitude West</u>
Point Pinole Light P	38°00'59.919" ✓	122°21'58.952" ✓
San Pablo Bay Light 4	37°58'52.626" ✓	122°24'59.882" ✓
San Pablo Bay Channel Light 5	38°00'43.002" ✓	122°24'50.994" ✓

The published and charted position of San Pablo Bay Channel Light 5 has been revised via LNM 47 of 1981 to conform to the present survey position. The charted positions of the other two lights have subsequently been revised on

the 32nd Edition of chart 18654 to essentially conform to present survey positions. The source for this revision is not readily ascertainable.

San Francisco Bay North Channel Light 17 and East Brother Island Light were verified as charted.

Aids to navigation as located on the present survey adequately serve their intended purpose.

8. COMPLIANCE WITH INSTRUCTIONS

H-10080 adequately complies with the project instructions as amended and noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a good basic survey.

Additional field work is recommended to determine the least depth of the rock awash located at latitude  $39^{\circ}57'59.20''N$ , longitude  $122^{\circ}25'38.00''W$ . This rock was previously assigned and is listed in the AWOIS as item 50521.

Those features plotted on the smooth sheet without supporting positional information listed in Section 2 should be considered for additional work.

It is further recommended that the reconnaissance hydrography in Gallinas Creek be considered for future survey operations.

Respectfully submitted,



Karol M. Scott  
Cartographer  
December 7, 1984

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting. The survey is recommended for approval.



James S. Green  
Supervisory Cartographer





UNITED STATES  
National Oceanic and Atmospheric Administration  
NATIONAL OCEANOGRAPHIC CHARTING AND  
Rockville, Maryland

FEB 16 1984

AMERCE  
istration

X1  
10P2  
- 18 21

TO: N/MO - Robert C. Munson

FROM: N/CG - John D. Bossler

SUBJECT: Reduction of Marine Center Hydrographic Survey Processing Backlog

Marine Center and Nautical Charting Division representatives met on January 30 and 31, 1984, to determine actions to be taken to reduce the Atlantic Marine Center (AMC) processing backlog specifically and reduce processing time in general. The following actions were agreed to and approved by the Chief, Nautical Charting Division:

1. AMC will forward all wire-drag surveys not in final stages of processing to Hydrographic Surveys Branch (HSB) for abstracting of information. Surveys in final stages will be completed by AMC. Surveys where obstructions were not found will not be processed immediately, unless the information is determined critical by HSB (these surveys will be processed completely at a later date).

2. Surveys for the Navy will be processed per the Memorandum of Agreement; i.e., replotting of the field sheets and adding smooth tide data. It is anticipated that approximately 60 to 80 hours will be spent on these surveys.

3. Digitizing of surveys after processing at the Marine Centers will be accomplished by Photogrammetry personnel. This procedure usually requires 24 hours per survey sheet. Personnel at both Marine Centers will be identified by the Marine Center Directors to accomplish this starting immediately. *Have Reservations About This - Probably Inefficient But Expense Personnel's Work*

4a. The requirement for transferring T-sheet (shoreline manuscript) data to the smooth sheet and field sheet will be relaxed. Anything that is on the T-sheet may be transferred to the field sheet by the hydrographer to help in planning or data acquisition. Copious notes on discrepancies must be made by the hydrographer to clearly indicate what was found and method used. Deletions are particularly important. The hydrographer must explain recommended deletions so that no question can come from his work, and it is apparent to the verifier as to what was done. *LT Henry Adams on Harmonically Fed TSN*

4b. Shoreline and Geographic Names data on T-sheets shall not be duplicated on the smooth sheet. Freehand annotations on the smooth sheet are encouraged. Any further cartographic requirements that could be eliminated should be brought to the attention of the Program Manager (Chief, Nautical Charting Division) for action.



5. The preprocessing effort at AMC will be assigned to one individual.

6. A campaign to increase quality of data acquisition was initiated at both Marine Centers in command seminars and workshops. Every effort should be made to impress upon ships and field parties the importance of complete, orderly, documented data to the efficient processing of that data.

7. Loran-C data will be handled such that it does not impact the normal processing flow of hydrographic data. The stripping off and merging process should be at any point that is most convenient for the processing cycle.

8. To enable AMC to significantly reduce their inventory, a combination of reduced input of surveys and increased output is necessary in addition to the above seven steps.

Assignment of the NOAA Ship MT. MITCHELL to other projects for 3 years will reduce the AMC input to 25 to 30 surveys a year. To increase the AMC output of surveys to 50 to 60 per year, six personnel will be added to processing, bringing the total to 15. Also, procedures to streamline the flow of data will be initiated.

It was determined that the first seven steps should reduce the inventory at the Pacific Marine Center to a normal work in progress level.

At both Marine Centers, a normal work in progress level was determined to be approximately half the annual processing output. This number is necessary to keep every process in the system active.

Resources, both staffing and monetary, must be identified to keep production at the predicted levels. Close coordination between our staffs will be essential over the next several months. A followup meeting with the Marine Centers is planned for April 23 to see if we are on track with our actions and plans.

cc:  
N/MOA  
N/MOP

CLEARANCE

N/MO: R. C. Munson

SIGNATURE AND DATE:

*R. C. Munson 2-17-64*

HISTORIC GOAL WORKING INVENTORY = 40 SURVEYS

1959 11/11

25 SURVEYS

11/11/61 25 SURVEYS

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10080

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (G&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

David W. Yagou 12/07/84  
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

Larry J. Mordock 12/17/84

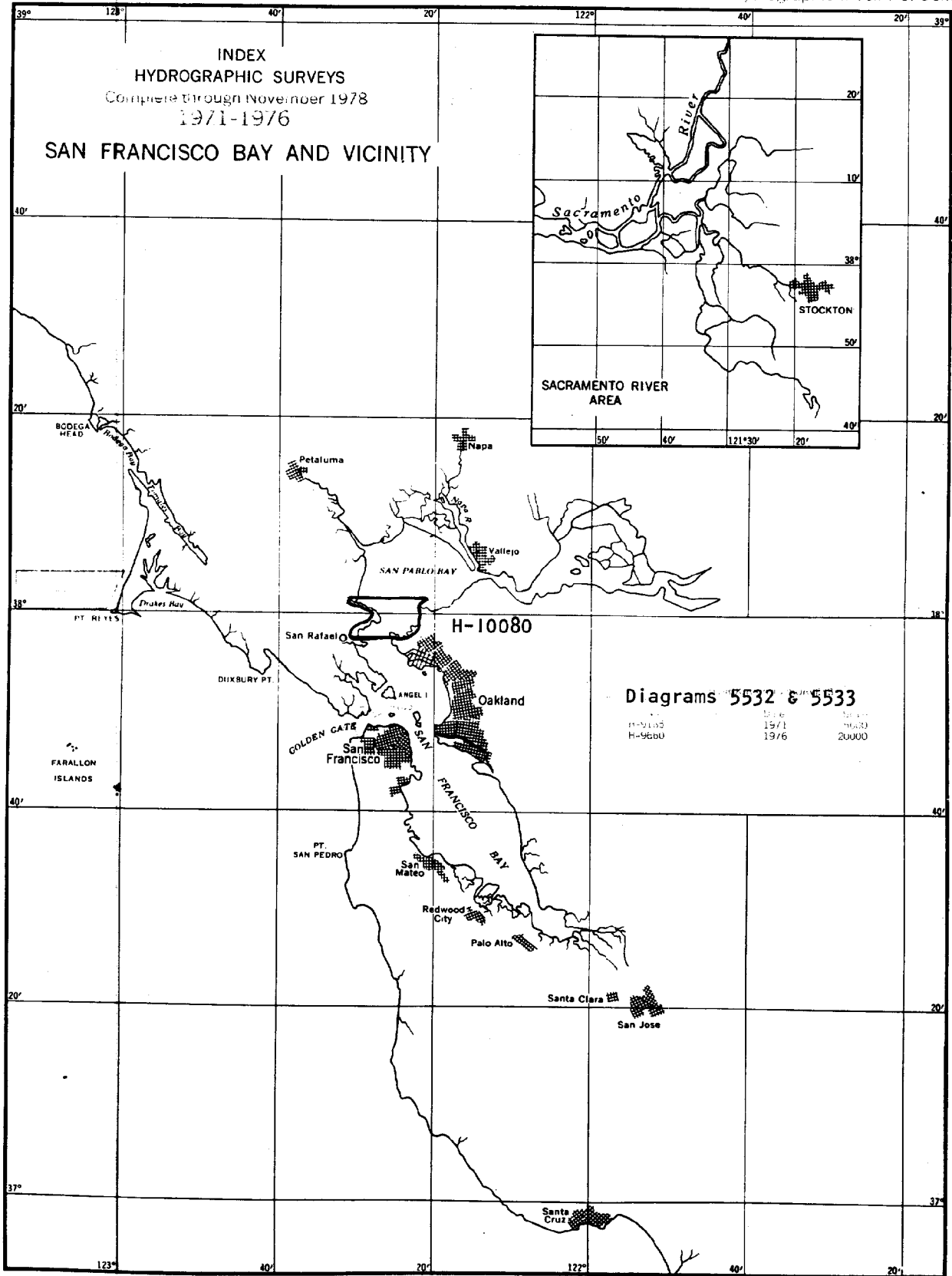
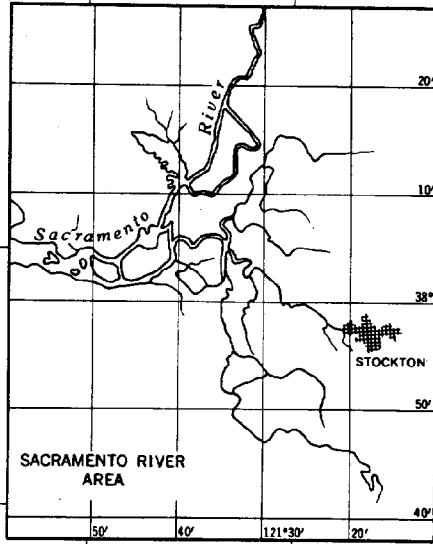
After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Robert L. Sargent 12-18-84  
Director, Pacific Marine Center (Date)

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

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Diagrams 5532 & 5533

Diagram	Scale	Date
H-9665	1576	1971
H-9660	1976	20000

