

# 10081

Diagram No. 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-10-3-83 ..  
Office No..... H-10081 ..

### LOCALITY

State ..... California ..  
General Locality San Pablo Bay ..  
Locality ..... Pinole Shoal and Vicinity ..

1983

CHIEF OF PARTY  
CAPT R.J. Land

### LIBRARY & ARCHIVES

DATE ..... April 3, 1985 ..

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10081

Area 5  
CHS

18654

18652 sec

18640-ll

TO SIGN OFF SEE  
"RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10081

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-10-3-83

State California

General locality San Pablo Bay

Locality Pinole Shoal and Vicinity

Scale 1:10,000

Date of survey April 11 - 30, 1983

Instructions dated February 4, 1983

Project No. OPR-L123-RA-83

Vessel NOAA Ship RAINIER Launches 2123, 2124, 2125

Chief of party CAPT R. J. Land

Surveyed by LT S. Ludwig, ENS R. Koehler, ENS B. Postle, ENS W. Loque,  
ENS J. Judson, ENS K. Barton, SST 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 R. Shipley

Automated plot by PMC Xynetics Plotter

Evaluation by K. M. Scott

Soundings in ~~fathoms~~ feet at ~~MHW~~ MLLW

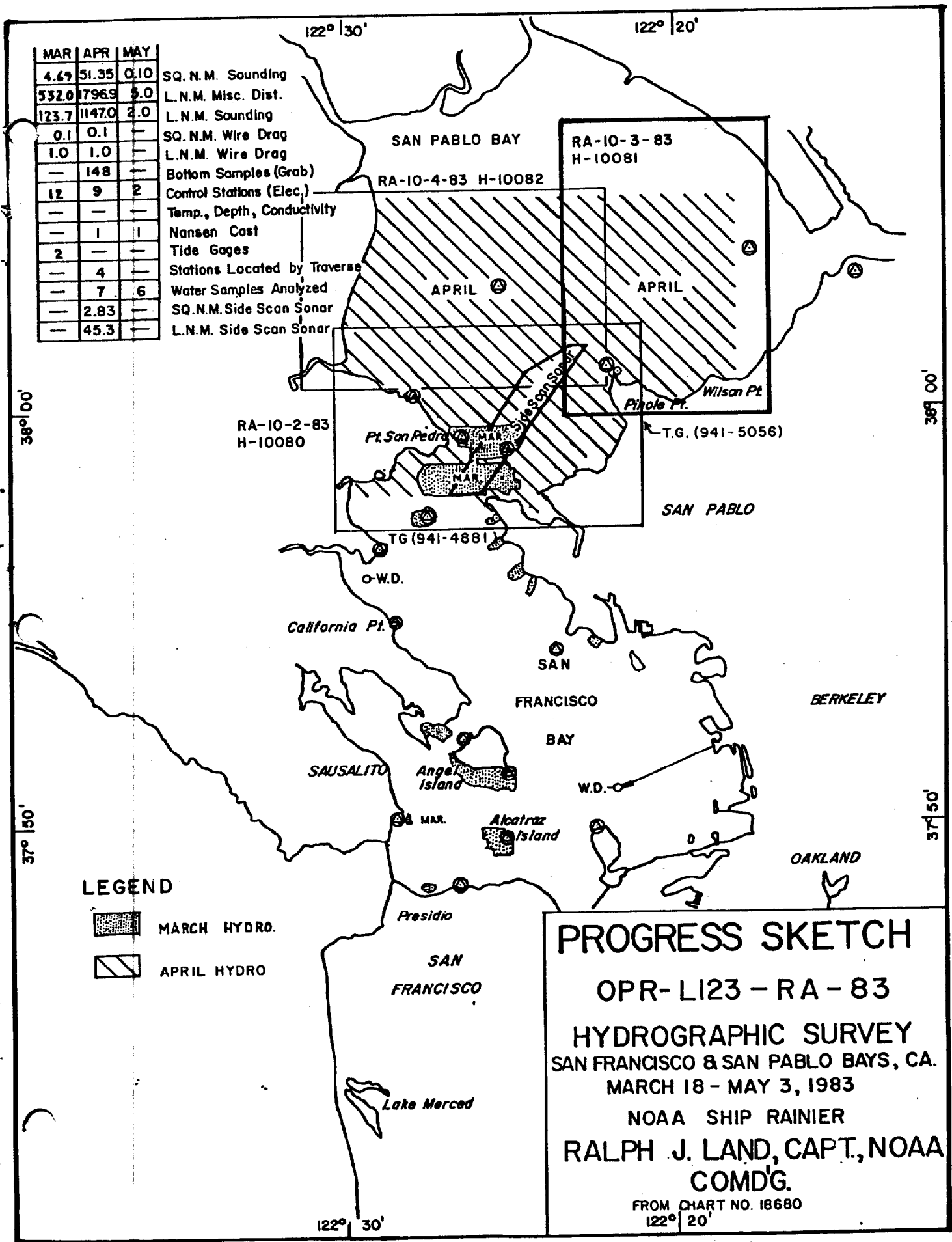
REMARKS: Revisions and marginal notes in black by evaluator.

Separates are filed with the hydrographic data.



AWOIS AND SURF ✓ RWD 4/85

SP 4-30-97

MAR	APR	MAY	
4.69	51.35	0.10	SQ.N.M. Sounding
532.0	1796.9	5.0	L.N.M. Misc. Dist.
123.7	1147.0	2.0	L.N.M. Sounding
0.1	0.1	—	SQ.N.M. Wire Drag
1.0	1.0	—	L.N.M. Wire Drag
—	148	—	Bottom Samples (Grab)
12	9	2	Control Stations (Elec.)
—	—	—	Temp., Depth, Conductivity
—	1	1	Nansen Cast
2	—	—	Tide Gages
—	4	—	Stations Located by Traverse
—	7	6	Water Samples Analyzed
—	2.83	—	SQ.N.M. Side Scan Sonar
—	45.3	—	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

Survey H-10081 was conducted in accordance with Project Instructions OPR-L123-RA-83, San Francisco Bay and San Pablo Bay, California, dated February 4, 1983, and supplements: Change 1 dated March 11, 1983 and Change 2 dated March 29, 1983.

- See  
Eval Rpt  
Sect. 1

B. AREA SURVEYED

Survey H-10081 was performed in San Pablo Bay. The area is bounded on the west by  $122^{\circ}23'00''W$  and on the east by  $122^{\circ}18'10''W$ ; and extends from  $38^{\circ}05'00''N$  to the southern shore of San Pablo Bay. The eastern extent of this survey extends approximately 1000 meters beyond the limit shown on the project limit sketch. Inclusive dates of the survey were April 11-~~29~~<sub>30</sub>, 1983.

C. SOUNDING VESSEL

All soundings were obtained using the following hydrographic launches RA-3 (2123), RA-4 (2124), and RA-5 (2125). No unusual sounding vessel configurations or problems were encountered.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All information contained in this section is applicable to RA-10-3-83. 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

Each launch was equipped with Ross Fathometer systems. The systems included the following Ross components: model 400 transceivers, model 5000 analog trace recorders, model 6000 digitizers and 100 khz transducers. The serial numbers of the components are summarized in Table I.

TABLE I  
Echo Sounding Component Serial Numbers

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

Multiple analog recorders were utilized in RA-3 and RA-4 due to occasional failures of the principal recorders (#1042 and #1070, respectfully).

The principal recorders were used in these launches except as follows: 1) RA-3 used recorder #1070 on JD 115 and 2) RA-4 used recorder #1042 on JD's 114-116 and 118.

Analog recorders #1070 and #1071 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 for investigating PSR Items #50530 and 50531.

#### SOUND VELOCITY CORRECTORS

A Nansen cast was performed to determine the sound velocity correctors for this survey. The cast was conducted on May 3, 1983 at  $37^{\circ}58.4'N$ ,  $122^{\circ}26.1'W$ .

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. 4.9.4.2.6, 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. *Velocity data is filed with the raw data*

#### 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. 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

Smooth hydrographic sheets were prepared on board the RAINIER S221 using the PDP 8/e complot system. The sheets were based on modified transverse mercator projections. A list of parameters used to define the hydrographic sheets are attached in the separates following the text. The smooth field sheets are plotted at 1:10,000 scale.

Two field sheets, RA-10-3W-83 and RA-10-3E-83 covered the survey area. Three expansion sheets were used for development areas. Field records will be forwarded to Pacific Marine Center, Seattle, Washington.

The maximum line spacing required in the Project Instructions is 100 meters. In some areas splits were run to further develop specific items or shoal areas. Fifty meter spacing was used on the east limit of the survey to provide adequate sounding information for 1:10,000 scale charting planned east of 122°19'W.

#### F. CONTROL STATIONS

No new control stations were established for this survey. The following existing control stations were recovered. All stations are at least Third Order, Class I and are on the North American 1927 Datum. Reference the Horizontal Control Report OPR-L123-RA-83.

CHINA 1951  
EAST BROTHER ISLAND LIGHT  
END 1951  
PETALUMA RIVER ENTRANCE LIGHT 2, 1979  
POINT PINOLE 4 1940  
POINT PINOLE LIGHT P, 1981

SAN PABLO BAY CHANNEL LIGHT 5  
 SAN PABLO BAY CHANNEL LIGHT 7, 1981  
 SAN PABLO BAY CHANNEL LIGHT 10, 1981  
 SAN PABLO BAY CHANNEL LIGHT 12  
 SAN PABLO BAY CHANNEL LIGHT 13  
 SAN PABLO BAY CHANNEL LIGHT 14  
 SISTER 1941  
 SOW (USE)  
 TORMEY 1929

G. HYDROGRAPHIC POSITION CONTROL

Range/Range was the only method used for hydrographic position control. Positioning instruments included Motorola Mini-Ranger III systems. The table below summarizes 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

TABLE II  
Mini-Ranger Shore Equipment

<u>Code</u>	<u>Transponder S/N</u>	<u>Station #</u>
A	1645	154
B	4951	166
C	1628	157
E	911721	154
F	911711	152
1	C1680	Not Used
2	B1106	162

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 before work began on this sheet. An initial calibration for the new R/T unit was performed on April 6, 1983 at San Pablo Bay, California. The calibration was done using inverse distances between known geodetic positions. Ending 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. Static calibration methods were used to confirm the baseline correctors for this survey. Calibrations were taken daily.

#### Mini-Ranger Performance

All shore stations were positioned on Third Order, Class I or better geodetic stations. Power was supplied by two 12-volt batteries connected in series. Infrequent problems with erratic Mini-Ranger rates made data acquisition difficult at times. Numerous transponders were established to permit using the most stable pair.

A systematic error was found in the data collected by RA-4 on JD 109, 110, 111, 112, 114 and 115. An incorrect elevation of 1150 meters instead of 115 meters for station TORMEY (166) had been entered on the RA-4 signal tape. This caused a horizontal displacement of up to 100 meters of the data collected on-line by RA-4 using station TORMEY. The off-line plot is correct and the data was kept. This accounts for the irregular line spacing apparent on the field sheets.

Overall, Mini-Ranger systems performed well.

#### H. SHORELINE

The shoreline for this survey was transferred from a 1:10,000 scale expansion of TP-000527 (1:20,000). Shoreline features have been verified or disproven and all changes noted were transferred to the field sheet in red.

The row of pilings, located at  $38^{\circ}00'40''N$ ,  $122^{\circ}21'45''W$  on TP-000527 was disproven during a low water investigation. Therefore, they were not transferred to the field sheet.

The area foul with stakes, located at  $38^{\circ}00'30''N$ ,  $122^{\circ}21'00''W$  on TP-000527, was disproven during a low water investigation. Therefore, it was not transferred to the field sheet.

#### I. CROSSLINES

Eight percent of the mainscheme hydrography in this survey are crosslines. The soundings at crossings agree well, generally, within one foot.



Two foot discrepancies exist at 38°00'48"N, 122°20'45"W and at 38°04'37"N, 122°19'25"W. *Approved tides have eliminated the discrepancy*

J. JUNCTIONS

This survey junctions with contemporary survey H-10080 and H-10082. A junction also exists between the east and west sheets of this survey, H-10081 (RA-10-3-83). Results of the comparisons is as follows:

H-10081

The junction between RA-10-3W-83 and RA-10-3E-83 is good. The depths generally agree within one foot.

H-10080

A total of 39 soundings were compared between the junction of H-10080. 37 (95%) of these soundings agree within one foot of the surrounding soundings. Two soundings had discrepancies of two feet. They are located at 38°01'35"N, 122°22'47"W and 38°01'35"N, 122°22'55"W. Overall, junction agreement is very good.

H-10082

A total of 30 soundings were compared between the junction of H-10081 and 10082. All of the comparisons agreed within one foot. Junction agreement is excellent.

K. COMPARISON WITH PRIOR SURVEY

This survey had a total of 13 pre-survey review items. The table below summarizes investigation results:

<u>PSR#</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Type</u>	<u>Disposition</u>	<u>Recommendation</u>
50530 <i>14 wk</i>	38/03/22.99 N	122/19/03.09 W	Side Scan Sonar	Verified Pos. 3000-3019, JD 111	Remain as charted. <i>concur See Eval Rpt Sect. 6</i>
50531 <i>17 wk</i>	38/03/23.0 N	122/19/00.0 W	Side Scan Sonar	Verified Pos. 3000-3019, JD 111	Remain as charted. <i>concur See Eval Rpt Sect. 6</i>
✓ 50532 <i>vis pile</i>	38/00/38.6 N	122/21/03.0 W	50 m bottom sweep	Disproved Pos. 3096 JD 118	Remove from chart. <i>concur</i>

<u>PSR#</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Type</u>	<u>Disposition</u>	<u>Recommendation</u>
✓ 50533 <i>visible pile</i>	38/00/40.0 N	122/21/08.0 W	50 m bottom sweep	Disproved Pos. 3095 JD 118	Remove from <i>concur</i> chart.
✓ 50534 <i>visible pile</i>	38/00/38.9 N	122/21/37.6 W	50 m bottom sweep	Disproved Pos. 3094 JD 118	Remove from <i>concur</i> chart.
✓ 50535 <i>visible pile</i>	38/00/41.2 N	122/21/37.6 W	50 m bottom sweep, D.P.*	Verified Pos. 3090 JD 119	Remain as <i>do not concur</i> charted. <i>Revise to pile uncovers 2ft MLLW</i>
✓ 50536 <i>visible pile</i>	38/00/38.5 N	122/21/29.5 W	50 m bottom sweep	Disproved Pos. 1520- 1521, JD 117	Remove from <i>concur</i> chart.
✓ 50537 <i>visible pile</i>	38/00/32.9 N	122/21/16.2 W	D.P.	Verified, Pos. 1555-56 JD 117	Remain as <i>concur</i> charted. <i>bare 3ft MLLW</i>
✓ 50538 <i>visible stakes</i>	38/00/28.2 N	122/20/59.0 W	D.P.	Verified Pos. 1570 JD 117	Remain as charted. Revise "Stakes" to "piles" <i>concur</i> <i>See Eval Rpt Sect 6</i>
✓ 50539 <i>visible pile</i>	38/00/21.8 N	122/20/34.2 W	Visual	Verified JD 109	Remain as charted. <i>concur</i> <i>See Eval Rpt Sect 6</i>
✓ 50540 <i>visible pile</i>	38/00/14.4 N	122/20/25.8 W	Visual	Verified JD 109	Remain as <i>concur</i> charted. <i>See Eval Rpt Sect 6</i>
✓ 50541 <i>visible dol</i>	38/00/13.8 N	122/20/21.0 W	Visual	Verified JD 109	Add to chart. <i>do not concur</i> <i>See Eval Rpt Sect 6</i>
✓ 50542 <i>visible dol</i>	38/00/12.5 N	122/20/21.2 W	Visual	Verified JD 109	Remain as charted. Revise "Dolphin" to "Pile" <i>do not concur</i> <i>See Eval Rpt Sect 6</i>
✓ 50543 <i>visible pile</i>	38/00/11.4 N	122/19/57.6 W	Visual	Verified JD 109	Remain as charted. <i>concur</i> <i>bare 3ft MLLW</i>

\*Detached Position

PSR Items 50530 and 50531 (three wrecks) were investigated on JD 111 by RA-3 using a Klein side scan sonar. Side scan sonar lines were run at 400 percent bottom coverage.

For this project, the towfish was deployed from the stern of the launch. The water depth in the area varied between 13 and 25 feet. All side

scan sonar lines were run using the 50 meter range scale with a line spacing of 50 meters. Two complete (200 percent coverage) investigations were run, with the second search pattern oriented approximately 90° to the first search pattern. 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 investigation. The launch towing speed was four knots (1000 rpm).

A position plot for this investigation is included on expansion sheet 3. Contact areas are outlined on the position plot to indicate the location of significant sonar returns.

One significant contact appeared during the side scan search at approximately position 38°03'25.9"N, 122°19'01.9"W. This contact is located 100 meters north of the positions given in the AWOIS listing. The position of this contact is approximate because it appeared after the sounding line was broken and the launch was turning to begin the next line. The fathogram shows two peaks after position 3015 rising two feet above the bottom. The sonargram also shows the two peaks after position 3015 with an associated sand wave pattern. The contact did not appear on the sounding line that was oriented 90° to this line.

PSR number 50530 reported that divers found metal wreckage protruding 1.5 feet above the bottom. Due to strong currents in the area it is likely that the wreckage covers and uncovers in the shifting sand. It is possible that this is what appears on the fathogram and sonargram after position 3015.

See  
Eval Rpt  
Sect 6

After a review of the side scan sonar search it was considered unnecessary to conduct a wire drag investigation. It is recommended that the area remain as charted according to the wire-drag done by the NOAA Ship DAVIDSON in 1977.

The prior surveys, (H-7897, H7898, H7900), were used for comparison in the area of San Pablo Bay. Comparisons with each of the prior surveys indicated individual sounding discrepancies ranging from five feet deeper to seven feet shoaler.

See  
Eval Rpt  
Sect 6

Comparison among depth contours shows fairly good agreement with the 18, 30, and 36 foot contours. The 30 foot contour north of San Pablo Bay Channel has shifted northward by as much as 200 yards. The 12 foot contour south of San Pablo Bay Channel has shifted northward by as much as 250 yards. The largest discrepancy occurs inshore where the six foot contour has shifted southward (inshore) over a half mile in some areas. Contours within San Pablo Bay Channel show good agreement. Discrepancies are the result of natural processes which have occurred over the past 20 years.

#50535

A previously visible pile east of Point Pinole is now ~~submerged~~ <sup>Uncovered 2 ft at low</sup> ~~27 feet~~ at  $38^{\circ}00'41.2''N$ ,  $122^{\circ}21'37.6''W$ . The Coast Guard was informed to include the hazard in the local notice to mariners. See attached radio message. *See Eval Rpt Sect 6*

A visible ~~pile~~ <sup>pipe</sup> exists east of Point Pinole at  $38^{\circ}00'26.5''N$ ,  $122^{\circ}29'27.0''W$ . The Coast Guard was also informed to include this hazard in the local notice to mariners. See attached radio message. *See Eval Rpt Sect 7 ?*

A 1:2,500 scale expansion sheet was made on our investigation of a 16 foot sounding from prior survey H-7898. Vessel 2123, JD 115 ran 50 m development lines. The 16 foot sounding was disproved. *See Eval Rpt Sect 6*

It is recommended that this survey supersede all prior surveys for charting.

#### L. COMPARISON WITH THE CHART

This survey was compared with Chart 18654, 31st Edition, June 5, 1982. A 1:10,000 scale blowup was made from 1:40,000 scale original. The chart shows discrepancies ranging from three feet deeper to five feet shoaler than the current survey. In most areas soundings from the chart tend to be two to three feet shoaler. One charted sounding at  $38^{\circ}02'07''N$ ,  $122^{\circ}18'50''W$  is 10 feet shoaler than coincident soundings from the current survey. The current survey is correct and disproves the prior charted sounding. Chart agreement is poor since less than 60% of the comparisons meet the criteria as stated in Section 1.1.2, Part B.11.1 of the Hydrographic Manual. *See Eval Rpt Sect 7*

A trend of deepening can be seen in nearshore areas where the six foot contour has moved as much as one-half a mile closer to shore. Deepening can also be noted where the 30 foot contour has shifted northward from the channel by 200-300 meters. This occurs on the north side of San Pablo Bay Channel, by Channel Lt. 7. The differences can be attributed to ongoing processes of deposition and erosion. Other contours show good agreement.

A 1:2,500 scale expansion sheet of a 3 foot shoal area was compiled. Vessel 2125 on JD 119 conducted the development. The Coast Guard was informed to include this hazard at  $38^{\circ}00'53.0''N$ ,  $122^{\circ}21'25.5''W$  in the local notice to mariners. See attached radio message. *See Eval Rpt Sect 6 Least depth 2 ft*

#### M. ADEQUACY OF SURVEY

This hydrographic survey is considered complete and adequate to supersede all prior surveys for charting.

#### N. AIDS TO NAVIGATION

There are nine fixed aids to navigation in the survey area of San Pablo Bay.

<u>Name</u>	<u>Light List No.</u>
Point Pinole Light P	766.5
Channel Light 7	767
Channel Light 8	768
Channel Light 9	769
Channel Light 10	770
Channel Light 11	771
Channel Light 12	772
Channel Light 13	773
Channel Light 14	774

Geodetic positions were calculated for San Pablo Channel Lights 8, 9, and 11. These fixed aids had been re-established and required new positions. For more information concerning these aids, refer to Horizontal Control Report OPR-L123-RA-83 and 76-40's attached.

The Navy was to have established five unlit marker buoys as published in a Local Notice to Mariners (Notice No.14, 8 April 1983). The Buoys were not present while this survey was conducted.

O. STATISTICS

<u>Survey Launch</u>	<u>Number of Positions</u>	<u>Miles of Hydrography</u>	<u>Bottom Samples</u>	<u>LNM Sidescan</u>
RA-3 (2123)	<del>48</del> 66	----	--	3.2
RA-4 (2124)	2852 65	406.4	--	---
RA-5 (2125)	743	1.3	578	---
	<u>3064</u>			

This survey covers an area of approximately 35 square nautical miles.

One tide station was maintained.

P. MISCELLANEOUS

No anomalous currents were reported or observed.

Q. RECOMMENDATIONS

This survey is considered complete and adequate to supersede prior surveys. No further work should be assigned to investigate on Items 50530 and 50531.

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished in accordance with the Hydrographic Manual (4th Edition), Manual of Automated Hydrographic Surveys, the MOP OPORDER, Hydrographic Survey Guidelines and the

## Hydrographic Data Requirements for 1983.

Soundings and positions were taken by an ASI Logger and a Hydroplot system using Program RK112. There are daily master tapes and corresponding corrector tapes which include the TRA for the launches and electronic control baseline correctors for Mini-Ranger 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>	<u>Checksum</u>
RK 201 Range/Range, Hyperbolic Hydroplot	08/04/81	2352
RK 211 Range-Range Non-Real Time Plot	02/02/81	4032
RK 201 Grid, Signal, and Lattice Plot	04/18/75	1443
RK 212 Visual Station Table Load	04/01/74	5141
RK 215 Visual Non-Real Time Plot	01/11/81	5174
RK 216 Range-Azimuth Non-Real Time Plot	02/09/81	4356
RK 300 Utility Computations	10/21/80	0021
RK 330 Reformat and Data Check	05/04/76	3460
PM 360 Electronic Corrector Abstract	02/02/76	1500
RK 407 Geodetic Inverse/Direct Computation	09/25/78	2745
AM 500 Predicted Tide Generator	11/10/72	1634
RK 530 Layer Corrections for Velocity	05/10/76	7336
RK 561 H/R Geodetic Calibration	12/01/82	3724
AM 602 Elinore--Line Oriented Editor	12/08/82	4371
RK 606 Tape Duplicator	08/22/74	5603
AM 607 Self-Starting Binary Loader	08/10/80	5227
RK 610 Binary Tape Duplicator	12/01/82	5264
RK 612 Line Printer List	03/22/78	0177
DA 903 Diagnostic--Instruction Timer	02/27/76	3470
RK 905 Hydroplot Controller Checkout	03/18/81	5426
RK 935 Hydroplot Hardware Tests	03/15/82	1732
RK 950 Hardware Tests (Documentation Only)	06/02/75	----

The Wang Series 700, HP 97 and HP 9815A 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:

Coast Pilot Report	OPR-L123-RA-83
Echo Sounding Report	OPR -L123-RA-83
Electronic Control Report	OPR-L123-RA-83
Horizontal Control Report	OPR-L123-RA-83

Respectfully submitted,

*William G. Logue, Jr.*

William G. Logue, Jr.  
ENS, NOAA

1847z bmc de wtef 1 of 1

NMC	063385 MHZ
gr	06 MAY 83 1847z

rttuzyuw 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

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APPROVAL SHEET


DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

H-10081

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

<del>112</del>	<del>3</del>	<del>37</del>	<del>56</del>	<del>42337</del>	<del>122</del>	<del>28</del>	<del>48272</del>	<del>250</del>	<del>0000</del>	<del>000000</del>	<del>FIELD UNADJUSTED G.P.</del>
<del>/QUENTIN 1979</del>											
115	3	37	57	26104	122	27	21596	250	0005	000000	NGS LISTING
/SAN FRANCISCO BAY N CHAN LT 17											
117	4	37	57	47807	122	25	56701	250	0015	000000	FIELD UNADJUSTED G.P.
/EAST BROTHER ISLAND LIGHT											
150	3	37	58	52626	122	24	59882	250	0005	000000	NGS LISTING
/SAN PABLO BAY LT 4											
151	3	37	59	17835	122	26	25887	250	0000	000000	NGS LISTING
<del>/SISTER 1941</del>											
152	6	38	00	16372	122	27	39336	250	0000	000000	NGS LISTING
/CHINA 1951											
<del>153</del>	<del>3</del>	<del>38</del>	<del>00</del>	<del>45002</del>	<del>122</del>	<del>24</del>	<del>50794</del>	<del>139</del>	<del>0005</del>	<del>000000</del>	<del>NGS LISTING</del>
<del>/SAN PABLO BAY CHAN LT 5</del>											
154	3	38	00	59919	122	21	58952	250	0005	000000	NGS LISTING
/POINT PINOLE LIGHT P, 1981											
155	4	38	00	42148	122	21	56319	139	0021	000000	NGS LISTING
/POINT PINOLE 4, 1940											
<del>156</del>	<del>3</del>	<del>38</del>	<del>02</del>	<del>42819</del>	<del>122</del>	<del>25</del>	<del>37685</del>	<del>250</del>	<del>0005</del>	<del>000000</del>	<del>FIELD UNADJUSTED G.P.</del>
<del>/PETALUMA RIVER ENT LT 1</del>											
157	3	38	02	56998	122	25	15400	250	0005	000000	NGS LISTING
/PETALUMA RIVER ENT LT 2, 1979											
<del>158</del>	<del>3</del>	<del>38</del>	<del>05</del>	<del>49900</del>	<del>122</del>	<del>26</del>	<del>52960</del>	<del>139</del>	<del>0007</del>	<del>000000</del>	<del>NGS LISTING</del>
<del>/SOW USE 1951</del>											
159	3	38	06	03724	122	19	39200	139	0007	000000	NGS LISTING
/MARE ISLAND RADAR TARGET 1951											

160	3	38	01	51942	122	22	22478	139	0000	000000	
/SAN PABLO BAY CHAN LT 7, 1981											
											NGS LISTING
161	3	38	02	22473	122	20	59958	139	0000	000000	
/SAN PABLO BAY CHAN LT 10, 1981											
											NGS LISTING
162	3	38	03	48384	122	17	41398	250	0000	000000	
/END 1951											
											NGS LISTING
163	3	38	01	44754	122	22	15194	139	0005	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	11115	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	
/TORMEY 1929											
											NGS LISTING
<del>167</del>	<del>3</del>	<del>37</del>	<del>59</del>	<del>38486</del>	<del>122</del>	<del>16</del>	<del>23617</del>	<del>139</del>	<del>0166</del>	<del>000000</del>	
<del>/FARIA (EBMUD) 1954</del>											
											<del>NGS LISTING</del>
168	3	38	04	36342	122	15	14142	139	0086	000000	
/MARE ISLAND SOUTHEAST 1852											
											NGS LISTING
169	3	38	02	48132	122	30	23375	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	
/GALLINAS ST VINCENT ORP SPIRE 1951											
											NGS LISTING
172	3	38	11	51149	122	23	21683	139	0020	000000	
<del>/SKAGGS ISLAND U.S. NAVY TANK 1951</del>											
											<del>NGS LISTING</del>

NOAA FORM 76-40  
(8-74)

Replaces C&GS Form 567.

TO BE CHARTED  
 TO BE REVISED  
 TO BE DELETED

REPORTING UNIT  
(Field Party, Ship or Office)

NOAAS RAINIER

STATE

CALIFORNIA

LOCALITY

SAN PABLO BAY

DATE

6/2/83

## NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

### 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.

CHARTING NAME	DESCRIPTION <small>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</small>	DATUM			POSITION			METHOD AND DATE OF LOCATION <small>(See instructions on reverse side)</small>		CHARTS AFFECTED
		JOB NUMBER	SURVEY NUMBER	LATITUDE	LONGITUDE	OFFICE	FIELD	DATE		
								OPR PROJECT NO.	N.A.	
LIGHT	(SAN PABLO BAY CHANNEL LIGHT 8, 1983) 1983 L.L.# 768, FIELD POSITION	38 01	122 22	44.754 1379.8	15.194 370.6			F-2-6-L	18652 18654	
LIGHT	(SAN PABLO BAY CHANNEL LIGHT 9, 1983) 1983 L.L.# 769, FIELD POSITION	38 02	122 21	30.620 944.1	06.568 160.2			F-2-6-L	18652 18654	
LIGHT	(SAN PABLO BAY CHANNEL LIGHT 11, 1983) 1983 L.L.# 771, FIELD POSITION	38 03	122 19	11.119 342.8	46.663 1137.7			F-2-6-L F-2-6-L	18652 18654	

re - Ref L-568(83)  
 LHM 17/84 } 12 H CG  
 18/84 } DIST

RESPONSIBLE PERSONNEL		ORIGINATOR
TYPE OF ACTION	NAME	
OBJECTS INSPECTED FROM SEAWARD	R.B. KOEHLER	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	R.B. KOEHLER	FIELD ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		OFFICE ACTIVITY REPRESENTATIVE
		<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)
<p><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</p>	<p><b>B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.</b>            EXAMPLE: P-8-V            8-12-75            74L(C)2982</p>
<p><b>FIELD</b></p> <p><b>I. NEW POSITION DETERMINED OR VERIFIED</b>            Enter the applicable data by symbols as follows:            (E) Field            L - Located            V - Verified            1 - Triangulation            2 - Traverse            (3) - Intersection            4 - Resection            5 - Field identified            (6) - Theodolite            7 - Planetable            8 - Sextant            L-located</p> <p>A. Field positions* require entry of method of location and date of field work.            EXAMPLE: F-2-6-L            8-12-75</p> <p><b>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</b></p>	<p><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</p> <p><b>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH</b>            Enter 'V-Vis.' and date.            EXAMPLE: V-Vis.            8-12-75</p> <p><b>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</b></p>

Field Tide Note  
H-10081

Field tide reduction of soundings for survey H-10081 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. One subordinate tide station provided data for survey H-10081.

An ADR tide gage was installed at the historical gage site on the pier ruins at Point Pinole, California (941-5056),  $38^{\circ}00.9'N$ ,  $122^{\circ}21.8'W$ . The gage was installed on March 26, 1983 and removed on May 2, 1983. The existing float well and staff from the 1979 installation by the NOAA Ship McArthur was used. This gage operated well throughout the period of hydrography.

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 bench marks 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 8mm 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 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

Tide Station Used (NOAA Form 77-12): 941-4881 Point Orient, Ca.  
941-5056 Point Pinole, Ca.

Period: April 11-29, 1983

HYDROGRAPHIC SHEET: H-10081

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  $38^{\circ}05'0''$  Zone on 941-5056 Point Pinole and apply +15 minutes time correction.
- 2) South of  $38^{\circ}05'0''$  to  $38^{\circ}00'0''$ 
  - a) West of Longitude  $122^{\circ}19'0''$  Zone Direct on 941-5056 Point Pinole.
  - b) East of  $122^{\circ}19'0''$  Zone on 941-5056 Point Pinole and apply +15 minutes time correction.
- 3) South of  $38^{\circ}00'0''$  Zone on 941-4881 Point Orient and apply +15 minutes time correction.

  
Chief, Tidal Datums Section, Tides & Water  
Levels Branch

GEOGRAPHIC NAMES

H-10081

Name on Survey

A ON CHART NO. 18654  
31 ST 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

Name on Survey	A	B	C	D	E	F	G	H	Number
CALIFORNIA (title)									1
PINOLE SHOAL	X								2
SAN PABLO BAY	X							TP-00527	3
PINOLE									4
PINOLE POINT									5
WILSON POINT									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

Approved

*Charles E. Harrington*

Chief Geographer - N/C6245

24 FEB. 1984



# HYDROGRAPHIC SURVEY STATISTICS

H-10081

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		3
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		4
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES	2				
ENVELOPES					
VOLUMES					
CAMERS					
BOXES					

**SHORELINE DATA**

- SHORELINE MAPS(List):
- PHOTOBATHYMETRIC 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			3003
POSITIONS REVISED	3003		
SOUNDINGS REVISED	315		
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL	4		4
VERIFICATION OF POSITIONS	27		27
VERIFICATION OF SOUNDINGS	120		120
VERIFICATION OF JUNCTIONS	8		8
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	33		33
COMPARISON WITH PRIOR SURVEYS AND CHARTS		15	15
EVALUATION OF SIDESCAN SONAR RECORDS	1		1
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		30	30
OTHER Review		8	8
Digitization	9.5		9.5
<b>TOTALS</b>	<b>202.5</b>	<b>53</b>	<b>255.5</b>

Pre-processing Examination by	Beginning Date	Ending Date
Verification of Field Data by R. Shipley	9/23/84 start	1/16/85 Ending Date
Verification Check by J. Stringham, B. Olmstead, J. Green	36 Time(Hours)	2/25/84 Ending Date
Evaluation and Analysis by R.M. Scott	2/5/85 start	2/25/85 Ending Date
Inspection by D.H.H	2 Time(Hours)	3-4-85 Ending Date

PACIFIC MARINE CENTER  
EVALUATION REPORT  
H-10081

1. INTRODUCTION

H-10081 was accomplished by NOAA Ship RAINIER and launches in accordance with Project Instructions OPR-1123-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 in San Pablo Bay of Pinole Shoal and vicinity.

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 revised to exclude leadline depths. These tables are listed with the smooth sounding printout.

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 office processing to center the hydrography on the smooth sheet and to change the projections to polyconic.

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 the range/range mode 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.

Photogrammetric manuscripts used for location of offshore features are as follows:

T-Sheet	Date of Photography	Date of Field Edit	Date of Final Review	Class
TP-00525	Mar 1977	Cancelled	Sept 1981	Class III Registered
TP-00527	Mar 1977	Apr 1979	Nov 1981	Final Map

Shoreline and most geographic names are not shown on the smooth sheet in an effort to expedite office processing. (See memo Reduction of Marine Center Hydrographic Survey Processing Backlog, February 16, 1984).

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>
row of 7 piles	38°00'30"N ✓	122°21'20.5"W ✓
limit of abandoned oyster bed	38°00'07"N ✓	122°20'00"W ✓
	38°00'20.5"N ✓	122°19'21.5"W ✓
ruins	38°00'10"N ✓	122°20'19.5"W ✓
ruins	38°00'10"N ✓	122°20'17"W ✓

The duckblind at latitude 38°00'40.5"N longitude 122°20'27.0"W was added to the smooth sheet from on-line data printouts at sounding position 1416+1.

### 3. HYDROGRAPHY

Soundings at line crossings are in good agreement.

Delineation of the bottom configuration, development of shoal soundings, determination of least depths, and delineation of standard depth curves are adequate. The 36-foot supplemental depth curve has been added to delineate San Pablo Bay Channel.

### 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, except as noted in the Preprocessing Examination Report, dated July 27, 1983 and as follows:

In several cases the AWOIS survey requirements specified that a feature should be verified or disproved through a visual investigation at low water. Items that were found to exist were not positioned using hydrographic or better methods. These features had to be brought forward to the smooth sheet from the prior survey H-7898. *\* These items follow the lwl.*

Items 50530 and 50531 were wrecks which required verification or disproval through wire drag. Side scan sonar was utilized and possible contacts identified. However, neither accurate positions nor least depths were obtained. These wrecks were brought forward to the smooth sheet from prior survey H-7898.

No bottom sample was obtained on the shoal at latitude 38°00'53.0"N longitude 122°21'25.5"W. On line records do not agree with bottom samples in the surrounding area. It is likely that this shoal is not unique to the area. A note, gravel, was added to the smooth sheet on the shoal from the hydrographer's comments.

5. JUNCTIONS

Junctions with H-10081 have been adequately effected as follows:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Note</u>	<u>Junctions</u>
H-10080	1983	1:10,000	Joins	Southwest
H-10082	1983	1:10,000	Joins	Northwest

Soundings have been transferred from H-10080 to complete the 30-foot depth curve and support the 12-foot curve.

6. COMPARISON WITH PRIOR SURVEYSH-7897 (1951) 1:10,000

Present survey soundings to the north of San Pablo Bay Channel range from four feet deeper at latitude  $38^{\circ}01'45''N$  longitude  $122^{\circ}22'45''W$  to eight feet less deep between the 12-foot and 18-foot depth curves. Present survey soundings south of the channel range from zero to three feet less deep.

H-7898 (1951) 1:10,000

Present survey soundings are generally in good agreement with present survey soundings two to three feet deeper inshore with soundings gradually becoming less deep moving northward toward the channel with comparable soundings outside the 18-foot curve.

Present survey depths over the two-foot gravel shoal at latitude  $38^{\circ}00'53.0''N$  longitude  $122^{\circ}21'25.5''W$  are consistent with prior survey soundings, however, no shoal feature was identified at that time.

The 16-foot shoal at latitude  $38^{\circ}01'39''N$  longitude  $122^{\circ}21'15''W$  on the prior survey was investigated. Soundings over this area do not support the existence of a significant shoal but rather a sloping bottom. The area south of the shoal has filled in, thereby reducing the significance of the feature.

North of San Pablo Bay Channel soundings vary up to two feet in depths greater than 12 feet, however, there has been considerable change in depths less than 12 feet with soundings four to seven feet less deep.

H-7900 (1951) 1:20,000

Soundings are comparable with agreement between one to two feet over most of the common area. Major differences are seen along the 12-foot curve west of longitude  $122^{\circ}21'30''W$ . The present survey soundings range from six to ten feet less deep.

Changes occurring within the survey area since 1951 surveys have been caused by natural circumstances i.e., current action and siltation.

Presurvey review items are discussed in Section K of the hydrographer's report and are supplemented as follows:

- 50530 -- A wreck charted at latitude  $38^{\circ}03'22.99''N$  longitude  $122^{\circ}19'03.09''W$  was investigated using side scan sonar. Divers found wreckage as noted by the hydrographer. No least depth or position was obtained. The 14-foot sounding and note from H-7898 were carried forward. Retain as charted.
- 50531 -- A wreck charted at latitude  $38^{\circ}03'23.00''N$  longitude  $122^{\circ}19'00.00''W$  was investigated using side scan sonar; nothing conclusive was found. The 17-foot sounding and note from H-7898 has been carried forward. Retain as charted.
- 50538 -- Three stakes originating with H-7898 are charted as visible at mean high water at latitude  $38^{\circ}00'28.20''N$  longitude  $122^{\circ}20'59.00''W$ . A visual investigation was accomplished and these stakes, redefined as piles by the hydrographer, were confirmed and elevations determined. Since the hydrographer did not adequately position the piles, they have been located on the smooth sheet using the position of the stakes originating with H-7898. The chart should be revised to show piles baring 3 feet MHW at the presently charted position of the stakes.
- 50539 -- Three piles originating with H-7898 are charted as visible at mean high water and charted at latitude  $38^{\circ}00'21.80''N$  longitude  $122^{\circ}20'34.20''W$ . A visual investigation was accomplished and piles were confirmed, but no adequate positions were obtained. Accordingly, the piles have been carried forward from H-7898 and are supplemented on the smooth sheet with the elevation of bare 6 feet MHW as observed by the present hydrographer. Retain as charted.
- 50540 -- A pile charted as visible at high water at latitude  $38^{\circ}00'14.40''N$  longitude  $122^{\circ}20'25.80''W$  originating with H-7898 was visually confirmed as described under item 50539. The present elevation of the pile is bare 6 feet MHW. Retain as charted.
- 50541 -- The dolphin charted at latitude  $38^{\circ}00'13.80''N$  longitude  $122^{\circ}20'21.00''W$  originated with H-7898 as a visible pile. A visual investigation identified the feature but no position was obtained as described under item 50539. The present elevation of the pile is bare 3 feet MHW. This feature should be charted at the discretion of the compiler.
- 50542 -- The dolphin which is charted as visible at high water located at latitude  $38^{\circ}00'12.50''N$  longitude  $122^{\circ}20'21.20''W$ , was visually investigated. The "dolphin" was confirmed as plotted on the shoreline manuscript, TP-00527 (Reviewed), but redescribed as a pile with a mean high water elevation of 6 feet. It has been plotted accordingly on the smooth sheet and should be added to the chart.
- 50543 -- The pile charted at latitude  $38^{\circ}00'11.40''N$  longitude  $122^{\circ}19'57.60''W$  originated with H-7898 and was visually confirmed as described under item 50539. The present elevation of the pile is above 3 feet MHW. Retain as charted.

H-10081 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 information originate with the prior surveys discussed in Section 6 of this report. Other soundings originate with miscellaneous sources not readily ascertainable.

Two piles charted north of the pier at Pinole Point, latitude  $38^{\circ}00'57.5''N$  longitude  $122^{\circ}21'56.5''W$  in the junction area were addressed with that survey. See the Evaluation Report, H-10080, for the disposition.

H-10081 is adequate to supersede charted hydrography within the common area.

Dangers to navigation were identified and a message was forwarded to the 12th USCG District by the hydrographer, (See Descriptive Report attachment). No additional dangers were identified during office processing.

b. Controlling Depths - The survey depths within San Pablo Bay Channel are consistent with controlling depths as charted.

c. Aids to Navigation - Carquinez Strait Range Target No. 2 lies within the survey limits but was not located by the hydrographer. It has been transferred from TP-00525 and added to the control file. Carquinez Strait Range Target No. 2 and aids to navigation as located on the present survey adequately serve their intended purposes.

8. COMPLIANCE WITH INSTRUCTIONS

H-10081 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 over the wrecks identified in the AWOIS listing numbers 50530 and 50531 located at latitude  $38^{\circ}03'22.99''N$  longitude  $122^{\circ}19'03.09''W$  and latitude  $38^{\circ}03'23.00''N$  longitude  $122^{\circ}19'00.00''W$ , respectively.

Respectfully submitted,



Karol M. Scott  
Cartographer  
February 22, 1985

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.



Dennis Hill  
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10081

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 (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

*Daniel W. Yeager* 3/8/85  
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

*Larry W. Mordock* 3/12/85

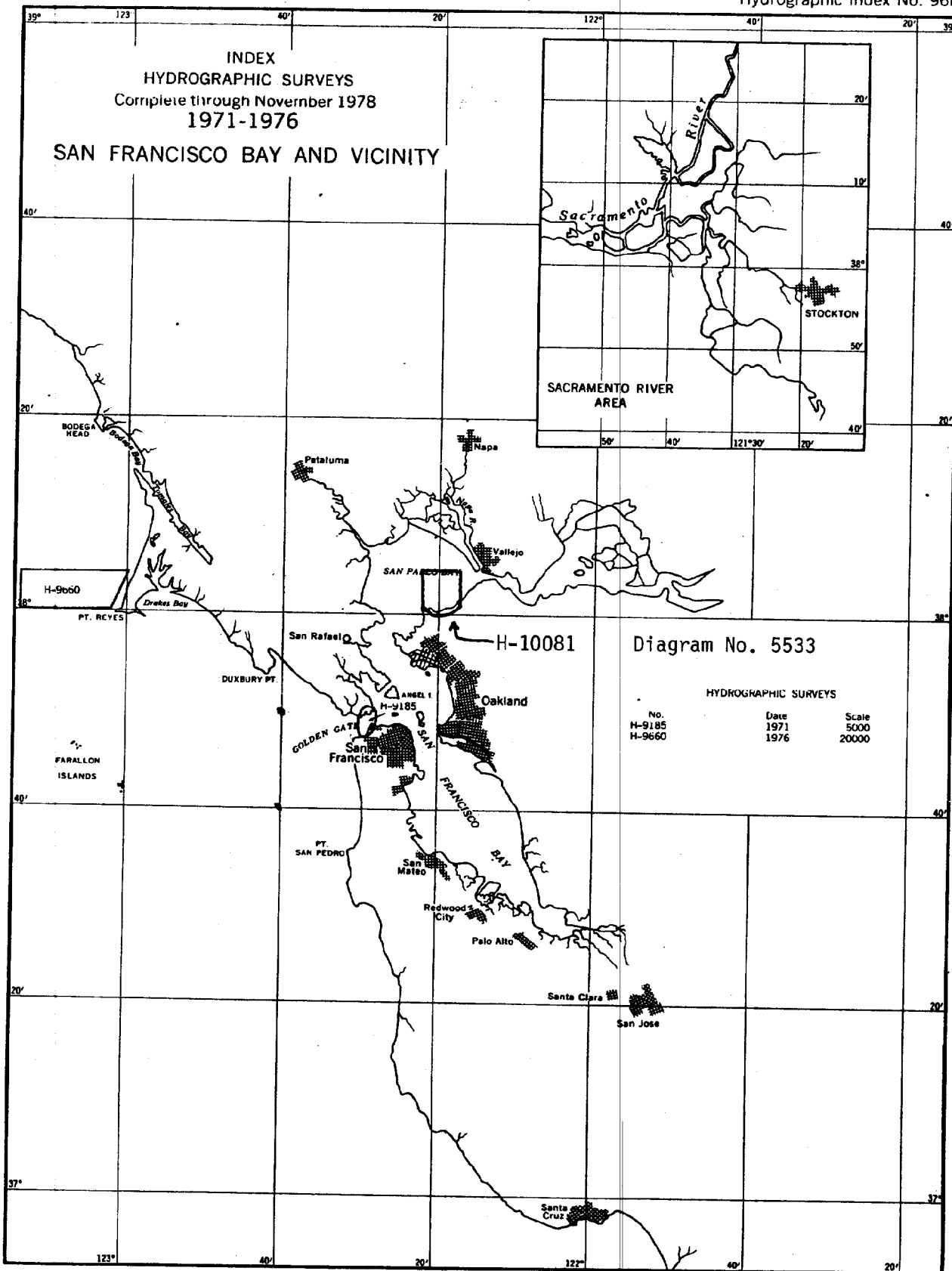
After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

*Robert L. Sanford* 3-15-85  
Director, Pacific Marine Center (Date)



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

Hydrographic Index No. 96M



INDEX  
 HYDROGRAPHIC SURVEYS  
 Complete through November 1978  
 1971-1976  
 SAN FRANCISCO BAY AND VICINITY

SACRAMENTO RIVER AREA

Diagram No. 5533

HYDROGRAPHIC SURVEYS		
No.	Date	Scale
H-9185	1971	5000
H-9660	1976	20000

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

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10081

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
18652c	8/15/83	H.J. Smawski	Full Part <del>Before</del> After Marine Center Approval Signed Via Drawing No. <sup>#27</sup> Exam'd for critical corr's only
18654	1/19/88	Conditto <sup>W.W.</sup>	Full Part <del>Before</del> After Marine Center Approval Signed Via Drawing No. 48 33rd Ed.
18652-C	1/29/88	Conditto <sup>W.W.</sup>	Full Part <del>Before</del> After Marine Center Approval Signed Via Drawing No. 29 25th Ed.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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