

10082

Diagram No. 5533-1

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-10-4-83 ..
Office No..... H-10082 ..

LOCALITY

State California ..
General Locality San Pablo Bay ..
Locality Northeast of Gallinas Creek ..

19 83

CHIEF OF PARTY
CAPT. R. J. Land

LIBRARY & ARCHIVES

DATE February 28, 1985 ..

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

Area 5
CHS
18654
18652 sec C
18640-Nc

TO SIGN OFF SEE
"RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10082

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-10-4-83

State California

General locality San Pablo Bay

Locality Northeast of Gallinas Creek

Scale 1:10,000 Date of survey 4/18/83 - 4/29/83

Instructions dated February 4, 1983 Project No. OPR-L123-RA-83

Vessel Launches 2125, 2126

Chief of party CAPTAIN R. J. Land

Surveyed by LT Ludwig, LT(jg) Mathwig, ENS Koehler, ENS Barton, SST Hastings

Soundings taken by echo sounder, hand lead, pole Ross Finline Fathometer

Graphic record scaled by Ship Personnel

Graphic record checked by Ship Personnel

Verification J. Schofner Automated plot by PMC Xynetics Plotter

Evaluation G. Kay

Soundings in ~~XXXXXX~~ feet at ~~XXXX~~ MLLW

REMARKS: Annotations in black were made during Evaluation at the Pacific Marine Center, Seattle, Washington.

✓ Awois and SURF; RWD 3/11/85

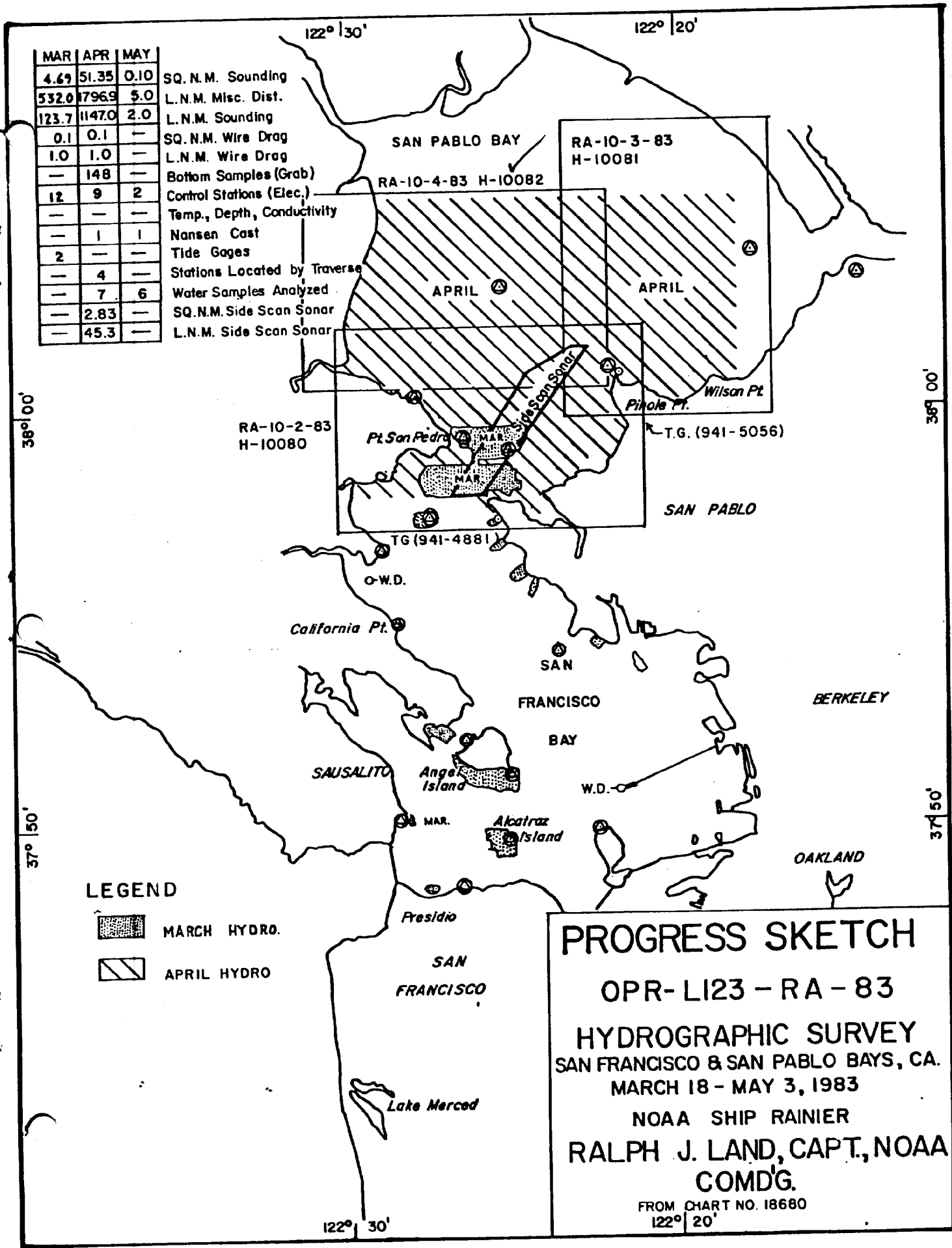
STANDARDS CK'D 3-4-85

C. Loy



SC 4-30-87

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
122° 20'

A. PROJECT

Survey H-10082 was accomplished in accordance with Project Instructions OPR-L123-RA-83, San Francisco Bay and San Pablo Bay, California, dated February 4, 1983, Change No. 1, Supplement to Instructions, dated March 11, 1983, and Change No. 2, dated March 29, 1983. ✓

B. AREA SURVEYED

This survey was conducted within the waters of San Pablo Bay, California. The survey limits were 38°05'00" N to the north, 38°01'30" N to the south, 122°23'00" W to the east, and shoreline to the west. ✓

The survey was conducted between April 18-29, 1983 (Julian days 108 - 119). ✓

C. SOUNDING VESSELS

Launches RA-5 (2125) and RA-6 (2126) were used in conducting the survey. 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-10-4-83 (H-10082). 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 Fineline 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>2125</u>	<u>2126</u>
Transceiver	1042	1080
Analog	1071	1040-6
Digitizer	1042	1040-3

Analog recorder #1071 did not always advance the paper at a constant speed. Digital soundings were used and no peaks were missed due to this problem. ✓

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°58.4'N, 122°26.1'W. 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 both 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 the 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. ✓

E. HYDROGRAPHIC SHEETS

Two hydrographic field sheets, RA-10-4N-83 and RA-10-4S-83, based on a modified transverse mercator projection, were prepared using the PDP 8/e Hydroplot system aboard the RAINIER. A list of parameters used to define each field sheet is attached. There are no irregularities in projection or scale. ✓

All field records were forwarded 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 attached. ✓

G. HYDROGRAPHIC POSITION CONTROL

Range/Range was the only method used for hydrographic position control. Positioning instruments included Motorola Mini-Rangers 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>
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	154
B	4951	166
C	1628	157
E	911721	154
F	911711	152
1	C1680	Not used
2	B1106	Not used

Mini-Ranger Calibrations and System Check

Initial Mini-Ranger baseline calibrations 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 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.

*Final correctors
are measured
baseline values.*

Static calibration methods were used to complete system checks for this survey. ✓

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 and signal strengths made data acquisition difficult at times. If accurate rates were unobtainable, then data was simply not collected. Soundings were taken where signal strengths were just below the cutoff values determined from the initial baseline calibration. These occur occasionally on vessel 2126, 108/Pos. 6030-6100, 109/Pos. 6188-6220, 110/Pos. 6383-6394 and 112/Pos. 6759-6794. This data was kept because the area was very flat and featureless where small positional errors would not affect the hydrography. No large displacement of sounding spacing was apparent between data collected with acceptable signal strength and data which had the next lower value. ✓

H. SHORELINE

Shoreline details were transferred from blueprint BP-116943 which is a revision print of registered shoreline map TP-000524. The print has been revised with 1981 photographic source data and was provided at 1:10,000 scale. ✓

Shoreline verification was accomplished on all areas of the field sheet and all changes have been transferred to the sheet. Shoreline has not changed since the most recent photography and no revisions were made. There were no discrepancies between photogrammetric and hydrographic locations of detail seaward of the shoreline. ✓

The aircraft light structure at $38^{\circ}02'45''N.$, $122^{\circ}29'30''W.$ should be added to the chart. *Comau*

All control stations seaward of the shoreline are navigational aids or markers. ✓

I. CROSSLINES

A total of 28.8 nautical miles of crosslines were run representing 9.6% of the mainscheme mileage. Crossline sounding agreement met favorably, generally within 1 foot, without significant (three foot) discrepancies. No crossline soundings required further investigation. ✓

Certain crosslines were run by a different vessel than that which ran the mainscheme lines. This did not cause any sounding discrepancies. ✓

J. JUNCTIONS

This survey junctioned to the south with contemporary survey H-10080 (RA-10-2-83, 1:10,000), and to the east with contemporary survey H-10081 (RA-10-3-83, 1:10,000). There was no contemporary survey to the north. ✓

Soundings at junctions with both surveys met favorably, generally 1 to 2 feet, with the criteria as stated in the Hydrographic Manual, section 1.1.2, part B, without significant discrepancies. ✓

K. COMPARISON WITH PRIOR SURVEYS

PSR Items

All PSR items were obtained from the National Ocean Survey Wreck and Obstruction Information System listing, dated March 4, 1983. ✓

See Evaluation Report sections 6 and 7 for disposition of Pre-Survey Review items (Annois)

PSR NO.	EM	G.P.	SOURCE	INVESTIGATION	CHARTING RECOMMENDATION
50496	Duck Blind	38/03/20.46N 122/28/01.60W	BP103245	D.P. 2125, JD 110, on duck blind ruins, pos. 5391	Charted pos. of 38/03/20.46N, 122/28/01.60W is erroneous. Rechart at pos. 5391 38/03/24.39N, 122/28/09.44W.
50486	Wreck	38/03/10.22N 122/29/05.36W	H7899 1951 CL280 1978	D.P. 2125, JD 113, on stake marking airplane wreckage, pos. 8026, stake bares 3 ft. @174336Z	Pos. 8026, 38/03/10.21N, 122/29/05.50W, Chart as is.
50487	Unknown Obstruction	38/03/08.5N 122/28/54.0W	1981 Photographs	D.P. 2125, JD 113, on duck blind in ruins, pos. 8025	Pos. 8025, 38/03/08.64N, 122/28/54.66W, Chart duck blind ruins at pos. 8025.
50485	Pile visible @high water	38/03/09.8N 122/29/09.5W	H7899 1951	Visually disproved @low water JD 110	Delete from chart.
50488	Unknown Obstruction	38/02/58.2N 122/29/19.0W	TP00524	D.P. 2125, JD 113, on 4X4 wooden post, pos. 8027, bares 1 ft. @174640Z	Pos. 8027, 38/02/58.36N, 122/29/23.12W, Rechart as obstruction @pos. 8027.
50489	Pile visible @high water	38/02/55.8N 122/29/17.4W	H7899 1951	Visually disproved @low water	Delete from chart.
50509	Platform	38/02/47.0N 122/29/30.0W	1981 Photographs	Visually verified, 2125, JD 113 as duck blind in ruins, see pos. 8040	Chart at 38/02/47.0N, 122/29/30.0W.
50508	Platform	38/02/32.0N 122/29/07.0W	TP00524	D.P. 2125, JD 113, on duck blind fixed on wood stakes, pos. 8098	Pos. 8098, 38/02/29.48N, 122/29/04.90W, Rechart as duck blind at pos. 8098.
50503	Duck Blind	38/02/04.5N 122/29/03.8W	1981 Photographs	D.P. 2125, JD 113, on duck blind fixed on wood stakes, pos. 8097	Pos. 8097, 38/02/04.54N, 122/29/04.27W, Chart at pos. 8097.
50497	Duck Blind	38/02/02.50N 122/28/43.92W	CL280 1978	Visually disproved @low water JD 110	Delete from chart.
50504	Duck Blind	38/01/54.0N 122/28/17.5W	1981 Photographs	Visually verified, 2125, JD 115 see pos. 8198	Chart at 38/01/54.0N, 122/28/17.5W.
50499	Duck Blind	38/01/49.84N 122/28/13.38W	CL280 1978	D.P. 2125, JD 110, on duck blind fixed on wooden posts, pos. 5231	Pos. 5231, 38/01/53.95N, 122/28/17.33W, Rechart @pos. 5231.
50498	Duck Blind	38/02/08.4N 122/28/04.8W	CL280 1978	Visually disproved @low water JD 110	Delete from chart.
50505	Duck Blind	38/01/40.5N 122/27/57.0W	1981 Photographs	D.P. 2125, JD 110, duck blind fixed on wood poles, pos. 5232	Pos. 5232, 38/01/40.58N, 122/27/57.10W, Chart @pos. 5232.
50492	Three stakes visible @high water	38/01/35.5N 122/27/57.5W	H7899 1951	Visually disproved at low water JD 110	Delete from chart.

See Induction Report section 6 and 7 for description of pile survey results & items.

PSR NO.	ITEM	G.P.	SOURCE	INVESTIGATION	CHARTING RECOMMENDATION
50490	Piling ruins	38/02/51.23N 122/26/51.52W	H7899 1951 CL280 1978	D.P. 2125, JD 110, piling ruins, pos. 5228, 5229, some piles bare @ 2 ft. others as great as 10 ft. at 185622Z	Remain as charted.
50491	Pile Structure	38/02/40.71N 122/25/53.62W	H7899 1951 CL280 1978	D.P. 2125, JD 110 on most SE pile and most NW pile, pos. 5224 & 5225	Rechart structure as described in data printout (RA-10-45-83) JD 110.
50502	Duck Blind	38/04/34.5N 122/28/44.0W	1981 Photographs	D.P. 2126, JD 113, on duck blind, pos. 9002	Pos. 9002, 38/04/34.53N, 122/28/44.20W, Chart at pos. 9002.
50510	Platform Four piles, visible at low water	38/03/44.4N 122/29/14.0W	1981 Photographs	Duck blind in ruins, visually verified @ low water	Chart at 38/03/44.4N, 122/29/14.0W.
50484		38/03/44.5N 122/28/15.5W	H7899 1951	D.P. 2125, JD 111 on NW most of 4 pilings, pos. 5747	Remain as charted.

The Elevation East Station 1 and 2 for description of the Survey Line is shown.

H-10082 was compared with the following prior surveys: H-7899 at 1:10,000 (1951), H-7890 at 1:20,000 (1951), and H-7897 at 1:10,000 (1951). Comparing with all three prior surveys, H-10082 is consistently 1-4 ft. deeper throughout the entire survey. There are a few areas where the present survey is shoaler. They are as follows: ✓

H-7900

The area around 38°02'00"N., 122°23'30"W. is 1-4 ft. shoaler. The area between 38°02'00"N.-38°02'10"N. and 122°23'00"W.-122°23'30"W. is 1-6 ft. shoaler. ✓

H-7897

The area around 38°01'30"N., 122°24'00"W. is up to 8 ft. shoaler. The area around 38°02'00"N., 122°23'30"W. is up to 8 ft. shoaler. ✓

H-7899

The area around 38°04'20"N., 122°26'10"W. (Petaluma River Channel): Soundings in this part of the channel are 1-2 ft. shoaler. The area around 38°02'00"N., 122°25'42"W. is 1-3 ft. shoaler. ✓

L. COMPARISON WITH THE CHART

This survey was compared with a 1:10,000 blowup of chart 18654, 31st Edition, June 5, 1982, 1:40,000 scale. As with the prior survey comparisons, the present survey was consistently 1-4 ft. deeper throughout the survey area. The exception here is at the south-east corner of the survey where the bottom topography steepens. Here the contemporary survey yields shoaler soundings as compared to the chart, specifically as follows: ✓

38/02/06N., 122/23/12W.	8 ft. shoaler
38/02/16N., 122/23/15W.	3 ft. shoaler
38/01/48N., 122/23/27W.	6 ft. shoaler
38/01/57N., 122/23/33W.	7 ft. shoaler
38/01/45N., 122/23/45W.	5 ft. shoaler
38/01/30N., 122/23/51W.	5 ft. shoaler
38/01/57N., 122/25/42W.	5 ft. shoaler

Most non-sounding features regard PSR items which were discussed previously. Recommendations on deletions, additions, and re-charting these items are found in section K. Items charted and not treated as PSR investigations were all field verified. Navigational aids are discussed in section N. ✓

The following items were not treated as PSR's and are not presently charted: ✓

A new landmark was located on Skaggs Island. See attached 76-40. ✓

Three small mooring buoys, 2 ft. diameter, located:

38/03/09.³~~68~~ N. 122/25/39.98⁴ ~~98~~ W. Pos. 5861 ✓
38/03/25.9⁰~~0~~ N. 122/26/50.~~03~~ W. Pos. 5862
38/03/48.¹⁰~~10~~ N. 122/26/57.28⁹ W., Pos. 5863

Duck blind, located:

38/02/31.7⁰~~7~~ N. 122/27/49.6⁹ W., Pos. 5230

M. ADEQUACY OF SURVEY

This survey is complete and sufficient to supercede all prior surveys for charting purposes. ✓

N. AIDS TO NAVIGATION

There are 8 fixed and no floating aids within the survey. The fixed aids are as follows: (all are for the Petaluma River Entrance Channel). ✓

<u>Name</u>	<u>Location</u>	<u>Characteristics</u>
Entrance Light 1**	38/02/42.819N 122/25/39.685W	Fl. G., 4 S & square shaped green daymark on pile (LL #784) ✓
Entrance Light 2*	38/02/56.998N 122/25/15.400W	Fl. W., 4 S & triangular shaped red daymark on pile (LL #785) ✓
Entrance Channel Daybeacon 3	38/03/29.46N 122/25/42.78W Pos. 8326	Square shaped green daymark on pile ✓
Entrance Channel Daybeacon 4*	38/03/31.356N 122/25/22.338W	Triangular shaped red daymark on pile ✓
Entrance Channel Daybeacon 5	38/04/15.67N(Pos. 8324) 122/25/37.12W	Square shaped green daymark on pile ✓
Entrance Channel Light 6*	38/04/16.164N 122/25/32.994W	Fl. R., 4 S & triangular shaped red daymark on pile (LL #786) ✓
Entrance Channel Daybeacon 7	38/04/48.03N(Pos. 8310) 122/26/03.41W	Square shaped green daymark on pile ✓
Entrance Channel Daybeacon 8	38/04/49.79N(Pos. 8311) 122/26/00.13W	Triangular shaped red daymark on pile ✓

** 1983 Third Order position established during this survey. See attached 76-40. ✓
* Previous Third Order position.

Entrance Channel Daybeacon 4 and 6 should be charted using its 3rd order position. ✓

O. STATISTICS

<u>Survey Launch</u>	<u>Linear Nautical Miles</u>	<u>Square Nautical Miles</u>	<u>Number of Positions</u>
RA-5 (2125)	169.2	---	1187 1472
RA-6 (2126)	159.7	---	1349 1318
Total	328.9	17.15	2536 2790

Bottom Samples: 44
Nansen Casts : 1

P. MISCELLANEOUS

A dredge was working in the Petaluma River channel entrance during the survey. No anomalous currents were observed or reported in the survey area.

Q. RECOMMENDATIONS

None

R. AUTOMATED DATA PROCESSING

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

Soundings and positions were taken by a hydrologger ASI logger and a hydroplot system using program RALOGD and RK 112. 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 Program</u>	<u>Version Date</u>	<u>Checksum</u>
RALOGD Hydrologger	03/11/83	---
RK 112 Range/Range, Hyperbolic Hydroplot	08/04/81	2352
RK 201 Grid, Signal, and Lattice Plot	04/18/75	1443
RK 211 Range-Range Non-Real Time Plot	02/02/81	4032
RK 212 Visual Station Table Load	04/01/74	5141
RK 215 Visual Non-Real Time Plot	02/11/81	5174

<u>PDP 8/e Program</u>	<u>Version Date</u>	<u>Checksum</u>
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	09/24/78	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	--

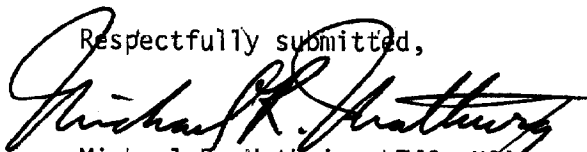
The Wang Series 700, the HP 97 and HP 9815A programmable calculators were used to compute geographic positions of electronic control stations and visual signals for calibrations.

S. REFERRAL TO REPORTS

The following contain information related to this survey:

Echo Sounding Report
 Electronic Control Report
 Horizontal Control Report
 Coast Pilot Report

Respectfully submitted,


 Michael R. Mathwig, LTJG, NOAA

FIELD TIDE NOTE

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 AM 500. One subordinate tide station provided data for survey H-10082.

An ADR tide gage was installed at the historical gage site on the pier ruins at Point Pinole, California (941-5056), Lat. $38^{\circ}00.0'$ N, Long. $122^{\circ}21.8'$ 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 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 was 0° (UTC).

MASTER STATION LIST
OPK-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								NGS LISTING			
117	4	37	57	47807	122	25	56701	250	0015	000000	
/EAST BROTHER ISLAND LIGHT FIELD								UNADJUSTED G.P.			
150	3	37	58	52626	122	24	59882	250	0005	000000	
/SAN PABLO BAY LT 4								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								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			
156	3	38	02	42819	122	25	39685	250	0005	000000	
/PETALUMA RIVER ENT LT 1								FIELD UNADJUSTED G.P.			
157	3	38	02	50998	122	25	15400	250	0005	000000	
/PETALUMA RIVER ENT LT 2											
158	3	38	03	49980	122	26	52960	139	0007	000000	
/SOW USE 1951								NGS LISTING			
159	3	38	06	03724	122	19	39200	139	0007	000000	
/MARE ISLAND RADAR TARGET 1951								NGS LISTING			

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	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	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	
/TURKEY 1929											
										NGS LISTING	
167	3	37	59	38486	122	16	23617	139	0166	000000	
/FARIA (EBMUD) 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	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	
/SKAGGS ISLAND U.S. NAVY TANK 1951											
										NGS LISTING	

FIELD GEOGRAPHIC POSITIONS

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

LOCALITY San Pablo Bay NORTH AMERICAN 1927 DATUM Third ORDER TRIANGULATION. STATE California

STATION	LATITUDE AND LONGITUDE		AZIMUTH		BACK AZIMUTH		TO STATION	DISTANCE METERS
#183 San Pablo Bay Channel Light 8 d.'83 (Intersection Station)	38° 12' 22"	01° 22'	242° 41'	58.9"	62° 46'	18.4"	Mare Island Southeast 1852	11548.678*
#184 San Pablo Bay Channel Light 9 d.'83 (Intersection Station)	38° 12' 22"	02° 21'	245° 41'	12.4"	65° 44'	49.7"	Mare Island Southeast 1852	9425.680*
#185 San Pablo Bay Channel Light 11 d.'83 (Intersection Station)	38° 12' 22"	03° 19'	248° 23'	47.1"	68° 26'	35.1"	Mare Island Southeast 1852	7144.014*
#186 Petaluma River Entrance Light 1 d.'83 (Intersection Station)	38° 12' 22"	02° 25'	257° 01'	10.8"	77° 07'	36.5"	Mare Island Southeast 1852	15646.194*
Skaggs Island Southern Water Tank d.'83 (Intersection Station)	38° 12' 22"	11° 23'	333° 40'	02.3"	153° 44'	32.7"	Faria 1953 (EBMUD)	24108.076*

*NOTE: ALL DISTANCES ARE NON-EDMI DISTANCES

The check on this position. Abbreviations used: d.=described; m.=marked; s.=moor; f.=fence; v.=village; l.=light; p.=probably; (Examples: s.d.=not described; p.l.=probably light.)

GEOGRAPHIC NAMES

RA-10-4-83

Name on Survey

A ON CHART NO. 1867A
31780 C/582
B ON PREVIOUS SURVEY
C ON U.S. QUADRANGLE
MAPS
D FROM LOCAL
INFORMATION
E ON LOCAL MAPS
F P.O. GUIDE OR MAP
G RAND McNALLY
ATLAS
H U.S. LIGHT LIST
K

	A	B	C	D	E	F	G	H	K	
Gallinas Creek	X									1
San Pablo Bay	X									2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

MONITORING AND/OR LANDMARKS FOR CHARTS

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

ORIGINATING ACTIVITY

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

(See reverse for responsible personnel)

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

The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO. OPR-1123-RA-83

JOB NUMBER N.A.

SURVEY NUMBER H-10082

DATUM N.A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)	POSITION		LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side)	CHARTS AFFECTED
		LATITUDE ° / D.M. Meters	LONGITUDE ° / D.P. Meters			
TANK	(SKAGGS ISLAND SOUTHERN WATER TANK, 1983) NEW LANDMARK, FIELD POSITION	38 11	122 23	41.883 1019.3	F-2-6-L	18652 18654

See L-568(83)

1 of 6

Revision Print

NOAA FORM 76-40 (6-7)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				ORIGINATING ACTIVITY	
NONFLOATING AIDS OR LANDMARKS FOR CHARTS		LOCALITY		DATE		<input type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> COMPILATION ACTIVITY <input type="checkbox"/> FINAL REVIEWER <input type="checkbox"/> QUALITY CONTROL & REVIEW GRP. <input type="checkbox"/> COAST PILOT BRANCH <small>(Use reverse for responsible personnel)</small>	
REPORTING UNIT (Island Party, Ship or Office) Coastal Mapping Div. - AlC, Norfolk Va.		STATE		DATE			
HAVE <input type="checkbox"/> BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS. OPR PROJECT NO.		SURVEY NUMBER Revision Print TP-00524		LOCALITY San Francisco and Pablo Bays		DATE Oct, 1981	
CHARTING NAME (Record reason for deletion of landmark or aid to navigation. Show triangulation station name, where applicable, in parentheses)		DATUM NA 1927		POSITION LATITUDE LONGITUDE		METHOD AND DATE OF LOCATION (See instructions on reverse side)	
		JOB NUMBER		D.M. Meters S. Meters		OFFICE	
		SURVEY NUMBER TP-00524		D.P. Meters		CHARTS AFFECTED	
LIGHT	Petaluma River Entrance Light 1	38-02.9	122-25.9	03.49	Beyond 1981 Photo Limits	18652 - 18654 -	
LIGHT	Petaluma River Entrance Light 2	38-03.0	122-25.2	85	"	"	
DAYBEACON	Petaluma River Entrance Channel Daybeacon 3	38-03.5	122-25.7	00.40	"	"	
DAYBEACON	Petaluma River Entrance Channel Daybeacon 4	38-03.5	122-25.4	10	"	"	
DAYBEACON	Petaluma River Entrance Channel Daybeacon 5	38-04.3	122-25.6	28.93	"	"	
LIGHT	Petaluma River Entrance Channel Light 6	38-04.3	122-25.6	705	"	"	
DAYBEACON	Petaluma River Entrance Channel Daybeacon 7	38-04	122-26	25.56	81E(P) 1466 May 3, 1981	Verified 1983 H-10082 Pos 8310	
DAYBEACON	Petaluma River Entrance Channel Daybeacon 8	38-04	122-26	623	81E(P) 1466 May 3, 1981	Verified 1983 H-10082 Pos 8311	
DAYBEACON	Petaluma River Entrance Channel Daybeacon 9	38-05	122-26		81E(P) 1466 May 3, 1981	"	
LIGHT	Petaluma River Entrance Channel Light 10	38-05	122-26		81E(P) 1466 May 3, 1981	"	

Listed By: R. Kravitz Oct. 15, 1981 X Scaled By: R. Kravitz Oct. 15, 1981
 Checked By: N. Connolly 18 DEC 81

SUL-625(02)

NOAA FORM 76-40
(8-74)

NONFLOATING AIDS AND LANDMARKS FOR CHARTS

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

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If field Party, Ship or Office)

NOAAS RAINIER

STATE

CALIFORNIA

LOCALITY

SAN PABLO BAY

DATE

6/2/83

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)

OPR PROJECT NO.

OPR-1123-RA-83

JOB NUMBER

HAVE HAVE NOT

SURVEY NUMBER

H-10082

DATUM

N.A. 1927

CHARTING NAME

LIGHT

DESCRIPTION

(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)
 (PETALUMA RIVER ENTRANCE LIGHT 1, 1979) 38 02
 1983 L.L. # 784 STRUCTURE DESTROYED
 AND REBUILT IN DIFFERENT LOCATION. SEE
 76-40, AIDS TO BE CHARTED FOR THIS SURVEY.
 NGS LISTING POSITION IN ERROR.

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

OFFICE FIELD

CHARTS AFFECTED

F-VIS-V 18652
5/18/83 18654

LATITUDE

° / ' " D.M. Meters 40.746

LONGITUDE

° / ' " D.P. Meters 122 25 53.607

See L-568(83)

NOAA FORM 76-40
(8-74)

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

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If field party, ship or office)

NOAAS RAINIER

STATE

CALIFORNIA

LOCALITY

SAN PABLO BAY

DATE

6/2/83

The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.

OPR-1123-RA-83

JOB NUMBER

N.A.

SURVEY NUMBER

H-10082

DATUM

N.A. 1927

CHARTING NAME

LIGHT

DESCRIPTION

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

(PETALUMA RIVER ENTRANCE LIGHT 1, 1983)
1983 L.L.# 784, FIELD POSITION

LATITUDE

° / ' / ''

38 02 42.819

LONGITUDE

° / ' / ''

122 25 39.685
1320.2 967.8

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

OFFICE

FIELD

F-2-6-L

CHARTS AFFECTED

18652
18654

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)

See 6-568(83)

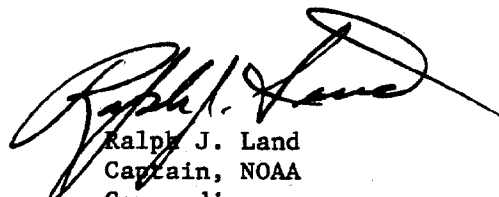
APPROVAL SHEET

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY

H-100082

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

DEPARTMENT OF TRANSPORTATION



COAST GUARD

NOV 23 1981

CPM 1 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

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): 941-5056 Point Pinole, Ca.

Period: April 18-29, 1983

HYDROGRAPHIC SHEET: H-10082

OPR: L123

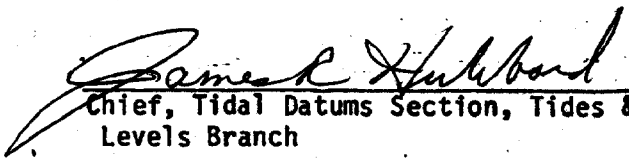
Locality: San Pablo Bay, California

Plane of reference (mean lower low water): 6.96' ft.

Height of Mean High Water above Plane of Reference is 5.4' ft.

REMARKS: Recommended Zoning:
In San Pablo Bay,

- 1) North of Latitude $38^{\circ}05.0'$ apply +15 minute time correction.
- 2) South of $38^{\circ}05.0'$ Zone Direct.


Chief, Tidal Datums Section, Tides & Water
Levels Branch

HYDROGRAPHIC SURVEY STATISTICS

H-10082

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

RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS		1	
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS		7	
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS		
ACCORDIAN FILES							
ENVELOPES							
VOLUMES							
CAHIERS	2						
BOXES							

SHORELINE DATA
 SHORELINE MAPS(List): TP-00524
 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			2536
POSITIONS REVISED	7086	0	7086
SOUNDINGS REVISED	320	0	320
CONTROL STATIONS REVISED	0		
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	2	0	2
VERIFICATION OF CONTROL	3	1	4
VERIFICATION OF POSITIONS	110	2	112
VERIFICATION OF SOUNDINGS	105	1	106
VERIFICATION OF JUNCTIONS	1	2	3
APPLICATION OF PHOTOBATHYMETRY	0	0	0
SHORELINE APPLICATION/VERIFICATION	1	2	3
COMPILATION OF SMOOTH SHEET	55	2	57
COMPARISON WITH PRIOR SURVEYS AND CHARTS	0	40	40
EVALUATION OF SIDESCAN SONAR RECORDS	0	0	0
EVALUATION OF WIRE DRAGS AND SWEEPS	0	0	0
EVALUATION REPORT	8	16	24
OTHER Rework/other	0	30	30
Digitization			
TOTALS	285	96	381

Verification of Field Data by Jim Shofner	Time(Hours) 285	Ending Date 9/28/84
Verification Check by Jim Stringham, James S. Green	Time(Hours) 36	Ending Date 11/9/84
Evaluation and Analysis by Gordon E. Kay	start date 10/10/84	Ending Date 10/29/84
Inspection by D. Hill	Time(Hours) 3	Ending Date 12/21/84

PACIFIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO: H-10082

FIELD NO: RA-10-4-83

California, San Pablo Bay, Northeast of Gallinas Creek

SURVEYED: April 18-29, 1983

SCALE: 1:10,000

PROJECT NO: OPR-L123-RA-83

SOUNDINGS: Ross Fineline Model 5000

CONTROL: Range/Range
Motorola Mini-Ranger
III

Chief of Party.....Capt. R. J. Land

Surveyed by.....Lt. Ludwig
Lt. (jg) Mathwig
Ens. Koehler
Ens. Barton
SST Hastings

Automated Plot by.....PMC Xynetics Plotter

Verified by.....J. Schofner

Evaluated by.....Gordon E. Kay

1. INTRODUCTION

H-10082 is a basic hydrographic survey conducted by NOAA Ship RAINIER (S-221), in accordance with the following:

- Project Instructions OPR-L123-RA-83, dated February 4, 1983
- Change Number 1, dated March 11, 1983
- Change Number 2, dated March 29, 1983

The survey area is situated northeast of Gallinas Creek, in San Pablo Bay, California.

The following changes were made during office processing:

- a. Projection parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.
- b. Tide level reducers are from observed tides, see form 712.

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are adequately discussed in Descriptive Report paragraphs F and G, and in the Horizontal and Electronic Control reports for OPR-L123-RA-83.

The smooth sheet was plotted using published geographic positions on the North American Datum of 1927.

Applicable registered shoreline manuscripts and dates are as follows:

TP-00524 Class III, Final Map	Date of Photography	March 1977
	Date of Field Edit	Cancelled
	Date of Final Review	September 1981

Shoreline is not shown on H-10082 in accordance with N/CG memorandum, "Reduction of Marine Center Hydrographic Processing Backlog," dated February 16, 1984 (copy attached).

3. HYDROGRAPHY

Soundings at crosslines are in good agreement. The hydrography contained within this survey is adequate to determine the bottom configuration and least depths. Depth curves could be adequately drawn.

The field sheet portrays a hand-plotted duck blind (red ink) at latitude 38°01'49.0"North, longitude 122°28'17.0"West and references that it was obtained by a detached position (#5231) the hydrographer presumed to be AWOIS item #50499. Detached position #5231 actually locates another duckblind 128.8 meters north (AWOIS #50504). This hand plotted (red ink) duck blind was not transferred onto the smooth sheet because it has been determined it was plotted on the field sheet in error. See Section 4.B and 9 of this report.

4. CONDITION OF SURVEY

The hydrographic records and final reports adequately conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change 3, with the following exceptions;

a. Four Automated Wreck and Obstruction Information System (AWOIS) pre-survey review items were not adequately disposed of as required by the AWOIS file listing. AWOIS #'s 50486, 50492, 50498, and 50499 required further investigation to include a wire sweep (see section 9 of this report).

b. The present survey documented a detached position (#5231) on a duck blind they considered to be AWOIS #50499. However this detached position (#5231) is only 5.3 meters away from AWOIS #50504, which had already been visually confirmed by position #8094/4. This mis-identification was complicated further by the placement of a duck blind (red ink) on the field sheet at the site of AWOIS #50499 when in fact records reveal that this AWOIS item has been neither proven nor disproven. "Data transferred to the field sheet must be compared

carefully with the results obtained during the new survey." H.M.4.5.15. Additional references are included in H.M.4.8.1 (see Section 9 of this report).

c. A single sounding line was run in the marked entrance to the Petaluma River channel, but this single line of hydrography does not satisfy the requirements set forth in section 4.3.5.4 of the Hydrographic Manual for developing channels, (see section 9 of this report).

5. JUNCTIONS

H-10082 junctions the following:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Note</u>	<u>Color</u>	<u>Junctions on</u>
H-10080	1983	1:10,000	Joins	Violet	South
H-10081	1983	1:10,000	Joins	Red	East

There is no junctional survey north of H-10082, but generally the depths on H-10082 are in harmony with the charted depths, (Chart 18654, 31st Edition).

The junctions have been adequately effected.

6. COMPARISON WITH PRIOR SURVEYS

H-10082 was compared with the following:

H-7897 (1951) 1:10,000 does not compare well with H-10082. Shoaling (2 feet in 13 feet) takes place in depths up to 30 feet with deepening occurring from the 30-foot curve offshore (4 feet deeper at 41 feet). The cause of the shoaling and deepening has not been determined. The present survey H-10082 is adequate to supersede H-7897 within the common area.

H-7899 (1951) 1:10,000 does not compare well with H-10082. Differences between the two surveys vary from ± 1 to ± 2 feet. However, because of the shallow depths on this survey, this difference is very significant. The cause of the variation has not been determined. The following AWOIS items originating with H-7899 are located within the limits of H-10082.

✓ AWOIS #50484 is four piles visible at MHW charted at latitude $38^{\circ}03'44.50''$ North, longitude $122^{\circ}28'15.50''$ West. A hydrographic investigation was performed with positive results. The northwestmost pile was located at latitude $38^{\circ}03'44.74''$ North, longitude $122^{\circ}28'15.33''$ West. The other three piles were visually confirmed. These features should be retained as charted.

✓ AWOIS #50485 is a pile visible at MHW charted at latitude $38^{\circ}03'09.80''$ North, longitude $122^{\circ}29'09.50''$ West. A hydrographic investigation at low water was performed with negative results. The pile is considered to be visually disproven and should be removed from the chart.

✓ AWOIS #50486 is an obstruction uncovering at MLLW charted at latitude $38^{\circ}03'10.22''$ North, longitude $122^{\circ}29'05.36''$ West. A hydrographic investigation (not at low water) was performed with negative result. During the

122 29 05.47

38 03 10.19

investigation a stake was located at latitude ~~38°02'58.33"~~North, longitude ~~122°29'23.08"~~West baring 4 feet MHW (position #8026). The obstruction (airplane wreckage) has been carried forward from H-7899 as an obstruction covered at MLLW and should be revised on the chart.

✓ AWOIS #50489 is a pile visible at MHW charted at latitude 38°02'55.80"North, longitude 122°29'17.40"West. A hydrographic investigation at low water was performed with negative results. The pile is considered to be visually disproven and should be removed from the chart.

✓ AWOIS #50490 is pile ruins uncovering at MLLW charted at latitude 38°02'51.23"North, longitude 122°26'51.42"West. A dive investigation was performed with positive results. Position #5228 fixes the location of the northernmost pile at latitude 38°02'50.94"North, longitude 122°26'51.72"West, with position #5229 at latitude 38°02'51.49"North, longitude 122°26'51.47"West locating the southernmost pile. This feature, a pile in ruins, should be retained as charted.

✓ AWOIS #50491 obstruction uncovered at MLLW, charted at latitude 38°02'40.71"North, longitude 122°25'53.62"West. A hydrographic investigation was performed with a row of 5 dolphins and a platform located. Position #5224 located the southernmost dolphin at latitude 38°02'40.23"North, longitude 122°25'53.42"West. Position #5225 located the northernmost dolphin at latitude 38°02'42.24"North, longitude 122°25'53.71"West. The platform, a 10 meter x 20 meter rectangle, is centered at latitude 38°02'41.0"North, longitude 122°25'53.5"West and is aligned longways, parallel to the row of dolphins. These features should be charted as a row of dolphins and a platform.

✓ AWOIS #50492 is three stakes visible at MHW charted at latitude 38°01'35.50"North, longitude 122°27'57.50"West. A visual hydrographic investigation was performed with negative results. However, a visual search in over four feet of water did not disprove the existence of this feature. The stakes have been transferred to the smooth sheet in orange from H-7899 and should be retained as charted.

With the addition of the stakes transferred onto the smooth sheet, H-10082 is adequate to supersede H-7899 within the common area.

H-7900 (1951) 1:20,000 does not compare well with H-10082. Shoaling (up to 4 feet) takes place in depths from the 12-foot curve to deeper water. Deepening occurs up to 6 feet inshore of the 12-foot curve. The cause of this shoaling and deepening has not been determined. The present survey H-10082, is adequate to supersede H-7900 within the common area.

7. COMPARISON WITH CHART

Chart 18654, 31st Edition, June 5, 1982, 1:40,000.

a) Hydrography -- Charted depths come from the before mentioned prior surveys and other sources. For a discussion of depth changes, refer to section 6 of this report. There are no rocks within the limits of H-10082.

All chart features are adequately discussed in section 6 of this report or as follows.

The following AWOIS items appear within the limits of H-10082 and come from sources other than prior surveys.

- ✓ AWOIS #50487 is an obstruction visible at MHW charted at latitude 38°03'08.50"North, longitude 122°28'54.00"West. A hydrographic investigation was performed with positive results (position #8025) with a duck blind in ruins located at latitude 38°03'08.61 North, longitude 122°28'54.63" West. Chart a duck blind in ruins at this position and delete the presently charted obstruction.
- ✓ AWOIS #50488 is an obstruction charted at latitude 38°02'58.20"North, longitude 122°29'19.00"West. A hydrographic investigation was performed with positive results (position #8027), with a 4" x 4" wooden post located at latitude 38°02'58.33" North and longitude 122°29'23.08"West. Chart a stake at this position and delete the presently charted obstruction.
- ✓ AWOIS #50496 is a duck blind at latitude 38°03'20.46"North, longitude 122°28'01.60"West. The AWOIS also notes that this feature is charted at latitude 38°03'20"North and longitude 122°26'58"West from a blueprint position which appears to be erroneous. A duck blind in ruins (Position #5391) was located at latitude 38°03'24.35"North and longitude 122°28'09.41"West, which confirms the AWOIS listed position. It can be established from H-10082 that the charted duck blind is erroneously positioned and should be removed from the chart. Chart a duck blind at latitude 38°03'24.35"North, longitude 122°28'09.41"West.
- ✓ AWOIS #50497 is a duck blind charted at latitude 38°02'02.50"North, longitude 122°28'43.92"West. A hydrographic investigation was performed at low water with negative results. This feature is considered visually disproven and should be removed from the chart.
- ✓ AWOIS #50498 is a duck blind charted at latitude 38°02'08.40"North, longitude 122°28'04.79"West. A hydrographic visual investigation was performed with negative results. The required wire sweep investigation was not performed and the existence of the duck blind is not disproven. This feature (duck blind) should be retained as charted.
- ✓ AWOIS #50499 is a duck blind at latitude 38°01'49.84"North longitude 122°28'18.38"West. This feature originates according to the AWOIS listing from a sextant fix obtained during the NOAA Ship DAVIDSON work of 1977 (CL 280/78). Present survey misidentified AWOIS #50504 as AWOIS #50499 (see Section 3 and 4.B of this report). No other investigation was performed; AWOIS #50499 has been neither proven nor disproven. This feature, a duck blind, should be retained as charted.
- ✓ AWOIS #50502 is a duck blind charted at latitude 38°04'34.50"North, longitude 122°28'44.00"West. A hydrographic investigation was performed with positive results. Position #9002 at latitude 38°04'34.50" North, longitude 122°28'44.18" West verifies the charted position. Retain the duckblind as charted.

- ✓ AWOIS #50503 is a duck blind charted at latitude 38°02'04.5"North longitude 122°29'03.8"West. A hydrographic investigation was performed with positive results. Position #8097 at latitude 38°02'04.52" North, longitude 122°29'04.23" West verifies the charted position. Retain this duckblind as charted. 6 ✓
- ✓ AWOIS #50504 is a duck blind charted at latitude 38°01'54.00"North, longitude 122°28'17.50"West. A hydrographic investigation was performed with positive results. Position #5231 at latitude 38°01'53.93" North, longitude 122°28'17.30" West. verifies the charted position. Retain this duckblind as charted. 11 ✓
- ✓ AWOIS #50505 is a duck blind charted at latitude 38°01'40.50"North, longitude 122°27'57.00"West. A hydrographic investigation was performed with positive results. Position #5232, at latitude 38°01'40.55" North, longitude 122°27'57.06" West, verifies the charted position. Retain the duck blind as charted. 6 ✓
- ✓ AWOIS #50508 is a duck blind charted at latitude 38°02'32.0"North longitude 122°29'07.0"West. A hydrographic investigation was performed with positive results. Position #8098, at latitude 38°02'29.46" North, longitude 122°29'04.86" West, verifies the charted position. Retain the duckblind as charted. 6 ✓
- ✓ AWOIS #50509 is a platform charted at latitude 38°02'47.00"North, longitude 122°29'30.00"West. A visual search was performed with positive results that verifies the charted position, which is described by the hydrographer as a duckblind in ruins. Revise the charted platform to a duckblind. ✓
- AWOIS #50510 is a platform charted at latitude 38°03'44.40"North, longitude 122°29'14.00"West. A hydrographic visual search consisting of an uncontrolled observation while on a sounding line was performed with positive results. A duck blind in ruins was confirmed and is shown on the smooth sheet from TP-00524. Revise the charted platform to a duckblind in ruins. ✓

b) Controlling depths -- There are no controlling depths located within the limits of H-10082.

c) Aids to navigation -- There are eight fixed and no floating aids within the limits of H-10082. These features are adequately discussed and disposed of in Descriptive Report paragraph N.

There have been no dangers to navigation identified or reports submitted by the NOAA Ship RAINIER or the Pacific Marine Center, Seattle, Washington, during the processing of H-10082.

The geographic names on the smooth sheet originate with the chart.

H-10082 is adequate to supersede hydrography on chart 18654 within the common areas.

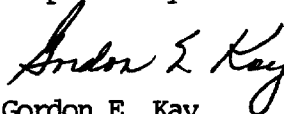
8. COMPLIANCE WITH INSTRUCTIONS

H-10082 adequately complies with the instructions and changes listed in section 1 of this report.

9. ADDITIONAL FIELD WORK

H-10082 is a good hydrographic survey. Additional field work is required on a non-priority basis to resolve AWOIS items: #50486, 50492, 50498, 50499. Additional sounding lines are needed across the channel axis in Petaluma River Channel, to define the limits of this narrow channel.

Respectfully submitted,



Gordon E. Kay
October 24, 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 except as noted in the Evaluation Report. The survey is recommended for approval.



James S. Green
Supervisory Cartographer



UNITED STATES
National Oceanic and Atmospheric Administration
NATIONAL OCEANOGRAPHIC AND MARINE CHARTING
ROCKVILLE, MARYLAND

AMERCE
ISTRATION

X1
10P2
- 10P21

FEB 16 1984

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.

4. 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.

4.5. 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/HOA
H/HOP

CLEARANCE

N/HO: R. C. Munson

SIGNATURE AND DATE:

R. C. Munson 2-17-62

HISTORIC GOAL INVENTORY = 40 SURVEYS

254

25

11/100

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10082


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.

 12/27/84
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

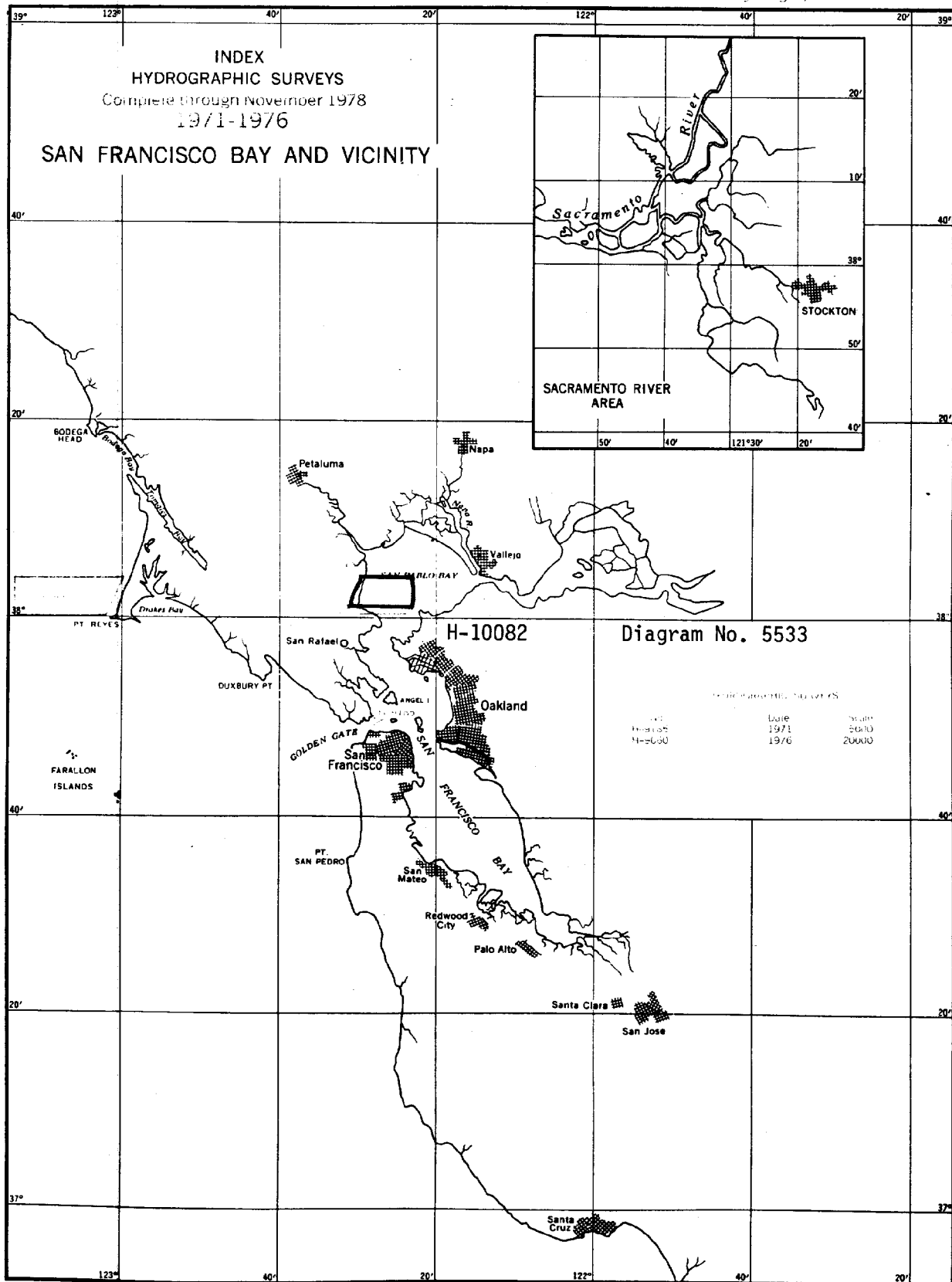
 12/27/84

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.

 12-27-84
Director, Pacific Marine Center (Date)

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

Hydrographic Index No. 96M



RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10082

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
18652-C	8/15/88	A.J. Emanuelis	Full Part Before After Verification Review Inspection Signed Via Drawing No. #27 Exam'd for critical errors
18654	1/15/88	CORDTS WW	Full Part Before After Verification Review Inspection Signed Via Drawing No. 48 33rd Ed.
18652-C	1/29/88	CORDTS WW	Full Part Before After Verification Review Inspection Signed Via Drawing No. 29 25th Ed.
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