

9810

Diagram No. 5530-5

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. DA-10-1-79
Office No. H-9810

LOCALITY

State California
General Locality San Francisco Bay
Locality Oakland to Richmond

1979

CHIEF OF PARTY
CDR C.W. Hayes

LIBRARY & ARCHIVES

DATE May 28, 1982

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

9810

Diagram 5

18000
18001
18002
18003
18004
18005

18005

} see record of
Application for
Sign-off

HYDROGRAPHIC TITLE SHEET

H-9810

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.

DA-10-1-79

State California

General locality San Francisco Bay

Locality Oakland to Richmond

Scale 1:10,000

Date of survey March 1³ - April 30²⁶, 1979

Jan. 15, 1979; Change 2, Feb. 8, 1979;

Instructions dated Change 3, Feb. 12, 1979

Project No. OPR-L123-DA-79

Vessel NOAA Ship DAVIDSON S3331, Launches DA-1, DA-2

Chief of party CDR C. William Hayes, Cmdg.

Surveyed by CDR C. W. Hayes, LCDR A. N. Bodnar, LT C. Lawrence, LTJG L. Haas, LTJG E. McDougal, ENS T. Peasley and Ship's personnel

Soundings taken by echo sounder, hand lead, pole Ross Finline, Model 5000

Graphic record scaled by N/A

Graphic record checked by Ship's Personnel

Protracted by N/A

Automated plot by PMC Xynetics Plotter

Verification by R. A. Shipley

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

REMARKS: Survey Time Zone: GMT.

Survey is complete.

Notes in red added during O.C.

AWOIS + SURE ✓ END 11/84

STANDARDS CK'D 2-4-85

C. Loy

RWW 7/22/92

122° 30'

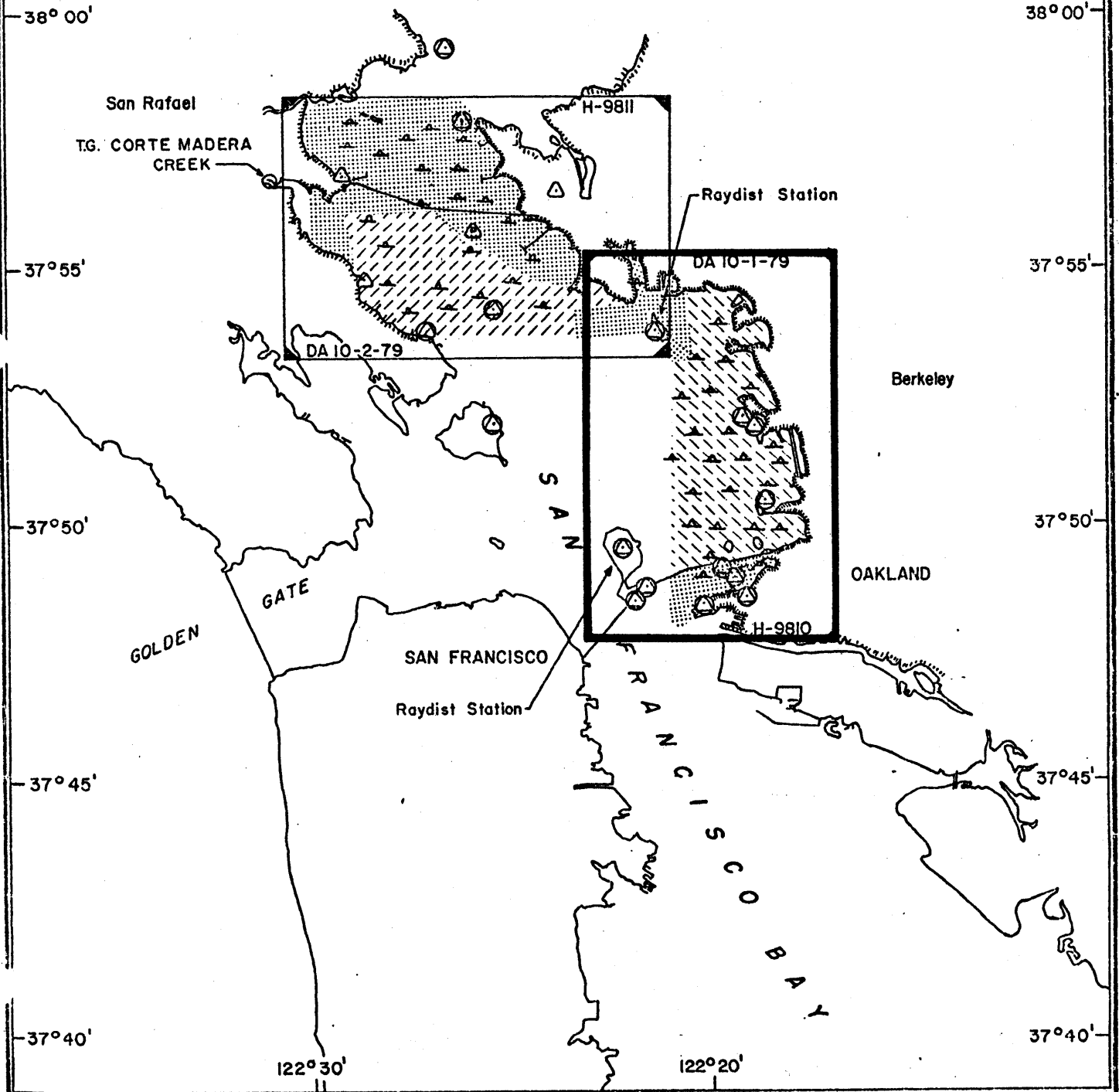
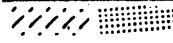
122° 20'

PROGRESS SKETCH
OPR-L123-DA-79
SAN FRANCISCO BAY, CALIFORNIA

SCALE: CHART 18680
 1: 210,668

NOAA SHIP DAVIDSON (S-331)
 CDR. C. WILLIAM HAYES, Comdg.

MARCH	APRIL	STATISTICS :
452.9	337.95	L. N. M. SOUNDING LINE
20.5	13.15	SQ. N. M. SOUNDING
23	19	TRIANGULATION STA. RECOVERED
4	0	TRIANGULATION STA. ESTABLISHED
0	1	TIDE GAGES
25	28	BOTTOM SAMPLES
0/0	0/0	MARTEK / SALINITY CAST
3/0	5/0	BENCH MARKS RECOVERED / ESTAB.
12	11	L. N. M. PHOTO SHORELINE INSPECTION
4	1.2	L. N. M. WIRE DRAG
0.25	.14	SQ. N. M. WIRE DRAG



A. PROJECT

Basic survey DA-10-1-79 was accomplished in accordance with Project Instructions OPR-L123-DA-79, San Francisco Bay, California, dated 15 January 1979, and Changes #1, #2, and #3, dated 1 February, 8 February and 12 February respectively. ✓

B. AREA SURVEYED

The area surveyed covered the eastern portion of San Francisco Bay from Richmond Inner Harbor south to Oakland Outer Harbor. The boundaries were as follows: ✓

West	122°21'30"W ✓
North	37°55'15"N ✓
East	122°17'30"W ✓
South	37°48'15"N ✓

Tide gages for support of hydrography were installed by the California Tides Party and the Ship McARTHUR before the beginning of OPR-L123-DA-79 and were maintained by the above for the duration of the project. (Refer to Field Tide Note). Recovery of existing geodetic control and establishment of new control began on 12 March and continued throughout the project. Hydrographic operations were conducted from 13 March through 26 April. ✓

C. SOUNDING VESSELS

DA-1 (Vessel #3131) was used almost exclusively as the sounding platform for H-9810. It was characterized by the color red used in all raw data recording and on preliminary computer plots. ✓

DA-2 (Vessel #3132) was used on 27 April (JD 117) to assist in the wire drag operation for PSR Item #15. The color blue was used to characterize the raw data and preliminary computer plots from DA-2. ✓

D. SOUNDING EQUIPMENT

Both sounding vessels used Ross Finline Fathometers (Model #5000). Depths ranged from approximately 1 to 60 feet. Serial numbers of sounding equipment were as follows: ✓

<u>Vessel #</u>	<u>Equipment</u>	<u>S/N</u>
3131 (DA-1)	Fathometer	1048
3131 (DA-1)	Digitizer	1081 ✓
3131 (DA-1)	Tranceiver	1036
3132 (DA-2)	Fathometer	1077
3132 (DA-2)	Digitizer	1077 ✓
3132 (DA-2)	Tranceiver	1077

Phase calibrations were conducted daily and with each paper change from 0 to at least 100 feet at 10-foot intervals. The initial was set as close to 0 as possible, but would usually vary approximately 0.5 ft. during the day. Poor quality paper seemed to be the cause. ✓

All ~~fathograms~~ ^{echograms} were scanned and compared to digitized depths. Additions (peaks and deeps) and corrections were either edited into the master data tape or included on a separate electronic corrector tape. ✓

Soundings on the Final Field Sheet were corrected for transducer depth and predicted tides. Transducer draft was determined from bar checks made daily, weather permitting, and from launch settlement/squat test results. ✓
The computed static TRA corrector was 1.5 feet for both DA-1 and DA-2.
(See Correction to Echo Sounders Report)

Predicted tides for San Francisco (#513, TIDE TABLES 1979) were corrected according to the zoning scheme supplied with the Project Instructions for OPR-L123-DA-79. (Zoning referenced to OPR-L123-RA-79 and OPR-L123-HFP-79). ✓
Correctors used were as follows:

<u>Time Correctors</u>		<u>Range Ratio</u>
LW	+37 min.	X 1.05 ✓
HW	+23 min.	

A California Tide Party gage at Richmond Inner Harbor (941-4849) controlled the survey area. Two additional gages were installed by CTP in or near the H-9810 area while the survey was in progress. One was located on the Coast Guard pier near the south end of Angel Island, and the other was installed on a small private pier south of the Berkeley Yacht Harbor. The California Tide Party should be contacted if more information on these gages is desired. ✓
_{position unavailable}

Soundings on the Final Field Sheet were not corrected for velocity. Data for these corrections was obtained from the NOAA Ship McARTHUR. (See Corrections to Echo Sounders Report). ✓

WIRE SWEEP AND WIRE DRAG OPERATIONS

Bottom drag and modified wire sweep operations were conducted in order to resolve PSR Items #9 (JD 081), #14 (JD 082 and 085), and #24 (JD 081). Launch DA-1 and Skiff WZ-3041 were employed as tow boats and stayed 150-200 feet apart. A towline base of 100 feet was used to drag 150 feet of weighted cable along the bottom for PSR Items #9 and #24, and 1 - 2 feet (allowing for slight lift) off the bottom for PSR Item #14. The drag line was buoyed at both ends from adjustable uprights. ✓

Raydist bottom drag information was recorded on the data printout for JD 081. Visual and Range-Azimuth sweep information was recorded in sounding volume #1 for H-9810. For more information on the disposition of PSR items, see Section L. ✓

A wire drag investigation was conducted on 27 April (JD 117) to verify or disprove PSR Item #15. Standard procedures as outlined in USC&GS Publication 20-1 (Wire Drag Manual) were adhered to throughout the drag. A towline base of 160 feet was used. The drag consisted of two 300-ft. sections of cable connected by adjustable uprights to three intermediate buoys. (No large end-buoys were used). The uprights were set at 12 feet for the first drag and at 14 feet for the second. The drag tested to 11½ feet and 13 feet, respectively. For more information on results of the wire drag, see Section L. ✓
(Raw data for the drag was recorded in sounding volumes #2 and #3 for H-9810 and on the DA-1 and DA-2 raw data records for JD 117 and 118.)

Data recorded in Vol's 2 and 3, is in an unusable format. No data exists for J.D. 117 and 118.

E. HYDROGRAPHIC SHEETS

The Field Sheet for this survey was prepared in two parts, DA-10-1A-79 and DA-10-1B-79, each at a scale of 1:10,000, using the HYDROPLOT system on the DAVIDSON. A PDP-8/e computer was linked with a Complot DP3 plotter (S/N 5445-6) for computation and plotting. One blow-up was prepared at a scale of 1:5,000 in order to clarify an area of congested soundings at approximately 37°49'02.5"N and 122°19'10"W.

F. CONTROL STATIONS

RAYDIST antennas were located at the two third order triangulation stations listed below.

<u>Signal List #</u>	<u>Station</u>
001	Alley, 1978
002	Brooks Is. 2, 1905-16

In addition, T-2 theodolites and/or MINIRANGER transponders, used for Range-Range (R-R) or Range-Azimuth (R-A) hydrography, were located at various times on the 8 third order triangulation stations below.

<u>Signal List #</u>	<u>Station</u>	<u>Type of Position Control</u>
010	Army 2, 1947	R-A
011	Mole, 1947	R-R
020	Brooks Is. 2, 1905-16	R-A
022	Army 2, Ecc. (Temp)	R-A
023	Wharf E (Temp)	R-A
024	Wharf W (Temp)	R-A
025	Matson, 1979	R-A
034	Seven (Temp) Oakland Outer Harbor Entrance Channel Exposed Cable Barrier North light 1978	R-R

The following stations were used for visual control of wire sweep operations on JD 082.

<u>Signal List #</u>	<u>Station</u>
007	Oakland Outer Harbor ^{Range "A" Rear Light 1978} W. Side Bcn "339" 1948
008	Oakland Navy Supply Depot Checkered Tank; 1947
009	Yerba Buena Lighthouse, 1919
014 035	Oakland Outer Harbor Entrance Channel Exposed Cable Barrier S. Light, 1978

Forty-two triangulation stations were recovered during this project. All computations were based on the North American 1927 Datum. (See Horizontal Control Report.) Refer to the Signal List for the Geographic positions of all stations.

G. HYDROGRAPHIC POSITION CONTROL

A Teledyne-Hastings RAYDIST system was used for most of the Range-Range position control portion of this survey. The Red Station, Transmitter S/N 234, consisted of a 35-ft. whip antenna located atop the Bowling Alley

~~#001~~
 (Station Alley, 1978) on Treasure Island, and was powered by the building's 110V (AC) power supply. Problems with this station were experienced when a fuse was blown on JD 075 and when the station was accidentally unplugged on JD 078.

Signals #002 and #020
 The Green Station, Transmitter S/N 015, was located on Brooks Island (Station Brooks Is. 2, 1905-16) and consisted of a 35-ft. whip antenna powered by six 12V wet cell batteries. The only problem exclusive to this station occurred when the antenna blew down in high winds on JD 075.

Problems common to both stations included lane jumps while working close to the San Francisco-Oakland Bay Bridge, and a load shift, which affected calibration correctors, during a storm around noon on JD 074.

Motorola MINIRANGER III units used in conjunction with Wild T-2 Theodolites were used for Range-Azimuth position control in those areas not covered by the RAYDIST set-up. Miniranger equipment was also used for the Range-Range position control of wire drag operations on JD 117. Below are the serial numbers of electronic equipment employed:

<u>RAYDIST (DA-1 only)</u>			
<u>NAVIGATOR</u>	<u>CHART RECORDER</u>	<u>NAVIGATION INTERFACE</u>	<u>TRANSMITTER</u>
54	14	34	172

Both launches were equipped with 12 ft. whip antennas

<u>MINIRANGER</u>		
<u>VESSEL #</u>	<u>RANGE CONSOLE</u>	<u>R/T UNIT</u>
3131 (DA-1)	707 (Used until JD 100)	307 (Used until JD 100)
	716 (Used after JD 100)	709 (Used after JD 100)
3132 (DA-2)	710	719

TRANSPONDERS

<u>CODE</u>	<u>S/N</u>
1	723
2	772
3	773
4	771

Daily calibrations were performed at least once per set-up by comparing the computed rates of a fixed point to observed rates on the HAZLOW or MINIRANGER console at the time of calibration. Comparisons were made after having positioned the launch with its R/T unit or RAYDIST antenna as close as possible to a stationery object of known distance from the RAYDIST shore station or MINIRANGER transponder.

Initially, RAYDIST lane counts were slewed so that observed rates would fall within one lane of actual rates. At the end of the day, whole lanes were checked against the initial calibration. Initial and final partial lane correctors were then meaned to obtain daily corrector values, which were applied

found involved 2 feet of water or less.

L. COMPARISON WITH THE CHART

The largest scale chart of the area surveyed was #18649, SAN FRANCISCO ENTRANCE, 45th ED., February 4, 1978, Scale 1:40,000. Selected soundings were inked on the Preliminary Plot Sheet in violet. Also in violet were Pre-survey Review Items #9, #11, #14, #15, #23, and #24.

See Verifier's Rpt Sec 7

Subm stake charted at lat. 37°53'58"N, long 122°20'13"W. (from H-7705 (1948))

A bottom drag as described in Section D was conducted to locate PSR Item #9, described as a submerged stake covered 1 foot at MLLW. After two drags, one running east and one running west, a wooden stake was noted protruding 1 foot out of the water just south of the drag area. A detached position was taken, and it was attempted to forcibly remove the obstruction. As this was not possible, bottom drag operations continued for two more lines to ensure that no other obstructions existed in the area. It is recommended that PSR Item #9 be charted at Latitude 37/53/56.32 and Longitude 122/20/03.35 as found during this survey. (Fix #3321). **concur**

wire pos. on chart

No sign of PSR Item #11, a reported 4-ft. shoal, was found during work on H-9810. The wire sweep operation during OPR-511-DA-76 thoroughly covered the area in question. The Coast Guard had no further information on the obstruction apart from the Chart Letter dated 18 May 1973. A cursory search of the area was made during work on H-9810 by running a 45 M grid over the area. Fathograms were closely scanned, but no indication of shoaling was found. It is recommended that the 4-ft. (PA) sounding at 37°50'14"N and 122°19'49"W be deleted from the chart. **concur**

Shoalest sdg located is 0 ft. depth about 200m. north of charted sdg.

A wire sweep investigation was conducted on JD 082 and JD 085 in order to verify or disprove PSR Item #14, submerged piles. The investigation was conducted visually on JD 082 and with Range-Azimuth support on JD 085. (For procedural details, refer to Section D). No hangs were encountered during the sweeps. On the basis of this investigation, it is recommended that submerged piles at 37°48'46"N, 122°20'11"W and at 37°48'47"N, 122°20'18"W be deleted from the chart. (Sweep data is included with the data package, but has not been plotted.) **concur**

Subm piles originated as post lights from undetermined source. Not visible on H-7622

The search for PSR Item #15 involved a full scale wire drag operation as outlined in USC&GS Pub. 20-1. (For specific details of the procedure used, see Section D) In a memorandum dated 23 March 1979, the Ship RAINIER advised the DAVIDSON of ruins found in the PSR Item #15 area during a diver investigation in November 1978. The DAVIDSON wire drag operation thoroughly covered the area in question. The wire hung once. Divers found three wooden pilings projecting approximately 5 feet off the bottom, as well as a good deal of metal or cement debris (high current and poor visibility prevented a positive identification of material) that projected not more than one foot off the bottom. *A least depth of 14.1 feet was obtained at 2342 Z on JD 117 for the tallest piling. It was located by hydrographic detached position at 37°49'01"N and 122°20'10"W. **Disregard - See Verifier's Rpt, Sec 6, PSR 15**

see Verifier's reports

*Disregard least depth of 14.1 - sdg cannot be verified, nor was position data provided.

No indication of shoaling was found at the site of PSR Item #23. The area was consistently 7 and 8 feet deep, though the bottom came up to within 32 feet of the water's surface to the north at approximately Latitude 37°50'38"N and 122°19'13"W. Shoaling (PSR 13) charted at lat. 37°50'29"N, long 122°29'11"W from an undetermined source after 1974. Shoaling identified as 4-ft sdg. (1974) PA.

to soundings on the Final Field Sheet.

Differences between computed and observed MINIRANGER rates were always within 5 meters of the respective baseline corrector. Signal strength was observed and recorded at all times. Baseline calibrations of Console/RT units 710/719 and 716/709 were conducted on 16 February and 04 May at PMC. Console/RT unit 707/307 was calibrated at PMC on 16 February but broke down during work on JD 094 and could not be end-calibrated. Mean correctors derived from the two baseline calibrations should be applied to positions during final plotting. (For further information, refer to the appended Electronic Control Report).

Two DR lines were run on JD 118 in order to fill a small hole in Oakland Outer Harbor. Latitudes and Longitudes were scaled from the T-Sheet and converted to rates via RK-300 for plotting purposes.

H. SHORELINE

Shoreline for H-9810 was transferred from unedited Class III manuscripts TP-00527 and TP-00530, and from TP-00529, field edited by the NOAA Ship RAINIER during the 1978 Field Season. (Note: Shoreline derived from TP-00527, a 1:20,000 scale manuscript, was authorized by Project Instructions for BOAT SHEET USE ONLY.) Navigational aids offshore from the MHW line located during hydrography were transferred to the Final Field Sheet. Contact was maintained with the field editor to prevent duplication of effort. *See Verifiers Rpt. Sec. 2*

I. CROSSLINES

Crosslines comprised 20.4% of the ^{regular system of} total sounding lines and were in excellent agreement with main scheme hydrography.

J. JUNCTIONS

This survey junctioned to the west, south of Brooks Island, with H-9794 (RAINIER, 1978) and to the west, north of Brooks Island, with Contemporary Survey H-9811. Both were 1:10,000 scale surveys. Soundings from H-9794 were inked in red on the preliminary smooth plot (PSO). Most junction soundings were in excellent agreement. The maximum difference noted was 3 feet in areas of steeply sloping bottom. *See Verifiers Rpt. Sec. 5*

K. COMPARISON WITH PRIOR SURVEYS

Representative soundings from three prior surveys were inked on the Preliminary Plot Sheet in the colors indicated below:

<u>SURVEY</u>	<u>SCALE</u>	<u>YEAR</u>	<u>COLOR</u>
H-7619	1:10,000	1947	BLUE
H-7705	1:10,000	1948	BROWN
H-7622	1:5,000	1947	BLACK

Many H-7622 soundings showed considerably less depth in Oakland Outer Harbor than the present survey found. This area was last dredged by the Army Corps of Engineers in 1977, which explains the discrepancies.

This survey agreed well with both H-7705 and H-7619. The few discrepancies *See Verifiers Report Sec. 6*

This northern shallow area was probably the one reported. It is recommended that the 4-ft. (PA) sounding be deleted from the chart. *concur*

A bottom drag operation, as described in Section D, was conducted in order to verify or disprove PSR Item #24, described as a submerged obstruction. Mud and a few bits of decaying fish net were pulled up on the wire, but no obstruction was encountered. (No hangs). Conversation with the Harbor Master provided no information on the item. It is recommended that it be deleted from the chart. *concur. no plot provided.*

Subm obstr. charted at lat. 37°50'20"N, long. 122°18'39"W from unknown source. It was noted that the limits of the Oakland Outer, Middle, and Inner Harbor areas in the Coast Pilot were in conflict with Chart 18649, the U.S. Army Corps of Engineers, and the Port of Oakland. (See Coast Pilot Report)

M. ADEQUACY OF SURVEY

This survey is considered complete and adequate to supercede all areas of common hydrography.

N. AIDS TO NAVIGATION

All fixed aids within the H-9810 survey area were located by third-order triangulation methods during OPR-L123-DA-79. (See Horizontal Control Report)

The following floating aids were located by hydrographic detached position.

<u>DESCRIPTION</u>	<u>LL#</u>	<u>FIX#</u>	<u>POSITION</u>
W Or Sp "B"	Priv. Maintained	3222	37/52/51.3N 122/20/30.0W
W Or Sp "C"	Priv. Maintained	3223	37/52/05.4N 122/20/12.2W
Oakland Outer Harbor C "7"	631	4229	37/48/ 29 ³ 2N 59.3 122/19/ 15 8W 13.5
- Lighted Buoy "5" FL.G., 4s	631	4230	37/48/ 21 7N 51.0 122/19/ 32 1W 30.0
- Lighted Buoy "3" FL.G., 4s	630	4231	37/48/ 26 1N 45.1 122/20/ 00 0W 19'58.9
- Lighted Buoy "1B" FL.G., 4s	628	4232	37/48/ 44 8N 20.0 122/20/ 29 1W 54.6

In addition, the following miscellaneous items of general interest to navigation were located by hydrographic detached position. (See listing on next page)

<u>FIX #</u>	<u>DESCRIPTION</u>	<u>POSITION</u>
3251	Center of Berkeley "Reef"	37/52/28.6N 122/19/56W 56.2
3315	Charted Dot. (PG&E "Gas Line Sign")	37/49/26.8N Rejected 3315 122/20/35.2W field Edit information
3579	Piling tilted West, Amash (5)	37/52/23.3N 23.6 122/18/28.0W 27.8
<u>MARINA BAY</u> <u>RICHMOND INNER HARBOR BASIN</u>		
3952	Small ^{Red} Mooring Buoy	37/53/31.9N 37° 54' 38.7N 122/20/08.5W 122° 20' 48.9W 48.9W
3953	Small Mooring Buoy	37/53/30.4N 37 54 45.0 N 122/20/1.5W 122 20 49.1W
3954	3' Diam. Mooring-Buoy	37/53/31.5N 37 54 42.4 N 122/20/06.2W 122 20 54.9W
3955	Dolphin @ S. end Pier ruins	37/53/30.5N 37 54 48.2 N 122/20/01.1W 122 21 02.8W
3957	2' Diam. Red Mooring-Buoy	37/53/29.5N 37 54 50.2 N 122/19/57.0W 122 20 54.6 W
3958	3' Diam. Mooring Buoy	37/53/34.8N 37 54 33.2 N 122/20/19.8W 122 21 08.0W
3959	3' Diam. Mooring-Buoy	37/53/35.3N 37 54 31.2 N 122/20/22.1W 122 21 06.9N
<u>OAKLAND OUTER HARBOR AREA</u>		
4233	Dolphin	37/48/43.0N 37 49 07.1 N 122/20/41.1W 122 20 44.6 W
4321	Dolphin	37/49/41.4N 37 49 05.5 N 122/17/57.7W 122 19 06.3 N
4464	Lone Piling	37/48/32.3N 37 48 57.6 N 122/19/35.2W 122 19 33.2

O. STATISTICS

Number of Positions	2759
Nautical Miles of Sounding Lines	336.7
Nautical Miles of Crosslines	68.8
Square Nautical Miles of Hydrography	15.21
Bottom Samples	23

P. MISCELLANEOUS

Work in the Richmond Inner Harbor Basin and in Oakland Outer Harbor was hampered to a degree by the presence of moored vessels. Four large barges sat in the middle of Richmond Inner Harbor Basin throughout the survey. Numerous ships and barges, some conducting preliminary dredging operations, blocked a good portion of the south basin. It was found, through a conversation with the Richmond Port Traffic Supervisor, Peter M. Hughes, that the Port of Richmond is to start dredging the Inner Harbor Basin in the summer of 1979 to create a new yacht basin. ✓

Q. RECOMMENDATIONS

It is recommended that the Richmond Inner Harbor Basin and immediate vicinity be resurveyed after dredging operations and rebuilding are completed. ✓

R. AUTOMATED DATA PROCESSING

All smooth sheets were produced with a PDP-8/e computer (S/N 10744) and a COMLOT DP-3 plotter (S/N 5445-6). Programs used to process this survey follow. ✓

<u>PROGRAM #</u>	<u>PROGRAM NAME</u>	<u>VERSION</u>
RK-111	Range-Range Real Time Hydroplot	1/30/76 DUP 9/1/78
FA-181	Range-Azimuth Logger	2/23/78 DUP 4/10/78 ✓
RK-201	Grid, Signal, and Lattice Plot	4/18/75 DUP 9/18/78
RK-211	Range-Range Plot	1/15/76
RK-212	Visual Station Load and Plot	4/1/74
RK-216	Range-Azimuth Plot	2/5/76
RK-300	Utility Computations	2/10/76
RK-330	Reformat and Data Check	5/4/76 DUP 12/30/76
RK-407	Geodetic Direct and Inverse	10/23/75
RK-409	Geodetic Utility Package	9/5/73
AM-500	Predicted Tides Generator	11/10/72
RK-530	Velocity Correction Computations	5/10/76 DUP 11/7/77
AM-602	Elinore	5/21/75 DUP 2/13/79

S. REFERENCE TO REPORTS

Field Tide Report
Electronic Control Report
Corrections to Echo Sounders Report
Horizontal Control Report
Coast Pilot Report
TP-00527 and TP-00530 Field Edit Reports

SUBMITTED BY:

Ellen McDougal
Ellen McDougal
LT(jg), NOAA

APPROVED AND FORWARDED BY:

C. William Hayes
C. William Hayes
CDR, NOAA
Commanding Officer

SURVEY APPROVAL SHEET

DA 10-1-79 (H-9810)

- A. Amount and degree of personal supervision of field work and frequency of record and sheet inspection:

Direct/Daily

- B. State whether the survey is complete and adequate or if additional field work is recommended:

See Descriptive Report for additional survey work in areas being dredged or where construction is planned, otherwise the survey is considered complete and adequate.

- C. Cite additional information or references that may be of assistance for verifying and reviewing the survey:

None

- D. Signed statement of approval of the field sheet and all accompanying records:

DATE: 18 June 1979

Approved and forwarded by:



C. William Hayes
CDR, NOAA
Commanding Officer

OPR-L123-DA-79
 DA 10-1-79(H-9810), DA 10-2-79(H-9811)
 MASTER SIGNAL LIST

001	4	37	49	30968	122	22	01346	250	0012	330645	
ALLEY 1978											
002	2	37	53	47366	122	21	16177	250	0048	330645	
BROOKS ISLAND 21905-1916											
003	2	37	51	54818	122	19	04643	253	0000	000000	
BERKELEY BREAKWATER LIGHT "1"											
004	2	37	52	01145	122	19	08669	253	0000	000000	
BERKELEY BREAKWATER LIGHT "2"											
005	2	37	50	37136	122	18	29940	243	0000	000000	
EMERYVILLE MARINA LIGHT "5"											
006	4	37	54	16299	122	25	18505	139	0000	000000	
SOUTHAMPTON SHOAL LIGHT "1"											
007	4	37	49	01891	122	19	26993	139	0000	000000	
OAKLAND OUTER HARBOR WEST SIDE BEACON "339" 1948											
008	4	37	48	28021	122	19	11606	139	0000	000000	
OAKLAND NAVY SUPPLY DEPOT CHECKERED TANK 1947											
009	4	37	48	26462	122	21	40177	139	0000	000000	
YERBA BUENA LIGHTHOUSE 1919											
010	2	37	48	50558	122	21	30637	139	0024	000000	
ARMY 2 1947											
011	4	37	49	14966	122	19	44838	250	0002	000000	
MOLE 1947											
012	3	37	52	09556	122	25	19766	250	0000	000000	
SIMPTON Rm 2 1948											
013	3	37	54	55057	122	28	25116	250	0002	000000	
PARADISE 1979											
014	4	37	48	48888	122	20	13758	253	0000	000000	
OAKLAND OUTER HARBOR ENTRANCE CHANNEL ^{14/22} CABLE BARRIER SOUTH LIGHT, 1978											
015	6	37	55	44705	122	25	47309	250	0053	000000	
RED ROCK 2 1979											
016	3	37	53	39594	122	26	54647	250	0008	000000	
SAN FRANCISCO NORTH CHANNEL LIGHT "7"											
017	0	37	56	08218	122	26	43456	254	0005	000000	
TP1 B											
018	1	37	57	47812	122	25	56707	250	0010	000000	
EAST BROTHER ISLAND LIGHTHOUSE 1932											
019	4	37	53	39680	122	26	54604	254	0003	000000	
POINT CHANNCM (ECC), TEMPORARY POINT											
020	5	37	53	47366	122	21	16177	250	0048	000000	
BROOKS ISLAND 2 1905-1916											

- 35 Oakland Outer Harbor Entrance Channel
Exposed Cable Barrier South Light, 1978 37° 48' 41.458" 122° 20' 14.070"
- 36 San Francisco Oakland Bay Bridge
Pier G Aero Beacon, 1978 37° 48' 51.721" 122° 21' 26.908"
- 37 San Francisco Oakland Bay Bridge
Pier H Aero Beacon, 1978 37° 48' 56.950" 122° 21' 10.683"
- 38 Oakland Outer Harbor East Side Beacon
337, 1948 37° 49' 03.163" 122° 19' 15.067"

- 021 2 37 52 19650 122 15 24221 139 0091 000000
CAPMANILLE, U of C, 1916
- 022 5 37 48 49853 122 21 30976 254 0024 000000
ARMY 2 (ECC) (TEMPORARY POINT)
- 023 4 37 49 16171 122 18 25976 254 0005 000000
WHARF EAST (TEMPORARY POINT)
- 024 0 37 49 11261 122 19 00162 254 0005 000000
WHARF WEST (TEMPORARY POINT)
- 025 1 37 54 28022 122 21 02330 254 0000 000000
MATSON (TEMPORARY POINT)
- 026 2 37 56 32428 122 24 04652 250 0149 000000
HIGH HILL 4 1979
- 027 6 37 54 13314 122 22 30325 243 0000 000000
RICHMOND HARBOR CHANNEL LIGHT "10"
- 028 1 37 56 26480 122 29 44396 254 0018 000000
MADERA (TEMPORARY POINT)
- 029 0 37 54 29674 122 23 54358 243 0000 000000
RICHMOND HARBOR CHANNEL LIGHT "5"
- ~~030 0 37 56 42339 122 28 48272 250 0003 000000
QUENTIN 1979~~
- ~~031 3 37 57 26098 122 27 21586 139 0000 000000
* SAN FRANCISCO BAY NORTH CHANNEL LIGHT "17"~~
- ~~032 1 37 59 17835 122 26 25887 250 0000 000000
SISTER 1941~~
- ~~033 4 37 55 14167 122 22 51771 254 0112 000000
RICHARD 1932 (ECC) (TEMPORARY POINT)~~
- ~~034 5 37 48 39786 122 19 55006 254 0003 000000
SEVEN (TEMPORARY POINT)~~

- 30 37° 52' 1.646 122° 19' 1.880 Berkeley Marina North Light
- 31 37° 51' 58.132 122° 19' .565 139
Berkeley Marina south Light 1979
- 32 Emeryville Marina Light 1 1978
37° 50' 25.280 122° 19' 10.506

- 33 37 50 24.234 122° 19' 9.262
Emeryville Marina Light 2 1978

- 34 37° 48' 41.458 122 20 14.070
Oakland Outer Harbor entrance Channel
Exposed Cable barrier North Light 1978

See Smooth Printout
and attachment for
this list.

NONFLOATING AIDS

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

ORIGINATING ACTIVITY

- HYDROGRAPHIC PARTY
 - GEODETIC PARTY
 - PHOTO FIELD PARTY
 - COMPILATION ACTIVITY
 - FINAL REVIEWER
 - QUALITY CONTROL & REVIEW GRP.
 - COAST PILOT BRANCH
- (See reverse for responsible personnel)

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)
Photogrammetric Branch,
PMG, Seattle, Wa.

STATE
California

LOCALITY
San Francisco and San
Pablo Bays

DATE
06/06/80

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

OPR PROJECT NO.
411

JOB NUMBER
CM-7704

SURVEY NUMBER
TP-00527

DATUM
North American 1927

POSITION

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

CHARTS
AFFECTED

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

LATITUDE
D.M. Meters

OFFICE

FIELD

CHARTS
AFFECTED

-LIGHT ✓
Berkeley Marina Channel Light 3

37° 51' 27.60" N
851 D.M. Meters
22° 20' 1319 D.P. Meters

53.96"
1319
P-5 04/04/79
77B(P) 3694

18649

-LIGHT ✓
Berkeley Breakwater Light 1

37° 51' 54.82" N
1690 D.M. Meters
22° 19' 114 D.P. Meters

04.64"
114
77B(P) 3694
Mar. 18, 1977

18649

-LIGHT ✓
Berkeley Breakwater Center Light

37° 51' 58.19" N
1794 D.M. Meters
22° 19' 162 D.P. Meters

06.63"
162
F-P-I
04/11/79

18649

-LIGHT ✓
Berkeley Breakwater Light 2

37° 52' 01.15" N
35 D.M. Meters
22° 19' 212 D.P. Meters

08.67"
212
F-V-Vis

18649

-LIGHT ✓
(Berkeley Marina North Light, 1979
(Field Position))

37° 52' 01.64" N
50.7 D.M. Meters
22° 19' 46.0 D.P. Meters

01.880"
46.0
F-3-6-I
04/15/79

18649

-LIGHT ✓
(Berkeley Marina South Light, 1979
(Field Position))

37° 51' 58.13" N
1792.3 D.M. Meters
22° 19' 13.8 D.P. Meters

00.565"
13.8
F-3-6-I
04/15/79

18649

-LIGHT ✓
Berkeley Reef Light 1

37° 52' 27.41" N
84.5 D.M. Meters
22° 19' 138.4 D.P. Meters

56.63"
138.4
P-5, 04/04/79
77B(P) 3694

18649

*LIGHT
Brickyard Cove Harbor Light 1

37° 54' 25.82" N
796 D.M. Meters
22° 22' 133.4 D.P. Meters

54.58"
133.4
77B(P) 3534
Mar. 18, 1977

18649

*LIGHT
Brickyard Cove Harbor Light 2

37° 54' 24.98" N
770 D.M. Meters
22° 22' 131.0 D.P. Meters

53.62"
131.0
77B(P) 3534
Mar. 18, 1977

18649

*LIGHT
Richmond Harbor Channel Light 9

37° 54' 19.15" N
591 D.M. Meters
22° 22' 27.92 D.P. Meters

27.92"
682
77B(P) 3534
Mar. 18, 1979

18649

*Outside Survey limits

NE K-112(82)/dnp file

NONFLOATING AIDS

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

ORIGINATING ACTIVITY

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

Replaces C&GS Form 567.

REPORTING UNIT
(Field Party, Ship or Office)
Photogrammetric Br.
PMG, Seattle, Wa.

STATE
California

LOCALITY
San Francisco and San

DATE
06/06/80

(See reverse for responsible personnel)

OPR PROJECT NO.
411

JOB NUMBER
GM-7704

SURVEY NUMBER
TP-00527

DATUM
North American 1927

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

CHARTS
AFFECTED

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° / ' "	// D.M. Meters	° / ' "	// D.P. Meters			
LIGHT	Richmond Harbor Channel Light 10, 1979 (Preliminary Adjusted Field Position)	37° 54' 13.315"	410.5	22° 22' 30.328"	740.9	77B(P) 3534 Mar. 18, 1977	F-3-6-L 04/04/79	18649
LIGHT	Richmond Harbor Channel Light 12	37° 54' 05.89	182	22° 21' 58.00	1407.2	77B(P) 3534 Mar. 18, 1977	F-V-Vis. 03/29/79	18649
LIGHT	Richmond Harbor Channel Light 14	37° 54' 13.01"	402	22° 21' 35.03"	856	77B(P) 3534 Mar. 18, 1977	F-V-Vis. 03/29/79	18649
DAYBEACON	Richmond Harbor Channel Daybeacon 16	37° 54' 29.33	904	22° 21' 34.21"	836	77B(P) 3534 Mar. 18, 1977	F-V-Vis. 03/29/79	18649

* Outside survey limits

LANDMARKS FOR CHARTS

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

Replaces CGCS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If field party, ship or office)
Photogrammetric Branch
PMG, Seattle, Wa.

STATE
California

LOCALITY
San Francisco and San Pablo Bays

DATE
06/06/80

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

OPR PROJECT NO. 411

JOB NUMBER CM-7704

SURVEY NUMBER TP-00527

DATUM North American 1927

POSITION

CHARTING NAME	DESCRIPTION <i>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)</i>	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION <i>(See instructions on reverse side)</i>	OFFICE	FIELD	CHARTS AFFECTED
		° / ' "	D.M. Meters	° / ' "	D.P. Meters				
TANK	(Berkeley Durkee Famous Foods Co Tank, 1947)	37° 51'	09.097"	122° 17'	35.611"	77B(P) 3695 Mar. 18, 1977	77B(P) 3695	Triang. Rec. Mar. 28, 1979	18649
TANK	(Berkeley, H. J. Heinz Co., Tank, 1947)	37° 51'	11.51"	122° 17'	16.97"	77B(P) 3695 Mar. 18, 1977	77B(P) 3695	Triang. Rec. Mar. 28, 1979	18649
TANK	(Berkeley Peet Brothers Stack, 1916)	37° 51'	21.636"	122° 17'	11.861"	77B(P) 3695 Mar. 18, 1977	77B(P) 3695	Triang. Rec. Mar. 28, 1979	18649
TOWER	(Campanile, University of California, 1916)	37° 52'	19.650"	122° 15'	21.221"	77B(P) 2572 Mar. 4, 1977	77B(P) 2572	Triang. Rec. Mar. 28, 1979	18649
TANK		37° 52'	39.25"	122° 18'	06.37"	77B(P) 3694 Mar. 18, 1977	77B(P) 3694	F-V-Vis. Mar. 15, 1979	18649
TANK		37° 54'	1210.1		155.6	77B(P) 3694 Mar. 18, 1977	77B(P) 3694	F-V-Vis. Mar. 26, 1979	18649
TANK		37° 54'	34.50"	122° 21'	21.16"	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 26, 1979	18649
TANK		37° 54'	1063.6		590.2	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 26, 1979	18649
TANK		37° 55'	09.09"	22° 22'	56.567"	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 19, 1979	18649
TANK		37° 55'	280.3		1381.7	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 19, 1979	18649
TANK		37° 56'	56.530"	22° 21'	56.567"	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 19, 1979	18649
TANK		37° 56'	1742.9		1367.0	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 19, 1979	18649
TANK		37° 57'	14.76"	22° 21'	26.98"	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 19, 1979	18649
TANK		37° 57'	455.1		658.7	77B(P) 3534 Mar. 18, 1977	77B(P) 3534	F-V-Vis. Mar. 19, 1979	18649

XO:tside Survey limits

NONFLOATING AIDS 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)

Replaces C&GS Form 567.

REPORTING UNIT
(Field Party, Ship or Office)
Photogrammetric Branch
PMC, Seattle, Wa.

STATE
California

LOCALITY
San Francisco and San Pablo Bays

DATE
07/08/80

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

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

CHARTS AFFECTED

OPR PROJECT NO. JOB NUMBER SURVEY NUMBER
CM-7704 TP-00529

DATUM
North American 1927

FIELD

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

LATITUDE
LONGITUDE
D.M. Meters D.P. Meters

OFFICE

CHARTS AFFECTED

BELL
Pier 32 Fog Signal
37 47 09.50 122 23 00.57
293 14

OFFICE
77B(P)2542
4 Mar., 1977

FIELD
P-5, 11-78
77B(P)3495

LIGHT (HORN)
Yerba Buena Island Light (Yerba Buena Lighthouse, 1919)
37 48 26.462 122 21 40.177
815.8 982.8

OFFICE
77B(P)2542
4 Mar., 1977

FIELD
Triang. Rec.
11-78

LIGHT
Yerba Buena Island Wharf Light, 1978 (Field Position)
37 48 29.426 122 21 35.862
907.2 877.3

OFFICE

FIELD
F-3-6-L, 11-78

LIGHT
Oakland Outer Harbor
37 48 57.60 122 21 25.230
1776 617

OFFICE

FIELD
F-3-6-L, 11-78

LIGHT
Oakland Outer Harbor Range B Front Light
37 49 03.163 122 19 15.067
97.5 368.5

OFFICE
77B(P)2542
4 Mar., 1977

FIELD
Triang. Rec.
1976

LIGHT
Oakland Outer Harbor Range A Front Light
37 48 56.53 122 19 37.98
1743 929

OFFICE
77B(P)2542
4 Mar., 1977

FIELD
V-Vis.
11-78

LIGHT
Oakland Outer Harbor Range A Rear Light, 1978 (Field Position)
37 49 02.134 122 19 27.094
65.8 662.7

OFFICE
77B(P)2542
4 Mar., 1977

FIELD
F-3-6-L, 11-78

LIGHT
Oakland Outer Harbor Entrance Channel Exposed Cable Barrier North Light, 1978 (Field Position)
37 48 41.458 122 20 14.070
1278.2 344.2

OFFICE

FIELD
F-3-6-L, 11-78

LIGHT
Oakland Outer Harbor Entrance Channel Exposed Cable Barrier South Light, 1978 (Field Position)
37 48 40.968 122 20 14.122
1263.1 345.4

OFFICE

FIELD
F-3-6-L, 11-78

LIGHT
Exposed Cable Barrier South Light, 1978 (Field Position) BARRTD Obstruction Light
37 48 40.968 122 20 14.122
1263.1 345.4

* Outside Survey limits

NONFLOATING AIDS 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

Replaces C&GS Form 567.

REPORTING UNIT: TO BE CHARTED TO BE REVISED TO BE DELETED
 (Field Party, Ship or Office)
 Photogrammetric Branch
 PWC, Seattle, Wa.

STATE: California
 LOCALITY: San Francisco and San Pablo Bays
 DATE: 07/08/80

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

OPR PROJECT NO. CM-7704
 JOB NUMBER TP-00529
 SURVEY NUMBER
 DATUM: North American 1927
 POSITION: North American 1927

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

CHARTS AFFECTED

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° /	// D.M. Meters	° /	// D.P. Meters			
* SIREN	Pier A Fog Signal	37	27.05	122	04.66		P-5-L 11-78	18650
* SIREN	Pier B Fog Signal	37	43.76	122	45.86		P-5-L 11-78	18650
* BELL	Pier C East Side Fog Signal	37	54.33	122	35.52		P-F-1a 11-78	18650
* BELL	Pier C West Side Fog Signal	37	1675	122	869		P-F-1a 11-78	18650
* BELL	Pier C West Side Fog Signal	37	53.00	122	37.08		P-F-L 11-78	18650
* SIREN	Pier D Fog Signal	37	1634	122	907		P-F-L 11-78	18650
* SIREN	Pier E Fog Signal	37	03.67	122	26.57		P-F-L 11-78	18650
* SIREN	Pier D Fog Signal	37	19.92	122	07.24		P-F-L 11-78	18650
	San Francisco - Oakland Bay Bridge East Crossing		614		177			
SIREN	Pier G Fog Signal	37	51.99	122	27.11		P-F-L 11-78	18650
			1603		663			
SIREN	Pier H Fog Signal	37	56.50	122	10.88		P-F-L 11-78	18650
			1742		266			

*Outside Survey Limits

Replaces C&GS Form 567.

NONFLOATING AIDS XXXXXXXXXX **FOR CHARTS**

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT: *Field Party, Ship or Office*
 Photogrammetric Branch
 STATE: California
 LOCALITY: San Francisco and San Pablo Bays
 DATE: 07/08/80

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

OPR PROJECT NO. _____ JOB NUMBER: CM-7704 SURVEY NUMBER: TP-00529
 DATUM: North American 1927

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)

CHARTING NAME	DESCRIPTION <i>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</i>	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION <i>(See instructions on reverse side)</i>	OFFICE	FIELD	CHARTS AFFECTED
		° / ' "	D.M. Meters	° / ' "	D.P. Meters				
-BELL	Pier I Fog Signal	37 48	58.68 1809	122 21	05.15 126			P-F-L, 11-78	18650
-BELL	Pier J Fog Signal	37 49	00.65 20	122 20	59.16 1447			P-F-L, 11-78	18650
-BELL	Pier K Fog Signal	37 49	02.59 80	122 20	53.23 1302			P-F-L, 11-78	18650
	San Francisco Waterfront								
* LIGHT	(San Francisco Waterfront Pier 27 -29 West Light, 1978 (Field Position))	37 48	27.609 851.2	122 23	59.327 1451.8			F-4-6-L 11-78	18650
* LIGHT	(San Francisco Waterfront Pier 27 - 29 East Light, 1978 (Field Position))	37 48	26.394 813.8	122 23	57.687 1411.1			F-4-6-L, 11-78	18650
* LIGHT	(San Francisco Waterfront Pier 17 Light, 1978 (Field Position))	37 48	10.914 336.5	122 23	45.624 1116.1			F-4-6-L, 11-78	18650
* LIGHT	(San Francisco Waterfront Pier 1 North Light, 1978 (Field Position))	37 47	53.648 1654.0	122 23	31.437 769.1			F-4-6-L, 11-78	18650
* LIGHT	(San Francisco Waterfront Pier 1 South Light, 1978 (Field Position))	37 47	52.928 1631.8	122 23	30.766 752.7			F-4-6-L, 11-78	18650
* BELL	Pier 26 Fog Signal	37 47	22.51 694	122 23	02.90 71			F-4-6-L, 11-78	18650

NONFLOATING AIDS FOR CHARTS

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

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

Replaces C&GS Form 567.

REPORTING UNIT: TO BE CHARTED TO BE REVISED TO BE DELETED

Field Party, Ship or Office: Photogrammetric Branch
 State: California
 Locality: San Francisco and San Pablo Bays
 Date: 07/08/80

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

OPR PROJECT NO.: CM-7704
 JOB NUMBER: TP-00529
 SURVEY NUMBER: North American 1927

CHARTING NAME	DESCRIPTION <small>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</small>	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION <small>(See instructions on reverse side)</small>	FIELD	CHARTS AFFECTED	
		° / ' " D.M. Meters	° / ' " D.P. Meters	° / ' " D.M. Meters	° / ' " D.P. Meters				
	Oakland Inner Harbor								
*	Oakland Inner Harbor Light 2	37 47	51.86 80	122 19	53.46 506	77B(P)3513 18 Mar., 1977	V-Vis., 11-78	18650	
	Emeryville Marina								
LIGHT	(Emeryville Marina Light 1, 1978) (Field Position) (Davidson work)	37 50	25.282 779.8	122 19	10.490 256.5		F-3-6-L, 11-78	18650	
LIGHT	(Emeryville Marina Light 2, 1978) (Field Position) (Davidson work)	37 50	24.242 747.4	122 19	09.246 226.1		F-3-6-L, 11-78	18650	
	San Francisco Bay								
*	LIGHT	(Treasure Island North End Light 6, 1977) (Field Position)	37 49	59.877 1846.1	122 22	17.071 417.5	77B(P)3545 18 Mar. 1977	F-3-6-L, 03-77	18650
*	LIGHT	Treasure Island North End Light 8	37 49	51.25 1580	122 21	55.53 1358	77B(P)3545 18 Mar. 1977	V-Vis 11-78	18650
*	LIGHT	(Berkeley Breakwater Light 2, 1978) (Field Position) Berkeley Marina Channel Light 2	37 50	52.109 1606.6	122 21	34.089 833.4	77B(P)3445 18 Mar. 1977	F-3-6-L 11-78	18650

* Outside survey limits

Replaces C&GS Form 567.

LANDMARKS FOR CHARTS

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

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT: Field Party, Ship or Office
 Photogrammetric Branch
 BMC, Seattle, Wa.

STATE: California
 LOCALITY: San Francisco and San Pablo Bays
 DATE: 07/08/80

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

COMPILATION ACTIVITY
 PHOTO FIELD PARTY
 GEODETIC PARTY
 FINAL REVIEWER
 QUALITY CONTROL & REVIEW GRP.
 COAST PILOT BRANCH
 (See reverse for responsible personnel)

OPR PROJECT NO. CM-7704 JOB NUMBER TP-00529 SURVEY NUMBER North American 1927

DATUM: North American 1927

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

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° / ' "	D.M. Meters	° / ' "	D.P. Meters			
RADIO TOWER	Center of three, KDIA	37 49	27.15	122 19	09.81	77B(P)3514	V-Vis. 11-78	18650
RADIO TOWER	West of three, KDIA	37 49	26.79 826	122 19	11.57 283	77B(P)3514 18 Mar. 1977	V-Vis. 11-78	18649
RADIO TOWER	(Treasure Island Red and White Radio Tower, 1978 (Field Position))	37 49	09.408 290.1	122 22	13.188 322.6	77B(P)3546 18 Mar. 1977	F-3-6-L 11-78	18650
CUPOLA	(Treasure Island Building One Cupola, 1978 (Field Position))	37 49	02.408 74.2	122 22	10.977 268.5	77B(P)3514 18 Mar. 1977	F-3-6-L 11-78	18650
RADAR TOWER	(USCG Vessel Traffic System Radar YBI, 1976 (Field Position))	37 48	34.964 1078.0	122 21	51.400 1257.3	77B(P)3514 18 Mar. 1977	F-3-6-L 76	18650
TANK	(Oakland Navy Supply Depot Checkered Tank, 1947)	37 48	28.021 863.9	122 19	11.606 283.9	77B(P)2599 04 Mar. 1977	Triang. Rec. 11-78	18650
TOWER	Octagonal wooden tower, 40 Ft.	37 48	14.37 443	122 20	22.69 555		P-5, 11-78 77B(P)3513	18650
TANK	Wooden Tank	37 48	01.40 43	122 19	39.53 967		P-5, 11-78 77B(P)3513	18650
MARKER	(Oakland Estuary West Rear Range, 1953)	37 47	56.296 1737.7	122 19	38.909 951.9		Triang. Rec. 11-78	18650
MARKER	Measured Nautical Mile Marker	37 47	48.55 1497	122 19	41.42 1013		F-4-8-L 11-78	18650

* Outside Survey limits

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
LANDMARKS FOR CHARTS

U.S. DEPARTMENT OF COMMERCE

Replaces C&GS Form 567.

TO BE CHARTED TO BE REVISED TO BE DELETED

REPORTING UNIT: Field Party, Ship or Official Photogrammetric Branch STATE: California LOCALITY: San Francisco and San Pablo Bays DATE: 09/29/80

P.M.C., Seattle, Wa.

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

OPR PROJECT NO. CM-7704 SURVEY NUMBER TP-00530

JOB NUMBER TP-00530

DATUM North American 1927

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)

CHARTING NAME	DESCRIPTION <small>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</small>	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION <small>(See instructions on reverse side)</small>		CHARTS AFFECTED
		D.M. Meters	° /	D.P. Meters	° /	OFFICE	FIELD	
* TANK		42.98	37 47	31.72	122 17	77B(P) 3512	F-V-Vis. March 30, 1979	18649 18650 18652
* GAS TANK	east one of three	49.50	37 47	52.03	122 16	77B(P) 3512	F-V-Vis. March 18, 1977	18649 18650 18652
* GAS TANK	center one of three	50.05	37 47	1273	122 16	77B(P) 3512	F-V-Vis. April 26, 1979	18649 18650 18652
* GAS TANK	west one of three	50.24	37 47	03.80	122 17	77B(P) 3512	F-V-Vis. April 26, 1979	18649 18650 18652
* TOWER (COURTHOUSE)	(Oakland - Alameda County Courthouse, Flagpole, 1947)	59.626	37 47	42.892	122 15	77B(P) 2559	F-V-Vis. March 30, 1979	18649 18650 18652
* SPIRE	(Oakland Tribune Building Flagpole, 1925)	11.610	37 48	11.166	122 16	77B(P) 2559	Triang. Rec. March 30, 1979	18649 18650 18652
* TOWER (CITY HALL)		19.34	37 48	17.25	122 16		F-V-Vis. March 19, 1979	18649 18650 18652
* TOWER	(Oakland, Shredded Wheat Building Tower, 1925)	34.681	37 48	17.462	122 17	77B(P) 2559	F-V-Vis. April 10, 1979	18649 18652
* TOWER		08.17	37 49	10.79	122 17	77B(P) 2559	F-V-Vis. March 23, 1979	18649 18652
* TOWER	(K.I.Q.I.) southwest tower	252	37 49	264	122 18	77B(P) 2559	F-V-Vis. March 30, 1979	18649 18650 18652
* TOWER		32.99	37 49	39.70	122 18			18649 18650 18652

NONFLOATING AIDS ~~FOR CHARTS~~ FOR CHARTS

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

ORIGINATING ACTIVITY

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

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)
 Photogrammetric Branch
 P.M.C., Seattle, Wa.

STATE
 California

LOCALITY
 San Francisco and San Pablo Bays

DATE
 09/30/80

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

CHARTING NAME	DESCRIPTION <i>(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)</i>	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION <i>(See instructions on reverse side)</i>	OFFICE	FIELD	CHARTS AFFECTED
		° /	''	° /	''				
* LIGHT	Oakland Inner Harbor Light 4	37	47	122	18	78B(P) 3512 March 18, 1977	78B(P) 3705 March 18, 1977	F-V-Vis. April 15, 1979	18619 18650 18652
* DAYBEACON	Brooklyn Basin South Channel Daybeacon 1	37	47	122	15	78B(P) 3705 March 18, 1977	78B(P) 3705 March 18, 1977	F-3-6-L April 15, 1979	18619 18650 18652
* DAYBEACON	Brooklyn Basin North Channel Daybeacon 2	37	47	122	15			F-3-6-L April 15, 1979	18619 18650 18652
* DAYBEACON	Brooklyn Basin North Channel Daybeacon 4	37	47	122	15			F-3-6-L April 15, 1979	18619 18650 18652
* DAYBEACON	Brooklyn Basin North Channel Daybeacon 6	37	47	122	15			F-3-6-L April 15, 1979	18619 18650 18652
* DAYBEACON	Brooklyn Basin North Channel Daybeacon 8	37	47	122	14			F-3-6-L April 13, 1979	18619 18650 18652
* DAYBEACON	Brooklyn Basin North Channel Daybeacon 10	37	47	122	14			F-3-6-L April 13, 1979	18619 18650 18652
LIGHT	(Emergyville Marina Light 3, 1979 (Field Position))	37	50	122	18			F-3-6-L April 15, 1979	18619 18650 18652
LIGHT	(Emergyville Marina Light 4, 1979 (Field Position))	37	50	122	18			F-3-6-L April 15, 1979	18619 18650 18652

* Outside Survey limits

NONFLOATING AIDS ~~FOR CHARTS~~ ~~FOR CHARTS~~ FOR CHARTS

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

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)

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)
 Photogrammetric Branch
 P.M.C., Seattle, Wa.

STATE
 California

LOCALITY
 San Francisco and San Pablo Bays

DATE
 09/30/80

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

OPR PROJECT NO. _____

JOB NUMBER
 CM-7704

SURVEY NUMBER
 TP-00530

DATUM
 North American 1927

CHARTING NAME

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

CHARTING NAME	DESCRIPTION	LATITUDE		LONGITUDE		METHOD AND DATE OF LOCATION <i>(See instructions on reverse side)</i>	FIELD	CHARTS AFFECTED
		° /	''	° /	''			
LIGHT	(Emeryville Marina Light 5, 1979 (Field Position))	37 50	37.136	22 18	30.030	77B(P) 3695 March 18, 1977	F-3-6-L April 15, 1979	18649 18650 18652
LIGHT	(Emeryville Marina Light 6, 1979 (Field Position))	37 50	35.771	22 18	32.608	77B(P) 3695 March 18, 1977	F-3-6-L April 15, 1979	18649 18650 18652
LIGHT	(Emeryville Marina Light 7, 1979 (Field Position))	37 50	31.199	22 18	33.305	77B(P) 3695 March 18, 1977	F-3-6-L April 15, 1979	18649 18650 18652
LIGHT	(Emeryville Marina Light 8, 1979 (Field Position))	37 50	961.9 31.828 981.3	22 18	814.3 34.239 837.2	77B(P) 3695 March 18, 1977	F-3-6-L April 15, 1979	18650 18652

DA-10-1-79Table 1 JD 072 - 097

<u>Corrector</u>	<u>To Depth</u>
0.0 ft.	08.6 ft.
0.2	23.7
0.4	37.6
0.6	52.6
0.8	66.2
1.0	80.5

Table 2 JD 098 - 120

<u>Corrector</u>	<u>To Depth</u>
0.0 ft.	05.4 ft.
0.2	14.9
0.4	23.8
0.6	32.7
0.8	41.9
1.0	51.2
1.2	60.2
1.4	69.7
1.6	79.4

FIELD TIDE NOTE
OPER-L123-JA-79

SAN FRANCISCO BAY, CALIFORNIA

INTRODUCTION

The operating primary tide gages at the Presidio, San Francisco (941-4290) and Alameda (941-4750) provided tide control for the survey area. Predicted tides used for hydrography were based on predicted tides for San Francisco and were interpolated by a PDP-8/e computer using Program AM-500, PREDICTED TIDES GENERATOR (VER 11/10/72)

Of the four subordinate stations required by Project Instructions dated 15 January 1979 to control the survey area, only the Corte Madera Creek Station (941-4874) was occupied and monitored by DAVIDSON personnel. Point Orient (941-4881) and Richmond Inner Harbor (941-4849) were installed and maintained by the California Tide Party. Pier 22½ (941-4317) was installed by the NOAA Ship McARTHUR S-330. Close communication was maintained with both the California Tides Party and McARTHUR personnel to assure continuous operation of gages at Pier 22½, Richmond Inner Harbor, Pt. Orient, and the two primary gages. Predicted tide and actual tides recorded by the Corte Madera Creek gage are referenced to Greenwich Mean Time to correspond with hydrography.

CORTE MADERA CREEK (941-4874)

A Fischer-Porter ADR Gage (S/N 7304 A 1380 M18) was installed at a historic site in Corte Madera Creek and operated for the duration of tide dependent work in that area. The gage was installed at 1730Z on 05 April 1979 and operated continuously, with one exception, until it was removed at 1624Z on 27 April. The gage was found 3 minutes slow on 10 April, 5 minutes slow on 20 April, and 3 minutes slow on 25 April. The gage was not reset on any of these occasions. Malfunctions of the gage occurred on 16 April, when it was found to have stopped 10 minutes before the arrival of the observer, and on 23 April, when it was found to have jumped 24 minutes ahead. Time was corrected and the gage properly restarted on both of these occasions. Data loss totaled less than 1 hour.

On the basis of seven gage/staff comparisons, the staff was found to read 0.12 ft. higher than the gage.

LEVELS AT CORTE MADERA CREEK

Levels from the staff to four of the five historic bench marks recovered were run upon installation and removal of the gage at Corte Madera Creek. Elevation differences were insignificant, as shown by the abstract below.

Differences in Elevation (M)

	<u>5 April</u>	<u>27 April</u>
(a) —————> 4874A	0.906	0.908
4874A —————> 4874C	0.832	0.832
4874C —————> 4874D	0.072	0.074
4874D —————> HUB, 1961	-0.950	-0.952

RECOMMENDED ZONING

Based on available data and project instruction requirements, it is recommended that Corte Madera Creek tides information be used to control hydrography in Corte Madera Creek and its dredged entrance channel.

COMMENTS

In addition to the four gages required by Project Instructions for the survey area, two other gages, installed and operated by the California Tide Party, were located within or significantly near to the project area. One was located at the Coast Guard Pier on the southeast side of Angel Island. The other was installed on a small private pier south of the Berkeley Yacht Harbor. Further information on these gages can be obtained through CTP.

Submitted by:

Ellen McDougal

Ellen McDougal
LT(jg), NOAA
NOAA Ship DAVIDSON

Approved and Forwarded by:

C. William Hayes

C. William Hayes
CDR, NOAA
Commanding Officer
NOAA Ship DAVIDSON

September 17, 1979 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): 941-4849 Richmond Inner Harbor, CA
941-4816 Berkeley, CA

Period: March 13 - April 28, 1979

HYDROGRAPHIC SHEET: H-9810

OPR: L123

Locality: San Francisco Bay, California

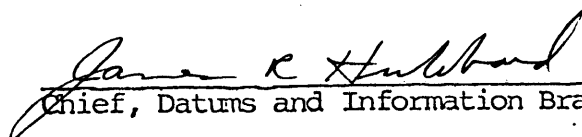
Plane of reference (mean lower low water): 2.28 ft. - Richmond Inner Harbor
4.58 ft. - Berkeley

Height of Mean High Water above Plane of Reference is

5.2 ft. - Richmond Inner Harbor; 5.5 ft. - Berkeley

REMARKS: Recommended zoning:

- (1). North of 37°53' zone direct on Richmond Inner Harbor.
- (2). South of 37°53' zone direct on Berkeley Yacht Harbor.


Chief, Datums and Information Branch

GEOGRAPHIC NAMES

H-9810

Name on Survey

A CHART NO. 18649 & 18650
 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
 I MANUSCRIPT

ALBANY	/	18649								TP-00527	1
ALBANY HILL		18649									2
BERKELEY	/	18649								TP-00527	3
BERKELEY PIER	/	18649								TP-00527	4
BERKELEY YACHT HARBOR	/	18649								TP-00527	5
BROOKS ISLAND	/	18649								TP-00527	6
EL CERRITO		18649									7
EMERYVILLE	/	18650								TP-00530	8
FLEMING POINT	/	18649								TP-00530 ²⁷	9
RICHMOND INNER HARBOR	/									TP-00527	10
OAKLAND	/	18650								TP-00530	11
OUTER HARBOR		18649								TP-00529	12
ENTRANCE CHANNEL		18650								TP-00529	13
OAKLAND OUTER HARBOR	/	18650								TP-00529	14
POINT ISABEL	/	18649								TP-00527	15
RICHMOND MARINE ^A BAY	/									TP-00527	16
SAN FRANCISCO BAY		18649								TP-00529	17
SAN FRANCISCO-OAKLAND BAY BRIDGE	/	18650								TP-00529	18
SEVENTH STREET MARINE TERMINAL	/									TP-00529	19
STEGE		18649									20
BERKELEY REEF	/	18649									21
EMERYVILLE MARINA	/										22
RICHMOND	/										23
CALIFORNIA (title)											24
											25

Approved:

Charles E. Harrington
 Chief Geographer - NCG2x5

9 DEC. 1983

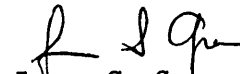
APPROVAL SHEET

FOR

SURVEY H-9810

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: April 6, 1982


James S. Green

Chief, Verification Branch

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS & PRELIMINARY OVERLAYS			
DESCRIPTIVE REPORT		1	SMOOTH OVERLAYS: POS. ARC, EXCESS			
DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS						
VOLUMES						
BOXES						

T-SHEET PRINTS (List)

SPECIAL REPORTS (List) Horizontal Control Report; Correction to Echo Sounders;

Electronic Control Report OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	VERIFICATION	TOTALS
POSITIONS ON SHEET			
POSITIONS CHECKED		2620	
POSITIONS REVISED		77	
SOUNDINGS REVISED		65	
SOUNDINGS ERRONEOUSLY SPACED		0	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	7		
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS		160	
VERIFICATION OF SOUNDINGS		300	
COMPILATION OF SMOOTH SHEET		170	
APPLICATION OF TOPOGRAPHY		24	
APPLICATION OF PHOTOBATHYMETRY			
JUNCTIONS		30	
COMPARISON WITH PRIOR SURVEYS & CHARTS		45	
VERIFIER'S REPORT		58	
OTHER			
TOTALS	7	776	783
Pre-Verification by James S. Green	Beginning Date 7/16/79	Ending Date 7/16/79	
Verification by R. A. Shipley	Beginning Date 7/5/79	Ending Date 3/17/82	
Verification Check by James S. Green, James L. Stringham	Time (Hours) 95	Date 4/6/82	
Marine Center Inspection by HIT	Time (Hours) 19	Date 5/12/82	
Quality Control Inspection by S. Baumgardner	Time (Hours) 212	Date 7/15/83	
Requirements Evaluation by	Time (Hours)	Date	

D. Myers 27 hrs 9/27/83

REGISTRY NO. 9810

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9810

FIELD NO. DA-10-1-79

California, San Francisco Bay, Oakland to Richmond

SURVEYED: March 15 to April 12, 1979

SCALE: 1:10,000

PROJECT NO: OPR-L123-DA-79

SOUNDINGS: Ross Fineline
Fathometer

CONTROL:
Range/Range-Raydist
Range/Range-Mini Ranger
Range/Azimuth-Mini Ranger

Chief of Party.....CDR C. W. Hayes

Surveyed by.....CDR. C. W. Hayes, LCDR A. N.
Bodner, LT C. Lawrence,
LTJG L. Haas, LTJG E.
McDougal, ENS T. Peasley
and ship's personnel

Automated plot by.....PMC Xynetics Plotter

Verified by.....R. A. Shipley

1. INTRODUCTION

H-9810 is a basic hydrographic survey conducted in accordance with Project Instructions for OPR-L123-DA-79, San Francisco Bay, California dated Jan. 15, 1979, Change 2 dated Feb. 8, 1979 and Change 3 dated Feb. 12, 1979. Also, Change #1, dated Feb. 1, 1979

During verification, the field geographic positions of the stations used for control were checked against the positions as published. Any discrepancies were revised to reflect the published positions.

Settlement and squat TRA correctors were applied for plotting.

Soundings plotting on piers, bulkheads and shoreline ^{*} areas were manually offset and leroyed on the smooth sheet for better clarity. There were forty soundings that were offset throughout the sheet.

Projection parameters used to prepare the smooth field sheet have been revised to center the hydrography on the smooth sheet. Parameters used by the Pacific Marine Center are appended to the smooth printout.

* By displacing soundings along shoreline, depth curves may be affected which could result in misrepresentation of hydrographic data. Shoreline should be broken for soundings

The master station list, as submitted in the Descriptive Report, was revised to reflect only those stations applicable to this survey.

Predicted tides from the Richmond Inner Harbor tide station, a California tide party gage, were used to reduce soundings on the field sheet. Approved tides from Richmond Inner Harbor and Berkeley tide stations were used for the final reduction of depths on the smooth sheet.

2. CONTROL AND SHORELINE

A variety of control systems were used during field work of H-9810. For the most part, the Raydist system was utilized. Mini-Ranger range-range was used for wiredrag operations and Mini-Ranger range-azimuth was used when use of the Raydist system was not possible. Two dead reckoning lines were run to fill in a holiday in Oakland Outer Harbor.

Horizontal control is adequately described in Section F of the Descriptive Report.

The shoreline was applied using the following reviewed Class I manuscripts:

<u>Dates of</u> <u>Photography</u>	<u>Scale</u>	<u>Date of</u> <u>Field Edit</u>	<u>Date of</u> <u>Review</u>	<u>Revision</u> <u>Date</u>
TP-00527 March 1977	1:20,000	April 1979	Nov. 1981	Dec81
TP-00529 March 1977	1:10,000	Nov. 1978	Dec. 1981	Jan82
TP-00530 March 1977	1:10,000	Mar. 1979	Jan. 1982	unavailable

TP-00527 was enlarged to the scale of the survey.

The manuscript position of a pipe at latitude 37°50'43"N, longitude 122°19'18"W on TP-00529 was superseded by the detached hydrographic position #2342 at latitude 37°50'51"N, longitude 122°19'22"W. The hydrographic position agrees with the present charted position.

TP-00529 (Jan. 1982 rev) shows correct location of pipe.

3. HYDROGRAPHY

Crosslines within this survey are in very good agreement with the main scheme soundings.

The bottom configuration and least depths are adequately delineated. Do not concur Standard depth curves could be adequately drawn and the 36 foot supplementary curve was added to the smooth sheet to conform to the published chart. See QC.

There were 24 bottom samples taken during this survey, consisting mainly of mud.

4. CONDITION OF SURVEY

The smooth sheet, accompanying overlays, hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual with the exception of:

a. A 0 foot shoal plotted at latitude $37^{\circ}53'15''N$, longitude $122^{\circ}18'55''W$ was not developed or discussed in the Descriptive Report. Further discussion can be found in Section 6 of the Verifier's Report.

b. The comparison with prior surveys, Section K of the ship's report, was inadequate and caused additional hours of processing the survey data at CPM32. Prior survey H-7623, 1947, was not shown in the ship's list of prior surveys under Section K. *Do not concur*
Hydrographer's comparison based on uncorrected depths from predicted tides. Verifier's comparison is based on depths computed from real tide correctors.

5. JUNCTIONS

H-9794, 1978 not available during Q.C.
 H-9811, 1979
 H-9844, 1979-80-81 not available during Q.C.

H-9810 junctions to the northwest with H-9811, a contemporary survey, on the west with H-9794 (1978, Rainier) and to the south with H-9844 (1979-80-81, Pacific Field Party). Very good agreement was accomplished with H-9811. A very good junction was made with H-9794 for the most part, with the exception of a 33 foot sounding at latitude $37^{\circ}48'35''N$, longitude $122^{\circ}20'58''W$ which was transferred in red ink to accomplish the junction of depth curves.

Junctions with these surveys have been made in processing and curves in the junction areas and junction notes have been inked accordingly.

H-9844, 1979-80-81, field sheet is in a preliminary phase of verification and a junction was not possible at the time of verification of H-9810. Depth curves and junction note were made in pencil.

6. COMPARISON WITH PRIOR SURVEYS

H-7619	1947 and Add. Wk (1950)	1:10,000	
H-7705	1948	1:10,000	
H-7622	1947	1:5,000	See Q.C. Rpt
H-7623	1947	1:5,000	

H-7619 (1947) and Wk (1950)

There's an area of change in the vicinity of latitude $37^{\circ}50'45''N$, longitude $122^{\circ}19'00''W$ due to an unknown cause, but it is likely the result of dredging operations. A difference of 1-6 feet was observed. There are also considerable shoreline differences due to fill and dredging. One extreme example is the construction of the Emeryville Marina at latitude $37^{\circ}50'20''N$, longitude $122^{\circ}18'30''W$, which was constructed since H-7619.

Items that are common between chart 18650, 35th Edition, May 12, 197⁹~~A~~ and H-7619 and not found on this survey were lifted from the prior and applied to the current survey in violet:

piles @ latitude 37°51'19"N, longitude 122°18'03"W (Deleted-located by present survey)
 stake @ latitude 37°50'48"N, longitude 122°18'07"W ✓
 piles @ latitude 37°50'09"N, longitude 122°18'13"W
 pile @ latitude 37°50'07"N, longitude 122°18'14"W Additional items
 pile @ latitude 37°50'04"N, longitude 122°18'19"W have been carried forward
 pile @ latitude 37°49'27"N, longitude 122°19'18"W
 log @ latitude 37°49'23"N, longitude 122°19'21"W
 which have neither been filled nor dredged

In areas ~~of no development and shoreline revision~~, the sounding comparison was very good and generally within a foot.

With the addition of the features carried forward H-9810 is ~~thus~~ adequate to supersede H-7619 in areas of common coverage.

H-7705

Two 0 foot soundings were transferred from H-7705 in the vicinity of latitude 37°53'12"N, longitude 122°18'56"W. There was no hydrography run to disprove the existence of the items. It is recommended that the shoal symbol be retained on the chart. The soundings were transferred in red ink.

In general, the comparison was within 1 or 2 feet in most areas where there has not been shoreline revisions or dredging operations.

Point Fleming, latitude 37°53'25"N, longitude 122°19'30"W is an area that has been filled ~~or was subject to accretion~~, as was Berkeley Yacht Harbor ~~Marina~~ in the area of latitude 37°52'25"N, longitude 122°19'00"W and Point Isabel in the vicinity of latitude 37°54'00"N, longitude 122°19'25"W.

See Section L of the D.R. for disposition of PSR 9.

With this in mind, H-9810 is adequate to supersede H-7705 within the common area.

H-7622

PSR item #15. shoal soundings charted in the vicinity of latitude 37°49'02"N, longitude 122°20'30"W, originated with prior survey H-7622, 1947 and are thought to be remains of the Oakland Ferry slip. The ship's report referred to the PSR item as ruins. In the pre-survey review, the item is referred to as shoal soundings, which may indicate the remains of the Oakland Ferry slip.

A wire drag was conducted and debris was found in the area of the shoal sounding referred to in PSR item #15. However, the wire drag field plot was not found in the raw data for verification of area coverage and drag size. Development hydrography should have been conducted in the area, which would have improved the data base for a verification decision. In view of this, the shoal soundings were carried forward from H-7622, supporting a conservative point of view. There were three soundings that were carried forward from H-7622:

wire drag data
is required for disproval

4' @ latitude 37°49'03"N, longitude 122°20'23"W

4' @ latitude 37°49'02"N, longitude 122°20'27"W

6' @ latitude 37°49'01"N, longitude 122°20'32"W

Six additional sdgs were carried forward by evaluator

Soundings and descriptive note were transferred in orange ink.

There were areas of very close agreement, but in areas of dredging or shoreline revision, there were some obvious discrepancies. H-9810 is now complete and adequate to supersede H-7622, within the common area.

H-7623

A comparison was made with H-7623 and there were some shoreline changes. More specifically, there are some docks and piers in the Richmond Marina Bay Inner Harbor Basin that are on the prior but have since been removed from the chart and two piles were carried forward and transferred to the smooth sheet in violet ink at latitude 37°54'29"N, longitude 122°21'28"W and latitude 37°54'23"N, longitude 122°21'25"W. Revised to subm piles - see CL-967/1976, item 4A

Richmond Marina Bay

Within the Inner Harbor Basin and the entrance to it, there is considerable differences in sounding depths. The prior tends to be 1 to 15 feet deeper than the current survey. For the rest of the survey, the contemporary survey tends to be 1 to 2 feet deeper than the prior. There is no explanation for this discrepancy.

Because the discrepancy is consistent, H-9810 is adequate to supersede H-7623, within the common area.

7. COMPARISON WITH CHART

A. A comparison was made with chart #18649 (45th Edition, Feb. 4, 1978), a 1:40,000 scale chart, and #18650 (35th Edition, May 12, 1979), a 1:20,000 scale chart.

a.

In areas of common coverage, chart 18650 was compared to and chart 18649 was used for the rest of the comparison.

z. The verifier recommends carrying forward, unless noted otherwise, the following items that appeared on charts 18650 but have origins other than the prior surveys, manuscripts, or the contemporary survey; and were neither verified nor disproved by the hydrographer. The pilings, listed below, should be revised to a wash at MLLW, based on the stage of tide and the path of the vessel while sounding nearby or over the feature.

(1) pile @ latitude 37°49'57"N, longitude 122°18'02"W from Bp94997-98.

(2) piles @ latitude 37°49'52"N, longitude 122°18'39"W from Bp94997-98.

(3) pile @ latitude 37°49'48"N, longitude 122°18'35"W from Bp94997-98. is charted on 18649 but not on 18650. Disposition is deferred to the compiler. Dock blind now charted this position.

(4) obstruction @ latitude 37°49'37"N, longitude 122°19'06"W from Bp94997-98.

(5) stake PA @ latitude 37°50'25"N, longitude 122°19'09"W from Bp95432. and lat. 37°50'34"N, long. 122°18'33"W from B.P. 94998, CL-716 (1976)

(6) snag @ latitude 37°49'28"N, longitude 122°19'35"W from Bp94997-98.

(7) pile @ latitude 37°50'02"N, longitude 122°18'26"W from Bp94997-98.

(8) pile symbol @ latitude 37°49'56"N, longitude 122°18'33"W - a pile symbol on the chart but was identified as a duck blind on the T-sheet and thus plotted that way on the smooth sheet.

(9) pile symbol @ latitude 37°49'51"N, longitude 122°18'14"W from Bp94997-98 - same explanation as (8) above.

(10) pile symbol @ latitude 37°49'46"N, longitude 122°18'17"W - same as (8) above.

The following items were found on chart #18649 and #18650. These items are derived from sources unknown to the verifier and they can neither be confirmed or positively disproven. It will be necessary for the compiler to evaluate the source of these charted items.

Chart #18649:

- (1) pile @ latitude 37°51'58"N, longitude 122°19'06"
 (2) ✓ ruins @ latitude 37°~~54'48"~~^{53'54"}N, longitude 122°~~20'10"~~^{19'27"}W
 Pier

Retain on chart as visible at MHW.

Chart #18650:

- (1) pile @ latitude 37°50'23"N, longitude 122°18'04"W
 (2) pile @ latitude 37°50'13"N, longitude 122°18'41"W
 (3) pile @ latitude 37°49'36"N, longitude 122°19'10"W
~~(4) snag @ latitude 37°49'28"N, longitude 122°19'36"W~~
 (5) stake @ latitude 37°49'22"N, longitude 122°19'36"W
 (6) pile @ latitude 37°50'06"N, longitude 122°18'04"W

The three radio towers located at approximate latitude 37°49.58'N and longitude 122°18.6'W on charts 18649 and 18650 are located on the Class I manuscript TP-00530 in a southwest direction from the charted information. Recommend the charted source be reviewed for validity.

Towers from CL-609(1960) - revise to agree with present survey.
 The present survey is adequate to supersede the charted hydrography within the common area.

B. Controlling Depths

Outer Harbor Entrance channel - hydrography shows it is within the limits of the controlling depths.

Oakland Outer Harbor - current hydrography shows it is well within the limits of controlling depths.

c. Aids to Navigation

Two special purpose buoys, W Or Sp "B", located at latitude 37°52'51.36"N. longitude 122°20'30.15"W position #3222 and W Or Sp "C" located at latitude 37°52'05.50"N. longitude 122°20'12.34"W position #3223, are plotted on the smooth sheet 300-400 meters from the charted positions. No source data for the buoys was available. The buoys could have been moved since they are reported to be racing buoys.

All other fixed and floating aids to navigation adequately mark the features intended and compare with the charted positions. ^{Do not concur} Positions of charted and new charted aids to navigation are shown on the 76-40's attached to this report. [↙] Oakland Outer Harbor lighted buoy "1B" and black can buoy no. 7 do not adequately mark the Federal Project Channel intended. The buoys are located about 50 and 60 meters, respectively, north of their charted positions.

8. COMPLIANCE WITH INSTRUCTIONS

With the exception of items listed in Sections 4, 6 and 7 this survey adequately complies with Project Instructions OPR-L123-DA-79 dated Jan. 15 1979. Change 2 dated Feb. 8, 1979 and Change 3 dated Feb. 12, 1979 and Change 1 dated Feb. 1, 1979

9. ADDITIONAL FIELD WORK

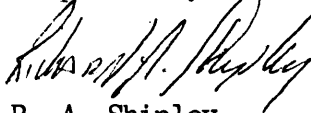
Additional field work is recommended to validate the three soundings transferred from H-7622. (1947) at approximate latitude 37°49'02"N. longitude 122°20'30"W See the verifier's report ^{Sec.} item 6, prior survey H-7622, PSR item 15 for further information.

Other than the resolution of PSR item 15. the present survey H-9810 is an adequate basic survey with no additional field work required. ^{Sec Q.C. Rpt.}

10. NOTES TO COMPILER

The light at latitude 37°52'27.4"N, longitude 122°19'56.6"W. charted on charts #18650 and #18649 as Berkeley Reef is actually Berkeley Reef Light "1" in the light list. ^{Disregard.}

Respectfully submitted



R A Shipley
Cartographic Technician
April 6 1982

Examined and Approved





James S. Green
Chief Verification Branch
April 6 1982



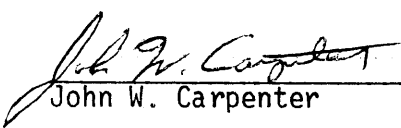
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

May 14, 1982

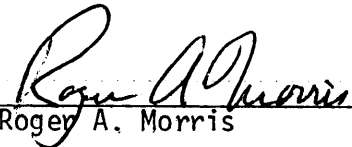
TO: CPM - Charles K. Townsend 
FROM: CPM3 - John W. Carpenter 
SUBJECT: PMC Hydrographic Inspection Team Report for Survey H-9810

This survey is a basic hydrographic survey of Oakland to Richmond, San Francisco Bay, California. This survey was conducted by NOAA Ship DAVIDSON in 1979 in accordance with Project Instructions OPR-L123-DA-79 dated January 15, 1979; Change No. 2 dated February 8, 1979; and Change No. 3 dated February 12, 1979; Change No. 1 dated February 1, 1979.

The inspection team finds H-9810 to be a basic survey adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.



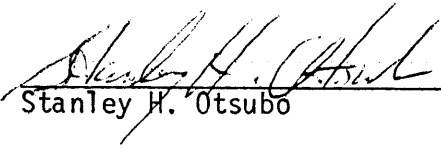
John W. Carpenter



Roger A. Morris



James W. Steensland



Stanley H. Otsubo

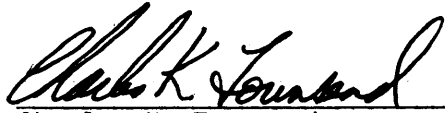


10TH ANNIVERSARY 1970-1980
National Oceanic and Atmospheric Administration
A young agency with a historic
tradition of service to the Nation

ADMINISTRATIVE APPROVAL
H-9810

Oakland to Richmond, San Francisco Bay, California

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.



Charles K. Townsend
Director
Pacific Marine Center



Date



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

N/CG242:SRB

October 29, 1984

TO: Roy K. Matsushige *RCM*
Chief, Hydrographic Surveys Branch

THRU: Chief, Standards Section *RM*

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

SUBJECT: Quality Control Report for Survey H-9810 (1979), California, San Francisco Bay, Oakland to Richmond

A quality control inspection of survey H-9810 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions made and actions taken by the verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a one-half scale copy of the survey to be furnished the verifier. In general, the survey was found to conform to National Ocean Service standards and requirements except as stated in the Verifier's Report and as follows:

1. Page 6 of the Verifier's Report was not forwarded until requested in November 1983.
2. Descriptive Report comments concerning an adequate investigation of shoal soundings (Presurvey Review item 15) in the vicinity of latitude 37°49'02"N, longitude 122°20'30"W are negated by the absence of field record data. Additional work is required in this area in order to verify or disprove the existence of the shoal soundings. (See Section D of the Descriptive Report, Wire-Sweep and Wire-Drag Operations.)
3. The entrance to Berkeley Yacht Harbor was not adequately developed to determine the least depth in the area. Additional field work at the entrance is required.
4. Ruins located at latitude 37°54'48"N, longitude 122°21'09"W were shown by the quality evaluator. These features are noted to exist from a statement "dol at south end of pier ruins" on an echogram. No positional data is provided as to where the pier ruins intersect the shoreline.



5. Section 6 of the Verifier's Report is supplemented by the following:

H-6421 (1938) 1:5,000
T-5925 (1941-45) 1:10,000

The prior topographic and hydrographic surveys cover the area of Berkeley Yacht Harbor on the present survey. The bottom and shoreline have been changed by harbor improvements since 1938. Large areas alongshore have been filled on the north, south, and east sides of the harbor. Similar differences in depths exist in the basin. The three dolphins charted near latitude 37°51.95'N, longitude 122°18.90'W originate with T-5925. The features do not appear on later topographic surveys and, because of the changes in the harbor noted above, are considered to no longer exist. The dolphins should be deleted from the chart.

The present survey is adequate to supersede these prior surveys in the common area.

6. In addition to the verifier's remarks concerning charted items that originate with miscellaneous sources, the following list supplements section 7A of the Verifier's Report. The disposition of some items is recommended while others are deferred to the compiler for disposition.

<u>Charted Item</u>	<u>Position</u> <u>Latitude (N), Longitude (W)</u>		<u>Disposition/</u> <u>Source</u>
Three unidentifiable markings	37°54'50"	122°20'48"	Delete [?]
Dolphin	37°54'28"	122°21'11"	Delete [?]
Pipeline	37°54'20"	122°19'52"	
Pile	37°50'26"	122°17'58"	
Pile	37°50'28"	122°18'29"	CL-716 (1976) BP-94998
Pile	37°50'09"	122°18'20"	
Pile	37°49'42"	122°19'04"	CL-716 (1976)
Islets (three)	37°49'02"	122°19'08"	Delete
Sewer	37°49'10"	122°20'00"	
Fill (area of)	37°50'05"	122°18'10"	Delete CL-1337 (1964)
Being Filled (note)	37°49'13"	122°19'25"	No evidence of fill. Charted about 1944.

7. Section 7B of the Verifier's Report is supplemented by the following:

In the charted controlling depth areas in the Outer Harbor Entrance Channel and the Oakland Outer Harbor, present depths are as much as 1 foot and 4 feet shoaler, respectively, than prior U.S. Corps of Engineers surveys of 1978.

cc:
N/CG241



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

JAN 2 1985

N/CG241:RWD

TO: N/MOP - Robert L. Sandquist
FROM: N/CG2 - C. William Hayes
SUBJECT: Report of Compliance for Survey H-9810

The smooth sheet and Descriptive Report for survey H-9810 (1979), California, San Francisco Bay, Oakland to Richmond, have been reviewed. Please extend my appreciation to the NOAA Ship DAVIDSON and your processing unit at the Pacific Marine Center for their efforts in completing this survey. This survey, except as noted in the Quality Control Report, dated October 28, 1984 (copy attached), and the Hydrographic Survey Inspection Team Report, dated May 14, 1982, is complete and adequate for the purposes intended and is in compliance with Project Instructions OPR-L123-DA-79, dated January 15, 1979.

Attachment

cc:
N/CG242 w/o att.



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

Hydrographic Index No. 96M

