9844

Diagram No. 5532-1

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. PHP-10-2-79

Office No. H-9844

LOCALITY

State California

General Locality San Francisco Bay

Locality Yerba Buena Island to Hunters Point

19 81

CHIEF OF PARTY
LCDR D. Taylor

LIBRARY & ARCHIVES

DATE July 12, 1985

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

Area C

CHTS
18650
18649
18653 A
18653 B

to sign off see Record of Application

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-9844

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.

PHP 10-2-79

State California

General locality San Francisco Bay

Locality Yerba Buena Island to Hunters Point

Scale 1:10,000 Date of survey August 20, 1979-April 9, 1981

Instructions dated February 22, 1979 Project No. OPR-L123-PHP-79

Vessel NOAA Launches 0654, 0656 and 1214

Chief of party Lt Cdr D. Taylor

Surveyed by F.L. Rosario, D.D. Smith, B.H. Lund

Soundings taken by echo sounder, hand lead, pole

Graphic record scaled by Pacific Hydrographic Party Personnel

Graphic record checked by Pacific Hydrographic Party Personnel

Evaluated by G.E. Kay Automated plot by PMC Xynetics Plotter

Verification by L.T. Deodato

Soundings in fathoms **feet** at MLW **MLLW**

REMARKS: Notations in black were made during Evaluation of H-9844 at the Pacific Marine Center, Seattle, Washington. Separates are filed in the back of the accordian folder.

Pubois and Surf - RMD 11/85

Addendum inserted 5/3/89 RMD

XWW 9/23/92

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174

PROGRESS SKETCH

OPR - L123

SAN FRANCISCO BAY, CALIF.

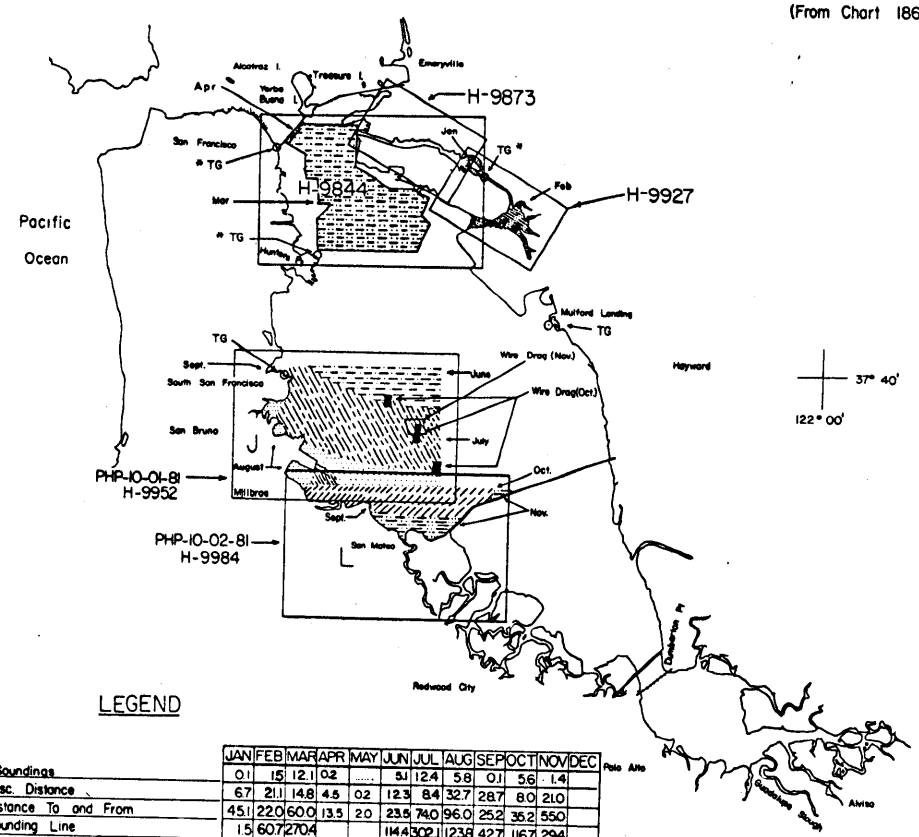
1981

PACIFIC HYDROGRAPHIC PARTY

Dirk R. Taylor, LCDR, NOAA

Chief of Party

(From Chart 18680)



LEGEND

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SQ. N.M. Soundings	0.1	1.5	12.1	0.2	.....	5.1	12.4	5.8	0.1	5.6	1.4	
L.N.M. - Misc. Distance	6.7	21.1	14.8	4.5	0.2	12.3	8.4	32.7	28.7	8.0	21.0	
L.N.M. - Distance To and From	45.1	22.0	60.0	13.5	2.0	23.5	74.0	96.0	25.2	35.2	55.0	
L.N.M. - Sounding Line	1.5	60.7	27.0	4		114.4	30.2.1	123.8	42.7	116.7	29.4	
Bottom Samples (Grab)	31	52						50	14			
Water Samples Analyzed (Salinity)												
Control Stations			1		2			1				
Temperature, Depth, Conductivity				2								
Nansen Cast												
Tide Gage		2			3*							
L.N.M. - Field Edit												
L.N.M. - Sounding Line (skiff)				8.4	0.1							
SQ. N.M. - Wire Drag										0.42	0.6	
L. N.M. - Wire Drag										25.8	24.2	

* Tide Gages Removed

BAY AREA SURVEY EXPEDITION

PROGRESS SKETCH

OPR-L123

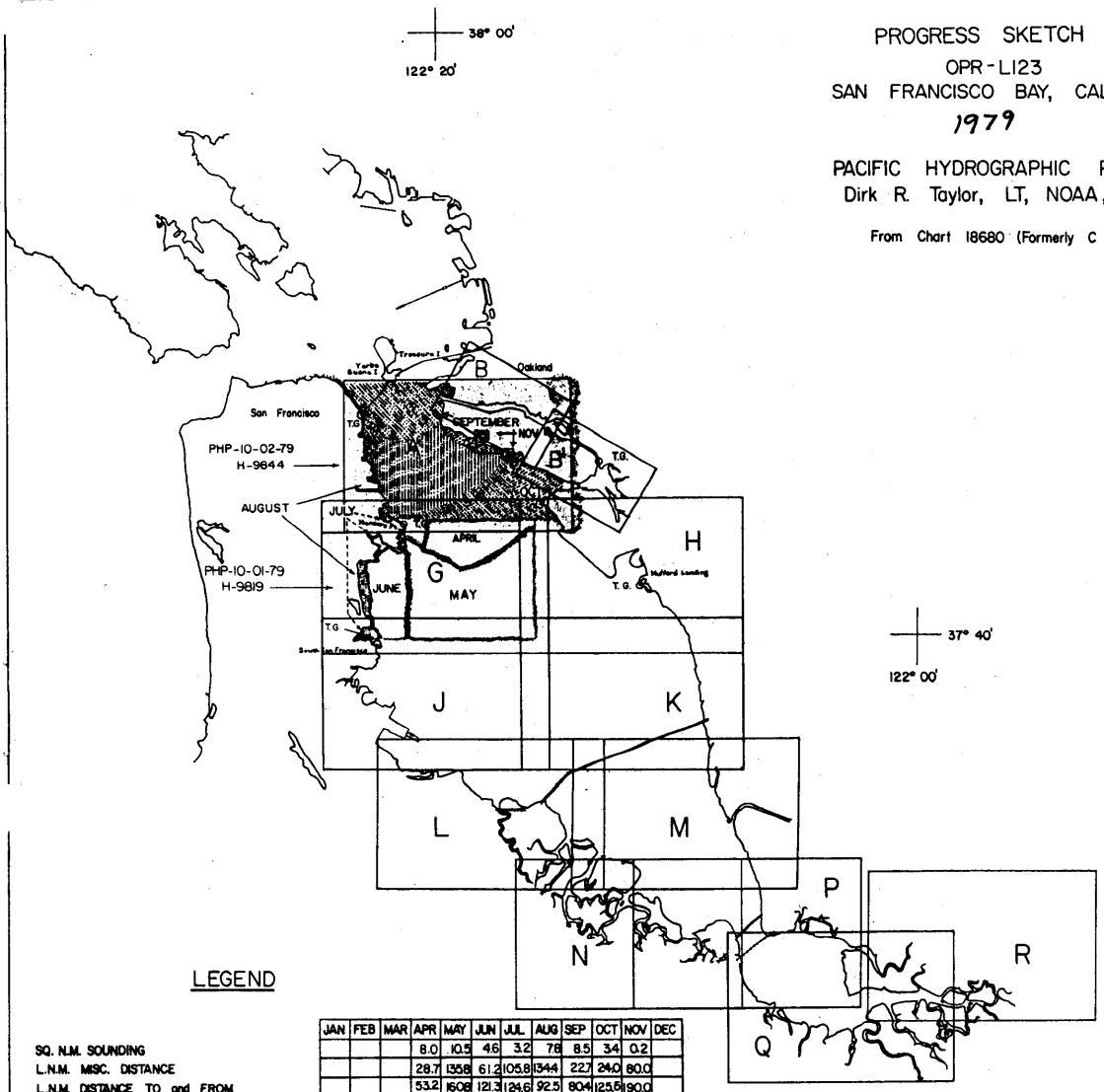
SAN FRANCISCO BAY, CALIF.

1979

PACIFIC HYDROGRAPHIC PARTY

Dirk R. Taylor, LT, NOAA, Chief of Party

From Chart 18680 (Formerly C & GS 5402)



LEGEND

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SQ. N.M. SOUNDING				8.0	10.5	4.6	3.2	7.8	8.5	3.4	0.2	
L.N.M. MISC. DISTANCE				28.7	135.8	61.2	105.8	134.4	22.7	24.0	80.0	
L.N.M. DISTANCE TO and FROM				53.2	160.8	121.3	124.6	92.5	80.4	125.5	190.0	
L.N.M. SOUNDING LINE Launch 1214 / 1016				96.3	244.1	83.7	58.9	202.9	209.8	81.9	232.7	
BOTTOM SAMPLES (GRAB)						17	10	31		8	49	
WATER SAMPLES ANALYZED (SALINITY)												
CONTROL STATIONS				2	1		3	3				3
TEMPERATURE, DEPTH, CONDUCTIVITY										1		
NANSEN CAST												
TIDE GAGE			1	2				1			1	
L.N.M. - FIELD EDIT					13.7	5.6	0.5	3.5				
L.N.M. SOUNDING LINE (Skiff)							5.9	20.2				

BAY AREA SURVEY EXPEDITION

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SURVEY

H-9844

PHP-10-2-79/81

SCALE 1:10,000

1979-1981

PACIFIC HYDROGRAPHIC PARTY

Lt. Cdr. Dirk R. Taylor

Chief of Party

A. PROJECT

Survey H-9844, PHP-10-2-79/81 was accomplished as per project instrutions for OPR-L123-PHP-79, San Francisco Bay, Bay Area Survey Expedition (BASE) dated February 22, 1979 and amended by Change #1 dated November 27, 1979, Change #2 dated May 15, 1980, Change #3 dated November 13, 1980, and Change #4 dated January 14, 1981.

B. AREA SURVEYED

Survey H-9844 was conducted from latitude 37° 44' 05" N northward to latitude 37° 48' 08"N and covered the entire width of San Francisco Bay. The survey area is bordered on the west by the city of San Francisco, and on the east by Alameda and Oakland. Operations were conducted between August 20, 1979 and April ~~20~~ 9, 1981.

C. SOUNDING VESSELS

Two vessels were used to collect hydrographic data on this survey and a third vessel was utilized as the end vessel during wire drag operations.

NOAA Launch 1016 (vesno 0656) was the primary vessel. It was an aluminum, Type 1 launch fitted with an ASI Hydrographic Logger.

NOAA 594 (vesno 0654) was used occassionally. This was a 17 foot Boston Whaler.

NOAA Launch 1214 was used as the end vessel during wire drag operations and as a general utility boat. This launch was a modified fiberglass 33 foot personnel boat.

Vessel number 0650 also appears in the survey records. This denotes data collected by the field party without the use of a boat, i.e. leadline soundings along pier faces.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Soundings for this survey were collected with either a Ross Fineline Fathometer system, a Raytheon 719B portable fathometer, or by hand lead and sounding pole.

The Ross system was used in Launch 1016 (vesno 0656). Two types of Ross fathometer systems were used. Prior to December 7, 1979 and after September 28, 1980, the newer solid state equipment was used. This consisted of a model 5500 recorder, 6500 digitizer, and a model 4500 transceiver. Two different solid state systems were used. The major difference between the two was the analog recorder. Serial number 3787 was keyed magnetically, the other by photocell. A modification to the transceiver by OA/CPM6 allowed phase adjustments on the analog recorder to be accomplished by changing the speed of the stylus belt drive motor. This was done by increasing or decreasing the frequency of the AC power supplied to the synchronous motor driving the stylus belt. The adjustment pot is located on

the Precision Frequency Generator card. This modification had been made to the solid state system used after September 28, 1980. The initial solid state system was not modified. Phase adjustments could not be made. When phase errors exceeded the 0.2 foot standard, it was necessary to install a new stylus belt to correct the error.

Data acquired by Ross equipment between the above dates was with the conventional Ross system consisting of a model 5000 recorder, 4000 transceiver, 6000 digitizer, and a power supply.

The Ross system consisted of the following components to December 7, 1979:

Component	Model No.	Serial No.
Transceiver	4500	3787
Recorder	5500	3787
Digitizer	6500	3787
To September 28, 1980:		
Transceiver	4000	1097
Recorder	5000	1087
Digitizer	6000	3787
Power Supply		1041-7
Thru April 9, 1981:		
Transceiver	4500	3787
Recorder	5500	9073
Digitizer	6500	1097

The Raytheon 719B fathometer, serial number 7348 was used in the 17 foot Boston Whaler (vesno 0654). This fathometer utilized a small, over the side, 8 degree transducer. A heavy duty 12 volt storage battery provided power.

Sound Velocity Corrections

Depths on this survey ranged from 0 feet to 127 feet. Bar checks were routinely conducted to a depth of 40 feet. Three TDC casts were conducted during the survey. One was done on day 276/79. Two were conducted on day 110/81. The cast data and instrument calibrations are appended to this report.

There was minor disagreement between the TDC cast data and the bar check data. The bar check data was used to determine the corrections to a depth of approximately 40 feet. For deeper depths the velocity curve was extended using the same general slope as the TDC curves.

Two velocity curves cover the survey. The first covers the 1979 and 1980 work. The second curve covers the 1981 work.

Static Transducer Draft

The static transducer draft for Launch 1016 (0656) was determined experimentally using bar check data from several surveys. The static transducer draft was defined as the difference between the actual bar depth and the mean digitized depth recorded with the bar set at 5 feet. The sound velocity and instrument errors were assumed to be 0 at a bar depth of 5 feet and all differences were attributed to transducer draft. The final static transducer draft determined by this method was applied on the TRA abstracts and TC/TI tape as 1.25 feet. ✓

The static transducer draft for the 17 foot Boston Whaler (0654) was determined after the boat was loaded with personnel and equipment. The actual depth of the over-the-side transducer was measured or determined by direct comparison to a leadline sounding. The transducer draft is noted on the fathograms.

Settlement and Squat

Settlement and squat trials for Launch 1016 (0656) were conducted on August 16, 1979 near Hunters Point Naval Shipyard on San Francisco Bay. Changes in transducer draft were measured by sighting from a stable level gun (Lietz B1, serial number 214303) on the beach to a third order level rod held perpendicular on the launch cabin top above the transducer. Changes in transducer draft at a specific speed were computed as the difference in rod elevation measured with the launch at rest and underway. Measurements were made at each speed with the launch running towards and away from the level gun. Several rod readings were taken during each run and averaged. The static rod elevation was determined before and after each run with the launch dead in the water. This procedure minimized any error due to changing tide level. No changes in equipment load or hull were made after the trials. Changes in transducer draft due to settlement and squat were measured at regular intervals through the speed range of the launch with all surveying equipment installed and a normal fuel and crew load on board. These point values were plotted and connected to yield a continuous RPM versus draft correction curve. A trial summary and draft correction curve are appended to this report. Settlement and squat corrections are not applied to the field sheet, but are incorporated on the TC/TI tape. ✓

Settlement and squat trials were not performed for the 17 foot Boston Whaler (vesno 0654). Hydrographic operations were always conducted at a slow speed due to the transducer being mounted over the side. Settlement and squat errors were considered negligible at the operational speed.

Sounding Instrument Corrections ✓

The Ross echo sounding system simultaneously produces an analog fathogram and a digitized depth value. Digitized depths sampled by the logging

system are the primary source of data on the field sheet. These are supplemented by depths scaled from the analog record in areas where digitized soundings were insufficient or incorrect. The digitized system sometimes recorded erroneous depths by triggering on a return from a source other than the bottom (fish, weeds, noise, etc.) or an instrument generated source such as the initial or blanking trace. In these instances the digitized depths were replaced by values scaled from the fathograms.

Errors in the analog trace are due primarily to incorrect initial adjustment and phase error. Initial error occurs when the fathometer transmit pulse is not adjusted to coincide with the 0 on the fathometer paper. ✓

The initial trace alignment was monitored and adjusted during survey operations. Any depths scaled from the fathogram with the initial error were corrected before being applied to the survey.

Phase errors are caused by faulty stylus belt timing in the analog recorder due to belt stretching or improper internal adjustment. The system was checked for phase error daily by introducing simulated exact depths into the analog recorder from the digitizer (phase calibration mode) and comparing the analog trace value to the digitized value. Survey operations were not conducted when phase error exceeded 0.2 feet in the range of depths encountered in the survey area.

Manual Sounding Corrections

Leadline soundings are plotted without velocity corrections. Leadlines were checked for accuracy with a steel tape prior to the survey. ✓

E. HYDROGRAPHIC SHEETS

The field sheet was divided into two plotter sheets because of plotter size limitations. The sheets were constructed on a modified transverse mercator projection.

Rough plots were made as work progressed. Additional plots were necessary prior to the field sheet plot. Two overlays were made to alleviate congestion along the shoreline. The first overlay contains most of the shoreline and bottom samples. The second overlay contains leadline soundings. ✓

Soundings on the field sheet are corrected for transducer draft, sound velocity, and predicted tides. Predicted tide correctors, only, are applied to leadline soundings.

The field sheet and survey records will be forwarded for verification to OA/CPM 3, Pacific Marine Center, Seattle, Washington.

F. CONTROL STATIONS

Horizontal control for this survey was provided by twelve newly established stations and 30 existing stations. ✓

Third order, class 1 methods and specifications were followed for the new stations. All of the stations were monumented or are recoverable, and described with the exception of station Spit (009) and Central Basin Temporary (014). These two stations were in unstable deteriorating areas.

The following stations were established for use on this survey and are monumented and/or described and recoverable:

* 005 Disk B, 1979
017 Alameda NAS West Breakwater West Light 1953, ~~1980~~
019 Ballena, 1980
020 Ballena RM1, 1980
028 Ballena Bay Radar Reflector TWR
** 029 Crab, 1980
033 Middle, 1980
040 Ballena Bay Light 1, 1980
041 Ballena Bay Rear Range, 1980 ENTRANCE
** 201 Pier 32 (also signal 501)

* Horizontal Control Report to Accompany Hydrographic Survey H-9819 for OPR-L123-PHP-79

** 1981 Horizontal Control Report for OPR-L123-PHP-81

The remaining stations can be found in the 1980 Horizontal Control Report for OPR-L123-PHP-80.

Alameda NAS West Breakwater West Light, 1953 was relocated during field edit operations on TP-00532. Computations using this station's published position did not close. See the 1980 Horizontal Control Report for OPR-L123-PHP-80 for a detailed explanation.

G. HYDROGRAPHIC POSITION CONTROL

Position control for this survey was provided by a Motorola Mini Ranger III system with the 16 code option and a Teledyne Hastings Raydist system operating at a frequency of 3290.400 KHZ.

Mini Ranger System Component	Serial No.
Console	713165
R/T	4931 (magnetron)
Reference Station, code 5	4499 (magnetron)
Reference Station, code 6	4951 (magnetron)
Reference Station, code 7	4709 (magnetron)

Raydist System

Mobile Station (Launch 1016)

Transmitter	Model TA-96	s/n 25
Navigator	Model ZA-75C-1	s/n 118
Position Indicator	Model GA-50B	s/n 122

Red Base Station

Transmitter	Model AA-60A	s/n 241
Power Supply	Model SA-192	s/n 94

Green Base Station

Transmitter	Model AA-60A	s/n 242
Power Supply	Model SA-192	s/n 34

The Motorola Mini Ranger III system provided positional control for all work accomplished in 1979 and 1980. Severe interference was encountered in a majority of the survey area. Hydrography was run by steering a constant range arc from one of the shore stations. The coxswain was able to steer the correct arc in almost all cases, even when the interference occurred. Enough valid rates were received for this purpose. During the processing of the data however, the recorded ranges were found to be more wrong than right. To smooth out the data to a usable point would have necessitated extensive plotting on a time and course basis and assigning ranges to many fixes thus degrading the validity of the data. see Evaluation Report section 1

In 1981 a large portion of the main scheme hydrography was rerun utilizing Raydist control. The north (green) station was located on the roof of the wharehouse building on Pier 32 in San Francisco. The south (red) station was located on the roof of Building 253 at the Hunters Point Naval Shipyard. Occasional interference at the north station was caused by vessels docked at the pier. The south station was located over the top of a elevator machinery room which caused more serious interference problems. Also the movement of cranes and vessels within the shipyard somewhat curtailed operations and made it necessary to check the lane count at a fixed aid frequently during each days work.

The Raydist system was not used to control hydrography within two hundred meters of the San Francisco-Oakland Bay Bridge. The signal was very unstable in this area due to the bridges large metal structure. see Evaluation Report section 1.

The Raydist and Mini Ranger systems were calibrated at a fixed point at the beginning and end of each day (third order, class 1 station).

Initial lane values were computed for the calibration points and entered in the Raydist navigation interface and the phase meters. The phase meters were activated when the launch antenna was as close to the calibration point as possible. With the receiver tracking, ten sample rates were recorded to determine the partial lane correctors applied during the working day. At the end of the day, this procedure was repeated to verify the whole lane count and

obtain another set of partial lane correctors. The daily correctors used in the data processing were the mean of the morning and evening values. On days where a closing calibration could not be obtained due to sea conditions at the calibration point, the launch was maneuvered as close as possible to obtain a lane count check. Several lane jumps did occur during the course of the Raydist controlled hydrography. The lane count was always verified at fixed points as soon as possible after the jumps occurred.

Mini Ranger system checks were performed before and after each survey day to insure the equipment was operating properly. The mean of ten sample range values collected during the systems check was required to lie within + or - 5 meters of the computed value for the calibration point to be acceptable. Correctors used in data processing were determined from baseline calibrations performed April 19, 1979, February 6, 1980, May 20, 1980, September 25, 1980, February 5, 1981 and April 29, 1981.

H. SHORELINE

Field sheet shoreline originated with three class III shoreline manuscripts, TP-00529, 531, and 532. Non reviewed manuscripts with field edit data applied were used. TP-00529 was field edited by the NOAA Ship Rainier. TP-00531 and 532 were field edited by the Pacific Hydrographic Party. Changes in shoreline since field edit were shown in red.

See section L for further shoreline discussion.

I. CROSSLINES

The percentage of crosslines to mainscheme hydrography was approximately 8 per cent. Crossline agreement is generally good, 1 to 2 feet.

J. JUNCTIONS

This survey junctions with 5 contemporary surveys as follows:

H-9819, 1:10,000 1979

Junctions with this survey were excellant. The depth curves match well. Junctions in the borrow area at the southeast corner were very good, especial- considering the irregular bottom in the area. The junction was made with the H-9819 field sheet.

H-9794, 1:10,000 1978

Junctions were made on the north with the H-9794 field sheet. Soundings in general compare within one and two feet. At a latitude of 37° 48' 07" N, longitude 122° 21' 00" W to 122° 21' 30" W depths vary by two to six feet. Contours compare and continue from this survey to the junction survey favorably.

H-9810, 1:10,000 1979

Junctions were made on the northeast border with the H-9810 field sheet. The overlap between surveys was one survey line. The junction is excellant, within one foot. ✓

H-9873, 1:5,000 1980

Junctions were made on the eastern border of this survey with H-9873's field sheet at the entrance to the Oakland Inner Harbor. There was little overlap between surveys. The contours match well and the depths agree within one foot. ✓

H-9927, 1:5,000 1981

Junctions were made with the H-9927 field sheet on the southeastern border of this survey at the San Leandro Channel leading to San Leandro Bay. There was no or very little overlap between the surveys. San Leandro Channel was not adequately surveyed on this survey west of survey H-9927. The channel is there as shown on the chart. Where junction was possible the depths compare within one foot. The area where the junction occures is very shallow and gentle sloping with large portions of mud flats exposed at MLLW except in the San Leandro Channel. ✓

H-9869, 1:10,000 (1980) see Evaluation Report section # 5.

K. COMPARISON WITH PRIOR SURVEYS

This survey was compared to the following prior surveys:

H-8024	1:10,000	April-September 1954
H-8023	1:5,000	May-September 1954
H-7716	1:5,000	March-October 1948
H-7622	1:5,000	January-September 1947
H-7619	1:10,000	April-October 1947

also refer to Evaluation Report section 5

H-8024, 1:10,000, April-September 1954, Yerba Buena Island to Hunters Point

In general the new survey indicates depths in the area surveyed to be deeper. The 60 foot curve has changed considerably. The bottom is gentle sloping and a 1 or 2 foot difference in tide correctors could account for the differences in depth. The 30 foot curve on the eastern portion of the survey compares well with the prior survey. The 18 foot curve is slightly offshore of that on the prior survey. ✓

The shoreline at the southwest corner of the Alameda Naval Air Station has been filled in, including the area just to the west of the Inner Basin. No comparison was possible in the Alameda Naval Air Station harbor. The prior survey did not cover this area. ✓

The 12 foot curve running south from the Alameda Naval Air Station

breakwater compares well with the prior's 12 foot curve except at latitude 37° 45' 30" N where the curve bulges to the northeast. This area is one to two feet deeper on the new survey. At the southern border of the new survey the 12 foot curve is irregular and west of that shown on the prior survey. Refer to smooth sheet for graphic presentation of depth curves

No comparisons could be made in the borrow area in the southeast corner of the new survey since it did not exist in 1954.

The 6 foot curve between Ballena Bay and the borrow area is generally the same as the curve on the prior survey. Minor displacement can be attributed to the difference in tide correctors.

The shoreline east and south of the Alameda Naval Air Station has changed dramatically. The shoreline along Alameda has been extended into the bay by .25 to .4 nautical miles. The area has been filled and is fully developed within the limits of the City of Alameda. The Ballena Bay Marina did not exist at the time of the prior survey.

Bay Farm Island has also been filled in and extended nearly .5 nautical miles west into the bay. A narrow channel now exists very close to the rip rap shoreline from a latitude of 37° 44' 30' N, north and eastward into San Leandro Bay. ✓

Extensive changes in the shoreline have also occurred on the western shoreline in the City of San Francisco. Depths are 5 to 25 feet deeper in the area of Army Street Terminal and Pier 94 and 96. The piers and terminal did not exist in 1954 and dredging to accomodate deep draft ships alongside and in the approaches to the new piers has taken place. ✓

At ~~position 9359~~, latitude 37° 45'15"N, longitude 122° 20' 25" W the new survey is shoaler by 5 feet. East of longitude 122° 21' 00" W to the 18 foot curve the new survey is generally shoaler by one to three feet. ✓

H-8023, 1:5,000, May-September 1954, Mission Rock to Hunters Point.

This prior survey covers the area from Mission Rock Terminal south to the southern limits of the new survey along the shoreline in a narrow strip.

The new survey is approximately 10 feet shoaler along the outer pier face at the Mission Rock Terminal. Further offshore (eastward) in this area the depths compare well. The ferry slip shown under construction on the prior survey has been completed. The basin area has been dredged. The area along the south edge of Mission Rock Terminal is approximately the same depth. The 11 foot shoal on the prior survey at latitude 37° 46' 16" N, longitude 122° 23' 00" W no longer exists, but a larger area shoaler than 30 feet exists now. ✓

The area south of pier 54 has shoaled from 18 to 25 feet to 10 and 11 feet. The 30 foot curve extends to the southeast from the outer northeast corner of pier 54 on the new survey and turns south and generally follows the same path as on the prior survey. Offshore of this area the comparison is good.

Central Basin-The shipyard on the southern side of the basin has remained about the same. There has been some movement of the floating drydocks since the prior survey. The depths in the basin are shoaler, the 31 and 32 foot depths no longer exist. The area is more uniform in depth, between 21 and 26 feet east of longitude 122° 23' 00" W. The area offshore of Central Basin and the shipyard has remained the same. ✓

item #5 in Sounding Volume 5 of 6 page 7

South of the shipyard offshore of the four marine railways in ruins is evidence of some shoaling. The 30 foot curve has shifted to the east approximately 100 meters. The depth contours have also shifted to the east off of Potrero Point.

Extensive shoreline changes have occurred in the area of Army Street Terminal, Islais Creek and piers 94 and 96. None of the piers were present during the prior surveys. Islais Creek is considerably deeper now than during the prior survey. Depths have most likely been deepened and maintained by dredging since the Army Street Terminal was built. No comparison was made west of the 3rd Street Bridge on Islais Creek. The area was not surveyed in 1954. There was a row of piles, but because of dredging, they have been removed.

The area offshore of Army Street Terminal is approximately 10 feet deeper on the new survey. The area was most likely dredged for deep draft vessels using the terminal. ✓

Extensive shoreline changes have also occurred in the India Basin area since the 1954 survey, making a comparison in the area impractical. ✓

H-7716, 1:5,000, March-October 1948, San Francisco Dock Area

The area compared extends northward from pier 48 to the limits of the new survey.

The entrance to China Basin has shoaled significantly since the 1948 survey. The ferry slip shown at the south entrance to China Basin is no longer present. The depths presently range from 11 to 25 feet in an area that used to be 20 to 40 feet. The commercial importance of this area has decreased and dredging to the old depths is no longer maintained. Depths directly to the east have remained about the same and the two surveys compare very favorably in this area. The slips from pier 46 north to pier 34 have shoaled since the 1948 survey. The slip between piers 32 and 30 shown on the prior survey has been filled in to make one pier face. The slip between piers 26 and 24 has shoaled since the 1948 survey. Depths on the new survey range from 21 to 25 feet. ✓

The shoreline north of the San Francisco-Oakland Bay Bridge has changed significantly. Piers 22, 20, and 18 are no longer present. Submerged ruins remained at the time of this survey. Pier 14 is also in ruins with only submerged piles remaining. The number of ferry slips in the vicinity of the Ferry Building have been reduced. None remain as depicted on the prior survey. The shoreline from pier 1, north, has remained the same except that the slip between piers 15 and 17 no longer exists. It has been filled and has one outer face. The remaining slips north of pier 1 are dredged maintained ✓

by the Port of San Francisco. There are differences but this area was not compared individually. The depths just offshore of the piers have not changed significantly. Differences of one or two feet are present. refer to smooth sheet and shoreline manuscripts for final deposition

H-7622, 1:5,000, January-September 1947, Oakland to Treasure Island

Area of comparison, 37° 48' 15" N to 37° 47' 50" N and 122° 21' 30" W to 122° 19' 15" W.

The last four lines on the north edge of the sheet are approximately 10 feet deeper on the current survey than on the prior. The Oakland Bar Channel passes through this area and the depth change can be attributed to maintenance dredging. The area directly to the south compares well with the prior survey.

centered at lat. 37°48'24" N, long. 122°12'06" W.

The Seventh Street Marine Terminal has been built since the prior survey, dramatically changing the shoreline. The depths are no longer within the 18 foot curve in the area around the west end of the terminal. The entire area has been dredged and now ranges from 32 feet to 41 feet deep.

All the piers shown along the north edge of Oakland Middle Harbor are now in ruins and all that remains are exposed and submerged piles and timbers. There is significant shoaling in the Middle Harbor at latitude 37° 48' 05" N, longitude 122° 20' 00" W that was not present during the prior survey. Much of the harbor area is now inside the 30 foot curve. The ferry slips on the southern edge of the harbor are no longer in use and the amount of ship traffic is greatly reduced from earlier years. Therefore the Oakland Middle Harbor has not been well maintained by dredging.

H-7619, 1:10,000, April-October 1947, Vicinity of Treasure Island

Area of Comparison 37° 47' 40" N to 37° 48' 12" N and 122° 21' 10" W to 122° 23' 00" W.

North and west of the San Francisco-Oakland Bay Bridge the depths are generally 1 to 5 feet deeper on the current survey in the areas where the bottom topography is generally flat. Between piers 2 and 3, north of the bridge, the bottom is irregular. The line spacing is more dense than the prior survey. Several depths exceed 100 feet. The deepest is 127 feet. Some of the depths in the immediate area are deeper by as much as 20 feet than those on the prior survey. The current in this area is very strong and could have scoured out the bottom. Also since the time of the prior survey, a tunnel for the Bay Area Rapid Transit System has been sunk and buried on the bottom.

To the south and east of the bridge the bottom is more regular except between piers 2 and 3 where several deeps were found which exceed 100 feet. These were not found during the prior survey. The remaining area varies and is one to ten feet deeper that the prior survey except at latitude 37° 47' 51" N, longitude 122° 22' 01" W. The current survey depth at position 7771 is 47 feet. The prior survey is 12 to 13 feet deeper.

Presurvey Review Items

PSR #13

The submerged dolphins charted at latitude 37° 46' 52" N, longitude 122° 19' 52"W were investigated by visually controlled wire drag on day 067/80. The drag was set at a depth of 20.0 feet below the surface. Lift did not exceed 0.5 feet. The wire drag consisted of a 100 meter ground wire in 15 meter sections towed by NOAA Launches 1016 and 1214. A third boat was used to verify the wire depth by hanging a greased graduated steel rod on a leadline in the path of the drag. When the drag passed, the rod was hauled up and read at the point the ground wire hit. All positional control was visual from lauch 1016, which was the offshore vessel. Launch 1214 maintained a constant distance, off the rip rap shoreline. Four sweeps of the area were made. Two in each direction around the point. The first pair was done with the inshore vessel no more than two boat lengths off the shore (approximately 20 meters). The second pair was done with the inshore vessel approximately 40 meters off the shore. No hangs occurred.

On two separate and earlier occassions, dive investigations were attempted. Due to strong currents and a very short period of slack water they failed to complete an adequate search of the charted position.

It is recommended that the charted submerged dolphins be deleted from the chart based on the negative findings during wire drag operations. Concur

PSR #13 is not presently charted on Chart 18650 38th Edition, Dec 17, 83

PSR #16 and #17 see Evaluation Report section 6 for PSR #16

These items were investigated during field edit operations on TP-00531, Item 16, dangerous sunken wreck, should be charted as shown on the field edit ozalid. Awois

Item 17 was not found during field edit. The depths in the area are shallow and when inspected at a negative tide, no obstruction was visible. Depths of water during the visual search was approximately one foot. It is recommended that the obstruction be deleted from the chart. Concur

PSR #28 see Evaluation Report section 7.

This item was investigated on day 321/81. Fix 6000 and 6001 shown in red on the field sheet indicate the culverts highest point and the direction it lies. The culvert is also addressed in the Field Edit Report for TP-00532. This culvert should be shown on the chart as it is a danger to vessels entering the area.

PSR #48

This sunken 23 foot sailboat charted as a PA at latitude 37° 45.1' N, longitude 122° 16.9' W was salvaged shortly after it sank. The boat is owned and operated by the sailing club at the Alameda Naval Air Station. Both the harbormasters at Ballena Bay Marina and the Navy's marina at the Alameda Naval Air Station indicated that the vessel had been salvaged

intact. No search was made by this field unit for the wreck based on the above information. It is recommended that the wreck be deleted from the chart. Concur

In addition to the above PSR items, several charted features were investigated by divers and/or wire drag. They are as follows:

#1

The charted cribline piling extending westward from Bay Farm Island at latitude 37° 44' 20" N was investigated by wire drag on days 332,353/79 and 058/80. On days 332 and 353 the deeper areas were dragged with a 50 meter ground wire set at a depth of 20 feet. Launches 1016 and 1214 were the guide and end vessels. Launch 1016 provided positional control for the drag. It was positioned by range/azimuth Mini Ranger from station Disk B. Temporary forward and back range markers were established on Bay Farm Island in-order to guide the coxswains and maintain the proper drag width. The end vessel maintained a position directly abeam of the guide vessel. ✓

The wire depth was not verified during these two days of operation. This was based on the assumption that the cribline piling preceeded the barrow areas and would have been removed or destroyed during dredging operations. There is a 20 to 30 foot depth change in the area due to the borrow dredging.

On day 058/80 the shallow area was wire dragged in the area of the cribline piling. The ground wire was set at a depth of 8 feet and the width of the drag was 100 meters. A third vessel was used to verify the drag depth and determine the amount of lift or sag. See PSR #13 for the procedure followed. During day 058's operations the maximum lift encountered was 0.5 feet. There was no sag. Forwarded with the survey records is a paper plot of the wire drag.

It is recommended that this cribline piling be deleted from the chart Concur based on the negative findings during the three days of wire drag operations.

#2

A second cribline piling was investigated on days 059 and 060, 1980. This cribline extends in a southwest direction from the Alameda shoreline at latitude 37° 45' 32" N, longitude 122° 15' 46" W. The same procedures were followed as in item #1. The drag was 100 meters in width and was set at a depth of 13 feet. The bottom was gently sloping towards the shore and the ground wire was usually dragging on the bottom on within 2 feet of the bottom. Two hangs were encountered during operations. On day 059/80, position 298, a least depth of 0.9 feet (MLLW) was found over a piling at latitude 37° 44' 58.~~84~~ 72" N, longitude 122° 16' 25.~~68~~ 74" W. The depth was obtained by sounding pole. ✓

~~83~~ On day 060/80, position 339, a second hang occurred at latitude 37° 45' 23.~~90~~ 83" N, longitude 122° 15' 54.~~63~~ 59" W. This hang could not be identified. It is covered by ~~4.1~~ 1.3 feet (MLLW) of water. The surrounding survey depths are 4 feet or less. The item may be located in a slight depression in the bottom or the predicted tide correctors may be in error.* A paper plot of the drag is included in the data package. The guide vessel provided all positional control ✓

* Pole depth measurements were in error, used fathometer depth

by range/azimuth Mini Ranger from Disk B. The guide vessel steered a range consisting of a buoy and a orange banner on the beach. The end vessel remained abeam of the guide vessel and maintained the proper distance off with the aid of Mini Ranger. The right rate on the data printout is the distance between the two vessels. A reference station was installed on the end vessel for this purpose. Concur

It is recommended that the cribline piling be deleted from the chart and that a submerged piling be charted at position 298, day 059/80. An obstruction, should be charted at position 339, day 060/80. → Latitude 37°44'58.7" North Longitude 122° 16' 25.7 West

submerged Latitude 37°45'23.8" North Longitude 122°15'54.8" West

#3

The limit of the submerged ruins off the four marine railways charted at latitude 37° 45' 31" N, longitude 122° 22' 50" W were determined by divers on day 303/79. See sounding volume # 5. It is recommended that the limits of the ruins be charted as shown in red on the field sheet. Position #30-34 Concur

Chart as shown on the smooth sheet

#4

On day 304/79 the charted submerged pile at latitude 37° 45' 30.44" N, longitude 122° 22' 46.28" W was searched for and located by wire drag. It is recommended that the limits discussed above be further extended to include this item. A group of five submerged pilings was actually found. Position #37

Chart 1 pile as shown on the smooth sheet with note "group of 5"

#5

The two charted pilings off the northeast corner of a pier at latitude 37° 46' 02" N, longitude 122° 22' 54" W were not visible during hydrographic operations. They were seached for by divers on day 303/79. A 25 meter circle search was conducted around their charted position without finding them. It is recommended that they be deleted from the chart. Concur

#6

Wire drag and dive operations were started on the ruins of piers 22 and were to continue northward to the other piers. After several hangs and diver investigations operations were cancelled. The area contains too many submerged piles and ruins of the old piers to make investigation by divers and wire drag feasible. It is recommended that the areas previously shown as piers 22, 20, and 18 be shown with the same limits as submerged ruins. Concur Chart 18650 38th Edition is correct

L. COMPARISON TO THE CHART

This survey was compared to chart 18650, 35th edition, 1979, scale 1:20,000. The chart covers the San Francisco Bay from Candlestick Point to Angel Island. The chart was blown up to a scale of 1:10,000 by OA/C351 to make direct comparions possible.

The 60 foot curve between longitude 122° 21' 00" W and 122° 22' 30" W has changed somewhat. The bottom is relatively flat and the 60 foot curve may changed significantly when smooth tides are applied. ✓ No significant change appears

As decussed in section K, the depths north and south of the San Francisco-Oakland Bay Bridge between piers 2 and 3 have changed significantly either due to scouring or construction. The chart does not adequately depict the bottom topography in this area.

In the eastern portion of the survey the 30, 18, 12, and 6 foot curves have shifted slightly. This is most likely due to the predicted tide correctors. A small change in tides over the relatively flat bottom would significantly shift the curves.

At latitude 37° 45' 46.97" N, longitude 122° 22' 40.94" W, position 2205, a 42 foot depth was found during this survey. The charted depth is 30 feet. Dredging is the most probable cause of the change.

The ferry slip charted at the south entrance to China Basin is no longer present as shown on the chart. The field sheet shows the limits of the ruins which remain. Shown on the Smooth Sheet is submerged ruins with 2 piles and is correctly charted on chart 18650 30th Edt. shown on Smooth Sheet as ruins

North of the San Francisco-Oakland Bay Bridge, piers 22 and 18 are now in ruins. Only submerged piles and timbers remain. Pier 7, on the chart, is shown in ruins with a dashed outline of the pier. This pier is still intact, though there is some deterioration along the face of the pier. During this survey the pier was being used for automobile parking. Pier 5 is shown in the same condition on the chart as pier 7. It is still in use and only the faces are in ruins.

No comparison was made in the Alameda Naval Air Station harbor and basins. ✓

See section K for further discussion on comparisons.

M. ADEQUACY OF SURVEY

Survey H-9844 is complete and adequate for charting except at latitude 37° 44' 58" N, longitude 122° 15' 20" W in the area of the San Leandro Channel. The channel was not adequately surveyed to supercede the charted data. The channel is there and should be shown as charted. ✓

All fathograms were scanned for peaks and deeps with appropriate changes made to the original records.

N. AIDS TO NAVIGATION

The following floating aids to navigation were located during the course of this survey:

Lash Terminal Lighted Buoy 1 LL #656
Latitude 37° 44' 44.07" N Longitude 122° 22' 08.78" W

Anchorage 9 Lighted Buoy A LL #649
Latitude 37° 44' 43.68" N Longitude 122° 19' 22.27" W
This buoy is 75 meters south of its charted position.

Alameda Naval Air Station Channel Entrance Lighted Bell Buoy 1 LL#636 ✓
Latitude 37° 46' 38.58" N Longitude 122° 20' 23.10" W

Alameda Naval Air Station Channel Entrance Lighted Buoy 2 LL#637
Latitude 37° 46' 27.44" N Longitude 122° 20' 24.18" W

Oakland Middle Harbor Light Buoy LL#632
Latitude 37° 48' 07.07" N Longitude 122° 20' 19.33" W
06.99'

The above positions were compared to the 1979, 18650 chart 1:10,000 blowup and the 1981 Light List (CG-162) Volume III.

Several fixed aids to navigation were either located or checked during field edit operations conducted in conjunction with this survey. See the 1980 Horizontal Control Report for OPR-L123-PHP-80 and the field edit reports for TP-00529, 531, and 532.

O. STATISTICS

Launch 1016 (vesno 0656)		
	Positions	7804
	Linear Nautical Miles	778.0
	Square Nautical Miles	23.8
Skiff 594 (vesno 0654)		
	Positions	42
	Linear Nautical Miles	8.4
	Square Nautical Miles	.4
Party Personnel on foot (vesno 0650)		
	Positions	720
Totals		
	Positions	~~8566~~ 6238
	Linear Nautical Miles	786.4
	Square Nautical Miles	24.2
	Tide Gages	3
	Bottom Samples	49
	TDC Casts	3

P. MISCELLANEOUS

None

Q. RECOMMENDATIONS

The San Francisco waterfront from China Basin north to pier 7 in undergoing major changes. The pamphlet titled "Northeastern Waterfront Survey" details these changes. Many of the ruins in this area mentioned in section L are in the process of being removed. The pamphlet is included in the survey records. this pamphlet was not located in records or found anywhere in files.

This survey was inadequate in the area of San Leandro Channel along the north shore of Bay Farm Island. The channel is there as shown on the chart. If time permits the area should be surveyed in greater detail to delineate the channel.

R. AUTOMATED DATA PROCESSING

The following computer programs were used with the Hydroplot System to process this survey:

Program Number	Description	Version
RK201	Grid, Signal, and Lattice Plot	4/18/75
RK211	Range-Range Non-Real Time Plot	2/02/81
RK212	Visual Station Table Load	4/01/74
RK215	Visual Non-Real Time Plot	2/11/81
RK216	Range-Azimuth Non Real Time Plot	2/09/81
RK300	Utility Computations	10/21/80
RK330	Reformat and Data Check	5/04/76
PM360	Electronic Corrector Abstract	2/02/76
AM500	Predicted Tide Generator	11/10/72
RK530	Layer Corrections for Velocity	5/10/76
AM602	Elinore-Line Oriented Editor	10/10/72

S. REFERRAL TO REPORTS

Horizontal Control Report to Accompany Survey H-9819
1980 Horizontal Control Report, OPR-L123-PHP-80
1981 Horizontal Control Report, OPR-L123-PHP-81
Field Edit Report TP-00529, NOAA Ship Rainier
Field Edit Report TP-00531
Field Edit Report TP-00532

APPROVAL SHEET

HYDROGRAPHIC SURVEY H-9844

PHP-10-2-79/81

OPR-L123-PHP

The field records and data were inspected and approved by the Chief of Party. A large portion of the Mini Ranger range/range hydrography was not plotted on the field sheet and was rerun when Raydist equipment became available to the field party. Area tapes are included with the data package. They determine what is and is not to be plotted using each type of positional equipment. This survey is complete and adequate to supercede previous surveys for charting purposes except in the area of the San Leandro Channel at Bay Farm Island. There was insufficient hydrography run in this area to define the channel. The channel should be shown as depicted on the present edition of the chart.

Dirk R Taylor

Dirk R. Taylor
LCDR. NOAA
Chief of Party

January 4, 1982

Station	0	Latitude	Longitude	CRT	Elev	F. KHZ	Source	Name
001	1	37 48 26411	122 21 40130	254	0029	000000	PHP, 1979	Yerba Buena Lighthouse, ~~1979(Ecc.)~~ 1919
005	4	37 44 24915	122 15 35623 (16)	250	0003	000000	PHP, 1979	Disk B, 1979
008	0	37 45 46418	122 15 08227	250	0028	000000	Q 3712214	Hospital, 1947
009	3	37 44 17733	122 21 59366	254	0002	000000	PHP, 1979	~~Spit~~
011	3	37 46 28730	122 22 50786	250	0004	000000	Q 3712214	Mission Rock Northeast Corner Light, 1957
012	0	37 48 39271	122 22 16431	250	0050	000000	Q 3712214	Goat
013	0	37 49 34672	122 25 15758	139	0029	000000	Q 3712214	Alcatraz Lighthouse, 1910
014	1	37 46 00439	122 22 58979 (85)	254	0002	000000	PHP, 1980	~~Central Basin-Temporary~~
015	0	37 45 16172	122 23 32586	139	0150	000000	Q 3712214	San Francisco Obstruction Light
016	0	37 46 19362	122 22 49593	250	0003	000000	Q 3712214	Mission Rock SE Corner Light 1957
017	7	37 46 18724 (01)	122 18 59993 (80)	250	0004	000000	Q 3712214 PHP, 1980	Alameda NAS West Breakwater West Light, 1953
018	6	37 48 26462	122 21 40177	139	0029	000000	Q 3712214	Yerba Buena Lighthouse, 1979
019	1	37 46 01554	122 16 43132 (16)	250	0002	000000	PHP, 1980	Ballena, 1980
020	4	37 45 58388	122 16 49287 (71)	250	0002	000000	PHP, 1980	Ballena RM 1 (1980)
021	0	37 47 03080	122 17 48430	243	0000	000000	TP-00532	Alameda NAS Center Checkered Tank
022	0	37 46 36634 (29)	122 19 47929 (32)	139	0000	000000	PHP, 1980	Alameda NAS Channel Light 3, 1980
027	0	37 48 28021	122 19 11606	139	0000	000000	Q 3712214	Oakland Navy Supply Depot Checkered Tank, 1947
028	0	37 45 33844 (6)	122 16 32315 (01)	139	0000	000000	PHP, 1980	Ballena Bay Radar Reflector TWR
029	0	37 46 06299 (5)	122 16 39383 (8)	139	0000	000000	PHP, 1981	Crab, 1980
030	0	37 48 11610 (576)	122 16 11166 (126)	139	0000	000000	Q 371221	Oakland Tribune Bldg. Flagpole 1925
031	0	37 45 54676	122 12 50885	139	0000	000000	Q 3712211	Oakland P G and E 50th Ave Gas Holder, 1947
032	0	37 48 34968	122 21 51409	139	0000	000000	Q 371221	USCG Vessel Traf Sys Radar YBI 1976

Station	O	Latitude	Longitude	CRT	Elev	F. KHZ	Source	Name
033	0	37 48 18360	122 19 55137	250	0003	000000	PHP, 1980	Middle, 1980
034	0	37 48 03080	122 22 26257	139	0060	000000	Q 3712214	San Francisco Oakland Bay Bridge Pier No 2, 1954
035	3	37 46 34146	122 18 23266	250	0000	000000	Q 3712214	Alameda NAS Inner Basin West Light, 1953
036	3	37 46 06900	122 18 34812	250	0000	000000	Q 3712214 PHP, 1980	Alameda NAS West Breakwater East Light, 1953
037	0	37 46 09956	122 18 16603	139	0000	000000	PHP, 1980	Alameda NAS Channel Day Beacon 8, 1980
038	1	37 46 02560	122 18 25638	139	0000	000000	Q 3712214	Alameda NAS East Breakwater South Light, 1953
040	1	37 45 49066	122 16 53582	139	0000	000000	PHP, 1980	Ballena Bay Light 1, 1980
041	0	37 45 53263	122 16 20306	139	0000	000000	PHP, 1980	Ballena Bay Rear Range, 1980
043	0	37 45 18578	122 27 05923	139	0000	000000	Q 371221	Mt Sutro TV Tower S Antenna 1976
045	0	37 47 42826	122 24 06079	139	0000	000000	Q 371221	Trans America Building 1976
046	7	37 48 50558	122 21 30637	250	0040	000000	Q 3712214	Army 2, 1947
047	7	37 45 46510	122 15 08307	139	0000	000000	PHP, 1979	Hospital RM 3 ~~Flagpole~~
048	0	37 48 20492	122 22 07603	139	0000	000000	Q 3712214	San Francisco Oakland Bay Bridge Pier No 1, 1954
049	0	37 47 44337	122 22 46339	139	0000	000000	Q 3712214	San Francisco Oakland Bay Bridge Pier No 3, 1954
050	0	37 47 26921	122 23 04994	139	0000	000000	Q 3712214	San Francisco Oakland Bay Bridge Pier No 4, 1954
051	0	37 45 19565	122 27 05924	139	0000	000000	Q 371221	Mt Sutro TV Tower N Antenna 1976
052	0	37 44 43055	122 22 42585	139	0000	000000	Q 3712213	KSFO Radio Tower, 1937
101	4	37 41 44959	122 20 18062	250	0005	000000	Q 371221	San Bruno Shoal Channel Lt 1 1977
111	0	37 44 01650	122 21 51195	250	0010	000000	Q 3712213	Hunters Point North End Light, 1953
200	0	37 43 36225	122 21 28531	250	0030	329040	PHP, 1981	Bldg 253 (Ecc)
201	0	37 47 09642	122 23 01210	250	0012	329040	PHP, 1981	Pier 32, 1981 (Raydist)
501	0	37 47 09640	122 23 01210	250	0012	000000	PHP, 1981	Pier 32, 1981 (Mini Ranger)
~~102~~	~~3~~	~~37 41 42024~~	~~122 20 26524~~	~~139~~	~~0004~~	~~000000~~	~~Q 371221~~	~~San Bruno Shoal Channel Lt 2 1977~~
~~110~~	~~0~~	~~37 42 58177~~	~~122 23 38291~~	~~139~~	~~0000~~	~~000000~~	~~Q 3712213~~	~~KSFO Radio Tower~~

Replaces C&GS Form 567.

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

[X] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (If field Party, Ship or Office) Coastal Mapping Div. A.M.C. Norfolk, Va.	STATE California	LOCALITY San Francisco and San Pablo Bays	DATE

[ ] PHOTO FIELD PARTY
[X] COMPILATION ACTIVITY
[ ] FINAL REVIEWER
[ ] QUALITY CONTROL & REVIEW GP
[ ] COAST PILOT BRANCH
(See reverse for responsible personnel

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00529	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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
LIGHT	Berkeley Marina Channel Light 2 (BERKELY BREAKWATER LIGHT 2, 1978)	37-50 37-50	52.109 1606.0	122-21 122-21.	34.089 933.0	TTB(1) 3545 march 18, 1977	F-3-6-L 11-78	18650 18652
LIGHT	Treasure Island North End Light 6 (Treasure Island, North End Light 6, 1978)	37.49	59.971 1846.1	122-22.	17.071 917.4	TTB(1) 3545 march 18, 1977	TRIANG. REC 11-78	" " "
LIGHT	Treasure Island North End Light 3	37-49	51.25 1580.0	122-21	53.161 1860.0	TTB(1) 3545 march 18, 1977	V-VIS 11-78	" " "
LIGHT (HORN)	Yerba Buena Island Light (Yerba Buena Lighthouse, 1919)	37 48	26.462 815.8	122-21.	45.177 982.8	TTB (1) 3592 march 9, 1977	TRIANG. REC 11-78	" " "
LIGHT	Yerba Buena Island Wharf Light (YERBA BUENA ISLAND WHARF LIGHT, 1978)	37-48 37 48.5	29.926	122-21 122-21.6	35.862	unverified	F-3-6-L 11-78	" " "
LIGHT	Pier 27-29, West Light (SAN FRANCISCO WATER FRONT PIER 27-29 WEST LIGHT, 1978	37-48 37-48.	27.609	122-23 122-23.7	59.327	unverified	F-4-6-L 11-78	" " "
LIGHT	Pier 27-29, East Light (SAN FRANCISCO WATER FRONT PIER 27-29 EAST LIGHT, 1978	37-48 37 48.4	26.394	122-23 122-23.9	57.687	unverified	F-4-6-L 11-78	" " "
LIGHT	Pier 17 Light (SAN FRANCISCO WATER FRONT PIER 17 LIGHT, 1978	37-48 37 48.2	10.914	122-23 122-23.7	45.624	unverified	F-4-6-L 11-78	" " "
LIGHT	Pier 1, North Light (SAN FRANCISCO WATERFRONT PIER 1 NORTH LIGHT, 1978	37-47 37 47.1	53.648	122-23 122-23.5	31.437	unverified	F-4-6-L 11-78	" " "
Dropped points scaled by: F. Mauldin Date: Oct 13 1978 " " checked by: Date: New positions plotted by: Date:								

Replaces C&GS Form 567.

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

[X] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office) Coastal Mapping Div. A.M.C. Norfolk, Va.	STATE California	LOCALITY San Francisco and San Pablo Bays	DATE [illegible] 1977	[ ] GEODETIC PARTY [ ] PHOTO FIELD PARTY [X] COMPILATION ACTIVITY [ ] FINAL REVIEWER [ ] QUALITY CONTROL & REVIEW G. [ ] COAST PILOT BRANCH (See reverse for responsible personnel)

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00529	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 LATITUDE ° '	LATITUDE " D.M. Meters	LONGITUDE ° '	LONGITUDE " D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	Pier 1, South Light (SAN FRANCISCO WATERFRONT PIER 1 SOUTH LIGHT, 1978)	~~37-47~~ 37 47.9	52.928	122-23 / 122-23.5	30.766	unverified	F-4-6-L 11-78	18649 18650 18652
		~~37-~~		~~122-19~~				
LIGHT	Oakland Outer Harbor Range A Rear Light (OAKLAND OUTER HARBOR ~~Host Side~~ RANGE A REAR LIGHT, 1978 ~~1977~~)	37-49 / 37 49	57.89? / 58.3	122-19 / 122-19	22.973? / 560.2	77B(P)2542 march 9 1977	F-3-6-L 11-78	"
LIGHT	Oakland Outer Harbor Range B Front Light	37 48	57.61 / 1776.3	122-19.	[illegible] / 617.0	77 B(P) 2543 march 9, 1977	V-VIS 11-78	"
LIGHT	Oakland Outer Harbor Range B Rear Light (OAKLAND OUTER HARBOR EAST SIDE REAR RANGE BEACON 337, 1948)	37 49.	03.163 / 97.5	122-19.	15.067 / 368.5	77B(P) [illegible] march 9, 1977	TRIANG. REC. 11-78	"
LIGHT (HORN)	Oakland Inner Harbor Light 1 ~~(Oakland ... 1977)~~ STATION DESTROYED LIGHT RESULT AT POS. ON PHOTO	37 48.	00.632 / 19.5	122-19.	50.118 / 1226.1	77B(P)2543 [illegible] 1977	V-VIS 11-78	"
LIGHT	Oakland Inner Harbor Light 2	37 47.	51.85 / 1598.5	122-19.	53.46 / 1307.9	77B(P)2513 march 15, 1977	V-VIS 11-78	"
LIGHTS	~~S...~~ LIGHT REMOVED Lights (Priv. Aid)	~~37 48.7~~		~~122-20.2~~		[illegible]	DELETE	"
LIGHT	Emeryville Marina Light 1 (EMERYVILLE MARINA LIGHT 1, 1978) (Priv. aid)	37-50 / 37 50.+	25.292	122-19 / 122-19.2	10.490	unverified	F-3-6-L 11-78	"

Dropped points scaled by: F. Mauldin Date: Oct 19, 1978
" " checked by: Date:
New positions plotted by: Date:
" " checked by: Date: Triangulation positions plotted by: Date: checked by:

(8-74)

Replaces C&GS Form 567.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

~~NONFLOATING AIDS OR~~ LANDMARKS FOR CHARTS

[X] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office) Coastal Mapping Div. A.M.C. Norfolk, Va.	STATE California	LOCALITY San Francisco and San Pablo Bays	DATE [illegible]	[ ] GEODETIC PARTY [ ] PHOTO FIELD PARTY [X] COMPILATION ACTIVITY [ ] FINAL REVIEWER [ ] QUALITY CONTROL & REVIEW G [ ] COAST PILOT BRANCH (See reverse for responsible personne

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00529	N.A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
TOWER ("76")	(San Francisco, Union Oil Co Bldg, Tower, ~~1951~~ 1978) STATION RELOCATED	37-47 37-47	09.461 09.457 291.6	122-23 122-23	28.098 28.546 698.5	77 B(L) 3495 march 18, 1977	F-3-6-L 11-78	18649 18650 18652
CLOCK TOWER	(San Francisco Schmidt Building, Tower, 1932)	37-47	01.424 45.9	122-23	34.798 851.5	77 B(P) 2524 march 4 1977	TRIANG. REC. 11-78	" "
R TOWER	(TREASURE ISLAND RED AND WHITE RADIO TOWER, 1978)	37-49 37-49	09.408 [illegible] 288.0	122-22 122-22	13.188 [illegible] 325.0	77 B(P) 3546 march 18 1977	F-3-6-L 11-78	" " "
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		-		-				

Dropped points scaled by: T. Mauldin Date: 07 13 1978 — Copy checked: E.J. Davis 15 June 78
" " checked by: Date:
New positions plotted by: Date:
" " checked by: Date: ~~Triangulation positions plotted by~~ ~~Date~~ ~~checked by~~

Replaces C&GS Form 567.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (If Field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk.Va.

STATE: California

LOCALITY: San Francisco and San Pablo Bays

DATE:

- [ ] PHOTO FIELD PARTY
- [X] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

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

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

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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
CUPOLA	(TREASURE ISLAND BUILDING ONE) CUPOLA, 1978	37-49	02.408	122-22	19.977	778(P) 3514		18649
		37 49	73.2	122-22	271.5	march 18, 1977	F-3-6-L 11-78	18650 18651
RADAR TOWER	(Taller of Two) (U.S. COAST GUARD VTS RADAR, 1976)	37-48	34.964	122-21	51.400	778(P) 3514	TRIANG. REC. 11-78	"
		37 48	1023.8	122-21	1254.0	march 18 1977		"
FERRY TOWER	(San Francisco, Ferry Building, Flagstaff, 1910)	37 47.	15.804	122-23	33.029	778(P) 2522	TRIANG. REC.	"
			1359.5		808.1	March 4 1977		"
		~~37 47.1~~		~~122-23~~				
C		~~37 47.0~~		~~122-23~~				
R TOWER	(Center of Three, (KDIA)	37 49.	26.79	122-19.	11.57	778(1) 3514	V-VIS 11-78	"
			826.0		283.0	march 18, 1977		"
TANK	(Oakland, Navy Supply Depot, Checkered Tank, 1947)	37 48	28.201	122-19.	11.606	778(P) 2599	TRIANG. REC 11-78	"
			863.9		283.9	march 4 1977		"
R Tower	Center of Three, (KDIA)	37 49	27.15	122-19	[illegible]	778(1) 3514	V-VIS 11-78	"
			837.0		240.0	march 18, 1977		"
		~~37 47~~		~~122-17~~				

Dropped points scaled by: [illegible] Date: [illegible] 18, 1978
" " checked by: Date:
New positions plotted by: Date:
" " checked by: Date:

Triangulation positions plotted by: [illegible] Date: [illegible] checked by:

Replaces C&GS Form 567.

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

[X] TO BE CHARTED
[ ] TO BE REVISED
[ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk, Va.

STATE: California

LOCALITY: San Francisco and San Pablo Bays

DATE: [illegible] 1978

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

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

OPR PROJECT NO.: 411 | JOB NUMBER: CM-7704 | SURVEY NUMBER: TP-00529 | 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)	LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	Emeryville Marina Light 2. (EMERYVILLE MARINA LIGHT 2, 1978) (Priv. aid)	37-50 37-50.4	24.242	122-19 122-19.2	09.246	unverified	F-3-6-L 11-78	18649 18650 18652
MARKER (Front)	On South side of Channel Entrance Measured Nautical Mile Marker	37-47 37-47.7	48.546	122-19 122-19.7	41.924	unverified	F-4-8-L 11-78	"
MARKER (Rear)	On South side of Channel Entrance Measured Nautical Mile Marker.	37-47 37-47.7	48.227	122-19 122-19.7	41.516	unverified	F-4-8-L 11-78	"
BELL	Pier 26 Fog Signal	37-47.4		122-23.1		unverified	MARKED ON PHOTO 3495	"
LIGHT	Oakland Outer Harbor Range A Front Light	37-47	56.52 17-1215	122-19	37.96 924.5	76(C) 2542 march 4, 1977	V-VIS 11-78	
BELL	Pier 32 Fog Signal	37-47.2		122-23.0		unverified	MARKED ON PHOTO 3495	
LIGHT		37-47.7		122-19.4		unverified		
MARKER (Front)	(OAKLAND ESTUARY ~~WEST~~ FRONT RANGE, 1953) On North side of Channel entrance Measured Nautical Mile Marker	37-47.9		122-19.6		unverified	DESTROYED	
MARKER (Rear)	(OAKLAND ESTUARY WEST REAR RANGE, 1953) On North side of Channel entrance Measured Nautical Mile Marker	37-47 37-47.9	55.803	122-19 122-19.6	39.068	[illegible]	TRIANG. REC 11-78	

Dropped points scaled by: F Mauldin Date: Oct [illegible]
" " checked by: Date:
New positions plotted by: Date:
" " checked by: Date:
Triangulation positions plotted by: Date: checked by:

Replaces C&GS Form 567. NONFLOATING AIDS

[X] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (If field Party, Ship or Office) Coastal Mapping Div. A.M.C. Norfolk, Va.	STATE California	LOCALITY San Francisco Bay	DATE	[ ] CHIEF, [illegible] DIVISION [ ] FINAL REVIEWER [ ] QUALITY CONTROL & REVIEW BRP. [ ] COAST PILOT BRANCH (See reverse for responsible personnel)

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00529	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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	SAME AS EMERYVILLE MARINA LT. 1 Light "1"	37 -50.5		122-19.4		unverified	DELETE	18649 18650 18652
LIGHT	SAME AS EMERYVILLE MARINA LT. 2 Light "2"	37 -50.4		122-19.3		unverified	DELETE	"
FOG SIGNAL ~~AERO~~	Pier A fog signal on northeasterly side of pier	37 -47.		122-		unverified	SEE DRAWINGS F.E. REPORT	"
FOG SIGNAL ~~AERO~~	Pier B fog signal on southerly side of pier	37 -47.7		122-		unverified	SEE DRAWINGS F.E. REPORT	"
FOG SIGNAL (East)	Pier C fog signal on easterly side of pier	37 -47.7		122-		unverified	SEE DRAWINGS F.E. REPORT	"
FOG SIGNAL (West)	Pier C fog signal on westerly side of pier	37 -47		122-22.6		unverified	SEE DRAWINGS F.E. REPORT	"
FOG SIGNAL	Pier D fog signal on northerly Corner of pier	37 -48.		122-22.5		unverified	SEE DRAWINGS F.E. REPORT	"
AERO BEACON	PIER A AERO BEACON OAKLAND BAY BRIDGE (SAN FRANCISCO OAKLAND BAY BRIDGE PIER A) 1954	37-97	26.921	122-23	04.994		TRIANG. REC 11-78	"
AERO BEACON	PIER 3 OAKLAND BAY BRIDGE AERO BEACON (SAN FRANCISCO OAKLAND BAY BRIDGE PIER 3) 1954	37 -97	49.337	122-22.	46.339		TRIANG. REC. 11-78	"
Dropped points scaled by: Date: " " checked by: Date: New positions plotted by: Date: " " checked by: Date:		-		-				

Triangulation positions plotted by: Date: checked by:

Replaces C&GS Form 567.

[X] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office) Coastal Mapping Div. A.M.C. Norfolk, Va.	STATE California	LOCALITY San [illegible]	DATE [illegible] 8

[ ] FINAL REVIEWER
[ ] QUALITY CONTROL & REVIEW GRP
[ ] COAST PILOT BRANCH
(See reverse for responsible personnel)

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00529	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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
FOG SIGNAL ~~[illegible]~~	Pier E fog signal on southerly corner of pier	37-48.3		122-20.1		unverified	SEE DRAWING & F.E. REPORT	18649 18650 [illegible]
FOG SIGNAL ~~LEAD~~	Pier G fog signal on top of east face of pier	37-[illegible]		122-21.4		unverified	"	
FOG SIGNAL ~~[illegible]~~	Pier H fog signal on southwest corner of pier	37-[illegible]		122-21.2		unverified	"	"
FOG SIGNAL	Pier I fog signal on west side of pier	37-[illegible]		122-[illegible]		unverified	"	"
FOG SIGNAL	Pier J fog signal on west side of pier	37-[illegible]		122-21.0		unverified	"	"
FOG SIGNAL	Pier K fog signal on west side of pier	37-4[illegible]		122-20.[illegible]		unverified	"	"
AERO BEACON	PIER E AERO BEACON OAKLAND BAY BRIDGE (SAN FRANCISCO OAKLAND BAY BRIDGE PIER NO. 1, 1954)	37-48	20.492	122-22	07.603		TRIANG. REC 11-78	
AERO BEACON	PIER G AERO BEACON OAKLAND BAY BRIDGE (SAN FRANCISCO OAKLAND BAY BRIDGE PIER G AERO BEACON, 1978)	37-48	51.721	122-21	26.906		F-3-6-L 11-78	
AERO BEACON	(SAN FRANCISCO OAKLAND BAY BRIDGE PIER H AERO BEACON, 1978)	37-48	56.950	122-21	10.683		F-3-6-L 11-78	
Dropped points scaled by: Date: " " checked by: Date: New positions plotted by: Date:		-		-				

" " checked by: Date: Triangulation positions plotted by: Date: checked by:

(NOAA FORM 76-35)
(8-74)

Replaces C&GS Form 567.

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

[X] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office): NOAA SHIP RAINIER	STATE: CALIFORNIA	LOCALITY: SAN FRANCISCO AND SAN PABLO BAYS	DATE: OCT 1978

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

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00529	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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
NOT CHARTED	(OAKLAND OUTER HARBOR ENTRANCE CHANNEL EXPOSED CABLE BARRIER NORTH LIGHT, 1978)	37-48	41.458	122-20	14.070		F-3-6-L 11-78	18649 18650 Charted 18652
NOT CHARTED	(OAKLAND OUTER HARBOR ENTRANCE CHANNEL EXPOSED CABLE BARRIER NORTH SOUTH LIGHT, 1978)	37-48	40.968	122-20	14.122		F-3-6-L 11-78	"

...AMPLE: F-2-6-L
8-12-75

...field work.

...revis.
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40 (8-74)
(NOAA FORM 76-40 (8-74))

Replaces C&GS Form 567.

~~NONFLOATING AIDS OR~~ LANDMARKS FOR CHARTS

☒ TO BE CHARTED ☐ TO BE REVISED ☐ TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office): NOAA SHIP RAINIER	STATE: CA	LOCALITY: SANFRANCISCO BAY SAN PABLO BAY	DATE: 11-78	☐ 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.	JOB NUMBER	SURVEY NUMBER	DATUM
911	CM-7704	TP-00529	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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
NOT ON CHART	OCTAGONAL WOODEN TOWER	37-48		122-20			MARKED ON PHOTO #3513	18649 18650 18652
NOT ON CHART	WOODEN TANK	37-48		122-20			MARKED ON PHOTO # 3513	11

> 99% Rain H2O

NOAA FORM 76-40 (8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

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

(See reverse for responsible personnel)

- [x] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk, Va

STATE: CALIFORNIA

LOCALITY: San Francisco and San Pablo Bays

DATE: Oct 1978

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-00531 | 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)	LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Light (HORN)	Pier 46A Light	37°46′	43.0856	122° 23′	01.030″	Unverified	F-4-6-L 1-29-80	18649 18650 18652
Light	(Mission Rock Northeast Corner Light, 1953) (priv. aid)	37°46′	28.730 / 885.7	122° 22′	50.786″ / 1242.9	unverified	Triang. Rec. 6-21-79 77B(P)3767	" " "
Light (Bell)	(Mission Rock Southeast Corner Light, 1957) (priv. aid)	37°46′	19.362 / 596.9	122° 22′	49.593″ / 1213.7	77B(P)2524 Sept 18, 1978	Triang. Rec. 6-21-79	" " "
Light (HORN)	(Western Pacific Ferry Slip Light, 1953) (priv. aid) (See ~~revised~~ new position - NOAA Form 76-40)	37°45′	14.16 / 436.6	122°22′	44.65 / 1093.0	Unverified	F-4-6-L 1-30-80	" " "
Light	Pier 96 North End Light (Priv. aid) (Deleted)	37-44.6		122-22.2		Unverified	V-Vis. (Structure removed)	" " "
Light	Pier 96 Lighter Basin Entrance Light 2 (priv. aid) (See revised position)	37-44.4		122-22.0		Unverified	F-4-6-L 1-28-80	" " "
Light	Pier 96 Lighter Basin Entrance Light 1 (priv. aid) (See revised position)	37-44.3		122-22.0		Unverified	F-4-6-L 1-28-80	" " "
Light	(HUNTERS Point Light, 1953)	37-43	44.737 / 1379.2	122-21	26.343 / 645.1	77B(P)2528 Sept. 27, 1978	Triang. Rec. 6-21-79	18649-50 18651-52
HORN	Santa Fe Ferry Slip Fog Signal	37-46.2		122-23.0		Unverified	V-Vis 77B(P)3766 7-31-79	18649 18650 18652

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checked by

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

~~NON-FLOATING AIDS OR~~ LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- ☐ HYDROGRAPHIC PARTY
- ☐ GEODETIC PARTY
- ☐ PHOTO FIELD PARTY
- ☒ COMPILATION ACTIVITY
- ☐ FINAL REVIEWER
- ☐ QUALITY CONTROL & REVIEW GP
- ☐ COAST PILOT BRANCH

(See reverse for responsible personnel)

☒ TO BE CHARTED
☐ TO BE REVISED
☐ TO BE DELETED

REPORTING UNIT (If field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk, Va.

STATE: California

LOCALITY: San Francisco and San Pablo Bays

DATE: Oct 1978

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-00531

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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
TANK		37 45.	24.4 / 753.0′	122-23	53.5 / 1309.0′	77B(P) 2524 SEPT. 18, 1978	V-VIS 6-14-79	18649 18650 18652
GAS TANK	(San Francisco, P.G. and E. Gas Tank, 1951)	37 45.	16.044 / 494.6	122-23	33.297 / 815.1	77B(P) 2524 SEPT 18, 1978	Triang. Rec. 6-14-79	" " "
GAS TANK		37 45.	27.2′ / 840.0′	122-23.	5.0 / 114.0	77B(P) 2524 SEPT 18, 1978	V-VIS 5-30-79	" " "
GAS TANK	(San Francisco, Union Iron Works, Gas Tank, 1925)	37 45	22.154 / 683.0	122-23	04.528 / 110.8	77B(P) 2524 SEPT. 18, 1978	Triang. Rec. 6-14-79	" " "
STACK	(San Francisco PG+E Potero Plant Stack, 1977)	37 45	21.857 / 673.8	122-22	50.749 / 1242.3	77B(P) 2524 SEPT. 18, 1978	F-3-6-L 3/77	" " "
GAS TANK	(San Francisco, Army Street, Gas Tank, 1925)	37 44	57.016 / 175.7.8	122-23	51.598 / 1263.2	77B(P) 2526 SEPT 22, 1978	Triang. Rec. 6-14-79	" " "
STACK	(San Francisco, American Smelting And Refining Corp., Stack, 1942.)	37 44	56.42 / 1739.4	122-23	35.63 / 872.3	77B(P) 2526 SEPT. 22, 1978	Triang. Rec. 6-14-79	" " "
R. TR.	(KSFO Radio Tower, 1937)	37 44	43.055 / 1327.4	122-22.	42.585 / 1042.6	77B(P) 2526 SEPT. 22, 1978	Triang. Rec. 5-21-79	" " "
STACK	N.W. of Three	37 44	16.9′ / 520.0′	122-22	31.4 / 770.0	77B(P) 2526 SEPT. 22, 1978	V-VIS 5-21-79	" " "

Dropped points scaled by: JEFF MILLER Date: Oct 23, 1978
" " checked by: [illegible] Date: Oct 23, 1978
New positions plotted by: Date:

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

~~NONFLOATING AIDS OR~~ LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- ☐ HYDROGRAPHIC PARTY
- ☐ GEODETIC PARTY
- ☐ PHOTO FIELD PARTY
- ☒ COMPILATION ACTIVITY
- ☐ FINAL REVIEWER
- ☐ QUALITY CONTROL & REVIEW GP
- ☐ COAST PILOT BRANCH

(See reverse for responsible personnel)

- ☒ TO BE CHARTED
- ☐ TO BE REVISED
- ☐ TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk, Va.

STATE: California

LOCALITY: San Francisco and San Pablo Bays

DATE: Oct 1978

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00531	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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
STACK	Center of Three	37 -44	15.8 / 488.0	122-22	29.5 / 723.0	77B(P) 2526 SEPT, 22, 1978	V-VIS 5-21-79	18649 18650 18652
STACK	S.E. of Three	37 -44	15.4 / 475.0	122-22	27.9 / 684.0	77B(P) 2526 SEPT 22, 1978	V-VIS 5-21-79	" " "
TANK		37 -43	40.0 / 1233.0	122-22	3.2 / 78.0	77B(P) 2528 SEPT. 27 1978	V-VIS 5-21-79	18649-50 18651-52
TOWER		37 -43	36.2 / 1115.0	122-21	31.2 / 763.0	77B(P) 2528 SEPT. 27, 1978	V-VIS 5-21-79	" " " "
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Dropped points scaled by: J. Moler Date: Oct 23, 1978
" " checked by: C. [illegible] Date: Oct 23, 1978
New positions plotted by: [illegible] Date: [illegible]

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

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

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Pacific Hydrographic Field Party PHC, Seattle, WA

STATE: CALIFORNIA

LOCALITY: San Francisco Bay

DATE: June 1979

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
L123-PHP-79		H-9819	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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	Pier 94 North End Light (Priv. Aid)	37 44		122 22				18649-50 18651-52

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS [redacted] FOR CHARTS

REG. #

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

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Pacific Hydrographic Field Party

STATE: CALIFORNIA

LOCALITY: San Francisco Bay

DATE: JAN 1980

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

OPR PROJECT NO.: 411

JOB NUMBER: CM-7704

SURVEY NUMBER: TP-00531

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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
Light	Pier 94 North End Light (Priv. aid)	37°44′	44.0289	122°22′	18.050		F-4-6-L 1-30-80	18649 18650 18652
Light	Western Pacific Ferry Slip Light (Priv. aid)	37°45′	14.0320	122°22′	44.898		F-4-6-L 1-30-80	18649 18650 18652

NOAA FORM 76-40

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

ORIGINATING ACTIVITY
- [x] 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
- [x] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Pacific Hydrographic Field Party
STATE: CALIFORNIA
LOCALITY: San Francisco and San Pablo Bays
DATE: JAN 1980

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-00531
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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Light	Pier 96 Lighter Basin Entrance Light 2 (priv. aid)	37-44	24.740	122-21	59.838		F-4-6-L 1-28-80	18649 18650 18652
Light	Pier 96 Lighter Basin Entrance Light 1 (priv. aid)	37-44	21.2399	122-22	00.578		F-4-6-L 1-28-80	" " "

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR ~~LANDMARKS~~ FOR CHARTS

ORIGINATING ACTIVITY
- [X] 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): Pacific Hydrographic Field Party

STATE: CALIFORNIA

LOCALITY: San Francisco and San Pablo Bays

DATE: JAN 1980

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-00531

DATUM: N.A. 1927

POSITION

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
Light	Pier 96 North End Light (priv. aid) removed	37-44.6		122-22.7			V-Vis-(on-site) (superceded by Pier 94 N. End Lt.)	18649 18650 18652

(8-74) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Replaces C&GS Form 567.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

- [ ] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [X] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (If field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk, Va.

STATE: California

LOCALITY: San Francisco and San Pablo Bays

DATE: July 1978

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00532	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 LATITUDE ° ′	POSITION LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	POSITION LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
LIGHT	Alameda Naval Air Station Channel Light 3. (ALAMEDA N.A.S. CHANNEL LIGHT 3, 1980)	37 -46.	34.6337 35.61 .1098	122-19.	42.928 10.13 982	TTB(P) 35:0. MAR. 18, 1977	F-2-6-L	18647 18650 18652
LIGHT	Alameda Naval Air Station Channel Light 5. (ALAMEDA N.A.S. CHANNEL LIGHT 5, 1980)	37 -46.	34.5361 34.32 1058	122-19	02.145 2.13 52	"	F-2-6-L	" " "
LIGHT	Alameda Naval Air Station Channel Light 4. (ALAMEDA N.A.S. CHANNEL LIGHT 4, 1980)	37 -46.	24.3972 21.29 749	122-19.	12.619 11.54 1090	"	F-2-6-L	" " "
LIGHT	Alameda Naval Air Station Channel Light 6. (ALAMEDA N.A.S. CHANNEL LIGHT 6, 1980)	37 -46.	21.6358 22.54 695	122-19.	05.318 3.29 83	"	F-2-6-L	" " "
LIGHT	Air Station East Breakwater South Light (Alameda N. A. S., East Breakwater, South Light, 1953)	37. -46.	02.480 78.9	122-18.	25.638 627.5	TTB(P) 35:1 MAR. 18, 1977	TRIANG. REC. 4-11-80	" " "
LIGHT	Air Station East Breakwater North Light (Alameda N. A. S., East Breakwater, North Light 1953)	37 -46	06.358 196.6	122-18	25.568 620.9	"	TRIANG. REC. 4-11-80	" " "
LIGHT	Air Station West Breakwater East Light (Alameda N. A. S., West Breakwater, East Light, 1953, 1980).	37 46	06.8992 212.1	122-18	27.811 851.4	"	TRIANG. REC. 4-11-80	" " "
LIGHT	Air Station West Breakwater West Light (Alameda N. A. S., West Breakwater, West Light, 1953, 1980)	37 46	18.7236 57L.6	122-18	59.993 1468.0	"	TRIANG. REC. 4-11-80	" " "
DAY-BEACON	Alameda Naval Air Station Channel Daybeacon #8 (ALAMEDA N.A.S. DAYBEACON 8, 1980)	37 46	01.9358 4.86 304	122-18	16.663 16.63 407	"	TRIANG. REC. F-2-6-L 4-11-80	" " "

Dropped points scaled by: [illegible] Date: 7/27/78

" " checked by: J. Roderick Date:

New positions plotted by: Date:

" " checked by: Date:

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

- [ ] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [x] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW G
- [ ] COAST PILOT BRANCH

(See reverse for responsible personne

[x] TO BE CHARTED [ ] TO BE REVISED [ ] TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office) Coastal Mapping Div. A.M.C. Norfolk, Va.	STATE California	LOCALITY San Francisco and San Pablo Bays	DATE July 1978

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
411	CM-7704	TP-00532	N.A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	Ballena Bay Light 1 (Priv. aid) (BALLENA BAY LIGHT 1, 1980)	37-45	49.0664 ~~47.45~~ 1509	122-16	53.582 ~~53.64~~ 1313	TTBIP 8510 MAR. 12, 1977	F-3-6-L 4-11-80	18649 18650 18652
LIGHT	Alameda Intake Light (Priv. aid) (ALAMEDA INTAKE LIGHT, 1980)	37 45 ~~45.6~~	35.1178	122-16 ~~16.4~~	19.304	NOT VISIBLE	F-2-6L 4-11-80	"
* LIGHT	(Navy Maintd.) East Light Inner (Alameda N. A. S. Basin, East Light, 1953)	37-46	33.644 1037.3	122-18	14.544 351.0	TTBIP 8511 MAR. 18, 1977	TRIANG. REC. V-VIS. 4-11-80	"
* LIGHT	(Navy Maintd.) West Light Inner (Alameda N. A. S. Basin, West Light, 1953)	37-46	34.146 1052.8	122-18	23.266 569.4	"	TRIANG. REC. 4-11-80	"
RANGE BANNER *	BALLENA BAY REAR RANGE (BALLENA BAY REAR RANGE, 1980)	37-45	53.2626	122-16	20.306		F-3-6-L 4-80	"
* LIGHT	(ALAMEDA NAS CHANNEL RANGE REAR LIGHT, 1953)	37-46	~~37~~ 26.616	122-17	53.335		TRIANG. REC. 4-11-80	"
		-		-				
	* NOT LISTED IN 1978 PACIFIC COAST LIGHT LIST	-		-				
		-		-				
		-		-				

Dropped points scaled by: C. Butler Date: 7/27/78
" " checked by: J. Roderick Date:
New positions plotted by: Date:
" " " checked by: Date:
Triangulation ...

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

~~NONFLOATING AIDS~~ OR LANDMARKS FOR CHARTS

- [ ] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [X] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW G
- [ ] COAST PILOT BRANCH

(See reverse for responsible personne

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk, Va.

STATE: California

LOCALITY: San Francisco and San Pablo Bays

DATE: July 1978

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-00532

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 LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
RADAR REF TOWER	(BALLENA BAY RADAR REFLECTOR TOWER, 1980)	37 45	33.8445 ~~33.84~~ 1043	122 16	32.315 ~~32.31~~ 792	775(P) 3510 MAR. 18. 1977	F-3-6-L 4-80	18649 18650 18652
HOSP FLAGPOLE	(Alameda, St. Josephs Hospital, Square white Cupola, 1925)	37 45	42.39 1430.2	122 15	08.30 203.2		TRIANG. REC. 4-80	" " "
		-		-				
		-		-				
		-		-				
		-		-				
		-		-				
		-		-				
		-		-				

Dropped points scaled by: D. Butler Date: 1/27/78
" " checked by: J. Roderick Date:
New positions plotted by: Date:

FIELD TIDE NOTE

August 20, 1979-April 9, 1981

OPR-L123-PHP

H-9844 PHP-10-2-79/81

Soundings on the field sheet were reduced on the basis of predicted tides for San Francisco, California and corrected for the survey area as follows:

Time of high water	+32 minutes
Time of low water	+43 minutes
Height Ratio	1.20

Tidal reducers were computed at 0.2 foot intervals using a PDP8/e computer and Hydroplot Program AM500, "Predicted Tide Generator".

Tide control for the survey was provided by ADR gages installed at three tertiary stations as follows:

Site	Position	Period
#941-4317 Pier 22½	37° 47.4' N 122° 23.2' W	August 13, 1979 to May 22, 1980 February 25, 1981 to May 16, 1981
#941-4358 Hunters Point	37° 43.8' N 122° 21.4' W	March 30, 1979 to May 1, 1981
#941-4688 San Leandro Channel	37° 41.7' N 122° 11.5' W	April 3, 1979 to present

In addition to the above stations the primary gage at Fort Point #941-4290 and the secondary gage at the Alameda Naval Air Station #941-4750 may also be useful.

Pier 22½ Station 941-4317

This station was established on August 13, 1979 when a Leupold Stevens gage, serial number 76578-76, was installed on an existing well. The station was inspected and turned over to the NOAA Ship McArthur on May 22, 1980. It is not known how long it was in service after that date. On February 25, 1981 the station was re-established and a Fischer Porter gage, serial number 6612A1694M24 was installed. A new staff had been installed previously by the NOAA Ship McArthur. The levels were run from the new staff. The gage was removed on April 16, 1981.

Hunters Point Station 941-4358

This station was established on March 30, 1979 when a Fischer Porter gage, serial number 7305A3099M4 was installed. This gage was damaged by personnel at the shipyard and replaced with a Leupold Stevens gage, serial number 76587-76 on May 30, 1979. This gage was lost over the side of the pier on June 5, 1979 and replaced with a Fischer Porter gage, serial number 7504A2689M24. The gage was installed further north along the pier face and a new staff was also installed. It was replaced with gage number 7305A3099M4. On February 4, 1981 a Fischer Porter gage, serial number 6810A3845M1 was installed and remained in place until the station was removed on May 1, 1981.

The data quality from December 1979 thru October 1980 was poor and rejected by OA/C231

San Leandro Marina Station 941-4688

The San Leandro Marina gage was installed on April 3, 1979 with a Fischer Porter gage, serial number 6903A5568M13. On February 3, 1981 gage number 6804A4960M17 was installed. This gage was replaced with serial number 6810A3845M1 on May 4, 1981.

A new staff was installed on November 13, 1980.

DATE: April 7, 1982

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): 941-4750 Alameda, CA

Period: August 20, 1979-April 10, 1981

HYDROGRAPHIC SHEET: H-9844

OPR: L123

Locality: San Francisco Bay, California

Plane of reference (mean lower low water): 3.27 ft.

Height of Mean High Water above Plane of Reference is 5.88 ft.

REMARKS: Recommended Zoning:

1. From northern limit of sheet, south to latitude 37°47' apply x0.94 range ratio.
2. From 37°47' south to 37°45' zone direct.
3. South of 37°45' apply x1.03 range ratio.

James R Hubbard
Chief, Tidal Datums and Information Branch

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-9844

Name on Survey	A ON CHART NO. 18650 38th Ed.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
HUNTERS POINT	X									1
INDIA BASIN	X									2
POTRERO POINT	X									3
SAN FRANCISCO BAY	X									4
YERBA BUENA ISLAND	X									5
										6
										7
										8
										9
										10
										11
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										23
										24
										25

U.S. DEPARTMENT OF COMMERCE | REGISTRY NUMBER H-9844

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1.	SMOOTH OVERLAYS: POS., ARC, EXCESS	13
DESCRIPTIVE REPORT	1.	FIELD SHEETS AND OTHER OVERLAYS	7

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDIAN FILES	4					
ENVELOPES						
VOLUMES	8.					
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS(List): TP.00529, TP.00531, TP.00532

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List):

NAUTICAL CHARTS(List): 18650

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS VERIFICATION	AMOUNTS EVALUATION	AMOUNTS TOTALS
POSITIONS ON SHEET			6238
POSITIONS REVISED	2699		2699
SOUNDINGS REVISED	928		928
CONTROL STATIONS REVISED	0		0
	TIME-HOURS VERIFICATION	TIME-HOURS EVALUATION	TIME-HOURS TOTALS
PRE-PROCESSING EXAMINATION	9		9
VERIFICATION OF CONTROL	48		48
VERIFICATION OF POSITIONS	166		166
VERIFICATION OF SOUNDINGS	525		525
VERIFICATION OF JUNCTIONS	12		12
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	99		99
COMPARISON WITH PRIOR SURVEYS AND CHARTS		58	
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	9	63	72
OTHER REWORK/OTHER	30	116	146
DIGITIZATION/ REWORK		8	47.5
TOTALS	898	245	1182.5

Pre-processing Examination by	J.S. GREEN	Beginning Date 2/16/82	Ending Date 2/17/82
Verification of Field Data by	L.T. DEODATO	~~Beginning Date~~ begin 4/01/83	Ending Date 2/13/85
Verification Check by	S.H. OSTUBO, J.S. GREEN	Time(Hours) 88	Ending Date 12/10/84, 6/4/85
Evaluation and Analysis by	G.E. Kay	~~Beginning Date~~ begin 1/3/85	Ending Date 6/3/85
Inspection by	D.J. Hill	Time(Hours) 2	Ending Date 6/4/85

PACIFIC MARINE CENTER
EVALUATION REPORT

H-9844

1. INTRODUCTION

H-9844 is a basic hydrographic survey conducted by the Pacific Hydrographic Party in accordance with the following:

Project Instructions OPR-L123-PHP-79, dated February 22, 1979

Change Number 1, dated November 27, 1979
Change Number 2, dated May 15, 1980
Change Number 3, dated November 13, 1980
Change Number 4, dated January 14, 1981

The survey is situated south of Yerba Buena Island south to Hunters Point in San Francisco Bay, California.

Predicted tides are based on San Francisco, California. Time and range adjustments were utilized during shipboard processing. Tide correctors used for the reduction of the final soundings are computed from approved hourly heights from Alameda, California (941-4750).

During office processing the plotting parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.

H-9844 is a three year hydrographic survey. The 1979-80 field work was accomplished using Motorola Mini-Ranger III for positioning control. During the 1981 field season a large portion of the main scheme hydrography was re-run using a Hasting-Raydist positioning control system. The final field sheet was produced with the Hastings-Raydist data for the resurveyed area. However, the Mini-Ranger data for the resurveyed area was retained on the paper tapes and in the survey records. The processed hydrographic file contains only Mini-Ranger data (refer to CPM3x2, May 24, 1982 and CPM3, September 15, 1982 memos attached). The smooth sheet, however, displays position dots for data positioned by both control systems.

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are adequately discussed in the Descriptive Report paragraphs F and G and in the Horizontal Control Reports for OPR-L123-PHP for 1979, 1980, and 1981.

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

Applicable reviewed Class I shoreline manuscripts (scale 1:10,000) and dates are as follows:

	TP-00529	TP-00531	TP-00532
Date of Photography	March 1977	March 1977	March 1977

Date of Field Edit	November 1978	August 1979	April 1980
Photo Revised	No	No	No

Shoreline is not shown on H-9844 in accordance with N/CG memorandum "Reduction of Marine Center Hydrographic Processing Backlog", dated February 16, 1984.

The following features were plotted on the smooth sheet from the field sheet or from comments in the raw records without supporting positional information.

Feature	Latitude North	Longitude West	Source
Pile	37°45'48.5"	122°23'02.6"	Field Sheet
Ruins (Center)	37°45'31.3"	122°22'46.3"	Field Sheet
Wreck	37°46'09.2"	122°17'29.6"	Field Sheet
Dolphin	37°46'38"	122°23'19.6"	Sounding Volume
Piles (Group of 2)	37°46'36.8"	122°23'10.2"	Sounding Volume
Rock	37°45'18"	122°22'54.2"	Sounding Volume
* Ruins	37°47'39"	122°23'21"	Field Sheet
Pile	37°47'49"	122°23'31.5"	Field Sheet
pile	37°46'15.5"	122°17'47.5"	Field Sheet
Buoy (L.L. #597)	37°47'47"	122°22'50"	Field Sheet
Buoy (L.L. #600)	37°48'06"	122°22'30"	Field Sheet
Buoy (L.L. #600)	37°48'01"	122°22'23"	Field Sheet
Buoy (L.L. #648)	37°46'08"	122°21'45"	Field Sheet

* The Descriptive Report paragraph K reports that pier 14 is in ruins with only submerged piles remaining. The limits of these ruins shown on TP-00529 are different than the ruins portrayed on the field sheet. The ruins have been transferred from the field sheet onto the smooth sheet without supporting positional information.

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 and completely drawn.

GO looks good

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 exception.

Numerous prior survey and chart features including piles, piers, dolphins, cable crossing areas, pipeline sewers and bridge clearances were not investigated during the course of this survey, see section 6, 7 and 9.

> "A basic hydrographic field survey is not complete until it meets all of the following requirement(s), 7. Charted information and prior survey findings in disagreement with or not supported by present survey data have been thoroughly investigated and resolved", Hydrographic Manual 4.1.1.

5. JUNCTIONS

H-9844 junctions the following:

Survey	Year	Scale	Note	Color	Junctions
H-9794	1978	1:10,000	Adjoins	Red	Northwest
H-9810	1979	1:10,000	Adjoins	Violet	North
H-9819	1979	1:10,000	Joins	Red	South
H-9869	1980	1:10,000	Joins	Violet	Southeast
H-9873	1980-81	1:5,000	Adjoins	Orange	Northeast
H-9927	1981	1:5,000	Adjoins	Brown	East

The junctions have been adequately accomplished with the "Joins" surveys.

Soundings in the junctional area of the "Adjoins" surveys are in agreement, but the junctions have not been effected since these surveys have been forwarded to Headquarters, Rockville, Maryland.

6. COMPARISON WITH PRIOR SURVEYS

H-7716 (1948) 1:5,000
H-7622 (1947) 1:5,000

Present survey data does not compare well with these prior surveys. For a discussion of major differences and causes, refer to Descriptive Report paragraph K. The following features in brown have been transferred from H-7622 onto H-9844.

Feature	Latitude North	Longitude West
Pier ruins	37°48'21"	122°19'42"
Pier ruins	37°48'21"	122°19'39"
Pier ruins	37°48'21"	122°19'35"

Note: The above pier ruins are portrayed on Chart 18650 38th Edition.

H-7619 (1947 - additional work 1950) 1:10,000

Present survey data compares well with the prior survey. Depths in the common area range from 60 to 100 feet with only minor differences noted (±2 to 3 feet). This common area is outside of the dredged areas, and that is presumedly why the depths correspond so well with one another.

With the exception of the above transferred features, H-9844 is adequate to supersede H-7716, H-7622, and H-7619 over the areas of common coverage.

H-8023 (1954) 1:5,000

Present survey data does not compare well with this prior survey. Major sounding differences are discussed in Descriptive Report paragraph K. Extensive high water line changes have occurred in the 30 years between the two surveys. Most notable is the area south of Potrero Point to India Basin where the high water line has extended eastward approximately .5NM into

San Francisco Bay, due to the filling in of the bay for the construction of pier 94. The following features in brown have been transferred from H-8023 onto H-9844.

Feature	Latitude North	Longitude West
Pile	37°44'17"	122°22'27"
Ruins	37°45'53"	122°23'06"
Piling (group of 3)	37°45'49"	122°23'06"
Piles	37°45'49"	122°23'08"

There are two Pre-Survey Review items (PSR) that originate with this prior survey. PSR #17 is adequately disposed of in the Descriptive Report.

AWOIS -

PSR #16 dangerous sunken wreck charted at latitude 37°44'11"N, longitude 122°22'19"W, was investigated during field edit operations on TP-00531 and was found in ruins (uncovered 3 feet MLLW). This feature should remain as charted.

H-8024 (1954) 1:10,000

The present survey data does not compare well with this prior survey, major differences are noted below.

a. Depths east of a line between latitude 37°48'15"N, longitude 122°23'30"W and latitude 37°44'15"N, longitude 122°21'00"W to the 24-foot curve are 2 to 60 feet deeper on the present survey. Differences are attributed to the continuing dredging of San Francisco Bay.

b. East of the 24-foot curve depths vary widely, showing differences on the order of ±2 to 20 feet from this prior to the present survey. The most notable change occurs in the borrow area, centered at latitude 37°44'30"N, longitude 122°17'00"W, where present survey soundings are 20 feet deeper than the prior. Differences are attributed to the dredging of the area for landfill.

c. West of the line in a. (above) to the western limits of this prior survey, present survey data varies widely from 2 to +20 feet difference. This difference is attributed to the construction and post construction dredging of pier 94.

See Descriptive Report paragraph K, H-8024 for discussion of shoreline changes.

The following features have been transferred from H-8024 onto H-9844 in red.

Feature	Latitude North	Longitude West	
Piling	37°45'13"	122°15'20"	
Ruins (duck blind)	37°45'44"	122°16'30"	
Ruins	37°47'48"	122°19'54"	
* 50 wreckage	37°47'11"	122°22'09"	AWOIS 51988

* This sounding originates from H-3967 (1917) wire drag and marks the location of some wreckage. This sounding and notation "wreckage" was transferred in green onto H-9844.

With the exception of the above transferred features, H-9844 is adequate to supersede H-8023 and H-8024 within the area of common coverage.

7. COMPARISON WITH CHART

Chart 18650 35th Edition, May 12/79, scale 1:20,000
Chart 18650 36th Edition, June 7/80, scale 1:20,000
Chart 18650 38th Edition, December 17/83, scale 1:20,000

The following is a list of edition numbers (Chart 18650) that were either listed in the project instructions or used for comparison purposes in the field or at the Pacific Marine Center.

	35th 5/12/79	36th 6/7/80	38th 12/17/83
Project Instructions		X	
Compared in Field	X		
* Compared at PMC	X	X	X

* A comparison was made to the 38th edition because it is the latest edition available.

a. Hydrography - Charted depths come from the before mentioned prior surveys and miscellaneous sources. For a discussion of depth changes, refer to section 6 of this report. Presurvey Review items discussed in Descriptive Report paragraph K is supplemented as follows.

> PSR #28 submerged obstruction PA charted at latitude 37°46'00"N, longitude 122°16'56"W, was determined by hydrographic investigation to be a 5-foot diameter concrete culvert. It is shown on the smooth sheet as a pipe extending from latitude 37°46'01"N, longitude 122°16'55.5"W to latitude 37°45'59.0"N, longitude 122°16'53"W. It should be charted according to this survey.

The following chart features need to be revised:

A pier charted (pier #2) on the 38th Edition at latitude 37°46'27"N, longitude 122°18'13"W is incorrectly charted too short and should be extended westward 65 meters as shown on the shoreline manuscript.

The 2 dolphins on the 38th Edition at latitude 37°46'27"N, longitude 122°18'15"W used to be at the end of the above charted pier. The extended pier now has either used those dolphins for support or they have been removed during the pier extension construction. They should be removed from the chart.

The south side of Islais Creek centered at latitude 37°44'50"W, longitude 122°22'35"W presently has a row of piles (aligned east-west) charted on the

38th Edition. This area has been redefined by the shoreline manuscript and H-9844. This area should be charted as portrayed on this survey.

Pier 16 charted at latitude 37°47'31" North, longitude 122°23'18" West is charted or portrayed intact on Chart 18650, 35th Ed., 36th Ed., TP-00529 and the field sheet H-9844. Presently, Chart 18650 38th Ed., portrays pier 16 in ruins. The compiler should investigate the source of pier 16 in ruins and if valid it should remain as charted.

The following charted features (source unknown) were neither verified nor disproven during the course of this survey and should remain as charted (38th Edition) unless otherwise disproven.

Feature	Latitude North	Longitude West
Obstruction (P.A.)	37°46'04"	122°18'23"
Obstruction (pipe)	37°46'14"	122°17'37"
Obstruction	37°47'51"	122°19'51"
Obstruction	37°47'49.5"	122°19'50"
Obstruction	37°47'50.5"	122°19'50"
Obstruction	37°47'50"	122°19'49"
Obstruction	37°47"46"	122°19'54"
Obstruction	37°47'46"	122°19'53"
Obstruction	37°47'46"	122°19'52"
Cable area	37°46'39"	122°23'21"
Cable area	37°46'16"	122°23'03"
Cable and pipeline area	37°44'51"	122°23'13"
* PA wreck	37°46'25"	122°23'35"
Obstruction	37°46'16"	122°23'45"
Obstruction	37°46'15"	122°23'49"
Obstruction	37°46'12"	122°23'49.5"
Obstruction	37°46'22"	122°23'07"
Ruins	37°47'40"	122°23'25"

* This feature originates from sources subsequent to the 35th Edition.

b. Controlling Depths - A comparison was made to the 38th Edition of Chart 18650 to the present survey. Present survey depths are consistent with the controlling depths in Bar Channel, Outer Harbor Entrance Channel and in Middle Harbor. Inner Harbor Entrance Channel, right inside quarter, has a controlling depth of 36.2 feet. The present survey contains a depth of 33.7 feet (position number 4090/2) at latitude 37°47'56.32" North, longitude 122°20'01.79" West. N/CG 222 was contacted (May 31,1985) and informed personnel of this office (N/MOP 211C) that the U.S. Army Corps of Engineers conducted a post-dredging survey during August 1984 in Inner Harbor Entrance Channel. A minimum depth of 36.8 feet in the right inside quarter was obtained during this survey (USACE file # Sheet 2 of 6, 2/2/323, NOS BP 123833).

A comparison of controlling depths was not made for the channel at latitude 37°46'33"N, longitude 122°20'30"W, which goes into the Alameda Naval Air Station boat basin. A comparison of the channel was not possible because channel depths are not published on the chart and the boat basin is a "Restricted Area".

c. Aids to Navigation - (Compared to Chart 18650 38th Edition)

The following Light List aids were not in place at the time of this survey and are not shown on the smooth sheet.

Pier 96 Range Front Light (LL 657.10)
Pier 96 Range Rear Light (LL 657.20)

All the floating and fixed aids adequately mark the features intended.

The geographic names shown on the smooth sheet originate from this chart.

With the exception of the aforementioned features which were neither verified nor disproved, H-9844 is adequate to supersede the hydrography on chart 18650, 38th Edition, within the common area.

8. COMPLIANCE WITH INSTRUCTIONS

H-9844 adequately complies with the instructions and changes listed in section 1 of this report.

9. ADDITIONAL FIELD WORK

H-9844 is an adequate hydrographic survey. Additional field work is required on a non-priority basis to verify or disprove the features listed in section 2, 6, and 7 of this report.

Gordon E. Kay
Cartographer

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

Dennis Hill
Chief, Hydrographic Section

Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

May 24, 1982

TO: CPM3 - John W. Carpenter

FROM: CPM3x2 - William A. Wert

SUBJECT: H-9844 (PHP-10-2-79/81) San Francisco Bay, CA

H-9844 is presently in the PPO stage of the verification process pending additional edit and assignment to CPM32A. The field work was completed on April 20, 1981 and the survey was received at PMC on January 11, 1982. Pre-verification was completed by CPM32 on February 16, 1982.

Due to severe interference problems experienced while using Motorola Mini-ranger III for hydrographic position control in 1979 and 1980, a large portion of the survey area (60%) was rerun in 1981 using Raydist for hydrographic position control. However, interference problems were also experienced with the Raydist system as explained in Section G of the descriptive report and, therefore, the positional accuracy of the Raydist controlled hydrography is also questionable.

Mini-ranger controlled hydrography common in areas with the Raydist controlled hydrography was not plotted on the final field sheet; however, the affected Mini-ranger data was not deleted from the master tapes or rejected on the raw data printouts as would be expected. The final field sheet plot was accomplished by generating an area limit tape that specified the corner points (up to ten) of the plotting area and Mini-ranger soundings falling outside of the specified area were not plotted on the field sheet.

PMC software is not compatible with hydroplot software in this regard; therefore, separate PPO's for each method of control were plotted. The PPO's were reviewed by CPM32 and the Mini-ranger PPO was marked up for deletion of data in the common areas of hydrography in order to duplicate the survey lines contained on the field sheet on a PPO. Position and sounding listings have been generated and the survey is currently on hold at my request. The effort expended by CPM32 to date has been commendable; however, continued verification of this survey along these lines may not be prudent.

One possible solution is to initially segregate the survey by type of electronic control system and generate separate PSS's. This will require modification of our existing software by CPM3x1. A verifier will than have the option of looking at all the data and determining which soundings to delete and which to retain based upon minimum depths and comparison of adjacent soundings.

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NOAA FORM 61-2

Another possible solution is to merge all the data and generate a PSS. Source identification of the soundings would be difficult; however, soundings could be color coded as to type of control system by software modification.

The solution recommended by CPM32; i.e., reject the common Mini-ranger soundings and generate a PSS runs the inherent risk of possibly overlooking shallower depths as determined by Mini-ranger hydrography.

No matter which solution is pursued adequate verification will not be possible because of the positional uncertainties caused by interference problems experienced by both electronic control systems.

I recommend that the survey be returned to the Pacific Hydrographic Party for additional field work. This would involve a rerun of the area of hydrography previously ran in 1979-80 and again in 1981. I believe this approach is the most rational considering the draft and size of the vessels frequenting this portion of San Francisco Bay and the legal consequences of inadequate surveys as evidenced by the EVITA DAN grounding in Los Angeles Harbor. Reenforcing my recommendation is the often overlooked but important fact that verification of questionable data will not result in an acceptable survey.

A quick pre-processing review of the field sheet revealed other discrepancies that should be resolved to complete the survey. I recommend additional field work on the following items be accomplished even if the survey is not returned as recommended above:

1. Seven floating aids to navigation charted at:

Latitude N	Longitude W
37°46.14'	122°21.75'
37°47.78'	122°22.84'
37°48.01'	122°22.37'
37°48.10'	122°22.50'
37°48.23'	122°21.36'
37°48.30'	122°20.90'
37°48.12'	122°20.33'

were not located during the survey. These aids are plotted on the field sheet at their charted location. No statements as to the adequacy, position, and description can be made.

2. Two fixed aids to navigation -- the Alameda Naval Air Station Channel Rear Range Light, 1953 and the Ballena Bay Rear Range, 1980 were plotted on the field sheet; however, the corresponding front ranges were not plotted. Supporting evidence to substantiate the non-existence of these front ranges was not included with the hydrographic records and appropriate informational notes were not inked on the field sheet noting the apparent discrepancies. Neither range was listed in Volume III Pacific Coast and Pacific Island 1982 Light List or charted on NOAA Chart 18650, 35th Ed., May 12, 1979.

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3. San Leandro Channel (3 ft. rep. 1976) was not defined by hydrography on H-9844 as stated in the approval sheet. H-9844 junctions with H-9927 (PHP-05-01-81) in this common area. The channel was defined on H-9927; however, a portion of the channel remains unsurveyed at the junction. Additional work at 1:5000 scale (recommended) is required from latitude 37°44.85'N, longitude 122°15.20'W to the entrance of the channel -- a distance of approximately .5 nautical miles.

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

September 15, 1982

TO: CPM32 - James S. Green

FROM: CPM3 - Ned C. Austin

SUBJECT: H-9844, PHP-10-2-79/81, San Francisco Bay, CA

Based upon conclusions drawn between the Mini-Ranger control and Raydist control PPO's and PSS's, you are to initially process and verify the survey using only the 1979 Mini-Ranger controlled hydrography as the source for sounding information contained on H-9844.

The Raydist controlled hydrography will not be processed or used to supplement the Mini-Ranger controlled hydrography in the common areas of coverage without CPM32 approval.

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-9844

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

5/31/85
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:LWMordock 5/31/85

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

5-31-85
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

MAY 3 1989

MEMORANDUM FOR: Commander Russell C. Arnold, NOAA
Chief, Hydrographic Surveys Branch

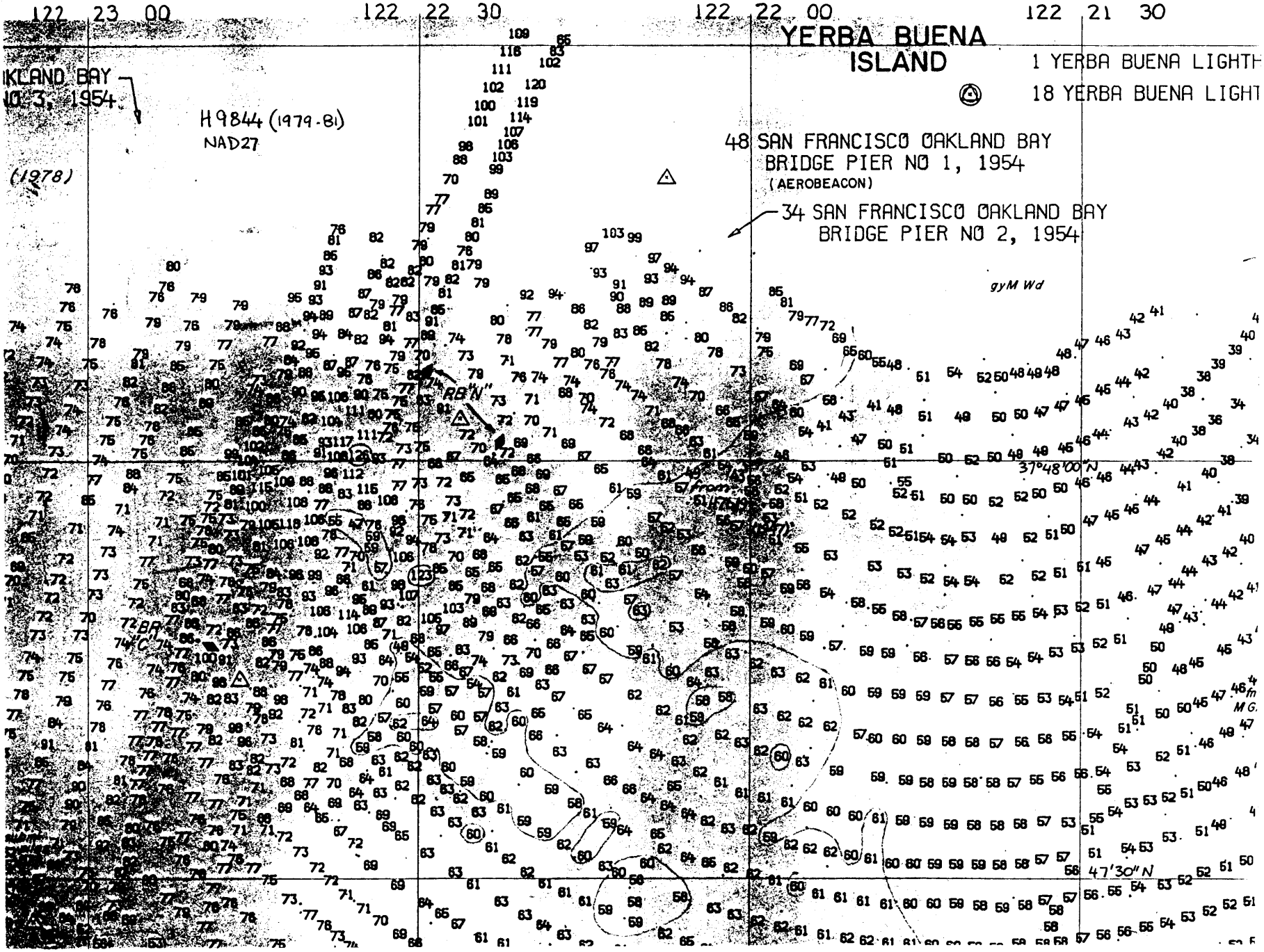
FROM: Lieutenant Commander Maureen R. Kenny, NOAA
Chief, Operations Section

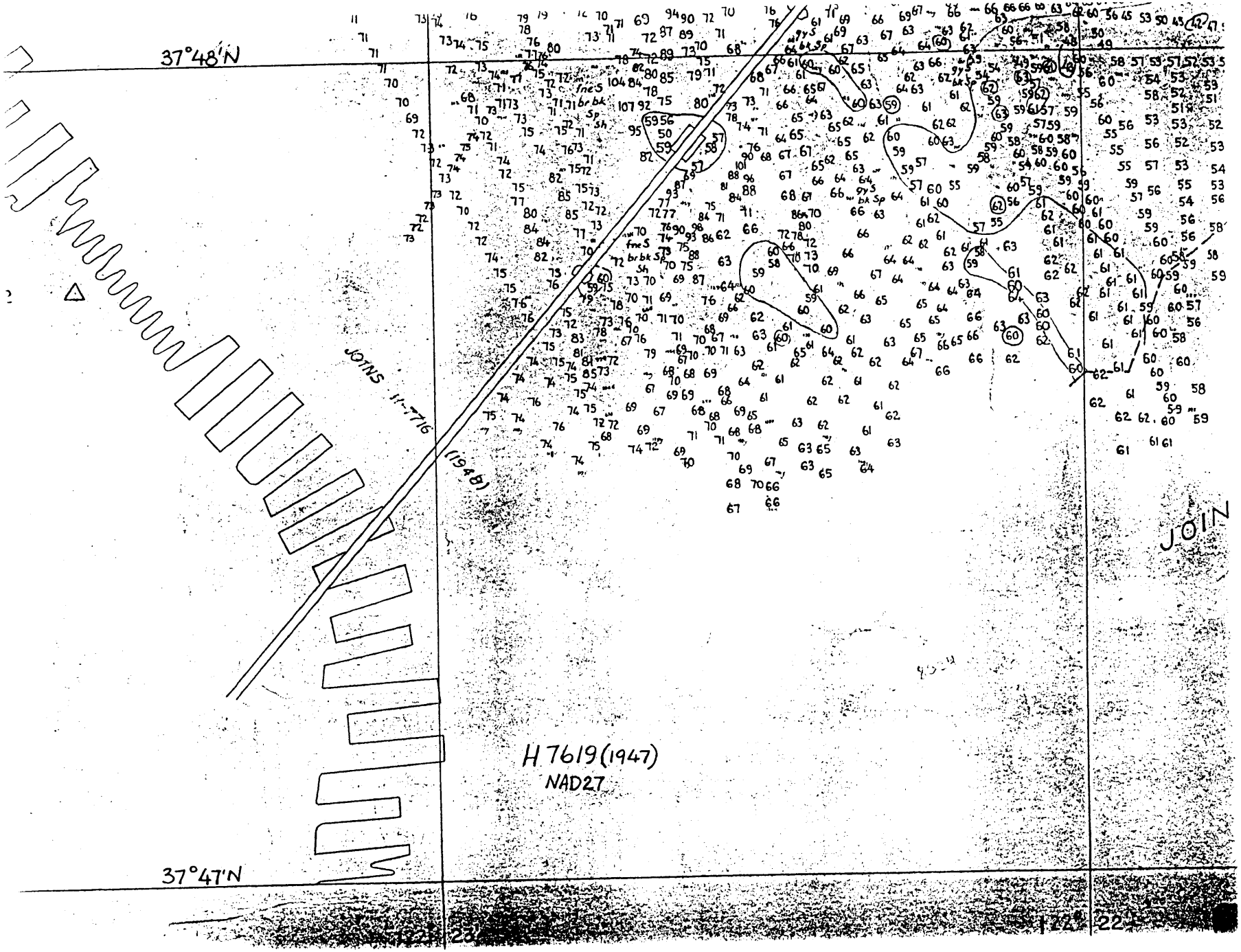
SUBJECT: Addendum to the Evaluation Report of Survey H-9844 (1979-1981)

A 43-foot sounding from prior survey H-7619 (1947) in latitude 37°47'58.6"N, longitude 122°22'00.5"W (NAD 27) was not adequately disproved by the present survey and has been carried forward. A 47-foot depth on a pinnacle from mainscheme hydrography on the present survey (position 3502) in latitude 37°47'59.08"N, longitude 122°22'01.42"W (NAD 27) was shown approximately 25 meters from the 43-foot depth, it has been excessed.

Attachments

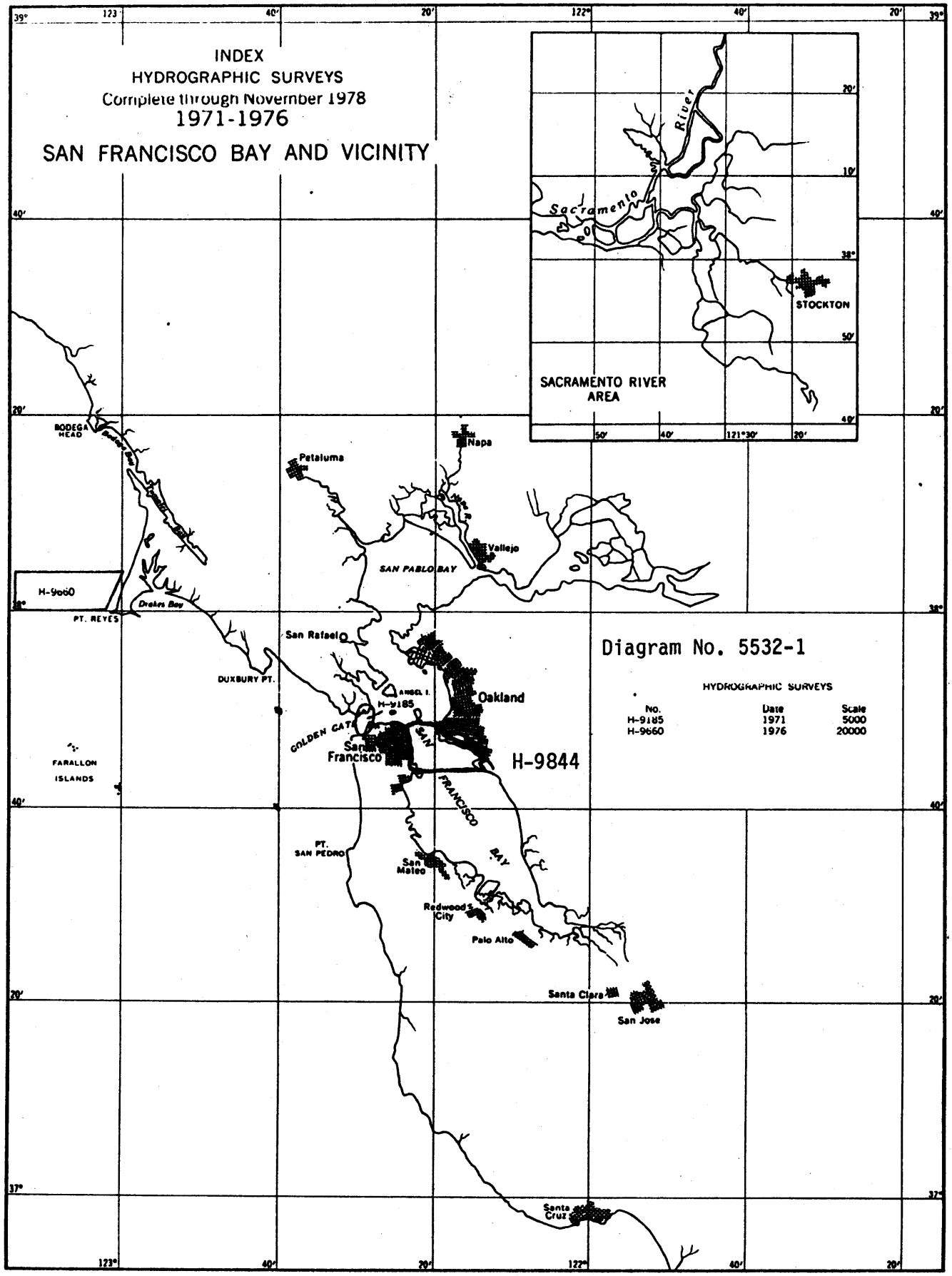
cc:
N/CG221
MOP211


122 23 00
122 22 30
122 22 00
122 21 30
YERBA BUENA ISLAND
1 YERBA BUENA LIGHTH
18 YERBA BUENA LIGHT
KLAND BAY
10 3, 1954
H9844 (1979-81)
NAD27
(1978)
48 SAN FRANCISCO OAKLAND BAY
BRIDGE PIER NO 1, 1954
(AEROBEACON)
34 SAN FRANCISCO OAKLAND BAY
BRIDGE PIER NO 2, 1954
37°48'00"N
47'30"N


37°48'N
37°47'N
JOINS H-716 (1948)
JOIN
H 7619 (1947)
NAD27

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

Hydrographic Index No. 96M



NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9844

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
18650	11/20/86	Coastal WW	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 57
18652-SC	11/26/86	Coastal WW	Full ~~Part Before~~ After Marine Center Approval Signed Via
Pg A, B			Drawing No. 28
18649	9/23/88	Pearce Hunt JP	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 67
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			STANDARDS CK'D 7-17-85 C.Coy

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.