10070

Diagram No. 5531-1

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-10-3-81

Office No. H-10070

LOCALITY

State California

General Locality San Francisco Bay

Locality San Mateo Bridge to Coyote Hills Slough

1983

CHIEF OF PARTY
LCDR P.R. Chelgren

LIBRARY & ARCHIVES

DATE October 10, 1984

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

10070

Area 5
CHTS
18651
18652 sc A
B insert 2
18680-inc

See "Record of Application" to sign off.

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10070

HYDROGRAPHIC TITLE SHEET

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-10-3-81

State California

General locality San Francisco Bay

Locality San Mateo Bridge to Coyote Hills Slough

Scale 1:10,000 Date of survey May 16 to August 2, 1983

Instructions dated August 11, 1981 Project No. OPR-L123-PHP-81

Vessel NOAA Launch 1101, Skiff 594

Chief of party Lt. Cdr. Pamela R. Chelgren

Surveyed by Lt. Cdr. Pamela R. Chelgren, Lt. (jg) Eric Secretan

Soundings taken by echo sounder, ~~machine lead~~ Ross Fineline 5000

Graphic record scaled by Pacific Hydrographic Party personnel.

Graphic record checked by Pacific Hydrographic Party personnel.

~~Protracted~~ Verification by M. L. Sanders Automated plot by PMC Xynetics Plotter

~~XXXXXXXXXXXX~~ Evaluation by Gordon E. Kay

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

REMARKS: Check marks and notations in black were made during evaluation at the Pacific Marine Center, Seattle, Washington.

Misc. records removed from report and filed with field records

STANDARDS CK'D. 10-22-84

SCH 4-22-97 C.Lay

✓ AWOIS NWD 10/84

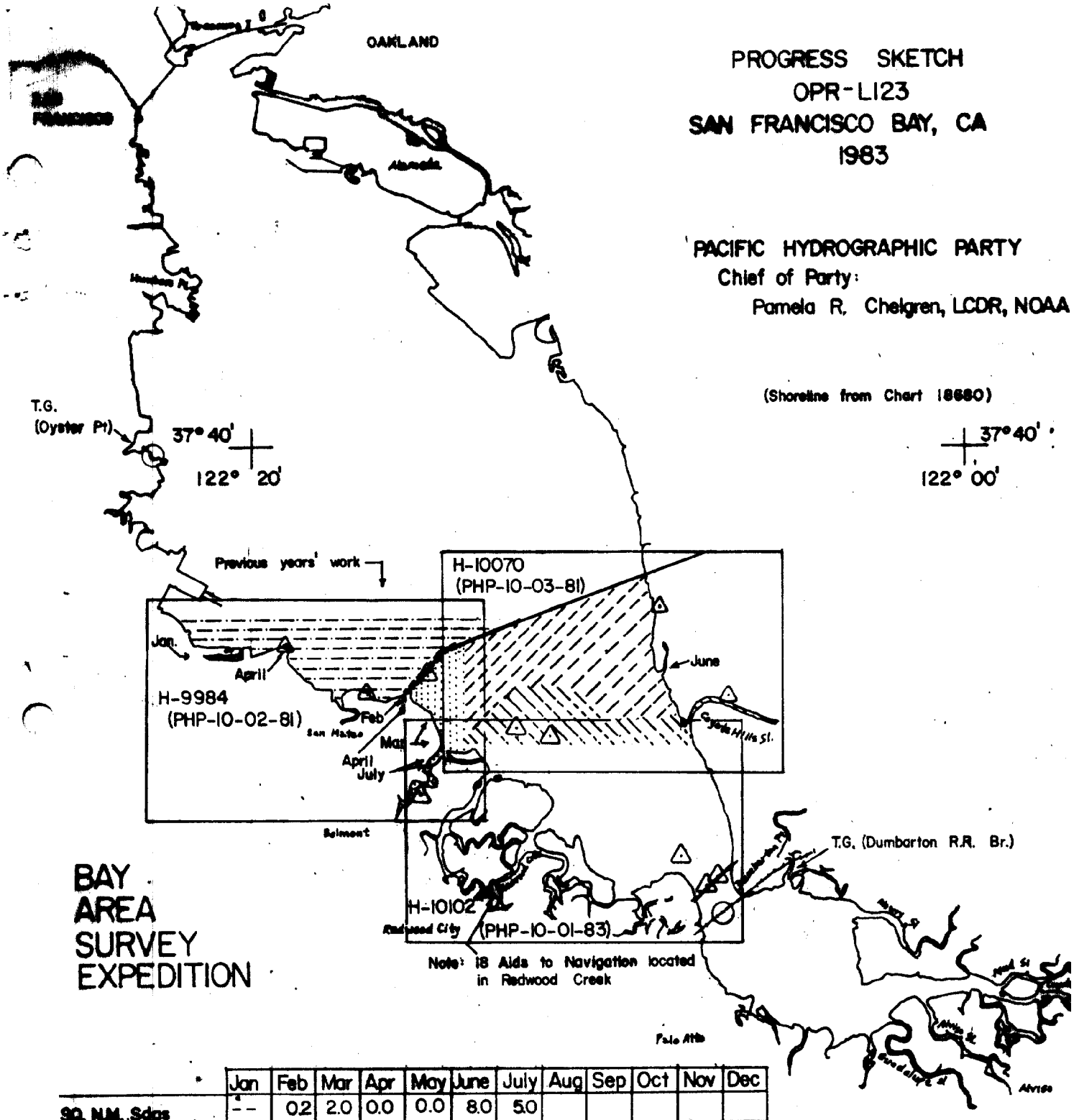
KWW 8/25/92 ✓ SJAC

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6

PROGRESS SKETCH
OPR-L123
SAN FRANCISCO BAY, CA
1983

PACIFIC HYDROGRAPHIC PARTY
Chief of Party:
Pamela R. Chelgren, LCDR, NOAA



BAY AREA SURVEY EXPEDITION

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
SQ. N.M. Sdgs	--	0.2	2.0	0.0	0.0	8.0	5.0					
L.N.M. Misc. Dist.	0.2	18.0	87.0	19.0	5.0	56.0	182.0					
L.N.M. Dist To & Fr.	1.0	25.0	104.0	40.0	10.0	68.0	62.0					
L.N.M. Sdg. Line	0.3	6.4	68.2	6.8	0.1	162.3	147.0					
Bottom Samples	--	--	6	--	--	36	3					
Control Stations	1	3	20	4	--	2	3					
Tide Gauges	--	--	--	--	1	--	--					
L.N.M. Field Edit	1.0	--	--	4.0	10.0	6	5.5					

A. PROJECT.

Survey H-10070 (PHP-10-3-81) was accomplished in accordance with project instructions OPR-L123-PHP-81, San Francisco Bay, Bay Area Survey Expedition (BASE), dated August 11, 1981. Changes to the above project instructions which apply to this survey are change number 3, dated June 10, 1982; change number 4, dated December 29, 1982; and change number 5, dated July 18, 1983.

B. AREA SURVEYED.

Survey H-10070 was conducted in the southern portion of San Francisco Bay. The survey encompassed a rectangular portion of southeast San Francisco Bay (20.8 square nautical miles) lying on the east side of the San Mateo-Hayward Bridge. Part of the area delineated by the parameter tapes for this survey (the northwest corner) was already surveyed during survey H-9872 because of a different earlier survey sheet lay-out. The inclusive dates of the survey are from May 16, 1983 to August 2, 1983. The approximate limits of the area surveyed are as follows:

North	Latitude 37°36'05"N (west of 122°12'25"W).
	San Mateo Bridge (east of 122°12'25"W).
East	Alameda County shoreline.
West	Longitude 122°13'50"W.
South	Latitude 37°33'17"N.

C. SOUNDING VESSELS.

Vessel	Hull No.	EDP No.	Usage
Launch	1101	0651	Soundings 0-60 feet.
Skiff	594	0654	Sextant fixes/support.

Launch 1101 is equipped with two seperate narrow beam (7½ degree) transducers used for sounding data acquisition. One of the narrow beam transducers is mounted in the hull and was used for very little of the sounding data acquisition on this survey. The second narrow beam transducer was installed during haulout in February 1983 and consists of an aluminum transducer bow mount which supports the transducer away from the hull in front of the boat. The bow mount transducer is used for high speed sounding when there is a low possibility of the launch striking a shoal or submerged hazard. When in use, the bow mount transducer is held firmly in place under the water by a tripod configuration of supporting arms and nylon tension lines. During slower nearshore work, when the hull mounted narrow beam transducer

is used, the bow mount is disengaged and folded up out of the water. Launch 1101 is also equipped with a 45 degree hull mounted wide beam "search" transducer.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS.

All soundings on H-10070 were recorded from launch 1101 using a standard Ross Fineline fathometer and digitizing system using one of two single 7½°, 100 KHz transducers. The Ross system consists of a model 2000 power inverter, a model 4000 transceiver, a model 5000 analog recorder and a model 6000 digitizer.

The Ross system on launch 1101 was made up of the following instruments:

Component	Model No.	S/N
Power inverter	2000	1003
Transceiver	4000	1097
Analog recorder	5000	1082
Digitizer	6000	3787

Sound Velocity Correctors.

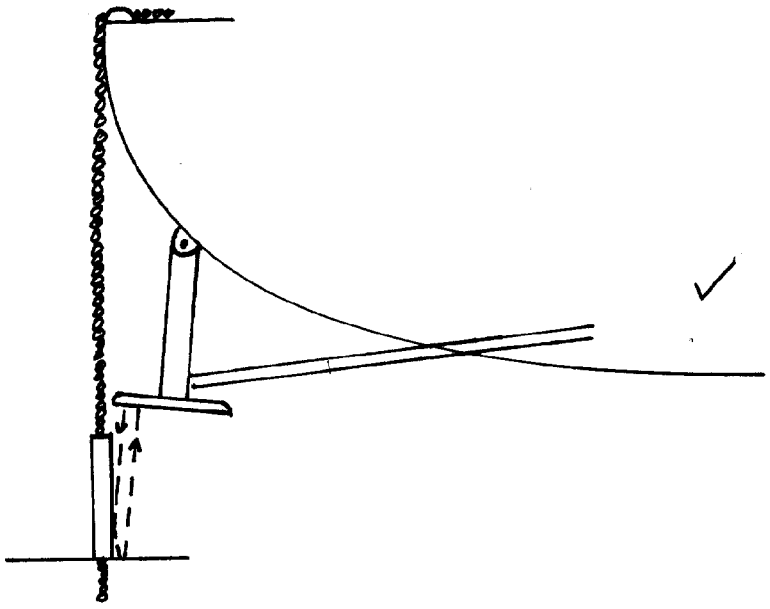
Depths on this survey ranged from 0 to 60 feet. Bar checks were made twice daily if wind and sea conditions permitted. Many times the wind was too strong in the afternoon for the light-weight jet launch to get usable bar check data. An 11x1 foot aluminum bar suspended on ¼ inch steel chains with painted markings at 5 foot intervals was used to obtain bar check data on the hull mounted transducers. For the bow mounted transducer a 2 foot diameter aluminum disk suspended on a ¼ inch steel chain marked at 5 foot intervals was used to obtain "bar check" information. Chain markings were checked for accuracy prior to beginning the survey and after its completion and found to be accurate. Bar checks were abstracted daily using a measured static draft value of 2.0 feet for the bow mounted narrow narrow beam transducer, 1.6 feet for the hull mounted narrow beam transducer and 1.6 feet for the hull mounted wide beam search transducer.

Sound velocity correctors for the point values measured during the bar check (5 foot intervals) were computed using the following formula:

Bar depth at A = Digital depth value at bar depth A + velocity corrector at depth A + measured transducer draft.

Sound velocity correctors were computed using the mean of the daily values for each bar depth and the appropriate static draft value for the transducer being used. The overall point corrector value for each bar depth was plotted on a depth versus velocity corrector grid and connected by a smooth curve which was the source of the sound velocity corrector tables used to process the sounding data. Soundings on the field sheet are corrected for sound velocity.

NOTE: The five foot disk depth was not used in computations or the drawing of the velocity corrector graph for the bow mounted transducer. For some physical reason the five foot disk depth was producing a multiple reflected pulse which made the recorded depth appear to be deeper than it should have been for this depth. It is believed that the multiple reflection is caused by the center shaft of the disk. Because of the close proximity of the disk to the transducer at the five foot depth, the multiple reflected pulse can still strike the transducer face. At deeper depths the multiple reflected pulse no longer returns to the transducer face and/or is no longer strong enough to affect the single reflected (correct) pulse.



There are three sound velocity corrector tables for survey H-10070. Sound velocity table 1 is used for soundings obtained from JD 154 through JD 175. Table 2 is for soundings obtained on JD 186. Table 3 is for soundings obtained from JD 190 through JD 214. ✓

Static Transducer Draft.

The static transducer draft values for the two hull mounted transducers on launch 1101 (EDP 0651) were physically measured in two parts. The first part was done while the launch was out of the water. The distance between the transducer face and the bottom of a black line painted on the hull above the water line was accurately measured using a surveying level (Lietz B-1, S/N 214303) and rod. The second part was done with the launch in the water with a normal crew and fuel load. The distance between the bottom of the painted black line and the actual water line was measured with a steel tape. ✓

The actual static transducer depth is the distance obtained in part 1 minus the distance measured in part 2. ✓

The actual static draft was measured at 1.63 feet for the hull mounted narrow beam transducer, and 1.60 feet for the hull mounted wide beam search transducer. ✓

The static transducer draft for the bow mounted transducer on launch 1101 was measured while the launch was in the water. A mark was made at the water line on the main support arm of the transducer mount (vertical arm) while the transducer was in the "down" position. The transducer was then swung up out of the water into the "up" position; and the distance between the transducer face and the mark placed on the mount arm measured with a steel tape. Two separate static transducer drafts were measured for the bow mounted transducer. The first static draft measured was the "survey static draft". This is the static draft measured with a normal fuel load, and crew in the same positions they would be in during sounding operations. The second static draft measured was the "bar check static draft". This is the static draft measured with equipment and crew in the same positions they would be in during bar/disk checks (i.e. one person, a bucket of ¼ inch chain and the calibration disk all on the bow). The difference between the two different static drafts for the bow mount transducer was measured to be 0.12 feet. ✓

The following is a listing of all static transducer drafts for launch 1101 (EDP 0651). Static transducer drafts used on the TC/TI tape were the same drafts as applied to field sheet soundings. ✓

Transducer	Measured value	TC/TI value
Hull wide beam	1.56 feet	Not used
Hull narrow beam	1.63 feet	1.6 feet
Bow "survey draft"	1.86 feet	1.9 feet ✓
Bow "bar check draft" (used only for bar check comparisons).	1.98 feet	n/a

Instrument/draft corrector.

The instrument/draft corrector is the corrector used to adjust the actual static transducer draft for sounding system characteristics. The instrument/draft corrector is the difference between the measured static draft and the apparent static draft obtained from bar check data. On this survey the instrument/draft corrector is +0.1 ft. for the bow transducer and 0.0 ft. for the hull narrow beam transducer (from H-9984); the only transducers used for sounding data acquisition. The wide beam "search" transducer has an instrument/draft corrector of -0.3 feet. Instrument/draft correctors were applied to the TC/TI tape, and were listed in the "scale-phase" column of the TC/TI listing. ✓

Settlement and Squat Corrections.

Settlement and squat measurements for launch 1101 were conducted on April 19, 1983 along the face of the Municipal Wharf in Redwood City, California. The depth of the water was always greater than 25 feet while taking the measurements. Changes in transducer draft verus RPM were measured for both narrow beam transducers (bow and hull mounted) by sighting from a stable level gun (Lietz B-1, S/N 214303) on the beach to a stadia rod held perpendicularly on the launch cabin top (or deck) above the transducer. The change in transducer draft at a specific speed (measured in RPM's) was 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 taken during each run were averaged and static rod elevation was determined by averaging rod readings taken before and after each run with the launch dead in the water. This procedure eliminates any error due to changing tide level (during our measurements the tide was at a high and only changing very slowly). Changes in transducer draft due to settlement and squat were measured at regular intervals (which included all standard survey speeds) through the range of 1000 to 2800 RPM with all surveying equipment installed and a normal fuel and crew load on board. These point values were plotted and connected to yield two continuous RPM versus draft correction curves. Settlement and Squat table 1 is to be used for the hull mounted narrow beam transducer with the ✓

bow mounted transducer raised up out of the water. When using the hull mounted transducer the bow mounted transducer must be raised up out of the water because of the bubble interference it causes ahead of the hull mounted transducer (i.e. the bow mounted transducer will always be out of the water when the hull mounted transducer is used). Settlement and Squat table 2 is to be used for the bow mounted transducer. ✓

Settlement and squat measurements were not taken on the wide beam transducer on launch 1101 because this transducer is only used at idle speed and not subject to settlement and squat considerations at this speed. ✓

Settlement and squat corrections are not applied to the field sheet, but are incorporated on the TC/TI tape. ✓

Sounding Instrument Accuracy and Adjustments.

The Ross echo sounding system simultaneously produces an analog fathogram and a digitized depth value. Digitized soundings sampled by the logging system at predetermined time intervals are the primary source of data on the field sheet, but these are supplemented by depths scaled from the analog record in areas where digitized soundings were incorrect or lacking. The digitized depths were sometimes triggered by a source other than the bottom (weeds, fish, 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 fathogram. ✓

Initial error occurs when the fathometer's transmit pulse trace is not adjusted to coincide with zero on the fathogram paper. The initial trace alignment was monitored and adjusted during survey operations. Any depths scaled from fathograms with initial error were corrected before being applied to the survey. Initial error has no effect on digitized depth values. A maximum initial error of 0.2 feet was seen on this 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 at the beginning and end of each survey day (or whenever the analog paper was changed) by introducing simulated depths (e.g. 10', 20',30', etc.) into the analog recorder via the digitizer phase calibrate mode. The analog trace was then compared to the simulated digitial depth. Survey operations were not conducted when phase error exceeded 0.2 feet in the range of depths encountered in the survey area. ✓

Application of Sounding System Correctors.

There are no area limitations on any of the sounding system correctors on H-10070 (i.e. all correctors are independent of area). The only corrector dependent on depth is the sound velocity correctors. ✓

The correctors applied to soundings on the field sheet are: ✓

Launch 1101 (EDP 0651)	Tide correctors
	Velocity correctors
	Static draft correctors

Because of the very rough bottom in the main ship channel only the shoaler depths were scaled to alleviate sounding congestion. In all cases the difference between the peaks and deeps is less than 4 feet. ✓

E. HYDROGRAPHIC SHEETS.

Hydrographic sheet H-10070 was divided into two field sheets at 1:10,000 scale (PHP-10-3-81 north and PHP-10-3-81 south) along latitude 37°34'47"N because of plotter size limitations. The sheets were constructed by PHP party members with program RK 201 on a Modified Transverse Mercator projection. ✓

Bottom samples, circle searches and some non-important soundings were plotted on two overlays to avoid congestion on the field sheet. ✓

Field records will be forwarded to the Pacific Marine Center, Nautical Chart Branch, Seattle, Washington for verification and smooth plotting. ✓

F. CONTROL STATIONS.

Newly established control stations on H-10070 which have been located and described are: ✓

Turk RM 4, 1925/83
Salt RM 3, 1925/82
San Fran Bay S Ch Lt 12, 1983 ✓
Dumbarton PG&E W Twr Lt, 1983
Dumbarton PG&E E Twr Lt, 1983

Stations Turk RM 4, 1925/83 and Salt RM 3, 1925/82 were monumented with standard NOS brass disks. ✓

All stations were located by Third Order, Class I techniques using intersection and traverse methods. ✓

Geodetic computations were based on the 1927 North American Datum. Hydrographic data was processed using unadjusted field geographic positions for the new stations established or located by the party. See Horizontal Control Report for H-9952 and H-9984 and Horizontal Control Report for H-10070 and H-10102, OPR-L123-PHP-81, San Francisco Bay, California for a complete discussion of horizontal control procedures, equipment, computations and observations. ✓

G. HYDROGRAPHIC POSITION CONTROL.

Survey launch position control on this survey was accomplished almost entirely with a Motorola Mini-Ranger ultra-high frequency transponder system. The survey area south of the San Mateo-Hayward Bridge was controlled by a range-range configuration. ✓ The very small area north of the bridge was controlled by range-azimuth methods. Some detached positions were located by sextant fixes or range-visual fixes.

Electronic Control Equipment.

The following electronic positioning equipment was used on this survey. ✓

Motorola Mini-Ranger Mobile Station, Launch 1101.

Mini-Ranger Console	S/N 713165
Transceiver	S/N 4931 (until JD 161)
Transceiver	S/N 1619 (after JD 161) ✓

Motorola Mini-Ranger Reference Stations.

Mini-Ranger Transponder, Code 5	S/N 4499 ✓
Mini-Ranger Transponder, Code 6	S/N 1652
Mini-Ranger Transponder, Code 7	S/N 4709

Position Control Equipment Operation.

South of the San Mateo-Hayward Bridge position control was accomplished with Mini-Ranger in a range-range configuration. Most of the survey area was controlled with the left station (code 5) located at Turk RM 4, 1925/83 and the right station (code 6) located at Marsh 1925. In an area in the southeast corner of the sheet where Turk/Marsh control LOP's would ✓ intersect at less than 30 degrees, control was changed to left station (code 7) located at Salt RM 3, 1925/82 and right station (code 6) remaining at Turk RM 4, 1925/83.

In the very small survey area north of the San Mateo-Hayward Bridge position control was accomplished with Mini-Ranger in ✓ a range-azimuth configuration with the transponder (code 7) and theodolite located at Point San Mateo 1925.

Mini-Ranger system checks were performed every second or third survey day (at Third Order, Class I located non-floating aids) to insure the equipment was operating properly. The mean of a group of sample range values collected during the systems check was required to fall within 5 meters of the computed corrected value for the calibration point to be acceptable. Correctors used in data processing were determined from the baseline calibration performed on February 22, 1983. ✓

Only one positioning equipment failure occured during this survey. Launch mounted transceiver S/N 4931 failed suddenly on the morning of June 10, 1983 (JD 161) before any data had been acquired that day. The transceiver was replaced with spare unit S/N 1619. Transceiver S/N 1619 had undergone Baseline Calibration at the same time as transceiver S/N 4931 (February 22, 1983). ✓

Andist correctors are not needed for H-10070 Mini-Ranger work because all sounding transducers on launch 1101 are within 5 meters distance of the Mini-Ranger antenna on the launch cabin top. The horizontal distance to the three transducers on launch 1101 from the Mini-Ranger antenna are as follows: ✓

Hull mounted narrow beam	1.6 meters
Hull mounted wide beam	0.0 meters
Bow mounted narrow beam	4.1 meters

Location of shore station equipment for hydrographic position control on H-10070 is as follows: ✓

Station No.	Station Name	Code
104	Turk RM4, 1925/83	5
113	Salt RM3, 1925/82	7
120	Marsh 1925	6
170	Point San Mateo 1925	7

Reference notes concerning "distance off" the San Mateo-Hayward Bridge and the San Mateo Bridge Transmission Towers were not usually annotated on the data printout because of the difficulty in determining where the center of these large objects are. ✓

DETACHED POSITION LISTING

Day/yr	Pos. #	Cartographic Code	Description	Remarks
136/83	7001	893	Concrete ruins.	In foul area.
	7002	893	Concrete and steel ruins.	In foul area.
	7003	280	Steel pipe.	In foul area.
	7004	893	Concrete and steel ruins.	In foul area.
	7005	893	Concrete and steel ruins.	In foul area.
167/83	1465		25 meter, on bottom, circle search. Nothing found.	PSR Item #34. Do not smooth plot.
194/83	7006	287	Steel drum partially buried in bottom.	
196/83	3037		25 meter, on bottom, circle search. Nothing found.	Search for prior survey snag. Do not smooth plot.
	7008	280	Steel pipe.	
214/83	3660	284	25 meter, on bottom, circle search. Steel and concrete ruins found.	Foul for radius of 20 meters. In foul area.
	7009		Fix to determine location of sewer pipeline.	Do not smooth plot.

H. SHORELINE.

Shoreline information for H-10070 was taken off TP-00535 expanded to 1:10,000 scale by a local reproduction company. Any subsequent changes to the T-sheet were annotated in red ink on the copy of the sheet submitted with the survey. All shoreline details were field edited and changes have been transferred to the field sheet. The photographs supplied were inconvenient in that there were no low water photos given to us, the scale was half that of the survey and we received no ratio prints. ✓

The "Revision Print" of TP-00536 (1:10,000 scale) does include some of the survey area of H-10070; but was not used because it contributes no information to this survey. ✓

There are two discrepancys between "T-sheet" positions and hydrographic positions for the same item on this survey. ✓

1. "San Mateo Bridge Transm Twr 3 1955" was miscompiled on TP-00535 approximately 25 meters north of it's published position. ✓

2. The "pile" shown on TP-00535 at latitude 37°33'29.7"N, longitude 122°09'19.5"W was determined to be incorrectly plotted during shoreline verification on H-10070. The source of the "pile" was the Field Edit Report for TP-00535 (Pos #8003) dated August 29, 1980. The Field Edit Report for TP-00535 has an incorrect G.P. listed for the center object of 3-point fix #8003. A new 3-point fix was taken on the item (in reality a pipe) during this survey (Pos #7008) by the same person who took the Field Edit Report fix in 1980 (Bruce Lund). The item was verified by Bruce Lund to be the same item. ✓

Control stations seaward of the shoreline include almost all of the San Mateo Bridge Transm Twrs (see signal list for actual towers used), Dumbarton PG&E E Twr Lt, 1983, Dumbarton PG&E W Twr Lt, 1983 and San Fran Bay S Ch Lt 12, 1983. ✓

I. CROSSLINES.

Crosslines comprise 9.7% of the soundings on H-10070. Agreement was 0-2 feet allowing a positional shift of 1½ mm. Soundings were reduced with preliminary actual tides or real tides. ✓

J. JUNCTIONS.

H-9872, 1:10,000 scale, 1980.

H-10070 agrees with this prior survey within 0-1 foot with the exception of a 3 foot sounding on H-10070 plotted next to a 5 foot sounding on H-9872 at latitude 37°35'58.5"N, longitude 122°13'41.1"W. The 3 foot sounding on H-10070 has only a 0.3 foot difference in depth from the surrounding depths on H-10070, which were plotted as 4 foot depths. Agreement is considered very good with this prior survey. ✓

H-9984, 1:10,000 scale, 1983.

Survey H-9984 was run in the same year and with the same survey launch as survey H-10070. Sounding overlap of H-10070 with H-9984 exceeds requirements. Agreement is within 0-1 foot in the shallow areas outside the channel, and 0-2 foot in the irregular bottomed channel which was plotted with predicted tides on H-9984. Agreement is considered excellent with this prior survey. ✓

K. COMPARISON WITH PRIOR SURVEYS.

Presurvey Review Item number 34 (PSR #34).

This item consists of a "pile" charted at latitude 37°34'~~40~~ 39.8"N, longitude 122°11'~~21~~ 22.2"W which originated from H-5129 (1930) as a visible pile. It was not disproved during H-8275 (1956) and so has remained charted. Change number 2 to Hydrographic Project Instructions OPR-L123-PHP-81 gives the Third Order position of this pile as latitude 37°34'39.52"N, longitude 122°11'22.43"W. ✓

The investigation of this item consisted of a 25 meter radius, on bottom, circle search (Pos #1465) as per project instructions change number 5. No remains of the "pile" were found, and it is recommended that this item be deleted from the chart. Concur

Presurvey Review Item number 36 (PSR #36).

This item consists of a "submerged pile, PA", charted at latitude 37°33'~~56~~ 13'05"N, longitude 122°~~14'01~~ 22'"W which originated with a U.S. Power Squadrons report of 1972 (CL 1843/72). It was subsequently revised to submerged through a U.S. Coast Guard Auxiliary report of 1977 (CL 392/77) which reported that the pile was broken off at the low water mark and visible only on a minus tide. ✓

The investigation of this item consisted of the following: ✓

1. All attemps to contact the original observer, William R. Macke, failed. He has since moved from the area and no present address or phone number can be found. ✓

2. The Chairman of Cooperative Charting (USPS), George A. Traeger, was contacted by telephone. He could give no information on the pile, Mr. Macke's present whereabouts or who might have been with Mr. Macke when the original observation was made. ✓

3. Since the original fix information given by Mr. Macke to the Marine Chart Branch has been subsequently "lost", and Mr. Macke could not be contacted, no knowledge of the accuracy of the charted position could be determined. ✓

4. Mr. Paul G. Jones, who reported that the pile had broken off, was contacted by telephone. His fix on the "broken off pile" consisted of a radar fix from his vessel "Inland Seas" which had in turn been fixed by radar. Such a fix could in no way be accurate enough to update the charted position of the "pile". Mr. Jones states that the charted position of the pile appears to be correct. He also states that he has not seen the pile in the last two or three years, even during minus tides. ✓

5. Three visual searches of the area were made by PHP party personnel during minus tides. The lowest tide utilized during a search was -2.6 feet (-1.8 feet at the Golden Gate Bridge) predicted on June 13, 1983. ✓

6. An on bottom, two boat, wire drag search was performed over and within 200 meters of the charted position. The requirements for disproval of a "PA" item require a 1 nautical mile radius wire drag search. A search of such magnitude is much beyond the scope of a small field party such as ours. Thus the above search was not intended to "disprove" the item, only to find it if it really did exist in the position charted. For this reason no data was recorded during the search because it would not have contributed anything to the survey in itself. The search performed, was controlled by buoys and Mini-Ranger. The 200 meter radius area was thoroughly drug in both directions numerous times with sufficient overlap. Nothing was found. ✓

7. After it was determined that the sewer pipeline charted north of fixed aid "12" was actually quite closer to the PSR #36 "pile" than charted, the sewer plant was contacted for any knowledge of the pile. Mr. Jim Buhle, Plant engineer, (415) 571-7121, states that the pile was present when the pipeline was built in 1971. He also states that the pile was in about 15 feet of water and about 100 meters north of the pipeline, and very old and decomposed. ✓

8. A second, on bottom, two boat wire drag search was performed over and within 150 meters of the area specified by Mr. Buhle. For the same reasons as before, no search data was recorded. Again, nothing was found. ✓

It is recommended that because of the reported age and condition of this "pile"; and the on bottom searches performed over the area that it be revised to "submerged pile, PA, ED". *Concur*

H-8027, 1:20,000 scale, 1955-1956.

Soundings.

This prior survey has only the very small triangular section north of the San Mateo Bridge in common with H-10070. Depths in the area range from 3 to 5 feet. Agreement is from 0, to 2 feet deeper on H-10070. The deeper depths on H-10070 appear to be the result of erosion (or mining) of the shell banks. The general depths (i.e. 4 and 5 feet) around the shell banks on H-8027 agree within 1 foot of the corresponding depths on H-10070. ✓

This phenomenon of diminishing shell banks has been observed throughout the area (e.g. H-9952, H-9984). And is also present on the south portion of H-10070. The cause is in part because of the death of the oyster beds themself, so that they no longer replenish. An additional cause has been the extensive dredging for shells and sand to the southeast of the San Bruno Shoal. This dredging has allowed a pathway for tidal current erosion to reach the shallows to the east of the main channel. ✓

Non-Sounding Features.

The only non-sounding feature on H-8027 in the survey area of H-10070 is the San Mateo-Hayward Bridge. This section of the bridge still exists as shown on H-8027. ✓

H-8210, 1:10,000 scale, 1956.

Soundings.

There has been a general deepening on H-10070 of the entire area in common with H-8210. The area has deepened overall 1 to 3 feet. ✓

NOTE: During the comparison of H-10070 with the prior surveys and the chart, settlement and squat correctors were taken into consideration. For the bow mounted transducer the corrector for standard survey speed 2700 RPM is -0.9 feet. Settlement and squat correctors were not applied to soundings on the field sheet. ✓

Other than the general differences noted above the following differences were also observed:

1. The bare shoal shown lying along the San Mateo-Hayward Bridge (130 meters south of the bridge) on H-8210 no longer exists. It is believed that the erosion of this shoal (shells) was caused by the same reasons as outlined in the comparison with H-8027. ✓

2. In the area of latitude 37°34'00"N, longitude 122°10'00"W there has been a deepening of 4 feet from the 1 foot depths shown on H-8210. Again, it is believed that the mechanism outlined in the comparison with H-8027 is the cause of most of this deepening. ✓

3. The channel to the Coyote Hills Slough has moved north from that shown on H-8210. This channel also presently carries a depth of 0-1 foot all the way to the bay; which it did not do on H-8210. The Coyote Hills Slough is a flood control system discharge. It is believed that the large volume of water caused by the abnormally high rainfall in northern California in the last few years was responsible for cutting the new channel to the Bay. ✓

Non-Sounding Features.

Non-sounding features shown on H-8210 which are in the survey area of H-10070 are as follows: ✓

1. "Pile (6)" shown at latitude 37°34'25.9"N, longitude 122°09'07.5"W. This pile was observed to no longer exist during a minus tide when the entire area was bare. It is recommended that this item be deleted from the chart. Concur

2. "Piles (H-5129)" shown at latitude 37°35'48.7"N, longitude 122°09'09.7"W. This item was observed to no longer exist during a minus tide when the entire area was bare. It is recommended that this item be deleted from the chart. Concur

3. The San Mateo-Hayward Bridge and the San Mateo Bridge Transmission Towers still presently exist as shown on H-8210.

H-8275, 1:10,000 scale, 1956.

Soundings.

In the depths of 12 to 55 feet there is very good agreement (within 0-2 feet) with prior survey H-8275. The edges of the channel (i.e. 12, 18, 24, etc. foot contours) shown on H-8275 agree very well with the present survey (within 20 to 30 meters). As with the comparison with prior surveys H-8027 and H-8210 there has been an overall deepening of 0 to 3 feet in the depths of 0 to 12 feet.

Other than the general deepening trend noted above, the following differences were observed:

1. The bare shoal shown on H-8275 which parallels the San Mateo Bridge on the south side (the same shoal discussed in the comparison with H-8210) has almost totally disappeared. There are a few isolated remains of the original shell bank which made up this shoal. Split sounding lines were run over the area (Development E). See the comparison with H-8027 for some of the possible reasons for the diminishment of this shoal.

2. There has been a deepening of up to 4 feet in the general area of latitude 37°34'00"N, longitude 122° 10'00"W as previously noted in the comparison with prior survey H-8210.

Non-Sounding Features.

The following are the non-sounding features shown on H-8275 in the survey area of H-10070:

1. The San Mateo-Hayward Bridge and the San Mateo Bridge Transmission towers still presently exist on H-10070 as they are shown on H-8275.

2. "Pile (H-5129)" located at latitude 37°34'39.8"N, longitude 122°11'22.2"W. This is Presurvey Review Item #34. This item was disproved with a circle search and it is recommended that it be deleted from the chart (as stated at the beginning of this section).

The following non-sounding features on H-8275 are located in the "foul area" recommended in section L of this report: ✓

1. "Snag" latitude 37°36'23.6"N, longitude 122°11'05.7"W.
2. "Snag" latitude 37°36'16.8"N, longitude 122°11'32.4"W.
3. "Snag" latitude 37°36'10.9"N, longitude 122°11'51.8"W. ✓
4. "Snag" latitude 37°36'07.8"N, longitude 122°11'54.8"W.
5. "Snag" latitude 37°35'39.8"N, longitude 122°13'46.2"W.

We believe that the positions shown for these items on H-8275 could be up to 100 meters away from their true locations. Or, if they were plotted correctly on H-8275 they are now insignificant items compared to the much more serious hazards to navigation which surround them (i.e. steel and concrete ruins). Concur

We have had continuous problems with visual fixes in the area. About the only objects which can be used for a sextant fix in the area are the San Mateo Bridge Transmission Towers. It is very difficult to determine the center of the towers at close range. We have had a number of sextant fixes close within a couple of meters of their sextant check fixes, but in reality be 20 or 30 meters away from their real location. The fixes taken in this "foul area" on H-10070 were either controlled or checked by Mini-Ranger. The hydrographers who performed H-8275 used the same transmission towers as hydrographic signals, but they did not have an electronic positioning system to back them up. The only real way to know if the position information for these "snags" is correct is to obtain the original descriptions as written during H-8275, and compare them to the descriptions of the nearby items located during H-10070. ✓

If the "snags" actually were located accurately on H-8275 then they are now destroyed, or totally insignificant compared to the numerous much more serious hazards to navigation in the area (only the most serious of which were located during H-10070). Concur

It is recommended that the above five "snags" which are in the area of the recommended "foul area" be deleted from the chart, and the "foul area" be charted as recommended in section L. Concur

L. COMPARISON WITH THE CHART.

Survey H-10070 was compared with the 33rd edition of chart 18651 (9/18/82), the 21st edition of chart 18652 (April 1982) and a June 25, listing of charts 18651 and 18652's FFAIDs. ✓

Soundings.

In general the depths agree within ± 2 feet of chart 18652. As also noted in section K, there has been an overall deepening of 0 to 2 feet on H-10070 from the chart.

Other than the general differences noted above or discussed in section K, are the following:

1. The bare "shell banks" shown charted at latitude 37° 33.8'N, longitude 122°10.3'W no longer exist. The area is now 3 to 7 feet deep.

2. The main ship channel (in the southwest corner of the sheet) has silted in to depths of up to 4 feet shoaler than charted.

As discussed in section K there were two days of on bottom wire drag search performed on PSR #36. The wire drag search data was not recorded because of the reasons stated in section K.

There were seven development investigations performed on survey H-10070. They are as follows:

A. Wide beam fathometer search for charted "snag" at latitude 37°35.7'N, longitude 122°13.7'W. Position numbers 6000-6031 (all rejected).

B. Split lines and axis line over shell bank shoal. Position numbers 3038-3068 and 3607-3610. Least depth Ref# 3060/4 = 4.6ft. MLLW Least depth Ref# 3606/5 = 4.3ft MLLW

C. Split lines over shoal area in southwest corner of sheet. Position numbers 3069-3078. Least depth Ref# 3071/1 = -2.0ft MLLW

D. Split lines over the channel leading from the Coyote Hills Slough to the bay. Position numbers 3354-3400.

E. Split lines over the area of the prior shoal charted next to the south edge of the San Mateo-Hayward Bridge. Position numbers 3415-3472 and 3547-3606.

F. Split lines and axis line over small shoal in southwest corner of sheet. Position numbers 3537-3545 and 3657-3659. Least depth Ref# 3540/5 = 0.6ft MLLW, Least depth Ref# 3657/5 = 0.9ft MLLW

G. Crosslines run at 45 meter line spacing across the sewer pipeline trench in the southwest corner of the sheet. Position numbers 3611-3656.

Hydrographic findings of special note are the general deepening of the area, and the diminishment of the shell banks in the area as noted in section K. *Concur*

There has been one Danger to navigation Report submitted to the U.S. Coast Guard concerning hazards to navigation on this survey. The hazards reported were a foul area around the eastern part of the San Mateo-Hayward Bridge, an obstruction at latitude 37°36' 21.0"N, longitude 122°09'45.9"W and a pipe at latitude 37°33' 24.8"N, longitude 122°09'23.9"W. The letter is dated 20 July 83, and is attached to the end of this report. A separate letter was sent to the California Department of Transportation recommending that they replace their faded "submerged obstructions" warning signs on the San Mateo-Hayward Bridge. ✓

Non-Sounding Features.

Other than the non-sounding features already addressed in section K of this report, the following features have changed, been destroyed, or were incorrecty charted: ✓

1. The sewer pipeline in the southwest corner of the sheet is charted incorrecty. The pipeline is plotted correctly on the field sheet in red ink. Engineer's drawings of the pipeline have been submitted with the survey. It is recommended that the charted "sewer" be revised to it's correct location as shown on the field sheet. *chart as shown on smooth sheet* ✓

2. The "mud groins" charted along the shoreline south of the Coyote Hills Slough. Websters Dictionary defines a groin as a rigid structure built out from from shore. This feature is a low mud ridge, is not at all prominent, and the whole area is above the 0 foot curve. It is recommended that this item be deleted from the chart. *Do not concur. Chart at compiler's discretion*

3. "Snag" charted at latitude 37°35.7'N, longitude 122°13.7'W. This snag was searched for with a wide beam fathometer search (Development A). Nothing was observed during the fathometer search. This item is in the limits of the "foul area" recommended later in this section. It is recommended that because this item is in the "foul area", and because there are present obstructions in the immediate area which should more importantly be charted, that this item be deleted from the chart. *also reference D.R. K (H-8277) non-sounding #5.* ✓

4. The "stack" charted at latitude 37°36'05.82"N, longitude 122°04'21.41"W. The stack was verified to no longer exist by field observation. It was removed from the Horizontal Control net sometime in the last five years. It is recommended that this "stack" be deleted from the chart. concur

   NOTE: This item is outside the survey limits of H-10070 and all other planned surveys in San Francisco Bay. H-10070 is the closest survey sheet to this item. ✓

The following additions should be made to the chart. concur

1. "Area foul with visible and submerged pipes, concrete and steel obstructions". The area is enclosed by a line drawn from latitude 37°37'00"N, longitude 122°09'23"W to 37°35'35"N, 122°14'09"W to 37°35'30"N, 122°14'06"W to 37°35'42"N, 122°12'59"W to 37°36'57"N, 122°09'18"W and return. Later in this section the most significant obstructions in the area are recommended for charting. At least ten other lesser obstructions were observed in the area, but because of rising tides no fix was taken on them. All of the obstructions appear to be from a common source. They consist of such things as concrete with steel reinforcing bars and steel cable extending from it, large (5-10 foot) chunks of concrete and sections of skeletal steel fabrications. Some of the obstructions cover an area of up to 30 meters. The San Mateo Bridge has warning signs on it which inform vessels of the submerged obstructions. These signs are very faded though, and it has been recommended that they replace or repaint them. ✓

2. "Obstruction" at latitude 37°35'42.5"N, longitude 122°12'59.1"W. Hydrographic position # 7001. This item consists of concrete ruins and is in the recommended foul area. ✓

3. "Obstruction" at latitude 37°36'10.4"N, longitude 122°11'51.3"W. Hydrographic position # 7002. This item consists of concrete and steel ruins and is in the recommended foul area. ✓

4. "Pipe", at latitude 37°36'15.1"N, longitude 122° 11'32.0"W. Hydrographic position # 7003. This item is a vertical steel pipe and is in the recommended foul area. ✓

5. "Obstruction" at latitude 37°36'16.2"N, longitude 122°11'33.2"W. Hydrographic position # 7004. This item consists of concrete and steel ruins and is in the recommended foul area. ✓

6. "Obstruction" at latitude 37°36'25.1"N, longitude 122°11'02.5"W. Hydrographic position # 7005. This item consists of concrete and steel ruins and is in the recommended foul area. ✓

7. "Obstruction" at latitude 37°36'21.0"N, longitude 122°09'45.9"W. Hydrographic position # 7006. ✓

8. "Pipe" at latitude 37°33'24.8"N, longitude 122° 09'24.0"W. Hydrographic position # 7008. Concur

9. "Submerged obstruction" at latitude 37°35'39.8"N, longitude 122°13'46.1"W. Hydrographic position # 3660. This item consists of concrete and steel ruins and is in the recommended foul area. ✓

10. "Pile" at latitude 37°33'34.2"N, longitude 122°07' 43.3"W. This item was scaled off TP-00535, and verified to exist by field observation. ✓

11. "Ruins" at latitude 37°35'54.6"N, longitude 122° 08'48.9"W. This item was scaled off TP-00535 and verified to exist during a minus tide. ✓

12. "Ruins" at latitude 37°36'01.2"N, longitude 122° 08'49.8"W. This item was scaled off TP-00535 and verified to exist during a minus tide. ✓

13. "Piles" at latitude 37°36'04.8"N, longitude 122° 08'42.0"W and latitude 37°36'06.0"N, longitude 122°08'43.2"W. This item was scaled off TP-00535 and verified to exist by field observation. ✓

14. "Obstruction" at latitude 37°34'25.8"N, longitude 122°08'18.6"W. This item was never applied to the T-sheet from field edit in 1981. Fix information for this item is contained in the Supplement to Field Edit Report TP-00535, dated June 2, 1981. It's position number in that report is #8029. This obstruction was verified to still exist during H-10070 and it is recommended that it be charted. ✓

15. It is recommended that "Turk Island" and it's contour lines be charted as shown on U.S. Geological Survey Quadrangle Map "Newark, Calif., N3730 - W12200/7.5". This hill is prominent from the bay, and the chart should depict the fact that when observed from the water the mariner is not looking at the north end of the "Coyote Hills". The rest of the surrounding area is flat. Concur

The copy of TP-00535 included with this survey has been corrected where wrong (in red ink) in the area of survey H-10070. No additions or new features have been added to the T-sheet. All features shown on the T-sheet (which have not been corrected) can be assumed to be correct, and verified. All chartable features (including additions) have been applied to the field sheet. ✓

M. ADEQUACY OF SURVEY.

Other than PSR Item #36 survey H-10070 is complete and adequate to supersede all prior surveys for charting purposes. ✓

N. AIDS TO NAVIGATION.

There are no floating aids to navigation in the survey area of H-10070. ✓

There is one non-floating aid to navigation on survey H-10070. San Francisco Bay South Channel Light 12 was located by Third Order, Class I methods. This geodetic information will update the position information for this aid. San Fran Bay S Ch Lt 12, 1983 is in the 1983 edition of the Light List but has no position listed. A comparison was made with the position listed in a June 25, 1982 listing of FFAID's for charts 18651 and 18652. The FFAID position agrees within 5 meters of the unadjusted field position for this non-floating aid to navigation. This aid to navigation adequately serves the apparent purpose (i.e. marking shoal/channel edge) for which it was established. ✓

All existing bridges and overhead cables on H-10070 are shown adequately on the chart. ✓

There are no submarine cables or ferry routes known to exist in the survey area of H-10070. ✓

There is one submerged pipeline (sewer) on H-10070. This pipeline is incorrectly charted; see section L, "Comparison With the Chart" for complete information. ✓

O. STATISTICS.

Vessel	Number of Positions	N. miles of Sounding Lns.	Square Nm of Hydrography	Detached Positions
1101 (EDP 0651)	~~2721~~ 2716	309.3	17.2	3
594 (EDP 0654)	8	0.0	0.0	8
Total	~~2729~~ 2724	309.3	17.2	11

Number of bottom samples:	39	
Number of tide stations:	1	(Plus 3 of PTP's-see tide note)
Number of current stations:	0	
Number of velocity casts:	0	(bar checks only)
Number of magnetic stations:	0	

P. MISCELLANEOUS.

As mentioned in the sections K and L there has been an overall deepening of the shoaler areas of survey H-10070. Other than the possible reasons for this already given in those sections, it was reported to us that since the new San Mateo-Hayward Bridge was built there have been more and larger waves in the area. The wind (and waves) almost always come from the northwest in the southern San Francisco Bay. This means the waves can come through the main spans of the bridge and cause wave erosion on the shallows south of the bridge. The old bridge (before 1971) was supported on closely spaced piling all the way across the bay with a short lift span in the channel. This closely spaced piling would have blocked off most of the wind and waves from north of the bridge.

During the time period of survey H-10070 there has been an extremely large amount of fresh water runoff into the north San Francisco Bay from the Sacramento and San Joaquin Rivers. This runoff has been caused by the abnormally large amount of rainfall received in northern California this year. The large amount of runoff has the effect of filling in the void which would be "low tide", and damming up behind the "high tide". Both of these two events have the affect of "flattening out" the "highs" and "lows" in the tidal cycle (with a time shift introduced in the "high"). Low water has been observed to last from 20 to 70 minutes; high water from 20 to 50 minutes on tide gage records. Program AM 500 (Predicted Tide Generator) can not take this "flattening out" in to account, so it can be expected that the soundings will change somewhat when real tides are applied.

Q. RECOMMENDATIONS.

It is recommended that PSR Item #36 be disproved with a 1 nautical mile radius wire drag search when operationally feasible. ✓

No construction or dredging is presently being done in the area covered by survey H-10070. ✓

R. AUTOMATED DATA PROCESSING.

DEC PDP 8/e Computer.

Number	Name	Version Date	
RK201	Grid, Signal and Lattice Plot	4/18/75	
RK211	Range-Range Non-Real Time Plot	2/2/81	
RK212	Visual Station Table Load	4/1/74	
RK214	Range Visual Non-Real Time Plot	2/11/81	✓
RK215	Visual Non-Real Time Plot	2/11/81	
RK216	Range-Azimuth Non-Real Time Plot	2/9/81	
RK300	Utility Computations	10/21/80	
RK330	Reformat and Data Check	5/4/76	✓
PM360	Electronic Corrector Abstract	2/2/76	
AM500	Predicted Tide Generator	11/10/72	
RK561	H/R Geodetic Calibration	2/19/75	✓
AM602	Elinore-Line Oriented Editor	5/20/75	✓

Hewlett Packard 9815A Calculator.

Number	Name	Version Date	
811101	Geodetic Package	Feb 1983	✓

S. REFERRAL TO REPORTS.

Other project reports covering this survey area are: ✓

1. Horizontal Control Reports for years 1980-1983 (submitted at least yearly). ✓
2. Field Edit Report, and Supplement to Field Edit Report for TP-00535 (submitted in August 1980 and June 1981). ✓

3. Tide Station Reports and leveling records submitted to N/OMS 121 on all project area tide stations semi-annually. ✓

4. Coast Pilot Reports submitted annually to N/MOP 21 every January. ✓

Respectfully submitted,

Eric Secretan

Eric Secretan
LTJG, NOAA

Field Tide Note

Soundings on the field sheet were reduced on the basis of either telemetered tides from San Francisco(Golden Gate) California or real tides from San Mateo, California. Real tides from San Mateo were applied to soundings taken before JD 161/83. Telemetered tides from San Francisco were applied to soundings taken from JD 161/83 through to the end of the survey (JD 214/83).

Tides were adjusted with correctors supplied by the Tides and Water Levels Branch, Rockville, Maryland as follows:

Real tides from San Mateo, California (941-4458):

Time of high water	0 minutes
Time of low water	0 minutes
Height ratio	1.0

Telemetered tides for San Francisco, California (941-4290):

Time of high water	+43 minutes
Time of low water	+1 hour 10 minutes
Height ratio	1.41

Tidal reducers were computed at 0.2 foot intervals using a PDP 8/e computer system and program AM 500, "Predicted Tide Generator".

Only one tide gage (ADR type) was in operation in the survey area besides the three permanent gages maintained by the NOAA, Pacific Tide Party at San Francisco, Alameda and San Mateo, California. Location and period of operation of this single gage are as follows:

Site	Position	Period
Dumbarton Railroad Bridge 941-4510	37°29'57"N 122°06'23"W	May 11, 1983 - still in operation.

Dumbarton Railroad Bridge.

Fischer Porter ADR gage, S/N 7404A0407M17, was installed and levelled on May 11, 1983 and was in place for the entire survey. Excellent records were obtained with no interruptions in data. The analog record reads 40.3 feet greater than the staff.

Levels.

Levels were run to 7 marks (2 new and 5 historical) on May 11, 1983. No other levels have been run since installation on the Dumbartion Railroad Bridge Station. The gage is to remain in operation for further survey sheets. The next levels will be run in September 1983, and every six months after that. No noticeable divergence has been observed in the gage to tide staff difference since the Dumbarton Railroad Bridge Tide Station was established.

Time Meridian.

The time meridian used for Dumbarton Railroad Bridge Tide Station is 120^{0} west (Pacific Standard Time).

Pacific Tide Party Tide Stations.

The Pacific Tide Party has maintained tide gages at Fort Point, Alameda and San Mateo, California during the entire survey period of H-10070. There have been no breaks in the data for Alameda and San Mateo gages during H-10070. The ADR gage at Fort Point was out of operation from the start of survey H-10070 until June 10, 1983. During this time, the backup bubbler gage was operating at Fort Point.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
PACIFIC HYDROGRAPHIC PARTY - NOAA
1A UCCELLI BLVD.
REDWOOD CITY, CA 94063

10 August, 1983

TO: Chief, Tidal Requirements and Acquisitions Section - N/OMS121

Pamela R. Chelgren, LCDR, NOAA
FROM: Chief, Pacific Hydrographic Party - N/MOP223

SUBJECT: Smooth Tide Correctors for Hydrographic Survey H-10070

It is requested that smooth tide correctors be supplied to the Nautical Chart Branch (PMC N/MOP21, 7600 Sandpoint Way NE, Seattle, Wash. 98115) for hydrographic survey H-10070. A Progress Sketch and an Abtract of Times is appended.

NOTE: It is strongly recommended that the San Mateo Tide Gage data be used for determining the correctors for this survey. This gage is only one mile west of the west edge of the survey, and it was running the whole survey period. Fort Point Tide Gage data applied here would have a significant zoning error this year (compared to previous years) due to the excessively large river runoff from the Sacramento and San Joaquin Rivers. The bay has seen very unusual and unpredictable differences due to the hydraulic-ramming effect of this flow. The Fort Point WILTS printouts we received showed there was a filling in the void which would be "low tide", and a damming up behind the "high tide". Low water has been observed to last from 20 to 70 minutes; high water from 20 to 50 minutes.

DATE: 10/3/83

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 941-4458 San Mateo Bridge, CA

Period: May 16 - July 27, 1983

HYDROGRAPHIC SHEET: H-10070

OPR: L123

Locality: South San Francisco Bay, California

Plane of reference (mean lower low water): 14.67 feet

Height of Mean High Water above Plane of Reference is 7.0 feet

REMARKS: Recommended Zoning:

1. North of latitude 37°35.0' zone direct.
2. South of 37°35.0' to 37°34.0'.
   a) West of longitude 122°13.0' zone direct.
   b) East of 122°13.0' to 122°10.0' apply x 1.03 range ratio.
   c) East of 122°10.0' apply +15 minute time correction and x 1.07 range ratio.
3. South of 37°34.0'.
   a) West of 122°13.0' zone direct.
   b) East of 122°13.0' to 122°10.0' apply x 1.07 range ratio.
   c) East of 122°10.0' apply +15 minute time correction and x 1.07 range ratio.

James R. Hubbard
Chief, Tidal Datums Section, Tides & Water Levels Branch

SIGNAL TAPE LISTING

H-10070

PHP-10-3-81

7/26/83

Station	Latitude	Longitude	CRT	Elev	Freq	Name - Source
104 0	37 34 18043	122 06 14236	250	0034	000000	Turk RM 4, 1925/1983 - PHP
112 0	37 32 49793	122 13 58002	139	0170	000000	Radio Station KNBC Tall Mast 1955 - 371221/2044
113 0	37 36 28613	122 08 43689	250	0006	000000	Salt RM 3, 1925/1983 - PHP
120 0	37 32 04661	122 11 42707	250	0008	000000	Marsh 1925 - 371221/2020
130 0	37 30 53889	122 12 17000	139	0041	000000	Alien, 1982 - PHP/USCG
151 0	37 33 14065	122 05 36907	139	0089	000000	Red Hill Top 1958 - 371221/2025
170 0	37 35 28848	122 19 06017	250	0013	000000	Point San Mateo 1925 - 371221/3036
212 0	37 33 35554	122 12 33842	139	0003	000000	San Fran Bay S Ch Lt 12, 1983 - PHP
300 0	37 37 07990	122 08 38010	139	0025	000000	San Mateo Bridge Transm Twr TRA 1955 - 371221/2083
301 0	37 37 04933	122 08 56478	139	0035	000000	San Mateo Bridge Transm Twr 1 1955 - 371221/2066
303 0	37 36 51738	122 09 40993	139	0035	000000	San Mateo Bridge Transm Twr 3 1955 - 371221/2068
306 0	37 36 31919	122 10 47710	139	0035	000000	San Mateo Bridge Transm Twr 6 1955 - 371221/2071
307 0	37 36 25312	122 11 09952	139	0035	000000	San Mateo Bridge Transm Twr 7 1955 - 371221/2072
308 0	37 36 18696	122 11 32194	139	0035	000000	San Mateo Bridge Transm Twr 8 1955 - 371221/2073
309 0	37 36 12081	122 11 54426	139	0035	000000	San Mateo Bridge Transm Twr 9 1955 - 371221/2074
310 0	37 36 05470	122 12 16667	139	0035	000000	San Mateo Bridge Transm Twr 10 1955 - 371221/2075
311 0	37 35 58850	122 12 38919	139	0035	000000	San Mateo Bridge Transm Twr 11 1955 - 371221/2076
312 0	37 35 52239	122 13 01147	139	0035	000000	San Mateo Bridge Transm Twr 12 1955 - 371221/2077
315 0	37 35 32390	122 14 07838	139	0035	000000	San Mateo Bridge Transm Twr 15 1955 - 371221/2080
316 0	37 35 25965	122 14 29321	139	0035	000000	San Mateo Bridge Transm Twr 16 1955 - 371221/2081
317 0	37 35 11021	122 14 45779	139	0050	000000	San Mateo Bridge Transm Twr 17 1955 - 371221/2082
318 0	37 34 56315	122 15 01900	139	0050	000000	San Mateo Bridge Transm Twr 18 1955 - 371221/3070
400 0	37 30 28596	122 06 57152	139	0116	000000	Dumbarton PG&E E Twr Lt, 1983 - PHP
401 0	37 30 13149	122 07 20204	139	0116	000000	Dumbarton PG&E W Twr Lt, 1983 - PHP
550 0	37 45 54676	122 12 50885	139	0000	000000	Oakland P G and E Gas Holder 1947 - 371221/1072

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS [illegible] 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
- [XX] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA, NOS Pacific Hydro. Party	California	San Francisco Bay	7/29/83

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-L123-PHP-81	PHP-10-3-81	H-10070	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
South CH LT 12	(San Fran Bay S Ch Lt 12, 1983)	37 33	35.554	122 12	33.842	L-626(82)	F-2-6-L	18651, 18652

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Eric Secretan, LTJG, NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Felipe L. Rosario, NOAA	FIELD ACTIVITY REPRESENTATIVE
	Pamela R. Chelgren, LCDR, NOAA	OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field Identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

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

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

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

☆ U.S. GPO:1975-0-665-080/1155

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
- [X] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA, NOS Pacific Hydro. Party	California	San Francisco Bay	7/29/83

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
OPR-L123-PHP-81	PHP-10-3-81	H-10070	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	(HOLLY SUGAR CO, STACK). No longer exists.	37° 36'	05.82	122°04'	21.41			18651, 18652
	NOTE: Removed from Horizontal Control Net sometime in last 5 years.							

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Eric Secretan, LTJG, NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Felipe L. Rosario, NOAA	FIELD ACTIVITY REPRESENTATIVE
	Pamela R. Chelgren, LCDR, NOAA	OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

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

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

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

☆ U.S.GPO:1975-0-665-080/1155

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
PACIFIC HYDROGRAPHIC PARTY - NOAA
1A UCCELLI BLVD.
REDWOOD CITY, CA 94063

20 July, 1983

Commander (OAN)
12th Coast Guard District
Building 51, Government Island
Alameda, California 94501

Dear Sir:

It is requested that the following items be included in the next publication of the Coast Guard Local Notice to Mariners and also be sent to the Automated Notice to Mariners System (DMAHTC WASHINGTON DC// NVS//). These items were found by the Pacific Hydrographic Party of NOAA during hydrographic survey H-10070. These items and the rest of the survey will be used to update future editions of nautical charts 18651 and 18652, but are considered important enough to warrant immediate publication. Chart the following hazards at the indicated positions:

1. an area foul with visible and submerged pipes and concrete and steel obstructions surround the eastern side of the San Mateo - Hayward Bridge, extending from 37°37'00"N, 122°09'23"W to 37°35'35"N, 122°14'09"W to 37°35'30"N, 122°14'06"W to 37°35'42"N, 122°12'59"W to 37°36'57"N, 122/09/18W.

2. a visible steel obstruction (oil drum) partially buried in the mud at 37°36'21.0"N, 122°09'45.9"W.

3. The pile charted at 37°33'29.7"N, 122°09'19.4"W was incorrectly applied from previous Pacific Hydro Party survey work. Change it to a visible steel pipe and chart it at 37°33'24.8N, 122°09'23.9W.

Respectfully,

Pamela R. Chelgren, LCDR, NOAA
Chief of Party
Pacific Hydrographic Party, NOS, NOAA

cc: California Dept. of Transportation, Project Development Branch "B"
N/CG22 (Marine Chart Branch)

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
PACIFIC HYDROGRAPHIC PARTY - NOAA
1A UCCELLI BLVD.
REDWOOD CITY, CA 94063

20 July, 1983

J. Spinello
Project Development Branch 'B'
California Dept. of Transportation
150 Oak Street
Sna Francisco, Ca 94120

Dear Sir:

As per our telephone conversation, here are our survey positions of navigational hazards around the San Mateo - Hayward Bridge. The foul area delineated in the July 20 letter to the Coast Guard basically extends 50 meters NNW of the bridge and 100→350 meters SSE of the bridge from Transmission Tower 15 shoreward (eastward). The danger signs we saw on the bridge while surveying were very faded and not visible from the edge of our foul area. I suggest that new signs be made that will be readable from the edge of these delineated limits. This would notify mariners of the dangers before they would be in the middle of the area.

Respectfully,

Pamela R. Chelgren, LCDR, NOAA
Chief of Party
Pacific Hydrographic Party, NOS, NOAA

Attachments: 2 letters to USCG
dated 5/31/83 & 7/20/83

Approval Sheet

Hydrographic Survey H-10070

PHP-10-3-81

OPR-L123-PHP-81

The field sheet and accompanying records have all been inspected and are approved by me. All field work was personally supervised on a semi-weekly basis. This survey is complete and adequate to supersede all prior information with the exception of PSR Item #36.

Pamela R. Chelgren
LCDR, NOAA
Chief of Party
Pacific Hydrographic Party, NOS

U.S. DEPARTMENT OF COMMERCE | REGISTRY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-10070

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	5
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	4

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDIAN FILES						
ENVELOPES						
VOLUMES	1					
CAHIERS	1					
BOXES						

SHORELINE DATA

SHORELINE MAPS (List): TP-00535

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): Chart 18651 Enlargement 1:10,000

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			2724
POSITIONS REVISED	12		12
SOUNDINGS REVISED	13		13
CONTROL STATIONS REVISED			
	TIME-HOURS VERIFICATION	TIME-HOURS EVALUATION	TIME-HOURS TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL	11	1	12
VERIFICATION OF POSITIONS	29	1	30
VERIFICATION OF SOUNDINGS	97	1	98
VERIFICATION OF JUNCTIONS	2	1	3
APPLICATION OF PHOTOBATHYMETRY	0	0	0
SHORELINE APPLICATION/VERIFICATION	3	1	4
COMPILATION OF SMOOTH SHEET	19	1	20
COMPARISON WITH PRIOR SURVEYS AND CHARTS	0	17	17
EVALUATION OF SIDESCAN SONAR RECORDS	0	0	0
EVALUATION OF WIRE DRAGS AND SWEEPS	0	0	0
EVALUATION REPORT	10	16	26
OTHER Rework			
Digitization			18
TOTALS	171	39	228

	Beginning Date	Ending Date
Pre-processing Examination by		
Verification of Field Data by: Matthew G. Sanders	Beginning 10/4/83	Ending 6/19/84
Verification Checks by: James S. Green, Stanley H. Otsubo	Time (Hours) 38 hours	Ending 8/27/84
Evaluation and Analysis by: Gordon E. Kay	Beginning 8/9/84	Ending 8/17/84
Inspection by: D. Hill	Time (Hours) 2	Ending 9/18/84

PACIFIC MARINE CENTER

EVALUATION REPORT

REGISTRY NO: H-10070 FIELD NO: PHP-10-3-81

California, San Francisco Bay, San Mateo Bridge to Coyote Hills Slough

SURVEYED: May 16, 1983 - August 2, 1983

SCALE: 1:10,000 PROJECT NO: OPR-L123-PHP-81

SOUNDINGS: Ross Fineline 5000 Fathometer CONTROL: Range/Range
Range/Azimuth
Motorola Mini-Ranger III/Wild T-2

Chief of Party.....LCDR P. R. Chelgren

Surveyed by.....LT(JG) E. B. Secretan

Automated Plot by.....PMC Xynetics Plotter

Verified by.....M. G. Sanders

Evaluated by.....Gordon E. Kay

1. INTRODUCTION

H-10070 is a basic hydrographic survey conducted by the Pacific Hydrographic Party in accordance with the following:

Project Instructions OPR-L123-PHP-81, dated August 11, 1981
Change Number 1 dated August 17, 1981
Change Number 2 dated April 19, 1982
Change Number 3 dated June 10, 1982
Change Number 4 dated December 29, 1982
Change Number 5 dated July 18, 1983

H-10070 is a one-year survey situated along the southwestern shore of San Francisco Bay, south of the San Mateo Bridge to Coyote Hill Slough.

Hydrography was begun in 1981, thus the 1981 field number. The 1981 data was subsequently rejected and reaccomplished.

The following data was changed during verification:

a. Projection parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.

b. Tide levels -- values are from observed tides; see Form 712.

2. CONTROL AND SHORELINE

Shoreline is not shown on H-10070 in accordance with N/CG memorandum, "Reduction of Marine Center Hydrographic Survey Processing Backlog", dated February 16, 1984 (copy attached).

3. HYDROGRAPHY

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

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.

5. JUNCTIONS

H-10070 junctions the following:

Survey	Year	Scale	Note	Color	Junctions on
H-9872	1980	1:10,000	Adjoins	Violet	North
H-9984	1981-83	1:10,000	Joins	Red	West
H-10102	1983	1:10,000	Adjoins	Orange	South

The junction with H-9984 has been adequately effected. The junction with H-10102 has not been completed due to the early stage of processing it is in at the Pacific Marine Center. The junction with H-9872 was not completed because H-9872 has been forwarded to Headquarters. However, comparison with a copy of H-9872 indicates adequate sounding agreement. H-10070 depth curves adequately join those on H-9872.

6. COMPARISON WITH PRIOR SURVEYS

H-8027 (1955-56), 1:20,000 compares favorably with H-10070. For an excellent prior survey comparison see Descriptive Report paragraph K, H-8027. The present survey is adequate to supersede H-8027 over the area of common coverage.

H-8210 (1956), 1:10,000 does not compare well with the present survey. The large portion of H-8210 compares 0 to 2 feet shoaler than the present survey. The deeper depths on H-10070 appear to be the result of erosion and mining of shell banks (reference Descriptive Report paragraph K, H-8210, and paragraph P). The present survey is adequate to supersede H-8210 over the area of common coverage.

H-8275(1956), 1:10,000 does not compare well with H-10070. The large portion of H-8275 data compares within ±2 feet with present survey data, but considering that this data is in depths of less than 6 feet, the magnitude of discrepancies is quite large. For a good cause and effect discussion see Descriptive Report paragraph K, H-8275. The present survey, H-10070, is adequate to supersede H-8275 over the area of common coverage.

All PSR items originating with prior surveys have been adequately addressed by the hydrographer.

7. COMPARISON WITH CHART

Chart 18651, 33rd Ed., September 18, 1982, 1:40,000
Chart 18652, 21st Ed., April 1, 1982, 1:80,000

Control is adequately described in the Ship's Descriptive Report paragraphs F and G and Horizontal Control Report OPR-L123-PHP-81, for years 1980-1983.

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

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

Feature		Latitude North	Longitude West
*submerged pipeline (sewer) obstruction	from	37°33'48"	122°12'56"
	to	37°33'13"	122°13'15"
		37°34'25.8"	122°08'18.1"

*reference Descriptive Report paragraph L, Non-sounding feature, Item 1.

Applicable shoreline manuscript and dates are as follows:

TP-00535 (Final Map)	Date of Photography	March 1977, revised 1981
	Date of Field Edit	August 1980
	Date of Final Review	April 1982

The pile plotted on TP-00535 at latitude 37°34'26"N, longitude 122°09'08"W was searched for at a minus tide when bare and not found. It is considered disproven and is not shown on the smooth sheet.

a. Hydrography -- Charted depths come from the beforementioned prior surveys and unknown sources and are in good agreement with H-10070. There are no rocks located within the limits of H-10070. H-10070 should become the new charting source. For an adequate item-for-item chart comparison see Descriptive Report paragraph L. A comparison was also made with Chart 18652, 22nd Edition, May 7, 1983. The following exceptions are noted:

Two "wreckage" symbols charted at approximately latitude 37°36'00.0"N, longitude 122°08'48.0"W were determined to be "ruins". Chart as shown on the smooth sheet. (For further information see Descriptive Report paragraph L, non-sounding features, Items 11 and 12).

A pile charted at latitude 37°33'29.7"N, longitude 122°09'19.4"W was charted as shown on TP-00535, which was in error (see Descriptive Report paragraph H, Item 2 for an explanation) and is located at position #7008: latitude 37°33'24.8"N, longitude 122°09'24.0"W. Chart as shown on smooth sheet.

Presurvey Review items originating with miscellaneous charting sources have been adequately addressed by the hydrographer.

b. Controlling depths -- There are no controlling depths located within the limits of H-10070.

c. Aids to navigation -- These are adequately discussed and disposed of in the Descriptive Report paragraph N.

One danger to navigation report dated July 20, 1983 was forwarded to the 12th USCG District by the hydrographer. No additional dangers to navigation were identified during office processing.

The geographic name on the smooth sheet originates with the chart.

H-10070 is adequate to supersede hydrography on the above charts over the common area.

8. COMPLIANCE WITH INSTRUCTIONS

H-10070 adequately complies with the instructions and changes listed in section one of this report.

9. ADDITIONAL FIELD WORK

H-10070 is an excellent basic hydrographic survey, with additional field work recommended only to verify or disprove the existence of PSR item 36.

Respectfully submitted,

Bruce Alan Olmstead
for Gordon E. Kay
August 17, 1984

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

Dennis Hall
FOR James S. Green
Supervisory Cartographer

UNITED STA... AMERCE
National Oc... ...istration
NATIONAL OC...
CHARTING A...
Rockville, ...

FEB 16 1984

TO: N/MO - Robert C. Munson

FROM: N/CG - John D. Bossler

SUBJECT: Reduction of Marine Center Hydrographic Survey Processing Backlog

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

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

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

3. Digitizing of surveys after processing at the Marine Centers will be accomplished by Photogrammetry personnel. This procedure usually requires 24 hours per survey sheet. Personnel at both Marine Centers will be identified by the Marine Center Directors to accomplish this starting immediately.

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

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

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

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

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

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

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

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

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

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

cc:
N/MOA
N/MOP

CLEARANCE

N/MO: R. C. Munson

SIGNATURE AND DATE:

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10070

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.

For Dennis Hill 9-20-84
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE

N/MOP2:LWMordock Larry W. Mordock 9/21/84

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

Robert L. Swift 9-27-84
Director, Pacific Marine Center (Date)

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

Addendum to H-10070

Subsequent to office processing, additional field data became available which affected the TRA sounding corrector values. These additional data consist of localized launch settlement and squat correctors which affect raw soundings of 13 feet or less. A complete description of this corrector is contained in the report, "Ground Effect Report", dated May 1984.

The additional office processing consisted of revising the TC/TI tables to include the appropriate correctors; applying the correctors to raw depths of 13 feet or less; and plotting these corrected depths on an overlay to the smooth sheet. In addition, the revised sounding file was processed through a computerized sounding excessing routine and revised excess overlays accompany the survey records.

Junctioning has been accomplished and is adequate as described in the Evaluation Report.

The revised data have been evaluated and it has been determined that the survey continues to be adequate to supersede prior surveys and charts as recommended in the Evaluation Report.

Approval:

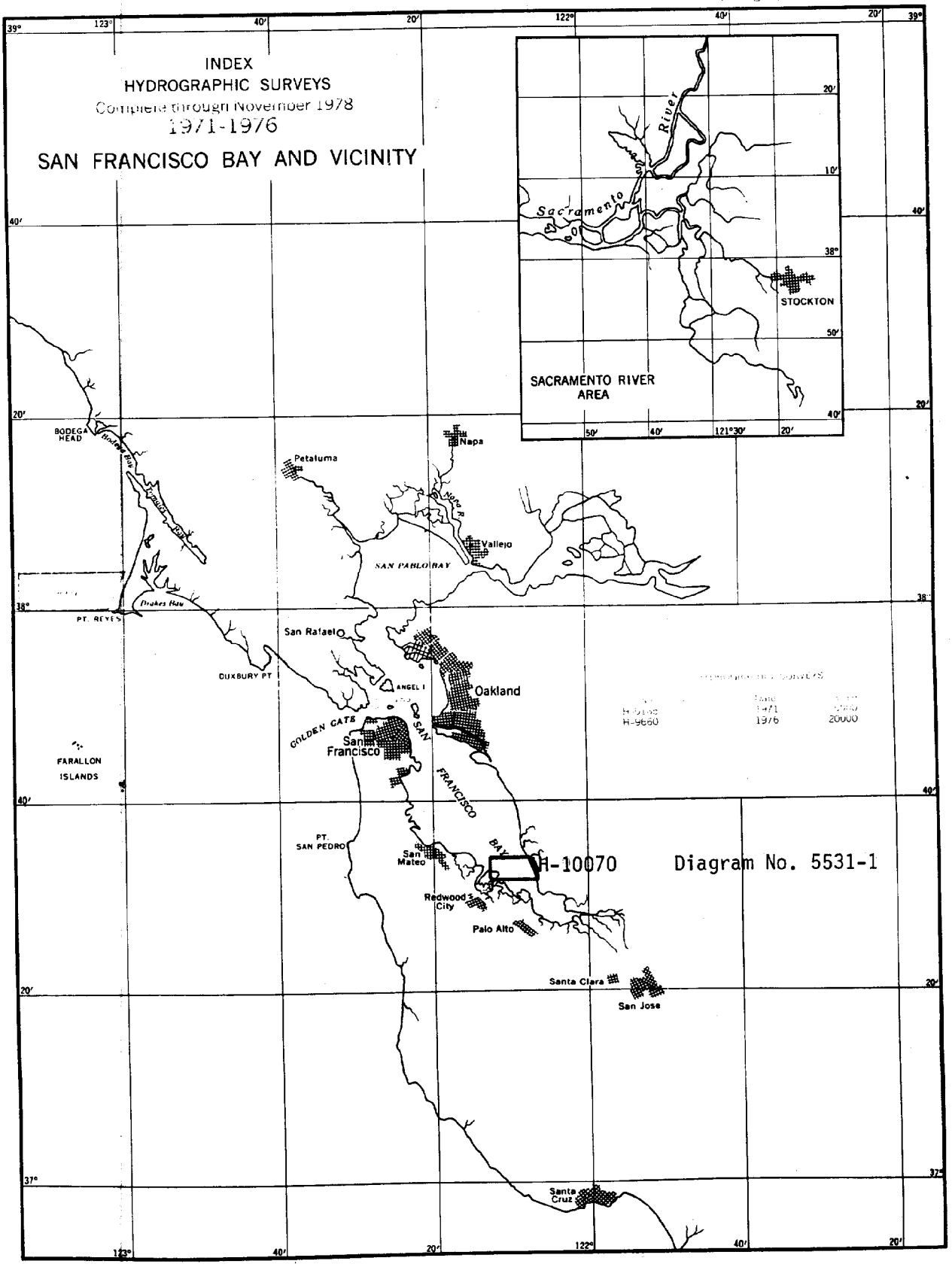
10-31-85
Dennis J. Hill (Date)
Chief, Hydrographic Section

10/31/85
David W. Yeager (Date)
Chief, Nautical Chart Branch

11/1/85
Robert L. Sandquist (Date)
Director, Pacific Marine Center

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

Hydrographic Index No. 96M



FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10070

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
18651	10-17-86	D. Wylie ww	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 42
18652-SC	11/4/86	Costo ww	Full ~~Part Before~~ After Verification Review Inspection Signed Via
A, B			Drawing No. 28
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
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			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63