H09819

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. PHP-10-01-79

Registry No. H-9819

LOCALITY

State California

General Locality San Francisco Bay

Sublocality Hunters Point

19 79

CHIEF OF PARTY
D.R. Taylor

LIBRARY & ARCHIVES

DATE January 10, 1984

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H-9819

FIELD NO. PHP-10-1-79

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State California

General locality San Francisco Bay

Locality Oyster Point to Hunters Point

Scale 1:10,000 Date of survey Apr. 20 - Aug. 25, 1979 and October 29, 1979

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

Vessel NOAA Launches 1214, 1016, and skiff

Chief of party LT Dirk R. Taylor

Surveyed by LT D. R. Taylor, LTJG D. D. Smith, F. L. Rosario

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

Graphic record scaled by Pacific Hydrographic Party Personnel

Graphic record checked by Pacific Hydrographic Party Personnel

~~Protracted~~ Verified by M. G. Sanders Automated plot by PMC Xynetics Plotter

~~Verification~~ Evaluated by D. J. Hill

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

REMARKS: All times are Greenwich Mean Time

Revisions and marginal notes in black by evaluator.

STANDARDS CK'D 1-19-84
C.Loy

AWOIS / 2nd

KWW 9/23/92

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-861/1222 REGION NO

PROGRESS SKETCH

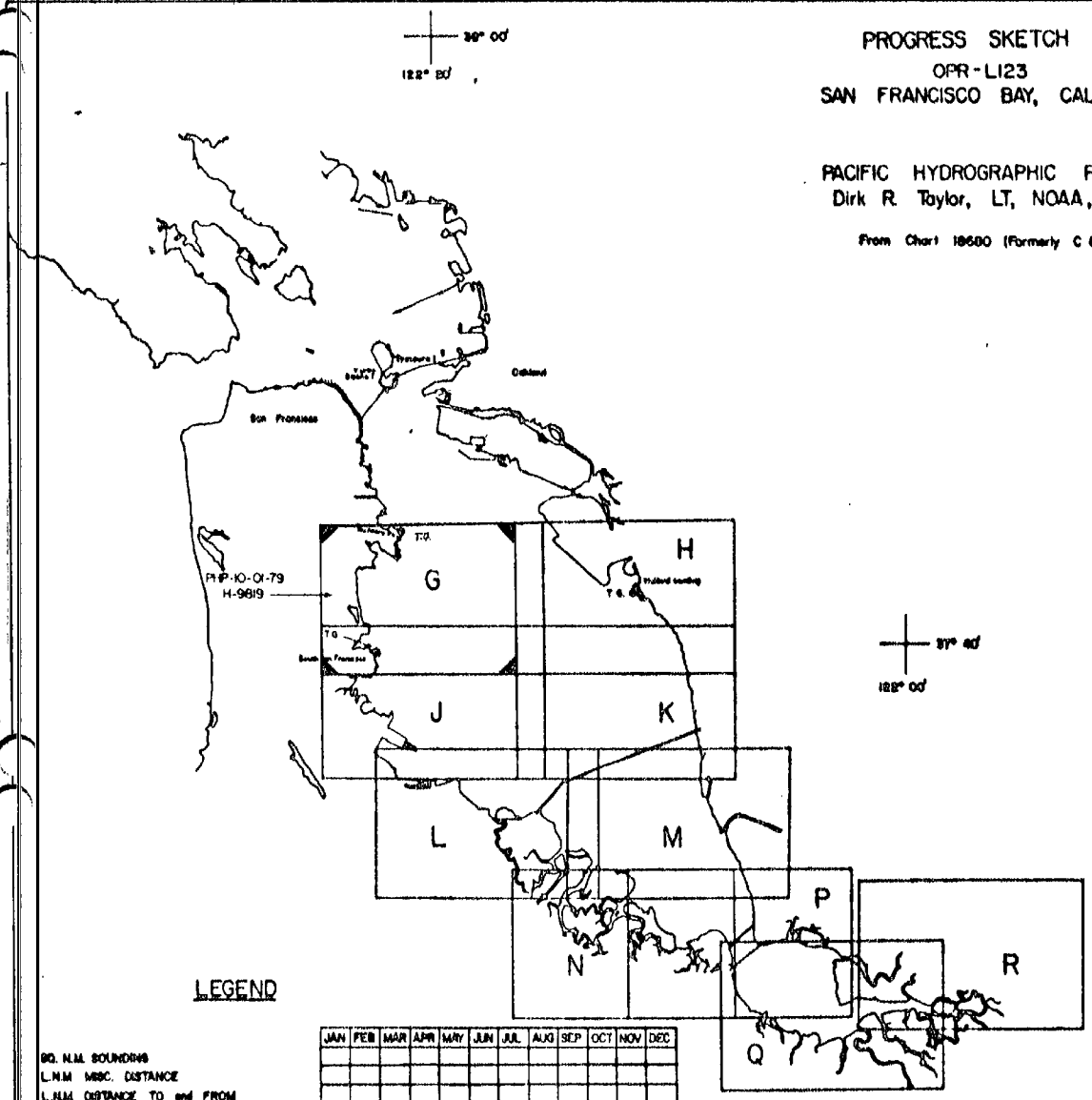
OPR-L123

SAN FRANCISCO BAY, CALIF

PACIFIC HYDROGRAPHIC PARTY

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

From Chart 18600 (Formerly C & GS 5402)



LEGEND

SQ. N.M. SOUNDING
L.N.M. MISC. DISTANCE
L.N.M. DISTANCE TO and FROM
L.N.M. BOUNDING LINE
BOTTOM SAMPLES (GRAB)
WATER SAMPLES ANALYZED (SALINITY)
CONTROL STATIONS
TEMPERATURE, DEPTH, CONDUCTIVITY
NANSEN CAST
TIDE GAGE

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

BAY
AREA
SURVEY
EXPEDITION

A. PROJECT

Survey H-9819, PHP-10-1-79 was accomplished in accordance with project instructions OPR-L123-PHP-79, San Francisco Bay, Bay Area Survey Expedition (BASE), dated February 22, 1979. There were no amendments or supplements to the project instructions.

B. AREA SURVEYED

Oyster H-9819 covered the western portion of San Francisco Bay from ~~Sierra~~ Point north to India Basin and east approximately three quarters the width of the bay. The geographic boundaries were as follows:

South	37°	40'	00"	N.
West	122°	23'	40"	W.
North	37°	44'	03"	N.
East	122°	16'	06"	W.

Hydrographic operations were conducted between April 20, 1979 and August 25, 1979 and on October 29, 1979.

C. SOUNDING VESSELS

NOAA Launch 1214 (Vesno 1214) was used as the primary sounding vessel for the survey. A 15 foot aluminum skiff (Vesno 0001) was also used for shallow water hydrography. NOAA Launch 1016 (Vesno 1016) was used at the end of the survey.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Soundings for H-9819 were recorded with a Ross Fineline Fathometer System on vessels 1214 and 1016. The transducers were narrow beam (7½°).

A Raytheon 719B portable fathometer system was used for all skiff hydrography.

The Ross system consisted of the following components:

Transceiver	Model 4500	Serial # 3787
Recorder	Model 5000	Serial # 3787
Digitizer	Model 6000	Serial # 3787

It should be noted that the Model 4500 Transceiver is a solid state unit. This is the first survey this model has been used on.

The Raytheon system consisted of the 719B recorder, serial number

7348 and a 8 degree transducer.

The transducer depth on Launch 1214 was 2.4 feet as physically measured with the launch in the water with average loading conditions.

The transducer depth for Launch 1016 was 1.5 feet as per the boat drawings and the results of the bar checks on this survey and on H-9844.

The transducer depth for the skiff was measured each day after the Raytheon system was installed and the skiff loaded for range-azimuth hydrography. Settlement and squat corrections for the skiff are 0. During sounding operations the skiff's speed was such that no corrections were necessary.

Settlement and squat trials were conducted for Launch 1214 on July 31, 1979 at Treasure Island, San Francisco. Launch 1016 settlement and squat trials were run on August 16, 1979 from station "Spit". The launches were run toward and away from the observer on the shore who was using a Lietz level, serial number 214303. A level rod was held on the cabin top above the transducer location. Several readings were taken on each run at each speed and then averaged. A dead in water reading was taken on the inshore and offshore ends of the run to provide a basis for tidal corrections. See the appendix for the trial information and results.

Phase calibrations were made each day on the 0 to 100 foot scale at 10 foot intervals when using the Ross system. The analog trace was adjusted to coincide with the 50 foot mark. Occassionally the initial at the 0 foot mark would wander. It was always readjusted in the phase calibration mode at the mid-scale value (50 feet).

The Raytheon 719B fathometer system was adjusted and used in accordance with the manufacturer's manual. Three adjustments are necessary with the Raytheon system. The first adjustment is the CAL ZERO, this is set at the zero depth mark on the chart paper. TIDE and DRAFT is the second adjustment. This is also set at the zero depth mark on the chart paper. The SPEED OF SOUND adjustment is the final adjustment. This is set to coincide with the 50 foot mark on the chart paper which coincides with a speed of sound of 800 fathoms per second.

Velocity corrections were derived from daily digital bar check comparison data. The same correctors are used for all vessels. The bar checks were averaged for each depth. Data that varied considerable from the mean, mainly due to the sea state at the time of observation was not used. The bar check consisted of a aluminum ladder with a non-skid plate attached to one side. The bar check lines were ¼ inch galvanized chain with painted 5 foot markings.

The field sheet is plotted with an early version of the velocity corrector tape. All soundings on the sheet with exception of the

leadline depths have the preliminary velocities applied. See the appendix for the bar check averages and the final velocity curve and velocity corrector tape printout.

E. HYDROGRAPHIC SHEETS

The field sheet was prepared by the Pacific Hydrographic Party using a PDP 8/e computer system. It was necessary to divide the field sheet into two sections, north and south due to plotter sheet size limitations. Soundings on the field sheet are corrected for transducer depth, sound velocity and predicted tides. Tidal correctors applied to San Francisco were +32m high water, +43m low water, and a height ratio of 1.20. The entire field sheet is plotted with these correctors.

One blowup at a scale of 1:2500 was made to clearly show the development on Presurvey Review item #18.

The field sheet and field records will be sent for verification to CPM 3, Pacific Marine Center, Seattle, Washington.

F. CONTROL STATIONS

Horizontal control for this survey was provided by existing triangulation and intersection stations and new stations positioned as needed. Three primary stations were used for the majority of the survey. They are:

Point San Bruno, 1925, ~~1974~~

Hospital, 1947

Yerba Buena Island Lighthouse, ~~1919~~-Eccentric, 1979

Numerous other stations were used for shorter periods. Several stations were established to accomplish the survey. All of the stations were temporary bench marks due to the non permanent nature of their surroundings with one exception. Station Disk B is a City of Alameda monumented station which is located on Bay Farm Island in a fill area. The station was located by field party personnel. Third order, class I standards were met or exceeded on all control work. The datum was North American, 1927.

The following stations and signals are monumented and/or recoverable:

Point San Bruno, 1925, ~~1974~~

Hospital, 1947

Disk B, 1979

Sierra Point, 1851, ~~1919~~

KYA Radio Tower, 1937

Hunters Point North End Light, 1953

Yerba Buena Island Lighthouse, 1919

San Bruno Shoal Channel Light "1", 1977

San Bruno Shoal Channel Light "2", 1977

San Bruno Shoal Channel Light "3", 1977

Stations Fill, Candle, Spit, and Rat were temporary marks which are not recoverable.

G. HYDROGRAPHIC POSITION CONTROL

Position control for this survey was provided by a Motorola Mini-Ranger III system with the 16 code option.

Console	Serial # 713165
R/T	Serial # 4931 (magnetron)
Reference Station Code 5	Serial # 4499 (magnetron)
Reference Station Code 6	Serial # 4951 (magnetron)
Reference Station Code 7	Serial # 4709 (magnetron)

The time, depth, and range readings were logged on the survey launch with a Hydrographic Logger, serial #06, manufactured by Aircraft Standards, Inc.

The Mini-Ranger system was transferred as necessary from sounding vessel to sounding vessel. The antenna-transducer distance was zero in the three survey vessels. The installation on NOAA Launches 1214 and 1016 was identical. When the system was used in the skiff it was powered by batteries at 24 volts DC. The signal strength meter could not be used in the skiff due to its power requirements.

A baseline calibration of the Mini-Ranger system was conducted on April 17, 1979. A baseline distance was measured from a mark on the seawall at the U. S. Coast Guard Station, Yerba Buena Island to a Pacific Telephone Company platform just south of pier "N" on the San Francisco-Oakland Bay Bridge. The range was 1632.641 meters as measured with the NOAA Ship Davidson's HP 3808.

The initial baseline calibration was done in accordance with the Pacific Marine Center OpOrder M 1979. A closing baseline calibration was not done due to a mis-interpretation of the oporder. Initial ranges only were recorded at the time of a second baseline calibration for the strongest signal strength. These values were within 3 meters of the initial calibration. The correctors determined during the first baseline calibration were applied to all electronic ranges.

System calibration checks were conducted daily. Whenever possible these checks were done before and after the days hydrography. Fixed aids to navigation at calculated ranges were used as calibration points. It was not always possible to lay directly alongside the aids due to current and wind conditions. Therefore the survey records for the system checks occassionally indicate that 1 or 2 meter corrections are to be applied to the ranges due to antenna displacement.

Considerable problems were encountered in using the Motorola Mini-Ranger system for this survey. Erroneous readings were numerous. The data printouts required very careful inspection to identify the bad ranges. The launch coxswain was successfully able to follow an arc even with the problems except in a few instances. When this occurred the data was rejected and the hydrography rerun at a later date.

The Hunters Point area, in particular, was very difficult to run with Mini-Ranger. Three station locations were tried for the right station before an acceptable signal was received in the area.

The source of interference in the survey area was not determined. There were other users of Mini-Ranger in San Francisco Bay but this was not considered to be the problem. The system can handle multi-users on different reference station codes. The Pacific Hydrographic Field Party appeared to be the only users of codes 5, 6, and 7.

All hydrographic position control was ~~either~~ one of the following: range range, ~~or~~ range azimuth. The range station and the azimuth station were the same for all range azimuth hydrography. visual, tagline.

H. SHORELINE

Field sheet shoreline originated with TP-00531, 1:10000, November 1978 and TP-00534, 1:20000, 1978. These are class III maps. Blowups of the 1:20000 manuscripts were made for shoreline use at a scale of 1:10000. Field edit was accomplished in conjunction with the hydrography. Features shown in red on the field sheet represent field edit data. See Evaluator's Report, Sect. 2

There were two control stations seaward of the shoreline. They were San Bruno Shoal Channel Lights 1 and 3 which were intersected by the Pacific Photo Party in 1977.

I. CROSSLINES

The percentage of crosslines to mainscheme hydrography was 9 per cent. Agreement is very good over the entire field sheet. Differences were no greater than 1 foot except in a few cases on the field sheet. Actual differences as determined from the data with all correctors applied except settlement and squat were considerable less than 1 foot.

J. JUNCTIONS ✓

This survey junctions with H-8024, 1:10000, 1954. Soundings agree within one or two feet except at Lat. 37° 43' 50" N, Long. 122° 16' 14" W where a few soundings differ by three feet. The present survey at the above position is deeper. The borrow area in the northeast corner of this sheet did not exist at the time of the 1954 survey. Therefore no junction can be made in that area.

There are no contemporary surveys with which this survey junctions.

See Evaluator's Report, Sect. 4 #5

K. COMPARISON WITH PRIOR SURVEYS ✓

This survey contained one presurvey review item within its boundary. Presurvey review item 18 was a charted obstruction with a minimum depth of 19 feet at Lat. 37° 43' 57" N, Long. 122° 21' 34" W. This area, near Hunters Point was investigated on three separate occasions. On julian day 205 a detailed development was run over the obstruction with NOAA Launch 1214. The wide angle, hull mounted transducer (22½°) was used. A least depth of 23 feet corrected for predicted tides and velocity was found at Lat. 37° 43' 56.6" N, Long. 122° 21' 33.7" W.

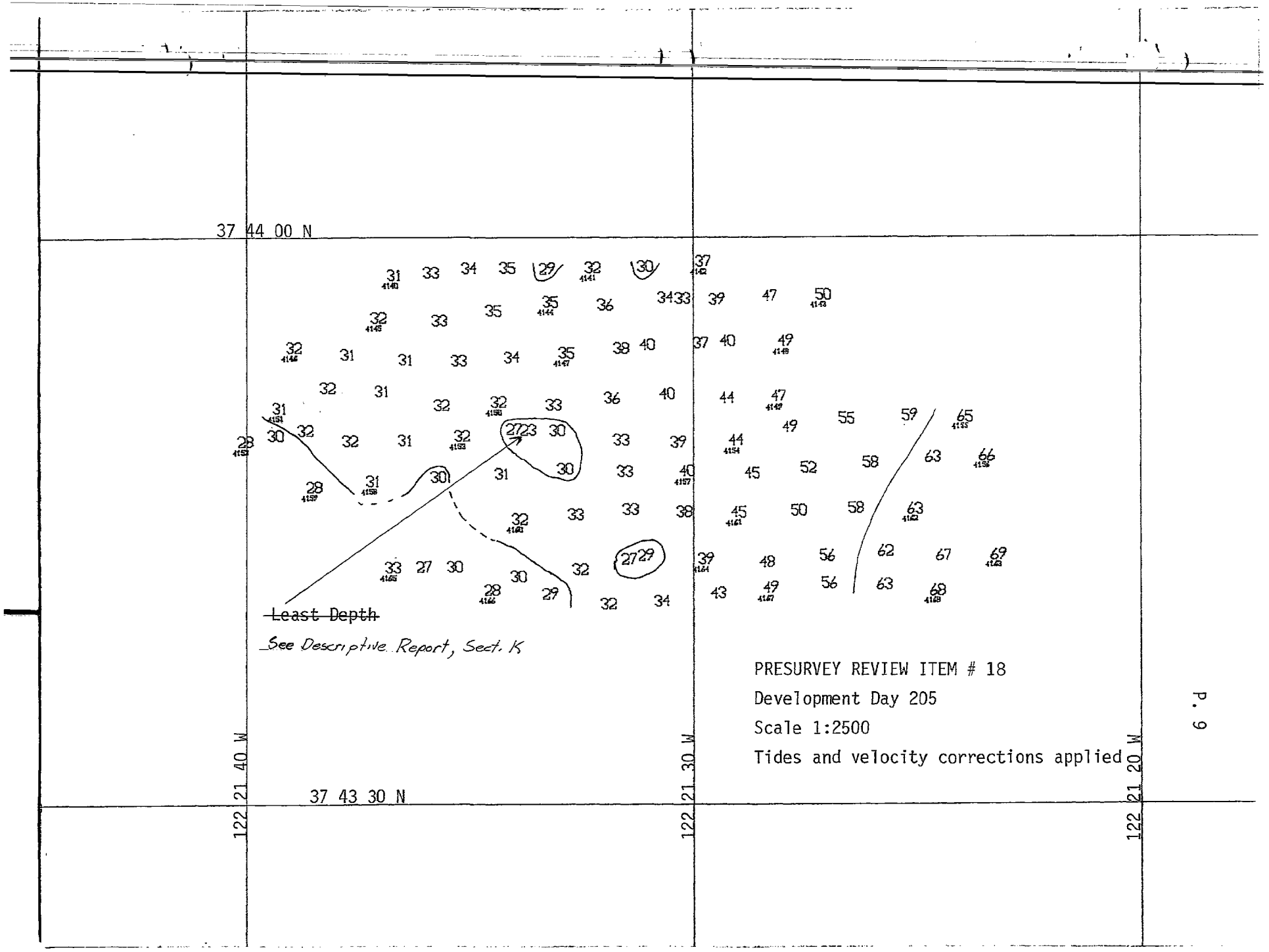
On julian day 214 the item was investigated by divers. The shoalest point was found to be a pile of gravel. A 25 meter radius circle search around the least depth by fathometer was the method used to determine the highest point on the obstruction. A least depth was not measured due to strong tidal currents hampering the divers. Fix 4264 is the position of the launch which was anchored within 30 meters of the shoalest point. This fix is not plotted on the field sheet. The position is Lat. 37° 43' 56.447" N, Long. 122° 21' 34.822" W.

The third investigation was done using divers on julian day 226. The same procedures were followed as on the previous dive. A least depth by leadline of 22.0 feet was found. With ~~predicted~~ observed tides applied the least depth was 20.0 feet. Visibility on the bottom was 5 to 6 feet. The divers found a large steel hatch and coaming and a large steel eyelet in the search area. This obstruction was most likely a loaded wood gravel barge which has deteriorated leaving only the steel fittings. The least depth was found at Lat. 37° 43' 56.471" N, Long. 122° 21' 32.720" W. The check angle checks well with the above position. It is recommended that this item be charted as a submerged wreck replacing the obstruction note on the chart. *Concur*

This survey was compared to the following prior surveys:

* H-8023	1:5000	1954
* H-8025	1:10000	1954-55
* H-8027	1:20000	1955-56
* H-8024	1:10000	1954
* H-6726	1:10000	1941
* H-3967 W/D	1:20000	1917

* *See Evaluator's Report, sect. 6 for additional discussion*


37 44 00 N
37 43 30 N
122 21 40 W
122 21 30 W
122 21 20 W
~~Least Depth~~
See Descriptive Report, Sect. K
PRESURVEY REVIEW ITEM # 18
Development Day 205
Scale 1:2500
Tides and velocity corrections applied

p. 9

H-8023 ✓

The new survey shows extensive shoaling within the area of the three finger piers at the southern edge of Hunters Point. In general this area has shoaled 10 feet. The third slip from the south end has also shoaled by 5 to 10 feet. Shoaling has occurred in the other areas in and around Hunters Point but to a lesser degree than the two areas mentioned above.

At the extreme northwest corner of the survey there have been extensive changes in the shoreline. Parts of this area (India Basin) are also shoaler. *See Evaluator's Report, Sect. 6 for additional discussion*

H-8025 *See Descriptive Report, Sect. L, Comparison With Chart for additional discussion of piles along Oyster Pt. Channel.* ✓

The new survey in the area off Hunters Point shows that the depth has increased by 3 to 8~~7~~ feet from Lat. 37° 43' 33" N, Long. 122° 21' 02" W south to Lat. 37° 43' 12" N.

The 12 and 18 foot curves have shifted east and north approximately 100 meters just south of Hunters Point. These ~~contours~~ curves compare very favorably southward of this area.

The ~~ruins~~ piles at Lat. 37° 43' 00" N, Long. 122° 21' 56" W on the prior survey are approximately 30 meters west of their position determined on this survey. There has also been major changes to the shoreline in the Candlestick Point area. Shallow areas south of Candlestick Point vary by 1 to 3 feet compared to the prior survey. There is no general shoaling or deepening, some areas are deeper and some are shoaler. Further south, and west of the 6 foot curve the agreement between surveys improves. *Delete charted subm. piles. See Sect. 6 of Evaluator's Report.*

The fill area shown on this survey as Sierra Point is new and does not appear on the prior survey. The Oyster Point Channel in the southwest corner of the sheet no longer exists as shown on the prior survey. A 23 foot deep was found at Lat. 37° 40' 2~~8~~5.3" N, Long. 122° 22' 0~~2~~1.7" W. This is not on the prior survey.

In the San Bruno Shoal Channel at Lat. 37° 41' 00" N the new survey is 1~~7~~5 to 1~~8~~6 feet deeper. This difference is probably due to dredging operations in the channel.

H-8027 ✓

The new survey in general compares very well with the prior survey. There are 1 and 2 foot discrepancies over the sheet. In some areas deeper, others shoaler.

The 30 foot curve has shifted westward with 3 foot differences in depth at Lat. 37° 43' 30" N, Long. 122° 18' 30" W to Lat. 37° 44' 00" N,

Long. 122° 19' 00" W. There was also a shift in the 18 foot curve westward at approximately the same latitude.

In the northeast corner of the field sheet just south of the borrow area the new survey is 1 to 2 feet deeper.

At the eastern limit of the field sheet several spikes between Lat. 37° 40' 30" N and 37° 41' 00" N, Long. 122° 16' 00" W and 122° 16' 30" W were found during the new survey that do not appear on the prior survey. There is pipeline construction in the vicinity. The area will be thoroughly investigated when the survey to the east is junctioned with this survey. See Evaluator's Report, Sect. 3

L. COMPARISON TO THE CHART

This survey was compared to NOAA Charts 18651, 29th edition, August 12, 1978 and 18650, 34th edition, May 20, 1978. Many of the comments from section K also apply to the comparison with the chart.

Oyster Point Channel has shoaled to 2 to 3 feet on the inshore end making it almost non-existant. At Long. 122° 22' 30" W the channel is 1 foot shoaler than the controlling depth.

In general the area west of the 6 foot curve between Candlestick Point and Sierra Point is 1 to 3 feet shoaler on the chart. There is also a significant change in the 6 foot curve immediately east of Candlestick Point. There has been some shoaling in the southern most slip at Hunters Point.

The 1 to 2 foot and sometimes 3 foot discrepancies between the survey and the chart will make noticeable changes in the contours due to the gentle slope of the bottom.

At Lat. 37° 43' 30" N, Long. 122° 16' 30" the survey depths are 5 to 6 feet deeper than those on the chart. The southern limit of the borrow area between 122° 16' W and 122° 17' W is adequately delineated by the boundary shown on the chart.

The submerged piles which marked the Oyster Point Channel were investigated by divers on julian day 214. A 25 meter radius circle search was made around the support vessels anchor. The anchor was positioned from station FILL using range azimuth control. No piles were found.

See Evaluator's Report, Sect. 4 & 7

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting with the following exceptions:

The charted pile at Lat. 37° 40' 06.8" N, Long. 122° 23' 04.5" W was not visible at the time of survey or field edit operations. This

pile was not investigated further but should be proved or disproved at the time survey operations are in progress on the next sheet south.

The shoal depths on the eastern edge of the sheet at Lat. 37° 40' 45" N require further investigation to identify their nature. At the time survey operations are underway in the area east of this sheet they should be checked.

N. AIDS TO NAVIGATION

One floating aid to navigation was checked on this survey. Oyster Point Channel Mooring Lighted Buoy is number 668.10 in the 1979 edition of the Light List, volume 3. The light on this privately maintained aid was not operational at the time of the survey. The geographic position calculated from data on julian day 177, fix 3419 is Lat. 37° 40' 25.798" N, Long. 122° 21' 58.718" W. A check angle was taken on julian day 302 and is in agreement with the fix data from julian day 177.

Four non-floating aids to navigation are located within the limits of hydrography. These aids were located to third order, class 1 standards by the Pacific Photo Party in 1977. They are:

San Bruno Shoal Light "1"	Lat.	37° 41' 44.963" N
	Long.	122° 20' 18.066" W
San Bruno Shoal Light "2"	Lat.	37° 41' 42.028" N
	Long.	122° 20' 26.525" W
San Bruno Shoal Light "3"	Lat.	37° 40' 10.847" N
	Long.	122° 19' 30.478" W
San Bruno Shoal Light "4"	Lat.	37° 40' 08.340" N
	Long.	122° 19' 39.147" W

The Light List positions are correct for these light. The markers adequately mark the San Bruno Shoal Channel.

O. STATISTICS

Vessel Number	Sq. Miles	Linear Miles	# of Pos.
1214	22.09	447.6	4256
0001 (skiff)	1.22	24.9	508
1016	.19	4.8	80
TOTAL	23.5	477.3	4844

Tide Stations 3

Bottom Samples 56

P. MISCELLANEOUS

None.

Q. RECOMMENDATIONS

The piling discussed in section M requires investigation by wire drag and/or divers. Also the shoal depths on the eastern edge of the sheet require additional investigation. These two items can be easily done when hydrography is run on the adjoining sheets.

The pilings which used to mark the Oyster Point Channel that were investigated by divers and not found, should be removed from the chart.

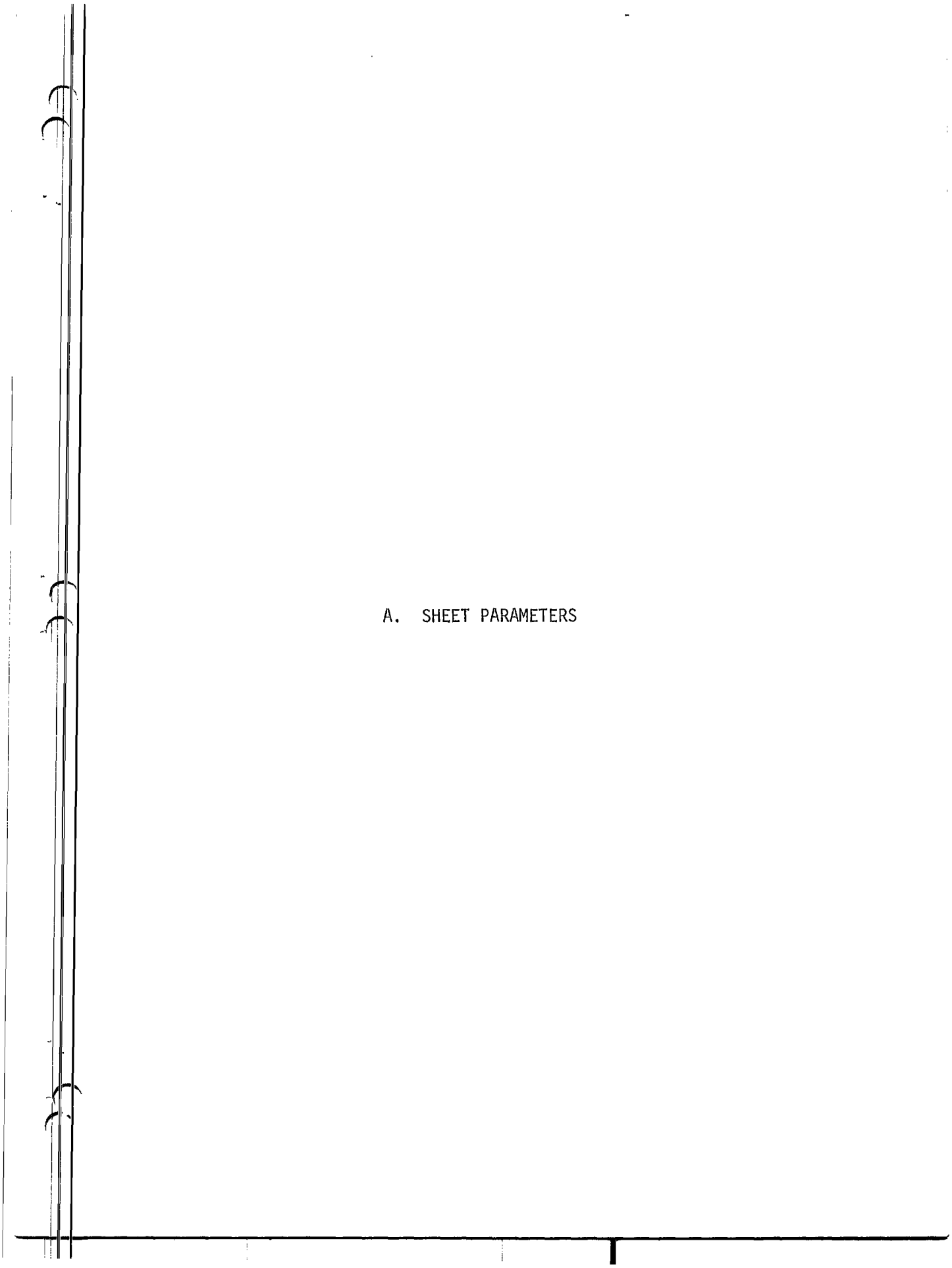
R. AUTOMATED DATA PROCESSING

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

Program	Name	Version
RK 201	Grid, Signal, and Lattice Plot	4/18/75
RK 211	Range-Range Non-Real Time Plot	1/15/76
RK 212	Visual Station Table Load	4/01/75
RK 216	Range-Azimuth Non-Real Time Plot	2/05/76
RK 300	Utility Computations	2/05/76
RK 330	Reformat and Data Check	5/04/76
PM 360	Electronic Corrector Abstract	2/02/76
RK 407	Geodectic Inverse/Direct Computation	9/25/78
RK 410	Geodectic Three Point Fix	9/22/78
AM 500	Predicted Tide Generator	11/10/72
AM 602	Elinore-Line Oriented Editor	5/20/75

S. REFERRAL TO REPORTS

Field Edit Report TP 00531	December 1979
Field Edit Report TP 00534	April 1980
Horizontal Control Report for H-9819	November 1979



A. SHEET PARAMETERS

PARAMETER TAPE LISTINGS
(Field Sheets)

North Plotter Sheet

FEST=10000
CLAT=4161000
CMER=122/20/00
GRID=30
PLSCL=10000
PLAT=37/41/39
PLON=122/24/56
VESNO=1214
YR=79
ANDIST=0.0

South Plotter Sheet

FEST=10000
CLAT=4161000
CMER=122/20/00
GRID=30
PLSCL=10000
PLAT=37/39/35
PLON=122/24/56
VESNO=1214
YR=79
ANDIST=0.0

Development Blowup

FEST=10000
CLAT=4161000
CMER=122/20/00
GRID=10
PLSCL=2500
PLAT=37/43/45
PLON=122/22/00
VESNO=1214
YR=79
ANDIST=0.0

D. ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

VELOCITY TAPE LISTINGS

Vessel Number 1214 Table 1

```
000049 0 0000 0001 000 121400 009819
000187 0 0002
000265 0 0004
000334 0 0006
000434 0 0008
009900 0 0010
999999 0 0012
```

Vessel Number 0001 (Skiff) Table 2

```
000049 0 0000 0002 000 000100 009819
000187 0 0002
000265 0 0004
000334 0 0006
000434 0 0008
009900 0 0010
999999 0 0012
```

Vessel Number 1016 Table 3

```
000049 0 0000 0003 000 101600 009819
000187 0 0002
000265 0 0004
000334 0 0006
000434 0 0008
009900 0 0010
999999 0 0012
```

VELOCITY-TRANSDUCER FILE: V09819 LISTING MADE: 11-30-82 15:00:27

TRANSDUCER CORRECTION TABLES

VESSEL: 1001 YR: 79 FT

DAY	TIME	TRA COR	VEL TABLE
208	175030	1.10	2
221	235959	1.10	2

VESSEL: 1016 YR: 79 FT

DAY	TIME	TRA COR	VEL TABLE
226	192500	.00	0
228	160400	1.40	3
228	164136	1.60	3
230	160400	.90	3
233	201700	.00	0
302	174630	1.30	3
302	235959	1.30	3

VESSEL: 1214 YR: 79 FT

DAY	TIME	TRA COR	VEL
110	190912	2.50	
128	201452	2.60	
129	160756	2.50	
192	174235	2.40	
214	235959	2.40	

SETTLEMENT AND SQUAT ABSTRACTS

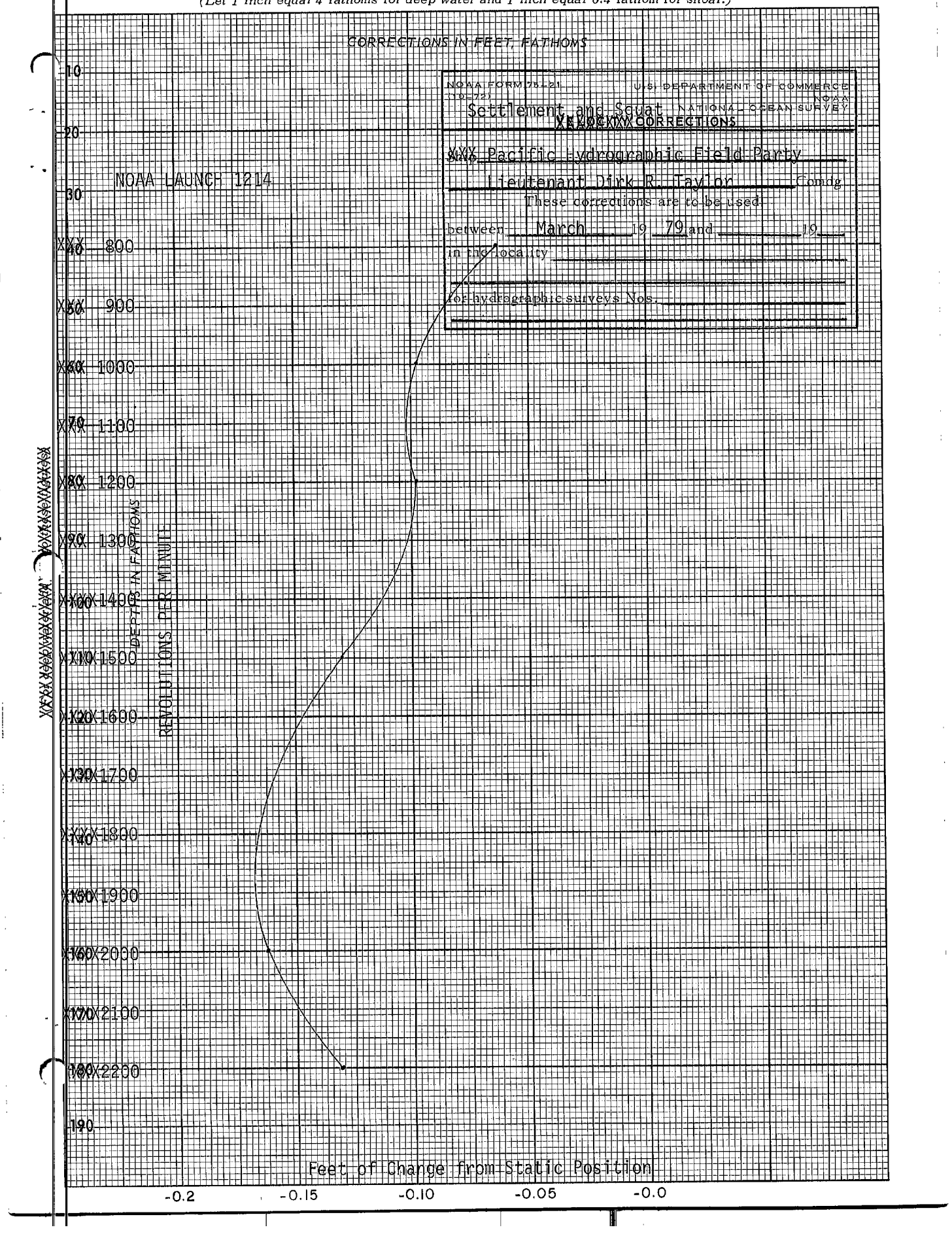
Vessel: 1214

RPM	Change in TRA in Feet
800	-0.0658
1000	-0.0984
1200	-0.0984
1500	-0.1312
2000	-0.1640
2200	-0.1312

Vessel: 1016

RPM	Change in TRA in Feet
500	-0.0656
800	-0.0885
1000	-0.1312
1500	+0.0886
2000	+0.3552
2200	+0.6396
2700	+0.9624

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)



(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET, FATHOMS

NOAA FORM 76-21
10-72

U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL OCEAN SURVEY

Settlement and Squat XXXXXXXX CORRECTIONS

XXX Pacific Hydrographic Field Party

Lieutenant Dirk R. Taylor Comdg

These corrections are to be used

between July 19 79 and 19

in the locality

for hydrographic surveys Nos.

NOAA LAUNCH 1016

REVOLUTIONS PER MINUTE

DEPTH IN FATHOMS

10
20
30
40
50
60
70 500
600
80 700
800
90 900
1000
100 1100
1200
110 1300
1400
120 1500
1600
130 1700
1800
140 1900
2000
150 2100
2200
160 2300
2400
170 2500
2600
180 2700
190

Feet of Change from Static Position

-.1 0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

TRA (TC/TI) TAPE: VESSEL 1214 SURVEY H-9819 FATHOMETER S/N 3787 YR 1979 PAGE 1 OF 1

From TIME	TRA CORR.	DAY	VEL. TBL.	TRA corr. is the algebraic sum of these columns ~~INITIAL~~ DRAFT	SCALE-PHASE	~~DRAFT~~	F. ARC	S./ SQUAT	COMMENTS
190912	+0.1	110	1	2.4	----	0	----	+0.1	
201452	+0.2	128	1	2.4	----	0	----	+0.2	
160756	+0.1	129	1	2.4	----	0	----	+0.1	
174235	0.0	192	1	2.4	----	-0.1	----	+0.1	
170017	0.0	207	1	2.4	----	0	----	0.0	

TRA (TC/TI) TAPE: VESSEL 0001 (Skiff) SURVEY H-9819 FATHOMETER S/N 7348 YR 1979 PAGE 1 OF 1

From TIME	TRA CORR.	DAY	VEL. TBL.	TRA corr. is the algebraic sum of these columns INITIAL	SCALE-PHASE	DRAFT	F. ARC	S./ SQUAT	COMMENTS
175030	1.1 Ø.Ø	208	2	----	----	1.1 Ø	----	0.0	

TRA (TC/TI) TAPE: VESSEL 1016 SURVEY H-9819 FATHOMETER S/N 3787 YR 1979 PAGE 1 OF 1

From TIME	TRA CORR.	DAY	VEL. TBL.	TRA corr. is the algebraic sum of these columns INITIAL	SCALE-PHASE	DRAFT	F. ARC	S./ SQUAT	COMMENTS
192500	0.0	226	0	----	----	0	----	0.0	Leadline sounding
160400	1.4 ~~-0.1~~	228	3	----	----	1.5 Ø	----	-0.1	1500 RPM
164136	1.6 ~~+0.1~~	228	3	----	----	1.5 Ø	----	+0.1	1000 RPM
160400	0.9 -0.6	230	3	----	----	1.5 Ø	----	-0.6	2350 RPM
201700	0.0	233	0	----	----	0	----	0.0	Leadline soundings
174630	1.3 ~~-0.2~~	302	3	----	----	1.5 Ø	----	-0.2	1650 RPM

F. LIST OF STATIONS

STATION LIST H-9819

Station	O	Latitude	Longitude	CRT	Elev.	F. Khz	Source	Name
001	1	37 48 26411	122 21 40130	250	0029	000000	PHP, 1979	Yerba Buena Island Lighthouse(ECC)
003	0	37 39 12095	122 23 01817	250	0053	000000	Q. 3712213 3035	Point San Bruno, 1925
004	4	37 40 10847	122 19 30478	250	0005	000000	PPP, 1977	San Bruno Shoal Channel Light 3, 1977
005	4	37 44 24916	122 15 35624	250	0003	000000	PHP, 1979	Disk B, 1979
006	0	37 40 21763	122 22 54152	254	0003	000000	PHP, 1979	Fill, ~~1979~~
007	3	37 42 57907	122 22 30378	254	0004	000000	PHP, 1979	Candle, ~~1979~~
008	0	37 45 46418	122 15 08227	250	0028	000000	Q. 3712214 4038	Hospital, 1947
009	4	37 44 17733	122 21 59367	254	0002	000000	PHP, 1979	Spit, ~~1979~~
010	5	37 40 38271	122 22 47977	254	0002	000000	PHP, 1979	Rat, ~~1979~~
101	4	37 41 44963	122 20 18066	250	0005	000000	PPP, 1977	San Bruno Shoal Channel Light 1, 1977
102	3	37 41 42028	122 20 26525	139	0004	000000	PPP, 1977	San Bruno Shoal Channel Light 2, 1977
110	6	37 42 58177	122 23 38291	139	0245	000000	Q. 3712213 3052	KYA Radio Tower, 1937
111	5	37 44 01650	122 21 51195	139	0007	000000	Q. 3712213 3049	Hunters Point North End Light, 1953
112	2	37 39 52110	122 22 05188	139	0005	000000	PHP, 1979	Oyster Point Entrance Light 2 1979 (South San Francisco Marina)
113	0	37 40 27542	122 23 33262	139	0146	000000	Q. 3712213 3040	Sierra Point, ~~1919~~ 1851
114	0	37 39 14581	122 23 02571	139	0065	000000	PPP, 1977	Forbes Tower, 1977
115	0	37 45 19566	122 27 05920	139	0575	000000	PPP, 1976	Mt. Sutro TV Tower N. 1976
116	0	37 47 42830	122 24 06072	139	0000	000000	PPP, 1976	Trans America Building, 1976
~~117~~	0	37 48 11576	122 16 11226	139	0000	000000	Q. 3712214 4162	Oakland Tribune Building Flagpole 1925
104	0	37 40 08340	122 19 39147	139	0000	000000	PPP, 1977	San Bruno Shoal Channel Light 4, 1977

PPP - Pacific Photo Party, PHP - Pacific Hydrographic Field Party

E. ABSTRACTS OF CORRECTIONS TO ELECTRONIC POSITION CONTROL

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 1214 SHEET : R-9819

TIME	DAY	PATTERN 1	PATTERN 2
190912	110	+00000	+00001
187220	114	+00000	+00001
173048	116	+00000	+00001
182536	117	+00000	+00001
165612	121	+00000	+00001
163000	123	+00000	+00001
174448	124	+00000	+00001
161352	128	+00000	+00001
160756	129	+00000	+00001
165500	130	+00000	+00001
161335	131	+00000	+00001
172312	142	+00000	+00001
164236	143	+00000	+00001
170612	144	+00000	+00001
190212	151	+00001	+00000
173447	152	+00001	+00000
174824	156	+00001	-00001
175848	157	+00001	-00001
165214	171	+00000	+00000
172442		+00000	+00001
175545	177	+00001	-00001
171822	178	+00001	-00001
174235	192	-00021	+65402
223411		+00021	+81139
225207		+00021	+56510

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 1214 SHEET : H-9819

TIME	DAY	PATTERN 1	PATTERN 2
211758	193	+00001	+70228
230434		+00001	-23134
000154	194	+00001	-65281
173636	199	+00001	-00001
160005	200	+00000	+75133
184038	205	-00001	+00001
164224	206	-00001	+00001
170017	207	-00001	+00001
183000	214	+00000	+53400
230000	214	+00000	+00000

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 1016 SHEET : H-9819

TIME	DAY	PATTERN 1	PATTERN 2
192500	226	+00000	+44147
192600		+00000	+00000
160400	228	-00001	-52391
162900	230	-00001	+00001
201700	233	+00000	+00000
185100	234	+00000	+00000
163800	236	+00000	+00000
163951	237	-00001	+00001
174630	302	+00000	+00000

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 0001 SHEET : H-9819

TIME	DAY	PATTERN 1	PATTERN 2
175030	208	-00001	+45017
200000	213	+00000	+00000
210300	213	-00001	-56298
175300	221	-00001	-14287

G. ABSTRACT OF POSITIONS

REJECTED POSITIONS

Julian Day	Positions
110	064-066, 161
114	173, 220, 264-265
116	413, 501-508
117	717, 798
121	824, 885
123	1162, 1163, 1194-1196, 1262, 1263, 1294
124	1295-1323, 1414-1424
128	1530, 1619, 1681
129	1739, 1768, 1769, 1831, 1859, 1916
130	2039-2041, 2057-2060, 2071-2073
131	2144
142	2365-2370
144	2634
151	2706, 2725, 2742, 2758-2760, 2770-2772
156	2877, 2878, 2893-2896, 2919
157	3005-3007, 3067, 3081, 3112, 3170, 3200, 3201 3230, 3231
177	3269-3275, 3301-3310, 3334-3342, 3368-3372, 3395, 3417,3418
178	3437, 3438, 3452-3459, 3472-3476, 3488-3490, 3496
192	3512, 3534, 3550-3552, 3610, 3622
193	3669, 3702, 3703, 3727-3729
199	3801, 3813-3817
200	3901, 3934, 3952, 3953, 3966, 3971, 3998
205	4052-4056
206	4246

Day	Positions	CTRL	S1	S2	Remarks
205	4021-4168	04	008	001	Hydro
206	4196-4211	04	001	008	Hydro
206	4212	04	001	008	Detached Position, Not plotted
206	4213-4245	04	001	008	Hydro
206	4247-4249	04	001	008	Bottom Samples
207	4250-4256	04	001	008	Bottom Samples
214	4257-4263	06	006		Detached Positions Dives
214	4264	06	009		Detached Position, Not Plotted

Vessel: 0001 (Skiff)

Day	Positions	CTRL	S1	S2	Remarks
208	5000-5055	06	009		Range azimuth Hydro
208	5056-5150	06	007		Range azimuth Hydro
213	5151-5177	06	006		Range azimuth Hydro
213	5178-5210	04	101	003	See Boatsheet/Range range
213	5211-5327	06	010		Range azimuth Hydro
221	5328-5507	06	010		Range azimuth Hydro

Vessel: 1016

Day	Positions	CTRL	S1	S2	Remarks
226	4265	06	009		Range azimuth Detached Position Dive on PSR #18
228	6000-6037	06	010		Range azimuth Hydro
230	6038-6049	04	001	008	Bottom Samples
230	6050	01			Bottom Sample-visual
230	6051-6056	04	001	008	Bottom Samples
237	6057-6067	04	001	008	Bottom Samples
302	6069-6079	04	001	008	Hydro

Vessel: 1016 (leadline soundings)

Day	Positions	CTRL	S1	S2	Remarks
233	7000-7007	04	005	101	Hydro Leadline Tagline
234	7008-7044	04	005	101	Hydro Leadline Tagline
236	7045-7061	04	005	101	Hydro Leadline Tagline

CTRL 06 Range Azimuth, 01 Visual, 04 Range Range

ABSTRACT OF POSITIONS: H-9819

Vessel: 1214

Day	Positions	CTRL	S1	S2	Remarks
110	0001-0161	04	003	001	Hydro
114	0162-0352	04	003	001	Hydro
116	0353-0618	04	003	001	Hydro
117	0619-0798	04	003	001	Hydro
121	0799-1038	04	003	001	Hydro
123	1039-1294	04	003	001	Hydro
124	1295-1424	04	003	001	Hydro
128	1425-1681	04	003	001	Hydro
129	1682-1916	04	003	001	Hydro
130	1917-2137	04	003	001	Hydro
131	2138-2301	04	003	001	Hydro
142	2302-2403	04	003	001	Hydro
143	2404-2547	04	003	001	Hydro
144	2548-2683	04	003	001	Hydro
151	2684-2772	04	004	003	Hydro
152	2773-2845	04	004	003	Hydro
156	2846-2959	04	004	003	Hydro
157	2960-3231	04	004	003	Hydro
171	3232-3236	04	001	008	Bottom Samples
171	3238-3242	04	003	001	Bottom Samples
177	3243-3418	04	004	003	Hydro
177	3419	04	004	003	Detached position
178	3420-3425	04	004	003	Bottom Samples
178	3426-3496	04	004	003	Hydro
192	3497-3637	06	003		Range azimuth Hydro
193	3638-3670	06	003		Range azimuth Hydro
193	3671-3736	06	006		Range azimuth Hydro
199	3737-3890	04	005	101	Hydro
200	3891-4020	06	007		Range azimuth Hydro

H. BOTTOM SAMPLES

NOAA FORM 75-44
(11-72)

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

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ NO	YEAR		CHECKED BY	DATE CHECKED
NOAA Launch 1214	OPR L123-PHP-79	1979	San Francisco Bay Survey H-9819	D. Taylor	9/18/79

SERIAL NO.	DATE	SAMPLE POSITION		DEPTH (Fathoms) Feet	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
		LATITUDE North	LONGITUDE West								
4249	206	37/42/48.815	122/19/45.339	39.7	10 lb			gn	M		
4250	207	37/40/05.147	122/18/05.041	07.1				wh, gn	M S		
4251	207	37/39/59.703	122/17/33.353	20.3				wh, gn	M S		
4252	207	37/40/22.090	122/15/35.130	12.0				wh, gn	M Sh		
4253	207	37/40/36.038	122/16/45.775	21.7				gn	M		
4254	207	37/40/36.309	122/17/48.680	28.4				gn	M Grs		
4255	207	37/40/36.208	122/18/43.926	25.7				gy-gn wh-br	M Sh tubeworms		
4256	207	37/40/35.167	122/19/45.795	36.7				gy gn br	M tubeworms		

Use more than one line per sample if necessary.

NOAA FORM 75-44
(11-72)

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

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
NOAA Launch 1016	OPR L123-PHP-79	1979	San Francisco Bay Survey H-9819	D. Taylor	9/18/79

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE North	SAMPLE POSITION LONGITUDE West	DEPTH VVVV (Fathoms) feet	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
6055	230	37/42/17.268	122/18/11.838	36.0	10 lb			gy	M		
6056	230	37/42/20.989	122/17/09.958	17.0				gy	M		
6057	237	37/42/45.148	122/16/31.482	10.9				gy-gn	wh Sh M plants		
6058	237	37/42/46.516	122/17/41.355	05.0				wh, gy	Sh M		
6059	237	37/41/44.449	122/16/41.217	25.2				gy	M Cl plants		
6060	237	37/41/13.332	122/16/19.793	17.6				gy	M Cl plants		
6061	237	37/41/12.892	122/17/12.809	16.8				gy, wh	S M Cl Sh		
6062	237	37/41/15.962	122/18/13.677	17.5				gy, wh	S M Cl Sh plants		
6063	237	37/41/13.932	122/19/15.151	31.1				gy, wh	M Cl Sh plants		
6064	237	37/41/44.586	122/17/46.220	28.1				gy, wh	M Cl Sh plants		
6065	237	37/41/43.112	122/18/44.177	---				gy, wh	M Sh plants		
6066	237	37/41/43.104	122/19/44.762	29.6				gy, wh	M Sh plants		
6067	237	37/41/41.065	122/22 27.580	09.0				gy-br	wh M Sh Wd		
6068	237	37/41/32.668	122/23/12.052	08.1				gy-gn	wh M Sh Wd		

Use more than one line per sample if necessary.

☆U.S. Government Printing Office: 1975 — 665-661/1130, Region No. 6

NOAA FORM 75-44
(11-72)

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

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
NOAA Launch 1016	OPR L123-PHP-79	1979	San Francisco Bay Survey H-9819	D. Taylor	9/18/79

SERIAL NO.	DATE	SAMPLE POSITION		DEPTH	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, sist. no., type of bottom relief i.e., slope, pisin, disposition, etc.)	OBS. INIT.
		LATITUDE North	LONGITUDE West	(Fathoms) Feet							
6038	230	37/44/03.697	122/21 58.302	---	10 lb			gy	M		
6039	230	37/43/35.083	122/20/33.914	02.3				gy	M S		
6040	230	37/43/44.015	122/19/37.300	44.6				gy	M S		
6041	230	37/43/47.658	122/18/39.383	31.0				gy	M		
6042	230	37/43/49.385	122/17/37.971	16.6				gy	M		
6043	230	37/43/16.880	122/17/10.708	14.0					No sample hrd		
6044	230	37/42/52.353	122/17/42.943	34.0				gy	M		
6045	230	37/43/15.911	122/19/08.308	---				gy	M		
6046	230	37/43/14.102	122/20/07.350	46.0				gy	M		
6047	230	37/43/21.396	122/21/38.787	53.0				gy	M Sh		
6048	230	37/42/46.753	122/20/36.269	45.0				gy	M Sh		
6049	230	37/42/44.872	122/21/39.091	17.0				gy	M		
6050	230	37/42/16.607	122/23/03.225	08.0				gy	M		
6051	230	37/42/19.490	122/22 12.384	09.0				gy	M		
6052	230	37/42/14.186	122/21/06.788	35.0				gy	M		
6053	230	37/42/24.999	122/20/23.367	36.0				gy	M		
6054	230	37/42/19.509	122/19/05.168	36.0				gy	M		

Use more than one line per sample if necessary.

☆U.S. Government Printing Office: 1975 — 665-681/1130, Region No. 6

NOAA FORM 75-44
(11-72)

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

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
NOAA Launch 1214	OPR L123-PHP-79	1979	San Francisco Bay Survey H-9819	D. Taylor	9/18/79

SERIAL NO.	DATE	SAMPLE POSITION		DEPTH	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
		LATITUDE North	LONGITUDE West	(Fathoms) Feet							
3232	171	37/40/ 02.914	122/20/ 41.223	03.8	10 lb			gy-gn	fne M		
3233	171	37/40/ 09.123	122/20/ 44.545	09.4				gn	M Sh		
3234	171	37/40/ 06.854	122/21 35.888	23.0				gy-gn	M plants		
3235	171	37/40/ 04.201	122/22/ 30.757	28.3				gy-gn	M Sh plants		
3238	171	37/39/ 59.482	122/23/ 22.328	28.6				gy-gn	wh M Sh Wd		
3239	171	37/40/ 33.146	122/22/ 18.309	---				gy-gn	wh M Sh		
3240	171	37/41/ 05.914	122/23/ 00.314	27.9				gy-gn	wh M Sh		
3241	171	37/41/ 39.800	122/22/ 51.704	29.2				gy-gn	M		
3242	171	37/42/ 05.563	122/23 22.052	33.2				gy-gn	wh M Sh		
3420	178	37/40/ 31.510	122/22/ 35.386	02.2				gy-gn	M Sh		
3421	178	37/40/ 55.078	122/21/ 58.886	15.8				gy-gn	M Cl tubeworms		
3422	178	37/40/ 37.970	122/21/ 53.111	16.2				gy-gn	wh M Sh tubeworms		
3423	178	37/41/ 09.913	122/21/ 13.717	24.1				gy-gn	M brk Sh tubeworms		
3424	178	37/41/ 38.414	122/21/ 53.360	19.5				gy-gn	M Grs		
3425	178	37/41/ 09.992	122/22/ 18.768	04.2				gy-gn	wh M Sh Grs		
4247	206	37/43/ 42.824	122/16/ 47.135	12.9				gn	M		
4248	206	37/42/ 40.066	122/18/ 23.579	29.1				gn	M		

Use more than one line per sample if necessary.

☆U.S. Government Printing Office: 1975 – 665-881/1130, Region No. 6

I. LANDMARKS FOR CHARTS

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)

	REPORTING UNIT (Field Party, Ship, or Office)	STATE	LOCALITY	DATE
[ ] TO BE CHARTED [X] TO BE REVISED [ ] TO BE DELETED	Pacific Hydrographic Field Party	California	San Francisco Bay	11/17/79

The following objects HAVE [ ] 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	North American, 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.M. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Stadium	Add name to structure at Candlestick Point	37 42	49.2	122 23	06.0			18649 18650 18651 18652
	See L-62(84)							

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD		☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		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.

NOAA FORM 76-40 (8-74)

SUPERSEDES NOAA FORM 76-40 (2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD BE DESTROYED UPON RECEIPT OF REVISION.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1030 Region 6

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-9819

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.

W. C. Austin 11/9/83
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:RLSandquist R L Sandquist 11/9/83 mm

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 in section 3 of the Evaluator's Report, and recommend that additional field work be accomplished prior to the departure of the Field Party now working in the San Francisco Bay Area.

Robert K Laursen 11/9/83
Director, Pacific Marine Center (Date)

B. FIELD TIDE NOTE

December 31, 1979

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 941-4392 Oyster Point, CA
941-4358 Hunters Point, CA

Period: April 11 - August 25, 1979

HYDROGRAPHIC SHEET: H-9819

OPR: L123

Locality: San Francisco Bay, California

Plane of reference (mean lower low water): 1.75 ft. - Oyster Point
2.99 ft. - Hunters Point (to 8/3 1400 HRS)
1.99 ft. - Hunters Point (after 8/3 1500 HRS)

Height of Mean High Water above Plane of Reference is
6.3 ft. - Oyster Point; 6.0 ft. - Hunters Point

REMARKS: Recommended zoning:

*(1). North of 37°42.5' zone direct on Hunters Point.

*(2). From 37°42.5' to 37°41.2' zone on Hunters Point applying +12 minute time correction and range ratio x 1.03.

(3). South of 37°41.2' zone on Oyster Point.

* The gage at Hunters Point was first damaged then destroyed resulting in a loss of data from May 24 - June 11. Smooth tides required for this period should be obtained from Oyster Point with zoning as follows:

(1). Apply -25 minute time correction and range ratio x0.94.

(2). Apply -12 minute time correction and range ration x.97.

James C. Hubbard
Chief, Datums and Information Branch

FIELD TIDE NOTE

APRIL-OCTOBER 1979

OPR-L123-PHP-79

H-9819 PHP-10-1-79

Field tide reductions of soundings are based on San Francisco Bay predicted tides, corrected for the operation area as specified in the project instructions. AM 500, the Predicted Tide Generator was used to interpolate tide correctors for all soundings through the PDP 8/e computer.

Three ADR gages were installed in the project area. Location and operational periods are:

Site	Position	Period
San Leandro #941-4688	37/41.7 N 122/11.5 W	April 4, 1979 to present
Oyster Point #941-4392	37/39.9 N 122/22.8 W	April 12, 1979 to Aug. 31, 1979
Hunters Point #941-4358	37/43.8 N 122/21.4 W	March 30, 1979 to present

San Leandro

A Fisher Porter ADR gage, serial number 6903A5568M13 was installed on an existing well and staff at the San Leandro Marina. No major problems were encountered with this gage. Time errors did occur several times. The gage was reset whenever the time was in error three minutes or more.

Oyster Point

A Fisher Porter ADR gage, serial number 7403A3402M3 was installed on a new floatwell and staff at the Oyster Point Marina in South San Francisco. The gage worked without a failure the entire period. Minor time errors did occur occassionally but these were corrected whenever the time was in error three minutes or more. The staff and floatwell were left intact for future use.

Hunters Point

A Fisher Porter ADR gage, serial number 7305A3099M4 was originally installed on an existing floatwell and staff at the Hunters Point Naval Shipyard. This gage was knocked off the well and damaged by a hawser

being used by the private ship repair company which leases the facility from the U. S. Government. The damage occurred between observations and resulted in 3½ days of lost tidal data. No hydrography or field edit occurred during this period. The dates were 25-30 May.

A Leupold & Stevens gage, serial number 76587-76 was installed in the same location on May 30, 1979. This gage was knocked off the well and lost in the bay under similar circumstances as the first gage was damaged. This occurred on June 5 or 6. Tidal data for May 30 through the time the gage was lost was not recoverable. During that period hydrography and/or field edit occurred on four days, May 31, June 1, 5, and 6.

A third gage was installed on June 11 on a new floatwell approximately 60 meters north along the face of the pier from the original location. The gage is a Fisher Porter ADR, serial number 7504A2689M24. A new tide staff was installed July 31, 1979 after the original staff was found missing on July 30. The old staff was installed in such a manner that no movement occurred prior to it missing completely. The new staff is approximately 50 meters north of the original and within 15 meters of the gage. The new staff was leveled in on August 3, 1979.

C. GEOGRAPHIC NAMES LIST

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9819

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 18650 & 18651	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 TP-00537 KP-00534		
CANDLE STICK POINT	X								X	1
DOUBLE ROCK	X								X	2
HUNTERS POINT	X								X	3
INDIA BASIN	X								X	4
OYSTER POINT	X								X	5
SAN FRANCISCO BAY	X								X	6
SIERRA POINT	X								X	7
SOUTH BASIN									X	8
CALIFORNIA (title block)										9
SAN FRANCISCO										10
POINT AVISADERO										11
										12
										13
										14
										15
										16
										17
					Approved:					18
										19
					Charles E. Harrington					20
					Chief Geographer - N/CG2x5					21
					6 July 1983					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-9819

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	4
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS, ARC, EXCESS	4

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS			2 - Raw			
VOLUMES						
BOXES			2 - Smooth			

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS PRE-VERIFICATION	AMOUNTS VERIFICATION	AMOUNTS TOTALS
POSITIONS ON SHEET			
POSITIONS CHECKED		4664	
POSITIONS REVISED		45	
SOUNDINGS REVISED		59	
SOUNDINGS ERRONEOUSLY SPACED		20	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	7	*(VER)/(EVAL)	
VERIFICATION OF CONTROL		02/02	04
VERIFICATION OF POSITIONS		74/03	77
VERIFICATION OF SOUNDINGS		532/03	535
COMPILATION OF SMOOTH SHEET		110/08	118
APPLICATION OF TOPOGRAPHY		94/00	94
APPLICATION OF PHOTOBATHYMETRY		00/00	00
JUNCTIONS		38/04	42
COMPARISON WITH PRIOR SURVEYS & CHARTS		00/29	29
VERIFIER'S REPORT		21/21	42
OTHER		06/00	06
TOTALS	7	877/70	947

Pre-Verification by James S. Green	*Beginning Date* 1/23/80	*Ending Date* 1/23/80
Verification by Matthew G. Sanders Evaluated by Dennis J. Hill	*Beginning Date* 9/12/80	*Ending Date* 6/7/83
Verification Check by Stanley H Okulan, James S Green	*Time (Hours)* 65	*Date* 6/10/83
Marine Center Inspection by HIT	*Time (Hours)* 10	*Date* 6/29/83
Quality Control Inspection by	*Time (Hours)*	*Date*
Requirements Evaluation by	*Time (Hours)*	*Date*

*Time in this column is for Verification (VER) and Evaluation (EVAL)

J. APPROVAL SHEET

APPROVAL SHEET

HYDROGRAPHIC SURVEY H-9819

PHP-10-1-79

OPR-L123-PHP-79

The field records and data were inspected an approved on a daily basis by the Chief of Party. *Additional field work is needed to resolve the piling at Lat. 37° 40' 06.8" N, Long. 122 23' 03.4 W and the shoal depths on the eastern edge of the field sheet. These can be easily resolved when the adjoining sheets are being surveyed. Other than the above discrepancies, this survey is complete and adequate to supersede prior surveys for charting purposes.

* See Evaluator's Report for other items requiring field work

Dirk R. Taylor

Dirk R. Taylor
Lt. NOAA
Chief of Party

PACIFIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO: H-9819 FIELD NO: PHP-10-1-79

California, San Francisco Bay, Oyster Point to Hunters Point

SURVEYED: April 20 - August 25, October 29, 1979

SCALE: 1:10,000 PROJECT NO: OPR-L123-PHP-79

SOUNDINGS: Ross Fineline 5000
Raytheon 719B Lead-line

CONTROL: Range-Range/
Range-Azimuth
Resection, Tagline

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

Surveyed By.....LT D. R. Taylor
LTJG D. D. Smith
Mr. F. L. Rosario

Automated Plot By.....PMC Xynetics Plotter

Verified By.....M. G. Sanders

Evaluated By.....D. J. Hill

1. INTRODUCTION

H-9819 (1979) is a basic survey conducted in accordance with Project Instructions OPR-L123-PHP-79, dated February 22, 1979 with Change 1 dated November 27, 1979; Change 2 dated May 15, 1980; Change 3 dated November 18, 1980 and Change 4 dated January 19, 1981.

This survey extends south along the west side of San Francisco Bay from latitude 37°44'00"N to latitude 37°40'00"N and east to longitude 122°16'00"W. The inshore limit of the survey is the high water line.

Field tide reductions are based on predicted tides from San Francisco, while final tide reductions are based on temporary ADR gages installed at Oyster Point (941-4392) and Hunters Point (941-4358).

The sounding correction abstracts were revised to include vessel draft and the field generated transducer correction tables have been replaced in the Descriptive Report with revised tables.

The list of control stations has been revised to include dates of station establishment.

The digital records for this survey have been updated to include categories of information required to comply with N/CG letter, Policy for Certification and Delivery of Hydrographic Surveys, December 17, 1982. Certain descriptive information, however, may not be included in the digital record due to the

restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Hydrographic position control is adequately discussed in paragraphs F and G of the Descriptive Report and the Horizontal Control Report OPR-L123-PHP-79. The smooth sheet was plotted using published and preliminary adjusted positions of control stations.

Shoreline originates with Class I reviewed shoreline manuscripts TP-00531 and TP-00534 of 1982. Photography originated in 1977 and field edit occurred in 1979 and 1982.

3. HYDROGRAPHY

Soundings at crossings are in good agreement.

Standard depth curves have been completed and supplemental 3-foot and brown curves have been added to better define flat bottom and peaks, respectively.

Some soundings along pier faces have been displaced to improve the legibility of the piers.

The development of bottom configuration and least depths is adequate in all navigable areas with the exception of eight shoal soundings in the vicinity of latitude 37°40'45", longitude 122°16'15"W. These depths are as much as 37 percent shoaler than surrounding depths and require additional development to determine least depths. In addition, a 1-foot sounding at latitude 37°40'12"N, longitude 122°22'32"W is indicative of an undeveloped feature.

4. CONDITION OF SURVEY

The smooth sheet and accompanying hydrographic records conform to the requirements of the Hydrographic Manual with the following exceptions:

Form 76-155, Geographic Names, was not used by the hydrographer and the source of names referenced in the Descriptive Report was not recorded.

The use of the term "plants", when recording bottom samples is ambiguous and has been interpreted during processing to mean weeds. This subtle change permits the entry of the information into the digital record which requires standard terms.

A junction was made with prior survey H-8024 (1954) instead of with contemporary surveys as required by the project instructions. Appropriate junctions were accomplished during processing and are discussed in section 5 of this report.

All the prior surveys common to the present survey area were not compared with and discussed within the Descriptive Report. Necessary comparisons were accomplished during processing.

Prior surveys were not completely superseded because the field investigations of several features were either incomplete or not sufficiently documented.

The discussion of the investigation of submerged piles along Oyster Point channel should have been made in section K, Comparison with Prior Surveys, instead of in section L, Comparison with the Chart. Section K has been annotated to direct users to section L.

Some echo sounder records indicate that the instrument gain control was set excessively high, resulting in spurious traces which are difficult to differentiate from sharply rising features attached to the bottom.

A rock uncovering 2 feet at latitude 37°42'00.5"N, longitude 122°23'26.5"W originating with TP-00534 is shown on the smooth sheet with a position approximate note. The field records contain no supplementary position data which could be used to delete the note.

5. JUNCTIONS

Survey	Scale	Relative Location
H-9844 (1979-80-81)	1:10,000	North
H-9869 (1980)	1:10,000	East
H-9952 (1982)	1:10,000	South

The junctions have been completed and inked with the exception of the junction with H-9952 which was not completed due to the preliminary stage of processing on that survey.

6. COMPARISON WITH PRIOR SURVEYS

H-3967WD (1917) 1:20,000

Comparison indicates no conflict with present hydrography with the exception of present depths of 33-34 feet in an area previously cleared to 35 feet effective depth. This small area, localized in the vicinity of latitude 37°42'27"N, longitude 122°20'12"W has shoaled slightly since 1917 and is adequately developed on the present survey.

H-6726 (1941) 1:10,000

Sounding agreement is good with prior soundings being approximately 1 foot shoaler than present. Major differences, however, are evident within the limits of the present San Bruno Shoal Channel. Here, apparently as the result of dredging, present depths are as much as 9 feet deeper than prior depths. No prior information was carried forward to supplement the present survey. The present survey is adequate to supersede the prior survey.

H-8023 (1954) 1:5,000

Shoaling has occurred in all areas alongshore with significant changes in slips at latitude 37°42'58"N, longitude 122°21'36"W and latitude 37°42'51"N, longitude 122°21'38"W where depths have been reduced respectively from 31 feet prior to 16 feet present and 29 feet prior to 17 feet present. Additional change in the form of shoreline accretion in India Basin has occurred west of longitude 122°22'00"W, resulting in numerous piles and dolphins being covered over. However, not all such features have been similarly affected and since there is no documentation regarding disproval,

the following visible features have been carried forward to the present survey as submerged features:

a. A row of piling with an offshore end at latitude 37°44'01.0"N, longitude 122°22'07.7"W

b. A row of piling with an offshore end at latitude 37°43'59.7"N, longitude 122°22'24.5"W

c. A pile at latitude 37°44'00.9"N, longitude 122°22'25.2"W

d. A pile at latitude 37°44'02.1"N, longitude 122°22'22.8"W

e. Dolphins at latitude 37°43'50.1"N, longitude 122°21'31.5"W and latitude 37°43'51.0"N, longitude 122°21'38.0"W.

In addition, five 39- to 40-foot soundings have been carried forward to supplement the present survey in areas where development was not adequate. With the exception of these features and soundings, the present survey is adequate to supersede this prior survey.

Presurvey Review (PSR) items 16 and 17, originating with this survey, are in a junctional area and are discussed within the report accompanying H-9844.

H-8024 (1954) 1:10,000

Comparison with this survey is good with the exception of an area in the extreme northeast corner of the present survey. Present depths there are significantly deeper and may be the result of dredging. The present survey is adequate to supersede this prior survey.

H-8025 (1954-55) 1:10,000

Sounding agreement is generally very good and with the exception of the Oyster Point Channel, is adequately discussed in the Descriptive Report. This channel has shoaled and now has a controlling depth of 2 feet. Several visible piles have been carried forward as submerged piles generally because there is no documentation in the field records relative to specific attempts to disprove the features. The pile at latitude 37°40'17"N, longitude 122°22'26"W was carried forward despite an attempt to disprove its existence because the search area was no closer than 50 meters from the position on H-8025. The pile at latitude 37°42'54.5"N, longitude 122°21'56.5"W, although not specifically investigated, was not carried forward because Chart Adequacy Survey 18650 (1976) (CL716/76) disproved the feature.

The note, "subm. piling and dols" has been carried forward with a leader to latitude 37°40'00.5"N, longitude 122°23'05"W. There is no indication on the survey smooth sheet where the features were actually located by the field party and since archival records are not available at the Pacific Marine Center, the note with leader is the only information presently available.

The double row of piling extending offshore to latitude 37°42'58.5"N, longitude 122°21'58.0"W was not carried forward although the present survey located a row of ruins extending to an offshore point approximately 15 meters east. The features are considered to be the same with the source of the

position discrepancy unidentified. The present survey delineation originates photogrammetrically and should supersede the prior delineation. With the exception of features carried forward, the present survey is adequate to supersede this survey.

H-8027 (1955-56) 1:20,000

Sounding agreement is good and with the exception of a 3-foot sounding carried forward at latitude 37°43'34"N, longitude 122°16'33"W, the present survey is adequate to supersede this survey.

PSR item 18, originating with none of the above prior surveys was located and has been adequately addressed by the hydrographer in section K of the Descriptive Report.

7. COMPARISON WITH CHARTS

18650, 34th Edition, May 20, 1978
18651, 29th Edition, August 12, 1978

a. Hydrography - A chart comparison indicates that most offshore hydrography originates with the prior surveys previously discussed while inshore hydrography, particularly in culturally built-up areas originates with miscellaneous sources not identified. The source of charted features has been indicated on copies of chart sections attached to this report. Items not identified on the chart sections originate with undetermined sources.

With the exception of the following two items, all other unidentified features and soundings should be superseded by the present survey:

	Latitude	Longitude
subm. pile	37°40'15"N	122°22'23"W
subm. dol	37°40'17.5"	122°22'11"W

b. Controlling Depths - Two channels with charted controlling depths were surveyed. Depths within the channel between San Bruno Shoal Light 1 and San Bruno Shoal Light 6 are no shoaler than 29 feet, confirming the charted note. Depths within the Oyster Point Channel, however, have shoaled to 2 feet and the charted controlling depth of 5 feet should be superseded. This condition has been reported to the 12th U. S. Coast Guard District (copy attached).

c. Aids to Navigation - Charted aids to navigation have been located and described and adequately serve their intended purpose. There are no uncharted aids within the survey area.

8. COMPLIANCE WITH INSTRUCTIONS

With the exception of deficiencies discussed elsewhere in this report, this survey adequately complies with the project instructions.

9. ADDITIONAL FIELD WORK

Additional work will be required to verify or disprove all features carried forward to this survey from prior surveys in addition to the following features originating with miscellaneous undetermined sources:

	Latitude	Longitude
subm. pile	37°40'15"N	122°22'23"W
subm. ~~pile~~ dol.	37°40'17.5"N	122°22'11"W

Additional work will be required to determine least depths for shoals discussed in section 3 and to improve the positioning of a rock uncovering 2 feet previously discussed in section 4.

Respectfully submitted,

Dennis Hill

D. J. Hill
Evaluator

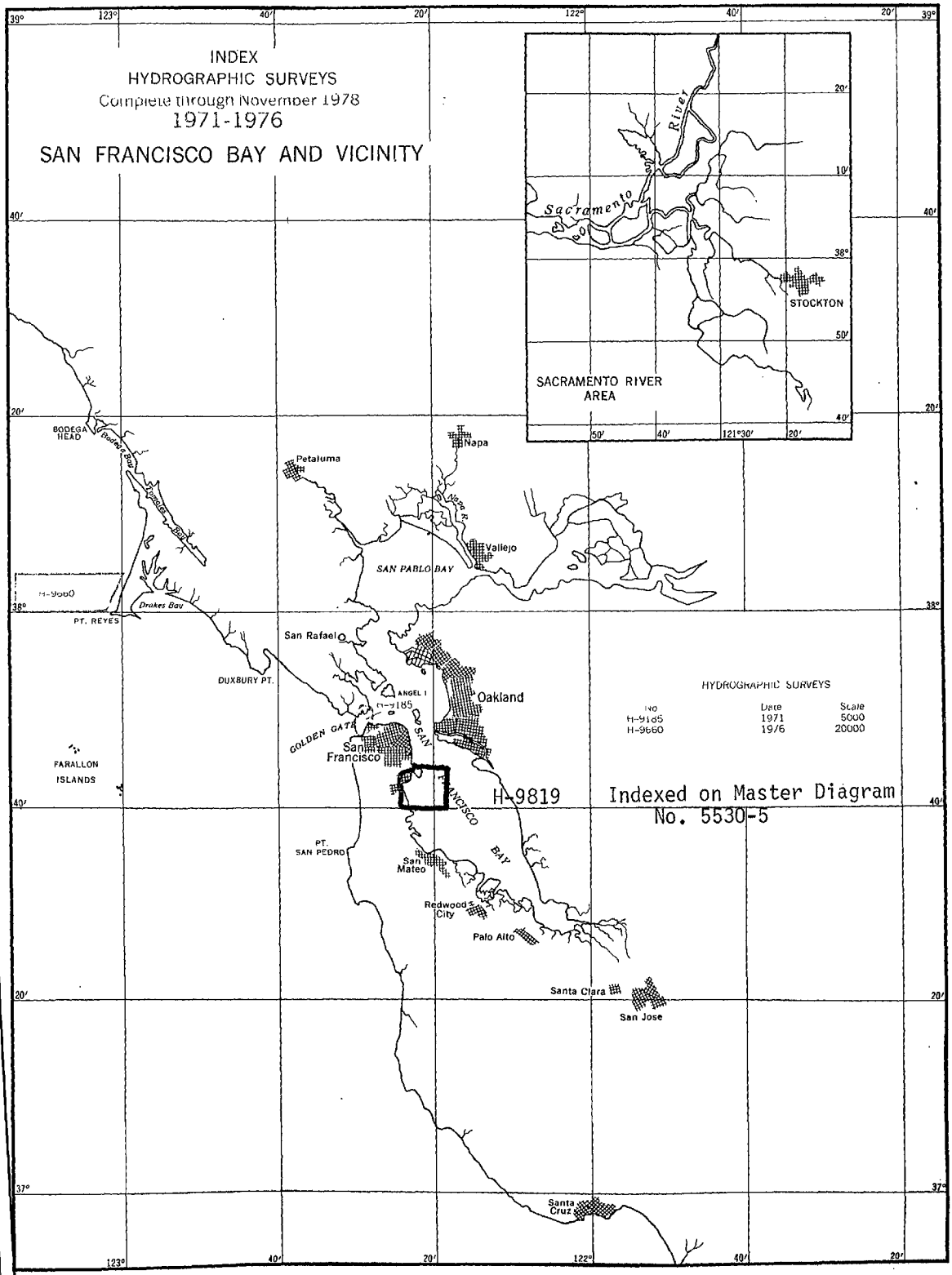
This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting except as noted in the Evaluation Report. The survey is recommended for approval.

J S Green

James S. Green
Supervisory Cartographer

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

Hydrographic Index No. 96M



FORM C&GS-8352
(9-28-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9819

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	3/30/84	Peter Schumaker	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 56
18651	4/16/84	Peter Schumaker	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 40
18649	5/2/84	Peter Schumaker	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 65
18652	1/18/85	CORDTS	
			Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 27
18650	3/18/98	[illegible]	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 65 @ 37°43'46"/122°18'25" changed 26' sdg/40 24'sds
			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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			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-978.

USCOMM-DC 8598-P63