

10409

Diagram No. 5527

NOAA FORM 76-36A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. PHP-10-3-91
Registry No. H-10409

LOCALITY

State California
General Locality San Joaquin River
Sublocality Big Break to False River

1991

CHIEF OF PARTY
LT G.F. Glang

LIBRARY & ARCHIVES

DATE July 22, 1993

10409

P/L

PRODS

18652'E'

18661 'B'

CP7

18010 NC

HYDROGRAPHIC TITLE SHEET

H-10409

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-10-3-91

State California

General locality San Joaquin River

Locality Big Break to False River

Scale 1:10,000 Date of survey Oct 21 to Nov 26, 1991

Instructions dated June 17, 1991 Project No. OPR-L208-PHP

Vessel Jensen Launch 0651, ^{SEA} MonArk Launch 0652

Chief of party LT Gerd G. Glang, NOAA

Surveyed by LT G.F. Glang, LT J.S. Verlaque, ET E.O. Wernicke, ST R. Baker

Soundings taken by echo sounder, hand lead, pole Raytheon DE-719C Echosounder

Graphic record scaled by PHP Personnel

Graphic record checked by PHP Personnel

Verification by: E. Domingo Automated plot by PHS Kynetics Plotter

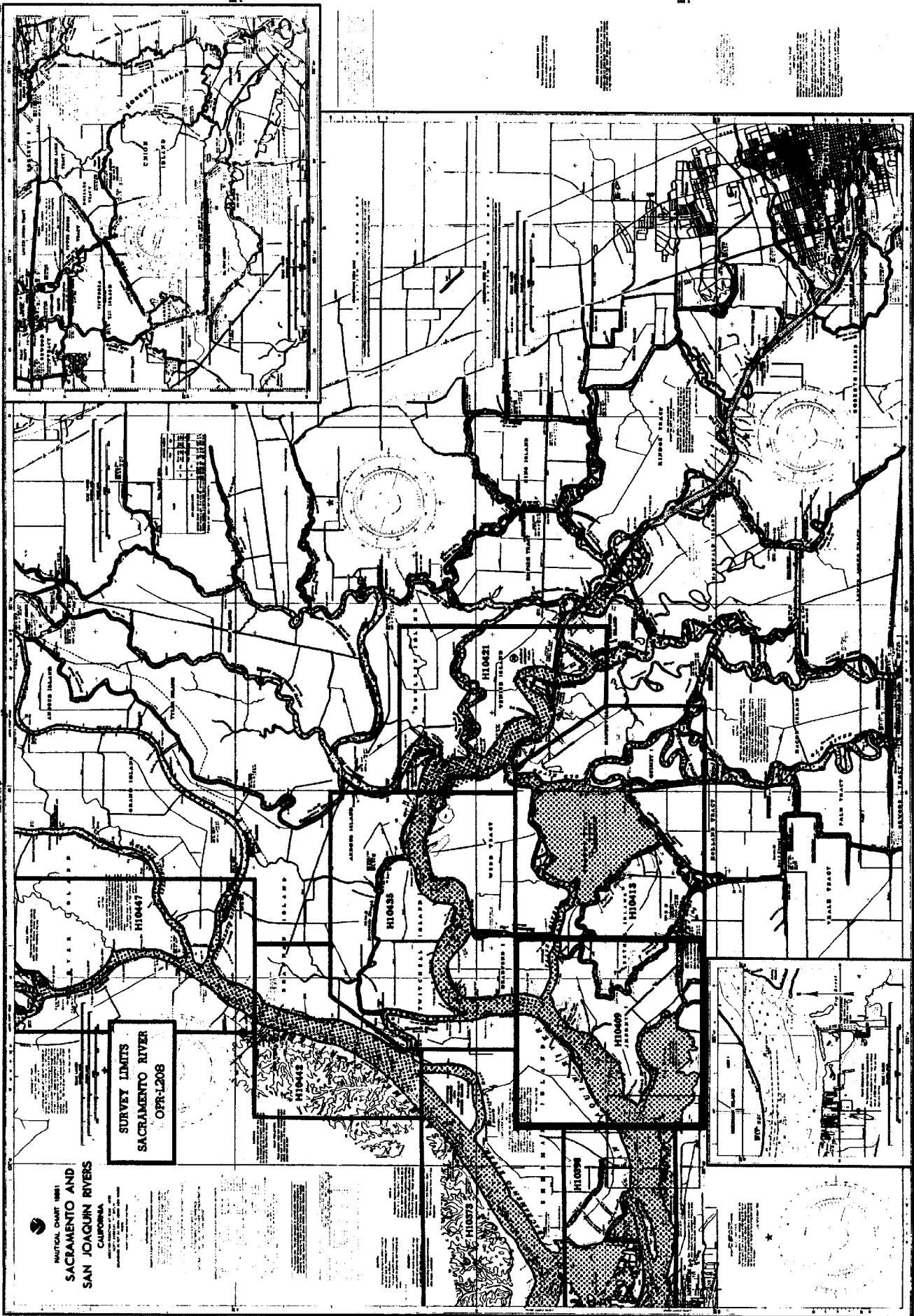
Evaluation by: R. Davies

Soundings in ~~fathoms~~ ~~feet~~ Meters at ~~MLLW~~ MLLW and decimeters

REMARKS: Time in UTC. Revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

AWOIS ITEM INVESTIGATION REPORTS HAVE BEEN FILED WITH THE SURVEY RECORDS; ALL DATA IS INCLUSIVE IN THIS REPORT.

SA-6-97 AWOIS and SURF 8/93 Red



NAUTICAL CHART 1881
SACRAMENTO AND
SAN JOAQUIN RIVERS
CALIFORNIA

SURVEY LIMITS
SACRAMENTO RIVER
OPR-L208

H10443

H10448

H10451

H10460

H10500

Descriptive Report to Accompany Hydrographic Survey H-10409

Field Number PHP-10-3-91
Scale 1:10,000
1991

Pacific Hydrographic Party
Chief of Party: LT Gerd F. Glang

A. PROJECT ✓

This survey was conducted in accordance with Hydrographic Project Instructions OPR-L208-PHP, Sacramento River, California, dated June 17, 1991.

Hydrographic survey H-10409 was conducted to obtain data for maintenance of existing nautical charts, and for a new series of 1:12,500-scale charts. This project also responds to the San Francisco Pilots Association and the US Army Corps of Engineers (COE), Bay Model Engineering Office, by aiding the update of the Bay model.

This survey's sheet letter is "M", as specified by the project instructions. As specified below (para. B), the sheet limit was expanded to the east to a maximum hydrographic area of 76 by 82.5 cm, IAW Hydrographic Manual Section 1.2.4. To meet limits of the field processing system, sheet "M" was divided into M(West) and M(East) sheets.

B. AREA SURVEYED *See EVAL Report, section 1*

The area surveyed for H-10409 includes: the San Joaquin River, from the west limit of Big Break at 121°44'10"W, north to 38°04'30"N; all of Big Break; and False River, Taylor Slough and Dutch Slough, east to 121°39'00"W. The southern limit is latitude 38°00'00"N.

Data acquisition was conducted from October 21, through November 26, 1991.

C. SOUNDING VESSELS

NOAA Launch 1101 (EDP No. 0651), a 29-foot Jensen^a, and NOAA Launch 1102 (EDP No. 0652), 22-foot SeaArk, were used to collect sounding data, bottom samples, velocity casts, and to conduct shoreline verification. Bottom drags were conducted from VN 0651 exclusively. No changes to the standard vessel sounding configurations were necessary.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

This survey was completed with the following HDAPS Programs:

<u>Program Name</u>	<u>Program Version</u>	<u>Installation Date</u>
DISC_UTIL	1.00	04/22/91
MB	0.00	04/22/91
HJ	0.00	04/22/91
AUTOST	1.10	06/26/91
SURVEY	6.02	06/26/91
POINT	1.31	06/26/91
PLOTALL	1.95	06/26/91
PRINTOUT	2.30	04/23/91
CARTO2	*.**	10/05/91
BASELINE	1.10	04/22/91
QUICK	1.10	04/22/91
CONVERT	2.42	06/26/91
INVERSE	1.31	06/26/91
LOADNEW	1.30	04/22/91
GLOBAL	1.11	06/26/91
REJECT	1.00	04/22/91
MAKEFIX	1.00	04/22/91
BIGABST	1.13	06/26/91
REAPPLY	1.32	06/26/91
DIAGNOSTIC	2.70	04/22/91
HPRAZ	1.22	06/26/91
FILESYS	2.11	06/26/91
BACKUP	2.00	04/22/91
BACKOLD	1.11	06/26/91
NEWCONT	1.10	04/22/91
LISTAWOIS	1.20	04/22/91
PREDICT	1.11	06/26/91
POSTSUR	5.12	06/26/91
READPROJS	1.07	06/26/91
SOFTCHECK	1.11	06/26/91
DP	1.11	06/26/91
MANU_DATA	1.11	06/26/91
RAMSAVER	1.00	04/22/91
REFTIDE1	*.**	04/22/91
Vers	*.**	10/05/91
DAS_SURV	6.03	06/26/91
CAT_KEYS	*.**	06/26/91
Program	Program	Installation
CSTAT_UP	1.00	06/26/91
CATALOGER	*.**	06/26/91
CART	0.00	10/05/91
SYMBOLS	0.00	10/05/91
EXCESS	3.02	07/20/91
GRAPHEDIT	1.01	07/20/91

The PC-DAS SURVEY Program, version 3.7, was used for on-line data acquisition aboard the survey launches.

The following non-HDAPS computer programs were used:

VELOCITY	(IBM PC)	1.11	03/09/90
NADCON	(IBM PC)	1.01	09/89

PHP continues to field test a new version of the CARTO Program. This version of the cartographic utility program includes the expanded symbols library based on HSG No. 35. A disk copy of the CFILE.BDAT file is included with this data.

Significant software problems encountered include errors in BIGABST Program, version 1.13, and PC-DAS SURVEY Program, version 3.71.

BIGABST does not correctly compute mileage, nor does it properly count DP's when several have been rejected on a particular DN.

PC-DAS SURVEY miscounts the fix numbers. The fix number displayed on screen in the survey mode often does not update with each fix event. This error occurs randomly and can only be corrected by a careful review of the RMPO* vs. the echogram. On several occasions, the SURVEY Program did not send an event marker to the echosounder and no visual record of a fix appeared on the echogram. When fixes appeared in the wrong numerical order (i.e. duplicate fixes occurred online), the GLOBAL Program was used to block edit. The RMPO* was annotated accordingly.

On DN 296 and DN 318, data collection was conducted by the same vessel on both sheet 13 (M-west) and sheet 14 (M-East) and inadvertently logged to the same file. In these cases, the same file was converted for each plotter sheet and the non-applicable data rejected.

The RMPO* was annotated whenever software problems affected the data.

* RAW MASTER PRINTOUT

E. SONAR EQUIPMENT ✓

Not applicable.

F. SOUNDING EQUIPMENT ✓

The following Raytheon DE-719C Echosounders, modified with an Odom Hydrographic Systems, Inc. Digitrace, were used:

<u>Vessel</u> <u>EDP No.</u>	<u>Serial No.</u>	<u>DN Used</u>
0651	10273	294-330
0652	10280	294-304
0652	6241	305-330

Soundings were recorded in meters, with an assumed speed of sound through water of 1500 m/sec. Depths encountered in the survey area range from 0.0 meters to 18.8 meters.

15, 9

The digitized soundings from the echosounder were compared in real time with the analog trace to ensure reasonable agreement. Adjustments to the zero calibration, speed of sound, and tide and draft were noted on the echogram if not obvious. Because of the poor reliability of the DE-719C echosounders, these adjustments were required almost continuously.

Survey records were scanned by PHP employees in accordance with the Hydrographic Manual and FPM Section 2.3.3, with the digital sounding taking precedence over the analog trace. An error is apparent when the digital sounding is compared to the analog trace. The error increases with depth, ranging from 0.2 meters at a 4.0-meter depth, up to 0.7 meters at a depth of 15 meters. In certain instances, the analog-to-digital difference was applied to a scanned insert. Although this error is not an uncommon characteristic of the Raytheon DE-719C/Odom Digitrace combination, VN 1102's echosounder was exchanged on DN 305 in an attempt to reduce this error. *Error was not reduced with the exchange of echosounders.*

Digital soundings took precedence over the analog trace in office processing.

Sounding poles were made by PHP using commercial surveyor's level-rod tape. These self-stick, pre-printed tapes are calibrated in centimeter intervals. They were laminated with clear epoxy to two-inch diameter wooden rods finished with white marine epoxy paint. The sounding poles are 3.3 meters long. No further calibrations are required. The sounding poles were used for measuring least depths on shallow AWOIS and diver investigations.

Metric leadlines were made by PHP in accordance with HSG 69. Each leadline is 7/16-inch double-braided dacron line. Markings are at one-meter intervals from 0 to 19, and are shrink-tubing secured with whipping twine. This deviation from HSG 69 makes for a more rugged leadline. Markings were calibrated during fabrication with a steel surveyor's tape while the line was under six pounds of constant tension. The throwing end is a standard six-pound lead shackled to a stainless steel thimble bent to the bitter end. Leadlines were used for depth comparisons with the echosounders and, on at least one AWOIS investigation, for depth comparison to the diver's depth gauge. Calibration forms are included in Separate IV*(Sounding Equipment Calibration and

* Filed with the hydrographic data.

Corrections).

A pneumatic depth gauge was not available for this survey. The least-depth obtained by diver investigation on AWOIS Item No. 51578 was determined by diver's depth gauge and compared to a leadline observation.

G. CORRECTIONS TO SOUNDINGS ✓

Velocity of Sound

Corrections for the speed of sound through the water column were computed from data obtained with an Applied Microsystems Laboratories (AML) Velocity of Sound Profiler (S/N 03004). The VELOCITY Program was used to determine the speed of sound correctors.

The following casts were taken:

<u>Cast</u>	<u>DN</u>	<u>Depth*</u>	<u>Apply to DN</u>	<u>HDAPS Tables</u>	
				<u>1101</u> (0651)	<u>1102</u> (0652)
1	295	17.2	294 - 300	1	2
2	301	22.6	301 - 307	3	4
3	310	19.6	308 - 314	5	6
4	323	18.2	315 - 328	7	8
5	330	24.7	330 - 334	9	10

*Extrapolated depth.

All casts were taken in approximate position 38°02'02"N, 121°42'45"W. Velocity corrector tables were created from each cast for both vessels due to their different drafts. Copies of all velocity cast data and HDAPS Velocity Corrector Tables are included in Separate IV.* A floppy disk copy of the VELOCITY Program data files* is provided with this report as well.

The AML instrument was calibrated by Northwest Regional Calibration Center on March 19, 1991. A copy of the calibration report is included in Separate IV.*

Leadline Comparisons

Leadline comparisons were taken daily to determine instrument error and to verify static draft. The instrument errors computed varied from -0.24 to +0.14 meters. This instrument correction was not applied to final field sheet soundings as it was not constant and may have been due to bottom type or individual operators. Leadline comparisons were annotated on the echograms and a leadline log is included in Separate IV.*

Static Draft ✓

* Filed with the hydrographic data.

A static draft for VN 0651 was determined on October 22, 1991 in two steps. The first step determined the depth of the transducer face from a reference mark on the hull. The second step involved measuring the depth from this reference mark to the launch's waterline with the launch in water (fuel tanks half full and two crew aboard). A static draft of 0.46 meters was determined. This draft agrees with historical data.

A static draft for VN 0652 was determined on October 15, 1991 using a similar method as above. A static draft of 0.4 meters was determined. This static draft differs by 0.12 meters from the static draft measurement obtained in June, 1989. This change in static draft is likely due to an addition of 100 pounds of ballast and the gradual deterioration of the launch's flotation.

Dynamic Draft ✓

Settlement and squat measurements for VN 0651 were conducted on October 22, 1991, on the San Joaquin River, north of Antioch, CA. Settlement and squat measurements for VN 0652 were conducted on October 18, 1991, on the Sacramento River, in the vicinity of Rio Vista, CA.

Draft and settlement and squat correctors are applied online to all survey data via the HDAPS Offset Tables. Offset Table 1 corresponds to VN 0651 and Offset Table 2 corresponds to VN 0652. Field records are included in Separate IV.* *The settlement and squat correctors and velocity tables were in error as submitted by the field. These correctors and tables were corrected during office processing.*
Tide Correctors ✓

The Final Field Sheets were plotted using predicted tides based on San Francisco, California. Four tidal corrector zones from the Tide Zone Chart are within this survey's limits. Only correctors from the most westerly zone (+4.30 hr HW, +5.15 hr LW, x 0.63 height ratio) were applied to all sounding data.

Approved water levels were requested from the Sea and Lake Levels Branch (N/OMA12) in a letter dated December 09, 1991. A copy of this letter is included in Appendix V*(Tides and Water Levels).

Hydrography (including mainscheme, splits, and crosslines) which was acquired on different days and overlapped, often differed by up to 0.7 meters. These differences were particularly noticeable in Big Break, a large and shallow tract of flooded land. Overlapping hydrography, collected on different days and by the same vessel, clearly showed these differences. Launch personnel often noticed higher apparent tides than predicted, especially on days with strong westerly winds, during times of predicted low water. These differences are likely due to the predicted tide correctors, and should be eliminated when smooth tides are applied. *After smooth tides were applied, differences were generally between 0.1 to 0.2 meters with extreme cases of 0.3 meters.*

* Filed with the hydrographic data.

H. CONTROL STATIONS ✓ See EVAL Report, section 2
Horizontal Datum

The horizontal control datum for this project is North American Datum (NAD) 1983. A copy of the HDAPS Control Station Table is included in ~~Appendix III~~ (List of Horizontal Control Stations).
this report.

Obscured Stations ✓

The following lights and offshore features on the San Joaquin River were obscured on the Final Field Sheets (FFS) by basic or supplemental control station:

<u>Station No.</u>	<u>Feature</u>
Sta. 724	San Joaquin River Light 18A (1990) (referred to as Blind Point in field notes). A small pier is obscured as well.
Sta. 735	San Joaquin River Light 19 (1990) A small pier is obscured as well.
Sta. 736	San Joaquin River Light 23 (1990)

Station 701 (Kirker, 1946), Station 713 (No. 8 USE, 1931), Station 728 (Dow, 1990), and Station 739 (Sand Creek 1946) do not plot within the limits of the FFS. Concur, Note has been added in the control station box to reflect this situation.

Survey Methods ✓

Geodetic positions used for establishing horizontal control on this survey were obtained from either the NGS CONUS database or from the Pacific Photogrammetric Party's (N/CG2333) Global Positioning System (GPS) receivers. All stations meet Third Order, Class I, standards.

The 1991 OPR-L208-PHP Horizontal Control Report was submitted by N/CG2333 in October, 1991. A list of preliminary adjusted positions is included in Appendix III* (List of Horizontal Control Stations). The applicable NGS CONUS station data is also included in Appendix III*.

* Filed with the hydrographic data.

I. HYDROGRAPHIC POSITION CONTROL ✓

Position Control ✓

Hydrographic position control was accomplished using the Motorola Mini-Ranger (MR) Falcon 484 positioning system which provided accuracy to meet the 1:10,000-scale survey requirements. Range/Range positioning methods were used for most of this survey. See-Field-Sheet (SFS) methods were used in the Big Break Marina and to reposition three soundings in Taylor Slough. Where SFS methods were used, the RMPO** and echogram was annotated. SFS sounding positions were edited by graphically scaling off the estimated Eastings and Northings. SFS soundings are plotted in blue ink on ~~FFS 13 and 14~~ (per HSG No. 62). *SFS soundings were entered into the digital file.*
black *the Smooth sheet.*

When using three or four lines-of-position (LOPs), a critical system check is continuously obtained by observing the error circle radii (ECR) and the maximum residual values on the Navitronics PC-DAS screen in the survey launch. Fixes which had erratic lines of position indicated by high residuals on the RMPO** listing were smoothed during processing. Positions were smoothed by dead reckoning between two accurate positions. If more than four consecutive selected soundings had high residuals with an erratic track plot, the data were rejected and later rerun. Point position recomputation was also used when fix data was erratic and the smoothing process was not adequate enough to save the data. Positions were recomputed by rejecting an LOP or reaccepting an LOP that was turned-off manually or automatically while online. If, after point position recomputation, acceptable ECR and maximum residual values were indicated, the data were then smoothed and saved. The RMPO** was annotated to reflect these edits.

Three LOP's were not always available for detached positions, particularly in the southern portion of Dutch Slough. Inspection of the RMPO** and comparison of DP's with the T-sheet shoreline provide position confidence.

** RAW MASTER PRINTOUT

Critical System Checks ✓

Range/Range critical systems checks consisted of monitoring the ECR and maximum residual values per FPM Section 3.1.3.3.

Mini-Ranger Falcon Calibrations ✓

Baseline calibrations were performed on October 3, 1991 in accordance with FPM Section 3.1.2.1. The baseline correctors were incorporated into the PC-DAS C-O Tables and applied on-line. C-O Table 1 applies to VN 0651 and C-O Table 2 applies to VN 0652. All records of these calibrations are included in Separate III*(Horizontal Position Control And Corrections To Position Data).

* Filed with the hydrographic data. 8

Positioning Equipment ✓

The following RPU-R/T combinations were used:

<u>Vessel</u> <u>EDP No.</u>	<u>RPU-R/T</u> <u>Serial No.</u>
0651	F0243/H3705
0652	F0259/C1680

The following MR transponders were used:

<u>MR Transponder</u> <u>Serial No.</u>	<u>Code</u>
911634	1
G3510	2
F3251	3
F3047	4
E2713	6
911632	9
B1411	A
911723	B

All equipment serial numbers are annotated on the daily RMPO.

J. SHORELINE See EVAC Report, section 2

Sources

Shoreline detail shown on the final field sheet was transferred by hand from: a 1:10,000-scale enlargement of TP-01059 (1:20,000-scale, NAD 27, April 1981) between 121°44'10"W and 121°42'00"W; a 1:10,000-scale enlargement of TP-01060 (1:20,000-scale, NAD 27, March 1988) between 121°42'00"W and 121°39'00"W. Where photographic compilation of TP-01060 ends, a 1:10,000-scale enlargement of NOAA Nautical Chart 18661 (1:40,000-scale, NAD 83, 20th Ed., June 9, 1990) was used for shoreline detail. *This area is shown in brown.*

NAD 27 datum ticks were applied to the NAD 83 field sheets and are shown in green on the FFS. Datum transformation from NAD 83 to NAD 27 was in accordance with FPM Section 7.4. A printout of the NADCON Program datum transformation is included in Separate I* (Hydrographic Sheets and Parameters).

NAD 27 datum ticks are shown on the smooth sheet with Datum transformation values in section 2
Verification ✓ of the EVAC Report.

Field notes from shoreline verification can be found on the echograms, in the sounding volumes, on the FFS, and the FFS Overlay. A Detached Position Listing created by the HDAPS DP Program is included in the data files.

* Filed with the hydrographic data.

Adequate control was not available for shoreline verification at the very eastern limit of this survey, on the south shore of Dutch Slough. This area is shown by the dashed blue limit line on FFS 14. The hydrographer anticipates verifying this small section of shoreline on the adjoining survey, PHP-10-1-92.

This area is shown with a black dash limit line with a note "numerous piers and docks" on the smooth sheet between lat. $38^{\circ}00'43''N$, long. $121^{\circ}39'00''W$ and lat. $38^{\circ}00'43''N$, long. $121^{\circ}39'33''W$

Charted Shoreline Agreement ✓

Charted shoreline was verified by its junction with the hydrographic data and by visual inspection. Shoreline from the chart enlargement did not match well and was changed to agree with the hydrographic field notes. Shoreline along the sloughs is mostly levee, reinforced with riprap, while the small islets are marsh (tule). Because the comparison between hydrography and the charted shoreline was so poor, the hydrographer chose to depict this shoreline in red on the FFS. The hydrographer believes the changes are due to the outdated shoreline manuscript used for Chart 18661, as well as the enlargement process. However, no apparent reason explains why the Jersey Island Fixed Bridge (at the survey's eastern limit of Dutch Slough) shifted approximately 100 meters east (Pos. No. 6547 to 6550, VN 0651, DN 318). Local sources confirm the bridge has not moved since its construction in 1949 (Mrs. T.V. Halsey, 510-684-2318). Other changes include increased cultural development along Taylor Slough and Dutch Slough, adding many private piers and docks. See Section N (Comparison with the Chart) for recommendations.

Shoreline drawn in red on the FFS is drawn in brown for orientation purposes from Chart 18661, 20th Ed. on the smooth sheet.

TP-Sheet Shoreline Agreement ✓

TP-sheet shoreline was verified by its junction with the hydrographic data and by visual inspection. The TP-sheet shoreline agreed well with the shoreline manuscript, although some distortion was apparent while aligning the TP-sheets with the NAD 27 datum ticks on the FFS. An exception to TP-sheet agreement are the western and southern areas of Big Break, where the accretion of tule and sea grass has occurred alongshore and around marsh islets and wrecks. The limits of tule grass are shown on FFS ~~13 and 14~~ as dashed lines. ^{black} _{the smooth sheet}

Shoreline Changes ✓

A small peninsula of marsh has extended north to $38^{\circ}00'50.8''N$, $121^{\circ}43'48.1''W$ from the shoreline shown on TP-01059. This change is shown in ^{dashed} red on the _{smooth sheet} FFS.

No attempt was made to individually verify each pier or dock in Taylor Slough and Dutch Slough. The hydrographer chose instead to verify the alongshore limits of these structures as numerous private piers and docks have been added. The limits of these structures are shown as dashed lines on ^{smooth sheet} FFS ~~14~~. See Section N (Comparison with the Chart) for recommendations.

This verification of piers and docks (dashed black limit line) was accomplished beyond the limit of compilation of shoreline map TP-01060 in Dutch Slough east of longitude $121^{\circ}40'48''W$ and Taylor Slough southeast of lat. $38^{\circ}01'12''N$.

K. CROSSLINES ✓

A total of 22.6 NM of crosslines and channel lines, representing 13.4% of the hydrography on H-10409, were used for crossline comparisons. The crossline soundings agree to within 0.2 to 1.0 meter of the mainscheme soundings. Differences in the crossline to mainscheme hydrography are attributed to predicted tides (discussed in Section G, Corrections to Soundings) and sand waves. Sand waves were recognizable on crossline echograms on the San Joaquin River and could account for differences. The same vessels were not necessarily used for both mainscheme hydrography and crosslines. *After approved tides were applied difference between crossline and mainscheme soundings are between 0.1 and 0.3 meters.*

L. JUNCTIONS See EVAL Report, section 5

Hydrography on this sheet junctions to the west with H-10398 (San Joaquin River, Vicinity of Antioch, 1:10,000, September 1991) and there are ^{two} contemporary surveys* which junction to the north-east of this sheet. The junction soundings from H-10398 agree to within 0.5 meters and contours match well.

* Surveys H-10413 (1992) and H-10435 (1992)

Overlapping junction soundings were obtained per section 4.3.2 of the Hydrographic Manual.

M. COMPARISON WITH PRIOR SURVEYS See EVAL Report, section 6

This survey was compared to the following prior surveys:

<u>Survey No.</u>	<u>Scale</u>	<u>Year</u>
H-6000	1:10,000	1934
H-6014C	1:10,000	1933
H-103691	1:10,000	1977 (unconfirmed)

TREATED AS a miscellaneous source

H-6000

No AWOIS items originated with prior survey H-6000. Concur

Comparison with a stable-based copy of this prior survey was made in areas common to H-10409; Piper Slough, Taylor Slough, and Dutch Slough (east of 121°40'52"W). Sounding agreement varied greatly throughout these common areas.

Soundings on H-10409 in Piper Slough agreed to within 2 feet. *CONCUR*

Soundings on H-10409 at the north end of Taylor Slough were generally 2 to 5 feet shoaler, with evidence the slough has widened 10 to 20 meters. This widening is likely due to previous erosion of the levees (now stabilized by riprap). There is no evidence of a marsh islet at 38°02'43"N, 121°39'31"W. A 1.2^e

meter sounding is all that remains on H-10409 of a small peninsula (possibly marsh) at 38°02'33"N, 121°39'35.8"W. A 1.5-meter shoal is all that remains on H-10409 of a marsh islet at 38°02'11.31"N, 121°40'21.85"W (Pos. No. 6556+4, VN 0651, DN 318, Dev 14-A). The marsh islets which still exist on H-10409 are adequately portrayed on TP-01060. *concur*

Soundings on H-10409 in Dutch Slough generally agreed within 2 feet. The Jersey Island Fixed Bridge portrayed on H-6000 was moved approximately 150 meters west, to its present location, in 1949. The two narrow sloughs which lead south from Dutch Slough still exist. The eastern slough is generally shoaler on H-10409 by 1 to 5 feet. The two small marsh islets portrayed on H-6000 at 38°00'25"N, 121°40'08"W are now submerged, and the area is generally foul with heavy sea grass and pile ruins. The western slough is generally deeper by 2 to 6 feet. As in Taylor Slough, the marsh islets which still exist on H-10409 are considerably altered in configuration and were depicted on ~~FFS-14~~ *smooth sheet* from the hydrographic field notes.

Data from H-10409 should supersede this prior survey in their common areas. *concur*

H-6014C See EVAE Report, section 6

AWOIS Item No. 51532 originates with prior survey H-6014C. This is a reported sunken barge in position 38°01'16.51"N, 121°42'38.13"W. On DN 317, a visual search and 25-meter radius bottom drags in position 38°01'16.55"N, 121°42'38.16"W (Pos. No. 6543, VN 0651) did not find any evidence of this barge. The hydrographer recommends not charting a wreck in the reported position. *concur*

A copy of this prior survey was not available for comparison. Soundings brought forward from H-6014C onto NOAA Chart 18661 are in Dutch Slough only, immediately north of Big Break. See Section N (Comparison with the Chart) for discussion of these soundings.

Blueprint
H-103691 - a miscellaneous source

No AWOIS items originated with prior survey ^{BP}H-103691. Numerous Awois items originate from chart letters that originate from a Chart Adequacy Survey which ended up as *Blueprint 103691*. Although not specifically listed in the Project Instructions, a paper copy of this prior survey's field sheet was available for comparison. This prior survey's common areas with H-10409 is Big Break. A date for this prior survey was not provided, but the hydrographer presumes ^{Blueprint}H-103691 originated from the NOAA Ship Davidson's chart adequacy survey (CAS) during the late-1970's. Severe distortion in the paper copy was apparent during comparison. Soundings and contours on H-10409 compare generally well to this survey. However, since no smooth tides or velocity

correctors were apparently used to create the ^{Blueprint} H-103691 field sheet, the differences are only generalized here. The accretion of tule grass along the berm which separates Big Break from Dutch Slough, and along the southern shore of Big Break, ^{is} apparent. These limits appear as dashed lines on the Final ^{Survey} Field Sheet and were determined from field notes made as the hydrographic data was acquired.

Data from H-10409 should supersede this ^{blueprint} prior survey in their common areas. *Concur*

N. COMPARISON WITH THE CHART *See Eval Report, section 7*

This survey affects the following chart in areas common with this survey:

<u>Chart No.</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
18661 SC <i>18661</i>	1:40,000 <i>1:40,000</i>	20th <i>21st</i>	June 9, 1990 <i>MAY 9, 1992</i>

A 1:10,000-scale enlargement of Chart No. 18661 SC was compared to areas common to this survey.

There were 51 AWOIS items within the limits of the H-10409 plotter sheets (HDAPS Plotter Sheets 13 and 14). Of these, two were resolved on survey H-10398 (San Joaquin River, Vicinity of Antioch, September, 1991), and four are reassigned to Sheet N ^(H-10413) (PHP-10-1-92). The 45 remaining AWOIS items are resolved on H-10409. One item originated from prior survey H-6014C and is discussed in Section M (Comparison to Prior Surveys). The remaining 44 AWOIS items originate from miscellaneous sources and are discussed here.

AWOIS Item No. 51495 originates from Chart Letter 1498/84 (USPS) and is described as a visible wreck (PA), covering at high water in position 38°00'45.71"N, 121°39'18.83"W. On DN 318, a visual search and 50-meter radius bottom drags were conducted in position 38°00'45.81"N, 121°39'18.70"W (Pos. No. 6546, VN 0651) and no evidence of a wreck was found. The hydrographer recommends not charting a wreck at the reported position. *Concur*
Visible wreck PA is not on current edition (21st) of chart 18661

AWOIS Item No. 51496 originates from Blueprint 66620/64 (USPS) and is described as a submerged wreck in position 38°00'57.71"N, 121°41'11.83"W. On DN 322, 100-meter radius bottom drags were conducted in position 38°00'57.65"N, 121°41'12.05"W (Pos. No. 6587, VN 0651) and no evidence of a submerged wreck was found. The hydrographer recommends deleting the wreck from the chart. *Concur*

AWOIS Item No. 51497 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as an area foul with wrecks centered around position 38°00'40.71"N, 121°43'25.83"W. On DN

296, a visual search located a visible wreck overgrown with trees and vegetation. Detached positions at $38^{\circ}00'39.37''\text{N}$, $121^{\circ}43'24.28''\text{W}$ (SE offshore end of wreck), $38^{\circ}00'40.85''\text{N}$, $121^{\circ}43'26.64''\text{W}$ (offshore center of wreck), and $38^{\circ}00'40.48''\text{N}$, $121^{\circ}43'28.60''\text{W}$ (NW offshore end of wreck, Pos. No's. 86 to 88, VN 0652) delimit the extent of the wreck area. Visible remains of the wreck ^{uncovers} bare 1.4 meters at MLLW. The trees and vegetation never cover. The hydrographer recommends charting a ^{foul or wreckage} wreck limit between the surveyed positions. See ~~Final Field Sheet 13 (M-West)~~ ^{Smooth sheet} for a complete depiction. CMCWT

AWOIS Item No. 51498 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck covered with trees and vegetation in position $38^{\circ}00'43.71''\text{N}$, $121^{\circ}43'30.83''\text{W}$. On DN 296, a visual search located a wreck centered at $38^{\circ}00'44.04''\text{N}$, $121^{\circ}43'30.16''\text{W}$ (Pos. No. 90, VN 0652) overgrown with trees and vegetation. The wreck is approximately 40 meters long, lies in a NE-SW direction, and is correctly portrayed on the T-sheet. Visible remains of the wreck ^{uncovers} bare 1.4 ^{visible} meters at MLLW. The hydrographer recommends charting a ¹ wreck at the surveyed position. CMCWT

AWOIS Item No. 51499 originates from TP-01059 (1979) and is described as a visible wreck approximately 60 meters long in an E-W direction in position $38^{\circ}00'45.21''\text{N}$, $121^{\circ}43'27.83''\text{W}$. On DN 296, a visual search located the SW offshore center of a wreck at $38^{\circ}00'45.51''\text{N}$, $121^{\circ}43'28.05''\text{W}$ (Pos. No. 92, VN 0652) overgrown with trees and vegetation. The wreck is approximately 60 meters long, lies in an E-W direction, and is 15 meters wide. Visible remains of the wreck ^{uncovers} bare 2.5 ^{visible} meters at MLLW. The hydrographer recommends charting a ¹ wreck at the surveyed position. CMCWT

AWOIS Item No. 51500 originates from TP-01059 (1979) and is described as a wreck limit line centered at position $38^{\circ}00'45.71''\text{N}$, $121^{\circ}43'36.83''\text{W}$. On DN 296, a visual search located numerous wrecks overgrown with trees and vegetation. Detached positions at $38^{\circ}00'43.91''\text{N}$, $121^{\circ}43'37.14''\text{W}$ (SW limit), and $38^{\circ}00'44.28''\text{N}$, $121^{\circ}43'34.14''\text{W}$ (NE limit, Pos. No's. 95 and 96, VN 0652) describe a foul area inclusive of these wrecks. The wreckage typically ^{uncovers} bares 1.6 ^{2.7} meters at MLLW. The hydrographer recommends charting a foul wreckage area between the surveyed positions. See ~~Final Field Sheet 13 (M-West)~~ ^{Smooth sheet} for a complete depiction. CMCWT

AWOIS Item No. 51501 originates from TP-01059 (1979) and is described as an area foul with wrecks centered around position $38^{\circ}00'46.21''\text{N}$, $121^{\circ}43'47.33''\text{W}$. On DN 296, a visual search located numerous visible wrecks overgrown with trees and vegetation. Detached positions at $38^{\circ}00'43.97''\text{N}$, $121^{\circ}43'38.72''\text{W}$ (E limit), $38^{\circ}00'44.69''\text{N}$, $121^{\circ}43'42.96''\text{W}$ (center limit), $38^{\circ}00'48.78''\text{N}$, $121^{\circ}43'46.26''\text{W}$ (W limit, Pos. No's. 98 to 100, VN 0652) describe a foul area inclusive of these wrecks. The

wreckage ^{uncovered} bares between ^{0.9} 1.8 meters and ^{1.4} 2.3 meters at MLLW. The hydrographer recommends charting a foul wreckage area between the surveyed positions. See ~~Final Field Sheet 13 (M-West)~~ ^{Smooth Sheet} for a complete depiction. CONCUR

AWOIS Item No. 51502 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as an islet or tule in position 38°00'47.71"N, 121°43'26.83"W. A visual search on DN 296 located a visible wreck centered at 38°00'49.08"N, 121°43'28.33"W (Pos. No. 94, VN 0652) overgrown with trees and vegetation. The wreck ^{uncovered} bares 0.6 meters at MLLW. The hydrographer recommends charting ^{visible} the wreck at the surveyed position. CONCUR

AWOIS Item No. 51503 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a large metal wreck, uncovering 20-25 feet (observed), lying in an E-W direction, in position 38°00'52.71"N, 121°43'52.83"W. A visual search on DN 296 located a metal wreck at 38°00'53.13"N, 121°43'52.19"W (Pos. No. 103, VN 0652) overgrown with trees and vegetation. The wreck is 40 meters long, lies in an E-W direction and bares 3.9⁰ meters at MLLW. ^{uncovered} A wrecked ferry, approximately 7-8 meters high lies, inshore of this wreck and may be the source of the reported height. The hydrographer recommends charting ^{visible} a wreck at the surveyed position. CONCUR

AWOIS Item No. 51504 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck uncovering 4 feet (observed), located in position 38°00'55.21"N, 121°43'53.23"W. On DN 296, a visual search located a metal wreck at 38°00'56.65"N, 121°43'53.08"W (Pos. No. 104, VN 0652) overgrown with trees and vegetation. The wreck is approximately 20 meters long, lies in a NE-SW direction, and ^{uncovered} bares 1.8 meters at MLLW. Pole and echosoundings were taken between AWOIS 51504 and 51506. These items are independent. The hydrographer recommends charting ^{visible} a wreck at the surveyed position. CONCUR

AWOIS Item No. 51505 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck on a tule islet in position 38°00'56.21"N, 121°43'05.83"W. ^{*} On DN 322, a visual search and 75 meter radius bottom drags centered at 38°00'56.19"N, 121°43'05.85"W (Pos. No. 6586, VN 0651) did not locate any evidence of this wreck or the tule islet. The hydrographer recommends not charting a wreck at the reported position. Do Not Concur
See EMLC Report,
Section 7

* wrong longitude, should be 121/43/35.83W

AWOIS Item No. 51506 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck overgrown with trees and vegetation in position 38°00'58.71"N, 121°43'52.13"W. On DN 296, a visual search located a wreck at 38°00'57.63"N, 121°43'52.46"W (Pos. No. 105, VN 0652) overgrown with trees and vegetation as described. The wreck is approximately 20 meters long, lies in a N-S direction, and is awash at MLLW. Pole and

echosoundings taken between AWOIS 51506 and 51504 established these as separate items. The hydrographer recommends charting a foul wreckage area between the surveyed positions (Pos. No's. 105 and 106). See ~~Final Field Sheet 13 (M-West)~~ for a complete depiction. *Smooth sheet* CONCUR

AWOIS Item No. 51507 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck, awash, in position 38°00'59.71"N, 121°43'52.43"W. On DN 296, a visual search located the north end of a wreck at 38°00'58.27"N, 121°43'52.53"W (Pos. No. 106, VN 0652) overgrown with trees and vegetation as described. The hydrographer recommends charting a foul wreck limit between the surveyed positions (Pos. No's. 105 and 106). See ~~Final Field Sheet 13 (M-West)~~ for a complete depiction. *Smooth sheet* CONCUR

AWOIS Item No. 51508 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck covered with trees in position 38°01'01.07"N, 121°43'40.17"W. On DN 296, a visual search located a metal wreck centered at 38°01'00.45"N, 121°43'39.23"W (Pos. No. 108, VN 0652) overgrown with trees and vegetation. The wreck is approximately 70 meters long, lies in a SE-NW direction, and ~~bare~~ ^{uncovered} ^{visible} 1.1 meters at MLLW. The hydrographer recommends charting a wreck at the surveyed position. CONCUR

AWOIS Item No. 51509 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck uncovering 4-7 feet in position 38°01'12.71"N, 121°43'55.83"W. On DN 301, a visual search located a wooden wreck at 38°01'12.60"N, 121°43'54.36"W (E offshore center), 38°01'11.82"N, 121°43'55.13"W (S end), and 38°01'13.69"N, 121°43'54.59"W (N end, Pos. No's. 6001 to 6003, VN 0651) approximately 80 meters long, baring between 1.9 and 2.9 meters at MLLW. The hydrographer recommends charting a ^{visible} wreck between the surveyed positions. See ~~Final Field Sheet 13 (M-West)~~ for a complete depiction. *Smooth sheet* CONCUR

AWOIS Item No. 51510 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck in position 38°01'14.01"N, 121°43'34.23"W. On DN 301, a visual search located a wood and metal wreck centered at 38°01'14.24"N, 121°43'34.72"W (Pos. No. 514, VN 0652) approximately 20 meters long. The wreck lies in a N-S direction with its boiler ^{uncovered} baring 1.7 meters at MLLW. The hydrographer recommends charting a visible wreck at the surveyed position. CONCUR

AWOIS Item No. 51511 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck in position 38°01'14.21"N, 121°43'42.83"W. On DN 301, a visual search located the offshore end of a wooden wreck at 38°01'14.32"N, 121°43'42.62"W (Pos. No. 517, VN 0652) approximately 30 meters from shore. The wreck lies in a NE-SW direction, extends to the HWL, and ~~bare~~ ^{uncovered} 1.2 meters at MLLW. The hydrographer recommends ^{0.9}

charting a visible wreck at the surveyed position. *Concur*

AWOIS Item No. 51512 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck in position 38°01'15.21"N, 121°43'41.83"W. On DN 301, a visual search located the ⁸ offshore end of a wooden wreck at 38°01'15.58"N, 121°43'41.97"W (Pos. No. 519, VN 0652) approximately 30 meters from shore. The wreck lies in a NE-SW direction, extends to the HWL, and at its mast, bares ^{2.5} 5.7 meters at MLLW. The hydrographer recommends charting a visible wreck at the surveyed position. *Concur*

AWOIS Item No. 51513 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck uncovering 3 feet (observed) in position 38°01'16.71"N, 121°43'50.13"W. On DN 296, a visual search located the bow of a wooden wreck at 38°01'16.37"N, 121°43'50.43"W (Pos. No. 6000, VN 0651) with a steel post attached as a marker. The wreck ^{uncovered} bares 1.6 meters at MLLW. The hydrographer recommends charting a visible wreck at the surveyed position. *Concur*

AWOIS Item No. 51514 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck uncovering 5 feet (observed) in position 38°01'17.21"N, 121°43'43.83"W. On DN 301, a visual search located the offshore end of a wooden wreck at 38°01'18.04"N, 121°43'43.43"W (Pos. No. 520, VN 0652) overgrown with trees and vegetation. The wreck is approximately 40 meters long, lies in a NE-SW direction, and at its offshore end, ^{uncovered} bares 1.74 meters at MLLW. The hydrographer recommends charting a visible wreck at the surveyed position.

AWOIS Item No. 51515 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck uncovering 4 feet (observed) in position 38°01'18.71"N, 121°43'43.83"W. On DN 301, a visual search located the offshore end of a wooden wreck at 38°01'18.54"N, 121°43'44.12"W (Pos. No. 521, VN 0652) overgrown with trees and vegetation. The wreck is approximately 80 meters long, lies in a NE-SW direction, and at its offshore end, ^{uncovered} bares 1.74 meters at MLLW. The hydrographer recommends charting a visible wreck at the surveyed position. *This wreck is included as part of a foul with wrecks limit Area.* *Concur*

AWOIS Item No. 51516 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck covered with trees and vegetation in position 38°01'22.71"N, 121°43'41.83"W. On DN 296, a visual search located a wreck between 38°01'23.36", 121°43'41.38" (N end) and 38°01'21.63"N, 121°43'42.32"W (S end, Pos. No.'s. 6007 and 6008, VN 0651) overgrown with trees and vegetation. The wreck is approximately 70 meters long, lies in a NE-SW direction, and bares ^{uncovered} 1.9 meters at MLLW at its N end. The hydrographer recommends charting a visible wreck between the surveyed position. *Concur*

AWOIS Item No. 51517 originates from Chart Letter 552/78 (CAS

18661, 1977) and is described as a visible wreck in position 38°01'23.11"N, 121°43'43.13"W. On DN 296, a visual search located a wooden wreck between 38°01'22.94"N, 121°43'44.06"W (N end) and 38°01'20.67"N, 121°43'44.06"W (S end, Pos. No's. 6005 and 6006, VN 0651) overgrown with trees and vegetation. The wreck lies in a N-S direction and ^{uncovered} bares 1.4 meters at MLLW. The hydrographer recommends charting a visible wreck between the surveyed position. *concur*

AWOIS Item No. 51518 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck in position 38°01'23.51"N, 121°43'34.83"W. On DN 317, a visual search and 25-meter radius bottom drags centered at 38°01'23.48"N, 121°43'34.66"W (Pos. No. 6542, VN 0651) did not locate any evidence of a wreck. The hydrographer recommends not charting a wreck at the reported position. *concur*

AWOIS Item No. 51520 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck uncovering 4 feet (observed) in position 38°01'24.91"N, 121°43'38.83"W. On DN 317, a visual search and 25-meter radius bottom drags centered at 38°01'24.92"N, 121°43'38.87"W (Pos. No. 6541, VN 0651) did not locate any evidence of a wreck. The hydrographer recommends not charting a wreck at the reported position. *concur*

AWOIS Item No. 51521 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck in position 38°01'27.21"N, 121°43'41.83"W. On DN 296, a visual search located a wooden wreck at 38°01'27.18"N, 121°43'41.88"W (Pos. No. 6014, VN 0651) inside an area foul with wreckage. The wreck is approximately 30 meters long and ^{2.5m} bares 0.4 meters at MLLW. The hydrographer recommends charting a visible wreck surrounded by a foul limit at the surveyed position. See ~~Final Field Sheet 13 (M-West)~~ ^{smooth sheet} for a complete depiction. *concur*

AWOIS Item No. 51522 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wreck approximately 30 meters long in position 38°01'29.01"N, 121°43'39.83"W. On DN 301, a visual search located the NW side of a small tule islet at 38°01'29.86"N, 121°43'40.04"W (Pos. No. 522, VN 0652) with no evidence of a visible wreck. One metal rod was observed ^{uncovered} baring 1.2 meters at MLLW (not considered significant). Some piles were also seen at the NW end of the islet, baring 2.2 meters at MLLW. ^{MHW} The piles are the NE end of a row which extends from Pos. No. 6013. The islet's dimensions are approximately 15 meters long, 5 meters wide, and 2.5 meters high. The hydrographer recommends charting an islet at the surveyed position, ^{and piles} See ~~Final Field Sheet 13 (M-West)~~ ^{smooth sheet} for a complete depiction. *concur*

AWOIS Item No. 51529 originates from Chart Letter 805/84 (USPS) and is reported as a wreck (PA) in position 38°01'53.71"N, 121°40'25.83"W. On DN 318, a visual search and 50-meter radius

bottom drags in position $38^{\circ}01'53.68^9"N$, $121^{\circ}40'25.77^8"W$ (Pos. No. 6551, VN 0651) did not locate any evidence of a wreck. The hydrographer recommends removing the charted wreck. *concur*

AWOIS Item No. 51530 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wood and metal barge wreck uncovering 4 feet (observed) in position $38^{\circ}01'00.41"N$, $121^{\circ}41'04.63"W$. On DN 301, a visual search located a wooden wreck approximately 60 meters long which lies in a NE-SW direction. The SW end is in position $38^{\circ}00'59.92"N$, $121^{\circ}41'06.01"W$, bares 1.1 meters at MLLW, and the NE end is in position $38^{\circ}01'00.84"N$, $121^{\circ}41'03.99"W$, and bares 0.4 meters at MLLW (Pos. No's. 480 and 481, VN 0652). A pile is approximately 20 meters ^{SE} of the wreck in position $38^{\circ}00'59.15"N$, $121^{\circ}41'05.41"W$ (Pos. No. 482, VN 0652) and bares 4.9 meters at MLLW. ^{visible to scale} The hydrographer recommends charting a wreck, and a visible pile at the surveyed positions. *concur*

AWOIS Item No. 51531 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a visible wood and metal barge wreck uncovering 4 feet (observed) in position $38^{\circ}01'18.81"N$, $121^{\circ}41'20.85"W$. On DN 301, a visual search located the offshore end of a wooden wreck at $38^{\circ}01'19.46"N$, $121^{\circ}41'20.85"W$ (Pos. No. 488, VN 0652) baring 1.3 meters at MLLW. The wreck extends to the HWL. The hydrographer recommends charting a wreck at the surveyed positions. *concur*

AWOIS Item No. 51537 originates from an unknown source, probably Chart Letter 552/78 (CAS 18661, 1977), and requires the controlling depth of the channel into the Big Break Marina. The reported controlling depth in 1977 was 5 feet, located at $38^{\circ}01'13.71"N$, $121^{\circ}43'58.83"W$. Hydrography conducted on DN's 298, 309, and 320 determined a 1.0 meter least depth at MLLW in position $38^{\circ}00'49.29"N$, $121^{\circ}43'56.54"W$ (Pos. No. 1621, VN 0652, DN 320). This depth is conservative as it plots slightly (less than 5 meters) east of the channel's center. The hydrographer recommends charting the controlling depth of the channel as 1.0 meter at MLLW, ^{based on} ~~to be corrected with smooth tides. See Eval. Report, T.C.~~ *concur*

AWOIS Item No. 51540 originates from an unknown source, first appearing on a 1964 edition of Chart 18661, and is described as a row of piles (PA) at $38^{\circ}01'31.01"N$, $121^{\circ}43'43.83"W$. On DN 317, a visual search and 150-meter radius bottom drags centered at $38^{\circ}01'30.92"N$, $121^{\circ}43'43.75"W$ (Pos. No. 6540, VN 0651) did not locate any piles. However, the drag radius was modified to sweep approximately 5 meters west of a pile row visually located on DN 301 (Pos. No's. 510, 512, and 523, VN 0652). The hydrographer is confident that the piles located on DN 301 are the AWOIS item. Recommend deleting the charted row of piles. See Final Field Sheet 13 for complete depiction of piles found on DN 301. See Final Field Sheet 13, Overlay A, for depiction of the ^{center of the vessel's} drag, vessel's track. *concur*

AWOIS Item No. 51541 originates from Chart Letter 710/64 (USPS) and is described as a visible wreck in position 38°01'31.71"N, 121°43'52.83"W. On DN 317, a visual search and 150-meter bottom drags centered at 38°01'31.70", 121°43'52.81"W (Pos. No. 6536, VN 0651) did not locate any evidence of a wreck. The hydrographer recommends removing the charted wreck.

checked
as
266m
Date 11
concur

AWOIS Item No. 51542 originates from Chart Letter 710/64 (USPS) and is described as a visible wreck in position 38°01'36.71"N, 121°43'42.91"W. On DN 317, a visual search did not confirm this item. A 150-meter bottom drag centered at 38°01'36.74"N, 121°43'42.91"W (Pos. No. 6537, VN 0651) located a ~~submerged~~ wreck at 38°01'37.76"N, 121°43'42.91"W (Pos. No. 6538, VN 0651) covering 1.7 meters at MLLW. The wreckage is approximately 4 meters long and lies in a NE-SW direction. The bottom drag also located a submerged wooden beam at 38°01'38.58N, 121°43'40.61"W (Pos. No. 6539, VN 0651). The beam rests flat on the bottom, is approximately 10 meters long, 0.5 meters wide, and covers 1.7 meters at MLLW. The hydrographer recommends charting a submerged wreck centered between Pos. No. 6538 and Pos. No. 6539. (See above.)

Submerged
concur

AWOIS Item No. 51543 originates from Chart Letter 662/86 (USPS) and is described as shoaling reported in position 38°01'38.71"N, 121°43'37.83"W. On DN 320, a 25-meter development centered over the reported shoal located a least depth of 0.9 meters at MLLW in position 38°01'38.62"N, 121°43'32.02"W (Pos. No. 1671+6). The reporting vessel drew 44 inches at an unknown time and tide when the grounding occurred. Examination of the echograms indicates a regular shoal with uniform contours. Bottom type is mud. Further development was not indicated as necessary. The hydrographer recommends charting the shoal least depth as 1.1 meters at MLLW at the surveyed position. Further development was not indicated.

concur

AWOIS Item No. 51546 originates from Chart Letter 1305/81 (USPS) and is described as metal structure or post obstruction (PA) in position 38°01'51.71"N, 121°43'19.83"W. On DN 318, 50-meter radius bottom drags centered at 38°01'51.81"N, 121°43'19.85"W (Pos. No. 6544, VN 0651) did not locate any obstructions. The hydrographer recommends removing the charted obstruction.

concur

AWOIS Item No. 51547 originates from Chart Letter 1305/81 (USPS) and is described as a pile (PA), approximately 20 feet offshore from marker 18, in position 38°01'57.71"N, 121°43'12.83"W. On DN 322, 50-meter bottom drags centered at 38°01'57.70"N, 121°43'12.72"W (Pos. No. 6585, VN 0651) did not locate a pile. The hydrographer recommends removing the charted pile.

concur

AWOIS Item No. 51566 originates from Chart Letter 1762/73 (USPS) and is described as a marker (PA) in position 38°02'11.71"N, 121°40'20.83"W. On DN 318, a visual search and 50-meter radius bottom drags centered at 38°02'11.08"N, 121°40'22.00"W (Pos. No.

6552, VN 0651) did not locate a marker. As the covered berths alongshore were within the marker's 50 meter search radius, the drag was centered slightly west, directly over the shoal and was inclusive of the markers position. The Leisure Landing Marina Harbor Master, Mr. Bud Camper (415-684-2166), indicated he had never seen a marker in that position, nor did he recall any local boaters mentioning one. The marker may have warned of a shoal which exists immediately west of its position. A 10-meter development (Dev 14-A) was conducted on DN 318 (Pos. No's. 6553-6571, VN 0651) over this shoal. This shoal is further discussed in Section M (Comparison to Prior Surveys) under prior survey H-6000. The hydrographer recommends removing the charted marker. CONCUR

AWOIS Item No. 51567 originates from Chart Letter 1861/72 (USPS) and is described as a piling (PA) in position 38°02'30.71"N, 121°29'57.83"W. On DN 309, a visual search located the offshore center of a private floating dock at 38°02'30.89"N, 121°39'56.44"W (Pos. No. 6314, VN 0651), approximately 25 meters long, parallel to shore, and approximately 20 meters offshore. The floating dock had two slips. The floating dock is less than 5 meters from the reported pile's position. The hydrographer recommends charting a pier at the surveyed position. CONCUR

Piling PA is not on the current edition (21st) of chart 18661.

AWOIS Item No. 51568 originates from TP-01060/83 and is described as an obstruction in position 38°02'31.71"N, 121°39'45.83"W. On DN 319, 25-meter radius bottom drags centered at 38°02'31.76"N, 121°39'45.82"W (Pos. No. 6573, VN 0651) and a 15-meter radius diver investigation did not find any evidence of an obstruction. The position is within 4 meters of the riprap shore and the bottom slopes irregularly to the slough's deeper center. The bottom was found to be silt and mud. The hydrographer recommends not charting the obstruction. CONCUR

Obstruction not on current edition of chart 18661

AWOIS Item No. 51569 originates from Chart Letter 1854/78 (USPS) and is described as piles (two charted; document shows 3 piles) baring 5 feet and 40 feet from shore in position 38°02'36.71"N, 121°41'39.83"W. On DN 302, a visual search did not find any evidence of piles. A 75-meter radius bottom drag was commenced centered at 38°02'36.75"N, 121°41'39.77"W (Pos. No. 6581, VN 0651) with the following submerged items found by subsequent diver investigation: A rotted pile at 38°02'36.26"N, 121°41'40.34"W (Pos. No. 6582, VN 0651) covering 1.4³ meters at MLLW; a stake at 38°02'36.80"N, 121°41'39.79"W (Pos. No. 6583, VN 0651) covering 1.3³ meters at MLLW; and a row of three stakes and a pile, with the stakes 3 feet apart, in position 38°02'36.72"N, 121°41'40.39"W (Pos. No. 6584, VN 0651) covering 2.4³ meters at MLLW. A 10-meter radius dive search was completed around these positions with no further contacts found. The hydrographer recommends charting a ruins configuration around the surveyed positions. See ~~Final Field Sheet 13~~ *Smooth Sheet* for a complete depiction. CONCUR

AWOIS Item No. 51570 originates from an unknown source, was first

charted in June, 1971, and is described as a sign (PA) in position 38°02'47.21"N, 121°39'19.83"W. On DN 309, a detached position at 38°02'47.68"N, 121°39'17.52"W (Pos. No. 6308, VN 0651) located a submerged pipeline entering Dutch Slough from Bethel Island. A Pacific Gas and Electric cable crossing sign exists 10 meters onshore from this position. The submerged pipeline re-emerges on the other side of Dutch Slough on Jersey Island in position 38°02'49.18"N, 121°39'17.14"W (Pos. No. 6309, VN 0651). No sign exists on this side. The hydrographer recommends charting a submerged cable crossing area between the surveyed positions. Chart a marker sign 10 meters inshore of Pos. No. 6308. *Sign PA is not current (21st) edition of chart 18661*

CONCUR

AWOIS Item No. 51578 originates from Chart Letter 658/84 (USPS) and is described as a submerged obstruction, possibly a dredge pipeline float (PA), in position 38°03'33.71"N, 121°40'44.83"W. On DN 319, a 100-meter radius bottom drag centered at 38°03'33.74"N, 121°40'44.59"W (Pos. No. 6574, VN 0651) was conducted. A subsequent diver investigation located a wreck approximately 4 meters long which lies in a NE-SW direction. The wreck consisted of a bow rail, propeller, engine block and metal bulkhead. The wreck ^{is submerged} covers 6.7 meters at MLLW at the metal bulkhead (Pos. No. 6575*, VN 0651). This position was rejected as the hydrographer suspected the launch had drifted off the wreck. The wreck was repositioned at 38°03'34.18"N, 121°40'42.08"W (Pos. No. 6580, VN 0651), ^{submerged} covering 6.7 meters, on DN 322 when another 100-meter radius bottom drag was conducted in the same location. A sheet metal structure, approximately 6 meters long and 1 meter wide, which lies in an E-W direction, was located in position 38°03'34.75"N, 121°40'41.45"W (Pos. No. 6577, VN 0651, DN 322), covering 7.6 meters at MLLW. This sheet metal structure is approximately 6 meters long, 10 meters wide, and 0.8 meters off the bottom and may well be the reported submerged float. No other contacts were located. The bottom is silt and mud, sloping downward toward the deep water channel immediately north. The hydrographer recommends charting a submerged wreck and obstruction at the surveyed positions.

AWOIS # 52011

CONCUR

* Rejected

AWOIS Item No. 51579 originates from Chart Letter 552/78 (CAS 18661, 1977) and is described as a sign in position 38°03'16.81"N, 121°39'19.83"W. On DN 309, a visual search located a sign on a pile at 38°03'16.18"N, 121°39'20.38"W (Pos. No. 6300, VN 0651), approximately 2 meters from the HWL. The sign, which marks the entrance to Piper Slough, is shot full of holes, and pines ^{3.6} meters at ^{MLLW}. The hydrographer recommends charting a pile at the surveyed position.

CONCUR

Dangers to Navigation

Two dangers to navigation were reported to the US Coast Guard Eleventh District in correspondence dated November 19, 1991. A

copy of this report is in ^{Attached} ~~Appendix I~~ (Danger to Navigation Reports).

A submerged wreck, ^(6.6 meters) covering 22 feet at MLLW, in position 38°03'34.18"N, 121°40'42.08"W (Pos. No. 6580, DN 322, VN 0651), was discovered during investigation of AWOIS Item No. 51578. This item is discussed above in detail. ^{Refer to preceding page.}

AWOIS # 52011

A shoal ^{submerged (1.5 meters)} covering 5 feet at MLLW, in position 38°02'11.31"N, 121°40'21.85"W (Pos. No. 6556+4, VN 0651, DN 318, Dev 14-A) was located during investigation of AWOIS Item No. 51566. This item is discussed above in detail, as well as in Section M (Comparison with Prior Surveys) under prior survey H-6000. ^{Refer to pages 12, 20 and 21 for additional information.}

Sounding Comparisons ✓

Sounding comparison was made between a 1:10,000-scale enlargement of Chart No. 18661 SC and H-10409. Agreement is generally good; charted soundings, when shifted 100-150 meters east or southeast compared within 1 meter. Charted soundings on the San Joaquin River and False River originated from US Corps of Engineer surveys. Charted soundings in Dutch Slough (along Big Break) originated from survey H-6014C. Charted soundings in Piper Slough, Taylor Slough, and Dutch Slough (east of Big Break) originated from prior survey H-6000.

The charted shoal centered approximately at 38°02'25"N, 121°42'40"W was found to have shifted about 200 meters southeast on H-10409. Shoal depths compared well, differing by not more than 0.1 meters, with the surveyed depths being shallower. Recommend data from this survey supersede the charted soundings.

C/MC/W

The charted shoal centered approximately at 38°01'55"N, 121°43'50"W is a shoal which extends to the northeast, about 1500 meters. This shoal has dense sea grass, as shown on ^{smoothen sheet} ~~FFS-13~~. Shoal depths compared well, differing by not more than 0.5 meters, with the surveyed depths being shallower. Recommend data from this survey supersede the charted soundings.

C/MC/W

The charted shoal centered at approximately 38°01'55"N, 121°44'05"W is a shoal with dense sea grass and tule. Although hydrography was originally run through this tule and grass, the hydrographer later chose to delimit this area. The area should be considered foul with tule grass, as depicted on ^{smoothen sheet} ~~FFS-13~~. The soundings inside the foul limit were marked not-for-smooth-plotting (NSP'd) in the data.

A charted 9-foot sounding at 38°03'48"N, 121°40'48"W was disproved by mainscheme hydrography and 50-meter splits. Echograms indicate a regular bottom which rises to the western shoreline of the San Joaquin River. Recommend data from this survey supersede the charted sounding.

C/MC/W

Anecdotal history of the San Joaquin River from miscellaneous local sources confirms that shoals in this area migrate and vary in depth from season to season.

Comparison of soundings and contours in Dutch Slough, Piper Slough, and Taylor Slough was acceptable. Sounding differences ranged between 1 foot and 3 feet, and are probably due to the history of intermittent dredging and silting (both natural and human causes). Likewise, differences in sounding positioning methods may contribute to the sounding differences. Specific differences are discussed in Section M (Comparison with Prior Surveys).

A small area centered at position 38°00'48"N, 121°43'50"W is used as a mooring area for a private dredging company. This area was obstructed by barges and dredges and could not be surveyed. The limits of the barges is indicated on ~~FFS-13~~,
the smooth sheet.

Sounding Comparison - Tabulated Depths

A chart correction published in Local Notice to Mariners 32/91 (Appendix VI, Supplemental Correspondence) indicates the mariner should refer to the charted depths for the section of the San Joaquin River-Stockton Deep Water Channel which is common to this survey. Soundings compared with the chart varied typically up to 3 feet, with the deeper soundings occurring on this survey. Discussions with the US COE (Mr. Mike Helm, 916-557-5275) indicate the San Joaquin River-Stockton Deep Water Channel is naturally deep in this area and requires minimal maintenance.

Non-Sounding Features Comparison

Comparison was made between all non-sounding features and the hydrographic records. In accordance with Project Instruction paragraph 6.12.2, most features near the HWL were judged not to be dangers to navigation and, unless noted otherwise below, were searched for by visual methods only. Several non-sounding features were previously discussed as AWOIS items. The following charted features were not found:

A charted submerged wreck in position 38°01'18.93"N, 121°41'22.76"W was disproved after 50-meter radius bottom drags (Pos. No. 6545, VN 0651, DN 318) found no evidence of a wreck. Recommend deleting this wreck from the chart. Concur

A charted sign east of approximately 38°00'56.65"N, 121°41'12.05"W is ambiguously described on the chart. A visual search failed to locate this sign. A pile was located at 38°00'59.13"N, 121°41'05.41"W (Pos. No. 482, VN 0652, DN 301), bearing 4.9 meters at MLLW.^{3.8} The hydrographer believes a sign may have been attached to this pile. This pile clearly marks the western entrance to Big Break and the southern extent of a wreck - #51530

immediately to the north. Recommend charting a ^{visible} pile at the surveyed position. CONCUR

A charted pier (possibly ferry ramp ruins) in position 38°03'23.96"N, 121°39'14.68"W was disproved after visual search (Pos. No. 1852, VN 0652, DN 330). Recommend deleting this pier from the chart as it is covered under the "Note B, Caution". *Inadequate investigation, retain as charted.* Do not CONCUR

A small charted islet immediately north of position 38°03'16.18"N, 121°39'20.36"W was disproved after visual search for AWOIS 51579 (Pos. No. 6300, VN 0651, DN 309). No evidence of this islet was found on the hydrographic data. Recommend deleting the small islet from the chart. *Depths of 0.5 meters in the area of charted islet. Position 6300 is a pile which bears 3.8 m. at MHW.* CONCUR

A charted obstruction in position 38°02'42.37"N, 121°39'35.74"W was disproved after visual and echosounder searches (Pos. No. 6311, VN 0651, DN 309). No evidence of the islet was found on the hydrographic data. Recommend deleting the obstruction from the chart (see Section M, Comparison with Prior Survey, H-6000). CONCUR

A charted islet in position 38°01'50"N, 121°40'14"W was disproved after conducting mainscheme hydrography (Pos. No's. 6289+1, 6289+2, VN 0651, DN 302). Recommend deleting this islet from the chart. *Soundings of 3.0 meters were found in the above area.* CONCUR

A charted islet in position 38°01'18"N, 121°39'29"W was disproved after conducting mainscheme hydrography (Pos. No's. 6295+2, 6219+5, 6220, VN 0651, DN 302). Recommend deleting this islet from the chart. *Sounding of 2.5 meters were found in the above area.* CONCUR

Recommendations

The hydrographer recommends shoreline manuscripts be compiled from new photogrammetry for the south sections of Taylor Slough and Dutch Slough, where no recent photographic compilation exists. Significant changes have occurred since the charted shoreline was compiled, as discussed above. CONCUR

O. ADEQUACY OF SURVEY See EVAL Report, section 7

This survey is a complete basic hydrographic survey and is adequate to supersede all prior surveys within their common areas.

P. AIDS TO NAVIGATION ✓

USCG Correspondence

The adjusted preliminary positions for aids to navigation provided by N/CG2333 (Pacific Photogrammetry Party) were

forwarded to the Eleventh Coast Guard District, Long Beach, CA (copy provided in Appendix VI* Supplemental Correspondence). These positions include all lights positioned by N/CG2333 for this project.

** Attached to this report.*

Position Comparisons

The following table lists all aids to navigation, private aids, and landmarks which fall within the H-10398¹⁰⁴⁰⁴ survey limits. These tables list the aerotriangulated positions, hydrographic positions, Light List positions, adjusted preliminary positions, and a chart comparison. The chart comparison column provides the bearing and distance in meters from the charted position to the hydrographic position or, where available, the adjusted preliminary position for fixed aids to navigation. Form 76-40 printouts from coastal mapping project CM-782 , CM-8304, and CM-8400, which list the aerotriangulated positions (in NAD 27) for most of these aids and landmarks, were provided for this project (copies in Appendix II* Non-floating Aids and Landmarks for Charts).

** Attached to this report.*

Floating/Non-Floating Aids and Landmarks
Comparison of Aerotriangulated Positions to Field Positions
for H-10409

<u>No.</u>	<u>Description</u>	<u>AeroTri. Pos.</u>	<u>Hydrographic Field Pos.</u>	<u>CG LL Pos.</u>	<u>GPS Prel. Adj. 3rd Order Pos.</u>	<u>DN Pos. No.</u>	<u>Chart Comparison</u>
Chart 18661							
1)	SJR Buoy 17A		38°01'59.94" 121°43'33.78" ⁵			310 #1601	Not Charted.
2)	SJR LT 18A LLN 6739		38°01'56.76" 121°43'11.32" ⁷		38°01'55.822" 121°43'12.077" ₅	310 #1574	18.4 meters bearing 244°T
3)	SJR LT 19 LLN 6740	38°02'06.555" 121°42'32.983"	38°02'10.10" 121°42'31.01"		38°02'10.147" 121°42'31.272" ₆	310 #1600	36.5 meters bearing 265°T
4)	SJR Buoy 21 LLN 6745		38°02'28.88" 121°41'59.74"	38°02'30.00" 121°42'00.00"		310 #1599	58.4 meters bearing 031°T
5)	SJR LT 23 LLN 6750	38°02'45.141" 121°41'45.757"	38°02'44.17" 121°41'47.15"		38°02'44.072" 121°41'47.424" ₁	310 #1598	45.4 meters bearing 263°T
6)	SJR LT 24 LLN 6755	38°03'07.253" 121°41'23.983"	38°03'07.75" 121°41'20.15" ₆			310 #1561	31.0 meters bearing 221°T
7)	SJR Buoy 25 LLN 6760		38°03'37.63" 121°40'48.06" ₄	38°03'36.00" 121°40'48.00"		310 #1540	4.6 meters bearing 154°T
8)	SJR LT 26 LLN 6765	38°03'57.640" 121°40'31.429"	38°03'57.68" 121°40'31.18"	38°04'00.00" 121°40'30.00"		310 #1539	33.6 meters bearing 287°T
9)	SJR LT 27		38°04'26.68" 121°40'42.76" ₉			310 #1537	Not Charted.
10)	Tower	38°03'05.525" 121°41'19.093"					Remarks: Good Landmark. Visually Located and Verified.
11)	Tower	38°03'22.285" 121°41'38.783"					Remarks: Good Landmark. Visually Located and Verified.

All fixed aids to navigation within the limits of H-10409 adequately serve their established purpose. Per provisional instructions received on December 16, 1991 from N/CG241, all fixed aid positions, both hydrographic and Third Order, Class I, were compared to their respective charted positions. These instructions do not specify a tolerance for differences between charted and hydrographic positions. The hydrographer chose 5 meters as the tolerance. For fixed aids which differ more than 5 meters from their charted positions, the hydrographer entered the new positions on a NOAA Form 76-40 (Appendix II)*as items to be revised. San Joaquin River Light 27 is not charted and is entered on a NOAA Form 76-40 (Appendix II)*as an item to be charted.

All floating aids to navigation within the limits of H-10409 were positioned by hydrographic methods. Descriptions and characteristics of these aids are provided in the field records. The hydrographic position for San Joaquin River Buoy 25, which differed more than 5 meters from its charted position, is entered on a NOAA Form 76-40 (Appendix II)*as an item to be revised. San Joaquin River Buoy 17A is not charted and is entered on a NOAA Form 76-40 (Appendix II)*as an item to be charted.

* Attached to this report.

Pipeline Crossings

An uncharted submerged pipeline crossing is marked by a sign on Jersey Island and crosses False River (Pos. No. 1548, VN 0651, DN 310). The sign is half broken off and no sign or pipeline is visible along the opposite shore, on Bradford Island. Recommend charting the limits of a submerged pipeline area approximately 50 meters wide, extending across False River, centered on the pipeline crossing sign on Jersey Island. *Chart, ^{subm.} pipeline crossing at lat. 38/03/20N, long. 121/39/26W.*

An uncharted submerged pipeline crossing is marked by a sign on Bethel Island and crosses Taylor Slough (Pos. No. 6308, VN 0652, DN 309). The pipeline is visible on the Jersey Island shore (Pos. No. 6309, VN 0651, DN 310). Recommend charting the limits of a submerged pipeline area, approximately 50 meters wide, extending across Taylor Slough, centered on the Bradford Island and Jersey Island pipeline positions. *Chart subm pipeline crossing between lat. 38/02/47N, long. 121/39/17.5W and lat. 38/02/49N, long. 121/39/17W.*

An uncharted submerged pipeline crossing is marked by a sign on Jersey Island and crosses Taylor Slough (Pos. No. 6403, VN 0651, DN 310). The pipeline is visible on the Bethel Island shore but could not be reached by launch for positioning (it is behind a floating berth). Recommend charting the limits of a submerged pipeline area, approximately 50 meters wide, extending across Taylor Slough, centered on the pipeline crossing sign on Jersey Island. *Chart subm pipeline crossing at lat. 38/01/17.5N, long. 121/39/31W.*

A charted submerged pipeline crossing exists between Jersey Point, Jersey Island, and the opposite shore on Sherman Island.

This crossing is directly beneath the overhead cable crossings currently charted. The pipeline crossing signs were positioned on DN 310 (Pos. No's. 1562 and 1594, VN 0652). The hydrographer recommends retaining this pipeline crossing area as charted. *concur*

Ferry Crossings

The charted ferry terminals exist on Jersey Island, at the junction of False River and Piper Slough, in position 38°03'18.52"N, 121°39'25.78"W (Pos. No. 6301, VN 0651, DN 309) and directly across on Bethel Island, in position 38°03'12.43"N, 121°39'25.58"W (Pos. No. 6304, VN 0651, DN 309). The ferry terminal at Jersey Island is used for daily trips to Webb Tract and occasional trips to Bradford Island. The ferry terminal at Bethel Island is not used on a regular basis (Peter Ohm, Operator, Webb Tract Ferry, 510-684-3003). *Retain charted ferry crossings.*

Recommendations

The hydrographer recommends the adjusted preliminary positions provided by N/CG2333 be used for the charted fixed aids to navigation. Where adjusted preliminary positions from N/CG2333 are not available, recommend the hydrographic field positions be used to chart the aids to navigation. *CMCW*

Q. STATISTICS ✓

<u>Description</u>	<u>Quantities</u>
Total Positions:	
VN 0651 (1101)	520
VN 0652 (1102)	1680
Detached Positions:	
VN 0651 (1101)	182
VN 0652 (1102)	183
Total Nautical Miles of Hydrography	168.1
Sq. Nautical Miles of Hydrography	4.5
Bottom Samples	71
Velocity Casts	5
Days of Production	23

R. MISCELLANEOUS ✓

A Copy of correspondence with the San Francisco Bar Association

(SF Bay Pilots) is provided in Appendix VI.* Per telecon with Captain Charlie Rhodes (415-32-5436), a review of the applicable pages to the Coast Pilot was due to PHP in October 1991. At this writing, no information has been received.

Bottom samples were taken in accordance with Hydrographic Manual Section 1.6.3. In accordance with the Project Instructions, samples were not submitted to the Smithsonian Institution. Bottom sample positions are plotted on the overlays and are listed on the Oceanographic Log Sheet-M, NOAA Form 75-44, which may be found in Separate II*(Bottom Samples).

As discussed in Section N (Comparison with the Chart), silting and sedimentation does occur. The Corps of Engineers periodically surveys the deep water channel and maintains it accordingly. The accretion of tule grass alongshore and around the wrecks in Big Break were previously discussed as well.

No anomalous tidal conditions were observed.

Per Project Instructions, no current observations were conducted in the survey area.

No magnetic anomalies were observed.

S. RECOMMENDATIONS ✓

None.

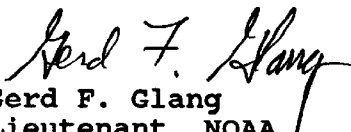
* Filed with the hydrographic data.

T. REFERRAL TO REPORTS ✓

<u>TITLE</u>	<u>DATE</u>
1991 Horizontal Control Report, OPR-L208-PHP (by N/CG2333)	October, 1991
1991 Coast Pilot Report, OPR-L208-PHP (Miscellaneous)	Pending. See Paragraph R

No separate Electronic Control Report or Corrections to Echo Soundings Report is scheduled for submittal.

Respectfully Submitted,


Gerd F. Glang
Lieutenant, NOAA
Chief of Party

CONTROL STATIONS as of 18 Dec 1991

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
700	F	038:04:24.681	121:49:14.674	30	250	0.0	0.0		10/18/91	BLACKJACK 1931
701	F	037:58:27.108	121:55:48.811	394	250	0.0	0.0	4	10/18/91	KIRKER 1946
713	F	038:07:07.203	121:42:30.435	38	250	0.0	0.0	8	10/18/91	NO R USE 1931
722	F	038:01:12.566	121:45:51.334	8	250	0.0	0.0		10/18/91	CCPWR 1990
723	F	038:01:44.875	121:44:20.666	7	250	0.0	0.0		10/18/91	SJ RIVER LT 17 1990
724	F	038:01:55.959	121:43:12.134	8	250	0.0	0.0	2	11/16/91	SJ RIVER LT 18A 1990
725	F	038:01:38.085	121:41:39.206	3	250	0.0	0.0		10/18/91	DUTCH 2 1990
726	F	038:03:14.162	121:41:07.673	2	250	0.0	0.0		10/18/91	FALSE 1931
728	F	038:04:26.984	121:46:58.517	51	250	0.0	0.0	9	10/18/91	ODW 1990
735	F	038:02:10.147	121:42:31.272	7	250	0.0	0.0		10/18/91	SJ RIVER LIGHT 19 1991
736	F	038:02:44.072	121:41:47.423	6	250	0.0	0.0		10/18/91	SJ RIVER LT 23 1991
737	F	038:02:25.002	121:41:52.586	3	250	0.0	0.0		10/18/91	HALSEY 1991
738	F	037:59:54.538	121:40:37.452	26	250	0.0	0.0	A	10/18/91	SILOS 1933
739	F	037:58:24.734	121:44:46.762	74	250	0.0	0.0	3	11/16/91	SAND CREEK 1946
740	F	038:05:02.570	121:41:09.592	10	250	0.0	0.0		10/18/91	SHERMAN 1931



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey

Seattle, Washington 98115-0070
Pacific Hydrographic Party
USATF 801 Beach Drive
Rio Vista, CA 94571-2003
(707) 374-5642

November 19, 1991

Director
DMAHTC
Attn:MCNA
6500 Brooks Lane
Washington, D.C. 20315-0030

**ADVANCE
INFORMATION**

Dear Sir:

While conducting hydrographic survey operations along the San Joaquin River, California, the NOAA Pacific Hydrographic Party discovered two dangers to navigation within the survey limits of H-10409. They were reported to the Eleventh Coast Guard District. A copy of correspondence describing the dangers is enclosed.

Sincerely,

Gerd F. Glang
Lieutenant, NOAA
Chief, Pacific Hydrographic Party

Attachments





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey

Seattle, Washington 98115-0070
Pacific Hydrographic Party
USATF 801 Beach Drive
Rio Vista, CA 94571-2003
(707) 374-5642

November 19, 1991

Commander
Eleventh Coast Guard District (oan)
Union Bank Building
400 Oceangate
Long Beach, CA 90822-5399

**ADVANCE
INFORMATION**

Dear Sir:

While conducting hydrographic survey operations along the San Joaquin River, California, the NOAA Pacific Hydrographic Party discovered two dangers to navigation within the survey limits of H-10409. I recommend these dangers for inclusion in the Local Notice to Mariners. These dangers have been reported to DMAHTC. Attachments describing these dangers are enclosed. A copy of the chartlet showing the areas in which the dangers exist is also attached.

Sincerely,

Gerd F. Glang
Gerd F. Glang
Lieutenant, NOAA
Chief, Pacific Hydrographic Party

Attachments

cc:DMAHTC
N/CG221
N/CG245



US Department of Commerce
Pacific Hydrographic Party

Dangers to Navigation
Project OPR-L208
Survey H-10409
PHP-10-3-91
Sheet M

<u>ITEM</u>	<u>DANGER</u>	<u>CHART NUMBER</u>	<u>EDITION DATE</u>	<u>REPORTED DEPTH</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
MA.	WRECK SUBM	18661	20/NAD83	cov 22 ft at MLLW (G.C. WK)	38°03'34.18"N	121°40'42.08"W
MB.	SHOAL SUBM	18661	20/NAD83	cov 5 ft at MLLW (1.5 meters)	38°02'11.31"N	121°40'21.85"W

**ADVANCE
INFORMATION**

RESPONSIBLE PERSONNEL

TYPE OF ACTION		NAME		ORIGINATOR	
OBJECTS INSPECTED FROM SEAWARD		LT J. Verlaque, ST R. Baker		<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)	
POSITIONS DETERMINED AND/OR VERIFIED		LT Gerd F. Glang, <i>Glang</i> Chief of Party LT Gerd F. Glang, <i>Glang</i> Chief of Party		FIELD ACTIVITY REPRESENTATIVE	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES				OFFICE ACTIVITY REPRESENTATIVE	
				<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
 (Consult Photogrammetric Instructions No. 64.)

<p>OFFICE</p> <p>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</p> <p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>FIELD (Cont'd)</p> <p>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</p> <p>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</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>
--	--

RESPONSIBLE PERSONNEL

TYPE OF ACTION		NAME		ORIGINATOR	
OBJECTS INSPECTED FROM SEAWARD		LT J. Verleque, ST R. Baker		<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)	
POSITIONS DETERMINED AND/OR VERIFIED		LT Gerd F. Stang, ROMY Chief of Party <i>Gerd F. Stang</i>		FIELD ACTIVITY REPRESENTATIVE	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES				OFFICE ACTIVITY REPRESENTATIVE	
				<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
 (Consult Photogrammetric Instructions No. 64.)

<p>OFFICE</p> <p>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</p> <p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>FIELD (Cont'd)</p> <p>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</p> <p>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</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>
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NOAA FORM 70-40
(8-74)

Replaces C&GS Form 567.

NON-FLOATING AIDS TO NAVIGATION FOR CHARTS

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

ORIGINATING ACTIVITY

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

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)
Pacific Hydrographic
Party, W/C62453

STATE
California

LOCALITY
San Joaquin River
Big Break to False River

DATE
12-18-91

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

OPR PROJECT NO. OPR-L208-PHP

JOB NUMBER PHP-10-3-91

DATUM
MAD 83

POSITION

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

CHARTS
AFFECTED

CHARTING NAME
SJR LT G Buoy #21*

DESCRIPTION
(Record reason for deletion of landmark or aid to navigation.
Show triangulation station names, where applicable, in parentheses.)
San Joaquin River Light Green Buoy #21*
LLM 6745

LATITUDE
38 02

OFFICE

FIELD
F-1-HYDRO-L
1990

LONGITUDE
121 41 59.740

L-1058/93

RESPONSIBLE PERSONNEL		ORIGINATOR
TYPE OF ACTION	NAME	
OBJECTS INSPECTED FROM SEAWARD	LT J. Verlaque, ST R. Baker	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	<i>Spd F. Glang</i> LT Gerd F. Glang, NAVY Chief of Party	FIELD ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> 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 (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		
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: P - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 5 - Field Identified 6 - Theodolite 7 - Planetable 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.		
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.		

RESPONSIBLE PERSONNEL

TYPE OF ACTION		NAME		ORIGINATOR	
OBJECTS INSPECTED FROM SEAWARD		LT J. Verlaque, ST R. Baker		<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)	
POSITIONS DETERMINED AND/OR VERIFIED		<i>Gerard F. Stang</i> LT Gerd F. Stang, NOAA Chief of Party		FIELD ACTIVITY REPRESENTATIVE	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES				<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
 (Consult Photogrammetric Instructions No. 64.)

<p>OFFICE</p> <p>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</p> <p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified P - Photogrammetric Vis - Visually 5 - Field Identified 6 - Theodolite 7 - Planetable 8 - Sextant</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>FIELD (Cont'd)</p> <p>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</p> <p>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</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>
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CARTOGRAPHIC FEATURES OF CHARTING INTEREST

COASTAL MAPPING PROJECT: CM-8400; Sacramento and San Joaquin Rivers,
Sacramento to Stockton, California

NOS Nautical Charts Affected: 18661, 18662, 18664

GEODETTIC DATUM: North American Datum of 1927

FEATURE DESCRIPTION	NCD CC	GEOGRAPHIC POSITION(°-'-")		NCD QC	DATE OF LOCATION
		LATITUDE	LONGITUDE		
✓ Map TP-01055 (continued):					
TANK (Isleton Mun Water Tk)	086	38-09-43.399	121-36-25.639	3	001/1931
TOWER (Three Mile Slu)	086	38-06-25.230	121-41-54.410	3	001/1931
TOWER (Three Mile Slu)	086	38-06-16.485	121-41-56.588	3	001/1931
TWIN TANKS (at RIO VISTA)	086	38-09-47.469	121-41-01.261	3	001/1931
TOWER (SW Trans at Isleton)	086	38-09-58.530	121-37-41.251	3	001/1931
TOWER (NE Trans at Isleton)	086	38-10-10.100	121-37-36.118	3	001/1931
STEEL POLE (W at Howard Ldg)	086	38-13-49.331	121-36-11.316	3	001/1932
STEEL POLE (E at Howard Ldg)	086	38-13-49.255	121-35-59.791	3	001/1932
WATER TANK (at Ryde)	086	38-14-15.270	121-33-31.736	3	001/1931
✓ Map TP-01056:					
TANK (Terminus Water Tk)	086	38-06-48.086	121-29-47.061	3	001/1931
TOWER (N Staten I)	086	38-13-33.70	121-29-30.88	6	103/1983
TV TOWER (Walnut Grove)	086	38-14-49.80	121-30-02.17	6	103/1983
Map TP-01060:					
* TOWER (N Jersey I)	086	38-03-05.81	121-41-15.26	6	104/1983
* TOWER (SE Sherman I)	086	38-03-22.57	121-41-34.95	6	104/1983
TOWER (NW Mandeville I)	086	38-04-09.67	121-34-24.74	6	104/1983
TOWER (SE Webb Tract)	086	38-04-23.61	121-34-29.42	6	104/1983
Map TP-01061:					
3803 22.852 TOWER (Bishop Cut)	086	38-03-32.14	121-25-05.66	6	103/1983
2141 38.256 TOWER (Bishop Cut)	086	38-03-31.91	121-24-59.19	6	103/1983
TOWER (N Bacon I)	086	38-00-14.85	121-31-51.65	6	103/1983
TOWER (SW Wright Tract)	086	37-59-15.66	121-23-29.58	6	103/1983
TOWER (NE Roberts I)	086	37-59-07.46	121-23-32.28	6	103/1983
TOWER (Empire Cut)	086	37-58-21.96	121-30-19.78	6	104/1983
TOWER (Empire Cut)	086	37-58-14.19	121-30-19.15	6	104/1983
TOWER (N Whiskey Slu)	086	37-58-13.25	121-28-32.03	6	104/1983
TOWER (N Whiskey Slu)	086	37-58-10.10	121-28-24.75	6	104/1983
Map TP-01062:					
TANK (N of Port - E Tank)	086	37-57-24.699	121-19-02.768	3	001/1954
TANK (N of Port - W Tank)	086	37-57-19.294	121-17-59.423	3	001/1954
TANK (Stockton Port E Tank)	086	37-57-01.452	121-19-00.383	3	001/1932
TANK (Stockton Port W Tank)	086	37-56-59.479	121-19-20.511	3	001/1932
TANK (ESE of Port-Fiber Prod)	086	37-56-41.383	121-18-09.038	3	001/1932
TANK (E of Moss Tract)	086	37-55-23.234	121-16-34.199	3	001/1959
- end -					

Listing approved by:

Final Reviewer

Robert W. Rodley

Date

3/25/88

FILE COPY



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Seattle, Washington 98115-0070
Pacific Hydrographic Party
USATF 801 Beach Drive
Rio Vista, CA 94571-2003
(707)374-5642

September 25, 1991

Commander
Eleventh Coast Guard District (oan)
400 Oceangate Boulevard
Union Bank Building
Long Beach, CA 90822-5399

Dear Sir:

The NOAA Pacific Hydrographic Party (PHP) is conducting a basic hydrographic survey of the Sacramento River and the San Joaquin River and adjoining sloughs. We are updating NOAA Nautical Charts 18652, 18656, 18659 and 18661.

Enclosed are the NAD 83 preliminary adjusted field positions for fixed aids to navigation which were located using GPS equipment. Positions are accurate to Third Order, Class I, standards.

<u>NON-FLOATING AID</u>	<u>ADJUSTED POSITION</u>	<u>LIGHT LIST POSITION</u>
SUISUN BAY		
CHART 18656		
Fl R Light 28 LLN 6580	38°02'33.055"N 121°55'06.773"W	38°02.6'N 121°55.0'W
NEW YORK SLOUGH		
CHART 18656		
Fl G Light 3 LLN 6620	38°02'16.833"N 121°52'47.069"W	No Published Pos.
Fl R Light 2 LLN 6600	38°02'29.003"N 121°53'08.230"W	38°02.5'N 121°53.1'W
Fl G Light 5 LLN 6625	38°01'57.489"N 121°52'04.168"W	38°02.0'N 121°52.0'W
Fl R Light 8 LLN 6635	38°01'48.818"N 121°51'13.985"W	38°01.8'N 121°51.2'W
Fl G Pittsburg Marina Light 1 LLN 6605	38°02'10.971"N 121°52'54.248"W	38°02.2'N 121°52.8'W



Fl R Pittsburg Marina 38°02'10.711"N No Published Pos.
Light 4 LLN 6615 121°52'55.079"W

Fl R Pittsburg Marina 38°02'11.942"N No Published Pos.
Light 2 LLN 6610 121°52'55.546"W

SAN JOAQUIN RIVER

CHART 18659

Point Beenar DBN 38°01'50.482"N 38°01.8'N
LLN 6660 121°50'15.374"W 121°50.2'W

Fl R Light 4 38°01'37.061"N 38°01.6'N
LLN 6670 121°49'46.359"W 121°49.7'W

Q R Light 8 38°01'15.388"N 38°01.2'N
LLN 6685 121°48'18.498"W 121°48.2'W

Fl G Light 7 38°01'20.884"N No Published Pos.
LLN 6690 121°48'25.975"W

Fl G Light 11 38°01'46.958"N 38°01.8'N
LLN 6700 121°45'59.597"W 121°45.9'W

Fl G Light 17 38°01'44.877"N NO Published Pos.
LLN 6730 121°44'20.668"W

Fl R Light 18A 38°01'55.822"N No Published Pos.
LLN 6739 121°43'12.077"W

Fl G Light 23 38°02'44.073"N No Published Pos.
LLN 6750 121°41'47.424"W

Fl G Light 19 38°02'10.147"N No Published Pos.
LLN 6740 121°42'31.272"W

SACRAMENTO RIVER DEEP WATER SHIP CHANNEL (SRDWSC)

CHART 18659

Fl G Light 1 38°03'54.053"N 38°03.9'N
LLN 7170 121°51'04.735"W 121°51.0'W

Fl G Light 5 38°03'56.091"N No Published Pos.
LLN 7185 121°50'05.058"W

Fl R Light 6 38°03'51.158"N No Published Pos.
LLN 7190 121°50'07.541"W

Fl G Light 7 38°03'44.035"N 38°03.7'N
LLN 7195 121°48'31.763"W 121°48.5'W

CHART 18661

Fl R Light 10 LLN 7210	38°03'35.034"N 121°47'59.559"W	No Published Pos.
Fl G Light 11 LLN 7215	38°03'51.497"N 121°47'38.149"N	38°03.8'N 121°47.5'W
Fl R Light 16 LLN 7240	38°05'18.247"N 121°44'29.809"W	No Published Pos.
Fl G Light 17 LLN 7245	38°05'38.923"N 121°44'11.819"W	No Published Pos.
Fl W Decker Island North End Light LLN 7300	38°06'13.905"N 121°42'36.693"W	38°06.3'N 121°42.6'W

Aids in Suisun Bay, New York Slough and San Joaquin River were positioned between August 01 and August 09, 1990. Aids in the Sacramento River were located between March 17 and March 23, 1991. If further information or clarification on these aids is required, please call us.

Sincerely,

Gerd F. Glang
Gerd F. Glang
Lieutenant, NOAA
Chief, Pacific Hydrographic Party

cc: N/CG245
N/CG233

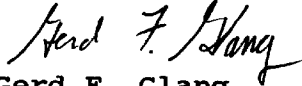
APPROVAL SHEET

for

SURVEY H-10409

I have reviewed the Descriptive Report, Final Field Sheets, and accompanying records for accuracy, completeness, compliance with project instructions, and adherence to required standards and procedures. I have supervised all field work on a daily basis to ensure a quality survey is forwarded for verification. I have personally examined the Final Field Sheets and all records of this survey during field processing. The data are forwarded for final review and processing to N/CG245, Pacific Hydrographic Section.

Approved and Forwarded,


Gerd F. Glang
Lieutenant, NOAA
Chief, Pacific Hydrographic Party

DATE DECEMBER 20, 1991

ORIGINAL



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 3, 1992

MARINE CENTER: Pacific

OPR: L-208

HYDROGRAPHIC SHEET: H-10409

LOCALITY: San Joaquin River, Big Break to False River, California

TIME PERIOD: October 21 - November 26, 1991

TIDE STATION USED: 941-5053 Dutch Slough, CA

Lat. $38^{\circ} 0.8'N$ Lon. $121^{\circ} 38.4'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.05 ft. (941-5053)

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.0 ft.

TIDE STATION USED: 941-5064 Antioch, CA

Lat. $38^{\circ} 1.1'N$ Lon. $121^{\circ} 48.9'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 2.88 ft. (941-5064)

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.6 ft.

TIDE STATION USED: 941-5145 Jersey Island, CA

Lat. $38^{\circ} 3.3'N$ Lon. $121^{\circ} 39.3'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 3.32 ft. (941-5145)

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.0 ft.

REMARKS: RECOMMENDED ZONING

1. In San Joaquin River, apply a +30 minute time correction and a x0.98 height ratio to Antioch, CA (941-5064).
2. In False River and Taylor Slough, times and heights are direct on Jersey Island, CA (941-5145).
3. In Big Break, apply a -30 minute time correction and a x1.06 height ratio to Dutch Slough, CA (941-5053).
4. In Dutch Slough, times and heights are direct on Dutch Slough, CA (941-5053).

Note: Hourly heights are tabulated in Pacific Standard Time.

[Signature]
CHIEF, DATUMS SECTION



HYDROGRAPHIC SURVEY STATISTICS

H-10409

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		7
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		4
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES	3				
CAHIERS					
BOXES					

SHORELINE DATA

- SHORELINE MAPS (List):
- PHOTOBATHYMETRIC MAPS (List):
- NOTES TO THE HYDROGRAPHER (List):
- SPECIAL REPORTS (List):
- NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			2565
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	72		72
VERIFICATION OF SOUNDINGS	275		275
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	144		144
COMPARISON WITH PRIOR SURVEYS AND CHARTS		40	40
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		37	37
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	491	77
			568

Pre-processing Examination by J. Griffin	Beginning Date 12/27/91	Ending Date 1/22/92
Verification of Field Data by E. Domingo	Time (Hours) 491	Ending Date 10/14/92
Verification Check by J. Stringham, S. Otsubo	Time (Hours) 174	Ending Date 11/17/92
Evaluation and Analysis by R. Davies	Time (Hours) 77	Ending Date 3/2/93
Inspection by B. Olmstead	Time (Hours) 39	Ending Date 6/1/93

EVALUATION REPORT

H-10409

1. INTRODUCTION

Survey H-10409 is a basic hydrographic survey accomplished by the Pacific Hydrographic Party under the following Project Instructions.

OPR-L208-PHP, dated June 17, 1991

This survey was conducted in California and covers a portion of the San Joaquin River between longitude 121/40/30W and longitude 121/44/10W, the entrance of False River, all of Big Break and portions of Taylor, Dutch, Piper, Gallagher and Emerson Sloughs. The surveyed area extends from latitude 38/00/00N to latitude 38/04/30N, and from longitude 121/39/00W to longitude 121/44/10W. The survey area is comprised of one major river, the San Joaquin, small feeder rivers, sloughs, and canals. The various waterways are surrounded by high levees and are dredged to maintain the height and grade of the levees. There are numerous private and commercial activities, low-lying islands made up of sand and marsh grass and numerous wrecks and ruins. The bottom consists of mud and sand. Depths range from zero to 15.9 meters.

In several areas, lines of hydrography appear to cross the HWL. In these places, the HWL is composed of tule grass which is not solid and therefore a survey launch can appear to have crossed the HWL, especially at a high stage of tide.

Predicted tides for Fort Point, San Francisco, California, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Dutch Slough, Antioch and Jersey Island, CA, gages 941-5053, 941-5064 and 941-5145 were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. NAD 83 is used as the horizontal datum for plotting and position computation. The sound velocity and electronic control correctors are adequate. The settlement and squat correctors were in error as submitted by the field and have been amended during office processing. Velocity tables 1 and 2 were revised to include the deepest depths within the survey area. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey that includes categories of information required to comply with Hydrographic Survey Guidelines No. 52, Standard Digital Data Exchange Format, April 15, 1986. Certain descriptive information, however, may not be 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

Sections H and I of the hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are published and 1990 and 1991 field values based on NAD 83. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined with NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -0.286 seconds (-8.807 meters)
 Longitude: 3.834 seconds (93.488 meters)

The year of establishment of control stations shown on the smooth sheet originates with the NGS listing and the horizontal control records for this survey. The final coordinates for the following stations, Dow, 1990, Dutch 2, 1990 and San Joaquin River Light 18A, 1990, have been received from NGS and checked for significance. All of the above final station coordinates are within .002 meter accuracy of the field positions.

The quality of several positions exceeds limits in terms of error circle radius and residual or have angles of intersection less than 30 degrees or more than 150 degrees. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable.

The following shoreline maps were compiled on NAD 27 and apply to this survey.

	<u>Photo Date</u>	<u>Class</u>	<u>Scale</u>
TP-01059	April 1979	III	1:20000
TP-01060	April 1983	III	1:20000

Shoreline south of latitude 38/00/45N, and east of longitude 121/40/54W, was drawn in brown for orientation only from chart 18661, 20th edition, dated June 9, 1990.

The following shoreline change is depicted on the smooth sheet with a dashed red line, and was transferred from the final field sheet without supporting position information. This revision is approximate but is adequate to supersede the common photogrammetrically delineated shoreline.

	<u>Latitude(N)</u>	<u>Longitude(W)</u>
HWL	38/00/48	121/43/48

3. HYDROGRAPHY

With the exception noted below and elsewhere in this report, hydrography is adequate to;

- a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation;
- c. show the survey was properly controlled and soundings are correctly plotted.

The hydrographer was apparently unable to define the zero, 1-meter and 2-meter depth curves throughout much of the survey area due to a combination of either significant cultural development, numerous foul areas (grass, wreckage) and or steeply sloping bottom just offshore of the mean high waterline.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, March 1991 edition, except for the following.

The settlement and squat correctors and velocity tables should be carefully reviewed and checked before submission. These tables and correctors had to be changed during office processing.

The geographic position as listed in the AWOIS file for item 51505 was erroneous. As such, this charted feature was investigated at the wrong location. When investigating AWOIS items, a review of both the AWOIS listing, AWOIS chart markup and current edition of the chart should be accomplished. This procedure would reduced the error of searching for an AWOIS item at the wrong coordinate or a feature that has been removed from the chart.

Shoreline drawn in red on the final field sheet should have been supported with positional information, not just drawn because the shoreline maps did not agree with hydrography. The shoreline drawn in brown from the chart would have been more appropriate if detached positions were not taken.

The preferred method for the discussion of numerous AWOIS items is not in the body of the hydrographer's report but following the report on the AWOIS item investigation forms. This would reduce the time required to evaluate duplicate data sets when there is a significant number of items.

5. JUNCTIONS

Survey H-10409 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10398	1991	10,000	West
H-10413	1992	10,000	East
H-10435	1992	10,000	North

The junction with surveys H-10398, H-10413 and H-10435 are complete. Soundings have been transferred to survey H-10409 from surveys H-10398 and H-10413 to better portray the bottom in the common areas.

6. COMPARISON WITH PRIOR SURVEYS

H-6000(1933-34) 1:10000

Survey H-6000 covers an area east of longitude 121/41/00W. Little change has taken place in the general shape of the sloughs. The most significant shoreline changes are on the south side of Big Break where erosion and accretion has taken place and a new

marina has been built. Other changes which have occurred over the years are the shoal areas and marsh islands in the various sloughs. These features have increased or decreased their size or location due to accretion or erosion. Depths differ between 0 to 6 feet (0 to 2.0 meters), with survey H-10409 being generally shoaler.

H-6014c(1933) 1:10000

Survey H-6014c covers Dutch Slough between latitude 38/00/48N, longitude 121/41/00W and latitude 38/01/35N, longitude 121/43/30W. This survey also includes shoreline in and around Big Break. This shoreline consist mostly of tule grasses and marsh. A considerable amount of change has occurred. The area of Big Break has filled in with water as a result of the breaks in the marsh islands which occur along the southern shoreline of Dutch Slough. Depths differ between 0 to 3 feet (0 to 1.0 meters), with survey H-10409 being generally shoaler.

Survey H-10409 is adequate to supersede the prior surveys within the common area.

AWOIS Item 51532 originates with the prior survey H-6014c. This item has been adequately investigated. Refer to hydrographer's report, section M and the associated AWOIS item investigation report (~~attached~~) for the disposition.

Filed

7. COMPARISON WITH CHART

Chart 18661 20th edition, dated June 9, 1990; scale 1:40,000

Chart 18661 21st edition, dated May 9, 1992; scale 1:40,000

The two editions listed above, are identical except for one feature, a submerged wreck, and several depths in the San Joaquin River.

a. Hydrography

Charted hydrography originates with the prior surveys mentioned in section 6 and miscellaneous sources and requires no further discussion, except for the following.

One feature was not found or adequately investigated during this survey. A structure in ruins, possibly ferry ramp ruins, at latitude 38/03/23.96N, longitude 121/39/14.68W, were investigated visually. This method is not acceptable for removing possible submerged ruins. This charted structure should be retained as charted with a added note "submerged ruins".

Survey H-10409 is adequate to supersede charted hydrography within the common area.

b. AWOIS

All AWOIS item's not mentioned in section 6 of this report originate with miscellaneous sources. Refer to the hydrographer's report for discussion and disposition of these features, supplemented as follows.

The geographic position of AWOIS item 51505, visible wreck, in the AWOIS listing is in error. The listed longitude is 121/43/05.83W, it should be longitude 121/43/35.83W. The hydrographer searched visually and did a 75-meter radius bottom drag at the listed AWOIS position, no wreck was found. A visible wreck was confirmed on shoreline map TP-01060 at the correct AWOIS position at latitude 38/00/56.21N, longitude 121/43/35.83W. Chart a visible wreck at this position.

AWOIS item 51519, a visible wreck charted at latitude 38/01/23.51N, longitude 121/43/43.23W, was not investigated by the hydrographer. However, this charted wreck falls within a foul with wreck limit line and should be included as part of the foul area centered at latitude 38/01/22N, longitude 121/43/42W. See the smooth sheet for depiction.

c. Controlling Depths

The San Joaquin-Stockton Deep River cuts through this survey in a southwest to northeast direction. There are no controlling depths from San Joaquin River Light 17 to Light 43. The user is referred to the charted soundings in the area.

The note, "5 ft reported 1977", at latitude 38/01/13.71N, longitude 121/43/58.83W, should be revised. Depths in the channel range from 1.0m to 3.8m (3ft to 12ft) at MLLW. Chart according to this survey with a note, 3 ft 1992 (1m). This is AWOIS item 51537.

d. Aids to Navigation

There are six fixed aids and three floating aids within the area of this survey. They were located and serve their intended purpose. Refer to the hydrographer's report, section P and NOAA Form 76-40 for hydrographic, areotriangulation and GPS positions.

All charted landmarks should remain as charted.

e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation

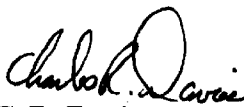
The hydrographer reported two dangers to the U. S. Coast Guard. A copy of the report is attached. No additional danger to navigation reports were generated during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10409 adequately complies with the project instructions, except where noted in this report.

9. ADDITIONAL FIELD WORK

This is an adequate hydrographic survey. Additional field work on a low priority basis is recommended to investigate the possible ferry ramp ruins not found or disproven during this survey, as noted in section 7 of this report.


C. R. Davies
Cartographer

APPROVAL SHEET
H-10409

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

for Bruce A. Olmstead

Dennis J. Hill Date: June 1, 1993
Chief, Hydrographic Processing Unit
Pacific Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Douglas G. Hennick

Commander Douglas G. Hennick, NOAA Date: 7/13/93
Chief, Pacific Hydrographic Section

Final Approval

Approved:

Daniel Yeager

for J. Austin Yeager Date: 12-9-94
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

Record
4/6/92

Diagram No. 5527

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