

# 10303

Diagram No. 5534-2

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

Type of Survey . Hydrographic .....

Field No. .... PHP-10-3-89 .....

Registry No. .... H-10303 .....

### LOCALITY

State ..... California .....

General Locality Grizzly Bay .....

Sublocality ..... Northern Portion of Suisun .....

..... and Montezuma Sloughs .....

19 89

CHIEF OF PARTY

LT F.R. Diaz .....

### LIBRARY & ARCHIVES

DATE ..... May 25, 1990 .....

# 10303

Charts

18652 D

18656

18661 NC

18659 NC

501 NC

18022 NC

18020 NC

HYDROGRAPHIC TITLE SHEET

H-10303

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 10-3-89

State California

General locality Grizzly Bay

Locality Northern Portion of Suisun and Montezuma Sloughs

Scale 1:10,000 Date of survey May 25 to July 5, 1989

Instructions dated May 1, 1989 Project No. OPR-L208-PHP

Vessel Launch 1101 (EDP 0651)

Chief of party LT Federick R. Diaz

Surveyed by LT Federico R. Diaz, LTJG Thomas K. Porta, ST Lowell J. Lindly,  
ST Michael E. Bigelow, ET Edmund O. Wernicke

Soundings taken by echo sounder, ~~hand lead, pole~~ Raytheon DE-719-C with Digitrace

Graphic record scaled by PHP Personnel

Graphic record checked by PHP Personnel

Verification by: R. N. Mihailov Automated plot by PMC Xynetics Plotter

Evaluation by: C.R. Davies

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

REMARKS: All times recorded in Universal Time Coordinate (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 & SURF 6/90 RUD*

*KW/W 6/12/90*

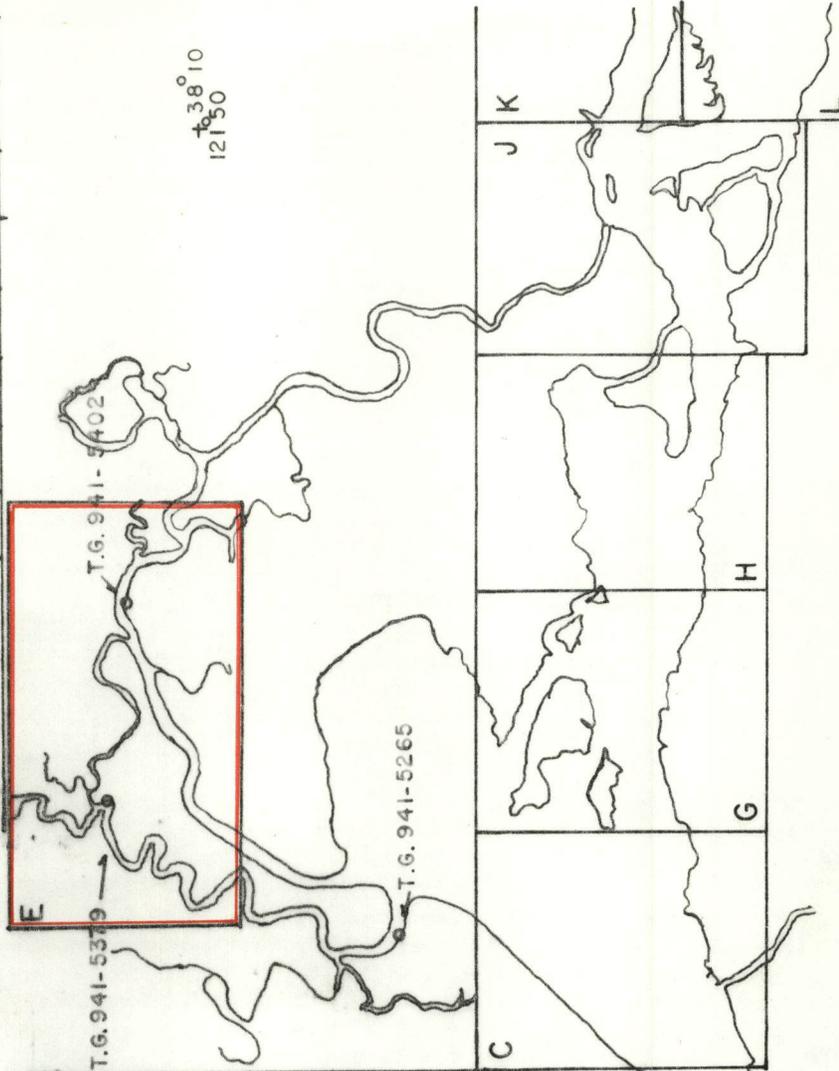
OPR-L208  
 SACRAMENTO RIVER, CA. Sheets C,E,GHJKL  
 MAY 1989

PACIFIC HYDROGRAPHIC PARTY  
 LT. FEDERICO R. DIAZ, NOAA, Chief of Party

AWOIS ITEM No. "STATUS OF INVESTIGATION"	YEAR	
	MONTH	YEAR
DISPROVED		
VERIFIED		
IN PROGRESS		
RESOLUTION NOT FEASIBLE		

38° 05' +  
 122° 05'

	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SO. N.M. Sdgs.								
L. N. M. Misc Dist								
L. N. M. Dist To & Fr.								
L. N. M. Sdg. Line								
Bottom Samples								
Control Stations								
Tide Gages								
Wire Drag S.N.M.								



PROGRESS SKETCH TO ACCOMPANY ANNUAL FIELD OPERATIONS REPORT

**A. PROJECT** ✓

A basic hydrographic survey, Sheet "E", was performed in accordance with Project Instructions OPR-L208-PHP, dated May 1 1989

The purpose of this survey is to obtain data for reconstruction of existing chart 18656, 18652SC, compilation of a new series of 1:12,500-scale charts, and to aid in an update of the U.S. Army Corps of Engineers bay model. This sheet was the first to be surveyed and processed by this field party using the new Hydrographic Data Acquisition and Processing System (HDAPS).

**B. AREA SURVEYED** ✓

The survey was conducted in the Sacramento River delta area, within the northern portions of Montezuma and Suisun Sloughs California. The limits of the survey are as follows.

<u>Latitude</u>	<u>Longitude</u>
38/ <sup>09</sup> 10/ <sup>30</sup> 00 N	121/56/ <sup>40</sup> 54 W
38/ <sup>3</sup> 12/ <sup>00</sup> 54 N	122/04/ <sup>15</sup> 06 W

The inclusive dates of hydrography were from May 25, 1989 (DN 145) to July 5, 1989 (DN 186). Final field day (level out of tide gages) July 18, 1989 (DN 199).

**C. SOUNDING VESSEL** ✓

PHP's Launch 1101 (EDP 0651), a 29-foot aluminum Jensen, equipped with a turbo Caterpillar diesel and a Hamilton jet drive, was used to position bottom drags, and sounding acquisition.

**D. SOUNDING EQUIPMENT** ✓

Launch 1101 is equipped with a Raytheon DE-719 C echosounder with Digitrace and a narrow beam high frequency transducer. Launch 1101 is also equipped with two side looking digital transducers for navigational use in sloughs, narrow channels, and creeks.

<u>Component</u>	<u>Model Number</u>	<u>Serial Number</u>
Raytheon	DE-719 C	10280

**SOUNDING INSTRUMENT ACCURACY AND ADJUSTMENTS** ✓

The Raytheon echo sounder produces an analog echogram and by use of the Digitrace component installed within the Raytheon, a simultaneous digitized depth value is also produced. The digitized soundings produced at predetermined time intervals are the primary source of sounding line data

on the field sheet, but these are supplemented by depths scaled from the analog record in areas where digitized depths were incorrect or lacking. The digitized depths are sometimes triggered by a source other than the bottom (sea weeds, fish, etc.) or from an instrument generated source such as side echoes. In these instances the digitized depths were replaced by values scaled from the echogram.

The event mark is drawn on the echogram at least one second after the digital event which occurs with an audible tone. The vessel speed made good averages 3 to 5 m/sec. On a fairly flat bottom there is little apparent error or disagreement between the Digitrace and the echogram. On a steeply sloping bottom the resulting apparent error is often more than a foot and be as much as 2.5 feet. Over a falling bottom, the echogram will be marked at a greater depth and over a rising bottom the event mark will show shallower than the digital. When the echogram is used to supplement the digital, this apparent error must be considered along with other errors in the echogram such as zero adjustment, tide & draft, speed of sound etc. N/CG24 is aware of this problem and is presently working on a solution.

During survey operations, the initial or zero adjustment as well as tide & draft and speed of sound alignments were monitored and adjusted constantly. Any depths scaled from the echograms were checked and corrected for the above mentioned alignments before being applied to the survey.

There were no faults that affected the accuracy of the soundings.

*concur*

#### **STATIC TRANSDUCER DRAFT ✓**

The static transducer draft values for the hull mounted transducer on Launch 1101 was physically measured in two parts. The first part was done while the launch was out of the water. The distance between the transducer face and the bottom of a black line painted on the hull above the water line was measured on 5/9/89 using a surveying level (Lietz B-1, S/N 214303) and rod. The second part was done on 5/23/89 with the launch in the water with fuel tanks at 1/2 full, HDAPS equipment installed and two crew men on board. The distance between the bottom of the painted black line and the actual water line was measured with a steel tape.

The actual static transducer depth is the distance obtained in part 1 minus the distance measured in part 2. The actual static draft was measured at 1.51 feet.

#### **SOUND VELOCITY CORRECTORS ✓**

Velocity correctors were determined at least once weekly by AML (# 03042) velocity casts. Daily bar checks at 5 and 10

feet ensured that the sounding equipment was working properly as well as validating the AML data. The AML cast data was transferred to an IBM PC, and velocity correction tables were generated using the NOS program "Velocity Version 1.00".

Table 1 is from the correctors on DN 163. It was the deepest cast and the most representative. It was extended from 16.6 meters to 21.5 and was used from DN 151 to DN 186. The following table is appropriate for the dates shown. The cast data and analysis are in Appendix IV,\*Sounding Correction Abstract.

The **Bar Check** consists of an 11 x 1 foot aluminum bar suspended on 1/4 inch steel chains with wire-tied and painted markings at 5-foot intervals was used to obtain bar check data. Chain markings were checked for accuracy prior to beginning the survey and were found to be accurate. The launch's beam is 11 ft, therefore no line correctors to correct for line angle were applied. Bar checks were abstracted daily using a measured static draft value of 1.5 feet. The calculated correctors for each bar depth are on these abstracts. The bar check abstracts contain the position of the stations and the dates of velocity correction observations. For more information see Appendix IV Sounding Correction Abstract,\*

#### **Settlement and Squat Corrections ✓**

A digital speed log for Launch 1101 was originally acquired in April, 1984 to correct for ground effect, which is the change in speed when moving to and from shallow water (see Ground Effect Report, May, 1984). It was determined that one method to help reduce the need for ground effect correctors was to operate the launch with constant speed through the water instead of fixed rpm. This decision was cleared through PMC and the speed log was permanently mounted in the hull of Launch 1101. Speed through the water was used during the settlement and squat measurements.

Settlement and squat measurements were observed for the Pacific Hydrographic Party's Launch 1101 (EDP 0651), on 5/23/89. The settlement and squat correctors apply to all data acquired with Launch 1101 on this survey.

Equipment on the launch at the time of the test consisted of the HDAPS electronic positioning and depth finding gear. The launch is equipped with a Caterpillar Diesel engine coupled to a Hamilton jet pump. Two people were on board the launch at the time of the test (a normal crew) and the fuel tanks were 1/2 full.

The test was conducted on the south end of First Street in the vicinity of Benicia Pt. near the city wharf and nearby

\* Filed with the hydrographic data

islets off Benicia. The test was within the geographic limits of project OPR-L202-PHP-88. The launch went from depths of 12 to 20 feet of water. The weather during the test was fair, with winds 5-15 knots, seas were 0.2 feet. The launch was getting a lee from the small offshore islets during this test.

The level was set up on the bank of the shoreline at the south end of First Street in Benicia. A back sight was taken on a local object before and after to check stability of the level instrument during the test. A level rod was held on the starboard gunwale in line with the position of the hull mounted transducer. The launch made runs ranging from 3NM to 12NM by going towards the leveling instrument and stopping for dead in the water (DIW) measurements before and after each run. The mean of these two readings accounted for the tidal correction for each run. These point values were plotted and connected to yield continuous speed versus draft correction curves.

Settlement and squat correctors are entered in the HDAPS presurvey offset table and applied during the post survey process. The correctors were determined as a function of speed through water, however HDAPS applies the correctors according to the computed "Speed Made Good", a true speed. The corrector data is in Appendix IV Corrections to Echo Soundings. *Filed with the hydrographic data.*

#### **Tide Correctors** ✓

Predicted tides were used to to reduce the heights of detached positions in the sounding volume to MLLW by PHP in order to determine the proper cartographic code. The field plots at PHP were plotted with the tide correctors applied to the predicted tides at Fort Point, San Francisco. See Appendix II. Field Tide Note for further information; *Attached to this report.*

#### **E. HYDROGRAPHIC SHEETS** ✓

All smooth field sheets were generated at Pacific Hydrographic Party. Due to plotter size limitations (58.5 x 180.9 cm), Survey H-10303 was divided into two 1:10,000 scale plotter sheets. Plotter sheet 1 includes all of Montezuma Slough and Cut-off Slough, and plotter sheet 2 includes Suisun Slough. All plots were made via a Bruning Zeta 824 plotter coupled to a Hewlett-Packard 9000 model 310 computer. The software used is listed under Item R of this report. The plots and collected data have been corrected, analysed and reviewed for completeness and quality of survey work.

All data and plots will be sent to ~~Hydrographic Surveys Branch, Nautical Chart Section~~ N/CG245 along with this report. *Pacific Hydrographic Section*

## F. CONTROL STATIONS ✓

The horizontal datum for this survey was the North American Datum of 1927. Control stations are listed in the following table:

STATUS	STATION	LOCATION METHOD
VERIFIED	<del>ZINC 1922</del>	TRAVERSE
"	BAY POINT USE 1932	"
"	THOMASSON 1922	"
"	SUISUN HILL 2 1922	"
"	GOODYEAR 2 1979	"
"	<del>KIRBY 1922</del>	"
"	<del>POTRERO (AVA 1922)</del>	"
"	LOPEZ 1932	"

All but one of the horizontal control stations used on this survey were originally established by geodetic traverse, and were verified before use by PHP. Further information is provided in the Horizontal Control Report, OPR-L202-PHP-88, Carquinez Strait, CA, March 1988 to April 1989, submitted to the Pacific Photo Party N/CG<sup>233</sup>~~245~~. Station LOPEZ 1932 was verified with steel tape measurements to the reference marks which agreed well with the published data. Further information on LOPEZ 1932 will be contained in the Horizontal Control Report, OPR-L208, Sacramento River.

Station Mount Diablo 1876 (elev. 1177m), which was used prior to HDAPS, and which on a clear day sees beyond the entire project and almost into the next state, could not be used because the HDAPS format would accept a maximum station height of 999 meters.

There were no unconventional survey methods used or anomalies in the control adjustment.

There were no known photogrammetric problems that could contribute to position inaccuracies.

## G. HYDROGRAPHIC POSITION CONTROL ✓

Electronic position control on this survey was accomplished with a Motorola Mini-Ranger Falcon 484 ultra-high frequency transponder system in a range-range configuration.

### Electronic Control Equipment ✓

The following electronic positioning equipment were used on this survey.

**Motorola Mini-Ranger Falcon 484 Mobile Station ✓**  
**Launch 1101**

Mini-Ranger Console           S/N F0259  
 Transceiver (RT Console)    S/N B1419

**Position Control Equipment Operation ✓**

Baseline correctors (BLC) applied to Mini-Ranger data collected on this survey were calculated from the calibrations shown below.

**Corrector/Minimum Signal Strength ✓**  
**Console F0259, RT B1419**

SERIAL NUMBER	E2709	911632	911C59	E2712
CODE	1	2	3	4
BLC DATE	5/10/89	5/10/89	5/10/89	5/10/89
CORRECTOR/ MIN SS	-5.8/15	-12.4/14	-3.2/14	-7.9/14

SERIAL NUMBER	F3233
CODE	5
BLC DATE	5-10-89
CORRECTOR/ MIN SS	-10.1/15

SERIAL NUMBER	G3510	91634	C1789
CODE	6	7	8
BLC DATE	6/19/89	6/19/89	6/19/89
CORRECTOR/ MIN SS	-6.6/14	-14.7/14	-12.3/15

The next Baseline calibration will be performed in November, 1989.

**Daily Calibrations ✓**

Critical system checks were performed twice weekly at geodetic stations. All system checks on the Mini-Ranger slave units and Falcon console/RT unit used during this time period resulted in a variance of less than 5 meters. PHP considers these system checks a confirmation of the BLC and proper Mini-Ranger operation as specified in the Hydrographic Field Procedures Manual.

The HDAPS Complex automatically applies the BLC during data acquisition.

All detached positions (DPs) were obtained with a minimum of 3 LOPs and those residuals are within the maximum allowable of 5.0 meters. All DPs were carefully verified on the field

sheet. During all data collection with 3 or more LOPs, the HDAPS computed residuals were within 0.5 mm at the scale of the survey or the data was rejected.

During hydro using 2 LOP interrogation, the angle of intersection was maintained between 30 and 150 degrees. In addition, the HDAPS computed ERROR CIRCLE RADIUS was less than 1.5 mm at the scale of the survey or the data was "hard smoothed" to time in course. HDAPS software automatically edits those LOPs with less than the minimum signal strength. There were no unusual methods of electronic control operations, and no unusual atmospheric conditions on this survey.

ANDIST correctors were zero for all positions on this survey.

For further information on electronic calibrations see Appendix V, Abstracts of Corrections to Electronic Position Control. \*

#### Equipment Failures ✓

There were no equipment failures that affected the accuracy of the positions acquired.

However, for further information on equipment failures that did not effect positions acquired see the faillogs in Appendix V, Abstracts of Corrections to Electronic Position Control. \*

#### H. SHORELINE

A stable-base enlargement copy at 1:10,000 scale of the following registered shoreline map was provided:

Job CM-7823

<u>Shoreline Map</u>	<u>Scale</u>
TP-01053	1:10,000
TP - 01067	1:10,000

Shoreline verification was conducted by the hydrographer for all shoreline within sheet limits and the results are shown on the final field sheet.

*See EVAL report section 2*

Some soundings plotted on the shoreline in Montezuma and Suisun Sloughs. This was due to the vessel being 5 meters from the high water line when the sounding was acquired. The areas where soundings plotted on the high water line were where the deepest depths were along that bank. It could also be due to erosion of the steep banks. The shoreline should not be changed in these areas. *concur. In areas where soundings are close to the MHWL, the shoreline was broken for the soundings.*

\* Filed with the hydrographic data.

All surveyed features not shown on TP-01053 are shown in red ink on the smooth DP overlays. *shore shoreline shown in red (HWL) on smooth sheet*

There were only two shoreline features on TP-01053 which were either not found or in need of revision.

A pier charted at Lat 38/11/35 Lon 122/02/19 does not exist. There are two lone piles just above HWL at those coordinates. At low water, the bottom bares to 10 meters seaward from the HWL. It is recommended that the pier be **deleted from the chart**. See photo in accordion file in day *concur* 186. *Chart piles within limit lines. See smooth sheet.*

A pier charted at Lat 38/10/46 Lon 122/03/03 does not exist. There is a wood bulkhead at the HWL at those coordinates. It appears to serve as a retaining wall for the earthen levee behind. It is recommended that the pier be **deleted from the chart**. *Bulkhead is annotated on the smooth sheet.* *concur*

#### I. **CROSSLINES** ✓

Crossline soundings were acquired to check mainscheme sounding lines. Crosslines were 5% of the sounding lines. In addition to the usual centerline and 2 shorelines, 2 quarterlines were run on each slough.

Overall, comparison of the crosslines to the main scheme is good. In the areas of regular bottom, discrepancies seldom exceed 1 ft. Discrepancies seldom exceed 2 ft in areas of irregular sloping bottom.

#### J. **JUNCTIONS** *See Enr Report section 5*

This project junctions with surveys of Sheets "D" (H-10293) & "F" (H-10298) of project OPR-L202 which were completed just prior to this survey. The junctions agree to about 1 foot in areas of flat bottom and 1 to 2 feet along steeper banks.

The junction of sheet "F" is at Lat 38/10/30 Lon 121/57/00. The junction with sheet "D" is at 2 locations, in Montezuma Slough at Lat 38/10/00, Lon 122/02/30, and in Suisun Slough at Lat 38/09/40, Lon 122/03/30.

#### K. **COMPARISON WITH PRIOR SURVEYS** *See Enr Report Section 6*

The data from this project were compared to the following surveys.

<u>Registry Number</u>	<u>Scale</u>	<u>Year Surveyed</u>
H-1785	1:20,000	1886-87

**AWOIS ITEMS** ✓

There were no AWOIS items originating from prior surveys. *Concur*

**COMPARISON OF NON SOUNDING FEATURES** ✓

Goat Island (Lat 38/12/45 Lon 122/02/11) is now where H-1785 showed a peninsula formed by a meander of Suisun Slough. *chart according to this survey*

Cross Slough (Lat 38/10/59.6 Lon 121/57/43.6), shown as navigable in H-1785 has been blocked by a levee near the west end. A single hydro line was run into Cross Slough from its junction with Montezuma Slough to within 180 meters of the blockage. Further surveys were prevented by large eucalyptus trees which surrounded the area. *Chart according to the survey*

Frost Slough (Lat 38/10/00 Lon 121/57/00), shown as navigable in H-1875, is blocked by a levee near its north end which junctions with Montezuma Slough. Frost Slough was not surveyed this year. *Frost Slough was not shown on this survey.*

**COMPARISON OF SOUNDINGS** ✓

In general, the depths of Montezuma Slough and Suisun Slough agree with H-1785 Survey.

There have been depth changes in the channel of Montezuma Slough of up to 6 feet plus and minus but they are random with no discernible trends. In Suisun Slough, there is a trend to a deepening of the deepest areas which are on the inside of the curves or meanders and a trend to shoaling in the outside of the meanders and the straighter portions of the slough.

The natural channel in both sloughs is very similar to the prior survey. Some erosion was noticed on the mud banks close to the deep part of the channel. It appeared that the shallow side of the channel had filled in some areas.

Shoaling has occurred in Cross Slough which now has an average depth of 2 ft and a controlling depth of 0 ft. at the west entrance.

Cutoff Slough has also filled an average of 3 to 4 ft. The controlling depth at the west entrance is 0' ft. and controlling depth of 1.0 ft. at the east entrance.

Shoaling has occurred around Goat Island from the northeast corner around the west side to the southeast corner of the island. The controlling depth for navigation around the west side of the island is a ~~-1.0~~ <sup>0.5</sup> at MLLW at the northeast corner. The main channel is now along the island's east side.

While the prior survey (H-1785) has some historical interest, it is of less practical value as it was performed 100 years ago.

**L. COMPARISON WITH THE CHART** *See Exam Report Section 7*

The survey is complete and adequate to supersede all charted features.

This survey was compared to

<u>Chart Number</u>	<u>Edition</u>	<u>Edition Date</u>
18656	47th	March 7, 1987
18652SC	25th	June 20, 1987
<del>18656</del>	48 <sup>th</sup>	MAY 29, 1989
<del>18652SC</del>	26 <sup>th</sup>	Dec 3 1988

A Dangers to Navigation letter was written to the Commander, Eleventh Coast Guard District. A copy of this letter is included in ~~Appendix XI~~, Dangers To Navigation. A copy of this letter was also sent to the Nautical Data Section, N/CG221, and ~~PMC~~ (N/CG245). The letter was dated July 25, 1989 *Attached to this report*

<i>(Field)</i> DESCRIPTION	<i>(Field)</i> LATITUDE N	<i>(Field)</i> LONGITUDE W	<i>(Field)</i> FT MLLW	POS
<b>Montezuma Slough</b>				
✓ snag	38/11/13.85	121/58/52.72	-0.3	456
✓ "	38/10/57.76	121/59/34.20	-2.5	1176
✓ stakes	38/10/15.72	122/01/00.21	-3.3	43
✓ ruins	38/10/26.21	122/00/46.42	-5.4	46
✓ row of piles	38/11/10.21	121/58/43.64	-3.5	61-
	38/11/10.04	121/58/43.74	-3.5	62
✓ pile	38/10/09.76	122/01/11.54	0.0	454
✓ "	38/10/07.05	122/01/26.09	-3.9	36
✓ "	38/10/07.05	122/01/27.04	-4.8	35
✓ "	38/10/14.16	122/01/25.72	-4.2	34
✓ "	38/10/14.14	122/01/26.96	-4.7	33
✓ "	38/10/19.85	122/01/58.64	-10.5	31
✓ "	38/11/20.97	122/00/00.39	-6.5	965
✓ "	38/11/10.62	122/00/06.11	-3.4	964
✓ "	38/11/14.18	122/01/02.48	-3.8	962
✓ shoal	38/10/42.44	122/00/13.16	+7.0	995+1
✓ shoal	38/10/59.62	121/57/43.55	-1.0	458
<b>Suisun Slough</b>				
✓ piles	38/10/11.21	122/04/06.17	-3.5	15
✓ pile	38/10/07/.75	122/04/00.22	-1.5	16
✓ pile	38/11/24.56	122/02/07.75	-4.0	220
✓ snag	38/11/24.97	122/02/30.25	+1.4	452
✓ shoal	38/12/50.74	122/02/06.15	-1.0	216+3
✓ rock	38/12/52.76	122/02/00.47	-0.5	542
✓ rock	38/12/52.39	122/02/01.17	-1.9	543
✓ rock	38/12/50.74	122/02/01.56	-3.2	544

*GPs and depths are preliminary field values. Refer to smooth sheet for final values.*

(Field) DESCRIPTION	(Field) LATITUDE N	(Field) LONGITUDE W	FT MLLW	POS
submarine	38/10/41.12	122/03/23.27		22
✓ cable	38/10/41.44	122/03/28.35		23
✓ foul	38/10/49.99	122/02/54.60		606
	38/10/51.10	122/02/57.30		607
foul	38/10/53.30	122/02/50.82		608
✓	38/11/01.01	122/03/13.30		1100

#### COMPARISON OF SOUNDINGS ✓

The charted soundings from the prior surveys have been discussed in section K. These soundings are soundings which have not been charted, or charted soundings originating from blueprints. Only significant items that are anomalous are discussed.

#### AWOIS ITEMS

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51388

ITEM DESCRIPTION: shoal reported 1984

SOURCE: CL1651/84--USPS

DATE	DN	POSITIONS	TIME	VVESNO
06/05/89	156	458	200607	0651
06/13/89	164	1015-1029	193431-194949	0651

	POSITION	LATITUDE N	LONGITUDE W	POS
Reported	Charted: 5 ft	38/10/58.00	121/57/45.00	
	Observed: <del>1.0</del> ft 0.0	38/10/59.6259	121/57/43.55	458

#### POSITION DETERMINED BY:

Range-range.

#### METHOD OF INVESTIGATION:

The mouth of Cross Slough was developed with sounding lines spaced about 20 meters which intersected the shore line and 1/4 line of Montezuma Slough on the west. The lines all converged on the east end of the development. In addition, position 458 was taken when the top of the shoal was awash and later reduced for predicted tides. The least depth is listed above.

#### CHARTING RECOMMENDATION

*Delete notation "shoal rep 1984"*  
Chart the shoal at position 458. *COMMAN*

*EDM*

## AWOIS ITEM

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51383 ✓

ITEM DESCRIPTION: shoaling reported 1981

SOURCE: CL1260/81--USPS

DATE	DN	POSITIONS	TIME	VVESNO	
06/13/89	164	968-1014	172640-182601	0651	
		<b>POSITION</b>	<b>LATITUDE N</b>	<b>LONGITUDE W</b>	<b>POS</b>
		Charted:	38/10/43.00	122/00/11.00	
		Observed: <sup>6</sup> / <sub>7</sub> ft	38/10/42.44	122/00/13.167	995+1

## POSITION DETERMINED BY:

Range-range.

## METHOD OF INVESTIGATION:

The slough was developed shore to shore with 45 meter spaced sounding lines. The lines were run almost perpendicular to the shore lines. The development extended 300 meters up and downstream from the reported position. The least depth is listed above.

## CHARTING RECOMMENDATION

Delete "shoaling rep. 1981"

Chart the shoal at position 995+1. Chart according to the smooth sheet.

Edm

## AWOIS ITEM

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51393✓

ITEM DESCRIPTION: obstruction, islet

SOURCE: CL11137/81--USPS

DATE	DN	POSITIONS	TIME	VVESNO	
06/16/89	167	1113-1126	180822-182136	0651	
		<b>POSITION</b>	<b>LATITUDE N</b>	<b>LONGITUDE W</b>	<b>POS</b>
		Charted:	38/12/39.00	122/02/01.5	
		Observed: 13 ft	38/12/37.59	122/01/59.82	<del>119+2</del> 196+3

## POSITION DETERMINED BY:

Range-range.

## METHOD OF INVESTIGATION:

The charted position was developed with soundings from the north point of an existing islet position 219 (AWOIS 51392) to about 270 meters north. The development was roughly centered over the reported position. The line spacing was about 25 meters. The sounding lines were 80 to 100 meters long and extended from an average of 5 to 6 meters from the east shore west into the center of the channel. The least depth is listed above.

## CHARTING RECOMMENDATION

Delete the islet from the chart and chart the surveyed soundings. *Concur*

*EM*

## COMPARISON OF NON SOUNDING FEATURES

## AWOIS ITEMS

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51380 ✓

ITEM DESCRIPTION: Pile (PA)

SOURCE: CL1631/67-USPS

DATE	DN	POSITIONS	TIME	VESNO
7/05/89	186	1178	192743	0651
	<b>POSITION</b>	<b>LATITUDE N</b>	<b>LONGITUDE W</b>	<b>POS</b>
	Charted:	38/10/30.0	121/57/06.0	
	Center Buoy:	38/10/30.013 29.98	121/57/05.973 8	1178

## POSITION DETERMINED BY:

3 ranges.

## METHOD OF INVESTIGATION:

A 50-m radius bottom drag was performed with 400% coverage at the above position. There were no hangs. For a description of the bottom drag configuration see ~~Appendix XII Supplemental Information~~. *Filed with the hydrographic data.*

## CHARTING RECOMMENDATION

Delete the pile (PA). *emur*

A pile uncovers 4PA at MLW was located at lat. 38°10'27.5"N, long. 121°57'06.46"W, pos # 75, which is 75 meters to the south of Awois 51380 chart pile at pos # 75

✓  
revised to  
Subm  
EMM

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51381 ✓

ITEM DESCRIPTION: Pile (PA)

SOURCE: CL1631/67-USPS

DATE	DN	POSITIONS	TIME	VESNO
6/14/89	165	1042	173904	0651
POSITION	LATITUDE N	LONGITUDE W	POS	
Charted:	38/10/31.0 <sub>1</sub>	121/57/00.0 <sub>7</sub>		
Center buoy:	38/10/31.045	121/57/00.065	1042	

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A 100-m radius bottom drag was performed with 400% coverage at the above observed position. There were no hangs.

## CHARTING RECOMMENDATION

Delete the pile. *CONCUR*

*Learn  
revised to  
Subm pile*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51389 ✓

ITEM DESCRIPTION: snag

SOURCE: CL1651/84--USPS

DATE	DN	POSITIONS	TIME	VESNO
6/13/89	164	1041	200957	0651

GEODETIC POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/10/59.00	121/57/42.00	
Observed:	38/11/00.784	121/57/39.434	1041

## POSITION DETERMINED BY:

3 Ranges.

**METHOD OF INVESTIGATION:** The snag was positioned on DN 164 and located approximately 82 meters heading 60 degrees true from the charted position. The snag ~~bare~~ <sup>uncovers</sup> -3.0 at chart ~~mean~~ datum.

## CHARTING RECOMMENDATION

Chart the snag at position 1041. *concur**2017*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51387 ✓

ITEM DESCRIPTION: Pile (PA)

SOURCE: CL1260/81-USPS

DATE	DN	POSITIONS	TIME	VESNO
7/05/89	186	1177	181111	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/10/57.0 4	121/59/ <sup>2</sup> 35.50 *	
Center Buoy:	38/10/56.773	121/59/35.080	1177
Observed (pile)	38/10/56.01	121/59/24.58	50 3.0 ft at MHW

POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A 100-m radius bottom drag was performed with 400% coverage. There were no hangs.

## CHARTING RECOMMENDATION

Delete the pile. *Do not concern*

Awois Item 51387 was listed in Awois listing incorrectly. The correct charted pile is located at lat. 38°10'57"N, long. 121°59'25"W. The hydrographer located a pile at lat. 38°10'56"N, long. 121°59'24"W. The Awois Item 51387 is considered found and should be charted at the above position (50).

*5/11/89  
Revised to  
subm pile*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51384 ✓

ITEM DESCRIPTION: submerged wreck (PA)

SOURCE: CL1260/81-USPS

DATE	DN	POSITIONS	TIME	VESNO
6/05/89	156	455	194346	0651
POSITION	LATITUDE N	LONGITUDE W	POS	
Charted:	38/10/48.00	121/59/44.00		
Observed:	38/10/47.040	121/59/44.05	455	

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A visual search of the area was made. Ruins of a barge were positioned 30 meters due south of the charted position. The ruins ~~are submerged~~ +0.4 ft at ~~chart datum~~.  
*uncovered 1.0 MLLW*

## CHARTING RECOMMENDATION

*Delete subm wk (PA)*  
 Chart the surveyed wreck at position 455. *cancel*

*Exam  
 Review to  
 vs wk sym  
 of survey POS*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51379 ✓

ITEM DESCRIPTION: 3 piles (PA)

SOURCE: CL1260/81-USPS

DATE	DN	POSITIONS	TIME	VESNO
5/30/89	150	46	192557	0651
5/30/89	150	47	192844	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted	38/10/27.00	122/00/48.00	
Observed	38/10/26.21 <sup>17</sup>	122/00/46.42	46
Observed	38/10/26.85 <sup>1</sup>	122/00/45.46	47

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A visual search of the area was made at chart datum. A row of more than 12 piles along the southeast shoreline in a northeast to southwest orientation were positioned. The items bare from ~~-5.4 to -6.4~~ respectively at chart datum.

*uncover* -6.0 to -7.0

## CHARTING RECOMMENDATION

Chart the positioned row of piles. *Do not concern*

*Chart ruins between pos # 46 and 47.*

*Sam  
rose to  
subm*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51375 ✓

ITEM DESCRIPTION: Pipes (PA)

SOURCE: CL1631/67-USPS

DATE	DN	POSITIONS	TIME	VESNO
6/15/89	166	1045	163501	0651
	POSITION	LATITUDE N	LONGITUDE W	POS
	Charted:	38/10/18.00	122/02/03.00	
	Center Buoy:	38/10/17.939 <sub>0</sub>	122/02/02.994 <sub>3.0</sub>	1045

POSITION DETERMINED BY:

3 Ranges.

METHOD OF INVESTIGATION:

A 100-m radius bottom drag was performed with 400% coverage.  
There were no hangs.

CHARTING RECOMMENDATION

Delete the pipes (PA) *Concur*

*Trans  
pose to  
Subm ED*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51373 ✓

ITEM DESCRIPTION: submerged wreck (PA)

SOURCE: CL1260/81-USPS

DATE	DN	POSITIONS	TIME	VESNO
6/05/89	156	459	211114	0651
POSITION		LATITUDE N	LONGITUDE W	POS
Charted:		38/10/10.00	122/02/15.00	
Observed		38/10/05.540	122/02/17.73	459

**POSITION DETERMINED BY:**

3 Ranges.

**METHOD OF INVESTIGATION:**

A visual search of the area was made at chart datum. Ruins of a barge approximately 15 feet long and in a northeast to southwest orientation were positioned 153 meters southwest of the charted position. The wrecked barge bares ~~-0.3~~ ft at chart datum. *MLLW* *uncas 3.0*

**CHARTING RECOMMENDATION**

*Ddt* subm wk PA.  
Chart the wreck at position 459.

*Edm  
Shes vic  
wk sum at  
survey pos*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51376 ✓

ITEM DESCRIPTION: Pile<sup>ing</sup>(PA)

SOURCE: CL501/84-USPS

DATE	DN	POSITIONS	TIME	VESNO
6/14/89	165	1043	195014	0651
	POSITION	LATITUDE N	LONGITUDE W	POS
	Charted:	38/10/18.0	122/03/58.00	
	Center Buoy:	38/10/18. <del>328</del> <sub>29</sub>	122/03/58. <del>281</del> <sub>9</sub>	1043

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A 100-m radius bottom drag was performed with 400% coverage resulting in one insignificant hang (position 1044-no plot). No other hangs were observed.

## CHARTING RECOMMENDATION

Delete the pile<sup>ing</sup>(PA) *concur*

*EDM  
PULSE to  
Subm*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51377✓

ITEM DESCRIPTION: Obstruction (<sup>A</sup>~~P~~)

SOURCE: Chart/79-82 Unknown

DATE	DN	POSITIONS	TIME	VESNO
5/25/89	145	2	182149	0651
	POSITION	LATITUDE N	LONGITUDE W	POS
	Charted:	38/10/21.0	122/03/36.00	
	Observed:	38/10/21. <sup>83</sup> <sub>33</sub>	122/03/38. <sup>76</sup> <sub>4.04</sub>	2

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A visual search was performed at chart datum. The center of 2 piles, 5 meters apart, was positioned. The piles ~~are~~ <sup>are</sup> ~~2.0~~ <sup>MLLW</sup> ft. at chart datum. <sup>UNCLAS -3.0</sup>

## CHARTING RECOMMENDATION

Chart the center of 2 piles at position 2. *Concur**2 piles  
samples*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51378✓

ITEM DESCRIPTION: Piles (P<sup>A</sup>)

SOURCE: CL1137/81--USPS

DATE	DN	POSITIONS	TIME	VESNO
5/25/89	145	1	180555	0651
	POSITION	LATITUDE N	LONGITUDE W	POS
	Charted:	38/10/23.00	122/03/46.00	
	Observed:	38/10/23.62 58	122/03/46.13	1

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A visual search was made. The center of a row of piles was positioned. The row of piles in an east to west orientation extended 50 meters along a north shore formed by the Y-junction of Wells Slough and Suisun Slough. The piles are 2 to 3 meters south (seaward) of the high water line. The piles ~~bare~~ = 7.3 feet at ~~chart datum~~.  
4.0 mHW

## CHARTING RECOMMENDATION

Delete piles PA

Chart the row of piles at the above position.

BTM  
Files



CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51385 ✓

ITEM DESCRIPTION: Pile (P<sup>A</sup>)

SOURCE: CL1182/72--USPS

DATE	DN	POSITIONS	TIME	VESNO
5/26/89	146	24	185453	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/10/50.00	122/02/53.00	
Observed:	38/10/50.32 <sup>09</sup>	122/02/54.34	24
	38/10/49.96	122/02/54.61	606
POSITION DETERMINED BY:	38/10/51.06	122/02/57.30	607

3 Ranges.

**METHOD OF INVESTIGATION:**

A visual search was made. The center of 3 piles was positioned at the south end of a fouled area. They are 5 meters seaward of the HWL and are along the southwest shore. The piles bare an average of <sup>2.0</sup>-7.5 feet at <sup>22 #4</sup>chart datum. The southmost and northmost of the 3 piles are approximately 10 meters apart, at Pos 24.

**CHARTING RECOMMENDATION**

*Delete pile PA*  
Chart the 3 piles at the above position. Do not connect

*Chart row of piles between pos # 606 and 607.*

*3  
Piles*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51386 ✓

ITEM DESCRIPTION: Pile (PA)

SOURCE: CL1182/72--USPS

DATE	DN	POSITIONS	TIME	VESNO
7/05/89	186	1181	220602	0651
	POSITION	LATITUDE N	LONGITUDE W	POS
	Charted:	38/10/53.50	122/02/53.00	
	Observed:	38/10/54.03 3.99	122/02/52.07 8	1181

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A 2 in. x 6 in. wood stake was positioned approximately 28 meters northeast of the charted position. It appears to have been a tide staff and is believed to be the reported item. It bares ~~7.0~~<sub>3.0</sub> feet at ~~chart datum~~<sub>MHW</sub>.

## CHARTING RECOMMENDATION

Delete the pile<sup>PA</sup> from the chart. Chart the stake at the above position. *cancel*

*EM*  
*(See Note D)*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51390✓

ITEM DESCRIPTION: Piles & ruins (~~PA~~)

SOURCE: CL279/78--CAS

DATE	DN	POSITIONS	TIME	VESNO
6/16/89	167	1104	170202	0651
		1105	170333	0651
		1106	170705	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/11/29.89	122/02/07.94	
Observed:	38/11/29.67	122/02/07.71	1104
	38/11/30.18	122/02/08.39	1105
	38/11/34.13	122/02/11.44	1106

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A visual search was made at chart datum. The ruins extend from position 1104 to 1106. The ruins <sup>uncover</sup> bare from <sup>4.9</sup>-3.5 feet at the south end to <sup>4.0</sup>-0.6 feet at the north end. (m.c.w.)

## CHARTING RECOMMENDATION

~~Delete~~ <sup>subm piles</sup>  
Chart the ruins at the above positions. <sup>correct</sup>

<sup>Edm</sup>  
Subm ruins

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51391✓

ITEM DESCRIPTION: Pile (P<sup>A</sup>)

SOURCE: CL1137/81--USPS

DATE	DN	POSITIONS	TIME	VESNO
5/25/89	145	12	201153	0651
	POSITION	LATITUDE N	LONGITUDE W	POS
	Charted:	38/11/51.00	122/02/40.00	
	Observed:	38/11/52.04 <sup>0</sup>	122/02/41.03 <sup>4</sup>	12

## POSITION DETERMINED BY:

3 Ranges.

## METHOD OF INVESTIGATION:

A visual search was made. One pile was positioned 41 meters northwest of the charted position. The pile bares <sup>5.0</sup>~~9.4~~ feet at ~~chart datum~~<sup>m<sub>40</sub></sup>. It is 2 to 3 meters seaward of the high water line.

## CHARTING RECOMMENDATION

*Delete pile PA*Chart the pile at the above observed position. *cancel**50m  
Pile*

CHART: 18656 47TH ED. MAR. 7, 1987

AWOIS: 51392

ITEM DESCRIPTION: Islet (P<sup>A</sup>)

SOURCE: CL1137/81--USPS

DATE	DN	POSITIONS	TIME	VESNO
5/25/89	145	14	202507	0651
6/01/89	152	219	204914	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/12/37.00	122/02/00.00	
Observed:	38/12/33.39 <sup>5</sup>	122/01/57.60 <sup>1</sup>	14
	38/12/35.18 <sup>4</sup>	122/01/58.82 <sup>3</sup>	219

**POSITION DETERMINED BY:**

3 Ranges.

**METHOD OF INVESTIGATION:**

A visual search was made. One islet in a north to south orientation was positioned.

**RECOMMENDATION**

Delete the two charted islets  
 Chart the islet at the above observed positions.  
 Island (approx. Hux)

Elev. referenced to MLLW on smooth sheet (Z)

Charted  
 raised islet.

**ADDITIONAL CHART REVISIONS**  
(not previously mentioned)

A cable area is indicated on the charts in Suisun Slough, at Navy Point (Lat 38/10/49 Lon 122/02/50). No evidence of cables or crossings were found during a thorough search of the area. Recommendation: **delete** the cable area indications from the chart. *Do not concur, retain as charted*

A cable area is indicated on the charts in Montezuma Slough at Lat 38/10/30 Lon 122/02/18. No evidence of a cable crossing was found during a thorough search of the area. Recommendation: **delete** the cable area indications from the chart. *Do not concur, retain as charted.*

Chart the following objects which are depicted on the **smooth** D.P. overlay: *Disregard the following table. Chart features as shown on the Smooth sheet.* *Final Field Sheet*

V=visible at mean high water  
C/U=covers at MLLW, uncovers at MHW  
S=submerged at MLLW

OBJECT	^	BARES FEET	POSN	TIME	LATITUDE	LONGITUDE
pile	C/U	-2.8	75	182336	38/10/27.610	121/57/06.451
pile	V	-9.5	71	181036	38/10/14.662	121/57/33.451
pile	V	-11.5	72	181129	38/10/14.689	121/57/34.034
pile	V	-11.5	74	181329	38/10/15.224	121/57/35.751
pile	V	-13.0	38	180203	38/10/10.488	122/01/10.377
pile	V	-6.9	963	162834	38/10/58.176	122/00/40.518
pile	V	-11.8	961	161744	38/11/21.842	122/01/14.625
pile	V	-13.8	960	161257	38/11/23.833	122/01/19.412
pile	V	-10.5	604	205140	38/10/50.089	122/02/45.510
pile	V	-8.0	39	180930	38/10/12.088	122/01/06.775
row of piles	C/U	-3.3	79-	192928	38/11/16.678	121/58/26.557
" " "	V	-13.4	80	193218	38/11/17.474	121/58/30.657
row of piles	V	-6.4	49-	194930	38/10/52.187	121/59/29.430
" " "	V	-7.4	50	195037	38/10/56.043	121/59/24.577
pier	V	-7.5	30	171111	38/10/12.806	122/02/09.170
pier	V	-12.9	37	175831	38/10/10.427	122/01/11.051
pier	C/U	-5.5	73	181236	38/10/15.023	121/57/35.069
pier	V	-7.3	67	175737	38/10/31.399	121/57/46.096
pier	C/U	-4.4	69	180414	38/10/19.667	121/57/41.874
pier	V	-6.4	68	180227	38/10/24.432	121/57/44.353
pier	V	-9.3	78	192454	38/11/12.795	121/58/10.701
pier	V	-7.7	63	172908	38/11/11.149	121/58/30.881
pier	V	-8.0	64	174130	38/11/09.989	121/58/21.534
pier	V	-8.0	65	174209	38/11/10.103	121/58/23.473
pier	V	-8.0	66	174313	38/11/10.607	121/58/27.303

V=visible at mean high water  
 C/U=covers at MLLW, uncovers at MHW  
 S=submerged at MLLW

OBJECT	^	BARES FEET	POSN	TIME	LATITUDE	LONGITUDE
pier	V	-8.6	60	202908	38/11/10.952	121/58/35.319
pier	V	-8.1	40	181654	38/10/12.964	122/01/05.423
pier	V	-8.1	41	181643	38/10/12.623	122/01/05.986
pier	V	-8.3	45	191312	38/10/15.760	122/01/00.515
pier	V	-7.6	605	205911	38/10/49.353	122/02/44.741
floating pier	V		76	192240	38/11/12.931	121/58/10.060
floating pier	V		77	192324	38/11/12.993	121/58/10.228
bulkhead	C/U	-5.3	44	191256	38/10/16.104	122/00/59.952
ramp	V		56	200631	38/11/08.227	121/58/49.036
ramp	V		73	181236	38/10/15.023	121/57/35.069
snag	C/U	-0.3	456	195552	38/11/13.848	121/58/52.725
snag	C/U	-2.5	1176	180743	38/10/57.759	121/59/34.204
snag	C/U	-0.3	603	201935	38/10/08.760	122/02/16.620
stake	C/U	-2.6	70	180617	38/10/15.546	121/57/36.745
stake	C/U	-1.3	457	195804	38/11/15.863	121/58/22.210
stakes	C/U	-3.3	43	191016	38/10/15.718	122/01/00.206
row of stakes	V	-9.4	48	193304	38/10/30.893	122/00/37.823
floodgate	V	-7.3	42	190142	38/10/14.310	122/01/02.638
floodgate	V	-9.9	32	172734	38/10/20.135	122/02/01.705

#### M. ADEQUACY OF SURVEY ✓

The survey is complete and adequate to supersede prior surveys.

*Concur*

#### N. AIDS TO NAVIGATION

No fixed or floating aids to navigation are maintained within the limits of this survey.

*Concur*

There were no overhead cables, or overhead pipelines, and no ferry routes within the limits of this survey.

*Concur*

Uncharted submarine cables are listed under Dangers to Navigation. Revisions to preexisting submarine cable areas are listed in section L. Comparison to non-sounding features.

**O. STATISTICS** ✓

Vessel: Launch 1101  
EDP 0651

Number of Detached Positions: 95  
 Total Number of Positions: 1181  
 N. miles of Sounding Lines: 138  
 Square nm of Hydrography: 1.5  
 N. miles of Bottom Drag: 1.53  
 Square nm of Bottom Drag: 0.04  
 Number of Bottom Samples: 30  
 Number of Tide Gages: 4  
 (See Field Tide Note)  
 Number of Current Stations: 0  
 Number of Velocity Casts: 5  
 Number of Magnetic Stations: 0  
 Vessel Days 18

**P. MISCELLANEOUS** ✓

Bottom samples were taken. The data was sent to the Smithsonian Institute in accordance with Project Instructions Item 6.7. The position numbers and day numbers are tabulated below.

<u>POS</u>	<u>DN</u>
760 - 775	160
1095 - 1099	167
1101 - 1103	167
1107 - 1112	167

There were no magnetic anomalies observed during the survey.

There were no anomalous currents observed during the survey.

After completion of field work for sheet "E" (H-10303) and well after beginning work on sheet "C" (H-10306), PHP learned from N/CG24 that HDAPS determines hydro mileage from a straight line distance i.e. beginning coordinates to ending coordinates for each reference line. HDAPS does not account for meanders, curves or circles.

The total mileage determined on all Sitreps for sheet "E" are incorrect. The true total mileage is 138 NM.

The sounding volume used for this survey was a blank green cloth covered (5" x 8") bound notebook instead of the traditional C&GS Form 275. This was on the recommendation of the Atlantic HFP #2. PHP personnel found it not as useful for notekeeping. PHP will return to using the traditional C&GS Form 275.

On several occasions during hydro operations (not DPs) the HDAPS would compute an erroneous SMG (speed made good). When it occurred, the erroneous SMG would be a value far in excess of our maximum hydro speed. The values would be from approximately 11 mps (meters per second) to 17 mps. Our normal maximum is approximately 6 mps.

In HDAPS, the settlement and squat corrections are based on the mps value. In order to correct this temporary problem, PHP changed the settlement & squat table which is within the offset table of the presurvey menu. All correctors which would occur at speeds above normal operating are now set to zero. This occurred on the following days: 151, 157, 158, 159. *Correct TC/TI correctors were applied to the smooth sheet.* N/CG24x4 is aware of the problem and is currently working on a solution.

#### Q. RECOMMENDATIONS ✓

Grizzly Bay and the Sloughs are used by small craft only. The waterways are used for fishing and pleasure boating.

The homes in Suisun Slough adjacent to the charted piers are not served by roads, or the roads are not usable in the winter. The sloughs serve as transportation routes for these residents.

It is recommended that PHP use the AML Sound Velocity Profiler weekly to determine velocity corrections and perform a daily leadline comparison to check the sounding equipment. *The AML Sound Velocity Profiler is currently in use.*

**R. AUTOMATED DATA PROCESSING** ✓

Soundings are skewed differently on different plotter sheets. PHP has no control over plot skew after the data has been collected. N/CG24x4 is currently working on a solution.

**HEWLETT PACKARD 9000 PC**

Navisoft 300 3.03, Documentation 2/1/89

6-1-89	6-21-89	7-6-89	7-12-89
Survey	3.03	3.03	
Postsur	3.03	3.03	
Convert 2.13	2.21	2.21	
Conplot		1.00	
Compute		1.00	2.00
Constat		1.00	2.00
Printout		2.10	
Abst		3.00	
Inverse		1.00	
Diagnostic			
Filesys	1.15	1.20	
Backup	1.01	1.01	

**Hewlett Packard 9815A Calculator.**

<u>Number</u>	<u>Name</u>	<u>Version Date</u>
811101	Geodetic Package	Feb. 1985

**IBM PC**

<u>Number</u>	<u>Name</u>	<u>Version Date</u>
MTEN	Micro - Terminal Entry Command	Nov. 1984
1.00	VELOCITY	9/1/88

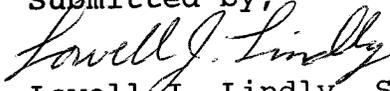
**S. REFERRAL TO REPORTS**

The following are reports which have already been submitted and also cover this survey area:

1) Horizontal Control Report, PHP, OPR-L202-PHP-88, Carquinez Strait, California, March 1988 - April 1989.  
Submitted to N/CG245 on 5/22/89

2) User Evaluation Report, OPR-L202-PHP-88, Carquinez Strait and Grizzly Bay, California.  
Submitted to N/CG245

Submitted by,



Lowell J. Lindly, Survey Technician NOAA  
Assistant Chief PHP

SIGNAL LIST  
H-10303  
PHP-10-3-89  
OPR-L202-PHP

603	38	02	03688	122	00	58696	0191	BAY POINT USE 1932
607	38	13	02154	122	06	52321	0107	THOMASSON 1922
608	38	12	53098	122	01	07724	0072	SUISUN HILL 1922
<del>609</del>	<del>38</del>	<del>06</del>	<del>29681</del>	<del>122</del>	<del>03</del>	<del>18420</del>	<del>0003</del>	<del>SUISUN SLOUGH ENT LT 9</del>
<del>610</del>	<del>38</del>	<del>07</del>	<del>08925</del>	<del>122</del>	<del>03</del>	<del>39820</del>	<del>0003</del>	<del>SUISUN SLOUGH ENT LT 10</del>
611	38	06	22023	122	06	12491	0065	GOODYEAR 2 1979
<del>612</del>	<del>38</del>	<del>10</del>	<del>03336</del>	<del>121</del>	<del>55</del>	<del>10801</del>	<del>0110</del>	<del>KIRBY 1922</del>
<del>614</del>	<del>38</del>	<del>12</del>	<del>09604</del>	<del>121</del>	<del>57</del>	<del>16301</del>	<del>0125</del>	<del>POTRERO (AVA 1922)</del>
615	38	07	27552	122	07	48434	0335	LOPEZ 1932



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SERVICE

Pacific Hydrographic Party  
614-A East 5th St.  
Benicia, California 94510

July 25, 1989

Commander (OAN)  
Eleventh Coast Guard District  
400 Oceangate Blvd.  
Union Bank Building  
Long Beach, California 90822

Dear Sir:

During field review of hydrographic survey H-10303, located in California, Sacramento River, north of Suisun and Grizzly Bays, the northern portion of Suisun and Montezuma Sloughs, dangers to navigation affecting charts 18656 (47th ed., March 7, 1987; datum: NAD 27) and chart 18652SC (25th ed., June 20, 1987; datum: NAD 27) was found.

It is recommended that the enclosed Report of Danger to Navigation be included in the Local Notice to Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

Sincerely,

A handwritten signature in black ink, appearing to read "Federico R. Diaz".

Federico R. Díaz  
Lieutenant, NOAA  
Chief, Pacific Hydrographic  
Party



REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: Shoals

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW.

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	-1.0	NAD 27	38/10/59.62N	121/57/43.55W
18656 -47-Mar.7,87	7.0	NAD 27	38/10/42.44	122/00/13.16W
18656 -47-Mar.7,87	-1.0	NAD 27	38/12/50.74	122/02/06.15W
18652SC-25-Jun.20,87	-1.0	NAD 27	38/10/59.62N	122/57/43.55W
18652SC-25-6/20/89	7.0	NAD 27	38/10/42.44	122/00/13.16W
18652SC-25-6/20/89	-1.0	NAD 27	38/12/50.74	122/02/06.15W

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

18652SC-25-6/20/89  
Date Edm

# REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: snag

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW.

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	-0.3	NAD 27	38/11/13.85N	121/58/52.72W ✓
18656 -47-Mar.7,87	-2.5	NAD 27	38/10/57.76N	121/59/34.20W ✓
18656 -47-Mar.7,87	+1.4	NAD 27	38/11/24.97N	122/02/30.25W ✓ edm
18652SC-25-Jun.20,87	-0.3	NAD 27	38/11/13.85N	121/58/52.72W
18652SC-47-Jun.20,87	-2.5	NAD 27	38/10/57.76N	121/59/34.20W
18652SC-47-Jun.20,87	+1.4	NAD 27	38/11/24.97N	122/02/30.25W

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: stakes

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW.

CHART-EDITION	DEPTH	HORIZ.	FEEET	DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	-3.3	NAD 27	38/10/15.72N	122/01/00.21W		
18652SC-25-Jun.20,87	-3.3	NAD 27	38/10/15.72N	122/01/00.21W		

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: row of piles

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW. The coordinates are each end of the row.

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	-3.5	NAD 27	38/11/10.21N	121/58/43.64W
	-3.5		38/11/10.04N	121/58/43.74W
18652SC-25-Jun.20,87	-3.5	NAD 27	38/11/10.21N	121/58/43.64W
	-3.5		38/11/10.04N	121/58/43.74W

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
 Survey Title: California  
 Sacramento River  
 Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
 Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: pile

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW.

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	0.0	NAD 27	38/10/09.76N	122/01/11.54W ✓
18656 -47-Mar.7,87	-3.9	NAD 27	38/10/07.05N	122/01/26.09W ✓
18656 -47-Mar.7,87	-4.8	NAD 27	38/10/07.05N	122/01/27.04W ✓
18656 -47-Mar.7,87	-4.2	NAD 27	38/10/14.16N	122/01/25.72W ✓
18656 -47-Mar.7,87	-4.7	NAD 27	38/10/14.14N	122/01/26.96W ✓
18656 -47-Mar.7,87	-10.5	NAD 27	38/10/19.85N	122/01/58.64W ✓
18656 -47-Mar.7,87	-6.5	NAD 27	38/11/20.97N	122/00/00.39W ✓
18656 -47-Mar.7,87	-3.4	NAD 27	38/11/10.62N	122/00/06.11W ✓
18656 -47-Mar.7,87	-3.8	NAD 27	38/11/14.18N	122/01/02.48W ✓
18656 -47-Mar.7,87	-1.5	NAD 27	38/10/07.75N	122/04/00.22W ✓
18656 -47-Mar.7,87	-4.0	NAD 27	38/11/24.56N	122/02/07.75W ✓
18652SC-25-Jun.20,87	0.0	NAD 27	38/10/09.76N	122/01/11.54W
18652SC-25-Jun.20,87	-3.9	NAD 27	38/10/07.05N	122/01/26.09W
18652SC-25-Jun.20,87	-4.8	NAD 27	38/10/07.05N	122/01/27.04W
18652SC-25-Jun.20,87	-4.2	NAD 27	38/10/14.16N	122/01/25.72W
18652SC-25-Jun.20,87	-4.7	NAD 27	38/10/14.14N	122/01/26.96W
18652SC-25-Jun.20,87	-10.5	NAD 27	38/10/19.85N	122/01/58.64W
18652SC-25-Jun.20,87	-6.5	NAD 27	38/11/20.97N	122/00/00.39W
18652SC-25-Jun.20,87	-3.4	NAD 27	38/11/10.62N	122/00/06.11W
18652SC-25-Jun.20,87	-3.8	NAD 27	38/11/14.18N	122/01/02.48W
18652SC-25-Jun.20,87	-1.5	NAD 27	38/10/07.75N	122/04/00.22W
18652SC-25-Jun.20,87	-4.0	NAD 27	38/11/24.56N	122/02/07.75W

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered:piles

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW.

CHART-EDITION	DEPTH	HORIZ.	FEEET	DATUM	LATITUDE	LONGITUDE
18656	-47-Mar.7,87	-3.5	NAD 27	38/10/11.21N	122/04/06.17W	edit
18652SC-25-Jun.20,87	-3.5	NAD 27	38/10/11.21N	122/04/06.17W		

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: ruins

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW.

CHART-EDITION	DEPTH	HORIZ.	FEET	DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	-5.4	NAD 27	38/10/26.21N	122/00/46.42W		
18652SC-25-Jun.20,87	-5.4	NAD 27	38/10/26.21N	122/00/46.42W		

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REVIS 5/28/89  
LMA

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: submarine cable

CHART-EDITION	HORIZ. DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	NAD 27	38/10/41.12N 38/10/41.44N	122/03/23.27W 122/03/28.35W
18652SC-25-Jun.20,87	NAD 27	38/10/41.12N 38/10/41.44N	122/03/23.27W 122/03/28.35W

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: areas of foul

CHART-EDITION	HORIZ. DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	NAD 27	38/10/49.99N 38/10/51.10N	122/02/54.60W 122/02/57.30W
18656 -47-Mar.7,87	NAD 27	38/10/53.30N 38/11/01.01N	122/02/50.82W 122/03/13.30W
18652SC-25-Jun.20,87	NAD 27	38/10/49.99N 38/10/51.10N	122/02/54.60W 122/02/57.30W
18652SC-25-Jun.20,87	NAD 27	38/10/53.30N 38/11/01.01N	122/02/50.82W 122/03/13.30W

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10303  
Survey Title: California  
Sacramento River  
Northern Portion of Suisun and Montezuma Sloughs

Project Number: OPR-L208-PHP  
Field Party: Pacific Hydrographic Party

The following item was discovered during hydrographic survey operations:

Object Discovered: ROCK

Corrected to MLLW using Predicted tides. Negative soundings indicate the object bares at MLLW.

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE	LONGITUDE
18656 -47-Mar.7,87	-0.5	NAD 27	38/12/52.76N	122/02/00.47W
18656 -47-Mar.7,87	-1.9	NAD 27	38/12/52.39N	122/02/01.17W
18656 -47-Mar.7,87	-3.2	NAD 27	38/12/50.74N	122/02/01.56W
18652SC-25-Jun.20,87	-0.5	NAD 27	38/12/52.76N	122/02/00.47W
18652SC-25-Jun.20,87	-1.9	NAD 27	38/12/52.39N	122/02/01.17W
18652SC-25-Jun.20,87	-3.2	NAD 27	38/12/50.74N	122/02/01.56W

Questions concerning this report should be directed to the Pacific Hydrographic Party at (707) 746-8189.



Approval Sheet

OPR-L208-PHP

Basic Hydrographic Survey

NORTHERN PORTIONS OF SUISUN

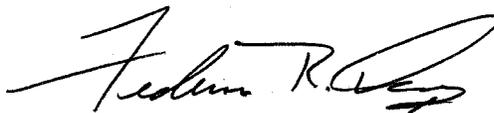
AND MONTEZUMA SLOUGHS

Supervision of field and office work on this hydrographic survey was continuous on a day to day basis to ensure completeness of the survey and that all work was done in accordance with the project instructions. The survey is complete and adequate to supersede all prior surveys. CONCUR

H-10303 is the first survey performed by PHP using the HDAPS/COMFLEX processing and acquisition equipment. PHP noted the following differences from HYDROPLOT:

1. The HDAPS/COMFLEX data acquisition system does not generate an on-line data printout or plot. All field annotations are entered onto the echogram and sounding volume.
2. Data printouts are generated in the office at the end of data acquisition day.
3. Echograms are check scanned against the digitrace depth to agree to within one foot. There are not as many depth corrections performed as with HYDROPLOT, except for the traditional inserts. It is recommended that the digitrace depth be considered the most accurate over the Raytheon DE-719c due to the human intervention factor. CONCUR
4. A daily data abstract is generated to verify all depth/positional edits.
5. A Data Set Number (DSN) sounding is automatically recorded every three seconds. The "selected" DSNs are shown on the smooth sheet. DSNs, all of which have positional data, are submitted with the survey records on magnetic tape.
6. As noted earlier in this report, there is at least a one-second time delay between the digitrace fix and the event mark on the Raytheon DE-719c Echosounder. N/CG24x4 is aware of the problem and presently working on a solution.

Approved by:



LT Federico R. Diaz, NOAA  
CHIEF  
PACIFIC HYDROGRAPHIC PARTY  
NATIONAL OCEAN SERVICE (NOS)

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 6, 1989

MARINE CENTER: Pacific

OPR: L-208

HYDROGRAPHIC SHEET: H-10303

LOCALITY: Northern Portions of Suisun and Montezuma Sloughs, CA.

TIME PERIOD: May 25 - July 5, 1989

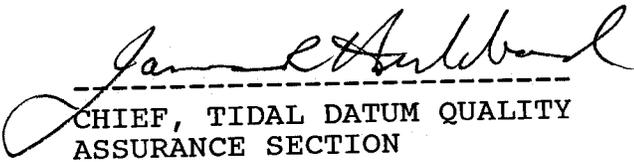
TIDE STATIONS USED: 941 5379 Joice Island, CA.  
941 5402 Montezuma Slough, CA.

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 941 5379 = 0.96 ft.  
941 5402 = 7.98 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 941 5379 = 4.7 ft.  
941 5402 = 4.8 ft.

REMARKS: RECOMMENDED ZONING

1. For Suisun Slough, zone direct on 941 5379.
2. For Montezuma Slough, zone direct on 941 5402.

  
-----  
CHIEF, TIDAL DATUM QUALITY  
ASSURANCE SECTION

GEOGRAPHIC NAMES

Name on Survey  
CALIFORNIA, GRIZZLY BAY  
NORTHERN PORTION OF SUISUN  
AND MONTEZUMA SLOUGH

ON CHART NO.  
18656 18657  
TP01053  
CON U.S. QUADRANGLE  
MAPS  
D FROM LOCAL  
INFORMATION  
E ON LOCAL MAPS  
F P.O. GUIDE OR MAP  
G GRAND McNALLY  
ATLAS  
H U.S. LIGHT LIST  
K

	A	B	C	D	E	F	G	H	K	
BEEDONS LANDING	X	X	X							1
CALIFORNIA (TITLE)	X	X	X							2
CROSS SLOUGH	X	X	X							3
CUTOFF SLOUGH	X	X	X							4
GOAT ISLAND	X	X	X							5
GRIZZLY ISLAND	X	X	X							6
JAPANESE POINT	X	X								7
JOICE ISLAND	X	X	X							8
MONTEZUMA SLOUGH	X	X	X							9
POTRERO HILLS *	X	X								10
RUSH LANDING	X	X	X							11
SUISUN HILL	X	X								12
SUISUN SLOUGH	X	X	X							13
										14
										15
										16
* 2/20/90 Called Mr Harrington and verified spelling of Potrero Hills. Added the "S" above JLS										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved:

*Charles E. Harrington*

Chief Geographer - N/C62x5

DEC 6 1989

**HYDROGRAPHIC SURVEY STATISTICS**

H-10303

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		9
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	1				
ENVELOPES					
VOLUMES	1				
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			1181	
POSITIONS REVISED				
SOUNDINGS REVISED				
CONTROL STATIONS REVISED				
	TIME-HOURS			
	VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION				
VERIFICATION OF CONTROL				
VERIFICATION OF POSITIONS	49		49	
VERIFICATION OF SOUNDINGS	129		129	
VERIFICATION OF JUNCTIONS				
APPLICATION OF PHOTOBATHYMETRY				
SHORELINE APPLICATION/VERIFICATION				
COMPILATION OF SMOOTH SHEET	68		68	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		9	9	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		30	30	
GEOGRAPHIC NAMES				
OTHER*				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	246	39	285

Pre-processing Examination by	M. Bradley	Beginning Date	8-3-89	Ending Date	9-27-89
Verification of Field Data by	R.N. Mihailov	Time (Hours)	246	Ending Date	2-8-90
Verification Check by	J. Stringham	Time (Hours)	46	Ending Date	12-21-90
Evaluation and Analysis by	C. R. Davies	Time (Hours)	39	Ending Date	5-2-90
Inspection by	D. Hill	Time (Hours)	4	Ending Date	5/15/90

## EVALUATION REPORT

H-10303

### 1. INTRODUCTION

Survey H-10303 is a basic hydrographic survey accomplished by the NOAA Ship Pacific Hydrographic Party under Project Instructions OPR-L208-PHP, dated May 1, 1989.

This survey occurred in California and covers the northern portions of Montezuma and Suisun Sloughs. The surveyed area extends from latitude 38°09'30"N to latitude 38°13'00"N and longitude 121°56'40"W to 122°04'15"W. The survey area is located in what is called the Delta Region. It is comprised of feeder rivers, sloughs and canals. Small boats use this area for recreation and hunting. The various waterways are surrounded by high levees and are dredged regularly to maintain a height and grade of the levees. The bottom consists of mud and shells. Depths range from zero to 62 feet.

Predicted tides for Fort Point, California, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Joice Island and Montezuma Slough, California, gages 941-5379 and 941-5402, 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. The TRA and sound velocity are adequate. An accompanying computer printout contains the parameters and the correctors. The electronic control correctors have been determined according to the established procedures, however, since this is an HDAPS survey, these correctors have been applied on line during data acquisition. Refer to the survey records for a review of the electronic control correctors used for the plotting of this survey.

A digital file has been generated for this survey as required by N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. The file, however, is incomplete. Certain feature descriptive information, all line type data and miscellaneous isolated features are not in the digital record due to the present lack of digitizing resources. The user should refer to the smooth sheet for complete depiction of survey data.

### 2. CONTROL AND SHORELINE

Sections F and G of the hydrographer's report and the 1988 Horizontal Control Report for OPR-L202-PHP contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are published values based on NAD 27. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 83 adjustment ticks based on values determined by N/CG121. Geographic positions based on NAD 83 may be plotted on the smooth sheet utilizing the NAD 27 projection by applying the following corrections.

Latitude: 0.304 seconds (9.4 meters)  
 Longitude: -3.867 seconds (-94.1 meters)

The year of establishment of control stations shown on the smooth sheet originates with the hydrographer's signal list.

The quality of several positions exceeds limits in terms of error circle radius and residual. 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 surroundings. These fixes are considered acceptable.

The following shoreline maps apply to this survey.

	<u>Photo Date</u>	<u>Class</u>
TP-01053	April 1979	III
TP-01057	April 1979	III

There are numerous new piers in Montezuma Slough drawn in red with supporting positional information. These are considered adequate to supersede the photogrammetrically delineated shoreline.

The following revisions to the shoreline are depicted in dashed red on the smooth sheet without supporting positional information. These revisions are considered adequate to supersede the common photogrammetrically delineated shoreline.

	<u>Latitude(N)</u>	<u>Longitude(W)</u>
Shoreline from	38°10'14"	122°02'21"
to	38°09'54"	122°02'42"
Shoreline from	38°09'41"	122°03'36"
to	38°09'32"	122°03'25"
Island	38°12'34"	122°01'58"

### 3. HYDROGRAPHY

With the exceptions noted 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; and

c. show the survey was properly controlled and soundings are correctly plotted.

#### 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 with the exception of the following.

A holiday exists at latitude 38°12'19"N, longitude 122°02'09"W. sam

#### 5. JUNCTIONS

Survey H-10303 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10293	1989	10000	southwest
H-10298	1989	10000	east

The junction with surveys H-10293 and H-10298 are complete. Some soundings have been transferred to survey H-10303 to better portray the bottom in the common area.

There are no contemporary surveys to the north. A comparison with chart 18656 reveals fair agreement.

#### 6. COMPARISON WITH PRIOR SURVEYS

H-1785(1886-87) 1:20000

Survey H-1785 covers the entire area of the present survey. Taking into consideration the differences in the scales of the surveys, the age of the prior survey and the methods of surveying comparison with this prior survey is satisfactory. Discrepancies between the two surveys are noted and discussed in section K of the hydrographer's report.

There are no AWOIS items originating from survey H-1785 applicable to the present survey.

Survey H-10303 is adequate to supersede the prior survey within the common area.

## 7. COMPARISON WITH CHART

Chart 18656 47th edition, dated March 7, 1987;  
scale 1:40000

Chart 18656 48th edition, dated May 27, 1989;  
scale 1:40000 (NAD 83)

Chart 18652 SC, 26th edition, dated December 3, 1988;  
scale 1:40000; and 1:80000 (NAD 83)

### a. Hydrography

All charted hydrography originates with surveys H-1785 and miscellaneous sources.

Survey H-10303 is adequate to supersede charted hydrography within the common area except for the cable crossings mention in section L, page 31 of the hydrographer's report, and the charted pier at latitude 38°10'45"N, longitude 122°03'02"W. These features should be retained as charted.

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### b. AWOIS

The following AWOIS items originate with miscellaneous sources: 51373, 51375, 51376, 51377, 51378, 51379, 51380, 51381, 51382, 51383, 51384, 51385, 51386, 51387, 51388, 51389, 51390, 51391, 51392 and 51393.

Each AWOIS Item is adequately discussed in section L of the hydrographer's report.

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### c. Controlling Depths

There are no charted channels with controlling depths within the area of this survey.

### d. Aids to Navigation

There are no fixed or floating aids located within the area of this survey.

### 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 three shoals, twenty-one obstructions and two foul areas to the USCG and N/CG222. Copies of the reports are attached. No additional dangers were discovered during office processing.

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8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10303 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is a good hydrographic survey. No additional field work is recommended.



C. R. Davies  
Cartographer

This survey has been examined and it meets Charting and Geodetic Services' standards and requirements for use in nautical charting. Approval is recommended.

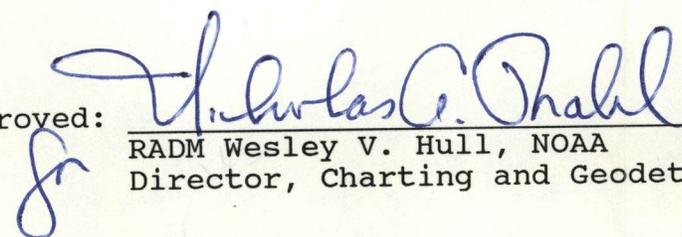


Dennis Hill  
Chief, Hydrographic Unit

APPROVALS

I have reviewed the smooth sheet, accompanying data, and reports associated with hydrographic survey H-10303. This survey meets or exceeds Charting and Geodetic Services' standards for products in support of nautical charting.

  
Commander Pamela Chelgren-Koterba, NOAA (Date) 5-16-90  
Chief, Pacific Hydrographic Section

Approved:  5-29-90  
RADM Wesley V. Hull, NOAA (Date)  
Director, Charting and Geodetic Services

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

Hydrographic Index No. 96M

