10306

7-26-91

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-10-4-89

Registery No. H-10306

LOCALITY

State California

General Locality Suisun Bay

Sublocality Bulls Head Point to Roe Island

19 89

CHIEF OF PARTY
LT F.R. Diaz

LIBRARY & ARCHIVES

DATE December 5, 1990

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

10306

CHTS

18657
18658
18656
18652 'C'
'E'

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.
H-10306

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-10-4-89

State California

General locality Suisun Bay

Locality Bulls Head Point to Roe Island

Scale 1:10,000 Date of survey June 23 to September 6, 1989

Instructions dated May 1, 1989 Project No. OPR-L202-PHP-89 / 8

Vessel Launch 1101 (EDP 0651), Launch 1102 (EDP 0652)

Chief of party LT Federico R. Diaz, NOAA

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

Soundings taken by echo sounder, ~~hand lead, pole~~ Raytheon DE-719C and DE-719B both w/ Digitrace

Graphic record scaled by PHP Personnel

Graphic record checked by PHP Personnel

Verified by: ~~Protracted by~~ L. Deodato Automated plot by PHS Xynetics Plotter

Evaluation by: ~~Verification by~~ A. Luceno

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

REMARKS: Marginal notes in black generated during office processing. All separates are filed with the hydrographic data.

SC 1-30-97 ✓ AWOIS + SURF 2/21/91 RWD

KWM

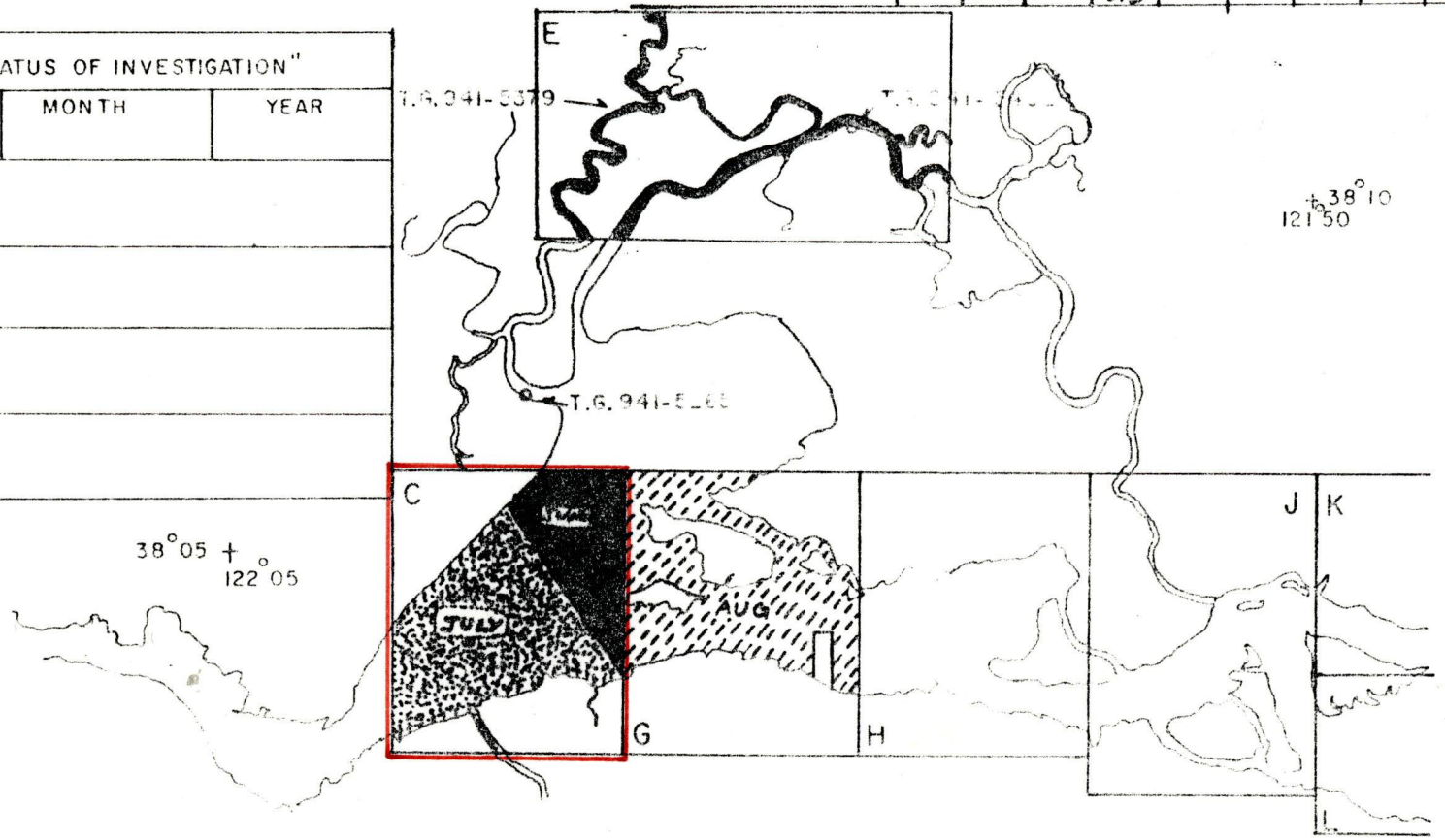
U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215

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

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

	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
SQ. N.M. Sdgs.		7.0	15.0	15.5								
L. N. M. Misc Dist		25	20	25								
L. N. M. Dist To & Fr.		400	34	48								
L.N.M. Sdg. Line		171	237	214								
Bottom Samples		29	0	68								
Control Stations	4			1								
Tide Gages	1		1									
Wire Drag S.N.M.		0.4		0.8								

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



PROGRESS SKETCH TO ACCOMPANY ANNUAL FIELD OPERATIONS REPORT

A. PROJECT

A basic hydrographic survey, Sheet "C", 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 charts 18656, 18657, 18658 and 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 San Francisco Bay/Sacramento Delta Model.

B. AREA SURVEYED

The survey was conducted in Suisun Bay, east of the Benicia-Martinez Highway Bridge to Seal Islands. The limits of the survey are as follows:

Latitude	Longitude
38/02/10 N	122/07/00 W
38/03/~~50~~ 36 N	122/07/00 W
East to	
38/03/13 N	122/02/45 W
38/06/05 N	122/02/45 W

The inclusive dates of hydrography were from June 23, 1989 (DN 174) to September 06, 1989 (DN 249).

C. SOUNDING VESSELS

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 for most of the survey period.

PHP's new Launch 1102 (EDP 0652), a 21-foot aluminum MONARK, powered by a 155 hp Johnson Outboard engine, was used for sounding acquisition and detached positions.

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.

Launch 1102 is equipped with a Raytheon DE-719 B echosounder with Digitrace and a narrow beam frequency transducer.

Component	Model Number	Serial Number
Raytheon	DE-719 C (0651)	10280
"	DE-719 B (0652)	6241

SOUNDING INSTRUMENT ACCURACY AND ADJUSTMENTS

The Raytheon echo sounders produce 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 speeds 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.

The static transducer draft for the hull mounted transducer on Launch 1102 was performed in much the same way except the distance between the transducer face and the top of a painted blue line on the hull above the water line was measured with a calibrated steel tape on 6/30/89. On the same day, with the boat in the water with fuel tanks at 1/2 full, all survey equipment installed and two crewmen on board, the distance between the top of the painted blue line and the actual water line was measured again with a calibrated steel tape.

The actual static transducer depth is the difference between parts 1 and 2. The actual static draft was measured at 0.91 feet.

SOUND VELOCITY CORRECTORS

Velocity correctors were determined at least once weekly by AML (# 03042) velocity casts. A daily leadline comparison performed over a flat bottom within the Benicia Marina in approximately seven feet of water ensured that the sounding equipment (on both launches) was working properly, as prescribed by N/CG24, via phone conversation. Leadline comparisons are located on Direct Comparison Logs in Appendix IV Sounding Correction Abstract.*

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 187. It was extended from 17.8 meters to 23.1 meters and was used from DN 174 to DN 191.

Table 2 is from the correctors on DN 219. It was extended from 18.9 meters to 24.6 meters and used from DN 192 to DN 249. This was the deepest cast and was representative for those days.

The Tables 1 and 2 are 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

* Filed with the hydrographic data.

to beginning the survey and 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, when taken, were abstracted 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 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. Small offshore islets provided a lee from the wind 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

* Filed with the hydrographic data.

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 tables in meters/second 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. S&S corrections applied from rpm data during office processing (speed through water)
Settlement and squat measurements for Launch 1102 were observed in the same way and at the same location as for Launch 1101 on 7/10/89.

Launch 1102 operates with fixed RPM settings as opposed to constant speed through the water (Knots). RPM setting were used during settlement and squat measurements. The operating RPM settings and settlement and squat correctors were computed to meters/second and entered into the HDAPS presurvey offset tables for Launch 1102. Several test survey lines with COMFLEX system on line, were performed at increasing RPM settings to determine " speed made good" in meters per second. It was determined that 2000 to 2500 RPM's (six knots) would be the new launch's survey speed.

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.

E. HYDROGRAPHIC SHEETS

All smooth field sheets were generated at Pacific Hydrographic Party. Plotter sheet 4 includes all of Pacheco Creek and Hastings Slough located on the south shore, and plotter sheet 6 includes Suisun Bay. All plots were generated using 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 ~~Nautical Chart/Field Surveys~~ Section N/CG245 along with this report.

* Filed with the hydrographic data.

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		ZINC 1922	TRAVERSE
"		BAY POINT USE 1932	"
"		THOMASSON 1922	"
"		SUISUN HILL 2 1922	"
"		GOODYEAR 2 1979	"
"	*	KIRBY 1922	"
"		POTRERO (AVA 1941)	"

Further information is provided in the Horizontal Control Report, OPR-L202-PHP-88, Carquinez Strait, CA, March 1988 to ~~April~~ October 1989, submitted to the Pacific Photo Party N/CG2~~45~~ 1333.

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.

* Not used for control.

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

Launch 1102

Mini-Ranger Console S/N F0243
Transceiver (RT Console) S/N C1680

Corrector/Minimum Signal Strength
Console F0243, RT C1680

SERIAL NUMBER	E2709	911632	911C59	E2712
CODE	1	2	3	4
BLC DATE	8/01/89	8/01/89	8/01/89	8/01/89
CORRECTOR/ MIN SS	-2.5/14	-11.3/14	-4.4/14	-10.0/14

SERIAL NUMBER	G3510	91634	C1789
CODE	6	7	8
BLC DATE	8/01/89	8/01/89	8/01/89
CORRECTOR/ MIN SS	-5.2/14	-14.3/14	-11.5/14

The next Baseline calibration will be performed in November 1989. Some of BLC correctors recorded as part of survey H-10515. Others unavailable. correctors are consistent with residual values.

Daily Calibrations

Critical system checks were performed twice weekly, when possible, 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, with ECR less than 15. PHP considers these system checks a confirmation of the BLC and proper Mini-Ranger operation as specified in the Hydrographic Field Procedures Manual. All critical systems checks can be found in the sounding volumes for Launch 1101 and 1102.

The HDAPS Comflex 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 two LOP interrogation, the angle of intersection was maintained between 30 and 150 degrees. In addition, the HDAPS computed ERROR CIRCLE RADIUS (ECR) 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.

The U.S. Department of Transportation (DOT) maintains a reserve fleet in the vicinity of Lat 038/05/00 N, Lon 122/05/00 W, which runs southwest to northeast and consists of eight rows of large vessels along the north edge of Suisun Bay North Channel. PHP Mini-Ranger control within the vicinity of the reserve fleet and the south shore near the Concord Naval Weapons Station was difficult to impossible, partly due to the massive reflection from the reserve ships and microwave interference from the Naval Base. The inability to perform manual range-azimuth with the COMFLEX system in areas of bad range-range control was a factor. ANDIST correctors were zero for all positions on this survey.

The one significant problem that affected processing was random HDAPS plotting problem coupled with COMFLEX positioning methods. Some DP's (and a few random soundings) that appeared acceptable during survey data acquisition,

were plotted in obviously erroneous positions. PHP repositioned the DP's that were erroneous. All DP's on this survey are plotted in their proper position. PHP is presently working with N/CG24x3 in resolving this "bug". In the meantime, all DP's are having to be manually scrutinized. corrections verified during office processing and applied when necessary.

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.

For further information on equipment failures that did not effect positions acquired see the failogs 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-8305

Shoreline Map	Date	Scale
TP-01048	~~June 1987~~ 11/83, 4/84	1:10,000
TP-01049	~~June 1987~~ 11/83, 4/84	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.

I. CROSSLINES

Crossline soundings (includes channel lines) were acquired to check mainscheme sounding lines. Crosslines were 14% of the sounding lines.

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.

* Filed with the hydrographic data.

J. JUNCTIONS

This survey junctions with the following surveys:

SHEET NAME	REGISTRY NO.	DATE	LOCATION
"B"	H-10283	8/15-12/16/88	West of "C"
"D"	H-10298	1/26-4/3/89	North of "C"
"G"	H-10315	1989	East of "C"

see Sect. 5 of Eval. Report

H-10283 and H-10293;

Comparison with these two surveys is good. The soundings agree to within one foot at the junctions in the areas of regular and irregular bottom. Adjustment to the soundings or depth contours is not recommended.

K. COMPARISON WITH PRIOR SURVEYS

The data from this project were compared to the following surveys. The survey soundings are to supersede all prior surveys.

Registry Number	Scale	Year Surveyed
H-6525	1:10,000	1940-41
H-7784	1:5,000	1949
H-7786	1:10,000	1949

All geographic positions listed in this report are in the North American Datum (NAD) of 1927.

COMPARISON OF NON SOUNDING FEATURES

There were no non sounding features to compare with prior surveys.

COMPARISON OF SOUNDINGS

H-7786

Comparison with this prior survey is fair, considering the age of the survey.

There have been depth changes throughout the entire survey to 10 feet plus and minus but they are random with no discernible trends. In the extreme shoal areas (regular bottom) of the survey, comparison is two feet.

The "zero" foot contour on the northern shore, which lies southwest to northeast (38/03/30 N, 122/07/00 W to 38/06/00 N, 122/04/25 W) has broaden from one hundred to as much as three hundred meters offshore.

The north and south channels in this area have been dredged and deepened, the shoreline areas have been developed and broaden, and the Sacramento Delta wetlands drained for irrigation and farming which shifted the sediment flow patterns. The prior survey was of little practical value since it was performed forty years ago.

H-7784

Comparison with the prior survey is fair.

Deepening of as much as twelve or more feet has occurred at 38/02/45 N, 122/06/45 W. The other depth changes are random with no discernible trends.

For the same reasons as with H-7786, comparison was of little practical value due to its age.

H-6525

The shoal areas in the vicinity of 38/04/00 N, 122/04/00 W and 38/04/30 N, 122/03/30 W, which are areas of regular bottom, agree within zero to two feet.

There are no discernible trends of deepening and shoaling which have occurred throughout this area. As with the other two prior surveys, comparison was of little practical value other than historical interest.

USACOE Post Dredge Survey, 28-31 Oct. 1987, 17 Dec. 1987.

A 1987 COE Survey Performed in Bulls Head Channel, East Bulls Head Channel, Pt. Edith Crossing Range and Preston Pt. Reach.

Comparison with this survey was good, one to two feet in areas of regular and irregular bottom.

The COE survey is submitted with the survey records.

L. COMPARISON WITH THE CHART

The survey is complete and adequate to supersede all charted features. *See sect. 7 of Eval. Report.*

This survey was compared to

Chart Number	Edition	Edition Date
18656	47th	March 7, 1987
18657	13th	December 3, 1988
18652SC	25th	June 20, 1987
18658	24th	Feb. 27, 1988

Dangers to Navigation

Three Dangers to Navigation letters were written to the Commander, Eleventh Coast Guard District. Copies of these letters are included in Appendix XI, Dangers To Navigation. Copies of these letters were also sent to the Nautical Data Section, N/CG221, and ~~Field Surveys Branch~~ (N/CG245). The letters are dated September 14, 18 and 20, 1989.

DESCRIPTION	LATITUDE N	LONGITUDE W	FT MLLW	POS	
Shoal	38/02/43.521	122/06/03.352	31.0	3172+2	
"	38/04/17.772	122/04/53.625	0.0	3339	
"	38/03/23.474	122/03/30.621	3.0	2876+2	
"	38/05/38.317	122/04/27.388	13.0	2257+4	Unrevised.
"	38/03/21.479	122/03/23.876	0.0	2684	
"	38/05/01.205	122/04/28.770	0.0	7052	Retain as reported.
Snag	38/03/36.576	122/06/58.068	0.2	4	
Obstruction	38/03/13.688	122/03/19.088	11.7	4004	
Pipe	38/02/48.385	122/05/20.951	-3.8	7209	
Pile	38/02/55.171	122/04/53.275	-18.1	3854	
Shoal *	38/02/29.432	122/06/46.307	32.0	2015+1	
" *	38/03/02.933	122/05/06.654	31.0	1823+3	
" *	38/03/50.956	122/02/46.175	35.0	756	
" *	38/03/54.487	122/03/04.875	26.0	814+1	

*See the end of Section L. Comparison With The Chart, for explanation.

COMPARISON OF NON SOUNDING FEATURES

For a graphic description of the bottom drag configuration, see*Appendix XII Supplemental Information.

AWOIS ITEM

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51280
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: OBSTRUCTION

SOURCE: CL1723/75--USCGAUX

DATE	DN	POSITIONS	TIME	VESNO
8/14/89	236	3953	2329	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MHW)
Charted: Tripod	38/03/11.00	122/03/31.00		
Observed: "	38/03/10.~~41~~0 (37)	122/03/36.3~~2~~0 (3)	3953	-19.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

A visual search was performed at the charted location along the Suisun Bay south shore. The tripod was observed at the above position.

CHARTING RECOMMENDATION

Revise the charted position of the tripod to the observed position. concur

* filed with the hydrographic data.

14
~~22~~

AWOIS ITEM

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51281
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: OBSTRUCTION, DOLPHIN

SOURCE: CL325/55

DATE	DN	POSITIONS	TIME	VESNO
7/19/89	200	2201	1529	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MHW)
Charted:	38/03/15.18	122/05/34.92		
Observed:	38/03/15.1~~85~~ 1	122/05/34.9~~21~~ 3	2201	-8.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

A visual search was performed to observe a dolphin at the observed position.

CHARTING RECOMMENDATION

Revise the charted dolphin to the above observed position. concur

15
~~23~~

AWOIS ITEMS

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51271
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: OBSTRUCTION

SOURCE: TP01057/79--REV-CLASS III
CL1651/84--USCGAUX

DATE	DN	POSITIONS	TIME	VESNO
7/27/89	208	3044	1737	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(FZ MHW)
Charted:	38/02/20.00	122/06/44.00		
Observed: Dol.	38/02/19.8~~87~~ 5	122/06/45.3~~16~~ 2	3044	-17.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search was performed within the charted area to observe a dolphin.

CHARTING RECOMMENDATION
Delete charted obstruction.
Chart the dolphin at the observed position. concur.

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51307
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: OBSTRUCTION

SOURCE: TP01057/79--REV-CLASS III
TP01248/83-84--REV-CLASS III

DATE	DN	POSITIONS	TIME	VESNO
7/27/89	208	3047	1802	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(FT MHW)
Charted:	38/04/16.20	122/06/25.80		
Observed: Crib	38/04/15.9~~43~~ 1	122/06/25.6~~66~~ 7	3047	-29.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search within the charted resulted in the observation of a wooden "High Voltage" crib.

CHARTING RECOMMENDATION
Delete charted obstruction.
Chart the "High Voltage" crib (platform) at the observed location. *concur.*

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51330
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: OBSTRUCTION

SOURCE: TP01057/79--REV-CLASS III
TP01248/83-84--REV-CLASS III

DATE	DN	POSITIONS	TIME	VESNO
7/28/89	209	3415	2018	0651

GEODETIC POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MHW)
Charted:	38/04/~~51.90~~ 52.1	122/05/~~52.46~~ 46.6		
Observed:				
Platform 275m away ~	38/04/59.4~~53~~ 2	122/05/41.1~~14~~ 2	3415	-20.0
Power Pole ↑TP01248	38/04/52.3~~55~~ 2	122/05/47.3~~17~~ 2	3416	-50.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search at the chart datum resulted in the observation of a Power Platform and Power Pole at the above observed positions.

CHARTING RECOMMENDATION

Chart the platform and power pole at the observed positions. concur.
~~Delete~~ Revise charted obstruction, to submerged obstr.
Existence of charted visible obstruction not disproven as submerged. Same obstruction shown on TP-01248 at latitude 38°04'52"N, longitude 122°05'47"W. Transfered to the smooth sheet as submerged. Chart this feature as shown on the smooth sheet.

18
~~26~~

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51335
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: OBSTRUCTION

SOURCE: TP01057/79--REV-CLASS III
TP01248/83-84--REV-CLASS III

DATE	DN	POSITIONS	TIME	VESNO
7/28/89	209	3417	2031	0651

POSITION		LATITUDE N	LONGITUDE W	POS	(Ft MHW)
Charted:		38/05/08.30	122/05/28.70		
Observed:	Pwr. ~~Pole~~ Platform	38/05/07.9~~83~~ 5	122/05/29.5~~61~~ 7	3417	-19.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search of the area at the chart datum resulted in the observation of a power ~~pole~~ platform at the observed position.

CHARTING RECOMMENDATION

Revise the charted position of the power pole to position 3417. Do not concur.

Delete charted obstruction, chart platform at observed position.

19
~~27~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51336
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: OBSTRUCTION, POLE

SOURCE: PHOTO REVISION (1955)

DATE	DN	POSITIONS	TIME	VESNO
8/11/89	223	3900	1934	0651

POSITION		LATITUDE N	LONGITUDE W	POS	(ft MHW)
Charted:		38/05/08.70	122/05/30.70		
Observed:	Pwr. Pole	38/05/08.~~427~~ 39	122/05/29.7~~06~~ 1	3900	-49.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search of the area was made. A power pole was observed at position 3900.

CHARTING RECOMMENDATION

Revise the charted power pole to position 3900. concur.
Pole not depicted on smooth sheet due to proximity to platform

20
~~28~~

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51372
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: OBSTRUCTION, RUINS

SOURCE: T5943/41
CL136/72--USPS
CL973/75--NANCI
TP01249/83-84--REV-CLASS III

DATE	DN	POSITIONS	TIME	VESNO
8/9/89	221	7106-7110	1623-1632	0652
8/11/89	223	7266-7267	1856-1859	"

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MHW)
Charted	38/02/35.00	122/02/56.00		
Observed:W. shore	38/02/27.~~123~~ 09	122/02/52.~~585~~ 3.21	7106	-9.0
To				
Observed:W. shore	38/02/34.1~~80~~ 4	122/02/55.~~096~~ 10	7109	-4.0
Observed:E. shore	38/02/27.1~~69~~ 3	122/02/52.58~~5~~ 9	7107	-3.0
To				
Observed:E. shore	38/02/36.~~509~~ 47	122/02/54.58~~9~~ 9	7110	-4.0 (MLLW)
Observed:wreck	38/02/35.738	122/03/00.125	7266	-14.0
To				
Observed:ruins	38/02/35.94~~7~~	122/02/56.04~~0~~	7267	-4.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search of the area was made at chart datum. A row of 17 piles along the east shoreline (pos. 7107 to 7110) and 8 piles on the west shoreline (pos. 7106 to 7109) of Hastings Slough were positioned. The items bare from ~~-13.1~~ -14.0 to ~~-4.1~~ -3.9 feet at chart datum. The ruins continue in a westerly cut off the main slough along its south shore. Pos. 7266 is a wreck in ruins. A row of 5 piles extend east from pos. 7266 to pos. 7267.
The entrance to Hastings slough is marked by "Restricted To All Navigation" signs (pos. 7116, 7259) as this area is owned by the Concord U.S. Naval Weapons Station.

CHARTING RECOMMENDATION

Revise the chart to the observed positions as described. Do not concur.

Chart marina in ruins as shown on smooth sheet.

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51274
18658 24TH ED. FEB. 27,1988

ITEM DESCRIPTION: VISIBLE WRECK

SOURCE: UNKNOWN SOURCE
TP01249/83-84--REV-CLASS III; WK NOT SHOWN

DATE	DN	POSITIONS	TIME	VESNO
8/9/89	221	7114	1642	0652

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MHW)
Charted:	38/02/46.20	122/03/22.40		
Observed:				
Pier in ruins	38/02/49.8~~96~~ 6	122/03/27.4~~16~~ 2	7114	-4.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search was performed at chart datum. A pier in ruins was observed (pos. 7114), but no evidence of any wreck.

CHARTING RECOMMENDATION

(Delete the wreck symbol Do not concur) and (chart the pier in ruins at position 7114.) concur
Boat traffic is restricted in Hastings Slough by the Concord U.S. Naval Weapons Station.

Existence of submerged wreck not adequately disproven.
Retain submerged wreck as charted.

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51321
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: VISIBLE WRECK *(Not charted)*

SOURCE: TP01248/83-84--REV-CLASS III

DATE	DN	POSITIONS	TIME	VESNO
8/10/89	222	3895	2200	0651

POSITION	LATITUDE N	LONGITUDE W	POS
TP-01248 ~~Charted~~:	38/04/37.30	122/06/07.80	
Observed	38/04/36.~~711~~ 67	122/06/07.0~~65~~ 7	3895

Pos. 3895 is a reference point only.

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search of the area was made at chart datum. A visible wreck was observed while at pos. 3895. The wreck is located at the high water grass line and poses no danger to navigation.

CHARTING RECOMMENDATION

Chart the visible wreck at position 3895 *Do not concur.*

Visible wreck shown on smooth sheet originating from TP-01248. chart visible wreck as shown on the smooth sheet, position scaled in lat 38/04/37.4 N, long 122/06/08W.

23 ✓
~~31~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51295 ✓
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: SUBMERGED WRECK

SOURCE: LNM8/84(2/24/84)--12TH CGD

DATE	DN	POSITIONS	TIME	VESNO
8/10/89	222	3889	1628	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/03/46.00	122/03/27.00	
Center Buoy:	38/03/45.7~~62~~ 3	122/03/26.~~697~~ 70	3889 (Dup.)

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A 200-m radius bottom drag was performed with 400% coverage resulting in no hangs.

CHARTING RECOMMENDATION

Delete the submerged wreck symbol from the chart. & "PA" note concur

Buoy was temporarily deployed to mark dive site.

24 /
~~32~~

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51301
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: OBSTRUCTION, PIPE

SOURCE: UNKNOWN SOURCE
TP01249/83-84--REV-CLASS III; NOT SHOWN

DATE	DN	POSITIONS	TIME	VESNO
8/10/89	222	3894	1920	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/04/02.50	122/03/08.80	
Center Buoy:	38/04/02.~~500~~ 44	122/03/08.~~799~~ 69	

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

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

CHARTING RECOMMENDATION

Delete the pipe from the chart. *concur*

Buoy was temporarily deployed to mark dive site.

25
~~33~~

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51326
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: OBSTRUCTION

SOURCE: TP01248/83-84

DATE	DN	POSITIONS	TIME	VESNO
8/10/89	222	3890	2110	0651

POSITION	LATITUDE N	LONGITUDE W	POS
TP-01248 ~~Charted~~:	38/04/39.50	122/06/00.00	
Center Buoy:	38/04/39.2~~0~~ 3	122/05/59.7~~2~~ 2	3890

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A 50-m radius bottom drag was performed with 400% coverage resulting in no hangs.

CHARTING RECOMMENDATION
Obstruction incorrectly charted at latitude 38°04'38"N, longitude 122°06'07"W.
Delete the obstruction from the chart. *concur.*
Obstruction disproved at latitude 38°04'39"N, longitude 122°06'00"W.

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51333
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: OBSTRUCTION, PILE *(charted as pole)*

SOURCE: PHOTO REVISION (1955)
TP01248/83-84--REV-CLASS III

DATE	DN	POSITIONS	TIME	VESNO
8/11/89	223	3898	1902	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:	38/05/06.50	122/05/33.30	
Center Buoy:	38/05/06.449 → 1	122/05/33.232 → 4	3898

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A 50-m radius bottom drag was performed with 400% coverage resulting in no hangs.

CHARTING RECOMMENDATION

Delete the pile from the chart. *concur*

Buoy was temporarily deployed to mark dive site.

27
~~35~~

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51337
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: OBSTRUCTION, POLE

SOURCE: PHOTO REVISION (1955)
TP01248/83-84--REV-CLASS III

DATE	DN	POSITIONS	TIME	VESNO
8/11/89	223	3897	1856	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(FT. MLLW)
Charted:	38/05/10.50	122/05/27.90		
Observed: Pile	38/05/09.~~97~~ 3	122/05/29.~~190~~ 20	3897	- 4.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A visual search was made at chart datum. A pile was observed at pos. 3897. The pile ~~bares~~ uncovers ~~-3.9~~ 4.0 feet at chart datum.

CHARTING RECOMMENDATION
Delete charted obstruction
Chart the pile at the observed position. *concur*

28
~~36~~

COMPARISON OF SOUNDINGS

The charted soundings from the prior surveys have been discussed in section K. These soundings are ones 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:** 51273
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: SOUNDING, 32-FT DEPTH REPORTED.

SOURCE: CL279/78--CAS18657 (1977)

DATE	DN	POSITIONS	TIME	VESNO
7/20/89	201	2361-2389	1605-1633	0651
7/27/89	208	3049-3256(XL)	1821-2125	"

POSITION	LATITUDE N	LONGITUDE W	POS	(FT. MLLW)
Charted:	38/02/45.00	122/06/00.00		
Observed:31-ft.	38/02/43.~~521~~ 48	122/06/03.3~~52~~ 6	3172+2	(EXCESSED) 32.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A sounding development was performed along the face and 100 meters offshore of the Avon Oil Co. fuel pier (pos. 2361-2389) at the charted position. A crossline (pos. 3049-3256) began along the face of the Avon Pier. A least depth of ~~31~~ 30 feet was observed at pos. ~~3172+2~~.
2363+01, latitude 38°02'43.81"N
longitude 122°06'02.32"W

CHARTING RECOMMENDATION

Chart the 31-ft. depth at the observed position. do not concur A dangers to navigation letter has been submitted to the Eleventh Coast Guard District, Long Beach, CA.

Delete 32-ft depth reported in 1977 from the chart.
Chart soundings in the area based on the compiler's selection.

29 ✓
~~37~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51279 ✓
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: SOUNDING, 18-FT. DEPTH

SOURCE: UNKNOWN SOURCE

DATE	DN	POSITIONS	TIME	VESNO
7/20/89	201	2390-2478	1655-1817	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(FT. MLLW)
Charted:	38/03/05.70	122/04/50.50		
Observed:24-ft.	38/03/04.3~~40~~ 0	122/04/49.0~~07~~ 1	2435+3	25.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A sounding development was performed at 25-m spacing in a NW-SE orientation at the charted position. The least depth of 24 feet was observed at pos. 2435+3. No evidence of an 18-ft. depth was observed. As mentioned earlier, comparison with the chart and the prior surveys showed no discernible trends with the shoal shifting.

CHARTING RECOMMENDATION

Survey depths to supersede all charted depths. Chart the 24-ft. depth at the observed position. *Do not concur*

Delete 18-ft charted sounding & corresponding depth curve. chart sounding in the area based on the compiler's selection. Within the 150-meter search radius, depths as shallow as 10 feet are apparent

30
~~38~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51287
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: SOUNDING, SHOALING REPORTED 1977

SOURCE: CL279/78--CAS 18656 (1977)

DATE	DN	POSITIONS	TIME	VESNO
7/26/89	207	2815-2909	1818-2048	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(FZ. MLLW)
Charted: 8-ft.	38/03/22.00	122/03/32.00		
Observed: 3-ft.	38/03/23.4~~4~~4	122/03/30.6~~2~~1	2876+2	4.0
0-ft.	38/03/21.4~~7~~9~~4~~	122/03/23.8~~7~~6	2684	1.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A sounding development at 25-m spacing in a NW-SE orientation was performed at the charted position (pos. 2815-2909). 1.~~8~~-ft. and ~~4~~-ft. depths were observed at positions 2684 and 2876+2, respectively. Dangers to navigation letters concerning these items have been submitted to the Eleventh Coast Guard District, Long Beach, CA. A least depth of 0.5 feet was found at latitude 38°03'22.94"N, longitude 122°03'26.06"W (pos. 2684+02)

CHARTING RECOMMENDATION

Survey soundings to supersede charted depths. Chart the 0-ft. and 3-ft. depths at their respective positions. do not concur.

Delete charted note "shoaling reported in 1977".

Chart sounding in area based on the compiler's selection.

31/39

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51288
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: SOUNDING, SHOALING REPORTED 1955

SOURCE: UNKNOWN SOURCE

DATE	DN	POSITIONS	TIME	VESNO
7/26/89	207	2910-2957	2101-2143	0651
7/27/89	208	2958-3023	1522-1623	"

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft. MLLW)
Charted: 11-ft.	38/03/29.00	122/03/58.00		
Observed: 17-ft.	38/03/28.992 c	122/03/58.556 c	2949	16.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A sounding development was performed at 25-m spacing in a NW-SE orientation at the charted location (pos. 2910-3023). A depth of 17 feet was observed at pos. 2949. Comparison with the prior surveys and chart shows no discernible trends.

RECOMMENDATION

Chart the 17-ft. depth at the observed position. Do not concur

Delete charted note "shoaling."

Chart sounding in the area based on compiler's selection.

There is no 11-ft charted sounding at the position listed above.

32 ~~40~~ /

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51308 ✓
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: SOUNDING, SHOALING REPORTED (1977)

SOURCE: CL279/78--CAS 18656 (1977)

DATE	DN	POSITIONS	TIME	VESNO
7/28/89	209	3257-3414	1636-2007	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(ft MLLW)
Charted:16 ft.	38/04/20.00	122/04/47.00		
Observed:0 ft.	38/04/17.7~~2~~ 4	122/04/53.6~~25~~ 3	3339	0.5

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A sounding development was performed at 25-m spacing in a NW-SE orientation (pos.3257-3345) and a NE-SW orientation (3346-3414) at the charted location. A depth of 0.5 feet was observed at pos. 3339. Comparison with the prior surveys and chart shows no discernible trends. A dangers to navigation letter concerning this item was submitted to the Eleventh Coast Guard District, Long Beach, CA.

Least depth of -0.5 feet observed at latitude 38° 04' 15.83" N
RECOMMENDATION Longitude 122° 04' 55.21" W (pos. 3387+01)

Chart the 0-ft. depth at the observed position. Do not concur

Delete charted note "shoaling reported 1977"
Chart soundings in the area based on compiler's selection.

33
~~11~~

AWOIS ITEMS

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51338 ✓
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: 17-ft. Sounding

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO
7/19/89	200	2245-2358	1808-2047	0651

POSITION		LATITUDE N	LONGITUDE W	POS	Ft (MLLW)
Charted:	17 ft	38/05/22.40	122/04/46.50		
Observed:	21 ft	38/05/22.~~204~~ 17	122/04/4~~5.998~~ 6.00	2348+2	22.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

The charted position was developed at 25-m spacing sounding lines in a NW-SE orientation. The soundings lines cover the required search radius. The least depth is listed above at the observed location.

CHARTING RECOMMENDATION

Survey soundings supersede all prior charted soundings. concur
Chart the 21-ft. depth at the observed position. Do not concur

Delete 17-ft. sounding & corresponding depth curves.
chart soundings in the area based on the compiler's selection.

34 ✓
~~12~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51340
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1888

ITEM DESCRIPTION: 15.7-ft. Sounding

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO
7/19/89	200	2245-2358	1808-2047	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(FT MLLW)
Charted: 15 ft	38/05/26.40	122/04/42.40		
Observed: 20 ft	38/05/25.~~619~~ 58	122/04/41.9~~31~~ 4	2326+1	21.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

The charted position was developed at 25-m spacing sounding lines in a NW-SE orientation. The sounding lines cover the required search radius.

CHARTING RECOMMENDATION

Chart the 20-ft. depth at the above observed position. *Do not concur*
Delete 15-ft charted sounding & corresponding depth curve.
chart sounding in the area based on the compiler's selection.

35 ✓
~~13~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51341 ✓
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: 12.7-ft. Sounding

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO
7/19/89	200	2245-2358	1808-2047	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(ft MLLW)
Charted: 13 ft.	38/05/31.00	122/04/38.00		
Observed: 13 ft.	38/05/31.3~~82~~ 5	122/04/37.9~~89~~ 9	2298	13.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

The charted position was developed at 25-m spacing sounding lines in a NW-SE orientation. The sounding lines cover the required search radius.

CHARTING RECOMMENDATION

Chart the 13-ft. depth at the above observed position. *Do not concur.*

Delete 13-ft charted sounding & corresponding depth curve.
chart sounding in area based on compiler's selection.

36 /
~~14~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51342 ✓
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: 17.9-ft. Sounding

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO
7/19/89	200	2245-2358	1808-2047	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted: 18 ft.	38/05/32.50	122/04/35.00	
Observed: 18 ft.	38/05/32.0~~43~~ 1	122/04/33.~~898~~ 90	2288+4

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

The charted position was developed at 25-m spacing sounding lines in a NW-SE orientation. The sounding lines cover the required search radius.

CHARTING RECOMMENDATION

Chart the 18-ft. depth at the above observed position. *Do not concur.*

Delete 18-ft charted sounding & corresponding depth curve.
Chart sounding in area based on compiler's selection.

37 ✓
~~15~~

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51343 ✓
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: 14.3-ft.

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO
7/19/89	200	2245-2358	1808-2047	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MLLW)
Charted: 14 ft.	38/05/38.40	122/04/28.00		
Observed: 13 ft.	38/05/38.~~17~~ 28	122/04/27.38~~8~~ 9	2257+4	13.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

The charted position was developed at 25-m spacing sounding lines in a NW-SE orientation. The sounding lines cover the required search radius.

CHARTING RECOMMENDATION

Chart the 13-ft. depth at the above observed position. *Do not concur.*
Delete 14-ft charted sounding & corresponding depth curve -
chart sounding in the area based on the compiler's selection.

38 /
~~16~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51324 ✓
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB.27, 1988

ITEM DESCRIPTION: 11.0-ft. Sounding

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO
7/24/89	205	2589-2644	2012-2103	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MLLW)
Charted: 11 ft.	38/04/38.60	122/05/03.50		
Observed: 21 ft.	38/04/38.3~~90~~ 5	122/05/03.5~~32~~ 4	2613+2	22.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

The charted position was developed at 25-m spacing sounding lines in a NW-SE orientation. The sounding lines cover the required search radius.

CHARTING RECOMMENDATION

Chart the 21-ft. depth at the above observed position. *Do not concur*
Delete 11-ft charted sounding & corresponding depth curve.
Chart sounding in the area based on the compiler's selection.

39 ✓
~~17~~

CHART: 18656 47TH ED. MAR. 7, 1987 **AWOIS:** 51296 ✓
18657 13TH ED. DEC. 3, 1988

ITEM DESCRIPTION: 20.0-ft. Sounding

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO
7/24/89	205	2498-2588	1556-1934	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft MLLW)
Charted: 20 ft.	38/03/53.70	122/06/00.90		
Observed: 32 ft.	38/03/53.1~~8~~ 0	122/06/00.0~~6~~ 1	2557	34.0

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

The charted position was developed at 25-m spacing sounding lines in a NW-SE orientation. The sounding lines cover the required search radius.

CHARTING RECOMMENDATION

Chart the 32-ft. depth at the above observed position. Do not concur

Delete 20-ft charted sounding. Chart sounding in the area based on the compiler's selection.

40
~~18~~

CHART: **18656 47TH ED. MAR. 7, 1987** **AWOIS:** 51334
18657 13TH ED. DEC. 3, 1988
18658 24TH ED. FEB. 27, 1988

ITEM DESCRIPTION: 12.0-ft. Unsupported Sounding

SOURCE: BP53402/66--COE

DATE	DN	POSITIONS	TIME	VESNO

POSITION	LATITUDE N	LONGITUDE W	POS
Charted: 12 ft.	38/05/07.60	122/05/03.00	
Observed: Acquisition not feasible			

POSITION DETERMINED BY:

Range-range.

METHOD OF INVESTIGATION:

No Method

CHARTING RECOMMENDATION

AWOIS 51334 is a 12-ft (unsupported depth) whose source is U.S. Army Corps of Engineers (BP53402/1966) was not investigated by PHP as one of the rows of reserve fleet ships is anchored over the AWOIS charted position. The mainscheme hydrography within the vicinity of the charted location is 27 feet with no indication of shoaling.

Retain the 12-ft. depth as charted. *concur. See sect. 7a of Eval. Report*

ADDITIONAL CHART REVISIONS
(not previously mentioned)

Bottom drags were performed on the following non-AWOIS Items.

ITEM: Submerged Pile; H7786/49

DATE	DN	POSITIONS	TIME	VESSEL
8/11/89	223	3890	1611	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:Subm Pile	38/02/32.00	122/06/08.20	
Center Buoy:	38/02/32.7~~62~~ 3	122/06/07.8~~15~~ 2	3890

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A 50-m bottom drag with 400% coverage was performed over the charted item. No hangs were observed.

CHARTING RECOMMENDATION:

Delete the charted submerged pile. *concur*

ITEM: Submerged Stake; H7786/49

DATE	DN	POSITIONS	TIME	VESSEL
8/22/89	234	3995	1613	0651

POSITION	LATITUDE N	LONGITUDE W	POS
Charted:Subm Stake	38/03/33.50	122/05/00.50	
Center Buoy:	38/03/3~~3.017~~ 2.98	122/05/04.5~~73~~ 3	3995

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A 75-m bottom drag with 400% coverage was performed over the charted item. No hangs were observed.

CHARTING RECOMMENDATION:

Delete the charted submerged stake. concur

ITEM: Suisun Bay Light #11 (Old Position, before rebuilt)

DATE	DN	POSITIONS	TIME	VESSEL
9/06/89	249	4006	2109	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft. MLLW)
Charted:	38/03/51.49	122/03/42.85		
Center Buoy:	38/03/51.~~608~~ 57	122/03/42.8~~81~~ 9	4006	28.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A 75-m bottom drag with 400% coverage was performed over the charted position of Suisun Bay Light #11. No hangs were observed.
The U.S. Coast Guard replaced Light #11 on 18 July 1989 and claimed to have performed a clearance drag within the federal channel to find no evidence of the light.

CHARTING RECOMMENDATION:

Chart the new position for Light #11. Do not chart obstruction symbol at the old Light #11 position. concur

See sect. N of this report for position of Light #11.
Buoy was temporarily deployed to mark dive site.

ITEM: Seal Island Day Beacon "G-5" (destroyed)

DATE	DN	POSITIONS	TIME	VESSEL
9/06/89	249	4001, 4004	1715-1937	0651

POSITION	LATITUDE N	LONGITUDE W	POS	(Ft. MLLW)
Charted:	38/03/13.29	122/03/18.64		
Center Buoy:	38/03/13.~~22~~19	122/03/18.85~~86~~	4001	
Hang: Obstruction	38/03/13.6~~88~~5	122/03/19.0~~89~~	4004	12.0

POSITION DETERMINED BY:

Range-range

METHOD OF INVESTIGATION:

A 75-m bottom drag with 400% coverage was performed over the charted item. One hang was observed at pos. 4004. A diver investigation concluded that the obstruction was not the destroyed Seal Island Day Beacon "G-5", but a thick piece of angle iron protruding about 5 feet off the bottom. A least depth of ~~11.7~~ 12.9 feet was observed at the observed position. No additional hangs occurred and no evidence of "G-5" was observed.

CHARTING RECOMMENDATION:

Chart the obstruction at the observed hang position. *concur*

Delete charted Day Beacon "G-5".

Buoy was temporarily deployed to mark dive site.

Bulls Head Channel, East Bulls Head Channel, PT. Edith Crossing Range and Preston PT Reach are maintained by the U.S. Army Corps of Engineers (COE). The charted tabulated controlling depth from the COE 1987 and 1988 survey are as follows:

	LEFT OUTSIDE QUARTER (FT)	MIDDLE HALF OF CHANNEL (FT)	RIGHT OUTSIDE QUARTER (FT)
BULLS HEAD CHANNEL			
CHARTED	36.5	34.6	33.5
OBSERVED	35.0	*32.0	34.0
EAST BULLS HEAD CHANNEL			
CHARTED	35.5	35.0	33.7
OBSERVED	36.0	35.0	*31.0
PT EDITH XING RANGE			
CHARTED	26.6	35.9	30.4
OBSERVED	36.0	36.0	30.0
PRESTON PT REACH			
CHARTED	35.6	37.1	30.5
OBSERVED	36.0	*35.0	*26.0

see sect. 7c of Eval. Report.

*See Dangers To Navigation in this section and copy of letter dated September 18, 1989 in Appendix XI of this report.

M. ADEQUACY OF SURVEY

The survey is complete and adequate to supersede prior surveys.

concur

N. AIDS TO NAVIGATION

Comparisons of positions and the variance from the field to the U.S. COAST GUARD LIGHT LIST, Volume VI, 1989 and the July, 1988 DIPFILE Listing for fixed and floating aids to navigation are shown below. These positions are based on the North American Datum of 1927.

Floating Aids to Navigation

POS	DESCRIPTION	FIELD N/W	DIPFILE N/W	LIGHT LIST N/W	INV (M)
3046	Suisun Bay Chan LT By 6	38/02/31.314 122/06/38.268	38/02/31.0 122/06/39.0	38/02/.6 122/06.6 #6355	20.3
2493	Suisun Bay Chan Lt By 7	38/02/54.597 122/05/53.085	38/02/52.0 122/05/59.0	38/02.9 122/06.0 #6360	6.1
2487	Suisun Bay Chan Lt By 9	38/03/13.457 122/04/49.981	38/03/12.0 122/04/52.0	38/03.2 122/04.9 #6385	66.6
3892	Suisun Bay Chan Lt By 10	38/03/28.874 122/04/12.519	38/03/28.5 122/04/13.5	38/03.5 122/04.2 #6425	26.6
2481	Suisun Bay Chan Lt By 12	38/03/47.429 122/03/38.258	38/03/47.9 122/03/32.5	38/03.8 122/03.5 #6445	141.1
722	Suisun Bay Chan Lt By 14	38/03/54.661 122/03/07.956	38/03/55.0 122/03/08.0	38/03.9 122/03.1 #6455	10.5

FIXED AIDS TO NAVIGATION

*	7287	Suisun N. Chan Lt 2	38/02/52.998 122/06/38.947	38/02/53.0 122/06/38.9	No posn #6325	1.1
	7285	Suisun N. Chan Lt 4	38/03/53.655 122/05/44.184	38/03/53.6 122/05/44.2	No posn #6330	1.7
	7283	Suisun N. Chan Lt 6	38/04/47.623 122/04/51.903	38/04/47.6 122/04/51.9	No posn #6335	0.7
*	2489	Pt Edith Crs S Rng F Lt	38/02/55.025 122/05/18.209	No Posn	38/02.9 122/05.3	
*	2492	Pt Edith Crs S Rng R Lt	38/02/47.551 122/05/31.452	No Posn	No Posn #6380	
*	720	Pt Edith Crs Rng F Lt	38/03/55.369 122/03/27.684	38/03/55.7 122/03/30.2	38/03.5 122/04.2 #6433	62.2

* Refer to attached 76-40 for third order positions.

	POS	DESCRIPTION	FIELD N/W	DIPFILE N/W	LIGHT LIST N/W	INV (M)
*	721	Pt Edith Crs Rng R Lt	38/04/00.8~~71~~ 68 122/03/17.298~~4~~	38/03/59.4 122/03/23.7	38/03.9 122/03.5 #6434	162.5
*	2484	Seals Is Chan LT 2	38/03/13.0~~79~~ 79 122/04/12.~~709~~ 72	38/03/13.0 122/04/12.7	38/03.2 122/04.2	2.4
	2482**	Chan Lt 11	38/03/50.~~892~~ 994 122/03/40.~~208~~ 303	38/03/51.5 122/03/42.8	No Posn #6440	64.0
	7306	Chan Lt 13	38/03/59.~~360~~ 41 122/03/09.9~~50~~ 9	38/03/59.4 122/03/09.9	No Posn #6450	1.7
	725	Roe Is Chan Rng F LT	38/04/00.5~~08~~ 3 122/02/43.~~244~~ 33	38/04/00.5 122/02/43.3	38/04.0 122/02.7 #6470	1.4
	724	Roe Is Chan Rng R LT	38/04/04.~~196~~ 06 122/03/02.~~084~~ 16	38/04/04.2 122/03/02.1	No Posn #6475	0.4
	7291	Day Marker "R-4"	38/03/14.~~840~~ 73 122/03/5~~1~~.~~030~~ 0.87	38/03/14.8 122/03/51.0	No Posn #6400	1.4
	2652	Day Marker "R-6"	38/03/07.~~380~~ 24 122/03/18.~~260~~ 31	38/03/07.4 122/03/18.3	No Posn #6410	1.2
	***	Day Marker "G-5"		38/03/13.3 122/03/18.6	No Posn #6405	
	2651	Day Marker "G-3"	38/03/22.~~310~~ 22 122/03/52.~~210~~ 09	38/03/22.3 122/03/52.2	No Posn #6395	8.6

The fixed aids to navigation were positioned by Pacific Photo Party (PPP) in March 1988. The field positions above marked by * were located to third order, class 1 methods. The accompanying detached positions verify the third order position.

**Suisun Bay LT 11 (Pos. 2482) was positioned to third order, class one by PPP in March 1988. The light was reported destroyed by an unknown source in the U.S. Coast Guard Local Notice to Mariners. The U.S. Coast Guard replaced Suisun Bay Light 11 on 22 July 1989. Phone conversations with N/CG24 and N/CG245 indicated that representatives of PPP will assist PHP in November 1989 to locate control for work in 1990-91, therefore would position Light 11 to third order, class one methods at that time and would not be necessary for PHP to position Light 11 to third order accuracy before submission of H-10306. The field position shown above is position 2482.

* Refer to attached 76-40 for third order position

***Seal Island Channel Day Marker "G-5" was positioned to third order, class 1 methods by PPP in March 1988. The U.S. Coast Guard reported the marker destroyed by an unknown source in August 1989. To date, the U.S. Coast Guard has not replaced the marker nor has plans to re-establish it.

Pt Edith Crossing Range Front and Rear Lights (Pos. 720 - 721) were installed in January 1988. The DIPFILE positions for the two range lights are the old positions. The U.S. Coast Guard, San Francisco Group (415) 399-3515 stated, via phone conversation, that the old front and rear range lights were removed below the mud line on 19 July 1988.

Suisun Bay Lights 6 and 12 were replaced by Lighted Buoys 6 and 12, respectively. The U.S. Coast Guard, San Francisco Group stated, via phone conversation, that both fixed lights were removed below the mud line in 1985.

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

O. STATISTICS

Vessel:	Launch 1101 EDP 0651	Launch 1102 EDP 0652
Number of Detached Positions:	~~79~~ 212	~~17~~ (both launches)
Total Number of Positions:	~~4006~~ 3895	~~1311~~ (both launches)
N. miles of Sounding Lines:	348.7	27.0
Square nm of Hydrography:	18.7	4.9
N. miles of Bottom Drag:	12.5	0.0
Square nm of Bottom Drag:	2.5	0.0
Number of Bottom Samples:	68	0
Number of Tide Gages: (See Field Tide Note)	1	
Number of Current Stations:	0	0
Number of Velocity Casts:	6	0
Number of Magnetic Stations:	0	
Vessel Days	26	6

P. MISCELLANEOUS

The following AWOIS Investigation sounding developments are not smooth plotted for purposes of neatness, however should not be deemed NSP since they delineate contours and show dangers to navigation where the mainscheme hydrography did not:

POS	DN
2245-2358	200
2361-2389	201
2390-2478	201
2498-2644	205
2815-2909	207
2910-2957	207
2958-3023	208
3257-3414	209

data included in hydrographic file. ✓

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.

POS	DN	VESSEL
3902-3951	226	0651
3954-3990	227	"

✓

There were no magnetic anomalies observed during the survey. ✓

There were no anomalous currents observed during the survey. ✓

The HDAPS Monitor says the following positions are not available on disk to retrieve and/or edit, although they both plot on the smooth sheet. Disregard the following positions:

Do not disregard in hydro file. Positions are plotted on the smooth sheet.

POS	DN
1275	192
1561	193

On back-up magnetic tape for Plotter Sheet #4, disregard edited file for Launch 0652, Pos. 3901-3953. The false data cannot be erased from the Active Plotter Sheet File.

Positions 3901 to 3953 are bottom sample positions and are plotted on the smooth sheet.

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. N/CG24x4 is aware of the problem and is currently working on a solution. corrected S&S table applied during office processing. based on rpm

The Reserve Fleet, which consists of eight rows of ships, were positioned (stern and bow) at the ends of each row. The area delineated by the anchored vessels is shown on the smooth DP overlay. shown as holidays on the smooth sheet.

Q. RECOMMENDATIONS

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. Concur. Procedure used at PHP.

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	6-26-89	7-6-89	7-24-89	8-9-89
Survey	3.03	3.03			
Postsur	3.03	3.03			3.04
Convert 2.13	2.21	2.21			
Conplot		1.00			
Conpute		1.00	2.00		
Constat		1.00	2.00		
Printout		2.10			
Abst		3.00			
Inverse		1.00			
Diagnostic					
Filesys	1.15	1.20		1.30	
Backup	1.01	1.01		1.02	

Hewlett Packard 9815A Calculator.

Number	Name	Version Date
811101	Geodetic Package	Feb. 1985

IBM PC

Number	Name	Version Date
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,

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

SIGNAL LIST
H-10306
PHP-10-4-89
OPR-L208-PHP

	602	38	01	49920	122	06	25128	0060	ZINC 1922
	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
*	609	38	06	29681	122	03	18420	0003	SUISUN SLOUGH ENT LT 9
*	610	38	07	08925	122	03	39820	0003	SUISUN SLOUGH ENT LT 10
	611	38	06	22023	122	06	12491	0065	GOODYEAR 2 1979
	614	38	12	09604	121	57	16301	0125	POTRERO (AVA 1941)

* not used for control

NOAA FORM 76-40
(8-74)

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

Replaces C&GS Form 567.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

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

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
Pacific Hydro Party	CA	Suisun Bay	9/12/89

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-L208-PHP-89		H-10306	NAD 27

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	PT Edith Crossing S RNG F LT	38 02	55.025	122 05	18.209		F26L	18657 18656
"	PT Edith Crossing S RNG R LT	38 02	47.551	122 05	31.452		"	" "
"	PT Edith Crossing RNG F LT	38 03	55.369 (6)	122 03	27.684 (0)		"	18656 18658
"	PT Edith Crossing RNG R LT	38 04	00.8~~71~~ (68)	122 03	17.298 (4)		"	" "
"	Suisun N. Chan LT 2 BAY	38 02	52.998	122 06	38.947		"	18656 18657
"	Suisun Bay LT 11	38 03	50.892	122 03	40.288		F15L	18656 18658
	L-1091 (89)							

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

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

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
Pacific Hydro Party	CA	Suisun Bay	9/12/89

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-L208-PHP-89		H-10306	NAD 27

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	″ D.M. Meters	POSITION LONGITUDE ° ′	″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
DAY MARKER	Seal Island Chan Marker "G-5"	38 03	13.300	122 03	18.600		USCG does not plan to re-install	18656 18658
	L-1081(89)							

SURVEY NUMBER: H-10306

RESPONSIBLE PERSONNEL

TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	Thomas K. Porta Gary Frederick Federico R. Diaz	☒ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Gary Frederick, Richard Minton, Thomas Porta	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

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

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

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

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

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

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

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

FIELD (Cont'd)

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

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

II. TRIANGULATION STATION RECOVERED

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

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

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

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

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

September 14, 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-10306, located in Suisun Bay, California, dangers to navigation affecting chart 18656 (47th ed., March 7, 1987; datum: NAD 27), chart 18652SC (25th ed., June 20, 1987; datum: NAD 27), chart 18657 (13th ed., December 3, 1988; datum: NAD 83) and chart 18658 (24th ed., February 27, 1988; datum: NAD 83) were observed.

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,

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

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10306
Survey Title: California
Sacramento River
Suisun Bay

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 N	LONGITUDE W
18656 -47-3/7/87	31.0	NAD 27	38/02/43.521	122/06/03.352
18656 -47-3/7/87	0.0	NAD 27	38/04/17.772	122/04/53.625
18656 -47-3/7/87	3.0	NAD 27	38/03/23.474	122/03/30.621
18656 -47-3/7/87	13.0	NAD 27	38/05/38.317	122/04/27.388
18652SC-25-6/20/89	31.0	NAD 27	38/02/43.521	122/06/03.352
18652SC-25-6/20/89	0.0	NAD 27	38/04/17.772	122/04/53.625
18652SC-25-6/20/89	3.0	NAD 27	38/03/23.474	122/03/30.621
18652SC-25-6/20/89	13.0	NAD 27	38/05/38.317	122/04/27.388
18657 -13-12/3/88	31.0	NAD 83	38/02/43.521	122/06/03.352
18657 -13-12/3/88	0.0	NAD 83	38/04/17.772	122/04/53.625
18657 -13-12/3/88	3.0	NAD 83	38/03/23.474	122/03/30.621
18657 -13-12/3/88	13.0	NAD 83	38/05/38.317	122/04/27.388
18658 -24-2/27/88	31.0	NAD 83	38/02/43.521	122/06/03.352
18658 -24-2/27/88	0.0	NAD 83	38/04/17.772	122/04/53.625
18658 -24-2/27/88	3.0	NAD 83	38/03/23.474	122/03/30.621
18658 -24-2/27/88	13.0	NAD 83	38/05/38.317	122/04/27.388

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-10306
Survey Title: California
Sacramento River
Suisun Bay

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 N	LONGITUDE W
18656 -47-3/7/87	0.2	NAD 27	38/03/36.576	122/06/58.068
18652SC-25-6/20/87	0.2	NAD 27	38/03/36.576	122/06/58.068
18657 -13-12/3/88	0.2	NAD 83	38/03/36.576	122/06/58.068
18658 -24-2/27/88	0.2	NAD 83	38/03/36.576	122/06/58.068

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-10306
Survey Title: California
Sacramento River
Suisun Bay

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

The following item was discovered during hydrographic survey operations:

Object Discovered: Obstruction

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

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE N	LONGITUDE W
18656 -47-3/7/87	11.7	NAD 27	38/03/13.688	122/03/19.088
18652SC-25-6/20/87	11.7	NAD 27	38/03/13.688	122/03/19.088
18657 -13-12/3/88	11.7	NAD 83	38/03/13.688	122/03/19.088
18658 -24-2/27/88	11.7	NAD 83	38/03/13.688	122/03/19.088

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-10306
Survey Title: California
Sacramento River
Suisun Bay

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

The following item was discovered during hydrographic survey operations:

Object Discovered: Pipe

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 N	LONGITUDE W
18656 -47-3/7/87	-3.8	NAD 27	38/02/48.385	122/05/20.951
18652SC-25-6/20/87	-3.8	NAD 27	38/02/48.385	122/05/20.951
18657 -13-12/3/88	-3.8	NAD 83	38/02/48.385	122/05/20.951
18658 -24-2/27/88	-3.8	NAD 83	38/02/48.385	122/05/20.951

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-10306
Survey Title: California
Sacramento River
Suisun Bay

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

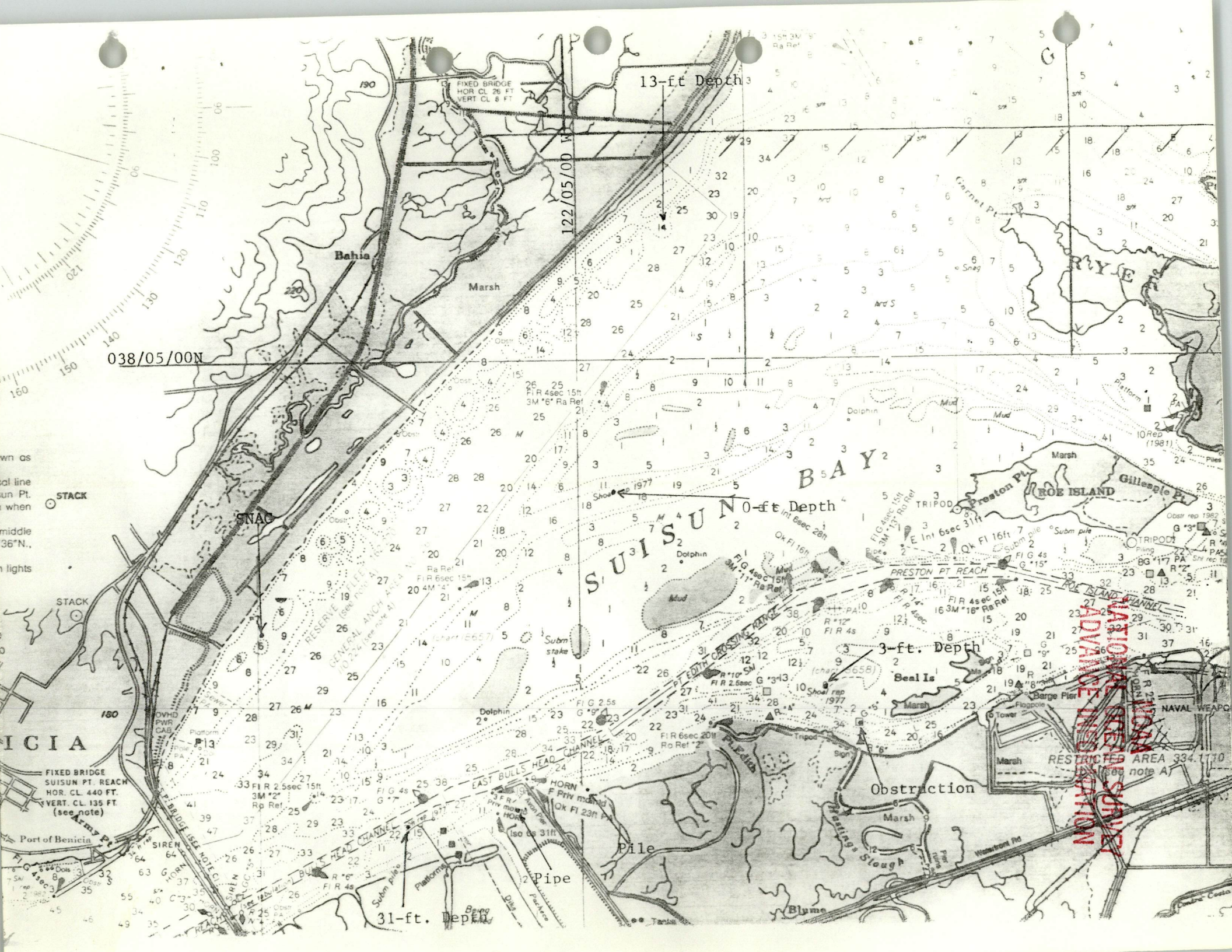
The following item was discovered during hydrographic survey operations:

Object Discovered: Pile

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

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE N	LONGITUDE W
18656 -47-3/7/87	-18.1	NAD 27	38/02/55.171	122/04/53.275
18652SC-25-6/20/87	-18.1	NAD 27	38/02/55.171	122/04/53.275
18657 -13-12/3/88	-18.1	NAD 83	38/02/55.171	122/04/53.275
18658 -24-2/27/88	-18.1	NAD 83	38/02/55.171	122/04/53.275

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


13-ft Depth
122/05/00 W
038/05/00N
0-ft Depth
3-ft. Depth
Obstruction
Pile
Pipe
31-ft. Depth
SUISUN BAY
RYE
Bahia
Marsh
Dolphin
Mud
Seal Is
ROE ISLAND
Preston Pt.
Gillespie Pt.
PRESTON PT REACH
ROE ISLAND CHANNEL
PT EDITH CROSSING RANGE
EAST BULLS HEAD CHANNEL
Hastings Slough
Blume
Waterfront Rd
Army Pt
Port of Benicia
FIXED BRIDGE
SUISUN PT. REACH
HOR. CL. 440 FT.
VERT. CL. 135 FT.
(see note)
FIXED BRIDGE
HOR CL 26 FT
VERT CL 8 FT
STACK
SNAG
RESERVE FLEET
GENERAL ANCH AREA
RESTRICTED AREA 334.1170
(see note A)
NAVAL WEAPO
NATIONAL OCEAN SURVEY
ADVANCE PRINT EDITION

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

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

September 18, 1989

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

NOAA
NATIONAL OCEAN SURVEY
ADVANCE INFORMATION

Dear Sir:

During field review of hydrographic survey H-10306, located in Suisun Bay, California, dangers to navigation affecting chart 18656 (47th ed., March 7, 1987; datum: NAD 27), chart 18652SC (25th ed., June 20, 1987; datum: NAD 27), chart 18657 (13th ed., December 3, 1988; datum: NAD 83) and chart 18658 (24th ed., February 27, 1988; datum: NAD 83) were observed.

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,

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

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10306
Survey Title: California
Sacramento River
Suisun Bay

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 N	LONGITUDE W
18656 -47-3/7/87	32.0	NAD 27	38/02/29.432	122/06/46.307
18656 -47-3/7/87	31.0	NAD 27	38/03/02.933	122/05/06.654
18656 -47-3/7/87	35.0	NAD 27	38/03/50.956	122/02/46.175
18656 -47-3/7/87	26.0	NAD 27	38/03/54.487	122/03/04.875
18652SC-25-6/20/89	32.0	NAD 27	38/02/29.432	122/06/46.307
18652SC-25-6/20/89	31.0	NAD 27	38/03/02.933	122/05/06.654
18652SC-25-6/20/89	35.0	NAD 27	38/03/50.956	122/02/46.175
18652SC-25-6/20/89	26.0	NAD 27	38/03/54.487	122/03/04.875
18657 -13-12/3/88	32.0	NAD 83	38/02/29.432	122/06/46.307
18657 -13-12/3/88	31.0	NAD 83	38/03/02.933	122/05/06.654
18658 -24-2/27/88	35.0	NAD 83	38/03/50.956	122/02/46.175
18658 -24-2/27/88	26.0	NAD 83	38/03/54.487	122/03/04.875

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

For NAD 83 Charts 18657 and 18658, use the NAD 83 shift constant to convert NAD 27 geographic positions to NAD 83.

The dangers listed above are controlling depths for the following:

BULLS HEAD CHANNEL	**MIDDLE HALF OF CHANNEL (FT)**
OBSERVED:	32.0
CHARTED:	34.6

EAST BULLS HEAD CHANNEL

	RIGHT OUTSIDE QUARTER (FT)
OBSERVED:	31.0
CHARTED:	33.7

PRESTON PT REACH

	MIDDLE HALF OF CHANNEL (FT)
OBSERVED:	35.0
CHARTED:	37.1

	RIGHT OUTSIDE QUARTER (FT)
OBSERVED:	26.0
CHARTED:	30.5

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

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

September 20, 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-10306, located in Suisun Bay, California, dangers to navigation affecting chart 18656 (47th ed., March 7, 1987; datum: NAD 27), chart 18652SC (25th ed., June 20, 1987; datum: NAD 27), chart 18657 (13th ed., December 3, 1988; datum: NAD 83) and chart 18658 (24th ed., February 27, 1988; datum: NAD 83) were observed.

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,

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

REPORT OF DANGER TO NAVIGATION

Survey Registry Number: H-10306
Survey Title: California
Sacramento River
Suisun Bay

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

The following item was discovered during hydrographic survey operations:

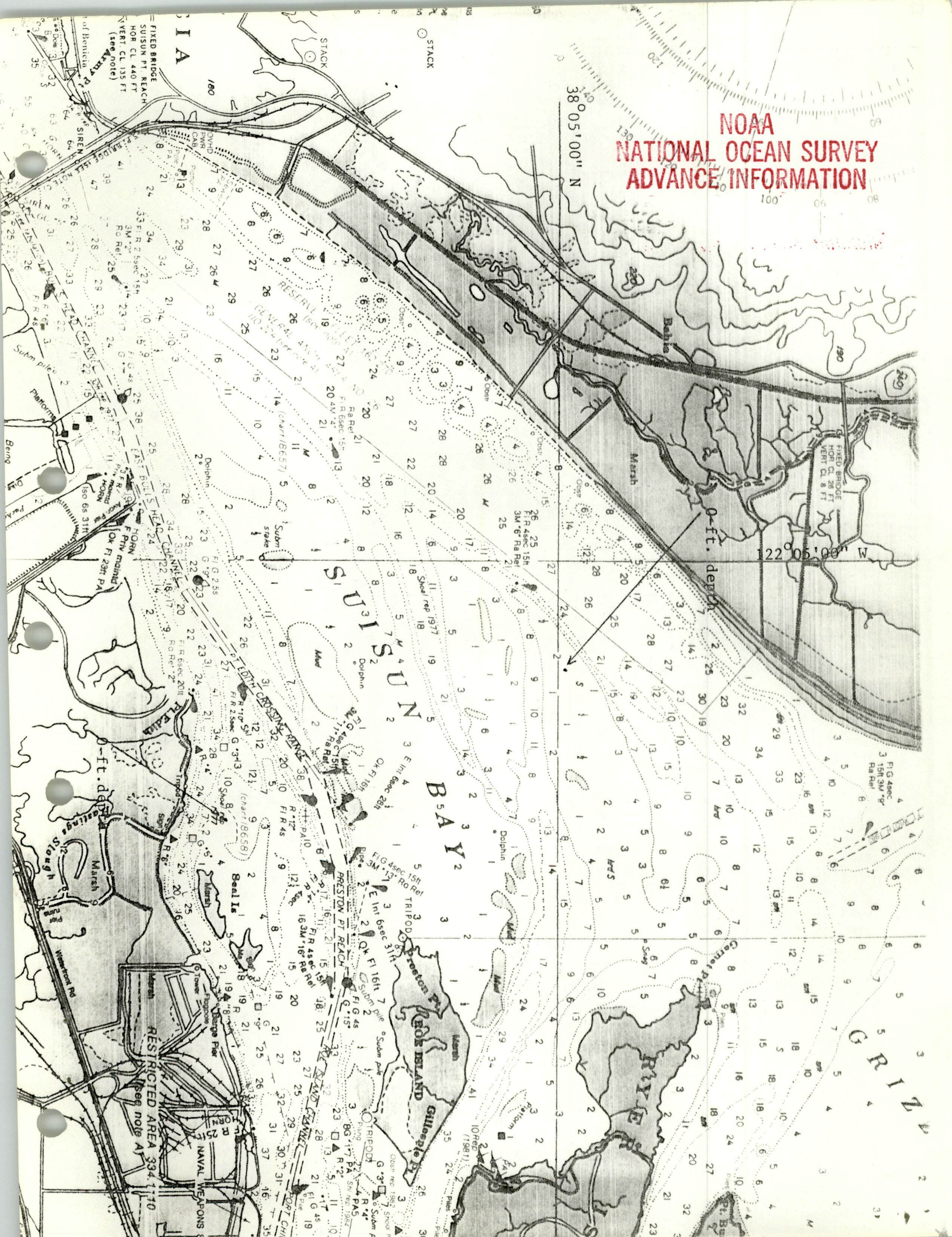
Object Discovered: Shoals

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

CHART-EDITION	DEPTH FEET	HORIZ. DATUM	LATITUDE N	LONGITUDE W
18656 -47-3/7/87	0.0	NAD 27	38/03/21.479	122/03/23.876
18656 -47-3/7/87	0.0	NAD 27	38/05/01.205	122/04/28.770
18652SC-25-6/20/89	0.0	NAD 27	38/03/21.479	122/03/23.876
18652SC-25-6/20/89	0.0	NAD 27	38/05/01.205	122/04/28.770
18657 -13-12/3/88	0.0	NAD 83	38/03/21.479	122/03/23.876
18657 -13-12/3/88	0.0	NAD 83	38/05/01.205	122/04/28.770
18658 -24-2/27/88	0.0	NAD 83	38/03/21.479	122/03/23.876
18658 -24-2/27/88	0.0	NAD 83	38/05/01.205	122/04/28.770

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

For NAD 83 Charts 18657 and 18658, use the NAD 83 shift constant to convert NAD 27 geographic positions to NAD 83.


NOAA
NATIONAL OCEAN SURVEY
ADVANCE INFORMATION
38°05'00" N
122°05'00" W
SUISUN BAY
FIXED BRIDGE
SUISUN PT. REACH
HOR CL 440 FT
VERT CL 135 FT
(see note)
FIXED BRIDGE
HOR CL 26 FT
VERT CL 8 FT
STACK
Marsh
0-ft. depth
PRESTON PT REACH
Preston Pt
ROE ISLAND
Gillespie Pt
Seal Is
RYER
Hastings Slough
RESTRICTED AREA 334.1110
(see note A)
NAVAL WEAPONS
Waterfront Rd
TRIPOD
Dolphin
Army Pt

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852
Pacific Hydrographic Section
BIN C15700, Bldg. 3
7600 Sand Point Way NE
Seattle, WA 98115-0070

MAY 25 1990

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

Dear Sir:

During office review of hydrographic survey H-10306, located in Suisun Bay, California, a danger to navigation affecting chart 18656 (48th ed., May 27, 1989: NAD 83), chart 18652SC (26th ed., December 3, 1988; NAD 83) and chart 18657 (13th ed., December 3, 1988: NAD 83) was found.

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

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

Sincerely,

Pamela R. Chelgren-Koterba
Commander, NOAA
Chief, Pacific Hydrographic Section

Enclosure

cc: DMA/TC
N/CG221

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10306
Survey Title: State: California
General Locality : Suisun Bay
Sublocality : Bulls Head to Roe Island
Project Number: OPR-L208-PHP
Pacific Hydrographic Party

The following item was discovered during office processing of hydrographic survey H-10306

Object Discovered: Shoal, covered 33.1 feet corrected to MLLW using observed tides.

CHART NUMBER	EDITION NO.	EDITION DATE	REPORTED DEPTH	CHART HORIZ. DATUM	GEOGRAPHIC POSITION LATITUDE(N)	GEOGRAPHIC POSITION LONGITUDE(W)
18656	48	May 27, 1989	33.1 feet	NAD 83	38°03'02.74"	122°05'22.38"
18652SC	26	Dec. 3, 1988	33.1 feet	NAD 83	38°03'02.74"	122°05'22.38"
18657	13	Dec. 3, 1988	33.1 feet	NAD 83	38°03'02.74"	122°05'22.38"

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

Approval Sheet

OPR-L208-PHP

PHP-10-4-89

H-10306

Basic Hydrographic Survey

Suisun Bay

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.

Standard procedures were followed in accordance with **THE HYDROGRAPHIC MANUAL (FOURTH EDITION)**, **HYDROGRAPHIC SURVEY GUIDELINES** and **THE FIELD PROCEDURES MANUAL** in producing this hydrographic survey except for the following:

The shoreline was drawn on the "smooth" DP overlay instead of the mainscheme overlay so as to better show the shoreline features without being blanked out by soundings.

Approved by:

Lieutenant Federico R. Díaz, 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: December 7, 1989

MARINE CENTER: Pacific

OPR: L-208

HYDROGRAPHIC SHEET: H-10306

LOCALITY: Suisun Bay (Western Portion), CA.

TIME PERIOD: June 23 to September 6, 1989

TIDE STATION USED: 941 5111 Benicia, CA.

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 28.54 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 4.7 ft.

REMARKS: RECOMMENDED ZONING

1. North of 38 05'N apply a 0.97 range ratio to all heights, and a +0 hr. 25 min. HW and a +0 hr. 52 min. LW time correction.

2. South of 38 5'N and east of 122 05'W, apply a 0.95 range ratio and a +0 hr. 21 min. HW and a 0 hr. 34 min. LW time correction.

3. South of 38 05'N and east of 122 05'W, zone direct.

NOTE: Please use data with caution due to no closing levels.

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10306

Name on Survey
CALIFORNIA, SUISUN BAY
BULLS HEAD POINT TO
ROE ISLAND

	A ON CHART NO. 1856-18658	B	C NO. TP-01248	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H	K U.S. LIGHT LIST	
BULLS HEAD POINT	X	X								1
CALIFORNIA (title)										2
EDITH, POINT	X	X								3
GARNET POINT	X		X							4
HASTINGS SLOUGH	X		X							5
PACHECO CREEK	X	X								6
PRESTON POINT	X		X							7
ROE ISLAND	X		X							8
RYER ISLAND	X		X							9
SEAL ISLANDS	X		X							10
SEAL ISLANDS CHANNEL			X							11
SUISUN BAY	X	X	X							12
										13
										14
										15
										16
										17
				Approved:						18
										19
				Charles E. Harrington						20
				Chief Geographer - N/CG2 x5						21
				FEB 26 1990						22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H) (9-83)

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10306

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	5 mylar 3 paper
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	6

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2			1		
ENVELOPES						
VOLUMES	2					
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			3895
POSITIONS REVISED			58
SOUNDINGS REVISED			193
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	143		143
VERIFICATION OF SOUNDINGS	201		201
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	96		96
COMPARISON WITH PRIOR SURVEYS AND CHARTS		30	30
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		91	91
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	440	121	561

Pre-processing Examination by M.J. Bradley	*Beginning Date*	*Ending Date* 11/2/89
Verification of Field Data by R. Mihailov, L. Deodato, M. Sanders & J. Stringham	*Time (Hours)* 440	*Ending Date* 7/10/90
Verification Check by T. Jones, J. Stringham	*Time (Hours)* 83	*Ending Date* 7/10/90
Evaluation and Analysis by A. Luceno	*Time (Hours)* 121	*Ending Date* 11/15/90
Inspection by D.J. Hill	*Time (Hours)* 10	*Ending Date* 11/20/90

EVALUATION REPORT

H-10306

1. INTRODUCTION

Survey H-10306 is a basic hydrographic survey accomplished by the Pacific Hydrographic Party under Project Instructions OPR-L208-PHP, dated May 1, 1989.

This survey occurred in California, and covers the western portion of Suisun Bay. The surveyed area is bounded by the northern and southern shores of the bay between latitudes 38°02'13"N and 38°06'07"N and between longitudes 122°02'42"W and 122°07'00"W. The bottom consists predominantly of mud. Depths range from zero to 58 feet. The deeper soundings are located inside the limits of channels and their nearby vicinities.

Predicted tides for San Francisco, Golden Gate, Presidio, Fort Point, California, gage 941-4290, were used for the reduction of soundings during field processing. Approved hourly heights from Suisun Bay (western portion), Benicia, California, gage 941-5111, 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, sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey as required by the specifications contained in Hydrographic Survey Guideline No. 52, Standard Digital Data Exchange Format, April 15, 1986. 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 Horizontal Control Report for OPR-L202-PHP, 1989, contain adequate discussions of the 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. 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: 0.290 seconds (8.9 meters)
Longitude: -3.869 seconds (-94.3 meters)

The year of establishment of control stations shown on the smooth sheet originates with published NGS data.

The quality of several positions exceeds limits in terms of residual. A review of the data indicates that there is no significant plotting difference between these fixes and adjacent positions. The review also indicates that the located features or soundings are consistent with surroundings. None of the fixes is used to position dangers to navigation. These fixes are considered acceptable.

The following registered shoreline maps apply to this survey.

	Photo Dates	Class
TP-01248	Nov.1983, Apr.1984	III
TP-01249	Nov.1983, Apr.1984	III

3. HYDROGRAPHY

Except for the zero depth curve which was not adequately developed, 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, except:

Holidays exist in eight separate areas 0.4 nautical miles south of the northern shore of Suisun Bay between longitudes 122°04'42"N and 122°06'48"W, and along the pier at latitude

38°04'45"N, longitude 122°05'57"W, because of the presence of moored vessels.

5. JUNCTIONS

Survey H-10306 junctions with the following surveys.

Survey	Year	Scale	Area
H-10283	1988-89	1:10,000	west
H-10293	1989	1:10,000	north
H-10315	1989	1:10,000	east

The junction with survey H-10315 is complete. The junction with surveys H-10283 and H-10293 has not been formally completed since those surveys were previously processed and forwarded for charting. The junction comparison was made using copies. Soundings are in good agreement. Some soundings have been transferred to survey H-10306 to better portray the bottom in the common area. Portions of the depth curves on surveys H-10283 and H-10293 should be adjusted to conform with those on survey H-10306.

6. COMPARISON WITH PRIOR SURVEYS

H-6525(1940-41)	1:10,000
H-7784(1949)	1:5,000
H-7786(1949)	1:10,000

Survey H-6525 covers the entire area of survey H-10306. Survey H-7786 covers the western portion of survey H-10306 and supersedes survey H-6525 west of longitude 122°04'30"W. Survey H-7784 covers a small portion at the southwest corner of survey H-10306 and supersedes survey H-6525 for the common area. Major changes to the hydrography and topography throughout the present survey area have occurred since the prior surveys were carried out. Soundings from the present survey are generally deeper, especially in areas where Federal projects provide specific depths in channels and moorage areas. Some areas in the mid-section of Suisun Bay between longitudes 122°05'W and 122°06'W are now considerably shallower because of deposits from the rivers upstream.

Changes to marshy shores and the formation of numerous marshy islands were caused by reclamation projects.

There are no AWOIS items originating from the prior surveys

Taking into consideration the changes by man-made and natural causes, survey H-10306 is adequate to supersede these prior surveys within the common area.

7. COMPARISON WITH CHART

Chart 18657, 13th edition, dated December 3, 1988; scale 1:10,000 (NAD 83)

Chart 18658, 24th edition, dated February 27, 1988; scale 1:10,000 (NAD 83)

The survey was compared to the charts listed above. These charts are the latest edition of the largest scale charts covering the surveyed area.

a. Hydrography

Charted hydrography originates with surveys H-6525, H-7786 and miscellaneous sources. Survey H-10306 is adequate to supersede charted hydrography within the common area, except:

(1) The 12-foot unsupported sounding under AWOIS item 51334 at latitude 38°05'07.6"N, longitude 122°05'03.0"W, which was not investigated because of the presence of moored ships. (NAD27)

(2) The existence of the submerged wreck under AWOIS item 51274 at latitude 38°02'46.2"N, longitude 122°03'22.4"W, was not adequately disproven. (NAD 27)

(3) The existence of two charted poles at latitude 38°04'54"N, longitude 122°05'54"W, and at latitude 38°04'56"N, longitude 122°05'52"W, was not disproven. (NAD 83) DISREGARD; ABOVE HWL. SEE TP01248 RWD 2/91

These features should be retained as charted.

b. AWOIS

The AWOIS items originate with miscellaneous sources. These items are adeqately discussed by the hydrographer in section L of his report.

c. Controlling Depths

Bulls Head Channel, East Bulls Head Channel, Pt Edith Crossing Range and a portion of Preston Pt Reach are within the limits of this survey. All depths from the present survey equal or exceed the tabulated controlling depths from surveys by the Corps of Engineers except:

(1) a 32-ft depth in the right outside quarter of Bulls Head Channel at latitude 38°02'29"N, longitude 122°06'47"W. The tabulated controlling depth here is 33.5 feet

(2) a 33-ft depth in the left outside quarter of Bulls Head Channel at latitude 38°02'31"N, longitude 122° 06'49"W. The tabulated controlling depth in this area is 36.5 feet.

(3) a 33-ft depth in the middle half of East Bulls Head Channel at latitude 38°03'03"N, longitude 122°05'18"W. The tabulated controlling depth in this area is 35 feet.

d. Aids to Navigation

Except for Day Marker G-5 which was destroyed, all fixed and floating aids were located and serve their intended purpose. NOAA Forms 76-40 are attached to this report.

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 14 dangers to the USCG. The dangers consisted of shoals, obstructions, pipes, piles, poles and snags. One additional danger was discovered during office processing. Copies of the messages are attached.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10306 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is a good hydrographic survey. Additional field work is recommended to locate or disprove the features listed in section 7.a of this report and the submerged obstruction at latitude 38°04'52"N, longitude 122°05'47"W (AWOIS Item 51330). Surveys in areas occupied by moored vessels at the time of the present survey may have been performed previously by the Reserve Fleet personnel. The latest results from their surveys in the holiday areas, if available, should be considered for charting.

Arsenio A. Luceno
Cartographer

APPROVAL SHEET
H-10306

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.

Dennis Hill Date: 11/20/90

Dennis J. Hill
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.

Date: 11/27/90

Commander Pamela Chelgren-Koterba, NOAA
Chief, Pacific Hydrographic Section

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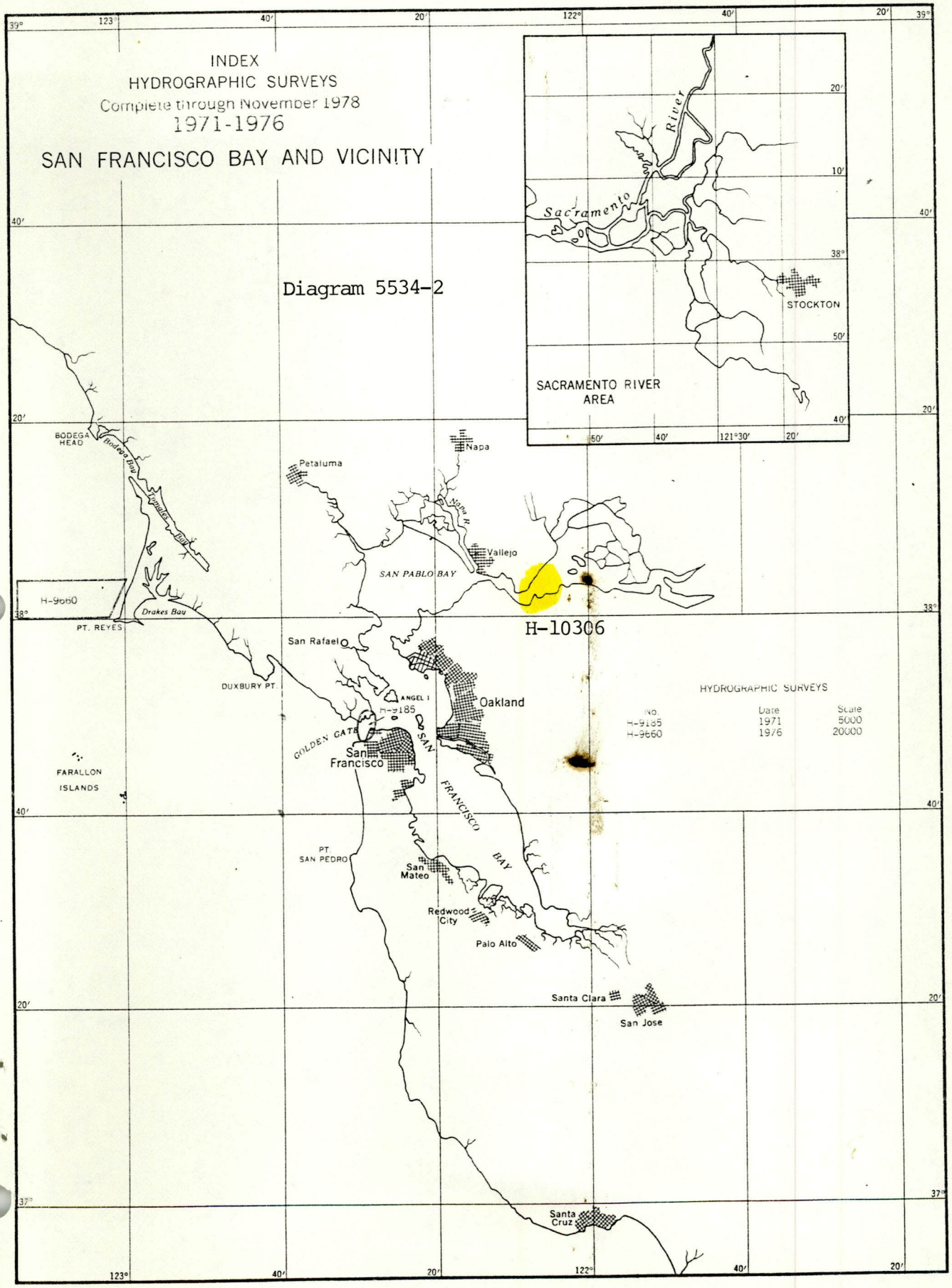
Final Approval

Approved: V. Custer Yeager Date: 2/15/91

Wesley V. Hull
Rear Admiral, NOAA
Director, Charting and Geodetic Services

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

Hydrographic Index No. 96M



NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10306

INSTRUCTIONS

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

CHART	DATE	CARTOGRAPHER	REMARKS
18658	11/5/90	A. Kay	~~Full~~ Part Before ~~After~~ Marine Center Approval Signed Via Partial application
			Drawing No. of sndgs. from SS.
18657	11/16/90	A. Kay	~~Full~~ Part Before ~~After~~ Marine Center Approval Signed Via full application
			Drawing No. of sndgs. from SS.
18656	11/28/90	ALMACEN	~~Full~~ Part Before ~~After~~ Marine Center Approval Signed Via Partial application
			Drawing No. of sndgs. from SS thru 18657 & 18658.
18652	12/4/90	ALMACEN	Full Part Before After Marine Center Approval Signed Via Full application of sndgs.
			Drawing No. from SS thru 18657.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

NOAA FORM 75-96
(10-83)

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

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CHART	DATE	CARTOGRAPHER	REMARKS
18657	4-17-91	John Pierce	Full ~~Part Before~~ After Marine Center Approval Signed Via
	7-5-91	J.C. Harpine	Drawing No. 17
18658	7-9-91	Charles Jarrett	Full Part Before After Marine Center Approval Signed Via
			Drawing No. 39
18656	7-8-99	Daniel Notwgmomo	(Full) ~~Part Before~~ After Marine Center Approval Signed Via Applied thru 18652
	9-10-99	D.Harpine	Drawing No. 56
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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