

**7786**

Diag. Cht. Nos. 5530-5 & 5534

Form 504

U. S. COAST AND GEODETIC SURVEY  
DEPARTMENT OF COMMERCE

**DESCRIPTIVE REPORT**

Type of Survey HYDROGRAPHIC

Field No. BO - 1249 Office No. H-7786

**LOCALITY**

State CALIFORNIA

General locality CARQUINEZ STRAIT

Locality PT. CARQUINEZ TO PT. EDITH

1949

**CHIEF OF PARTY**

C. A. George

**LIBRARY & ARCHIVES**

DATE JULY 12, 1951

**98221**

JUL 12 1951

Form 537  
(Ed. June 1946)

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

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

REGISTER No. H-7786

Field No. BO - 1249

State California

General locality Carquinez Strait - Suisun Bay

Locality Point Carquinez - Point Edith

Scale 1:10,000 Date of survey 16 August - 8 November, 1949

Instructions dated 12 April 1949

Vessel Ship BOWIE

Chief of party C. A. George

Surveyed by W. M. Hellman

Soundings taken by fathometer, graphic recorder, hand lead, wire, pole

Fathograms scaled by R. H. Berg, A. A. Burnette, F. W. Lingenfelter

Fathograms checked by R. H. Berg, A. A. Burnette, F. W. Lingenfelter

Protracted by A.G. Atwill

Soundings penciled by A.G. Atwill

Soundings in fathoms feet at MLW MLLW

REMARKS:

This survey was smooth plotted in the Hydrographic Section of the Norfolk Processing Office.

APPROVAL SHEET FOR NOTES FOR DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY H-7786 (1949), (Field No. EO-1249)

At this writing the smooth sheet has not been plotted, and statements in the report regarding junctions, crossings, etc. naturally refer to boat sheet soundings. The boat sheet soundings, however, were accurately corrected, and it is not believed that any great differences will result on the smooth sheet.

The field work was given personal supervision by the Chief of Party and the boat sheet was examined daily. It is considered that the survey is complete and adequate.

Additional work is recommended in the vicinity of the 25 foot sounding (Lat.  $38^{\circ} 01.75'$  and Long.  $122^{\circ} 09.50'$ ) which appears both on prior survey H-6524 (1939-40) and Chart No. 5534. The sounding fell between two sounding lines, spaced 50 meters apart, on the present survey and was not developed. It is contemplated that this additional work can be accomplished at the beginning of the 1950 field season. *Add. develop. accomplished on CA day, 1950. 25 ft. sq. was disproved.*

Particular attention is called to the area in the vicinity of the main ship channel east of the Southern Pacific Railroad Bridge. This channel was dredged by the U.S. Engineers after the close of the 1949 field season. A copy of U. S. Engineer's prints Nos. 536/1 and 536/2, File No. 51-6-536 is attached to this report. *(Ops 47783 & 47784)*

*C. A. George*  
C. A. George,  
Commander, C&GS,  
Chief of Party

NOTES FOR DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SHEET H-7786 (Field No. BO-1249)

Survey of Carquinez Strait and Suisun Bay, from Point Carquinez to Point Edith, on a scale of 1:10,000 by personnel of the Ship BOWIE, C. A. George, Chief of Party.

A. PROJECT:

This survey was executed in accordance with the Director's Instructions dated 12 April 1949, Project CS 256.

B. SURVEY LIMITS AND DATES:

This survey covers the area in Carquinez Strait and Suisun Bay east from a line from Point Carquinez to the point at Benicia to a line extending north from Point Edith to Lat.  $38^{\circ} 05.25'$  which is the northern limit of the work. The work junctions with, but does not cover Survey H-7784 (1949) 1:5,000, which extends about  $\frac{1}{2}$  mile east from the Southern Pacific Railroad Bridge and about  $\frac{1}{2}$  mile north from the southern shore of Suisun Bay.

The work on this sheet makes a junction with contemporary Survey H-7785 (1949) 1:10,000, on the west, and with prior Survey H-6525 (1940) 1:10,000, on the east. It is a re-survey of all of H-4593 (1926), and parts of both H-6524 (1939-40) and H-6525 (1940).

Hydrography was started on 16 August 1949, and final field work done on 8 November 1949. *Additional work at Benicia Arsenal Pier accomplished on 7-14-50.*

C. VESSEL AND EQUIPMENT:

Launch 113 was used for the major portion of the sheet, with Launch 133 and a dinghy being used for shoal sounding. The launches operated from the Ship BOWIE.

Type 808 J Fathometer No. S-111 was used in Launch 113 and 808 J Fathometer No. S-112 was used in Launch 133 for the entire sheet.

## DESCRIPTIVE REPORT - continued

D. TIDE AND CURRENT STATIONS:

All soundings were reduced to MLLW using data from the tide gage at Benicia with the exception of 8 November, on which the tide staff at Benicia was read.

F. CONTROL STATIONS:

The positions of triangulation stations were obtained from the Publication "Geographic Positions of Triangulation Stations, California VII, San Francisco and Vicinity", and from the field computations of geographic positions of the 1949 field season.

Topographic stations were taken from topographic Surveys T-7135 (1949), T-7136 (1949) and T-7137 (1949). T-7135 and T-7137 are 1:10,000 graphic control sheets and T-7136 is a 1:5,000 graphic control sheet.

G. SHORELINE AND TOPOGRAPHY:

The shoreline was taken from planimetric maps, Nos. T-5941 and T-5942, with the exception of the municipal pier at Martinez, the Army pier at Benicia, and the pier at Avon. These piers were rodded-in on the topographic sheets. A short section of the shoreline was also rodded-in around triangulation station ECHO on Sheet T-7137.

Numerous small changes, such as the location of small fishing piers, which were considered of insufficient importance to be located by standard topographic methods, were located by sextant fixes. The field notes for these changes were recorded in a separate sounding volume, and the changes are shown on copies of Survey T-5941 and T-5942. Both the sounding record and the copy of the survey are being forwarded with other field data.

The low water line was defined by soundings, except where the steep-to beach prevented this development.

H. SOUNDINGS:

Depths were measured by 808 J type fathometers Nos. S-111 and S-112, leadline, and sounding pole. A mud lead was used for leadline sounding in soft bottom. Fathometer S-111 was used in Launch 113 and Fathometer S-112 was used in Launch 133.

DESCRIPTIVE REPORT -- continued

I. CONTROL OF HYDROGRAPHY:

Hydrography on this survey was controlled by sextant angles taken between objects located by triangulation or topography. <sup>led</sup>

J. ADEQUACY OF SURVEY:

This survey is believed to be complete, and adequate to supersede prior surveys for charting.

The junction on the west with contemporary survey H-7785 was satisfactory and the depth curves can be drawn without difficulty. <sup>(1949)</sup>

The junction with contemporary survey H-7784 immediately east of the Southern Pacific Railroad Bridge is satisfactory on all three sides and the depth curves can be drawn without difficulty. <sup>(1949)</sup>

The junction on the east with prior survey H-6525 is satisfactory and the depth curves can be drawn without difficulty. <sup>(1940)</sup>

K. CROSSLINES:

Crosslines consist of approximately 9% of the lines run. The crossings are within 1 foot on the flat areas and reasonably close in the areas of steep slopes and irregular bottom.

L. COMPARISONS WITH PRIOR SURVEYS:

In general, the survey agreed with prior survey H-6524 (1939-40). The deep area off Point Carquinez and the deep area off Army Point were about the same, with only slight change in delineation. The 6 foot to 36 foot curves along the south shore of the strait showed little change. The only changes along the south shore were a filling in between the Municipal Pier and the Shell Pier at Martinez, and a deepening off the Shell Pier along the out-board side. This deepening could be a result of the periodic dredging done by the Shell Oil Company.

The north shore along the Benicia Arsenal waterfront showed considerable shoaling, which was undoubtedly due to the construction of the large pier at the Benicia Arsenal.

DESCRIPTIVE REPORT - continued

L. COMPARISONS WITH PRIOR SURVEYS: - continued

A point of particular mention in comparison with prior survey H-6524 is the 25 foot sounding at Lat. 38° 01.75' Long. 122° 09.58' off of the pier at Ozol. This sounding fell between sounding lines (spaced 80 meters at the maximum in this area) and was not developed. The surrounding lines gave no indication of any such shoal, but it is recommended that this sounding be retained until future development either verifies or disproves this sounding. This development is contemplated for the first part of the 1950 field season.

25 ft  
disproved  
by add.  
wk. 19  
April,  
1950.  
See P's  
of Review

The new survey differed from prior survey H-4593b (1926) in several respects. There was a considerable amount of shoaling on the easterly portion of the waterfront at Benicia, and also to the west of the 12 foot shoal at Lat. 38° 02.25' Long. 122° 09.78'

Considerable time and effort was expended in development of the 12 foot shoal (Lat. 38° 02.25' Long. 122° 09.78') on prior survey H-4593b. A considerable number of twenty meter crosslines were run over the shoal, and approximately thirty minutes were spent in drift sounding in the area, but the shoalest depth found was 15 feet about 50 meters northward.

See  
P's of  
Review

It was specifically requested that the remains of the dock at Lat. 38° 02.50' Long. 122° 08.80' be investigated. On 4 November a dinghy party sounded over the area, and found no sign of any piling, although some hard objects were felt on the bottom. Local information from an elderly man employed in the vicinity was that at extreme low tide the pilings were visible above the mud, although not protruding very far. (See sounding volume 28, page 35).

At the eastern limit, the present survey agrees closely with prior survey H-6525 (1940), but considerable shoaling has occurred in the shoal area which extends in a northeasterly direction from the Southern Pacific Railroad Bridge. A general shoaling of about 6 feet has occurred on the point of the shoal toward the bridge, and the shoal has extended under the bridge and forms a 24 foot shoal on the west side of the bridge. This area is partly covered by contemporary survey H-7784 (1949).

not plotted on H-7784

On the north shore of Suisun Bay, northeast of Army Point, considerable shoaling has occurred in the vicinity of the 18 foot depth curve immediately east of triangulation station ARMY POINT 2 (1886). The present depths are about 8 or 9 feet shoaler than on the previous survey. The deeper area off Army Point agrees closely on the two surveys.

On the southern shore of Suisun Bay, east of the Southern Pacific Railroad Bridge, very little change has occurred between the shore and the 18 foot depth curve.

The area of the main ship channel between the Southern Pacific Railroad Bridge and Point Edith was surveyed during the course of the field work. After the field season was closed in November, the channel was dredged by the U. S. Engineers. A copy of the after dredging surveys (U.S. Engineers prints 536/1 and 536/2 - File Nos. 51-6-536, January 1950) are attached to this report.

18ps 47783 and 47784

DESCRIPTIVE REPORT - continued

M. COMPARISON WITH CHARTS:

The same general remarks about comparison with prior surveys apply to the comparison of this survey with Chart 5534. The 12 foot shoal at Lat.  $38^{\circ} 02.25^{\circ}$ , Long.  $122^{\circ} 09.70^{\circ}$ , the 25 foot sounding at Lat.  $38^{\circ} 01.75^{\circ}$ , Long.  $122^{\circ} 09.50^{\circ}$ , the pillings at Lat.  $38^{\circ} 02.50^{\circ}$ , Long  $122^{\circ} 08.80^{\circ}$ , and the shoal in the middle of Suisun Bay are discussed in Par. L, Comparison with prior surveys.

*\* Considered not disproved by present survey, carried forward.*

\* The grounded ship at Lat.  $38^{\circ} 01.70^{\circ}$  Long.  $122^{\circ} 09.90^{\circ}$  was not visible and sounding lines run over the area gave no indication of any such ship.

The grounded ship at Lat.  $38^{\circ} 01.35^{\circ}$  Long.  $122^{\circ} 08.70^{\circ}$  is a grounded schooner that was still present in November 1949.

\* The grounded ship at Lat.  $38^{\circ} 01.45^{\circ}$  Long.  $122^{\circ} 08.55^{\circ}$  was not visible, but a single pole protruding about four feet above high water was located on topographic sheet T-7135 (1949) about 50 meters east of this position.

The grounded ship shown at Lat.  $38^{\circ} 01.51^{\circ}$  Long.  $122^{\circ} 08.36^{\circ}$  is one of a group of grounded house boats and barges, and is still present.

N. DANGERS AND SHOALS:

All dangers and shoals were found as charted, with the exceptions of those mentioned in Paragraphs L and M, Comparisons with Prior Surveys and Comparison with Charts.

O. COAST PILOT INFORMATION:

(Included in separate report).

P. AIDS TO NAVIGATION:

The report on fixed aids to navigation was prepared on Form 567 and forwarded to the Washington Office on 9 March 1950.

The following floating aids to navigation were located on this survey:



DESCRIPTIVE REPORT - continued

P. AIDS TO NAVIGATION: - continued

Lat. & Long.	Depth	Pos.	Day & Launch	Date	Aid	
38° 02.23'	30	46	b	113	17 August	Benicia Shoal
122° 09.867		47	b	113	17 August	Lighted Bell Buoy 1A
38° 02.21'	54	1	b	113	17 August	Carquinez Strait
122° 08.10'		2	b	113	17 August	Lighted Buoy 1B
38° 03.01'		33	x	113	25 October	Suisun Bay
122° 05.82'		33a	x	113	25 October	Lighted Buoy 3
38° 03.25'		34	x	113	25 October	Suisun Bay
122° 04.876		35	x	113	25 October	Lighted Buoy 5
38° 03.40		78	x	113	25 October	Point Edith
122° 04.218		79	x	113	25 October	Buoy
		80	x	113	25 October	

A copy of the letter transmitting a chart with Objects for Use of the U. S. Coast Guard was forwarded to the Washington Office on 8 March 1950.

The azimuth of the Point Edith Crossing Range, as determined in the field, is 574°.

The location of the termini of the Benicia Martinez Ferry are Lat. 38° 01.65' Long. 122° 08.30'; and Lat. 38° 02.51' Long. 122° 09.10'.

Q. LANDMARKS FOR CHARTS:

A special report on Landmarks for Charts was prepared on Form 567 and forwarded to the Washington Office on 10 March 1950. (CL-181 (1950))

A list of the recommended landmarks for this area is as follows:


- ✓ Spire, St. Paul's Episcopal Church (Spy)
- ✓ Elevated Tank, (largest in Benicia) (Manx)
- ✓ Elevated Tank, (tank just outside Benicia Arsenal) (Ant)
- ✓ Incenerator (Benicia Arsenal) (Van)
- Center Stack of Three, in Martinez (Not on Smooth Sheet)

DESCRIPTIVE REPORT - continued

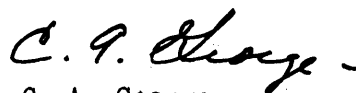
U. VELOCITY CORRECTIONS:

The determination of velocity corrections is covered in a separate report. An abstract of the velocity corrections which were applied to the echo soundings is included in this report. (S-2904) Filed with H-7786

Submitted,

  
Hubert W. Keith, Jr.  
Ensign, C&GS

Approved:

  
C. A. George,  
Commander, C&GS  
Chief of Party

C O P Y

DEPARTMENT OF COMMERCE

U. S. COAST & GEODETIC SURVEY

Ship BOWIE  
P. O. Box 390  
Pittsburg, Calif.

18 July 1950

To: Supervisor, Southeastern District  
U. S. Coast and Geodetic Survey  
Room 418 Post Office Building  
Norfolk 10, Va.

Subject: Additional Soundings off Benicia Arsenal Pier.

On 13 July, the Post Engineer at the Benicia Arsenal, Benicia, California requested that some additional soundings be taken off the Arsenal Pier. This work was done on 14 July, and the soundings have been plotted on a copy of U. S. Engineer's Drawing No. 4317. This copy, together with the sounding volume, is being forwarded to you under separate cover. It is recommended that these soundings be included on the smooth sheet of Survey H-7786 (1949), BO-1249. *(Shown on a day - Arsenal Pier insert.)*

Your promptness in forwarding the copies of the 1949 boat sheet in the vicinity of the Benicia Arsenal Pier is appreciated. The Army's request for this information was most urgent, and the material was delivered in a minimum of time.

C. A. George,  
Commander, USC&GS  
Commanding Officer - Ship BOWIE

cc. The Director

Ship BOWIE  
 P. O. Box 390  
 Pittsburg, Calif.

25 April 1950

TO: Supervisor, Southeastern District  
 U. S. Coast and Geodetic Survey  
 Room 418, Post Office Bldg.,  
 Norfolk 10, Va.

SUBJECT: Additional Field Work on Surveys H-7785 (1949) and  
 H 7786 (1949), Project OS 256. Vicinity of Carquines  
 Strait.

On 18 April 1950, additional hydrographic investigations were made at the following localities: On H-7785, off Port Costa, at Latitude  $38^{\circ} 02.95'$ , and Longitude  $122^{\circ} 10.90'$ ; and on H-7786, off the Ozol Pier, at Latitude  $38^{\circ} 01.7'$  and Longitude  $122^{\circ} 09.50'$ . These investigations were made to disprove shoal soundings which appeared on prior survey H-6524 (1939-40), and which fell between sounding lines on the 1949 hydrography.

At Port Costa, the old survey showed 13 and 14-foot soundings. Where the 13-foot sounding existed, the present survey shows 35 feet; where the 14-foot sounding existed, the present survey shows 17 to 19 feet. H-7785 (1949)

At Ozol, the old survey showed 25 and 26 feet. The present investigation shows no indication of any depth less than 31 feet in this vicinity. It is probable that this area has been dredged since the 1939-1940 survey was made. Because of the close development in both areas, it is recommended that the depths obtained in 1949-50 supersede the previous soundings.

The tide staff at the Benicia Arsenal - Benicia, California was used for the reduction of all soundings taken on 18 April 1950. The value of mean lower low water on the staff was 2.2 feet; a level connection was made between the staff and one bench mark to verify the fact that the staff had not moved since its establishment in 1949.

Hydrographic signal SIG was used during the investigation of 18 April on Survey H-7785. This signal was not used for hydrography on the 1949 work, but was located on topographic survey T-7134 (1949). The name should be included on the List of Stations, Volume 1 - H-7785.

Also on 18 April 1950, sextant fixes were taken to locate the four navigation lights on the Shell Oil Company pier at Martinez. These lights are fixed-red, aircraft-warning lights on top of masts approximately 50 feet high. Although some measurements were taken in 1949, complete data to locate the lights were not obtained. *Also see notes sdg. vol 28, pg. 40 and sdg. vol. 29, pg. 9.*

The field work accomplished on 18 April was plotted on tracings made of the 1949 boat sheets. These tracings, the sounding volumes, and fathograms are being forwarded under separate cover by registered mail.

C. A. George  
Commander, USCGC  
Commanding Officer Ship BOWIE

cc The Director

LIST OF SIGNALS

H-7786

TRIANGULATION STATIONS

BAY - BAY, 1939  
 WAG - BENICIA ARSENAL FLAGPOLE, 1949  
 ✓ VAN - BENICIA ARSENAL INCINERATOR, 1949 ✓  
 MANX - BENICIA, LARGE WATER TANK, 1949  
 SPY - BENICIA, ST. PAULS EPISCOPAL CH. SPIRE, 1949  
 WIN - BENICIA TANNERY TANK, 1922  
 ANT - BENICIA, WATER TANK NEAR BENICIA ARSENAL, 1949  
 BUCK - BUCK, 1949  
 MOC - BULLS HEAD PT. MOCOCO FERTILIZER STACK, 1922-1939  
 WER - CLOCK TOWER FLAGSTAFF, 1909  
 STA - CONCRETE STACK AT OLD SMELTER, 1949  
 DOCK - DOCK, 1949 ✓  
 ECHO & ECHO, 1922  
 ISLE - ISLE, 1949  
 MAN - MAN, 1949  
 ✓ MART - MARTINEZ COURTHOUSE, 1922  
 ✓ TER - MARTINEZ WATER TANK, 1949  
 NICK - NICK, 1949  
 NOVA - NOVA, 1949  
 OZOL - OZOL STACK, 1922  
 TOW - P.G. & E. NORTH TRANSMISSION TOWER, 1922  
 KOP - POINT EDITH CROSSING RANGE FRONT LIGHT, 1949  
 LOG - POINT EDITH CROSSING RANGE REAR LIGHT, 1949  
 ✓ MAY - PORT COSTA LIGHT, 1949  
 RES - PRESTON PT. TRIPOD, 1949  
 RID - RED BRICK CHIMNEY SOUTH SIDE, 1909  
 BIG - SHELL OIL CO. PIER, N.E'LY LIGHT, 1949  
 ACE - SHELL OIL CO. PIER, S.W'LY LIGHT, 1949  
 AVA - SOUTHERN PACIFIC R.R., AVIATION BEACON, 1932-39  
 ✓ ZINC - ZINC, 1922-49

MARKED TOPOGRAPHIC

ARE, 1949 (T-7136)	FOR, 1949 (T-7136)	SOS, 1949 (T-7136)
BAN, 1949 (T-7136)	JUN, 1949 (T-7137)	
DIA, 1949 (T-7136)	SEM, 1949 (T-7136)	

TOPOGRAPHIC STATIONS

From T-7137 - Abe, Bat, Ber, Cam, Cat, Cob, Dam, Dia, Eke, Fit, Fox, Fus,  
 Gin, Gum, Hop, Ith, Job, Kis, Loo, Mel, Pas, Rum, Sod, Tol, Wee

From T-7136 - Cas, Der, Fen, Gab, Get, Lit

From T-7135 - Art, Ask, Bob, Car, Cow, Dig, Dog, Don, End, Eva, Fan, Ham,  
 Ink, Jet, Key, Lay, Max, Nap, Oak, Ole, Peg, Pig, Paw, Rat, Rod, Rub, Saw,  
 Tan, Top, Uno, Vip, Way, Yam

From T-7134 - Feb, Lub, Nip, Nut, Say, Tap, Uke, Yes, Zip

(1)

STATISTICS FOR HYDROGRAPHIC SURVEY, H - 7786 (1949) Field BO - 1249

Launch 113

DAY	VOL. NO.	DATE	NO. POS.	NO. STATUE MILES
a Red	1 & 2	16 August	261	19.5
b	3	17 "	266	21.11
c	4	29 "	78	5.0
d	4	12 September	146	10.1
e	5	13 "	63	3.1
f	6	22 "	225	15.8
g	7	26 "	79	5.2
h	8	27 "	253	15.7
j	9	29 "	162	11.5
k	10	30 "	112	6.1
l	11	4 October	141	7.8
m	12 & 13	10 "	293	22.6
n	13 & 14	11 "	233	18.1
p	14 & 15	12 "	330	26.0
q	15 & 16	14 "	232	16.8
r	16 & 17	17 "	206	15.4
s	18	18 "	176	13.3
t	19	19 "	238	19.6
u	20	20 "	176	17.6
v	21	21 "	155	11.2
w	22	24 "	149	9.5
x	23	25 "	133	7.7

(continued)





TIDE NOTE - SURVEY H-7786(1949)

The tide station at the Benicia Arsenal - Benicia, California (Lat  $38^{\circ} 02.6'$ , Long  $122^{\circ} 07.9'$ ) was used for the reduction of all soundings. No time or height correction was applied.

The value of mean lower low water on the staff was 2.2 feet (Director's letter, 36-rcb, dated 16 September 1949).

## ABSTRACT OF VELOCITY CORRECTIONS

SURVEY H, 7786 (1949)

FIELD NO. BQ - 1249

Launch 113

DAYS	DEPTHS (feet)	CORRECTIONS (feet)
16 August thru 27 Sept. a to h	A Scale	
	0 - 32	0.0
	32 - 55	-0.2
	B Scale	
	35 - 55	-1.8
	55 - 90	-2.0
29 September j	C Scale	
	70 - 95	-2.8
	A Scale	
30 Sept. thru 14 Oct. k to q	0 - 55	0.0
	B Scale	
	35 - 46	-1.2
	46 - 90	-1.0
	C Scale	
	70 - 95	-1.8
17 October r	A Scale	
	0 - 32	0.0
	32 - 55	-0.2
	B Scale	
	35 - 65	-1.4
	65 - 90	-1.6
17 October r	A Scale	
	0 - 32	0.0
	32 - 55	-0.2
	B Scale	
	35 - 55	-2.0
	55 - 90	-2.2

(continued)

## ABSTRACT OF VELOCITY CORRECTIONS (continued)

SURVEY H, 7786 (1949)

FIELD NO. 80 - 1249

## Launch 113

DAYS	DEPTHS (feet)	CORRECTIONS (feet)
18, 19, 21 & 27 October s, t, v & z	A Scale	
	0 - 16	0.0
	16 - 25	-0.2
	25 - 33	-0.4
	33 - 40	-0.6
	40 - 55	-0.8
	B Scale	
	35 - 52	-2.0
	52 - 63	-2.2
	63 - 74	-2.4
	74 - 88	-2.6
	C Scale	
	70 - 72	-3.0
	72 - 82	-3.2
	82 - 93	-3.4
20, 24, 25, 26, 31 Oct., 4 & 8 Nov., u, w, x, y, ba, ca, da	A Scale	
	0 - 24	0.0
	24 - 34	-0.2
	34 - 55	-0.4
	B Scale	
	35 - 49	-1.6
	49 - 74	-1.8
	74 - 90	-2.0
	C Scale	
	70 - 90	-2.6


## Launch 133

23 Sept. a	A Scale	
	0 - 20	-0.0
	20 - 55	-0.2

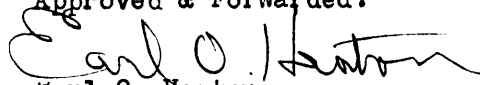
ADDENDUM  
To Accompany

HYDROGRAPHIC SURVEY H-7786 (Field No. Bo-1249)

Hydrographic Survey H-7786 was smooth plotted by the Hydrographic Section  
of the Norfolk Processing Office.

Respectfully submitted,  
  
Hugh L. Proffitt  
Cartographer

Norfolk, Va.  
9 July 1951

Approved & Forwarded:  
  
Earl O. Heaton  
Supervisor, SE District.

**DEPARTMENT OF COMMERCE**

**U. S. COAST AND GEODETIC SURVEY**

**SOUTHEASTERN DISTRICT HEADQUARTERS**

**ROOM 418, U. S. POST OFFICE BUILDING**

**NORFOLK 10, VIRGINIA**

RHC

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~DIVISION OF HYDROGRAPHY AND TOPOGRAPHY~~

24 July 1951

Division of Charts: R. H. Carstens

Plane of reference approved in 30  
volumes of sounding records for

HYDROGRAPHIC SHEET 7786

Locality Carquinez Strait, Suisun Bay, California

Chief of Party: C. A. George in 1949-50  
Plane of reference is mean lower low water, reading  
2.2 ft. on tide staff at Benicia  
15.5 ft. below B. M. 9 (1948)

Height of mean high water above plane of reference is 5.1 feet.

Condition of records satisfactory except as noted below:

*E.C. McKay*  
*Section*  
Chief, ~~Division of Tides and Currents.~~

GEOGRAPHIC NAMES

Survey No. H-7786

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. Quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	I
<u>California</u>									USCB	1
<u>Carquinez Strait</u>										2
<u>Suisun Bay</u>										3
										4
<u>Port Costa</u>										5
<u>Ozol</u>										6
<u>Ozol Pier</u>										7
<u>Martinez</u>										8
<u>Martinez Ferry Slip</u>										9
<u>Aron Pier</u>										10
<u>Point Edith</u>										11
<u>Benicia</u>									USCB	12
<u>Benicia Arsenal Pier</u>										13
<u>Southern Pacific Bridge</u>										14
<u>Bulls Head Pt.</u>										15
<u>Pt. Carquinez</u>										16
<u>Army Pt.</u>										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27
										M 234

Names underlined in red are approved 7-24-57. h. Heck  
(see chart 5534 for any additional names that may be desired)

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7786

Records accompanying survey:

Boat sheets ~~1-2 parts~~; sounding vols. 30; wire drag vols. ....;  
 bomb vols. ....; graphic recorder rolls 15 env.  
 special reports, etc. Velocity Corrections: 1 Smooth Sheet; 1 env. misc.  
Fathograms of Speed Checks; 1 env. misc. Fathograms of Bar Checks—Comparison  
with Temp. & Salinity Obs. etc.; 4 Overlay Tracings; 1 Print, Benicia Arsenal Dock;  
 1 Planimetric Map T-5942; 1 Descriptive Report.

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

Number of positions on sheet		<u>5194</u>	.....
Number of positions checked		<u>120</u>	.....
Number of positions revised		<u>6</u>	.....
Number of soundings revised (refers to depth only)		<u>8</u>	.....
Number of soundings erroneously spaced		<u>7</u>	.....
Number of signals erroneously plotted or transferred		<u>—</u>	.....
Topographic details	Time	<u>20</u>	.....
Junctions ( <u>H-7784</u> ) ( <u>H-7785</u> ) ( <u>H-6529</u> ) ( <u>1940</u> )	Time	<u>17</u>	.....
Verification of soundings from graphic record	Time	<u>11</u>	.....
<i>Checking Curves: Sticni</i>		<u>6</u>	
Verification by <i>E. Thomas</i>	Total time	<u>179</u>	Date <u>9-7-51</u>
Reviewed by <i>Lu Ziskind</i>	Time	<u>55</u>	Date <u>10-19-51</u>
<i>Sticni - 6 hrs.</i>			



DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7786

FIELD NO. BO-1249

California, Carquinez Strait, Pt. Carquinez to Pt. Edith

Project No. CS-256

Surveyed in Aug. - November, 1949  
April - July, 1950

Scale 1:10,000

Soundings:

808 Fathometer  
Lead line  
Sounding Pole

Control:

Sextant fixes on shore signals

Chief of Party - C. A. George  
Surveyed by - W. M. Hellman  
Protracted by - A. G. Atwill  
Soundings plotted by - A. G. Atwill  
Verified and inked by - E. Thomas  
Reviewed by - I. M. Zeskind, 22 October 1951  
Inspected by - R. H. Carstens

1. Shoreline and Signals

The shoreline originates with air-photographic surveys T-5941 and T-5942 of 1941 and graphic control surveys T-7135, T-7136 and T-7137 of 1949. Shoreline and in-shore detail shown in red are from the graphic control surveys and present survey field revisions.

The source of the control is described in the Descriptive Report.

2. Sounding Line Crossings

Depths at crossings are in good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves were adequately delineated, except in the vicinity of lat. 38° 04.91', long. 122° 06.0'. where development of the area inshore from the 6-ft. curve was not accomplished.

The bottom is fairly smooth, except for irregularities

caused by shoals and channel deeps. A prominent shoal lies east of the Southern Pacific Railroad Bridge, separating deep water channels. Depths along the axis of the natural channels which fall within the limits of the present survey are as great as 91 ft.

#### 4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7785 (1949) on the west and with H-7784 (1949) east of the Southern Pacific Railroad bridge. A butt junction was effected with H-6525 (1940-41) on the east where adjoining soundings are in adequate agreement. However, northeast of Benicia inshore depths on the 1940-41 survey are as much as 10 ft. deeper than present survey depths and consequently no junctional depths are shown in this area. Additional work has been recommended in paragraph 9 to cover the unsurveyed area in this vicinity.

#### 5. Comparison with Prior Surveys

A.	H-563 (1855)	1:10,000	H-1780 (1886-87)	1:10,000
	H-760 (1862)	1:10,000	H-2021 (1890)	1:10,000
	H-782 (1863)	1:10,000	H-2025 (1890)	1:10,000
	H-879 (1866)	1:10,000	H-2990 (1909)	1:10,000
	H-905 (1866-67)	1:20,000	H-3656 (1914)	1:10,000
	H-1438 (1878)	1:20,000	H-4281 (1922)	1:10,000
	H-1779 (1886)	1:10,000	H-4282 (1922-23)	1:10,000

These early surveys have been compared with and superseded by H-6524 (1939-40) and H-6525 (1940-41). Further consideration of the early surveys, therefore, is deemed unnecessary in the present review.

B.	H-4593a & b (1926)	1:10,000
	H-6524 (1939-40)	1:10,000
	H-6525 (1940-41)	1:10,000
	FE-6, 1948	1:5,000

A comparison between the prior and present surveys reveals many changes in bottom configuration which are attributed to strong currents, water-front improvements and dredging operations. The prominent shoal which lies between the 2 channels east of the Southern Pacific Railroad Bridge has extended westward under the bridge a distance of 450 meters. On this shoal present depths of 23-29 ft. in lat. 38° 02.40', long. 122° 07.40', fall in prior depths of 45 ft. Depths on the crest of the shoal in general have decreased 2-5 ft. Shoaling has also occurred on the north side of Carquinez Strait. Here, east of Army Pt. inshore from 18-ft. depths, the bottom has shoaled 2-3 ft. West of Army Pt. on Benicia Shoal, the bottom has shoaled as much as 22 ft. as for example,

in lat.  $38^{\circ} 02.44'$ , long.  $122^{\circ} 08.41'$ , where present depths of 2-6 ft. fall in prior depths of 26 ft. Here the construction of the Benicia Arsenal Pier has probably blocked the channel currents and increased the shoaling.

The following differences between the prior and present surveys were also noted:

1. The 12-ft. sounding on H-4593b (1926) in lat.  $38^{\circ} 02.28'$ , long.  $122^{\circ} 09.68'$ , falls in present depths of 15-19 ft. The close development of the area on the present survey and an additional 30 minutes spent in drift sounding over it, is considered adequate to disprove the existence of the 12-ft. depth. A present depth of 14 ft. about 40 meters northeastward of the prior 12 is adequate for charting.
2. The 25-ft. sounding on H-6524 (1939-40) in lat.  $38^{\circ} 01.75'$ , long.  $122^{\circ} 09.53'$ , falls in present depths of 31 ft. This sounding is considered disproved by the close development on the present survey and should be disregarded.
3. The 32-ft. sounding on H-6524 (1939-40) in lat.  $38^{\circ} 02.33'$ , long.  $122^{\circ} 09.99'$ , was erroneously reduced in the sounding records and instead should be 38 ft. The 38-ft. sounding falls on the present survey in depths of 50-51 ft. in an area where changes have occurred in the bottom and should be disregarded for charting.

Two wrecks were transferred to the present survey from H-6524 (1939-40). With the addition of these wrecks, the present survey is adequate to supersede the prior surveys within the common area.

C. H-4593c W.D. (1926) 1:10,000

This wire-drag survey covers the west end of Benicia Shoal in the vicinity of lat.  $38^{\circ} 02.0'$ , long.  $122^{\circ} 09.6'$ , Nine and 10-ft. depths are now found in the vicinity of lat.  $38^{\circ} 02.5'$ , long.  $122^{\circ} 09.4'$ , which was previously declared by an effective depth of 11 ft. Except for these conflicts, effective drag depths and depths on the present survey are in harmony.

6. Comparison with Chart Drawing 5534 dated 11-21-51  
Chart Drawing 5575 compilation dated 11-16-51

The hydrography on the drawings originates with the present survey after verification and review, with H-4593 W.D. (1926) and with the U. S. Corps of Engineers survey of 1950 (Bp. 47783-84).

B. Aids to Navigation

Aids to navigation located on the present survey are in substantial agreement with their locations on the drawings and adequately mark the features intended. However, the following discrepancies between the mooring buoys shown on Drawing 5534 and those on the present survey are noted:

1. The mooring buoy shown on the chart drawing dated 11-21-51, in lat.  $38^{\circ} 03.83'$ , long.  $122^{\circ} 06.85'$ , from H.O. Notice to Mariners 43, 1945, does not appear on the present survey. The existence of the buoy is not considered disproved by the present survey and it, therefore, should be retained on the chart.
2. The two mooring buoys shown on the chart drawing in the vicinity of lat.  $38^{\circ} 03.8'$ , long.  $122^{\circ} 06.15'$ , were established subsequent to the present survey in accordance with H.O. Notice to Mariners 37, 1949.

C. Dredged Channels

The controlling depth of 30 ft. in Bulls Head Channel shown on the drawings originates with the surveys by the U. S. Corps of Engineers in 1950 (Bps. 47783-84). Present survey depths of 27-29 ft. fall 10-25 meters inside the southern limits of the channel in several places, but are superseded for charting by depths of the more recent Engineer surveys.

7. Condition of Survey


- a. The sounding records and Descriptive Report are complete and comprehensive.
- b. The smooth plotting was accurately done.
- c. Moored ships of the Reserve Fleet prevented the surveying of the area northeast of Benicia.


8. Compliance with Project Instructions

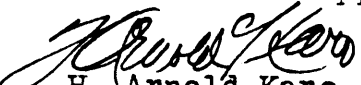
This survey adequately complies with the Project Instructions, except as noted in paragraphs 4, 7c and 9.


9. Additional Field Work Recommended

With the addition of 2 wrecks from prior surveys, the present survey is considered basic for the area covered. However, the area occupied by the moored vessels northeast of Benicia should be surveyed when the opportunity presents itself. (See paragraphs 4 and 7c above.)

  
H. R. Edmonston  
Chief, Nautical Chart Branch

  
L. S. Hubbard  
Chief, Section of Hydrography

Examined and approved:  
  
H. Arnold Karo  
Chief, Division of Charts

  
W. M. Scaife  
Chief, Division of Coastal Surveys

