

6524

6524

Form 504  
Rev. April 1935  
DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Topographic } Sheet No. 11  
Hydrographic }

U. S. COAST & GEODETIC SURVEY  
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SEP 4 1940

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State CALIFORNIA

LOCALITY

SAN FRANCISCO BAY

DAVIS POINT to SUISUN POINT,

CARQUINEZ STRAIT.

1940

CHIEF OF PARTY

E. W. Eichelberg H. and G. Eng.

Roland D. Horne H & G Eng.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO.

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.

Field No. 11

REGISTER NO. H6524

State CALIFORNIA

General locality SAN FRANCISCO BAY

Locality Davis Point to Suisun Point, Carquinez Straits.

Scale 1 - 10000 Date of survey Nov. 27<sup>1939</sup> to Mar. 29, 192/40

Virginia 1 and Florence (Chartered)  
Vessel Starboard Motorsailer (GUIDE) and Starboard Motorsailer (PIONEER)

Chief of Party Roland D. Horne and E. W. Eichelburg.

Surveyed by S. G. Grenall, J. Laskowski, F. G. Johnson.

Protracted by William W. Husemeyer.

Soundings penciled by William W. Husemeyer

Soundings in fathoms feet

Plane of reference M L L W

Subdivision of wire dragged areas by

Inked by Joseph W. Vonasek

Verified by Joseph W. Vonasek

Instructions dated Sept. 26 and Oct. 6, 192/39

Remarks: Position by visual fixes. Soundings by hand lead

line and machine.

DESCRIPTIVE REPORT  
 to accompany  
 HYDROGRAPHIC SHEET FIELD NO. 11 H 6524 (1940)  
 Project No. HT 239  
 Davis Point to Suisun Point  
 Carquinez Strait - California.  
 SHIP GUIDE and PIONEER  
 1939 - 1940.

INSTRUCTIONS:

The instructions for this project are dated September 26, 1939, with a modification being made in Par. 15 of the above dated instructions under date of October 6, 1939.

SCALE and LIMITS:

A complete hydrographic survey, on a scale of 1:10000, was made of the entire water area in Carquinez Strait from Davis Point to Suisun Point, excepting that area covered by Survey H-4593(b) were a junction is made between the two surveys. This survey is a part of the area covered by Chart 5534, and joins on the east the survey covered by Hydrographic Field Sheet No. 12. H 6525 (1940)

PARTY, VESSELS and DATES:

The work was done by the usual personnel required in launch hydrography, using the chartered launch Virginia 1, between the dates November 27 to December 1; the chartered launch Florence between the dates December 4 to 8, 1939; the PIONEER 'Starboard Motorsailer' between the dates December 11 to 29, 1939; the above work being in charge of Lieuts. S. B. Grenell and J. Laskowski. The GUIDE 'Motor-sailer' (Starboard) was used between the dates March 13 to 29, 1940, in charge of Lieut. F. G. Johnson.

SPACING OF SOUNDINGS:

The spacing of soundings is from 80 to 100 meters over the majority of the area surveyed. The area between Long. 122 - 10.8 and 122 - 15.8 was sounded by running the lines normal to the channel, and lines were run from off-shore to the 3 to 6 fathom depths with an approximate 50 meter spacing. The lines from Long. 122 - 10.8 to the eastern limit of the sheet (Long, 122 - 07.5) were run in the general direction of the channel. Soundings were made from the face of the docks beginning in about Long. 122 - 11.5 and to the east, the sounding being made from the dock itself even though a time interval is given in the record book (Form 275) for these soundings. Cross lines normally agree with the other soundings. All soundings were penciled with the exception of in a few lines where the sounding were generally one foot or less. A compilation of the omitted soundings is included in the report.

*(This list is of little value and has been removed. H.W.M.)*

CONTROL:

The signals used by the hydrographic parties were predominately those located by triangulation, and those located with a planetable using an aluminum mounted paper sheet. Two signals are identified as hydrographic signals (DER and RICK) but no determination of their

1939 Surveys:  
 T-6733  
 T-6734  
 T-6735

38° 02' N 122° 11'

position by sextant cuts is recorded in the sounding volumes, their position for plotting on the smooth sheet being determined by reference to the dock sounding in the dock sounding record book and from their location on the boat sheet.

METHODS:

Launch positions were obtained by the usual three point fixes with time generally about two minutes between fixes when the launches were underway while soundings were being made. Machine sounding was used during one day of the PIONEER'S operations ( n day - green, 85 soundings) when the interval of the fix was generally one minute, and longer intervals depending on the running. Machine sounding was used during the GUIDE'S operations usually when the sounding depth approached 12 fathoms, 285 soundings being taken in this manner, and the time interval between fixes approximates two and one-half minutes.

It is understood that all sounding recorded in the dock record book were made directly from the docks and not from the launch running along the face of the dock.

DANGERS:

No serious dangers to navigation were uncovered, the channels being clear. Since the prevailing depth of the channel to the east covered by Field Sheet No. 12, the 29 $\frac{1}{2}$  and 30 $\frac{1}{2}$  foot depths were penciled on Field Sheet No. 11, all other depths being taken to the even foot. H-4523 (1940) 30 feet  
Note: mid-channel depths on the present survey considerably deeper.

A rock edging the channel off Benicia, was used in the hydrographic work as signal BEN (Benicia Dock Navigation Beacon, 1932) which ~~light~~ Sec Rev, par 6 b (9) beacon if an aid to navigation is not shown by the new topographic survey, nor is this ~~light~~ beacon shown on Chart 5534 (Reissued, Aug. 1938, published April 1935). The Benicia Shoal is covered by Survey No. 4593(b). H 4593 b (1926)

A 48 foot sounding 90 meters east of  $\phi 38^{\circ}02.4', \lambda 122^{\circ}10.5'$  signal MOR, overlays a 79 foot sounding in the same position. It may be that there is a shoaling in this area, yet it is probable that the 48 foot sounding is carried too far off-shore by the fix of Pos. 61b (blue). Accepted, 59' just offshore on other line.

A group of rocks is shown off the point (Lat. 38-03.45, Long. 122 - 14.07 on Topo Sheet A, 7-6733 (1939) which was not developed in the hydrographic work to determine their extent.

CURRENT:

The existence of 'very strong current' is recorded in the remarks column of the sounding records at different times.

Strong currents with rips were <sup>indicated</sup> off Dillon Point, just to the south of which there is a deep, on Pos. 28f (red), page 17, Vol. 2; on Pos. 31f (red) Lat. 38-03.5, Long. 122-11.7 this current was noted as "setting to westward about 4 knots"; current rips are again noted at Pos. 50f (red) about 400 meters west of Pos. 31f; and a strong eddy about the point, 40 meters off-shore, is noted at Pos. 7n (green).

CURRENTS, continued:

Existence of 'strong current' is further noted as follows:

- 'b' day in vicinity of Lat. 38 - 03.2, Long. 122 - 11.
- 7c (blue) in vicinity of Lat. 38 - 01.9, Long. 122 - 09.5.
- Pos. 69j (blue) at face of Shell Oil Company dock; at Pos. 93j (blue) about 200 meters north of face of <sup>Lat. 38° 03.2', Long. 122° 07.4'</sup> Associated Oil Co. dock, Martinez; and at Pos. 91 (ell) (blue) about 200 meters northeast of the face of the Petroleum Products Company dock.

DISCREPANCIES:

1. In Lat. 38 - 03.7, Long. 122 - 15.65, sounding of 61 feet at second sounding following Pos. 27a(red) was not penciled in because of notation in sounding volume, "line leading aft". The 10 fathom depth curve was thus moved slightly toward deeper water to allow for a shoaler water at this sounding.

2. In vicinity of Lat. 38 - 03.8, Long. 122 - 14.1, crossing of running 127 to 129c and 20 to 22c (red) indicates a possible error in the fix for Pos. 128c; allowing 1 degree change of right angle would better crossing and place adjacent soundings in better position.

*sdgs on line 127-130c omitted*

3. The cross line 54 to 57d(red) along Lat. 38 - 03.6, between Long. 122 - 14 to 122 - 15, is deeper by 3 to 6 feet than the lines crossed; the cross line soundings should, <sup>not</sup> be given greatest weight, the deeper sounding being due to the action of current on the line.

*Deeper sdgs omitted*

4. A sounding recorded as 7 fathoms was corrected to 11 fathoms in the sounding volume and initialed by J. C. Ellerbe with notation, "Probably Recorder's error"; pos 2c(red) in Lat. 38 - 03.75, Long. 122 - 12.8. The sounding however was plotted as 64 feet(reduced) on Smooth Sheet.

2e

5. In Lat. 38 - 03.2, Long. 122 - 10.75, the soundings from 23h to 26h(red) should be disregarded in favor of shoaler soundings secured in later operations on 'a' and 'j' days(blue); and the running out of the line 26 to 27h questioned because of operation in strong current.

6. A deep (in excess of 120 feet) is defined at Lat. 38 - 03.35, Long. 122 - 11, extending northwesterly and southeasterly from this position about 175 meters; at Pos. 89n(green), Lat. 38 - 03.4, Long. 122 - 11.08 is a sounding of 61 feet laying just to northeast of the deepest sounding of 134 feet.

7. In Lat. 38 - 01.92, Long. 122 - 09.3, the crossing of Pos. 19c to 20c(blue) and continuation of 'c' day line to Pos. 31c, shows depths greater than the probable depths because of sounding against current.

*sdgs omitted Pos. 19-20c.*

8. In Lat. 38 - 01.65, Long. 122 - 08.43, the crossing of line 12 to 13d (blue) appears approximately 8 feet too great a depth on the 'd' day running. *Deeper sdgs omitted.*

9. In Lat 38 - 03.4, Long. 122 - 11.7, a sounding of 60 feet at Pos. 5h(blue) is rejected in the sounding volume because of investigation on 'j' day (Pos. 1 to 6; the shoaler sounding was not plotted.

DISCREPANCIES, Continued:

10. A fishing barge indicated at Pos. 30h (blue), Lat. 38 - 03.25, Long. 122 - 10.53 and sketched on the boat sheet, was not sketched on the smooth sheet, since there is no indication that the barge is so located permanently. <sup>Plotted as a matter of record.</sup>

11. Within the area bounded by Long. 122 - 14.7 and 122 - 15, lines run across the channel on d day (red) were later paralleled with lines run on m day (green); the latter run lines result in shoaler soundings being secured in the area, and probably were run because of the questioning of the previous day's soundings due to currents running on d day.

12. Off the face of the ARMY dock (Lat. 38 - 02.8, Long. 122 - 08), Pos. 72g (blue) is given as one meter off the SW corner of the dock with a sounding of 3 feet and 3 foot soundings continuing eastward half the length of the dock. Soundings taken off the face of the dock on g day, March 22, 1940, give appreciably deeper soundings and more commensurate with the expected conditions off a used dock. The dock soundings are shown on a larger scale insert directly above the transfer from the Topo sheet at a scale about  $3\frac{1}{2}$  times larger. <sup>T-6734 (1939)</sup>

13. The dock soundings along the west face of the Shell Oil Company dock are pencilled along the dotted line as transferred from the Topo sheet which line is thought to indicate a line of piles. <sup>T-6734 (1939)</sup>

AIDS TO NAVIGATION:

All fixed aids to navigation appearing in this area were previously located by triangulation, or by the topographer on aluminum mounted paper sheets, and presumably have been submitted on Form No. 567 at the time of the transmittal of the descriptive reports covering the topographic work. Only two floating aids to navigation are located in the area, the Benicia Shoal Lighted Bell Bouy 1A is located by topo, <sup>T-6734 (1939)</sup> and the Bouy No. 13 (black can) located by hydrographic party and placed in Lat. 38 - 04 - 230 meters, Long. 122 - 15 - 65 meters. ✓

BOTTOM CHARACTERISTICS:

Bottom characteristics are determined from the usual notes as entered in the sounding volumes, being generally a black mud. A hard bottom is indicated from Carquinez Bridge westward to about Long. 122 - 11.7, and a small area of fine gray sand is noted in the vicinity of Lat. 38 - 03.1, Long. 122 - 10.7. A rocky bottom is indicated at two points, one just off the Associated Oil Dock at Port Costa, and the other in Lat. 38 - 01.9, Long. 122 - 09.7.

MISCELLANEOUS:

Not previously mentioned under the heading CONTROL is the matter of the location of the signal CHY. <sup>T-6733 (1939)</sup> This signal was not located by hydrography, and on the topo sheet, Sheet "A" there is plotted a building but not indicated as a topo signal. For the hydro fixes, the chimney of this shack was used as the signal and so the signal CHY has been transferred from the topo sheet and indicated as a topo signal.

A memorandum from Lieut. F. G. Johnson to the Processing Office,

Steamer GUIDE,  
Oakland, Calif.  
April 9, 1940

MEMORANDUM TO: LIEUT. W. J. CHOYAN,  
For Boat Sheets No. 11 and 12A.

#6524 (1940)

# (524 (1940)

The work accomplished by the GUIDE on Sheet No. 11, extends from the vicinity of Long 122 - 11 east. That to the westward was done by the PIONEER. Except for the cross lines, the sounding lines by the GUIDE were run parallel to the current. The PIONEER ran their lines across the current. A small amount of work was done on Sheet No. 12A on the east side of the Associated Oil Dock in the vicinity of Lat. 38 - 02 and Long. 122 - 07.5. This work can be recorded on Sheet No. 11 when the smooth sheet is made. (As was done - Processing Office notation)

Par. 1

INVESTIGATIONS

The work of the GUIDE was made to overlap that done by the PIONEER in the vicinity of Long. 122 - 11. The soundings on the overlap by the GUIDE were written in violet colored ink to designate them from those of the PIONEER, except for the five lines in the shallow water on the north side of the straits. In the vicinity of Lat. 38 - 03, Long. 122 - 11, and about 600 meters NW from signal WHITE our soundings are several feet shallower than those of the PIONEER. Our original lines were run on "a" day at this point and on "j" day two additional short lines were run splitting the original lines. It was found the two additional lines established depths consistent with our original lines but still about the same amount shallower than the depths obtained by the PIONEER

Par. 2

Cross line at Rt. angle to channel. Sd's omitted. H.W.M.

Two spots circled in red pencil on the part of the sheet worked by the PIONEER were investigated by this party, one in Lat 38 - 03 plus, Long. 122 - 12, where a sounding of 86 feet came between soundings of 75 and 69 feet. We ran an additional line here, 1h to 4h (blue) and found the 86 foot sounding to be wrong. The other place investigated is in the vicinity of Longitude 122 - 11.7, where a sounding of 61 feet was recorded between greater depths about 160 meters north of signal PILE. We found this depth to be incorrect by taking spot soundings on positions 1 to 6 inclusive on "j" day. A few additional soundings were taken to the north of this spot where no-bottom soundings had been recorded.

Par. 3

Where two of our lines crossed at Lat. 38 - 02 minus, Long. 122 10, about 300 meters NE of signal TEEN, additional lines were run on "k" day between positions 13 to 19 inclusive which cleared up the inconsistencies here.

Par. 4

It will be noted at about 600 meters east of signal BRICK that there are a number of soundings greater than 80 feet which off-hand might be questioned. However these soundings are correct as proven by line run across the spot on "j" day.

Par. 5

In the vicinity of Lat. 38 - 01.8, Long. 122 - 08, a line of soundings appeared inconsistent with adjacent soundings. This was cleared up by running additional lines on "j" day. This spot is about 550 meters northeast of signal STAFF.

The color used by the GUIDE'S launch is blue, except for one day, "d" day for which red was accidentally used.

MEMORANDUM TO: Lieut W. J. Chovan, continued:

DOCKS

All docks from the Port Costa Warehouse Co. dock in the vicinity of Long. 122 - 11 east to the end of the sheet (east) were sounded out by the party from the GUIDE.

A print of the survey made by the Associated Oil Company around this dock accompanies the boat sheet. *Bp. 31825 (1938)*

/s/ Frank G. Johnson.

The following comments relative to Lieut. Johnson's memorandum <sup>on page 5</sup> are made:

As pertaining to Par. 1, on the Smooth Sheet, the work on Boat Sheets 11 and 12A were combined, the hydrographic work being contained in the same series of records.

Reference to Par. 2, junction of work, the line of the PIONEER, 23 to 26h (red) is covered in the 5th Par. of the Discrepancies. The ~~GUIDE~~ work was done with a 20 pound lead machine sounding, the PIONEER using a hand line. The shoaler sounding are to be preferably retained.

Reference to Par. 3, with reference to the 86 foot sounding, this sequence of sounding is not carried on the Smooth Sheet. A no-bottom sounding however near this point should be disregarded. The 61 foot sounding (60 feet, reduced) is covered in Par. 9 of Discrepancies, and was not retained on the Smooth Sheet.

Reference to Par. 4, there is no apparent discrepancy at this point outside of the sounding on Pos. 1c (blue) at 30 feet (reduced).

Reference to Par. 5, soundings and junction of lines indicates that depths of 80 feet exist in this area.

Reference to Par. 6, with reduced soundings, no inconsistencies are evident in this area.

With reference to dock soundings, the matter of discrepancies have been noted in the vicinity of the Army Dock. In the plotting of dock fixes as given in the sounding volumes it was quite often difficult to reconcile the position of the fix with its described location, and its position as described with reference to the topo location.



## COMPARISONS WITH PREVIOUS SURVEYS AND NEW SURVEYS:

Comparison with Chart No. 5534: In general the new depths agree with those shown on the chart, however with some particularly noticeable difference in some areas of the survey. There appears to be a general filling in of the tide flats, and in the vicinity of Lat. 38 - 03, Long. 122 - 10, depths of approximately 20 feet less than shown on the chart were secured. There is a deepening of the channel under and in the vicinity of Carquinez Bridge, the secured depths being in excess of those shown on the chart by 10 to 40 feet, and in the vicinity of and fronting the Port Costa Warehouse Company dock there is a probable deepening of the channel from a comparison with the chart. The deepest water secured in the new survey is off Dillon Point, a maximum sounding of 148 feet having been secured.

*H-45936 (1926)*

Comparison with Survey No. 4593(b): The junction of the two surveys give greater depths in the new work, usually from two to four feet, except on the eastern and inshore limits of the junction, the new work is shoaler to about 400 meters off-shore, and also in a small area in the vicinity of Lat. 38 - 02.35, Long. 122 - 10, the new work gives shoaler depths to about 10 feet.

*H-6525 (1940)*

Comparison with Field Sheet No. 12 (GUIDE - 1940): The junction of Field Sheets Nos. 11 and 12, at the easterly limit of Sheet No. 11 is satisfactory. *H-6524 (1940)* *H-6525 (1940)* *H-6524 (1940)*

## DEPTH CURVES:

Depth curves are drawn on the sheet up to and including the 120-foot curve. Where the change in the conformation of the bottom is so rapid that a drawing-in of the lines would lead to a confusion of lines, the intermediate lines are omitted. The bottom changes in the narrower parts of the Straits, <sup>are</sup> very rapidly between the 4 and 10 fathom depths.

## TIDAL DATA:

*H 6524 (1940)*

Tide reducers were secured for Sheet 11, from a portable automatic tide gauge installed on the wharf of the American Smelting and Refining Company, Selby. The location of the gauge was Lat. 38 - 03.5, Long. 122 - 14.6. Also from a standard automatic tide gauge installed on the dock at Benicia Arsenal in Lat. 38 - 02.6, Long 122 - 08.0.

is

A report covering the tidal data is included as a portion of the Descriptive Report.

STATEMENT  
to accompany

HYDROGRAPHIC SHEET FIELD  
NO. 11  
H 6524 (1940)

The smooth plotting and penciling of soundings on the sheet was done by William W. Husemeyer, who also prepared the descriptive report, with the exception of the report covering the tidal data which was prepared by Lieut. Walter J. Chovan. All work was under the supervision of Lieut. Walter J. Chovan.

The completed smooth sheet has been inspected and is approved.



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Walter J. Chovan,  
Officer in Charge of Oakland Processing Office.

Oakland, California.

TABLE OF STATISTICS.

H6524

HYDROGRAPHIC FIELD SHEET NO. 11.

Date 1939	Vol.	Day Letter	Positions	Soundings	Miles Statute	Vessel
Nov. 27	1	a (red)	42	143	5.0	Chartered Launch
28	1	b	99	342	17.3	Virginia I.
29	1	c	133	374	15.0	"
Dec. 1	1	d	58	204	8.3	"
4	2	e	59	159	8.0	Chartered Launch
6	2	f	62	161	4.5	Florence
7	2	g	39	107	3.9	"
8	2	h	27	79	2.4	"
11	2	j (green)	47	139	4.3	PIONEER, Starboard
13	2	k	153	505	11.6	Motorsailer
14	3	l	79	280	5.1	"
27	3	m	76	151	6.3	"
28	3	n	101	101**	4.0	"
29	3	p	6	6	0.1	"
1940						
Mar. 13	4	a (blue)	115	25		
				90*	10.5	GUIDE, Starboard
14	4	b	156	350		Motorsailer
				61*	12.5	"
15	4	c	102	303	8.0	"
19	4	d	97	486	8.8	"
20	5	e	109	434		
				34*	7.4	"
21	5	f	159	614	13.5	"
22	5	g	90	301	7.4	"
26	6	h	60	124		
				54*	4.8	"
27	6	j	133	386		
				48*	9.5	"
28	6	k	56	247	3.8	"
29	6	l	38	220	3.6	"
14	7	b		51		From Dock.
22	7	g	2	18		"
26	7	h		13		"
28	7	k	39	250		"
29	7	l	9	39		"
Totals		25 days	2136	6844	184.6	

\* Machine soundings.

\*\* Includes 85 Machine soundings.

Total machine soundings - 372.

Area surveyed - square (statute) miles - 6.6

LIST OF SIGNALS.

H6524

HYDROGRAPHIC SHEET NO. 11

TRIANGULATION

<u>Name</u>	<u>Hydrographic Name</u>
Army Point 2, 1886	Army
Mococo Fertilizer Co., stack, 1932	Coco
Benecia Dock, navigation Beacon, 1932	Ben
Rodeo, Union Oil Co., stack, 1932	Rod
Crockett, C. & H. Sugar Co., stack, 1932	Sug
Vallejo, Carquinez Bridge, nav. beacon, 1932	Mid
Naval Beacon, Front Range Breakwater. East End, 1932	Val
Carquinez Strait Lighthouse, 1911	Car
Selby, stack on shot tower, 1911	Shot
Dolphin Off End of New Dyke, 1911	Dol
Benicia Tannery, tank, 1922	Tan
Grangers Wharf Tower, east gable, 1922	Gran
Pacific Gas and Electric Co., north trans. tower, 1922	Pac
Martinez, Courthouse, 1922	Mart
Ozol, stack, 1922	Ozol
Arsenal, tank, 1922	Ars
Clocktower, flagstaff, 1909	Clock
Stack, 1938	Hi
Great Western Power Company, north trans. tower, 1922	Pow
Beacon 1, 1928	Mud
Lone Tree Point Wharf, southwest point 1911	Lone
Sperry Flour Company, water company, 1911	Sperry
Black Beacon, 1929	Black
Southern Pacific Railroad, aviation beacon 1932	Sou
Suisun Point U. S. E., 1922	Suisun Point USE
Red Brick Chimney, south side, 1909	Brick

HYDROGRAPHIC SIGNALS

Der  
Rick

Vol. 7, Page 6 and Boat Sheet.  
do

TOPOGRAPHIC SIGNALS

	<u>Sheet A</u>		<u>Sheet B</u>		<u>Sheet C</u>
Black	Gun	Rad	Aero	Ho	Top
Can	Low	Ric	Cab	Red	Get
Code	Mor	See	Crib	Sign	
Cup	<u>Mon</u> 13a	Staff	Chy		
Dol	Oil	Teen(Mon 17a)	End		
Flag	Pile	Use	Fish		
Fin	Pilot	Up	Flag		
		White			

LAC  
H.C.

## TIDE NOTE FOR HYDROGRAPHIC SHEET

September 20, 1940

Division of Hydrography and Topography:

✓ Division of Charts: Attention: Mr. H. R. Edmonston

Tide Reducers are approved in  
7 volumes of sounding records for

HYDROGRAPHIC SHEET 6524

Locality Carquinez Strait, Davis Pt. to Suisun Pt., San Francisco Bay, Calif.

Chief of Party: R. D. Horne in 1939-1940

Plane of reference is mean lower low water reading

2.3 ft. on tide staff at Selby

12.2 ft. below B.M. 1

2.4 ft. on tide staff at Benicia ✓

9.8 ft. below B. M. 4.

Height of mean high water above plane of reference is 5.5 feet at  
Selby; 5.1 feet at Benicia. ✓

Condition of records satisfactory except as noted below:

*R. Schuman*  
Acting Chief, Division of Tides and Currents.

GEOGRAPHIC NAMES

Survey No. **H6524**

Name on Survey	Source of Name										Number
	A	B	C	D	E	F	G	H	K		
<u>Army Point</u>											1
<u>Benicia</u>											2
<u>Benicia Shoal</u>											3
<u>Crockett</u>											4
<u>Dillon Point</u>											5
<u>Glen Cove</u>											6
<u>Morrow Cove</u>											7
<u>Oleum</u>											8
<u>Selby</u>											9
<u>Semple Point</u>											10
<u>Southampton Bay</u>											11
<u>Davis Pt.</u>											12
<u>Suisun Pt.</u>											13
<u>Carquinez Strait</u>											14
<u>Martinez</u>											15
											16
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											26
											27

Names underlined in red approved  
by L. A. Beck on 11/27/40

Remarks

Decisions

1		380221
2		" U.S.G.B
3		"
4		380222
5		380221
6		380222
7		"
8		"
9		"
10		"
11		380222
12	Title	380222
13	"	380221
14	"	380222 U.S.G.B
15		380221
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25		
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27		

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. ...**H6524**

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

Number of positions on sheet	<b>2136</b>
Number of positions checked	<b>.139</b>
Number of positions revised	<b>..33.</b>
Number of soundings recorded	<b>6844.</b>
Number of soundings revised	<b>..77..</b>
Number of soundings erroneously spaced	<b>..66..</b>
Number of signals erroneously plotted or transferred	<b>0.....</b>

Date: **11/6/40**

Verification by **J.W. Vonasek**

Time: **228 hrs.**

Review by **Harold W. Murray**

Time: **28 hrs.**



HYDROGRAPHIC SURVEY NO. H6524

Smooth Sheet One

Boat Sheet One

Records; Sounding 7 Vols., Wire Drag     Vols., Bomb     Vols.

Descriptive Report Yes

Title Sheet Yes

List of Signals Yes

Landmarks for Charts (Form 567) Yes

Statistics Yes

Approved by Chief of Party Yes

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service -----  
(Circular Nov.30, 1933)

Hydrography: Total Days 30 ; Last Date Mar. 29, 1940

Remarks \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# MEMORANDUM

## IMMEDIATE ATTENTION

SURVEY DESCRIPTIVE REPORT PHOTOSTAT OF	}	No. H <b>H6524</b> <del>No. T</del>	{ received <b>Sept. 4, 1940</b> registered <b>Sept. 6, 1940</b> verified reviewed approved
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This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE		Initial	Attention called to
20			
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RETURN TO

82	T. B. Reed
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✓ TBR

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H-6524 (1940)

Verified and Inked by *J. W. Vonasek*

Date *11/6/40*

1. The descriptive report was consulted and appropriate action taken. ✓
2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude. ✓
3. All references to survey sheets mentioned in the descriptive report include the registry number and year. ✓
4. Geographic names of hydrographic features are in slanting lettering and of topographic features in vertical lettering. ✓
5. All items effecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken. ✓
6. All positions verified instrumentally were check marked in the sounding records. ✓
7. All critical soundings are clear and legible. ✓
8. The metal protractor has been checked within the last three months. ✓
9. The protracting and plotting of all bad crossings were verified. ✓
10. All detached positions locating critical soundings, rocks or buoys were verified. ✓
11. The boat sheet was compared with the smooth sheet. ✓
12. The spacing of soundings as recorded in the records was closely followed. ✓
13. The bottom characteristics were shown on outstanding shoals. ✓
14. The reduction and plotting of doubtful soundings were checked. ✓

15. The transfer of contemporary topographic information was carefully examined. ✓
16. All junctions were transferred. ✓
17. The notation "JOINS H " was added for all contemporary adjoining or overlapping sheets now registered. ✓
18. The depth curves have been drawn to include the significant depths. ✓
19. All triangulation stations and transfer of topographic and hydrographic signals were checked by the field party. ✓
20. Heights of rocks were checked against range of tide. ✓
21. Rocks transferred from topographic survey have a dotted curve where shown thereon. ✓
22. Unnecessary pencil notes have been removed. ✓
23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet. ✓
24. The low water line and delineation of shoal areas have been properly shown (see letter of October 20, 1934). ✓
25. Degree and minutes values and symbols have been checked. ✓
26. Source of shoreline and signals (When not given in report).  
*Topographic Surveys T-6733 (1939)*  
*T-6734 ..*  
*T-6735 ..*
27. Depth curves were satisfactory ~~except as follows:~~

28. Sounding line crossings were satisfactory except as follows:  
*at several locations described under "Discrepancies" in the report.*
29. Junctions with contemporary surveys were satisfactory ~~except as follows:~~
30. Condition of sounding records was satisfactory ~~except as follows:~~
31. The protracting was satisfactory ~~except as follows:~~
32. The field plotting of soundings was satisfactory ~~except as follows:~~
33. Notes to reviewer:

Under 'Discrepancies' Par. 2., an error in the fix for Pos. 128 c (red) is discussed. Upon investigation pos 127 c seems also in error, indicating an error in recording the signals used. The soundings 126 c to 133 c. have not been inked since it is obvious from inspection that the line is in error. All sidg's omitted. H.W.M.

In Par. 5, the action recommended was taken.

In Par. 12, the sounding at pos. 72 g (blue) is discussed. Plotting 72 g on a later sounding clears up the trouble. (see <sup>by records</sup> vol. 5. p 60)

A wreck was plotted at  $122^{\circ} 09.95'$ ;  $38^{\circ} 03.2'$ ; the position was transferred from the Boat sheet. The pencilled note on the Boat sheet was the only authority for plotting the wreck.

Joseph W. Youasick

DIVISION OF CHARTS

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6524 (1939-40) FIELD NO. 11

California, San Francisco Bay, Davis Point to Suisun Point,  
Carquinez Straits

Surveyed in November 1939 to March 1940, Scale 1:10,000

Instructions dated September 26 and October 6, 1939

(PIONEER) October 6, 1940 (GUIDE)

Soundings:

Hand Lead and Machine

Control:

Three point fixes on shore signals

Chief of Party - Roland D. Horne and E. W. Eickelberg.  
Surveyed by - S. G. Grenell, J. Laskowski, F. G. Johnson.  
Protracted by - Wm. W. Husemeyer.  
Soundings plotted by - Wm. W. Husemeyer.  
Verified and inked by - J. W. Vonasek.  
Reviewed by - Harold W. Murray, November 12, 1940.  
Inspected by - H. R. Edmonston.

1. Shoreline and Signals.

The shoreline and signals originate with 1939 plane table surveys T-6733, T-6734 and T-6735. The origin of hydrographic signals "CHY", "DER", and "RICK", in lat. 38°02', long. 122°11' are given in the descriptive report, pages 1, 2 and 4.

2. Sounding Line Crossings.

Agreement of cross lines is generally satisfactory in view of the fact that currents as large as 4 knots have been encountered. The descriptive report, pages 3, 4 and 6 lists several discrepancies. An additional discrepancy noted in lat. 38°03.8', long. 122°14.0' is channel line 6 to 8d (red) which varies 2 to 9 feet shoaler in depths of 60 to 90 feet than the main system of cross channel lines run on c day (red). The shoaler soundings have been retained.

Some doubt exists as to the character of the 61 foot sounding in lat. 38°03.4', long. 122°11.1' falling in depths of 81 to 120 feet because it is not confirmed by another sounding.

3. Depth Curves.

The usual depth curves may be satisfactorily drawn within the limits of the survey.

4. Junctions with Surveys.

a. The junction on the east with H-6525 (1940) will

be considered in the review of that survey.

- b. The western limit of the present survey is the limit of the present project HT-239. A fair junction, however, is made with the charted soundings on Chart 5525 originating with H-4280 (1926).
- c. The present survey joins H-4593b (1926) in the vicinity of lat.  $38^{\circ}02'$ , long.  $122^{\circ}09'$ . In the common area along the south and east sides the present survey depths vary in many instances from 2 to 4 feet deeper and the deeper soundings of the 1926 survey have, therefore, been omitted. The fringe of inshore soundings from H-4593b, however, generally agree closely with the present survey depths except in lat.  $38^{\circ}02.3'$ , long.  $122^{\circ}10.0'$ , where the present survey shows depths as shoal as 32 feet in an area where formerly 54 feet was available. This change in bottom of 22 feet is partly attributed to the shoal area (least depth 12 feet) about 0.25 miles further eastward which is apparently building up in a westerly direction. It is quite probable that the present survey limits, if carried further eastward, would continue to show changes in bottom although the amount of change would naturally decrease.

#### 5. Comparison with Prior Surveys.

a.	H-544 (1856)	H-879 (1866)	H-1801 (1887)
	H-563 (1857)	H-905 (1866-67)	H-2021 (1890)
	H-759 (1862)	H-1322 (1876)	H-2256 (1896)
	H-760 (1862)	H-1438 (1878)	H-2338 (1896-98)
	H-782 (1863)	H-1779 (1886)	H-2990 (1909)
	H-838 (1864)	H-1780 (1886-87)	H-3655 (1914)

The above surveys on scales of 1:5,000 to 1:20,000 with a scale of 1:10,000 predominating, taken singly and in groups cover various portions of the present survey. In particular, the vicinity of Benicia is covered by four surveys and the mouth of Mare Island Strait is covered by six surveys.

The area covered by the present survey, Carquinez Strait, is a bottleneck existing between two larger bodies of water, Suisun Bay on the east and San Pablo Bay on the west. The scouring effect and transfer of sediments through the strait has a changeable history which is emphasized by the present survey depth being as much as 50 feet deeper in some areas and 20 feet shoaler in others. The



excessively larger differences are, of course, confined to areas of small extent and in particular in areas where deeps are indicated.

An examination of each individual survey revealed no information of pertinent importance to navigation that needs consideration in this review. A survey by survey comparison, of the changes noted will serve no useful cartographic purpose and is, therefore, omitted. It is to be noted, however, that the detached lumps encircled by the 60 foot curve, as well as a number of other nearby depths on the present survey in lat.  $38^{\circ}03.6'$ , long.  $122^{\circ}12.7'$ , agree within 1 to 2 feet with the depths obtained in 1886 on H-1779. This old survey also verifies the doubtful 62 foot sounding shown on the present survey in lat.  $38^{\circ}03.3'$ , long.  $122^{\circ}14.1'$ . The present survey, within the area covered, supersedes these surveys.

b. H-4280 (1922) and H-4281 (1922) scales 1:10,000.

These surveys taken together cover the entire area of the present survey. Agreement of depths is good in some areas but the predominating trend has been one of change. The present survey depths are noted to be as much as 27 feet deeper in some instances and 12 feet shoaler in others. The maximum changes, however, are noted in the deeper areas in midchannel and do not necessarily occur throughout the entire length of the channel. In lat.  $38^{\circ}03'$ , long.  $122^{\circ}10'$  and northwestward the large shoal area inside the 6 foot curve has shoaled 1 to 4 feet. At the western limit of the present survey, portions of the present survey shoreline is from 100 to 150 m. further offshore. This large difference does not necessarily imply extensive changes since the area under consideration is characterized by marsh land. Additional comparison notes are given in the descriptive report, page 7, under "Comparison with Chart No. 5534".

A 54 foot sounding (charted) originating with H-4281 in lat.  $38^{\circ}03.3'$ , long.  $122^{\circ}11.3'$  falls in depths of 58 to 62 feet on the present survey and was carried forward. The 54 is a single sounding on line indicating an irregular bottom. Since the bottom characteristics in this vicinity are hard, the present survey development of lines spaced 100 m. apart does not offer sufficient evidence that the 54 foot spot has been worn away. The present survey, with this addition, supersedes these surveys.

Mention is made of the fact that the original review of H-4280 contains a study of the accuracy of vertical cast sounding in relation to the current.

c. H-4593a (1926) scale 1:10,000.

This survey overlaps the limits of the unsurveyed area on the present survey in the vicinity of lat.  $38^{\circ}02'$ , long.  $122^{\circ}09'$ . The survey was made to determine relative differences between sounding with the current and sounding against the current, and is not intended to be used in charting. The common area, however, was resurveyed in the same year on H-4593b (1926) discussed as a junction in par. 4c of this review and no further consideration is necessary.

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

A small drag strip set to an effective depth of 11 feet on this survey in the vicinity of lat.  $38^{\circ}02.2'$ , long.  $122^{\circ}09.9'$ , does not conflict with the present survey depths of 32 to 80 feet.

6. Comparison with Charts 5525 (New Print dated Mar. 16, 1940.)  
5534 (New Print dated June 26, 1940.)

a. Hydrography.

Hydrography shown on the charts originates with surveys discussed in the preceding paragraphs and several Army Engineers' surveys.

- (1) The latest blueprint covering the opening between the dikes at the southeast end of Mare Island is No. 34657 (Sept.-Oct. 1940) which is subsequent to and in good agreement with the present survey.
- (2) Blueprint 26567 of 1933 covers the unsurveyed area south of Benicia. The soundings generally agree within 1 to 2 feet.
- (3) Blueprint 31825 of 1938 covers a strip about one-half mile wide along the south shore to the eastward of long.  $122^{\circ}09.4'$ . Agreement of depths is good in some areas but only fair in others as differences of several feet are noted.

With the exception of blueprint 34657 which is subsequent to the present survey, the present survey supersedes the above blueprints.

b. Aids to Navigation.

Aids to navigation agree closely with the charted positions and satisfactorily mark the features intended. Mention is made, however, of the following:

- (1) The present survey shows several lights located on the ends of ferry slips or docks as in latitude  $38^{\circ}01.6'$ , long.  $122^{\circ}08.3'$  which are not charted. These lights are probably privately maintained.
- (2) The charted lights shown at each end of the wharf in latitude  $38^{\circ}02'$ , longitude  $122^{\circ}08'$  are not shown on the present survey or on T-6734 (1939) nor are they listed in Chart Letter 366 of 1940 covering landmarks and aids to navigation. These lights, however, are listed in the 1940 Pacific Coast Light List and should, therefore, be retained.
- (3) The beacon (not charted) formerly located by triangulation (1932) in latitude  $38^{\circ}02.6'$  long.  $122^{\circ}10.0'$ , was established on a bare rock. The beacon was discontinued two years later (Lighthouse Notice to Mariners 19 of 1934). The bare rock (not charted) on which the beacon was formerly located, however, is still in existence (see T-6734 of 1939).
- (4) The aviation beacon on the Carquinez Bridge is noted on Chart 5534 as a flashing light but the color of the light is not indicated. Both T-6633 (1939) and the 1940 Light List show this feature as a flashing red light. This light is maintained by the American Toll Bridge Company.
- (5) Chart 5525 shows a bell located on the middle of the L-shaped wharf off Oleum which has been charted since 1920. Both the 1940 Light List and T-6733 (1939) indicate that the bell is located near the east end of the wharf.
- (6) The charted "cable limit outline" in lat.  $38^{\circ}04'$ , long.  $122^{\circ}14'$  does not fully enclose the submerged cable crossing shown on the present survey.
- (7) The descriptive report of T-6735 (1939), page

3, states that the bell listed in the Light List (No. 355) is slightly in error. The correct position is at signal "Leb" shown on T-6735, (lat. 38°02.1', longitude 122°07.4').

7. Condition of Surveys.

- a. The sounding records are neat and legible and conform to the requirements of the Hydrographic Manual.
- b. The descriptive report is clear and very comprehensive, and satisfactorily covers all matters of importance.
- c. The field protracting and plotting of soundings were satisfactory.
- d. It is desirable that clearances of overhead structures such as bridges and power lines be verified.

8. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the instructions for the project.


9. Additional Field Work Recommended.

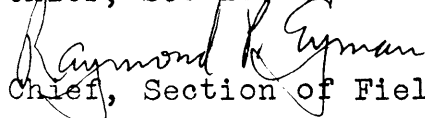
This is a satisfactory survey and no additional field work is required. (See par. 4c, this review).

10. Superseded Surveys.


H-544	(1856)	In part	H-1780	(1886-87)	In part
H-563	(1857)	" "	H-1801	(1887)	" "
H-759	(1862)	" "	H-2021	(1890)	Entirely
H-760	(1862)	" "	H-2256	(1896)	In part
H-782	(1863)	Entirely	H-2338	(1896-98)	" "
H-838	(1864)	In part	H-2990	(1909)	" "
H-879	(1866)	" "	H-3655	(1914)	" "
H-905	(1866-67)	" "	H-4280	(1922)	" "
H-1322	(1866-67)	" "	H-4281	(1922)	" "
H-1438	(1878)	" "	H-4593a	(1926)	" "
H-1779	(1886)	" "			

Examined and approved:

  
Thos. B. Reed,  
Chief, Section of Field Records.

  
Chief, Section of Field Work.

  
Chief, Division of Charts

  
Chief, Division of Coastal  
Surveys.

application to chart 5525 Feb. 1941 - J. L. S.

Applied to chart dwg. 5534 March 17, 1941. L. C. M.