

8356

Diag. Cht. No. 5502-2.

Form 504

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. WCFP-1457 Office No. H-8356

LOCALITY

State California

General locality Tomales Bay

Locality Indian Beach to Lagunitas

Creek

1957

CHIEF OF PARTY

A. L. Wardwell

LIBRARY & ARCHIVES

DATE December 11, 1957

USCOMM-DC 5087

8356

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-8356

Field No. WCFP 1457

State California

General locality Tomales Bay

Locality ~~Southern Part~~ INDIAN BEACH TO LAGUNITAS CREEK

Scale 1:10000 Date of survey 23 April - 1 May 1957

Instructions dated 22 August 1956

Vessel Launch No. C.S. 160

Chief of party CDR. Arthur L. Wardwell

Surveyed by ENS. Philip J. Taetz, ENS. James K. Richards

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

Fathograms scaled by A.W. Brain, L.T. Brown

Fathograms checked by ENS. J.K. Richards

Protracted by ENS. J.K. Richards

Soundings penciled by ENS. J.K. Richards

Soundings in ~~fathoms~~ feet at MLW MLLW AND ARE TRUE DEPTHS.

REMARKS:

R.W.W. 6/4/57

2052

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SURVEY
FIELD NO. WCFP 1457 - REGISTRY NO. H-8356

TOMALES BAY, CALIFORNIA
PROJECT 13890

DATE OF SURVEY: 1957
SCALE: 1:10,000

WEST COAST FIELD PARTY - ARTHUR L. WARDWELL, CHIEF OF PARTY

SURVEYED BY: P.J. TAETZ, J.K. RICHARDS

PROJECT

The project number is 13890. Instructions are by the Assistant Director, dated 22 August 1956.

SURVEY LIMITS AND DATES

The general locality of this survey is Tomales Bay, California. The survey occupies the southern part of Tomales Bay, extending northward to approximately latitude $38^{\circ} 08' 30''$. Lagunitas Creek was developed south to latitude $38^{\circ} 04.1'$.

Field work commenced on 23 April 1957 and continued intermittently until 1 May 1957.

Junction is made on the north with sheet WCFP 1357, Reg. No. H-8355 (1957)

VESSEL AND EQUIPMENT

Launch C.S. 160 and a skiff were used for all sounding lines. All fathometer soundings were taken aboard the launch with an 808 J type fathometer, no. 152 SPX, with a keel-mounted acoustic unit. All soundings taken from the skiff were pole soundings.

TIDE AND CURRENT STATIONS

For tidal reducers in the area of this survey, a portable tide

gage was maintained on the Inverness Yacht Club pier. See TIDE NOTE ✓
in this report. An abstract of smooth tide reducers is attached to
this report.

No current stations were occupied.

SMOOTH SHEET

The projection was made by hand at the C&GS Ships' Base in ✓
Seattle.

The shoreline was transferred from advance blue-line tracings. ✓
The shoreline and all piers and houses along the shoreline were not *- inked by W.O.*
inked on the smooth sheet. All details in the water area, however,
(such as rocks and duck blinds) which originated with the manuscript
were inked on the sheet.

Because the sounding lines on this sheet are fairly straight and ✓
the area has a bottom with a uniform slope, film positives of the
boat sheet were used in plotting many of the positions. The begin-
ning and end of each sounding line was plotted with the protractor.
Where the line was more than five positions in length, every fifth
position along the line was plotted with the protractor. All inter-
mediate positions were pricked through from the film positives.
Detached positions were plotted with a protractor.

CONTROL STATIONS

Three of the signals were previously established triangulation ✓
stations. The remainder were located by photogrammetric methods.
See LIST OF SIGNALS USED for details.

SHORELINE AND TOPOGRAPHY

The shoreline was taken from manuscripts T-10415, T-10416, ✓
T-10417, T-10418, and T-10419 of (1955-57).

In some cases the hydrographic location of rocks awash did not ✓
agree precisely with the photogrammetric locations. Where the rocks
were located by actual three-point fixes by the hydrographic party,
the hydrographic positions were used on the smooth sheet.

The only significant discrepancy between the photogrammetric
and hydrographic data occurs in the location of the abandoned oyster-
pen fence between latitudes $38^{\circ} 05.2'$ and $38^{\circ} 06.5'$. The hydro-

A tracing of the soundings and depth curves at the north end of the sheet was made and compared with sheet WCFP 1357, H-8355⁽¹⁹⁵⁷⁾. The junction was found to be complete. No excessive differences in soundings exist, and the depth curves can be adequately drawn between the two sheets.

CROSSLINES

The crosslines run were 11.1% of the total sounding lines. All crosslines appeared very satisfactory, the depths usually differing by no more than 0.2 foot.

COMPARISON WITH PRIOR SURVEYS

Comparison of this sheet with survey H-5165, 1:10,000, 1931 shows very little change. The depth curves have maintained their same relative shape, and have shifted very little. The shoal area enclosed by the 12-foot curve at latitude $38^{\circ} 07.8'$ has increased in size, and the south end of the bay has shoaled slightly. *Sac Review*

COMPARISON WITH CHART

Chart 5603 (Nov. 1934) has no significant differences from the present survey other than those indicated in the preceding paragraph.

DANGERS AND SHOALS

All obstructions are shown on the smooth sheet. No important uncharted dangers were found.

AIDS TO NAVIGATION

There are no aids to navigation in the area of this survey.

There is a submerged communication cable with termini at signals SIG and JOB. The smooth sheet location of this cable was taken from the manuscript.

graphic location of this fence (shown in pencil on the smooth sheet) ✓ was obtained by a series of detached positions taken along the fence, using three-point fixes with check angles. The photogrammetric location is assumed to be incorrect. *

The location of the duck blinds in the southern part of the ✓ sheet was taken from the manuscript. The duck blinds (some of which were used as signals) are anchored to the bottom, but are not considered to be permanent objects.

The low-water line is not completely defined in the southern ✓ part of the sheet between signals COR and MOP. The MLLW value on the Inverness tide staff was raised 0.2 foot after the hydrographic survey was completed, thus increasing many of the boat-sheet depths in the vicinity of the low-water line by $\frac{1}{2}$ foot. The low-water line on the smooth sheet was drawn with reference to the boat sheet, and is considered to be sufficiently accurate. *LWL adequate here*

SOUNDINGS

Soundings were taken with ⁸⁰⁸ fathometer and/or pole. The initial ✓ on the fathometer was held at three feet during the sounding. Fathometer corrections were obtained by a series of bar checks and phase comparisons, described in a separate fathometer report which has been forwarded to the Director. An abstract of echo corrections is attached to this report.

The low-water line was obtained, in most cases, by walking along ✓ the shoreline at a zero tide and taking sextant fixes at the water's edge.

CONTROL OF HYDROGRAPHY

For all hydrography in the bay, the positions were fixed by ✓ sextant angles on previously located objects ashore. For the line run down the center of Lagunitas Creek, fixes were obtained by beam bearings on signals along the shore or by two signals on range.

ADEQUACY OF SURVEY

This survey is considered adequate for charting purposes, and ✓ should supersede all previous surveys.

* That portion of the fence visible on the photographs was recompiled on T-10418 during final photogrammetric review. The two surveys (hydro-planimeters) are in agreement.

LANDMARKS FOR CHARTS

There are two barns used as landmarks within the limits of this survey. One is located at lat. $38^{\circ} 03.64'$, long. $122^{\circ} 48.52'$; the other is located at lat. $38^{\circ} 04.05'$, long. $122^{\circ} 48.58'$. Both are plotted on the smooth sheet and have been submitted on form 567. (CL. 1029(1958))

TABULATION OF APPLICABLE DATA

1. Inverness Tide Station marigrams, Nos. 1 through 11 forwarded to the Director 7 February 1957, Nos. 12 through 16 forwarded 2 May 1957, Nos. 17 through 21 sent 2 July 1957.

Inverness Tide Station Report forwarded to the Director 1 February 1957. Level data for installation of Inverness Tide Station sent to the Director 6 February 1957. Level data for removal of Inverness Tide Gage sent to the Director 18 November 1957.

Abstract of tide reducers attached to this report.

2. Office photographs forwarded to the Director 19 July 1957.
3. Photo manuscripts and blueline prints to be forwarded to the Director.
4. Special fathometer report sent to the Director 15 November 1957. Abstract of fathometer corrections attached to this report.
5. Fathograms to be forwarded to the Director.
6. Sounding volumes to be forwarded to the Director.
7. Boat Sheet to be forwarded to the Director.
8. Copies of old surveys to be sent to the Director.

Respectfully Submitted,

James K. Richards
James K. Richards
Ensign, C&GS

COMBINED CORRECTIONS FOR FATHOMETER 152 SPX
 when being used in Launch CS 160, Winter 1956 - 1957

Project 13890 Tomales & Bodega Bays

<u>"A" Scale</u>		<u>"B" Scale</u>		<u>"C" Scale</u>	
Fathometer Reading (ft.)	Correction (ft.)	Fathometer Reading (ft.)	Correction (ft.)	Fathometer Reading (ft.)	Correction (ft.)
5.0-14.7	-0.2				
-31.7	-0.1				
-38.8	0.0				
-43.8	/ 0.1	37.3-42.3	/ 1.6		
-48.1	/ 0.2	-46.6	/ 1.7		
-52.3	/ 0.3	-50.8	/ 1.8		
-56.3	/ 0.4	-54.8	/ 1.9		
-60.2	/ 0.5	-58.7	/ 2.0		
		-63.1	/ 2.1		
		-69.0	/ 2.2	63.7-69.6	/ 1.6
		-87.7	/ 2.3	-92.0	/ 1.7

*See H-8353 for
 fathometer report*

TIDE NOTE FOR HYDROGRAPHIC SURVEY

FIELD NO. WCFP 1457 - REGISTRY NO. H-8356

A portable automatic tide gage and a tide staff, located on the end of the Inverness Yacht Club pier, were used for tide reducers for all soundings on this sheet. The geographic position of the tide station is: latitude $38^{\circ} 06.23'$, longitude $122^{\circ} 51.32'$.

The MLLW value on the tide staff was 2.8 feet. No corrections to time or height for distance from the gage were applied to the observed tides.

STATISTICS FOR HYDROGRAPHIC SURVEY

FIELD NO. WCFP 1457 - REGISTRY NO. H- 8356

LAUNCH CS 160 - PROJECT 13890

Vol.No.	Day Letter	Date	No.Pos.	H.L.& Pole Sdgs.	Stat.Miles	Method
1	a	23 April	92	6	11.2	L
1 & 2	b	24 "	144	48	18.5	L
2	c	25 "	106	68	12.3	L
2	d	26 "	68	145	6.6	L
3	e	30 "	91	210	6.3	S W
2	ee	30 "	32	0	0.0	W
3	f	1 May	53	0	0.0	W
2	ff	1 "	43	11	0.0	S W
			<u>629</u>	<u>488</u>	<u>54.9</u>	

Total area, square statute miles = 3.4

L Launch

S Skiff

W Walking shoreline

SPECIAL REPORT ON PRELIMINARY REVIEW

PROJECT 13890

HYDROGRAPHIC SHEETS NO.

WCFP 1157, H-8353

WCFP 1257, H-8354 ✓

WCFP 1357, H-8355

WCFP 1457, H-8356

All questionable areas shown on the Preliminary Review were investigated in the field by the hydrographic party, with the exception of the doubtful 13 foot rock sounding on sheet WCFP 1257 at latitude $38^{\circ} 15.62'$, longitude $122^{\circ} 58.62'$. This area could not be thoroughly investigated because of rough water. ✓

The development of the other areas is shown on the respective smooth sheets. All shoal soundings in question were verified, and, in some cases, shoaler soundings were found.

The unsurveyed foul area indicated in the vicinity of latitude $38^{\circ} 14.25'$, longitude $122^{\circ} 59.10'$ was investigated to some extent, but rough water prevented a thorough job.

The condition of the oyster pens in the south end of Tomales Bay was described on sheet WCFP 1457. (H-8356-1957)

All shoreline features such as docks and piers were verified by the field inspection party from the photogrammetry division.

Respectfully submitted,

Philip J. Taetz
Philip J. Taetz
Ensign, C&GS

Curtis Le Fever
Superior Seattle
District

APPROVAL SHEET

HYDROGRAPHIC SURVEY WCFP 1457, H-8356

This survey is complete and adequate for charting purposes, and no additional work is recommended. The Chief of Party kept close personal supervision over the work.

Curtis LeFever

Curtis LeFever
Captain, C&GS
Seattle District Supervisor

ABSTRACT OF SMOOTH TIDE REDUCERS

INVERNESS TIDE GAGE DIRECT

SHEET WCFP 1457 REGISTRY NO. H- 8356

"a" day, 23 Apr.

0921-0940 - 2.6
 -1000 - 2.4
 -1018 - 2.2
 -1038 - 2.0
 -1100 - 1.8
 -1121 - 1.6
 -1143 - 1.4
 -1200 - 1.2

"b" day, 24 Apr.

0920-0942 - 3.2
 -1005 - 3.0
 -1027 - 2.8
 -1049 - 2.6
 -1110 - 2.4
 -1130 - 2.2
 -1150 - 2.0
 -1210 - 1.8
 -1233 - 1.6
 -1300 - 1.4
 -1329 - 1.2
 -1430 - 1.0

"c" day, 25 Apr.

0824-1000 - 3.6
 -1024 - 3.4
 -1044 - 3.2
 -1105 - 3.0
 -1125 - 2.8
 -1145 - 2.6
 -1206 - 2.4
 -1228 - 2.2

"d" day, 26 Apr.

0906-0932 - 3.4
 -1120 - 3.6
 -1139 - 3.4
 -1157 - 3.2
 -1213 - 3.0

"e"

"ee" day, 30 Apr.

0800-0810 - 0.0
 -0826 - 0.2
 -0842 - 0.4
 -0858 - 0.6
 -0912 - 0.8
 -0927 - 1.0
 -0940 - 1.2
 -0953 - 1.4
 -1005 - 1.6
 -1018 - 1.8
 -1029 - 2.0
 -1041 - 2.2
 -1054 - 2.4
 -1107 - 2.6
 -1121 - 2.8
 -1135 - 3.0
 -1151 - 3.2
 -1207 - 3.4
 -1226 - 3.6
 -1251 - 3.8
 -1410 - 4.0
 -1433 - 3.8
 -1448 - 3.6
 -1500 - 3.4

"f"

"ff" day, 1 May

0715-0900 0.0
 -0915 - 0.2
 -0930 - 0.4
 -0943 - 0.6
 -0956 - 0.8
 -1010 - 1.0
 -1021 - 1.2
 -1033 - 1.4
 -1045 - 1.6
 -1056 - 1.8
 -1107 - 2.0
 -1119 - 2.2
 -1131 - 2.4
 -1143 - 2.6
 -1156 - 2.8
 -1210 - 3.0
 -1225 - 3.2
 -1241 - 3.4
 -1300 - 3.6

LIST OF SIGNALS USED

FIELD NO. WCFP 1457 REGISTRY NO. H- 8356

Hydrographic
Name

Origin of Signal

ABE	Manuscript T-10415
ART	Manuscript T-10415
BAN	Manuscript T-10416
BUS	Manuscript T-10418
CAB	Manuscript T-10415
CAT	Manuscript T-10418
COR	Manuscript T-10418
DAY	Manuscript T-10418
DOG	Manuscript T-10418
DUC	Manuscript T-10418
END	Manuscript T-10417
FEW	Manuscript T-10415
FIL	Manuscript T-10418
FLY	Manuscript T-10418
FOG	Manuscript T-10415
GAB	INVERNESS, YACHT CLUB, NORTHEAST GABLE, 1956
GUN	Manuscript T-10418
HOP	Manuscript T-10415
HUM	Manuscript T-10418
INK	FRINK 2, 1906
JIM	Manuscript T-10418

LIST OF SIGNALS USED

FIELD NO. WCFP 1457 REGISTRY NO. H- 8356

Hydrographic
Name

Origin of Signal

JOB	Manuscript T-10418
LAG	Manuscript T-10418
LIP	Manuscript T-10418
LOG	Manuscript T-10418
LUG	Manuscript T-10418
MAG	Manuscript T-10418
MET	Manuscript T-10418
MIL	MILLERTON, HORSE BARN, NORTH GABLE, 1906
MOP	Manuscript T-10418
OAT	Manuscript T-10418
OFF	Manuscript T-10418
PEN	Manuscript T-10418
PIE	Manuscript T-10418
RAY	Manuscript T-10418
RIM	Manuscript T-10418
ROY	Manuscript T-10418
SAM	Manuscript T-10418
SIG	Manuscript T-10418
TAN	Manuscript T-10418
VEX	Manuscript T-10418
WES	Manuscript T-10416
YEL	Manuscript T-10416

GEOGRAPHIC NAMES

Survey No. H-8356

Name on Survey	Source										
	A	B	C	D	E	F	G	H	K		
<u>California</u>										BGN	1
<u>Tomales Bay</u>											2
<u>Millerton Point</u>											3
<u>Inverness Yacht Club</u>				(tide station)							4
<u>Inverness</u>											5
<u>Lagunitas Creek</u>										BGN	6
											7
											8
											9
											10
											11
											12
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											15
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											25
											26
											27
											N 234

Names approved 12-20-57

L. Beck

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-8356.

Records accompanying survey:

Boat sheets ..1...; sounding vols. 3.....; wire drag vols.;
 bomb vols.; graphic recorder rolls 2-Envelopes
 special reports, etc. .1-Smooth sheet and 1-Descriptive report.
*Source material filed in vault, blue line tracings and
 blackline impression.*

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

Number of positions on sheet		629..
Number of positions checked		90..
Number of positions revised		none.
Number of soundings revised (refers to depth only)		10..
Number of soundings erroneously spaced		none.
Number of signals erroneously plotted or transferred		none.
Topographic details	Time	..3..
Junctions	Time	..8..
Verification of soundings from graphic record	Time	..8..

Verification by *William L. Higley*.. Total time ..47.. Date *7/31/58*

Reviewed by *[Signature]*..... Time ...19.. Date *17 June 1960*

OFFICE OF CARTOGRAPHY

REVIEW SECTION -- NAUTICAL CHART DIVISION

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8356

FIELD NO. WCFP-1457

California Tomales Bay, Indian Beach to Lagunitas Creek

SURVEYED: 23 April - 1 May 1957

SCALE: 1:10,000

PROJECT NO. 13890

SOUNDINGS: 808 Depth Recorder
Sounding Pole

CONTROL: Sextant fixes
on shore signals

Chief of Party -----	A. L. Wardwell	
Surveyed by -----	P. J. Taetz; J. K. Richards	
Protracted by -----	J. K. Richards	
Soundings plotted by -----	J. K. Richards	
Verified and inked by -----	W. L. Higley	
Reviewed by -----	L. S. Straw	<u>DATE 6-15-60</u>
Inspected by -----	R. H. Carstens	

1. Shoreline and Control

The shoreline originates with reviewed air photographic surveys T-10415, T-10416, T-10417, T-10418, and T-10419 of 1955-57.

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

2. Sounding Line Crossings

The agreement in depths at crossings is satisfactory.

3. Depth Curves and Bottom Configuration

The three-foot curve and the usual depth curves were adequately delineated. With the exception of the 10-to-12-foot middle-ground in Lat. $38^{\circ}07.80'$, Long. $122^{\circ}52.75'$ and the 4-to-5-foot shoal in Lat. $38^{\circ}07.62'$, Long. $122^{\circ}52.23'$, the bottom is even and featureless from the mud flats south of Inverness to opposite Indian Beach where present depths range from 16 to 26 feet offshore.

4. Junctions with Contemporary Surveys

The junction on the north at Indian Beach with H-8355 (1957) is adequate.

5. Comparison with Prior Surveys

H-757 (1861) 1:10,000
H-5165 (1931) 1:10,000

Large quantities of sediment, transported principally by Lagunitas Creek and many other smaller streams, has been deposited over the bottom from Indian Beach to the head of Tomales Bay. As a result, the present survey depths are 2 to 5 feet shoaler than the depths on the prior surveys.

A 6-ft. sounding from H-757 (1861), Lat. $38^{\circ}07.71'$, Long. $122^{\circ}52.49'$ falls in 18-ft. depths on the present survey, and in 9-to-26-ft. depths on H-5165 (1931). The tip of the thumb shaped shoal is probably out of position on the early survey because of widely spaced positions. The 6-ft. sounding on H-757 (1861) should be disregarded. Other soundings on this hard sand shoal as shown on H-757 (1861) agree within a foot of the depths on the present survey.

Practically no change in the shoreline is evident, except at the head of Tomales Bay, where large differences are due to the construction of a road bed and railroad bed (abandoned) and 4-to-6-ft. dikes at the mouth of Lagunitas Creek for reclamation purposes. (T-10418, 1955-57)

The present survey completely supersedes the prior surveys within the common area.

6. Comparison with Chart 5603 (latest print date 9-14-59)

A. Hydrography

Only a few critical soundings and some other information was applied to the chart before verification and review, therefore the charted information is almost entirely from surveys discussed in paragraph 5 of this review.

The present survey is adequate to supersede the charted information within the common area.

B. Aids to Navigation

There are no aids to navigation within the limits of the present survey.

7. Condition of the Survey

- a. The sounding records and the Descriptive Report are complete and comprehensive.
- b. The smooth plotting was well done.

3. Compliance with Project Instruction

The survey adequately complies with the Project Instructions.

9. Additional Field Work Recommended

This is a good basic survey and no additional field work is required.

Examined and Approved:

Chief,
Nautical Chart Division

J. E. Waugh 5/26/61

Projects Officer,
Operations Division

R. W. Richards

Assistant Director,
Office of Cartography

J. T. Sarman

Assistant Director,
Office of Oceanography

K. A. Crosby

RHC

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens

14 Jan. 1958

Plane of reference approved in
3 volumes of sounding records for

HYDROGRAPHIC SHEET 8356

Locality Tomales Bay, California

Chief of Party: A. L. Wardwell in 1957

Plane of reference is mean lower low water, reading

2.8 ft. on tide staff at Inverness

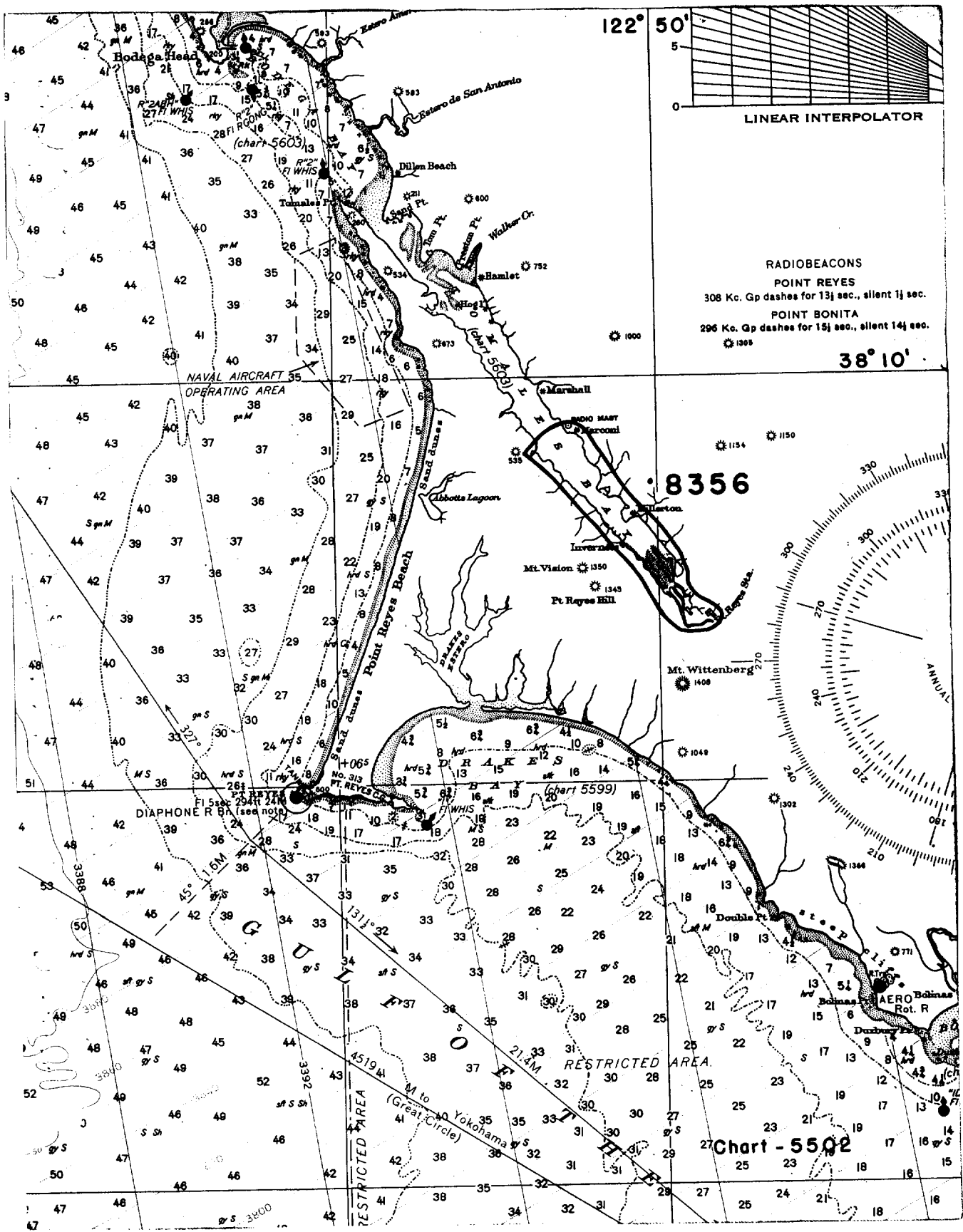
10.4 ft. below B.M. 1 (1931)

Height of mean high water above plane of reference is 4.6 feet.

Condition of records satisfactory except as noted below:


Signature

Chief, Tides Branch



122° 50'



LINEAR INTERPOLATOR

RADIOBEACONS

POINT REYES

308 Kc. Gp dashes for 13 1/2 sec., silent 1 1/2 sec.

POINT BONITA

296 Kc. Gp dashes for 15 1/2 sec., silent 1 1/2 sec.

1305

38° 10'

8356

Chart - 5502

NAUTICAL CHARTS BRANCH

SURVEY NO. H-8356

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
2/12/58	5603	<i>SA McLean</i>	Before After Verification and Review <i>Part. applied.</i>
11-26-60	5603	<i>R. E. Ekins</i>	Before After Verification and Review <i>Completely applied</i>
			Before After Verification and Review
			Before After Verification and Review
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M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.