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Diag. Cht. Nos. 5302-2 and 5402-2.

Form 504	
U. S. COAST AND GEODETIC SURVEY DEPARTMENT OF COMMERCE	
<b>DESCRIPTIVE REPORT</b>	
Type of Survey <u>Hydrographic</u>	
Field No. <u>81 &amp; 121</u>	Office No. <u>H-5472</u> <u>H-5473</u>
LOCALITY	
State <u>California</u>	
General locality <u>Pacific Coast</u>	
Locality <u>Offshore San Francisco to Pt. Sur.</u> and <u>Offshore San Francisco to Pt. Pinos</u>	
<u>19A 32</u>	
CHIEF OF PARTY	
<u>F. L. Peacock</u>	
LIBRARY & ARCHIVES	
DATE <u>July 9, 1934</u>	

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

U. S. COAST & GEODETIC SURVEY  
LIBRARY AND ARCHIVES  
JUL 9 1984  
REG. NO. 5472  
Acc. 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. 121

REGISTER NO. 5472

State California

General locality Pacific Coast

Locality Offshore San Francisco to Point Sur

Scale 1:120,000 Date of survey May 24 to Oct. 12, 1932

Vessel U.S.C. & G.S.S. Guide

Chief of Party Fred. L. Peacock

Surveyed by Fred. L. Peacock

Plotted

~~Protracted~~ by E. E. Garnett

Soundings penciled by E. E. Garnett

Soundings in fathoms ~~feet~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by S. E. Perkins

Verified by S. E. Perkins

Instructions dated April 4, 19 32

Remarks: R.A.R. Controlled Hydrography, Fathometer Sounding,  
K.W.W. 9/22/42

*Applied to Chart 5402-5502 - Mar. 1935. N.S. Sibley*

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. 5473

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. 81

REGISTER NO. 5473

State California

General locality Pacific Coast

Locality Offshore San Francisco to Point Pinos

Scale 1:80,000 Date of survey May 24 to Oct. 12 19 32 *also 1933 + 1934*

Vessel U.S.C. & G.S.S. Guide

Chief of Party Fred. L. Peacock

Surveyed by Fred. L. Peacock

Plotted  
~~Projected~~ by R. D. Dewell *5473*

Soundings penciled by R. D. Dewell

Soundings in fathoms ~~feet~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by S. E. Perkins + Chas Bush

Verified by S. E. Perkins + Chas Bush

Instructions dated April 4, 19 32

Remarks: R.A.R. Controlled Hydrography, Fathometer Soundings,

Visual Fix Hydrography, and Precise Dead Reckoning.

*X.W.H. 9/22/92*

*approved & checked 5402-5502 - Mar. 1935. J. S. Gumble*

DESCRIPTIVE REPORT

to accompany  
H 5473 H 5472  
FIELD SHEETS 81 and 121 R.A.R.

INSTRUCTIONS:

This work was performed in accordance with the season's instructions dated April 4, 1932.

CHARACTER OF WORK:

The hydrography on these sheets was done by the Radio Acoustic Ranging method with the exception of portions of "FF" and "Y" days from Hydrographic Field Sheet No. 43 which is visual fix hydrography and is plotted on Field Sheet No. 81 <sup>(5473)</sup> because it falls outside the limits of the former sheet. Occasional visual fixes of either one or two angles were taken on inshore portions of the work as a check.

The soundings were all obtained with the fathometer except for 102 vertical casts. The depth range is approximately from 40 to 1600 fathoms for Field Sheet 81 <sup>(H 5473)</sup> and from 30 to 2000 fathoms on Field Sheet 121. <sup>(H 5472)</sup> However, the greater portion of the area represented by the latter sheet is deeper than 1600 fathoms. ✓

The east-west sounding line spacing is approximately 400 meters inside the 100 fathom curve, 3000 meters to the 1000 fathom curve and four to five miles to the 2000 fathom curve. Cross lines parallel to the shore are roughly four to six miles apart to the 1000 fathom curve and ten miles apart thereafter. *The general spacing above is within the requirements set forth in the Instructions.*

The position interval varies from ten to thirty minutes between bombs in accordance with the usual practice, with supplemental positions at all changes of speed and course.

The scale of Field Sheet 81 is 1:80,000 and of Field Sheet 121 is 1:120,000. The boat sheet includes the areas of both, plotted on a scale of 1:120,000. The two areas were separated in smooth sheet plotting to get the close inshore development on a larger scale.

LIMITS:

The hydrography on the two sheets covers an area of 4634 square statute miles extending from the Farallon Islands to off Point Sur and from the limits of visual fix hydrography approximately to the 2000 fathom curve. The adjoining inshore sheets are Field Sheet Nos. 43, 44, 48, 45, 46, 47, in order from north to south.

The limits of Field Sheet No. 81 are the Parallels of Latitude 37-45 and 36-35, and the visual fix hydrography inshore and a line extending from Latitude 37-20, Longitude 123-15 to Latitude 36-30, Longitude 122-45. The two sheets are overlapped to the extent of at least one bomb position in common, and in many cases more than one. The area of hydrography on Field Sheet 81 is 1354 square statute miles of R.A.R. work and 31.4 square statute miles of visual work, and on Field Sheet 121 is 3280 square statute miles of R.A.R. work.

CONTROL:

The control consisted of three hydrophone stations, one at Pigeon Point, one at Point Pinos and one which was located at the S.E. Farallon Id. until August 19 and then shifted to Point Sur, and such triangulation and topographic signals as were necessary to plot visual fix hydrography on Field Sheet 81 and the visual fix checks on R.A.R. control. Due to mishaps in operation it was necessary to move and relocate all of the hydrophones except that at Pigeon Point several times during the season.

The beginning of operation and later changes were on the following dates:

Farallon Id. May 17 and 25, June 4 and 23, 1932

Pigeon Point May 18, 1932

Point Pinos July 17 and September 22, 1932

Point Sur August 26, September 23, October 7 and 10, 1932

It should be noted here that the circles drawn on Field Sheet 81 at Pinos Point are in error. The position of the hydrophone was felt to be in error and a new position was determined from tests. This is fully explained in a special report on that subject under Lag Tests. All bombs on Field Sheet 81 were plotted from offsets from this station. <sup>see vol # 14</sup>

#### DAT OF SURVEY:

Work on this sheet began on May 24, 1932 and was concluded on October 12, 1932.

#### TIDAL REDUCERS:

Tidal reducers were applied only to soundings of less than 100 fathoms. The Santa Cruz Portable Automatic Tide Station was used for such work as was under 100 fathoms in depth. No range or time correction was found to be necessary. Further information on this subject may be found in the season's tidal report which covers all the tidal work of the party of the ship Guide from April 28, 1932 to February 28, 1933.

#### APPARATUS CORRECTIONS:

The apparatus corrections for the soundings on this sheet, consisting of the constant fathometer correction and the velocity correction for the temperatures, salinities and densities of the water sounded, were obtained from an analysis of the temperatures, salinities, dial speed tests and comparative vertical casts throughout the season. Dial speed tests showed that the dial speed was a little fast but approximately constant throughout the season. Temperature and Salinity showed minor seasonal variations. The index correction varied from 0 to 1 fathom

during the season with the exception of short periods when the fathometer was operating poorly, but was also subject to small variations due to the vessel being unusually deep or light in the water and according to the hydrophone or oscillator used.

Further information on the subject may be found on the season's report on temperature and salinity determinations which also covers in complete detail dial speed tests, sounding sheave tests and the results of comparative vertical casts.

A correction of one meter per second was added to all velocities used in R.A.R. control, and another of 0.03 second subtracted from the elapsed time to account for the delay between the arrival of the first sound waves at the hydrophone and those of sufficient strength to trip it. A full discussion of these corrections and their derivations will be found in the report on velocity tests.

#### SLOPE CORRECTIONS:

One slope correction was applied to a sounding in the gorge off Pinos Point, twenty three around the northerly of the two submarine peaks in the north-<sup>H 5472</sup>westerly portion of Field Sheet 121 and twenty eight around the southerly of the two peaks.

These corrections were all applied in accordance with the methods outlined in special publication no. 165. However, due to the rough and uneven nature of the bottom all of these corrections are questionable, although some correction is doubtlessly necessary to show true depths. On all soundings the corrections appear to be too large and a more consistent and possibly more accurate picture of the bottom is given by the uncorrected soundings. It is therefore requested that final verification of these soundings be given careful consideration.

*See paragraph on Slope Corrections, Review of H-5472*

#### BOTTOM CHARACTERISTICS:

A total of 82 bottom characteristics were taken over the area of the two sheets. The majority, distributed over the entire area, showed green mud, with patches of fine gray sand, gray clay and gray mud. A rocky bottom was indicated

from two samples off Pigeon Point and on the southerly of the two submarine peaks in the northwest corner of the sheet. .

#### DANGERS:

There appear to be no dangers to navigation within the limits of the sheets.

#### COMPARISON WITH PREVIOUS WORK:

In general the soundings throughout the area covered by the two sheets check with previous work. Previous R.A.R. controlled surveys in the Gulf of the Farallons and the overlap the of ship Guide's work are in fair agreement. It is not to be expected, however, that isolated soundings made with dead reckoning control in former years check with nice exactitude the work on Field Sheets 81 and 121. It can be generally said, however, that the soundings show no great inconsistencies.

Field Sheet 81 and the inshore visual sheets have been compared very closely and the soundings are in close agreement in practically every case.

#### COMPUTATION OF VELOCITIES:

The velocities for bomb positions on these sheets were calculated according to methods based on a study of the velocity tests and previous R.A.R. experience as follows;

Profiles were drawn, from boat sheet soundings, at each five degrees of azimuth from each hydrophone station, with depths in fathoms plotted against distance in units of 1480 meters corresponding to one second's travel of sound in water.

Assumed sound paths were drawn on each profile from its offshore limit to the hydrophone following a uniform depth of 270 fathoms in deep water and approximately the bottom in lesser depths, but jumping across narrow or shallow depressions in a series of straight lines.

On these profiles the average velocity was calculated between each two adjacent changes of gradient in the sound path for each month in the season



and also the weighted mean of these velocities from each change in gradient back to the hydrophone, to a depth of 270 fathoms. The basic velocity curves used were computed from the monthly temperature and salinity determinations and the British Admiralty tables on the velocity of sound.

The azimuths of each bomb position from the hydrophones which gave returns were determined from the boat sheet and the velocities were then taken from the prepared tables on the corresponding profiles. Where the depth of the bomb position exceeded 270 fathoms a uniform velocity of 1479 meters per second was assumed into the 270 fathom point on the profile throughout the season, and from the 270 fathom point into the hydrophone an interpolation according to date between the two monthly average velocities along the bottom. Where the depth was less than 270 fathoms, interpolation was made between the average velocities to the two adjacent changes in gradient in the sound path and between months as above. Various tables and curves were prepared to reduce the actual work of computation.

A constant correction of one meter per second, based on results of the velocity tests, was added to all velocities obtained in the above fashion.

It should be noted that in computing the run, the depth of the bomb was taken into consideration. The rate of sinking of both cast iron and tin bombs was determined by dropping them into the water with a lead line attached and measuring the time require to sink five fathoms. It was found that cast iron bombs sink at a rate of 3.1 meters per second and tin bombs an average of about 1.2 meters per second. Deviations from the latter tin bomb rate due to size were found to be negligible.

#### PLOTTING OF SMOOTH SHEET:

The bombs were plotted in terms of distances from the respective hydrophone stations, which were computed from the elapsed times and the velocities obtained as noted above.

Distance circles were drawn from each hydrophone station; on Field Sheet 81 at intervals of 5000 meters and on Field Sheet 121 at intervals of 10,000 meters. Celluloid templates subdivided to intervals of 100 meters were used to interpolate between the circles.

Since it was thought more practicable to draw circles from only one hydrophone position at each station, offset holes bearing the same relative position to the center hole as the various other hydrophone locations to that used for the circles were punched in the template, and by orienting the template and marking through the offset corresponding to the hydrophone location desired, arcs parallel to the distance circles were drawn, the intersection of which determined the bomb position.

The templates used in plotting accompany this report.

All preliminary work was done on tracing paper covering the smooth sheet. Approximate log factors were obtained between bombs at both ends of courses and the dead reckoning was fitted in by trial. Where the plotting was difficult, dead reckoning was plotted on a separate overlay and fitted in.

Where question arose as to which of two bomb returns or of two groups of returns were probably more correct, those giving the highest millimeter reading at the hydrophone were generally accepted although many instances occurred in which this rule could not be followed. Much greater weight was given to bombs of three returns intersecting in a point or small triangle than to any others; however, a few returns of this nature occurred which from other considerations appeared to be in error.

Discrepancies between log readings and bomb positions were verified by checking the log against time, which in many cases showed the log reading to be in error and the bomb correct.

Greater weight was given cast iron bombs than tin bombs. Some indication was found that cast iron bombs plot closer inshore than tin bombs as on CC day on Field Sheet 121, but the present data is insufficient and the quantitative

relationship between the two types of returns can probably be obtained only by special tests.

In some cases it was also possible to verify plotting by crossings of boat sheet soundings, and transferred soundings from visual work.

Bomb positions which were clearly in error, more than 400 meters on Field Sheet 81 and more than 600 meters on Field Sheet 121 were rejected.

The plotting of dead reckoning was facilitated by a curve which showed the relation between log factor on one course and the drift on another at right angles to it. This curve was made on the assumption that 1.05 is the normal log factor of the ship, determined over a period of time, and for any log factor X along a given course the tangent of angle of drift along another course perpendicular to the first is  $(X-1.05)/1.05$ . This curve could of course not be followed absolutely due to the constantly changing winds and currents which are known to have occurred during the progress of the survey. Specific data on the latter, if available, would have helped materially in the plotting.

When a dead reckoning was obtained which appeared correct it was transferred to the smooth sheet and inked. Arcs not passing through a position are shown one millimeter in length each side of their perpendicular through the position.

Part of AA day and all of BB day on Field Sheet 81 on which in general only single returns were available, and many returns and log readings were in error, were plotted against transferred soundings from visual work.

J,MM,RR,UU and VV days on both sheets,XX day on Field Sheet 81 and the inshore part of DD day on Field Sheet 121 were all plotted after all other days including soundings had been smooth plotted, in order to verify the dead reckoning by crossings.

#### DISCREPANCIES:

The number of discrepancies on the two sheets is fairly small considering the extent and nature of the work. Many differences in crossings are probably due to erratic behavior of the fathometer and to rough bottom.

Considerable trouble was had with the fathometer on the following days all on  
 #5473  
 Field Sheet 81: B day May 25, C day June 6, L day July 19, M day July 20, and XX  
 day October 12.

LIST OF CROSSINGS ON FIELD SHEET 81, MORE THAN 3% IN ERROR: (H-5473)

Position	Position	Amount	Per Cent Error
17-18 E	17-18 B	20 fms	6.7
4-5 E	9+10E	30	22.0 <i>These lines do not cross. No discrepancy between these positions.</i>
1-2H	12-13 E	6	8.0
4 H	9-10 E	15	13.0 <i>Discrepancy not this large.</i>
6-7 S	7 E	6	5.0
6-7 S	9-10 B	10	7.5
14-15 S	10-11 H	20	13.6 <i>Deep edge between pos 14S + 15S omitted. Surrounding soundings conforming shaller edge on pos 10-11 H</i>
28-29 V	7-8 M	100	20.0 <i>For very steep slope, slight displacement of either line would account for difference</i>
11-12 W	4-5 K	17	9.5
56-57 X	2-3 P	3	7.0
86 X	30-31 Q	30	20.0 <i>or discrepancy eliminated by replottting.</i>
21-22 GG	21-22 Q	25	4.5
10-11 NN	8-9 CC	20	3.6
22-23 RR	73-74 JJ	20	4.2
33-34 RR	9-10 NN	17	3.2
41-42 RR	12-13 CC	50	4.8
60-61 RR	45-46 RR	30	3.9
66-67 RR	7-8 Y	60	5.8
74-74 RR	24-25 FF	50	5.4
81-82 RR	13-14 V	40	3.6
81-82 RR	18-19 Q	50	4.8
83-84 RR	21-22 P	70	8.2
83-84 RR	35-36 T	45	8.5
91-92 RR	42-43 H	20	8.7
41-42 XX	16-17 Y	70	6.2
39-40 XX	24-25 FF	55	4.9
46-47 XX	29-30 K	100	14.2 <i>- line 46-47 XX rejected</i>
49-50 XX	37-38 K	25	3.1
50-51 XX	21-22 P	140	20.0 <i>- line 21-22 P. rejected</i>
56-57 XX	90-91 S	16	3.8
56-57 XX	35-36 T	40	6.2
43-44 J	22-23 D	30	14.2 <i>Both lines accepted. Curve not affected.</i>
32-33 J	87-88 S	40	6.2

From the foregoing it seems that RR and XX days are generally in error

Since these two days were plotted against soundings from other days, for the purpose of securing the best possible crossings consistent with the bomb returns and dead reckoning, they probably cannot be much improved. On RR day the fathometer failed to work due to low voltage, from positions 80-82, and probably its operation was faulty throughout the day. *These lines accepted as plotted, generally giving preference to soundings on the other lines.*

Returns were generally poor on Field Sheet 81 on L, Q, AA, BB, CC, DD, FF, JJ, MM, RR, U and XX days. The soundings between positions 55K and 57 K were questioned when taken; they appear to be in error.

LIST OF CROSSING ON FIELD SHEET <sup>#5472</sup> 121 MORE THAN 5% IN ERROR:

Position	Position	Amount Difference	Per Cent Difference
94-95 G	72-73 S	74 fathoms	8
20-21 J	140-141 U	101	6
24-25 J	73-74 FF	40	4
73-74 S	80-81 S	42	4
33-34 U	80-81 H	48	4
184-105 U	62-63 H	45	4
127-128 U	91-92 U	53	10
45-46 FF	5-6 Q	133	10
60-61 FF	4-5 Q	45	3
70-71 FF	53-54 TT	64	4
10-11 HH	49-50 EE	70	6
43-44 JJ	31HH	29	4.5
58-59 JJ	45-46 EE	47	4
2-3 KK	54-55 EE	36	7
99-100 KK	1-2 Q	266	15
22-23 LL	15-16 EE	67	4
28 LL	31-32 KK	45	3
20-21 NN	50-51 EE	85	8
29-30 NN	17-18 HH	7	6
33-34 NN	52-53 JJ	20	3.5
35-36 PP	39-40 SS	60	3.5
4-5 QQ	9-10 EE	43	3
5-6 QQ	55-56 PP	45	3
13-14 QQ	53-54 JJ	25	4
55-56 RR	37DD-84WW	40	6
5-6 SS	17-18 HH	11	7
8-9 SS	30-31 NN	10	3
11-12 TT	10-11 DD	80	5.5
60-61 TT	46-47 FF	70	5
17-18 UU	45-46 PP	100	7
34-35 <del>UU</del> VV	3-4 EE	35	6
1-2 WW	4-5 KK	variable	about 10
17-18 WW	45-46 EE	45	4.5
35-36 WW	21-22 NN	24	4.5
38-39 WW	13-14 HH	25	5
75-76 WW	makes indefinite but poor crossing with 34-35 WW		

On Field Sheet <sup>#5472</sup> 121 it will be noted that the distribution of poor crossings is general throughout the entire sheet, although the percentage error is in most cases low. The greatest difficulties with dead reckoning were experienced on J, U, and TT days around the submarine peaks in the northwest corner of the sheet.

J day was plotted to fit as many returns as possible, the soundings and position 32 J as determined from plotting on Field Sheet 81 on which the plotting was <sup>#5473</sup>

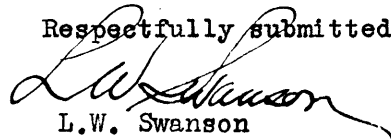
much better. The plotting of S day on Sheet 121 is extremely poor, but is apparently the best that can be done to agree with all the factors involved.

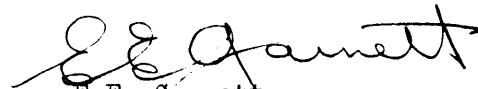
On G day there seemed to be an error of five degrees in the course between positions 56 and 57, which was corrected in plotting.

QQ day has poor control; the boat sheet plotting was followed. There was apparently an error in steering or recording of ten degrees in the course between positions 1 and 3 which was corrected in plotting.

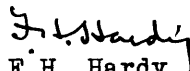
On NN day from position 26 to 28 4 bearings and all one angle cuts were rejected because they fail to check the bomb plotting which is verified perfectly by comparison of soundings and visual work. Using the visual checks results in discrepancies of up to 200 fathoms and it is thought that wrong objects must have been used for the fixes. two bearings out of the six given check the line as plotted perfectly, the others are slightly off in a way which shows that all cannot be fitted.

Respectfully submitted,

  
L.W. Swanson  
Jr. H and G.E. C. and G. Survey

  
E.E. Garnett  
Civil Engineering Hand  
C. and G. Survey

Respectfully forwarded,  
Approved:

  
F.H. Hardy,  
Chief of Party, C. and G. Survey  
Commanding Ship Guide.

14 March 1933.

MEMORANDUM for Captain Peacock:

In the year 1918, Captain King of the PIONEER BOAT WORKS, Belvedere, Calif., (Phone Belvedere 206 and 252), was in command of the chartered fishing trawler "CHAS. TRAVELSON". This trawler was used in investigating reported fishing banks and collecting specimens of fish, for the Food Administration Commission, part of the cost being defrayed by the California Fish and Game Commission. A man, whose name is not known, equipped the trawler with gear formerly used on the Newfoundland Banks. This man made inquiries among the fishermen in Monterey and heard of a shoal off Point Pinos. The trawler went out and set the trawls and hung up on the bank. A temporary buoy was planted and soundings taken. These showed depths of from 178 feet to 230 feet. The shoal appeared to be about  $1\frac{1}{4}$  miles long, in a northwesterly and southeasterly direction and from 200 to 250 feet wide. The trawler made a second trip out using their compass course and found the shoal by means of their buoy. The compass was not adjusted and had no deviation card. Captain King reports the true course as nearly as he could judge as 272 degrees from abeam of Point Pinos after leaving Monterey. The distance was logged from abeam Point Pinos as 20 statute miles, (approximately).

Captain King further reports that a Greek fisherman in Monterey (name not known) knew of this shoal because of his anchor catching on it when drifting while repairing a disabled engine. His anchor had been lowered with about 40 fathoms of line.

DESCRIPTIVE REPORT  
to accompany

Field Sheet No. 81 H 5473

Added Notes and Data

A few additional days of Hydrography were done offshore from Point Pinos on May 31, June 1, 3, and 4, 1934. This was done to verify or disprove the reported shoal of 30 Fathoms. This work was accomplished by dead reckoning.

B, C, and D days are in good agreement with visual work on Sheet 82 <sup>H5279</sup> completed in 1932, and R.A.R. work on Sheet 81 done in 1932. A day was in poor agreement and we have been unable to plot this day satisfactorily. It is being submitted on an overlay tracing and can be used if found to be necessary.

Because of the close spacing of the sounding lines in this vicinity, it is felt that this shoal is non-existent, as the slope would have to be greater than that found on the steepest submarine mountain thus far encountered offshore, such as was located southwest of Point Sur in 193<sup>3</sup><sub>4</sub>.

Additional Triangulation

POINT JOE 1932

POINT PINOS SIREN 1932

MONTEREY BAY 3 1932

CYPRESS ROCK 1932

Additional Statistics

Dead Reckoning 1934

Day	<del>Statute Miles</del> SOUNDINGS	Positions	Statute Miles SOUNDINGS
A	209	39	48.9
B	86	26	24.2
C	116	41	38.0
D	103	27	47.2
Total	514	133	158.3

The work done on the previously noted dates is under the authorization of Project H 184.



TABLE SHOWING 1932 CORRECTIONS  
as compared to

1933 CORRECTIONS FOR

FATHOMETER  
JUNE

1932		1933	
Depth	Correction	Depth	Correction
455	10	450	9
510	11	468	10
530	12	541	11
608	13	590	12
615	14	615	13
700	15	715	14
706	16	744	15
800	17	793	16
804	18	851	
902	19	934	19
910	20	1003	20
1000		1108	

The 1932 set of corrections was used for this area for the following reasons: 1) Temperature data more in agreement for the area worked, 2) Soundings on smooth sheet plotted from 1932 reductions, thus a better comparison can perhaps be made, 3) The average difference is seldom more than one fathom for the depths sounded, 4) Data on 1933 corrections includes emphasis on draft of ship and which oscillator was being used, thus it may not as applicable to the present work.

STATISTICS

Day	No. of Positions Plotted			No. of Bombs Plotted			Statute Miles of Line			Both Sheets			
	81	121	Tot.	81	121	Tot.	Total	81	121	RL	RLx6	WL	VC
A	39	39	-	24	24	-	65.6	65.6	-	170	92	-	-
B	65	65	-	35	35	-	75.4	75.4	-	284	40	-	2
C	50	50	-	39	39	-	82.1	82.1	-	200	73	2	6
D	72	72	-	49	49	-	69.1	69.1	-	350	-	-	6
E	90	90	-	51	51	-	91.4	91.4	-	314	5	-	6
F	51	51	-	29	29	-	35.9	35.9	-	175	-	-	3
G	138	90	57	80	52	33	164.3	73.6	97.5	156	114	149	4
H	93	54	44	53	28	29	100.6	46.9	59.9	117	146	17	2
J	52	22	32	42	18	25	100.2	34.5	65.7	95	141	52	-
K	62	62	-	43	43	-	76.5	76.5	-	145	109	-	3
L	100	100	-	61	61	-	96.3	96.3	-	374	63	-	5
M	71	71	-	41	41	-	78.0	78.0	-	247	128	-	4
N	81	81	-	46	46	-	81.0	81.0	-	269	60	-	3
P	54	24	31	32	17	16	93.7	36.2	57.5	41	37	162	1
Q	38	21	17	22	18	5	69.2	36.6	25.0	7	122	55	1
R	151	151	-	77	77	-	144.6	144.6	-	566	75	-	10
S	108	95	16	52	44	8	114.3	101.8	13.3	384	71	-	2
T	66	66	-	31	31	-	64.8	64.8	-	176	54	-	4
U	144	22	124	78	13	67	170.1	28.8	144.0	85	338	52	2
V	31	20	13	22	16	8	73.1	42.7	32.7	20	154	8	-
W	124	124	-	61	61	-	104.5	104.5	-	532	16	-	4
X	89	89	-	50	50	-	81.5	81.5	-	363	15	-	2
Y	81	32	49	40	22	19	154.0	52.0	101.7	-	367	1	3
Z	13	13	-	11	11	-	30.3	30.3	-	8	61	-	-
AA	83	83	-	56	56	-	102.6	102.6	-	483	43	-	2
BB	34	34	-	29	29	-	40.0	40.0	-	54	82	4	-
CC	44	21	22	30	16	14	102.2	37.8	63.0	-	232	14	1
DD	38	11	26	23	9	15	67.3	22.6	44.0	4	149	-	2
EE	62	-	62	55	-	55	174.9	-	174.9	-	334	63	-
FF	90	40	52	55	26	31	153.3	68.2	85.1	72	283	4	1
GG	39	39	-	25	25	-	55.5	55.5	-	48	99	-	2
HH	57	-	57	40	-	40	113.0	-	113.0	23	206	18	3
JJ	79	20	60	47	13	35	146.8	33.5	113.3	-	295	-	2
KK	106	-	106	51	-	51	173.3	-	173.3	-	418	9	2
LL	27	-	27	21	-	21	82.7	-	82.7	-	131	6	1
MM	63	52	13	44	37	9	99.2	79.3	19.9	73	204	-	2
NN	39	11	29	33	9	25	80.5	17.0	63.5	33	154	-	1
PP	59	-	59	26	-	26	137.5	-	137.5	-	240	6	2
QQ	21	-	21	14	-	14	33.7	-	33.7	13	71	-	-
RR	94	86	11	57	51	9	158.5	144.0	18.1	13	416	-	3
SS	45	-	45	27	-	27	83.5	-	83.5	55	181	7	2
TT	78	-	78	35	-	35	103.5	-	103.5	-	241	1	3
UU	82	11	70	37	7	30	113.7	18.5	95.0	-	262	-	3
VV	46	7	38	26	4	23	74.6	9.8	64.8	56	147	-	-
WW	84	-	84	39	-	39	94.5	-	93.5	-	240	-	1
XX	74	74	-	40	40	-	94.0	94.0	-	140	169	-	2
TOTAL	2297	2083	1333	1859	1188	699	4436.3	2278.2	2113.9	6095	6968	618	102

ADDITIONAL STATISTICS  
to accompany

Field Sheet No. 81 (H5473)

These statistics include one day of visual work from Field Sheet 43 which was plotted on Field Sheet 81 as it was too far offshore to plot on the previous visual sheet.

1932	No. of Soundings	No. of Positions	Miles of Soundings.
Nov. 3 Y day	284	78	44.9
Feb 7 FF day (1933)	967	205	111.8
Total	1251	283	156.7

All Soundings were accomplished by the Red Light Direct Method.

The final totals are as follows:

Statute Miles of Soundings	No. of Positions	Total Sdgs. Both Sheets
2593.2	2499	RL 7346
		RLx6 7428
		7428
		7428

LIST OF SIGNALS  
to accompany

H 5473 H 5472  
HYDROGRAPHIC SHEETS FIELD NOS. 81 and 121

Sheet 81 H 5473

TRIANGULATION

Hydrographic Name	Location
ANO	Ano Nuevo Lighthouse 1931
BRUNO	Mount San Bruno
BON	Bonita Point Lighthouse, 1907
COOKE	Cooke 1931
FRANK	Frank 1931
HO	Castle N.W. Corner Large White House
GLASS	Glass 1931
JARO	Jaro 1931
PID	Pigeon Point Lighthouse 1931
PASS	Radio Compass Tank 1931
PILL	Tank Pillar Point 1931
MILE	Mile Rock Lighthouse
SKY	Skyline U.S. Engineers
TAM	Mount Tamalpais, East Peak, Observatory, 1907
CAB	N.W. Cable Tower at Davenport 1931
WEST	Radio West 1931

Sheet 121 H 5472

TRIANGULATION

VENTURA ROCK	Ventura Rock 1932
VENTURA	Ventura 1932
LIGHT	Point Sur Lighthouse 1932

FALSE SUR

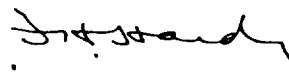
STATEMENT  
to accompany

HYDROGRAPHIC SHEET FIELD NO. 81 45473

Coast of California  
U.S.C. and G.S.S. Guide  
1932

The smooth plotting of this sheet and the pencilling of the soundings thereon has been done by Mr. R.D. Dewell, civil engineering hand under the general supervision of Lieutenant L.W. Swanson.

Lieutenant Swanson has drawn the depth curves. The completed smooth sheet has been inspected and is approved. ~~However, in as much as the plotting of this sheet has been done by a temporary employee, it is recommended that the office verification be correspondingly rigid.~~



F.H. Hardy  
Chief of Party C. and G.S.  
Commanding ship GUIDE

Oakland, California  
July 2, 1934

STATEMENT  
to accompany

HYDROGRAPHIC SHEET FIELD NO. 121 H 5472

Coast of California  
U.S.C. and G.S.S. Guide  
1932

The smooth plotting of this sheet and the pencilling of the soundings thereon has been done by Mr. E.E. Garnett, civil engineering ~~hand~~ under the general supervision of Lieutenant L.W. Swanson.

Lieutenant Swanson has drawn the depth curves. The completed smooth sheet has been inspected and is approved. However, in as much as the plotting of this sheet has been done by a temporary employee, it is recommended that the office verification be correspondingly rigid.

F.H. Hardy  
Chief of Party C. and G.S.  
Commanding ship GUIDE

Oakland, California  
July 2, 1934

*Verification* Report on H. 5472.

- A. The records conform to the requirements of the General Instructions.
- B. The list of discrepancies given in the field report was checked by the verifier. Crossings 5% or less were not changed since that error is allowable in these depths.
- C. The crossing at 1Q - 2Q and 99 - 100 KK (Lat.  $36^{\circ}51'$ <sup>57'</sup>, Long.  $123^{\circ}25'$ ) which is 15% in error was considered correct and was plotted as indicated by the field plotter (authority K.T.A.).
- D. The Field plotter indicated vertical casts on position with no other sounding. The verifier inked the fathometer sounding on position and the ~~lead-line~~ *wire* sounding offset nearby.
- E. Line 24p - 28p was not in agreement <sup>in position</sup> with the continuation of that line on H. 5473.

Apparently the field plotter attempted to show a better crossing, but did so without justification. Line 24p - 28p and 40 MM - 42 MM were re-plotted to agree with bomb positions, Boat sheet, time and course.

- line agree very well*
- F. With only a few exceptions, the field plotting was good. —
- G. The triangulation stations were not verified in the field. —
- H. No source was found to check the position of signal False Sur, which was apparently used only for locating the hydrophone at Point Sur.
- I. Junctions were made with the following sheets:

H. 5473 (1932) ✓  
H. 5313 (1932-33). ✓  
H. 5279 (1932-33). ✓  
H. 5014 (1929). ✓

They were, on the whole, in good agreement. ✓

The soundings from H. 5014 (1929) were obtained with the Sonic Depth Finder whereas the soundings on H. 5472 were obtained by the fathometer. ✓

J. The soundings with slope corrections were left in pencil pending investigation by Mr. Shalowitz. Likewise, curves affected by soundings with slope corrections were left in pencil. *See par. on Slope Corrections Review of H 5472*

K. Curves were drawn with the aid of soundings from overlapping sheets and were completely inked within the limits of the soundings except as indicated in the preceding paragraph. ✓

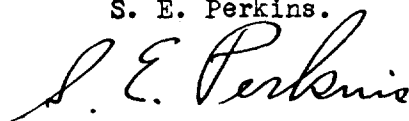
L. A sounding of 921 fathoms in the center of submarine valley in Lat.  $36^{\circ}40'$ , Long.  $122^{\circ}05'$ , appears in error and merits further consideration by the reviewer. *This line was adjusted and is now in fair agreement.*

H. 5472 - 2.

M. It was suggested in the Report of H. 5014 that the bank in Lat.  $37^{\circ}20'$ , Long.  $123^{\circ}25'$  be named "Pioneer". According to Mr. Bacon, this has never been acted upon by the Division of Geographic Names.

Respectfully Submitted,  
November 13, 1934.

S. E. Perkins.

A handwritten signature in cursive script, reading "S. E. Perkins". The signature is written in dark ink and is positioned below the typed name "S. E. Perkins.".



Report on

Verification of H. 5473.

A. The R. A. R. positions as a whole were none too strong, and many positions were little more than dead reckoning determinations. Line 22 FF - 27 FF is left in pencil. It makes bad crossings and is considered too deep. Mr. Brittain who was reading the fathometer at that time, and who is now in the Washington office, was consulted by Capt. Adams. He suggested rejecting the line. The vertical cast at 20 FF should have been rejected in the field. It is impossible to adjust the line for better crossings and it is felt that the fathometer was in error. The line is not to be considered for charting (authority KTA). The Executive Officer of the "Guide" was also consulted by Capt. Adams, and his explanation was, "bad weather", though the records do not indicate it.

vc. - t  
20FF rejected  
J.G.L.

B. Part of line 11 D' - 14 D' was not plotted since it was presumably taken with the white light method, and is not considered as accurate as the nearby soundings which are shoaler.

C. Between 45 XX and 58 XX, and between 81 RR and 87 RR only those soundings which appeared to agree with the other lines were plotted. Errors may have been caused from any of the following:- the fathometer wasn't working between 80 RR and 82 RR (see Descriptive Report). The control is weak and Red Light X 6 was being used in this depth.

D. Line 21 P - 22 P not plotted. It appears to be too deep.

rejected  
J.G.L.

E. Line 84 X - 89 X was changed to plot by the visible fixes. The old positions as determined by R. A. R. were left on the sheet. (Lat.  $36^{\circ}55'$ , long.  $122^{\circ}20'$ ).  
old positions have been removed

F. The fathometer was read to 10ths <sup>of fathoms</sup> with some vertical casts as deep as 295 fathoms. (See pp. 45, Hydro. Man.).

G. A note on Page 39, Vol. 9 (5NN) was put in by the field plotter, Mr. Dewell, in black pencil, contrary to rule pp 158, page 20, Hydro. Manual.

H. The area bounded by lat.  $36^{\circ}57'$  and  $37^{\circ}15'$  and long.  $122^{\circ}42'$  and  $122^{\circ}20'$ , approximately, was verified and inked by Mr. Bush. Because of a change of rules regarding plotting vertical casts since Mr. Bush worked on the sheet, all vertical casts in that area were changed by the writer to conform to the new ruling (i.e. fathometer sounding on position).

I. The crossing at 16 - 18 E and 17 - 18 B was not changed. Apparently there is shoaling on both sides. (C.R.B)

J. Junctions were made with the following sheets:-

- |  |                 |
|--|-----------------|
| H. 5279 (1932-33).                                       | H. 4979 (1929)  |
| H. 5278 " "  | H. 4980a (1929) |
| H. 5395 (1932-34).                                       | H. 4981 (1929)  |
| H. 5266 (1932-33)  |                 |
| H. 5245 (made previously) (1932-33).                     |                 |
| H. 5472 (1932)   |                 |
| H. 5014 (1929) (soundings made with sonic depth Finder). |                 |

Depth curves were re-drawn on these sheets and the curves in turn traced on to H. 5473. Several overlaps were exceptionally large; one approximating 800 soundings. ✓

K. The records conform to the General Instructions except as noted in this report. ✓

L. Lines 42 MM and 31J - 32J were replotted by time and course. (Lat.  $37^{\circ}05'$ , long.  $123^{\circ}05'$ ). This is in agreement with the overlap of H. 5472. ✓

M. The dates for Hydrophone positions movements at Point Pinos were marked "MAY" instead of "JULY" and "September". They have been corrected.

N. 8 - 12 A was replotted (Lat.  $37^{\circ}11'$ , long.  $122^{\circ}43'$ ). ✓

Respectfully Submitted by - S. E. Perkins.  
Oct. 12, 1934.

*S. E. Perkins*

Field Records-Section (Charts)

HYDROGRAPHIC SHEET No. 5472

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

Number of positions on sheet	.1333
Number of positions checked	12
Number of positions revised	7
Number of soundings recorded	.14,774 (Includes H 5473)
Number of soundings revised	21
Number of signals erroneously plotted or transferred	—

Date:..... Nov 16 1934 .....

Cartographer:..... S. E. Perkins .....

Verification of protracting  
 Verification & inking of rocks & Shoals) by S. E. Perkins

Verification of inking by

Review by ~~John A. Peck~~  
 P. L. Johnston

Time: } 83 1/2 hrs.  
 Time: }  
 Time: ~~26~~  
 21 hrs

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 5.4.73

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

Number of positions on sheet	2499	
Number of positions checked	21	
Number of positions revised	10	
Number of soundings recorded	14774	(Includes sheet) H-5472
Number of soundings revised	14	
Number of signals erroneously plotted or transferred	—	

Date:..... Sept. 13 1934 .....

Cartographer:..... S. E. Perkins .....

Verification of plotting	by Chas R Bush Jr.	Time: 43 hrs.
Verification & inking of rocks & shoals		
Verification of inking by	S. E. Perkins	Time: 83 1/4 hrs.
Review by	John G Ladd	Time: 26 hrs
	R L Johnston	17 hrs

July 20, 1934

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in  
13 volumes of sounding records for

HYDROGRAPHIC SHEET 5472

Locality Offshore San Francisco to Point Sur and Offshore San Francisco  
to Point Pinos

Chief of Party: Fred L. Peacock in 1932

Plane of reference is mean lower low water, reading

3.1 ft. on tide staff at Princeton

13.7 ft. below B. M. 4

3.0 ft. on tide staff at Santa Cruz

14.5 ft. below B.M. 2

5.5 ft. on tide staff at San Francisco

11.5 ft. below B.M. 166

Height of mean higher high water above plane of reference is 5.3 ft. at  
Santa Cruz and 5.6 ft. at Princeton.

Condition of records satisfactory except as noted below:

*Paul Schurman*

Acting Chief, Division of Tides and Currents

July 20, 1934.

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in  
13 volumes of sounding records for

HYDROGRAPHIC SHEET 5473

Locality Offshore San Francisco to Point Sur and Offshore San Francisco  
to Point Pinos

Chief of Party: Fred L. Peacock in 1932

Plane of reference is mean lower low water, reading

3.1 ft. on tide staff at Princeton

13.7 ft. below B. M. 4

3.0 ft. on tide staff at Santa Cruz

14.5 ft. below B.M. 2

5.5 ft. on tide staff at San Francisco

11.5 ft. below B.M. 166

Height of mean higher high water above plane of reference is 5.3 ft.  
at Santa Cruz and 5.6 ft. at Princeton

Condition of records satisfactory except as noted below:

*Paul Schuman*

Acting Chief, Division of Tides and Currents

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5472 (1932).

Offshore San Francisco to Point Sur, Calif.  
Instructions dated April 4, 1932 (GUIDE).  
Surveyed - May 24 to Oct. 12, 1932.

Fathometer Soundings and R. A. R. Control.

Chief of Party - F. L. Peacock.

Surveyed by - F. L. Peacock.

Protracted and soundings penciled by - E. E. Garnett.

Verified and inked by - C. R. Bush and S. E. Perkins.

1. Condition of Records.

The records conform to the requirements of the Hydrographic Manual, however there was no evidence to show that the triangulation stations had been verified in the field. These were verified in the office.

2. Compliance With Instructions for the Project.

The character and extent of the survey satisfy the instructions for the project. The spacing of sounding lines is well within the specified limits.

3. Sounding Line Crossings.

The sounding lines are generally in very good agreement at the crossings. There are some discrepancies scattered throughout the sheet but in most cases the differences are only a small percentage of the depth. Very little adjustment of sounding lines because of differences at crossings was necessary in the office. The largest discrepancy occurs at the crossing of pos. 1Q - 2Q and pos. 99KK - 100K (lat.  $36^{\circ}57'$ , long.  $123^{\circ}25'$ ) where in depths of about 1600 fathoms the difference is 15 per cent. No logical adjustment could be made of these lines. Another discrepancy occurs at the crossing of pos. 10DD - 11DD and pos. 10TT - 11TT (lat.  $36^{\circ}37'$ , long.  $122^{\circ}54'$ ) where the difference is 80 fathoms in depths of approximately 1500 fathoms. Both of these crossings have been retained.

4. Depth Curves.

The 1000 and 500 fathom curves can be completely drawn as well as portions of the 200, 100 and 50 fathom curves in the vicinity of Point Sur.

5. Junctions With Contemporary Surveys.

H. 5014 (1929).

The junction on the north with this survey is adequate but the depths are not in close agreement in the vicinity of the submarine peaks between lat.  $37^{\circ}20'$  and lat.  $37^{\circ}30'$ . The soundings from H. 5014 (1929), obtained with the Sonic Depth Finder may not be as accurate as

the Fathometer soundings on the present survey. See statement in Descriptive Report of H. 5014 (1929) which reads "The soundings are not so accurate. The echos were so faint and the inexperience of the officers resulted in an occasional probable error of 50 fathoms in depths over 1200 fathoms". For this reason, in transferring the overlap from H. 5014 (1929) to the present survey, the soundings from H. 5014 (1929) have been omitted when not in agreement. A charted 421 fathom sounding from H. 5014 (1929), which was the least depth obtained on the submarine mountain, was retained although it does not agree closely with the soundings of the present survey.

The area common to both surveys, between lat.  $37^{\circ}18'$  and lat.  $37^{\circ}30'$ , should be charted from the combined soundings as shown on H. 5472 (1933).

H. 5473 (1932).

The junction on the east with this contemporary survey is satisfactory. Most of the sounding lines continue from one sheet to the other.

H. 5279 (1932-3).

Only a few sounding lines from this survey overlap the present survey at the junction in the vicinity of the submarine valley (approximate lat.  $36^{\circ}40'$ , long.  $122^{\circ}06'$ ). They agree fairly well. The overlaps from H. 5472 (1932) and H. 5473 (1932) have been made on H. 5279 (1932-3) which now gives a fairly complete picture of this valley.

H. 5313 (1932-3).

The junction on the southeast with this survey is satisfactory. While the soundings are not always in exact agreement, there are no large discrepancies.

H. 5500 (1933).

The junction on the south with this survey is satisfactory. The soundings agree well with the exception of one difference of approximately 60 fathoms in depths over 1800 fathoms. (Lat.  $36^{\circ}10'$ , long.  $122^{\circ}40'$ ).

6. Comparison With Prior Surveys.

H. 4543 (1925).

This survey covers the area east of long.  $123^{\circ}15'$ , between lat.  $36^{\circ}30'$  and lat.  $37^{\circ}00'$ . The sounding lines are very weakly controlled by occasional bearings and astronomic observations. In some areas the soundings agree fairly well but are not in agreement in others with the present survey. Because the present survey, H. 5472 (1932) is more accurately controlled, the soundings from H. 4543 (1925) should be



disregarded, however the bottom characteristics from H. 4543 (1925) have been added to H. 5472 (1932) in the areas where the soundings are in agreement.

7. Comparison With Chart No. 5402.

Within the area of the present survey the chart is based principally on surveys discussed in the foregoing paragraphs but contains a few soundings from outside sources. The authority for these soundings could not be traced. They have been shown on the charts since 1908. They are of little importance since all are deep soundings (1200 to 1800 fathoms) and are in fair agreement with the present survey. Because of the uncertain origin of these soundings they should not be used in future charting.

There are no aids to navigation within the area covered by this survey.

8. Field Plotting.

The usual amount of field plotting was well done by the field party. Only a few minor changes were made in the office.

9. Slope Corrections.

By rigidly applying the rules pertaining to the application of slope corrections, as set out in Special Publication No. 165, it was found that for the scale of the sheet and the slope and depths involved, only a few soundings would require corrections. In as much as there is some uncertainty as to where the changes in grade occurs, it was decided to omit all slope corrections.

10. Additional Field Work Recommended.

No additional work is recommended within the area covered by this survey.

11. Superseding Old Surveys.

Within the area covered, the present survey, with the indicated additions from previous surveys, will supersede the following survey for charting purposes:

H. 4543 (1925) in part.

12. Note to Compiler.

In charting the area in the vicinity of the submarine mountain between lat.  $37^{\circ}18'$  and  $37^{\circ}30'$  the selection should be made from the combined soundings as shown on this sheet and should not be taken from H. 5014 (1929). (See Par. 5, this review).

13. Reviewed by - R. L. Johnston - Nov. 1934.

Inspected by - A. L. Shalowitz.

Examined and approved:

C. K. Green, *C. K. Green*  
Chief, Field Records Section.

*F. S. Jordan*  
Chief, Section of Field Work.

*L. O. Robert*  
Chief, Division of Charts.

*G. H. ...*  
Chief, Division of H. & T.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5473 (1932-4)

Offshore San Francisco to Point Pinos, Pacific Coast, California  
Instructions dated April 4, 1932 ("Guide")  
Surveyed in 1932

Fathometer and Vertical Cast Soundings - R. A. R. Control from Shore Hydro-  
phones and 3 Point Fixes on Shore  
Signals

Chief of Party - Fred L. Peacock.

Surveyed by - Fred L. Peacock.

Protracted and Soundings Pencilled by - R. D. Dwell.

Verified and Inked by - Chas. R. Bush, Jr. and S. E. Perkins.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual.

2. Compliance with Instructions.

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

3. Sounding Line Crossings.

a. Considering the depths involved the agreement of cross lines and adjacent sounding lines is considered satisfactory. The field party submitted a list of the more important discrepancies in crossings. These were examined and in some cases lines were adjusted or rejected, but in the greater number of cases where the differences were small and the lines appeared to be of about equal strength, both lines were accepted. The following are the principal changes made in the office:

(1) Soundings on the line from pos. 21P to pos. 22P were omitted because they were deeper than those of two cross lines. (Lat.  $37^{\circ}02'$ , Long.  $122^{\circ}55'$ ).

(2) Soundings on the line from pos. 46XX to pos. 47XX were omitted because they were not in agreement with two cross lines and because the field party did not consider this days work as accurate as that on other days. (Lat.  $36^{\circ}58'$ , Long.  $122^{\circ}52.5'$ ).

(3) Soundings on the line from pos. 11D' to pos. 14D' were omitted because they were consistently deeper than those of three other lines. (Lat.  $36^{\circ}41'$ , Long.  $122^{\circ}15'$ ).

(4) The line from pos. 22FF to pos. 27FF (Lat.  $36^{\circ}48.5'$ , Long.  $122^{\circ}29'$  to  $122^{\circ}44'$ ) is in poor agreement with cross lines and appears too deep. This line could not be adjusted to cross

well and there is a possibility that the fathometer may not have been working properly. (See verification report, par. A) As the omission of this line would cause a holiday in the work and it was considered sufficiently accurate to disprove the existence of banks or shoals, it has been shown on the sheet in purple but should not be used for charting.

4. Depth Curves.

Within the limits of the survey the usual depth curves may be satisfactorily drawn, including portions of the 50 and 100 fathom curves.

5. Junctions with Contemporary Surveys.

a. A satisfactory junction is made with H-5472 (1932) on the south and west.

b. On the east, satisfactory junctions, considering the depths involved, are made with H-5278 (1933), H-5266 (1933), H-5245 (1933) and H-5395 (1932-4).

c. Also on the east a junction and considerable overlap is made with H-5279 (1932). The overlap in the vicinity of the submarine valley at Lat. 37°00', Long. 122°25' is shown on the present survey, whereas the balance of the overlap and junction, southeast of the valley, is shown on H-5279 (1932).

When the work on H-5279 (1932) and H-5473 (1932-4) in the submarine valley was combined, it was found that there was a discrepancy in the delineation of the 200 fathom curve on the two surveys. The soundings from H-5279 (1932) showed a smoother curve but were not as closely spaced as those on H-5473 (1932-4). In making the overlap, the soundings from H-5473 (1932-4) were generally given the preference over those on H-5279 (1932) because they covered the area, where the differences occurred, more closely. The area of the submarine valley should be charted from the combined soundings shown on H-5473 (1932-4). In other areas H-5279 (1932) is in fair general agreement with the present survey.

d. On the north, satisfactory junctions are made with H-5014 (1929) and H-4981 (1929), with the following exceptions:

(1) The 210 fathom sounding on H-4981 (1929) at Lat. 37°11.8', Long. 122°48.0' falls on the present survey in depths of about 160 fathoms. An examination of the records for H-4981 (1929) shows that the fathometer was apparently not working correctly at the time of this sounding, as there were a number of "misses" before and after the 210 fathom sounding. There were also two full left turns without bomb control and a change of hydrophone at this sounding. This area is fairly well developed on the new survey and shows no indications of any irregular bottom. The 210 fathom sounding is considered erroneous and should be disregarded in future charting.

(2) The line of soundings on H-4981 (1929) (pos. 52N to 55N) at approximate Lat.  $37^{\circ}13'$ , Long.  $122^{\circ}54'$  is consistently 15 to 40 fathoms less than the soundings from the present survey in depths of about 200 fathoms. The records show that this line of soundings are white light soundings which are considered to be less accurate than the red light soundings. The records also show that on this same day numerous other white light soundings were rejected by the Chief of Party. This line, however, was not questioned at the time due possibly to a ~~lack~~<sup>lack</sup> of any adjacent line with which to compare it. The line is considered to be too shoal and should be disregarded in future charting, and it has been so noted on H-4981 (1929).

(3) Satisfactory junctions are made around the detached development on the northern portion of the sheet by H-4980a (1929), H-4979 (1929) and H-5395 (1932-4).

6. Comparison with Prior Surveys.

a. H-558 (1856), H-871 (1865) and H-1548a (1883).

These surveys cover small areas on the inshore limits of the present survey. The agreements are satisfactory.

b. H-4453 (1925) and H-4455 (1925).

These surveys overlap the present survey along the southern inshore side and in the vicinity of the submarine valley at Lat.  $37^{\circ}00'$ , Long.  $122^{\circ}25'$ . Considering the depths involved, they are in general agreement with the present survey and may be used in conjunction with it in charting.

c. H-4543 (1925).

This survey, which covers the lower half of the present survey, is very weakly controlled. All the sounding lines, with the exception of the inshore ends, are astronomically controlled. The soundings are vertical casts which in many cases were subject to appreciable slope on the wire due to drift of the ship. (See D. R. page 2, H-4543). H-4543 (1925) agrees fairly well with the present survey in some areas but is in poor agreement in others. Because of the weak character of the control on H-4543 (1925), it should be superseded within the area covered by H-5473 (1932).

7. Comparison with Chart 5402.

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs, with the exception of a few deep soundings, the origin of which could not be determined. These soundings are in fair agreement with the present survey, but since they are of doubtful origin and the area is now adequately covered by the surveys of this bureau, it is unnecessary to use them in future charting. (See Addenda attached to this review for origin of some of these soundings, also those that should be retained).

8. Field Plotting.

The field plotting was very satisfactory.

9. Additional Field Work Recommended.

No additional field work is required.

See Addenda attached to this review.

10. Miscellaneous Matters.

Attached to this descriptive report is a memorandum for the Chief of Party, which describes the finding of a bank with depths of about 30 fathoms by a fishing trawler in 1918. The position of the bank was located by unadjusted compass course and approximate log distance as being about 272 degrees (true) and 20 statute miles distant from Point Pinos.

The field party ran some additional sounding lines in 1934, controlled by dead reckoning on the 500 fathom bank about 17 statute miles 295° (<sup>true</sup>~~true~~) of Point Pinos and also inside the 1,000 fathom curve about 20 statute miles 275° (<sup>true</sup>~~true~~) of Point Pinos. The lines are in agreement with visual fix work on H-5279 (1932) and R. A. R. work on H-5473 (1932-4). For the depths involved, the area inside the 1,000 fathom curve is well covered. Outside of the curve the lines are spaced about 3 miles apart. For a 30 fathom bank to be located between two such lines, without any indication of it being detected on either of the adjacent lines would require a slope of about 35° and an almost pinnacle formation.

11. Superseding Old Surveys.

Within the area covered the present survey supersedes the following surveys for charting purposes.

H- 558 (1856)	In Part.
H- 871 (1865)	" "
H-1548a(1883)	" "
H-4543 (1925)	" "

12. Reviewed by - John G. Ladd, and R. L. Johnston, December, 1934.

Inspected by - A. L. Shalowitz.

Examined and approved:

C. K. Green, *C. K. Green*  
Chief, Section of Field Records.

*L. O. Colburn*  
Chief, Division of Charts.

*J. B. Borden*  
Chief, Section of Field Work.

*G. H. de*  
Chief, Division of H. & T.

Section of Field Records

ADDENDA TO REVIEW OF H-5473 (1932-34)

Par. 9 Additional Field Work Recommended.

The 217 fathom sounding (charted) in lat. 37° 21', long. 123° 00' and falling at the junction of the present survey and H-5014 (1929) and close to a shoaling indicated on both surveys, the least depth on the present survey in this vicinity being 296 fathoms is <sup>in</sup> sufficiently developed on either survey. The 217 fathoms originates with a report (page 408, year 1890, Serial No. of sounding: 3105) entitled: "Dredging and Other Records of the U. S. Fish Commission Steamer "ALBATROSS" dated 1889 to 1892 and 1901 to 1910. (Library No. 639--U 58 A). This sounding is being retained on the chart until a more detailed examination is made in this area. At such time, a better development of the submarine valley indicated just west and southwestward should also be made.

Reviewed by - Harold W. Murray,

March 18, 1937.

Inspected by - A. L. Shalowitz.

Applied to Drawing of Chart 5403, July 10, 1935 H.B.

H 5472 Applied to Drawing of Chart 5302 Jan 15, 1936 - J.F.W.

H. 5472 Applied to compilation of new Chart No. 5020 Dec. 1937, S.B.M.

H. 5472 } <sup>completely</sup>  
H 5473 } appl to comp. of new chart 5072 4-7-64