5758

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: California.

11—5813

DESCRIPTIVE REPORT.

Hydrographic *Sheet No.* 25

LOCALITY:

Southern California coast

San Clemente Island.

19 33-34

CHIEF OF PARTY:

O. W. Swainson,

Form 537
Ed. Sept., 1929

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. 25

REGISTER NO. 5758

State California

General locality Southern California Coast

Locality San Clemente Island

Scale 1:20,000 Date of survey October 24, 1933 to May 17, 1934

Vessel PIONEER

Chief of Party O. W. Swainson

Surveyed by O. W. Swainson, J. M. Smook, P. L. Bernstein, R. A. Gilmore, and J. C. Ellerbe.

Protracted by H. J. Pulskamp (Draftsman) and H. J. Healy

Soundings penciled by H. J. Pulskamp and H. J. Healy.

Soundings in fathoms ~~feet~~

Plane of reference M. L. L. W.

Subdivision of wire dragged areas by

Inked by Robinson & ( )

Verified by Robinson

Instructions dated November 18, 1932

Remarks: Robinson

U. S. GOVERNMENT PRINTING OFFICE: 1929

DESCRIPTIVE REPORT

TO ACCOMPANY

HYDROGRAPHIC SHEET, FIELD NO. 25.

AUTHORITY

The hydrography of field sheet No.25 was done in accordance with Instructions dated November 18,1932, for project No. 120.

LOCALITY

The sheet extends offshore of the 1933 work of Lieut. R.W. Knox, around the southern and southeastern end of San Clemente Island, Calif.

CONTROL

The control was visual fixes on triangulation stations established or recovered by Lieut. R.W. Knox in 1933, and topographic signals established by the same party.

SURVEY METHODS

The work was done on a scale of 1:20,000, using the PIONEER throughout. All soundings were taken with the fathometer, supplemented with a large number of vertical casts. These casts were taken close together off the southeast end of the island due to the irregular bottom and also to check the slope corrections as determined from the depth curves.

The lines were run parallel to the shore to allow a gradual increase in the spacing of the lines as the depth increased. Cross lines were run normal to the beach at about five mile intervals.

Bottom characteristics were usually obtained at the vertical casts and are so indicated on the sheet.

Depth curves are drawn at 50, 100 and 200 fathoms.

CURRENTS

No current observations were made, nor were any decided currents observed in the course of the hydrography.

TIDES

Tidal data was obtained from the automatic tide gages maintained by Lieut. R.W. Knox, first at Wilson Cove, San Clemente Island and later at Avalon, Catalina Island. No time or height corrections were made to the data obtained in referring them to the locality of the sheet.

MAGNETICS

No magnetic observations were made.

FATHOMETER CORRECTIONS

Fathometer corrections were computed for sheets 12,13,14,25,26 and 27 as a group prior to November 21,1933 and then again after that date up to May 14,1934. Another set of corrections was determined for sheets 25,26 and 47 as a group for the period May 14 to May 31,1934.

For detailed tables and descriptions of the determination of the fathometer corrections see 1933 Seasons Report for the PIONEER. See also the Descriptive Report for sheet, field No.12 for the corrections up to May 14, 1934. The method of computing the fathometer correction after May 14 is explained in detail and is made a part of this report on subsequent pages.

A resume of the corrections applied to this sheet is attached to the front of Volume 1, and an abstract of the fathometer comparisons is made a part of this report.

SLOPE CORRECTIONS

All corrections for slope were computed in accordance with Special Publication No.165. The depth curves were drawn using fathometer soundings that were corrected for salinity and temperature. A scale was made to read the percent of slope between 100 fathom depth curves. Using this scale the complete area of the sheet was investigated.

In many places the percentage of slope was taken between intermediate depth curves, for example between 250 and 350 fathoms. The corrections were all entered in the record and the soundings reduced.

Where slope corrections were applied, the final reduced sounding is shown on the smooth sheet, followed by a sounding in parenthesis, which is corrected for all other factors except slope.

In the case of the wire soundings they are shown on the sheet followed by V.C. Where slope corrections were applied to the soundings in the immediate vicinity of the V.C. a correction was also applied to the reduced fathometer sounding at the V.C., so besides the wire reading there are given two other soundings in parenthesis, namely the reduced fathometer sounding and same corrected for slope. Where no slope correction has been applied only one sounding in parenthesis is given at the V.C., namely the reduced fathometer sounding.

DANGERS

There are no dangers to navigation on this sheet.

JUNCTION WITH OTHER SHEETS

The hydrography checked very well with the junction of the 1933 inshore work of Lieut. R.W. Knox. Where there are small discrepancies with Lieut. Knox's work, use his soundings.

This sheet joins sheet field No. 26 on the north side of the island and sheet, field No. 27 on the south side of the island. There is a discrepancy of about 2% with some of the soundings on sheet No.26 and agrees very well with sheet No.27.

COMPARISONS WITH PREVIOUS SURVEYS

Tracings of the surveys on sheets 1430, 4366, 4549a and 4783 were made and these were used for the comparison with the new survey. The following was noted:

Sheet 1430: There were a few discrepancies with this sheet, but most of the soundings showed fairly good agreement.

Sheet 4366: As a whole the agreement with this sheet was good except near longitude 118° 20' between latitudes 32° 47' and 32° 48'.

Sheet 4549a: The agreement of the overlapping section of this sheet with the present survey was very good except for the six soundings on a line from latitude 32° 53!8 longitude 118° 22!8 to latitude 32° 56' longitude 118° 24!7, which are exceedingly lower than those obtained on field sheet No.25.

Sheet 4783: As a whole the agreement of the overlapping section with this sheet was very good.

In all of the above cases where the old survey and the present one do not agree, accept the present soundings. (With the exception of the area Southeast of the southeast end of the island, where the fixes were weak, as noted later, the control was very good and the fathometer soundings were supplemented with a alrge number of vertical casts. The last two days of work on this sheet were devoted entirely to taking vertical cast comparisons.)

MISCELLANEOUS

Some difficulty was encountered in obtaining good control southeast of the southeast end of the island, as on several occasions swingers were used for fixes. There was also some confusion about △ Guds. The fixes were plotted with this station on the boat sheet, but when check angles were taken it was noted that ⊙ Guds 2 had been used, and this point has been plotted as a hydrographic signal and was used in plotting the smooth sheet. Both △ Guds and ⊙ Guds 2 were used.

△ Three was erroneously plotted on the boat sheet and this was not discovered until practically all the plotting using that station was finished. When correctly used it made a decided change in the plotting of the lines.

In view of the changes made on the smooth sheet on account of the use of ⊙ Guds 2 and the correct position of △ Three, the lines on the smooth sheet southeast and southsoutheast of the southeast end of the island do not conform to those on the boat sheet.

1 At latitude 32° 53!3 longitude 118° 23!7 the fathometer sounding (325) on C day is probably too deep, as it doesn't check the vertical comparisons taken nearby (positions 29F and 40F). The next fathometer sounding on position 161 C checks the vertical cast taken at position 39F.

2 At position 30F (latitude 32° 53!7 longitude 118° 23!3) the vertical cast seems to be too deep, as it doesn't check the other soundings. The fathometer sounding seems to be correct. V.C. not plotted.

3 At latitude 32° 54!3 longitude 118° 24!8 there is a discrepancy of about 4% in the crossing (408 and 420).

4 At latitude 32° 50!4 longitude 118° 21!2 there is a discrepancy of 22 fathoms between the fathometer sounding and the vertical cast (position 22F). The slope corrections were not applied to the line of soundings near position 22F, therefore it wasn't applied to the fathometer reading taken at the vertical cast, the reason being that the slope is less than the critical value. However, as the slope is about 7%* in this case, if it were applied to the fathometer reading it would bring it up to the vertical cast. This same condition exists at position 26F (latitude 32° 51!1 longitude 118° 22!) where the slope is about 5%. Slope comes 3½% accord. to Sp. Pub. 165 & not plotted

5 At latitude 32° 46!8 longitude 118° 25!4, there is a sounding of 43 fathoms between a 32 and a 37 and at latitude 32° 46!6 longitude 118° 25!6 there is a sounding of 39 fathoms between a 47 and a 45. These soundings are correct. The bottom is very bumpy in this area, and the soundings were checked on sheet No. 27.

6 At latitude 32° 45!8 longitude 118° 22!4 the sounding of 153 fathoms between 160 and 178 looks doubtful. It is noted that the recorder marked this as a slope sounding in the record book. It probably wasn't called to the attention of the officer in charge at the time. * Sounding not plotted. Very probably the echo wasn't from point directly beneath vessel.

7 At latitude 32° 47!7 longitude 118° 20!6 there is a sounding of 101 fathoms just inside of 97 (discrepancy of about 4%).

8 At latitude 32° 45!7 longitude 118° 19!1 there is a sounding of 363 fathoms near a 376 (discrepancy of about 3½%).

9 At latitude 32° 48!8 longitude 118° 20!3 there is a sounding of 66 fathoms between a 48 and a 63. The bottom in this locality is very uneven and the soundings are probably all correct.

With the few exceptions noted above, the crossings on this sheet checked very well.

J.M. Smook,
J.M. Smook,
H.& G. Engineer.

FATHOMETER CORRECTIONS

For

Field Sheets Nos. 12, ~~14~~, 25, 26, and 27.

TABLE A

This table shows the computation of the theoretical and final fathometer correction, the latter being obtained by application to the former of index corrections computed on tables B and C.

Column 0 is the temperature scaled from a curve of temperatures taken in the areas of the sheets. (See blueprint).

Column 1 is true depth of water.

Column 2 is salinity scaled from a curve plotted with data furnished by the Scripps Institute of Oceanography. These salinities were taken west of San Miguel Island, but are believed to be of sufficient accuracy for use in the areas covered by the sheets concerned.

Column 3 is the velocity of sound through sea water as taken from the British Admiralty Tables for each depth.

Column 4 is the mean of the velocities from the surface to each succeeding depth.

Column 5 is the distance the sound traveled from the oscillator to the bottom and back to the hydrophone for the No. 3 (Navy rat) hydrophone and Big Oscillator.

Column 6 is the uniform scale reading on a fathometer, computed from the depth and mean theoretical velocity. The speed of the fathometer was 248 r.p.m., or 62/15 r.p.s. The uniform scale reading equals 124/15 x $\frac{D \times 1.828}{\text{Mean Theor. Vel.}}$. The factor, 1.828, is used to reconcile the depth in fathoms to the mean theoretical velocity in meters.

In column 7 the reading on the uniform scale is changed to the corresponding reading on the existing non-uniform scale of the fathometer. Where the existing scale is uniform, this column is left blank.

Column 8 is the computed theoretical correction, and is equal to column 1 minus column 7.

Column 9 is the final correction to fathometer soundings, obtained by applying an index correction of minus 0.9 fathom to the corresponding theoretical corrections. These final corrections apply from October 1, 1933 to November 21, 1933.

Column 10 is the final correction to the fathometer soundings, obtained by applying an index correction of plus 1.4 fathoms to the corresponding theoretical corrections. These corrections apply after November 21, 1933.

In columns 9 and 10, it is to be noted that the corrections are listed opposite true depths of water, but in order to simplify the entering of the reducers in the sounding volumes these corrections were plotted on a curve against indicated depths and the final values shown in Table D taken from this curve.

Column 11 is the distance the sound travels from the small oscillator to the bottom and back to the number 2 (tuned) hydrophone.

Column 12 is the uniform scale reading for the number 2-small oscillator combination. (See column 6 this report for method of computation)

Column 13 for the number 2-small oscillator combination is the same are column 7 for the number 3-large oscillator combination.

Column 14 is the theoretical fathometer correction and equals column 2 minus column 13.

Column 15 is the final fathometer correction and is column 14 plus an index correction of -1.8 fathoms. This column applies from October 1 to November 21, 1933.

Column 16 is the final fathometer correction that applies after November 21, 1933. This correction is column 14 plus an index correction of +1.0 fathom.

These corrections were plotted on a curve against indicated fathometer soundings and the corrections in Table D taken therefrom.

Columns 5, 6, 7, 8, 9, and 10 apply to the big oscillator- number 3 hydrophone combination; columns 11, 12, 13, 14, 15, and 16 apply to the small oscillator-number 2 hydrophone combination; columns 0, 1, 2, 3, and 4 apply to both combinations.

TABLE B

In table B are listed the comparison of the indicated fathometer soundings with the corresponding vertical casts to obtain an index correction (I.C.). On the left hand side of the table are the comparisons taken between October 1, and November 21, with a separate table for the long dash. On the right hand side of the table are the comparisons taken after November 21. This table is for the Number 3- Big Oscillator combination.

TABLE C

In table C are listed the comparisons of the number 2 hydrophone-Small Oscillator combination fathometer soundings and the corresponding vertical casts. Only a few of the comparions taken were used, as a number were taken on a slope. Those on the left side of the table are for the

period from October 1 to November 21, and those on the right side are for the period after November 21. The long dash comparisons were so variable as to be unreliable, therefore the long dash comparisons listed on table B were used in every case where the long dash was used in sounding. This correction was taken as the difference between the average short dash I. C. and the average long dash I. C. for the number 3 hydrophone- big oscillator combination before November 21. This correction (-2.7fathoms) is applied as an additional correction to every long dash sounding, the regular short dash correction being entered. For the number 2 hydrophone-small oscillator, this additional correction has been applied to the original curve, and the values tabulated in Table D.

TABLE D

Table D is the final table from which the reducers were entered in the sounding volumes, and is self-explanatory.

All the values are in fathoms except column 2 of Table A, which is in parts per thousand, and columns 3 and 4 of Table A, which are in meters per second.

TABLE A

FATHOMETER CORRECTIONS, SAN CLEMENTE ID.

No. 3 Hydrophone, Big Oscillator.

Temp. °C	True Depth Fms	Salinity o/oo	Theor. Vel. m/s	Mean Vel. m/s	D Fms	Uniform Scale Rdg. Fms	Non-unif Scale Rdg. Fms	Theor. Cor'n Fms	Final Cor'n to 11/21 IC-0.9	Final Cor'n after 11/21 IC 1.4
0	1	2	3	4	5	6	7	8	9	10
16.0	2	33.60	1505.6							
15.8	4		04.9	1505.2	8.0	8.0	7.7	-3.7	-4.6	
15.7	6		04.7	05.1	8.7	8.7	8.3	-2.3	-3.2	
15.4	8	.70	03.9	04.8	9.8	9.8	9.6	-1.6	-2.5	-0.2
14.9	10		02.4	04.3	11.1	11.1	11.0	-1.0	-1.9	+0.4
14.0	12		1499.6	03.5	12.6	12.6	12.5	-0.5	-1.4	+0.9
13.1	14		96.6	02.5	14.3	14.4	14.3	-0.3	-1.2	+1.1
12.5	16		94.7	01.6	16.0	16.1	16.0	0.0	-0.9	+1.4
12.0	18		92.9	00.6	17.8	17.9	17.8	+0.2	-0.7	+1.6
11.8	20		92.2	1499.8	19.6	19.8		0.2	-0.7	1.6
11.5	24	.80	91.5	98.4	23.3	23.5		0.5	-0.4	1.9
11.4	28		91.3	97.4	27.1	27.4		0.6	-0.3	2.0
11.4	32		91.4	96.6	31.0	31.3		0.7	-0.2	2.1
11.6	42	.90	92.5	95.6	40.7	41.1		0.9	0.0	2.3
11.5	52		92.6	95.0	50.6	51.2		0.8	-0.1	2.2
11.2	62		91.8	94.5	60.5	61.2		0.8	-0.1	2.2
10.7	72	34.00	90.5	93.9	70.4	71.3		0.7	-0.2	2.1
10.2	82		89.0	93.3	80.4	81.4		0.6	-0.3	2.0
9.8	92		87.9	92.7	90.4	91.5		0.5	-0.4	1.9
9.5	102		87.1	92.1	100.3	101.5	101.3	0.7	-0.2	2.1
9.2	112	.10	86.4	91.6	110.3	111.8	111.6	0.4	-0.5	1.8
9.0	122		86.0	91.1	120.2	121.9		0.1	-0.8	1.5
8.5	142		84.8	90.2	140.2	142.2		-0.2	-1.1	1.2
8.2	162	.20	84.6	89.5	160.2	162.5		-0.5	-1.4	0.9
7.9	182		84.0	88.8	180.2	183.0		-1.0	-1.9	0.4
7.7	202		83.9	88.4	200.2	203.0	202.8	-0.8	-1.7	0.6
7.2	242	.30	83.4	87.6	240.2	244.1		-2.1	-3.0	-0.7
6.7	282		82.7	86.9	280.2	284.8		-2.8	-3.7	-1.4
6.2	322		82.1	86.3	320.2	325.4		-3.4	-4.3	-2.0
5.8	362		81.8	85.8	360.1	366.1		-4.1	-5.0	-2.7
5.4	402		81.6	85.4	400.1	407.0		-5.0	-5.9	-3.6
5.1	442	.40	81.7	85.0	440.1	447.9		-5.9	-6.8	-4.5
4.7	482		81.5	84.7	480.1	488.9		-6.9	-7.8	-5.5
4.4	522		81.5	84.5	520.1	529.8		-7.8	-8.7	-6.4
4.1	562		81.6	84.3	560.1	570.6		-8.6	-9.5	-7.2

Additional list to show correction over part of dial that is not uniform.

Non-uniform scale rdg.	Theor. Cor'n.	Final Cor'n to 11/21	Final Cor'n after 11/21	Non-uniform scale rdg.	Theor Cor'n	FinalCor'n to 11/21	Final Cor'n after 11/21
101	0.7	-0.2	2.1	201	-1.1	-2.0	+0.3
102	0.8	-0.1	2.2	202	-1.0	-1.9	+0.4
103	0.9	0.0	2.3	203	-0.8	-1.7	+0.6
104	1.0	0.1	2.4	204	-0.7	-1.6	+0.7
105	1.0	0.1	2.4	206	-0.5	-1.4	+0.9
106	1.0	0.1	2.4	208	-0.3	-1.7	+0.6
107	0.9	0.0	2.3	209	-0.9	-1.8	+0.5
108	0.8	-0.1	2.2	210	-1.1	-2.0	+0.3
111.8	0.4	-0.5	1.8	212	-1.2	-2.1	+0.2
121.9	0.1	-0.8	1.5				

TABLE A CONTINUED
No. 2 Hydrohpne, Small Oscillator

True Depth	D	Uniform Scale Rdg.	Non-unif. Scale Rdg.	Theor. Cor'n.	Final Cor'n to 11/21 I.C. -1.8	Final Cor'n after 11/21 I.C. 1.0
2	11	12	13	14	15	16
4	2.8	2.8	2.4	1.6	-0.2	+2.6
6	4.5	4.5	4.0	2.0	+0.2	3.0
8	6.3	6.3	5.7	2.3	0.5	3.3
10	8.3	8.3	8.0	2.0	0.2	3.0
12	10.2	10.3	10.1	1.9	0.1	2.9
14	12.2	12.3	12.1	1.9	0.1	2.9
16	14.1	14.2	14.1	1.9	0.1	2.9
18	16.1	16.2	16.1	1.9	0.1	2.9
20	18.1	18.2	18.1	1.9	0.1	2.9
24	22.1	22.3		1.7	-0.1	2.7
28	26.1	26.3		1.7	-0.1	2.7
32	30.1	30.4		1.6	-0.2	2.6
42	40.1	40.5		1.5	-0.3	2.5
52	50.1	50.7		1.3	-0.5	2.3
62	60.1	60.8		1.2	-0.6	2.2
72	70.1	70.9		1.1	-0.7	2.1
82	80.1	81.1		0.9	-0.9	1.9
92	90.0	91.1		0.9	-0.9	1.9
102	100	101.3	101.1	0.9	-0.9	1.9
112	110	111.5	111.4	0.6	-1.2	1.6
122	120	121.7		0.3	-1.5	1.3
142	140	142		0.0	-1.8	1.0
162	160	162.3		-0.3	-2.1	0.7
182	180	182.8		-0.8	-2.6	0.2
202	200	203.1	202.9	-0.9	-2.9	0.1
242	240	243.9		-1.9	-3.7	-0.9
282	280	284.6		-2.6	-4.4	-1.6
322	320	325.2		-3.2	-5.0	-2.2
402	400	406.9		-4.9	-6.7	-3.9
362	360	366		-4.0	-5.8	-3.0
442	440	447.8		-5.8	-7.4	-4.6
482	480	488.8		-6.8	-8.6	-5.8
522	520	529.7		-7.7	-9.5	-6.7
562	560	570.5		-8.5	-10.3	-7.5

Additional list to show the corrections over part of the dial that is not uniform.

Indicated depth (Non-uniform scale)	Theor. Cor'n.	Final Cor'n to Nov. 21; IC-1.8	Final Cor'n after Nov. 21; IC 1.0
101	0.9	-0.9	1.9
102	1.0	-0.8	2.0
103	1.1	-0.7	2.1
104	1.2	-0.6	2.2
105	1.2	-0.6	2.2
106	1.2	-0.6	2.2
108	1.0	-0.8	2.0
110	0.7	-1.1	1.7
111.5	0.6	-1.2	1.6
121.7	0.3	-1.5	1.3

TABLE B

COMPARISON OF FATHOMETER READINGS WITH VERTICAL CASTS FOR INDEX CORRECTION

No. 3 Hydrophone — Big Oscillator — SHORT DASH

Before Nov. 21, 1933					On and after Nov. 21, 1933.				
Fath. Rdg.	Theor Cor'n	Crtd. Fath.	V.C.	I.C.	Fath. Rdg.	Theor. Cor'n.	Crtd. Fath.	V. C.	I.C.
25.4	0.5	25.9	25.1	-0.8	9.6	-1.6	8.0	11.3	(3.3)
25.4	0.5	25.9	24.9	-1.0	9.5	-1.6	7.9	11.3	(3.4)
40.0	0.9	40.9	39.6	-1.3	35.5	0.8	36.3	36.9	0.6
14.7	-0.3	14.4	14.4	0.0	44.5	0.9	45.4	46.2	0.8
39.3	0.9	40.2	39.1	-1.1	11.5	-0.7	10.8	13.0	(2.2)
17.3	0.2	17.5	16.9	-0.6	9.0	-1.6	7.4	10.0	(2.6)
36.3	0.8	37.1	35.8	-1.3	9.8	-1.6	8.2	11.4	(3.2)
45.7	0.9	46.6	45.4	-1.2	12.0	-0.7	11.3	13.6	(2.3)
47.0	0.8	47.8	46.4	-1.4	30.5	0.7	31.2	31.8	0.6
48.5	0.8	49.3	48.9	-0.4	30.0	0.7	30.7	31.5	0.8
60.6	0.8	61.3	63.2	(1.9)	55.5	0.8	56.3	57.8	1.5
39.2	0.9	40.1	38.6	-1.5	55.0	0.8	55.8	57.6	1.8
60.8	0.8	61.6	61.1	-0.5	55.2	0.8	56.0	57.5	1.5
60.1	0.8	60.9	60.9	0.0	45.1	0,9	46.0	47.3	1.3
60.8	0.8	61.6	60.2	-1.4	45.8	0.9	46.7	47.3	0.6
59.8	0.8	60.6	60.0	-0.6	35.0	0.8	35.8	36.0	0.2
39.8	0.9	40.7	40.00	-0.7	57.5	0.8	58.3	60.0	1.7
40.0	0.9	40.9	39.8	-1.1	42.5	0.9	43.4	43.9	0.5
63.8	0.8	64.6	66.0	(1.4)	29.8	0.7	30.5	32.6	2.1
64.0	0.8	64.8	65.3	(0.5)	30.5	0.7	31.2	31.7	0.5
162	-0.5	161.5	168.0	(6.8)	24.2	0.5	24.7	25.8	1.1
39.2	0.9	40.1	38.5	-1.6	77.5	0.6	78.1	79.0	0.9
346	-3.8	342.2	345.3	(3.1)	15.5	0.1	15.6	16.2	0.6
337.5	-3.7	333.8	336.5	(2.7)	15.1	0.1	15.2	16.1	0.9
49.5	0.8	50.3	49.5	-0.8	18.0	0.2	18.2	19.0	0.8
19.8	0.2	20.0	20.0	0.0	55.6	0.8	56.4	57.5	1.1
39.8	0.9	40.7	39.3	-1.4	52.5	0.8	53.3	53.8	0.5
58.2	0.8	59.0	60.0	+1.0	44.0	0.9	44.9	46.4	1.5
159.8	-0.4	159.4	168.0	(8.6)	93.5	0.5	94.0	91.7	(-2.3)
147.5	-0.3	147.2	149.4	(12.2)	84.5	0.6	85.1	83.2	(-1.9)
64	0.8	64.8	67.2	(2.4)	30.5	0.7	31.2	31.8	0.6
					30.0	0.7	30.7	31.5	0.8
MEAN FOR INDEX CORRECTION -0.9					14.2	-0.3	13.9	16.0	2.1
					14.0	-0.3	13.7	15.8	2.1
					24.3	0.5	24.8	25.8	1.0
					24.5	0.5	25.0	25.9	0.9
-LONG DASH-									
37.2	0.8	38.0	34.9	-3.1	11.2	-0.7	10.5	12.7	2.2
38.0	0.8	38.8	34.9	-3.9	11.2	-0.7	10.5	12.6	2.1
38.3	0.8	39.1	35.3	-3.8	11.5	-0.7	10.8	12.6	1.8
38.8	0.8	39.6	34.4	-4.2	208	-1.2	206.8	208.8	2.0
28.0	0.6	28.6	25.1	-3.1	49.5	0.8	50.3	49.0	(-1.3)
28.1	0.6	28.7	24.9	-3.8	114.5	0.2	114.7	116.8	2.1
42.6	0.9	43.5	39.6	-3.9	15.2	-0.2	15.0	17.8	2.8
159.8	-0.5	159.3	168.0	(8.7)	15.5	-0.2	15.3	17.8	2.5
148.5	-0.3	148.2	159.0	(10.8)	59.1	0.8	59.9	60.1	0.2
346.0	-3.7	342.3	345.3	(3.0)	191.5	-1.1	190.4	191.4	1.0
337.5	-3.6	333.9	336.5	(2.6)	36.3	0.8	37.1	37.8	0.7
Mean for index correction 7)25.8(-3.6					51.0	0.8	51.8	53.4	1.6
					Mean for index correction				+1.4

I. C. -0.9
-3.6

Difference = -2.7 fms. which is to be added to all LONG DASH soundings as these comparisons are all that compare well enough for an index correction.

TABLE C.

COMPARISON OF THE FATHOMETER READINGS WITH VERTICAL CASTS FOR INDEX CORRECTION

SHORT DASH

Before November 21, 1933					On and after Nov. 21, 1933				
Fath. Rdg.	Theor. Cor'n	Crtd. Fath.	V.C.	I.C.	Fath. Rdg.	Theor. Cor'n.	Crtd. Fath.	V.C.	I.C.
6 1.0	1.2.	62.2	61.1	-1.1	52.5	1.3	53.8	53.4	-0.4
61.2	1.2	62.4	60.9	-1.5	71.0	1.1	72.1	74.5	2.4
61.0	1.2	62.2	60.2	-2.0	209.0	-1.2	207.8	208.8	1.0
60.5	1.2	61.7	60.0	-1.7	420.0	-5.2	414.8	419.8	(5.0)
81.7	0.9	82.6	81.2	-1.4					3)3.0
97.0	0.8	97.8	95.2	-2.6					
102.0	0.7	102.7	99.9	(-2.8)					
115.5	0.4	114.9	117.9	(2.0)					
118.0	0.3	118.3	116.3	-2.0					
				7)12.3					
Mean for Index Correction				-1.8	Mean for index correction				+1.0

The following comparisons were not used for the I.C. as they were taken on a slope.

143.5	0.0	143.5	148.2	4.7
145.0	0.0	145.0	147.5	2.5
145.8	0.0	145.8	147.5	1.7
148.0	-0.1	147.9	148.2	0.3
151.0	-0.2	150.8	159.4	8.6
161.5	-0.3	161.2	168.0	6.8
248.0	-1.9	246.1	248.0	1.9
348.9	-3.8	345.1	353.0	7.9
380.0	-4.4	375.6	376.5	0.9
535.0	-7.8	527.2	550.0	22.8

LONG DASH

101.0	0.7	101.7	95.2	(-6.5)
117.0	0.3	117.3	117.9	0.6
148.0	-0.1	147.9	147.5	-0.4
152.0	-0.2	151.8	159.0	7.2
157.0	-0.2	156.8	168.0	11.2
161.0	-0.3	160.7	168.0	7.3
228.0	-1.5	226.5	223.4	-3.1
224.0	-1.4	222.6	223.5	0.9
248.0	-1.9	246.1	248.0	1.9
251.0	-2.0	249.0	248.0	-1.0
265.0	-2.2	262.8	273.3	10.5
307.0	-3.0	304.0	306.2	2.2
337.0	-3.4	333.6	336.5	2.9
343.0	-3.6	339.4	353.0	13.6
345.5	-3.6	331.9	345.3	13.4
380.0	-4.4	375.6	376.5	0.9
537.0	-8.0	529.0	550.0	(21.0)
422.0	-5.2	416.8	419.8	3.0
				16)72.1
Mean Index correction				4.5

These Long Dash Comparisons not used. The ones on Table B are used in every case where the Long Dash was used. The difference between the Long D ash and the Short Dash was 2.7 fathoms and the Long Dash gave soundings that were too deep. Therefor, an additional correction of -2.7 fathoms must be made in each case where the Long Dash was used.

TABLE D

FINAL FATHOMETER CORRECTIONS

Big Oscillator - Number 3 Hydrophone

Before November 21, 1933

Short Dash		Long Dash	
Depth (Fms)	Correction (Fms)	Depth (Fms)	Correction (Fms)
10 - 11	-2	11 - 15	-4
11.1 - 12.9	-1½	15.1 - 21	-3½
13 - 17	-1	21.1 - 32	-3
17.1 - 25.9	-½	32.1 - 57	-2½
26.0 - 80	0	58 - 102	-3
80.1 - 100	-½	103 - 108	-2½
100 - 109	0	109 - 112	-3
110 - 112	-½	113 - 140	-3½
113 - 150	-1	141 - 172	-4
151 - 210	-2	173 - 210	-4½
211 - 260	-3	211 - 222	-5
261 - 322	-4	223 - 275	-6
323 - 379	-5	276 - 345	-7
380 - 425	-6	346 - 390	-8
426 - 470	-7	391 - 435	-9
471 - 515	-8	436 - 479	-10
516 - 560	-9	480 - 525	-11
561 - 605	-10		

After November 21, 1933. May 14 1934

9.5 - 10	0
10.1 - 11	+½
11.1 - 14	+1
14.1 - 21	+1½
21;1 - 102	+2
103 - 166	+1
167 - 224	0
225 - 278	-1
279 - 343	-2
344 - 389	-3
390 - 435	-4
436 - 480	-5

NONE

Note: For sheet 13, +1.4 fms. was used up to 25 fms. See attached abstract of vertical casts.

Note: For LONG DASH soundings after November 21, apply an additional correction of minus (-) 2.7 fms. Long dash was too deep by this amount.

For FRx6 soundings throughout the period covered by these corrections, apply an additional correction of plus (+) 7.0 fms.

FINAL FATHOMETER CORRECTIONS
Small Oscillator - Number 2 Hydrophone.

Before November 21, 1933.

Short Dash		Long Dash.	
Depth (Fms)	Correction	Depth (Fms)	Correction
10 - 34	0	50 - 125	-4
35 - 70	-½	126 - 180	-5
71 - 102	-1	181 - 237	-6
103 - 107	-½	238 - 293	-7
108 - 111	-1	294 - 350	-8
112 - 165	-2	351 - 402	-9
166 - 220	-3	403 - 454	-10
221 - 277	-4		
278 - 335	-5		
336 - 388	-6		
389 - 442	-7		
443 - 482	-8		
483 - 518	-9		

After November 21, 1933.

10 - 21	+3	--- 115	-1
22 - 52	+2½	116 - 170	-2
53 - 109	+2	171 - 225	-3
110 - 125	+1½	226 - 282	-4
126 - 154	+1	283 - 338	-5
155 - 181	+½	339 - 390	-6
182 - 212	0		
213 - 267	-1		
268 - 323	-2		
324 - 377	-3		
378 - 428	-4		
429 - 472	-5		
473 - 510	-6		
511 - 558	-7		

Note: For FRx6 soundings throughout the period covered by these corrections, apply an additional correction of plus (+) 7.0 fathoms.

FATHOMETER CORRECTIONS

For period from May 14th to May 31st, 1934.

Sheets Nos. 25, 26, and 47.

The temperature and salinity curves used to obtain the theoretical fathometer corrections are attached to this report. The temperatures were obtained during the period and in the area for which they are applied. The data for the salinity curves was obtained in adjacent areas during the previous season. It has been found that there is not enough seasonal change in salinity to affect the results appreciably.

Table 1 shows the method of computation of average velocities to various depths. Depths are listed in column 7. Salinities and temperatures corresponding to the depths of column 7 are shown in columns 5 and 6 respectively and are taken from the accompanying curves. The velocities in column 1 are taken from table 2 of the British Admiralty Tables of the Velocity of Sound in Sea Water. The pressure corrections in column 2 and the salinity corrections in column 3 were taken from tables 4 and 3 of the same publication. In column 4 are the algebraic sums of columns 1, 2, and 3, which are the velocities corresponding to the depths in column 7. In column 8 are the average velocities from the surface to the depth in column 7. The average velocities at the bottom of the table for depths less than 100 fathoms were obtained by linear interpolation in the first part of the table.

Table 2 shows the method of computation of the theoretical fathometer corrections for the two base lines-- hydrophone to the big oscillator and hydrophone to the small oscillator. The theoretical corrections are obtained as follows. Let the distance between hydrophone and oscillator be 2 b and the depth from surface to the floor of ocean be d. The hydrophones and oscillators are all 2 fathoms below the water line. Then the distance traveled by the sound from oscillator to the floor of the ocean is

$(d-2)^2 + b^2$, neglecting the progress of the ship. (This is the hypotenuse of the right triangle whose two legs are half the length of the base line and the depth of the ocean below the base line.) The time t taken by the sound to travel from oscillator to bottom to hydrophone is then

$$t = \frac{2\ (d-2)^2 + b^2}{V}$$

when V is the average velocity (col. 2)

If the fathometer makes n revolutions per second, then the fathometer reading is given by 100nt since the dial is graduated into 100 divisions. The values of $(d-2)^2 + b^2$ are given in column 3 of table 2 for the big oscillator, and in column 6 for the small oscillator, with the fathometer readings in columns 4 and 7 respectively. Since the average velo-

cities in column 2 are expressed in meters and the distances are in fathoms, the coversion factor enters. The fathometer speed was 247.6 revolutions per minute when the

$$\text{Fathometer reading} = \frac{2\sqrt{(d-2)^2 + b^2}}{V} \quad 1.8288 \frac{247.6}{60} 100 = 1509 \frac{\sqrt{(d-2)^2 + b^2}}{V}.$$

The difference between the actual depth and the fathometer reading is the theoretical correction and is shown in columns 5 and 8. The Theoretical corrections are plotted on an accompanying graph.

Non-uniformity of the fathometer scale does not enter as no soundings less than 15 fathoms were made during the period, and for depths greater than 100 fathoms the error is less than 1%

Index corrections were obtained from vertical cast comparison under 150 fathoms. The data is shown in tables 3 and 4.

The final fathometer correction is then the algebraic sum of the theoretical and index corrections.

TABLE 1.

Sheets 25, 26, 47

After May 15th, 1934.

1	2	3	4	5	6	7	8
Base Velocity m/sec	Pressure Corr.	Salinity Corr.	Velocity m/sec	Salinity o/oo	Temp. °C.	Depth (Fms)	Average Velocity m/sec
1515.7	0	-1.7	1514	33.2	19.0	0	1514
1501.0	.8	-1.5	1500	33.4	14.2	25	1507
1488.3	1.7	-1.3	1489	33.7	10.5	50	1501
1485.0	2.5	-.9	1487	34.0	9.6	75	1498
1482.8	3.3	-.8	1485	34.1	9.0	100	1495
1480.5	4.2	-.6	1484	34.2	8.4	125	1493
1479.0	5.0	-.6	1483	34.2	8.0	150	1492
1477.4	5.8	-.6	1483	34.2	7.6	175	1491
1475.9	6.6	-.7	1482	34.2	7.2	200	1490
1473.5	8.3	-.7	1481	34.2	6.6	250	1488
1471.5	9.9	-.7	1481	34.2	6.1	300	1487
1469.9	11.6	-.7	1481	34.2	5.7	350	1486
1467.9	13.3	-.5	1481	34.3	5.2	400	1487
1466.6	14.9	-.5	1481	34.3	4.9	450	1485
1465.0	16.6	-.4	1481	34.4	4.5	500	1485
1464.1	18.2	-.3	1482	34.5	4.3	550	1485
1463.7	19.9	-.3	1483	34.5	4.2	600	1485
1463.3	21.6	-.3	1485	34.5	4.1	650	1485
1462.9	23.2	-.3	1486	34.5	4.0	700	1485
1462.9	24.9	-.3	1488	34.5	4.0	750	1485
1462.4	26.5	-.3	1489	34.5	3.9	800	1485
1462.4	28.2	-.4	1490	34.4	3.9	850	1485
1462.0	29.8	-.4	1491	34.4	3.8	900	1486
						15	1510
						20	1508
						30	1506
						40	1503
						60	1500
						70	1499
						80	1497
						90	1496

TABLE 2.

Sheets 25, 26, 47 After May 15th, 1934.

1	2	3	4	5	6	7	8
Depth (d (Fms)	Average Velocity m/sec	#3 Hydro. ½ Distance Traveled	Big Oscillator Fath. Reading (Fms)	Fath. Corr. (Fms)	#2 Hydro. ½ Distance Traveled	Small Oscillator Fath. Reading (Fms)	Fath. C orr. (Fms)
2		8.00	7.97	-5.97			
27	1507	26.3	26.3	+0.7	25.1	25.1	+1.9
52	1501	50.6	50.9	+1.1	50.04	50.3	+1.7
77	1498	75.5	76.0	+1.0	75.03	75.6	+1.4
102	1495	100.4	101.3	+0.7	100.02	101.0	+1.0
127	1493	125.4	126.7	+0.3	125	126.3	+0.7
152	1492	150.3	152.0	0	150	151.7	+0.3
177	1491	175.3	177.5	-0.5	175	177.2	-0.2
202	1490	200.2	202.7	-0.7	200	202.5	-0.5
252	1488	250	253.7	-1.7	250	253.6	-1.6
302	1488	300	304.4	-2.4	300	304.4	-2.4
352	1488	350	355.4	-3.4	350	355.4	-3.4
402	1487	400	406.3	-4.3	400	406.3	-4.3
452	1486	450	457.3	-5.3	450	457.3	-5.3
502	1486	500	508.2	-6.2	500	508.2	-6.2
552	1486	550	559	-7	550	559	-7
602	1486	600	610	-8	600	610	-8
652	1486	650	660.4	-8.4	650	660.4	-8.4
702	1486	700	711.4	-9.4	700	711.4	-9.4
752	1486	750	762.3	-10.3	750	762.3	-10.3
802	1486	800	813	-11	800	813	-11
852	1486	850	864	-12	850	864	-12
902	1486	900	914	-12	900	914	-12
7	1513	9.43	9.41	-2.41			
12	1512	12.81	12.78	-0.78			
17	1510	17.0	17.0	0	15.15	15.14	+1.86
22	1508	21.6	21.6	+0.4	20.1	20.1	+1.9
32	1506	31.1	31.2	+0.8	30.1	30.16	+1.84
42	1503	40.9	41.1	+0.9	40.0	40.2	+1.8
62	1500	60.6	61.0	+1.0	60.03	60.4	+1.6
72	1499	70.5	71.0	+1.0	70.03	70.5	+1.5
82	1497	80.5	81.1	+0.9	80.03	80.7	+1.3
92	1496	90.5	90.2	+0.8	90.02	90.8	+1.2

COMPUTATION OF INDEX CORRECTION
FOR SHEETS 25, 26, and 47.

AFTER MAY 14, 1934.

TABLE 3

No. 3 Hyd. Big Oscillator - F. R. - Short Dash

Sheet	Position	V° C.	Fathometer	Theor. Correction	Index Correction
25	1E	141.1	141.5	+ 0.1	- 0.5
25	5E	50.0	50.3	+ 1.0	- 1.3
25	21E	50.5	50.5	+ 1.0	- 1.0
25	23E	41.8	41.6	+ 0.9	- 0.7
25	57E	131.1	131.5	+ 0.3	- 0.7

Average I. C. = - 1.0 fathoms (.84)

TABLE 4

No. 2 Hyd. Small Oscillator - F. R. - Short Dash

25	1E	141.1	143.0	+ 0.4	- 2.3
25	5E	50.0	51.0	+ 1.7	- 2.7
25	23E	41.8	42.0	+ 1.8	- 2.0
25	52E	89.9	72.5	+ 1.5	- 4.1 R
25	53E	107.0	107.0	+ 1.0	- 1.0
26	74H	50.0	50.5	+ 1.7	- 2.2

Average I. C. = - 2.0 fathoms (rejecting the - 4.1)

No. 2 Hyd. Small Oscillator - F. R. - Long Dash

Average of 9 comparisons on Sheet 47 of No. 2 Small, Short Dash, and No. 2 Small, Long Dash, show the long dash reads 1-1/2 fathoms higher than short dash. See abstract of vertical cast comparisons.

Average I. C. $\frac{21}{22}$ fathoms.

No. 2 Hyd. Small Oscillator - F.R.x6

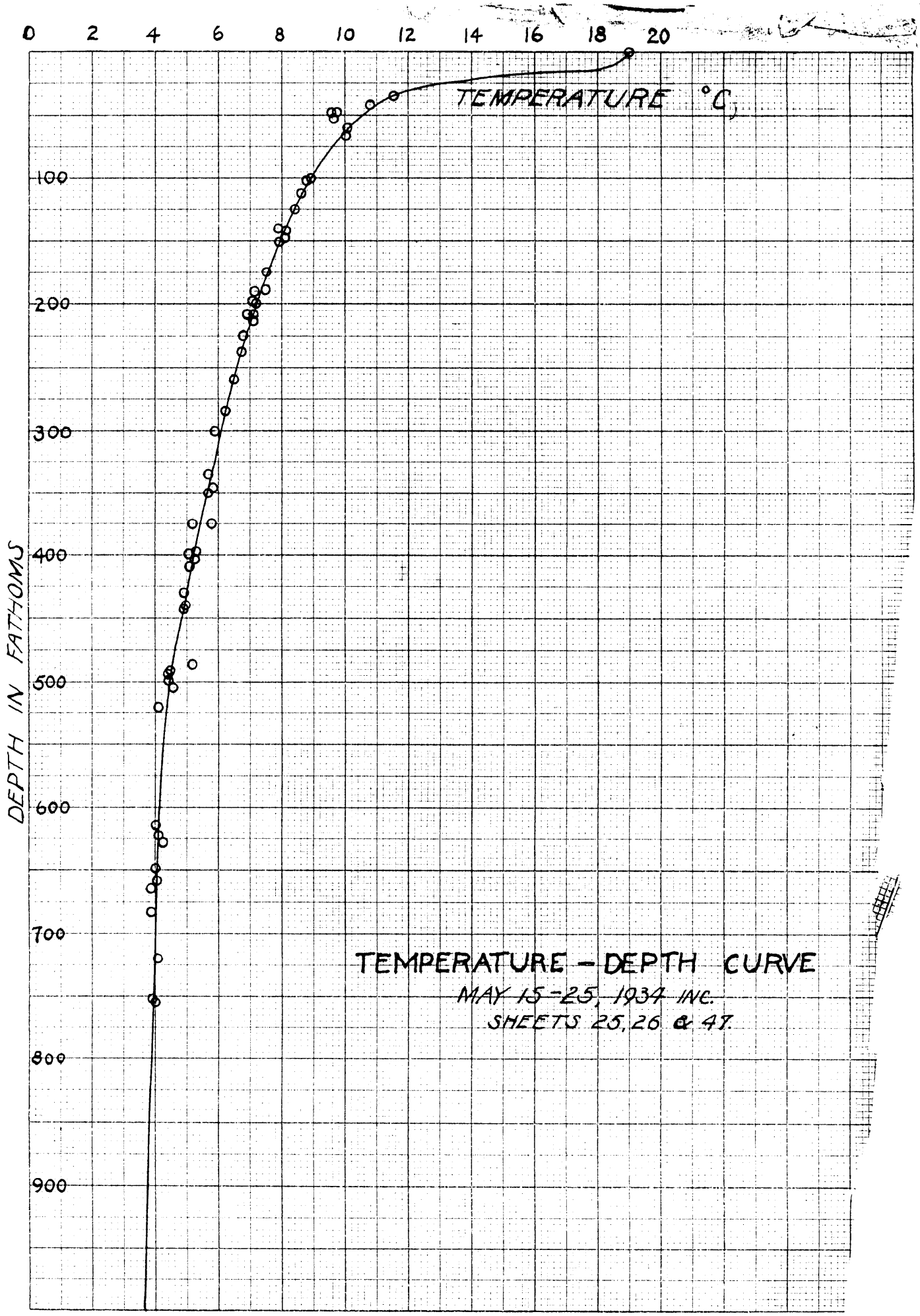
Average of 30 comparisons (Sheets 25 and 47) of No. 2 Small, Long Dash, and No. 2 Small, F.R.x6 show the F.R.x6 reads 1½ fathoms higher than the Long Dash. Two differences of the 30 rejected. Sheet 26 averages 0 but if the 7 of the 23 comparisons on Sheet 26 are rejected, the average for Sheet 26 is also 1½. See abstract of vertical cast comparisons.

Average I. C. = - 4 fathoms.

FATHOMETER CORRECTIONS - AFTER MAY 15, 1934.

Sheets Nos 25, 26, & 47.

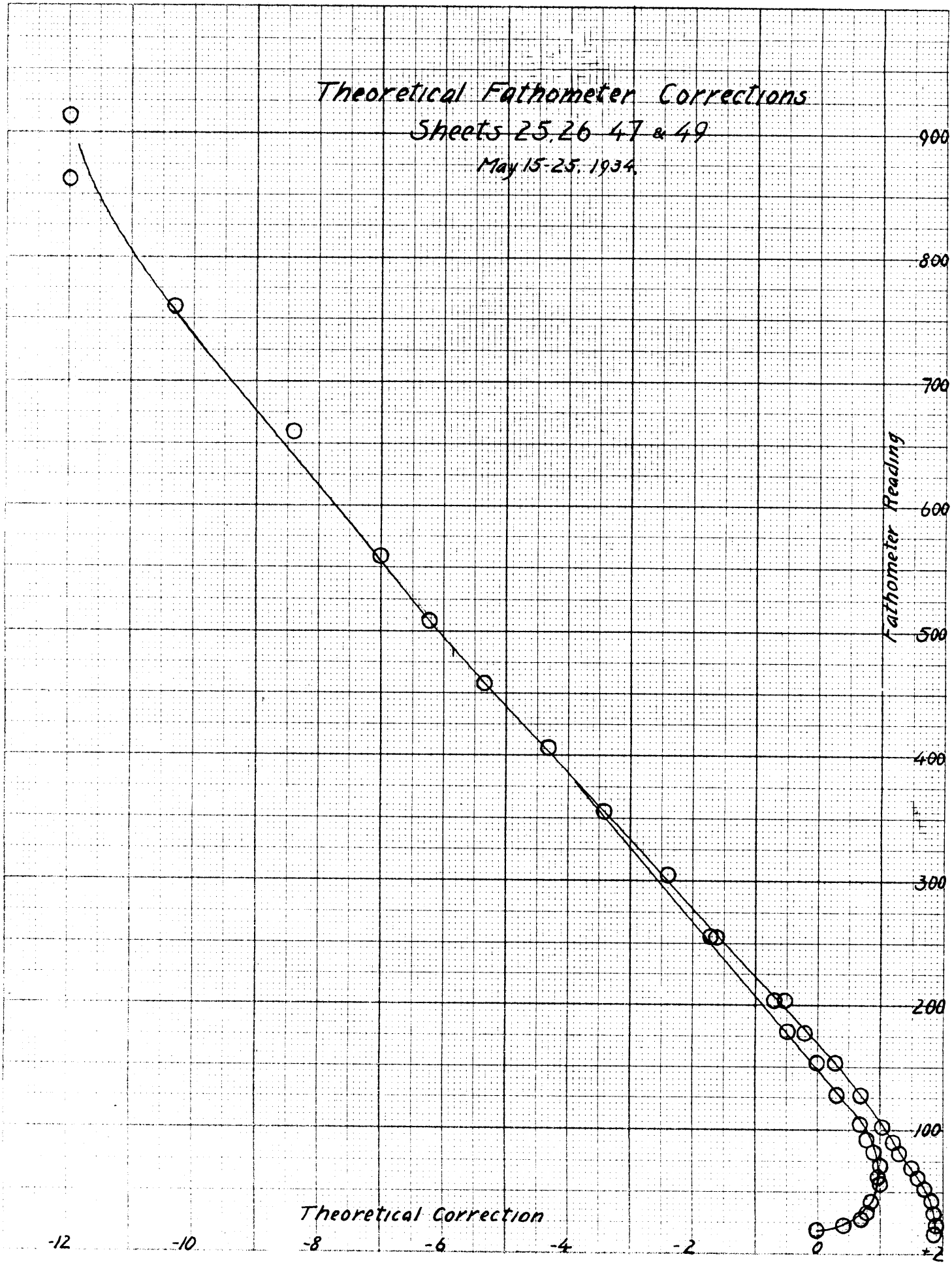
No. 3 Hyd. Big Osc.		No. 2 hydrophone Small Oscillater					
Short Dash		F.R. x 6		Short Dash		Long D ash	
Depth	Corr.	Depth	Corr.	Depth	Corr.	Depth	Corr.
18 - 31⅓	-½	104 - 120	-4	15 - 40	0	15 - 40	-1½
32 - 92	0	121 - 165	-5	40½ - 90	-½	40½ - 87½	-2
93 - 100½	-½	166 - 235	-6	90⅓ - 120	-1	88 - 100½	-2½
101 - 165	-1	236 - 285	-7	121 - 165	-2	101 - 155	-3
166 - 235	-2	286 - 345	-8	166 - 235	-3	156 - 210	-4
236 - 285	-3	346 - 400	-9	236 - 285	-4	211 - 264	-5
286 - 345	-4	401 - 450	-10	286 - 345	-5	265 - 319	-6
346 - 400	-5	451 - 505	-11	346 - 400	-6	320 - 370	-7
401 - 450	-6	506 - 565	-12	401 - 450	-7	371 - 424	-8
451 - 505	-7	566 - 625	-13	451 - 505	-8	425 - 475	-9
506 - 565	-8	626 - 685	-14	506 - 565	-9	476 - 534	-10
566 - 625	-9	686 - 750	-15	566 - 625	-10	535 - 595	-11
626 - 685	-10			626 - 685	-11	596 - 659	-12
686 - 750	-11			686 - 750	-12	660 - 715	-13
						716 - 780	-14



TEMPERATURE – DEPTH CURVE

MAY 15-25, 1934 INC.

SHEETS 25, 26 & 47.


Theoretical Fathometer Corrections
Sheets 25, 26 47 & 49
May 15-25, 1934.
900
800
700
600
500
400
300
200
100
Fathometer Reading
Theoretical Correction
-12
-10
-8
-6
-4
-2
0
+2

ABSTRACT OF VERTICAL CASTS WITH APPLICATION OF SLOPE CORRECTION
Sheet No. 25.

Date 1933	Pos.	Hydrophone & Oscillator used.	Fath. Rdng.	Fath. Cor'n.	Crtd. Fath. Sndg.	Slope Cor'n.	Crtd. Fath. Sdg. + Slope Cor'n.	V. C.	*
10/24	1A	#3 Big FRSD	45.7	0	45.7	0	45.7	45.4	
	2A	" "	47	0	47	0	47	46.4	
1/4/34	54B	#2 Sml "	261	-1	260	0(+3%)	260	272	12
	54B	" FRx6	255	+6	261	0(+3%)	261	272	12
	100B	" SD	171.5	+½	172	0	172	171.6	
1/5	152C	" "	439	-5	434	+17	451	450	8
	152C	" LD	441	-7	434	+17	451	450	8
	152C	" FRx6	435	+2	437	+17	454	450	8
	190C	" SD	366	-3	363	+7	370	368	8
	190C	" LD	366	-6	360	+7	367	368	8
	190C	" FRx6	360	+4	364	+7	371	368	8
1/6	28D	" SD	504	-6	498	0	498	504	
	28D	" LD	507	-9	498	0	498	504	
	28D	" FRx6	502	+1	503	0	503	504	
	55D	" SD	554	-7	547	0	547	547	
	55D	" LD	556	-10	546	0	546	547	
	55D	" FRx6	548	0	548	0	548	547	
	102D	" SD	150	+1	151	0	151	149	
	102D	" LD	153	-2	151	0	151	149	
	102D	" FRx6	143	+8	151	0?	151	149	
	102+D	" SD	150	+1	151	0?	151	158	
	102+D	" LD	151	-2	149	0?	149	158	
	102+D	" SD	141	+1	142	0?	142	155	
	102+D	" LD	142	-2	140	0?	140	155	
	102+D	" FRx6	136	+8	144	0?	144	155	
	101D	" SD	127	+1	128	0(+10%)	128	141	31
	101D	" LD	129	-2	127	0(+10%)	127	141	31
5/15	1E	" SD	143	-2	141	0	141	141	
	1E	#4 Big "	142	-1	141	0	141	141	
	5E	#2 Sml "	51	-½	50.5	0	50.5	50	
	5E	#4 Big "	50.3	0	50.3	0	50.3	50	
	5+E	#2 Sml "	51	-½	50.5	0	50.5	50	
	9E	" "	104	-1	103	0(+2%)	103	107	32
	21E	#4 Big "	50.5	0	50.5	0	50.5	50.5	

* Difference between V. C. and fathometer sounding for critical slope at which correction for slope ~~is~~ would be first applied.

ABSTRACT OF VERTICAL CASTS WITH APPLICATION OF SLOPE CORRECTION
Sheet No. 25.
C ontinued

Date 1934	Pos.	Hydrophone & Oscillator used.	Fath. Rdng.	Fath. Cor'n.	Crtd. Fath. Sndg.	Slope Cor'n.	Crtd. Fath. Sdg. + Slope Cor'n.	V. C.	*
5/15	23E	#2 Sml FRSD	42	-½	41.5	0	41.5	41.8	
	23E	#4 Big "	41.6	0	41.6	0	41.6	41.8	
	35E	#2 Sml "	388	-6	382	0	382	377	
	35E	#4 Big "	390	-5	385	0	385	377	
	43E	#2 Sml "	234	-3	231	0(+2%)	231	238	16
	43E	" LD	238	-5	233	0(+2%)	233	238	16
	43E	#4 Big SD	233	-2	231	0(+2%)	231	238	16
	52E	#2 Sml "	72.5	-½	72	0	72	69.9	
	53E	" "	107	-1	106	0	106	107	
	54E	" "	245	-4	241	+14	256	244	16
	54E	#4 Big "	246	-3	243	+15	258	244	16
	55E	#2 Sml "	223	-3	220	+9	229	220	18
	55E	#4 Big "	220	-2	218	+9	227	220	18
	56E	#2 Sml "	116	-1	115	0	115	118	
	57E	" "	130	-2	128	0	128	131	
	57E	#4 Big "	132	-1	131	0	131	131	
	62E	#2 Sml "	181	-3	178	+20	198	202	20
	62E	#2 Sml FRx6	175	-6	169	+20	189	202	20
	62E	#5 Big SD	176	-2	174	+20	194	202	20
	63E	#2 Sml "	254	-4	250	+17	267	250	16
	63E	#5 Big "	251	-3	248	+17	265	250	16
	67E	#2 Sml "	274	-4	270	+14	284	271	12
	70E	" "	274	-4	270	+17	287	278	12
	70E	" LD	240	-5	235	+17	253	278	12
	70E	" "	272	-6	266	+17	283	278	12
	73E	" "	305	-6	299	+16	315	313	9
	76E	" "	522	-10	512	0	512	514	
	76E	" FRx6	525	-12	513	0	513	514	
	80E	" "	548	-11	537	0	537	0 / 565	8
1/16	1F	" LD	289	-6	283	0	283	290	
	1F	" FRx6	293	-8	285	0	285	290	
	2F	No fathometer sounding						341	
	6F	#2 Sml FRx6	396	-9	387	0	387	389	
	7F	No fathometer sounding						333	

* Difference between B. C. and fathometer sounding for critical slope at which correction for slope ~~is~~ would be first applied.

ABSTRACT OF VERTICAL CASTS WITH APPLICATION OF SLOPE CORRECTION
Sheet No. 25. Continued

Date 1934	Pos.	Hydrophone & Oscillator used.	Fath. Rdng.	Fath. Cor'n.	Crtd. Fath. Sdg.	Slope Cor'n.	Crtd. Fath. Sdg. + Slope Cor'n.	V. C.	*
1/16	8F	No fathometer sounding						276	
	9F	" " "						196	
	11F	#2 Sml FRLD	506	-10	496	0	496	507	
	11F	" FRx6	512	-12	500	0	500	507	
	14F	" LD	371	-8	363	+18	381	404	8
	14F	" FRx6	373	-9	364	+18	382	404	8
	15F	" LD	295	-6	289	+9	298	295	10
	15F	" FRx6	300	-8	292	+9	301	295	10
	15F	" SD	292	-5	287	+9	296	295	10
	16F	" LD	328	-7	321	+6	327	320	10
	16F	" FRx6	322	-8	314	+6	320	320	10
	17F	" SD	392	-6	386	+12	398	399	8
	17F	" FRx6	392	-9	383	+12	395	399	8
	18F	" LD	368	-7	361	0	361	362	8
	19F	" "	398	-8	390	+15	405	397	8
	19F	" FRx6	397	-9	388	+15	403	397	8
	20F	" LD	271	-6	265	+18	283	312	10
	20F	" FRx6	273	-7	266	+18	284	312	10
	21F	" LD	314	-6	308	+15	323	336	10
	21F	" FRx6	321	-8	313	+15	328	336	10
	22F	" LD	220	-5	215	0(+7%)	215	250	16
	22F	" FRx6	234	-6	228	0(+7%)	228	250	16
	23F	" LD	304	-6	298	+12	310	320	10
	23F	" FRx6	298	-8	290	+12	302	320	10
	24F	" LD	386	-8	378	0	378	375	
	24F	" FRx6	387	-9	378	0	378	375	
	25F	" LD	459	-9	450	0	450	453	
	25F	" FRx6	458	-11	447	0	447	453	
	26F	" SD	222	-3	219	0(+5%)	219	232	16
	26F	" FRx6	220	-6	214	0(+5%)	214	232	16
	27F	" SD	176	-3	173	0(+6½%)	173	193	16
	27F	" FRx6	178	-6	172	0(+6½%)	172	193	16

* Difference between V. C. and fathometer sounding for critical slope at which correction for slope ~~is~~ would be first applied.

ABSTRACT OF VERTICAL CASTS WITH APPLICATION OF SLOPE CORRECTION
Sheet No. 25. Continued

Date 1934	Pos.	Hydrophone & Oscillator used.	Fath. Rdng.	Fath. Cor'n.	Crtd. Fath. Sndg.	Slope Cor'n.	Crtd. Fath. Sdg. + Slope Cor'n.	V. C.	*
1/16	28F	#2 Sml FRSD	324	-5	319	0	319	321	
	28F	" FRx6	328	-8	320	0	320	321	
	29F	" SD	288	-5	283	0	283	287	
	29F	" FRx6	290	-8	282	0	282	287	
	30F	" LD	402	-8	394	0(+3½%)	394	430	8
	30F	" FRx6	400	-9	391	0(+3½%)	391	430	8
	31F	" LD	434	-9	425	0(+1%)	425	445	8
	31F	" FRx6	448	-10	438	0(+1%)	438	445	8
	32F	" LD	376	-8	368	0	368	375	
	32F	" FRx6	378	-9	369	0	369	375	
	33F	" LD	323	-7	316	+17	333	341	10
	33F	" FRx6	325	-8	317	+17	334	341	10
	34F	" LD	424	-8	416	0	416	414	
	34F	" FRx6	426	-10	416	0	416	414	
	35F	" LD	466	-9	457	0	457	458	
	35F	" FRx6	468	-11	457	0	457	458	
	36F	" "	538	-12	526	0	526	528	
	37F	" LD	475	-9	466	0	466	461	
	38F	" FRx6	430	-10	420	0	420	421	
	39F	" LD	301	-6	295	0	295	302	
	39F	" FRx6	294	-8	286	0	286	302	
	40F	" LD	295	-6	289	0	289	292	
	40F	" FRx6	298	-8	290	0	290	292	
1/17	1G	" LD	522	-10	512	+5	517	520	8
	1G	" FRx6	512	-12	500	+5	505	520	8
	2G	" LD	568	-11	557	0	557	558	
	2G	" FRx6	571	-13	558	0	558	558	
	3G	" LD	623	-12	611	0	611	615	
	3G	" FRx6	624	-13	611	0	611	615	
	4G							557	
	5G	" LD	563	-11	552	0	552	550	
	5G	" FRx6	564	-12	552	0	552	550	

* Difference between V. C. and fathometer sounding for critical s lope at which correction for slope ~~is~~ would be first applied.

STATISTICS - SHEET NO. 25

Day	Date	No.Pos.	No. Sdgs.	Stat. Miles of Soundings	Vol.	Wire Soundings
A	Oct. 24	149	925	156.4	1	
B	Jan. 4	143	634	81.2	1	
C	Jan. 5	190	675	120.0	2	
D	Jan. 6	112	575	58.0	2	
E	May 15	80	218	22.0	2	
F	May 16	40	74	28.0	3	37
Totals		714	3101	465.6	3	37

CHIEF OF PARTY'S REPORT

ON INSPECTION OF RECORDS AND SHEETS.

Lieutenant H.J. Healy examined the records and sheet carefully. He went through the records and inspected the boat sheet to see that all hydrographic features mentiones in the records were plotted on the smooth sheet. The smooth sheet plotting was then checked by placing a tracing of the smooth sheet positions over the boat sheet and replotting the questionable positions.

The sheet was then turned over to Lieutenant J.M. Smook for a review. He checked the crossings and the junctions with the adjacent sheets. He also made a comparison of the sheet with the old surveys. Points of doubt or discrepancy were called to my attention for action.

The descriptive report was written by Lieutenant J.M. Smook.

O.W. Swainson,
Chief of Party,
Commanding Str. PIONEER.

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Ed. Feb. 1935

TIDE NOTE FOR HYDROGRAPHIC SHEET

May 18, 1935

Division of Hydrography and Topography:

✓ Division of Charts: Attention Mr. E. P. Ellis

Tide Reducers are approved in
3 volumes of sounding records for

HYDROGRAPHIC SHEET 5758

Locality San Clemente Island, California

Chief of Party: O. W. Swainson in 1933-1934
Plane of reference is mean lower low water reading
3.6 ft. on tide staff at Santa Barbara
16.5 ft. below B.M. 1

Height of mean higher high water above plane of reference is 5.4 ft.

Condition of records satisfactory except as noted below:

Paul T. Whitney
Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE

GEOGRAPHIC NAMES

Date. Mya 8, 1935 California

Survey No. H5758

Chart No. 5102

Diagram No. 5102-3

Approved by the Division of Geographic Names, Department of Interior. ✳

Referred to the Division of Geographic Names, Department of Interior. R

Under investigation. Q

'tatus	Name on Survey	Name on Chart	New Names in local use	Names assigned by Field	Location
	----------	San Clemente Island ✓			
		Pyramid Head ✓			
		APPROVED NAMES UNDER... H. L. Flemer			

(M-136)

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. ...5758

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

Number of positions on sheet	714
Number of positions checked	77
Number of positions revised	X 2
Number of soundings recorded	3101
Number of soundings revised	200
Number of signals erroneously plotted or transferred	0

Date: - 6 - 11 - 35

Verification by Michael Robinson Time: 30 hrs.

Review by S. Ruegari Time: 32 3/4 hrs.

HYDROGRAPHIC SURVEY NO. 5758

Smooth Sheet 1

Boat Sheet 1

Sounding Records 3 Vols.

Descriptive Report Yes

Title Sheet Yes

List of Signals

Landmarks for Charts (Form 567)

Statistics Yes

Approved by Chief of Party O. W. Swainson

Recoverable Station Cards (Form 524)

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

Remarks

6-11-'35

Verifier's Report on H-5758.

1- The Records conform to Hydrographic Manual instructions in the main. Sounding Records read in fathoms and tenths and are so shown on H-5758.

2- Considering the depth of soundings shown it is deemed that areas have been sufficiently developed to show depth curves can be completely.

3- Reference to protracted positions and soundings between those positions were well covered in the Descriptive Report and were accepted with but little checking, as long as its numerical values were as recorded. See (6) "Remarks."

4- Due to the reworking of the Smooth Sheet by the Plotter as covered in the Descriptive Report, Positions were accepted on authority of Report without change, except ~~Pos. 190c which plotted considerably off the point shown~~ was erroneously plotted on the Smooth Sheet. It was deemed fair to assume that Ep © 33°-40' as recorded was erroneously put down for Ep © 40°-33' as it plotted in that Position. Pos. 44B* and Pos. 190c were erroneously plotted

* found by reviewer.

5- There are four (4) adjacent Sheets H-5600, H-5474 both scale 1:20,000 are transferred to H-5758. H-5601, scale:-20,000 will have part of H-5758 transferred on to it and H-5459, scale:-10,000 will also have part of H-5758 transferred on to it.

6- Remarks:-Since the Smooth Sheet was reworked on account of erroneous location of Signals, mentioned in the Descriptive Report, some of the positions first plotted were left on the Sheet unknowingly, thus the same Position appeared twice in different locations; it was only by thorough verifying that these positions were discovered and eliminated.

As many as 130 Sndgs. were changed in the records (due to tide corrections)

→ The field party failed to erase erroneously plotted positions due to wrong use of Sig Guds and Guds 2 (Klep, Report p. 3)

What the verifier has in mind here is that
where rejections in positions are noted in the Sdg. volumes
the corresponding ~~numbers~~ thus rejected should be
used with the succeeding accepted work. He
believes that the gap created by the missing
of several rejected position numbers on a sheet
would tend to confuse and cause me to look
for the missing numbers, particularly where
there is a break in the line.

after the Smooth Sheet was plotted. These soundings had to be corrected while verifying; soundings omitted due to erassures when replotting were supplied from Records. In some cases the respacing of soundings to conform to time became necessary.

Where V.C's. were taken:- Soundings were invariably given These were made to read {Sndg VC / Corrd Sndg (Echo Sndg)} (by authority) *

The usual field procedure of renumbering Positions when rejection are made were not followed in the Records. When Positions were rejected the following position read on:- thus:- i.e. 10A 11A 12A 13A 14A 15A 16A etc. this would tend to increase the chances of confusion in plotting and future reference.

In a number of cases where the line broke off and moved to a new Position some distance away, the new Position wasn't geographically located, these were supplied. to aid the reviewer in expediting his work.

Due to fathometer method of sounding, there seems to be a conspicuous lack of Bottom Characteristics for A, B, C and D days, regrettably so, because on E, F and G days when a number of V.C. soundings were taken, the bottom showed interesting characteristics.

Respectfully submitted

Michael Robinson

* What the verifier is stating here is that the echo soundings were not plotted on the line. On echo work the usual procedure is to plot the echo sdgs. on line and offset the vertical casts to an offset.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5758 (1933-34) - FIELD NO. 2

San Clemente Island, California
Surveyed in October 24, 1933, to May 17, 1934
Instructions dated November 18, 1932 (PIONEER)

Fathometer Soundings. 3 Point Fixes on Shore Signals.

Chief of Party - O. W. Swainson.
Surveyed by - O. W. S., J. M. Smook, P. L. Bernstein, R. A. Gilmore, J. C. Ellerbe.
Protracted by - H. J. Pulskamp, H. J. Healy.
Soundings penciled by - H. J. P., H. J. H.
Verified and Inked by - M. Robinson.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except as follows:

a. More bottom characters should have been taken along the eastern limit and also at the southern portion between long's. 118°20' and 118°26', where none have been shown.

b. Evidence that the plotting of Hydrographic Signals was checked in the field was lacking, since the initials of the checker were omitted on the sheet. This was accomplished in the office.

c. A number of cuts to hydrographic signals were not entered on the index page of the record volumes.

d. The Descriptive Report is complete and comprehensive and satisfactorily covers all items of importance.

2. Compliance with Instructions for the Project.

The survey complies with the instructions for the project.

3. Sounding Line Crossings.

With a few exceptions noted in the Descriptive Report, page 4, the agreement in depths at crossings is good.

4. Depth Curves.

The usual depth curves may be satisfactorily drawn.

5. Junctions with Contemporary Surveys.

a. Satisfactory junction is made with H-5600 (1934) on the north.

b. Junction with H-5474 (1933) on the west is satisfactory, but in the portion south of lat. 32°52' and east of San Clemente I., the agreement in the overlapping depths is not good in a number of places. The steep slopes in this vicinity are no doubt contributing factors to the discrepancy. Since sheet H-5474 (1933) covers the area with wire soundings, the 1933 survey should be given preference for charting.

c. Satisfactory junction is made with H-5459 (1934) on the south inshore limits.

6. Comparison with Prior Surveys.

a. H-1429 (1878-79).

This survey on a scale of 1:20,000, covers sections of the western and southern portions of the present survey with relatively few soundings which are not in good agreement.

Comparison of the soundings in the southern portion indicates a general deepening has occurred since the date of the old survey, bringing the 50 fathom curve approximately 500 meters nearer shore.

The soundings in the western section from the 100 fathom curve, seaward, are shoaler than those of the present survey.

The present survey adequately covered this area and a large number of excellent comparisons between the wire and the fathometer soundings were obtained.

The old work should not be used for charting.

b. H-1430 (1879).

This survey on a scale of 1:20,000 covers the eastern portion of the present survey with widely spaced soundings. The agreement in the depths is in general very good.

The 331 fathom sounding charted in lat. 32°56.1', long. 118° 25.6' was found to be erroneously plotted on the old survey and should be 531.

Since the present survey covers the area adequately, the old survey should be disregarded for charting purposes.

c. H-4265a (1922-23).

This survey on a scale of 1:100,000 overlaps the present survey at the south limit with four soundings which are in fair agreement with the depths of the later survey. For charting purposes the present survey should be given preference.

d. H-4366 (1924-1928).

This survey on a scale of 1:160,000 covers the area of the present survey with widely spaced soundings. The agreement in most places is very good, except for a few soundings southeasterly of signal Guds.

The 482 fathom shoal sounding charted in lat. 32°52', long. 118°19' falls on the present survey among deeper soundings, of which 493 is the shoalest, and since the surrounding depths are in agreement with the present ones, the 482 is being carried forward.

The present survey should supersede the old survey as the area has been adequately covered.

e. H-4549a (1925).

This survey on a scale of 1:140,000, overlaps the present survey with two lines of soundings off the east coast and several soundings off the south coast. With the exception of a very few soundings, the agreement in the depths is in general satisfactory.

The old survey has nothing outstanding to be carried forward and should be superseded by the present survey which covers the area very satisfactorily.

f. H-4504 (1925).

This survey on a scale of 1:120,000, overlaps the present survey at its southeastern portion with widely spaced soundings.

The agreement in depths in general is satisfactory. The old survey adds nothing of particular value to the present work and should not be used for charting.

g. H-4782 (1928).

This survey on a scale of 1:80,000, covers a portion of the present survey on the south and the agreement in depths in general is very good.

An outstanding 28 fathom sounding charted in lat. 32°45.7', long. 118°24.6' falls in an area where the present survey found a least depth of 26 fathoms.

There are no features on the old survey which the present has not adequately developed. The present survey should be given preference for charting.

7. Comparison with Charts No's. 5101, 5126.

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and contains no additional information that needs consideration in this review.

Attention is called to the erroneous sounding 331 in approximate lat. 32°56', long. 118°25.6', which should be 531 (par. 6b, this review).

8. Field Plotting.

The protracting of positions and the plotting of soundings is good.

9. Additional Field Work Recommended.

No additional work is required.

10. Superseding Old Surveys.

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

H-1429	(1878-79)	in part.
H-1430	(1878)	" "
H-4265a	(1922-23)	" "
H-4366	(1924, 1928)	" "
H-4549a	(1925)	" "
H-4504	(1925)	" "
H-4783	(1928)	" "

11. Reviewed by - G. Risegari, July 1, 1935.

Supervised by - A. L. Shalowitz.

Examined and approved:

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

L. O. Colbert
Chief, Division of Charts.

T. S. Borden
Chief, Section of Field Work.

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

applied to drawing of Chart 5111 - Sept 9, 1935 - J.P.W.

25 Jan 2 1936
End

5758

Additional work

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. 10-1
Hydrographic }

Additional work

State California

LOCALITY

South of San Clemente Island

1935

CHIEF OF PARTY

R.R.Moore

U.S. GOVERNMENT PRINTING OFFICE: 1934

POST-OFFICE ADDRESS: P. O. Box 530, Long Beach, California.

TELEGRAPH ADDRESS:

EXPRESS ADDRESS:

1935 NOV 22 AM 11:56

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

U.S.C. & G.S.S. PIONEER,

November 16, 1935.

To: The Director,
U. S. Coast and Geodetic Survey,
Washington, D. C.

From: The Commanding Officer,
U.S.C. & G.S.S. PIONEER.

Subject: Investigation of reported shoal.

An examination of the shoaling reported south of San Clemente Island by the Commanding Officer of the U. S. S. BUCHANAN in the Hydrographic Office Notice to Mariners dated October 24, 1935, was made while the PIONEER was in that vicinity last Monday.

The ~~attached~~ being forwarded tracing shows the result of the examination.

This area is also covered by Field Sheet No. 25, of the 1934 season of the PIONEER which has been sent to the Office.

The sounding record is being forwarded to the Office.

R. R. Moore,
H. & G. Engineer,
Commanding PIONEER.

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Ed. Feb. 1935

TIDE NOTE FOR HYDROGRAPHIC SHEET

December 18, 1935.

Division of Hydrography and Topography:

✓ Division of Charts: Attention: Mr. E. P. Ellis

Tide Reducers are approved in
1 volumes of sounding records for

HYDROGRAPHIC SHEET 5758 Additional Work

Locality South of San Clemente Island, Coast of Southern Calif.

Chief of Party: R. R. Moore in 1935
Plane of reference is mean lower low water reading
3.6 ft. on tide staff at Los Angeles
14.0 ft. below B.M. 8

Height of mean high water above plane of reference is 4.7 feet.

Condition of records satisfactory except as noted below:

Paul P. Whitney

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. .....

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

Number of positions on sheet	18
Number of positions checked	18
Number of positions revised	
Number of soundings recorded	83
Number of soundings revised	0
Number of signals erroneously plotted or transferred	

Date: Jan. 22, 1936

Verification by J. McCormick Time: 4 hr.

Review by Time:

Verifier's Report on H-5758 (Additional Work)

Records: Records are complete.

Drafting: Tracing of additional work was submitted by field party on a scale of 1:10,000. It was carefully done and served as a check on the verifier's plotting of work on scale of 1:20,000.

Remarks: Topo signal Gros was obtained from T-4857. Pyramid Point L.H. (1934) was obtained from Division of Geodesy. It checked the hydrographic signal Lite within 4 meters so verifier did not ink it on sheet.

4 soundings of the additional work fell in the overlap with H-5459. They were transferred to that sheet and inked in the same color as the rest of the overlap.

January 22, 1936.

Submitted,

J. A. McCormick.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5758 (Additional Work 1935)

Off Pyramid Head, San Clemente Island, California
Surveyed in Nov. 1935
Instructions dated H. O. Notice to Mariners, Oct. 24, 1935.

Fathometer Soundings. 3 Point Fixes on shore signals.

Chief of Party - R. R. Moore.
Surveyed by - R. R. Moore.
Protracted by - J. A. McCormick.
Soundings penciled by - J. A. McCormick.
Verified and inked by - J. A. McCormick.

1. Purpose of Survey.

The purpose of the additional work was to determine the existence of the reported 25 fathom shoaling in latitude 32°48'06", longitude 118°21'30", mentioned in the H. O. Notice to Mariners, No. 43 of 1935.

2. Results of Survey.

The extent of development in the additional work and the work on H-5758 (1933-34) appears sufficient to satisfactorily disprove the existence of the reported 25 fathom shoaling. This depth falls on H-5758 (1933-34) in depths of 51 fathoms with no indication of a shoaling and in a generally sandy bottom area. It is not believed to exist in the reported position and should not be charted.

3. Reviewed by - C. Risegari, Jan. 28, 1936.

Inspected by - A. L. Shalowitz.

Examined and approved:

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

L. O. Colbert
Chief, Division of Charts.

H. S. Borden
Chief, Section of Field Work.

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

25 Jan 7, 1936
EAB

Applied to Chart 5101 – May 4, 1936 L.M.Z.

Applied to Chart 5117 June 4, 1937 G.H.S.