4757

Reg. Cht. No. 5902

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: OREGON

11—5613

DESCRIPTIVE REPORT.

HYDROGRAPHIC *Sheet No.* 5 4757

LOCALITY:

Cascade Head
~~NORTHERN OREGON~~

Cape Foulweather to Cascade Head-Offshore

100 to 1000 fathoms

1927

CHIEF OF PARTY:

R. F. Luce

4757

DESCRIPTIVE REPORT

to Accompany Hydrographic sheets 1 and 5

AUTHORITY.

The work on these sheets was executed in accordance with instructions of the Director, U. S. Coast & Geodetic Survey to the Commanding Officer of the S. PIONEER, dated March 8, 1927.

GENERAL DESCRIPTION.

The work covered is contiguous, joining with the work of the S. PIONEER of 1926 on the north and running continuously to a latitude of approximately 44° 45' on the south, and covers the area from the 100 fathom curve (sheets 2 & 6 of this years work) to the 1000 fathom curve. The work is divided into two sheets in order that Whatman's Cold pressed paper might be used for the smooth sheets.

OUTLYING DANGERS & ISLANDS.

There are no outlying dangers or islands within the limits of these sheets.

CURRENTS.

No current observations were taken in the area of these sheets, but in running the east and west lines it was observed that generally there was a southeasterly current of slightly varying intensity averaging about one knot.

LANDMARKS.

there are few landmarks visible from this area except in very clear weather when the more prominent peaks are visible.

ANCHORAGES.

There are no anchorages within the limits of these sheets.

SURVEY METHODS.

All soundings on these sheets were taken with the Navy sonic sounding machine and location was controlled by R. A. R. methods. The general plan of development was a system of east and west lines spaced 1-1/2 miles apart between 100 and 300 fathom curves and 3 miles apart from the 300 to 1000 fathom curves. This system was supplemented by frequent cross lines and extra development where there were abrupt changes of depth or unusual configurations of bottom.

In general the crossings are good but a list of some discrepancies with probable explanations follows.

Sheet 1

Sounding at 7:31 A.M. between 3C and 4C of 354 appears to be too deep and on examination of the sonic operator's note book it is found that on that one sounding he used a different ratio than for the soundings on either side and this may have caused an erroneous reading.

Soundings from 1:05 P.M. to and including 1:52 P.M. C day are questionable for a similar reason as above. This part of the line was covered by another line on "H" day in order to check or disprove the questionable soundings.

Soundings 4:54 P.M. to 5:00 P.M. on "D" day appeared unusual and a check line 12 M to 14 M was run which did not give such shoal soundings in this area. No particular reason can be assigned for this discrepancy.

Soundings from 1:43 P.M. to 1:53 P.M. "J" day are questionable for reason of a change in ratio being used on the sonic machine and consequent confusion of operator. This portion of "J" day is checked by a portion of line on "K" day.

It is questionable if the soundings on "M" day from the beginning of the line to 2:21 P.M. are good. They are apparently too shoal and as the sonic is hard to operate in depths below 125 fathoms it is thought that the operator's personal equation entered into these soundings too greatly.

Sheet 25

The crossing appear to be within the limits of the sonic except the crossing at 3B and 4A for which no particular reason can be assigned.

REDUCTION OF SOUNDINGS.

Wherever a correction of more than 1% would be coused by the application of slope corrections these corrections were applied.

No tide reducers were applied.

VELOCITY OF SOUND.

A sound velocity of 1477.0 m. per second was derived and used throughout the season. A copy of the analysis of the tests made to compute the velocity is attached to this report.

Roland D. Horne

Forwarded March 22, 1928
C. W. Swanson, Cmdg

DETERMINATION OF SOUND VELOCITY; OREGON COAST 1927.

	Date	Time	KGAK Rejected	All Obs.	Very good	Best Obs.	Time	KGAL Rejected	All Obs.	Very good	Best Obs.	Notes
22L	5/26	12:78		75.4								North
23L		15:02		73.6			31.01		57.7			inshore
24L		15.38		74.9			31.15		56.4			sheet #3
27L		13.50		74.0			26.55	R				
29L		15.03		77.1								
30L		12.93	R									
68M	5/27	16.58		77.9								
69M		16.92		75.9								
71M		16.45		76.1			26.66		68.6			
73M		16.19		73.0			26.59		62.6			
75M		15.89		75.1								
54R	6/9	20.82		77.0	77.0		22.78	52.8				
57R		21.35		74.7	74.7							
58R		21.19		75.8	75.8							
59R		20.97		75.4	75.4							
6X	6/22	29.49		74.0	74.0	74.0						
9X		29.35		71.7	71.7	71.7						
1H	8/25						12.89		81.6			South
2H		53.70		77.8	77.8	77.8	12.62		81.8			inshore
3H							12.50		81.0			sheet #4
4H		53.38		79.2	79.2	79.2	12.55		82.8			
5H		55.28		78.5	78.5	78.5	12.25		83.3			
1A	6/1	15.69	71.9				27.73	R				Offshore
20B	6/2	19.85	[illegible]	76.7	76.7		31.35		68.6			Sheet #2
21B	[illegible]	19.36		77.0	77.0		31.73		59.8			
22B		19.06		81.0	81.0		32.00		58.6			
1D	6/8	11.12		81.0			34.26		67.4			
25D		11.66		73.8								
1E	6/15	16.50		86.1								
3E		16.23		77.4	77.4							
10F	6/23	19.50		72.2	72.2							
14F		21.00		76.9	76.9							
32A'	8/11	50.71	92.1				13.12		71.4			
34A'		50.79		77.9	77.9	77.9	10.70		75.6			
41B'	8/12	25.38		74.5	74.5	74.5	25.84		74.7	74.7	74.7	
48B'		25.66		77.9	77.9	77.9	25.99		76.8	76.8	76.8	
56B'		28.71		77.4	77.4	77.4	29.15		74.9	74.9	74.9	
62B'		26.19		76.7	76.7	76.7	31.70		73.3	73.3	73.3	
69B'		22.52		76.5	76.5	76.5	34.86		79.3	79.3	79.3	
77B'		19.40		74.7	74.7	74.7	38.57		79.4	79.4	79.4	
1D'	9/23	34.73		79.6	79.6	79.6	12.79		83.0			
2D'		35.00		81.4	81.4	81.4	13.00		85.5			
4D'		35.50		81.3	81.3	81.3	13.40		81.6			
5D'		35.73		82.3	82.3	82.3	13.60		83.7			
6D'		36.04		82.1	82.1	82.1	13.85		85.7			
7D'		47.49		80.3	80.3	80.3						
		SUM		3157.8	2167.9	1403.8			1935.1	458.4	458.4	
		No. of observations		41	28	18			26	6	6	
		Average		1477.02	77.43	77.99			1474.42	76.40	76.40	
				Means of BOTH STATIONS					1476.01	77.25	77.59	

ADOPTED VALUE 1477.0 meters per second

Copy for Record Section files. (11) April 9, 1928.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
3 volumes of sounding records for

HYDROGRAPHIC SHEET 4757

Locality: Coast of Oregon

Chief of Party: R. F. Luce, 1927.
Plane of reference is M L L W
5.6 ft. on tide staff at Garibaldi

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

Chief, Division of Tides and Currents.

NOTE:- Tide reducers less than 1% of depth.

IN REPLY ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY
AND NOT THE SIGNER OF THIS LETTER

AND REFER TO No. 11-DRM

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

February 18, 1929.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4757

Cape Fairweather to Cascade Head, Oregon - Offshore

Surveyed in 1927

Instructions dated April 17, 1926 and March 8, 1927 (PIONEER)

Sonic Sounding and Radio Acoustic Ranging

Chief of Party, R. F. Luce.

Surveyed by R. F. L.

Protracted and soundings plotted by J. C. Bose.

Verified and inked by J. Fleming.

1. The records conform to the requirements of the General Instructions.

2. The plan and extent of the survey comply with the specific instructions with the following exceptions:

   a. There is a paucity of bottom characteristics on the sheet. Although the survey covers over 400 square miles, only 3 bottom characteristics are noted in the records.

   b. It is believed that many more vertical casts should have been taken to check the accuracy of the sonic depth finder.

   c. At the western end of the survey in the vicinity of lat. 44° 47' the work should have extended further westward to define the 1000 fathom curve.

3. Apart from the above the usual depth curves could be drawn.

4. The usual field plotting was completed by the field party and was found to be very satisfactory.

5. The sounding line crossings are generally acceptable. In one or two instances, however, the differences exceed the desirable limits. See crossing at lat. 45° 04', long. 124° 44 1/2' and crossing at lat. 45° 00', long. 124° 44'.

In the southeastern corner of the survey several closely spaded lines were run. The soundings on these several lines are not in agreement. No error could be discovered in the location of these lines. All are controlled by R.A.R. determinations. There is evidence of irregular bottom in this vicinity and this may account for it.

6. The junction with H. 4758 is satisfactory.

The junctions with the other contemporary surveys will be considered when these sheets are reviewed.

7. Attention is called to the fact that the work from 1 c to 5 c inclusive has been rejected as being manifestly in error. These soundings differed considerably from a cross line on the same sheet and also failed to agree with the adjoining sheet, H. 4758, by about the same amount. A chronograph reading between 4 and 5 c gave 116 fathoms where the sonic gave 140, which is practically conclusive that the sonic was not functioning properly. (Concurred in by Chief of Field Work.)

It should also be noted that all the sonic soundings of 100 fathoms and less have been omitted from the smooth sheet as these failed to agree within the allowable limits with the soundings on the adjacent sheet, H. 4758. No gap in the work was occasioned by this procedure.

8. Additional work should be done in the following places:

a. A development of the 540 fathom sounding in lat. 45° 00', long. 125° 15'. There is an indication of a bank in this locality.

b. A further development of the area between lat. 44° 44' and 44° 50' and between long. 125° 11' and the 1000 fathom curve, with special attention to the possible existence of a bank.

c. If deemed advisable, when work is extended to the southward, a few more lines should be run in the vicinity of the 113 fathom sounding in lat. 44° 46', long. 125° 42'.

9. Reviewed by A. L. Shalowitz, October, 1928.

Approved:

Chief, Section of Field Records (Charts)

Chief, Section of Field Work (H. & T.)

SECTION. FIELD RECORDS

Report on H — 4757 - Surveyed in 1927

Chief of Party — R. F. Luce

Surveyed by — R. F Luce

Protracted by — J. C. Bose

Soundings penciled by J. C. B.

(1) Records conform to General instructions

(2) Field Plotting complete and accurate

only three soundings were found to be in error

(3) A check on East and West runs and North and South runs comparing Elapsed time Difference in Fog readings and actual distance in Nautical Miles as plotted on the smooth sheet gave results in which there was close agreement between the factors involved

John Fleming

May — 21 — 1928

APPENDED REPORT

An apparent discrepancy in which sounding line 35-F to 38-F was on, or slightly north of sounding line 20-F to 23-F thus giving greater depths and lesser depths in approximately the same positions, was investigated

A correction factor for this investigation was obtained by taking the 'Heading by Compass' for courses having approximately the same bearing as the one to be investigated and comparing the recorded courses with the 'courses made good' and taking the average of these.

The courses used for this purpose were 5-F to 6-F and 15-F to 17-F

The resulting average difference was found to be 1°—

However when it was attempted to apply this correction factor the sounding lines still ran on top of each other and the average time and distance factor failed to give results.

The differences were somewhat reconciled by allowing a slightly greater distance traveled in a given time between positions 39-F and 40-F where the boat was traveling with the current and checking back from 41-F to 38-F it was found that the resulting value of the correction factor was reduced to approximately 16°-30'

J. Fleming Nov-1st 1928

Form 537
11—5812

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4757

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. 5

REGISTER NO. 4757

State OREGON

General locality ~~NORTHERN OREGON COAST~~ Cascade Head

Locality ~~OFF CASCADE HEAD~~ Cape Foulweather to Cascade Head - Offshore

Scale 1-120,000 Date of survey SEPTEMBER 21-Oct 4, 1927

Vessel U.S.C. & G.S.S. PIONEER

Chief of Party R. F. LUCE

Surveyed by R. F. LUCE

Protracted by J. C. BOSE

Soundings penciled by J. C. BOSE

Soundings in fathoms ~~FEET~~

Plane of reference MEAN LOWER LOW WATER

Subdivision of wire dragged areas by

Inked by J. FLEMING May — 21-1928

Verified by J.F /

Instructions dated MARCH 8, 1927

Remarks:

GPO

TABLE OF STATISTICS

Sheet No. 1

Date		Day letter	Volume	Positions	Soundings	Sta. Miles	Vessel	Apparatus
July 29,	1927	A	1	66	211	91.5	Ship	Sonic
Aug. 15	"	B	1	44	147	76.5	"	"
" 16	"	C	1	87	300	136.0	"	"
" 17	"	D	1	23	115	44.5	"	"
" 17	"	D	2	43	158	79.5	"	"
" 18	"	E	2	59	227	104.0	"	"
" 19	"	F	2	38	176	64.3	"	"
" 22	"	G	2	27	113	45.5	"	"
" 23	"	H	3	76	307	116.0	"	"
" 24	"	J	3	65	259	98.3	"	"
" 25	"	K	3	20	72	26.9	"	"
" 26	"	L	3	45	169	70.9	"	"
" 26	"	L	4	4	29	10.3	"	"
" 29	"	M	4	39	178	69.5	"	"
"								

TABLE OF STATISTICS

Sheet No. 5

Sept. 21,	1927	A	1	73	290	131.0	Ship	Sonic
" 22	"	B	1	86	316	142.6	"	"
" 23	"	C	1	26	97	38.2	"	"
" 23	"	C	2	12	46	18.8	"	"
Oct. 6	"	D	2	44	179	77.8	"	"
" 7	"	E	2	51	257	103.0	"	"
" 14	"	F	2	65	214	93.7	"	"