

7636

Diag. Cht. No. 6154

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. HO-05248 Office No. H-7636

LOCALITY

State OREGON

General locality WILLAMETTE

Locality ROCK ISLAND TO BUCHMANS LANDING

1948

CHIEF OF PARTY

W. H. Bainbridge

LIBRARY & ARCHIVES

DATE

Sept 19 - 1950

B-1870-1 (1)

7636

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H-7636

Field No. HO-05248

State Oregon

General locality Willamette River

Locality ~~North end of~~ Rock Island to Buchmans Landing, Oregon

Scale 1:5000 Date of survey 9 March 1948 - 30 Apr. 1948

Instructions dated 28 Nov. 1945

Vessel Ship HODGSON (LAUNCH 141 [L.C.P.R.] used for soundings)

Chief of party W. H. Bainbridge

Surveyed by H. J. Healy and A. M. Legako

Soundings taken by ~~XXXXXX~~ graphic recorder, hand lead, ~~XXX~~

Fathograms scaled by Ship's complement

Fathograms checked by E. Altizer (Radio Tech)

Protracted by Thos. G. Taxelius

Soundings penciled by Thos. G. Taxelius

Soundings in ~~XXXXXX~~ feet at ~~XXXXXXXXXX~~ Willamette River Datum  
which is locally 50 ft. (± 4 ft) above Mean Sea Level)

REMARKS: Smooth sheet and plotting by Seattle Processing Office.

H-7636

DESCRIPTIVE REPORT  
to accompany

Hydrographic Survey No. H-7635, (HO-05148)  
No. H-7636, (HO-05248)  
No. H-7637, (HO-05348)

Willamette River

Oregon City, Ore. to Vicinity South of Wilsonville, Ore.

Scale 1:5000  
Jan. - April 1948

Ship HODGSON  
W. H. Bainbridge  
Chief of Party

PROJECT:

Project No. CS-323.

The hydrographic survey was made in accordance with the following instructions:

1. Original Instructions, 22/MEK, 1995-WE-1, dated 28 November 1945.
2. Supplemental Instructions, 22/MEK, S-2-HO, dated 12 October 1948.
3. Related letters:
  - (a) From Director to Commanding Officer, Ship WEST-DAHL and Lt. Comdr. R. A. Earle dated 26 February 1946, 70 Lmh. Subject: Surveys in the vicinity of Portland, Oregon.
  - (b) From Director to Commanding Officer, Ship HODGSON, 22/MEK, S-1-WE, dated 17 April 1946. Subject: Field Work, Project CS-323.
  - (c) From Director to Lt. Comdr. R. A. Earle, 711-rs, dated 24 October 1947. Subject: Preparation of boat sheets and smooth sheets for Willamette River hydrography.

(d) From Director to Commanding Officer, Ship HODGSON, 711-rs, dated 24 November 1947. Subject: Recovery and use of photo-hydro stations.

(e) From Director to Commanding Officer, Ship HODGSON, 22/MEK, S-1-HO, dated 6 February 1948. Subject: Hydrography, Willamette River.

(f) From Director to Commanding Officer, Ship HODGSON, 22/MEK, S-1-HO, dated 16 April 1948. Subject: Field work.

These instructions cover new basic hydrographic surveys of the Willamette River from Oregon City, Oregon to the vicinity of Ash Island, south of Newburg, Oregon.

SURVEY LIMITS AND DATES:

This survey constitutes a new basic hydrographic survey of the Willamette River from Willamette Falls at Oregon City, Oregon to the Oregon Electric Railroad Bridge just south of Wilsonville, Oregon. (Refer to "Sheet Index Diagram" appended to this report).

Data pertaining to each hydrographic sheet is as follows:

Field Work

<u>Reg. No.</u>	<u>Field No.</u>	<u>Began</u>	<u>Ended</u>	<u>Surveyed by</u>	<u>Area Surveyed</u>
H-7635	HO-05148	1/19/48	2/10/48	R.M. Stone	Willamette Falls to D/S end of Rock Island
<u>H-7636</u>	HO-05248	3/9/48	4/30/48	H.J. Healy A.M. Legako	D/S end of Rock Island to Old Canby Ferry Landing (Buchmans Landing) ✓
H-7637	HO-05348	4/12/48	4/30/48	H.J. Healy R.M. Stone	Old Canby Ferry Landing to Oregon-Electric-Railroad Bridge.

On Hydrographic Sheet H-7636, (HO-05248), the section of the Willamette in the vicinity of the Rock Island area between Latitude 45° 18.70' and 45° 19.50', was surveyed by the Corps of Engineers at Portland, Oregon, during December 1947 on a scale of 1:2000. (Refer to U. S. E. Print No. WR-29-7, dated December 1947, titled "Rock Island Survey, Willamette River, Oregon"). A copy of this print is made a part of the field records. Authority has been granted to substitute the hydrographic survey executed by the Corps of Engineers for the identical area on Hydrographic Sheet H-7636, - )Refer to Director's letter, 22/MEK, S-1-HO, dated 6 February 1948).

(Bp 44685)

See P4 of Rev 44

On Hydrographic Sheet H-7635, (HO-05148), the section of the river between parallel 45° 21.0' and the Willamette Falls was surveyed by the Corps of Engineers during the year 1945 on a scale of 1 inch = 100 feet. (Refer to U. S. E. Print No. WL-13-1, dated Sept. 1939, Dec. 1945, Apr. 1945 and Sept. 1945, titled - "Willamette Falls & Vicinity". A copy of this print is made a part of the field records.

(Bp 47262)

not applicable to H-7636

It is noted that the soundings on the U. S. E. survey are related to mean sea level. The datum of Hydrographic Sheet H-7635 in vicinity of Willamette Falls is 49.94 feet above mean sea level, (taken from the Low Water Profile), hence, all soundings will have to be corrected accordingly.

VESSELS AND EQUIPMENT:

Hydrography was accomplished with Launch No. 141, a 36 foot landing barge, (L.C.P.R).

808-A-type depth recorder No. 77 was used throughout the survey.

In areas occupied by log rafts, hand lead soundings were required, which were obtained by a log walking party using lead line; lines Nos. 2 and 4.

The launch operated from the small boat moorage at "Marine Mart", 2.0 miles south of Oregon City at Lat. 45° 20.4, Long. 122° 38.3' during the time hydrography was done on Sheets H-7635 and H-7636. When work was started on Sheet H -7637, the launch operated from a small boat house located on the south shore of the Willamette near the Boones Ferry Landing, at Lat. 45° 17.5', Long. 122° 46.5'.

The squat and settlement of Launch No. 141 was accurately determined on 11 October 1946 and found to be negligible. No change has taken place in the construction of the launch since that time.

A copy of the observations for squat and settlement is attached to this report on Page ~~18~~<sup>16</sup>.

Corrections to the fathometer soundings were obtained from tables prepared from the data furnished by the three daily bar tests. These tests extended to a depth of 50 feet and were made for the various scale settings of the fathometer: (Refer to "Velocity Correction Abstract" appended to this report, - pages ~~25~~<sup>27 & 28</sup> -- ~~29~~ ~~incl.~~).

TIDES AND CURRENT STATIONS:

(See discussion under Tide Note attached, pages ~~19-24~~<sup>23</sup> ~~incl.~~).

No current stations were occupied during the time of this survey.

SMOOTH SHEET:

The projection for the smooth sheet was ~~not~~ made by the ~~field party~~. *Seattle Process. Office.*

Refer to the report from the Processing Office on this survey.

CONTROL STATIONS:

The area is covered by second order triangulation surveyed by C. A. George, Chief of Party, Year 1946.

Hydrographic signals were located by photogrammetric methods by R. A. Earle, Chief of Party, Year 1946 & 1947, - in conjunction with following surveys:

*\* Used on H-7636*

<u>Sheet No.</u>	<u>Scale</u>	<u>Title</u>	<u>Proj. No.</u>	<u>Date of Survey</u>
T-8704	1:8,000	Oregon City, Clackamas Co., Oregon	CS-322	Jan. 1946
T-8707	1:8,000	Mt. Pleasant, Clackamas Co., Oregon	CS-322	Jan. 1946
*T-8706	1:8,000	Willamette, Clackamas Co., Oregon	CS-322	Jan. 1946
*T-8708	1:8,000	Canby, Clackamas Co., Oregon	CS-322	Jan. 1946
T-8809	1:10,000	Willamette River, Oregon	PH-13(46)	May 1947

Additional hydrographic signals were located by means of sextant angles. Refer to "List of Stations" appended to this report, pages 13-17 incl.

To correlate the U. S. E. Survey of the Rock Island area, (Print No. <sup>(Bp 44685)</sup> WR-29-7, December 1947), with that of the U.S.C.&G.S. survey on Hydrographic Sheet H-7636, (HO-05248), theodolite observations were made on the following U. S. E. control points in order to locate these stations on the hydrographic sheet.

U. S. E. Triangulation Station 128 (Hydro. Signal RAG)

U. S. E. Triangulation Station 137A ✓

Rock Island Upper Light, (to determine location of triangulation station 132).

The theodolite observations were recorded in Hydro Volume 1, page 16 of Hydrographic Sheet No. H-7636.

A round of sextant angles were observed at triangulation stations 128, 137A and hydrographic signal SPOT. The results were recorded in Hydrographic Vol. 1, pages 4 & 5 ~~2~~ 16

Rock Island Upper Light and Rock Island Lower Light appear on both U. S. E. Print No. <sup>(Sp 44685)</sup> WR-29-7 and Hydrographic Sheet H-7636.

A U. S. E. Print of "Upper Willamette River Triangulation, Canemah to Coalca, Scale 1:5,000", No. WR-04-10/5 is made a part of the field records.

Filed in Geology

To correlate the U. S. E. survey of "Willamette Falls and Vicinity" to Hydrographic Sheet H-7635, control points appearing on both U. S. E. Print No. <sup>(Sp 47262)</sup> WL-13-1 and U.S.C.&G.S. Print No. T-8704 are used. Air photo control points, Nos. 37, 43 & 44 appear on both surveys.

Not applicable to H-7636

The boat sheets for hydrography complete with shoreline and photo-hydro signals were prepared in the Washington Office on a scale of 1:5000. Refer to Director's letter of Lt. Comdr. R. A. Earle, dated 24 October 1947, Reference 711-rs.

SHORELINE AND TOPOGRAPHY:

The shoreline of the Willamette River appearing in ink on the boat sheet was transferred from air photo compilation prints



at the time the sheets were prepared in the Washington Office.

Information pertaining to the air-photo surveys is listed under paragraph heading "Control Stations".

SOUNDINGS:

Hydrography was done with the use of depth recorder No. 77 mounted in Launch No. 141.

Numerous hand lead soundings were taken over shoal areas and in areas containing log rafts.

Bottom specimens were obtained at frequent intervals.

Velocity corrections derived from the mean of the daily bar checks, and the reducers pertaining to the difference between the Willamette River Datum and the elevation of the river surface, have been entered and checked in all hydrographic records in increments of two-tenths of a foot.

An abstract of bar check comparisons and velocity corrections is attached to this report, - pages <sup>27-28</sup>~~25-29~~ incl.

Lead line corrections have been entered and checked in all hydrographic records.

An abstract of River Level Corrections for ~~each~~ hydrographic sheet <sup>H-7636</sup> is appended to this report, - pages <sup>23</sup>~~22-24~~ incl.

CONTROL OF HYDROGRAPHY:

All horizontal control was done by the three point fix method.

ADEQUACY OF SURVEY:

The survey is complete and should supersede all prior surveys for charting. *No prior surveys in this area by U.S.C. & G.S. Sec 776 of Revised.*

The junctions between the hydrographic sheets and the Corps of Engineers surveys (Print Nos. WR-29-7 and WL-13-1) <sup>(Bp. 44685)</sup> <sup>(Bp 47262)</sup> are satisfactory.

CROSSLINES:

Eight percent of crosslines were run. ✓

No discrepancies were noted in the crosslines. ✓

COMAPRISON WITH CHART:

There are no existing navigational charts of this portion of the Willamette River. *(Chart 6171, first ed. Mar. 1949)*

COMPARISON WITH PRIOR SURVEYS:

There have been no prior hydrographic surveys made by the U. S. Coast and Geodetic Survey in this area.

The comparison made with the following U. S. Engineer's Survey prints was in fair agreement:

"Willamette River, Portland to Eugene, Oregon", Scale 1:5000.

- Print No. 5 of 52, Revised to June 1940
- \* Print No. 6 of 52, Revised to Oct. 1932
- \* Print No. 7 of 52, Revised to July 1937
- Print No. 8 of 52, dated - - -July 1932
- Print No. 9 of 52, dated - - -July 1932

\* Common to H-7636

COAST PILOT INFORMATION:

All traffic through this area consists of small pleasure boats and small tugs used only in moving log rafts.

This portion of the Willamette should be navigated by steering generally a mid-channel course, except in the Rock Island area where the narrow channel is indicated by buoys.

AIDS TO NAVIGATION:

Data pertaining to floating aids to navigation <sup>are</sup> is as follows:

Type of Buoy	Located on Sheet No.	Lat.	Long.	Depth at Buoy	Located by Hydro		
					Vol.	Pg.	Pos.
Rock I. Chan. Buoy No. 2, 4th Cl. spar	H-7635	45°19' (82.3)	121°39' (1015.2) 1770.0 291.3	4.0 ft.	1	19	1b
Rock I. Chan. Buoy No. 3, 3rd Cl. spar can	H-7635	45°19' (282.1)	121°39' (905.6) 1570.2 401.0	8.0 ft.	1	19	2b
Rock I. Chan. Buoy No. 5, 3rd. Cl. spar can	H-7635	45°19' (343.8)	121°39' (881.1) 1508.5 425.5	3.0 ft.	1	19	3b
Rock I. Chan. Buoy No. 7, <i>can</i> 3rd. Cl. <del>spar</del> can	<u>H-7636</u>	45°19' (997.1)	121°39' (439.9) 855.2 866.6	11.0 ft.	3	60	6h
Rock I. Chan. Buoy No. 9, <i>can</i> 3rd. Cl. <del>spar</del> can	<u>H-7636</u>	45°19' (1130.1)	121°39' (411.7) 722.2 894.6	11.0 ft.	3	59	5h
Rock I. Chan. Buoy No. 12, 4th Cl. spar	<u>H-7636</u>	45°19' (1331.1)	121°39' (282.9) 521.2 1023.7	-1.0 ft.	3	59	4h
Rock I. Chan. Buoy No. 14, 3rd. Cl. spar nun	<u>H-7636</u>	45°18' (549.1)	121°39' (246.8) 1303.2 1059.8	8.0 ft.	3	57	7lg

Data pertaining to non-floating aids to navigation is as follows:

Description	Located on Sheet No.	Lat.	Long.	Located by
				Air Photo Comp.
Willamette Falls Light	H-7635	45°21' (1672.9) 178.4	122°37' (927.9) 378.1	T-8704
Rock Island Lower Light Stand (No light fixture)	H-7636	45°19' (1673.7) 178.6	122°39' (188.8) 1118.1	T-8706
Rock Island Upper Light Stand (No light fixture)	H-7636	45°18' (321.3) 1531.0	122°39' (208.3) 1098.7	T-8706

All of the above information on buoys and non-floating aids was submitted to the Washington Office by W. H. Bainbridge, Comdr., USC&GS, in the form of a letter, dated 8 February 1949, Subject: "Aids to Navigation, Chart 6171". (Chart Letter 142, 1949)

There are no ranges maintained for navigation within the limits of this survey.

The vertical clearance of the Oregon Electric Railroad Bridge located just south of Wilsonville, Oregon, was determined and recorded in hydrographic volume 3, page 56 for Hydrographic Sheet H-7637. Additional information in regards to this bridge is as follows:

<u>Determined by</u>	<u>Vert. Clearance</u>	<u>Horiz. Clearance</u>
The Hydrographic Survey	77.5	-----
The Air Photo Field Survey	75.0	192.0
Publication of "List of Bridges over Navigable Waters of U. S.", 1936 edition	75	192

Not applicable to H-7636

A submerged telephone cable crossing was located on Sheet H-7637 (HO-05348) at Lat. 45° 17.85', Long. 122° 44.95'.

The <sup>H-7636</sup> Electric Low Power Line <sup>which fell on H-7636</sup> as shown on Air Photo Compilation Print No. T-8708 at Lat. 45° 18.0', Long. 122° 41.45' is no longer in place. (Refer to note in Hydro. Volume No. 3, Page 61 for sheet H-7637).

In regards to vertical clearance of existing power lines and ferry cables within the limits of this survey, refer to Vol. 3, Page 56 for Sheet H-7637.

An overhead cable, erected during the summer of 1948, was located at Lat. 45° 17.8', Long. 122° 44.95' on 15 March 1949. The results were originally recorded in Vol. 1, Pages 7 & 8 for

Not appl. to H-7636

Sheet HO-05149, and transferred to Vol. 3, Pages 64 & 65 for Sheet H-7637 (HO-05348). The vertical clearance of this cable is 101 feet above the river datum. The cable is part of a river gaging station maintained by the U. S. Geological Survey.

*Not applicable to H-7636.*

LANDMARKS FOR CHARTS:

Data relative to landmarks for charts was prepared and submitted by the U. S. C. & G. S. Photogrammetric Office, R. A. Earle, Chief of Party, during 1946 and 1947. *(Chart Letter 310, 1947)*

GEOGRAPHIC NAMES:

There are no additional names other than those submitted by the Photogrammetric Office and what are shown on the air-photo compilation prints.

LIST OF STATIONS ON SHEET H-7636, (HO-05248)

<u>Name Used in Hydro- graphic Survey</u>	<u>Origin of Station</u>
ACE	Hydro Sheet H-7635
ANN	T-8706, Sig.No.46, Hydro Vol. 4, Page 38 d/s corner, ferry ramp
ARM	T-8708, Sig. No. 25 Chimney, Gay Hse.
AZO	T-8706, Sig. No. 45 tree on bluff
BAG	Hydro Sheet H-7635
BAN	Hydro Vol. 1, Pages 13 & 14
BOB	Hydro Vol. 1, Pages 10 & 15
BON	T-8706, Sig.No. 3, Hydro Vol. 3, Page 59
BOX	T-8708, Sig. No. 24
BUM	Hydro Vol. 3, Page 13
CAT	T-8708 Sig. No. 22, Hydro Vol. 1, Page 54
COD	T-8708 Sig. No. 23
COW	Hydro Sheet H-7635
DIM	Hydro Vol. 1, Pages 4 & 15
DOC	Hydro Vol. 1, Pages 12 & 15
DOG	T-8708 Sig. No. 20, Hydro Vol. 1, Pages 10&15
DOT	Hydro Sheet H-7635
EAT	T-8708 Sig. No. 19
EGG	T-8708 Sig. No. 18, Hydro Vol.1, Page 10
ELM	Hydro Vol. 1, Page 9 & 11
FAR	T-8708, Sig. No. 17
FAT	T-8708 (Cupola, 1946)
FIG	Hydro Vol. 1, Page 12
FIN	T-8708 Sig.No. 16, Hydro Vol. 1, Page 11
FLX	T-8708 Sig. No. 31
FOG	Hydro Vol. 1, Page 9
FOX	Hydro Vol. 1, Page 7
GAG	Hydro Vol. 1, Page 21
GAL	T-8708 Sig. No. 15
GEO	T-8708 Sig. No. 14
GOB	Hydro Vol. 1, Page 7
GUM	T-8708, Sig. No. 12
HAL	Hydro Vol. 3, Page 59
HER	T-8708, Sig. No. 13
JAN	T-8708 Sig. No. 11, Hydro Vol. 1, Pg.6,7&13
JAX	Hydro Vol. 1, Pg. 6
JOE	T-8708 Sig. No. 29
JUG	Hydro Vol. 1, Page 6
JUT	T-8708, Sig. No. 9
KEY	T-8708 Sig. No. 7
KIM	T-8708 Sig. No. 28
LAD	T-8708 Sig. No. 1
LIZ	T-8708 Sig. No. 26
LOG	T-8708, Sig. No. 4
LOP	Hydro Vol. 1, Page 8
LOW	Hydro Vol. 1, Page 8
MAG	T-8708 Sig. No. 27
MAR	T-8706 Sig. No. 21
MAY	Hydro Vol. 3, Page 59
MID	T-8706, Sig. No. 44
MIX	T-8706 (MIX, USE, 1936-1946) (M) (MIX-507, 1946) see T-8706
MOP	T-8708 Sig. No. 2

LIST OF STATIONS ON SHEET H-7636, (HO-05248) (Continued)

<u>Name Used In Hydrographic Survey</u>	<u>Origin of Station</u>
NEW	T-8706 Sig. No. 20
NIX	T-8706 Sig. No. 43
NOW	Hydro Vol. 1, Page 4
NUT	T-8706 Sig. No. 42
OAK	T-8706 Sig. No. 19
OIL	T-8706 Sig. No. 18
OLD	T-8706 Sig. No. 41
ORA	T-8706 Sig. No. 39
OUT	T-8706 Sig. No. 17
OWL	Hydro Vol. 1, Page 5
PAD	T-8706 Sig. No. 40
PAL	Hydro Vol. 3, Page 59
PIER	T-8708 (Pier, 1946), Hydro Vol. 1, Pages 14 & 54. (d) and Vol. 2, Page 17
PIN	T-8706 Sig. No. 16
PLY	T-8706 Sig. No. 14 (d)
POI	Hydro Vol. 1, Page 5
POT <sub>1</sub>	T-8706 Sig. No. 15
POT <sub>2</sub>	Hydro Vol. 1, Page 54
PRO	T-8706 Sig. No. 13
QUO	T-8706, Sig. No. 38, Hydro Vol. 1, Page 16
RAG	Hydro Vol. 1, Pages 4 & 16
RIP	Hydro Vol. 1, Page 14
SPOT	Hydro Vol. 1, Page 5
TAX	T-8706 Sig. No. 10
TOWER	T-8706 (Apex, W. Trans. Tower, 1946)
VET	T-8706 Sig. No. 9, Hydro Vol. 3, Page 59
WAR	Hydro Vol. 1, Page 14
WIL	Hydro Vol. 1, Page 19

11 October 1946

OBSERVATION FOR SQUAT  
Launch No. 141

Willamette River, Vicinity of Hawthorne Bridge, Portland,  
Oregon.

Weather: Calm

River: Calm

Launch Fuel tanks approximately half full.

Observations taken with Wye Level set up on east shore of  
river - time 09.00 a.m.

Observations taken with launch idle, running slow speed  
(as used when sounding downstream), running about 2/3 speed  
(as used when sounding up stream).

	<u>Idle</u>	<u>Slow Speed</u>			<u>Squat</u>	<u>Fast Speed</u>			<u>Squat</u>
		Going Away	Approach	Mean		Going Away	Approach	Mean	
1st Obs.	1.27	1.30	1.32	1.31	0.04	1.35	1.38	1.36	0.09
2nd Obs.	4.87	4.92	4.88	4.90	0.03	5.03	5.04	5.04	0.17
3rd Obs.	4.67	4.70	4.72	4.71	0.04	4.82	4.79	4.80	0.13
				MEAN	0.04		MEAN	0.13	



Automatic recording gages, (ordinarily called tide gages), were established at Marina Mart and Upper Pulp Sid-ing. Staff readings were obtained at the remaining locations during the period of hydrography.

Each hydrographic sheet was divided into zones in order that the river level corrections could be applied to all sound-ings in increments of 0.2 ft. All zones have been clearly in-dicated on the boat sheets.

An abstract of the river level corrections for each hydrographic sheet is attached to this report, - pages <sup>23</sup> ~~22-24~~ incl.

H 7636 ( Ho 05248)  
Willamette River  
Oregon

List of geographic names  
penciled on smooth sheet.

Willamette River

Oregon

Rock Island

New Era

New Era Bar

Willow Island

Fish Eddy

Peach Cove

Shank's Landing

Buchman's Landing

Walnut Eddy

These names were found on the photo-topo sheets  
T 8706, T 8708 and T 8809.

Willamette River  
Oregon

Processing Office Notes.

Smooth sheet.

of 1946

The projection was ruled by hand on Whatman paper. The shoreline and topographic signals were transferred from sheets T 8706 & T 8708 and ~~T 8809~~. The hydro signals are not regarded as rigidly fixed. Some play can be found in the positions depending on which cuts are preferred, especially those which depend on other hydro signals. Some stations were found to be mutually interdependent. All angles at a station were plotted on a template and laid in the manner used for air photos. The positions which seemed most reasonable were used. It is believed that differences in elevations of objects seen across the narrow river have influenced positions. The photo-topo  $\odot$  Dim and  $\odot$  Fin were discarded in favor of hydro locations. Difficulty was experienced with cuts depending on  $\odot$  Ann as if there was an uncertainty about the point sighted upon, at least from certain directions. It is believed that the positions obtained are substantially good.

5/5 hydro. at crossings and on adj. sdg. lines in hydro ment.

It is suggested that all angles to locate signals be made with a small theodolite ( or engineer's transit) when the angle point is not in the water, to avoid the high percentage of doubtful angles in sextant cuts. This would provide level plate readings made on cross hairs thru telescopes. The angles would read from one initial point and not contain the cumulative errors caused by changing sextant initial points. The engineers transit is a very satisfactory instrument for this kind of work. It is a rugged instrument. It can be handily carried when mounted on its own tripod and it is a less expensive instrument than the theodolite.

Controlling depths.

Three feet can be carried west of New Era Bar. There is a critical area at  $\phi$  45 17.45'  $\lambda$  122 40.62'. It seems that 5 Ft. could be wiggled thru here but you can be sure of only 2 or 3 feet. Seven feet can be carried thru the narrow mid-river channel south of Rock Island, and better water can be found by deviating from a straight course.

Edgar L. Smith  
Capt. Engr

*Edgar L. Smith*  
8/31/50

**STATISTICS**  
 for  
**HYDROGRAPHIC SURVEY, (HO-05248), H-7636**  
*(Launch 141)*  
 Project CS-323                      Ship HODGSON  
 Willamette River                      Year 1948

<u>Vol. No.</u>	<u>Day Letter</u>	<u>DATE</u>	<u>No. of Pos.</u>	<u>No. of H.L. Soundings</u>	<u>Stat.Mi. Soundings</u>	<u>Launch No.</u>
1	a	3/9/48	99		11.8	141
1	b	3/10/48	112		11.2	141
2	c	3/11/48	130		11.5	141
2	d	3/23/48	97		6.9	141
3	e	3/24/48	40		2.1	141
3	f	3/26/48	101		7.5	141
3	g	3/29/48	71	15	2.5	141
3&4	h	3/30/48	57	3	3.6	141
5	j	4/12/48	33	2	1.2	141
5	k	4/30/48	113		6.9	141
Total for Launch No. 141			883	20	65.2	
4	a	3/12/48	47	103	0.8	Log Walking
4	b	3/17/48	42	118	1.2	Log Walking
4	c	3/18/48	28	64	0.8	Log Walking
4	d	3/19/48	42	79	0.9	Log "alking
4	e	3/29/48	23	37	0.2	Log Walking
4	f	3/30/48	6	35	0.2	Log "alking
Total for Log Walking - - - - -			188	436	4.1	
Total for Sheet H-7636 - - - - -			1071	456	69.3	
Total area for hydrography - - 0.8 sq. stat. miles						

*Copy - AMS*

H-7636  
 ABSTRACT OF RIVER LEVEL CORRECTIONS (SHEET HO-05248)

(~~Re-be~~ entered in Tide Reducer Column in Hydro Record Book)

DATE	TIME	ZONES															
		Upper Pulp Biding A	B	C	Coalco 1	2	3	4	5	Wilson 6	7	8	9 Crown Zellerbach				
3/9/48	all day				7.5	7.8	8.0	8.2	8.4	8.6							
3/10/48	all day				7.8	8.1	8.4	8.6	8.8	9.0	9.2	9.4	9.5				
3/11/48	all day				7.6	7.9	8.2	8.4	8.6	8.8	9.0	9.2	9.3				
3/12/48	all day									8.2	8.4	8.6	8.8				
3/17/48	all day				7.4	7.7est.											
3/18/48	all day				7.4	7.7	7.9	8.1	8.3	8.5							
3/19/48	all day				7.3	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0				
3/23/48	1000 - 1200				12.2	12.5	12.8	13.1	13.4	13.6	13.8	14.0	14.2				
	1201 - 1600				12.4	12.7	13.0	13.3	13.6	13.8	14.0	14.2	14.4				
3/24/48	all day				12.8	13.1	13.4	13.7	14.0	14.2	14.4	14.6	14.8				
3/26/48	1000 - 1200				10.8	11.1	11.4	11.7	12.0	12.2	12.4	12.6	12.8				
	1201 - 1600				10.6	10.9	11.2	11.5	11.8	12.0	12.2	12.4	12.6				
3/29/48	all day				8.3	8.6	8.9	9.1	9.3	9.5	9.7	9.9	10.0				
3/30/48	all day	6.4	6.9	7.4	8.1												9.2
4/12/48	all day				6.8	7.1	7.4	7.7	8.0	8.2	8.4	8.6	8.7				
4/30/48	1000 - 1200				6.9	7.2	7.5	7.7	7.9	8.1	8.3	8.5	8.6				
	1201 - 1600																

Copy - *AMS*

FATHOMETER CORRECTIONS  
SHEET H-7636

5.0	10.0	15.0	20.0	30.0	40.0A	50.0A	40.0B	50.0B	DAY	DATE
+0.7	0.0	0.0	-0.1	-1.0	-1.4	-2.0	-1.0	-2.0	"a"	3/9/48
+0.9	+0.3	-0.1	-0.2	-1.0	-1.4		-1.0			
+0.5	0.0	-0.4	-0.5	-0.9	-1.5	-2.0	-0.5	-1.3		
+0.8	+0.4	+0.1	-0.4	-0.8	-1.8		-0.7			
+0.5	+0.1	0.0	-0.4	-1.0	-1.8	-1.8	-1.0	-1.5	"b"	3/10/48
+0.3	+0.4	0.0	0.0	-1.0	-1.5		-0.8			
+0.4	+0.4	0.0	-0.2	-1.0	-1.5	-2.0	-0.5	-1.0		
+0.9	+0.4	0.0	-0.2	-1.0	-1.9		-0.5			
+0.3	+0.2	-0.2	-0.3	-1.2	-2.0	-2.4	-0.8	-1.5	"c"	3/11/48
+0.8	+0.5	0.0	-0.3	-1.0	-2.0		-0.9			
+0.7	+0.3	+0.2	-0.2	-0.5	-1.1	-1.8	-0.1	-0.6		
+1.0	+0.5	+0.4	0.0	-0.5	-1.2		-0.3			
+0.5	+0.3	-0.2	-0.3	-0.5	-1.7	-2.5	-1.0	-2.0	"d"	3/23/48
+0.5	+0.3	+0.2	-0.2	-0.8	-1.7		-0.8			
+0.5	+0.5	-0.1	-0.5	-1.0	-1.6	-2.0	-0.1	-0.3		
+0.7	+0.2	-0.2	-0.7	-1.5	-2.0		-0.4			
+0.7	+0.2	0.0	-0.3	-1.0	-1.2	-1.3	-0.2	-0.4	"e"	3/24/48
+0.7	+0.3	0.0	-0.2	-0.7	-1.0		0.0			
+0.4	+0.4	0.0	-0.1	-0.9	-1.5	-2.2	-0.6	-1.3	"f"	3/26/48
+0.7	+0.3	0.0	-0.2	-0.9	-2.0		-0.6			
+0.5	+0.3	0.0	-0.3	-1.0	-2.0	-3.0R	-0.7	-1.5		
+0.7	+0.3	0.0	-1.0R	-1.2	-2.0		-1.0			
+0.8	+0.6	0.0	-0.1	-0.7	-1.0	-1.8	-0.5	-1.0	"g"	3/29/48
+0.8	+0.4	+0.2	0.0	-0.7	-1.3		-0.5	0		
+0.7	+0.5	+0.4	+0.2	-0.8	-1.0	-1.1	0.0	-2.2		
+1.0	+0.5	+0.5	0.0	-0.4	-1.0		0.0			
+0.5	+0.2	+0.3	0.0	-0.5	-1.0	-1.2	-0.3	-0.5	"h"	3/30/48
+0.9	+0.5	+0.4	+0.1	-0.4	-1.0		-0.2			
+0.8	+0.1	0.0	0.0	-0.5	-1.0	-1.9	-0.1	-1.0		
+0.9	+0.5	+0.1	0.0	-0.9	-1.0		-0.2			
+0.4	+0.3	0.0	-0.2	-1.0	-1.5	-2.0	-1.0	-1.0	"j"	4/12/48
+0.7	+0.2	+0.1	-0.1	-1.0	-1.2		-0.8			
+0.8	+0.2	0.0	0.0	-1.0	-1.0	-1.5	-0.1	-0.4		
+0.8	+0.3	0.0	0.0	-0.3	-1.0		0.0			
+23.3	+10.9	+1.7	-5.7	-28.6	-18.8	-29.5	-18.2	-17.5	SUM	
+0.7	+0.3	+0.05	-0.2	-0.8	-1.44	-1.8	-0.53	-1.0	MEAN	
0.0	0.0	+0.1	+0.2	+0.4	+0.5	+0.5	+0.5	+0.5	Bar Check Correction	
+0.7	+0.3	+0.2	0.0	-0.4	-1.0	-1.3	0.0	-0.5	CORRECTION	
+0.9	0.0	-0.7	-0.9	-1.9	-2.8	-3.5	-1.7	-2.8	"k"	4/30/48
+0.5	0.0	-0.4	-0.8	-1.8	-2.9		-1.9			
+0.8	+0.2	-0.2	-0.5	-1.9	-2.8	-3.5	-1.5	-2.2		
+0.7	+0.3	0.0	-0.9	-1.7	-2.2		-1.0			
+2.2	+0.5	-1.3	-3.1	-7.3	-10.7	-7.0	-6.1	-5.0	SUM	
+0.5	+0.1	-0.3	-0.8	-1.8	-2.7	-3.5	-1.5	-2.5	MEAN	
0.0	+0.2	+0.3	+0.4	+0.8	+1.2	+1.5	+1.2	+1.5	Bar Check correction	
+0.5	+0.3	0.0	+0.4	-1.0	-1.5	-2.0	-0.3	-1.0	CORRECTION	

For "k" day, use results for "a" - "j" days.

*RMS*

*VWBm*

FATHOMETER CORRECTION  
SHEET H-7638

REDUCERS

(a, b, c, d, e, f, g, h, j, & k days)

A SCALE

0.0 to 3.0 =	+1.0
3.1 to 5.0 =	+0.8
5.1 to 7.3 =	+0.6
7.4 to 10.0 =	+0.4
10.1 to 17.8 =	+0.2
17.9 to 22.3 =	0.0
22.4 to 28.0 =	-0.2
28.1 to 32.0 =	-0.4
32.1 to 35.5 =	-0.6
35.6 to 38.5 =	-0.8
38.6 to 42.5 =	-1.0
42.6 to 49.0 =	-1.2
49.1 to end =	-1.4

B SCALE

to 42.0 =	0.0
42.1 to 46.0 =	-0.2
46.1 to 50.0 =	-0.4
50.1 to 54.0 =	-0.6
54.1 to 58.0 =	-0.8
58.1 to 62.0 =	-1.0
62.1 to 66.0 =	-1.2
66.1 to 70.0 =	-1.4
70.1 to 74.0 =	-1.6
74.1 to 78.0 =	-1.8
78.1 to 82.0 =	-2.0
82.1 to 86.0 =	-2.2

"C" Scale

86.1 - 90.00 =	-2.4
90.1 - 94.00 =	-2.6
94.1 - 98.00 =	-2.8
98.1 - 102.0 =	-3.0
102.1 - 106.0 =	-3.2

Inked corrections

Added by

S. Rose

OKed by  
RHC

No phase correction B to C scale apparent

JRBm

VELOCITY CORRECTION ABSTRACT:

Tabulations of the three daily bar checks for Launch No. 141 are shown on pages, - ~~25 - 29 incl.~~ <sup>27 & 28</sup>.

Velocity corrections were derived from the mean of the daily bar checks and are listed separately.

MISCELLANEOUS:

It will be noted that a small area at the west of Hydrographic Sheet H-7637 was surveyed on an insert. A standard size sheet, however, will obviate the necessity of this insert on the smooth plot.

APPLICABLE DATA

Date Forwarded to:  
 Washington Office      Seattle Proc. Office

- |   |                  |
|---|------------------|
| 3 - Hydrographic Sheets, (HO-05148), H-7635<br>(HO-05248), H-7636<br>(HO-05348), H-7637   | 3/21/49          |
| 4 - Volumes, Sounding Records, Form 275 (Sheet H-7635)  | 3/18/49          |
| 5 - Volumes, Sounding Records, Form 275 (Sheet H-7636)  | 3/18/49          |
| 4 - Volumes, Sounding Records, Form 275 (Sheet H-7637)  | 3/18/49          |
| 9 - Fathograms for Sheet H-7635- - - - -  | 3/18/49          |
| 10 - Fathograms for Sheet <u>H-7636</u> - - - - -   | 3/18/49          |
| 7 - Fathograms for Sheet H-7637- - - - -  | 3/18/49          |
| 1 - Progress Sketch, Hydrography - - - - - (monthly)  |                  |
| 1 - Sketch, Sheet Layout - - - - -  | 1/ /48           |
| 1 - Season's Report (Jan. - April, 1948) - - -  | 6/21/48          |
| 5 - Prints, U. S. Engineers Survey, Scale 1:5000<br>"Willamette River, Portland to Eugene, Oregon"<br>Sheet No. 5 of 52, Revised to June 1940<br>*Sheet No. 6 of 52, Revised to Oct. 1932      * common to H-7636<br>*Sheet No. 7 of 52, Revised to July 1937<br>Sheet No. 8 of 52, dated - - July 1932<br>Sheet No. 9 of 52, dated - - July 1932 | 3/21/49          |
| 1 - Print, U. S. Engineers Survey Scale 1 inch = 100 feet<br>"Willamette Falls & Vicinity", Print No. WL-13-1, dated - Sept. 1945 (Sp. 47262)   | 3/21/49<br><br>✓ |



Date Forwarded to:  
 Washington · Seattle  
 D. C. Proc.  
 Office Office

- 1 - Print, U. S. Engineers Survey, Scale 1:2000  
 "Willamette River, Rock Island Survey", Print  
 No. WR-29-7, dated December 1947- - - (Op-44685) 3/21/49
- 1 - Print, U. S. Engineers Triangulation, *Filed in Geodesy*  
 "Willamette River, Canemah to Coalca,  
 Oregon".- - - - - |-----| 3/21/49  
 Print No. WR-04-10/5
- 1 - Print, U. S. Engineers, "Low Water Profile,  
 Mouth of Willamette to Newburg, Oregon, 1929 *In 3/5 Tube*  
 Datum, 1940 Low Water".- - - - - |-----| *H-7813* 3/21/49

Data used in determining difference between river  
 datum and elevation of the water surface: 3/18/49

Gage or Staff Locations	Report of Level		Record Staff Readings Form 277
	Tide Sta. Form 681	Record Form 258 Marigrams	
Marina Mart	1		} 2
Upper Pulp Siding	1	3	
Coalca	1	1	
Wilson (Fish Eddy)	1	1	
Crown-Zellerbach	1	1	
Wilsonville (Boones Ferry)	1	1	

Respectfully submitted,

/s/ R. M. Stone  
 R. M. Stone, Lieut., USC&GS  
 H. & G. Engr.

Approved:

/s/ Henry J. Healy  
 Henry J. Healy, Lt. Comdr., USC&GS  
 Commanding Ship HODGSON

APPROVAL SHEET

Hydrographic Survey No. H-7635, (HO-05148)  
H-7636, (HO-05248)  
H-7637, (HO-05348)

Willamette River

Oregon City to vicinity of S. of Wilsonville, Oregon

Project CS - 325

The records for these hydrographic sheets have been examined and found to be complete.

The smooth sheets have not been plotted at the time of writing this report.

This survey is complete, adequate in detail and is approved.

/s/ Henry J. Healy,  
Lt. Comdr., USC&GS  
Commanding Ship HODGSON

GEOGRAPHIC NAMES

Survey No. H-7636

Name on Survey	Source										
	A	B	C	D	E	F	G	H	K		
<u>Oregon</u>										USGB	1
<u>Willemette River</u>										"	2
<u>Rock Island</u>											3
<u>New Era</u>											4
<u>New Era Bar</u>											5
<u>Willow Island</u>											6
<u>Fish Eddy</u>					(2 words)						7
<u>P</u>											
<u>Peach Cove</u>					(peninsula)						8
<u>Shanks Landing</u>					(not Shank's)						9
<u>walnut Eddy</u>											10
<u>Buchmans landing</u>					(not Buchman's)						11
											12
											13
					Names underlined in red are						14
					approved. 9-22-50.						15
										L. Heck	16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7636 .....

Records accompanying survey:

Boat sheets <sup>1</sup>....; sounding vols. <sup>5</sup>....; wire drag vols. ....;  
 bomb vols. ....; graphic recorder rolls <sup>5</sup>envel.  
 special reports, etc. <sup>1</sup> overlay; <sup>9</sup> USED misc. prints of Willamette River  
 .....

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

Number of positions on sheet	1071.
Number of positions checked	107.
Number of positions revised	1.
Number of soundings revised (refers to depth only)	0.
Number of soundings erroneously spaced	0.
Number of signals erroneously plotted or transferred	0.
Topographic details	Time 4 hrs.
Junctions	Time 4 "
Verification of soundings from graphic record	Time 60 "

Verification by *Stephen Rose* Total time 208 hrs. Date 1-30-51

Reviewed by *In Jeskeud* Time 35 Date 2-7-51

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7636

FIELD NO. HO-05248

Oregon, Willamette River, Rock Island to Buchmans Landing  
Surveyed in March - April, 1948                      Scale 1:5,000  
Project No. CS-323

Soundings:

Control:

808 Fathometer

Sextant fixes on shore signals

Chief of Party - W. H. Bainbridge  
Surveyed by - H. J. Healy and A. M. Legako  
Protracted by - T. G. Taxelius  
Soundings plotted by - T. G. Taxelius  
Verified and inked by - S. Rose  
Reviewed by - I. M. Zeskind, 7 February 1951  
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline of the present survey originates with air-photographic surveys T-8706 and T-8708 of 1946.

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

2. Sounding Line Crossings

Depths at crossings are in good agreement.

3. Bottom Configuration and Depth Curves

The usual depth curves are adequately delineated.

The bottom is very irregular and is marked by shoals, deeps and gravel bars. Depths along the axis of the natural channel range from 3 ft. to 85 ft.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7635 (1948) on the north and with H-7637 (1948) on the west. Adequate junctions with the U. S. Corps of Engineers' survey of 1947 in the vicinity of Rock Island were made in accordance with instructions contained in the Director's letter dated 6 February 1948. Bp. 44685

5. Comparison with Prior Surveys

There are no prior surveys of the area by this Bureau.

6. Comparison with Chart 6171 (Latest print date 3/21/49)

A. Hydrography

The charted hydrography originates principally with the U. S. Corps of Engineers' surveys of 1932 (Bp. 39790, sheet No. 6), 1937 (Bp. 39790, sheet No. 7) and 1947 (Bp. 44685), supplemented by hydrographic information from the present survey prior to verification.

A comparison between the chart and the present survey reveals minor differences in bottom configuration. The north end of Willow Island and present depths are generally from 1-3 ft. shoaler than charted depths.

The following discrepancies are specifically noted:

1. The 16-ft. sounding charted in lat.  $45^{\circ} 18.56'$ , long.  $122^{\circ} 39.87'$ , falls in present depths of 55-56 ft. and should be disregarded. The charted sounding, originating with the U. S. Corps of Engineers' survey of 1932 (Bp. 39790, sheet No. 6), is one of several shoal soundings on a line across the river which are disproved by the development on the present survey.
2. The 26-ft. sounding charted in lat.  $45^{\circ} 18.03'$ , long.  $122^{\circ} 39.73'$ , falls in present depths of 40 to 50 ft. and should be disregarded. This sounding is probably displaced in position and should actually fall about 50 meters westward where comparable present depths are found.

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

B. Aids to Navigation

The present survey positions of aids to navigation are in substantial agreement with the charted position and adequately mark the features intended.

Spar Buoy S-12 located in lat.  $45^{\circ} 19.29'$ , long.  $122^{\circ} 39.78'$  on the present survey has been subsequently replaced by a nun buoy which is charted in the same position (H.O. Notice to Mariners, No. 44, 1950).

Buoy N-14 charted in lat.  $45^{\circ} 18.71'$ , long.  $122^{\circ} 39.82'$ , is designated S-14 on the smooth sheet. The first chart of the area, dated 3-21-49, shows the designation of the buoy to be in accordance with the Light List corrected to January 1st, 1949. No authority for the change could be readily ascertained.

Buoys C-13 and C-15 charted in lat.  $45^{\circ} 18.73'$ , long.  $122^{\circ} 39.77'$  and lat.  $45^{\circ} 18.65'$ , long.  $122^{\circ} 39.80'$ , respectively, originated with the U. S. Corps of Engineers' survey of 1947 (Bp. 44685). The positions of these buoys were not determined on the present survey.

7. Condition of Survey

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


8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.


9. Additional Field Work Recommended


This is an excellent basic survey and no additional field work is recommended.

Examined and approved:

  
H. R. Edmonston  
Chief, Nautical Chart Branch  
Acting/

  
E. Arnold Kero  
Chief, Division of Charts

  
L. S. Hubbard  
Chief, Section of Hydrography

  
W. M. Scaife  
Chief, Division of Coastal Surveys

RUC

### TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography~~

6 December 1950

Division of Charts: R. H. Carstens

Plane of reference approved in  
5 volumes of sounding records for

HYDROGRAPHIC SHEET 7636

Locality Willamette River, North End of Rock Island to Buchmans Landing

Chief of Party: W. H. Bainbridge in 1948  
Plane of reference is Willamette River Datum, reading  
0.0 ft. on tide staff at Marina Mart  
29.6 ft. below B. M. IAT (1935)

-1.2 ft. on tide staff at Upper Pulp Siding  
29.6 ft. below B. M. IAT (1935)

0.1 ft. on tide staff at Coalco  
39.8 ft. below B. M. D14 (1903)

-0.4 ft. on tide staff at Fish Eddy (Wilson Tide Staff)  
32.6 ft. below B. M. 1 (1948)

-2.0 ft. on tide staff at Crown Zellerbach Log Dump  
30.3 ft. below B. M. 1 (1948)  
Condition of records satisfactory except as noted below:

*E.C. McKay*

*Section*  
Chief, ~~Division of Tides and Currents.~~



# NAUTICAL CHARTS BRANCH

SURVEY NO. H-7636

## Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
<i>6/23/52 22 S</i>	<i>6171</i>	<i>H. W. Burgoyne</i>	<del>Before</del> After Verification and Review <i>completely applied</i>
<i>22 Sept 52</i>	<i>6172</i>	<i>James H. Bell</i>	<del>Before</del> After Verification and Review <i>then dit 0151 dated 52 8/25</i>
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
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			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

M-2168-1

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