

8292

Diag. Cht. No. 6002-2.

Form 504

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. WCFP-1556 Office No. H-8292

LOCALITY

State Washington

General locality Grays Harbor

Locality South Bay

1956

CHIEF OF PARTY

H. G. Conerly

LIBRARY & ARCHIVES

DATE October 21, 1958

USCOMM-DC 5087

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

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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-8292

Field No. WCFP 1556

State Washington

General locality Grays Harbor

Locality South Bay

Scale 1:10,000 Date of survey July & August 1956

Instructions dated 13 February 1955

Vessel Launch CS 160

Chief of party Horace G. Conerly

Surveyed by K. E. Taggart

Soundings taken by fathometer, ~~graphic recorder~~, hand lead, ~~wire~~ and pole.

Fathograms scaled by Various

Fathograms checked by Various

Protracted by C. A. J. Pauw

Soundings penciled by C. A. J. Pauw

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

REMARKS:

R.T.M.

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DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SURVEY

FIELD NO. WCFP 1556 - REGISTRY NO. H-8292

GRAYS HARBOR, WASHINGTON

PROJECT 13780

SCALE: 1:10,000

WEST COAST FIELD PARTY: H. G. CONERLY, CHIEF OF PARTY

SURVEYED BY: K. E. TAGGART

PURPOSE

The purpose of this survey is a new basic survey of Grays Harbor, Washington.

INSTRUCTIONS

The project no. is 13780, and instructions are by the Director dated 18 February 1955.

SURVEY LIMITS AND DATES

The northern limits of the sheet is a junction with Sheet WCFP 1255 Registry H-8251, the western, eastern and southern limits are to the shore in South Bay.

Field work commenced on 17 July 1956 and continued intermittently until 29 August 1956.

VESSEL AND EQUIPMENT

For all soundings Launch CS 160 and a skiff were used. All fathometer soundings were taken aboard the launch with an 808 type fathometer with keel mounted acoustical units or an EDO Model 255 with a fish mounted on the starboard side. All soundings taken from the skiff were either hand-lead or pole.

METHODS

Standard hydrographic methods were used throughout.

TIDES AND CURRENTS

For tides see separate Tidal Note.

No current stations were occupied.

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CONTROL

Most of the control was from previously established triangulation stations. A few stations were located by photo methods and one by theodolite angle and distance. See list of signals used for details.

SHORELINE AND TOPOGRAPHY

The shoreline is from T-9518^{S(950-56)}, T-9519^{S(950-57)} and T-9521⁽⁹⁵¹⁻⁵⁶⁾. The Bay City Bridge is now a wreck and a newer bridge has been built to the south. It should be taken from the later survey by the photogrammetry party now operating in the area. The bridge across the Johns River is also new and should be taken from the survey by the Field Edit Party.

SOUNDINGS

Soundings were taken with 808 type fathometer, and EDO Model 255, handlead and pole.

The handlead was calibrated at the beginning and end of the season and showed no appreciable error at either calibration.

The 808 accoustical units were mounted in the keel and the initial set at 3 feet during all the soundings. A transducer for the EDO was mounted on the starboard side at one foot below the surface and the initial set at one foot. A separate fathometer report will be forwarded to the Director and an abstract of corrections attached to this report.

CONTROL OF HYDROGRAPHY

The positions of the launch were fixed by sextant angles on previously located objects ashore.

CROSSLINES

There are enough crosslines for comparison of all days of sounding. There are two areas where the soundings do not compare too favorably. The one east of hydro station Ant is due to recent dredging. A very slight misplacement of a sounding will make a large difference in depths. The least depth should be used. An area at Latitude 46-55 Longitude 124-05.2 does not compare too favorably on the boat sheet but it is believed that results will be better on the smooth sheet. *OK. on smooth sheet*

JUNCTIONS

The sheet makes a satisfactory junction with sheet WCFP 1255⁽⁸²⁵¹⁻¹⁹⁵⁵⁻⁵⁶⁾ on the north and the shoreline in other directions.

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COMPARISON WITH PRIOR SURVEYS

There are many differences between previous surveys and this one. ✓
Most of them are plainly shown on the sheet.

The area south and east of signal LUM^(Johns river) is shown on 6665 as clear but a large number of piles have been driven. The outer limits of them are shown on the sheet. The area behind the piles is used as log storage space and at times the whole river is blocked by logs waiting to be cut at the shingle mill.

The depth curves on 6665 are similar to the present survey but have moved. ✓ Depths vary greatly in several areas. *See Review #5.*

In the area of H-3229 and 3230 the sand bars have moved and there is very little similarity.

In the area of H-6646 the depth curves follow approximately the same pattern but sand bars have shifted and depths have changed. The Bay City Bridge is a wreck and a new bridge has been built to the south. The dock shown on H-6646 SW of of topo station City is now in ruins.

COMPARISON WITH CHART

There are many differences between this survey and the chart. ✓ Where they differ this survey should be used for charting. *APG Review*

AIDS TO NAVIGATION

No fixed aid to navigation was located on this sheet. One which was previously located by triangulation has been destroyed and will not be replaced. It is BAY CITY BRIDGE, LIGHT ON NORTH RANGE MARKER 1940.

Those in the area of the sheet located by other methods are located by triangulation or photogrammetry. All are shown on the boat sheet and manuscript. ✓ *PP 6C Review*

Floating aids have all been located and are shown on the sheet. ✓

PRELIMINARY REVIEW

The bridge mentioned in note 3 of the preliminary review has been located by the Field Edit Party from Portland. ✓ The usual information will be furnished by that office and the final location will be shown on their field sheet.

DANGERS AND SHOALS

Shoals are plainly shown on the sheet. ✓

There are no dangers other than those plainly shown on the sheet north of Latitude 46-52.0 in South Bay; and 46-55.0 in the Johns River. South of these lines there are numerous broken piles and sunken logs along the sides of the channels. Vessels easily damaged should not travel in the area except with care.

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ADEQUACY OF SURVEY

The survey is considered as adequate for charting purposes and should supersede all previous surveys where there are differences. ✓

APPLICABLE DATA

1. TRIANGULATION. Only previously established triangulation was used.
2. Special Fathometer Report forwarded to The Director, abstract of corrections attached to this report.
3. Photos have been transferred to Portland Photogrammetric Office.
4. Photo manuscripts to be forwarded to Seattle Processing Office.
5. Blue-line Prints to be forwarded to Seattle Processing Office.
6. Tidal levels, marigrams, etc. forwarded to Director. Abstract of tide reducers attached to this report.
7. Fathograms forwarded to Processing Office.
8. Sounding volumes forwarded to Seattle Processing Office.
9. Boat Sheet forwarded to Washington for photographing with request that it be returned to the Seattle Processing Office. ✓

FORWARDED

Horace G. Conerly
Horace G. Conerly
Commander, C&GS
OinC., West Coast
Field Party

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TIDAL NOTE FOR HYDROGRAPHIC SURVEY

FIELD NO. WCFP 1556 - REGISTRY NO. H-8292

For tide reducers in the area of the sheet tide gages were maintained at Aberdeen, Washington Latitude 46 - 58 - 02 Longitude 123-51-07 and Point Chehalis Latitude 46-54-34 Longitude 123-06-45. The MLLW reading on the Aberdeen gage was 4.6 and on the Point Chehalis gage was 3.1 ft.

Outlined on Diagram back of D.R.

Four tide zones were used. They are shown on the boat sheet in green ink.

In zone A the observations from the Point Chehalis gage were used direct with no correction to time or height for distance from the gage.

In zone B observations from the Point Chehalis gage were used with a correction of plus 15 minutes to the time and no correction for height.

In zone D a mean of the observations at the Aberdeen and Point Chehalis gages were used.

In zone F a plus correction of 20 minutes and a range ratio of 1.03 was applied to the Point Chehalis observations.

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STATISTICS FOR HYDROGRAPHIC SURVEY

FIELD NO. WCFP 1556 - REGISTRY NO. H-8292

Day Letter	Vol.No.	Date	H.L.Sdgs.	No. Pos.	Stat.Miles	Sdg.
a	1	17 July	3	109	15.0	Launch
b	1 & 2	18 July	12	178	24.6	"
c	2	23 July	3	102	10.6	"
d	2 & 3	24 July	2	140	17.8	"
e	3	25 July	15	90	9.5	"
f	3	1 August	28	70	4.6	"
g	3 & 4	2 August	5	65	8.2	"
h	4	3 August	163	188	19.0	"
j	4 & 5	9 August	34	100	8.5	"
k	5	10 August	110	177	12.9	Launch & Skiff
l	5	14 August	130	154	11.0	" " "
m	5 & 6	15 August	132	167	14.8	" " "
n	6	17 August	84	132	10.9	Launch
p	6 & 7	29 August	55	60	1.4	Skiff
Totals			<u>776</u>	<u>1,732</u>	<u>168.8</u>	

Total area, square statute miles 7.9

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APPROVAL SHEET

HYDROGRAPHIC SURVEY

FIELD NO. WCFP 1556 - REGISTRY NO. H-8292

The field work on this sheet was under close supervision by the Chief of Party. The work and records are approved.

Horace G. Conerly
Horace G. Conerly
Commander, C&GS
OinC., West Coast
Field Party

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PROCESSING OFFICE NOTES H-8292

SMOOTH SHEET

The smooth sheet was hand constructed by the Seattle Hydrographic Processing Unit, using standard methods of construction and checking.

SHORELINE AND TOPOGRAPHY

The shoreline was transferred from blue-line prints of T-9518S, T-9519S, and T-9521 (1951-56)
(1950-56) (1950-57)

ADEQUACY OF SURVEY

The survey is complete and adequate for charting. The junction with H-8251, to the north has been compared and the depth curves can be adequately drawn at the junction.

COMPARISON WITH PRIOR SURVEYS

In addition to the comments by the hydrographer, one reference to the comparison with H-6646 is considered necessary. The channel at Lat. 46° 53' 8" N., Long. 124° 04' 8" W., has filled to a depth of approximately a half fathom or less.

COMPARISON WITH CHART

The smooth sheet has been compared with Chart 6195 53rd Ed. Revised 1/20/58. The only revision of the old Chart, in the area covered by the smooth sheet, appears to have been the aids to navigation and the new bridge at Bay City. The bridge shown on the smooth sheet is the old one. No tracing of the location of the new one is available in the Processing Office. The differences in soundings appear to be numerous enough to warrant a complete revision of the Chart in this area.

Respectfully submitted

William M. Martin
WILLIAM M. MARTIN
Supervisory Cartographer

Approved and forwarded

E. H. KIRSCH
Captain C&GS
Seattle District Officer
E. H. Kirsch

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NOTES TO VERIFIER
PH-62, T-9521
HYDRO. SHEET NO. H-8292
DECEMBER 23, 1957

During the review of manuscript T-9521, PH-62 Grays Harbor, Washington, comparison was made with B. P. 54397 *(B.S. of H-8292)*. A notation under the position of "Bay City Range 3 Rear Daybeacon" stated that the position had been moved 200 m S. E. of the position located during field inspection by Theodolite. The Theodolite position is lat. $46^{\circ} 51' 48.035''$, long. $124^{\circ} 04' 17.177''$ *which is in agreement with H-8292 after verification.*

8/24/60
L.S.S.

The hydrographic sheet H-8292 and the records were in the Seattle Processing Office during the time of final review. The position shown on the manuscript is the Theodolite position listed above.



A. K. Heywood
Review and Edit

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COMPUTATION OF TRIANGLES

State:

	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3 Bay City Water 1 Tank	(43 41-13)				96.00 m	1.982 271 ✓ 0.160 699 ✓
	2 KITE	66-57-26 ✓					9.963 888 ✓
	3 Target	69-21-21 ✓					9.971 178 ✓
	1-3						2.106 858 ✓
	1-2					130.1 m	2.114 148 ✓ ✓
	2-3						
	1						
	2						
	3						
	1-3						
	1-2						
	2-3						
	1						
	2						
	3						
	1-3						
	1-2						

SIEF BACK of
Sheet for sketch

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 27
Ed. April 1945

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

α	2	KITE	to 3	Westport Marineiral Tank	135	10	00	00	3	3	to 2	180	00	00.0
$2^d L$			&		+173	46	10	10			&			
α	2		to 1		308	56		10		3	to 1			
$\Delta\alpha$														
α'	1		to 2		180	00		00.0			to 3	180	00	00.0

FIRST ANGLE OF TRIANGLE

ϕ	46	51	47.133	2	KITE	1439	λ	124	03	38281	ϕ	46	51	47.133	2	KITE	1439	λ	124	03	38281
$\Delta\phi$	-	00	02.647				$\Delta\lambda$	-	00	04.776	$\Delta\phi$	-	00	02.647				$\Delta\lambda$	-	00	04.776
ϕ'	46	51	44.486		Bay City Tank		λ'	124	03	33505	ϕ'	46	51	44.486				λ'	124	03	33505

s	Logarithms	Values in seconds		$\frac{1}{2}(\phi+\phi')$	Logarithms	Values in seconds		s	Logarithms	Values in seconds		$\frac{1}{2}(\phi+\phi')$	Logarithms	Values in seconds	
		1st term	2d term			1st term	2d term			1st term	2d term			1st term	2d term
s	2.114 148							s							
Cos α	9.798 273							Cos α							
B	5.510 324							B							
h	0.422 745	1st term	+ 2.647					h							
s ²								s ²							
Sin ² α								Sin ² α							
C								C							
h ²								h ²							
D								D							
		3d term	+ 102.647												

r note

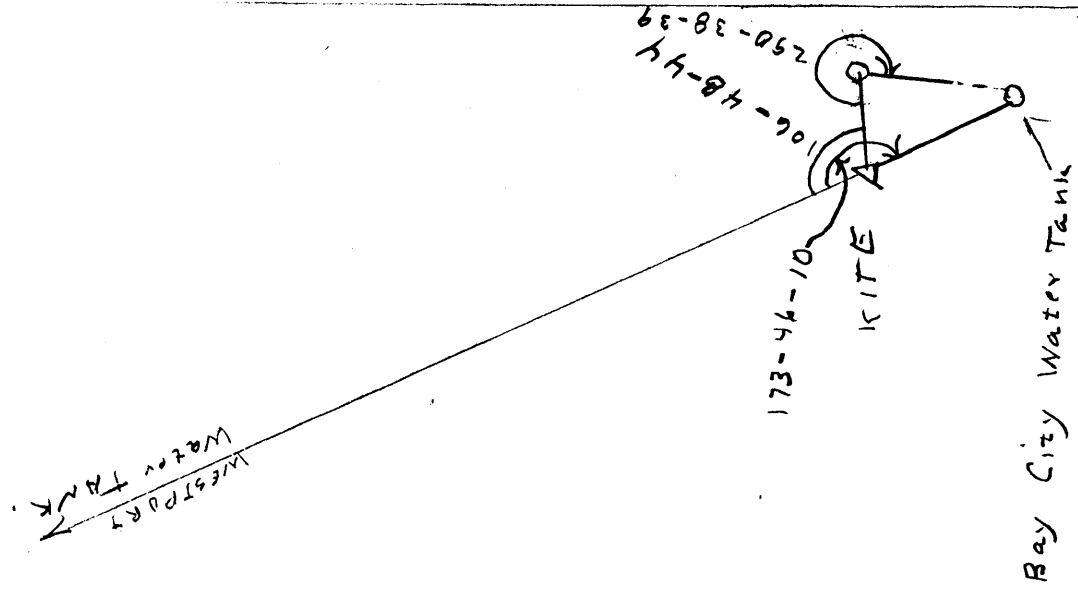
6E-8E-052
250-38-39
44-84-44

173-46-10

KITE

Bay City Water Tank

WESTPORT
Water Tank



ABSTRACT OF SMOOTH TIDE REDUCERS

TIDE GAGES AT ABERDEEN AND POINT CHEHALIS

HYDROGRAPHIC SHEET FIELD NO. WCFP 1556 - REGISTRY NO. H-8292

"a" day 17 July 1956 A Zone	"d" day 24 July 1956 A Zone	"g" day 2 August 1956 A Zone
0900 - 1012 - 5.8	1215 - 1224 - 5.8	0831 - 0856 - 5.6
1034 - 5.6	1234 - 6.0	1007 - 5.8
1052 - 5.4	1244 - 6.2	1032 - 5.6
1106 - 5.2	1256 - 6.4	1050 - 5.4
1120 - 5.0	1307 - 6.6	1105 - 5.2
1132 - 4.8	1321 - 6.8	"h" day 3 August 1956 A Zone
1145 - 4.6	1339 - 7.0	0833 - 0844 - 5.2
1156 - 4.4	1510 - 7.2	0854 - 5.4
1209 - 4.2	1526 - 7.0	0905 - 5.6
"b" day 18 July 1956 A Zone	1537 - 6.8	1500 - 1600 - 3.0
0833 - 0846 - 5.0	1516 - 6.6	"h" day 3 August 1956 B Zone
0900 - 5.2	1554 - 6.4	1515 - 1615 - 3.0
0920 - 5.4	"e" day 25 July 1956 A Zone	"h" day 3 August 1956 F Zone
0940 - 5.6	1303 - 1312 - 6.0	0855 - 0907 - 5.4
1006 - 5.8	1320 - 6.2	0918 - 5.6
1123 - 6.0	1330 - 6.4	0930 - 5.8
1146 - 5.8	1343 - 6.6	0945 - 6.0
1202 - 5.6	1400 - 6.8	1000 - 6.2
1213 - 5.4	1425 - 7.0	1020 - 6.4
1226 - 5.2	1511 - 7.2	1150 - 6.6
1239 - 5.0	1534 - 7.0	1206 - 6.4
1252 - 4.8	1549 - 6.8	1220 - 6.2
1304 - 4.6	1600 - 6.6	1231 - 6.0
1320 - 4.4	"f" day 1 August 1956 A Zone	1240 - 5.8
1334 - 4.2	0800 - 0917 - 5.2	1249 - 5.6
1350 - 4.0	0934 - 5.0	1258 - 5.4
"c" day 23 July 1956 A Zone	0947 - 4.8	1306 - 5.2
1117 - 1125 - 4.6	1000 - 4.6	1315 - 5.0
1133 - 4.8	1016 - 4.4	1325 - 4.8
1141 - 5.0	1032 - 4.2	1336 - 4.6
1150 - 5.2	"f" day 1 August 1956 F Zone	1347 - 4.4
1159 - 5.4	1013 - 1029 - 4.6	1359 - 4.2
1209 - 5.6	1044 - 4.4	1412 - 4.0
1219 - 5.8	1101 - 4.2	1428 - 3.8
1230 - 6.0	1120 - 4.0	1444 - 3.6
1241 - 6.2	1138 - 3.8	1505 - 3.4
1254 - 6.4	1158 - 3.6	1533 - 3.2
1310 - 6.6	1220 - 3.4	
1335 - 6.8	1320 - 3.2	
1425 - 7.0		
1446 - 6.8		

ABSTRACT OF SMOOTH TIDE REDUCERS

(CONTINUATION)

"j" day 9 August 1956			"k" day (contd)		"m" day 15 August 1956		
F Zone			1239	- 4.2	A Zone		
1240 - 1246	- 5.4		1245	- 4.4	0800 - 1000	- 5.8	
	1252	- 5.6	1251	- 4.6	1019	- 5.6	
	1258	- 5.8	1257	- 4.8	1036	- 5.4	
	1304	- 6.0	1303	- 5.0	1052	- 5.2	
	1310	- 6.2	1310	- 5.2	1108	- 5.0	
	1317	- 6.4	1316	- 5.4	1124	- 4.8	
	1323	- 6.6	1322	- 5.6	1140	- 4.6	
	1330	- 6.8	1329	- 5.8	"m" day 15 August 1956		
	1337	- 7.0	1336	- 6.0	F Zone		
	1344	- 7.2	1343	- 6.2	1226 - 1245	- 4.2	
	1352	- 7.4	1350	- 6.4	1320	- 4.0	
	1359	- 7.6	1358	- 6.6	1500	- 3.8	
	1407	- 7.8	1405	- 6.8	1530	- 4.0	
	1415	- 8.0	1412	- 7.0	"n" day 17 August 1956		
	1424	- 8.2	1420	- 7.2	D Zone		
	1433	- 8.4	1426	- 7.4	1103 - 1216	- 7.0	
	1445	- 8.6	1433	- 7.6	1236	- 6.8	
	1500	- 8.8	1441	- 7.8	1250	- 6.6	
	1604	- 9.0	1449	- 8.0	1301	- 6.4	
"k" day 10 August 1956			1459	- 8.2	1312	- 6.2	
F Zone			1510	- 8.4	1322	- 6.0	
0830 - 0844	0.0		1525	- 8.6	1332	- 5.8	
	0902	✓ 0.2	1545	- 8.8	1342	- 5.6	
	0940	✓ 0.4	"l" day 14 August 1956		1353	- 5.4	
	0958	✓ 0.2	F Zone		1405	- 5.2	
	1011	0.0	0900 - 0920	- 5.6	1418	- 5.0	
	1020	- 0.2	0937	- 5.4	1430	- 4.8	
	1030	- 0.4	0953	- 5.2	1445	- 4.6	
	1037	- 0.6	1007	- 5.0	1500	- 4.4	
	1045	- 0.8	1020	- 4.8	1515	- 4.2	
	1053	- 1.0	1036	- 4.6	1535	- 4.0	
	1100	- 1.2	1051	- 4.4	1630	- 3.8	
	1107	- 1.4	1108	- 4.2	"p" day 29 August 1956		
	1114	- 1.6	1130	- 4.0	D Zone		
	1121	- 1.8	1202	- 3.8	1150 - 1209	- 3.2	
	1128	- 2.0	1337	- 3.6	1235	- 3.4	
	1135	- 2.2	1400	- 3.8	1254	- 3.6	
	1141	- 2.4	1420	- 4.0	1308	- 3.8	
	1149	- 2.6	1435	- 4.2	1354 - 1407	- 4.8	
	1155	- 2.8	1449	- 4.4	1418	- 5.0	
	1201	- 3.0	1501	- 4.6	1428	- 5.2	
	1208	- 3.2	1514	- 4.8	1439	- 5.4	
	1214	- 3.4	1526	- 5.0	1449	- 5.6	
	1220	- 3.6	1539	- 5.2	1500	- 5.8	
	1227	- 3.8	1552	- 5.4	1511	- 6.0	
	1233	- 4.0			1522	- 6.2	

COMBINED CORRECTIONS FOR EDO FATHOMETER #203

AS USED IN LAUNCH OS 160

PROJECT 13780 - SUMMER 1956

Reading In Feet	Frequency in Cycles per second							
	60.75	60.50	60.25	60.00	59.75	59.50	59.25	59.00
A Scale								
5.0	- 0.4	- 0.4	- 0.4	- 0.4	- 0.4	- 0.4	- 0.4	- 0.3
8.4	- 0.4	- 0.3	- 0.3	- 0.3	- 0.3	- 0.3	- 0.2	- 0.2
11.5	- 0.3	- 0.3	- 0.2	- 0.2	- 0.2	- 0.1	- 0.1	0.0
14.8	- 0.3	- 0.2	- 0.2	- 0.1	0.0	0.0	✓ 0.1	✓ 0.1
17.8	- 0.2	- 0.1	- 0.1	0.0	✓ 0.1	✓ 0.1	✓ 0.2	✓ 0.3
21.1	- 0.1	0.0	0.0	✓ 0.1	✓ 0.2	✓ 0.3	✓ 0.3	✓ 0.4
24.4	- 0.1	0.0	✓ 0.1	✓ 0.2	✓ 0.3	✓ 0.4	✓ 0.5	✓ 0.6
27.5	0.0	✓ 0.1	✓ 0.2	✓ 0.3	✓ 0.4	✓ 0.5	✓ 0.6	✓ 0.7
30.7	0.0	✓ 0.2	✓ 0.3	✓ 0.4	✓ 0.5	✓ 0.6	✓ 0.8	✓ 0.9
34.0	✓ 0.1	✓ 0.2	✓ 0.4	✓ 0.5	✓ 0.6	✓ 0.8	✓ 0.9	✓ 1.0
37.0	✓ 0.2	✓ 0.3	✓ 0.5	✓ 0.6	✓ 0.7	✓ 0.9	✓ 1.0	✓ 1.2
40.3	✓ 0.2	✓ 0.4	✓ 0.5	✓ 0.7	✓ 0.9	✓ 1.0	✓ 1.2	✓ 1.4
43.4	✓ 0.3	✓ 0.5	✓ 0.6	✓ 0.8	✓ 1.0	✓ 1.1	✓ 1.3	✓ 1.5
46.6	✓ 0.3	✓ 0.5	✓ 0.7	✓ 0.9	✓ 1.1	✓ 1.3	✓ 1.5	✓ 1.6
49.8	✓ 0.4	✓ 0.6	✓ 0.8	✓ 1.0	✓ 1.2	✓ 1.4	✓ 1.6	✓ 1.8
53.0	✓ 0.5	✓ 0.7	✓ 0.9	✓ 1.1	✓ 1.3	✓ 1.5	✓ 1.7	✓ 1.9
56.2	✓ 0.5	✓ 0.8	✓ 1.0	✓ 1.2	✓ 1.4	✓ 1.7	✓ 1.9	✓ 2.1
59.4	✓ 0.6	✓ 0.8	✓ 1.1	✓ 1.3	✓ 1.5	✓ 1.8	✓ 2.0	✓ 2.2
62.6	✓ 0.6	✓ 0.9	✓ 1.2	✓ 1.4	✓ 1.7	✓ 1.9	✓ 2.1	✓ 2.4
65.7	✓ 0.7	✓ 1.0	✓ 1.2	✓ 1.5	✓ 1.8	✓ 2.0	✓ 2.3	✓ 2.6
68.5	✓ 0.8	✓ 1.0	✓ 1.3	✓ 1.6	✓ 1.9	✓ 2.2	✓ 2.4	✓ 2.7
71.9	✓ 0.8	✓ 1.1	✓ 1.4	✓ 1.7	✓ 2.0	✓ 2.3	✓ 2.6	✓ 2.9
75.0	✓ 0.9	✓ 1.2	✓ 1.5	✓ 1.8	✓ 2.1	✓ 2.4	✓ 2.7	✓ 3.0
78.1	✓ 1.0	✓ 1.3	✓ 1.6	✓ 1.9	✓ 2.2	✓ 2.5	✓ 2.8	✓ 3.2
81.3	✓ 1.0	✓ 1.3	✓ 1.7	✓ 2.0	✓ 2.3	✓ 2.7	✓ 3.0	✓ 3.3
84.5	✓ 1.0	✓ 1.4	✓ 1.8	✓ 2.1	✓ 2.4	✓ 2.8	✓ 3.1	✓ 3.5
87.8	✓ 1.1	✓ 1.5	✓ 1.8	✓ 2.2	✓ 2.6	✓ 2.9	✓ 3.3	✓ 3.6
91.0	✓ 1.1	✓ 1.5	✓ 1.9	✓ 2.3	✓ 2.7	✓ 3.1	✓ 3.4	✓ 3.8
B Scale								
53.7	- 0.2	0.0	✓ 0.2	✓ 0.4	✓ 0.6	✓ 0.8	✓ 1.0	✓ 1.2
56.9	- 0.2	✓ 0.1	✓ 0.3	✓ 0.5	✓ 0.7	✓ 1.0	✓ 1.2	✓ 1.4
60.1	- 0.1	✓ 0.1	✓ 0.4	✓ 0.6	✓ 0.8	✓ 1.1	✓ 1.3	✓ 1.5
63.3	- 0.1	✓ 0.2	✓ 0.5	✓ 0.7	✓ 1.0	✓ 1.2	✓ 1.4	✓ 1.7
66.4	0.0	✓ 0.3	✓ 0.5	✓ 0.8	✓ 1.1	✓ 1.3	✓ 1.6	✓ 1.9
69.2	✓ 0.1	✓ 0.3	✓ 0.6	✓ 0.9	✓ 1.2	✓ 1.5	✓ 1.7	✓ 2.0
72.6	✓ 0.1	✓ 0.4	✓ 0.7	✓ 1.0	✓ 1.3	✓ 1.6	✓ 1.9	✓ 2.2
75.7	✓ 0.2	✓ 0.5	✓ 0.8	✓ 1.1	✓ 1.4	✓ 1.7	✓ 2.0	✓ 2.3
78.8	✓ 0.3	✓ 0.6	✓ 0.9	✓ 1.2	✓ 1.5	✓ 1.8	✓ 2.1	✓ 2.5
82.0	✓ 0.3	✓ 0.6	✓ 1.0	✓ 1.3	✓ 1.6	✓ 2.0	✓ 2.3	✓ 2.6
85.2	✓ 0.3	✓ 0.7	✓ 1.1	✓ 1.4	✓ 1.7	✓ 2.1	✓ 2.4	✓ 2.8
88.5	✓ 0.4	✓ 0.8	✓ 1.1	✓ 1.5	✓ 1.9	✓ 2.2	✓ 2.6	✓ 2.9
91.7	✓ 0.4	✓ 0.8	✓ 1.2	✓ 1.6	✓ 2.0	✓ 2.4	✓ 2.7	✓ 3.1

COMBINED CORRECTIONS FOR 808 FATHOMETER 152 SPX

AS USED IN LAUNCH GS 160

PROJECT 13780 - SUMMER 1956

"A" Scale		"B" Scale	
Fathometer	Corr'n	Fathometer	Corr'n
3.6	- 0.6		
5.0	- 0.5		
7.8	- 0.4		
15.0	- 0.3		
24.0	- 0.2		
33.0	- 0.1	32.4	+ 0.5
42.0	0.0	41.4	+ 0.6
51.0	+ 0.1	50.4	+ 0.7
60.0	+ 0.2	59.4	+ 0.8
		68.4	+ 0.9
		76.4	+ 1.0
		85.4	+ 1.1
		90.0	+ 1.2

LIST OF SIGNALS USED

FIELD NO. WCFP 1556 - REGISTRY NO. H-8292

Name Used In Hydro.	Origin of Signal
ACK	T-9519 S Black stack on oyster house.
AMP	SWAMP, 1940.
AND	ISLAND, 1940.
ANT	Sextant cuts, "f" day, volume 3, page 52 and 53.
ARD	BEARDS, 1940.
ARF	WESTPORT WHARF LIGHT, 1951.
BAY	BAY CITY BRIDGE, LIGHT ON NORTH RANGE MARKER, 1940.
BEA	T-9521 BAY CITY RANGE 2 REAR DAYBEACON, 1952. Located by theodolite Lat. $46^{\circ} 51' 955(898)m$ Long. $124^{\circ} 03' 1017(254)m$.
BIM	T-9519 S 30-ft. snag with several limbs.
CITY	See G. P. computation, this descriptive report.
CORN	Three point fix, "p" day, volume 6, page 66.
CUP	GRAYS HARBOR, COAST GUARD STATION CUPOLA, 1951.
DAY	JOHNS RIVER DAYBEACON 3, 1952. T-9519. Lat. $46^{\circ} 54' 1595(258)m$ Long. $123^{\circ} 59' 1242(27)m$.
DEMP	DEMPSEY, 1940, Topo sheet B Lat. $46^{\circ} 52' 876 m$ Long. $124^{\circ} 01' 952 m$ L.S.S.
ELK	ELK, 1940
FRONT	GRAYS HARBOR, NORTH CHANNEL RANGE 2 FRONT LIGHT, 1952.
HUNG	Three point fix, "p" day, volume 6, page 71.
LIGHT 4	POINT CHEHALIS LIGHT 4, 1951.
LIGHT 6	POINT CHEHALIS LIGHT 6, 1951.
LOW	T-9518 S Prominent stump, 4-ft. diameter.
LUM	JOHNS RIVER, MARKHAM LUMBER CO. TANK, 1940.
MIS	Three point fix "p" day, volume 6, page 66.
MUD	MUDDEN, 1940.

LIST OF SIGNALS USED

(CONTINUATION)

Name Used In Hydro.	Origin of Signal
NORTH	WESTHAVEN OUTER BREAKWATER NORTH LIGHT 5, 1951.
NOT	NOTCH, 1940.
ONE	T-9519 S Lone 40' fir.
PETE	PETERSON, 1940. Topo sheet B Lat $46^{\circ} 52' 683m$ Long $124^{\circ} 02' 13m$.
PILE	Sextant cuts, "h" day, volume 4, page 48.
POD	TRIPOD, 1951. T-9518 S.
RAN	BAY CITY RANGE 1 FRONT DAYBEACON, 1952. T-9521. Located by theodolite Lat. $46^{\circ} 52' 125(1782)m$ Long $124^{\circ} 04' 699(572)m$.
RAY	T-9519 S Black stack on Ocean Spray Cranberry Co.
REAR	GRAYS HARBOR, NORTH CHANNEL RANGE 2 REAR LIGHT, 1952.
REW	ANDREWS, 1940.
RIV	JOHNS RIVER ENTRANCE LIGHT 14, 1951.
SOUTH	WESTHAVEN OUTER BREAKWATER SOUTH LIGHT, 1951.
SOW	T-9519 S 40-ft. lone bushy fir.
STA	OCOSTA (USE) 1952.
TALL	Three point fix, "f" day, volume 3, page 53.
TANK	WESTPORT MUNICIPAL TANK, 1951.
TEX	Three point fix, "p" day, volume 6, page 66.
UMP	T-9518 S 10-ft high lone stump.
VIE	BAYVIEW, 1940.
WAL ⁶	T-9519 S.
WEST	WESTPORT, GRASS ISLAND, CHIMNEY ON SHACK, 1940.
WET	Three point fix, "g" day, volume 4, page 5.

GEOGRAPHIC NAMES PENCILED ON H-8292

BARLOW CREEK

BAY CITY

BEARDSLEY^E SLOUGH

DEMPSEY CREEK

ELK RIVER

GRASS I.

GRAYS HARBOR

JOHNS RIVER

MARKHAM

PT. CHEHALIS

SOUTH BAY

WESTHAVEN

WESTPORT

WHITCOMB FLATS

DIVISION OF CHARTS

REVIEW SECTION -- NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8292

FIELD NO. WCFP-1556

Washington, Grays Harbor, South Bay

SURVEYED: 17 July - 29 August 1956

SCALE: 1:10,000

PROJECT NO. 13780

SOUNDINGS: Edo Depth Recorder
808 Depth Recorder
Sounding Pole
Handlead

CONTROL: Sextant fixes
on shore signals

Chief of Party ----- H. C. Conerly
Surveyed by ----- K. E. Taggart
Protracted by ----- C. A. J. Pauw
Soundings plotted by ----- C. A. J. Pauw
Verified and inked by ----- L. Hahn
Reviewed by ----- L. S. Straw
Inspected by ----- R. H. Carstens

Date: 6 Sept 1960

1. Shoreline and Control

The shoreline originates with reviewed air-photographic surveys T-9518S (1950-56), T-9519S (1950-57) and T-9521 (1951-56).

It should be noted that limits of the dock at Bay City (Lat. $46^{\circ}51.67'$, long. $124^{\circ}03.65'$), which according to an inked note on the boat sheet was deteriorating, is shown in greater detail on the hydrographic survey (H-8292) than on T-9521 (1951-56). It is probable that the whole structure is in a state of ruins by this time but underwater obstructions such as pile stubs may still remain.

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

2. Sounding Line Crossings

The depths at crossings are in adequate agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves supplemented by the 3-ft. and 36-ft. curves were adequately delineated.

South Bay contains extensive mud flats which are divided by several channels. The main channel is dredged from opposite Grass Island to Bay City; the project depth is 14 ft. and the width 100 ft.

4. Junctions with Contemporary Surveys

The junction on the north with H-8251 (1955-56) is adequate.

5. Comparison With Prior Surveys

A.	H-809 (1862), 1:20,000	H-2371 (1898), 1:20,000
	H-1589 a & b (1883), 1:20,000	H-3229 (1911), 1:20,000
	<u>H-2085 (1891), 1:20,000</u>	<u>H-3230 (1911), 1:20,000</u>

The above surveys have been compared with and are superseded by surveys H-6646 (1940) and H-6665 (1940-41) within their common area. Outside the limits of H-6646 and H-6665, a comparison of prior surveys with the present, reveals many changes in depths and shoreline. Point Chehalis and vicinity has been completely transformed by dredging, construction of docks, piers, and breakwaters at Westhaven; here the prior surveys as well as the present survey are superseded in this extremely changeable area by Corps of Engineer surveys which are made annually.

At Bay City and southward both artificial and natural changes have occurred. The first bridge, built at Bay City in 1917 is shown in ruins on the present survey with the note "Old bridge is in ruins and is being removed"; the second bridge just south of it was completed in 1956.

The Bay City Channel is maintained by the Corps of Engineers project depth 14 ft. and width 100 ft.

Although the development on the prior survey H-3230 (1911) is about half that of the present survey, there are enough soundings to indicate the changeable nature of the bottom. For example, there are differences in depths from 2 to 8 ft. either shoaler or deeper $\frac{1}{4}$ mile south of the bridge. From long. 124°03.00' to long. 124°03.50' at lat. 46°51.65', the 6-ft. natural channel has shifted northward about 100 meters since 1911.

The present survey is adequate to supersede that portion of the prior surveys within the common area which fall outside of the limits of H-6646 (1940).

E.	H-6646 (1940), 1:10,000
	<u>H-6665 (1940-41), 1:10,000</u>

These surveys cover that portion of the present survey

which lies east of long. $124^{\circ}05.3'$ and south of South Channel to the highway bridge at Bay City.

There are differences in the location of the highwater line as much as 100 meters, but much of the shoreline is marshy and therefore subject to change.

North of lat. $46^{\circ}53.8'$ and west of long. $124^{\circ}04.50'$ the bottom is very changeable. A 13 ft. channel with depths in the deepest section of 19 to 21 ft. in lat. $46^{\circ}54.7'$, long. $124^{\circ}05.1'$ in 1940 (H-6646) has shifted eastward at the north end as much as 350 meters and shoaled from 2 to 15 feet. The prior 2 ft. channel at lat. $46^{\circ}55.00'$, long. $124^{\circ}03.00'$ has completely filled to form a continuous low water shoal nearly three miles long in approximate lat. $46^{\circ}55.00'$. Between long. $124^{\circ}03.8'$ and long. $124^{\circ}04.8'$ for a distance of about $8/10$ of a mile the northern limit of this shoal has moved on an average of 100 meters farther north and uncovers at low water from 1 to 2 feet, where prior depths here were from 10 to 14 feet. A 4 to 6 ft. shoal on H-6646 (1940) which falls in depths of 14 to 22 feet on the present surveys has scoured away and probably contributed to the northward buildup of the low water shoal between long. $124^{\circ}03.8'$ and long. $124^{\circ}04.8'$ mentioned above.

A spit of 11 to 12 ft. depths on H-6646 (1940) in lat. $46^{\circ}54.1'$ long. $124^{\circ}04.88'$ has disappeared; present depths are from 15 to 19 feet. During the same period the main channel $1/10$ mile to the west has shoaled 2 to 5 feet.

Except as noted above there is little change in the limits or depths over large flat areas bare at low water and only minor differences in depths of 1 to 2 feet elsewhere. The changes in bottom configuration are attributed principally to the action of the current on the bottom.

The present survey is adequate to supersede the prior surveys within the common area.

6. Comparison with Chart 6195 (Latest print date 7/18/60)

A. Hydrography

The charted information originates with prior surveys previously discussed which need no further consideration, with the present survey after verification but before review, and with Corps of Engineers surveys both prior and subsequent to the present survey. The latest to date

of several subsequent Corps of Engineers surveys which supersede a portion of the present survey within the common area at Point Chehalis and vicinity are: Bp. 55057 (Mar. 1957), Bp. 58647 (Aug. 1959), and Bp. 59450 (Mar. 1960).

A 7-ft. sounding in lat. $46^{\circ}54.64'$, long. $124^{\circ}06.23'$ from Bp. 58647 (Aug. 1959) falls in 16 and 17 ft. depths on the present survey, Bp. 54289 (Sept. 1956), Bp. 55809 (Aug. 1957), Bp. 58089 (Apr. 1959) and Bp. 59450 (Mar. 1960). This sounding is undoubtedly 10 ft. in error and should be disregarded.

The 10 and 13 ft. soundings charted in lat. $46^{\circ}54.08'$, long. $124^{\circ}04.73'$ and lat. $46^{\circ}54.10'$, long. $124^{\circ}04.73'$ respectively apparently originate with the present survey; however, they are charted 70 to 100 meters too far north.

Two 12 ft. and several 14 ft. soundings charted on the inset in approximate lat. $46^{\circ}54.6'$, long. $124^{\circ}06.15'$ fall in depths from 17 to 20 ft. on the present survey and all Corps of Engineers surveys made in this vicinity from 1956 to 1960. The soundings on the latest Corps of Engineers surveys should be charted in lieu of those on the present survey, and the prior Corps of Engineers surveys.

The dock charted at Markham (Lat. $46^{\circ}54.45'$, long. $123^{\circ}59.9'$) should be revised to agree with T-9519S (1950-57) and the present survey.

Two piles charted in lat. $46^{\circ}51.64'$, long. $124^{\circ}03.6'$ apparently represent a row of piles shown on T-6806 (1940); they are not shown on the latest topographic survey T-9521 (1951-56) and fall in depths of 7 to 9 feet on the present survey. Their existence is neither proved or disproved by the present work and they should be retained on the chart.

The present survey supersedes the charted hydrography except the changeable area in the vicinity of Point Chehalis and the dredged channel to Bay City where the latest periodic surveys by the Corps of Engineers are used for charting purposes.

B. Dredged Channels

The charted controlling depths of the dredged channels at Westhaven Cove and Bay City originate with Corps of Engineers surveys. Bp. 59450 (Mar. 1960) and Bp. 59326 (Feb. 1960) subsequent to the present survey.

C. Aids to Navigation

The present survey positions of aids to navigation are in substantial agreement with the charted positions and adequately mark the features intended, except as follows:

1. Lighted buoy "1" located on the present survey in lat. $46^{\circ}54.76'$, long. $124^{\circ}06.13'$ was deleted from the chart subsequent to the present survey in accordance with H.O.N. to M. 37, 1959.
2. Buoy C "3" charted in lat. $46^{\circ}54.21'$, long. $124^{\circ}05.07'$ is about 150 meters east of the present survey position. It was apparently off station at the time the present work was done. The charted position of buoy C "3" properly marks the feature intended.
3. The buoys marking the Bay City Channel (opposite Grass I. to the highway bridge) were changed to beacons in accordance with H.O.N. to M. 26, 1957.
4. The spar buoys marking the channel southeast of Whitcomb Flats are not maintained by the U. S. Coast Guard or shown in the Pacific Coast light list. They were probably established by private interests.

7. Condition of Survey

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

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work Recommended

This is a good basic survey and no additional work is recommended.

Examined and Approved:

Chief, Nautical Chart Branch

J. E. Waugh
1/5/61

Chief, Division of Charts

Thomas B. Leary

Chief, Hydrography Branch

Edward Richards
2/7/61

Chief, Division of Coastal Surveys

K. J. Crosby

GEOGRAPHIC NAMES

Survey No. H-8292

Name on Survey										
	A	B	C	D	E	F	G	H	K	
	On Chart No.	On previous survey No.	On U. S. quadrangle Maps	From local information	On local Maps	P. O. Guide or Map	Rand McNally Atlas	U. S. Light List		
<u>Washington</u>									BGN	1
<u>Grays Harbor</u>										2
<u>South Bay</u>										3
<u>Point Chehalis</u>				(tide station)					BGN	4
<u>Westhaven</u>										5
<u>Westport</u>										6
<u>Whitcomb Flats</u>										7
<u>Grass Island</u>										8
<u>Bay City</u>										9
<u>Elk River</u>										10
<u>Beardslee Slough</u>										11
<u>Barlow Creek</u>										12
<u>Dempsey Creek</u>										13
<u>Ocosta</u>										14
<u>Johns River</u>										15
<u>Markham</u>										16
										17
										18
Tide station off sheet:										18
<u>Aberdeen</u>										19
										20
										21
										22
										23
										24
										25
										26
										27

Names approved 11-5-58

h. Heck

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8292...

Records accompanying survey:

Boat sheets .1...; sounding vols. .7...; wire drag vols. .0...; bomb vols.; graphic recorder rolls 6-Envelopes special reports, etc. 1-Smooth sheet and 1-Descriptive report; each Blackline Print T-9516S, T-9517N, T-9517S, T-9518N+S, T-9519N+S, and T-9520... 1-Blueline Print T-9517N.....

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

Number of positions on sheet 1727.
Number of positions checked 513.
Number of positions revised 46.
Number of soundings revised (refers to depth only) 55.
Number of soundings erroneously spaced 23.
Number of signals erroneously plotted or transferred 1.
Topographic details Time 40.
Junctions Time 19.
Verification of soundings from graphic record Time 30.

Verification by Le Roy J. Wahn Total time 29.6 hrs Date 12/17/59

Reviewed by [Signature] Time 74 hr Date Sept. 6, 1960

RHC

9

8292

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens

1 December 1958

Plane of reference approved in
7 volumes of sounding records for

HYDROGRAPHIC SHEET 8292

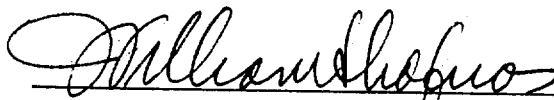
Locality Grays Harbor, Washington

Chief of Party: H. G. Conerly in 1956

Plane of reference is mean lower low water, reading
3.1 ft. on tide staff at Point Chehalis
17.5 ft. below B.M. 1 (1927)

Height of mean high water above plane of reference is 8.3 feet.

Condition of records satisfactory except as noted below:



Signature

Chief, Tides Branch

2011 (1881) $\frac{1}{20}$

Dia 1 6002

809 (1862) $\frac{1}{20}$

2085 (1898) $\frac{1}{20}$



Area outside of N-6646 (1940)

1589 946 (1883) $\frac{1}{20}$

3228

8252

LO

8251

6665
(1940) 10

3229
(1911) 10
6646
(1940) 10

A-8292
(1956)

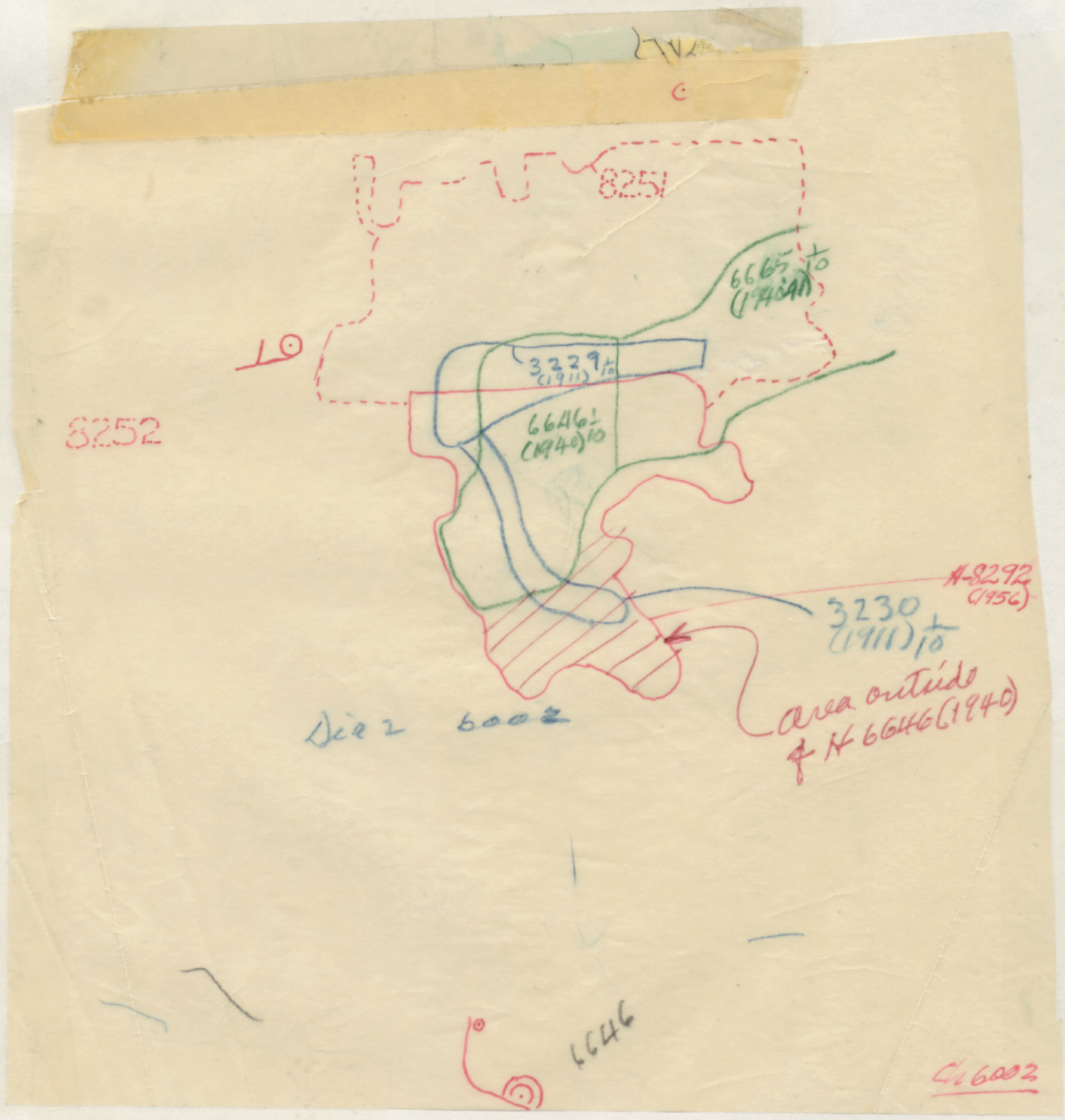
3230
(1911) 10

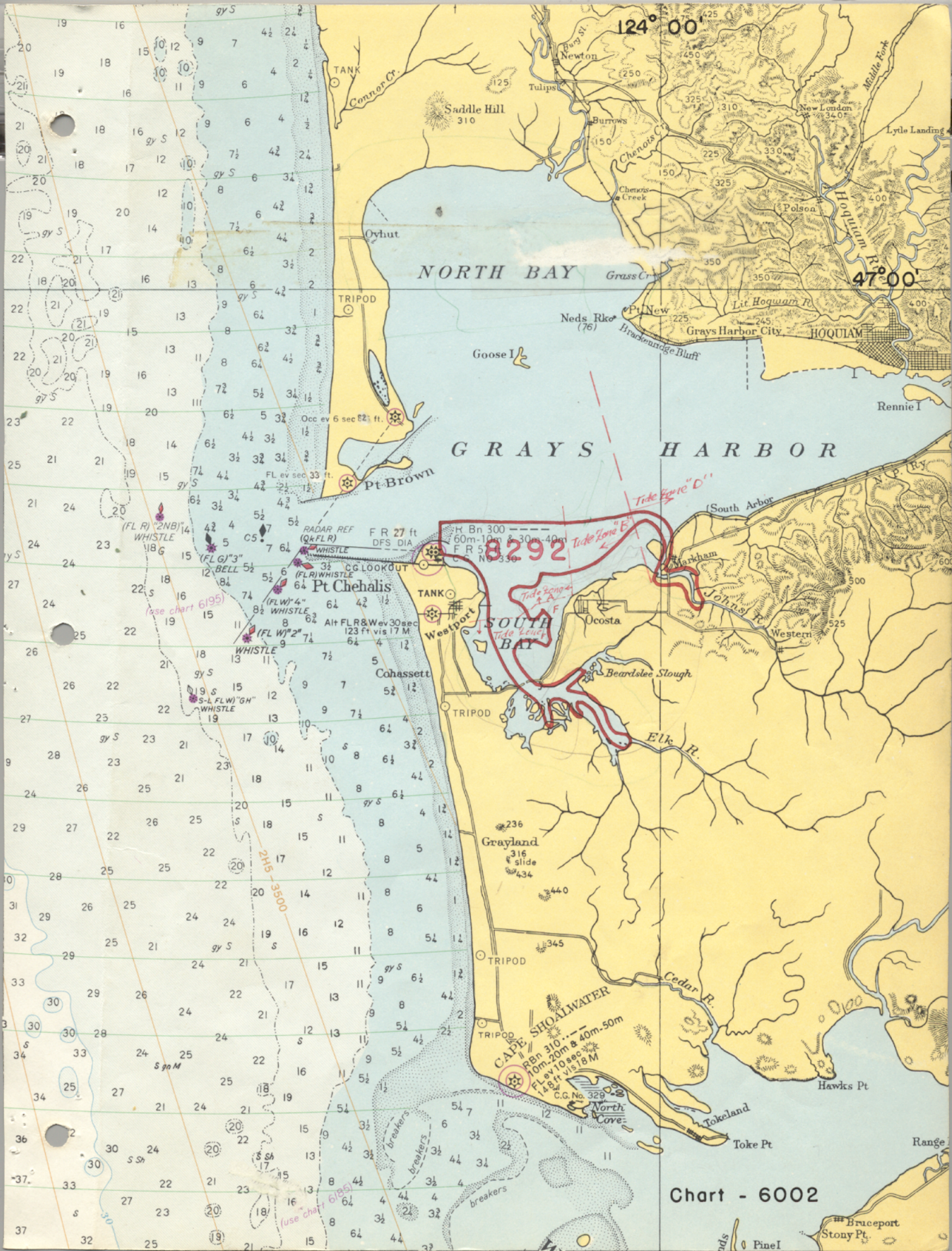
area outside
of H-6646 (1940)

See 2 6002

6646

C. 6002





124° 00'

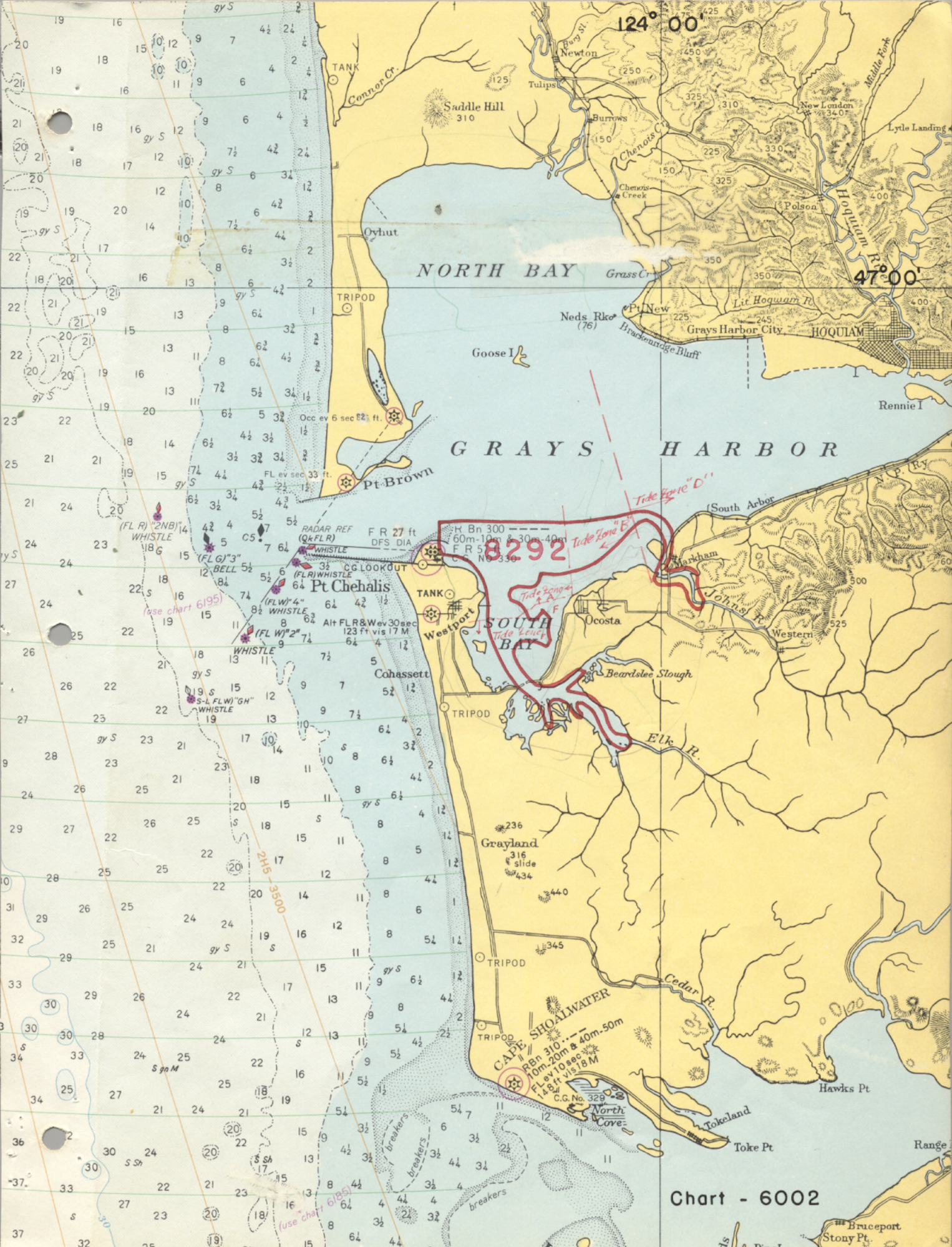
47° 00'

NORTH BAY

GRAYS HARBOR

8292

Chart - 6002



TANK

Saddle Hill 310

Oyhut

TRIPOD

Occ ev 6 sec 82 ft.

Pt. Brown

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

WHISTLE

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WHISTLE

WHISTLE

RADAR REF (QFLR) F R 27 ft DFS DIA

H Bn 300 60m-10m & 30m-40m F R 5 No 330

CG LOOKOUT Pt Chehalis

Alt FLR & Wv 30 sec 123 ft vis 17 M

TANK

Westport

TRIPOD

Cohasset

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

Tide Zone "B"

Tide Zone "C"

Tide Zone "D"

Tide Zone "E"

Tide Zone "F"

Tide Zone "G"

Tide Zone "H"

Tide Zone "I"

Tide Zone "J"

Tide Zone "K"

Tide Zone "L"

Tide Zone "M"

Tide Zone "N"

Tide Zone "O"

Tide Zone "P"

Tide Zone "Q"

Tide Zone "R"

Tide Zone "S"

Tide Zone "T"

Tide Zone "U"

South Bay

South Harbor

South Cove

South Point

South Spit

South Shoal

South Trench

South Bank

South Head

South Neck

South Point

South Spit

South Shoal

South Trench

South Bank

South Head

South Neck

South Point

South Spit

South Shoal

Grayland

Grayland slide

Grayland 434

Grayland 440

Grayland 345

Grayland 316

Grayland 236

Grayland 10m-20m & 40m-50m

FL ev 10 sec 148 ft vis 18 M

C.G. No 329

CAPE SHOALWATER

Rbn 310

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

TRIPOD

Markham

Ocosta

Western

Western 525

Western 500

Western 600

Western 500

Western 525

Western 500

Western 600

Western 500

Western 525

Western 500

Western 600

Western 500

Western 525

Western 500

Western 600

Western 500

Western 525

South Harbor

South Cove

South Point

South Spit

South Shoal

South Trench

South Bank

South Head

South Neck

South Point

South Spit

South Shoal

South Trench

South Bank

South Head

South Neck

South Point

South Spit

South Shoal

South Trench

South Bank

