

9864

Diagram No.s 6460-3 & 6450-2

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. FA-10-1-80
Office No. H-9864

LOCALITY

State Washington
General Locality Puget Sound
Locality Rich Passage & Port Orchard

1980

CHIEF OF PARTY
CAPT A.J. Patrick

LIBRARY & ARCHIVES

DATE February 23, 1982

AREA 5
CHARTS

18440
18441 ← applied 4-18-83 RVS
18445-A+B #5 ✓ applied 4-15-83 RVS
18448 ← applied 4-15-83 RVS
18449 ← applied 4-13-83 RVS
18452 ← applied 4-6-83 RVS

U.S. GOV. PRINTING OFFICE: 1980-766-230

9864

HYDROGRAPHIC TITLE SHEET

H-9864

INSTRUCTIONS - 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.

FA 10-1-80

State Washington

General locality Puget Sound

Locality Rich Passage and Port Orchard

Scale 1:10,000

Date of survey January 18 - March 18, 1980

Instructions dated December 21, 1979

Project No. OPR-N100-FA/DA-80

Vessel NOAA Ship FAIRWEATHER S220 (2020), Launches FA-3 (2023), FA-4 (2024), FA-5 (2025), Skiff (2028)

Chief of party Captain A. J. Patrick, NOAA

Surveyed by LT A. H. Yanaway, LT D. G. Hennick, ENS C.P. Hancock, ENS A.J. Trimble

Soundings taken by echo sounder, ~~hand lead, pole~~ Ross Finline

Graphic record scaled by Ross Digitizer

Graphic record checked by Ship's Personnel

Position verified

~~by~~ L. T. Deodato

Automated plot by Xynetics Plotter (PMC)

Soundings

Verification by L. T. Deodato

Soundings in ~~XXXXXX~~ feet at ~~XXXX~~ MLLW

REMARKS: Survey completed.

All times are based on GMT.

STANDARDS CHECKED 4-4-83.

C. Loy

122 30 00

122 15 00

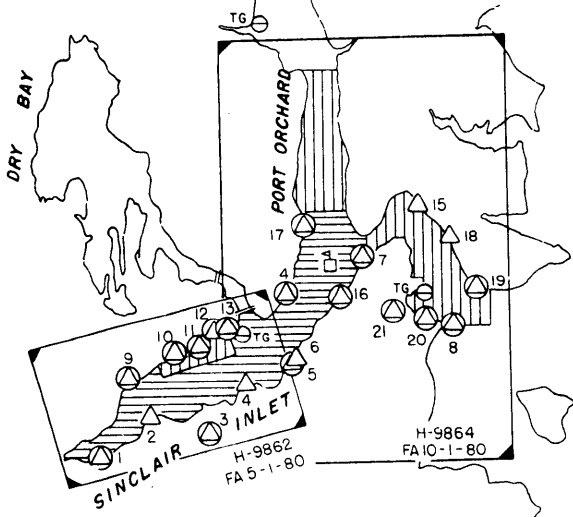
47 45 00

OPR-N100-FA-80 PROGRESS SKETCH PUGET SOUND, WASHINGTON

NOAA SHIP FAIRWEATHER (S-220) CAPT. ARCHIBALD J. PATRICK, CMDG

- 1980 -

- △ STA ESTABLISHED
- ⊙ STA RECOVERED
- ⊖_{TG} TIDE GAGE
- ⊠ MARTEK / NANSEN CAST



	JAN	FEB	MAR
LNM SOUNDING LINE	228.0	136.0	57.4
SQ NM SOUNDING LINE	4.0	4.4	0.3
MARTEK / NANSEN	1	2	2
BOTTOM SAMPLE	16	5	33
HYDROGRAPHY			

STATIONS RECOVERED AND ESTABLISHED

47 30 00

DECEMBER - JANUARY

FEBRUARY

- 1 PEAT, 1934
- 2 SULPHUR 3, 1980
- 3 PORT ORCHARD W. MUNICIPAL TANK, 1945
- 4 MITCHELL 5, 1980
- 5 DALL, 1934
- 6 DALL, 1934 RM-3, 1980
- 7 WATERMAN POINT LT., 1965
- 8 ORCHARD, 1857
- 9 BUTTS 2, 1934
- 10 PSNY BLDG 467, 1945
- 11 BREMERTON NAVY RADAR COLLIMATION TOWER, 1965
- 12 PSNY POWER PLANT STACK, 1945
- 13 PSNY BLDG 290, 1945
- 14 HIGH, 1915
- 15 SPINNER, 1980

- 16 DRONE
- 17 YAH 2, RM 3, 1934
- 18 HUNTLEY, 1980
- 19 BEANS, 1974
- 20 CLAM, 1934
- 21 SITAR, 1974

Descriptive Report to Accompany
Hydrographic Survey H-9864 (FA 10-1-80)
Scale 1:10,000, Year 1980
NOAA Ship FAIRWEATHER
Chief of Party: Capt. A. J. Patrick

A. PROJECT

This hydrographic survey was conducted in accordance with: Project Instructions OPR-N100-FA/DA-80, Puget Sound, Washington dated December 21, 1979; Supplements to Instructions, Changes No. 1 dated December 28, 1979, No. 2 dated January 17, 1980, No. 3 dated January 31, 1980 and No. 4 dated February 22, 1980; and Data Requirements for the 1979 field season dated April 11, 1979. The PMC OORDER and the Hydrographic Manual Fourth Edition are also applicable.

B. AREA SURVEYED

The area covered by this survey includes that portion of Port Orchard between Pt. Herron and University Point, Rich Passage, and the eastern outlet of Rich Passage as far east as longitude $122^{\circ}31'35''W$ and as far south as latitude $47^{\circ}33'50''N$. The survey began on January 18, 1980 (J.D. 018) and was concluded on March 14, 1980 (J.D. 074).

C. SOUNDING VESSELS

All soundings were obtained by launches FA-3 (EDP No. 2023, hull 1011), FA-4 (EDP No. 2024, hull 1010), and FA-5 (EDP No. 2025, hull 1001). Shoreline and detached soundings on rocks were taken by skiff (EDP 2028). Bottom samples were collected by FA-3 and FA-5. There were no unusual vessel configurations or problems.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings were taken by Ross Fineline Fathometers. There were no unusual faults in the equipment. Serial numbers of the sounding equipment used are as follows:

<u>Vessel</u>	<u>Days</u>	<u>Digitizer</u>	<u>Analog</u>	<u>Inverter</u>
FA-3 (2023)	029-30/31	1054	1047	1046
	031-044	1054	1046	1046
	070	1054	1047	1046
	073	1054	1046	1046
FA-4 (2024)	018-070	1046	1054	1103
FA-5 (2025)	032	1036	1047	1053
	032-074	1036	1036	1053

Corrections

1. Velocity of Sound - MarTek casts, a Nansen cast and bar check data were used to calculate velocity corrections for the smooth sheet, but no velocity corrections were applied to the final field sheet submitted with this report. An Abstract of Corrections to Echo Sounding in the appendix contains velocity correctors. More information can be found in the Report of Corrections to Echo Soundings OPR-N100-FA/DA-80. ✓
2. Instrument Initial - Fathometer operators monitored the initial setting during operations and reinitialed the analog when necessary. ✓
3. Phase Calibrations - The phase calibration for each fathometer was checked each day after operations by the ET department and during operations by launch personnel. ✓
4. Corrections determined from direct comparison. Bar checks to 6 fathoms were taken twice per day except for a few days when restricted by weather. ✓
5. Settlement and Squat Corrections for dynamic draft changes are applied via TC/TI tapes listed in the appendix of this report. They were determined using a level and level rod as described in section 4.9.4.2 of the Hydrographic Manual. ✓

E. HYDROGRAPHIC SHEETS

Due to the size limitations of the shipboard plotters, this survey was divided into two field sheets, FA 10-IN-80 and FA 10-IS-80. The field sheets and the two development sheets for Orchard Rocks and Bainbridge Reef were constructed aboard the ship on mylar using RK 201, the PDP8e computer and the Complot plotter, serial number 6166-22. The parameters for these sheets are attached at the end of this report. There are no irregularities in projection, scale or other properties. The field records will be sent to the PMC Processing Division for verification and smooth plotting. ✓

F. CONTROL STATIONS

Horizontal control for this survey was provided by existing and newly established triangulation stations and temporary traverse points which were located to Third Order Class I or Second Order Class II standards. There were no unconventional methods used or anomalies in closure. Traverse was the only method used in locating the monumented and described stations. NAD 1927 was the datum used. The following is a list of the control stations on the sheet that have been monumented and described: ✓

RM3
HIGH, 1915
YAH2, 1934
DRONE3, 1965
SPINNER, 1980
HUNTLEY, 1980
LEE 2, 1934
CRYSTAL, 1915

BEANS, 1974
 ORCHARD, 1857
 CLAM, 1934-74
 SITAR, 1974
 SITAR RMI, 1974

See Horizontal Control Report, OPR-N100-FA/DA-80, for more information on other stations used on this survey and for detailed descriptions of the geodetic methods.

G. HYDROGRAPHIC POSITION CONTROL

Sounding line position control during this survey was provided by utilizing the range/azimuth method. Range measurements were provided by a Motorola Mini Ranger III system.

Positioning equipment used aboard each launch was as follows:

		<u>Serial No.</u>	<u>J. D.</u>
FA-3 (2023)	Mini Ranger Console, R/T	702	029-073
FA-4 (2024)	Mini Ranger Console, R/T	703	018-070
FA-5 (2025)	Mini Ranger Console, R/T	701	032-072
		702	073/074
		701	074

Seven shore stations were used for range measurements. Station names and numbers, transponder code numbers, and dates are as follows:

<u>Station No.</u>	<u>Station Name</u>	<u>Transpon. M/R Code</u>	<u>Launch M/R Console</u>	<u>J. D.</u>
103	Mitchell 5 1980	702	703	018/019, 025
103	Mitchell 5 1980	704	703	024
103	Mitchell 5 1980	704	702	070
105	TP-3, 1980	702	702	029, 030/031, 031
105	TP-3, 1980	702	701	032, 042, 043, 057, 059
105	TP-3, 1980 RM	701	703	066/067
207	YAH2 1934, 3	702	702	073
106	Spinner 1980	702	702	037, 038, 044
106	Spinner 1980	702	701	072

<u>Station No.</u>	<u>Station Name</u>	<u>Transpon. M/R Code</u>	<u>Launch M/R Console</u>	<u>J.D.</u>
106	Spinner 1980	702	702	073
116	Huntley 1980	701 ²	702 ¹	072
209	Clam 1934-1974	701	703	070
205	Orchard RM10 ECC	703	702	042/043
205	Orchard RM10 ECC	703, 704	702	043
205	Orchard RM10 ECC	702	702	044
205	Orchard RM10 ECC	701	703	067
205	Orchard RM10 ECC	704	701	073/074, 074

For range/azimuth control of shoreline verification the following control configurations were used:

<u>Station No.</u>	<u>Station Name</u>	<u>M/R Console at station</u>	<u>Mobile Transpon. Code</u>	<u>J.D.</u>
106	Spinner 1980	701	702	060
106	Spinner 1980	701	703	063
106	Spinner 1980	701	702	064
205	Orchard 1875 RM 10 ECC	701	702	064/065
205	Orchard 1875 RM 10 ECC	701	702	065/066
205	Orchard 1875 RM 10 ECC	701	703	066
116	Huntley 1980	701	703	067
209	Clam 1934-74	701	703	070
105	TP-3, 1980	701	702	070
209	Clam 1934-74	701	701	071

Two system checks were performed each day. At least 10 ranges were recorded while the launch was positioned with the R/T unit alongside the system check station. The range values were averaged and compared, after applying the corrector, to the calculated inverse between the stations. These checks were performed before and after each day's operations to insure agreement within the allotted tolerance. The stations used for system checks and the corresponding M/R station are as follows:

Mini Ranger Station

System Check Station

<u>Name</u>	<u>S/N</u>	<u>Name</u>	<u>S/N</u>	<u>Calculated Inverse</u>
Mitchell 5 1980	103	Radar Target K	011	4385.344
		Radar Target J	010	2635.846
		Radar Target F	004	903.195

<u>Name</u>	<u>S/N</u>	<u>Name</u>	<u>S/N</u>	<u>Calculated Inverse</u>
Mitchell 5 1980	103	Radar Target C	015	848.841
		Radar Target D	009	555.281
TP-3, 1980	105	Radar Target J	010	4196.490
		Radar Target K	011	2631.615
YAH2 1934 ^{RM} _^ 3	207	Pt. White Light #10	024	1970.664
Spinner 1980	106	Pt. Glover Lt. #9	022	1043.021
Huntley 1980	116	NMFS Pier (NE Corner)	023	1898.422
		Pt. Glover Lt. #9	022	1448.083
Clam 1934-74	209	NMFS Pier (NE Corner)	023	540.417
Orchard RM 10 ECC	205	NMFS Pier (NE Corner)	023	1331.327

Two Mini Ranger baseline calibrations were performed in conjunction with this survey. An initial calibration was conducted in Seattle, Washington on December 12, 1979. This calibration established the electronic corrector values and minimum signal strength values which were utilized throughout the survey. A final baseline calibration was conducted on March 20, 1980 in Seattle, Washington. The ending baseline calibration indicated only minimum changes in the correctors, however the two values were averaged to obtain the final correctors that should be used for smooth plotting. No final baseline calibration was performed on transponder 702, due to equipment casualty, therefore the initial correctors for this transponder should be used. Daily system checks verified that code 702 was operating properly up to the time it failed. At no time were questionable geometric configurations encountered. ✓

Erratic signals were encountered on two days while trying to operate in the south end of Rich Passage near Clam Bay. The first was on J.D. 043 while using control from Orchard RM 10 ECC. It is believed that signal reflection was the cause of this problem. As the tide level changed the rates improved. On J.D. 070 a similar problem occurred while using Huntley 1980 as the control station. It is believed that this was a null zone problem because steady rates from this station were received by the same launch at other locations in Rich Passage. No data was collected on that day. On J.D. 072 at a different tide level the same area was surveyed and no problems were encountered. Another theory concerning the erratic rates is that a nearby satellite monitoring station may have caused some interference. Abstracts of corrections to electronic position control are in Appendix E of this report. ✓

Refer to the Electronic Control Report OPR-N100-FA/DA-80 for further information pertaining to electronic positioning control, computations of baseline corrections and equipment problems.

H. SHORELINE

No shoreline manuscripts or aerial photographs were available for determination of shoreline detail in the survey area. Shoreline verification was performed both from a skiff and while walking along the shore. Sextant fixes and range/azimuth fixes were used for positioning shoreline features. Check angles were taken whenever possible. Both a direct and reverse reading were recorded as a check for azimuths. The range/azimuth stations were set up with a Mini Ranger console, signal strength indicator, T-1 theodolite, and Mini Ranger R/T unit set over the station mark. The shoreline party carried batteries and a Mini Ranger transponder. With the transponder in position on the item (rock, pier, piling, etc.) the azimuth was measured, usually directly to the transponder itself. The range, signal strength and direct and reverse azimuths were radioed from the T-1 station and recorded by the shoreline party in a fix volume along with description and diagrams. This system worked efficiently and rapidly.

In depicting the numerous foul areas and rocky ledges in Rich Passage, it was not possible to study all of the areas at low tide. An attempt was made to occupy the most seaward points of these features, but in some cases estimated distances were used to define the limits.

Positions were taken every few hundred meters on the Mean High Water Line, and wherever there was a distinct change in the directional trend of the shoreline. Positions were taken wherever possible on corners of seawalls, piers, floats, breakwaters, ruins, pilings, dolphins, marine railways, rocks and all other chartable features. Distances were taped and estimated. Sketches and notes were made in the fix volumes to aid in compilation, and in lieu of positions where fixes could not be taken.* (A current copy of the largest scale chart of the area was always carried in the field. All charted features were verified, relocated or disproved.) Notes were made on the chart where there were changes or additions. Plotting positions in the field was not feasible because of the weather conditions and the limitations of a whaler. Offshore features were not located during shoreline verification if they were located by survey launch D.P.'s or other methods.

* See Quality Control Report and last paragraph of next page.

Description of Shoreline:

The Port Orchard area west of Waterman Point, longitude 122°34'09"W, is a residential area with frequent seawalls, groins, marine railways, small private piers and little natural shoreline. The prominent features are three public piers which are located on the south shore at 47°34'24"N, 122°34'48"W, on the east shore at 47°36'01"N, 122°34'32"W, and on the west shore at 47°35'59"N, 122°35'40"W.

East of Waterman Point, along Rich Passage, the shoreline is natural, with less frequent small piers, groins, pilings and seawalls. There are numerous foul areas, rocky ledges, and reefs. Orchard Rocks, an extensive reef close to the eastern entrance to Rich Passage, was developed by the hydrographer. A commercial fish farm on the southeast shore of Rich Passage maintains three floating fish pens. The fish pen in Clam Bay is located in the general vicinity of the "Fish Pen Area" currently charted. The other two fish pens are located on the east shore. One is attached to the main pier of the fish farm and the other lies just offshore. The privately maintained quick-flashing white lights on the corners of the fish pens, were also located. The National Marine Fisheries Service Laboratory maintains a pier and small fish pen on the west shore in Clam Bay. A pier on the south shore of Rich Passage just west of Orchard Point, is maintained by the Puget Sound U.S. Naval Supply Center.

Compilation of Shoreline:

All of the fix data was logged on computer tape using Visual and Range/Azimuth format. A computer plot was generated on paper using RK 212, RK 215 and RK 216. From this position plot, and using the sketches and taped distances in conjunction with the 1:10,000 scale chart blow up, the shoreline was compiled. In the process of constructing the shoreline on this initial paper sheet all sextant positions that had check angles were checked using either a three arm protractor or RK 300. All swingers and busts were determined by this process. Positions were corrected and replotted using the preferred geometry and in some cases using remeasured angles. ✓

Unresolved busts were rejected. Annotations were made in the fix volumes where positions were rejected and where swingers were determined.

The tapes were recut and replotted on a mylar shoreline overlay. The shoreline was traced onto the overlay from the initial paper sheet. The shoreline was then transferred from the final smooth Shoreline Overlay onto the Final Field Sheet.

In the area just east of Waterman Point, thirty positions were taken in an attempt to define the Mean High Water Line and the limits of the ledges. The positions plotted so close to each other that it was difficult to correlate points to position numbers, so nine positions were deleted from the tape. The positions that were deleted were those either at or near the Mean High Water Line or rocks within the limits of the ledge.

There were areas where no Shoreline Verification was performed, and some areas that were not covered thoroughly. The reasons for this were lack of adequate Visual or Range/Azimuth control, lack of time and bad weather. The shoreline here was compiled by tracing directly from the chart blow ups.

See Quality Control Report for charted items not verified by survey.

Shoreline Overlay

The Mean High Water Line where compiled using positions in conjunction with the chart blow up is depicted by a dashed red line. A solid red line was used where two or more positions or one position in conjunction with taped distances defined a straight line feature such as seawalls, piers, etc. The lighter weight dashed red line indicates unverified shoreline that was taken directly off the chart blow up. The Shoreline Overlay is complete with notes describing each feature and the type of shoreline (rip-rap, natural, etc.). ~~At~~^{At low} tide dependent features such as rocks and wrecks are labeled with the height, Julian Day and time. Also plotted on the overlay are D.P.'s taken by the hydro launches and Bottom Samples.

Recommendation

^{The red shoreline portrayed on the smooth sheet}
It is recommended that ~~this smooth Shoreline Overlay~~ supersede the source document currently used for charting purposes, as this is the best source available. Using this data in conjunction with a manuscript compiled from current data aerial photography would produce a better source document.
~~The above recommendation is deferred to the compiler for a final resolution.~~

Limits of Coverage

Visual control was used in the following areas of Port Orchard:

- On the northwest shore south of station YAH2, 1934^{RM}₃ (Pos. Nos. 1-98).
- On the southeast shore west of Waterman Point Light (Pos. Nos. 100-168, 174-177)
- Northwest from Point White between latitude 47°35'49"N and latitude 47°36'02"N (Pos. Nos. 169-173).

Range/Azimuth control (Pos. Nos. 500-864) was used in the following areas of Rich Passage and Clam Bay.

- On the south shore east of Waterman Point Light.
- On the north shore east of longitude 122°34'17"W and in Port Orchard on the west shore north from station YAH2, 1934 3 to latitude 47°36'20"N.

A small section of shoreline north from station Spinner, 1980 to latitude 47°36'10"N was not covered.

The area northwest from Point White to TP3 was not covered thoroughly.

Shoreline verification of the northern part of the survey in Port Orchard was not completed. The northern limits of coverage are:

- On the east shore latitude 47°36'02"N.
- On the west shore latitude 47°36'20"N.

I. CROSSLINES

A total of 25 miles of crosslines were run or 13.8% of the main scheme mileage. In general the crosslines are in excellent agreement with the main scheme lines; the maximum discrepancies being three feet in areas with steep bottom slopes and areas of depths over 100 feet. Two crosslines in the western part of Port Orchard were run close to shore, over steeply sloping bottom. Because these lines are parallel to the contours some poor crossings resulted. The crossline run northeast from Orchard Point found depths 2-4 feet deeper at several of the crossings in depths over 75 feet. On several occasions differences of 2/3 feet were noted between real and predicted tides in this area (see Descriptive Report for H-9862). Although the tide records applicable to these crossings were not examined it is believed that this may have caused the discrepancy.

See VR
Sec. 3

J. JUNCTIONS

This survey junctions on the north with H-5576, 1:10,000, 1934, on the east with H-5711, 1:10,000, 1934-1935 and on the southwest with the contemporary survey H-9862, 1:5,000, 1980.

H-5576 overlaps the new survey for approximately 2 miles northward from 47°36'40"N. The depths and contours at the northern extreme of H-9862, 1980 agree well with the 1934 survey generally within 2-3 feet in depths up to 117 feet, except at 47°38'23"N, 122°35'03"W where the new survey has a depth as 131 feet and H-5576 has a sounding of 137.

Not a
Junction
Survey
See V.R.
Sec. 5

Survey 5711, 1:10,000, 1934 overlaps this survey from its eastern limit west to 122°33'40"W. The contours and depths agree well, within 2-5 feet, along the southeastern limit of the new survey, where the depths approach 300 feet.

Survey H-9862, 1:5,000, 1980 agrees within 1-2 feet along the junction with this survey. ✓

K. PRIOR SURVEYS

H-5576, H-5652 and H-5711 are 1:10,000 scale surveys from 1934.³⁵ In general the new contours are considerably different and the depths in the deeper part of Port Orchard are as much as 20 feet shoaler than the 1934 soundings. In contrast H-6751, 1:5,000, 1942 is in excellent agreement with the new survey. The depths agree within 1-2 feet and the contours coincide quite well. This would indicate that the large discrepancies with the 1934 surveys is not due to geological change or sedimentation but probably due to differences in methods used on the two surveys.

See VR
Sec. 6

H-5576, 1:10,000, 1934

In some areas the surveys are in good agreement, however, in the deeper flatter areas near the center of the channel depths are consistently 3-10 feet deeper on the prior survey. The 0-foot contour agrees well

in most areas but because of the steeply sloping bottom the 6, 12, 18, 30 and 60 foot contours differ significantly. The deep area shown by the 120 foot contour on the prior survey at 47°37'20"N, 122°34'50"W did not appear on this survey, or on H-6751, 1942. On the west shore at 47°36'50"N, 122°35'20"W the 60-foot contour on the new survey, as well as on H-6751, extends further out from shore than depicted on H-5576.

H-6751, 1:5,000, 1942

This survey generally agrees within 1-2 feet with H-9864, 1980 in depths of 32 to 134 feet.

H-5652, 1:10,000, 1934

In general soundings on this survey also are consistently deeper than those on H-9864, 1980. Down to 60 feet the depths agree within 1-5 feet, but at deeper depths discrepancies of 10 feet are common. Contours follow the same general trends but in some areas especially on the steep slopes near shore the differences are substantial. ~~There are two isolated deeps on the prior survey, depicted by the 120 foot contours; at 47°36'05"N, 122°34'45"W and 47°35'15"N, 122°34'50"W. The new survey found depths as much as 18 feet shallower in these areas.~~ A 20 foot discrepancy, where the new survey has a depth of 113 as compared to 133 can be found at 47°34'12"N, 122°35'42"W. The 120 foot contours at 47°34'23"N, 122°35'22"W and at 47°35'22"N, 122°34'40"W are considerably different. A 35 foot discrepancy was found on the steep drop-off on the south shore of Rich Passage at 47°35'15"N, 122°33'51"W. The new survey shows the depth as 83 feet, while the prior survey recorded a sounding of 48 feet ^{which was} ~~carried forward~~ (placed in excess)

H-5711, 1:10,000, 1934-35

Again in contrasting the new survey with the prior survey, the contours follow the same trends but along the steep shores there are obvious differences. No general statement can be made as to whether the new contours fall inshore or seaward of the prior survey contours. The 30, 18 and 12 foot contours off station Spinner, 1980, at 47°35'50"N, 122°32'50"W are depicted quite differently on the two surveys. A ^{7 to 13} 15 foot discrepancy can be found at 47°34'53"N, 122°31'45"W where the new survey shows ²²⁻²⁸ 30 feet as compared to 15 feet. A deep of 128⁶ was found north of Pt. Glover where the depth from the prior survey was 119⁵. A least depth of 37⁵ feet, compared to 36 feet from the 1934 survey, was found over Bainbridge Reef. In the area of the 21 foot sounding south of Orchard Rocks at 47°34'31"N, and 122°31'55"W on the prior survey, the least depth found on the current developments was 27⁶ feet.

The following pre-survey review items were not investigated due to lack of time and because the equipment available for bottom dragging as required by the project instructions for many of the items was being used for investigation of items on the 1:5,000 survey H-9862. It is recommended that, these items be retained on the chart.

PSR Item Numbers not Investigated:

- 19 } outside of survey area
- 20 } outside of survey area
- * 21 B, C, D, & E → does not exist
- 22 A, B, C, & D
- 24 } outside of survey area
- ** 25
- 26 } outside of survey area
- 27 } outside of survey area
- 28 } outside of survey area
- 29 } outside of survey area
- 30 }

** PSR 25 Subm piles
 chart inshore pile as visible at low water. This pile plots on shore side of MLLW line

* PSR 21 B, C - Piles, PA
 chart piles as visible at low water. Retain PA.

Item 21A

This pile at 47°35'12"N, 122°31'50"W was searched for during shoreline verification but was not found. A more thorough investigation by drag would be necessary in order to disprove the existence of this item. ✓
 It should be changed to submerged pile, since it was not visible at the surface. ✓
 • PA, awash at MLLW.

Item 23

The obstruction at 47°37'27.3"N, 122°34'27.5"W as described was seen during reconnaissance for horizontal control. It was high and dry at a low stage of the tide, about 50-100 meters from the MHWL. No position was taken since shoreline verification was not completed in this area. ✓
 Retention is recommended.

Item 31

The pile (PA) charted at 47°34'05"N, 122°36'30"W was located by sextant fix during shoreline verification, position number 4, and should be charted at this position. ✓
 concur lat. 47° 34' 05", long 122° 36' 31"

Item 38E

A low water visual search for these pilings at 47°34'31"N, 122°34'31"W was conducted. Nothing was found. Because the charted positions were so far inshore of the MLLW line it was felt that a bottom drag was not necessary. It is recommended that this item be deleted from the chart. ✓

Item 38F

This pile charted at 47°35'12.5"N, 122°32'46.5"W was found and located during shoreline verification, position 543 and should be charted at this position. ✓

Item 38G

These pilings at approximately 47°34'22"N, 122°32'48"W were located during shoreline verification, positions 834-843 and should be charted. ✓

L. CHART COMPARISON

A comparison was made between this survey and chart 18449, 10th Edition dated October 27, 1979. See section K for discussion of pre-survey review items and sounding comparisons. A mooring buoy on the east side of Rich Passage labeled PA on the chart, was located during hydrography, detached position number 5601 and should be charted in that position. ✓ (lat. 47°35'01.8" long. 122°31'44.7") Other PA charted features are PSR items 21 and 31 (see section K).

Developments of Orchard Rocks, positions 4244-4360 and Bainbridge Reef were conducted on J.D. 067. The development of Orchard Rocks plotted at 1:2,500 shows some differences in contours. On lines that broke because of shoaling depth distances to the edge of the reef, estimated by a bow lookout, were recorded on the master printout. On J. D. 073 a diver's investigation of Bainbridge Reef was conducted. A least depth of 37 feet was measured by divers at detached position 5577. } See V.R. sec 6a.#7 A development at 10 meters spacing was conducted on J.D. 074 over a 21 foot charted sounding located south of Orchard Rocks at 47°34'31"N, 122°31'55"W, position 5602-5651. The least depth found was 27⁰ feet. A diver investigation was also conducted on the same day but no prominent high point was found. This feature is a ridge which slopes downward to the south rather than a pinnacle rock. The 21 foot sounding at 47°34'31"N, 122°31'55"W should be removed from the chart. ✓ See #R

M. ADEQUACY OF SURVEY

This survey is adequate to supersede prior surveys except for shoreline features of areas listed in section H and PSR items listed in Section K. ✓

N. AIDS TO NAVIGATION

The 3 floating aids, detached positions 5578, 5580, 5596, in Rich Passage were located by range/azimuth methods. The charted positions agree with the positions determined during this survey. The descriptions in the Light List are accurate and these aids adequately serve the purpose for which they were established. ✓

Three floating fish pens (one offshore in Clam Bay, one southeast of Orchard Rocks and one attached to the pier north of Beans Point) are each marked by two quick flashing white lights. The chart and the Light List (2451.10 and 2451.20) include only four of these lights, one of which has been moved from the charted position. All six lights were located by range/azimuth methods. Refer to NOAA Form 76-40 in this report. The three lights charted correctly are at: ✓

Position 846, 47°34'14.3"N, 122°32'19.0"W ✓
 Position 704, 47°34'35.8"N, 122°31'30.5"W ✓
 Position 707, 47°34'40.8"N, 122°31'32.0"W ✓

The charted position of one light should be changed from 47°34'16"N, 122°32'29"W to 47°34'17.6"N, 122°32'31.3"W (position 845). Two additional lights on the uncharted fish pen southeast of Orchard Rocks are located at:

Position 702, 47°34'37.2"N, 122°31'41.2"W
 Position 703, 47°34'35.8"N, 122°31'40.4"W

Three Radar Calibration Targets (H, J and K) maintained by the Navy but not listed in the light list, are located on this survey. These are radar reflectors on dolphins. Their positions, determined by intersection are as follows:

47°33'23.520"N, 122°35'58.341"W
 47°33'48.893"N, 122°35'34.186"W
 47°34'33.588"N, 122°34'41.109"W

There are no bridges or overhead cables in the survey area. A ferry route between Seattle and Bremerton runs through Rich Passage. The submarine cable areas charted at 47°35'50"N, 122°35'00"W and 47°35'20"N, 122°34'30"W are marked by large cable crossing signs at each end. They should remain on the chart. ✓

0. STATISTICS

Vessel	Positions	Miles of Hydrography	Square Miles of Hydrography
FA-3	1209	125.7	---
FA-4	462	31.9	---
FA-5	633	61.5	---
TOTAL	2304	219.1	6.2

Bottom Samples: 19

Tide Stations: Bremerton, No. 944-5958
 Brownsville, No. 944-5832
 Clam Bay, No. 944-5938

Temperature and Salinity Casts: 3 MarTek and 1 Nansen

P. MISCELLANEOUS

A 1:2,500 scale blow-up sheet was plotted to show the development work over Bainbridge Reef and two 1:2,500 scale blow-up sheets were plotted to show the development work around Orchard Rocks. The position numbers used for these plots are as follows:

filed with field records

Bainbridge Reef

1761-1762
1765-1766
1808-1809
1813-1815
4361-4395

Orchard Rocks

1736-1737
1748-1750
1756-1758
1770-1772
1837-1841
1849-1853
1946-1949
1953-1957
1963-1981
4244-4360
4396-4399
5602-5651

Along the steep slopes near the shoreline in Port Orchard the contours appear to be more wavy than would be expected. This is due to the fact that the launch does not come up to constant speed instantaneously from a dead stop at the inshore ends of lines but the range/azimuth plot does interpolate sounding positions between fixes based on time and speed. The steepness of the bottom accentuates the wavy appearance. During this survey we lacked experienced launch coxswains and they were continually in a training status. The problem could be solved for plotting by extrapolating a position for the second sounding of such lines based on time and speed of the second and third positions rather than interpolating between the first and second positions.

See Q.C. Rpt. item 5

Q. RECOMMENDATION

The shoreline north of 47°36'00"N should be verified. Several Pre-survey Review Items remain to be investigated.

R. AUTOMATED DATA PROCESSING

The following programs were used to process the data of this survey.

<u>Version Date</u>	<u>Tape Number</u>	<u>Purpose</u>
4/18/75	RK 201	Grid Construction
4/1/74	RK 212	Visual Station table load
8/16/74	RK 215	Visual non-real time plot
2/5/78	RK 216	Range/azimuth non-real time plot
2/10/76	RK 300	Utility Computations
5/4/76	RK 330	Reformat & format check
11/10/72	AM 500	Predicted tides
5/21/75	AM 602	Editor

S. REFERRAL TO REPORTS

The following reports contain information related to this survey.

Horizontal Control Report, OPR-N100-FA/DA-80
 Electronic Control Report, OPR-N100-FA/DA-80
 Corrections to Echo Soundings, OPR-N100-FA/DA-80
 Coast Pilot Report, OPR-N100-FA/DA-80
 Geographic Names Report, OPR-N100-FA/DA-80

J. APPROVAL SHEET

The commanding officer supervised the field work and examined the field sheet and records on a daily basis. The survey is complete and adequate.

Submitted by

Christopher P. Hancock

Christopher P. Hancock
Ens. NOAA

Approved by

a J Patrick

A. J. Patrick
Capt. NOAA

CONTROL FOR: C09864 DATE OF LISTING: 07-09-81 GEOGRAPHIC POSITIONS IN DEGREES, MINUTES, AND SECONDS

RECORD NUMBER	YR	STA NUM	GARTO LABEL CODE	VECTOR ANGLE	PLOT DISP. CODE	NAME	STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE (S)	LONGITUDE (E)
1	80	1	139	340.30	.52	0	PORT UKCHAKU W MUNICIPAL IK 1965	90.0	47 32 4.642	122 38 5.875
2	80	4	139	279.50	3.10	0	SINCLAIR INLET RADAR	0.0	47 33 1.918	122 36 29.451
3	80	4	139	287.36	3.71	0	CALIBRATION TARGET 3 1965	0.0	47 33 1.918	122 36 29.451
4	80	5	139	253.90	.63	0	PUGET SOUND NAVY YARD	53.0	47 33 41.104	122 37 44.263
5	80	5	139	291.12	1.16	0	POWER PLANT STACK 1945	53.0	47 33 41.104	122 37 44.263
6	80	6	139	102.00	5.90	0	PT MERRON LIGHT 1945	5.0	47 33 56.766	122 36 45.444
7	80	7	139	336.00	2.60	0	WATERMAN POINT LIGHT 1965	5.0	47 35 4.718	122 34 8.745
8	80	10	139	358.00	4.20	0	SINCLAIR INLET RADAR	5.0	47 33 48.900	122 35 34.185
9	80	10	139	352.93	5.09	0	CALIBRATION TARGET 4 1965	5.0	47 33 48.900	122 35 34.185
10	80	11	139	358.50	5.50	0	SINCLAIR INLET RADAR	5.0	47 34 33.598	122 34 41.099
11	80	11	139	354.39	6.38	0	CALIBRATION TARGET 5 1965	5.0	47 34 33.598	122 34 41.099
12	80	12	139	119.86	.35	0	BREMERTON NAVY RADAR	55.0	47 33 26.648	122 38 21.870
13	80	12	139	345.45	.70	0	COLLIMATION TOWER 2 1980	55.0	47 33 26.648	122 38 21.870
14	80	14	139	253.90	.63	0	SINCLAIR INLET RADAR	0.0	47 32 21.468	122 38 56.157
15	80	14	139	302.04	1.28	0	CALIBRATION TARGET B 1980	0.0	47 32 21.468	122 38 56.157
16	80	16	139	253.90	.63	0	SINCLAIR INLET RADAR	0.0	47 33 .595	122 37 2.389
17	80	16	139	302.04	1.28	0	CALIBRATION TARGET E 1980	0.0	47 33 .595	122 37 2.389
18	80	17	243	357.80	4.30	0	SINCLAIR INLET RADAR	0.0	47 33 12.687	122 36 13.901
19	80	17	243	352.86	5.19	0	CALIBRATION TARGET G	0.0	47 33 12.687	122 36 13.901
20	80	18	139	357.80	3.70	0	SINCLAIR INLET RADAR	0.0	47 33 23.520	122 35 58.341
21	80	18	139	352.22	4.59	0	CALIBRATION TARGET H 1980	0.0	47 33 23.520	122 35 58.341
22	80	22	139	215.50	9.70	0	POINT GLOVER LIGHT 9 1980	0.0	47 35 25.469	122 32 57.405
23	80	23	243	181.00	8.50	0	NMFS PIER	0.0	47 34 25.935	122 32 35.683
24	80	24	139	119.00	6.30	0	POINT WHITE LIGHT 10 1980	4.0	47 35 25.254	122 33 58.043
25	80	25	252	183.00	3.50	0		0.0	47 34 7.640	122 36 25.510

Updated Signal Listing

26	80	100	254	270.00	1.50	0	DALL 1934 RM3	2.0	149835.00	47 33	6.200	122 36	7.197
27	80	103	250	253.90	.63	0	MITCHELL 5 1980	0.0	149835.00	47 32	54.375	122 37	11.166
28	80	105	254	354.40	1.50	0	TP3	2.0	149835.00	47 35	58.690	122 34	34.770
29	80	106	250	340.30	.52	0	SPINNER 1980	1.0	149835.00	47 35	58.079	122 32	44.420
30	80	116	250	340.30	.52	0	HUNTLEY 1980	2.0	149835.00	47 35	18.605	122 31	48.845
31	80	204	254	302.70	5.10	0	ORCHARD 1857 RMI0	2.0	149835.00	47 33	55.468	122 31	50.748
32	80	205	254	289.00	5.60	0	ORCHARD 1857 RMI0 ECC	1.0	149835.00	47 33	55.425	122 31	50.686
33	80	207	254	181.50	6.30	0	YAN 2 1934 RM3	1.0	149835.00	47 35	45.936	122 35	27.276
34	80	208	139	182.00	4.40	0	HIGH 1915	2.0	0.00	47 34	27.314	122 36	7.856
35	80	209	250	181.00	10.90	0	CLAM 1934-74	1.0	149835.00	47 34	8.688	122 32	31.316
36	80	210	139	278.00	6.40	7	ORCHARD POINT LIGHT 1933	0.0	0.00	47 33	55.338	122 31	51.022
37	80	211	139	150.00	2.00	7	MANETTE CHURCH SPIRE 2 1980	0.0	0.00	47 34	19.648	122 36	42.844
38	80	212	139	340.30	.52	7	FORT WARD STEEL TOWER 1980	0.0	0.00	47 34	54.138	122 30	44.378
39	80	213	139	359.00	8.80	7	ORCHARD ROCKS DAY BEACON 1980	0.0	0.00	47 34	39.635	122 31	50.610

Updated Signal Listing

Replaces C&GS Form 567.

- TO BE CHARTED
- TO BE REVISED
- TO BE DELETED

REPORTING UNIT
(Field Party, Ship or Office)

FAIR WEATHER

STATE

Washington

LOCALITY

Puget Sound
Rich Passage, Port Orchard
Mar '80

DATE

Mar '80

The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.

OPR - N100 - FA/DA - 80

JOB NUMBER

H-9864

DATUM

NAD 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION			METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED
		LATITUDE		LONGITUDE	OFFICE	FIELD	
		° / ' / D.M. Meters	° / ' / D.P. Meters				
SPIRE	(MANETTE CHURCH SPIRE) Limited value due to numerous buildings	47-34	19.648 606.8	122-36	42.849 895.6	F-3-6-U Mar '80	18452 18449
TOWER	Fort Ward Steel Tower	47-34	54.138 1672.0	122-36	44.378 927.6	F-3-6-U Mar '80	18449
Ra Target	Radar Reflector on Dolphin	47-33	01.918 59.2	122-36	29.451 615.8	F-3-6-U Feb '80	18452 18449
Ra Target	Radar Reflector on Dolphin	47-33	12.686 391.8	122-36	13.901 290.7	F-3-6-U Feb '80	18449
Ra Target	Radar Reflector on Dolphin	47-33	23.520 726.4	122-35	58.341 1219.9	F-3-6-U Feb '80	18449
Ra Target	Radar Reflector on Dolphin	47-33	48.893 1510.0	122-35	34.186 714.8	F-3-6-U Feb '80	18449
Ra Target	Radar Reflector on Dolphin	47-34	33.588 1037.3	122-34	41.109 859.3	F-3-6-U Feb '80	18449
	Duplicate -						
	Ref. LD 02(80)						

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY

- HYDROGRAPHIC PARTY
 - GEODETIC PARTY
 - PHOTO FIELD PARTY
 - COMPILATION ACTIVITY
 - FINAL REVIEWER
 - QUALITY CONTROL & REVIEW GRP.
 - COAST PILOT BRANCH
- (See reverse for responsible personnel)

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

ORIGINATING ACTIVITY

- HYDROGRAPHIC PARTY
- GEODETIC PARTY
- PHOTO FIELD PARTY
- COMPILATION ACTIVITY
- FINAL REVIEWER
- QUALITY CONTROL & REVIEW GRP.
- COAST PILOT BRANCH

(See reverse for responsible personnel)

REPORTING UNIT
(Field Party, Ship or Office)
FAIRWEATHER

STATE
WA

LOCALITY
BREMERTON

DATE
MAR '80

The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.
OPR-N100

FA/DA-80

JOB NUMBER

SURVEY NUMBER

DATUM

NAD 1927

POSITION

LATITUDE

LONGITUDE

D.M. Meters

D.P. Meters

DATUM

DESCRIPTION

(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)

47-34

17.8

31.31

F-1-6

QK. FL. V. LIGHT LIST 2451.10
Privately Maintained
Position has been changed

18449

Rough Azimuth
Hydrographic Position
March '80

CHARTING NAME

CIAM BAY FISH PEN LIGHT.

METHOD AND DATE OF LOCATION

(See instructions on reverse side)

OFFICE

FIELD

CHARTS AFFECTED

Ref. L1202(80)

VELOCITY- PRODUCER FILE: V09864

LISTING MADE: 07-09-81

11:40:22

TRANSDUCER CORRECTION TABLES

VESSEL: 2023 YR: 80 FT VESSEL: 2024 YR: 80 FT VESSEL: 2025 YR: 80 FT

DAY TIME TRA COR VEL TABLE DAY TIME TRA COR VEL TABLE DAY TIME TRA COR VEL TABLE

29 190145 1.90 2 230536 2.00 2 183115 2.00 2

29 195130 1.70 2 224048 1.80 2 210155 1.80 2

29 232000 1.90 2 224948 2.00 2 210800 2.00 2

29 232800 1.70 2 225500 1.80 2 215630 1.80 2

29 233200 1.90 2 230148 2.00 2 220330 2.00 2

29 234100 1.70 2 231724 1.80 2 225930 1.80 2

30 182230 1.90 2 233248 2.00 2 193748 2.00 2

30 191930 1.70 2 233800 1.80 2 195012 1.80 2

30 192315 1.90 2 234424 2.00 2 195312 2.00 2

30 194700 1.70 2 234936 1.80 2 200036 1.80 2

30 195149 1.90 2 235436 2.00 2 200436 2.00 2

30 223904 1.70 2 000012 1.80 2 201048 1.80 2

30 224000 1.90 2 222315 2.00 2 201448 2.00 2

30 225430 1.70 2 222715 1.80 2 202042 1.80 2

30 225900 1.90 2 223530 2.00 2 202600 2.00 2

30 230750 1.70 2 224000 1.80 2 211320 1.80 2

30 232615 1.50 2 224415 2.00 2 211836 2.00 2

30 233315 1.70 2 224847 1.80 2 212548 1.80 2

30 233930 1.90 2 225930 2.00 2 213100 2.00 2

30 234840 1.70 2 230345 1.80 2 213436 1.80 2

30 235245 1.90 2 192030 2.00 2 213848 2.00 2

Updated TC/TT

TRANSDUCER REACTION TABLES --- CONT.

DAY	TIME	IRA COR	VEL TABLE	DAY	TIME	IRA COR	VEL TABLE	DAY	TIME	IRA COR	VEL TABLE
VESSEL: 2023 YR: 80 FT											
31	175945	1.70	2	66	194658	1.80	2	42	214412	1.80	2
31	181315	1.90	2	70	191930	2.00	2	42	214824	2.00	2
31	182130	1.70	2	70	193800	1.80	2	42	215832	1.80	2
31	184830	1.90	2	70	211600	2.00	2	42	220248	2.00	2
31	185300	1.70	2	70	212140	1.80	2	42	220924	1.80	2
31	190230	1.90	2	70	212640	2.00	2	42	221236	2.00	2
31	190730	1.70	2	70	230000	1.80	2	42	221648	1.80	2
31	191915	1.90	2	70	235959	1.80	2	42	222024	2.00	2
31	192445	1.70	2					42	222624	1.80	2
31	194145	1.90	2					42	223024	2.00	2
31	200730	1.70	2					42	232131	1.80	2
31	201715	1.90	2					42	232448	2.00	2
31	213724	1.70	2	VESSEL: 2028 YR: 80 FT							
31	214536	1.90	2					42	233036	1.80	2
31	215036	1.70	2					42	233336	2.00	2
31	215236	1.90	2					42	234124	2.00	2
31	215836	1.70	2	31	181700	.00	4	42	234636	1.80	2
31	220336	1.90	2	77	235959	.00	4	42	234900	2.00	2
31	222448	1.70	2					43	175038	1.80	2
31	222800	1.90	2					43	175400	2.00	2
31	225824	1.70	2					43	181100	1.80	2
31	225912	1.90	2					43	181412	2.00	2
37	182830	1.70	2					43	181803	1.80	2
37	185200	1.90	2					43	182124	2.00	2
37	190800	1.70	2					43	182440	1.80	2

Updated TC/TJ

TRANSDUCE: DIRECTION TABLES -- CONT.

VESSEL: 2023 YR: 80 FT VESSEL: 2025 YR: 80 FT

DAY TIME TRA COR VEL TABLE DAY TIME TRA COR VEL TABLE

37	190745	1.90	2	43	182800	2.00	2
37	192612	1.70	2	43	185600	1.80	2
37	194124	1.90	2	43	185912	2.00	2
37	195624	1.70	2	43	190214	1.80	2
37	200024	1.90	2	43	190536	2.00	2
37	201400	1.70	2	43	190751	1.80	2
37	210924	1.90	2	43	191112	2.00	2
37	211224	1.70	2	43	191248	1.80	2
37	211536	1.90	2	43	191600	2.00	2
37	212248	1.70	2	43	191814	1.80	2
37	212948	1.90	2	43	192136	2.00	2
37	213500	1.70	2	43	192313	1.80	2
37	214224	1.90	2	43	192636	2.00	2
37	214424	1.70	2	43	192922	1.80	2
37	215424	1.90	2	43	193648	2.00	2
37	215612	1.70	2	43	194129	1.80	2
37	215845	1.90	2	43	194448	2.00	2
37	220012	1.70	2	43	194800	1.80	2
37	220528	1.90	2	43	195548	2.00	2
37	220724	1.70	2	43	195715	1.80	2
42	191248	1.50	2	43	200012	2.00	2
42	215936	1.70	2	43	200309	1.80	2
42	220300	1.90	2	43	200624	2.00	2
43	175000	1.70	2	43	201357	1.80	2
43	195612	1.50	2	43	201548	2.00	2

Updated 7/9/77

TRANSDUCE: JKRECTION TABLES --- CONT.

VESSEL: 2023 YR: 80 FT VESSEL: 0 YR: 0 VESSEL: 0 YR: 0
DAY TIME TRA COR VEL TABLE DAY TIME TRA COR VEL TABLE DAY TIME TRA COR VEL TABLE

73 203015 1.90 2
73 204114 1.70 2
73 235959 1.70 2

Updated T C/T

VELOCITY SECTION TABLES

2

TABLE# 02 YR: 80 FT TABLE# 04 YR: 80 FT

DEPTH VEL COR DEPTH VEL COR

14.00 .00 150.00 .00

39.00 .20 9999.90 .00

63.00 .40

87.00 .60

110.00 .80

132.00 1.00

152.00 1.20

174.00 1.40

194.00 1.60

210.50 1.80

231.00 2.00

250.00 2.20

267.00 2.40

285.00 2.60

302.00 2.80

318.50 3.00

333.50 3.20

9999.90 3.20

Updated Velocity Cor'n Table

B. FIELD TIDE NOTE

OPR-N100-FA-80

Field tide reduction of soundings was based on predicted tides from Seattle, Washington, corrected to Bremerton, Port Orchard. Correctors were interpolated by the HYDROPLOT system program AM500. All times of both predicted tides and recorded tides are based on zone 000° (GMT).

The tide station at Seattle, Washington (944-7130) was the primary gage for the project. Levels were run to it on January 3, 1980 and March 21, 1980.

All tide data for H-9862, and for H-9864 as far north as 47°37'30"N and west of 122°34'00"W were collected at the Bremerton, Port Orchard gage, station #944-5958. It was located at 47°33'43"N, 122° 37'25"W on the ferry pier.

Due to malfunctions three successive ADR gages were used. Gage 6511A4632M5 was installed December 13, 1979. Levels were run to the staff and the gage started on December 20, 1979, J.D. 354. Good tidal data was collected through J.D. 362, when the tape was inadvertently advanced as the cover was being removed. The paper was then advanced 24 hours and the gage reset.

During the following two weeks the gage gained five minutes so after 171200 gage time on J.D. 011 the operator stopped the gage for five minutes and started it again at 171800 GMT. The paper was not advanced 24 hours. By J.D. 015 the gage had gained three minutes so a new timer and battery were installed. The gage continued to gain so on J.D. 021 it was replaced with gage number 7408A2970M1. The new gage worked well until about J.D. 046 when it started to gain time more rapidly. On J.D. 056 it was eight minutes fast and then reset. By J.D. 059 it had again gained four minutes. One hour and eight minutes after that observation the record was broken apparently due to a faulty tape drive mechanism.

After a lapse of 15 hours and 34 minutes the gage was restarted at J.D. 059, 172423 GMT. During the subsequent 24 hours the record indicates serious malfunctions. The tape jumped ahead several punch times throughout the period, so this data may have to be rejected.

The gage was reset at 173000 GMT, J.D. 060 and although the data for the following 4 hours and 6 minutes appeared to be good, the gage was replaced by #7404A1193M1, which was started J.D. 060 at 223600 GMT. This gage worked properly until it was removed at the end of the project on March 18, 1980 at 182105 GMT.

The mean gage to staff differences were:

First gage (6511A4632M5) 18.76 feet
J.D. 362 - J.D. 021, 1704 GMT

Second gage (7408A2970M1) 18.26 feet
J.D. 021, 1800 GMT to J.D. 060, 2136 GMT

Third gage (7407A1193M1) 18.26 feet
J.D. 060, 2236 GMT to J.D. 078, 1821 GMT

On J.D. 022 the comparison differed from the mean by 0.54 feet, but otherwise the differences were within 0.1 feet of the mean.

In summary, the times punched on the tapes for this stations are often off by several minutes, and there is a gap in the record from 0149 GMT, J.D. 059 to 1730 GMT, J.D. 060. Hourly heights will be required for this period.

For survey H-9864 tidal control for the area north of 47° 35'30"N was collected by the gage at Brownsville, #944-5832. It was located on the marina pier at 47° 38'36"N, 122° 36'48"W.

Gage #7404A1193M1 was installed 24 January 80. It lost approximately 1/2 minute per day, so by 1 February (J.D. 032) it was 4 minutes slow and had to be reset.

Seven hours and 24 minutes later the paper tape broke, due to two jammed punch pins. The gage was restarted on J.D. 035, 185400 GMT, but only 5 hours and 42 minutes of data was gathered before the tape tore again. On J.D. 037 the gage was replaced by gage #7601A1469M19, which was started at 181200 GMT, J.D. 037.

This gage functioned well to the end of the project, but it tended to slowly gain time. It was reset on J.D. 045, and was 3 1/2 minutes fast when it was removed on J.D. 077.

The mean gage to staff differences were:

First gage (7404A1193M1) 17.54 feet
J.D. 024 - J.D. 036, 0036 GMT

Second gage (7601A1469M19) 17.29 feet
J.D. 037, 1812 GMT - J.D. 077

There is no data for the periods from J.D. 033, 0242 GMT to J.D. 035, 1854 GMT, and from J.D. 036, 0036 GMT to J.D. 037, 1812 GMT. Hourly heights are not required for these periods.

The leveling at the installation and removal yielded nearly identical values with two exceptions. There is exactly a 1 meter discrepancy between the differences of elevation between 5832C, 1980, and BM6, 1975 on the two days caused by erroneously changed data shown in the leveling record of 24 January 80. The other discrepancy is an apparent .097 meter settling of the staff. It is believed that compensating errors of .100 meters on the leg from the staff to BM5 on both forward and backward run, in the record book from 24 January 80, accounts for this discrepancy. An examination of the level records shows that "corrections" were made to the level records for these legs.

For survey H-9864 tidal control for the area east of $122^{\circ} 34'00''W$ was controlled by the gage at Clam Bay, #944-5938. It was located on a pier southeast of Middle Point in Clam Bay, at $47^{\circ} 35'12''N$, $122^{\circ} 32'18''W$.

Gage #603A5568M12 was installed 18 January 80 and removed 17 March 80. There were no significant problems with the gage. The time was reset on 23 January 80, 19 February 80, and 21 February 80. Apparently on 21 February 80 the tape was advanced two times as the cover was removed. No significant differences in comparative observations between staff and gage were noted. The mean difference was 14.18 feet. No hourly heights are missing for the duration of this installation.

No unusual fluctuations were observed between adjacent gages.

No unusual tidal levels or currents were observed.

000° time meridian (GMT) was used for the records. Local time (+8) was used for annotations.

U.S. DEPARTMENT OF COMMERCE
September 8, 1980 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 944-5958 Bremerton, WA
944-5832 Brownsville, WA
944-5938 Clam Bay, WA

Period: January 8 - March 14, 1980

HYDROGRAPHIC SHEET: H-9864

OPR: N100

Locality: Puget Sound, Washington

Plane of reference (mean lower low water): 0.97 ft. - Bremerton
-0.50 ft. - Brownsville
1.42 ft. - Clam Bay

Height of Mean High Water above Plane of Reference is
10.9 ft. - Bremerton; 10.9 ft. - Brownsville; 10.6 ft. - Clam Bay

REMARKS: Recommended zoning:

- (1). East of $122^{\circ}34.0'$ zone direct on Clam Bay
- (2). ~~North of $47^{\circ}35.5'$ zone direct on Brownsville~~
- (3). ~~South of $47^{\circ}35.5'$ zone direct on Bremerton.~~

Telecon. JIM GREEN 12/4/80 (PMC)

SUBJECT CHANGE OF ZONING SCHEME

(A) Zone West of $122^{\circ}34.0'$

(A) NORTH of $47^{\circ}35.5'$ zone direct on Brownsville

(B) ~~WEST~~ SOUTH of $47^{\circ}35.5'$ zone direct on Bremerton

James R. Hubbard
Chief, Datums and Information Branch

GEOGRAPHIC NAMES

H-9864

Name on Survey	ON CHART NO. 18449 ON PREVIOUS SURVEY CON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP GRAND MCNALLY ATLAS U.S. LIGHT LIST										
	A	B	C	D	E	F	G	H	K		
Bainbridge Reef	X	H-5711						X			1
Beans Point	X		X					X			2
Beaver Creek	X		X								3
Clam Bay	X		X					X			4
Crystal Springs	X	H-5576	X								5
East Bremerton	X	H-5652	X								6
Fort Ward State Park	X										7
Illahee	X		X								8
Illahee State Park	X		X								9
Lynwood Center	X		X								10
Middle Point	X		X								11
Orchard Point	X	H-5711	X					X			12
Orchard Rocks	X	H-5711	X					X			13
Pleasant Beach	X		X								14
Point Glover	X	H-5711	X					X			15
Point Herron	X	H-5652	X					X			16
Point White	X		X					X			17
Port Orchard	X	H-5652	X					X			18
Rich Passage	X	H-5711	X					X			19
University Point	X		X								20
Waterman	X		X								21
Waterman Point	X	H-5652	X					X			22
Wautauga Beach (locality)	X		X								23
West Blakely	X		X								24
Bainbridge Island											25

GEOGRAPHIC NAMES

H-9864

Name on Survey	Source of Name										
	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	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
Fletcher Bay (locality)											1
Enetai											2
Point White (locality)											3
Westwood											4
											5
											6
											7
											8
											9
											10
											11
											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25

Approved:

Chas. E. Harrington
Chief Geographer - N/CG2x?

14 Dec. 1982

Geographic Names Report
OPR-N100-FA-80
Puget Sound, Washington
Winter, 1980

An investigation of geographic names was conducted during this survey, by conferring with local residents, ferry pilots, boat owners and harbor masters. The following changes to the charts are recommended:

Chart 18452

The Port Orchard Yacht Club has constructed a building at their moorage on the west side of the community of Port Orchard, latitude 47°32'10"N, longitude 122°38'40"W. This building is shown on Chart 18449. Recommend that this building be labeled P.O.Y.C. on Chart 18452. See H-9062

Chart 18449

Recommend removal of the following names from the chart:

Gibson, latitude 47°36'05"N, longitude 122°34'22"W
Westwood, latitude 47°37'06"N, longitude 122°34'18"W

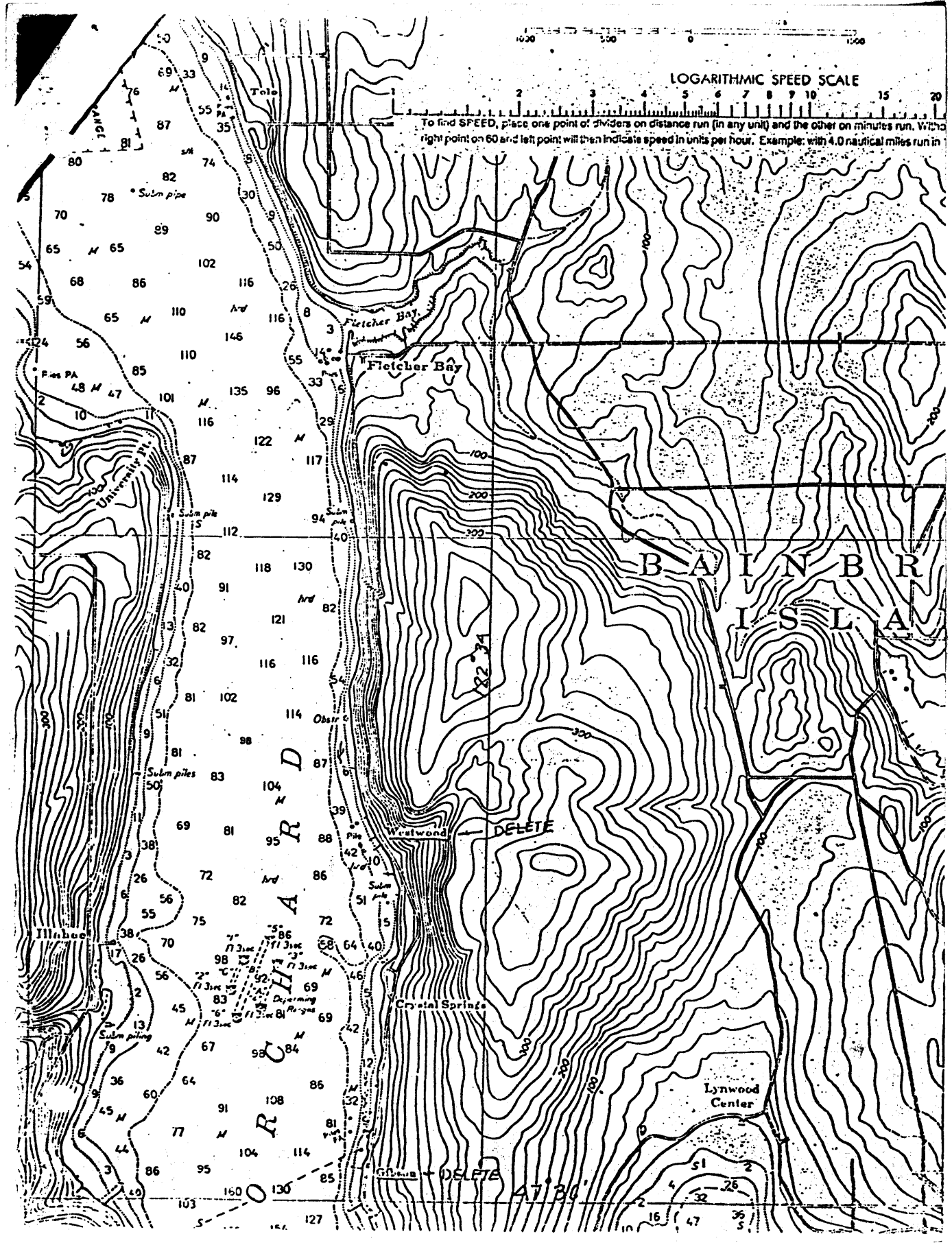
These are not names commonly used by the community. At one time they were names for ferry landings, which no longer exist.

Submitted by:

Christopher P. Hancock
Christopher P. Hancock
Ensign, NOAA

Approved by:

A. J. Patrick
A. J. Patrick
Captain, NOAA



LOGARITHMIC SPEED SCALE

To find SPEED, place one point of dividers on distance run (in any unit) and the other on minutes run. With right point on 60 and left point will then indicate speed in units per hour. Example: with 4.0 nautical miles run in

R A R I T A N R I V E R

B A I T I N B A Y
I S L A N D

DELETE

DELETE

47° 30'

1000
500
0
500
1000

Subm pipe

F. PA 48 M 47

Subm pipe

Subm pipes

Subm piping

GRASS

150

127

150

127

150

127

APPROVAL SHEET

FOR

SURVEY 9864

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: 11/20/81



Chief, Verification Branch

HYDROGRAPHIC SURVEY STATISTICS

H-9864

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS & PRELIMINARY OVERLAYS		4	
DESCRIPTIVE REPORT		1	SMOOTH OVERLAYS: POS. ARC, EXCESS		11	
DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS			2 Raw			
VOLUMES						
BOXES			1 - smooth P/B 3.500 Vol.			

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	VERIFICATION	TOTALS
POSITIONS ON SHEET			2822
POSITIONS CHECKED		2822	
POSITIONS REVISED		487	
SOUNDINGS REVISED		154	
SOUNDINGS ERRONEOUSLY SPACED			
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	5		
VERIFICATION OF CONTROL		45	
VERIFICATION OF POSITIONS		87	
VERIFICATION OF SOUNDINGS		230	
COMPILATION OF SMOOTH SHEET		87	
APPLICATION OF TOPOGRAPHY		27	
APPLICATION OF PHOTOBATHYMETRY		--	
JUNCTIONS		5	
COMPARISON WITH PRIOR SURVEYS & CHARTS		41	
VERIFIER'S REPORT		25	
OTHER			
TOTALS	5	547	552
Pre-Verification by J. S. Green	Beginning Date Oct. 6, 1980	Ending Date Oct. 6, 1980	
Verification by L. T. Deodato	Beginning Date Dec. 17, 1980	Ending Date Sept. 29, 1981	
Verification Check by S. H. Otsubo and J. S. Green	Time (Hours) 58	Date Nov. 4, 1981	
Marine Center Inspection by HIT	Time (Hours) 20	Date Jan. 14, 1982	
Quality Control Inspection by S.R. Baumgardner	Time (Hours) 172	Date Aug. 9, 1982	
Requirements Evaluation by Stephen J. Kerry	Time (Hours) 4.0	Date Jan 13, 1983	

D. Murray 52 hrs. 8/30/82

REGISTRY NO. 9864

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

data was deemed erratic for it failed to calibrate as shown in the report of the Northwest Regional Calibration Center. The data from the Nansen cast was then office plotted and the velocity corrections were picked from it.

(5) Predicted tide reductions were based on Seattle tides corrected to Bremerton, Port Orchard. Approved tides from tide gages in Bremerton, Brownsville and Clam Bay were utilized for soundings on the smooth sheet.

2. CONTROL AND SHORELINE

a. The source of control is adequately described in Sections F and G of the Descriptive Report.

b. No shoreline manuscript was available in the surveyed area. Shoreline shown in red ^{ashes} on the smooth sheet was field verified while the shoreline shown in brown is from Chart 18449. Shoreline in brown is for orientation only and does not include charted piers.

c. Some rocks with no position information were transferred directly from the shoreline verification sheet to the smooth sheet in the vicinity of: latitude 47°35.08'N, longitude 122°35.73'W; latitude 47°34.53'N, longitude 122°36.06'W; latitude 47°35.24'N, longitude 122°32.81'W, latitude 47°34.23'N, longitude 122°32.35'W; and latitude 47°35.17'N, longitude 122°31.74'W.

d. Some piles or stumps with no position information were also transferred directly from the shoreline verification sheet to the smooth sheet in the vicinity of: latitude 47°34.71'N, longitude 122°35.91'W; latitude 47°34.51'N, longitude 122°36.07'W; latitude 47°34.25'N, longitude 122°35.31'W; latitude 47°34.47'N, longitude 122°34.60'W; latitude 47°34.66'N, longitude 122°34.40'W; latitude 47°35.30'N, longitude 122°32.88'W; and latitude 47°4.69'N, longitude 122°31.47'W.

e. The shoreline was ~~not~~ shown in ^{brown in} the vicinity of latitude 47°33'21.5"N, longitude 122°35'53"W, since it was not determined by the field editor.

3. HYDROGRAPHY

a. Crossline soundings are in good agreement, generally 0-²/₄ feet at all depths.

b. Standard depth curves were adequately ~~drawn~~ delineated, except in a few places close to shore where the zero depth curve could not be shown. A number of brown curves were added by the verifier to emphasize shoal depths.

c. Except where noted in this report the development of the bottom configuration and the determination of least depths are adequate.

4. CONDITION OF SURVEY

With the exception of the following, the smooth sheet,

accompanying overlays, hydrographic records, and reports are adequate and conform to the requirements of the Hydrographic Manual.

a. The list of stations contained some incorrect station names.

b. Sounding correction abstract was not included in the separates of the Descriptive Report.

c. A discrepancy of 2 feet or more between the plotted soundings on the field smooth sheet and the smooth sheet is due to the erroneous predicted tide corrections used in the field. Refer to the predicted tide printout of JD-43, which is filed in the cahier.

d. The dive investigations for this survey were not adequately documented. *do not concur*

5. JUNCTIONS

a. H-9862 ¹⁹⁷⁹⁻(1980) 1:5,000

H-9864 has a satisfactory junction with ^{this} survey. Junction notes and depth curves have been inked.

b. There is no contemporary survey on the north and southeast sides of this survey.

6. COMPARISON WITH PRIOR SURVEYS

a. H-5576 (1934) 1:10,000
 H-5652 (1934) 1:10,000
 H-5711 (1934-35) 1:10,000

(1) On the field verified shoreline, the changes noted are mostly manmade.

(2) Soundings on H-9864 agree within 0-8 feet with H-5576 and H-5652, and 0-5 feet, with H-5711.

(3) Some soundings ^{bottom characteristics} and features from the above prior surveys were carried forward to H-9864.

(4) PSR item #22, submerged pilings: "B" (latitude 47°38'04.03"N, longitude 122°35'24.01"W), "C" (latitude 47°35'02.96"N, longitude 122°34'35.99"W) and "D" (latitude 47°36'53.95"N, longitude 122°34'25.91"W), originating from H-5576, were not investigated and were carried forward to H-9864 ^{as awash at MLI}. These piles are presently charted as submerged based on a US Power Squadron rpt (CL 1587-70). The final disposition for charting purposes is deferred to the compiler.

(5) PSR item #38, piling "E" (latitude 47°34'31.0"N, longitude 122°34'31.0"W), is properly disposed in Section K of the Descriptive Report.

(6) The charted 21 foot sounding at latitude 47°34'31"N, longitude 122°31'55"W which originates from H-2483 and carried

forward on H-5711 is properly developed. Diving investigation was also conducted. Refer to Section L of the Descriptive Report and ~~paragraph 4 of this report.~~ The verifier agrees with the last sentence of Section L of the Descriptive Report and that this area be charted according to this survey. ~~concur~~

(7) In regards to the minimum depth over Bainbridge Reef latitude $47^{\circ}34'05''N$, longitude $122^{\circ}31'00''W$, the charted 36 foot sounding was carried forward from H-5711. This was done because of ~~theⁿ inadequate dive investigation, documentation and the lack of a specific recommendation by the hydrographer.~~ See Q.C. report, item 4

b. H-6751 (1942) 1:5,000

(1) This prior survey is a sort of navigable area survey and shoreline comparison is not feasible.

(2) Soundings on H-9864 agree within 0-3 feet with H-6751.

c. With the ~~transferances~~ ^{bottom characteristics} of some soundings_A and features from the above prior surveys to the smooth sheet, H-9864 is adequate to supersede the above prior surveys in the common area.

d. ~~H-3765 WD (1915) 1:10,000~~ See QC report, item 1

~~This prior wire drag survey has no hang depths. The source of charted soundings which was provided by C351 show that some charted soundings originate from this wire drag survey as shown on the attached chartlet. The soundings on the present survey agree with the indicated effective drag depths.~~

7. COMPARISON WITH CHARTS

Comparison was made with Chart #18449 (10th edition, October 27, 1979, scale 1:25,000).

a. Hydrography

(1) Charted soundings and features that originate from the previously discussed prior surveys were disposed of in Section 6 of this report, also see enclosed chartlet. ^(filed with field data)

(2) All charted shore features of unknown source along the shoreline of Port Orchard that are shown in brown (not field verified shoreline and directly taken from chart blow up) have not been disproven and should continue to be charted from its source. ^{See QC report, item 2}

(3) PSR item #21, piles PA:

(a) "A" (latitude $47^{\circ}35'12''N$, longitude $122^{\circ}31'50''W$) was not disproven and should ~~continue to be charted~~ ^{retained} ~~from its source with the notation~~ as stated in Section K of the Descriptive Report.

(b) "B" (latitude 47°36'12.4"N, longitude 122°34'34.0"W) and "C" (latitude 47°36'15.0"N, longitude 122°34'34.5"W) were not investigated and should continue to be charted from its source. (Cl 1541/1974), but revised to a wash at MLLW

(4) PSR item #22, submerged piling: "A" (latitude 47°36'31.54"N, longitude 122°35'38.40"W) was not investigated. ~~The verifier cannot ascertain whether this originates from H-5652, and was~~ ~~This should continue to be charted from its original source.~~
carried forward to the present survey as a wash at MLLW. These piles are presently charted as submerged based on a U.S. River Squadron Report (Cl 1597/70). The final disposition for charting purposes is deferred to the compiler.

(5) PSR items #23, obstruction; at latitude 47°37'27.3"N, longitude 122°34'37.5"W; #31, pile PA, at latitude 47°34'05"N, longitude 122°36'30"W; #38, piling F (latitude 47°35'12.5"N, longitude 122°32'46.5"W) and piling G (latitude 47°34'22"N, longitude 122°32'48"W) were adequately disposed in Section K of the Descriptive Report.

(6) PSR item #25, submerged piles, at latitude 47°37'17.11"N, longitude 122°35'32.87"W was not investigated and should continue as charted from its origin.

Except as noted above

(7) ^A H-9864 is adequate to supersede the charted data in the common area.

b. Aids to Navigation

The position of floating and nonfloating aids or landmarks for charts were located and verified. Refer to Section N of the Descriptive Report.

8. COMPLIANCE WITH PROJECT INSTRUCTIONS

Except where noted, this survey adequately complies with the Project Instructions dated December 21, 1979 and Change Nos. 1 through 4 dated December 27, 1979, January 17, 1980, January 23, 1980 and February 14, 1980 respectively.

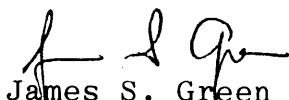
9. ADDITIONAL FIELD WORK

This is an adequate basic survey. Should the area be resurveyed in the future, PSR items Nos. 21, 22, 23 and 25 should be properly disposed of and the shoreline and other shoreline features ~~be properly delineated.~~

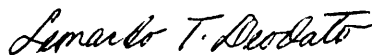
adequately

Submitted by,

Examined and approved:


James S. Green

Chief, Verification Branch


Leonardo T. Deodato



**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY**

Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

RECEIVED
FEB 11 1982

PACIFIC MARINE CENTER

February 1, 1982

TO: OA/CPM - Charles K. Townsend *[Signature]*
FROM: OA/CPM3 - John W. Carpenter *[Signature]*
SUBJECT: PMC Hydrographic Inspection Team Report for Survey H-9864

This survey is a basic hydrographic survey of Rich Passage and Port Orchard, Puget Sound, Washington. This survey was conducted by NOAA Ship FAIRWEATHER in 1980 in accordance with Project Instructions OPR-N100-FA/DA-80 dated December 21, 1979; Change No. 1 dated December 27, 1979; Change No. 2 dated January 17, 1980; Change No. 3 dated January 23, 1980; and Change No. 4 dated February 14, 1980.

The following items were noted:

1) The project instructions for this survey initially specified a navigable area survey to the zero ~~depth~~ curve; however, subsequent project instructions changed it to a basic survey without photogrammetric support.

2) Paragraph P of the Descriptive Report was noted, and it is the responsibility of the field unit to correct such problems in the field.

as defined in the P.I.s.

This survey ~~does not~~ meets the basic survey requirements, since the shoreline is shown as an estimated one. The Inspection Team does find H-9864 to be an adequate navigable area survey, adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

[Signature]
John W. Carpenter

[Signature]
James W. Winttermyre

[Signature]
James W. Steensland

[Signature]
James L. Stringham



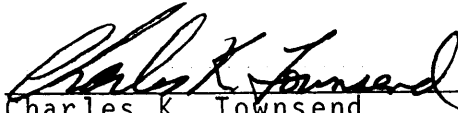
10TH ANNIVERSARY 1970-1980
National Oceanic and Atmospheric Administration

A young agency with a historic
tradition of service to the Nation

ADMINISTRATIVE APPROVAL
H-9864

Rich Passage and Port Orchard, Puget Sound, Washington

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.



Charles K. Townsend
Director
Pacific Marine Center



Date



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352:SRB

August 9, 1982

TO: Glen R. Schaefer *GS*
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch *gm*

FROM: S. R. Baumgardner *SRB Baumgardner*
Quality Evaluator

SUBJECT: Quality Control Report for H-9864 (1980), Washington, Puget Sound,
Rich Passage and Port Orchard

A quality control inspection of H-9864 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions made and actions taken by the verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a one-half scale copy of the survey to be furnished the verifier. In general, the survey was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report, the HIT Report, and as follows:

1. The following supplements paragraph 6 of the Verifier's Report:

- d. H-3764 (1915) WD, 1:10,000
H-3765 (1915) WD, 1:10,000

These surveys are considered to be superseded by H-3972 (1917) WD and Additional Work (1928) within the common area. In the combined Descriptive Report for the surveys of 1915, the Commanding Officer recommends that the area be resurveyed because of problems with control, equipment, and untrained personnel. As a result, H-3972 (1917) WD was conducted.

Some detached soundings from H-3765 WD which were brought forward to H-5711 (1934-35) are superseded by lesser or comparable depths on the present survey.



H-3969 (1917) WD, 1:20,000

This wire-drag survey covers a portion of the present survey. Effective drag depths do not conflict with depths on the present survey.

H-3972 (1917) WD and Additional Work (1918), 1:20,000

With one minor exception, effective drag depths on this survey do not conflict with depths on the present survey. The conflict exists in the vicinity of latitude 45°35'37"N, longitude 122°34'25"W, where an area is indicated to have been effectively cleared to 20 feet. The present survey shows lesser depths along a steep slope near the inshore limits of the cleared area. The difference is attributed to inadequate control or procedures used on the wire-drag survey.

Several detached soundings brought forward from this survey to H-5711 (1934-35) are superseded by detailed development on the present survey.

2. The items listed below, from chart 18449, were neither verified nor disproved by the present survey and originate with miscellaneous sources. They are deferred to the compiler, with appropriate recommendations, for final disposition. The remarks are based on the stage of tide and the path of the vessel when sounding nearby or over the feature.

<u>Items</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Recommendation</u>
Pier	47°37'40"	122°35'27"	Revise to ruins ←
Ruins	47°35'52"	122°35'30"	None
Two piles	(in vicinity of) 47°35'42"	122°35'25"	Revise to awash at MLLW ←
Pile symbol	47°34'12"	122°36'20"	Revise to awash at MLLW ←
Two piers	47°35'05"	122°33'57"	Revise to ruins ←
Pier	47°35'17"	122°33'29"	None ✓
Four pile symbols	(in vicinity of) 47°34'07"	122°32'11"	Revise to awash at MLLW ←
Ruins, two pile symbols	47°35'27"	122°34'03"	Revise piles to awash at MLLW ←
Two ruins, pier, pile symbol	47°36'10"	122°34'30"	Revise pile symbol to awash at MLLW
Piers, four piles	47°37'08"	122°34'38"	Revise piles to awash at MLLW and piers to ruins ?
Ruins	47°37'18"	122°34'35"	None ✓

3. The pier and pier ruins, both charted in the vicinity of latitude 47°36'00", longitude 122°35'40"W, appear to be the same feature. The ruins originated as a pier with Chart Letter 598 of 1955. A similar pier, from 1963 air photographs, was later charted about 20 meters to the southeast. The original pier was apparently not observed on the air photographs to be in the position reported in 1955 and was revised to ruins. The pier ruins should be deleted from the chart. ←

4. The hydrographer states that a diver's float line was used to obtain a least depth of 37 feet at latitude 47°34'06.24"N, longitude 122°30'59.49"W on Bainbridge Reef. The float line was a noncalibrated nylon line which is not acceptable for obtaining sounding data. A standard lead line should have been employed. (See section A.F.1 of the Hydrographic Manual.) A 36-foot sounding was carried forward from H-5711 (1934-35) in place of the erroneous depth during verification and a rocky bottom characteristic during quality control.

5. The hydrographer probably could have alleviated the appearance of wavy contours as noted in the Descriptive Report by maintaining half speed between the first two positions from shore, then increasing to full speed on the second position. However, due to the mechanical drawing of curves on the smooth sheet by the verifier, the wavy appearance of depth curves noted by the hydrographer was accentuated.

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