9862

Diagram No. 6460-2

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-5-1-80

Office No. H-9862

LOCALITY

State Washington

General Locality Puget Sound

Locality Sinclair Inlet

1979-80

CHIEF OF PARTY
CAPT A.J. Patrick

LIBRARY & ARCHIVES

DATE December 8, 1981

☆U.S. GOV. PRINTING OFFICE: 1980—766-

9862

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-9862

HYDROGRAPHIC TITLE SHEET

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-5-1-80

State WASHINGTON

General locality PUGET SOUND

Locality SINCLAIR INLET

Scale 1:5,000 Date of survey Dec 10, 1979 - Mar 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 CAPT A. J. PATRICK, NOAA

Surveyed by A. J. PICKRELL, A. YANAWAY, D. G. HENNICK, V. D. ROSS, C. P. HANCOCK, P. E. PEGNATO, A. F. TRIMBLE, E. R. KRICK

Soundings taken by echo sounder, hand lead, pole ROSS FINELINE FATHOMETER, LEADLINE

Graphic record scaled by A. J. PICKRELL, A. YANAWAY, D. G. HENNICK, C. P. HANCOCK

Graphic record checked by A. J. PICKRELL, A. YANAWAY, D. G. HENNICK, C. P. HANCOCK

Position Verified
~~Protracted~~ by ISAGANI A. ALMACEN Automated plot by PMC XYNETICS PLOTTER

Soundings
Verification by ISAGANI A. ALMACEN

Soundings in fathoms feet at MLW MLLW

REMARKS: All times are GMT.

corrections in red added during O.C. SRD

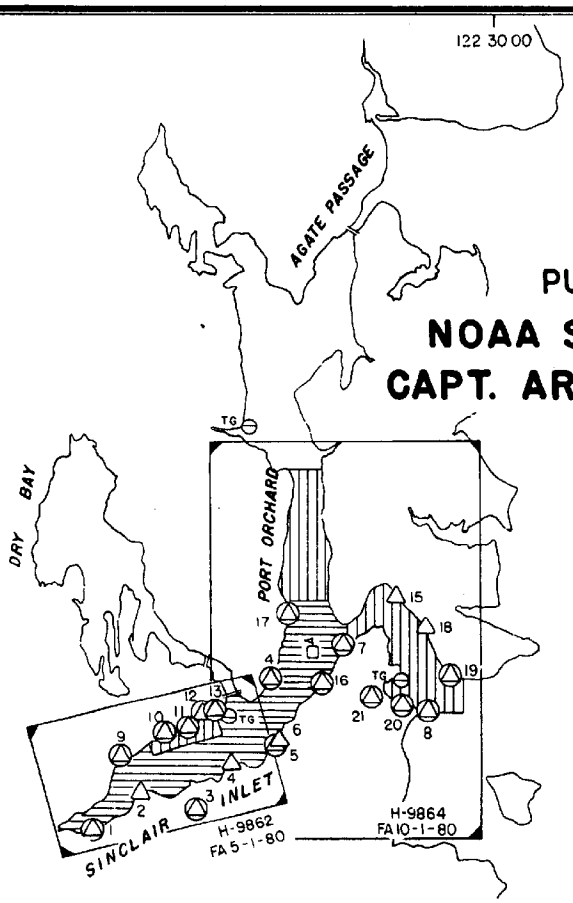
0015 - 2/24/84 MJH

STANDARDS CK'D 4-5-84

C.COY

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6



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

DECEMBER - JANUARY

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

FEBRUARY

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

SCALE OF NOS CHART 18440

47 15 00

Descriptive Report to Accompany Hydrographic Survey
H-9862 (Field No. FA 5-1-80)
Scale 1:5,000
Year 1980
NOAA Ship FAIRWEATHER
Chief of Party Capt. A. J. Patrick

A. PROJECT

This survey was conducted in accordance with Project Instructions OPR-N100-FA/DA-80, Puget Sound, Washington, dated December 21, 1979 and supplements to instructions: Change 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; Data Requirements for 1979 Field Season dated April 11, 1979; and the PMC OPORDER and the Hydrographic Manual.

B. AREA SURVEYED

The survey covered the entire area of Sinclair Inlet, and extended to the southernmost bridge spanning Port Washington Narrows. It junctions with H-9864 (FA 10-1-80) along a line across Port Orchard extending SSE from Pt. Herron. This area includes the Puget Sound Naval Shipyard, three marinas, and the Washington State Ferry Terminal at Bremerton. The towns of Bremerton, East Bremerton, and Port Orchard have waterfronts in this survey area.

Inclusive dates of the field work were December 10, 1979 through March 18, 1980.

C. SOUNDING VESSELS

Soundings were obtained by aluminum launches FA-3 hull #1011 (2023), FA-4 hull #1010 (2024), FA-5 hull #1001 (2025), and by a Boston Whaler designated Whaler-2 (2028). The launches were equipped in the usual manner for range/azimuth hydrography. Whaler-2 was rigged with a mini-ranger transponder on top of a 22 foot pole so range/azimuth control could be used in the three marinas. The transponder was visible over the boat houses. No unusual problems were encountered with any of the sounding vessels.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The following echo-sounding equipment was used.

VESSEL NO.	FATHOMETER	INST. S/N
2023	Ross Fineline	1047
2024	Ross Fineline	1046
2025	Ross Fineline	1054
2028	Raytheon Portable	6168

Lead lines were used along the naval piers in depths up to 55 feet, and the mooring lines of divers' buoys were used over obstructions in depths of less than 30 feet. Sounding poles and lead lines were used by shoreline investigators for depths of rocks and other shoreline features.

It was often difficult to maintain the initial on the Ross analog recorders at zero and still have the phase calibration correct. This means that the digital depths which are more accurate differ from the analog depths by one to three tenths of a foot. The phase calibration each day must be examined for a correction before using analog depths.

Velocity of sound was determined by three MarTek casts and one Nansen cast.

MarTek TDC Casts

Date	Depth	Latitude	Longitude	Inst. S/N
January 16, 1980	60m	47°34'55"N	122°34'56"W	357
February 15, 1980	50m	47°34'55"N	122°34'55"W	357
February 28, 1980	60m	47°34'55"N	122°34'55"W	327
		Nansen Cast		
March 17, 1980	58m	47°34'18"N	122°34'54"W	

The MarTek TDC systems were calibrated by Northwest Regional Calibration Center, S/N 327 in September 1979 and S/N 357 in October 1979, following NOAA "Calibration Procedure for CTD-SV Ocean Sensor package". Calibration correctors were applied to all MarTek data. (Marteks failed calibration & returned to PMC on April 14, 1980)

The Deep Sea Reversing thermometers were also calibrated by Northwest Regional Calibration Center.

Salinometer S/N 6347 was calibrated September 1979 by the Northwest Regional Calibration Center.

The cast data was combined with bar check data taken twice each day to determine velocity correctors.

Variations in instrument initial were checked each night by the ET department, and each day by launch personnel. Errors were removed by adjustment of the analog recorder.

Settlement and squat were determined for each launch by a Zeiss level shooting to a stadia rod at different launch speeds. The results were corrected for tides.

E. HYDROGRAPHIC SHEETS

This survey was plotted on one 63 inch long field sheet due to the long narrow nature of Sinclair Inlet. After discussions with PMC it was decided that the entire inlet could be plotted on one sheet in the field. The west end of Sinclair

Inlet could be separated and plotted as an inset on a standard 36 x 54 inch smooth sheet during the smooth plotting process at PMC. Insets plotted in the field consist of three 1:1,250 scale plots of marinas, and one 1:2,500 scale plot of the naval shipyard piers. In addition there are six development sheets, seven PSR plotting sheets, one 1:5,000 shoreline and D.P. overlay, and one paper sheet of the junction soundings with H-9864 plotted at 1:5,000. All field sheets were constructed aboard the FAIRWEATHER using RK 201, a PDP 8e computer, and Complot plotter SN 6166-22.

The field records and plotting sheets will be sent to PMC for verification and smooth plotting.

F. CONTROL STATIONS

The following control stations on the sheets have been monumented and described.

STATION NAME	SIGNAL NUMBER
Dall 1934 RM3 1980	100
Mitchell 5 1980	103
Sulpher 3 1980	104
Peat 1934	200
Butts 2 1934	206
PSNS Bldg 290 1945	201
PSNS Bldg 467 1945	202

In addition the following control stations were used, but not monumented:

TP-1 (GAZEBO), S/N 002, was used extensively during the survey but not monumented because it was on the wooden deck of a pavillion-like gazebo. It was selected for use because of the protection it provided azimuth observers during winter weather.

TP-2, S/N 101, was used for range/azimuth control on several days but not monumented because it was located in an area where fill is expected in the future.

Range/azimuth control in the Puget Sound Navy Shipyard piers was done from:

R 30	S/N 310
S 27 S	S/N 112
S 27 W	S/N 113
5 E 0 E	S/N 111
N 45 E	S/N 108
K 48 E	S/N 107
Q 40 E	S/N 115
R 34 W	S/N 110
R 34 E	S/N 109

R 30 is a station monumented by the navy. The rest are temporary eccentrics from other stations monumented by the navy. All the monumented stations were located with second order methods in 1979 by the surveying firm Wilsey and Ham. NGS approved the use of their data for hydrographic purposes. See drawings 46942 and 46943 submitted with the data package for this survey, the memorandum from the FAIRWEATHER to NGS dated December 21, 1979 and the response from NGS dated January 4, 1980 attached to this report.

drawings [redacted] file with field data

FAIRWEATHER personnel accomplished all the horizontal control for this survey. With the exception of a few visual hydrographic signals all control was accomplished in accordance with applicable instructions to at least third order, class I standards. The 1927 NAD was used. No unconventional survey methods were used. There were no anomalies in control adjustment, or in closure and ties. There was no photogrammetric support for this project. The signal listing used for the Hydroplot system is attached at the end of this report. See the Horizontal Control Report, OPR-N100-FA/DA-80 for further details.

G. HYDROGRAPHIC POSITION CONTROL

Range/azimuth control using Motorola Miniranger III systems (super high frequency) and T1's or T2's was used for all of the main scheme hydrography, all of the developments, all of the hydrography in the marinas, most of the hydrography in the naval shipyard, and some of the bottom samples. Except for hydro in the marinas where the data was manually recorded all range/azimuth hydrography was done using data loggers on the launches. It was feared that Minirangers would not work properly in the slips of the shipyard, due to reflections of the microwaves off the ships and piers. However, a trial of the system was done by piloting a launch all around several slips. The signal strength remained consistently high and the rates remained consistent. After that trial normal range/azimuth methods and an aluminum launch were used to survey the slips. System checks were made to verify proper operation of the system in this area.

Prior to the Miniranger trials in the shipyard, two of the slips were surveyed using sextant cuts for control. This was accomplished by steering an aluminum launch on ranges down the length of the slip. Meanwhile observers on three stations measured angles to the launch. The observers radioed their angles to the launch personnel, who also recorded the soundings. During processing the sextant angles were reduced to azimuths. This system proved to be cumbersome in the field, labor intensive, difficult to process, and practical only in slips that were nearly clear of ships. After two slips had been surveyed this way, all the rest of the piers were controlled by the range/azimuth method.

Leadline soundings were taken along the naval piers controlled with taped distances from the ends of the piers.

Visual control was used for some of the bottom samples, D.P.'s on mooring buoys and D.P.s taken for shoreline verification.

Miniranger range/range control was used for the PSR bottom drag items because a real-time plot and straight line steering control was necessary to ensure overlapping drags. Any items found during these drags and during diver searches were located by visual fixes.

Minirangers were calibrated on the baseline at PMC both before and after the project. System checks were conducted twice daily whenever the signal had a line of sight to a radar reflector or dolphin of known position. This was possible for virtually every set up except a few in crowded naval slips.

The system checks verified the baseline calibration data throughout the survey.

There were no major equipment malfunctions nor substandard operation.

No unusual atmospheric conditions affected data quality.

Signal strength was good throughout the survey, as was geometric configuration.

There are no known systematic errors in the data.

See the Electronic Control Report for OPR-N100-FA/DA-80 for a list of equipment used and other details.

H. SHORELINE

Shoreline details on the field sheet come from Chart 18452, 11th Ed, dated March 26, 1977, and from visually controlled positions taken during shoreline verification. No manuscripts or aerial photographs were available for this survey.

Control stations seaward of the shoreline included radar targets A through G (004, 008, 009, 014-017), Pt. Herron Light (006), and the calibration dolphin near Peat (013). Radar targets A, D and F are charted as "1", "2", and "3" respectively.

Shoreline verification was performed both from a whaler and while walking along the shore. Sextant fixes were used exclusively for control; a check angle was taken with nearly all fixes.

Positions were taken every few hundred meters on the Mean High Water Line, and at distinct changes 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 with the exception of those discussed specifically in section L. 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.

Weather caused visibility and recording problems. In addition many other difficulties were encountered because of the urban and industrial development in the area. The worst problem was obstructed line of sight. In the Puget Sound

Naval Shipyard, and in the three marinas on the south shore, it was impossible to get fixes on the inshore ends of the piers and floats. In some cases fixes had to be taken from atop a fence or while standing on a railing, ladder, or roof. In other instances the fixes had to be taken from a position offset from the point of value. In these cases an estimated or taped distance and a direction to the point of value were recorded. In these problem areas, and in the mouth of Port Washington Narrows where the arc of visibility is cut off by Point Herron and Point Turner, there was never a choice of signals to use. Getting a check angle was sometimes impossible. This resulted in a few swingers and weak or busted fixes due to small angles. Another common problem was the positive identification of the signals being used due to marginal weather conditions.

All of the fix data was logged on computer tape using the visual format. A computer plot was generated on paper using RK 212 and RK 215. From this position plot, and using the sketches and taped distances in conjunction with the 1:5,000 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 program RK 300. All swingers and busts were located by this process. Positions were corrected and replotted using the preferred geometry and in some cases using remeasured angles. Unresolved busts were rejected. Anotations were made in the fix volumes where positions were rejected and where swingers were determined.

The tapes were recut and replotted on a mylar overlay. The shoreline was traced onto these overlays from the initial paper sheet. The shoreline was then transferred from these final smooth Shoreline Overlays onto the final field sheet.

No positions were taken west of longitude 122°41'17"W on the south shore nor west of longitude 122°41'23"W on the north shore. The reasons for this were lack of adequate visual control, lack of time, and bad weather. The shoreline in these places was compiled by tracing directly from the chart blow up. The shoreline of the Puget Sound Naval Shipyard was checked by fixes on the outer ends of the piers and visual comparison with the chart and the Wilsey and Ham survey referenced in section F.

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. Solid black lines were used to depict straight line features where the charted position matched exactly with the position derived from Shoreline Verification. Solid black was also used for the piers of Puget Sound Naval Shipyard which have exact positions defined by the Navy's network of horizontal control stations. The Shoreline Overlays are complete with notes describing each feature and the type of shoreline (rip-rap),natural, etc.). All tide dependent features such as rocks and wrecks are labeled with the height, Julian Day and time. Also plotted on these overlays are D.P.'s taken by the hydro launches, D.P.'s taken during wire drag operations, positions on pre-survey review items, and bottom samples.

See Verifier Rpt. Sec 2

It is recommended that this smooth Shoreline Overlay supersede the source document currently used for charting purposes, as this is the best source available. This recommendation is referred to the compiler for final resolution.

Nearly all of the shoreline is man-made (rip-rap, seawalls, piers, bulkheads, etc.), the major exception being the tidal flat and marsh areas in the western end of the Bay. Approximately one half of the north shore, that which lies east of longitude 122°39'20"W, can be considered an urban and industrial area. Included in this portion of the shoreline are the large piers and drydocks of the Puget Sound Naval Shipyard, the ferry terminals, municipal piers, fuel docks, private docks and numerous homes and other buildings built over the water. The north shore between longitude 122°39'20"W and 122°41'30"W is all comparatively straight rip-rap with few other features.

The south shore consists largely of rip-rap, seawalls, docks, piers and buildings constructed on pilings over the water; but in contrast with the north shore these features are generally more spread out. The exception is that between longitude 122°38'00"W and longitude 122°38'50"W, the area around the community of Port Orchard, the shoreline is densely developed. Two boatyards, plus two large moorages, the Port Orchard Yacht Club and the Port Orchard Marina are located in this area. In addition there is a ferry pier and several private piers and floats along this section of shoreline. Pier ruins, pilings, dolphins, wrecks and other hazards can be found all along the south shore and about 1 1/2 miles west of Port Orchard, there is a third sizable marina, the Suldan Boatworks.

There are three areas depicted as foul along the south shore. For the most part they lie inshore of the zero foot curve, but they are labeled in this manner to indicate to mariners that beach landings are inadvisable. Most other positions on rocks also lie inshore of the zero foot curve. At nottime during the survey was there a favorable tide for performing an adequate low water visual search for rocks.

I. CROSSLINES

Crosslines constitute 10.8% of the miles of hydrography run in this survey. The same launches and sounding equipment were used for main scheme and crosslines.

Crosslines agree within one foot of the corresponding main scheme soundings with the following exceptions:

1. In areas of steep contours and irregular bottom features some crossline soundings differ by more than one foot from main scheme soundings in the same area. It often occurs near the shore and offshore near the eastern end of the sheet where the water is deep. In all cases the crossline soundings are consistent with the general slope of the bottom, or within the degree of variability that the main scheme soundings show in the immediate area.

2. In the western end of the inlet, west of 122°40'00" and south of 47°32'15", there are numerous sunken logs on the bottom; they are remnants of lumbering days when logs were stored afloat in this area. Divers confirmed that logs are abundant here, that they lie horizontally on the bottom, and are scattered widely throughout the area. The logs cause discrepancies of up to 3 feet between neighboring soundings, and some crossline comparisons in the western end of the inlet show the effect of these logs.

3. At 47°32'34"N, 122°40'13"W, between positions 4040 and 4041, a questionable 26 foot crossline sounding plotted immediately adjacent to a 33 foot main scheme sounding. The area was developed at 10 meter line spacing from position 5625 to 5639. It was labeled development #1, and plotted on development sheet #1 at 1:1,250 scale. No shoal sounding was found in this area during the development, so the original fathometer trace was interpreted to be a stray sounding. concur

4. At 47°32'50"N, 122°39'59"W there is a 28 foot sounding on the crossline plotted among 31 foot adjacent soundings. This area was developed with 5 meter line spacing and radial lines around a marker buoy. It was labeled development #8, and plotted at 1:1,250 on development sheet #2. The shoalest sounding found was 28 feet, which was entered on the final plot by hand.

5. At 47°32'41"N, 122°38'47"W there is a 31 foot crossline sounding immediately after position 1005, between 34 foot crossline soundings, and 35 foot main scheme sounding. The fathometer trace is similar to those caused by logs in the west end of the inlet. Since divers found sunken logs throughout the inlet, this sounding is interpreted as a 3 foot diameter log. 31 obstr (subm log)

6. The crosslines in the area where the main scheme was run late in the day on J. D. 014/015 are up to 2 feet shallower than the main scheme. This occurs near 47°32'48"N, 122°38'13"W and also near 47°33'05"N, 122°38'15"W. The crosslines were run on J. D. 062 (positions near 1059 and 1032); they compare well with all of the main scheme they cross except the soundings around position 4641. Predicted tides were compared with the real tides for the times involved. It was found that the difference between predicted tides at those times disagreed with the difference in real tides at the times by enough to account for the depth discrepancies. concur

7. There are notother discrepancies between the crosslines and main scheme soundings. However, in addition to crosslines, there are several other areas of the survey where sounding lines from different days overlap. Generally the agreement is good, but in several areas there are discrepancies of a few feet. The predicted tides were compared with the observed tides for these areas and significant differences were found that would account for the discrepancies. For example at 47°33'00"N, 122°37'45"W soundings near position 4810 (J. D. 015, 2355Z) are generally 2 feet deeper than soundings near position 4926 (J. D. 017, 1856Z). The predicted tides for these times differ by 2.0 feet, but the actual tides differed by 3.56 feet, accounting for the discrepancy. At 47°32'32"N, 122°38'48"W soundings around position 5361 (J. D. 028, 1826Z) were about 2 feet shallower than corresponding soundings near position 4493 (J. D. 014, 1832Z). Predicted tide correctors added 0.4 feet more to the latter soundings, but real tides were 2.5 feet deeper at the time of the latter soundings, accounting for the plotted discrepancy. Other soundings taken on J. D. 028 also were two feet shallower than neighboring soundings taken on other days. It is expected that these discrepancies will not exist on the smooth plot when smooth tides are applied. concur

J. JUNCTIONS

This survey junctions with prior survey No. 5933 (1935, scale 1:10,000) at the bridge over Port Washington Narrows at 47°32'12"N, 122°37'10"W. The prior survey shows the 20 foot curve extending farther off the east bank than this survey,

and generally the 1935 soundings are several feet shallower than those taken this year. However, the bottom is quite irregular in this area, so the agreement between the surveys is relatively good. The bottom contours should be redrawn for charting. H-5933 is a prior survey and should have been considered in Sec. K.1, See Verifiers Report Sec. 6b. Also, designated prior survey in Project Inst.

This survey junctions at the eastern edge with contempory survey H-9864. The two surveys were conducted concurrently by the same personnel and equipment. The Junction Sheet is a 1:5,000 scale plot of the soundings of H-9864 in the junction area. The soundings of the two surveys agree well. The few apparent discrepancies of a few feet are due to the steepness of the bottom in this area. Junction checked during QC of H-9864 ✓

K.1. COMPARISON WITH PRIOR SURVEYS

Prior survey No. H-5652 (1934, scale 1:10,000) covered the entire area of this survey. The pertinent area of H-5652 was photographically enlarged to 1:5,000 scale, and that copy is forwarded with the sheets of this survey.

There are several distinct areas of this inlet which are useful to keep in mind during comparison of the prior survey with the data gathered in 1980. The western region extends from lines south of 47°32'15" and west of 122°40'05" into the tidal mudflats at the far end of the inlet. The north shore and south shore regions extend several hundred meters into the inlet, enclosing a central region running down the middle. Near the east end of the survey there is a deep region, where the gentle contours of the areas mentioned above suddenly give way to a rugged and steep bottom.

In the western region the soundings of this survey agree within one foot with those of the prior survey, except there are scattered soundings of both surveys which are 2 to 3 feet shallower than the surrounding bottom. These are caused by sunken logs lying horizontally on the bottom throughout this region, apparent remnants of the old log booming activities. The identification of these logs was made by divers on J. D. 072, when they swam for 5 minutes, in water of 10 foot visibility, and found six sunken logs. The shoreline has changed substantially in this area, due to filling.

The north shore has undergone entensive filling in the years intervening between surveys. This has drastically changed both the shoreline and the bottom contours of the northern region of the inlet. Many of the modern soundings there are five to ten feet shoaler than comparable soundings of 1934. The 30 foot contour has moved southward several hundred meters in some places. The naval base has been modified extensively, including new piers, much filling, and repeated dredging, making comparison between the new and prior surveys meaningless in this area. The town of Bremerton has also filled its shoreline, so the soundings along the entire north shore of the inlet are different than they were 46 years ago.

The south shore has not changed much. West of 122°39'00" the 1934 soundings in the southern half of the inlet generally agree within one or two feet with the 1980 data. An exception is a 31 foot sounding on the prior survey at 47°32'44"N, 122°39'05"W in an area which is presently 35 feet deep. Also at 47°32'40"N, 122°39'37"W there are a number of 31 foot soundings on the prior survey corresponding to 34 foot depths this year. To the east of 122°39'00", near the south shore, discrepancies of ~~three or four~~ two to six feet become quite common, with the 1980 soundings almost always being deeper than those of the prior survey. But the contours

follow the same general pattern, even if they are shifted a few meters toward shore.

Along the length of the inlet, near the center and west of 122°38'45", the two surveys generally agree within two or three feet, with the new survey almost always being slightly deeper than the prior survey. East of this line to the 60 foot curve the discrepancies grow larger, with the modern soundings remaining generally deeper than the comparable 1934 soundings, and sometimes being ~~eight~~ seven feet deeper. Further to the east, the bottom becomes so steep that small differences in position cause significant changes of depth. In this area, centered at 47°33'30"N, 122°36'50"W, there is no distinct pattern to the discrepancies, although many of the prior survey soundings are deeper than those of this survey. The bottom contours, however, are quite similar in the two surveys.

At the approach to Port Washington Narrows, at the NE corner of this survey, the 1980 soundings are nearly always one to three feet deeper than the 1934 depths. The bottom contours in this region are quite similar, although displaced a few meters from one survey to the other.

K.2. PRESURVEY REVIEW ITEMS

Throughout the project, launch chain drags and diver searches were used to investigate a large number of the PSR items. The diver searches were all carried out in accordance with the NOAA Diving Manual Section 7.1.1.1. A system for small scale bottom drags was designed to provide maximum efficiency while still retaining a conservative approach. On J. D. 039 two chain drags were run to act as models for the ensuing work. (See PSR Field Volume page 19, 21.) Measurements of these models were taken and used as criteria for all drags. The first model used 200 feet of chain. At the end of the drag the buoys were pulled tight and the actual chain spread measured to be 102 feet or 51% of the initial chain spread. The second model using 300 feet measured 187 feet or 62% of the initial spread. For data processing a conservative chain path of 50% of the initial chain spread was used for plotting. In some instances, allowing for the fact that the chain would close to this 50% figure gradually, an initial 200 foot coverage was used in plotting the area coverage at the beginning of a line. Using the 50% figure for the chain paths a 40% overlap of launch tracks assured complete coverage by the drag. Launches were spread at various distances from 60 to 80 meters. Positioning was determined using the Motorola Mini-Ranger system in a range/range mode. During the course of each individual drag, sextant angles were taken across the two outer buoys marking the chain ends. Using the tangent of this angle times the length of the tow lines, 150 feet, a good estimate of the chain spread was determined. It was used in calculating the position and boat spread for the next drag. This was considered only an estimate since the amount of slack line from the chain end to the buoy varied with the water depth. (See PSR Field Volume page 22.) The measurements taken of the model drag confirm that this function offered a good estimate of the chain spread. Two plots of each PSR item are included with the data. One plot indicates the area covered by the boat tracks. The second sheet shows the area covered by the chain. These sheets also show those areas covered by diver and visual searches.

PSR Item 31 - This pile falls in the area covered by H-9864 (FA 10-1-80). It exists and was located. concur: Pile located at lat 47°34'05"N, long 122°36'31"W

PSR Item 32 - The SUBMERGED PILING in the vicinity of 47°32'00"N, 122°40'50"W were investigated by low water visual search (see Section L) and by chain drag. (pos N 7542 7578) The PSR description for item 32 refers to four separate areas near the head of Sinclair Inlet. The first search centered on a solitary pile 125 yards off the northern shore. Eight chain paths were dragged from the north shore towards the south. The chain was placed parallel to rip-rap lining the north shore in approximately 10 feet of water. During the seventh line the chain was caught on the rocky bottom. This was viewed from the surface, and cleared by the utility boat. Two more hangs were encountered during the seventh and eighth lines respectively. Both were investigated by divers and verified to be logs lying flush with the bottom. Neither log presented any dangers to navigation. Plots of the chain paths on PSR Sheet #1 indicated a full coverage of a 100 meter area around the plotted position with the exception of one small holiday in the shallow area. Two areas at the beginning of the chain drags, indicated by the green, were covered by the initial 200 foot spacing of the chain. The 200 foot initial spacing was then tapered in to the 50% coverage figure used throughout the plotting. Overall there was a large amount of chain path overlap throughout the search. The search next progressed further into the inlet. During the next line two hangs were encountered. Investigation by divers (lat 47°32'11"N, long 122°40'36"W)

revealed that both hangs were logs with a 2 foot diameter lying flush with the bottom. Although the logs presented no danger to navigation the divers reported that the area was strewn with logs every 25 yards. This precluded any chance of effective chain drags. Due to the large amount of area to be covered diver searches were also ruled out. Note that this area was once the ~~sight~~ site of a large logging operation.

Recommendation: The solitary pile at 47°32'10.9"N, 122°40'36"W should be removed from the charts and all other piling in deep water in the vicinity of (lat 47°31'58"N long 122°41'00"W) 47°32'00"N, 122°40'50"W remain as ~~charted~~ uncovers at MLLW. The submerged piles west of the six foot contour were searched for visually while running shoreline verification and chart comparison operations. See section L for a recommendation of these items.

PSR Item #33 - The visible wreck at 47°31'39"N, 122°41'32"W exists and is plotted on the shoreline verification sheet (positions 5042 and 5043). It is a barge which extends from the grass of the marsh out onto the mud flats. chart as shown on smooth sheet

PSR Item #34 - The SUBMERGED DOLPHIN at 47°31'54.9"N, 122°40'25.4"W was investigated on J.D. 053. A sequence of circular search patterns were completed (see PSR sheet #7 and PSR field volume page 31) in accordance with the NOAA Diving Manual Section 7.1.1.1. The first four, having radii of 100 feet and covering the full circumference of the circles, were positioned using dive buoys placed over the diver centering the search. The fifth circle with a radius of 100 feet was swum from the direction 020° counter-clockwise to 155°. This circle was centered at a dolphin used for miniranger calibration, signal number 13. Throughout the search a uniform bottom and unusually good visibility aided in completing a thorough search of the area. Coverage of this item extended from the calibration dolphin to a point 194 feet past the given position. Parallel to the line formed from the calibration signal and PSR position coverage extended 55 feet to the NW and 76 feet to the SE. No hangs or objects were encountered by the divers at any time.

Recommendation: It is recommended that the submerged dolphin at 47°31'54.9"N, 122°40'25.4"W be removed from the charts. I concur.

PSR Item #35 - The SUBMERGED PILE at 47°31'55.06"N, 122°40'21.12"W was investigated on day 056, two divers utilizing two rectangular search patterns each 100 feet wide. The search patterns were positioned in reference to the existing marina piers. One diver would swim along the pier, piling to piling, while the second diver with a tape stretched between them swam a compass course parallel to the pier. The first rectangle was located from the most western pier and the second rectangle from the middle pier. (See PSR Sheet #7.) Two pilings were found lying flush with the bottom. They present no dangers to safe navigation. (See PSR filed volume page 32, 34).

Recommendation: It is recommended that the submerged pile at 47°31'55.06"N 122°40'21.12"W be deleted from the charts. I concur.

PSR Item #36 - The SUBMERGED DOLPHINS in the vicinity of 47°32'25"N, 122°39'25"W were searched for on J. D. 038, 039/040, 045, 050 and 052. The majority of the search centered around launch chain drags but was supplemented by otter board sweeps, diver searches and low water visual searches. Thirty-one chain drags were run from the shore, at the shallowest point accessible to the launch, and run north. Due to the long foreshore the launches were hindered by lack of

depth. The only hangs encountered were verified by divers to be pile stubs just barely flush with the bottom. Two circular dive searches, in accordance with the NOAA Diving Manual Section 7.1.1.1., were utilized using a 100 foot radius. The dive searches were primarily used to cover the areas surrounding two anchored fishing vessels. The anchors of each vessel were used to center the search and were positioned using a divers buoy and visual fixes. (See PSR field volume page 27.) Four lines were run dragging an otterboard system behind a single launch. The otterboard coverage is depicted in green. (See PSR Sheet #5.) The otterboards were only run for two days and then discontinued in favor of the chain drags. Field edit personnel covered the foreshore at low water during shoreline verification. The area of the low water foreshore is shown in blue. As per PSR Sheet #5 the area covered is quite substantial but the coverage has a few small holidays and one larger one in shallow water. Lastly it should be noted that a number of residents from the surrounding community were queried as to the piles removal. Each resident stated that the piles had been removed long ago but had no documentation to verify this. From this perspective it seems apparent that all these piles have been removed. It is certain that all those in the area of coverage as shown on PSR Sheet #5 are no longer present.

Recommendation: It is recommended that the submerged dolphins and piles in the vicinity of 47°32'25"N, 122°39'25"W be deleted from the charts. The pier ruins in this area shown on the shoreline overlay should be charted. This recommendation applies to the charted subm dolphins and piles between longitudes 122°39'10"N and 122°39'40"N (2) I concur.

PSR Item #37 - The SUBMERGED PILE charted at 47°32'33.9"N, 122°39'03"W was searched for on J. D. 032 and 071 using chain drag methods as described in the opening text. A series of N-S and E-W lines were run in an attempt to cover the area of a circle with a 100 meter radius. Although a considerable effort was put forth the coverage as shown on PSR Sheet #6 has a few small holidays and is probably not adequate for disproval. Of significant interest was the remains of a pile, found by ship's divers on J. D. 032, lying flush with the bottom beside a stub protruding 2 1/2 feet from the bottom at 47°32'36.4"N, 122°39'10.75"W approximately 180 yards from the charted position. A least depth of ~~39.5~~ 29 feet was measured at 23:35:00 GMT. The pile is not a danger to navigation but it is felt that this may be the pile in question.

Recommendation: The submerged pile at 47°32'33.9"N, 122°39'03"W should remain as it is now charted since conclusive evidence of its removal cannot be provided. Further, a least depth sounding should be charted over the pile stub at 47°32'36.4"N, 122°39'10.75"W. I concur.

PSR Item #38A - The PILING in the vicinity of 47°32'22"N, 122°38'44"W were searched for, using launch chain drags, on J. D. 071. A discrepancy should be noted on the PSR description referring item #38A to location 47°32'22"N, 122°38'40"W. This was contrary to the chartlet that was provided with the PSR descriptions. The area stated by lat-long was located between two piers and was searched on J. D. 056 by divers in the process of investigating PSR Item #39. The procedures followed are outlined under the text for PSR Item #39 (see PSR Sheet #2 and page 35 of the PSR field volume). In searching the area referred to on the PSR chartlet chain drags were run from the shore seaward to 5 fathoms as required. The width of the drags was restricted to the west and southwest by existing piles and piers (see Shoreline Verification FA 5-1-80 H-9862). Launches were run as close as possible to all existing piers. The fathograms were checked for any indication of spikes or peaks that could indicate piles. There were two hangs encountered during the chain drags. Both hangs were verified by divers to be logs lying flush with the bottom, presenting

no dangers to navigation (see data printout and PSR field volume page 54). In reference to the chartlet, the solitary pile to the south of the most western pier at 47°32'19.6"N, 122°38'40.8"W was found to be still standing. The group of three piles to the west of the most western pier were not found. Of the three piles, two at 47°32'22.8"N, 122°38'45.1"W and 47°32'22"N, 122°38'44.2"W were within the area covered by the chain drag.(see PSR Sheet #2). The third pile position at 47°32'22.1"N, 122°38'42.9"W was under the marina piers to the east of the drag. An inquiry with the marina owner revealed that no documentation existed but that it could be positively stated that all piling in the vicinity of the marina had been removed.

Recommendation: It is recommended that the pile ~~found standing~~ reported at 47°32'19.6"N, 122°38'40.8"W ~~remain~~ be revised on chart 18449 and that it also be added to chart 18452. at lat. 47° 32' 19.2"N, long. 122° 38' 41.2"W I concur.

It is further recommended that the three pilings at 47°32'22.8N, 122°38'45.1"W, 47°32'22.1"N, 122°38'42.9"W and 47°32'22"N, 122°38'44.2"W be deleted from chart 18449. I concur.

PSR Item #38B - The PILE shown on chart 18449 at latitude 47°32'34.5"N, longitude 122°37'55"W was searched for on J. D. 063 with negative results. The area surrounding the pile was searched using chain drag methods previously described. A series of eight N-S lines and 2 E-W lines were run. The N-S lines were started as shallow as possible during high water and dragged seaward. Plots of the chain paths on PSR Sheet #3 showed complete coverage and overlap of each drag. One pile was found, by divers, lying on its side and presents no danger to navigation. The position of PSR item #38B plots well above the LWL and therefore a low water visual search was also conducted.in accordance with PSR instructions. The search showed no evidence of the pile. The shoreline verification party did find a rotting 4x4 pole standing vertical but loose in this area. It was easily pulled out.

Recommendation: It is recommended that the pile at 47°32'34.5"N, 122°37'55"W be deleted from chart 18449. I concur.

PSR Item #38C - The PILE located at 47°32'51.5"N, 122°37'15"W on chart 18449 was searched for on J. D. 064. Due to the pile's proximity to a wide foreshore a low water search was conducted.and in addition 3 N-S chain drags were towed from shore seaward (see PSR Sheet #4). Neither search revealed any items of significance. A group of pile stubs were found at approximately 47°32'51.7"N, 122°37'14.1"W during the low water search. The stubs are projecting 6" above the ground surface near the HWL and do not present a hazard to navigation. Refer to the drawing on page 49 of the PSR field volume.

Recommendation: It is recommended the pile positioned at 47°32'51.5"N, 122°37'15"W be deleted from chart 18449. I concur.

PSR Item #38D = The two DOLPHINS shown on chart 18449 in the vicinity of 47°32'55"N, 122°36'55"W were investigated on J. D. 064 and 065 by chain drags, divers and by visual inspection at low water. Two N-S chain drags were run on J. D. 064 during high water (see PSR Sheet #4). Divers, using snorkles, searched the shallow areas using a criss-cross search pattern parallel and perpendicular to the shoreline. They positioned themselves by visual observation of the shore. On J. D. 065 a low water search was conducted over the foreshore

area. Refer to the diagram on page 50 of the PSR field volume. It may also be noted that the chain drags snagged a pile stub, of insignificant charting value. Refer to the raw data printouts for J. D. 064. Coverage of the area is considered complete and thorough.

Recommendation: It is recommended that the dolphins shown at 47°32'55"N, 122°36'55"W be removed from chart 18449. I concur.

PSR Item #39 - The PILE charted at 47°32'23.54"N, 122°38'38.99"W was searched for by divers on J. D. 056. The search was conducted between two adjacent piers. Using the pier pilings for positioning two divers, one at each pier with a line stretched between them, swam a compass course along the face of the piers (see PSR field volume page 35). One pile was found lying flush with the bottom, at the approximate position of the PSR description. It constitutes no danger to safe navigation. In a previous discussion with the marina owner it was stated that although no documentation exists he could assure us with no uncertainty that the pile had been removed (see PSR Sheet #2).

Recommendation: It is recommended that the pile charted at 47°32'23.54"N, 122°38'38.99"W be deleted. I concur.

PSR Item #40 - The PILE charted in position 47°32'27.8"N, 122°38'33.4"W was searched for on J. D. 038, 057 and 065 using chain drags and diver searches. Initially 2 N-S drag lines were run. During the investigation of a hang at the beginning of the third line numerous objects and wreckage were noted by the divers over a large area surrounding the PSR position. It appeared to be a dumping ground for boat wreckage and miscellaneous debris. Three fixes, taped heights and least depths were taken at what appeared to be the most prominent objects (see PSR filed volume page 41). Due to the large amounts of protruding objects, two circular dive searches were initiated in accordance with the NOAA Diving Manual Section 7.1.1.1., using a 100 foot tape centered on the bow and stern of the sunken wreck "Phillip Foss". This wreck located by divers on J. D. 038 (see PSR field volume page 52), was found directly below the ruins of a floating breakwater surrounded by floating submarine net buoys. A least depth was measured from the highest point of the wreck. The floating wreckage and buoys were located by field edit (see Shoreline Verification FA 5-1-80 H9862 fix # 165, 166, 167). The first circle which was centered on the bow (position #619) started from directly south and was swam counter-clockwise until the tape was parallel to the wreck. The second circle centered on the stern (position 618) was started from a direction bearing 030° and swam counter-clockwise to a direction bearing 190° at which point accumulated wreckage and hanging chains stopped the search pattern. A third search was conducted directly beneath the floating breakwater extending 25 meters shoreward and perpendicular to the "Phillip Foss". The area directly surrounding the wreck of the "Phillip Foss" is conjested with floating and submerged wreakage, mooring lines and chains. While conducting the second circular search the tape was snagged on a heavy mooring chain. Upon further investigation a sunken barge was discovered. The barge was oriented in an east-west direction and measured 105' in length by 25' standing 13' above the natural bottom. It was located from the northwest corner and that being the highest point a least depth of 18.2 was measured. The barge was being used as an anchor for the floating wreckage. (see PSR field volume page 51-52). Throughout the searches and numerous dives no indication of the pile was seen. The indicated coverage of the first circle

centered on lat. 47°32'26.3"N, long 122°38'30.1"W

lat 47°32'27.6"N long 122°38'34.8"W

lat 47°32'27.4"N long 122°38'37.5"W

lat 47°32'27.5"N long 122°38'34.2"W

lat 47°32'19.2"N long 122°38'41.2"W

lat 47°32'27.8"N long 122°38'37.6"W

An unidentified 17ft. sounding (noted as an obstr) was obtained while running the regular system of sounding lines, 20 meters south of the sunken barge (18 WK). It should be considered as part of the breakwater structure.

search, shown on PSR Sheet #2, shows that the given position of the pile was covered by the divers.

Recommendation: It is recommended that the pile positioned at 47°32'27.8"N, 122°38'33.4"W be deleted from the charts. In addition it is recommended that the submerged barge at 47°32'27.85"N, 122°38'37.65"W be depicted as sunken wreck with a least depth of 19.2 feet MLLW. It is also recommended that the sunken wrecks be charted at ~~47°32'26.5"N, 122°38'29.6W with a least depth of 12.8 feet MLLW, at~~ 47°32'27.65"N, 122°38'34.79"W with a least depth of 15.8 feet MLLW ~~and at 47°32'27.7"N, 122°38'34.9"W with a least depth of 10.4 feet MLLW.~~ It is also recommended that a least depth sounding of 14.8 feet MLLW be plotted over the submerged wreckage at 47°32'26.3"N, 122°38'30.1"W. I concur.

PSR Item #41 - The SUBMERGED PILING and pier ruins in the vicinity of 47°32'35.80"N, 122°38'18.5"W were searched for on J. D. 059 using launch chain drag techniques as previously described. During the first line a hang investigated by divers revealed two submerged piles. The piles originated from the same spot, but one angled off to end approximately 15 feet away from the original point (see PSR field volume page 44). One pile (position #615) stood 8.8 feet above the bottom and the second (position #616) stood 10.0 feet above the bottom. Least depths were measured from both piles. No further lines were run. Coverage of item #41 is considered inadequate.

Recommendation: It is recommended that the four submerged piling in the vicinity of 47°32'35.80"N, 122°38'18.5"W be retained on the chart from H-5652 (1934). It is also recommended that a submerged pile be plotted at 47°32'35.8"N, 122°38'18"W with a depth of 16.6 feet MLLW and that a submerged pile be plotted at 47°32'35.8"N, 122°38'18.1"W with a depth of 17.3 feet MLLW. as uncovers at MLLW I concur.

PSR Item #42 - The SUBMERGED PILING in the vicinity of 47°32'46.06"N, 122°37'52.66"W were investigated using chain drags as described. On J. D. 063 and 064 a scheme of 10 N-S lines were run. Coverage and overlap, depicted on PSR Sheet #3, show that a 100 meter radius was covered from the stated position with the exceptions of small area southeast of the position covered to 90 meters and a narrow area to the west of the position covered to 80 meters. Coverage in the immediate area of the given position was extensive. Throughout the search no hangs were encountered to indicate any submerged items.

Recommendation: It is recommended that the submerged piling at 47°32'46.06"N, 122°37'52.66"W be removed from all charts. I concur.

L. Comparison with Chart 18452, 11th Ed; Mar 26/77.

The chart was photographically enlarged to 1:5,000 scale for easy comparison. The enlargement is forwarded with the field sheets.

The soundings on the chart are from prior survey H-5652 so most of the soundings and contour lines need to be changed as described in the previous section.

The shoreline of the chart differs in many minor ways from the actual shoreline, as can be seen by superimposing the shoreline overlay on the chart blow up. Major discrepancies involve alterations of the marinas along the south shore,

new foul areas in three places on the southeastern shore, and deletion of many structures which formerly protruded from the bank on the southwest shore of Port Washington Narrows.

The PSR items previously discussed in detail will be referenced by item number only in this section. See the previous section for more detail on each of them.

Starting at the western end of the inlet, the status of the offshore charted features is as follows. Accurate positions were obtained for the two seaward corners of the PA wreck, PSR item 33.

The piling symbols west of and ~~near~~ to include the "Log Boom" at 47°31'42.5"N, 122° 41'11.3"W should be removed. The pilings and obstructions shown on the final field sheet should be added to the chart. These recommendations are based on an inspection of the mud flats that was conducted on foot between 2330 J. D. 052 and 0010 J. D. 053 (see Chartlet below). Position 379, (FA 5-1-80, Shoreline Verification)Volume) is a large sunken log. The search commenced at this position and proceeded 350 meters west southwest and then turned and proceeded north to position 254, a storm drain pipe. Fix 380 was taken at the top of the embankment on the railroad tracks above the storm drain. The mud flats west of a line between this position and a tangent to the point of land on the south shore at 47°31'41N, 122°41'07"W were totally dry except for the tidal stream that runs in the center of the flats. The pilings that are charted on either Chart 18452 or 18449 west of the described line do not exist and should be removed from the chart. One lone piling which sticks up 7 feet above the flats was found on the south shore close to where chart 18452 shows 4 pilings in a row. ~~Position 381 is an approximate position on this piling~~. A row of pilings was located on the south shore at the MHWL at position 252. Two pilings were seen near the edge of the marsh in the southwest corner of the small bay just east of the wreck on chart 18452. A large barrel 6 feet high and 4 feet in diameter was seen approximately in the center of the flats. The estimated distance and direction from the charted wreck is 100 meters northwest. There is a piling symbol on chart 18452 at 47°31'42.6"W, 122°41'36.5"W which may represent this obstruction.

lat. 47°31'39" N. long 122°41'18" W

No other pilings or obstructions were visible anywhere west of the described line except 5 piling stubs which protrude 1 1/2 feet above the mud flat between the point of land at 47°31'41.6"N, 122°41'16.5"W and the point of the marsh at 47°31'37.7"N, 122°41'26.5"W on the south shore. In the area labeled "log booms" on chart 18452, at 47°31'42.5"N, 122°41'11.3"W on the south shore, several large horizontal logs were seen nearly buried in the mud, sticking up no more than 1 foot above the mud.

noted on smooth sheet.

The submerged pilings of PSR 32 west of the six foot contour should all be removed from the chart. They are charted in the vicinity of 47°31'56"N, 122°41'08"W and 47°31'58"N, 122°41'00"W. They were visually searched for as described below. The submerged pile at 47°32'11"N, 122°40'36"W was disproved by bottom drag. The rest of the submerged piles of PSR 32 were not disproved due to the numerous logs on the bottom preventing an effective bottom drag and lack of time. The search for the submerged piles in shallow water was conducted between 2300, J. D. 052 and 0100, J. D. 053, in Whaler 2. Position 378 is near the center of the area searched.

four at lat. 47°32'00" N long 122°40'45" W

should be retained as uncovers at MLLW.

Ten lines were run parallel to the shore at ten meter spacing, (see chartlet on the following page). The end points for these lines were the line between

at the Office of the Commander, 13th t
Guard District in Seattle, Wash.

Refer to section numbers shown with area designation.

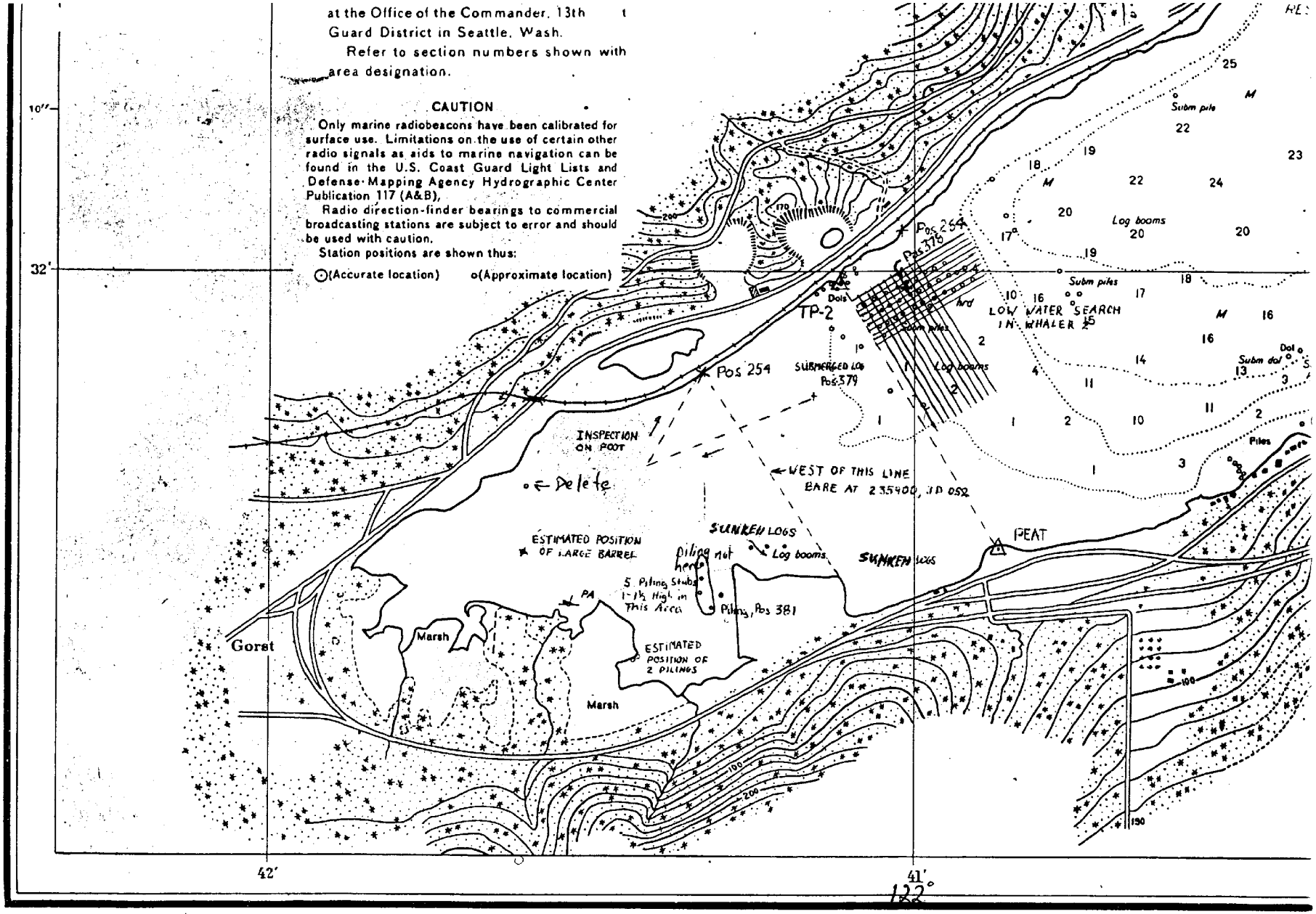
CAUTION

Only marine radiobeacons have been calibrated for surface use. Limitations on the use of certain other radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and Defense Mapping Agency Hydrographic Center Publication 117 (A&B).

Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.

Station positions are shown thus:

⊙(Accurate location) o(Approximate location)



11th Ed., Mar. 26/77

18452

(formerly C&GS 6440)

CAUTION

This chart has been corrected from the Notice to Mariners published weekly by the Defense Mapping Agency Hydrographic Center and the Local Notice to Mariners issued periodically by each U.S. Coast Guard district to the print date shown in the lower left hand corner.

SOUNDINGS IN FEET

station PEAT and station TP2 and a line perpendicular to the north shore 100 meters east of the east end of a pier in ruins (see fix 264, FA 5-1-80, Shoreline Verification Volume).

Ten lines were run perpendicular to the shore at 15 meters spacing, (see chartlet). The first line coincided with the line between station TP-2 and station PEAT. The last line was run on the line through fix 264, the east end of the pier in ruins. These lines began and ended 50 meters from shore and 300 meters from shore.

The search was performed at slack water, low tide, with 3-5 knots of wind. Visibility was 10 feet. The boat was run at dead slow. Two persons were stationed in the bow looking ahead and to the side.

The depth in the area searched varied from 3 to 10 feet. Distances were estimated.

The "log booms" at 47°31'54"N, 122°40'56"W and 47°32'03"N, 122°40'34"W are no longer there, based on visual inspection of the areas, and should be removed from the chart.

The piles at 47°31'48"N, 122°40'30"W and 47°31'51"N, 122°40'24"W are no longer there, based on visual search during shoreline verification and should be removed from the chart.

The submerged dolphin, PSR item 34, at 47°31'55"N, 122°40'25"W was searched for by divers and not found. It should be removed from the chart. The dolphin immediately to the northeast of PSR 34 is still there.

The submerged pile, PSR item 35, in the marina at 47°31'56"N, 122°40'21"W was searched for by divers and not found. It should be removed from the chart.

The dolphin, piers, and breakwater associated with the marina centered at 47°31'55"N, 122°40'18"W should be recharted as shown on the shoreline overlay.

The pile from H-5652 at 47°31'55"N, 122°40'11"W was not specifically investigated, and therefore should be continued on the chart as uncovers at MLLW

The snag at 47°31'55"N, 122°40'09"W was searched for during shoreline verification and not found. It should be removed from the chart.

A group of 5 piles should be added to the chart near 47°31'57"N, 122°40'02"W, position numbers 5672 - 5676.

The 2 piles & dols. at 47°32'03"N, 122°39'55"W were searched for during shoreline verification and not found. They should be removed from the chart.

The series of four dolphins centered at 47°32'04"N, 122°39'57"W are misplaced on the chart. They should be deleted and three dolphins should be charted centered at 47°32'07"N, 122°39'55"W, position numbers 5678 to 5680. I concur.

(Pilings for log storage as it appears on proposed plan by Halvorsen of Port Madison in 1957)-CL-87/64
Some of the piles inshore of the zero foot curve from 47°32'04"N, 122°39'54"W to 47°32'30"N, 122°39'45"W still exist, but the locations should be plotted as positions 5677 and 5681 to 5688. The rest of the charted piles in this line were visually searched for from the launch by maneuvering along the depth contour of the existing piles and looking into the water. The water was about seven feet deep at the time. None were found but it is recommended that they be retained on the chart because the area was not searched at low water or dragged. as uncovers at MLLW

north of lat 47°32'16"N long 122°39'47" W.

On the north shore near 47°32'27"N, 122°40'24"W there are nine piles, positions 5585 to 5589 and 5591 to 5594 which should be added to the chart. (2)

I concur.

The three dolphins near 47°32'48"N, 122°40'15"W are accurately charted (positions 5595 to 5597), but a group of 13 piles should be charted in this area bounded by positions 5598 to 5601.

A pier ruins consisting of 35 piles should be charted at 47°32'49"N, 122°40'15"W, bounded by positions 5602 to 5606 and 279.

A dolphin should be charted at 47°32'51"N, 122°40'09"W, position 5607. In the same area five pairs of piles, the ruins of a pier, should be charted as evenly spaced pairs from position 5608 to 5609. The piles of each pair are about 2 meters from each other, parallel to shore. The sewers charted in this area were not noticed during shoreline verification. However discolored water was noticed here during heavy rains. Retention on the chart is recommended.

I concur.

Mooring buoys maintained by the naval base are moved, added, and removed at irregular intervals throughout most of Sincliar Inlet. Currently they are secured with either 8 or 11 ton concrete sinkers, plus one or three anchors and chains led out on the bottom from the sinkers. The 8 ton sinkers are 4.5 foot cubes; the 11 ton sinkers are 4.5 feet high, with octagonal surface shape, 6 feet across. Naval personnel said that these sinkers often get covered by mud. At the time of the survey there were eight naval mooring buoys in Sinclair Inlet at positions 501 to 504, and 5017 to 5019. The eighth buoy of position 505 (which was found to be in error) is marked "L-4", which should remain on the chart as charted. Buoys L5, L6 and L7 are gone, as is the unlabled mooring buoy at 47°33'06"N, 122°38'55"W. IN addition to the eight naval buoys, there are two privately maintained mooring buoys at positions 153 and 268, as shown on the shoreline overlay.

The submerged dolphins and piles of PSR #36 in the vicinity of 47°32'25"N, 122°39'25"W were searched for by bottom drag, diver search, and low water visual search. Remnants of some were found in the charted pier ruins but none were found elsewhere. None extended more than six inches above the bottom. They had been broken off and were rotting away. It is recommended that all these features except the pier ruins be removed from the chart. The boundaries of the pier ruins are positions 6045 and 6086. (lat 47° 32' 24"N long 122° 39' 18"W)

I concur.

Two rocks near 47°32'23"N, 122°39'30"W, positions 603 and 207, should be added to the chart. Two wrecks should also be charted in this area at positions 206 and 212.

I concur.

An obstruction should be charted at position 602, 47°32'24"N, 122°39'18"W. It is an I-beam protruding to 3 feet above bottom of a 45° angle from the bottom. It is shown on the shoreline overlay. (awash at MLLW)

The rock position charted at 47°32'19"N, 122°39'03"W should be moved to position 375.

There are seven radar targets located along the south shore of the survey area, which should be labled Radar targets 1, B, C, 2, E, 3, G. The radar targets already on the chart should have their positions and designations updated, and target C should be charted. See the horizontal control report for OPR-N100-FA/DA-80 for details.

The pile at position 47°32'28.2"N, 122°38'45.5"W was investigated on J. D. 057 by launch chain drag. Eight lines were run from south to north. Plots of the chain paths on PSR Sheet #2 show that a circle with a 100 meter radius from the charted position was covered with the exception of a small area to the south southeast that was covered out to 70 meters. There was one hang encountered. Diver investigation verified a discarded towing cable in the mud which presented no dangers to navigation. Chain paths were overlapped considerably in a uniform manner. It is recommended that this pile be removed from the charts.

The submerged wreckage, from a wooden barge, was located on J. D. 057 at 47°32'29.8"W, 122°38'~~40.75~~ 39.4"W. The wreckage was located by divers investigating a spike on the fathometer trace run during launch chain drags. Notations can be reviewed on the raw data printout at time 210709 and in the PSR field volume on page 40. The wreckage of the barge was in an advanced stage of decay and deeply silted over. Measurements and descriptions of the barge were not possible due to state of decay. A least depth and the projecting height above the bottom was taped from the highest point (see PSR filed volume page 40). It is recommended that the least depth of 28.2 feet MLLW be plotted as a sounding at the position 47°32'29.8"N, 122°38'~~40.75~~ 39.4"W.

The piers and marina near 47'32'22"N, 122°38'40"W need to be recharted as drawn on the shoreline overlay.

The four piles of PSR item 38A on the west edge of the marina, were searched for by bottom drag. The most southerly of these four piles exists and is charted correctly. The others were not found and removal from chart 18449 is recommended. See Sec K.2 PSR Item 38A

PSR item 39, a pile in the marina was searched for by divers. It was not found and removal from the chart is recommended.

The sunken wreck of the tugboat "Phillip Foss", positions 601, 618 and 619 should be charted at 47°32'27"N, 122°38'34"W. The breakwater in that area is in ruins and should be recharted using positions 165 to 167. PSR item #40, a pile near the wreck was searched for by divers, positions 618 and 619, and not found. It should be removed from the chart. See Sec K.2 PSR Item 40

The cable area running from Port Orchard to the west end of the naval base was not investigated. Retention on the chart is recommended.

The submerged piles of PSR item 41 exist and should be charted at 47°32'36"N, 122°38'18"W, positions 615 and 616. There are two piles, one at an angle from the bottom, covered by 16 feet of water at 2108Z, J. D. 059.

Another pile should be charted at 47°32'35"N, 122°38'17"W, 13 meters seaward of position 138.

The marina and ferry pier near 47°32'38"N, 122°38'07"W should be recharted as shown on the shoreline overlay.

The cable charted at 47°32'38"N, 122°38'01"W was not investigated, and not noticed during shoreline verification. Retention is recommended.

The piling charted on 18449 at 47°32'34.5"N, 122°37'55"W, PSR item 38B, was searched for during shoreline verification and by wire drag and not found. It should be removed from the chart.

The three submerged piles of PSR item 42 at 47°32'46"N, 122°37'53"W were searched for by bottom drag. They were not found and removal from the chart is recommended.

The piling charted on 18449 at 47°32'51.5"N, 122°37'15"W, PSR item 38C, was searched for during shoreline verification and not found. Removal from the chart is recommended.

The charted cable area running across the inlet from Annapolis to Pt. Turner was not investigated. Retention on the chart is recommended.

The dolphins charted on 18449 at 47°32'55"N, 122°36'55"W, PSR item 38D, was searched for during shoreline verification, by wire drag, and by divers. They were not found. Removal from the chart is recommended. There are two other dolphins in the vicinity as shown on the shoreline verification overlay.

The ruined pier charted at 47°32'56"N, 122°36'54"W was searched for during shoreline verification by divers and by chain drag (see PSR volume page 50). Its former landward end consists of 10 broken pilings set in cement, well above the low water line. It is plotted as an obstruction on the shoreline overlay at position 73. Nothing was found seaward of these during any of the searches. The pier ruins should be removed from the chart except for the obstruction at the landward end.

The restricted area boundary running from the end of that ruined pier to Pt. Turner should be changed. New restricted limits are defined in Notice to Mariners 34/79 for Coast Pilot corrections on page 103, lines 34-45.

A foul limit along the coast should be charted in the area of 47°32'53"N, 122°36'55"W, as shown on the shoreline overlay.

The submerged cable near 47°32'55"N, 122°36'43"W was not noticed during shoreline verification, but not investigated. It should be retained.

A foul limit is needed at 47°32'50"N, 122°36'36"W. See the shoreline overlay.

The piling at 47°33'04"N, 122°36'14"W (from H-5652) was not seen during shoreline verification or hydrography, but not dragged for due to lack of time. It is recommended that it be retained on the chart.

The three detached piles and submerged feature charted near 47°33'06"N, 122°39'34"W were not observed during shoreline verification, but not dragged for. Retention (as uncovers at MLLW) is therefore recommended. Other features in this area shown on the shoreline verification sheet should be charted.

The naval base should be redrawn as shown on the shoreline overlay.

The markers on the naval base defining the measured nautical mile, and 1/2 nautical mile, have not been maintained and the pilots working for the shipyard say they are not used. They could not be positively identified or located. Removal from the chart of all six markers, and the measured distances is recommended. See horizontal control report for more information on these markers. Appl thru CL 1202/80

(lat. 47°33'45"N., long. 122°37'15"W)

The dolphins charted in the Pt. Turner area, which do not have position numbers associated with them were not found during shoreline verification. However, they were not dragged for, so retention is recommended. The dolphin, charted in lat. 47°33'32.8"N, long. 122°37'31.5"W., was verified, however the remaing piles and dolphins were neither verified or disproved and should be retained as uncovering at MLLW.

The cable areas around Port Washington Narrows and Pt. Herron were not investigated. Retention is recommended.

The piling charted at 47°34'05"N, 122°36'30"W, PSR item #31, was searched for during shoreline verification and located. It falls within the limits (see H-9864) of the contemporary junction survey H-9864.

The quality of the bottom thoughout the area of the survey is properly charted. This includes theiindication of interspersed rocky, hard, and mud bottoms in the deep area at the east end of the survey.

M. ADEQUACY OF SURVEY

This survey is sufficiently complete and adequate to supersede prior surveys for charting. Deficiencies are: small sections of shoreline that had to be drawn directly from the chart.without field verification; a few PSR item bottom drags that did not completely cover the areas specified in the project instructions; and insufficient search for some of the charted piles mentioned in section L.

N. AIDS TO NAVIGATION

There are no floating aids to navigation in the survey area.

At the time of the survey there were four navigation lights on the naval piers at positions 382, 383, 390 and 391. However, naval authorities said they were going to be removed and therefore should not be charted.

The entries in the Light List are complete and accurate except entry 2457.60, Bass Point Light, is listed as being on chart 18452, which is erroneous. It would be better to list it after entry 2456, under a heading of "Port Washington Narrows (chart 18449)".

All existing charted landmarks and nonfloating aids in the survey area were located to 3rd Order, Class I accuracy by intersection and geodetic direct methods. Each item was evaluated for its usefulness as an aid to navigation. (See the Horizontal Control Report submitted by the FAIRWEATHER for OPR-N100-FA/DA-80)

One landmark not located was the hotel in the community of Port Orchard, shown on chart 18452, at 47°32'31"N, 122°38'13"W. Due to its present state of disrepair and due to new buildings in the vicinity, the hotel is no longer a prominent feature. Attempts to renovate it have been abandoned due to lack of funds. There is still some local support for the renovation project, but deletion from the chart is recommended.

There are no uncharted bridges or overhead cables in the survey area. The clearance of the Port Washington Narrows bridge was not checked.

The Washington State Ferry, Seattle to Bremerton route terminates at Pt. Turner at 47°33'44"N, 122°37'27"W. The ferries generally make a wide turn at about 47°33'25"N, 122°37'00"W and navigate down the middle of Port Orchard east of this survey.

A local ferry runs directly from the pier at 47°33'47"N, 122°37'21"W on Pt. Turner to the charted ferry pier at Port Orchard. Submarine cables in the area are discussed in section L.

O. STATISTICS

Vessel	No. of Positions	Nautical Miles of Sounding Lines	Sq. Miles of Hydrography	Number of Bottom Samples
FA-3	1210	82.5	1.2	
FA-4	1790	110.7	1.6	
FA-5	670	20.7	.2	31
Whaler-2	280	5.9	.05	
FA-3, Bottom Drag	393			
FA-4, Bottom Drag	484			

Nansen:Cast: 1
MarTek Casts: 3

P. MISCELLANIOUS

No unusual situations were detected.

As mentioned in section E, several areas of hydrography were plotted at an enlarged scale for readability of the data. These sheets are tabulated below:

Sheet Number	Scale	Positions	Content
Inset 1	1:2,500	See position abstract	Soundings in PSNS slips
Inset 2	1:1,250	8000-8114	Port Orchard Marina at 47°32'39"N, 122°38'09"W
Inset 3	1:1,250	8115-8228	Port Orchard Yacht Club at 47°32'23"N, 122°38'39"W
Inset 4	1:1,250	8229-8280	Suldan Boat Works at 47°31'51"N, 122°40'15"W
Development Sheet 1	1:1,250	4059-4061 4074-4076 4081-4084 4098-4102 4124-4127 4135-4139 4161-4164 4190-4191 5610-5649 4001-4003 4011-4013 4040-4041 5557-5584	Developments 1, 1A, 2, 3, 4 and 10 #1 Disproval of stray sounding, third out of position 4040 at 47°32'34"N, 122°40'13"W (positions 5625-5638) #1A Disproval of stray sounding at position 4107, 47°32'32"N, 122°39'59"W (positions 5557-5584) #2 Disproval of stray sounding (fish) near position 4075 at 47°32'37"N, 122°40'00"W (positions 5610-5624) #3 Disproval of stray between positions 4125 and 4126 at 47°32'32"N, 122°39'53"W (positions 5610-5624) #4 Disproval of stray, first out of 4163 at 47°32'30"N, 122°40'25"W (positions 5641-5649) #10 Investigation of shoaling at 47°32'35"N, 122°39'46"W (positions 5557-5570)
Development Sheet #2	1:500	1076-1078 1081-1083 4004-4005 6450-6512	Development #8 to investigate a peak at 47°32'51"N, 122°39'59"W

Sheet Number	Scale	Positions	Content
Development Sheet #3	1:500	4121-4122 4140-4141 4150-4152 4171-4173 5355-5397 6105-6147	Development #5 to investigate a peak at 47°32'48"N, 139°39'29"W
Development Sheet #4	1:1,250	4088-4094 4113-4122 4140-4152 4173-4181 4203-4208 4232-4233 5385-5397 5401-5531 5818-5865 5946-6104	Developments 6 and 7 #6 Disproval of stray between positions 4173 and 4174 at 47°32'54"N, 122°39'24"W (positions 5385-5397 and 5405-5409) #7 Investigation of least depths of irregular bottom near USS Missouri berth
Development Sheet #5	1:500	4429-4434 4450-4452 6148-6176	Development #9 investigated a peak at 47°33'00"N, 122°38'49"W
Development Sheet #6	1:1,250	1133-1134 1148-1150 1257-1259 1262-1263 1534-1536 1596-1597 4917-4919 6682-6762 6775-6776	Developments 11, 12, 13, 14 and 15 #11 Investigation of a rise off the bottom in 67 foot depths at 47°33'27"N, 122°37'11"W (positions 6729-6740) #12 Investigation of a rise off the bottom in 65 foot depths at 47°33'32"N, 122°37'15"W (positions 6741-6752 and 6755-6676) #13, 14 Investigation of a ridge in 75 foot depths at 47°33'32"N, 122°37'02"W (Positions 6682-6728) #15 Disproval of stray after position 1262 at 47°33'16"N, 122°37'42"W (positions 6753-6762)

It will be seen that there are many apparent holidays in the slips of the navy yard. These are locations where ships under repair, inactive fleet vessels, barges, etc. were moored. Lines were run as close as possible to all moored vessels. Leadline soundings were taken along all piers except the east face of pier 6 and the west face of pier 7 where dredging operations were being carried out (see section Q).

Q. RECOMMENDATIONS

This survey is considered adequate for charting. However, if a field party operates in the area in the near future it may be desirable to work on the unresolved items listed in sections M and L.

Performing a basic survey in developed urban areas such as this should be done only if photo support exists. The acquisition, processing, and compilation of data for a complete shoreline verification without photo support in such an area requires tremendous effort compared to field edit of shoreline manuscripts. The navigable area concept should be applied to such surveys.

Prescribing limits of coverage to disprove PSR items (e.g. 100 meter radius from charted position) is a very good idea. However requiring bottom drags as was the case for this survey (see PSR specifications for item 32, 33, 34, 35, 37, 38) is not. The method of search should be left to the discretion of the field unit. In this particular area bottom dragging was often very inefficient due to numerous logs and debris resting on the bottom.

Inset #1 shows the depths obtained in the slips at the time of our survey. It should be noted that dredging is a common activity in the shipyard. Of special note is the fact that dredging between piers 6 and 7 (47°33'35"N, 122°37'41"W) was begun after that slip was surveyed. A copy of the after dredge survey done by the Northwest Engineering Company is being forwarded with the field records. The soundings on that map are not depths but elevations above a naval datum in which an elevation of 109.4 feet corresponds to NOS MLLW. I.E., the numbers on the map should be subtracted from 109.4 to find the depth below MLLW.

filed with field data

R. AUTOMATED DATA PROCESSING

The following hydroplot programs were used for data acquisition and processing.

Number	Version Date	Program Name
RK 111	1/30/76	R/R Real time Plot
RK 201	4/18/75	Grid, Signal, and Lattice Plot
RK 211	1/15/76	R/R Non-real time Plot
RK 212	4/1/74	Visual Station Load and Plot
RK 215	8/16/74	Visual Non-real time Plot
RK 216	2/5/78	R/Az Non-real time Plot
RK 300	2/10/76	Utility Package
RK 330	5/4/76	Data Reformat and Check
RK 360	2/2/76	Electronic Corrector Abstract

Number	Version Date	Program Name
RK 407	9/25/78	Inverse/Direct Computation
AM 602	5/21/75	Elinore
AM 500	11/10/72	Predicted Tides
RK 530	5/10/76	Velocity Corrections

Data acquisition and processing methods were standard, except for the sextant cuts used for control in two of the shipyard slips.

S. REFERRAL TO REPORTS

The following reports are pertinent to this survey:

Horizontal Control Report, OPR-N100-FA/DA-80

Correction to Echo Soundings Report, OPR-N100-FA/DA-80

Geographic Names Report, OPR-N100-FA/DA-80

Coast Pilot Report, OPR-N100-FA/DA-80

Electronic Control 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

Douglas J. Hennick

Douglas G. Hennick
LT. NOAA

Approved by

A J Patrick

A.J. Patrick
CAPT. NOAA

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 labled P.O.Y.C. on Chart 18452.

Chart 18449 outside limits of H-9862

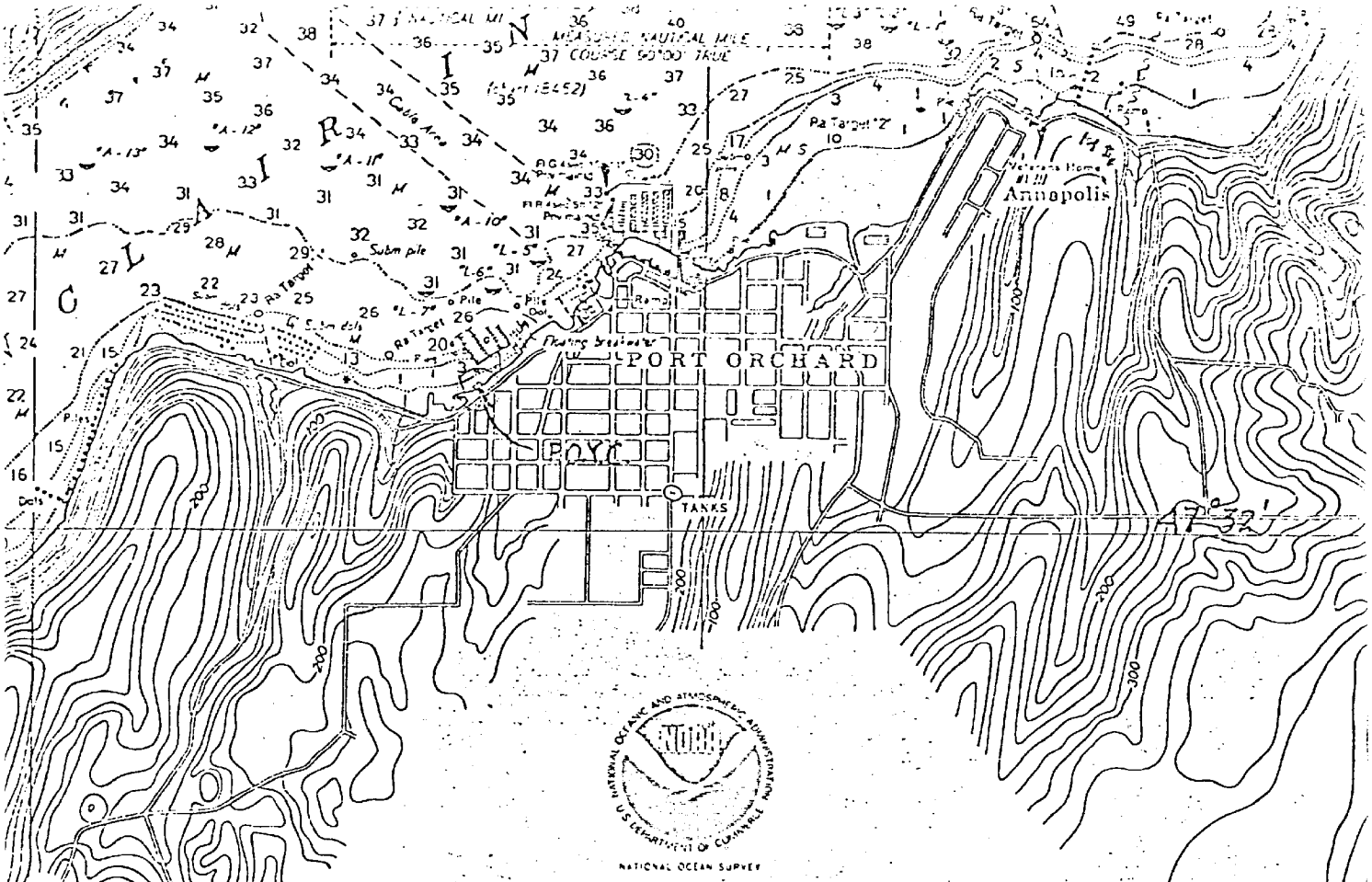
Recommend removal of the following names from the chart:

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



NATIONAL OCEAN SURVEY

UNITED STATES – WEST COAST

WASHINGTON

PUGET SOUND

SEATTLE TO BREMERTON

Mercator Projection
Scale 1:25,000 at Lat. 47°35'

North American 1927 Datum

SOUNDINGS IN FEET
AT MEAN LOWER LOW WATER

...ings (MLLW)	
...ean Lower Low Water	Extreme Low Water
feet	feet
00	-4.5
00	-4.5
00	-4.5
.00	-4.5

ABBREVIATIONS

Aids to Navigat...
AERO ...
Alt alternat...
B black
Bn beacon
C can
DIA diapho...
Elnt equal ...
F fixed
Fl flashing

Bottom characte...
bk black
Blds boulde...
brk broken

Miscellaneous:
AUTH auth...
ED existen...
(21) Wreck
(2) Rocks

...the Coast
...s and U.S.

...ATION
...d Light List for
...concerning aids

122°40' 39' 38' 37' 36'

...published
...topographic
..., each U.S.
...d corner.

WARNING

The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

Chart 18449

F. List of stations

```
001                    SIGNAL LISTING
002
003       PORT ORCHARD WEST MUNICIPAL TANK
004 001-4   47 32 04642 122 38 05875   139 0090 000000
005
006       TP-1 (GAZEBO)
007 002-3   47 32 55060 122 40 06389   254 0010 000000
008
009       TP-1  ECC
010 003-4   47 32 55188 122 40 05794   254 0008 000000
011
012       RADAR TARGET 3 (F)
013 004-6   47 33 01914 122 36 29451   139 0000 000000
014
015       PSNS POWER PLANT STACK
016 005-6   47 33 41104 122 37 44263   139 0053 000000
017
018       PT HERRON LIGHT
019 006-1   47 33 56766 122 36 45444   139 0005 000000
020
021       WATERMAN POINT LIGHT
022 007-4   47 35 04718 122 34 08745   139 0005 000000
023
024       RADAR TARGET 1 (A)
025 008-6   47 32 27280 122 39 19691   139 0005 000000
026
027       RADAR TARGET 2 (D)
028 009-6   47 32 48791 122 37 36428   139 0005 000000
029
030       RADAR TARGET 4 (J)
031 010-6   47 33 48894 122 35 34187   139 0005 000000
032
033       RADAR TARGET 5 (K)
034 011-6   47 34 33588 122 34 41109   139 0005 000000
035
036       BREMERTON NAVY  RADAR COLLIMATION TOWER
037 012-1   47 33 26648 122 38 21870   139 0055 000000
038
039       CALIBRATION DOLPHIN NEAR PEAT (USED FROM TP-2)
040 013-6   47 31 55344 122 40 24234   139 0000 000000
041
042       RADAR TARGET B
043 014-6   47 32 21684 122 38 56157   139 0000 000000
044                 468
045       RADAR TARGET C
046 015-6   47 32 46589 122 37 50117   139 0000 000000
047
048       RADAR TARGET E
049 016-6   47 33 00595 122 37 02389   139 0000 000000
050
```

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001      RADAR TARGET G
002 017-6  47 33 12687 122 36 13901  139 0000 000000
003
004      RADAR TARGET H
005 018-6  47 33 23520 122 35 58341  139 0000 000000
006
007      PIER 'D'
008 019-1  47 33 10795 122 38 54144  252 0002 000000
009
010      TRACK
011 020-0  47 32 18137 122 40 29936  252 0002 000000
012
013      POLE
014 021-4  47 31 54224 122 40 13976  252 0002 000000
015
016      DAY BEACON #9 (OFF PT GLOVER, CALIBRATION FROM SPINNER)
017 022-1  47 35 25469 122 32 57405  139 0000 000000
018
019      NMFS PIER (NE CORNER, CALIBRATION FROM ORCHARD)
020 023-3  47 34 25935 122 32 35683  139 0000 000000
021
022      DAYBEACON #10
023 024-0  47 35 25254 122 33 58043  139 0004 000000
024
025      FLAGPOLE BACHMAN PARK
026 025-3  47 34 07784 122 36 25508  252 0000 000000
027
028      DALL RM-3
029 100-4  47 33 06200 122 36 07197  250 0002 000000
030
031      TP-2 (NW SHORE OF SINCLAIR INLET)
032 101-1  47 31 58980 122 41 06782  254 0004 000000
033
034      TP-2 ECC
035 102-3  47 31 58975 122 41 06838  254 0000 000000
036
037      MITCHELL 5 1980
038 103-6  47 32 54375 122 37 11186  250 0000 000000
039
040      SULPHUR 3 1980
041 104-6  47 32 23847 122 39 38647  250 0002 000000
042
043      TP-3 (ON PIER NW OF POINT WHITE)
044 105-2  47 35 58690 122 34 34770  254 0002 000000
045
046      SPINNER 1980
047 106-4  47 35 58079 122 32 44420  250 0001 000000
048
049      K 48 E
050 107-3  47 33 37244 122 38 01990  254 0005 000000
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001
002      N 45 E
003 108-3  47 33 30344 122 38 14169  254 0005 000000
004
005      R 34 E
006 109-3  47 33 22674 122 38 43626  254 0005 000000
007
008      R 34 W
009 110-4  47 33 22677 122 38 47936  254 0005 000000
010
011      5 E 0 E
012 111-3  47 33 40128 122 37 49603  254 0005 000000
013
014      S 27 S
015 112-0  47 33 17861 122 39 05472  254 0005 000000
016
017      S 27 W
018 113-5  47 33 17650 122 39 12552  254 0005 000000
019
020      PIER 'B'
021 114-1  47 33 10884 122 38 36803  243 0005 000000
022
023      Q 40 E
024 115-1  47 33 22592 122 38 26449  254 0005 000000
025
026      HUNTLEY 1980
027 116-2  47 35 18605 122 31 48845  250 0002 000000
028
029      S27
030 117-0  47 33 20578 122 39 05440  243 0005 000000
031
032      PEAT 1934
033 200-6  47 31 43122 122 40 51571  250 0002 000000
034
035      PSNS BLDG 290
036 201-1  47 33 50147 122 37 36253  250 0025 000000
037
038      PSNS BLDG 467
039 202-1  47 33 23609 122 38 46723  139 0025 000000
040
041      ORCHARD 1857
042 203-6  47 33 55366 122 31 50907  139 0002 000000
043
044      ORCHARD RM 10
045 204-3  47 33 55468 122 31 50748  250 0002 000000
046
047      ORCHARD RM 10 ECC
048 205-4  47 33 55425 122 31 50686  250 0001 000000
049
050      BUTTS 2 1934
051 206-3  47 32 57083 122 40 00358  139 0003 000000
```

```
001
002      YAH 2 1934 3
003 207 0  47 35 45936 122 35 27276  250 0001 000000
004
005      HIGH 1915
006 208 0  47 34 27314 122 36 07856  139 0002 000000
007
008      CLAM 1934 74
009 209 6  47 34 08688 122 32 31316  250 0001 000000
010
011      6-E-8
012 301 0  47 33 30600 122 37 43828  243 0002 000000
013
014      6-E-3
015 302 5  47 33 35535 122 37 43825  243 0002 000000
016
017      VISUAL STATION PIER 7
018 303 2  47 33 32040 122 37 39386  252 0002 000000
019
020      5-W-4
021 304 2  47 33 34567 122 37 51922  243 0002 000000
022
023      5-W-1190
024 305 2  47 33 26770 122 37 51926  243 0002 000000
025
026      VISUAL STATION PIER 4
027 306 2  47 33 30061 122 37 57063  252 0002 000000
028
029      R-30
030 310 1  47 33 22745 122 38 56598  254 0002 000000
```

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): FAIRWEATHER
STATE: Wa
LOCALITY: BREMERTON
DATE: MAR '80

The following objects HAVE [x] 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

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
RA TARGET "1"	RADAR REFLECTOR ON DOLPHIN	47-32	27.280 842.5	122-39	19.690 411.8	✓	F-3-6-V FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN Tgt "B"	47-32	21.468 663.0	122-38	56.157 1174.6	✓	F-3-6-V FEB '80	18452 18449
RA TARGET "2"	RADAR REFLECTOR ON DOLPHIN	47-32	48.791 1506.9	122-37	36.428 761.9	✓	F-3-6-V FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN Tgt "E"	47-33	00.594 18.3	122-37	02.387 50.0	✓	F-3-6-V FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN Tgt 3	47-33	01.918 59.2	122-36	29.451 615.8	✓	F-3-6-V FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN Tgt "G"	47-33	12.686 391.8	122-36	13.901 290.7	✓	F-3-6-V FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN Tgt "H"	47-33	23.520 726.4	122-35	58.941 1219.9	✓	F-3-6-V FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN	47-33	48.893 1510.0	122-35	34.186 714.8		F-3-6-V FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN	47-34	33.588 1037.3	122-34	41.109 859.3		F-3-6-V FEB '80	18452 18449

NC see L 12002(80)

(62)

H-9864

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [x] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
FAIRWEATHER	Wa	BREMERTON	MAR '80

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-N100-FA/DA-80			NAD 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
STACK (TALLER)	(PSNS BOILER HOUSE STACK)	47-33	32.345	122-38	31.401	/	F-3-6-L	18452
	ONLY ONE STACK. TALLER WAS DESTROYED		9989		656.6		MAR '80	18449
	LIMITED VALUE							

w/c Ltr 2/20/80

(63)

NOAA FORM 76-xx
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

- [x] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
FAIRWEATHER S-220	WA	BREMERTON	MAR '80

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-N100-FA/DA-80			NAD 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
RA TOWER	(BREMERTON NAVY RADAR COLLIMATION TOWER) FL. R 1s	47-33	26,648 823.0	122-38	21.870 457.3	/	F-3-6-L FEB '80	18452 18449
RA TARGET	RADAR REFLECTOR ON DOLPHIN Target "C"	47-32	46.589 1438.8	122-37	50.117 1048.2	/	F-3-6-L FEB '80	18452 18449
	NC/ Digfile 4-1202(80)							

(61)

NOAA FORM 76-40 (8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [x] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): FAIRWEATHER S220
STATE: Wa
LOCALITY: BREMERTON
DATE: MAR '80

The following objects HAVE [x] 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

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE // D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
MARKER	NO LONGER EXISTS	47-33	18 555.9	122-39	07 146.4	/	F-VIS JAN - MAR '80	18452 18449
MARKER	NO LONGER EXISTS	47-33	24 741.2	122-39	07 146.4	/	F-VIS JAN - MAR '80	18452 18449
MARKER	NO LONGER EXISTS	47-33	14 432.4	122-38	22 460.0	/	F-VIS JAN - MAR-80	18452 18849
MARKER	NO LONGER EXISTS	47-33	36 1111.8	122-38	22 460.0	/	F-VIS JAN - MAR '80	18452 18449
MARKER	NO LONGER EXISTS	47-33	32 988.3	122-37	40 836.4	/	F-VIS JAN - MAR 80	18452 18449
MARKER	NO LONGER EXISTS	47-33	42 1297.1	122-37	40 836.4	/	F-VIS JAN - MAR 80	18452 18449
FLAGSTAFF	NOT OF LANDMARK VALUE	47-33	49 1513.3	122-38	10 209.1	/	F-VIS JAN - MAR 80	18452 18449
R TR (KBRO) 1490 kHz	NOT OF LANDMARK VALUE	47-33	53 1636.8	122-39	30 627.3	/	F-VIS JAN - MAR '80	18452 18449
HOTEL	NOT OF LANDMARK VALUE	47-32	31 401.5	122-38	13 648.3	/	F-VIS JAN - MAR '80	18452

NC Aug L/2082(80)

(60)

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
FAIRWEATHER	WA	BREMERTON	MAR '80

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
ORR-N100-FA/DA-80			NAD 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
PT HERRON LIGHT "12"	FL. W. 6S		56.763		45.439	✓	F-2-6-V	18452
	ON HOUSE ON DOLPHIN	47-33	1753.1	122-36	950.1		MAR '80	18449

NC L 12021(80)

(59)

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): FAIRWEATHER
STATE: WA
LOCALITY: BREMERTON
DATE: MAR '80

The following objects HAVE [x] 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

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE // D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
TANK	WATER TANK 3/4 NM SOUTH, SOUTHWEST OF WEST PARK. WHITE	47-33	21.577 666.4	122-46	58.509 1223.4	✓	F-3-6-V MAR '80	18452 18449 — off the sheet
TANKS	(PORT ORCHARD WEST TANK) WATER TANK WITH LARGE CROSS	47-32	04.548 140.5	122-38	05.840 122.1	✓	F-3-6-V MAR '80	18452 18449
STACK	(PSNS POWER HOUSE STACK) LARGE MASONRY STACK WHITE & BLACK	47-33	41.128 1270.2	122-37	44.152 923.2	✓	F-3-6-V MAR '80	18452 18449 (64)
SPIRE	MANETTE CHURCH SPIRE LIMITED VALUE	47-34	19.649 606.8	122-36	42.844 895.6	✓	F-3-6-V MAR '80	18452 18449 outside

NC L 1202(80)

VELOCITY CORRECTION TABLES

TABLE#: 01 YR: 79 FT

DEPTH	VEL COR
14.00	.00
39.00	.20
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
210.00	1.80
231.00	2.00
250.00	2.20
267.00	2.40
9999.90	2.40

TABLE#: 02 YR: 80 FT

DEPTH	VEL COR
14.00	.00
39.00	.20
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
210.00	1.80
231.00	2.00
250.00	2.20
267.00	2.40
9999.90	2.40

TABLE#: 03 YR: 80 FT

DEPTH	VEL COR
60.00	.00
9999.90	.00

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 inadvertantly 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.

B (cont)

For survey H-9864 tidal control for the area east of 122° 34'00"W was controled by the gage at Clam Bay, #944-5938. It was located on a pier southeast of Middle Point in Clam Bay, at 47° 35'12"N, 122° 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

Period: December 28, 1979 - March 14, 1980

HYDROGRAPHIC SHEET: H-9862

OPR: N100

Locality: Puget Sound, Washington

Plane of reference (mean lower low water): 0.97 ft.

Height of Mean High Water above Plane of Reference is 10.9 ft.

REMARKS: Zone direct.

James R Hubbard
Chief, Datums and Information Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9862

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 18449 & 18452	B ON PREVIOUS SURVEY NO. H-5652	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON U.S. NAVY CHARTS/MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ANNAPOLIS	X			X						1
BREMERTON	X	X		X	X					2
~~DRYDOCK NO. 6~~	X				X					3
EAST BREMERTON	X	X		X						4
GORST	X			X						5
~~MOORING "A"~~					X					6
~~MOORING "E"~~					X					7
~~MOORING "F"~~					X					8
~~PIER B~~					X					9
~~PIER D~~	X				X					10
~~PIER 3~~	X				X					11
~~PIER 4~~	X				X					12
~~PIER 5~~	X				X					13
~~PIER 6~~	X				X					14
~~PIER 7~~	X				X					15
~~PIER 8~~					X					16
NAVY YARD CITY										17
PORT ORCHARD	X	X								18
~~PORT ORCHARD MARINA~~				X						19
~~PORT ORCHARD YACHT CLUB~~				X						20
PORT WASHINGTON NARROWS	X	X		X						21
PT. HERRON	X			X						22
PT. TURNER	X			X						23
~~PUGET SOUND NAVAL SHIPYARD~~	X	X		X	X					24
RETSIL	X			X						25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-9862

Name on Survey	A ON CHART NO. 18449 & 18452	B ON PREVIOUS SURVEY NO. H-5652	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON U.S. NAVY ~~U.S.C.&G.S.~~ MAPS	F	G P.O. GUIDE OR MAP	H RAND MCNALLY ATLAS	K U.S. LIGHT LIST	
SINCLAIR INLET	X	X		X	X					1
~~SULDAN BOAT WORKS~~				X						2
~~SUPPLY PIER~~					X					3
PUGET SOUND (TITLE)										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
					Approved:					19
										20
					Chas. E. Hemingway					21
					Chief Geographer - N/CG2x3					22
					14 APRIL 1983					23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

APPROVAL SHEET

FOR

SURVEY H-9862

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: Sep 14, 1981

Chief, Verification Branch

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER H-9862

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS 16 11	27
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS 3 ARC 3, EXCESS	6

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES				[redacted]	[redacted]	
CAHIERS			3 rau	[redacted]	[redacted]	
VOLUMES			[redacted]	[redacted]	[redacted]	
BOXES	[redacted]	[redacted]	1 Folder smooth P/O	[redacted]	[redacted]	

T-SHEET PRINTS (List) none

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	AMOUNTS VERIFICATION	AMOUNTS TOTALS
POSITIONS ON SHEET	[redacted]	[redacted]	5200
POSITIONS CHECKED		5200	
POSITIONS REVISED		2320	
SOUNDINGS REVISED		4121	
SOUNDINGS ERRONEOUSLY SPACED		-	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		1	
[redacted]	*TIME – HOURS*		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	9		
VERIFICATION OF CONTROL		16	
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Pre-Verification by JAMES S. GREEN	*Beginning Date* 9/4/80	*Ending Date* 9/4/80
Verification by ISAGANI A. ALMACEN	*Beginning Date* 10/7/80	*Ending Date* 8/14/81
Verification Check by J. GREEN & S. OTSUBO	*Time (Hours)* 51	*Date* 9/1/81
Marine Center Inspection by HIT	*Time (Hours)* 21	*Date* 9/15/81
Quality Control Inspection by S Baumgardner	*Time (Hours)* 159	*Date* 5/7/82
Requirements Evaluation by [signature]	*Time (Hours)* 16	*Date* 2/24/82

M. K. Myers 39 hrs. 3/15/82

REGISTRY NO. H-9862

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:

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO: H-9862 FIELD NO: FA-5-3-80

Washington, Puget Sound, Sinclair Inlet

SURVEYED: December 10, 1979 - March 18, 1980

SCALE: 1:5000 PROJECT NO: OPR-N100-FA-80

SOUNDINGS: Ross Fineline Fathometer, Leadline, Divers

CONTROL: Mini-Ranger Range/Azimuth & Range/Range, Visual

Chief of Party.....CAPT A. J. Patrick

Surveyed by.....LCDR A.J. Pickrell,
LT A.H. Yanaway,
LT D.G. Hennick,
ENS V.D. Ross,
ENS C.P. Hancock,
ENS P.E. Pegnato,
ENS A.F. Trimble,
CST E.R. Krick

Automated Plot by.....PMC Xynetics Plotter

Verified by.....Isagani A. Almacen
May 12, 1981

1. INTRODUCTION

a. This survey was first classified as a navigable area survey in the Project Instruction (section 1.8 & 6.0) dated December 21, 1979, but was later changed to basic (Change No. 2, Amendent to Project Instructions). The survey covered the entire portion of Sinclair Inlet, extending eastward to Longitude 122°36'00"W and northward up to the area of the bridge across Port Washington Narrows. It was accomplished by NOAA Ship FAIRWEATHER from the period of December 10, 1979 to March 18, 1980.

b. Hydrography was accomplished using the mini-ranger system in the Range/Azimuth mode. Visual control methods with theodolites and sextants were used to locate buoys, bottom samples and prominent features around the inlet during shoreline verification. Leadline soundings were taken along piers controlled from stations located in the vicinity. Mini-ranger in the Range/Range mode was also used to control chain drag operation for PSR investigations and objects found during this operation were located by visual fixes.

c. This survey, inspite of being classified as basic has neither Class I Shoreline Manuscripts nor were aerial photographs available at the time of the survey or during office verification.

2. CONTROL AND SHORELINE

a. Horizontal control used on this survey consisted of existing NOS triangulation stations, newly located Third-Order stations and stations located in 1979 by Wilsey & Ham, Inc. under contract with the Department of the Navy. In addition, two (2) temporary stations for Range/Azimuth and five (5) hydrographic stations for visual control were also used on this survey.

b. Shoreline detail information was obtained from a 1:5000 blow-up of Chart 18452, 11th Edition, dated March 26, 1977, Chart 18449, 10th Edition, October 27, 1979 and from shoreline verification. No shoreline manuscripts or aerial photographs were available for this survey.

Shoreline features located by visually controlled fixes were plotted in red and those taken from 1:5000 blow-up of Chart 18452 originating from survey H-5652 (1934) was plotted in brown on the smooth sheet.

Four (4) rocks without recorded positional data plotted on the boat sheet at Latitude 47°33'15.4"N, Longitude 122°36'00.8"W; Latitude 47°32'50.0"N, Longitude 122°36'33.6"W; Latitude 47°32'49.2"N, Longitude 122°36'37.5"W; and Latitude 47°32'52.4"N, Longitude 122°36'34.4"W were carried forward in black on the smooth sheet.

The following piles and dolphins plotted on the boatsheet lacking positional data were carried forward on the smooth sheet:

a. The piles located in the vicinity of the loading ramps at Latitude 47°31'59.0"N, Longitude 122°41'07.0"W.

b. Pile at Latitude 47°32'15.5"N, Longitude 122°39'47.7"W.

c. Three (3) piles in the vicinity of Latitude 47°32'51.5"N, Longitude 122°40'09.5"W.

d. Four (4) piles in the vicinity of Latitude 47°33'04.5"N, Longitude 122°39'38.5"W.

e. Three (3) piles in the vicinity of Latitude 47°33'08.0"N, Longitude 122°39'38.5"W.

f. Three (3) piles at the foot of a pier ruins in the vicinity of Latitude 47°32'20.0"N, Longitude 122°39'17.0"W.

g. Dolphin at Latitude 47°32'16.5"N, Longitude 122°38'53.0"W.

h. Six (6) piles in the vicinity of Latitude 47°32'27.0"N, Longitude 122°38'24.0"W.

i. Three (3) piles in the vicinity of Latitude 47°32'25.0"N, Longitude 122°38'30.0"W.

j. Two (2) piles at the end of a float at Latitude 47°32'33.0"N, Longitude 122°38'19.0"W.

k. A dolphin at Latitude 47°32'35.5"N, Longitude 122°38'04.0"W.

l. A pile at Latitude 47°32'48.0"N, Longitude 122°37'18.0"W.

m. A pile at Latitude 47°32'53.0"N, Longitude 122°37'13.0"W.

n. A pile at the end of floating pier at Latitude 47°32'53.0"N, Longitude 122°36'48.5"W.

o. A pile at Latitude 47°32'49.0"N, Longitude 122°36'22.0"W.

p. A pile at Latitude 47°34'07.5"N, Longitude 122°36'51.0"W.

q. A group of five (5) piles and a dolphin located in the vicinity of Latitude 47°33'52.0"N, Longitude 122°37'19.0"W.

Rock elevations appearing on the smooth sheet are based on actual tides.

3. HYDROGRAPHY

a. The crosslines on this survey were in good agreement. Soundings generally agree to within a foot except in the following areas:

(1) The eastern portion of the survey where the edge of the inlet is steep, deep and the bottom relief is irregular.

(2) The western end of the inlet west of Longitude 122°40'00"W, confirmed to be the former site of a large logging operation, where scattered sunken logs were noted lying horizontally across the bottom.

b. The Northwest Engineering Company under contract with the Department of the Navy started dredging the slip between piers 6 & 7 just after this survey was completed. The middle of the slip was found to be about 1 to 5 feet deeper upon completion of dredging operation in March 1980. (See blueprint #80091, P-203-Hydrographic Survey, Piers 6 & 7) filed with field data [redacted]

c. The development of bottom configuration and the determination of least depths are considered adequate, except for the delineation of some shipyard slips where the presence of moored ships under repair, inactive navy vessels including the USS MISSOURI, barges and other vessels precluded its development.

d. Depth curves, except in areas mentioned above, were adequately delineated and inked in the smooth sheet.

4. CONDITION OF SURVEY

The automated plotting of the smooth sheet, accompanying overlays, hydrographic records and field procedures are adequate and conform to the requirements of the Hydrographic Manual except for the following:

a. Mini-ranger was used as close as approximately 15 meters from the station in some instances during this survey. It does not conform with the requirements of the Hydrographic Manual and the latest Hydrographic Survey Guideline No. 11 dated March 5, 1981.

b. On this survey, the ship used TP-1, 1980 (ECC) for initial azimuth station from instrument station TP-1, 1980 which is only about 13 meters away. According to section 4.4.4. of the Hydrographic Manual, objects sighted on for initial azimuths should be at least 500 meters from the theodolite.

5. JUNCTIONS

This survey junctions at the eastern limit of the sheet with contemporary survey H-9864 (1980), scale 1:10,000. Comparison is considered satisfactory. Soundings generally agree to within a foot at the junction area. Depth curves and notes were inked accordingly.

No contemporary surveys junction with this sheet in the vicinity of the bridge over Port Washington Narrows to the North of this survey.

6. COMPARISON WITH PRIOR SURVEYS

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

Comparison was made with this survey covering the entire area of Sinclair Inlet. It should be noted that during the 1934 survey, there were only four (4) existing major piers at Puget Sound Naval Shipyard in Bremerton. The present survey shows some developments around the inlet within the Navy shipyard and along the southern side particularly Port Orchard. Shoreline around the inlet has changed extensively, while no significant changes in the bottom configuration were noted except along the coastline, on approaches to piers, ferry docks, marinas and boat harbors where occassional dredging is a common activity in the area. Some old pier ruins, pilings, dolphins, wrecks and other hazards to navigation could still be found along the coast particularly west of Port Orchard. The tidal mud flats on the western tip of the inlet still exist.

The present survey is generally deeper by about 1 to 6 feet than the 1934 survey, with the exception of the following areas:

(1) The deep area in the vicinity of Latitude 47°33'30"N, Longitude 122°37'00"W where the present soundings appears to be about 2 to 5 feet shoaler than the prior survey.

(2) The area off the northern shore of the inlet, west of Longitude 122°39'30"W, where the soundings appear to be shoaler by about 2 to 15 feet from the prior survey.

b. H-5933 (1935), 1:10,000

Comparison was made with this prior survey in the area of Port Washington Narrows. The 1935 soundings are generally shoaler ~~by about~~ from 1 to 3 feet ~~a foot~~ within the common area.

Presurvey Review Items: PSR Nos. 32, 33, 34, 35, 36, 37, 38A, 38B, 38C, 38D, 39, 40, 41, and 42 were covered on this survey. Chain drags, visual and diver searches were primarily employed to investigate these PSR features along the inlet. For recommendations and dispositions of each of the above items, refer to section K.2 of the ship's Descriptive Report.

The present survey is considered adequate to supercede the prior surveys of 1934 & 1935 for areas of common coverage.

7. COMPARISON WITH CHARTS

a. This survey was compared with Chart 18452, 11th Edition, March 26, 1977 and Chart 18449, 10th Edition, October 27, 1979. The charted soundings and other prominent features around the inlet primarily originated from prior surveys H-5652 and H-5933. Recommendations regarding deletion or retention of charted items are discussed in section L of the Descriptive Report except for the following features:

(1) The charted pier ruins and piles on charts 18449 and 18452 between Mooring "E" and pier "D" were not investigated in the field nor mentioned on the Descriptive Report. It is recommended that ~~it~~ the ruins be retained as charted and the piles retained as uncovers at MLLW. (lat 122°39'03"N, long 47°33'08"W)

(2) The pier ruins on Chart 18449 and 18452 extending at right angle from the eastern face of pier 8 was not investigated nor mentioned in the Descriptive Report. It is recommended that this feature be retained as charted.

(3) Cable areas across the inlet from Port Orchard to Bremerton were not verified on this survey and retention on the Chart is recommended.

(4) The new naval restricted limits for Sinclair Inlet defined in Notice to Mariners #34-79 and incorporated on the 16th Edition of U.S. Coast Pilot 7, dated June 1980 should be incorporated on the chart of the area.

(5) The clearance of the bridge across Port Washington Narrows was not checked during this survey.

(6) The two (2) charted submarine cables located in the vicinity of Latitude 47°32'55"N, Longitude 122°36'43"W and Latitude 47°32'38"N, Longitude 122°38'01"W were not investigated during this survey. It is recommended that they be retained as charted.

(7) The group of four (4) submerged piles charted in the vicinity of Latitude 47°31'59"N, Longitude 122°40'45"W were neither verified nor disproven on this survey. Retention of these submerged piles on the chart is recommended. See D.R. sec K.2, item 32

(8) The charted sewer (position approximate) at Latitutde 47°33'28"N, Longitude 122°38'16"W was not disproven on this survey and therefore it is recommended that it be retained as charted.

(9) The charted breakwater in the vicinity of Latitude 47°32'27.0"N, Longitude 122°38'37.5"W, North of Port Orchard Yacht Club, was not adequately located on this survey and should be retained ~~as charted~~, however, the offshore section should be adjusted to agree with the present survey findings.

b. Aids to Navigation

The existence of navigational aids and landmarks around Sinclair Inlet were verified on this survey.

(1) Eight (8) Navy mooring buoys and two (2) privately maintained buoys were located in the field. According to the navy these buoy locations were not permanent in nature and they are being removed or moved to other locations around the inlet from time to time throughout the season.

(2) All radar calibration targets located around the inlet maintained by the navy were either verified or located during this survey. (See Horizontal Control Report for OPR-N100-FA-80) Adjusted NGS geographic positions were used for all radar calibration targets recovered and verified in the field.

(3) Pt. Herron Light "12" was verified in the field, found in good condition and serves the purpose intended.

(4) Four (4) temporary lights at the ends of Pier 3 and 8 were located during this survey and plotted on the smooth sheet. See DR., sec N

(5) Based on the field information from shipyard plots, the nautical mile markers are not being used anymore and could not be positively identified in the field. It is recommended that these markers be deleted from the chart.

(7) The hotel charted at Latitude 47°32'31"N, Longitude 122°38'13"W at its present state was found to be no longer a prominent feature in this particular location. New building construction and site developments are in progress in the area. Plans to renovate this hotel have been abandoned due to lack of funds. Deletion of this charted landmark is recommended. See DR, sec. N.

This survey is adequate to supercede charted hydrography within the common area.

8. COMPLIANCE WITH PROJECT INSTRUCTIONS

This survey complies with Project Instructions OPR-N100-FA/DA-80, dated December 21, 1979 with 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.

9. ADDITIONAL FIELD WORK

This survey is considered adequate for charting. However, compilation of shoreline manuscripts of the area based on the latest photographs and field edit information including some few remaining unresolved items mentioned in Sections M and L of the Descriptive Report is desirable.

Submitted by,

Isagani A. Almacen
Cartographic Technician

Examined and Approved:

James S. Green
Chief, Verification Branch

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

November 12, 1981 OA/CPM3/JWC

TO: OA/CPM - Charles K. Townsend

FROM: OA/CPM3 - John W. Carpenter JWC

SUBJECT: PMC Hydrographic Inspection Team Report for Survey H-9862

This survey is a basic hydrographic survey of Sinclair Inlet, Puget Sound, Washington. This survey was conducted by NOAA Ship FAIRWEATHER in 1979, 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 foot curve; however, subsequent project instructions changed it to a basic survey without photogrammetric support. Section Q of the Descriptive Report expresses the complications this change presented to the ship; the remarks contained in the second paragraph of this section are endorsed since the same complications were realized in the verification and inspection process.

2) The estimated shoreline shown on the smooth sheet (dashed red line) does not coincide with the shoreline on NOS Chart 18452 - 11th edition. Recommend that the Nautical Chart Division (OA/C32) investigate the source of the charted shoreline in order to resolve this problem.

3) The distance between control station 3TP-1(ECC) and the station from which the initial azimuth was taken is less than the 500 meters as specified in Section 4.4.4 of the Hydrographic Manual. The two areas covered by this item are defined as: a) a circular area of 150 to 500 meters centered at the station and b) the enclosed area of a polygon defined by the following coordinates:

47°33'15"	122°38'40"
47°32'15"	122°38'40"
47°32'15"	122°39'00"
47°32'45"	122°38'07.5"
47°33'15"	122°38'07.5"

Since a theoretical accuracy of one minute in azimuth at the maximum range-azimuth distance of 2500 meters subtends a distance of approximately 1/10 of the 7.5 meter requirement for positional sounding accuracy on this survey, it appears that the positional sounding accuracy requirements have been met.

This survey does not meet the basic survey requirements since the shoreline is shown as an estimated one. The Inspection Team does find H-9862 to be an adequate navigable area survey, adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

John W. Carpenter

James W. Wintermyre

James W. Steensland

James L. Stringham

ADMINISTRATIVE APPROVAL

H - 9862

This 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
R. Adm., NOAA
Director,
Pacific Marine Center

11/19/81
Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
CHARTING AND GEODETIC SERVICES
Rockville, Md. 20852

N/CG242:SRB

February 10, 1984

TO: Roy K. Matsushige
Chief, Hydrographic Surveys Branch

THRU: Chief, Standards Section

FROM: S. Baumgardner
Quality Evaluator

SUBJECT: Quality Control Report for Survey H-9862 (1979--1980), Washington, Puget Sound, Sinclair Inlet

A quality control inspection of survey H-9862 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 National Ocean Service standards and requirements except as stated in the Verifier's Report and the HIT Report.

The following items supplement the Verifier's Report:

paragraph 6

c. H-3972 (1917) WD and Additional Work (1928), 1:20,000

This wire-drag survey covers portions of the present survey area. No conflicts between present depths and effective wire-drag depths were found.

paragraph 7.a

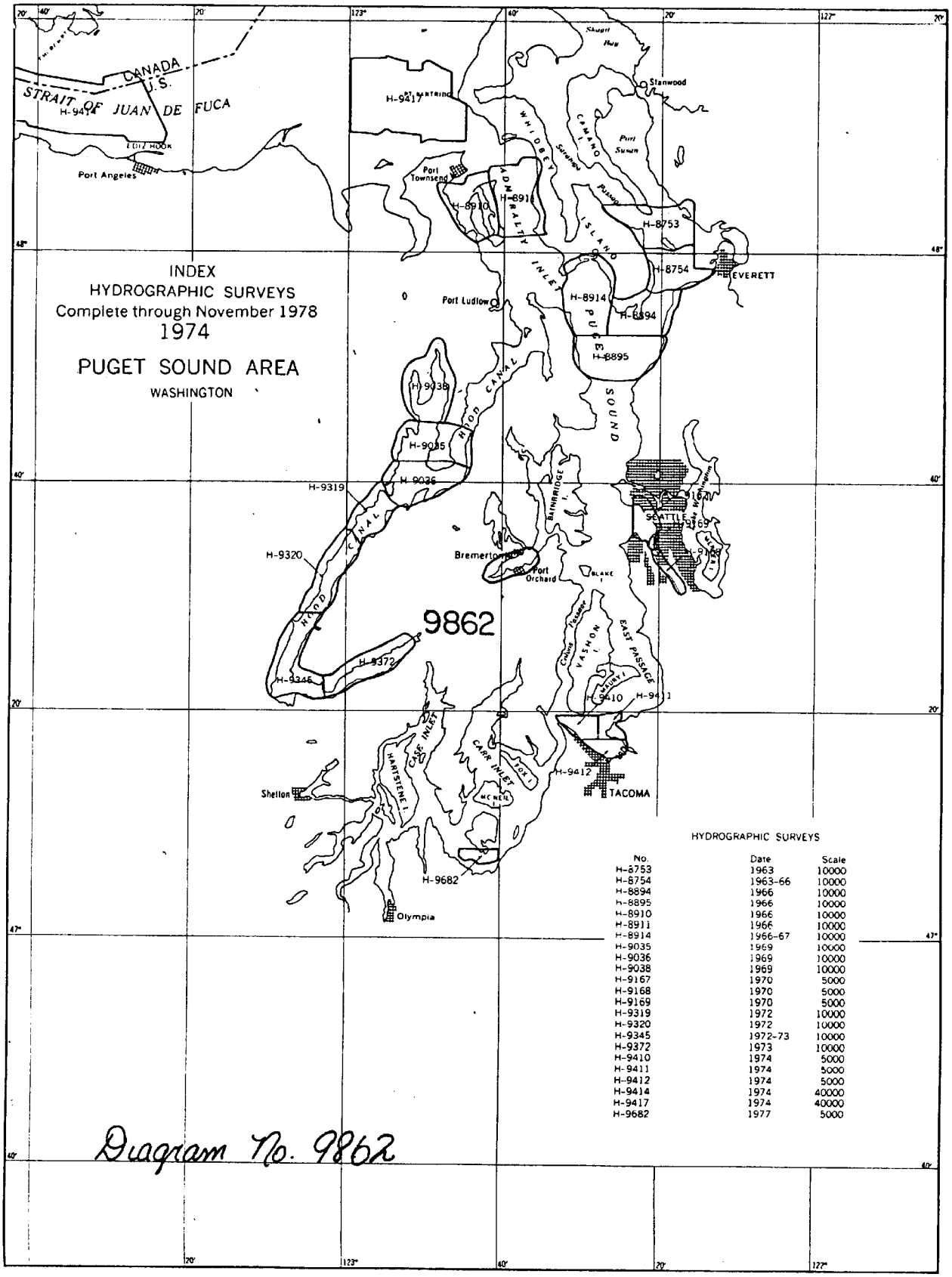
(10) Nine dolphins, charted in the vicinity of latitude 47°32'00"N, longitude 122°41'07"W originate with Chart Letter 1545 of 1974. The features in this vicinity are considered better delineated by the present survey.

(11) Four pile symbols (no label), three charted in the vicinity of latitude 47°32'04"N, longitude 122°40'52"W, and one charted in latitude 47°31'55.3"N, longitude 122°40'11.7"W, from miscellaneous sources, were not proved or disproved on the present survey. These items are deferred to the compiler for final disposition.

cc:
N/CG241

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 1041



HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8753	1963	10000
H-8754	1963-66	10000
H-8894	1966	10000
H-8895	1966	10000
H-8910	1966	10000
H-8911	1966	10000
H-8914	1966-67	10000
H-9035	1969	10000
H-9036	1969	10000
H-9038	1969	10000
H-9167	1970	5000
H-9168	1970	5000
H-9169	1970	5000
H-9319	1972	10000
H-9320	1972	10000
H-9345	1972-73	10000
H-9372	1973	10000
H-9410	1974	5000
H-9411	1974	5000
H-9412	1974	5000
H-9414	1974	40000
H-9417	1974	40000
H-9682	1977	5000

Diagram No. 9862

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
CHARTING AND GEODETIC SERVICES
Rockville, Md. 20852

N/CG241:MJF

MAR 2 1984

TO: N/MOP - Charles K. Townsend

FROM: for N/CG2 - C. William Hayes Sign'd R. Waters

SUBJECT: Report of Compliance for Survey H-9862

The smooth sheet and Descriptive Report for survey H-9862 (1979-80), Washington, Puget Sound, Sinclair Inlet, have been reviewed. This survey, except as noted in the Quality Control Report, dated February 10, 1984 (copy attached), and the Hydrographic Survey Inspection Team Report, dated November 12, 1981, is complete and adequate for the purposes intended and is in compliance with Project Instructions OPR-N100-FA/DA-80, dated December 21, 1979.

Attachment

cc:
N/CG242 w/o att.

FORM C&GS-8352
(9-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9862

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
18452	5-25-84	Charles James	Full ~~Part Before~~ After Verification Review Inspection ~~Signed Via~~ Signature
			Drawing No. #14
18449	6-6-84	Charles James	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. #23
18445B	6-7-84	Charles James	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. #20
18445A	6-7-84	Charles James	
			Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. #20
18440	6-8-84	Charles James	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. #35
18448	6-11-84	Charles James	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. #22
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P83