H10587

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. PHP-5-2-94

Office No. H-10587

LOCALITY

State Washington

General Locality Strait of Juan de Fuca

Locality Port Angeles Harbor

19 94-95

CHIEF OF PARTY
LT Richard A. Fletcher, NOAA

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DATE MAY 30 1996

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NOAA FORM 77-28 (72) | U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTER NO. H-10587

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. PHP-5-2-94

State: Washington

General locality: Strait of Juan de Fuca

Locality: Port Angeles Harbor

Scale: 1:5,000 Date of survey: Dec. 20, 1994-May 22, 1995

Instructions dated: May 17, 1995 Project No.: OPR-N251-PHP

Vessel: Jensen Launch 1101 (EDP 0651), MonArk Launch 1102 (EDP 0652)

Chief of party: LT Richard A. Fletcher, NOAA

Surveyed by: LT R.A.Fletcher, LTJG P.K.Haines, ST R.W.Adams, ST L.K. Simmons, ET E.O. Wernicke

Soundings taken by echo sounder, ~~hand lead, pole~~ Side Scan, Dive DSF-6000N, Innerspace 448, EG&G Model 260 MOD III Divers Least Depth Gauge

Graphic record scaled by: PHP Personnel

Graphic record checked by: PHP Personnel

Evaluated by: L. Deodato Automated plot by: HP Design Jet 650C

Verification by: J. Stringham, D. Doles, L. Deodato

Soundings in ~~fathoms feet~~ Meters & Decimeters at ~~MLW~~ MLLW

REMARKS: All times are UTC, revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

All depths listed in this report are referenced to mean lower low water unless otherwise noted.

MAY 30 1996

AWOIS Check 5/19/96 NBH

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

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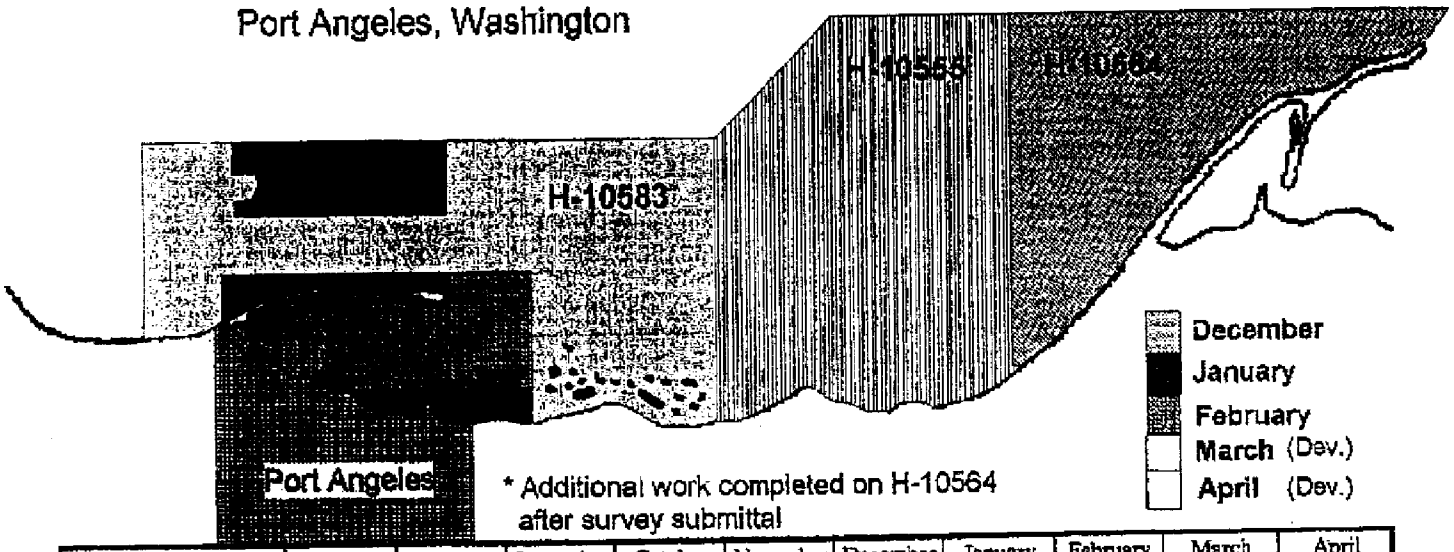
PACIFIC HYDROGRAPHIC PARTY
PROGRESS SKETCH
OPR-N251-PHP
April 1995

Reg. #	Commenced	% Complete	Completed	Submitted
H-10555	25-Jul-94	100%	21-Nov-94	28-Nov-94
H-10564	24-Aug-94	100%	30-Mar-95	
H-10583	30-Nov-94	100%	26-Jan-95	24-Feb-95
H-10587	20-Dec-94	100%	13-Apr-95	

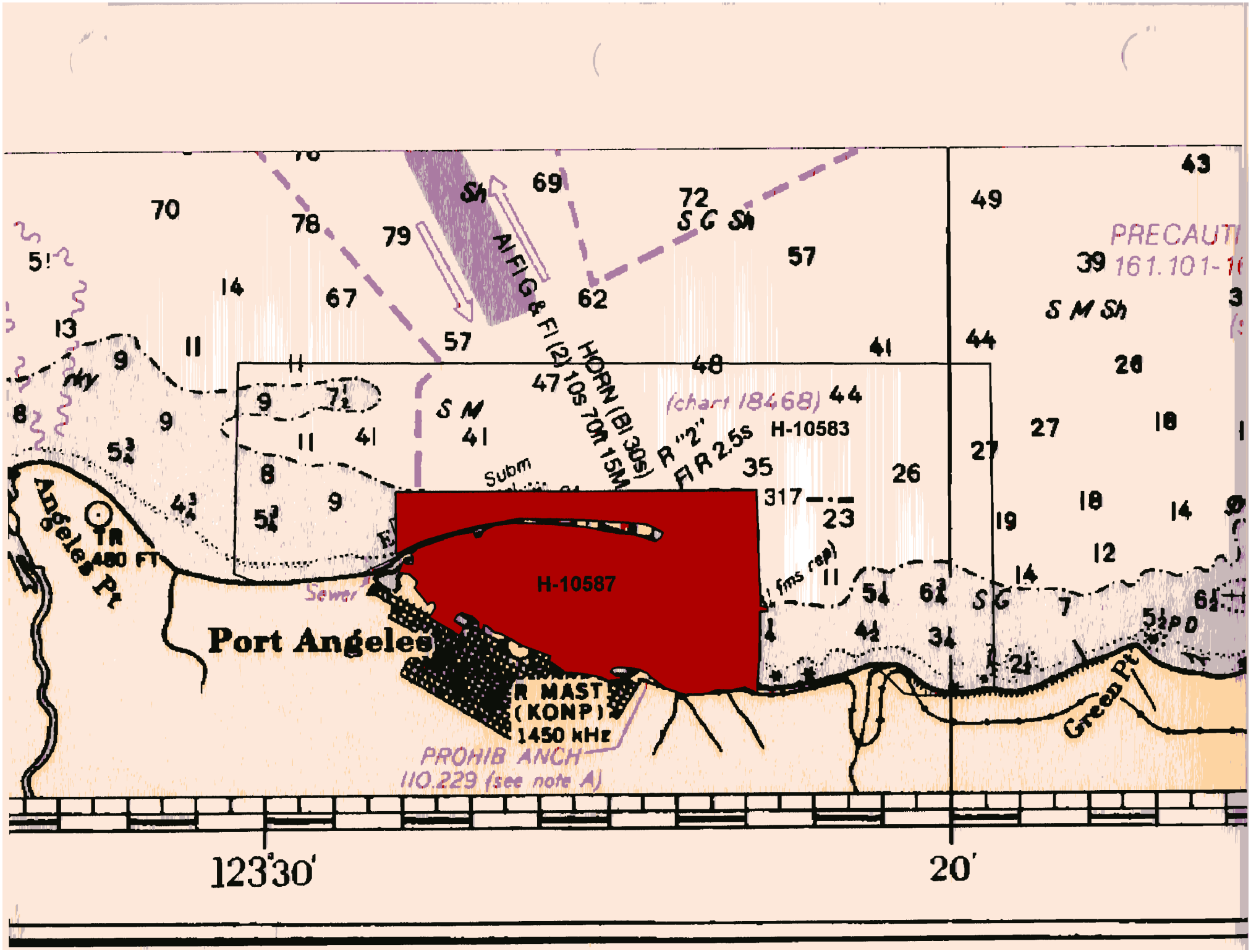
Down Time:	Weather	Electronics	Mechanical	GPS
in days	0	0	0	0

PROJECT LIMITS & SHEET LAYOUT
OPR-N251-PHP
Port Angeles, Washington



* Additional work completed on H-10564 after survey submittal

TYPE	July	August	September	October	November	December	January	February	March	April
Sq. NM	0.15	8	8	6	4	6	2	3	0	0
SV Casts	0	4	1	1	1	2	3	2	1	0
LNM Hydro	0	284.2	170.8	142.2	158.7	203.4	147.4	102	6.88	4.27
LNM SSS	11	49.4	101.2	88.5	94.8	68.8	26.9	92.8	56.5	0
DP							1	67	151	11
Dives							0	4	3	0
Control Stations Est.									0	0
BS	0	0	0	0	46	0	5	0	0	23


H-10587
Port Angeles
Angeles Pt
TR
480 FT
R MAST
(KONP)
1450 kHz
PROHIB ANCH
110.229 (see note A)
Green Pt
Sewer
Subm
HORN (B) 30s
Fl R 2.5s
(chart 18468)
H-10583
123°30'
20'

Descriptive Report to Accompany Hydrographic Survey H-10587

Field Number PHP-5-2-94
Scale 1:5,000
1994

Pacific Hydrographic Party
Chief of Party: LT Richard A. Fletcher

A. PROJECT ✓

A basic hydrographic survey was accomplished in accordance with project instructions OPR-N251-PHP Port Angeles, Washington dated May 17, 1994. An amendment to these project instructions was submitted from Nautical Charting Division on August 5, 1994.

This survey (H-10587) responds to requests from the Puget Sound Pilot Association, the Port of Port Angeles, the City of Port Angeles, and local commercial enterprises. The primary concern is to update charted hydrography, which dates from 1892 to 1974, to resolve discrepancies between charted and existing cultural features, and to investigate wrecks and submerged features. The Port of Port Angeles is frequently used by large vessels for refueling, awaiting orders or tugs, and a harbor of refuge when weatherbound. Commercial activities include oil handling and bunkering, liquid bulk handling (caustic soda, chlorine, etc.), dry bulk handling (logs, lumber, wood chips, pulp, limestone, etc.), and general cargo handling that includes seafood. A ferry service is also available between Port Angeles and Victoria, B.C. The Port Angeles Boat Haven accommodates commercial fishing vessels and pleasure craft with approximately 500 berths.

This survey's sheet letter is "A". The field sheet was divided into two plots, due to equipment constraints, HDAPS tables # 9 & # 10. This sheet is the fourth survey for project OPR-N251-PHP.

B. AREA SURVEYED ✓ See Eval Report, Section B

The area surveyed for H-10587 extends from latitude 48°06'50" N, north to latitude 48°08'50" N, and from longitude 123°22'16"W west to longitude 123°29'55"W. Hydrography for H-10587 are within the limits required by the Hydrographic Manual (Section 1.2.3), and the project instructions. Data acquisition began December 20, 1994 (DN 354) and continued through to May 22, 1995 (DN 142).

C. SOUNDING VESSELS

NOAA VN 1101 (EDP No. 0651), a 29-foot Jensen, and NOAA VN 1102 (EDP No. 0652), a 21-foot SeaArk, were used for all hydrography and velocity casts. There was no change to the standard vessel configuration for VN 1101.

The antenna on VN 1102 was relocated on 1/6/95 resulting in a change of offset tables. The following offset tables were applied to data collected with VN 1102:

Offset Table	Day Numbers
2	354-005
3	006-142

D. AUTOMATED DATA ACQUISITION AND PROCESSING

The PC-Data Acquisition System (PC-DAS) and the Hydrographic Data Acquisition and Processing System (HDAPS) software were used during this survey. Program names and versions are listed in the appendix.

The following non-HDAPS computer programs were used:

Program Name	Date	Version
PC-DAS	1994	5.00
VELOCITY	1994	2.11
NADCON	1989	1.01
MONITOR	1994	2.00
GEOID93	1993	1.00
SMLGAUGE	1994	2.20
DAILYDQA	1994	2.20

Raw data files were collected on plotter sheet 34 (1:10,000). Data were plotted on sheets 9 (1:5,000), 10 (1:5,000), and 36 (1:10,000).

E. SONAR EQUIPMENT

Side scan sonar (SSS) operations were conducted using an EG&G model 260 slant-range corrected SSS Recorder and an EG&G 272-T dual-channel (single frequency) towfish. The towfish was operated on the 100 kHz frequency and was configured with a 10° beam depression.

The following sonar equipment was used throughout the survey:

Type	S/N
Towfish	015598
260 Recorder	015602

The SSS towfish was towed with a 43 meter EG&G lightweight towcable. The towfish was deployed with an electric winch through a block mounted to a swing-arm davit on the starboard quarter of launch 1101. The length of towcable deployed was determined by measured markings on the towfish cable. The SSS towfish was maintained at a height off the bottom of 8 to 20 percent of the range scale. The measured towpoint is found in the offset tables*. Five range scales were used 50-,75-, 100-, 150-, and 200-meters. SSS operations were conducted at or less than the maximum speed of five knots while operating with the 50-, 75-, or 100-meter range scales and four knots while operating with the 150- and 200-meter range scale.

The inshore limit of SSS collection was the 5-meter curve, safe navigation with a SSS towfish, or the limit of collecting acceptable SSS sonargrams. Obtaining acceptable SSS sonargrams was exceptionally difficult in shallow sloping areas less than five fathoms (10 meters) due to jet wash, currents, kelp, and thermal gradients in shallow water. The recorder gain setting was set for the best return for the most prevalent bottom material. Contacts or identifiable features, such as a change in bottom texture, moored vessels, or pipelines were seen in the outer portion of the usable SSS sonargram and are an indication of proper SSS recorder tuning and were periodically marked as confidence checks. Degraded sonargrams were rejected and rerun, or the acceptable swath width was adjusted. Two 1:10,000 scale swath plots depicting adjusted SSS bottom coverage indicate that 200% SSS coverage was completed. Check of coverage plots seems to indicate that the requirement of 200% Side Scan was met. However, refer to Section P. Atrocity where the hydrographer has specified an area which is not in compliance with the line spacing required for a 1:10,000 scale survey. Side scan sonargrams were manually scanned for significant contacts in accordance with section 7.3.2 of the project instructions and entered into HDAPS contact tables*. In areas of numerous contacts only the highest contacts were entered. PHP entered 650 contacts into 41 contact tables* in confile 1.

PHP used the sifter program to help determine which contacts appeared to be significant and needed further investigation. A 50-meter radius and threshold depth of 19-meters was utilized March 9, to sift and identify significant contacts. The sifter printout was manually scanned for the largest contacts to development. On March 30 the contacts were resifted using a

* Filed with the hydrographic data

100-meter radius and threshold depth of 19-meters to more easily identify the most significant contacts. All SSS contacts flagged as significant were investigated. Then contacts were resifted using a 50-meter radius and threshold depth of 19-meters. All SSS contacts flagged as significant were investigated. A sifter program printout, run upon completion of investigations, with annotations as to the disposition of contacts remaining flagged, and the contact table listing are included in Separate V* of this report.

During near shore SSS operations a buoy was connected to the towfish towpoint to maintain the required height off the bottom and keep the towfish out of the jet wash.

PHP had difficulty acquiring SSS data within the harbor due to log booming operations and many log storage areas. SSS operations were delayed numerous times to affect towfish and towcable repairs. On DN 046 a new cable was installed and marked.

F. SOUNDING EQUIPMENT ✓

The following sounding equipment was used throughout this survey:

Vessel #	Model	Serial #	Day #'s
1101	DSF-6000N	A121N	026-097
1102	IN-448	236	354-142

Digitized soundings displayed on line were compared in the field with the analog trace to ensure reasonable agreement. No on-line calibration adjustments can be performed on the IN-448 or DSF-6000N.

Soundings were recorded in meters with an assumed speed-of-sound through water of 1500 m/sec. Depths encountered in the survey area ranged from -1.2 meters (fix number 98) to 86.1 meters (fix number 5050) based on ~~predicted~~ approved tides.

Metric lead lines were used for depth comparisons with the echosounder. PHP fabricated the lead lines following Hydrographic Survey Guideline (HSG) 69. Each lead line is 1/4-inch steering tiller rope. Shrink tubing, secured with "Scotchkote", marks one-meter intervals from 1 to 30. With the line subjected to six pounds of constant tension, markings were calibrated with a steel surveyor's tape. The throwing end is a standard six-pound lead weight shackled to a stainless steel

* Filed with the hydrographic data.

thimble bent to the bitter end. Leadline calibration forms are included in Separate IV* of this Descriptive Report.

The IN-448 had extreme difficulty tracking and correctly digitizing in the deeper steep sloping portions of this sheet. PHP attributes this difficulty to the turbulence and debris in the water column aggravated by inadequate grounding of electronics on VN 1102. Data was analyzed during office processing and found to contain no significant problems.
The DSF-6000N performed well during the course of this survey except when hydrography was run in depths shoaler than the reverb blanking setting. This resulted in a false return of the bottom. When this occurred the data were rejected and rerun. See statement above.

When the DSF 6000N high frequency did not digitize correctly, the low frequency depth, when available, was manually inserted into the digital record. Data was analyzed during office processing and found to contain no significant problems.
The hydrographer does not consider occasional breaks in the continuity of the echogram significant unless greater than 6 mm at survey scale (Section 1.4.6, Hydrographic Manual), or if they occurred over a shoaling trend (potential missed peak), in which cases the section or line was resurveyed.

A MOD III Divers Least Depth Gauge was used on DN 59. The gauge was operated in accordance with section 7.2.2.1 of the Field Procedures Manual with the exception that no AML cast was performed on the day the gauge was operated. Instead the previous AML cast number 17, DN 045, was utilized.

G. CORRECTIONS TO SOUNDINGS ✓

Velocity of Sound

Corrections for the speed of sound through the water column were computed from data obtained with an Applied Microsystems Laboratories (AML) Velocity of Sound Profiler, S/N 3042. VELOCITY was used to determine sounding correctors which were applied to all high and low frequency soundings.

* Filed with the hydrographic data.

The following casts were used: ✓

Cast	Extrapolated DN	Depth	DN Range	HDAPS Tables	Cast Position Latitude	Longitude
13	354	151.8	354-004	13	48°09'40"N	123°28'20"W
14	005	160.2	005-016	14	48°09'42"N	123°28'18"W
15	017	121.7	017-031	15	48°10'00"N	123°25'00"W
16	031	107.1	032-044	16	48°10'00"N	123°25'00"W
17	045	109.8	045-078	17	48°08'44"N	123°24'56"W
18	079	83.3	079-142	18	48°08'45"N	123°24'00"W

Separate IV* contains copies of all velocity cast data and HDAPS Velocity Corrector Tables. Casts 13, 14, 15, and 16 plot outside the survey limits.

The AML instrument(S/N 3042) was calibrated by Northwest Regional Calibration Center on April 15, 1994(DN 105). A copy of this calibration report is included in Separate IV* of this Descriptive Report.

On DN 142 additional development hydrography was obtained in shallow water (less than 8 meters). A velocity cast was not performed and velocity cast number 18, DN 079, was applied to the raw data. Data was analyzed during office processing and found to contain no significant problems.

Lead line Comparisons ✓

Lead line comparisons were periodically conducted to confirm proper digitization of echosounder depths. These are annotated on the echograms.*

Static Draft ✓

Static draft for VN 1102 was determined on 4/12/94. First, the depth of the transducer face from a reference mark on the hull was measured. Next, with the launch in the water, fuel tanks half full and two crewmen aboard, the depth from this reference mark to the launch's waterline was measured. Combining the two measurements, a static draft of 0.4 meters was calculated.

A static draft of 0.5 meters was determined for VN 1101 on 5/3/94, using a method similar to the one above. Static draft for VN 1101 was redetermined on March 20, 1995(DN 079) after major repairs, a static draft of 0.5 meters was calculated.

Supporting data are included in Separate IV.*

* Filed with the hydrographic data.

Dynamic Draft ✓

Settlement and squat correctors are applied on line to all survey data. Settlement and squat correctors are reapplied during field processing using the REAPPLY program in HDAPS.

VN 1101 settlement and squat measurements conducted on 5/4/94 were applied using Offset Table 1* (DN 354-078) and measurements conducted on 3/20/95 were applied using Offset Table 4* (DN 079-097).

VN 1102 settlement and squat measurements conducted on 5/5/94 * were applied throughout the survey using Offset Tables 2 and 3. Supporting field records are included in Separate IV* of this Descriptive Report.

Tide Correctors ✓

In compliance with Section 5.9 of the Project Instructions, predicted tide correctors from the existing Primary station at Port Angeles, 944-4090, were applied to soundings during field processing. One tidal zone was established for this survey. Final correctors will be applied from data collected by this station. All times and heights for this tidal zone were direct. *Tide Note dated June 20, 1995 is attached to this report.*

H. CONTROL STATIONS See Eval Rpt, Section H

Horizontal Datum

The horizontal datum for this project is North American Datum of 1983 (NAD 83). A copy of the HDAPS Control Station Table is included in Appendix III* (List of Horizontal Control Stations). A separate Horizontal Control Report OPR-N251-PHP, Port Angeles, was submitted to PHS in September of 1994.
HDAPS control station table is attached to this report.

A DGPS fixed point performance station was positioned at the USCG pier to third order class 1 standards.

I. HYDROGRAPHIC POSITION CONTROL See Eval Rpt, Section I.

* *Filed with the hydrographic data.*

Position Control ✓

Differential GPS (DGPS) was used for position control throughout this survey. The following beacons were used during hydrographic operations:

Location	Frequency
Race Rocks, Victoria, B.C.	309 kHz
Pt. Atkinson, Vancouver, B.C.	320 kHz
Robinson Point, Maury Is., WA	323 kHz

MONITOR results for these three stations are found in Separate III.*

The accuracy requirements as stated in section 3.4 of the Field Procedures Manual were met during the course of this survey with the exception of the buffer line on the south shore of the harbor. High HDOP's were encountered on the buffer line due to the high bluff to the south which blocked part of the GPS horizon. The track plot was checked and if the track plot represented the course actually run the data were retained. Data was analyzed during office processing and found to contain no significant problems. Occasional signal loss was encountered due to extreme atmospheric conditions. See statement above.

GPS Performance Checks ✓

DGPS performance checks using the fixed point method were obtained per FPM Section 3.4.4.1, using the site established at the USCG pier at Ediz Hook, Port Angeles. Performance check forms are included with the data files.

Positioning Equipment ✓

The unique numbers for all equipment serial numbers are annotated on the daily echograms.* The GPS antenna on VN 1102 was relocated on January 6, 1995. Offset Table 2 was used from DN 354 to DN 005 and Offset Table 3 was used from DN 006 to DN 142. Antenna offsets for each vessel are listed in the corresponding offset tables. Supporting data is included in Separate III.*

J. SHORELINE See Eval Rpt, Section J.

DM-10158 is the source document for shoreline on this survey and was supplied in both mylar and digital form. The digital map (DM) is plotted on all hydrographic field sheets for reference.

* Filed with the hydrographic data.

In addition to the source shoreline two 1:20,000 DM markups, with notes to the hydrographer, were forwarded with the project instructions.

The entire harbor area has seen extensive changes to cultural features along the shoreline. Because DM-10158 was compiled at a scale of 1:20,000 and the survey scale was 1:5,000 PHP found extensive changes to the source document. Rather than describe each item in the Descriptive Report the following graphical (color code) approach was taken:

> Two 1:5,000 field plots of the digital shoreline were made. The following color code was used to print comments on the shoreline plot to differentiate additions to the shoreline, digital map disprovals, prior survey disprovals, and chart disprovals:
>
> Red- All additions to the digital shoreline
> Green- Digital shoreline disprovals
> Violet- Prior survey disprovals
> Blue- Chart disprovals

The following items could not be adequately depicted on the shoreline field plot and require additional explanation:

> Several dolphins plotted on the DM were covered with SSS coverage during the course of this survey. Dolphins at the following positions were disproved with SSS and should not be charted: *concur*

Latitude	Longitude	SSS FIX
48°07'32.55"N	123°26'~~54.00~~ 39.00"W Rec	5483-5484,5819-5821
48°07'25.65"N	123°26'14.85"W	5894-5895
48°07'22.50"N	123°26'05.55"W	5541-5542
48°07'16.50"N	123°25'32.00"W	5865-5868
48°07'13.50"N	123°25'32.00"W	5225-5226, 5576-5577
48°07'13.00"N	123°25'32.00"W	5225-5226, 5576-5577
48°07'12.50"N	123°25'32.00"W	5225-5226, 5576-5577

The privately maintained light (LL # 16310, Volume VI, 1993) is incorrectly charted. The light is mounted on the eastern-most dolphin (Fix number 6193 and check Fix number 6581) off the Port of Port Angeles pier. These changes are shown on the ~~field shoreline~~ smooth sheet plot. Port Dock Light as located by this survey plots at latitude 48°07'32.543 N, longitude 123° 26' 12.484 W.

PHP observed the removal of two dolphins plotted on the DM at latitude 48°08'22.20"N, longitude 123°24'44.85"W, during the construction of the wave abatment system at the USCG station. Do not chart per digital map. *concur*

Two dolphins on the south shoreline at latitude 48°06'59.55"N longitude 123°24'50.55"W and latitude 48°06'59.10"N 123°24'47.25"W were visually investigated. No evidence of dolphins were seen. Do not chart per digital map. *concur*

A dolphin plotted on the DM at latitude 48°08'22.76"N longitude 123°24'55.45"W (Fix 6323) is a mooring buoy. Chart a mooring buoy. *concur*

The Notes to Hydrographer references a light with no ID at the eastern end of Ediz Hook, latitude 48°08'24.00"N, longitude 123°24'09.00"W. There is no light at this position. There is a building which houses a fog signal. This fog signal is referenced in the Light List, Volume VI, 1993 under # 16280, Column 8. *concur* Retain fog signal as presently charted.

K. CROSSLINES ✓

SSS lines were run perpendicular to the mainscheme hydrography and were used for crossline comparison. Nautical miles of crossline total 131.24 nm, representing 45.0% of the mainscheme hydrography on H-10587. There was good agreement between the mainscheme and crossline hydrography. *concur*

L. JUNCTIONS *See Eval Report Section L*

The west, north, and east edges of H-10587 (1:5,000) adjoins contemporary survey H-10583 (1:10,000). Comparison between the two showed good agreement.

M. COMPARISON WITH PRIOR SURVEYS *See Eval Report Section M*

PHS will conduct a comparison with prior surveys after smooth tides are applied to the raw data.

A 1:10,000 scale plot in fathoms was made to facilitate a cursory comparisons of hydrographic soundings to prior surveys.

Comparison were made between H-10587 and the following prior surveys:

Registry Number	Survey Scale	Survey Date
H-2110	1:4,800	Apr.-May, 1892
H-4586	1:10,000	May-Nov., 1926 ✓
H-5160	1:10,000	October, 1931
H-6649	1:10,000	Nov.-Dec., 1940

There are many cultural features that have changed along the shoreline. The significant discrepancies of shoreline features are addressed in Section J(Shoreline) of this DR. Prior survey items that were not on the DM are plotted on the field shoreline plot in red. Disprovals of prior survey items are plotted on the field shoreline plot in blue.

The following additional changes were noticed during comparison with the priors:

The north shore of Ediz Hook has been built up with Rip-Rap and some accretion to the east end of Ediz Hook has occured. These changes are evident when compared with the priors. The DM adequately depicts the new shoreline in this area. *concur*

The prior survey depth contours on H-5160 showed excellent agreement when compared with the current hydrography with the exception of two areas in the vicinity of the Rayonier ITT plant where shoaling has occurred. One shoal area located at latitude 048°07'08.50"N, longitude 123°24'55.50"W and another shoal area located at latitude 048°07'22.00"N, longitude 123°24'24.00"W have enlarged in comparison to the prior survey.

Comparison with H-6649 indicated some deepening around the five and ten fathom contour on the south side of the harbor.

Generally most soundings on H-10587 are deeper than those depicted on H-2110.

An 8.0'(1-3/4 fathom) charted rock on H-2110 located at latitude 048°07'05.80"N, longitude 123°23'27.00"W, was developed on DN 142. A rock was located at this position with a least depth of 4.1 meters (2-1/2 fathoms) based on ~~predicted~~ *actual* tides at fix number 1314.19. It is recommended to delete the 1-3/4 fathom rock and chart contemporary hydrography. *Do not concur The 1 3/4 Fm (3.2 meters) rock has been brought forward to the smooth sheet and should be retained as charted.*

Comparison with H-4586 showed excellent agreement. ✓

N. ITEM INVESTIGATION REPORTS ✓

All copies are attached to this report.

The following AWOIS and Item Investigation Reports are included in Separate VI.

N1	52058	Obstruction(submerged dolphin)
N2	52059	Obstruction(disposal area)
N3	52060	Obstruction(seaplane ramp)
N4	52061	Obstruction(pier in ruins)
N5	52062	Obstruction
N6	52063	Obstruction
N7	52064	Obstruction(pier in ruins)
N8	52065	Obstruction(pier in ruins)
N9	52066	Obstruction(marine railway)
N10	52067	Obstruction(ruins)
N11	52068	Obstruction
N12	52069	Obstruction
N13	52070	Obstruction
N14	52071	Obstruction
N15	52072	Obstruction(disposal area)
N16	52073	Obstruction(mooring boom and anchor)
N17	52074	Obstruction(row of 5 dolphins)
N18	52075	Obstruction(timbered pile groin)
N19	52076	Obstruction(timbered pile groin)
N20	52077	Obstruction(timbered pile groin)
N21	52078	Obstruction(timbered pile groin)
N22	52079	Obstruction(timbered pile groin)
N23	52080	Obstruction(row of 3 dolphins)
N24	52081	Obstruction(dock area in ruins)
N25	52082	Obstruction
N26	52083	Obstruction(group of 3 piles)
N27	52084	Obstruction(pier in ruins)
N28	52085	Obstruction
N29	52086	Obstruction
N30	52087	Obstruction(piling)
N31	52088	Obstruction
N32	52089	Obstruction
N33	52090	Obstruction
N34	52091	Obstruction(two dolphins)
N35	52092	Obstruction
N36	52093	Obstruction(group of 22 piles)
N37	52094	Obstruction(single dolphin)
N38	52095	Obstruction(group of 23 piles)
N39	52096	Obstruction(single pile)
N40	52097	Obstruction(single dolphin)

N41	52098 Obstruction(single dolphin)
N42	52099 Obstruction(sewer outfall)
N43	52100 Obstruction(sewer pipe)
N44	52101 Obstruction
N45	52102 Obstruction
N46	52103 Obstruction(row of piles)
N47	52104 Obstruction(row of 5 dolphins)
N48	52105 Obstruction(Spoil area)
N49	52106 Obstruction(single dolphin)
N50	52107 Obstruction(Shoal area)
N51	52108 Obstruction(Sewer outfall)
N52	52109 Obstruction(Timbered pile groin)
N53	52110 Obstruction
N54	52111 Obstruction
N55	52112 Obstruction(unidentified ruins)
N56	52113 Obstruction
N57	51270 Reported rock, approximate position
N58	Submerged uncharted wreck
N59	Submerged uncharted wreck
N60	Removal of charted platform pier and dolphins
N61	Uncharted rock

O. COMPARISON WITH THE CHART ✓ See Eval Report Section O

PHS will conduct a sounding comparison with the chart after smooth tides are applied.

A 1:10,000 scale plot in fathoms (plotter sheet 36) was created to facilitate a cursory comparison with Chart 18468 16th Ed., February 17, 1990 and to extend the western limit of H-10587.

There have been significant shoreline changes in several areas. Most shoreline changes have been accounted for on the digital map. Charted items that were not on the DM are plotted on the field shoreline plot in red. Disprovals of charted items are plotted on the field shoreline plot in blue.

The following additional changes were noticed during comparison with the chart:

The Stolt Sea Farm fish pen centered at latitude 048°08'22.50"N, longitude 123°25'11.00"W, is an area where hydrography or SSS coverage could not be conducted. ✓ The digital map shows dolphins around the perimeter of this fish pen. There are no dolphins, the fish pen is anchored ~~with mooring buoys.~~ Chart as shown on the ~~field shoreline plot~~ Smooth Sheet. Privately maintained lights mark the corners of this fish pen.

On the southern shoreline of Port Angeles Harbor there are charted pier ruins at latitude 048°07'14.80"N, longitude 123°25'45.40"W, which are no longer present. City officials confirmed operations were conducted within this area to remove the debris on the bottom. A development line was accomplished over these charted ruins on DN 103, Fix number's 1252-1253. There was no evidence of these charted ruins on the fathogram record nor was there any evidence of the ruins by visual inspection of the bottom by PHP personnel. The DM adequately depicts this change. concur Chart this area based on the results of the present survey.

The following table lists the center positions of log booming grounds which are currently being utilized and should be retained on Chart 18468: Concur

LATITUDE (N)	LONGITUDE (W)
48°07'04.80"N	123°24'43.10"W ✓
48°07'24.50"N	123°26'15.20"W
48°07'30.70"N	123°26'50.20"W ✓
48°07'53.10"N	123°27'34.70"W
48°08'11.50"N	123°27'10.30"W
48°08'07.60"N	123°26'41.30"W
48°08'18.00"N	123°26'00.00"W

Two "Log Booming Grounds" are not in use or have been abandoned. Delete charted "Log Booming Grounds" at the following positions: Concur

LATITUDE	LONGITUDE
48°07'10.30"N	123°25'22.20"W
48°08'03.70"N	123°27'41.00"W

Sounding comparisons

Comparison of sounding data and charted soundings were made throughout the survey in accordance with section 6.11. of the Project Instructions and sections 4.5.15. and 5.3.4. of the Hydrographic Manual.

A shoal area charted at latitude 048°06'56.10"N, longitude 123°23'28.00"W was found to have a least depth on the western edge of the shoal of 1.0 fathom (1.9 meters) located at latitude 048°06'56.72"N, longitude 123°23'29.28"W. See Eval Report Sections M & T.

The nearshore hydrography along the southern shoreline of Port Angeles Harbor appears to be slightly deeper than the charted soundings.

Hydrography from H-10587 shows good agreement with charted soundings with some indication of deepening within Port Angeles Harbor.

Numerous rocks and boulders were found inshore of the 10 fathom curve on the southeast entrance to Port Angeles Harbor. PHP recommends charting "*bldrs*" symbol at latitude 048°07'30"N, longitude 123°23'00"W. The notation 'bldrs' has been added to the smooth sheet based on the side scan sonargrams and contact plot. In addition, a note has been added to the smooth sheet to reflect this situation.

Danger To Navigation ✓

Danger to Navigation Reports for the following items were submitted: Letters attached to this report.

ITEM	DATE SUBMITTED
Submerged Wreck	March 6, 1995
Uncharted rock	May 4, 1995

P. ADEQUACY OF SURVEY See Eval Rpt, section P

Mainscheme hydrographic line spacing of 100 meters was run throughout the survey limits. A SSS linespacing of 75 meters was run perpendicular to the mainscheme. Developments where conducted where needed or required. South of latitude 048°07'12.00"N was too shallow for SSS operations and the sounding spacing for this area exceeds required guidelines as specified in Sections 4.3.4, 4.3.5, and 4.3.6 of the Hydrographic Manual and Hydrographic Survey Guideline # 69, but is adequate to delineate the submarine relief for the intended use. This survey is complete and adequate to supersede prior surveys within their common areas. Concur However, there are several shoal indications inside the 10-meter depth curve, that were not developed to obtain a least depth.

Q. AIDS TO NAVIGATION ✓ See Eval Rpt, section Q

All aids to navigation, private aids and landmarks within the limits of H-10587 were positioned as specified in Section 4.2 of the project instructions.

The following new USCG and private aids to navigation were positioned to hydrographic standards:

Description	FIX	Latitude	Longitude
Yellow Light & Daymarker	6317	48°08'22.42"N	123°24'42.38"W
Green light & Daymarker "1"	6319	48°08'21.97"N	123°24'45.99"W
Red light & Daymarker "2"	6318	48°08'21.35"N	123°24'44.13"W
Green light & Daymarker "3"	6321	48°08'22.49"N	123°24'53.33"W
Red light & Daymarker "4"	6320	48°08'22.62"N	123°24'52.41"W

The supporting data on these new aids will be found in Appendix II, NOAA Form 76-40(Nonfloating Aids or Landmarks for Charts), of this report. Copies attached to this report.

Two private floating aids were not found. The Stolt fish pens mentioned in section "O" now extend to these positions. Delete the following charted aids: See attached copies of NOAA Form 76-40.

Description	FIX	Latitude	Longitude
Yellow light Y "G"		48°08'22.00"N	123°25'01.00"W
Yellow light Y "A"		48°08'23.00"N	123°25'01.00"W

R. STATISTICS

Description	Quantities
Total Positions	3156
Total Number of Selected Soundings	16593
Total Detached Positions	234
Total Bottom Samples	18
Total Nautical Miles 200% SSS	131.24
Total Nautical Miles Hydrography	290.07
Square Nautical Miles Hydrography	8.5
Velocity Casts	6
Days of Production	29

S. MISCELLANEOUS

Bottom samples were obtained in accordance with Section 6.7 of the Project instructions, sections 1.6.3 and 4.7.1 of the Hydrographic Manual. No differences in charted bottom characteristics were npticed. Reference Section O., regarding recommendation of "Blds" notation at Southeast entrance to Port Angeles Harbor.

A significant break in hydrographic data acquisition occurred from March 2 (DN 061) until March 20 (DN 079) due to the haulout of VN 1101 for annual repairs.

While acquiring SSS data during the course of this survey, it was noticed that there were numerous areas where the bottom was scattered with water-logged timber. Most of the areas found in this condition were in or around the vicinity of log booming grounds. These areas are not considered to be dangerous to the mariner because of the general locations of this debris. The areas which have scattered timber on the bottom are mainly within the presently active log booming grounds. No charting recommendations are suggested here. Limits of the log booming grounds have been shown on the smooth sheet where warranted.

The loading pier charted at latitude 048°08'25.00"N. longitude 123°26'39.00"W and positioned on DN 060 at Fix Number 6380 and Fix Number 6384 is scheduled to be permanently removed in the summer of 1995. This feature is shown on the smooth sheet and should continue to be charted unless more current information is available.

No unusual magnetic variations were observed during the course of this survey.

T. RECOMMENDATIONS ✓ See Eval Report Section T.

Chart 18468 shows only the 1-, 2-, 3-, and 5-fathom depth curves. It is suggested that the 10-, 15-, 20-, 25-, and 30-fathom depth curves be applied on this chart due to the large volume of deep-draft vessels transiting and mooring within the harbor. The added contours will better depict the bathymetry in the anchorage areas. The 1, 2, 3, and 5 Fathom depth curves have been those selected for Chart raster 18468. Application of additional depth curves have been left to the discretion of the Nautical Charting Division. (mco)
Current diver technology is significantly more accurate than wire drag methods. There should be separate chart symbols differentiating dive investigation depths and wire drag clearance depths.

U. REFERRAL TO REPORTS ✓

Coast Pilot Report	March, 1995
Horizontal Control Report	September, 1994

Submitted for approval,

Reginald W. Adams, Jr.
Survey Technician
Survey, OIC

Approved and forwarded,

Richard A. Fletcher
Lieutenant, NOAA
Chief of Party

January 24, 1995

USER CONTACT

LT Rick Fletcher and ST Reggie Adams held a meeting with representatives from the Port of Port Angeles, City of Port Angeles, Port Angeles Marina and Black Ball Transport regarding the progress of survey operations on the Port Angeles project and survey requirements for sheet A "Port Angeles Harbor".

Attendees:

Name	Organization	Phone #
Dave Callantine	Port of Port Angeles	457-8812
Gary Kenworthy	City of Port Angeles	457-0411 X-129
Chuck Faires	Port Angeles Marina	452-4505
Wayne Barrett	Black Ball Transport	457-4491

No items of concern were identified. Mr. Kenworthy was interested in having us position the end of the sewer outfalls. Some local knowledge was gained regarding changes to shoreline and possible uncharted obstructions.

1) An uncharted wreck lies outside the marina entrance.
2) A large anchor was placed off the main Port wharf.
3) Several changes to shoreline

The crane wreckage on found survey on H-10564 was identified as the crane lost approximately 3 years ago by the Mansen Construction Company of Seattle. The fishing vessel located on H-10564 was identified as a vessel that also sank approximately 3 years ago; the vessel's master was rescued by the U.S.C.G. and the vessel name is unknown.

A quick visit was made to the Port Angeles Pilot Station. PHP briefed the pilots on survey progress and supplied the positions of obstructions reported as Dangers to Navigation. No items of concern were identified.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey

Seattle, Washington 98115-0070
Pacific Hydrographic Party
P.O. Box 188
Railroad and O avenues
Anacortes, Wa 98221-0188
(206) 293-1379

May 2, 1994

Captain Charles R. Brown, USCG
Commanding Officer, USCG Group/Air Station
Port Angeles, WA 98362

Dear Captain Brown:

I respectfully request logistical support for the United States Coast and Geodetic Survey, Pacific Hydrographic Party (PHP) during our upcoming project at Port Angeles which is scheduled to begin in late June and continue through November.

The attached information sheet outlines PHP's functions. PHP will be conducting a hydrographic survey of the port of Port Angeles and the surrounding waters to update the nautical charts for the area. This project is in response to requests from the Puget Sound Pilots and the Port of Port Angeles.

During a reconnaissance trip to the Port Angeles area in March, the PHP Assistant Chief Lieutenant Richard Fletcher, NOAA, found your facility to be the best location for PHP to set up a base for survey operations. We are looking for the following support:

Level, paved or gravel parking space for two office trailers, approximately 45'x 30'.
200A-110V AC power source for office trailers.
Daytime use of bathrooms for 6 personnel or permission for a porta-potty.
Parking space for two small boats on trailers, 26' trailers.
Parking space for two government trucks.
Daytime parking space for 6 personal vehicles.
Pier space for a 30' survey launch and 110 VAC shore power hookup or proximity to a 110 V outlet.
The ability to install two phone lines.
The ability to broadcast marine VHF and NOAA frequency (approximately 170 MHZ) VHF radio to our boats in the survey area.

If you have any other logistical questions please contact myself or Lieutenant Richard Fletcher at (206) 293-1379.

Sincerely,

Lieutenant Guy T. Noll, NOAA
Chief

Who we are:

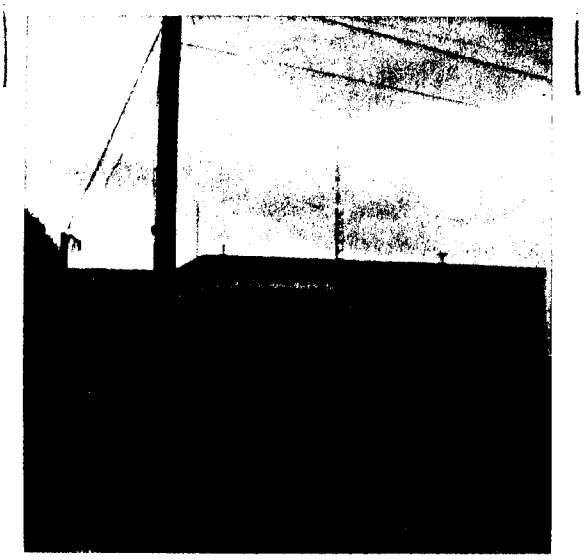
Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Coast & Geodetic Survey
Nautical Charting Division
Hydrographic Surveys Branch
Pacific Hydrographic Section
Pacific Hydrographic Party, N/CG2453

Our mission:

Provide hydrographic ("measure of water depth") survey information for the maintenance of nautical charts. Nautical charts are published by NOS for helping the mariner transit the territorial waters of the US using prudent seamanship. NOAA is liable for the accurate and precise portrayal of the bottom topography. Thus, our surveys meet the standards promulgated by NOAA and the International Hydrographic Organization based in Monaco.

How we perform our mission:

We use a high-precision Differential Global Positioning Satellite system for positioning our 29 and 23-foot launches on the bay. A digital fathometer measures the depth beneath the launch, and the depth and position data are time-correlated to give us the depth at the known location. A systematic cross-sectioning of the bay and its features allows us to produce a plot of a small representative sample (<10%) of our data which is used to update the chart of the area after further processing in Seattle and Silver Spring, MD.



PHP Office Trailers

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Seattle, Washington 98115-0070

PACIFIC HYDROGRAPHIC PARTY
P.O. BOB 760
PORT ANGELES, WA 98362
VOICE (360) 457-4206
FAX (360) 457-4371

ADVANCE INFORMATION

March 6, 1995

Commander
Thirteenth Coast Guard District(OAN)
Federal Building, Room 3410
915 Second Avenue
Seattle, WA 98174-1067

Dear Sir:

The NOAA Pacific Hydrographic Party has discovered a potential danger to navigation while conducting survey operations in Port Angeles Harbor in the Strait of Juan de Fuca. A Danger to Navigation Report is enclosed along with a chartlet showing the affected portion of Chart 18468.

I recommend this Danger to Navigation be included in the next Local Notice to Mariners.

Sincerely,

Lieutenant Richard A. Fletcher, NOAA
Chief of Party

Enclosures

cc: DMAHTC
N/CG221
N/CG245

ADVANCE INFORMATION

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10587

Survey Title:

State: WA

General Locality: Strait of Juan de Fuca

Sublocality: Port Angeles Harbor

Project Number: OPR-N251-PHP

The following item which is a potential danger to navigation was discovered during hydrographic survey operations by the NOAA Pacific Hydrographic Party.

Object Discovered: A submerged wreck 45 feet in length, rising four meters from the bottom was located at latitude 48°07'40.410"N, longitude 123°27'10.691"W. Dive investigation confirmed a least depth of 8.0 meters(4.4 fathoms) at MLLW based on ~~predicted~~ actual tides. This depth plots to the northwest of the boat haven entrance and to the southeast of a commercial pier handling deep-draft vessels.

Affected nautical charts:

Chart Number	Edition No. Date	Reported Depth	Chart Datum	Geographic Position Latitude	Longitude
18468	16th Feb. 17, 1990	4 1/2 fm	NAD83	48°07'40.410"N	123°27'10.691"W

Questions concerning this report should be directed to NOAA, Pacific Hydrographic Section, N/CG245, 7600 Sand Point Way NE, Bin C15700, Seattle, WA 98115-0070, telephone (206) 526-6836.

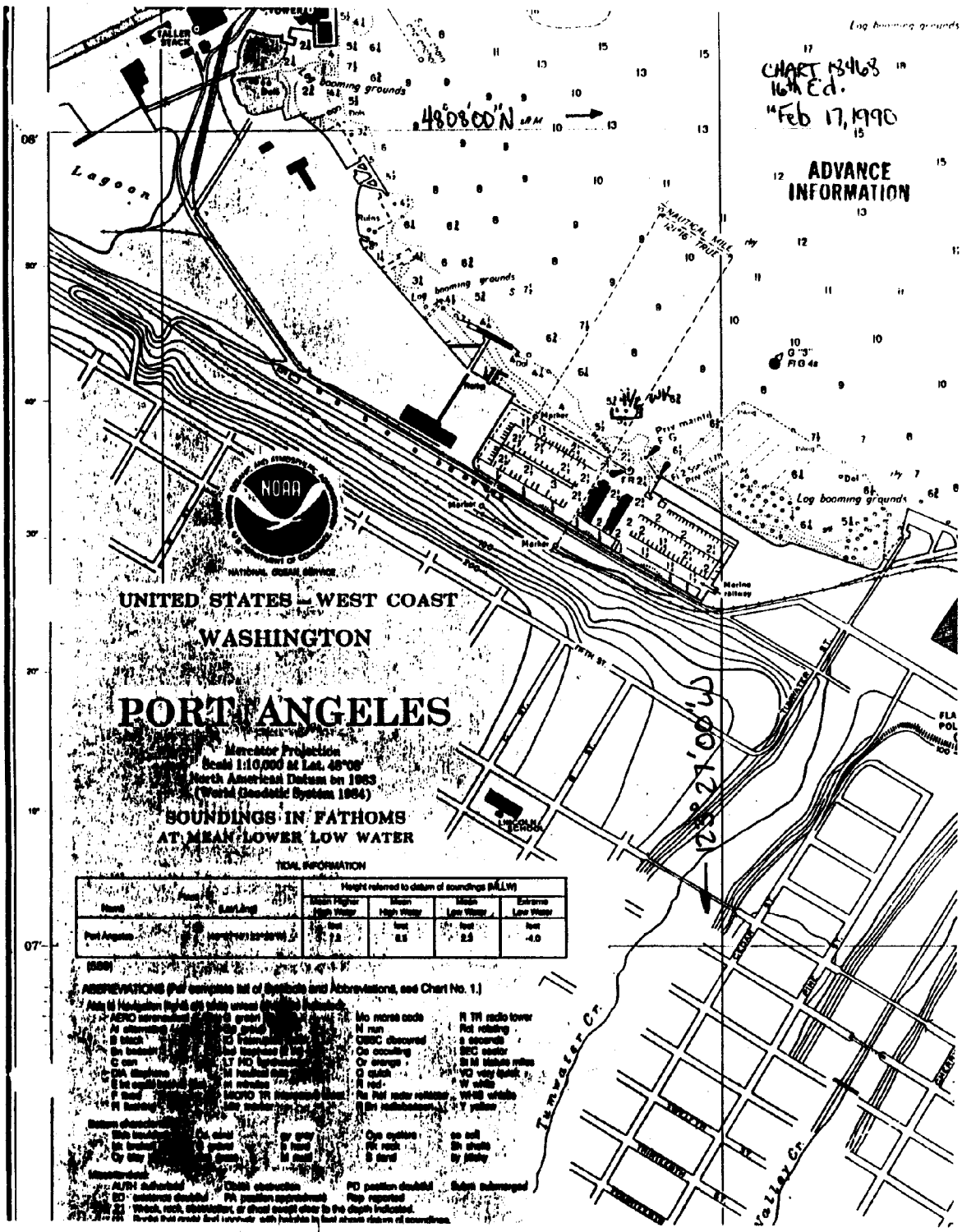


CHART 18468
16th Ed.
Feb 17, 1990
ADVANCE INFORMATION
48°08'00"N
Lagoon
Log booming grounds
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEAN SERVICE
UNITED STATES — WEST COAST
WASHINGTON
PORT ANGELES
Mercator Projection
Scale 1:10,000 at Lat. 48°08'
North American Datum on 1983
(World Geodetic System 1984)
SOUNDINGS IN FATHOMS
AT MEAN LOWER LOW WATER
TIDAL INFORMATION
Height referred to datum of soundings (MLLW)
Port Angeles
123°27'00"W
Tumwater Cr.
Valley Cr.
Marine railway
Log booming grounds

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Seattle, Washington 98115-0070

PACIFIC HYDROGRAPHIC PARTY
P.O. BOX 5803
BELLINGHAM, WA 98227-5803
VOICE (360) 650-9095
FAX (360) 650-9134

ADVANCE INFORMATION

May 4, 1995

Commander
Thirteenth Coast Guard District(OAN)
Federal Building, Room 3410
915 Second Avenue
Seattle, WA 98174-1067

Dear Sir:

The NOAA Pacific Hydrographic Party has discovered a potential danger to navigation while conducting survey operations in Port Angeles Harbor in the Strait of Juan de Fuca. A Danger to Navigation Report is enclosed along with a chartlet showing the location of the danger.

I recommend this Danger to Navigation be included in the next Local Notice to Mariners.

Sincerely,

Lieutenant Richard A. Fletcher, NOAA
Chief

Enclosures

cc: DMAHTC
N/CG221
N/CG245

ADVANCE INFORMATION

REPORT OF DANGER TO NAVIGATION

Hydrographic Survey Registry Number: H-10587

Survey Title:

State: WA

General Locality: Strait of Juan de Fuca

Sublocality: Port Angeles Harbor

Project Number: OPR-N251-PHP

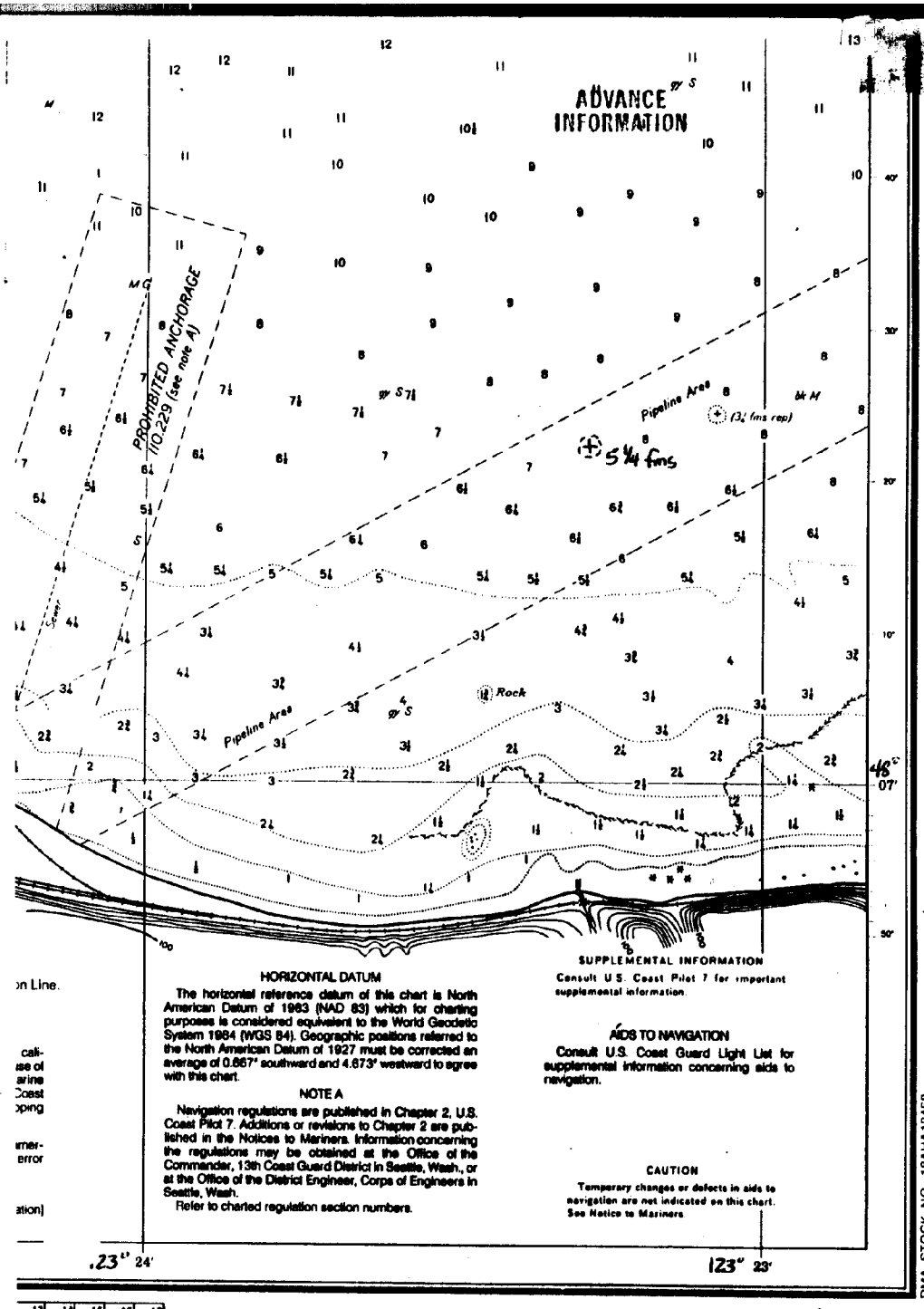
The following item which is a potential danger to navigation was discovered during hydrographic survey operations by the NOAA Pacific Hydrographic Party.

Object Discovered: A submergedrock, rising 4.8 meters from the bottom was located at latitude 48°07'22.320"N, longitude 123°23'17.570"W. An echosounder investigation confirmed a least depth of 9.4 meters (5.1 fathoms) at MLLW based on ~~predicted~~ actual tides.

Affected nautical charts:

Chart Number	Edition No. Date	Reported Depth	Chart Datum	Geographic Position Latitude	Longitude
18468	16th Feb. 17, 1990	5 1/4 fm	NAD83	48°07'22.320"N	123°23'17.570"W
18465	29th Mar. 6, 1993	5 1/4 fm	NAD83	48°07'22.320"N	123°23'17.570"W

Questions concerning this report should be directed to NOAA, Pacific Hydrographic Section, N/CG245, 7600 Sand Point Way NE, Bin C15700, Seattle, WA 98115-0070, telephone (206) 526-6836.



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HORIZONTAL DATUM

The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83) which for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 0.667" southward and 4.673" westward to agree with this chart.

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 13th Coast Guard District in Seattle, Wash., or at the Office of the District Engineer, Corps of Engineers in Seattle, Wash.

Refer to charted regulation section numbers.

SUPPLEMENTAL INFORMATION

Consult U.S. Coast Pilot 7 for important supplemental information.

AIDS TO NAVIGATION

Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.

CAUTION

Temporary changes or defects in aids to navigation are not indicated on this chart. See Notice to Mariners.

DMA STOCK NO. 18AHA18468

(Port Angeles, Washington)

SOUNDINGS IN FATHOMS - SCALE 1:10,000

18468

16th Ed. FEB. 17, 1990

SOUNDINGS IN FATHOMS

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HDAPS Pre-Survey Program Version: 7.11        PRE-SURVEY: CONTROL STATION TABLE ✓               21:25:47    1 May 1995

Station No  ?
No   Type           Lat            Lon    H Cart     Freq    Vel Code  MM/DD/YY         Station Name

00[illegible] [illegible] 049:19:49.402 123:15:52.444   22  130     0.0      0    A  09/15/94  PT ATKINSON, B.C. (VANC DGPS)
00[illegible] [illegible] 048:17:52.258 123:31:54.747   -6  130     0.0      0    J  09/15/94  RACE ROCKS, B.C. (VICT. DGPS)
100        G 048:08:23.134 123:24:50.121  -19  250     0.0      0       07/30/94  DGPS CHK PT. (USCG DOCK)
101        G 048:07:25.144 123:27:04.024  -17  130     0.0      0       07/30/94  944 4090 A TIDAL
102        G 048:08:23.414 123:24:10.221  -18  130     0.0      0       07/30/94  TUCKER 1892
             000:00:00.000 000:00:00.000    0    0     0.0      0       03/01/92
             000:00:00.000 000:00:00.000    0    0     0.0      0       03/01/92
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             000:00:00.000 000:00:00.000    0    0     0.0      0       03/01/92
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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)

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

REPORTING UNIT (If field Party, Ship or Office): PACIFIC HYDROGRAPHIC PARTY, N/CG2453

STATE: WASHINGTON

LOCALITY: STRAIT OF JUAN de FUCA
PORT ANGELES HARBOR

DATE: 2-22-95

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-N251-PHP	PHP-5-2-94	H-10587	NAD 83

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
UNCHARTED	PORT OF PORT ANGELES PIER LIGHT FLASHING RED PRIVATELY MAINTAINED	48 07	30.144	123 26	33.566		F-DGPS-L 1995	18468
UNCHARTED	PORT OF PORT ANGELES PIER LIGHT FLASHING AMBER PRIVATELY MAINTAINED	48 07	31.936	123 26	39.882		F-DGPS-L 1995	18468
UNCHARTED	BLACK BALL TRANSPORT FLASHING GREEN ON PIER AT UNUSED FERRY RAMP, PRIVATELY MAINTAINED	48 07	20.837	123 25	49.044		F-DGPS-L 1995	18468
UNCHARTED	BLACK BALL TRANSPORT FLASHING RED ON PIER AT UNUSED FERRY RAMP, PRIVATELY MAINTAINED	48 07	21.292	123 25	49.848		F-DGPS-L 1995	18468
UNCHARTED	PRIVATELY MAINTAINED FLASHING RED ON CHARTED WOOD DOLPHIN	48 07	41.490	123 27	17.987		F-DGPS-L 1995	18468
								V mEB

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	LT (jg) P. K. HAINES, ST R.W. ADAMS	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	Reginald W. Adams, Jr. SURVEY TECHNICIAN, REGINALD W. ADAMS, JR, HYDROGRAPHER-IN-CHARGE	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

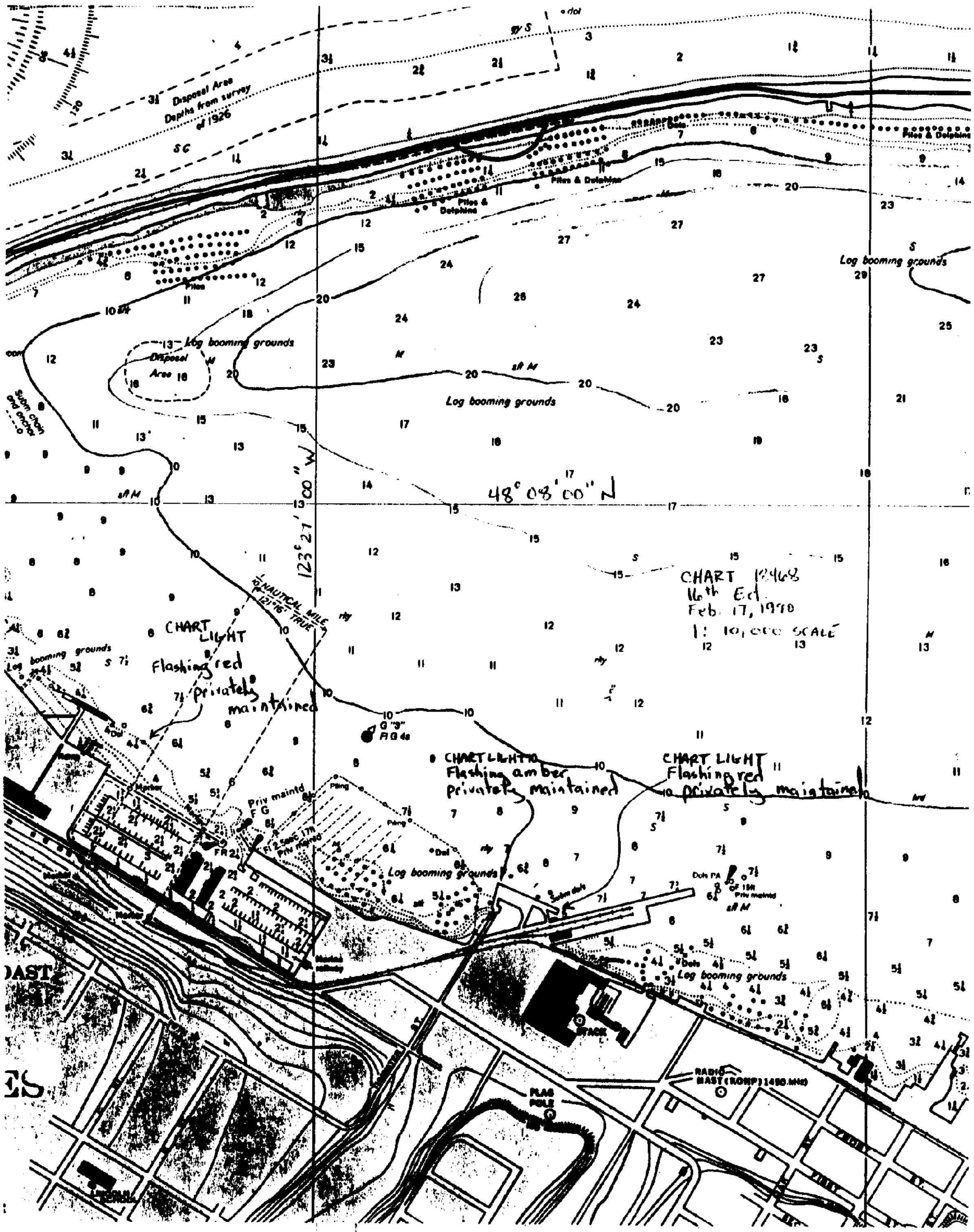
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40 (8-74)

SUPERSEDES NOAA FORM 76-40 (2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD BE DESTROYED UPON RECEIPT OF REVISION.

☆ U.S.GPO:1975-0-665-080/1155



Disposal Area
Depths from survey of 1926
Log booming grounds
Piles & Dolphins
48°08'00" N
123°21'00" W
CHART 18468
16th Ed.
Feb. 17, 1990
1: 10,000 SCALE
CHART LIGHT
Flashing red
privately maintained
CHART LIGHT
Flashing amber
privately maintained
CHART LIGHT
Flashing red
privately maintained
Priv maintd
FLAG POLE
STACK

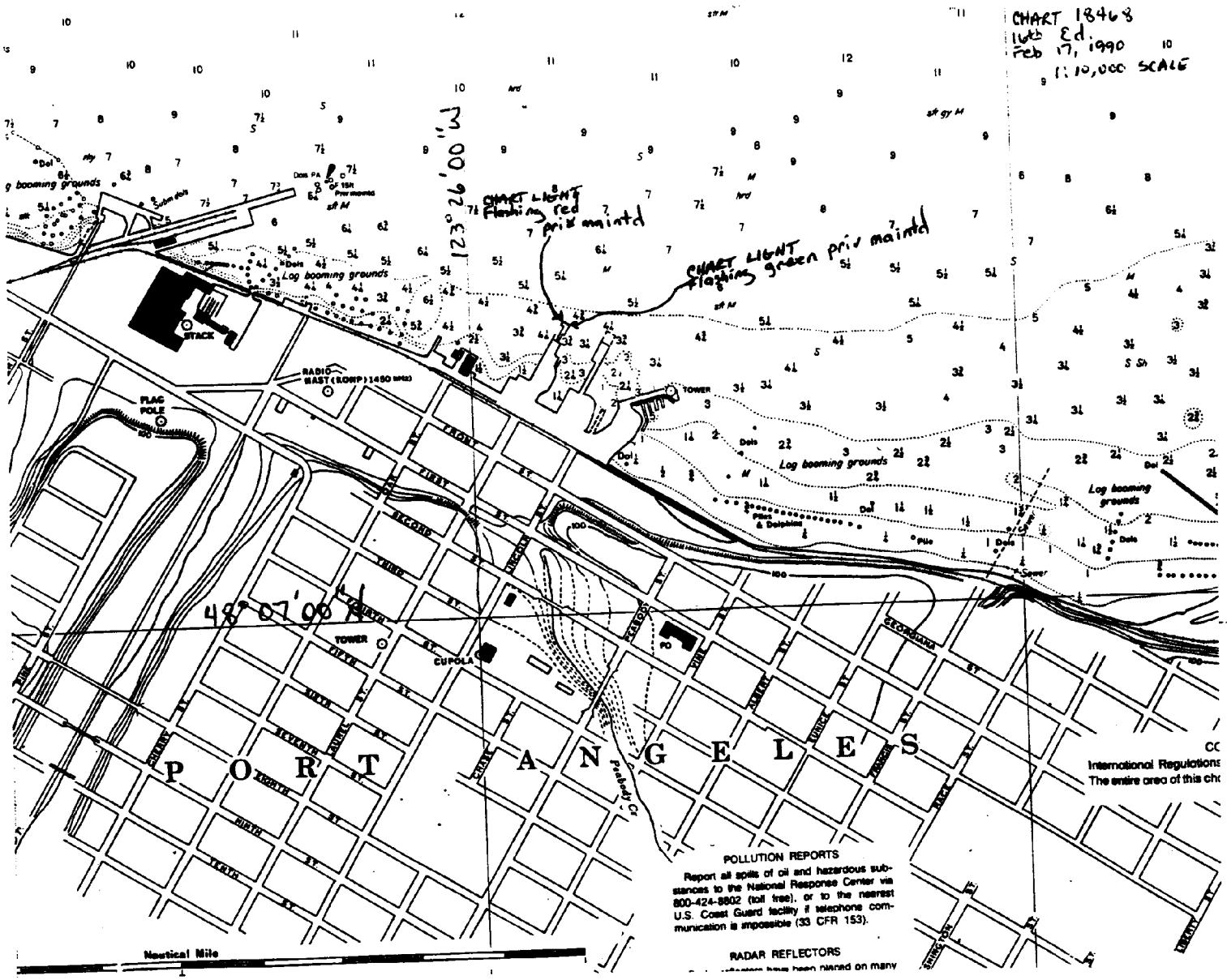


CHART 18468
16th Ed
Feb 17, 1990
1:10,000 SCALE
123°26'00"W
48°07'00"N
CHART LIGHT
Flashing red
priv maintd
CHART LIGHT
Flashing green priv maintd
Log booming grounds
STACK
RADIO MAST (LORP) 1450 kHz
FLAG POLE
TOWER
CUPOLA
PO
Pershing Sq
Peabody Cr
P O R T A N G E L E S
Nautical Mile
POLLUTION REPORTS
Report all spills of oil and hazardous substances to the National Response Center via 800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (33 CFR 153).
RADAR REFLECTORS
International Regulations
The entire area of this ch

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

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

NONFLOATING AIDS [redacted] 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): PACIFIC HYDROGRAPHIC PARTY, N/CG2453
STATE: WASHINGTON
LOCALITY: STRAIT OF JUAN de FUCA, PORT ANGELES
DATE: 3-1-95

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-N251-PHP	PHP-5-2-94	H-10587	NAD 83

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
UNCHARTED	USCG YELLOW RECTANGLE DAY BOARD FLASHING YELLOW LLN 16291 6317	48 08	22.420	123 24	42.379		F-DGPS-L 1995	18468
UNCHARTED	USCG RED DAY BOARD LIGHT "2" FLASHING RED LLN 16293 6318	48 08	21.353	123 24	44.127		F-DGPS-L 1995	18468
UNCHARTED	USCG GREEN DAY BOARD LIGHT "1" FLASHING GREEN LLN 16292 6319	48 08	21.966	123 24	45.986		F-DGPS-L 1995	18468
UNCHARTED	USCG RED DAY BOARD LIGHT "4" FLASHING RED LLN 16295 6320	48 08	22.622	123 24	52.412		F-DGPS-L 1995	18468
UNCHARTED	USCG GREEN DAY BOARD LIGHT "3" FLASHING GREEN LLN 16294 6321	48 08	22.492	123 24	53.326		F-DGPS-L 1995	18468
UNCHARTED	STOLT SEA FARM FISH PEN FLASHING WHITE PRIVATELY MAINTAINED 6328	48 08	21.705	123 25	17.723		F-DGPS-L 1995	18468
UNCHARTED	STOLT SEA FARM FISH PEN FLASHING WHITE PRIVATELY MAINTAINED 6329	48 08	23.629	123 25	17.810		F-DGPS-L 1995	18468
UNCHARTED	STOLT SEA FARM FISH PEN FLASHING YELLOW PRIVATELY MAINTAINED	48 08	19.650	123 25	01.087		F-DGPS-L 1995	18468
UNCHARTED	STOLT SEA FARM FISH PEN FLASHING YELLOW PRIVATELY MAINTAINED	48 08	20.163	123 25	13.191		F-DGPS-L 1995	18468
								✓ mm

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	ST R.W. ADAMS, ET E.O. WERNICKE	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Reginald W. Adams, Jr. SURVEY TECHNICIAN REGINALD W. ADAMS JR, HYDROGRAPHER-IN-CHARGE	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S.GPO:1975-0-665-080/1155

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

☐ TO BE CHARTED
☐ TO BE REVISED
☒ TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): PACIFIC HYDRO PARTY N/CS342

STATE: WA

LOCALITY: STRAIT OF JUAN de FUCA PORT ANGELES

DATE: 3-1-95

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

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

OPR PROJECT NO.: OPR-N251-PHP

JOB NUMBER: PHP-5-2-94

SURVEY NUMBER: H-10587

DATUM: NAD 83

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	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
4 "C"	LIGHTED BUOY	48 08	22.0	123 25	17.0			18468
"D"	SALMON PEN LIGHT "D"	48 08	22.0	123 25	12.0			18468
"E"	SALMON PEN LIGHT "E"	48 08	21.5	123 25	09.0			18468
"F"	SALMON PEN LIGHT "F"	48 08	21.5	123 25	04.0			18468

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD		☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

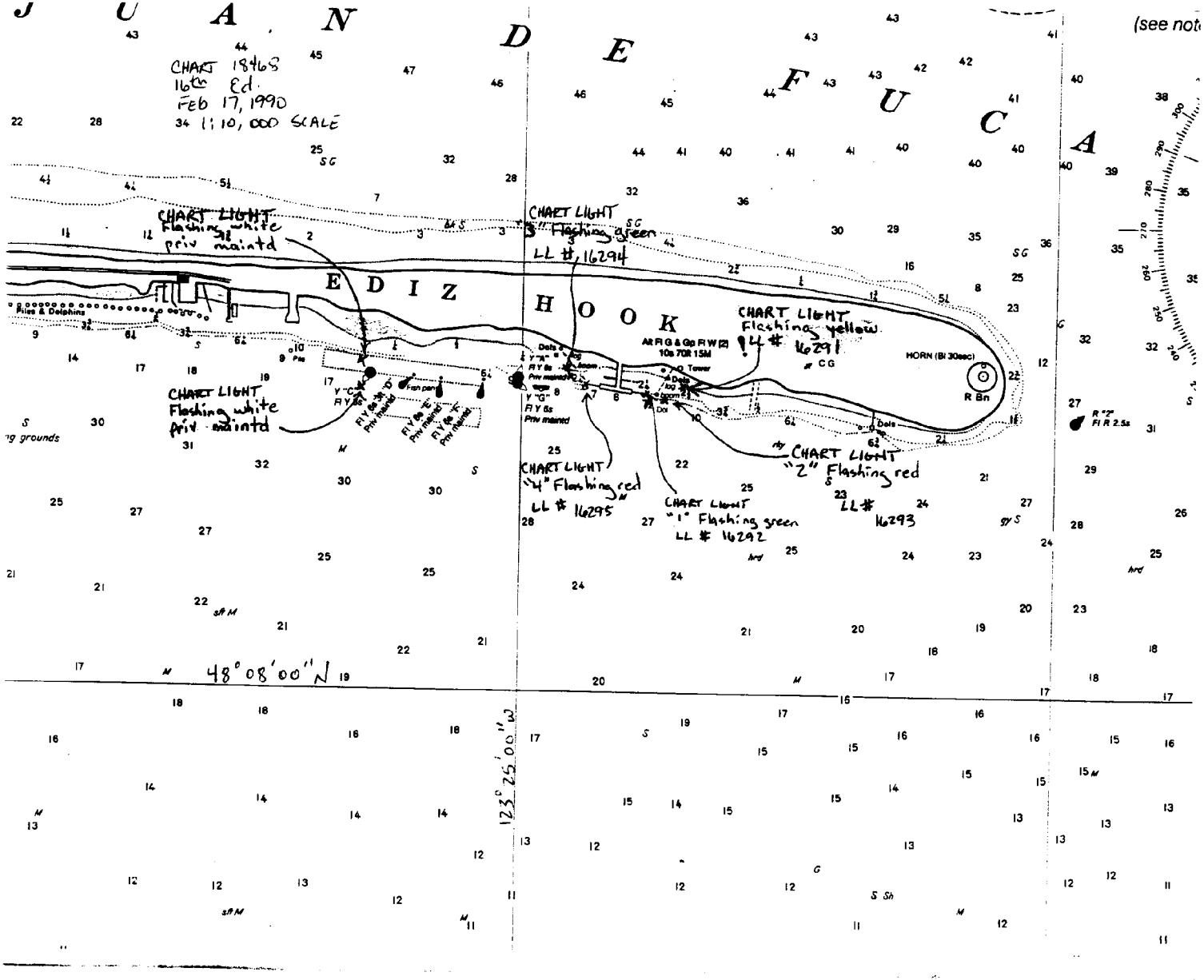
III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1030 Region 6


J U A N D E F U C A
(see not
CHART 18465
16th Ed.
FEB 17, 1990
1:10,000 SCALE
CHART LIGHT
Flashing white
priv maintd
CHART LIGHT
"3" Flashing green
LL #, 16294
E D I Z H O O K
CHART LIGHT
Flashing yellow
LL # 16291
CHART LIGHT
Flashing white
priv maintd
CHART LIGHT
"4" Flashing red
LL # 16295
CHART LIGHT
"1" Flashing green
LL # 16292
CHART LIGHT
"2" Flashing red
LL # 16293
48°08'00"N
123°25'00"W

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): PACIFIC HYDROGRAPHIC PARTY N/CG 2453

STATE: WASHINGTON

LOCALITY: STRAIT OF JUAN de FUCA

DATE: 2-22-95

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

OPR PROJECT NO.: OPR-N251-PHP

JOB NUMBER: PHP-5-2-94

SURVEY NUMBER: H-10587

DATUM: NAD 83

POSITION

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
FLAG POLE	FLAG POLE HAS BEEN REMOVED	48 07	15.100	123 26	34.700		V-VIS 1995	18468
								V mcb

RESPONSIBLE PERSONNEL

TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	LT (sg) P. K. HAINES, ST R. W. ADAMS	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	Reginald W. Adams, Jr. SURVEY TECHNICIAN, REGINALD W. ADAMS, JR., HYDROGRAPHER-IN-CHARGE	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

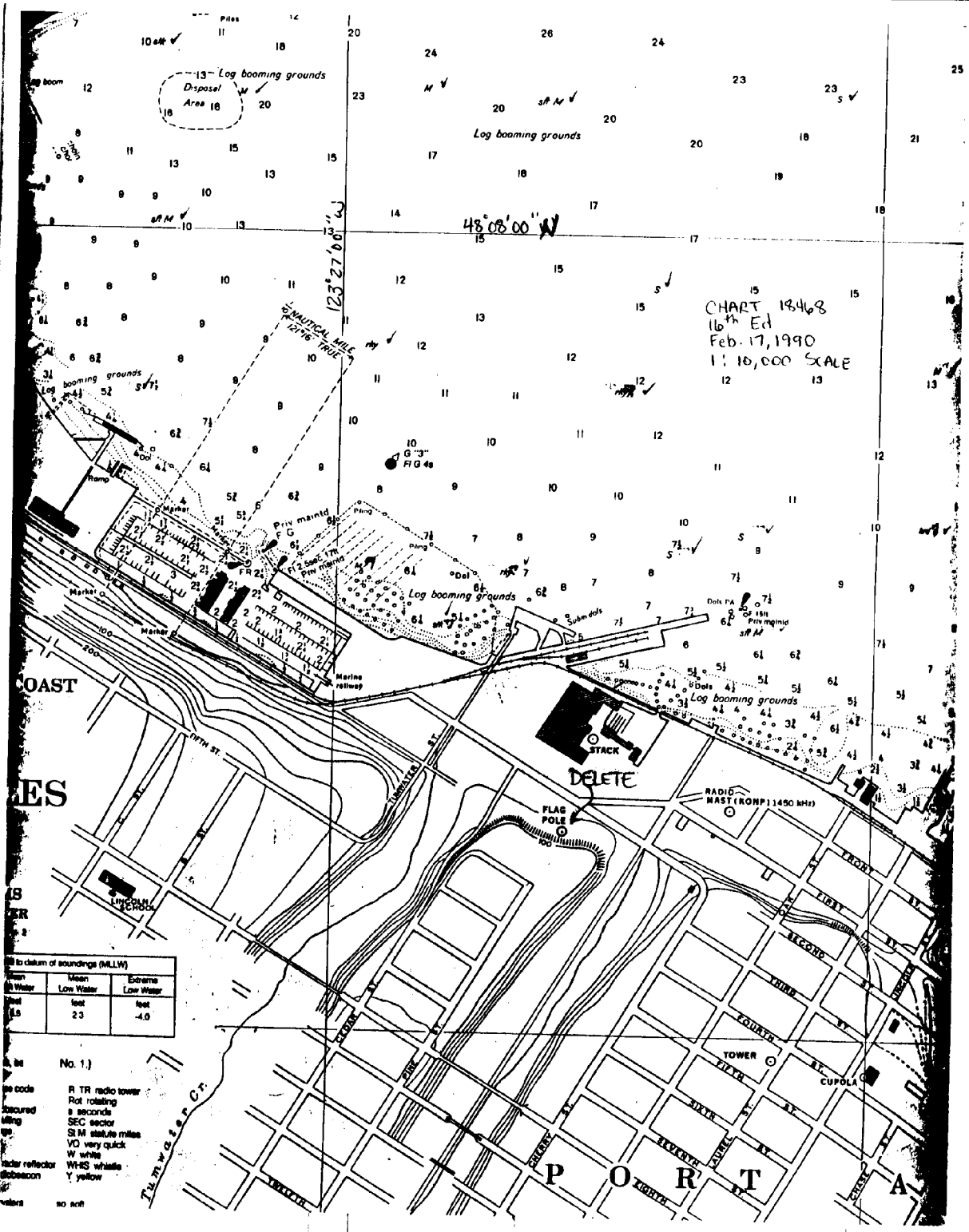
III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40 (8-74)

SUPERSEDES NOAA FORM 76-40 (2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD BE DESTROYED UPON RECEIPT OF REVISION.

☆ U.S. GPO:1975-0-665-080/1155


Log booming grounds
Disposal Area
Log booming grounds
48°08'00" W
123°27'00" W
CHART 18468
16th Ed
Feb. 17, 1990
1:10,000 SCALE
1 NAUTICAL MILE
Log booming grounds
Ramp
Marker
Marker
Marker
Marine railway
Log booming grounds
Log booming grounds
Log booming grounds
STACK
DELETE
FLAG POLE
RADIO MAST (RONP) 1450 kHz
TOWER
CUPOLA
LINCOLN SCHOOL
FIFTH ST.
FRONT ST.
FIRST ST.
SECOND ST.
THIRD ST.
FOURTH ST.
FIFTH ST.
SIXTH ST.
SEVENTH ST.
EIGHTH ST.
ELWHA ST.
OAK ST.
CHERRY ST.
RIVERVIEW
ALDER ST.
Tumwater Ct.
COAST
ES
P O R T
A

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
PACIFIC HYDROGRAPHIC PARTY, N/CG 2453	WASHINGTON	STRAIT OF JUAN de FUCA PORT ANGELES HARBOR	2-22-95

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-N251-PHP	PHP-5-2-94	H-10587	NAD 83

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	″ D.M. Meters	LONGITUDE ° ′	″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
F 15ft PRIV Maintd	PORT DOCK LIGHT LLN 16310 CHART COMPILATION ERROR	48 07	32.543	123 26	12.484		F-DGPS-L 1995	18468
								V May

RESPONSIBLE PERSONNEL

TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	LT (jg) P.K. HAINES, ST R.W. ADAMS	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Reginald W. Adams, Jr. SURVEY TECHNICIAN, REGINALD W. ADAMS, JR, HYDROGRAPHER-IN-CHARGE	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field Identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

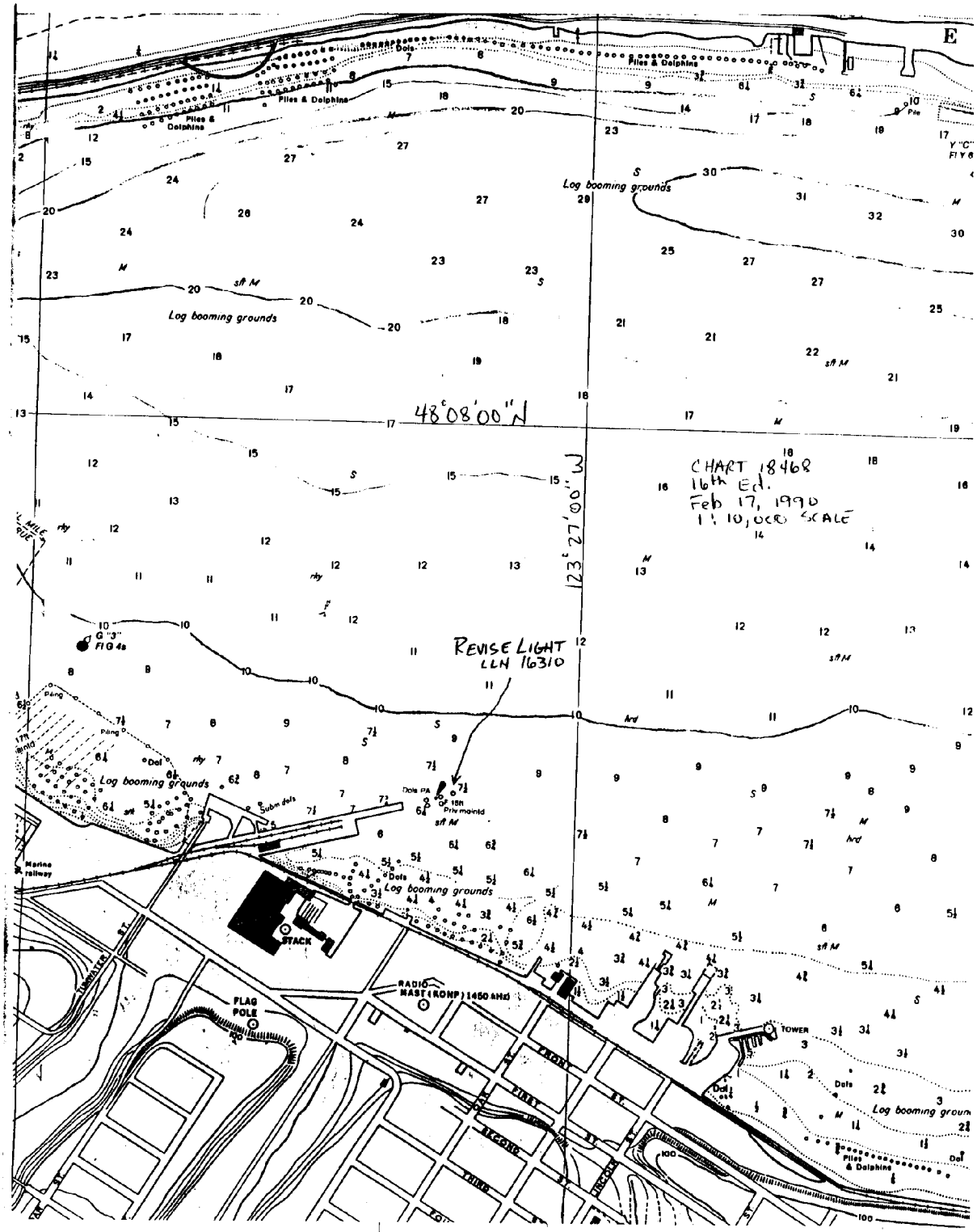
III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S. GPO:1975-0-665-080/1155


E
Piles & Dolphins
Log booming grounds
48°08'00"N
123°27'00"W
CHART 18468
16th Ed.
Feb 17, 1990
1:10,000 SCALE
REVISE LIGHT
LLH 16310
G "3"
FIG 4s
Marine railway
STACK
RADIO MAST (KONP) 1450 kHz
FLAG POLE
TOWER
Log booming grounds
Piles & Dolphins

AWOIS INVESTIGATION-N1 ✓

ITEM# 52058 DN: 045, 080

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(submerged dolphin).

SOURCE: CL542/44 -- War Dept., COE, CLL0297/83 -- USPS to NOS

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'36.50"N	123°26'~~27~~33.00"W	

OBSERVED:

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, 200% Side Scan Sonar coverage, 200-meter search radius. Area is covered by 200% SSS from fix number's 5679-5730 and 6405-6435.

FINDINGS: There was no indication of any contacts within the awois search radius. No significant feature was detected within the search radius.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a submerged dolphin charted at latitude 048°08'36.50"N, longitude 123°26'27.00"W." concur

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N2 ✓

ITEM# 52059 DN: 045, 080

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(disposal area).

SOURCE: CL936/71

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'26.00"N	123°27'22.00"W	Awois center

OBSERVED:

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, Side Scan Sonar coverage. Area is covered by 200% SSS from fix number's 5679-5730 and 6405-6435, and 50-meter spaced echosounder lines.

FINDINGS: There were no significant bottom profiles which showed any shoaling areas within the confines of this awois search area. There were no significant contacts found within the confines of this awois search area. Larry Signani, Chief, Field Operations, Survey Branch, U.S. Army Corps of Engineers (COE) verified that the disposal area has not been used recently and would prefer to retain the disposal area on the chart. Mr. Signani can be reached at (206) 764-3535 for further information.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." *concur* Revise note to "Depths from survey of 1994-95."

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N3 ✓

ITEM# 52060 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(seaplane ramp).

SOURCE:BP28621 -- 5/35 -- USCG, CL427/35 -- USCG

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'21.00"N	123°24'~~26~~33.00"W	
OBSERVED:	048°08'22.09"N	123°24'33.32"W	1213

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1213 is a position on the center of a seaplane ramp. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." Concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N4 ✓

ITEM# 52061 DN: 060

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(pier/ruins).

SOURCE: BP51371 -- 1954, CL411/54 -- C & GS, BP106174 -- NOS/79

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'22.00"N	123°24'46.80"W	Offshore end

OBSERVED:

POSITIONED BY:

METHOD OF INVESTIGATION: Telephone conversation.

FINDINGS: The pier/ruins charted have been removed. LCDR Jerry Dimetria of the US Coast Guard Group Port Angeles confirmed the removal of preexisting ruins of a former coal dock under contract with the Corps of Engineers and General Construction Co. Additional information as needed should be referred to LCDR Dimetria at (360) 457-2250.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete ruins charted at latitude 048°08'22.70"N, longitude 123°24'46.80"W." *concur*

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N5 ✓

ITEM# 52062 DN: 083, 089

CHART# 18468 VN: 0652, 0651

DESCRIPTION: Obstruction.

SOURCE: LNM37/80, LNM50/81, LNM1/83

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'24.72"N	123°25'26.06"W	Awois position

OBSERVED:

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar coverage, 75-meter radius. Area is covered by 200% SSS from fix number's 6556-6563. Area is also covered by 25-meter spaced development lines from fix number's 1153-1162. Area is also covered by 5-meter spaced development lines from fix number's 6565-6580.

FINDINGS: No submerged item was observed within the vicinity of the search radius. What appears to be the submerged end of the rip rap groin to the north was observed.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a charted pile at latitude 048°08'24.72"N, longitude 123°25'26.06"W." Concur

.....**COMPILATION USE ONLY**

CHART	APPLIED

AWOIS INVESTIGATION-N6

ITEM# 52063 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'28.00"N	123°26'00.00"W	Approximate center

OBSERVED:

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection. Side Scan Sonar coverage was unattainable due to a log boom area in the vicinity.

FINDINGS: Fix number 6349 is the eastern end of a row of pilings/dolphins. Fix number 6357 is the western end of a row of pilings/dolphins. Fix number's 6349-6357 are piles and dolphins which make up the northern edge of a log booming area.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: PHP recommends charting a line of piles and dolphins as drawn on the ~~final shoreline plot~~ Smooth Sheet. Concur. Additionally, retain as charted the dols between latitude 48/08/28.0, longitude 123/26/02.2 2nd latitude 48/08/29.4, longitude 123/26/24.70

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N7 ✓

ITEM# 52064 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(pier in ruins).

SOURCE: Photo revision -- 1964

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'28.00"N	123°25'41.00"W	Offshore end
OBSERVED:	048°08'28.84"N	123°25'40.11"W	6344
	048°08'28.39"N	123°25'40.00"W	6345
	048°08'28.42"N	123°25'40.54"W	6346
	048°08'27.72"N	123°25'39.92"W	6347

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: All fix number's represent single pilings which are used on a seasonal basis(April-Sept.). Usage is for seasonal floating piers which are connected to these single pile positions to form a "L" shaped pier. These are not ruins.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Chart as depicted on digital map at latitude 048°08'28.00"N, longitude 123°25'41.00"W." Do not concur. Delete charted pier in ruins. Chart this area as shown on the smooth sheet.

.....COMPILATION USE ONLY

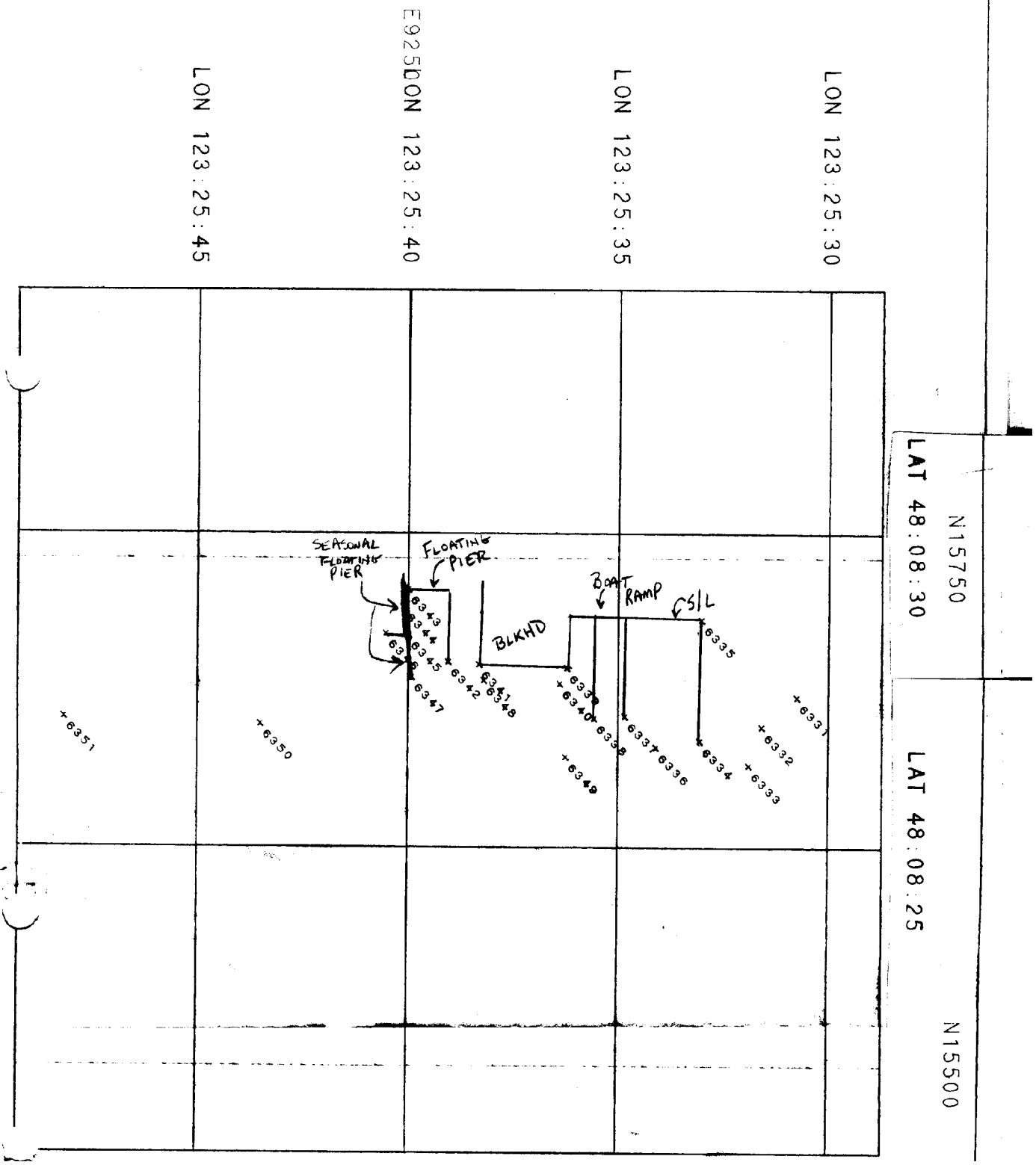
CHART	APPLIED

NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
NAUTICAL CHARTING DIVISION FRANK MALONEY CHIEF

PORT ANGELES HARBOR, WASHINGTON, H-10587, SHEET A

OPR-N251-PHP, PHP-5-2-94

FIELD SHEET: Page Plot REG. NO:	SHEET LETTER:
HORIZONTAL DATUM: NAD 83	PROJECT: PA_HARBOR
SOUNDING DATUM: Mean Lower Low Water	CONTROL LATITUDE: 048:00:00.000
PROJECTION: MODIFIED UTM PROJECTION	CENTRAL MERIDIAN: 123:17:00.000
SCALE: 1: 2500	SOUNDINGS IN:
SURVEYED BY: PACIFIC HYDRO PARTY LT R.A. FLETCHER	24 FEBRUARY 1995



AWOIS INVESTIGATION-N8 ✓

ITEM# 52065 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(pier in ruins).

SOURCE: Photo revision -- 1964, BP106174 -- NOS/79

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'27.60"N	123°25'39.20"W	Offshore end
OBSERVED:	048°08'27.62"N	123°25'36.40"W	6340
	048°08'27.67"N	123°25'38.21"W	6348

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number's 6340 and 6348 are existing piles in the search area that may have been used to anchor a floating pier. No floating pier was noticed in this vicinity during the course of this project.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart piles as shown on ~~field shoreline plot~~ the smooth sheet. Concur
Delete pier in ruins.

.....**COMPILATION USE ONLY**

CHART	APPLIED

AWOIS INVESTIGATION-N9 ✓

ITEM# 52066 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(marine railway).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'28.50"N	123°26'02.10"W	
OBSERVED:	048°08'28.66"N	123°26'01.79"W	1165

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1165 is the awois position for this item. No marine railway was observed at the awois position nor inshore of this position.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete marine railway charted at latitude 048°08'28.00"N, longitude 123°26'02.00"W." *concur*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N10 ✓

ITEM# 52067 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(ruins).

SOURCE: BP106174-- NOS-NANCI(4/79)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'29.00"N	123°26'04.50"W	
OBSERVED:	048°08'29.28"N	123°26'03.17"W	1163

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1163 is at the south end of the charted ruins.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart pier ruins as shown on the ~~field shoreline plot.~~ smooth sheet. concur

Delete pier ruins as currently charted.

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N11 ✓

ITEM# 52068 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'25.80"N	123°26'33.00"W	Approximate center
OBSERVED:	048°08'27.57"N	123°26'29.68"W	6374
	048°08'24.43"N	123°26'36.13"W	6383

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6374 is the north-easternmost pile associated with this awois. Fix number 6383 is the offshore-most dolphin of 6 and is the western terminus of this awois. Fix number's 6375-6379 and 6381-6382 are additional dolphins located within the search radius.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on field shoreline plot. Do not concur

Retain this area as charted. Add notation to southernmost row of piles/dols as submerged.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N12 ✓

ITEM# 52069 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'23.80"N	123°26'46.00"W	Approximate center
OBSERVED:	048°08'24.91"N	123°26'40.80"W	6385
	048°08'22.37"N	123°26'49.13"W	6395
	048°08'22.80"N	123°26'50.30"W	6396

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar was unattainable due to a log boom area in use.

FINDINGS: Fix number 6385 is the easternmost inshore piling of a row of 22. Fix number 6395 is the westernmost offshore piling of a row of 24. Fix number 6396 is the westernmost end of the inshore row of 22. The easternmost piling of the offshore row of 24 was inaccessible by launch. There is also another row of pilings which are on shore, north of these two rows of pilings. There was no evidence of a row of pilings to the south (offshore) of these positions.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on field shoreline plot. Do not concur. Retain as charted the first 3 rows of piles and dolphins south of the shoreline. Chart last row of piles/dolphins to south with notation submerged.

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N13 ✓

ITEM# 52070 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: CL845/73 -- NOS, Coast Pilot #7 Field Inspection

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'21.80"N	123°27'06.00"W	Offshore end
OBSERVED:	048°08'21.28"N	123°27'05.36"W	6397

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6397 is the offshore-most dolphin of 4 pilings in an area of ruins. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: ~~Chart~~ Revise charted Pier ruins as shown on the smooth sheet ~~field shoreline plot~~. concur

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N14 ✓

ITEM# 52071 DN: 052,060,080

CHART# 18468 VN: 0652,0651

DESCRIPTION: Obstruction(group of 66 piles).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'18.00"N	123°27'13.00"W	Approximate center

OBSERVED:

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar. Area is covered by 200% SSS from fix number's 6453-6455. Area is covered by 100-meter spaced mainscheme lines at fix number's 184-185, 190-193, 200-203, and 209-211. Area is covered by 25-meter spaced development lines at fix number's 616-639, 662-667, 673-678, and 681-704.

FINDINGS: SSS and echo sounder records depict that these piles are submerged.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart submerged piles as shown on field shoreline plot. Do not concur: Dash around the charted pile area with the notation "foul with subm piles and dols.

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N15 ✓

ITEM# 52072 DN: 052, 080

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(disposal area).

SOURCE: Unknown

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'09.00"N	123°27'16.00"W	Approximate center

OBSERVED:

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Corps of Engineers correspondence, Side Scan Sonar, conversation with city officials. Area is covered by 200% SSS from fix number's 5283-5288, 5295-5295, and 6489-6500. Area is covered by 100-meter spaced mainscheme lines at fix number's 192-193, 199-204, and 209-211. Area is covered by 25-meter spaced development lines at fix number's 638-676.

FINDINGS: PHP found no significant shoaling within this awois area. On January 24, 1995, PHP personnel had an informal multi-agency use meeting with officials from the City of Port Angeles. During this meeting town officials were asked if this disposal area was still in use. Their response was that they have not seen any dumping of any type of materials within this vicinity for over 25 years. COE suggested to retain the disposal area on the chart. For more information contact Dave Collentine or Gary Kenworthy from the City of Port Angeles at (360) 457-0411, or Larry Signani, Chief, Field Operations, COE at (206) 764-3535.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." *Concur*

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N16 ✓

ITEM# 52073 DN: 033, 080

CHART# 18468 VN: 0651, 0652

DESCRIPTION: Obstruction(mooring boom and anchor).

SOURCE: CL792/83 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#	
CHARTED:	048°08'10.32"N	123°27'41.67"W	Anchor	This position is referenced to NAD 27
OBSERVED:	048°08'05.20"N	123°27'31.90"W	560.20	

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar, and a conversation with city officials. Area is covered by 200% SSS from fix number's 5283-5288, 5292-5294, and 6489-6500, and 6515-6518.

FINDINGS: Fix number 560.20 is a contact development position of contact number 5293.28P. This contact is likely the submerged anchor and should be considered as an obstruction. On January 24, 1995 PHP personnel had an informal multi-agency use meeting with officials from the City of Port Angeles. Officials confirmed that the mooring boom and anchor chain had been removed but were unsure of the exact location of the anchor. The observed position is 256 meters southwest of the charted position. For more information contact Dave Collentine or Gary Kenworthy from the City of Port Angeles at (360) 457-0411.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete an anchor charted at latitude 048°08'05.20"N, longitude 123°27'31.90"W, and chart an obstruction at latitude 048°08'03.34"N, longitude 123°27'21.09"W." Concur "Delete a mooring boom and anchor chain charted at latitude 048°08'05.00"N, longitude 123°27'39.80"W." *concur* Chart 13 obstr (7 ½ obstn) as shown on the smooth sheet.

.....COMPILATION USE ONLY

CHART APPLIED

ANCHOR

AWOIS INVESTIGATION-N17 ✓

ITEM# 52074 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(row of 5 dolphins).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'03.50"N	123°27'48.10"W	Offshore end
OBSERVED:	048°08'03.48"N	123°27'48.07"W	1171

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1171 is the awois position for this item. There were no pilings at this position, verified by a visual inspection of the bottom in this area. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete five ~~piles~~ dolphins charted at latitude 048°08'03.60"N, longitude 123°27'48.10"W." *Concur*

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N18 ✓

ITEM# 52075 DN: 088

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(timbered pile groin, 55' in length).

SOURCE: CL577/76 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'15.80"N	123°27'42.00"W	Offshore end
OBSERVED:	048°08'16.28"N	123°27'41.98"W	6550

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6550 is a position as close to the awois position as possible. The bow was aground on rip rap material and was still 18 meters north of the awois position. The shoreline in this area has been built up with rip rap. There was no evidence of a groin or a three pile dolphin extending from shore.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a groin charted at latitude 048°08'15.80"N, longitude 123°27'42.00"W." concur

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N19 ✓

ITEM# 52076 DN: 088

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(timbered pile groin, 55' in length).

SOURCE: CL577/76 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'13.70"N	123°27'47.10"W	Offshore end
OBSERVED:	048°08'14.04"N	123°27'47.80"W	6551

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6551 is a position as close to the awois position as possible. The bow was aground on rip rap material and was still 18 meters north of the awois position. The shoreline in this area has been built up with rip rap. There was no evidence of a groin or a three pile dolphin extending from shore.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a groin charted at latitude 048°08'13.70"N, longitude 123°27'47.10"W." concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N20 ✓

ITEM# 52077 DN: 088

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(timbered pile groin, 55' in length).

SOURCE: CL577/76 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'11.80"N	123°27'52.80"W	Offshore end
OBSERVED:	048°08'14.04"N	123°27'47.80"W	6552

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6552 is a position as close to the awois position as possible. The bow was aground on rip rap material and was still 14 meters north of the awois position. The shoreline in this area has been built up with rip rap. There was no evidence of a groin or a three pile dolphin extending from shore.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a groin charted at latitude 048°08'11.80"N, longitude 123°27'52.80"W." *concur*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N21 ✓

ITEM# 52078 DN: 088

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(timbered pile groin, 55' in length).

SOURCE: CL577/76 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'10.00"N	123°27'57.90"W	Offshore end
OBSERVED:	048°08'10.47"N	123°27'58.08"W	6553

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6553 is a position as close to the awois position as possible. The bow was aground on rip rap material and was still 15 meters north of the awois position. The shoreline in this area has been built up with rip rap. There was no evidence of a groin or a three pile dolphin extending from shore.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a groin charted at latitude 048°08'10.20"N, longitude 123°27'57.90"W." *concur*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N22 ✓

ITEM# 52079 DN: 088

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(timbered pile groin, 55' in length).

SOURCE: CL577/76 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'06.70"N	123°28'08.30"W	Offshore end
OBSERVED:	048°08'06.61"N	123°28'08.67"W	6554

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6554 is a position of the awois position. The shoreline in this area has been built up with rip rap. There was no evidence of a groin or a three pile dolphin extending from shore.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a groin charted at latitude 048°08'06.70"N, longitude 123°28'08.30"W." concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N23 ✓

ITEM# 52080 DN: 083

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(row of three dolphins).

SOURCE: BP106174 -- NOS-NANCI(4/79)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'01.50"N	123°27'41.20"W	
OBSERVED:	048°08'01.44"N	123°27'41.73"W	1179
	048°08'01.60"N	123°27'40.48"W	1180
	048°08'01.86"N	123°27'39.91"W	1181

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1179 is a position of the inshore-most dolphin of three at the offshore end of a pier. Fix number 1180 is a single dolphin which is the middle dolphin of three. Fix number 1181 is the offshore-most dolphin of three.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." do not concur
Chart as shown on smooth sheet

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N24 ✓

ITEM# 52081 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(dock area in ruins).

SOURCE: T2906A/13, T054/48

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'53.20"N	123°27'35.10"W	
OBSERVED:	048°07'54.61"N	123°27'35.43"W	1189
	048°07'53.09"N	123°27'33.87"W	1190

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1189 is a position on a single dolphin which is the northern end of a log boom area. Fix number 1190 is a position on a single dolphin which is the eastern end of a log boom area. ~~An abandoned pier lies in the center of the search area and is depicted on the digital map.~~ See photograph. Rec'd

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on ~~field shoreline plot~~ smooth sheet log boom. concur

Retain charted dock areas in ruins as submerged. ✓

.....**COMPILATION USE ONLY**

CHART	APPLIED

AWOIS INVESTIGATION-N25 ✓

ITEM# 52082 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'52.40"N	123°27'37.10"W	Offshore piling
OBSERVED:	048°07'52.61"N	123°27'36.41"W	1191

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1191 is a position on a single pile in ruins. This item investigation description refers to two pilings. Only one remains and it is not in an upright position and is not positioned at either of the charted positions.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete two pilings charted at latitude 048°07'52.40"N, longitude 123°27'37.10"W, and at latitude 048°07'52.50"N, longitude 123°27'37.80"W, and chart ~~an obstruction~~ a pile (12) at latitude 048°07'52.61"N, longitude 123°27'36.41"W." concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N26 ✓

ITEM# 52083 DN: 103

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(group of three piles).

SOURCE: Photo revision -- 1964

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'51.30"N	123°27'37.40"W	Awois position
OBSERVED:	048°07'51.31"N	123°27'37.38"W	1246

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1246 is the awois position for this item. No pilings were observed within this area. The detached position associated with this item was approximately 7 meters from a rip rap shoreline. These pilings have been removed from this area. There is a log boom approximately 20 meters to the north of this position. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete three piles charted at latitude 048°07'51.30"N, longitude 123°27'36.40"W." concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N27

ITEM# 52084 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(pier in ruins).

SOURCE: T2906/13, T7054/48

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'50.80"N	123°27'33.10"W	Offshore end
OBSERVED:	048°07'50.85"N	123°27'33.27"W	1192

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Visual inspection.

FINDINGS: Fix number 1192 is the awois position for this item. There is no visible evidence of a pier in ruins.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete ruins charted at latitude 048°07'50.80"N, longitude 123°27'33.27"W." Do not concur Retain charted pier ruins as submerged. Visual inspection not sufficient to dispove if submerged ruins still may exist.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N28 ✓

ITEM# 52085 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: BP106174 -- NOS-NANCI- 1979

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'46.90"N	123°27'31.80"W	Charted pile
OBSERVED:	048°07'47.16"N	123°27'31.38"W	6223

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6223 is a wood dolphin at the charted position and is plotted on the final shoreline plot.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart dolphin as plotted on the Smooth Sheet ~~field shoreline plot.~~ concur
Delete charted symbol (dol/pile).

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N29 ✓

ITEM# 52086 DN: 060

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction. (Pier ruins)

SOURCE: Photo revision -- 1964

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'47.20"N	123°27'30.00"W	Log boom ruins
OBSERVED:	048°07'46.66"N	123°27'30.72"W	6222

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6222 is a 6' x 4' block of concrete which is the apparent ruins of the log boom structure.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart obstr (2) as shown on ~~field shoreline plot~~ the smooth sheet. Delete charted pier ruins.

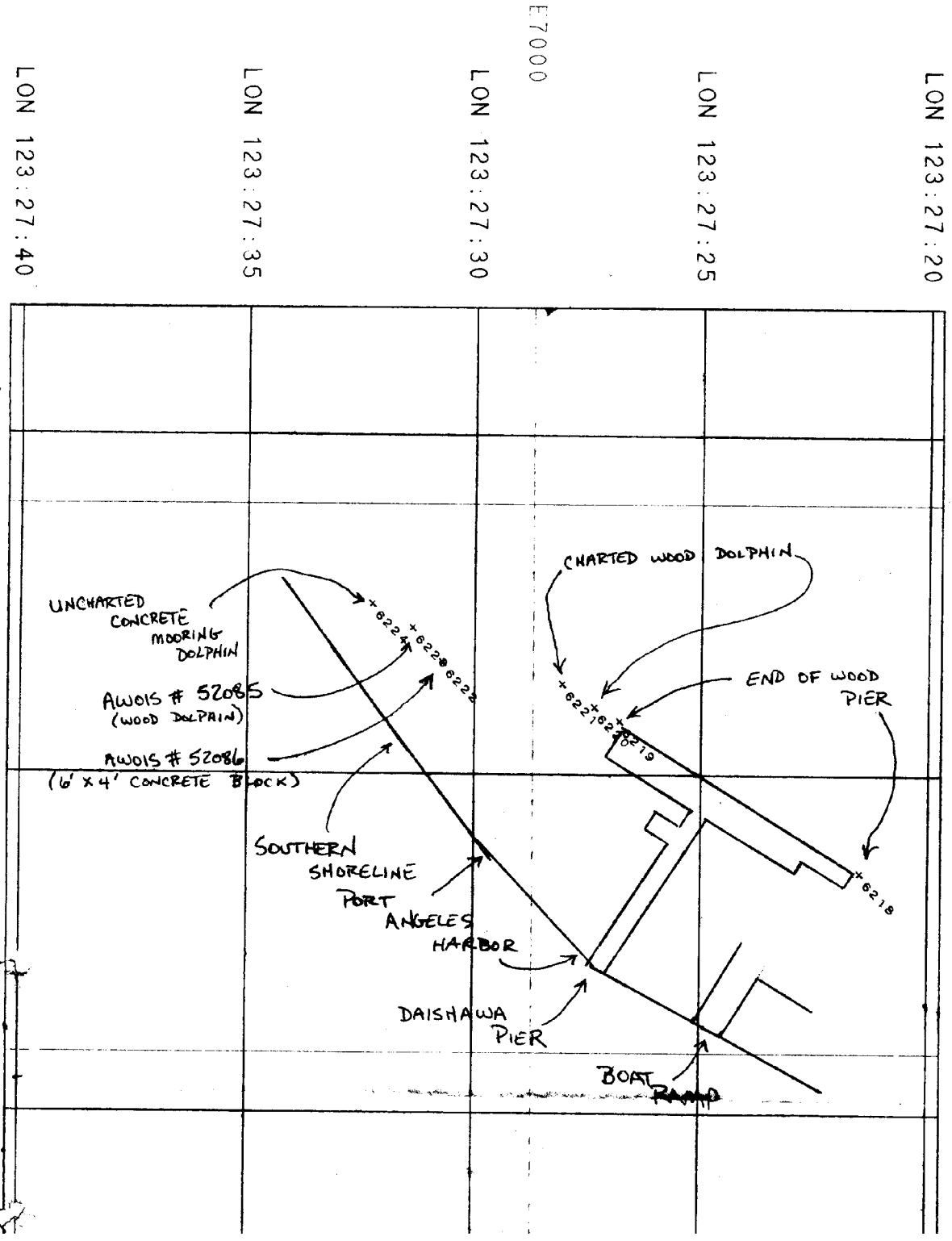
.....COMPILATION USE ONLY

CHART	APPLIED

NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
NAUTICAL CHARTING DIVISION FRANK MALONEY CHIEF

PORT ANGELES HARBOR, WASHINGTON, H-10587, SHEET A
R-N251-PHP, PHP-5-2-94

FIELD SHEET: Page Plot REG. NO:	SHEET LETTER:
HORIZONTAL DATUM: NAD 83	PROJECT: PA_HARBOR
SOUNDING DATUM: Mean Lower Low Water	CONTROL LATITUDE: 048:00:00.000
PROJECTION: MODIFIED UTM PROJECTION	CENTRAL MERIDIAN: 123:17:00.000
SCALE: 1: 2500	SOUNDINGS IN:
SURVEYED BY: PACIFIC HYDRO PARTY LT R.A. FLETCHER	24 FEBRUARY 1995



AWOIS INVESTIGATION-N30 ✓

ITEM# 52087 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(piling).

SOURCE: BP106174 -- NOS

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'46.80"N	123°27'29.80"W	
OBSERVED:	048°07'46.77"N	123°27'29.80"W	1193

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar was unattainable due to the geographic constraints of the area.

FINDINGS: Fix number 1193 is a position on the remains of a submerged piling.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Retain charted position, chart as a submerged pile. concur
Pile is Cov 0 T meters at MLLW.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N31 ✓

ITEM# 52088 DN: 053

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: BP106174 -- NOS-NANCI(4/79)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'35.00"N	123°26'55.00"W	Approximate center
OBSERVED:	048°07'30.82"N	123°26'42.63"W	6202
	048°07'38.83"N	123°26'58.54"W	6203

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar coverage was unattainable due to log boom activity in the area..

FINDINGS: Fix number 6202 is a single pile at the eastern end of this awois. It is also the offshore end of a row of six piles. Fix number 6203 is a single pile at the western end of this awois. It is also the offshore end of a row of 9 piles. Between these two positions are more piles. At the time these positions were taken the area was full of logs.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." Do not consider. Configuration different than charted. Chart as shown on smooth sheet the limits of of the log boom area.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N32 ✓

ITEM# 52089 DN: 053

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'33.00"N	123°26'56.00"W	Approximate center
OBSERVED:	048°07'30.82"N	123°26'42.63"W	6202
	048°07'38.83"N	123°26'58.54"W	6203

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar coverage was unattainable due to log boom activity in the area..

FINDINGS: Fix number 6202 and fix number 6203 are the offshore limitations of a log boom area. There are numerous pilings inshore of these positions.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." Do not concur Chart new log booming area as delineated on the Smooth Sheet.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N33 ✓

ITEM# 52090 DN: 053

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954, CL1009/89 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'30.00"N	123°26'44.00"W	
OBSERVED:	048°07'30.82"N	123°26'42.63"W	6202
	048°07'38.83"N	123°26'58.54"W	6203

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar coverage was unattainable due to log booming operations in the area.

FINDINGS: Fix number 6202 is a single pile at the eastern end of this awois. It is also the offshore end of a row of 6 piles. Fix number 6203 is a single metal piling at the western end of this awois. There were numerous piles visible within the awois area.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." *concur*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N34 ✓

ITEM# 52091 DN: 033,039,047,083

CHART# 18468 VN: 0651, 0652

DESCRIPTION: Obstruction(two dolphins).

SOURCE: Photo revision -- 1954, CL1349/72 -- Puget Sound Pilots

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'30.90"N	123°26'35.50"W	Dolphin
	048°07'32.20"N	123°26'34.00"W	Dolphin
OBSERVED:	048°07'32.16"N	123°26'33.82"W	1196

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, Side Scan Sonar. Area is covered by 200% SSS from fix number's 5252-5253, 5483-5484, 5819-5821.

FINDINGS: Fix number 1196 is the awois position. There is no evidence on the sonargram of submerged pilings in this vicinity. There are numerous deep-draft vessels transiting and mooring to the pier just to the south of this awois position. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: "Delete a submerged piling charted at latitude 048°07'30.90"N, longitude 123°26'35.50"W, and delete a submerged piling charted at latitude 048°07'32.20"N, longitude 123°26'34.00"W." *concur*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N35 ✓

ITEM# 52092 DN: 053, 083

CHART# 18468 VN: 0651, 0652

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'24.60"N	123°26'23.40"W	Intersection of 3 rows
OBSERVED:	048°07'25.97"N	123°26'23.86"W	6189
	048°07'27.05"N	123°26'29.93"W	6190
	048°07'26.69"N	123°26'27.97"W	6191
	048°07'26.00"N	123°26'21.15"W	1198

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6189 is an eastern-most dolphin of a row of eight. Fix number 6190 is a western-most dolphin of a row of four. Fix number 6191 is the center of an existing charted pier which is at the center of these rows of dolphins. Fix number 1198 is the offshore-most of a row of three piles.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on the smooth sheet ~~field shoreline plot~~.

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N36 ✓

ITEM# 52093 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(group of 22 piles).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'22.50"N	123°26'11.50"W	Center of group
OBSERVED:	048°07'22.49"N	123°26'11.54"W	1199

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar. Area is covered by 200% SSS coverage from fix number's 5541-5542.

FINDINGS: Fix number 1199 is a disproval D.P. of an area of charted piles/dolphins. There are no piles/dolphins within this area as shown on photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Delete charted piles/dolphins centered at latitude 048°07'22.50"N, longitude 123°26'11.50"W. concur Chart area based on the present survey data.

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N37 ✓

ITEM# 52094 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(single dolphin).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'10.90"N	123°25'43.00"W	
OBSERVED:	048°07'11.07"N	123°25'42.27"W	1200

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1200 is a disproval D.P. of a single dolphin. The charted position was unreachable by launch(bow aground) and there was no visible evidence of this dolphin within this vicinity. Sand has been dumped in the bight to create a beach. The item has been removed or is buried. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Delete a charted dolphin at latitude 048°07'10.90"N, longitude 123°25'43.00"W. concur

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N38 ✓

ITEM# 52095 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(group of 23 piles & dolphins in 2 rows).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'07.90"N	123°25'33.40"W	
OBSERVED:	048°07'07.82"N	123°25'33.35"W	1202

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar. Area is covered by 200% SSS coverage from fix number's 5576-5577.

FINDINGS: Fix number 1202 is a disproval D.P. of a group of 23 piles and dolphins. The charted position showed no visible or physical evidence of these structures within this vicinity. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Delete charted piles/dolphins at latitude 048°07'07.90"N, longitude 123°25'33.40"W. concur Chart area based on the present survey data.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N39 ✓

ITEM# 52096 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(single pile).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'04.70"N	123°25'11.60"W	
OBSERVED:	048°07'04.70"N	123°25'11.60"W	1204

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1204 is a position on the remains of a submerged piling.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: ~~Chart submerged~~ Revise charted to submerged the smooth sheet pile as shown on ~~field shoreline plot~~. concur
Pile CoV 0.7 meters at MLLW.

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N40 ✓

ITEM# 52097 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(single dolphin).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'03.50"N	123°25'02.90"W	
OBSERVED:	048°07'03.51"N	123°25'02.87"W	1205

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1205 is a position on the remains of a submerged dolphin.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: ~~Chart submerged pile~~ Revise Charted dol to submerged as shown on ~~field shoreline plot~~ the Smooth Sheet. concur
Dol cov 0.8 meters at MLLW.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N41 ✓

ITEM# 52098 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(single dolphin).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'05.00"N	123°25'01.40"W	
OBSERVED:	048°07'05.01"N	123°25'01.41"W	1207

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, 25-meter search radius, visual inspection.

FINDINGS: Fix number 1207 is a disproval D.P. of a charted single dolphin. No visible or physical evidence of this dolphin exists within this area. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Delete charted dolphin at latitude 048°07'05.00"N, longitude 123°25'01.40"W. concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N42 ✓

ITEM# 52099 DN: 089

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(sewer outfall).

SOURCE: CL36/60 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'09.30"N	123°24'56.90"W	
OBSERVED:	048°07'09.28"N	123°24'57.03"W	6584

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, Side Scan Sonar coverage. Area is covered by 200% SSS from fix number's 5229-5235, and 5583-5586.

FINDINGS: Fix number 6584 is a position of the offshore end of the storm drain outfall. On January 24, 1995, PHP personnel held an informal multi-agency use meeting with officials from the City of Port Angeles. During this meeting it was pointed out that the charted sewer line at this vicinity is actually a storm drain outlet. For more information contact Gary Kenworthy of the City of Port Angeles at (360) 457-0411.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: ~~Chart as shown on field shoreline plot.~~ Retain Charted Feature and revise to outfall (storm drain) Concur

.....**COMPILATION USE ONLY**

CHART	APPLIED

AWOIS INVESTIGATION-N43 ✓

ITEM# 52100 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(sewer pipe).

SOURCE: T6816 (1940)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'02.10"N	123°25'00.80"W	Offshore end
OBSERVED:	048°07'02.40"N	123°25'00.51"W	1206

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1206 is a position of the offshore end of storm drain ruins. On January 24, 1995, PHP personnel held an informal multi-agency use meeting with officials from the City of Port Angeles. During this meeting it was pointed out to PHP personnel that the charted sewer pipe at this vicinity is actually a storm drain outlet which is no longer in use. For more information contact Gary Kenworthy of the City of Port Angeles at (360) 457-0411.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: ~~Chart storm drain ruins as shown on field shoreline~~ Retain charted feature, and revise to outfall. concur plot.

.....COMPILATION USE ONLY

CHART	APPLIED

AWOIS INVESTIGATION-N44 ✓

ITEM# 52101 DN: 053

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'05.80"N	123°24'48.90"W	Offshore end
OBSERVED:	048°07'06.58"N	123°24'48.30"W	6170
	048°07'03.03"N	123°24'50.58"W	6171

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar was unattainable due to the shallow depth and constraints of the geographical area.

FINDINGS: Fix number 6170 is an offshore dolphin marking the western-most limitation of a log boom area. Fix number 6171 is an inshore dolphin marking the western and southern limitation of a log boom area. At the time these positions were taken the log boom was full and impended efforts to position more of the pilings/dolphins within this awois area.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on field shoreline plot. *Do not concur. Retain as charted.*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N45 ✓

ITEM# 52102 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(row of 13 piles/dolphins).

SOURCE: T6816 (1940)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'01.30"N	123°24'44.90"W	Offshore end
OBSERVED:	048°07'01.03"N	123°24'45.71"W	1209

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1209 is the position of a single dolphin at the southern apex of a log boom. There are four pilings to the west of this position and eight pilings to the east of this position. See photograph. At the time these positions were taken the log boom was full and impended efforts to position more of the piles/dolphins within the awois area.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown field shoreline plot. *Do not concur. Retain as charted.*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N46 ✓

ITEM# 52103 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(row of piles).

SOURCE: T4653A (1931), T6816 (1940)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'03.70"N	123°24'41.30"W	Offshore end
OBSERVED:	048°07'01.03"N	123°24'45.71"W	1209

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1209 is the position of a single dolphin at the southern apex of a log boom. Awois 52103 is within the parameters of the log boom which was full throughout the course of this survey. The row of pilings were verified visually. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on field shoreline plot. Do not concur. Retain as charted.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N47

ITEM# 52104 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(row of five dolphins).

SOURCE: Photo revision -- 1954

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'07.50"N	123°24'35.20"W	Offshore end
OBSERVED:	048°07'07.51"N	123°24'35.20"W	1210
	048°07'06.79"N	123°24'36.13"W	1211

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar coverage was unattainable due to the constraints of the geographic area.

FINDINGS: Fix number 1210 is a disproval D.P. of the offshore-most dolphin of this group. Fix number 1211 is now the offshore-most dolphin of three. Apparently two of these dolphins have been removed while three still remain. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on the Smooth Sheet ~~Field shoreline plot~~.

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N48 ✓

ITEM# 52105 DN: 089

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(spoil area).

SOURCE: CL792/83 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'05.30"N	123°24'36.80"W	
OBSERVED:	048°07'05.60"N	123°24'36.84"W	6586

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6586 is a position 9 meters north of the awois position. There is a permanent structure intact, made of a log and earth berm which is held in place by very large rip rap boulders. See photograph. The digital shoreline has charted this structure correctly and should be transferred on the next update printing of this chart.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart as shown on ~~field shoreline plot.~~ the Smooth Sheet. concur

.....**COMPILATION USE ONLY**

CHART	APPLIED

AWOIS INVESTIGATION-N49 ✓

ITEM# 52106 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(single dolphin).

SOURCE: T6816 (1940)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'04.90"N	123°24'34.30"W	
OBSERVED:	048°07'05.59"N	123°24'34.27"W	1212

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, 25-meter search radius, visual inspection.

FINDINGS: Fix number 1212 is a disproval D.P. of the single dolphin. This position was taken approximately 20 meters from the target bearing 184° and approximately 3 meters from rip rap material making the shoreline. There was no evidence of this dolphin in this vicinity. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Delete dolphin charted at latitude 048°07'04.90"N, longitude123°24'34.30"W. concur

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N50 ✓

ITEM# 52107 DN: 079

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction(shoal area).

SOURCE: Photo revision -- 1964

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'04.90"N	123°24'22.10"W	Center of shoal
OBSERVED:	048°07'04.90"N	123°24'22.10"W	346-371

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder.

FINDINGS: Fix number 346-371 are 25-meter spaced development lines run to help delineate the charted shoal area. This area will be subject to frequent shoaling since it is at the mouth of Ennis Creek.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Retain charted shoal area and data. ~~Chart as shown on field shoreline plot~~. concur

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N51 ✓

ITEM# 52108 DN: 039, 089

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(sewer outfall).

SOURCE: CL1072/68 -- 13th CGD, CL782/68 -- COE, CL 1713/74 -- USCG

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'33.00"N	123°24'00.00"W	Offshore end
OBSERVED:	048°07'32.77"N	123°24'00.44"W	6591.54
	048°07'32.60"N	123°24'01.18"W	6592.05
	048°07'32.75"N	123°24'00.41"W	6592.22

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, Side Scan Sonar coverage. Area is covered by 200% SSS from fix number's 5217-5219, 5490-5492, 5812-5814, 5828-5830, and 5898-5900.

FINDINGS: Fix number's 6591.54, 6592.05, and 6592.22 are development line positions of SSS contact number 5490.58S which resulted in finding the offshore end of the sewer outfall.

****

DIVING INVESTIGATION

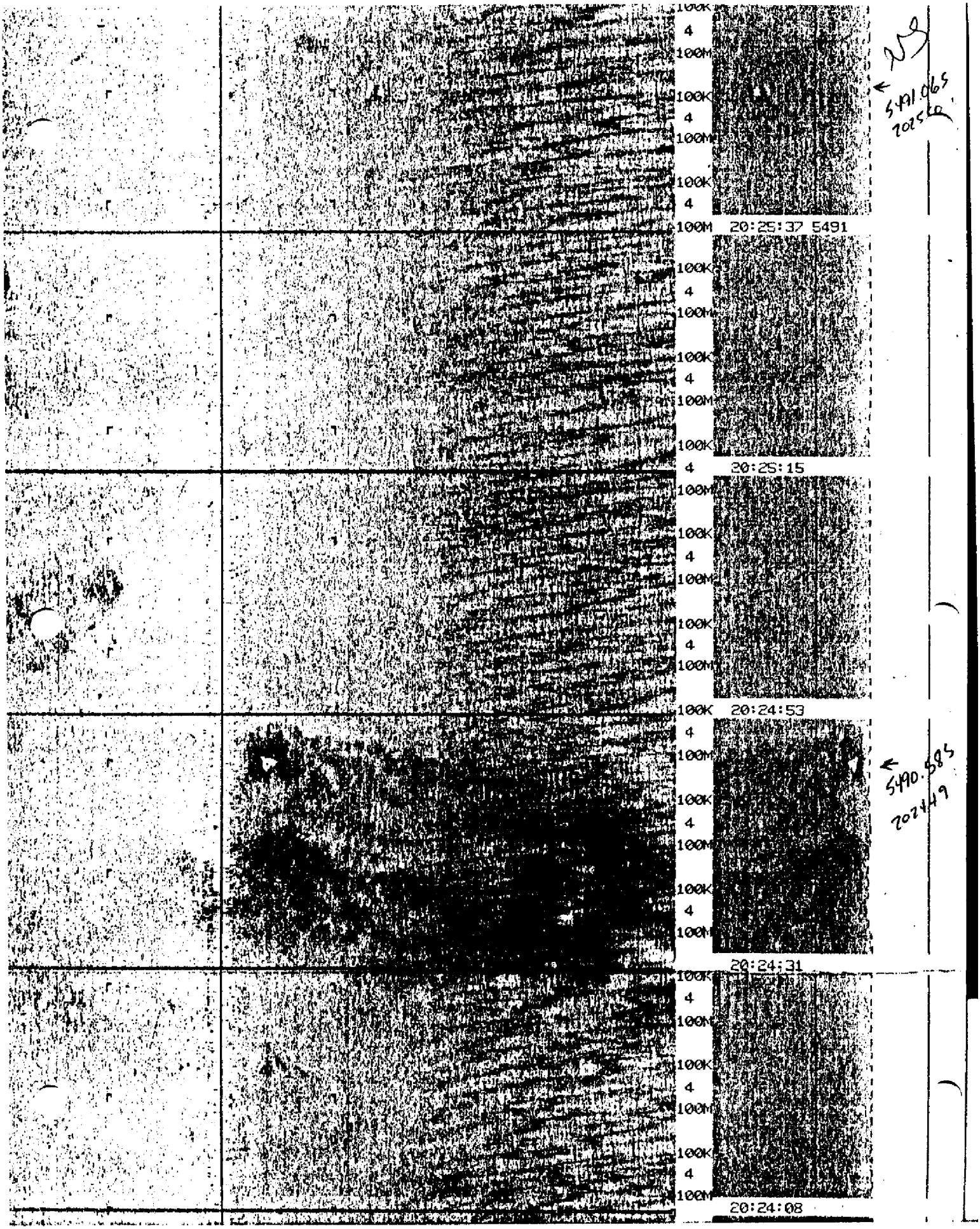
None.

****

CHARTING RECOMMENDATIONS: "Retain as charted." *concur*

.....**COMPILATION USE ONLY**

CHART APPLIED


100K
4
100M
20:25:37 5491
20:25:15
20:24:53
20:24:31
20:24:08

AWOIS INVESTIGATION-N52 ✓

ITEM# 52109 DN: 088

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction(timbered pile groin, 55' in length).

SOURCE: CL577/76 -- COE

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'08.50"N	123°28'03.00"W	Offshore end
OBSERVED:	048°08'08.44"N	123°28'03.62"W	6555

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number's 6555 is a position as close to the awois position as possible. The bow was aground on rip rap material and was still 11 meters north of the awois position. There was no evidence of a groin or a three pile dolphin at this position. The shoreline in this area has built up with rip rap material.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Delete a groin charted at latitude 048°08'08.50"N, longitude 123°28'03.00"W. *concur*

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N53 ✓

ITEM# 52110 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction.

SOURCE: DM - 10158 (1991/1993)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°08'10.10"N	123°27'27.40"W	Awois position
OBSERVED:	048°08'10.24"N	123°27'27.04"W	1166

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, Side Scan Sonar. A 50-meter search area is covered by 200% SSS from fix number's 5283-5291, and 6515-6518.

FINDINGS: Fix number 1166 is a position at the awois position. There is no obstruction at this position.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Do not chart obstruction from DM- 10158 (1991/1993). Concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N54 ✓

ITEM# 52111 DN: 053

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: DM - 10158 (1991/1993)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'37.80"N	123°27'15.00"W	Approximate center
OBSERVED:	048°07'37.81"N	123°27'12.06"W	6207
	048°07'37.33"N	123°27'13.38"W	6208
	048°07'37.65"N	123°27'14.39"W	6209
	048°07'37.85"N	123°27'15.38"W	6210
	048°07'38.48"N	123°27'15.04"W	6211
	048°07'38.95"N	123°27'15.91"W	6212
	048°07'38.24"N	123°27'16.34"W	6213
	048°07'38.56"N	123°27'17.38"W	6214

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: All positions mentioned are wood dolphins. During the course of this survey there have been no logs stored in this area. The hydrographer was unable to determine what these dolphins were used for.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Chart dolphins as shown on the smooth sheet ~~field shoreline plot.~~ concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N55 ✓

ITEM# 52112 DN: 083

CHART# 18468 VN: 0652

DESCRIPTION: Obstruction.

SOURCE: DM - 10158 (1991/1993)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'04.10"N	123°25'21.00"W	
OBSERVED:	048°07'04.11"N	123°25'20.90"W	1203

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 1203 is a disproval of unidentified ruins. No visible or physical evidence of any ruins were found in the vicinity. Only rip rap material exists on shore at this position. See photograph.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Do not chart item from DM- 10158 (1991/1993). *concur*

.....COMPILATION USE ONLY

CHART APPLIED

AWOIS INVESTIGATION-N56 ✓

ITEM# 52113 DN: 053

CHART# 18468 VN: 0651

DESCRIPTION: Obstruction.

SOURCE: DM - 10158 (1991/1993)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'14.20"N	123°24'28.60"W	Offshore end
OBSERVED:	048°07'14.26"N	123°25'28.58"W	6168

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection.

FINDINGS: Fix number 6168 is a position of the northwest end of the Rayonier ITT pier. There are no ruins associated with this position.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Retain pier as charted, do not include unidentified ruins from DM- 10158 (1991/1993). concur

.....**COMPILATION USE ONLY**

CHART APPLIED

AWOIS INVESTIGATION-N57

ITEM# 51270 DN: 031,082,103

CHART# 18468 VN: 0651, 0652

DESCRIPTION: Reported rock, position approximate.

SOURCE: CL1006/72 -- USCG, LNM35/72

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION#
CHARTED:	048°07'24.32"N	123°23'04.66"W	Awois position
OBSERVED:	048°07'22.32"N	123°23'17.57"W	946 + 1

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, Side Scan Sonar . 200-meter search area is covered by 200% SSS from fix number's 5187-5190, 5198-5200, 5217-5219, 5499-5501, 5545-5547, 5837-5839, and 5851-5853.

FINDINGS: The awois position of this rock is an approximate position reported by commercial divers working on a submerged pipeline in Port Angeles Harbor in 1972. Fix number 946 + 1 is the position of an uncharted rock just outside the search radius. SSS operations conducted within the search radius did not show a rock closer to the charted position. The least depth for fix number 946 + 1 is 9.4 meters(5-~~1/4~~ fathoms) at MLLW using ~~predicted~~ actual tides. This position is approximately 275 meters west of the awois position.

****

DIVING INVESTIGATION

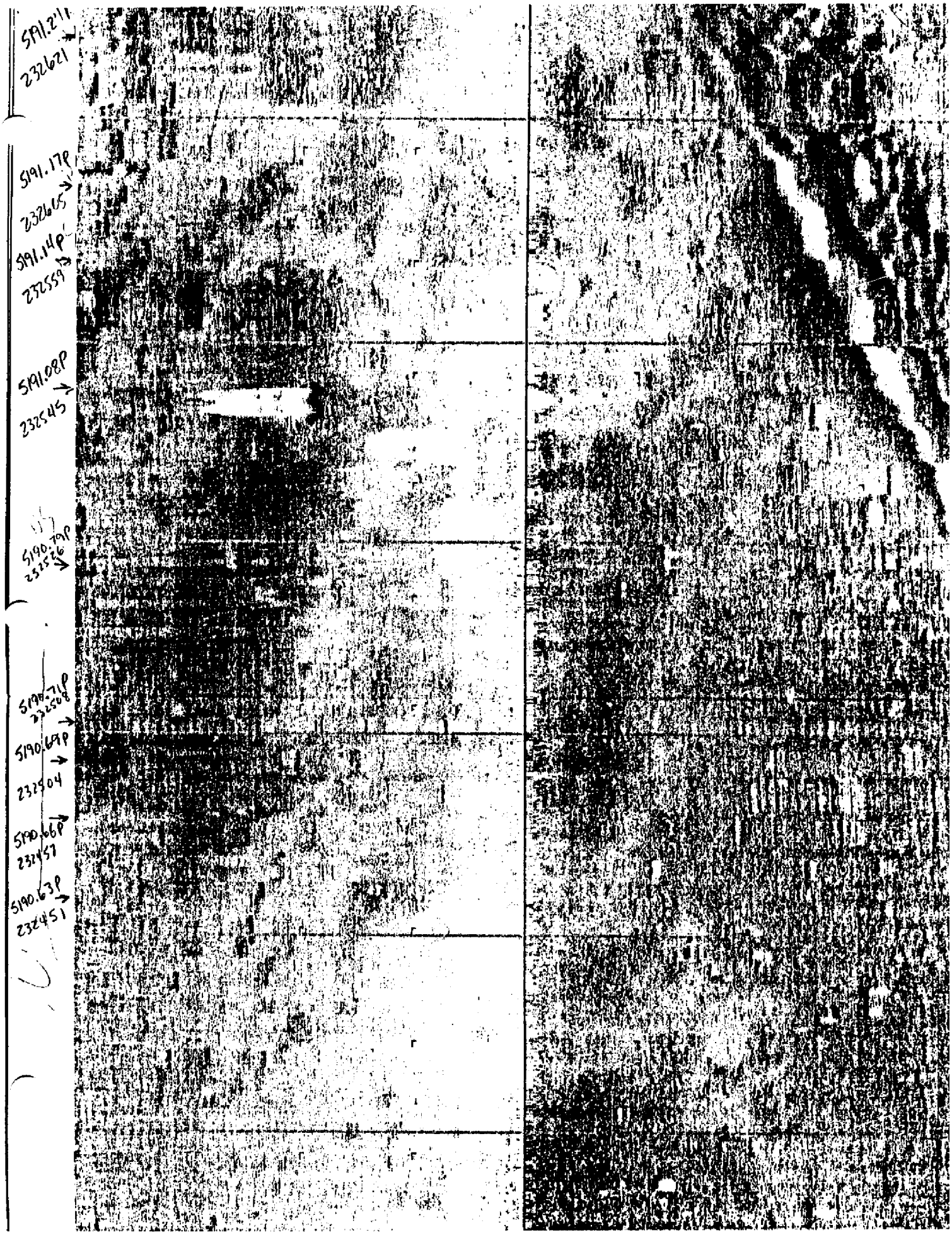
None.

****

CHARTING RECOMMENDATIONS: Delete the dangerous rock at latitude 048°07'24.32"N, longitude 123°23'04.66"W. Chart a dangerous rock at latitude 048°07'22.32"N, longitude 123°23'17.57"W. concur

.....**COMPILATION USE ONLY**

CHART APPLIED

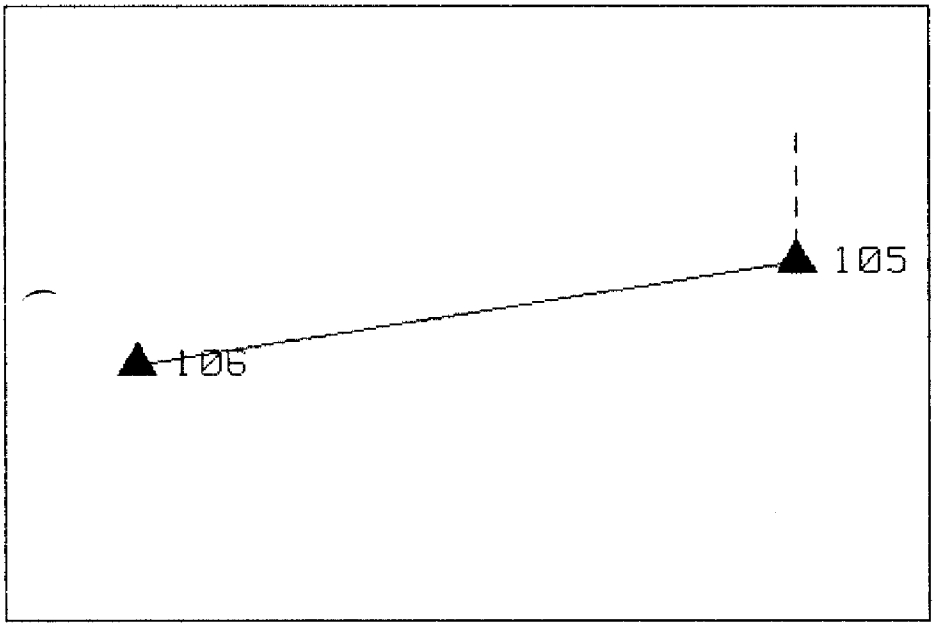

5191.21P
232621
5191.17P
232605
5191.14P
232559
5191.08P
232545
5190.79P
232526
5190.71P
232508
5190.69P
232504
5190.66P
232457
5190.63P
232451

HOAPS Inverse computation: 2.02 Choose Project/Sheet for Inverse Computation

STATIONS AVAILABLE
001
0
16
101
102

Projects	Shee
PR_HARBOR	Shee
SQUALICUM	Shee
BELL	Shee
H-10564	Shee
	Shee
	Shee
	Shee
	Shee
	Shee

FROM Station	TO Station	Distance	Forward azimuth
105 048:07:24.320	10_ 048:07:22.320	274.031	256:58:24.208
123:23:04.660	123:23:17.570		
CHARTED POSITION	TO OBSERVED POSITION		



Angle 106 to

Fix	Day	Time	Latitude	Longitude	Easting	Northing	Raw D	Tide	Drft	Sued	Hue	Corr'd	Exc	Cartg
94a+1	+0	82	18:48:09	048:07:22.324	125:23:17.566	12192.1	13666.9	10.4	-.9	+.4	-.1	+0.00	9.8	0	711

ITEM INVESTIGATION-N58 ✓

ITEM # Submerged uncharted wreck DN: 059

CHART # 18468 VN: 0651

DESCRIPTION: Submerged wreck.

SOURCE: PHP

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	048°07'40.41"N	123°27'10.69"W	6309

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, Side scan sonar, Diver investigation.

FINDINGS: On DN 059 a dive investigation was conducted after SSS records and local knowledge supported the report of the fishing vessel "Prosper" which sank approximately 3 years ago. An echo sounder return of contact # 5384.04P revealed an obstruction on the bottom approximately 4 meters off the bottom. Dive investigation concluded that there is a submerged wreck 45' in length lying upright 120° true bearing. Fix number 6309 is the resulting position taken over the least depth height of the object. A Danger to Navigation was reported and sent to proper authorities because of the close proximity to the entrance to the Port Angeles Boat Haven and the close proximity of a deep draft vessel pier.

****

DIVING INVESTIGATION

Divers: ET E.O. Wernicke
Search Radius: 20 meters
Water visibility: 20 feet
Maximum depth: 26.0 feet
Least depth: 8.2 meters(leadline) Bottom time: 10 min.
Findings: Described above.

****

CHARTING RECOMMENDATIONS: Chart a dangerous submerged wreck at latitude 048°07'40.41"N, longitude 123°27'10.69"W. *Concur* (8.2 meters/4½wk)

.....COMPILATION USE ONLY

CHART APPLIED

WRECK
5384.04P
211215

ITEM INVESTIGATION-N59 ✓

ITEM # Submerged uncharted wreck DN: 059

CHART # 18468 VN: 0651

DESCRIPTION: Submerged wreck.

SOURCE: PHP

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	048°08'05.79"N	123°26'57.75"W	6313

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, 200% Side Scan Sonar coverage, diver investigation.

FINDINGS: On DN 059 a dive investigation was conducted after SSS records and local knowledge supported the report of an unidentified object known to be submerged in the area. Dive investigation concluded that there is a submerged wreck 45' in length lying upright. Fix number 6313 is the resulting position taken over the least depth height of the object.

****

DIVING INVESTIGATION

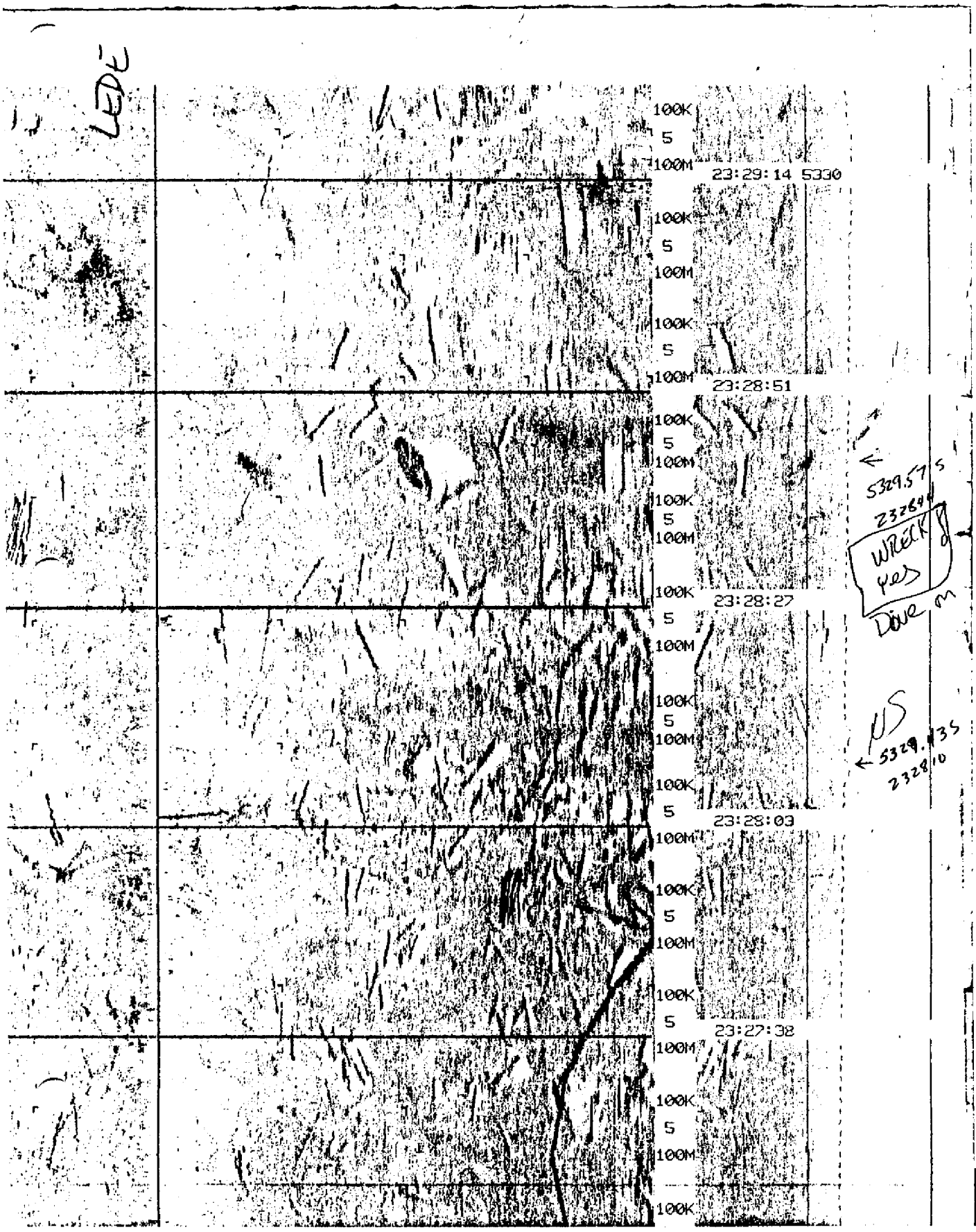
Divers: ET E.O. Wernicke, LT R.A. Fletcher
Search Radius: 20 meters
Water visibility: 7.0 feet
Maximum depth: ~~87.0~~ 25.1 feet
Least depth: ~~24.75~~ meters (reduced) Bottom time: 25 min.
Findings: Described above. actual tide

****

CHARTING RECOMMENDATIONS: Chart a non-dangerous submerged wreck (25 meters / 13WK) at latitude 048°08'05.79"N, longitude 123°26'57.75"W. concur

.....**COMPILATION USE ONLY**

CHART APPLIED


LEDGE
100K
5
100M
23:29:14 5330
23:28:51
5329.57 S
23280
WRECK
yes
Dive on
23:28:27
US
5329.35
23280
23:28:03
23:27:38

ITEM INVESTIGATION-N60 ✓

ITEM # Charted platform pier and dolphins. DN: 083

CHART # 18468 VN: 0652

DESCRIPTION: Removal of charted platform pier and dolphins.

SOURCE: PHP

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	048°08'20.00"N	123°24'21.00"W	
OBSERVED:	048°08'20.00"N	123°24'21.00"W	1147-1152

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, visual inspection, telephone conversation.

FINDINGS: A charted platform pier with several dolphins were removed by General Construction in November, 1994 under contract with the Corps of Engineers, in association with the USCG Port Angeles Group. LT CDR Jerry Dimetria of the US Coast Guard Group Port Angeles confirmed the removal of the pier and existing dolphins during contract work conducted by General Construction in November, 1994. Additional Echo sounder coverage was performed by PHP to confirm the complete removal of these structures. 25-meter development lines were run within the vicinity of the charted structures with no submerged obstructions observed. Side Scan Sonar was run in the vicinity of these charted structures as well with no significant contacts observed. Additional information as needed should be referred to LT CDR Jerry Dimetria at (360)-457-2250.

****

DIVING INVESTIGATION

None.

****

CHARTING RECOMMENDATIONS: Delete a pier ~~with dolphins~~ charted at latitude 048°08'20.00"N, longitude 123°24'21.00"W. concur

.....**COMPILATION USE ONLY**

CHART APPLIED

ITEM INVESTIGATION-N61 ✓

ITEM # SSS contact # 5362.38P DN: 059

CHART # 18468 VN: 0651

DESCRIPTION: Rock.

SOURCE: PHP

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	048°07'50.46"N	123°23'20.29"W	6316

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echo sounder, diver inspection.

FINDINGS: Fix number 6316 is a position of a large rock on a slope. This rock is not significant in relation to the surrounding hydrography.

****

DIVING INVESTIGATION

Divers: LT R.A. Fletcher
Search Radius: 20 meters
Water visibility: 20 feet
Maximum depth: 85 feet
Least depth: ~~23.63~~ 32.18 meters (reduced) actual tide Bottom time: 10 min.
Findings: Described above.

****

CHARTING RECOMMENDATIONS: No charting action is necessary. Do not concur Chart 12 RK

.....COMPILATION USE ONLY

CHART	APPLIED

APPROVAL SHEET

for

SURVEY H-10587

Standard field surveying and processing procedures were followed in producing this survey in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1995. The data were reviewed daily during acquisition and processing.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CG245, Pacific Hydrographic Section.

Approved and Forwarded,

DATE: June 9, 1995

Richard A. Fletcher
Lieutenant, NOAA
Chief, Pacific Hydrographic Party

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: June 20, 1995

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-N251

HYDROGRAPHIC SHEET: H-10587

LOCALITY: Washington, Port Angeles Harbor

TIME PERIOD: December 20, 1994 - May 22, 1995

TIDE STATION USED: 944-4090 Port Angeles, Strait of Juan de Fuca, Wa.
Lat. 48° 7.5'N Lon. 123° 26.4'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 30.20 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 6.5 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Port Angeles, Wa. (944-4090).

Notes: 1. Times are tabulated in Greenwich Mean Time.
2. Data for Port Angeles, Wa. (944-4090) are temporarily stored in file #744-4090.

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10587

Name on Survey	A ON CHART NO. 18468, 18465	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
EDIZ HOOK	X		X							1
ENNIS CREEK	X		X							2
JUAN DE FUCA, STRAIT OF	X		X							3
LAGOON, THE	X		X							4
PORT ANGELES	X		X							5
PORT ANGELES HARBOR	X		X							6
WASHINGTON (title)	X		X							7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
				Approved						18
										19
				Chief Geographer						20
										21
				JAN 19 1996						22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H) (9-83)

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10587

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List): DM-10158

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			3156
OSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	253.5		253.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS		10	10
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		16	16
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	253.5	26	279.5

Pre-processing Examination by LT Guy Noll	*Beginning Date* 6/12/95	*Ending Date* 6/15/95
Verification of Field Data by J.Stringham, D.Doles, L.Deodato	*Time (Hours)* 253.5	*Ending Date* 3/1/96
Verification Check by B. Olmstead	*Time (Hours)* 8	*Ending Date* 3/11/96
Evaluation and Analysis by L. Deodato	*Time (Hours)* 26	*Ending Date* 3/1/96
Inspection by B.A. Olmstead	*Time (Hours)* 16	*Ending Date* 4/15/96

EVALUATION REPORT

H-10587

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

This survey was conducted in Washington, and is located along the west side of the Strait of Juan de Fuca and inside Port Angeles Harbor. Specifically, the surveyed area is bounded by latitude 48/08/51N to the north and includes all of Port Angeles Harbor. The eastern limit is longitude 123/22/39W and the western limit is longitude 123/27/57W. Depths range from -1.5 meters to 86 meters.

C. SURVEY VESSELS

Survey vessel information is found in the hydrographer's report.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data were processed using the same Hydrographic Data Acquisition/Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS) and AutoCad, Version 12.0.

At the time of the survey certification the format for transmission of digital data had not been formally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the sounding plot was created with .dbf (extension) and enhanced using the AutoCad system, are filed both in the AutoCad drawing format, .dwg (extension); and in the more universally recognized graphics transfer format, .dxf (extension). Copies of these files will be retained at PHS until data transfer protocols are developed and improved.

The drawing files necessarily contain information which is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes, remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 75.

The field sheet parameters have been revised to center the hydrography on the office plot. The data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

Side scan sonar was used on survey H-10587. Refer to section E of the hydrographer's report concerning set-up, operation and processing of survey data.

F. SOUNDING EQUIPMENT

Sounding equipment is discussed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications. Actual tide reduction is derived from the Port Angeles, Washington, gage 944-4090.

H. CONTROL STATIONS

Control stations are discussed in the hydrographer's report and separates. A list of control stations used on survey H-10587 is attached to this report.

The positions of horizontal control stations used during hydrographic operations are field values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON.

Data based on NAD 27 may be referenced to this survey by applying the following corrections:

Latitude:	-0.674 seconds	(-20.821 meters)
Longitude:	4.669 seconds	(96.538 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations. The quality of several positions exceeds limits in terms of horizontal dilution of precision (HDOP). These positions are isolated and occur randomly throughout the survey area. A review of the data, however, suggests that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable.

J. SHORELINE

The following digitally compiled shoreline map on NAD 83 applies to this survey.

Map Number	Photo Date	Scale
DM-10158	July 1991	1:20,000

The shoreline drawn on the smooth sheet originates from a 1:20,000 scale digital file provided by the Coastal Mapping Program. This file has been merged with the survey file during ACAD processing. Changes to alongshore and offshore features shown on the shoreline maps were verified and revised as warranted during survey operations. These changes have been shown on the smooth sheet.

There was one revision (breakwater) to the mean high water line at latitude 48/08/22 N, longitude 123/24/41 W.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10587 junctions with the following survey.

Survey	Year	Scale	Area
H-10583	1995	1:10,000	west, north, and east

The junction with survey H-10583 is complete. Soundings and depth curves are in good agreement within the common area.

M. COMPARISON WITH PRIOR SURVEYS

H-2110 (1892) 1:4,800
H-4586 (1926) 1:10,000
H-5160 (1931) 1:10,000
H-6649 (1940) 1:10,000

The prior surveys listed above cover the entire area of the present survey. Sounding agreement is good, with the present survey depths deeper between 1 and 2 meters. Differences can be attributed to increased bottom coverage and less accurate positioning and sounding methods available between 1892-1940. Shoreline changes since 1926 are most notable along the southern and western shores of Port Angeles Harbor. In these areas , there has been new pier construction and associated fill activities to build up the surrounding shoreline. The shoreline along the north and south sides of Ediz Hook has remained stable and reflects little change.

The features listed below have been brought forward from the following prior surveys.

Feature	Latitude	Longitude	Prior Survey
rock	48/06/53.80	123/23/07.34	H-6649
rock	48/06/54.12	123/23/08.07	"
rock	48/06/53.80	123/23/09.04	"
rock	48/06/53.73	123/23/11.22	"
0.3 sdg.(1/6 FM)	48/07/05.18	123/24/57.62	H-5160
6.7 sdg.(3 4/6 FM)	48/08/25.96	123/25/37.68	"
31 sdg.(17 FM)	48/08/23.40	123/25/42.53	"
11.3 sdg.(6 1/6 FM)	48/08/25.96	123/25/43.99	"
7 sdg.(3 5/6 FM)	48/08/26.45	123/25/48.84	"
25.6 sdg.(14 FM)	48/08/24.08	123/25/50.20	"
42 sdg.(23 FM)	48/08/22.39	123/25/58.07	"
49 sdg.(27 FM)	48/08/20.77	123/26/20.93	"
27 sdg.(15 FM)	48/08/25.25	123/26/22.87	"
11.6 sdg.(6 2/6 FM)	48/07/34.47	123/26/52.24	"
11.6 sdg.(6 2/6 FM)	48/07/30.84	123/26/51.27	"
3.2 Rk (1 3/4 FM)	48/07/06.13	123/23/28.23	T-2110

With the exception of the above, survey H-10587 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

There were 57 AWOIS items assigned to this survey. With the exception of AWOIS items 52068, 52069, 52081, 52084, 52088, and 52089 these items have been adequately addressed and disposed of in the hydrographer's report. Four additional items found during the survey were investigated and have been adequately addressed by the hydrographer.

O. COMPARISON WITH CHART

Survey H-10587 was compared with the following chart.

Chart	Edition	Date	Scale	Datum
18468	16th	February 17, 1990	1:10,000	NAD83

a. Hydrography

Charted hydrography originates with the above mentioned prior surveys and miscellaneous sources and requires no further discussion except as follows:

A 3/4 fathom sounding in the vicinity of lat. 48/08/04.5 N, lon. 123/27/42.0 W and a group of five rocks in the vicinity of lat. 48/06/56.5 N, lon. 123/23/28.0 W both of miscellaneous origin were not verified during the survey and should be retained as charted.

Depths	Latitude	Longitude
9 FM	48/08/25.6	123/25/54.0
9 FM	48/08/25.5	123/26/04.5
8 FM	48/08/28.0	123/26/12.5
7 FM	48/08/27.5	123/26/20.5
5 1/4 FM	48/07/31.5	123/26/47.0
1 1/2 FM	48/07/03.5	123/24/43.0
1 FM	48/07/02.0	123/24/38.0

Except as noted above, survey H-10587 is adequate to supersede charted hydrography within the common area.

b. Dangers to navigation

The hydrographer reported two dangers to navigation during survey operations. These dangers were reported to the local United States Coast Guard District, DMAHTC, and N/CS261. Copies of these reports are attached. No additional dangers were submitted during office processing.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10587 is adequate to:

a. delineate the bottom configuration, determine least depths, and draw the required depth curves;

b. reveal there are no significant discrepancies or anomalies requiring further investigation; and

c. show the survey was properly controlled and soundings are correctly plotted.

Except as noted below, the hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, April 1994 Edition.

Several AWOIS items listed in section N were not adequately disposed of during survey operations. Four of these items are log booming areas where conventional hydrography and or side scan operations could not be conducted. AWOIS items 52081 and 52084 are charted pier/dock ruins that were not addressed.

Refer to the hydrographer's report, section P, regarding that portion of the survey area exceeding line spacing requirements and lack of side scan sonar coverage.

Q. AIDS TO NAVIGATION

Three buoys, five new lights, and seven privately maintained lights were located by the hydrographer. Port Haven Light (Light #16330) was not located by the hydrographer and its charting position was provided by the US Coast Guard and plotted on the smooth sheet. The existence of this light was visually verified by the hydrographer. The hydrographer also found out that the four markers for the 1/10 nautical mile speed check no longer exist and should be deleted from the chart. The charted light at Ediz Hook and eight landmarks were not verified by the hydrographer. These features has been digitized as part of the shoreline manuscript and graphically portrayed on the smooth sheet. The charted radio mast was visually verified by the hydrographer and recommends that it be retained as charted. The four privately maintained lights located on Stolt Sea Farm are on the corners of the floating fish pen.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous information is discussed in the hydrographer's report.

T. RECOMMENDATIONS

This is a good hydrographic survey. Additional work is recommended on a low priority basis to prove or disprove the existence of charted items from prior surveys and miscellaneous sources listed in sections M, N, and O.

U. REFERRAL TO REPORTS

Referral to reports is discussed in the hydrographer's report.

Leonardo T. Deodato
Cartographer

APPROVAL SHEET
H-10587

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report. Final control, position and sounding printouts have been included with the survey records.

Bruce A. Olmstead Date: 4/15/96
Bruce A. Olmstead
Senior Cartographer, Cartographic Section
Pacific Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Kathy Timmons Date: 4/19/96
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

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Final Approval

Approved:

Andrew A. Armstrong III Date: 5/30/96
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10587

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
18468	4-23-96	L. [illegible]	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. Full application of soundings and features from smooth sheet
18465	5-9-96	L. [illegible]	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. Full application of soundings and features from smooth sheet.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.