

9345

Diag. Chart No. 6460-2

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC
Field No. MA-10-3-72 Office No. H-9345

LOCALITY

State WASHINGTON
General locality Hood Canal
Locality Lilliwaup Bay - Sisters Point

19 72-73

CHIEF OF PARTY

George M. Poor, Cdr., NOAA

LIBRARY & ARCHIVES

DATE 6/6/75

9345

HYDROGRAPHIC TITLE SHEET

H-9345

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.

MA-10-3-72

State WASHINGTON

General locality Hood Canal

see 2/50

Locality Lilliwaup Bay - Sisters Point

Scale 1:10,000

Date of survey 28 Feb - 26 Mar 1973
12 October - 25 October 1972

Instructions dated 21 January 1972

Project No. OPR-412

Vessel NOAA Ship MCARTHUR, Launch AR-2

Chief of party Cdr. George M. Poor

Removes other personnel

Surveyed by MCARTHUR personnel

Soundings taken by echo sounder, hand lead, pole Raytheon DE-723, Nos. 915, 935

Graphic record scaled by MCARTHUR personnel

Graphic record checked by MCARTHUR personnel

Positions verified by ~~XXXXXXXX~~ Karol M. Hoops, Carto Technician

Gerber Digital Plotter

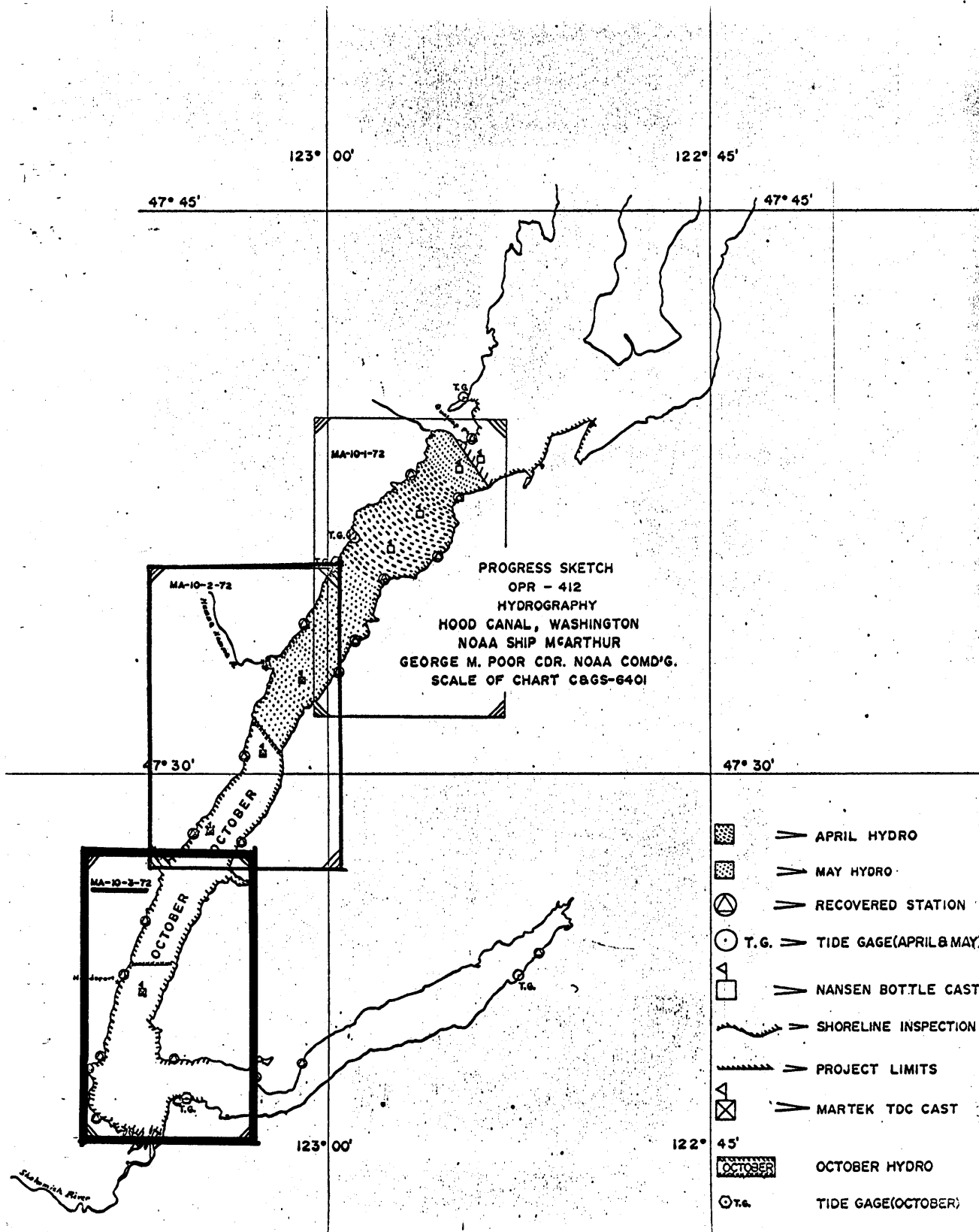
Automated plot by Pacific Marine Center

Soundings ~~checked~~ ^{verified} by Karol M. Hoops, Cartographic Technician

Soundings in fathoms ~~XXXX~~ at ~~XXXX~~ MLLW

REMARKS:

*Applied to stds 6/16/75
018.*



Descriptive Report

to Accompany

Hydrographic Sheet

(MA-10-3-72/H-9345)

Hood Canal, Washington

Scale 1:10,000

NOAA Ship MCARTHUR

CDR George M. Poor, NOAA, Commanding

A. PROJECT

This survey is part of OPR-412, Hood Canal, Washington. It was accomplished under Project Instructions dated 21 January 1972 (amended 17 February 1972) and in accordance with the Pacific Marine Center OPORDER.

B. AREA SURVEYED

The area surveyed is in the southern portion of Hood Canal, Washington. The area lies south of 47° 27' 50" N. and north of 47° 20' 00" N., and is bounded on the eastern and western sides by land, except in the southern portion where the eastern limit is 123° 06' 00" W. The prior survey of this area, Registry No. 1695, was conducted in July through September, 1885 on a 1:20,000 scale. A contemporary survey H-9320 (MA-10-2-72) joins the survey area to the north. Hydrography was completed from the north limit southward to 47° 25' 05" N. Field edit and bottom samples were completed throughout the survey area. Field edit was accomplished in May; hydrography was accomplished in October.

C. SOUNDING VESSELS

MCARTHUR and one launch, AR-2, were used to accomplish the hydrographic survey. To expedite hydrography, two boat-sheets were made. They were designated MA-10-3-72A and MA-10-3-72B. The applicable color codes and position numbers follows.

MCARTHUR	Violet	7000-7188
AR-2	Blue	0001-0369 0431-727
Detached Positions (Field Edit)	Blue	0370-0430
	Green	7213-7230
Detached Positions (Bottom Samples)	Green	8062-8092

D. SOUNDING EQUIPMENT

The survey was accomplished using Raytheon DE-723 fathometers on the MCARTHUR and AR-2. The fathometer serial numbers are: No. 915 for MCARTHUR and No. 935 for AR-2. Depths ranged to 80 fathoms in the survey area.

The Echo Sounder velocity corrections ~~corrections~~ were determined by serial temperature and salinity observations from Nansen bottles and the MARTEK model TDC metering system. Observations were made at the time that hydrography was being prosecuted. Corrections for initial error and from the results of bar checks were tabulated and are to be applied. A tabulation of all corrections is appended to the body of this report.

The Raytheon sounding equipment operated satisfactorily during the survey.

E. SMOOTH SHEET

A signal overlay was plotted by the Gerber Digital Plotter and verified by MCARTHUR personnel. The position and sounding data were logged by ship personnel with the final smooth sheet to be plotted electronically and verified by personnel at Pacific Marine Center.

F. CONTROL

All hydrography was accomplished by visual three-point sextant fix methods. The control signals were established on triangulation stations or were located by intersection with a Wild T-2 theodolite from the triangulation stations or by photogrammetric methods. Geographic positions for intersected hydrographic signals were determined by computation using the WANG model 700 calculator in conjunction with programs in the WANG Geodetic Program Library. Geographic positions for photogrammetrically located signals were determined using photos 71E(c)-4225 through 71E(c)-4234 and 71E(c)-4240 through 71E(c)-4249 in conjunction with Class 111 map manuscripts TP-00368, TP-00369, TP-00371 and TP-00372.

G. SHORELINE

Shoreline was transferred to the boatsheet from Class 111 map manuscripts TP-00368, TP-00369, TP-00371 and TP-00372. Discrepancies that were found were noted on the field edit Ozalids. Particular attention is drawn to the occasional misidentification of small mooring buoys as pilings or rocks.

H. CROSSLINES

Crosslines, consisting of approximately six per cent (4.8/83.6) of the principal system of sounding lines, were in good agreement with the main scheme sounding lines.

I. JUNCTIONS

Good agreement exists between the survey and contemporary survey H-9320. No adjustments is required.

J. COMPARISON WITH PRIOR SURVEYS

This survey compares well with prior survey No. 1695, July - September, 1885, 1:20,000.

Pre-Survey Review Items:

Item No. 7 - Piers

At 47°24.52'N., 123°08.12'W, there exists a pier in ruins with remaining piling visible above the mhwL.

At 47°27.25'N, 123°04.00'W a pier (with a house on it) was found in a ruinous state.

Recommendation: Chart piers as ruins.

K. COMPARISON WITH THE CHART

A comparison with USC&GS Chart 6460, scale 1:80,000, 12th Ed., 8/72 reveals no major changes with the exception of those mentioned in section J.

L. ADEQUACY OF SURVEY

The survey is considered complete and adequate for charting as far south as hydrography was completed.

M. AIDS TO NAVIGATION

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

N. STATISTICS

	MCARTHUR	AR-2
Positions	189	617
Sounding Lines (n.m.)	24.7	63.7
Area Surveyed (s.n.m.)	3.5	3.5
Bottom Samples	31	--

O. MISCELLANEOUS

In general the survey area has the general configuration of a glaciated valley with moderately steep sides and featureless bottom. The valley bottom consists of a layer of silt, up to 5 fathoms thick, overlaying a hard bottom. This silt layer often resulted in a poor bottom trace at depths greater than 50 fathoms.

Two small boat marinas were extensively developed in the survey area: At 47°24.55'N, 123°08.17'W and at 47°24.20'N, 123°08.35'W. These developments were conducted by lead line and positioning relative to the pier and floating docks. The positions and soundings (in feet) were plotted, as an inset, on boatsheet MA-10-3-72A on a 1:20000 scale.

P. RECOMMENDATIONS

NONE

Q. REFERENCES TO REPORTS

- 1) Season's Report, NOAA Ship MCARTHUR, 1972
- 2) Pre-survey Review Report, OPR-412, 1972
- 3) Hydrographic Signal Report, OPR-412, 1972
- 4) Field Edit Report, OPR-412, 1972
- 5) Sounding Corrections Report, OPR-412, 1972

Tide Note (MA-10-3-72)

Tide correctors used for the reduction of soundings observed in October plotted on boatsheet MA-10-3-72 were derived from a portable tide gage station at Union, Hood Canal, Washington (Lat. 47°21.5'N; Long. 123°05.9'W). The predicted tides were based on 2 months of records, October and November, 1952, and 91 high waters and 92 low waters.

HYDROGRAPHIC CONTROL DATA

Sheet: MA-10-3-72

Hood Canal, Washington

Station No.	G.P.	Seconds In Meters (d.m. & d.p.)	Located By:	
			Photo	Ground Survey
021	47° 27' 06.092" N. 123° 04' 24.128" W.	188.140 511.732		X
023	47° 25' 59.389" N. 123° 05' 24.293" W.	1834.112 509.083		X
024	47° 26' 44.729" N. 123° 06' 47.014" W.	1381.370 984.988		X
025	47° 25' 02.646" N. 123° 06' 02.282" W.	81.716 47.416		X
026	47° 26' 03.574" N. 123° 07' 07.648" W.	108.523 160.267		MILLER 2
027	47° 24' 11.407" N. 123° 06' 34.044" W.	352.280 713.830		X SHOZ R41
028	47° 25' 01.083" N. 123° 07' 48.780" W.	33.446 1022.545		WINDFALL 2
029	47° 23' 30.932" N. 123° 07' 03.526" W.	955.267 73.738		X
031	47° 22' 24.184" N. 123° 06' 17.216" W.	746.867 361.186		ROCKY
032	47° 22' 32.245" N. 123° 08' 51.620" W.	995.813 1083.345		NEELIN 3 (ECC)
033	47° 21' 51.511" N. 123° 02' 58.871" W.	1590.796 1235.307		X
034	47° 21' 06.446" N. 123° 09' 24.285" W.	199.069 509.279		INDIAN
036	47° 20' 31.648" N. 123° 07' 54.458" W.	977.370 1143.186		RESERVE
038	47° 20' 50.292" N. 123° 06' 28.003" W.	1553.145 587.783		X
040	47° 21' 25.826" N. 123° 06' 13.874" W.	797.574 291.161		UNION 2 (ECC)

HYDROGRAPHIC CONTROL DATA

Sheet: MA-10-3-72

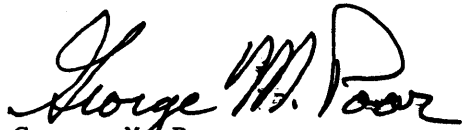
Hood Canal, Washington

Station No.	G.P.	Seconds In Meters (d.m. & d.p.)	Located By:	
			Photo	Ground Survey
✓ 019	47° 28' ⁴³ 15.000" N. 123° 03' 28.687" W.	0463.248 0600.315		DEWATTO 3
206	47° 29' 02.85" N. 123° 04' 39.98" W.	0088. 0837.	X	
208	47° 28' 03.37" N. 123° 05' 45.36" W.	0104. 0950.	X	
210	47° 27' 42.39" N. 123° 06' 16.22" W.	1309. 0342.	X	
✓ 212	47° 27' 15.58" N. 123° 06' 35.04" W.	0481. 0734.	X	
214	47° 25' 01.484" N. 123° 07' 48.753" W.	0045.83 1021.98		X
216	47° 24' 10.685" N. 123° 08' 21.317" W.	0330. 0447.	X	
218	47° 22' 31.837" N. 123° 08' 51.645" W.	983.21 1083.45		X
✓ 226	47° 26' 45.689" N. 123° 04' 47.920" W.	1411. 1004.	X	
228	47° 25' 58.162" N. 123° 05' 26.045" W.	1796.06 0546.14		X
230	47° 25' 03.756" N. 123° 06' 01.765" W.	0116. 0037.	X	
232	47° 23' 27.794" N. 123° 07' 04.093" W.	0856.85 0084.86		X
240	47° 21' 27.363" N. 123° 06' 11.923" W.	0845.04 0250.22		UNION 2

Approval Sheet For

H-9345 MA-10-3-72

Field work on this survey was accomplished under my general supervision. Frequent inspection of the field data and boatsheet were made by me as the survey progressed. The sounding records have been inspected and are approved. This survey is complete and adequate and is hereby approved.

A handwritten signature in cursive script that reads "George M. Poor". The signature is written in dark ink and is positioned above the printed name and title.

George M. Poor

CDR, NOAA

Commanding Officer

NOAA Ship MCARTHUR CSS 30

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Pre-survey Review Report

Field No. Office No.

LOCALITY

State Washington

General locality Hood Canal

Locality

1972

CHIEF OF PARTY
CDR George M. Poor, Commanding
NOAA Ship McARTHUR

LIBRARY & ARCHIVES

DATE April - May, 1972

Pre-survey Review Report

OPR- 412-MA-72

Hood Canal, Washington

NOAA Ship McARTHUR

April - May, 1972

While conducting operations on OPR-412-MA-72, Hood Canal, Washington, pre-survey review items were investigated in accordance with the pre-survey review report dated 20 October 1971. Item number 8 was not investigated because survey operations did not progress to this area.

Item 1, Log booms (47°36.36'N., 122°59.08'W.):

The ruins of a pier and 3 pilings were found at the southwest end of Triton Cove in the area of the described log booms. These features have been delineated on photo 4218. No log boom existed at the time of the investigation.

Item 2, Pier (47°34.04'N., 123°00.68'W.):

No pier or pier ruins were observed. It was learned, through talking with one of the local residents, that by 1952 the pier had rotted to such an extent that it was not visible above the surface of the water. In 1967, the person that was questioned, had SCUBA dived in the area where the pier had been. He observed a few very rotten pilings projecting about 1 foot above the bottom surface.

Item 3, Rock (47°33.84'N., 122°58.54'W.):

This rock was found. It is 6 feet in diameter and bares 3 feet above MHWL. See field edit ozalid TP-00367. The exact position of the rock is (47°33.94'N., 122°58.54'W.).

Item 4, Pier (47°33.58'N., 122°58.69'W.): No evidence was found of the pier or of any remaining ruins.

Item 5, Hamma Hamma River Channel (47°32.64'N., 123°02.22'W.):

The extent of the riprap used to retain the channel is defined on field edit ozalid TP-00366. Investigations were carried out at both low and high stages of tide. No evidence was found of any pilings that are reported to have been used to retain or mark the channel. It should be noted that the entrance to the channel is shoreward of the zero fathom curve. An approach to mouth is hazardous for even a skiff. McARTHUR field parties grounded on two separate occasions

while attempting to pass over the bar and into the Hamma Hamma River. This channel does not appear to be regularly maintained at this time and water-borne traffic should not be encouraged.

Item 6, Log storage pilings (47°31.57'N., 123°02.80'W.):

Log storage pilings exist at 47°31.75'N., 123°02.85'W., extending 200 meters to the northeast and 300 meters to the southeast. The storage area is in use and the pilings are in good condition. See field edit ozalid TP-00366 for a delineation of the pilings.

Item 7, Piers (47°24.52'N., 123°08.12'W.) and (47°27.25'N., 123°04.00'W.):

The pier near Hoodsport (47°24.52'N., 123°08.12'W.) is in ruins. The remaining pilings are visible above the MHWL. See field edit ozalid TP-00371 for a delineation of the pilings.

A pier (with a house on it) at the mouth of DeWatto Bay (47°27.25'N., 123°04.00'W.) was found in a ruinous state. See field edit ozalid TP-00368 for information on its location.

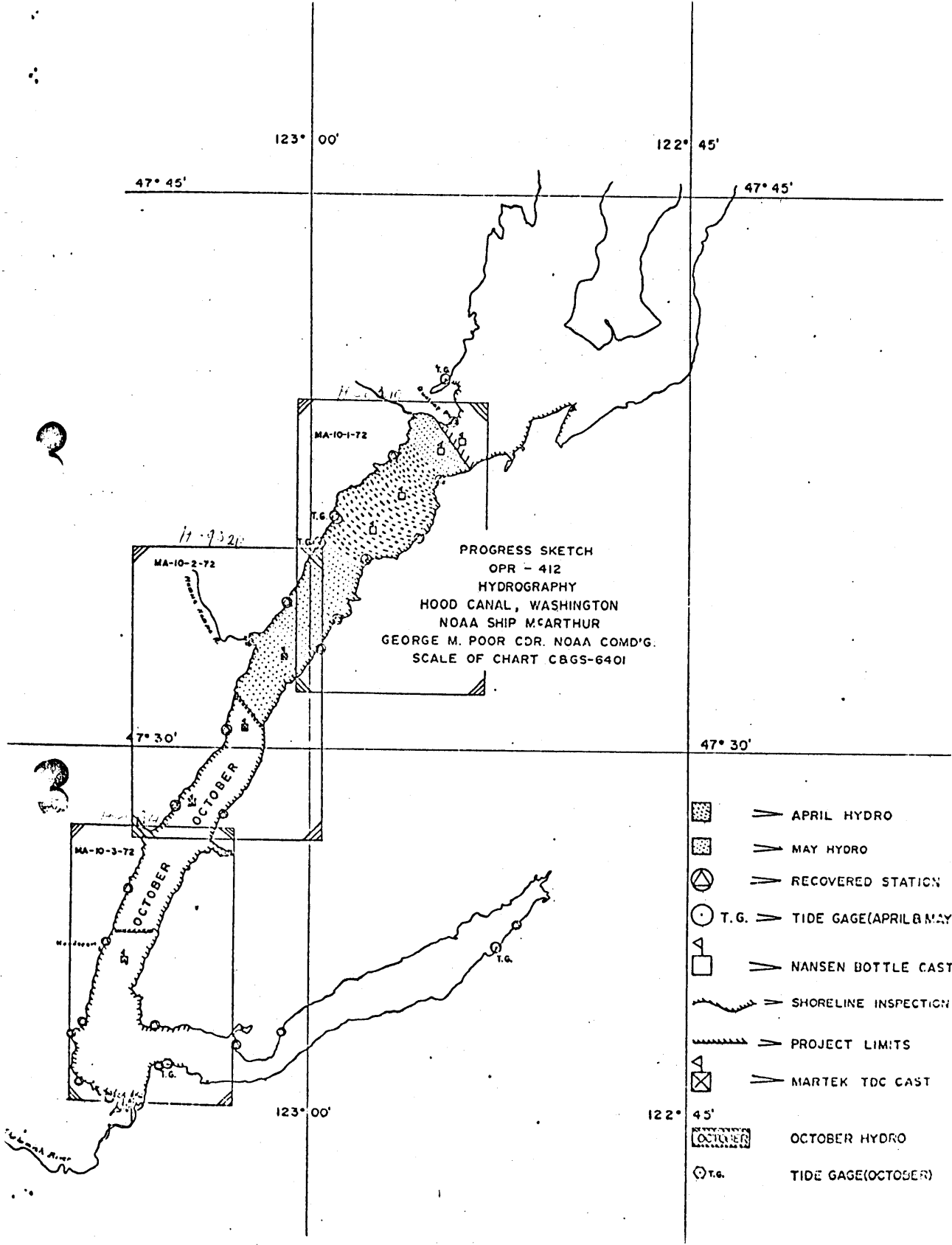
Prepared by:

Steven R. Birkey











Steven R. Birkey
LTJG, NOAA

Approved and forwarded by:

George M. Poor
George M. Poor
CDR, NOAA



PROGRESS SKETCH
 OPR - 412
 HYDROGRAPHY
 HOOD CANAL, WASHINGTON
 NOAA SHIP McARTHUR
 GEORGE M. POOR CDR. NOAA COMD'G.
 SCALE OF CHART CBGS-6401

-  APRIL HYDRO
-  MAY HYDRO
-  RECOVERED STATION
-  T.G. TIDE GAGE (APRIL & MAY)
-  NANSEN BOTTLE CAST
-  SHORELINE INSPECTION
-  PROJECT LIMITS
-  MARTEK TDC CAST
-  OCTOBER HYDRO
-  T.G. TIDE GAGE (OCTOBER)

ITEMS

1. The log boom charted in lat. 47°36'36 long. 122°59'08 originate with Chart Letter 676 (1966), a Corps of Engineers Permit Plan. Their existence, condition, and position should be determined.
2. The pier charted in lat. 47°34'04, long. 123°00'68 from Chart Letter 134 (1924) and revised to ruins by 1954 photography should be investigated to determine its present condition. If it is not visible above the water surface the area should be thoroughly investigated for submerged remains.
3. A submerged rock charted in lat. 47°33'84, long. 122°58'54 from Chart Letter 186 (1935) should be investigated to determine its accurate position and the least depth of water over it.
4. The pier charted in lat. 47°33'58, long. 122°58'69 from Chart Letter 133 (1924) should be investigated to determine its present condition.
5. The Hanna Hanna River Channel was charted in lat. 47°32'64, long. 123°02'22 from Chart Letter 1134 (1954), a Corps of Engineers Permit Plan. The plan consisted of dredging through the high water marsh area and the tidal flats, placing of 5-foot high riprap and driving piles to retain and mark the channel. The depth of the channel and the position and condition of piles should be determined.
6. The log storage piling charted in approximate lat. 47°31'57, long. 123°02'00 from Chart letter 549 (1954), a Corps of Engineers Permit Plan, should be investigated to determine the present position and condition of the piling.
7. The piers charted in lat. 47°24'52, long. 123°08'12 and in lat. 47°27'25, long. 123°04'00 since about 1911 from an undetermined source should be investigated to determine their existence and present condition.
8. The float charted in lat. 47°21'0, long. 123°04'0 from Chart Letter 1267 (1961) and the adjacent ruins apparently from 1961 air photographs should be investigated to verify their positions and present condition.

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Field Edit Report

Field No. Office No.

LOCALITY

State Washington

General locality Northwestern Washington

Locality Hood Canal

1972

CHIEF OF PARTY
NOAA Ship McARTHUR
CDR George M. Poor, Commanding

LIBRARY & ARCHIVES

DATE April - May 1972

FIELD EDIT REPORT

Hood Canal, Washington

April-May 1972

Map Manuscripts: TP-00381, TP-00365,
TP-00366, TP-00367, TP-00368, TP-00369,
TP-00371

Project OPR-412-MA-72

Field Edit Report

Hood Canal, Washington

Manuscripts: TP-00381, TP-00365, TP-00366
TP-00367, TP-00368, TP-00369, TP-00371

This report covers the area of Hood Canal bounded on the north by latitude 47° 40' 00" and on the south by latitude 47° 19' 00".

The entire shoreline was inspected by vehicle or small boat. The shoreline and alongshore features were compared with the field edit copies of the manuscript and the field edit color photographs. The field edit copies (discrepancy prints) of the map manuscripts were used as the index for field corrections. Three-point sextant fixes taken to delineate the mean high water line or the positions of other alongshore features are recorded on the appropriate Field Edit Ozalid. Positions of features determined by their relationship to photogrammetrically identified objects are referenced on the appropriate Field Edit Ozalid and recorded on the photograph indicated on the Field Edit Ozalid.

Adequacy of the Compilation

The accuracy of the maps appear adequate for navigation, however the current charts are lacking detail. All discrepancies were investigated and resolved.

New construction is prevalent in the area. All new piers and bulkheads were located by three-point sextant fixes. All pilings, dolphins, and ruins, which did not appear on the discrepancy sheets were also located by three-point fixes.

The mean high water line was established throughout the surveyed area either by three-point fixes or by measuring to the mean high water line from a known point of reference. Shore line areas where streams and rivers enter Hood Canal were extensively delineated. Changes to the shore line were dashed in with purple ink. Marsh areas are designated as such. Rocks and shoals were investigated. In the majority of cases, elevations of rocks and shoals were related to the elevation of the feature above the water at the time it was visited by direct measurement. In those instances where this was not possible, the height of the feature above mean high water (as estimated from vegetation on the face of the feature for example) was measured.

Purple ink was used to indicate corrections on the discrepancy sheets. Red-orange ink was used for the annotations of the field edit photographs. Green ink was used on the discrepancy prints to indicate deletions.

Where small coves made it impossible to carry on field edit work using established signals for sextant cuts, signals were photo located. Triton Cove, DeWatto Bay and Pleasant Harbor were field edited using photo located signals.

There were no fixed aids to navigation in the area surveyed. All features of landmark value were investigated and designated as such on the discrepancy sheets. All significant landmarks have been listed on form 567.

A list of geographic positions used in field edit work is included in this report.

SUBMITTED BY:

Steven R. Birkey
LTJG, NOAA

APPROVED AND FORWARDED:

George M. Poor
CDR, NOAA
Commanding

HYDROGRAPHIC TITLE SHEET

H-9345

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.

MA-10-3-72

State WASHINGTON

General locality HOOD CANAL

Locality Lilliwaup Bay - Sisters Point

Scale 1:10,000 Date of survey 28 Feb - 26 March 1973

Instructions dated 23 February 1973 Project No. OPR-412

Vessel Launches AR-1 and AR-2

Chief of party Cdr. George M. Poor

Surveyed by MCARTHUR personnel *Review enter personnel*

Soundings taken by echo sounder, ~~XXXXXXXXXX~~ Raytheon DE-723, Nos. 920 and 935

Graphic record scaled by MCARTHUR personnel

Graphic record checked by MCARTHUR personnel

Positions verified

~~XXXXXXXXXX~~ by Karol M. Hoops, Carto Technician Automated plot by Pacific Marine Center

Soundings ~~XXXXXXXXXX~~ ^{verified} by Karol M. Hoops, Carto Technician

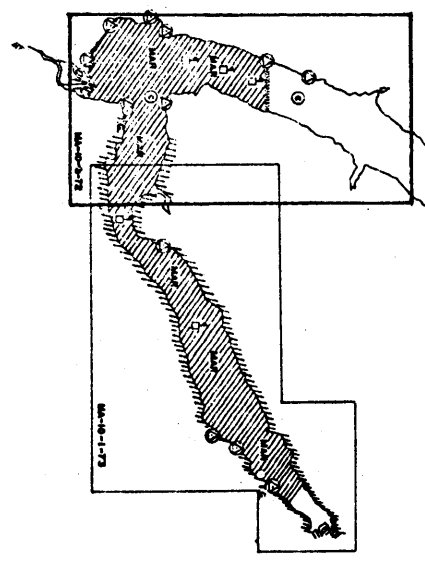
Soundings in fathoms ~~XXXX~~ at ~~XXXX~~ MLLW

REMARKS: This survey is a continuation of a boatsheet commencing in
October 1972. The field number and registry are the same. The
distinction between surveys is made by the year in which the work
was accomplished (i.e., 1972 or 1973).

MONTHLY PROGRESS SKETCH
 OPR-412-MA-73
 HOOD CANAL, WASHINGTON
 NOAA SHIP MCARTHUR
 G. M. POOR, CDR, NOAA, COMD/G.

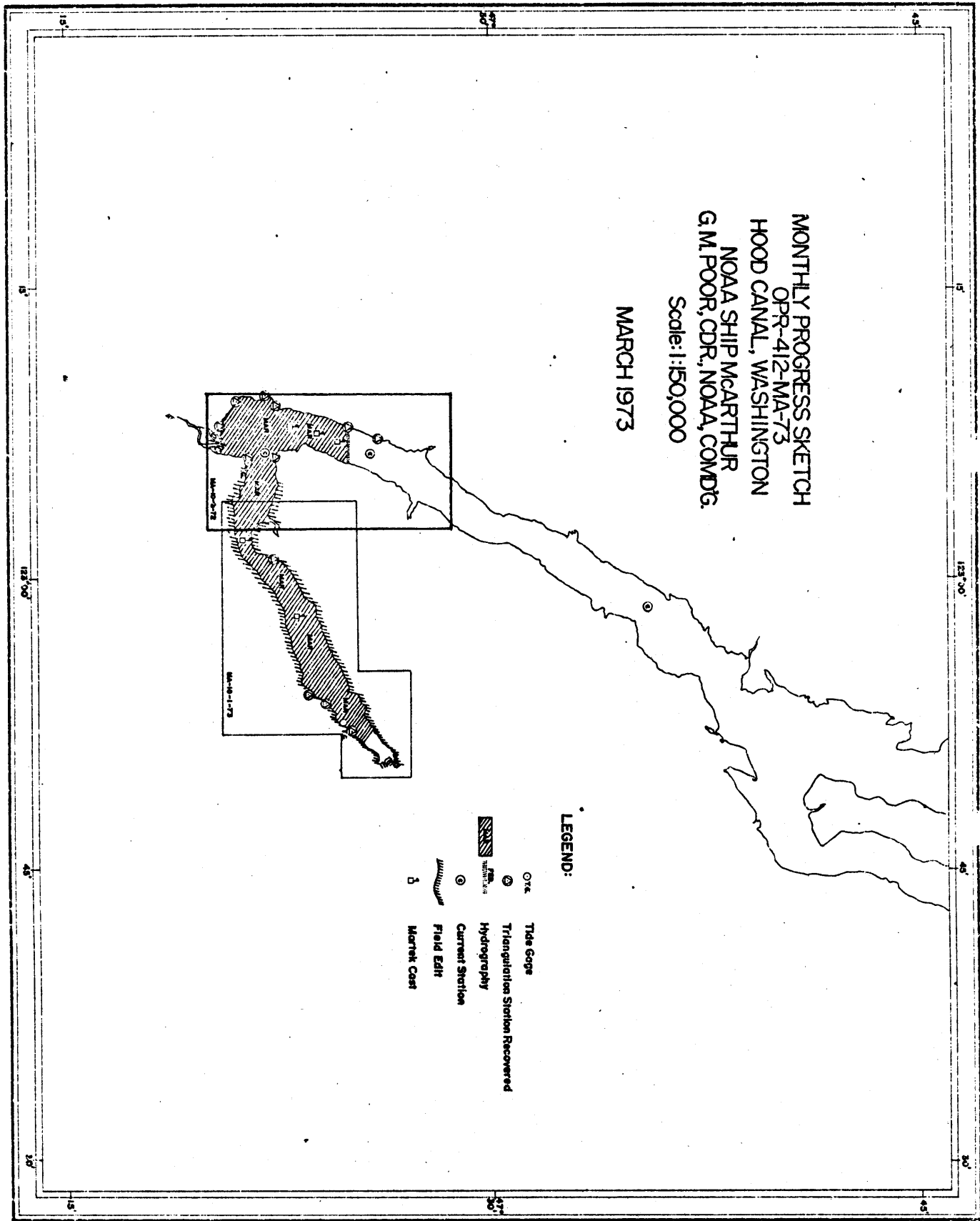
Scale: 1:150,000

MARCH 1973



LEGEND:

- Tide Gage
- △ Triangulation Station Recovered
- ▨ Hydrography
- Current Station
- ⊕ Field Edih
- ⊖ Marked Coast



Descriptive Report to
Accompany Hydrographic Survey
H-9345 (Field No. MA-10-3-72)

Scale 1:10,000
Year of Survey 1973

NOAA Ship McARTHUR CSS-30

CDR George M. Poor, NOAA, Commanding

A. PROJECT

This survey is part of OPR-412, Hood Canal, Washington. It was accomplished under Project Instructions dated 23 February 1973 and in accordance with the PMC ORDER. The original instructions were amended by instructions dated 2 March and 12 March 1973. This survey is a continuation of a survey commencing and ending in October, 1972 under the same Field and Registry number. It should be noted that the only variances in the title of the survey is made by the calendar year in which the work was completed. 1973 work was plotted on boatsheets "C" and "D".

B. AREA SURVEYED

The area surveyed is in the southern portion of Hood Canal, Washington. The survey is bound by land on the west and south and partly by land on the east. Contemporary survey H-9372 (MA-10-1-73) joins the area on the southeast part of the survey. The northern limit of the survey is near the 47°-25'N parallel where it joins contemporary survey of the same registry and field number completed the previous year. Prior survey of the area was performed from July 6th to September 16, 1885 on a scale of 1:20,000 with a registry number H-1695.

The hydrographic control was established during February 1973 for this survey and hydrography accomplished during February and March of 1973.

C. SOUNDING VESSELS

The two launches of the ship McARTHUR, AR-1 and AR-2, were used to accomplish the survey. In general, Launch AR-1 covered the eastern shore and all of the area east of the Great Bend while AR-2 developed the western and southern shores (near the river entrance) and the center portion of the canal. To expedite hydrography, two boat sheets were made and designated MA-10-3-72C and MA-10-3-72D. The applicable color codes and

position numbers are as follows:

<u>Vessel</u>	<u>Color</u>	<u>Position Numbers</u>
AR-1	Red	5001-6308
AR-2	Blue	2001-2953 2956-3240 3242-3314 3317-3387
Detached positions (field edit)	Blue Red	3314-3315 9000-9025 9026-9032
Detached positions (Bottom samples)	Green	8501-8517

The detached positions of field edit were performed by Launch AR-2 (Pos. Nos. 3315 & 3316), Launch AR-1 (Pos. Nos. 9000-9025), and the McARTHUR skiffs (Pos. Nos. 9026-9032). The bottom samples were taken by the McARTHUR and only in the area not covered by the contemporary survey completed in 1972.

D. SOUNDING EQUIPMENT

The survey was accomplished using Raytheon DE-723 fathometers on each of the launches. The fathometer serial numbers and the corresponding launch is as follows: No. 920 on AR-1 and No. 935 on AR-2. Depths ranged to 66 fathoms, thereby limiting the use of the fathometer to only A & B scales. The stylus arm length were checked periodically and found to be in good working order with little or no adjustment required. The initial on "A" and "F" scales was also periodically checked and set. The discrepancies found are noted in the TRA (TC/TI) correction table (see appendix). It should be noted that the main error introduced here is mostly due to the fluctuation of the paper alignment as it feeds across the plate.

E. SMOOTH SHEET

A signal overlay was plotted by the Gerber Digital Plotter at PMC and verified by McARTHUR personnel. The position and sounding data were logged by ship personnel with the final smooth sheet to be plotted electronically and verified by personnel at the Pacific Marine Center.

F. CONTROL

All hydrography was accomplished by visual three-point sextant fix methods. Of the 21 control signals, seven (7) were established on triangulation stations and reference marks, one (1) by 3-pt sextant fix (using triangulation stations for left, center and right objects), twelve (12) by

photolocation and two(2) from ground survey techniques from the 1972 survey. Geographic positions for the photogrammetrically located signals were determined by using photos 71-E(C)-4033, -4233, -4234, -4242, -4161 thru -4164, and -4172 thru -4175 in conjunction with Class III map manuscripts TP-00368, TP-00371 and TP-00372. The geographic position for the sextant fix signal was computed with the WANG model 700 calculator and the 3-point fix resection program of the WANG library. The positions for the triangulation station signals were obtained from the List of Geographic Positions (Form 28 Bt). Control established by the same survey of the previous year were: Signal 006 of this survey utilized the position established for signal 232 from the 1972 survey, and signal 115 utilized the position of 038, respectively.

G. SHORELINE

Shoreline was transferred to the boatsheet from Class III map manuscripts TP-00368, TP-00371 and TP-00372. Discrepancies that were found were noted on the field edit ozalids. Particular attention is drawn to the southwestern part of the boatsheet in the Skokomish River mouth area. The shoreline transferred was verified by the 1972 survey and found to be in good agreement.

H. CROSSLINES

Crosslines, consisting of approximately fourteen per cent (35.6/255.7) of the principal system of sounding lines, were in good agreement with the main scheme of sounding lines.

I. JUNCTIONS

Good agreement exists between the survey and contemporary surveys H-9345 (completed in 1972) and H-9372.

J. COMPARISON WITH PRIOR SURVEYS

This survey compares very well with prior survey No. H-1965, July - September, 1885, 1:20,000 scale. Particular note is made of the relatively little change in the mean lower low water line in the vicinity of the mud flat area at the mouth of the Skokomish River. No adjustments are required.

Pre-survey Review Items:

Item No. 7 - Piers charted in lat. 47°-24.52'N, long. 123°-08.12'W and in lat. 47°-27.25'N, long. 123°-04.00'W.

This item was covered in the Descriptive Report of Contemporary Survey H-9345 (1972). It was recommended to chart piers as ruins.

Unnumbered item in lat. 47°-21.78N, long. 123°-07.73W.

This item was investigated during the normal prosecution of hydrography.

Line spacing of less than or equal to 50 meters was used resulting in a least depth of 15 fms. It should be noted, however, that the MLLW line for this area is very irregular and the depth curves indicate a finger-like projection in the vicinity near this item. The seaward limit of the 3-fm curve lies about 150 meters SSW of the unnumbered item. It is recommended that the 3 fm charted depth be deleted.

Item No. 8 - Float charted in lat. 47°-21.0N, long. 123°04.0W

No single float was found in the area. However, the large float dock at Alderbrook Inn (private use only) was documented in that same area (see item 14 and Detached Positions 9000-9017). It is recommended that the float and ruins be deleted.

Item No. 10 - Pier and float in lat. 47°-20'59", long. 123°-03'32".

There were no structures or floats in the immediate area. However, a privately owned pier and float dock 100 meters to the east was investigated. The position numbers documenting the area are 9018 to 9025. The correct position of the pier and float dock are located on the boatsheet (47°-20.58N, 123°-03.42W).

Item No. 11 - Piling and floats in lat. 47°-22'35"N, long. 123°-08'47".

The ^{off shore} seaward limit of two piers, north and southwest, respectively, of the area under investigation was established by Pos. Nos. 3315 and 3316. The shore area between these two piers was extensively searched with no evidence of any such item. The southernmost pier was recently constructed. It is recommended that the piling and floats be deleted.

Item No. 12 - Piling and log breakwater in lat. 47°-24'18"N, long. 123°-08'20".

This area was investigated in the previous survey (1972) and no pilings or log breakwater were found. Recommend delete this item.

Item No. 13 - Piling and floats in lat. 47°-24'12"N, long. 123°-08'21"W.

This item was also investigated on the previous survey. An extensive development of the area was conducted at that time. Positions were taken and plotted on boatsheet H-9345 (MA-10-2-72A). The piling and floats in this item do exist and should be charted as shown. The pier and float dock is titled the "Hoodsport Public Pier."

Item No. 14 - Floating ramp and moorage float in lat. 47°-20'57", long. 123°-03'56".

An extensive development of the float dock using lead lines and sextant fixes was conducted and recorded as Detached Positions 9000-9017. The pier has been renovated and is for private use of the Alderbrook Inn. It is recommended that the item be charted as documented on the boatsheet and in the Detached Position volume.

A special note was made of the area between Presurvey Review No. 10 and 14. Only isolated pilings and two temporary diving platforms existed.

K. COMPARISON WITH THE CHART

A comparison with USC&GS Chart 6460, scale 1:80,000, 12th Ed., Aug. 19, 1972 reveals no major changes with the exception of those mentioned in section J.

L. ADEQUACY OF SURVEY

The survey is considered complete and adequate for charting.

M. AIDS TO NAVIGATION

There are no aids to navigation in the area of the survey. Of special interest are four silos near signal 113, RESERVE that are reported on Form C&GS 567, Nonfloating Aids or Landmarks for Charts, in the Field Edit Report, OPR-412, 1972.

N. STATISTICS

	AR-1	AR-2
Positions	1334	1384
Sounding lines (n.m.)	146.9	144.4
Area surveyed (s.n.m.)	7.6	5.8
Bottom Samples	17 (performed by McARTHUR)	

O. MISCELLANEOUS

As mentioned earlier in the report, the mud-flat area in Annas Bay (at mouth of Skokomish River) was very extensive but adequately defined. It was reported by members of the local populus that a natural channel existed on the east side of the bay near Union, Washington extending from the river's mouth to deeper water north of Union. A development of the east side was conducted (Pos. Nos. 3232 to 3269) and no channel was found. A special development WNW of Signal 016 (off Sister's Point) was also conducted to adequately define the bottom configuration as a discrepancy was noted in the near shore contours (see Pos. Nos. 3371 to 3387). A least depth of 3.0 fms was at lat. 47°-21'63N., long. 123°-02'75W.

P. RECOMMENDATIONS

It is recommended that this survey be smooth plotted through automation on a 42" sheet per the grid revision as requested on 4/27/73 for the hydro signal overlay. This will enable all soundings to be plotted on the smooth sheet with a margin as prescribed in the hydro manual. Also, signal #016 will fit on the sheet and compute correctly. Please insure

that the 1972 signals are recomputed for this new grid prior to processing 1972 work. Also, 1973 signals were re-numbered even if identical to 1972. This will result in several signals on the smooth sheet having two numbers. No other field work is required to complete this survey.

Q. REFERENCES TO REPORTS

1. Descriptive Report to Accompany Hydrographic Survey H-9345 (MA-10-3-72), 1972
2. Field Edit Report, OPR-412, 1973
3. Field Edit Report, OPR-412, 1972
4. Sounding Corrections Report, OPR-412, 1973
5. Coast Pilot Report, OPR-412, 1973
6. Current Survey Report, OPR-412, 1973

Submitted by;



Roger J. DeVivo
LT, NOAA

Approved and forwarded:



George M. Poor
CDR, NOAA
Commanding

Tide Note
(MA-10-3-72)

Tide correctors used for the reduction of soundings observed in March plotted on boatsheet MA-10-3-72 were derived from the subordinate tide gage station at Union, Hood Canal, Washington (Lat. $47^{\circ}21'29''\text{N.}$, $123^{\circ}05'53''\text{W.}$) with the Seattle tide gage being the reference station. The time meridian was 120°W PST. The high and low waters were obtained from the 1973 Tide Table Predictions for the West Coast of North and South America

Abstract of Velocity Corrections

to Echo Soundings

(MA-10-3-72)

The following table is a tabulation of sounding correctors vs. depth. The correctors were determined by Martek casts conducted in the survey area while hydrography was in progress.

A compendium of the data used to generate the table has been submitted in a separate report.

It has been concluded that only the correctors for 2 fathoms ^{or} less are insignificant (ie., less than 0.5% of the sounded depth). All other depths required the velocity correctors to be added.

Abstract of Velocity Correctors (fms)

Depth (Fms)	Casts					
	1	2	3	4	5	6
2	+0.01	+0.01	+0.01	+0.01	+0.01	0.00
7	+0.04	+0.05	+0.05	+0.04	+0.05	+0.04
12	+0.07	+0.08	+0.08	+0.08	+0.10	+0.08
17	+0.11	+0.12	+0.12	+0.12	+0.14	+0.13
22	+0.15	+0.16	+0.16	+0.16	+0.19	+0.17
27	+0.20	+0.21	+0.20	+0.20	+0.24	
32	+0.24	+0.25	+0.25	+0.24	+0.29	
37	+0.29	+0.30	+0.29	+0.29	+0.34	
42	+0.34	+0.35	+0.33	+0.34		
47	+0.39	+0.41	+0.38	+0.39		
52	+0.45	+0.46	+0.43	+0.44		
57	+0.50	+0.52	+0.48	+0.49		
62	+0.55	+0.57	+0.53			
67	+0.61	+0.63	+0.59			

TRA (TC/TI) TAP: VESSEL AR-1 SURVEY MA-10-372 FAIRHOMER S/N 920 YR
 PAGE 1 OF 2

FROM TIME	TRA CORR.	DAY	VEL. TBL.	TRA CORR. INITIAL	IS THE ALGEBRAIC SUM OF THESE COLUMNS	SCALE-PHASE	INST/DRAFT	STYLUS/F. ARC	S./SQUAT	COMMENTS
135500	1004	059	01	+0.1	0.0	0.0	+0.3	0.0	0.0	
084400	1003	061	01	0.0						
123600	1003	064	01	0.0						
134230	1002			-0.1						
135030	1003			0.0						
143600	1004			+0.1						
144530	1003			0.0						
145500	1004			+0.1						
153630	1003			0.0						
100200	1003	065	01	0.0						
091100	1003	066	01	0.0						
085000	1003	067	01	0.0						
091400	1002			-0.1						
095600	1003			0.0						
100000	1002			-0.1						
102200	1003			0.0						

FROM TIME	TFA CORR.	DAY	VEL. TBL.	TFA CORR. INITIAL	IS THE ALGEBRAIC SCALE-PHASE	SUM OF THESE COLUMNS INST/DRAFT	STYLUS/F. ARC	S./SQUAT	COMMENTS
095430	1002	060	01	0.0	0.0	+0.2	0.0	0.0	
130430	1003			+0.1					
152700	1002			0.0					
132500	1002	064	01	0.0					
101145	1002	065	01	0.0					
124545	1001			-0.1					
134530	1002			0.0					
104830	1002	066	01	0.0					
083700	1002	067	01	0.0					
084630	1001			-0.1					
085530	1002	068	02	0.0					
094152	1001			-0.1					
095300	1002			0.0					
100730	1001			-0.1					
104700	1002			0.0					
151600	1002	071	02	0.0					

HYDROGRAPHIC CONTROL DATA

Sheet: H-9345
MA-10-3-72 (1973)

Station No.	G.P.	Seconds In Meters (d.m. & d.p.)	Located By:	
			Photo	Ground Survey
002	47°25'07".535N 123°06'00".286W	232.7 6.0	X	
004	47°24'11".407 N. 123°06'34".044 W.	352.3 713.8		R.M. 1, SHED 2, 1934
006	47°23'27".794 N. 123°07'04".093 W.	858.4 85.8		Signal 232 from 1972 surv.
008	47°23'01".690 N. 123°06'49".733 W.	52.2 1043.2	X	
010	47°22'24".382 N. 123°06'16".775 W. 123°06'17".216 W.	753.0 351.9		Rocky 1882-1971 ROCKY 2 1934
012	47°22'24".281 N. 123°05'28".124 W.	749.9 590.0	X	
013	47°22'21".345 N. 123°04'11".762 W.	659.2 246.8	X	
014	47°22'07".300 N. 123°03'11".660 W.	225.4 244.6	X	
016	47°21'33".320 N. 123°02'22".490 W.	1029.0 472.0	X	
101	47°26'03".514 N. 123°07'07".648 W.	108.5 160.3		MILLER 2, 1934
103	47°25'01".083 N. 123°07'48".780 W.	33.4 1022.5		WINDFALL 2, 1934
105	47°24'10".773 N. 123°08'21".212 W.	332.7 444.8	K	
107	47°23'36".894 N. 123°08'36".151 W.	1139.4 758.1	X	
109	47°22'32".102 N. 123°08'51".593 W.	991.4 1082.4		Sextant fix

Approval Sheet for

H-9345 (MA-10-3-72)

Field work on this survey was accomplished under my general supervision. Frequent inspection of the field data and boatsheet were made by me as the survey progressed. The sounding records have been inspected and are approved. This survey is complete and adequate and is hereby approved.

A handwritten signature in cursive script that reads "George M. Poor". The signature is written in dark ink and is positioned above the printed name and title.

George M. Poor
CDR, NOAA
Commanding Officer
NOAA Ship McARTHUR CSS-30

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey FIELD EDIT REPORT

Field No. Office No.

LOCALITY

State WASHINGTON

General locality N.W. WASHINGTON

Locality HOOD CANAL (OPR-412)

.....
19.73
.....

CHIEF OF PARTY
CDR George M. Poor, Commanding
NOAA Ship McARTHUR

LIBRARY & ARCHIVES

DATE March 1973

Field Edit Report

Hood Canal, Washington

March 1973

Map Manuscripts TP-00370, TP-00372,
TP-00373, and TP-00374

Project OPR-412-MA-73

Field Edit Report

Hood Canal, Washington

Manuscripts TP-00370, TP-00372, TP-00373,
and TP-00374

This report covers the southernmost area of Hood Canal, bound by longitude 123°-05' on the west, and bound by land to the north, east, and south.

The entire shoreline was inspected in accordance with project instructions OPR-412-MA-73 dated 23 February 1973, and covered the southern portion of hydrographic survey H-9345, and all of the area of hydrographic survey H-9372. It junctions with field edit completed to the west in 1972.

Generally, the shoreline has numerous summer homes, cabins, and permanent residences; numerous piers, floats, swim floats, and mooring buoys exist. A skiff was used to conduct the field edit. Three-point fixes, utilizing hydrographic signals, were taken to position shoreline features.

Since only the discrepancy prints of the manuscripts were available at the time of shoreline inspection, all rough field notes were made on the discrepancy prints. All notes pertinent to field edit were later transferred to a paper ozalid, and indexed to field photos 71-E(C)-4152, 4154, 4155, 4157, 4159, 4162, 4174, 4176, 4178, 4180, and 4182 in violet ink. A commentary on the editing of individual manuscripts follows:

TP-00372

The shoreline has numerous private floats, and piers; many are anchored without piling, and are subject to minor location change. There are no houses or landmarks of charting value. The mean high water line is as shown, with numerous bulkheads along shore.

TP-00373

The shoreline has numerous private floats and piers; many are anchored without piling and are subject to minor location change. The mean high water line is as shown, with numerous bulkheads along shore. Special attention is drawn to the cable crossing 1000' wide, as described on the TP sheet, which runs northwest from Shady Beach. Twanoh State Park has a public pier and float, and boat ramp located at 47°-22.7'N, 122°-58.2'W. Also, there is a prominent bluff located at 47°-23.9' 122°-57.9' which is of landmark value.

TP-00374

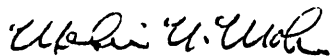
The shoreline has numerous private floats and piers; many are anchored without piling and are subject to minor location change. The MHWL has been revised slightly at 47°-24.9'N, 122°54.2'W and at 47°-24.5'N, 122°-53.0'; otherwise the mean high water line is as shown, with numerous bulkheads along shore. There are no houses or landmarks of charting value.

TP-00370

The shoreline is primarily tide flats which are impossible to inspect except at extremely high tide. After three attempts, sextant fixes were obtained at points "A" and "B" in the upper reaches of Lynch Cove, with heights above tide level noted to assist in stereoscopic viewing of the MHWL. Highway 300 ends at the west end of Belfair State Park as shown. The Port of Allyn Public Dock is as detailed on the TP sheet. Its two privately maintained white lights exist as presently described. Also there is a public boat ramp approximately 0.2 n.m. to the south of the dock. The lone silver colored silo (signal #036) as described in the general notes, does not show prominently to the area of more navigable waters, and therefore is not considered to be of landmark value. There are no other houses or landmarks in the area.

The heights and leadline soundings were recorded with proper notation as to time and date. All times were recorded as PST (120°W). A list of hydrographic signals with G.P.'s is attached to this report. There are no fixed aids to navigation, other than the two privately maintained white lights as previously described. All features of landmark value were investigated, and all questions on the discrepancy sheets were resolved.

Submitted by:

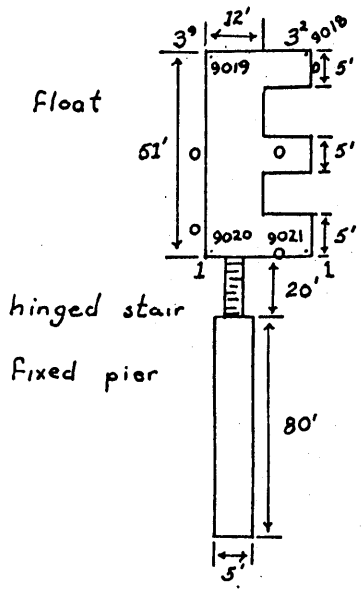


Melvin N. Maki
LT, NOAA

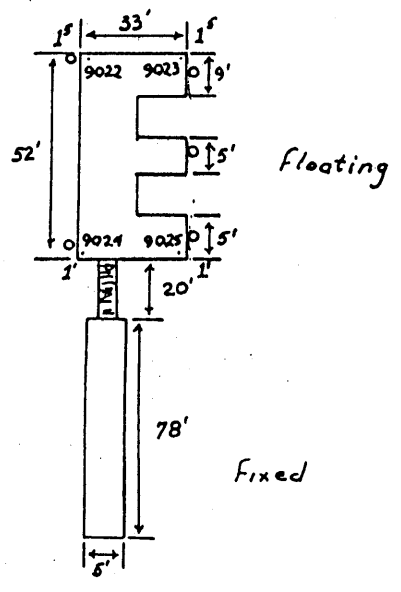
Approved and forwarded:



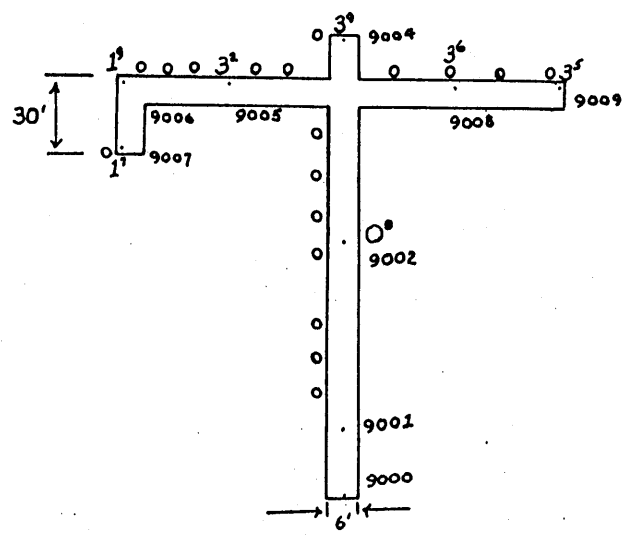
George M. Poor
CDR, NOAA
Commanding



PRESURVEY ITEM #10



PRESURVEY ITEM #10

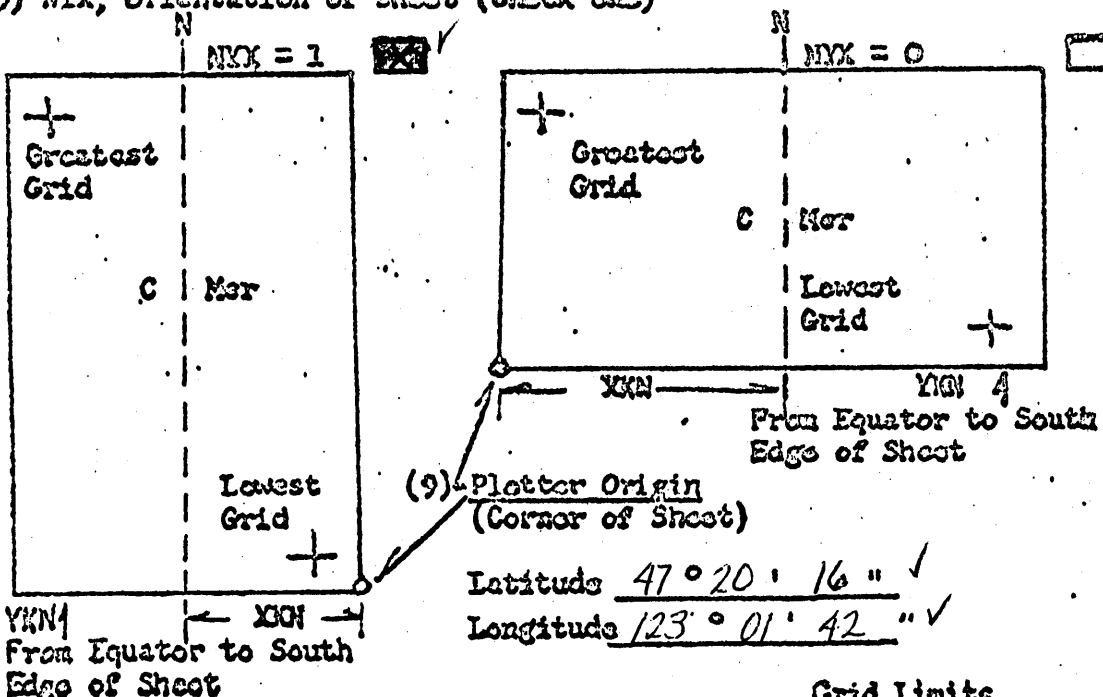


PRESURVEY ITEM #14
ALDERBROOK PIER

FORM # 2
PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

MA-CRIP-15 1972 ON PAUL
418 NEW 6110
NEW GRID COORDINATE FOR
H-9345

- (1) Project No. OPR-412-MA-73
- (2) H No. H-9345
- (3) Field No. MA-10-3-72
- (4) Requested ~~for~~ Hydro Signal Overlay
- (5) Ship or Office NOAA SHIP McARTHUR
- (6) Date Required 20 APRIL 1973
- (7) Visual Ft.(0) or Fathoms (1) (8) Electronic (fill out form 65)
- (10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). (Origin) 5416.486 Meters
- (11) YKN (SP 261) Distance from Equator to South Edge of Sheet. (Origin) 5,244,580.399 Meters
- (12) Central Meridian 123° 06' 00"
- (13) Survey Scale 1:10,000
- (14) Size of Sheet (Check one) 36x60 42x60
- (15) NYX, Orientation of sheet (Check one)



Handwritten calculations:
123-06
123-01-42
04-18
258
20.994
258

Grid Limits	
(16) Greatest Latitude	<u>47° 28' 00"</u> (Projection Line Interval Page 4 Hydro Manual)
(17) Lowest Latitude	<u>47° 20' 30"</u>
(18) Difference	<u>7' 30"</u>
(19)	<u>0' 30"</u>
(20)	<u>15 XKN</u>
(21) Greatest Longitude	<u>123° 10' 00"</u>
(22) Lowest Longitude	<u>123° 02' 00"</u>
(23) Difference	<u>08' 00"</u>
(24)	<u>0' 30"</u>
(25)	<u>16 XKN</u>

Handwritten note: W.M.M.

49345

Field No. 4-30-73
Date

PARAMETER CARD II

PARAMETER CARD II

Central Meridian of Projection	6.378,206.4	meters	YRN	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
Plotter Scale/Survey Scale	1:20,000	feet	YRN	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
North/South axis of sheet - to correspond to (Y axis - 0)	0 - feet	feet	YRN	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
Foot/Fathom indicator	1 - fathom	fathoms	YRN	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
Identification No.			YRN	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40

FOR - 1

PARAMETER CARD III

West Lat. Intersection	4 7 2 0 3 0	YST	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
Lowest Long. Intersection	1 2 3 0 2 0 0	YSL	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
Difference between Grid		DYX	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
Interval (Long)		XSN	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40
Interval (Lat)		YSN	1 2 3 4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36 37 38 39 40

Computed _____
Punched _____
Checked _____
Date _____

S I G N A L P L O T T E R C A R D S

H-NO.		LATITUDE	LONGITUDE	X	Y	
09345	021	72 47270609	123042444	03585	13297	021
09345	023	72 47255939	123052429	04901	11134	023
09345	024	72 47264472	123064701	06721	12604	024
09345	025	72 47250266	123060224	05736	09294	025
09345	026	72 47260353	123070764	07175	11269	026
09345	027	72 47241140	123063405	06436	07632	027
09345	028	72 47250107	123074880	08081	09243	028
09345	029	72 47233092	123070353	07085	06320	029
09345	030	72 47241107	123082113	08793	07623	030
09345	031	72 47222418	123061722	06066	04156	031
09345	032	72 47223225	123085162	09466	04419	032
09345	033	72 47215152	123025886	01696	03098	033
09345	034	72 47210644	123092425	10187	01637	034
09345	036	72 47203164	123075445	08209	00508	036
09345	038	72 47205029	123062801	06304	01112	038
09345	040	72 47212584	123061387	05992	02265	040
09345	208	72 47280343	123054541	05366	15156	208
09345	210	72 47274248	123061623	06043	14476	210
09345	212	72 47271557	123063504	06457	13604	212
09345	226	72 472644569	123044792	04101	12635	226
09345	228	72 47255816	123052605	04940	11094	228
09345	230	72 47250376	123060177	05726	09330	230
09345	232	72 47232775	123070405	07097	06218	232
09345	214	72 47250149	123074875	08080	09257	214
09345	216	72 47241069	123082132	08798	07611	216
09345	218	72 47223183	123085162	09467	04405	218

1972
05

09345	240	72	47212736	123061191	05949	02314	240
09345	019	72	47281499	123032865	02359	15532	019
09345	002	73	47250754	123060029	05693	09453	002
09345	004	73	47241140	123063405	06436	07632	004
09345	006	73	47232778	123070410	07098	06219	006
09345	008	73	47230168	123064972	06781	05372	008
09345	010	73	47222418	123061722	06066	04156	010
09345	012	73	47222429	123052812	04984	04159	012
09345	013	73	47222134	123041177	03303	04064	013
09345	014	73	47220730	123031166	01978	03610	014
09345	016	73	47213332	123022249	00894	02509	016
09345	101	73	47260350	123070764	07174	11267	101
09345	103	73	47250107	123074875	08080	09243	103
09345	105	73	47241078	123082122	08795	07614	105
09345	107	73	47233688	123083614	09124	06514	107
09345	109	73	47223209	123085158	09465	04413	109
09345	111	73	47210644	123092425	10187	01637	111
09345	113	73	47203164	123075445	08209	00507	113
09345	115	73	47205029	123062801	06304	01112	115
09345	117	73	47212736	123061191	05949	02314	117
09345	119	73	47212095	123044975	04139	02106	119
09345	121	73	47205919	123032146	02193	01402	121
09345	123	73	47210021	123023164	01095	01435	123

000000

1972

0

1972 Fall on 9345
 Signal 9320 Computer
 Used to

09320	017	72	47292118	123021065	00646	17679	017
09320	018	72	47302675	123031142	01983	19804	018
09320	020	72	47293601	123040602	03182	18158	020
09320	022	72	47282296	123051691	04739	15789	022
09320	204	72	47293021	123041180	03309	17970	204
09320	222	72	47300402	123014988	00191	19068	222
09345	206	72	47290285	123043998	03928	17083	206
000000							

MCARTHUR
MA-10-3-72
H-9345
TIME MERIDIAN -- 120
TIDE STATION -- UNION BAY, HOOD CANAL
YEAR -- 1972
CORRECTIONS IN FATHOMS
MLLW CORRECTION -- 03.1 FEET
TIME SHIFT -- PLUS 60 MINUTES
RANGE RATIO -- 01.00

222400 00 1012 0000 129 0 220000 000000
224300 00 1013
230300 00 1014
232200 00 1015
234200 00 1016
000400 00 1017 0000 130 0 000000 000000
003100 00 1018
010800 00 1019
024500 00 1020
031600 00 1019
033900 00 1018
040000 00 1017
042100 00 1016
044100 00 1015
050100 00 1014
052200 00 1013
054200 00 1012
060100 00 1011
061900 00 1010
063700 00 1009
065600 00 1008
071600 00 1007
073900 00 1006
081100 00 1005
091900 00 1004
094800 00 1005
101000 00 1006
103100 00 1007
105000 00 1008
110900 00 1009
112800 00 1010
114800 00 1011
121500 00 1012
125500 00 1013
134200 00 1014
161200 00 1015
164500 00 1014

*Revised file
with points*

171300 00 1013
174000 00 1012
180900 00 1011
184200 00 1010
191700 00 1009
200900 00 1008
205200 00 1007
212900 00 1008
215300 00 1009
221400 00 1010
223500 00 1011
225400 00 1012
231200 00 1013
233000 00 1014
234900 00 1015
001200 00 1016 0000 131 0 000000 000000
004000 00 1017
011100 00 1018
014500 00 1019
031600 00 1020
034900 00 1019
041200 00 1018
043100 00 1017
044800 00 1016
050400 00 1015
052100 00 1014
053600 00 1013
055200 00 1012
060700 00 1011
062200 00 1010
063700 00 1009
065200 00 1008
070700 00 1007
072300 00 1006
074100 00 1005
080000 00 1004
082100 00 1003
085000 00 1002
094800 00 1001
101700 00 1002
103800 00 1003
105500 00 1004
111000 00 1005
112400 00 1006
113800 00 1007
115200 00 1008
120800 00 1009
122500 00 1010
124300 00 1011
130400 00 1012
133300 00 1013

140500 00 1014
143700 00 1015
152400 00 1016
165900 00 1017
173000 00 1016
175500 00 1015
182300 00 1014
185400 00 1013
192200 00 1012
195300 00 1011
204000 00 1010
220000 00 1009
223500 00 1010
230000 00 1011
232000 00 1012
233900 00 1013
235800 00 1014
001600 00 1015 0000 132 0 000000 000000
003600 00 1016
005700 00 1017
012700 00 1018
020700 00 1019
030000 00 1020
040000 00 1020
042600 00 1019
044700 00 1018
050400 00 1017
052000 00 1016
053400 00 1015
054800 00 1014
060100 00 1013
061400 00 1012
062800 00 1011
064100 00 1010
065400 00 1009
070700 00 1008
072000 00 1007
073300 00 1006
074700 00 1005
080100 00 1004
081600 00 1003
083200 00 1002
085000 00 1001
091000 00 1000
093900 00 0001
102100 00 0002
105000 00 0001
110800 00 1000
112300 00 1001
113700 00 1002
115000 00 1003

120200 00 1004
121300 00 1005
122400 00 1006
123500 00 1007
124600 00 1008
125800 00 1009
131300 00 1010
133000 00 1011
134900 00 1012
141000 00 1013
143200 00 1014
145700 00 1015
152400 00 1016
155600 00 1017
164700 00 1018
172100 00 1019
180900 00 1018
183600 00 1017
190000 00 1016
192300 00 1015
194700 00 1014
201600 00 1013
210000 00 1012
231500 00 1011
234500 00 1012
000800 00 1013 0000 133 0 000000 000000
002900 00 1014
004800 00 1015
010700 00 1016
012700 00 1017
014800 00 1018
021400 00 1019
030000 00 1020
035900 00 1021
043700 00 1020
050200 00 1019
052100 00 1018
053800 00 1017
055400 00 1016
060800 00 1015
062200 00 1014
063500 00 1013
064800 00 1012
070100 00 1011
071300 00 1010
072500 00 1009
073600 00 1008
074800 00 1007
080000 00 1006
081100 00 1005
082300 00 1004

083500 00 1003
084800 00 1002
090100 00 1001
091500 00 1000
093000 00 0001
094800 00 0002
101600 00 0003
110200 00 0004
112400 00 0003
114000 00 0002
115400 00 0001
120700 00 1000
121900 00 1001
123100 00 1002
124300 00 1003
125400 00 1004
130500 00 1005
131600 00 1006
132800 00 1007
134000 00 1008
135200 00 1009
140500 00 1010
142100 00 1011
143900 00 1012
145800 00 1013
151700 00 1014
153800 00 1015
160000 00 1016
162100 00 1017
164500 00 1018
171800 00 1019
183500 00 1020
190800 00 1019
193200 00 1018
195500 00 1017
201800 00 1016
204500 00 1015
212300 00 1014
230000 00 1013
084100 00 1019 0000 284 0 080000 000000
091300 00 1018
093800 00 1017
100200 00 1016
103100 00 1015
110300 00 1014
114900 00 1013
124500 00 1012
142300 00 1011
150000 00 1012
152700 00 1013
155200 00 1014

161900 00 1015
164900 00 1016
173200 00 1017
184800 00 1018
193300 00 1017
200200 00 1016
202600 00 1015
204600 00 1014
210500 00 1013
212200 00 1012
213800 00 1011
215300 00 1010
220800 00 1009
222300 00 1008
223800 00 1007
225300 00 1006
230900 00 1005
232500 00 1004
234200 00 1003
000200 00 1002 0000 285 0 000000 000000
002900 00 1001
015600 00 1000
021900 00 1001
023600 00 1002
025200 00 1003
030700 00 1004
032300 00 1005
033900 00 1006
035500 00 1007
041200 00 1008
043000 00 1009
045000 00 1010
050900 00 1011
052900 00 1012
054900 00 1013
060900 00 1014
063000 00 1015
065200 00 1016
071800 00 1017
075400 00 1018
084700 00 1019
092900 00 1018
095900 00 1017
103400 00 1016
111200 00 1015
120000 00 1014
130000 00 1013
140000 00 1012
143200 00 1011
152800 00 1012
160000 00 1013

162800	00	1014					
165700	00	1015					
173000	00	1016					
193300	00	1017					
201000	00	1016					
204100	00	1015					
210600	00	1014					
212700	00	1013					
214700	00	1012					
220500	00	1011					
222300	00	1010					
224000	00	1009					
225600	00	1008					
231100	00	1007					
232600	00	1006					
234100	00	1005					
235600	00	1004					
001300	00	1003	0000	286	0	000000	000000
003100	00	1002					
005400	00	1001					
021500	00	1000					
024200	00	1001					
030400	00	1002					
032300	00	1003					
034200	00	1004					
040000	00	1005					
041600	00	1006					
043300	00	1007					
045100	00	1008					
051000	00	1009					
053100	00	1010					
055300	00	1011					
061300	00	1012					
063300	00	1013					
065300	00	1014					
071300	00	1015					
073400	00	1016					
080000	00	1017					
101100	00	1018					
104400	00	1017					
112200	00	1016					
122000	00	1015					
133300	00	1014					
144100	00	1013					
161300	00	1012					
165600	00	1013					
172600	00	1014					
175600	00	1015					
185900	00	1016					
191300	00	1017					
203300	00	1016					

210800 00 1015
213500 00 1014
220000 00 1013
222500 00 1012
224900 00 1011
230900 00 1010
232600 00 1009
234300 00 1008
235900 00 1007
001600 00 1006 0000 287 0 000000 000000
003400 00 1005
005200 00 1004
011100 00 1003
013300 00 1002
020600 00 1001
025300 00 1000
033400 00 1001
040000 00 1002
042000 00 1003
043900 00 1004
045800 00 1005
051800 00 1006
053900 00 1007
060000 00 1008
062000 00 1009
064000 00 1010
065900 00 1011
071900 00 1012
073900 00 1013
080000 00 1014
082000 00 1015
084300 00 1016
091600 00 1017
104800 00 1018
113700 00 1017
123000 00 1016
140000 00 1015
151900 00 1014
172800 00 1013
181600 00 1014
190000 00 1015
201100 00 1016
211300 00 1015
215300 00 1014
222600 00 1013
225400 00 1012
231400 00 1011
233400 00 1010
002600 00 1009 0000 288 0 000000 000000
005000 00 1010
011800 00 1011 0000 290 0 000000 000000

014800	00	1010					
021300	00	1009					
023800	00	1008					
030200	00	1007					
032700	00	1006					
035400	00	1005					
042500	00	1004					
061800	00	1003					
065100	00	1004					
071700	00	1005					
074100	00	1006					
080400	00	1007					
082900	00	1008					
085200	00	1009					
091600	00	1010					
093800	00	1011					
100000	00	1012					
101900	00	1013					
103900	00	1014					
110000	00	1015					
112400	00	1016					
115600	00	1017					
141600	00	1018					
150000	00	1017					
155000	00	1016					
163800	00	1015					
171700	00	1014					
175200	00	1013					
183300	00	1012					
210700	00	1011					
214700	00	1012					
004400	00	1013	0000	291	0	000000	000000
020400	00	1012					
024600	00	1011					
031800	00	1010					
034700	00	1009					
041000	00	1008					
043200	00	1007					
045500	00	1006					
052100	00	1005					
060000	00	1004					
071000	00	1003					
074500	00	1004					
081400	00	1005					
084000	00	1006					
090400	00	1007					
092600	00	1008					
094700	00	1009					
100800	00	1010					
103100	00	1011					
105300	00	1012					

111300	00	1013					
113300	00	1014					
115300	00	1015					
121600	00	1016					
124200	00	1017					
133900	00	1018					
140000	00	1019					
150000	00	1018					
153200	00	1017					
160300	00	1016					
164100	00	1015					
171600	00	1014					
174700	00	1013					
181600	00	1012					
184400	00	1011					
191700	00	1010					
200900	00	1009					
205000	00	1008					
213500	00	1009					
220600	00	1010					
224000	00	1011					
233400	00	1012					
004100	00	1013	0000	292	0	000000	000000
015000	00	1014	0000	293	0	000000	000000
033400	00	1015					
041400	00	1014					
043800	00	1013					
050000	00	1012					
052400	00	1011					
054800	00	1010					
061000	00	1009					
063200	00	1008					
065500	00	1007					
072000	00	1006					
075100	00	1005					
091700	00	1004					
094600	00	1005					
100700	00	1006					
102600	00	1007					
104300	00	1008					
110000	00	1009					
111600	00	1010					
113300	00	1011					
115100	00	1012					
120900	00	1013					
123000	00	1014					
125200	00	1015					
131600	00	1016					
134100	00	1017					
141500	00	1018					
155900	00	1019					

162400 00 1018
164300 00 1017
170100 00 1016
172000 00 1015
173800 00 1014
175600 00 1013
181400 00 1012
183300 00 1011
185200 00 1010
191100 00 1009
193000 00 1008
195100 00 1007
201300 00 1006
204100 00 1005
222000 00 1004
224700 00 1005
230700 00 1006
232300 00 1007
233900 00 1008
235500 00 1009
001200 00 1010 0000 294 0 000000 000000
003200 00 1011
005300 00 1012
011800 00 1013
014900 00 1014
022700 00 1015
033300 00 1016
040000 00 1017
044000 00 1016
050700 00 1015
053000 00 1014
055100 00 1013
061300 00 1012
063600 00 1011
070000 00 1010
072300 00 1009
074900 00 1008
081800 00 1007
090000 00 1006
100800 00 1005
103700 00 1006
105800 00 1007
111400 00 1008
112900 00 1009
114400 00 1010
120000 00 1011
122900 00 1012
125700 00 1013
131200 00 1014
132400 00 1015
133700 00 1016

135100 00 1017
141000 00 1018
150000 00 1019
155900 00 1020
163200 00 1019
165500 00 1018
171600 00 1017
173400 00 1016
175100 00 1015
180700 00 1014
182200 00 1013
183600 00 1012
185000 00 1011
190400 00 1010
191800 00 1009
193300 00 1008
194800 00 1007
200400 00 1006
202100 00 1005
203900 00 1004
210000 00 1003
213000 00 1002
223000 00 1001
230000 00 1002
231000 00 1003
232200 00 1004
233500 00 1005
000500 00 1006 0000 295 0 000000 000000
001100 00 1005
001600 00 1004
002200 00 1003
002700 00 1002
003200 00 1001
003700 00 1000
004300 00 0001
004900 00 0002
005500 00 0003
011600 00 0004 0000 298 0 000000 000000
012800 00 0003
013800 00 0002
014600 00 0001
015400 00 1000
020200 00 1001
021200 00 1002
022300 00 1003
023400 00 1004
024500 00 1005
025600 00 1006
030800 00 1007
032200 00 1008
033600 00 1009

035000 00 1010
040600 00 1011
042100 00 1012
043700 00 1013
045400 00 1014
051100 00 1015
052900 00 1016
054900 00 1017
061200 00 1018
065200 00 1019
073600 00 1020
081200 00 1019
083200 00 1018
085100 00 1017
090900 00 1016
092900 00 1015
095000 00 1014
101900 00 1013
110400 00 1012
121200 00 1011
130000 00 1010
135600 00 1011
142500 00 1012
144900 00 1013
150800 00 1014
152700 00 1015
154400 00 1016
160400 00 1017
163000 00 1018
171300 00 1019
180000 00 1020
184200 00 1019
190600 00 1018
192500 00 1017
194100 00 1016
195700 00 1015
201100 00 1014
202500 00 1013
203800 00 1012
205100 00 1011
210300 00 1010
211500 00 1009
212700 00 1008
213800 00 1007
214900 00 1006
220100 00 1005
221200 00 1004
222300 00 1003
223500 00 1002
224600 00 1001
225800 00 1000

231100 00 0001
232400 00 0002
233800 00 0003
235400 00 0004
001500 00 0005 0000 299 0 000000 000000
012200 00 0006
014000 00 0005
015400 00 0004
020700 00 0003
021900 00 0002
023000 00 0001
024100 00 1000
025100 00 1001
030200 00 1002
031300 00 1003
032400 00 1004
033500 00 1005
034600 00 1006
035800 00 1007
041200 00 1008
042700 00 1009
044200 00 1010
045800 00 1011
051300 00 1012
052800 00 1013
054400 00 1014
060000 00 1015
061500 00 1016
063100 00 1017
064900 00 1018
071200 00 1019
075100 00 1020
082500 00 1021
090800 00 1020
093300 00 1019
095500 00 1018
101700 00 1017
104100 00 1016
111100 00 1015
120600 00 1014
134000 00 1013
140000 00 1012
150000 00 1013
152800 00 1014
155300 00 1015
161400 00 1016
163600 00 1017
170000 00 1018
173300 00 1019
191100 00 1020
193900 00 1019

200000 00 1018
201600 00 1017
203100 00 1016
204600 00 1015
210200 00 1014
212500 00 1013
214500 00 1012
220100 00 1011
221000 00 1010
222000 00 1009
222900 00 1008
223700 00 1007
224600 00 1006
225500 00 1005

000000

MCARTHUR
MA-10-3-72
H-9345
TIME MERIDIAN -- 120
TIDE STATION -- UNION
YEAR -- 1973
MLLW CORRECTION -- 02.7 FEET
TIME SHIFT -- ZERO
RANGE RATIO -- 01.00

104500 00 1015 0000 059 0 090000 000000
115900 00 1016
125900 00 1017
134500 00 1016
142300 00 1015
150000 00 1014
153100 00 1013
160000 00 1012
162300 00 1011
164500 00 1010
170500 00 1009
172400 00 1008
174300 00 1007
180100 00 1006
182000 00 1005
184100 00 1004
191100 00 1003
202400 00 1002
205700 00 1003
211900 00 1004
213900 00 1005
215800 00 1006
220000 00 1007
051700 00 1019 0000 060 0 050000 000000
055200 00 1018
063800 00 1017
073300 00 1016
081900 00 1015
090000 00 1014
102700 00 1013
110500 00 1014
113500 00 1015
120900 00 1016
140700 00 1017
150400 00 1016
154600 00 1015
161600 00 1014
164000 00 1013

*Revised - file with
points*

170200 00 1012
172100 00 1011
173900 00 1010
175600 00 1009
181200 00 1008
182800 00 1007
184300 00 1006
190000 00 1005
191700 00 1004
193700 00 1003
200400 00 1002
210800 00 1001
213600 00 1002
215800 00 1003
220000 00 1004
044400 00 1020 0000 061 0 040000 000000
051300 00 1019
053800 00 1018
060200 00 1017
063100 00 1016
070400 00 1015
075000 00 1014
083000 00 1013
091600 00 1012
104500 00 1011
112100 00 1012
114700 00 1013
121300 00 1014
124000 00 1015
131600 00 1016
151900 00 1017
160300 00 1016
163400 00 1015
170000 00 1014
080800 00 1014 0000 064 0 080000 000000
082500 00 1013
084300 00 1012
090100 00 1011
092200 00 1010
094600 00 1009
101400 00 1008
110000 00 1007
112200 00 1006
121300 00 1007
123900 00 1008
130000 00 1009
131500 00 1010
132900 00 1011
134300 00 1012
135800 00 1013
141600 00 1014

143600	00	1015							
150000	00	1016							
153300	00	1017							
161900	00	1018							
175900	00	1019							
182800	00	1018							
185000	00	1017							
190800	00	1016							
192500	00	1015							
194100	00	1014							
195600	00	1013							
201200	00	1012							
202800	00	1011							
204400	00	1010							
210000	00	1009							
060000	00	1022	0000	065	0	060000	000000		
063400	00	1021							
065600	00	1020							
071300	00	1019							
073000	00	1018							
074500	00	1017							
080000	00	1016							
081400	00	1015							
082900	00	1014							
084400	00	1013							
090000	00	1012							
091600	00	1011							
093200	00	1010							
095000	00	1009							
100900	00	1008							
102900	00	1007							
105400	00	1006							
123600	00	1005							
130000	00	1006							
131600	00	1007							
133100	00	1008							
134500	00	1009							
140000	00	1010							
141400	00	1011							
143000	00	1012							
144600	00	1013							
150300	00	1014							
152500	00	1015							
155000	00	1016							
162900	00	1017							
173800	00	1018							
182000	00	1019							
190800	00	1018							
193200	00	1017							
195200	00	1016							
201000	00	1015							

202800 00 1014
204400 00 1013
210000 00 1012
065900 00 1021 0000 066 0 050000 000000
072000 00 1020
073700 00 1019
075200 00 1018
080700 00 1017
082100 00 1016
083400 00 1015
084700 00 1014
090100 00 1013
091500 00 1012
092900 00 1011
094400 00 1010
100000 00 1009
101600 00 1008
103300 00 1007
105200 00 1006
111200 00 1005
113600 00 1004
131100 00 1003
133300 00 1004
135100 00 1005
140700 00 1006
142200 00 1007
143600 00 1008
145100 00 1009
150600 00 1010
152200 00 1011
153900 00 1012
155800 00 1013
161900 00 1014
164300 00 1015
171000 00 1016
174000 00 1017
183200 00 1018
191400 00 1019
200200 00 1018
202800 00 1017
204900 00 1016
210000 00 1015
043600 00 1018 0000 067 0 040000 000000
050600 00 1019
055300 00 1020
071300 00 1021
074100 00 1020
080100 00 1019
081800 00 1018
083200 00 1017
084600 00 1016

090000	00	1015			
091300	00	1014			
092600	00	1013			
094000	00	1012			
095300	00	1011			
100600	00	1010			
101900	00	1009			
103200	00	1008			
104600	00	1007			
110100	00	1006			
111800	00	1005			
113700	00	1004			
120000	00	1003			
122300	00	1002			
141300	00	1002			
143000	00	1003			
144500	00	1004			
150000	00	1005			
151300	00	1006			
152600	00	1007			
153900	00	1008			
155200	00	1009			
160800	00	1010			
162700	00	1011			
164800	00	1012			
171000	00	1013			
173200	00	1014			
175700	00	1015			
182800	00	1016			
190800	00	1017			
210000	00	1017			
043400	00	1017	0000	068	0 040000 000000
050000	00	1018			
053300	00	1019			
061800	00	1020			
074500	00	1021			
081500	00	1020			
083600	00	1019			
085300	00	1018			
090800	00	1017			
092200	00	1016			
093500	00	1015			
094800	00	1014			
100100	00	1013			
101400	00	1012			
102700	00	1011			
104000	00	1010			
105400	00	1009			
110800	00	1008			
112200	00	1007			
113700	00	1006			

115300 00 1005
120900 00 1004
122700 00 1003
124700 00 1002
131500 00 1001
142300 00 1000
144900 00 1001
150900 00 1002
152500 00 1003
154100 00 1004
155500 00 1005
160900 00 1006
162300 00 1007
163700 00 1008
165200 00 1009
170000 00 1010
104100 00 1017 0000 071 0 100000 000000
111300 00 1016
113800 00 1015
120000 00 1014
122100 00 1013
124100 00 1012
130000 00 1011
131700 00 1010
133400 00 1009
135100 00 1008
140800 00 1007
142500 00 1006
144200 00 1005
150000 00 1004
151700 00 1003
153700 00 1002
160500 00 1001
165900 00 1000
174300 00 1001
180800 00 1002
182700 00 1003
184500 00 1004
190300 00 1005
192300 00 1006
194300 00 1007
200300 00 1008
202200 00 1009
204100 00 1010
210000 00 1011
040700 00 1016 0000 072 0 040000 000000
052100 00 1015
070000 00 1014
082100 00 1014
090900 00 1015
112900 00 1016

121100	00	1015			
124500	00	1014			
131300	00	1013			
133800	00	1012			
140000	00	1011			
141800	00	1010			
143500	00	1009			
145100	00	1008			
150800	00	1007			
152400	00	1006			
154000	00	1005			
155600	00	1004			
161300	00	1003			
163000	00	1002			
165000	00	1001			
171900	00	1000			
183900	00	0001			
190900	00	1000			
193000	00	1001			
194900	00	1002			
200700	00	1003			
202500	00	1004			
204200	00	1005			
210000	00	1006			
040400	00	1016	0000	073	0 040000 000000
050000	00	1015			
054200	00	1014			
063300	00	1013			
075900	00	1012			
080000	00	1011			
091600	00	1012			
095000	00	1013			
102200	00	1014			
110000	00	1015			
123400	00	1016			
132700	00	1015			
140300	00	1014			
143100	00	1013			
145500	00	1012			
151600	00	1011			
153500	00	1010			
155300	00	1009			
161000	00	1008			
162600	00	1007			
164300	00	1006			
170000	00	1005			
171500	00	1004			
173200	00	1003			
175000	00	1002			
181100	00	1001			
184200	00	1000			

190000 00 0001
040000 00 1018 0000 074 0 040000 000000
042500 00 1017
045000 00 1016
051800 00 1015
055200 00 1014
063600 00 1013
071800 00 1012
080000 00 1011
094200 00 1010
101300 00 1011
103600 00 1012
110000 00 1013
112700 00 1014
120000 00 1015
143100 00 1016
150800 00 1015
153400 00 1014
155500 00 1013
161500 00 1012
163400 00 1011
165100 00 1010
170700 00 1009
172300 00 1008
173800 00 1007
175300 00 1006
180900 00 1005
182500 00 1004
184200 00 1003
190200 00 1002
192600 00 1001
205900 00 1000
210000 00 1001
040900 00 1020 0000 075 0 040000 000000
043400 00 1019
045500 00 1018
051700 00 1017
053800 00 1016
060000 00 1015
062300 00 1014
064900 00 1013
071800 00 1012
075200 00 1011
082700 00 1010
101500 00 1009
103900 00 1010
110000 00 1011
111800 00 1012
113600 00 1013
115400 00 1014
121400 00 1015

123700 00 1016
130800 00 1017
152000 00 1018
160000 00 1017
080400 00 1014 0000 079 0 080000 000000
081800 00 1013
083200 00 1012
084600 00 1011
090000 00 1010
091400 00 1009
092900 00 1008
094400 00 1007
100100 00 1006
102000 00 1005
104400 00 1004
122600 00 1003
125000 00 1004
130800 00 1005
132300 00 1006
133700 00 1007
135100 00 1008
140600 00 1009
142100 00 1010
143700 00 1011
145400 00 1012
151200 00 1013
153200 00 1014
155300 00 1015
161800 00 1016
164900 00 1017
172500 00 1018
190300 00 1019
193000 00 1018
195100 00 1017
200000 00 1016
091100 00 1011 0000 080 0 090000 000000
092500 00 1010
093900 00 1009
095300 00 1008
100900 00 1007
102600 00 1006
104500 00 1005
110600 00 1004
113100 00 1003
125900 00 1002
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144300 00 1008

145800 00 1009
151400 00 1010
153100 00 1011
154800 00 1012
160800 00 1013
163100 00 1014
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123600 00 1008
130000 00 1007
132100 00 1006
134300 00 1005
140700 00 1004
143900 00 1003
164100 00 1002
171100 00 1003
173600 00 1004
180000 00 1005
182400 00 1006
184800 00 1007

000000

VELOCITY CORRECTION TABLE OPR-412 1972 SEASON ONLY
SURVEYS H-9320 AND H-9345

000020	0	0000	0003	000	000000	000000
000120	0	0001				
000220	0	0002				
000320	0	0003				
000420	0	0004				
000470	0	0005				
000570	0	0006				
000620	0	0007				
000720	0	0008				
000770	0	0009				
000820	0	0010				
000920	0	0011				
000970	0	0012				

TRA (TG/TI) PRINTOUT
MA-10-3-72
FATHOMETER SN 915
CSS-30
CORRECTIONS IN FATHOMS

30329972

104330 0 1002 0003 299 000000 000000

TRA(TC/TE) PRINTOUT
MA-10-3-72
FATHOMETER S/N 935
AR-2
CORRECTIONS IN FATHOMS

1972

30328672

102100	0	0002	0003	286	000000	000000
120900	0	0001				
121900	0	0002				
094300	0	0002	0003	287	000000	000000
112400	0	0001				
114115	0	0000				
115100	0	0001				
122030	0	0000				
122930	0	0001				
123415	0	0002				
163530	0	0002	0003	291	000000	000000
142630	0	0002	0003	298	000000	000000
163100	0	0001				
163300	0	0002				
103500	0	0002	0003	299	000000	000000

DATA IDENTIFICATION=====

O R 412-MA-73 YR 1973 TIME MERIDIAN 120W

REGISTRY NO(S) *H-9345*

FIELD NO(S) *MA-10-3-72(C&D)* TAPE # *VC -1*

TYPE OF DATA *VELOCITY CORRECTION*

OUNDING VESSEL _____

JULIAN DAY _____ FROM POS# _____ TO POS# _____

REMARKS:

*1973
Only*

000020 0 0000 0001 000 000000 000000
000170 0 0001
000270 0 0002
000370 0 0003
000470 0 0004
000570 0 0005
000670 0 0006 *000700 0 0007*
000020 0 0000 0002 000 000000 000000
000170 0 0001
000270 0 0002
000420 0 0003
000520 0 0004
000620 0 0005
000670 0 0006
000070 0 0000 0003 000 000000 000000
000170 0 0001
000320 0 0002
000420 0 0003
000520 0 0004
000570 0 0005 *000700 0 0006*
000020 0 0000 0004 000 000000 000000
000170 0 0001
000270 0 0002
000370 0 0003
000070 0 0000 0005 000 000000 000000
000170 0 0001
000220 0 0002

DATA IDENTIFICATION=====

ORIG: 412-MA-73 YR: 1973 TIME MERIDIAN 120W

REGISTRY NO(S) H-9345

FIELD NO(S) MA-10-3-72^(cop) TAPE # TRA-1

TYPE OF DATA TRA (TC/TI)

LOADING VESSEL AR-1

JULIAN DAY FROM POS# TO POS#

REMARKS:

303 059 1973

135500 0 0004 0001 059 000000 000000
084400 0 0003 0001 061 000000 000000
123600 0 0003 0001 064 000000 000000
134230 0 0002
135030 0 0003
143600 0 0004
144530 0 0003
145500 0 0004
153630 0 0003
100200 0 0003 0001 065 000000 000000
091100 0 0003 0001 066 000000 000000
085000 0 0003 0001 067 000000 000000
091400 0 0002
095600 0 0003
100000 0 0002
102200 0 0003
143330 0 0002
084300 0 0003 0002 068 000000 000000
141400 0 0003 0002 071 000000 000000
082600 0 0003 0002 072 000000 000000
113100 0 0002
113245 0 0003
084400 0 0003 0002 073 000000 000000
100000 0 0003 0002 074 000000 000000

DATA IDENTIFICATION=====

OR 412-MA-73 YR 1973 TIME MERIDIAN 120W

REGISTRY NO(S) *H-9345*

FIELD NO(S) *MA-10-3-72(C&D)* TAPE # *TRA-2*

TYPE OF DATA *TRA(TC/TI)*

OUNDING VESSEL *AR-2*

JULIAN DAY FROM POS# TO POS#

REMARKS:

3030601973

095430 0 0002 0001 060 000000 000000
130430 0 0003
152700 0 0002
132500 0 0002 0001 064 000000 000000
101145 0 0002 0001 065 000000 000000
124545 0 0001
134530 0 0002
104830 0 0002 0001 066 000000 000000
083700 0 0002 0001 067 000000 000000
084630 0 0001
085530 0 0002 0002 068 000000 000000
094152 0 0001
095300 0 0002
100730 0 0001
104700 0 0002
151600 0 0002 0002 071 000000 000000
154530 0 0001
110930 0 0001 0002 072 000000 000000
131900 0 0002
142200 0 0001
085000 0 0002 0002 074 000000 000000
132700 0 0003
083630 0 0002 0003 075 000000 000000
102645 0 0003
123030 0 0002 0004 085 000000 000000

2/28/75

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Union

Period: Feb. 28 - March 26, 1973

HYDROGRAPHIC SHEET: H-9345

OPR: 412

Locality: Hood Canal, Washington

Plane of reference (mean lower low water): 2.7 ft.

Height of Mean High Water above Plane of Reference is 10.6 ft.

Remarks: Zone direct.

James R. Hubbard

for Chief, Tides Branch

9/23/74

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Union

Period: October 2 - November 14, 1972
May 8 - May 12, 1972 By telecon
HYDROGRAPHIC SHEET: H9345 Green.

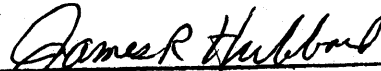
OPR: 412

Locality: Hood Canal, Washington

Plane of reference (mean lower low water): 3.1 ft.

Height of Mean High Water above Plane of Reference is 10.6 ft.

Remarks: Zone direct.

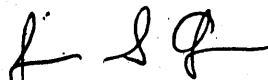


Chief, Tides Branch

APPROVAL SHEET

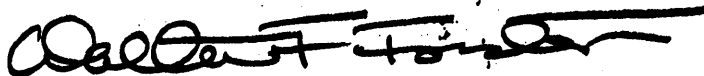
The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the Verifier's Report)

Examined and approved,



James S. Green
Supervisory Cartographic Technician

Approved and forwarded,



Walter F. Forster, Cdr., NOAA
Chief, Processing Division
Pacific Marine Center

Survey No.

H-9345

Name on Survey

	On Chart No	On previous No	On U.S. Coast Map	From local information	On local maps	P.O. Guide or Rand McNally	U.S. Light List		
	A	B	C	D	E	F	G	H	K
ANNAS BAY ✓									1
AYRES POINT ✓									2
DEWATTO ✓									3
DEWATTO BAY ✓									4
DEWATTO RIVER ✓									5
HOOD CANAL ✓									6
HOODS PORT ^{one word} ✓									7
LILLIWAUP ✓									8
LILLIWAUP BAY ✓									9
MILLER CREEK ✓									10
MUSQUETI POINT ✓									11
POTLACH ✓									12
RED BLUFF ✓									13
RENDSLAND CREEK ✓									14
SAND CREEK ✓									15
TAHUYA ✓									16
TAHUYA RIVER ✓									17
THE GREAT BEND ✓									18
UNION ✓									19
SISTERS POINT ✓									20
Skokomish River ✓									21
									22
									23
									24
									25
									26

Approved

Chas. E. Harrington

Staff Geographer

25 June 1975

HYDROGRAPHIC SURVEY STATISTICS
 HYDROGRAPHIC SURVEY NO. H-9345

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET <i>and PNO</i>		1	BOAT SHEETS		4	
DESCRIPTIVE REPORT		1	OVERLAYS		4	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES			1			
CAHIERS	1		1			
VOLUMES	17+2 copies					
BOXES						
T-SHEET PRINTS (List)						
TP-00371, 00372						
SPECIAL REPORTS (List)						

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				3524
POSITIONS CHECKED		3524		
POSITIONS REVISED		77		
DEPTH SOUNDINGS REVISED		267		
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		2		
	TIME (MANHOURS)			
Verification of Control		3		
Verification of Positions		180		
Verification of Soundings		221		
Smooth Sheet Compilation		101		
ALL OTHER WORK		20		
TOTALS		525		
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
VERIFICATION BY <i>Karol M Hoops</i> Karol M. Hoops, Cartographic Technician	12/17/73		5/20/75	
REVIEW BY	BEGINNING DATE		ENDING DATE	

VERIFIER'S REPORT
HYDROGRAPHIC SURVEY, H 9345

INSTRUCTIONS - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

CL - Check List Items: should be checked as having been completed during the verification processes.

R - Report Item: This column refers to those items reported to the reviewer and is used to indicate the items discussed.

Part I - DESCRIPTIVE REPORT	CL	R	Part III - JUNCTIONS (Continued)	CL	R
<p>Note: The verifier should first read the Descriptive Report for general information and problems.</p>			<p>10. Junctions with contemporary surveys were satisfactory except as follows:</p>		
<p>1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken. Remarks Required: -- None</p>	X		<p>Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of Butt junctions and areas which are SUPERSEDED.</p>		X
<p>2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification. Remarks Required: -- None</p>	X		<p>Part IV - VOLUMES 11. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken and exceptions noted in the volumes. Remarks Required: -- None</p>	X	
<p>3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None</p>	X		<p>12. Condition of sounding records was satisfactory except as follows:</p>		
<p>Part II - SHORELINE AND SIGNALS 4. Source of shoreline signals Remarks Required: -- List all surveys a. Give earliest and latest dates of photographs b. Field inspection date c. Field Edit date d. Reviewed-Unreviewed</p>		X	<p>Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following: (a) rocks (b) line turns (c) position values of beginning and ending of lines (d) bar check or velocity correctors (e) time recording (f) notes or markings on fathograms (g) was reduction of soundings accurately done? (h) was scanning accurate? (i) were peaks at uneven intervals missed? (j) were stamps completed? (k) references to adjacent features</p>		X
<p>5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.</p>	X				
<p>6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet. Remarks Required: -- None</p>	X				
<p>7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet. Remarks Required: -- List those signals still unidentified.</p>	X		<p>Part V - PROTRACTING 13. All positions verified instrumentally were check marked in column in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None</p>	N/A	
<p>Part III - JUNCTIONS Note: Make a cursory comparison preliminary to inking soundings in area of overlap. 8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical. Remarks Required: -- None</p>	X		<p>14. The protracting and plotting of all unsatisfactory crossings were verified. Remarks Required: -- None</p>	N/A	
<p>9. The notation in slanted lettering "JOINS H--- (19)" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil. Remarks Required: -- None</p>	X		<p>15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None</p>	X	

Part V - PROTRACTING (Continued)		CL	R	Part VIII - AIDS TO NAVIGATION		CL	R
16. The protracting was satisfactory except as follows: Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments.		N/A		26. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey. Remarks Required: -- Conflicts of any nature listed.		X	
17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number.		N/A		27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification. Remarks Required: -- None		X	
Part VI - SOUNDINGS				Part IX - BOAT SHEET			
18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None		N/A		28. The boat sheet was constantly compared with the smooth sheet with reference to notes, position of sounding lines and supplemental information. Remarks Required: -- None			X
19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments.		X		29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information.		X	
20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None		X		Part X - GENERAL			
21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. Remarks Required: -- None		X		30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2). Remarks Required: -- None		X	
22. The smooth plotting of soundings was satisfactory except as follows: Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning.		N/A		31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None		X	
Part VII - CURVES				32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet. Remarks Required: -- None		X	
23. The depth curves have been inspected before inking. Remarks Required: -- By whom was the penciled curves inspected.			X	33. The bottom characteristics are adequately shown. Remarks Required: -- None		X	
24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following: a. From T-Sheet in dotted black lines b. From soundings in orange c. Approximate position of sketched curve is dashed orange d. Approximate position of shoal area not sounded in black dashed Remarks Required: -- None		X		Part XI - NOTES TO THE REVIEWER			
25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn). Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient.		X		34. Unresolved discrepancies and questionable soundings.			X
				35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.		X	
				36. Supplemental information.			X

Verified by

Karol M Hoops
Karol M. Hoops, Cartographic Technician

Date

5/20/75

VERIFIER'S REPORT

MA-10-3-72

H-9345

This smooth sheet was constructed and plotted at Pacific Marine Center, Seattle, Washington. Information relating to this survey will be noted under the heading by the number and letter as on Verifier's Report, C&GS Form 946A.

PART II SHORELINE AND SIGNALS

4. The following Class I manuscripts were used to transfer shoreline and topographic features.

TP-00368, TP-00369, and TP-00372 (1:10,000)

Date of Photography	May 1971
Date of Field Edit	April-May 1972
Date of Final Compilation	May 1974

TP-00371 (1:10,000)

Date of Photography	May 1971
Date of Field Edit	April-May 1972

PART III JUNCTIONS

10. This survey joins H-9320, 1972 (1:10,000) to the north. Junction curves have been inked. Both sheets are in the final stages of processing.

The depth curves in the junction area to the East, H-9372, 1973 (1:10,000), were left in pencil due to the stage of processing at the time comparison was made.

PART IV VOLUMES

12. Sounding volumes for 1972 detached positions reflect positions on three sheets; H-9319, H-9320 and H-9345. Copies of pages relating to this survey are included with the survey records. The original volumes will be sent with records of H-9320.

PART VII CURVES

23. The penciled depth curves were checked by A.E. Eichelberger, Cartographic Technician, prior to inking.

PART IX BOATSHEET

28. The development of two small boat marinas included in the boatsheet have been transferred directly to the smooth sheet at a scale of 1:2,000. This is

the only record of soundings and positions. No original data was included with field records.

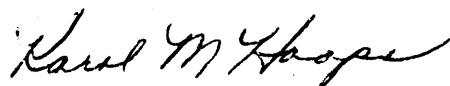
PART XI NOTES TO THE REVIEWER

34. Some detached positions from 1972 field work reflect weak control. Since the manuscripts show the same features, the T-sheet locations were accepted. Elevations of rocks, additional rocks, and islets were added from hydro.

Floats conflicting with lines of hydro in the southeast portion of the survey are not shown on the smooth sheet due to their temporary nature.

36. Pre-survey review items 10 and 14 are shown as sketches on the smooth sheet and are included with this report.

Respectfully submitted,



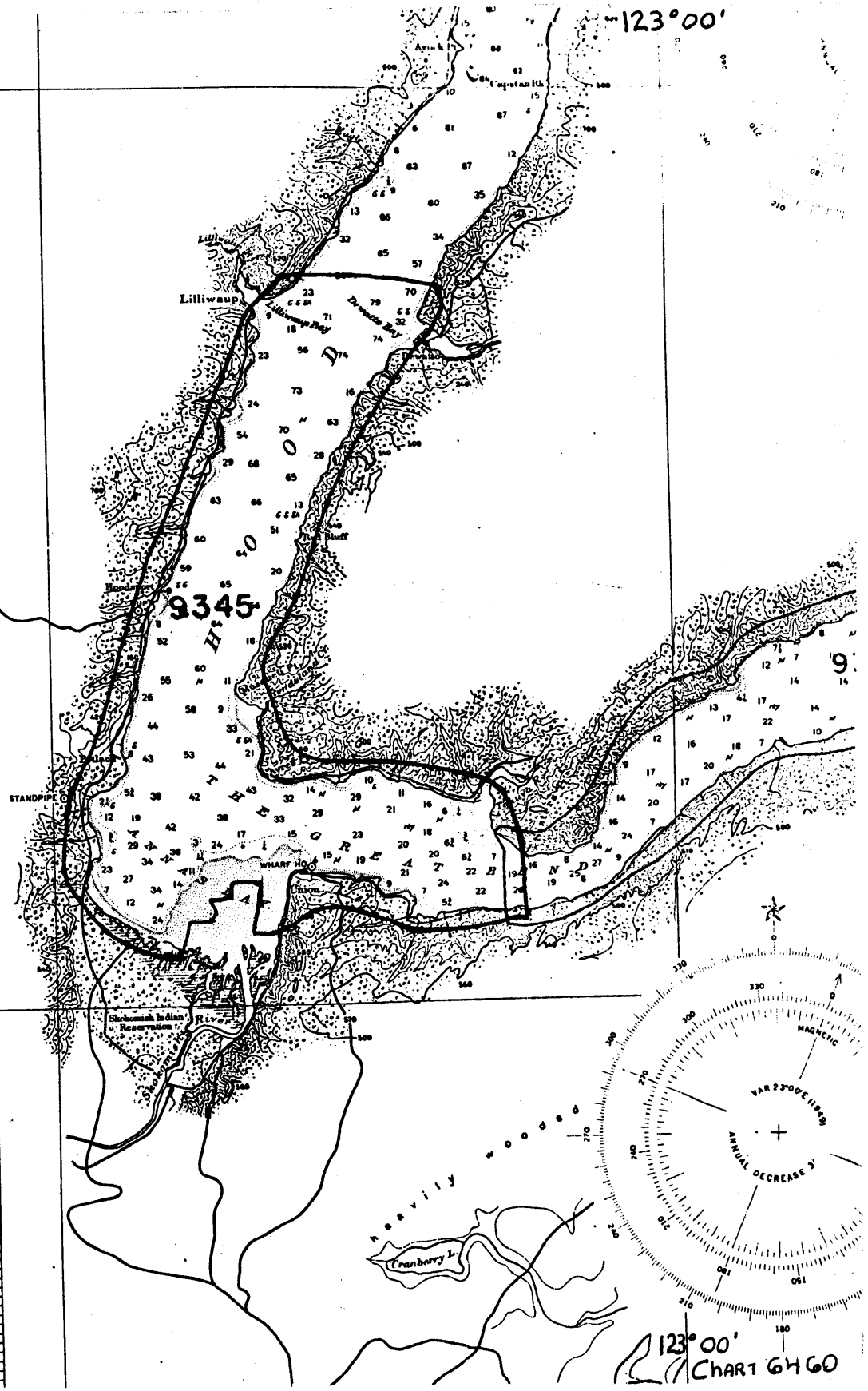
Karol M. Hoops
Cartographic Technician
May 20, 1975

47°
30'

123°00'

25'

20'



123°00'
CHART 6460

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9345

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
6460 18448	10/17/75	<i>Bob Thayer</i>	Full Part Before ^{before} After Verification Review Inspection Signed Via Drawing No.
6401 18440	10/16/75	<i>Diane Larson</i>	Full Part Before ^{before} After Verification Review Inspection Signed Via Drawing No. <i>critical corrections only through 6460</i>
185-SC 18445	11/4/75	D. R. CORDTS	Full Part Before ^{before} After Verification Review Inspection Signed Via Drawing No. <i>Crit Corr. thru 6460</i>
185-SC "E" 18445	6/76	D. R. CORDTS	Full Part Before After Verification Review Inspection Signed Via Drawing No. FINAL APPLICATION
6460 18448	6/76	D. R. CORDTS	Full Part Before After Verification Review Inspection Signed Via Drawing No. FINAL APPLICATION
6401	6/76	D. R. CORDTS	Full Part Before ^{before} After Verification Review Inspection Signed Via Drawing No. FINAL APPLICATION
6460 18448	2/79	<i>G. James</i>	Full Part Before ^{before} After Verification Review Inspection Signed Via Drawing No. <i>Final APPLICATION thru 185-SC "E" '85</i>
18476	11/09/83	<i>Mike Johnson</i>	Full Part Before <u>After Verification</u> Review Inspection Signed Via Drawing No. 1 CONSIDERED FULLY APPLIED BEFORE REVIEW 12/5/83 vbn
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.