9416

Diag. Cht. No. 6300-2.

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey ... HYDROGRAPHIC

Field No. ... RA-40-3-74

Office No. ... H-9416

LOCALITY

State ... WASHINGTON

General Locality ... STRAIT OF JUAN DE FUCA

Locality ... OFF CAPE FLATTERY

1974

CHIEF OF PARTY
K. W. JEFFERS

LIBRARY & ARCHIVES

DATE ... 12-19-74

☆U.S. GOVERNMENT PRINTING OFFICE: 1974-763-098

9416

FORM C&GS-537 (5-66)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-9416

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.

RA-40-3-74

State Washington

General locality Strait of Juan de Fuca

Locality Off Cape Flattery

Scale 1:40,000 Date of survey 9-16 April, 1974

Instructions dated 1 March, 1974 Project No. OPR-412-RA-1974

Vessel NOAA Ship RAINIER

Chief of party CDR. K. W. Jeffers

Surveyed by Officers of the Rainier

Soundings taken by echo sounder, ~~hand lead, pole~~ Ross model 5000-544, S/N 1042

Graphic record scaled by ~~Ship's personnel~~

Graphic record checked by Ship's personnel

Protracted by _____ Automated plot by Gerber Digital Plotter - PMC ~~Complot DP-3 S/N 4670-4~~

Soundings ~~plotted~~ by ~~Complot DP-3 S/N 4670-4~~

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW

REMARKS: The survey was made in GMT.

The mean longitude of the survey is 124° 42.5'W.

The survey is complete as required by the project instructions.

A. PROJECT

This survey was conducted in accordance with PROJECT INSTRUCTIONS: OPR-412-RA-74, dated 1 March 1974.

B. AREA SURVEYED

This survey includes the area from the US-Canadian border to the Olympic Peninsula at the entrance to the Strait of Juan de Fuca. It is bounded by Latitude 48° 21' N to Latitude 48° 31' N and by Longtitude 124° 29' W to Longtitude 124° 56' W. The survey began on 9 April 1974 (JD 099) and was completed on 16 April 1974 (JD 106).

C. SOUNDING VESSEL

The ship RAINIER (2120) obtained all of the soundings on this survey. Prudent seamanship neccessitated the breaking off of many lines on the southern end of the survey before the 10 fathom curve could be reached.

D. SOUNDING EQUIPMENT

A Ross Echo Sounder, Model No. 5000-544, S/N 1042 was used to obtain all soundings.

The blanking function was employed to eliminate spurious returns, and the fathometer was internally phased and adjusted so as to have no phase correction. Phase checks were taken regularly.

The initial was checked continuously during operation and maintained at zero. Beginning with JD 101 rough weather was encountered through the remainder of the project, as can be seen by the "saw-tooth" analog trace and the regular dips in the initial. The apparent dips in the initial were not corrected for, as they were caused by the stylus jumping as the belt moved around, and a weak trace can be found at the correct location for the initial. To compensate for the two to three-fathom swells, a smooth curve was drawn through the saw-tooth and corrections made as necessary. These corrections are marked on the raw data print-out with a blue felt tip pen prior to position No. 472 and with a blue ballpoint pen thereafter.

A TRA of 2.5 fathoms was used in the field, while a value of 2.4 appears on the TC/TI tape as determined by draft observations.

For further information concerning sounding equipment and corrections, refer to the TC/TI and velocity tape listings in the appendix, and to the report Corrections to Echo Soundings, OPR-412-RA-74.

E. FINAL BOAT SHEET

The boatsheets' transverse Mercator projection and soundings submitted to PMC for verification were plotted by RAINIER personnel using the on-board PDP-8e Complot Systems, S/N 1011 and Houston Instrument Company,

Cal-Comp, Model DP-3, S/N 4670-4 Plotter. The control meridian for the projection is 123° 50' 00" West Longtitude and the southern control Latitude is 5,320,000 meters north of Latitude Zero. Position numbers, soundings, and signals were machine-plotted. The final smooth sheet will be plotted by PMC's EDAT Branch. Refer to the appendix for parameter tape printouts.

Main scheme sounding lines are plotted in black ink, crosslines in red, bottom samples in green, and junction soundings in various other colors as indicated on the boatsheet.

F. STATION CONTROL

The mini-ranger at BRUSH 1931 was set directly over the recovered 3rd-order triangulation station. The three computation sheets of the SSS triangle by which the G.P. of ROCK2(ECC) was determined from the 1st-order triangulation station ROCK 2, 1942 (to obtain an Unobscured signal) are found in the appendix, as is the sheet containing the computation of the eccentric set-up at WAADAH ISLAND LIGHT 1942, which was necessitated by the shape of the structure.

The five calibration signals used were all either 2nd or 3rd-order triangulation stations, or in the case of WAADAH ISLAND LIGHT 1942, a 2nd-order traverse station.

The final boatsheet was plotted using a G.P. for ROCK 2 (ECC) that was later found to be in error by 10 meters. New parameter, signal, and corrector tapes have been made using the correct value. Mini-ranger calibrations were recomputed and new abstracts of corrections compiled.

G. POSITION CONTROL

This survey was entirely controlled by Motorola "Mini-Rangers", a range-range system. Arc intersections were never less than 30°, nor more than 150°. Intermittent interferences which were found along some of the sounding lines are discussed in the Mini-Ranger Report, OPR-412-RA-74.

Two pairs of stations were used to control this survey. ROCK 2 (ECC), (Code 3) and BRUSH 1931 (Code 2) were used east of Longtitude 124° 36' W, and ROCK 2 (ECC) (Code 3) and WAADAH ISLAND LIGHT (ECC)(Code 4) to the west.

The final boatsheet submitted to PMC for verification has been plotted with corrections applied for slope and calibrations before the new value of ROCK 2(ECC) was recomputed.

Serial numbers of equipment used follows:

EQUIPMENT	S/N
Mini-Ranger console	720
Ship's R/T unit	727
Code 2 transponder, BRUSH 1931	775
Code 3 transponder, ROCK 2(ECC)	776
Code 4 transponder, WAADAH ISLAND LT (ECC)	777

The mini-ranger antenna and the Ross transducer are not located along a common vertical axis. The transducer is located 114 feet aft of the antenna, both being very close to the centerline of the ship. A ship's heading tape is included with this report and is listed in the appendix of this report. See the copy of memo, dated 5 March 1974, in the appendix. Corrections applied as req'd.

H. SHORELINE

There were no shoreline requirements for this survey.

I. CROSSLINES

Approximately 55.4 nautical miles or 12.8% of the hydrography run on Sheet RA - 40 - 3 - 74 were crosslines. The agreement with the main scheme lines was within 0-2 fathoms in all cases.

J. JUNCTIONS

Junctions were made with the following contemporary surveys.

Reg. No.	Field No.	Scale	Date
H-9413	FA-80-1-74	1:80,000	1974
H-9415	RA-40-2-74	1:40,000	1974
H-7037	----------	1:10,000	1944-45

A ten-point comparison was made with the smooth boatsheet of H-9413 and all points agreed to within one fathom. Three lines of H-9415 were plotted on the eastern boundary of this survey and they aligned excellently with the depth curves. The comparison with H-7037 also agreed to within one fathom.

K. COMPARISON WITH PRIOR SURVEYS

There were no presurvey review items on this survey. A comparison with prior survey H-5148, a 1:40,000 scale survey conducted in 1931 was also made. There were several soundings from H-5148 that seemed to be ~~2 or 3~~ 1 to 5 fathoms deeper than what interpolation between the lines of this survey would have suggested, but since the soundings did not overlay each other, the agreement is considered good. The apparent discrepancy could be caused by the fathometer cone picking up a shallower depth from the sloping bottom. Also, a comparison was made with H-5147(1931) and H-5157(1931)-1:40,000. The same differences were noted on these prior surveys.

A possible wreck was located at 48° 26.9' N Latitude, 124° 46.0' W Longitude at 25 seconds after position 308. This is possibly the wreck reported to the RAINIER by radio from the NOAA Ship FAIRWEATHER to be in the area. A subsequent detailed description sent to the RAINIER

through the mail from the FAIRWEATHER never arrived. The possible wreck appeared to be 2 1/2 to 3 1/2 fathoms above the sloping bottom at this point. The indicated wreck was questioned after rescanning and interpreting the fathograms at the time of review. A side echo or stray is apparent.

L. COMPARISON WITH THE CHART

A comparison was made with Chart 6102 of February 1973. No discrepancies were noted, nor were any new dangers to navigation located.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for the special charting purposes intended. All fathogram field records were scanned and checked for deeps and peaks and appropriate changes were made to the original records.

N. AIDS TO NAVIGATION

Existing aids to navigation are satisfactory, no new aids are necessary in the area.

The location of the USCG Cutter FIR's mooring buoy S.E. of Tatoosh Island Light was determined during hydro. At 230314 GMT on JD 105 it was 48° 23.95' N Latitude and 124° 43.5' W Longitude.

O. STATISTICS

A total of 819 positions were obtained, of which all but one bottom sample were hydro positions. The 430.9 nautical miles of hydro cover an area of 82.0 square nautical miles.

P. MISCELLANEOUS

The bottom sample taken (position 185) is logged in a sounding volume and is submitted with this report.

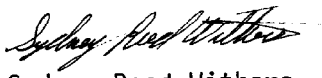
Q. REFERENCES TO REPORTS

Reports	Date FWD to PMC
Corrections to Echo Soundings, OPR-412-RA-74	
Mini-ranger Report, OPR-412-RA-74	

R. DATA PROCESSING PROCEDURES

The standard on-line hydroplot program AM100 version 11/10/72 was used to acquire all data for this survey. Program PM 340 version 12/1/72 was used to reduce master tapes to sea level distances.

Respectfully submitted



Sydney Reed Withers
LTJG, NOAA

Separates Following the Text

Pages	
1	Field Tide Note
1	TC/TI and Velocity Correction Tape Listings
1	Electronic Corrector Abstract
4	Daily Electronic Control Calibrations
1	Station List
1	ASCII Signal Tape Listing
1	Parameter Tape Listings
3	Computation Sheets for Position OP ROCK 2(ECC)
1	Computation Sheets for Position OP WAADAH ISLAND LIGHT (ECC)
1	Abstract of Positions
1	Oceanographic Log Sheet-M (Bottom Sediment Data)
1	Copy of Memo from CPM3, dated 5 March 1974
3	Ship's Heading Tape Listings

TIDE NOTE

RA-40-3-74

it is recommended that the tide station at Neah Bay, Washington, latitude 48 22.1'N., longitude 124 37.0'W., be used to control the soundings on this survey. The gage operated on Greenwich Mean Time. Hourly heights will be furnished to the PMC Processiong Division by the tide station observer. Reduction to MLLW and copies of the marigrams will be furnished by Tides Division, Rockville.

Predicted tides for boatsheet control were obtained from the Tide Tables, 1974, West Coast of North and South America, using the Aberdeen, Washington substation.

TC/TI AND VELOCITY CORRECTION TAPE LISTINGS

RA-40-3-74 (H-9416)

VELOCITY CORRECTION TAPE
VESSEL:SHIP (2120)
TIME PERIOD: 4-16 APRIL 1974
TABLE: 0002

```
000110 0 0000 0002 000 000000 000000
000255 0 0001
000400 0 0002
000540 0 0003
000645 0 0004
000775 0 0005
000892 0 0006
001015 0 0007
002000 0 0010
```

TC/TI TAPE
VESSEL: 2120
FATHOMETER: ROSS 1042

```
184500 0 0002 0024 099 000000 000000
020909 0 0002 0024 100 000000 000000
234715 0 0002 0024 100 000000 000000
220744 0 0002 0024 105 000000 000000
```

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2120 (SHIP RAINIER) SHEET : RA-40-3-74

TIME	DAY	PATTERN 1	PATTERN 2
		Rock	Brush
184500	099	-00015	-00003
194530		-00010	+00000
214500		-00006	+00002
234544		-00002	+00004
000001	100	-00002	+00004
020909		+00000	+00006
			Waddah Lt.
001244	101	+00004	+00000
012039		+00003	+00005
035400		+00001	+00010
062815		-00001	+00014
090215		-00003	+00019
114920		-00004	+00024
141022		-00006	+00029
164417		-00008	+00034
193917		-00010	+00038
220232		-00012	+00043
000012	102	-00012	+00043
002936		-00012	+00043
044230		-00012	+00043
060030		-00011	+00038
073030		-00010	+00033
220744	105	-00001	-00005
000030	106	-00001	-00005
015635		+00002	-00007
075030		+00003	-00009

MINIRANGER CALIBRATION ABSTRACT LOG

VESSEL	OPR	M/R STA		M/R STA	
2120	412	ROCK 2 1942 (ECC)		BRUSH 1931	
CONSOLE	**XCEIVER**	**CODE**	**XPONDER**	**CODE**	**XPONDER**
720	727	3	776	2	775

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR
217	218	220								
13-53	27-08				16261	16279	-18	14448	14450	-2
13-53	27-15				16259	16276	-17	14457	14460	-3
13-54	27-21				16262	16277	-15	14465	14471	-6

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
9 APR 74	099 L 099 Z	1045 L	1745 Z	-16.7 / -3.7

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR
214	223	218		217						
72-50	64-24	54-41			17284	17285	-1	11721	11716	+5
73-20	64-12	54-30			17298	17299	-1	11692	11686	+6
73-31	64-07	54-27			17304	17303	+1	11682	11679	+3
73-40	64-06	54-25			17310	17310	0	11673	11664	+9
73-52	64-00	54-20			17315	17315	0	11662	11657	+5

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
9 APR 74	099 L 100 Z	1845 L	0145 Z	-0.2 / +5.6

LINEAR INTERPOL'N	
-16.7	-3.7
-12.6	-1.4
-8.4	+1.0
-4.3	+3.3
-0.2	+5.6

TABLE OF CORRECTORS

J D (Z)	TIME (Z)	3 CODE	2 CODE
099	1745	-15	-3
	1945	-10	0
	2145	-6	+2
↓	2345	-2	+4
100	0145	0	+6
↓	0600		

BOAT SHEET	FM POS#	TO POS#
RA-40-3-74	0001	0184
ABSTRACTED BY	**DATE**	
PFEIFER	6MAY74	

10

MINIRANGER CALIBRATION ABSTRACT LOG

VESSEL	OPR	M/R STA		M/R STA	
2120	412	ROCK 2 1942 (ECC)		WAADAH LT (ECC)	
CONSOLE	XCEIVER	CODE	XPONDER	CODE	XPONDER
720	727	3	776	4	777

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR
222	217	218	223							
52-22	15-00		50-23		16512	16503	+9	3124	3131	-7
52-16	14-56		50-17		16499	16496	+3	3138	3139	-1
52-16	14-53		50-15		16490	16486	+4	3152	3151	+1

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
10 APR 74	100 L 100 Z	1545 L	2245 Z	+5.3 / -2.3

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR
222	217	218	223							
69-09	17-01		66-41		17310	17324	-14	2897	2851	+46
68-53	16-49		66-17		17288	17301	-13	2931	2879	+52
68-03	16-21		65-24		17234	17250	-16	3012	2959	+53

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
11 APR 74	101 L 102 Z	2000 L	0300 Z	-14.3 / +50.3

LINEAR INTERPOL'N

+5.3	-2.3
+3.5	+2.5
+1.7	+7.3
0	+12.0
-1.8	+16.8
-3.6	+21.6
-5.4	+26.4
-7.2	+31.2
-9.0	+36.0
-10.7	+40.7
-12.5	+45.5
-14.3	+50.3

TABLE OF CORRECTORS

J D (Z)	TIME (Z)	3 CODE	4 CODE
100	2245	+4	0
101	0120	+3	+5
	0354	+1	+10
	0628	-1	+14
	0902	-3	+19
	1136	-4	+24
	1410	-6	+29
	1644	-8	+34
	1918	-10	+38
	2202	-12	+43
102	0036	-13	+48
	0300		

BOAT SHEET	FM POS#	TO POS#
RA-40-3-74	0185	0587
ABSTRACTED BY: PFEIFER	DATE: 6 MAY 74	

VESSEL	OPR	M/R STA		M/R STA	
2120	412	ROCK 2 1942 (ECC)		WAADAH LT (ECC)	
CONSOLE	XCEIVER	CODE	XPONDER	CODE	XPONDER
720	727	3	776	4	777

MINIRANGER CALIBRATION ABSTRACT LOG

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
11 APR 74	101 L 102 Z	2000 L 0300 Z	-14.3	+50.3

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR
223	218	220	222							
70-42	28-53	72-34			16970	16975	-5	2566	2565	+1
69-18	30-25	71-09			16944	16943	+1	2558	2558	0
68-55	30-52	70-45			16938	16940	-2	2554	2552	+2
68-33	31-19	70-21			16932	16934	-2	2550	2549	+1

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
12 APR 74	102 L 102 Z	1100 L 1800 Z	-2.0	+1.0

LINEAR INTERPOL'N	
-14.3	+50.3
-13.1	+45.4
-11.8	+40.4
-10.6	+35.5
-9.4	+30.6
-8.2	+25.6
-6.9	+20.7
-5.7	+15.8
-4.5	+10.9
-3.2	+5.9
-2.0	+1.0

TABLE OF CORRECTORS

J D (Z)	TIME (Z)	3 CODE	4 CODE
102	0300	-14	+48
	0430	-12	+43
	0600	-11	+38
	0730	-10	+33
	0900	-9	+28
	1030	-8	+23
	1200	-6	+18
	1330	-5	+13
	1500	-4	+8
	1630	-3	+3
↓	1800		

BOAT SHEET	FM POS#	TO POS#
RA-40-3-74	0588	0657
ABSTRACTED BY	DATE	
PFEIFER	6 MAY 74	

MINIRANGER CALIBRATION ABSTRACT LOG

VESSEL	OPR	M/R STA		M/R STA	
2120	412	ROCK 2 1942 (ECC)		WAADAH LT (ECC)	
CONSOLE	XCEIVER	CODE	XPONDER	CODE	XPONDER
720	727	3	776	4	777

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR
222	218	220	223							
60-49	28-45		58-54		16090	16090	0	3481	3487	-6
60-37	29-23		58-43		16099	16102	-3	3451	3455	-4
60-29	29-51		58-36		16108	16109	-1	3428	3432	-4
60-20	30-24		58-26		16118	16120	-2	3402	3405	-3

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
15 APR 74	105 L 105 Z	1300 L	2000 Z	-1.5 / -4.2

SIGNALS AND SEXTANT ANGLES

L	C	R	LCK	RCK	RANGES CMP'D	RANGES OBS'D	CORR	RANGES CMP'D	RANGES OBS'D	CORR
222	218	220	223							
52-21	39-11		50-47		15884	15879	+5	3460	3471	-11
52-07	38-51		50-34		15838	15835	+3	3508	3521	-13
52-03	38-45		50-24		15820	15816	+4	3527	3533	-6

DATE	JULIAN DATE	TIME		MEAN CORRECTIONS
16 APR 74	106 L 106 Z	0645 L	1345 Z	+4.0 / -10.0

LINEAR INTERPOL'N	
-1.5	-4.2
+0.3	-6.1
+2.2	-8.1
+4.0	-10.0

TABLE OF CORRECTORS

J D (Z)	TIME (Z)	3 CODE	4 CODE
105	2000	-1	-5
106	0155	+2	-7
	0750	+3	-9
↓	1345		

BOAT SHEET	FM POS#	TO POS#
RA-40-3-74	0658	0908
ABSTRACTED BY: PFEIFER	DATE: 6 MAY 74	

STATION LIST
RA-40-3-74

STA	O	LATITUDE			LONGITUDE			CRT	ELEV	F. KHZ	TYPE/NAME	SOURCE
106	6	48	18	21557	124	25	36244	139	0013	149835	BRUSH 1931	
107	6	48	31	32838	124	26	42720	243	0019	149835	ROCK 2 1942 ECC.	*COMP
108	6	48	23	06528	124	35	54304	243	0018	149835	WAADAH ISLAND LIGHT 1942 ECC.	*COMP
217	6	48	22	42180	124	35	35280	139	::::	000000	NEAH BAY LIGHT 1942	
218	6	48	23	06510	124	35	54320	139	0019	000000	WAADAH ISLAND LIGHT 1942	
220	6	48	23	30422	124	44	07356	139	::::	000000	CAPE FLATTERY L.H. 1893	
222	6	48	21	26880	124	33	13610	139	::::	000000	NEAH BAY RADIO RANGE EAST TOWER 1955	
223	6	48	21	29150	124	33	21820	139	::::	000000	NEAH BAY RADIO RANGE WEST TOWER 1955	

* COMP.-REFER TO STATION LIST PART II FOR COMPUTATIONS
:::: VISUAL SIGNAL--NO ELEVATION TAKEN IN THE FIELD
G. P. OF MINI-RANGER STATIONS FROM PARAMETER TAPES

ASCII SIGNAL TAPE
RA-40-3-74

106	48	18	2156	124	25	3624
(ecc)107	48	31	3284	124	26	4272
(ecc)108	48	23	0653	124	35	5430
217	48	22	4218	124	35	3528
218	48	23	0651	124	35	5432
220	48	23	3042	124	44	0736
222	48	21	2688	124	33	1361
223	48	21	2915	124	33	2182

SIGNAL PLOTTER CARDS

H-NO.		LATITUDE	LONGITUDE	X	Y
09416	106	74 48182156	124253624	14092	01644
09416	107	74 48313284	124264272	13712	08057
09416	108	74 48230653	124355430	10747	03946
09416	217	74 48224218	124353528	10849	03748
09416	220	74 48233042	124440736	08084	04138
09416	222	74 48212688	124331361	11616	03139
09416	223	74 48212915	124332182	11571	03158

000000

PARAMETER TAPE LISTINGS
RA-40-3-74

S1=ROCK 2 (ECC) S2=BRUSH 1931

FEST=99000
CLAT=5320000
CMER=123/50/0
GRID=2/0
PLSCL=40000
PLAT=48/19/00
PLON=125/06/00
S1LAT=48/31/32.838
S1LON=124/26/42.720
S2LAT=48/18/21.557
S2LON=124/25/36.244
Q=1498.34995
VESNO=2120
YR=74

S1=ROCK 2 (ECC) S2=WAADAH ISLAND LIGHT (ECC)

FEST=99000
CLAT=5320000
CMER=123/50/0
GRID=2/0
PLSCL=40000
PLAT=48/19/00
PLON=125/06/00
S1LAT=48/31/32.838
S1LON=124/26/42.720
S2LAT=48/23/06.528
S2LON=124/35/54.304
Q=1498.34995
VESNO=2120
YR=74

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

(1) Project No. 412

(2) H No. 9416

(3) Field No. RA-40-3-74

(4) Requested by _____

(5) Ship or Office _____

(6) Date Required _____

(7) Visual ☐ Pt.(0) or Fathoms (1) [1] (8) Electronic ☒ (fill out form #3)

(10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). (Origin) 33,419.85 ~~33,420.6~~ Meters

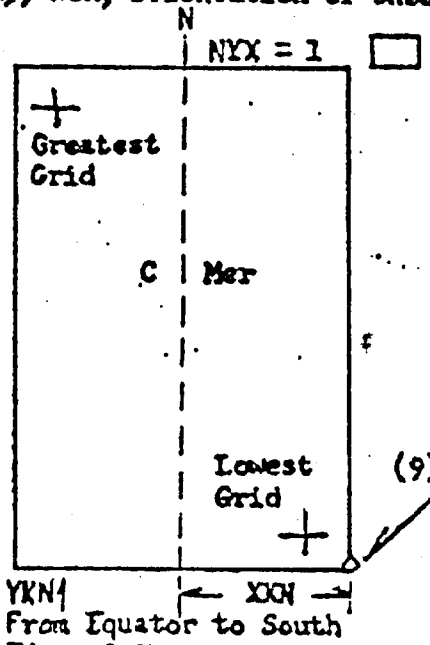
(11) YKN (SP 241) Distance from Equator to South Edge of Sheet. (Origin) 5,346,006.763 Meters

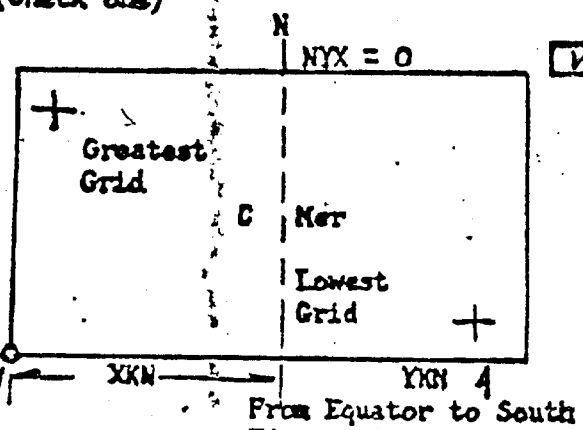
(12) Central Meridian 124 ° 42 ' 00 "

(13) Survey Scale 1: 40,000

(14) Size of Sheet (Check one) 36x60 [✓] 42x60 ☐

(15) NYX, Orientation of sheet (Check one)





(9) Plotter Origin (Corner of Sheet)

Latitude 48 ° 15 ' 00 "

Longitude 125 ° 09 ' 00 "

comp by RDL

Grid Limits

(16) Greatest Latitude 48 ° 34 ' 00 "

(17) Lowest Latitude 48 ° 16 ' 00 "

(18) Difference 18 ' 00 "

(19) 02 ' 00 " (Projection Line Interval Page 4 Hydro Manual)

(20) 09 YSN

(21) Greatest Longitude 125 ° 08 ' 00 "

(22) Lowest Longitude 124 ° 18 ' 00 "

(23) Difference 50 ' 00 "

(24) 02 ' 00 "

(25) 25 XSN

FORM # 3 FIG. 7

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

(1) PROJECT No. 412 (2) H- No. 9416 (3) FIELD No. RP-40-3-74

(4) TYPE OF CONTROL: ____ SHORAN, ____ RAYDIST, ____ HI-FIX, ____ RADAR MINI-RANGER
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) 1498.34995

(5) RANGE ONE (R1) (107) STATION NAME RACE 2 (1-70)
LATITUDE 48 ° 31 ' 32.84 "
LONGITUDE 124 ° 26 ' 40.70 "

(6) RANGE TWO (R2) (106) STATION NAME BRUSH 1931
LATITUDE 48 ° 18 ' 21.56 "
LONGITUDE 124 ° 25 ' 36.24 "

(7) AZIMUTH FROM R1 TO R2 356 ° 47 ' 30.694 "

(8) BASELINE LENGTH IN METERS 24419.5758 M.

(9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE
(TO DETERMINE: IMAGINE AN OBSERVER STANDING AT R1 AND LOOKING DIRECTLY AT R2 --- IF THE SURVEY AREA IS TO THE OBSERVER'S LEFT THEN A IS NEGATIVE; IF THE SURVEY AREA IS TO THE OBSERVER'S RIGHT THEN A IS POSITIVE.)

____ -A (MINUS) ✓ +A (PLUS)

(10) IF SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION, K(X) + C = D, WHERE X IS SHORAN DISTANCE AND D IS TRUE DISTANCE, ENTER THE CONSTANT COEFFICIENTS OF THE EQUATIONS HERE:

K(R1) _____, C(R1) _____, K(R2) _____, C(R2)_____

(11) NUMBER OF VELOCITY TABLES TO BE USED:
___NONE, ___ONE, ___MORE THAN ONE.

(12) _____THIS FORM IS SUBMITTED ONLY AS AN AID IN PREPARING A BOAT SHEET PROJECTION.

_____THIS FORM APPLIES TO ALL DATA ON THIS SURVEY.

_____THIS FORM APPLIES TO PART OF THE DATA ON THIS SURVEY -

TIME AND DATE LIMITATIONS: FROM 184500 099 TO 020909 100

POSITION NUMBER LIMITATIONS: FROM 0001 TO 0184

THIS IS FORM #3 SHEET # 1 OF 2 SHEETS FOR THIS SURVEY.

(13) OTHER REMARKS:

Prepared by RDL

FORM # 3 FIG. 7

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

(1) PROJECT NO. 412 (2) H- NO. 9416 (3) FIELD NO. RH-40-3-74

(4) TYPE OF CONTROL: ____ SHORAN, ____ RAYDIST, ____ HI-FIX, ____ RADAR MINI-RANGER
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) 1498.34995

(5) RANGE ONE (R1) (107)
STATION NAME ROCK 2 (ECC) (108)
LATITUDE 48 ° 31 ' 32.84 "
LONGITUDE 124 ° 26 ' 42.72 "

(6) PANGE TWO (R2)
STATION NAME WADDAH I LT (ECC)
LATITUDE 48 ° 23 ' 06.53 "
LONGITUDE 124 ° 35 ' 54.30 "

(7) AZIMUTH FROM R1 TO R2 35 ° 59 ' 12.822"

(8) BASELINE LENGTH IN METERS 19313.8875 M.

(9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE
(TO DETERMINE: IMAGINE AN OBSERVER STANDING AT R1 AND LOOKING DIRECTLY AT R2 --- IF THE SURVEY AREA IS TO THE OBSERVER'S LEFT THEN A IS NEGATIVE; IF THE SURVEY AREA IS TO THE OBSERVER'S RIGHT THEN A IS POSITIVE.)

____ -A (MINUS) ✓ +A (PLUS)

(10) IF SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION, K(X) + C = D, WHERE X IS SHORAN DISTANCE AND D IS TRUE DISTANCE, ENTER THE CONSTANT COEFFICIENTS OF THE EQUATIONS HERE:

K(R1) ____, C(R1) ____, K(R2) ____, C(R2) ____

(11) NUMBER OF VELOCITY TABLES TO BE USED:
___NONE, ___ONE, ___MORE THAN ONE.

(12) ____THIS FORM IS SUBMITTED ONLY AS AN AID IN PREPARING A BOAT SHEET PROJECTION.

____THIS FORM APPLIES TO ALL DATA ON THIS SURVEY.

____THIS FORM APPLIES TO PART OF THE DATA ON THIS SURVEY -

TIME AND DATE LIMITATIONS: FROM 001244 101 TO 075050 106

POSITION NUMBER LIMITATIONS: FROM 0185 TO 0908

THIS IS FORM #3 SHEET # 2 OF 2 SHEETS FOR THIS SURVEY.

(13) OTHER REMARKS:

Prepared By [illegible]

H 4-9416

Field No. RA-46-3-74

Date 6-24-74

HYDRO II AND III PARAMETER CARDS

PARAMETER CARD II

			1	2	3	4	5	6	7	8	9	10
Semi major axis of the earth	6,378,206.4	RDA	6	3	7	8	2	0	6	4	0	7
			11	12	13	14	15	16	17	18	19	20
X Constant- Distance from central meridian to origin of plotter SP 5	meters	XKN	3	3	4	1	9	8	5	2	0	5
			21	22	23	24	25	26	27	28	29	30
Y Constant - Distance from equator to origin of plotter SP 2,3	meters	YKN	5	3	4	6	0	0	6	8	0	7
			31	32	33	34	35	36	37	38	39	40
Central Meridian of Projection	124 42 00	CMR	4	4	8	9	2	0	0	0	0	6
			41	42	43	44	45	46	47	48	49	50
Plotter Scale/Survey Scale	*20498.6876 1: 40,000	SCA	2	6	2	4	6	7	1	9	0	0
												51
North/south axis of sheet - to correspond to (Y axis - 0) (X axis - 1) of plotter		NAX										0
												52
Feet/Fathom indicator	0 - feet 1 - fathom	FOT										1
								53	54	55	56	57
H Identification No.		JN						0	9	4	1	6
											66	67
		YR									7	4

FOT - 1

PARAMETER CARD III

			1	2	3	4	5	6	7	8	9	10
Lowest Lat. Intersection	48 16 00	YST	1	7	3	7	6	0	0	0	0	6
			11	12	13	14	15	16	17	18	19	20
Lowest Long. Intersection	124 18 00	XST	4	4	7	4	8	0	0	0	0	6
			21	22	23	24	25	26	27	28	29	30
Difference between Grid	02 00	DXY	1	2	0	0	0	0	0	0	0	3
											21	22
Interval (Long)		XSN									2	5
											35	36
Interval (Lat)		YSN									0	9

Computed _____

Punched _____

Checkdd ... ... [illegible]

1/2

H-9416

Field I.D. RA-40-3-74

6-24-74

HYDRO I PARAMETER CARDS

Computes C.T.'s from Electronic Controlled Baseline

Parameter Card I		Deg.Min. Seconds				Punch Codes											
							1	2	3	4	5	6	7	8	9	10	
Station No. 1 (107) Name Rock 2 ECC	Lat.	46	31	32	54	EPD	1	7	4	6	9	2	8	4	0	6	
	Long	124	26	42	72	RED	11	12	13	14	15	16	17	18	19	20	
							4	4	8	0	0	2	7	2	0	6	
Station No. 2 Name Brush (106) 1931	Lat.	48	18	21	56		Not Used										
	Long	124	25	36	24		Not Used										
Azimuth M1 to R2		356	47	30	94	RAD	21	22	23	24	25	26	27	28	29	30	
							1	2	8	4	4	5	0	7	0	7	
							Not Used										
Baseline Distance in Meters						SMP	31	32	33	34	35	36	37	38	39	40	
							2	4	4	7	9	5	7	6	0	5	
Velocity Code 0 - No Vel. 1 - 1 Vel. Table 2 - 2 Vel.-(E - W) 3 - 2 Vel.-(N - S)						IVL											41
Correction factor for electronic distance to meters.		Stat. M1 = Instr =				CNV	42	43	44	45	46	47	48	49	50		51
							1	0	0	0	0	0	0	0	0	3	
Identification Number						JN						52	53	54	55	56	
												0	9	4	1	6	
Correction of survey mish respect to electronic baseline		- <Λ = 1 + <Λ = 0				AAA											57
																	0
Velocity Boundary	IVL = 2 IVL = 3	Long = Lat =	0	"	"	VLE		58	59	60	61	62	63	64	65	66	
						YR								67	68	69	
														0	7	4	
If Sharan calibration correction is applied by equation (use Sharan card) punch 1 in column 80							70	71	72	73	74	75	76	77	78	79	80

Sharan Card Format (when calibration correction is applied by a line K x + C)
(Flag 5, 11, 17, or 23 if resp. constant is negative)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

2/2

H S H-9416
Field I.D. RA-40-3-74
Date 1-24-74

HYDRO I PARAMETER CARDS

Computer C.P.'s from Electronic Controlled Baseline

Parameter Card I	Deg.Min. Seconds	Prog. Codes
Master (107) Hydro Name RUCK 2 ECC — Lat.	48 31 32 84	RPD 1 7 4 6 9 2 8 4 0 6
Long	124 26 42 72	RDD 4 4 8 0 0 2 7 2 0 6
Slave (108) Hydro Name Wooded I. Lt ECC — Lat.	48 23 06 53	Not Used
Long	124 35 54 30	Not Used
Azimuth R1 to R2	35 59 12 87 2	RAD 1 2 9 5 5 2 8 7 0 6
		Not Used
Baseline Distance in Meters		SMP 1 9 3 1 3 8 8 8 0 5
Velocity Code 0 - No Vel. 1 - 1 Vel. Table 2 - 2 Vel.-(E - W) 3 - 2 Vel.-(N - S)		IVL
Conversion factor for electronic distance to meters. Stat. Mi = Nautical Mi = or		CNV 1 0 0 0 0 0 0 0 0 3
Identification Number		JH 0 9 4 1 6
Direction of survey with respect to electronic baseline — $\angle A$ = 1, $\angle A$ = 0		AAA 0
Velocity Boundary IVL = 2 Long = 0 / IVL = 5 Lat =		VLE
		YR
If Shoran calibration correction is applied by equation (use Shoran card) punch 1 in column 80		0 7 4

Shoran Card Format (when calibration correction is applied by a line K x + C)
(Plan 5, 11, 17, or 23 if resp. constant is negative)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

RIL RIC

PARAMETERS FOR H09416 (DATE: 12-04-74)

IDEN. NUMBER	SHEET SIZE	PROJ.	SCALE	SKEW	GRID	SHEET ORIGIN
H09416	(134 90)	2	40000.	0.	120.	48 16 15.0

EOF..

contains from previous page

(DATE: 12-04-74)

ZE	PROJ.	SCALE	SKEW	GRID	SHEET ORIGIN (LAT./LON.)	CENTRAL MERIDIAN
0)	2	40000.	0.	120.	48 16 15.0 125 3 45.0	124 42 0.0

CONTROL FOR: C09416 DATE OF LISTING: 12-04-74

RECORD NUMBER	YR	STA NUM	CARTO CODE	LABEL ANGLE	VECTOR DISP.	PLOT CODE	..... NAME .....
1	74	106	250	307.00	.60	0	BRUSH, 1931
2	74	107	254	307.00	.60	0	ROCK 2, 1942 ECC
3	74	108	254	307.00	.60	0	WAADAH ISLAND LIGHT, 194
4	74	217	139	307.00	.60	0	NEAH BAY LT., 1942
5	74	220	139	307.00	.60	0	CAPE FLATTERY LT., 1893
6	74	222	139	307.00	3.00	0	NEAH BAY RADIO RANGE
7	74	222	139	315.43	4.10	0	EAST TOWER, 1955
8	74	223	139	307.00	1.00	0	NEAH BAY RADIO RANGE
9	74	223	139	323.31	2.14	0	WEST TOWER, 1955

1942

FILE CERTIFIED CORRECT FOR PLOTTING BY:..... D.
EOF..

Continued From previous page

.... NAME	STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE -(S)	LONGITUDE -(E)
31	13.0	149835.00	48 18 21.560	124 25 36.240
942 ECC	19.0	149835.00	48 31 32.840	124 26 42.720
AND LIGHT, 1942	18.0	149835.00	48 23 6.530	124 35 54.300
T., 1942	0.0	0.00	48 22 42.180	124 35 35.280
TERY LT., 1893	0.0	0.00	48 23 30.420	124 44 7.360
RADIO RANGE	0.0	0.00	48 21 26.880	124 33 13.610
R, 1955	0.0	0.00	48 21 26.880	124 33 13.610
RADIO RANGE	0.0	0.00	48 21 29.150	124 33 21.810
R, 1955	0.0	0.00	48 21 29.150	124 33 21.810

..... DATE!.....

LATTICE FOR: L09416 DATE OF LISTING: 12-04-74

RECORD NUMBER	STATION 1	STATION 2	CENTER ANG. ARC SECTOR	SECTOR ARC LENGTH	MINIMUM RATE	MAXIMUM RATE	L/ (
1	106	0	0	0	0.00	0.00	
2	107	0	0	0	0.00	0.00	
3	108	0	0	0	0.00	0.00	

FILE CERTIFIED CORRECT FOR PLOTTING BY:..... DATE:..

EOF..

ABSTRACT OF POSITIONS: H-9416

vessel: 2120

DAY	POSITIONS	CTRL	S1	M	S2	REMARKS:
099	0001-					
100	-0184	04	107	---	106	hydro
101	0185	04	107	---	108	bottom sample
101	0186-					
102	-0657	04	107	---	108	hydro, rejected pos: 290,494-7,504-6,609
105	0658-					
106	-0908	04	107	---	108	hydro

FORM C&GS-733M
(6-66)

U.S. DEPARTMENT OF COMMER
E
COAST AND GEODETIC SUR

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
2120	OPR-412	74	RA-40-3-74		

SERIAL NO.	DATE	SAMPLE POSITION		DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)
		LATITUDE	LONGITUDE							
Pos. Tie on 4 185	4/10/74	45°25'.5	124°34.8	65.0					G, brk Sh, fine sd-S	

Use more than one line per sample if necessary.

USCOMM-DC 3701

U.S. [illegible]
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center

Date : 5 March 1974

Reply to Attn. of: CPM32

To : Commanding Officer
NOAA Ship RAINIER

From : Walter F. Forster, Cdr., NOAA
Chief, Processing Division

Subject: Ross Transducer--Mini-Ranger Antenna Displacement, OPR-412

The EDP Branch will be able to compensate for Ross transducer--Mini-Ranger antenna displacement using computer procedures. This is a temporary solution and must only be used for this project (OPR-412). Data Processing will require a special tape to be logged providing the ship's heading at each position fix.

This tape shall be logged in the following format, using an ASI or similar data logger in ASCII code. One word is to be logged for each fix word on the HYDROPLOT master tape.

Format: HHMMSS 0 OHDG FIXN DAY 000000 000000

Where : HHMMSS is the time of the fix word
OHDG is the ship's heading in degrees
FIXN is the fix number of the position
DAY is the Julian day number

All unused fields and the leading character of the heading field are to be zeros.

Include a copy of this memorandum in the Descriptive Report.

SINCE T.S. MANNERED COURSE NEED ONLY BE LOGGED UPON ANY COURSE CHANGE — FIXN TO BE LOGGED WITH NEW COURSE — HHMMSS WILL BE CONTINUING ENC HEADING CAN BE READ DATA AT PMC.

1. CO
2. XO
3. CH
4.
5.
6.
7. SN O/C
8. W. R.
9.
10. RET TO

APPROVAL SHEET

H- 9416 (RA- 40-3-74)

OPR-412-RA-74

Strait of Juan de Fuca
Washington

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OPORDER, and the Instruction Manual for Automated Hydrographic Surveys. The data was examined daily during the execution of the survey.

The boatsheets and the accompanying records have been examined by me and are considered complete and adequate for the special charting purposes and are approved.

K. William Jeffers
CDR., NOAA

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

Memorandum for File July 19, 1974

Subject: Hydrographic Surveys, OPR-412, RAINIER & FAIRWEATHER, 1974

This morning I received a telephone call from Mr. John MacAlinden, Marine Charts Division, 496-8157. He wanted to discuss the 1974 surveys of Straits of San Juan de Fuca and the Washington coast. He informed me that these surveys are for a different purpose than the standard hydrographic survey, that they were for bathymetric charts and would be used for bottom navigation. He stressed that the fathograms should be scanned for deeps as well as peaks. He also requested that all soundings be provided.

The team leader and applicable verifiers were briefed on the above. Significant deeps are to be added as requested during verification of soundings. The preliminary excess sounding overlay is to be updated and excess soundings overlays as required shall accompany the smooth sheet.

8/5/74

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 Neah Bay lat. 48°22.1 long. 124°37.0

Tide Station Used (NOAA Form 77-12): James Island

Period: March - April 1974

HYDROGRAPHIC SHEET: H9416

OPR: 412

Locality: Outer-Coast of Washington and Entrance to Strait of Juan DeFuca

Plane of reference (mean lower low water): 7.3 ft. Neah Bay
4.2 ft. James Island

Height of Mean High Water above Plane of Reference is 7.3 ft.

Remarks: Recommended zoning.

		Time correction	Range Ratio
(1)	Approx. 124°18' - 124°24'	+ 30 min.	x0.91 (Neah Bay gage)
(2)	Approx. 124°22' - 124°32'	+ 15 min.	x0.96 (Neah Bay gage)
(3)	Approx. 124°32' - 125°	Direct on Neah Bay	
(4)	Cape Flattery to 48°20'	Apply	x0.90 range ratio to James Island
(5)	Approx. 48°20' - 48°14'	Apply	x0.94 range ratio to James Island.

James C. Hubbard
for Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.
9416

Name on Survey	A On Chart No.	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	
STRAIT OF JUAN DE FUCA										1
PACIFIC OCEAN										2
CAPE FLATTERY RHC	6102									3
VANCOUVER ISLAND	6102									4
SAN JUAN PT.	6102									5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
					Approved					18
					Chas. E. Harrington					19
					Staff Geographer					20
					27 March 1975					21
										22
										23
										24
										25
										26

NOAA FORM 77-27
(9-72)
(PRESC. BY HYDROGRAPHIC MANUAL 20-2, 6-94, 7-131)

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. 9416

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
Smooth Arc Overlay (Mylar)	1	Smooth BOAT SHEETS	1
~~Smooth Position Overlay (Mylar)~~ SMOOTH SHEET	~~1~~ 3	Rough	2 3
DESCRIPTIVE REPORT	1	OVERLAYS Preliminary	3
		Smooth Excess	1 4

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
Env. Smooth ~~ENVELOPES~~			1			
CAHIERS	1 & Raw Data P/O.					
VOLUMES						
Bundle ~~ROLLS~~ Raw			1			

T-SHEET PRINTS *(List)*

SPECIAL REPORTS *(List)*

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				
POSITIONS CHECKED		899		
POSITIONS REVISED		2		
DEPTH SOUNDINGS REVISED		59		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		—		
SIGNALS ERRONEOUSLY ~~PLOTTED~~ symbolized OR TRANSFERRED			2	
	TIME (MANHOURS)			
Verification of Control		38		
Verification of Positions		4		
Verification of Soundings		30		
Smooth Sheet Compilation		25		
ALL OTHER WORK		12		
TOTALS		109	53hr	

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION BY Richard D. Lynn, Cartographic Technician	-	6/21/74
VERIFICATION BY Nicholas Lestenkof, Cartographic Technician	7/8/74	11/6/74
REVIEW BY Mark J. Friese	4/7/75	4/18/75

Corrections 4/21/75

* U.S. G.P.O. 1972-769-562/139 REG.#6

Reg. No. H-9416

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey the following shall be completed:

CARDS CORRECTED

DATE_____ TIME REQ'D_____ INITIALS_____

REMARKS:

Reg. No. _____

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

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

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQ'D._____ INITIALS_____

REMARKS:

H-9416

Items for Future Presurvey Review

There are no noteworthy changes since the time of the prior surveys.

Position Index Lat.	Long.	Bottom Change Index	Use Index	Resurvey Cycle
482	1244	1	6	50 yr.
482	1245	0	6	50 yr.
482	1250	0	6	50 yr.

OFFICE OF MARINE SURVEYS AND MAPS

MARINE CHART DIVISION

MODIFIED HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9416 FIELD NO. RA-40-3-74

Washington, Strait of Juan de Fuca, Off Cape Flattery

SURVEYED: April 9 thru April 16, 1974

SCALE: 1:40,000 PROJECT NO.: OPR-412

SOUNDINGS: Ross Echo Sounder
Model No. 5000-544,
S/N 1042

CONTROL: Motorola Mini-Ranger (Range-Range Mode)

Chief of Party ..... K. W. Jeffers
Surveyed by ..... M. H. Allen
..... P. E. Gadd
..... H. T. Langeveld
..... L. Pfeifer
..... B. K. Mezger
..... D. R. Seidel
..... G. W. Stroble
..... S. R. Withers
Automated plot by ..... Gerber Digital Plotter - PMC
Verified and inked by ..... N. Lestenkof
Reviewed by ..... M. J. Friese
..... Date: April 22, 1975
Inspected by ..... G. K. Myers

1. Control and Shoreline

The origin of control is adequately stated in part F and G of the Descriptive Report. There is no shoreline that falls within the area of the survey.

2. Hydrography

A. Depths at crossings are in good agreement.

B. The standard depth curves are adequately delineated. The development of the bottom configuration and the investigation of least depths are considered adequate.

3. Condition of the Survey

The field work, sounding records, smooth plotting and Descriptive Report are adequate and conform to the Hydrographic Manual supplemented by the Instruction Manual - Automated Hydrographic Surveys.

4. Junctions

An adequate junction was effected with H-9415 (1974) on the east, H-9413 (1974) on the west and H-7037 (1944-45) on the south.

5. Comparison with Prior Surveys

A. H-1845 (1888) 1:40,000
H-2170 (1893) 1:80,000

These prior surveys fall in the area of the present survey but are not discussed in the present review. It is to be noted, however, that several bottom characteristics have been brought forward to the present survey from H-1845.

B. H-5147 (1931) 1:40,000
H-5148 (1931) 1:40,000
H-5157 (1931) 1:40,000

These prior surveys taken together cover the entire area of the present survey. A comparison between prior and present depths reveals minor differences which can be attributed to different survey methods. The present survey obtained shoaler soundings in several instances due to its detailed hydrography. With the addition of several soundings brought forward from H-5148, the present survey is adequate to supersede the prior surveys in the common area.

6. Comparison with:
Chart 6300, latest print date June 29, 1974
Chart 6265, latest print date May 26, 1973

A. Hydrography

The charted hydrography originates with the previously discussed prior surveys, which require no further consideration. The present survey is adequate to supersede the charted hydrography within the common area.

B. Aids to Navigation

There are no charted aids to navigation that fall within the limits of this survey.

7. Compliance with Project Instructions

The present survey adequately complies with the project instructions.

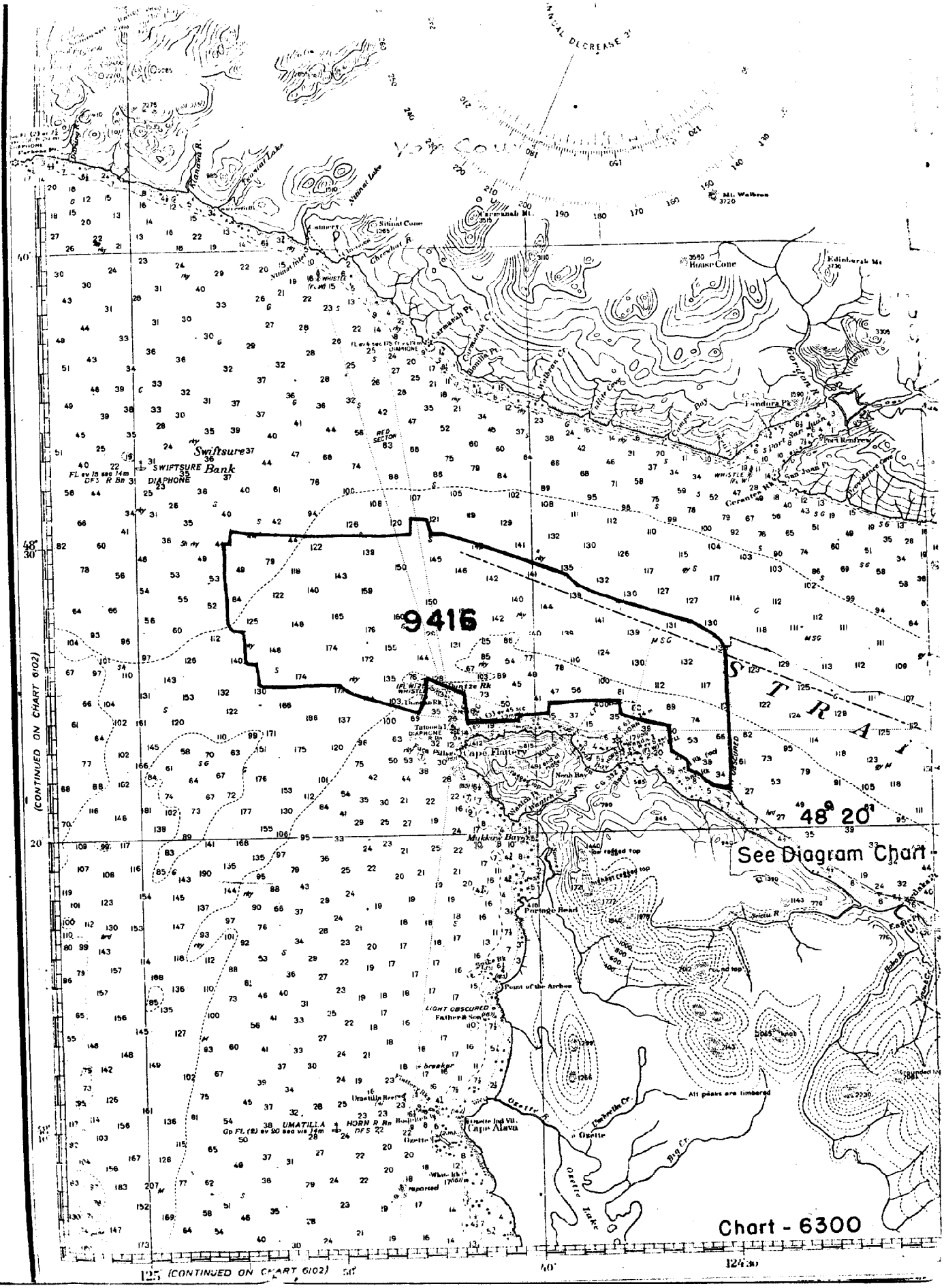
8. Additional Field Work

This is an excellent basic survey and no additional field work is recommended.

Examined and Approved:

R K Houlton
Chief
Marine Chart Division

Robert C. Munson
Associate Director
Office of Marine Surveys
and Maps


9416
STRAIT
Swiftsure Bank
SWIFTSURE DIAPHONE
Cape Flattery
Makkaw Bay
Tatoosh I.
Umatilla Reef
UMATILLA HORN R Bn
Cape Alava
Ozette R.
Ozette Lake
Big Cr.
Portage Head
Point of the Arches
All peaks are timbered
See Diagram Chart -
Chart - 6300
(CONTINUED ON CHART 6102)
(CONTINUED ON CHART 6102)
48° 20'
125°
124°30'

(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9416

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
6265 (18485)	7/17/75	J Green (RCS)	(Full) ~~Part~~ ~~Before~~ After Verification Review Inspection Signed Via Drawing No.
6102	7/16/75	J Green	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via Drawing No. exam no corr.
6300	7/21/75	J Green	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via Drawing No. exam no corr
6300	7/8/76	P. Shumar	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via Drawing No.
8500	6/13/77	Naitak	Full ~~Part Before~~ After Verification Review Inspection Signed Via Drawing No. 15 Exam. No corr at this scale Revised Soun considered fully applied at chart scale
18460 (new chart)	1-24-80	Gregory B. Noris 2-12-80 RCS	Full ~~Part~~ ~~Before~~ After ~~Verification Review~~ Inspection Signed Via Drawing No. 2 Revised several sndgs thru chart #18485 (6265)
18480 (6102)	1-28-80	Gregory B. Noris 2-13-80 RCS	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via Drawing No. 28 Revised several sndgs thru chart #18460. Considered fully appl'd
18003 (5022)	1-31-80	Gregory B. Noris 2-13-80 RCS	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via Drawing No. 31 Revised several sndgs thru chart #18480 (6102)
18007 (5052)	2-4-80	Gregory B. Noris 2-13-80 RCS	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via Drawing No. 30 Revised several sndgs thru chart #18003 (5022)
18400	7/80	Corbin 7-21-80 RCS	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via Drawing No. 45 Fully applied
501	2-4-80	Gregory B. Noris 2-13-80-RCS	Full After Inspection Signed Via Drawing No
18485	2-4-80	Gregory B Noris 2-13-80-RCS	Full After Inspection Signed Via

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

USCOMM-DC 8558-P63