

10133

Diagram No. 8102-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. DA-20-1-84
Office No. H-10133

LOCALITY

State Alaska
General Locality Behm Canal
Locality Walker Cove

19 84

CHIEF OF PARTY
CDR J.M. Wintermyre

LIBRARY & ARCHIVES

DATE July 25, 1985

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

10133

Area 6

CH 72

17424

17420

*To sign of see
Record of Applications*

HYDROGRAPHIC TITLE SHEET

H-10133

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.

DA-20-1-84

State ALASKA

General locality BEHM CANAL

Locality WALKER COVE

Scale 1:20,000 Date of survey April-May 1984

Instructions dated 2/14/84, Change No. 1: 2/21/84 Project No. OPR-0177-DA-84

Vessel 3130, 3131, 3132, and 3133

Chief of party Cdr. J.M. Wintermyre
Cdr. J.M. Wintermyre, Lt.Cdr. W.A. Wert, Lt. G. Wheaton, Lt. M. Koehn,

Surveyed by Ens. J. Waddell, Ens. A. Allen, Ens. D. Moeller, and ship's personnel

Soundings taken by echo sounder, ~~hand-lead, pole~~ Raytheon DSF-6000N

Graphic record scaled by DAVIDSON personnel and verification by PMC

Graphic record checked by DAVIDSON personnel and verification by PMC

Verification by: T.O. Jones Automated plot by PMC Xynetics Plotter

Evaluation by: C.R. Davies

Soundings in fathoms ~~feet~~ at NLW MLLW

REMARKS: All times are UTC. Marginal notes in black by evaluator.

Separates are filed with the hydrographic data.

Alvair/Surf M&M 5/15/86

SP 4-16-97

PROGRESS SKETCH

OPR-0177-DA-84

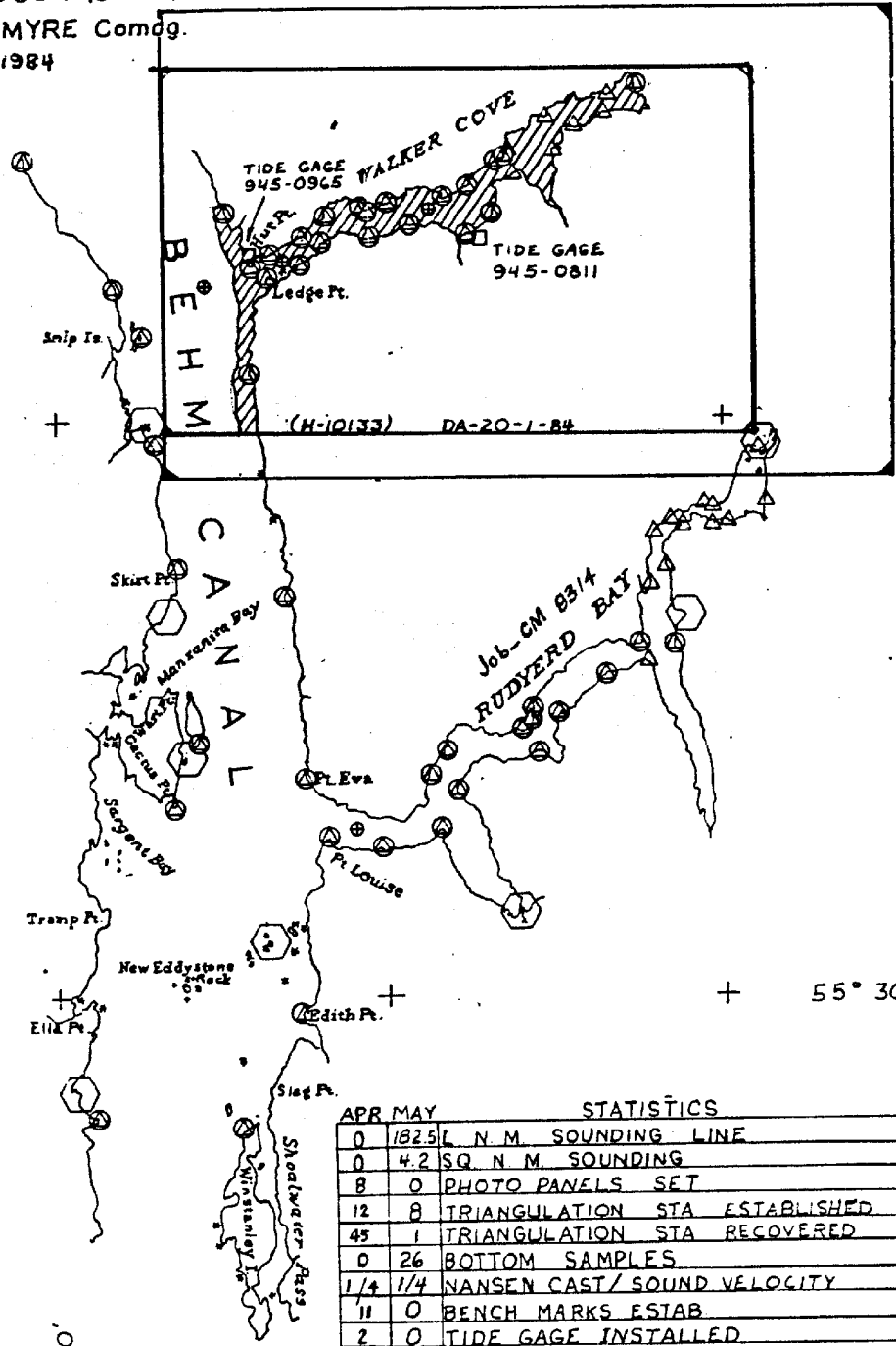
WALKER COVE, ALASKA

SCALE: CHART 17420

NOAA SHIP DAVIDSON (S-331)

CDR J. M. WINTERMYRE Comdg.

APR.-MAY, 1984



LEGEND

- △ STATION ESTABLISHED
- ⊙ STATION RECOVERED
- TIDE STATION
- ⬡ PHOTO PANEL SET
- ⊕ SOUND VELOCITY CAST

APR		MAY		STATISTICS	
0	182.5	L	N M	SOUNDING	LINE
0	4.2	SQ	N M	SOUNDING	
8	0			PHOTO PANELS	SET
12	8			TRIANGULATION STA	ESTABLISHED
45	1			TRIANGULATION STA	RECOVERED
0	26			BOTTOM	SAMPLES
1/4	1/4			NANSEN CAST/	SOUND VELOCITY
11	0			BENCH MARKS	ESTAB
2	0			TIDE GAGE	INSTALLED
0	5			DIVER VERIFIED	LEAST DEPTH

DESCRIPTIVE REPORT
OPR-0177-DA-84
WALKER COVE, ALASKA
H-10133

A. PROJECT ✓

Survey operations were conducted in accordance with Project Instructions OPR-0177-DA-84 dated 14 February 1984, Change No.1 dated 21 February 1984, and Change No. 2 dated 27 April 1984. Registry No. H-10133 was assigned 15 May 1984. The project was also in conjunction with photogrammetric project instructions issued to N/MOP 222 for Job CM-8314 dated 12 December 1983.

B. AREA SURVEYED ✓

Walker Cove is located about 10 miles north of Rudyerd Bay and 2 miles east northeast of Snip Island on the east side of Behm Canal.

The southern and northern limits of hydrography in Behm Canal were latitudes 55/40/00N and 55/47/36N respectively. The western limit of hydrography was extended by the commanding officer from the 50-fathom curve to the 100-fathom curve. The inshore limit was done in accordance with section 4.3.3 of the Hydrographic Manual. Hydrographic operations began on ^{30 April} 15 May 1984 (JD 136) and ended on ^{29 May} 1 June 1984 (JD 153).
150

C. SOUNDING VESSELS ✓

Sounding vessels were survey launches DA-1 (#3131) and DA-2 (#3132). For ease of identification, raw data records were annotated in red ink for #3131 and blue ink for #3132. No unusual sounding configurations were used and no problems with the launches were encountered. A sounding interval of 3.5 mm. was used outside the mouth of Walker Cove for a better representation of the depth curves. For soundings inside the mouth, a 4 to 6 mm. sounding interval was used. Vessel 3130 and 3133 were also utilized in Walker Cove.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS ✓

Both launches were equipped with Raytheon DSF-6000N Digital Survey Echo Sounders. Serial numbers of the echo sounding equipment can be found in the appended Corrections to Echo Soundings Report.

During hydrographic operations, a continuous analog trace could not be maintained on the DSF-6000N of slopes greater than 15 degrees; however, the system would continue to digitize. Ship's ETs made numerous adjustments to no avail and on JD 131 a Casualty Report was sent to the PMC Director informing him of the status of the echo sounder. Mr. Peter J. Tremko from Raytheon Ocean Systems and Mr. Mike

Webb from PMC were flown to the ship to resolve the problem and discovered that the problem was two-fold.

They explained to DAVIDSON what was wrong in the following layman's terms. The first problem was that a predominate thermocline between the surface and 60 feet caused the loss of the analog trace. They indicated that this loss was an inherent design characteristic of the DSF-6000N. Mr. Tremko modified the echo sounders by changing the Time Increasing Gain (TIG) system to a Time Variable Gain (TVG) system and by adjusting the Automatic Gain Control (AGC). This adjustment seemed to reduce the problem we had with the thermocline. We were advised by Mr. Tremko that the modifications would not change the accuracy of the DSF-6000N.

The second problem was that we often received an unacceptable trace when the echo sounder was set to High + Low (High Freq. Digitized) yet when set in the High Frequency function only, we received a better analog trace. Mr. Tremko explained the side lobes frequently have a stronger signal strength than the main lobe due to the steepness of the topography. He elaborated by saying that when set in the High + Low (High Freq. Digitized) function, the high frequency is truncated and the echo sounder is indecisive whether to record the side lobes or the main lobe on the analog trace. By setting the echo sounder to High Frequency only, the echo sounder only records the main lobe return, allowing for a strong trace. For this reason, most of the hydrographic data collected during the course of this survey was done so on High Frequency only. Hydrography was run on High + Low (High Freq. Digitized) only where the trace permitted. In areas where steep slopes reached depths of 160 fathoms, the echo sounder was kept on phase 1 and the 200 fathom scale. This made it easier to follow the trace. Phases 1 and 2 were used with the 40 fathom scale in gently sloping areas shoaler than 80 fathoms.

Since the High Frequency, narrow-beam function was used predominately in the survey area, line spacing was reduced from the suggested 400 meters in the Hydrographic Manual to 200 meters so the hydrographer could confidently say that no additional dangers to navigation existed.

To answer any further technical questions concerning the DSF-6000N consult MOP 131.

Echo sounders were monitored continuously during survey operations. The analog records were scanned and compared to digitized depths. Digitizer errors, missed depths, and peak/deep insertions were identified, and modifications were made to the data according to the analog trace. Changes were entered on the edited master tape or via the corrector tape, and noted on the raw data printout and analog trace.

Soundings on the final field sheet have been corrected for transducer draft, sound velocity, and predicted tides. Bar checks were generally made twice daily. A transducer depth correction (TRA) of 0.3 fathoms was determined for both the narrow and wide beam transducers. Only high

frequency (narrow beam) depths were digitized during the survey. At the conclusion of data acquisition the TRA was found to be unchanged based on bar check data. The same TRA was used to correct the final field sheet's depths.

The DAVIDSON conducted four sound velocity casts in the area to determine velocity correctors. For further information consult the Corrections to Echo Soundings Report.

Ketchikan, Alaska served as the reference station (945-0460) for predicted tides. Tide stations were installed at Hut Point, Walker Cove entrance (945-0695) and at 55/43/18N, 130/47/30W (945-0811). Additional tide gage information and leveling results can be found in the Field Tide Note.

E. HYDROGRAPHIC SHEETS ✓

Field sheets were prepared at a scale of 1:20,000 using the DAVIDSON's complot plotter, and standard NOS software.

Sounding lines were run in accordance with section 4.3.5 of the Hydrographic Manual. Crosslines and shorelines were run to define the cove's limits. Mainscheme lines were then run 45 degrees to the contours, as suggested in section 4.3.5 of the Hydrographic Manual, to more clearly depict steep sounding features on the echo sounder's analog trace.

One 1:5,000 and two 1:10,000 preliminary sounding enlargements were made of the area surveyed for better clarity during hydrographic operations. Six 1:5,000 enlargements were plotted on the final detached position sheet to clearly show the otherwise congested positions. A 1:10,000 enlargement was plotted on the final 1:20,000 position plot of hydrography run east of stations GOAT and SHADE for the same reason.

Sounding overprints were omitted on the final field sheet by using the manual override control of the complot plotter pen for legibility.

Where depth contours became congested on steep slopes, only the shoalest and deepest contours were shown; intermediate depth contours are omitted as suggested in 7.3.9.2 of the Hydrographic Manual.

A 1.5mm offset is noted when the position and sounding plot are overlaid. The sounding plot was deemed the accurate sheet after being compared with the shoreline. An example of the offset between the two sheets is seen at fix number 6. To meet the required six-week deadline, the position plot was not replotted but instead recommended as a reference only.

All data collected will be submitted to the Pacific Marine Center, Nautical Chart Branch (N/MOP 21) for verification and smooth plotting.

F. CONTROL STATIONS ✓

Visual signals and electronic control apparatus were set up on monumented horizontal control stations. New

stations were established at GOAT, SHADE, REPEL, NOTCH, BOLDER, BALD, BRO, and SCARP using Third-Order Class I methods. For further information consult the Horizontal Control Report for OPR-0177-DA-84. Station No. 35 is a temporary point established by sextant methods, control code 252.

G. HYDROGRAPHIC POSITION CONTROL ✓

Sounding line position control was accomplished by range-range or range-azimuth techniques using Motorola Miniranger III and Wild T-2 theodolites. The Miniranger transponder codes and serial numbers, stations and days of operation, corrections, and signal numbers can be found in the appended Electronic Control Report.

Range-range configurations were selected to provide unobstructed lines of sight to the survey area, as well as minimum 30 degree and maximum 150 degree arc intersection angles. Range-azimuth control was used only where satisfactory range-range control was not possible.

Miniranger system checks were performed using the static calibration method or by crossing the baseline.

Miniranger baseline calibrations were performed on 19 April 1984 and 30 May 1984 over a predetermined distance from station LEDGE 1931 to station HUT 1931. All calibrations were performed in the survey area. A discussion of the Baseline Calibration can be found in the Electronic Control Report. *Visual sextant fixes were also utilized in Walker Cove. These involved detached positions on point features located by vessel 3133.*

H. SHORELINE (See Section 2 of EURL Report)

Shoreline details shown on the field sheets were transferred from a copy of Shoreline Manuscript TP-01161, 1:20,000 scale. Photography was flown in June, 1982 (Job CM-8202) and compilation was finished in July, 1983. Change No. 2 dated 27 April 1984 declared that the original photographs had been damaged and were inadequate for use in the acquisition of field data.

A portion of the survey in Behm Canal was accomplished without the benefit of an accompanying manuscript. Shoreline shown in brown on the field sheets from latitude 55/39/50N to latitude 55/41/57N was taken from a 1:20,000 scale enlargement of the current edition of Chart 17424. It is recommended that the high water-line in this area be applied to the smooth sheet from the shoreline manuscript - Job CM-8314, Rudyerd Bay - Behm Canal, Alaska - upon completion of that photography.

Shoreline verification was done throughout the entire shoreline area of H-10133. During this time all shoreline details shown on the manuscript were inspected. Notes concerning their verification or disproof were made on the detached position (D.P.) boatsheet and subsequently transferred to the final field sheet.

The shoreline within the survey limits is characterized by steeply sloping cliffs with many tree covered portions in the highwater line vicinity. In many areas limbs mask the

high waterline up to ten meters. Since only the high waterline is depicted on TP-01161, many features, primarily boulders and rock outcrops (ledges) near shore, have been fixed by hydrographic methods and are shown on the final field sheet.

Additional fixes were taken in several areas to delineate the mean high waterline when hydrography, detached positions, or hydrographically located rocks plotted shoreward of the mean high waterline. Fix numbers 4071 - 4076 were taken between stations FIX and DIX while fix numbers 4088 - 4092 near station FIN. Fix numbers 4829 - 4835 were taken from just east of station SCARP to north of station GOOD while fixes 4836 - 4863 were taken from east of station SHADE to south of station BALD as well as near stations BOLDAR, REPEL, and GOAT. These fixes initially plotted inside the high waterline derived from the shoreline manuscript. Later it was discovered that the plotter pen moves slightly when the pen is put into the "plot" position, causing positions to appear to be offset; thus starting the pen at a false origin. Further, the computer-generated field sheets produced by the DP-3 plotter and the shoreline manuscript, both 1:20,000 scale, do not compare exactly when latitude/longitude grids are overlaid. *A comparison was made between the Field Sheet and T-Sheet. No significant problem exist.*

A satisfactory plot of detached positions with respect to the shoreline is produced by overlaying a plot of all detached positions onto the shoreline manuscript and aligning the nearby latitude/longitude lattices. The shoreline delineation fixes mentioned earlier plot along the mean high waterline of the shoreline manuscript when the above procedures are followed. Shoreline transferred from the manuscript, therefore, appears to agree well with the observed shoreline. A complete summary of all detached positions with fix numbers has been appended. *This was confirmed during verification. No change was made to the Photogrammetric MHWL.*

In several areas boulders and fallen tree debris, resulting from earth slides, extend up to 20 meters into the cove. Many waterfalls in Walker Cove and Behm Canal have boulders at their bases. In addition, rock outcrops not visible at high water along the shore become apparent at lesser stages of the tide. Delineation of areas foul with rocks and declared unsafe for navigation were noted by fix numbers 4002 - 4007, 4014 - 4019, 4044 - 4046, and 4137 - 4140 near station LEDGE and fix numbers 4061 - 4068 near station FIN. *Chart according to Smooth Sheet.*

Seventeen rocks are shown in Walker Cove on the shoreline manuscript. All were found as shown, and measurements of height and size were obtained for each. A summary of the rocks with fix numbers for the shoreline manuscript has been appended. Streams and waterfalls shown were verified in most cases, though 4 streams shown on the manuscript in eastern Walker Cove (2 near station NOTCH and 2 between stations BRO and BOLDAR) were not seen during shoreline verification. Finally, a feature labelled on the manuscript as "ft br" (foot bridge) joining two small islets just north of Hut Point is in fact a large fallen tree; no

Retain as charted

trace of a foot bridge was found in the area and it is the recommendation of the hydrographer that this label and feature be removed.

concur

I. CROSSLINE ✓

Crosslines comprise 8.9% of the total sounding line mileage. All crosslines were scanned and agreement with mainscheme soundings was good. Specific comparisons were made in accordance with the Hydrographic Manual 1.1.2. Part B.II.1. Results of 32 randomly selected crossline and mainscheme sounding comparisons are as follows: 22% of the crosslines agree within 1.5 fathoms for depths of 11 to 55 fathoms while 78% agree within 3% of the depth for soundings over 55 fathoms. Inspection of the fathogram shows an abrupt change in depth in one case where a 7 fathom discrepancy occurs between a sounding and the adjacent contour. This is located at 55/41/33.6N, 130/54/18.6W. A natural anomaly is believed to be the cause of this variance. It is recommended that the shoaler sounding be charted here.

See Section
4 of EVAL Report

A concur
chart according to
Smooth Sheet.

J. JUNCTION ✓

No junctioning with other surveys was required.

concur

K. COMPARISONS WITH PRIOR SURVEYS ✓

AWOIS items assigned from the Automated Wreck and Obstruction Information System were investigated with the following results:

AWOIS item #50631 is a reported 6.5 fathom least depth hard bottom shoal located in 55/42/36N, 130/53/46W. Range arcs were run at 5 meter intervals from stations ABE and HUT to locate the shoalest depth using a Raytheon DSF-6000N Echo Sounder. A weighted line and surface float was positioned on the echo-sounder least depth to guide the diver's descent. The divers reported 25 to 30 foot visibility. The diver's investigation found a long kidney-shaped ridge consisting of rocks less than 1 meter in diameter. A 5.2¹/₂ RK fathom least depth was obtained near the north end of the ridge at 55/42/37.5²/₈N, 130/53/48.1⁰/₈W. A bottom sample was collected by divers. Fix number 4826 - JD 148, sounding volume #1, page 54 - was also taken at this point. This AWOIS item does exist and its charted depth and position should be corrected to agree with the present survey. Concur

Concur
m.s.m.
5/15/86

AWOIS item #50632 is a reported 0.5 fathom least depth located in the middle of a small kelp bed with boulders in the vicinity of 55/42/27N, 130/53/38W. Three rocks were found further offshore and near this AWOIS item. Fix number 4015 - JD 122, sounding volume #1, page 5 - is a rock covered by 0.2 fathoms at 55/42/26.8N, 130/53/39.1W. Fix number 4026 - JD 123, sounding volume #1, page 8 - is a rock covered by 0.4 fathoms at 55/42/27.3N, 130/53/39.5W. Fix

Concur
m.s.m.
5/15/86

number 4137 - JD 138, sounding volume #1, page 43 - is a rock covered by 0.5 fathoms at 55/42/32.5N, 130/53/40.6W. These three rocks make up part of the foul zone limits around station LEDGE as described in section H of this report. It is suggested that this AWOIS item be identified as part of the foul zone defined above. There were no bottom samples taken in this area. *Chart according to Smooth Sheet*

AWOIS item #50633 is a reported 1.5 fathom least depth hard bottom shoal located in 55/42/30N, 130/53/12W. Range arcs were run at 5 meter intervals from station ABE to locate the shoalest depth using a Raytheon DSF-6000N Echo Sounder. A weighted line and surface float was positioned on the echo-sounder least depth to guide the diver's descent. The divers reported 15 to 20 foot water visibility. The diver's investigation found a flat ledge outcrop with pockets of silt. Three boulders about 3 meters square mark the northeast end of the outcrop. These boulders are not as shoal as the main outcrop. This crescent-shaped outcrop is about 20 meters wide and 100 meters long. A 1.57 fathom least depth was obtained near the northeast end of the ledge at 55/42/33.05N, 130/53/08.60W. A bottom sample was collected by divers. Fix number 4825 - JD 148, sounding volume #1, page 53 - was taken at this point. The outcrop slopes into deeper water at about a 45 degree angle around the edge, appearing as shown on the field sheet. This charted AWOIS item does exist and its charted depth and position should be corrected to agree with the present survey. *concur*

AWOIS item #50634 is a reported U.S. Forest Service mooring buoy charted at in 55/43/55N, 130/45/22W. The buoy was found to be white with a blue band at the waterline. It was located at 55/43/57.12N, 130/45/10.50W by T-2 intersection and Miniranger control. Fix number 4093 - JD 136, sounding volume #1, page 30 - was taken at its location. This charted AWOIS item does exist and its charted position should be corrected to agree with the present survey. The telephone number for the U.S. Forest Service in Ketchikan should be corrected on the AWOIS listing to 907-225-3101. *The PA should be deleted from chart.*

Fix number 4827 - JD 148, sounding volume #1, page 55 - is a shoal located at 55/42/43.26N, 130/53/48.20W. This area was chosen for closer investigation from the preliminary plot. Five meter range arcs were run from station HUT to locate the shoalest depth using a DSF-6000N Echo Sounder. A weighted line and surface float was positioned on the echo-sounder least depth to guide the diver's descent. Water visibility was reported to be 25 to 30 feet. The divers reported a rugged sloping outcrop which starts near a small islet east northeast of station HUT and slopes down to the southwest. The outcrop is about 20 meters wide with a northwest-southeast orientation. The fix and a least depth of ~~4.0~~^{3.8} fathoms were measured from the top of a 2 x 2 meter boulder at the above location which is the shoalest of a group of boulders. The shoal deepens by about

*AWOIS
C.M.M.
5/15/86*

concur

*AWOIS
C.M.M.
5/15/86
concur*

a meter to the northeast before gently rising towards the shore. Southwest of the boulder and fix the shoal gradually slopes towards deeper water. It is recommended that this feature be charted as shown on the present survey. There were no bottom samples taken in this area. *Concur*

Fix number 4828 - JD 149, sounding volume #1, page 56 - is a shoal located at 55/42/32.54N, 130/53/52.67W. This area was chosen for closer investigation from the preliminary plot. Five meter range arcs were run from station HUT to locate the shoalest depth using a DSF-6000N Echo Sounder. A weighted line and surface float was positioned on the echo-sounder least depth to guide the diver's descent. Water visibility was reported as 30 feet. The divers reported a rocky, gently sloping ledge consisting of rocks and boulders from 0.25 meters to 2.0 meters in diameter. The ledge is about 30 meters wide - oriented northeast-southwest - and 60 meters long - oriented northwest-southeast. South of this area, the bottom slopes up gradually; whereas to the north, it gets slightly deeper. To the east and west it slopes down about 20 degrees into deeper water. The fix and a least depth of 5.2 fathoms was taken at the above position on the shoalest point of the feature near the north end, on top of a 2 meter in diameter boulder. It is recommended that this item be charted as shown on the present survey. A bottom sample was taken in the area by divers. *Concur*

Comparisons between present and prior survey soundings were made by coinciding latitude and longitude and then comparing sounding trends. Prior survey H-5185 (1931, 1:20,000) was compared with H-10133 in accordance with PMC OPORTER Appendix Q. Good agreement is noted east of a line between stations HUT and LEDGE. Poor agreement occurs west of this same line. Results of 50 randomly selected sounding comparisons are as follows: 2% agree within 0.2 fathoms, 2% agree with 0.5 fathoms, 14% agree within 1.5 fathoms, 32% agree within 3% of those depths greater than 55 fathoms, and 50% do not agree within the suggested standards. All soundings which do not agree within suggested standards occur west of the previously mentioned HUT-LEDGE boundary. H-10133's soundings north of 55/43/00N and east of the 50 fathom curve are about 3 fathoms deeper than on survey H-5185. Those soundings west of this curve are about 3 fathoms shoaler. The soundings from 55/43/00N to 55/42/00N and east of the 50 fathom curve are about 5 fathoms shoaler while west of this curve they are about 12 fathoms shoaler. The soundings from 55/42/00N to 55/41/00N and east of the 50 fathom curve are about 8 fathoms deeper while west of this curve they are about 7 fathoms shoaler. The soundings from 55/41/00N to 55/40/00N and east of the 50 fathom curve are about 3 fathoms deeper while west of this curve they are about 2 fathoms shoaler. These discrepancies are believed to be due to the inaccuracy on the prior survey of using a sounding wire machine or leadline on steep slopes. It is

*See EVAL
Report, Section 6*

recommended that in every case the present survey's soundings supersede the prior survey's soundings. *CONCLV*

L. COMPARISON WITH THE CHART ✓

The largest scale chart of the survey area is Chart No. 17424, 5th edition, August 1977; revised October 1983, scale 1:80,000. A 1:20,000 photographic enlargement of Chart No. 17424 was used for sounding comparisons.

All soundings and features - excluding a rock at latitude 55/43'⁴N, longitude 130/54'⁶W - on chart 17424 were identified on the Chart Source Markup of Walker Cove as originating with the prior survey. A letter dated 24 January 1984 requesting identification of the source of the non-sounding feature was sent to N/MOP. Lt. Don Dreves, N/MOP2x², was contacted by Steve Verry, N/CG241, and was advised that the rock was from prior survey H-5185 (1931). A copy of the letter and Chart Source Markup have been appended.

The only discrepancies noted with depths or non-sounding features were located along the shoreline of Walker Cove. The sounding and non-sounding features were offset from the shoreline for visual clarity using cartographic license. Each of the offset sounding and non-sounding features were identified with prior survey H-5185 (1931) and checked to see if the features were in the position indicated on the chart. Since all charted soundings and charted features originate with the prior survey and since comparison with the prior survey has already been discussed in section K of this report, no further discussion is deemed necessary. *CONCLV*

A Dangers to Navigation letter was submitted to the Coast Guard on 31 May 1984. A copy of this letter is appended to this report.

M. ADEQUACY OF SURVEY ✓

This survey is complete within its boundaries to supersede prior surveys for charting. *CONCLV*

N. AIDS TO NAVIGATION ✓

There are no aids to navigation in the project area. *CONCLV*
A negative report for NOAA Form 76-40 (Non-floating Aids or Landmarks for Charts) has been appended. See section K of this report for a discussion of the mooring buoy charted at 55/43/⁵⁵N, 130/45/²²W.
57.12 10.50

O. STATISTICS ✓

Number of positions:	2020 1649
Total number miles of sounding lines:	142.47
Square miles of sounding lines:	3.12
Bottom samples:	23
Sound velocity determinations:	4
Tide stations occupied:	2
Dive investigations:	5

P. MISCELLANEOUS ✓

All bottom samples were sent to the Smithsonian Institution as requested. The samples were stored and shipped in accordance with Section 4.7.1. of the Hydrographic Manual and Hydrographic Survey Guideline No. 14. DAVIDSON had not received Hydrographic Survey Guideline No. 33 prior to the the bottom samples' transmittal date.

Current speed and direction was measured during H-10133. For information concerning this data see the Current Report.

NOAA Form 76-155 (Geographic Names) and the Request for Approved Geographic Names form letter together with a copy of the Progress Sketch has been transmitted with the Descriptive Report to be forwarded to the Chief Geographer N/CG2x5, through the Pacific Marine Center.

There were no Wire Drag or Side Scan Sonar operations during this project.

A Coast Pilot report dated 14 June 1984 has been transmitted with the Descriptive Report for forwarding to N/CG243, through the Pacific Marine Center.

Q. RECOMMENDATIONS ✓

There are no recommendations other than those already stated earlier in this Descriptive Report.

R. AUTOMATED DATA PROCESSING ✓

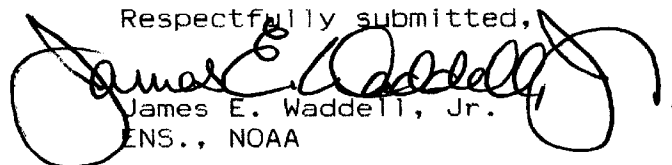
<u>Program Number</u>	<u>Program Name</u>	<u>Version Date</u>
RK 112	Range-Range Real Time HYDROPLOT	10/12/83
RK 201	Grid, Signal and Littice Plot	04/18/75
RK 211	Range-range Non-Real Time Plot	02/13/84
RK 215	Visual Non-Real Time Plot	02/11/81
RK 216	Range-Azimuth Non-Real Time Plot	02/24/84
RK 300	Utility Computations	10/21/81
RK 330	Reformat and Data Check	05/04/76
RK 407	Geodetic Inverse/Direct Comput.	09/25/78
AM 500	Predicted Tide Generator	11/10/72
AM 602	Elinore (Line Oriented Editor)	05/20/75

Geodetic computations were made using the geodetic and triangulation programs written for the HP-9815A calculator.

5. REFERRAL TO REPORTS ✓

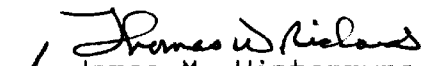
	<u>Date Submitted</u>
Horizontal Control Report	15 June 1984
Field Tide Note	19 June 1984
Electronic Control Report	14 July 1984
Corrections to Echo Soundings Report	14 July 1984
Field Geographic Names	14 July 1984
Coast Pilot Report	14 July 1984
Current Report	19 June 1984

Respectfully submitted,



James E. Waddell, Jr.
ENS., NOAA

Approved and forwarded,



for James M. Wintermyre
CDR., NOAA
Commanding Officer
NOAA Ship DAVIDSON



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

NOAA Ship DAVIDSON S331
1801 Fairview Ave East
Seattle, WA 98102

May 31, 1984

Commander
17th Coast Guard District
P.O. Box 3-5000
Juneau, AK 99802

Dear Sir:

This is to confirm our R 302300Z May 1984 message. It is requested that the following be published in the Local Notice to Mariners.

The following Dangers to Navigation were located during the hydrographic survey of Walker Cove, Alaska, registry number H-10133. A description and position of the dangers are listed below:

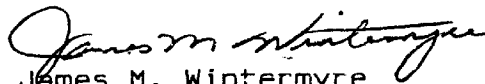
- 1) A rock covered by 0.³/₂ fm at MLLW discovered; chart 17424; latitude 55°42'26.8"N; longitude 130°53'39.1"W; distance 148 meters, bearing 278° true from Ledge Point.
- 2) A rock covered by 0.4 fm at MLLW discovered; chart 17424; latitude 55°42'27.3"N; longitude 130°53'39.5"W; distance 156 meters, bearing 282° true from Ledge Point.
- 3) A rock covered by 0.5 fm at MLLW discovered; chart 17424; latitude 55°42'27.4"N; longitude 130°53'40.6"W; distance 176 meters, bearing 283° true from Ledge Point.
- 4) A shoal covered by 5.²/₈ ^{RK} fm at MLLW discovered; chart 17424; latitude 55°42'32.5"N, longitude 130°53'52.7"W; distance 0.2 nautical miles, bearing 297° true from Ledge Point.
- 5) A shoal covered by 5.¹/₂ ^{RK} fm at MLLW discovered; chart 17424; latitude 55°42'37.6"N; longitude 130°53'48.1"W; distance 0.25 nautical miles, bearing 319° true from Ledge Point.
- 6) A shoal covered by ~~4.0~~^{3.8} ^{RK} fm at MLLW discovered; chart 17424; latitude 55°42'43.3"N, longitude 130°53'48.2"W; distance 0.3 nautical miles, bearing 330° true from Ledge Point.
- 7) The mooring buoy located in Walker Cove, Alaska, with a Position Approximate; chart 17424; located at latitude 55°43'57.¹²'N, longitude 130°45'10.5"W; distance 4.9 nautical miles, bearing 072° true from Ledge Point.



Questions or comments concerning the survey may be directed to:

Chief, Nautical Chart Branch
NOAA, National Ocean Service
1801 Fairview Avenue East
Seattle, WA 98102-3767

Telephone: (206) 442-6835



James M. Wintermyre
CDR, NOAA
Commanding Officer

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RTTUZUU RUWTEK0040 1520030-UUUU--RUWNSUU.

ZNR UUUUU

R 302300Z MAY 84

FM NOAA DAVIDSON

TO CCGDSEVENTEEN JUNEAU AK

ACCT CM-VCAA

BT

UNCLAS

THE FOLLOWING DANGERS TO NAVIGATION WERE LOCATED IN THE VICINITY OF WALKER COVE WHICH ENTERS BEHM CANAL FROM THE EAST ABOUT 10 MILES ABOVE RUDYERD BAY ENTRANCE ABREAST OF SNIP ISLAND.

1. A ROCK COVERED BY 0.2 FM MLLW, LOCATED AT LAT 55-42-26.8N, LONG 130-53-39.1W, IS 148 METERS BEARING 278 DEGREES TRUE FROM LEDGE POINT.
2. A ROCK COVERED BY 0.4 FM MLLW, LOCATED AT LAT 55-42-27.3N, LONG 130-53-39.5W, IS 156 METERS BEARING 282 DEGREES TRUE FROM LEDGE POINT.
3. A ROCK COVERED BY 0.5 FM MLLW, LOCATED AT LAT 55-42-27.4N, LONG 130-53-40.6W, IS ~~126~~ METERS *should be 176 meters see letter dated may 31* BEARING 283 DEGREES TRUE FROM LEDGE POINT.
4. A SHOAL COVERED BY 5.3FM MLLW, LOCATED AT LAT 55-42-32.5N, LONG 130-53-52.7W, IS 0.2 N MI BEARING 297 DEGREES TRUE FROM LEDGE POINT.
5. A SHOAL COVERED BY 5.2FM MLLW, LOCATED AT LAT 55-42-37.6N, LONG 130-53-48.1W, IS 0.25 N MI BEARING 319 DEGREES TRUE FROM LEDGE POINT.
6. A SHOAL COVERED BY 4.0FM MLLW, LOCATED AT LAT 55-42-43.3N, LONG 130-53-48.2W, IS 0.3 N MI BEARING 330 DEGREES TRUE FROM LEDGE POINT.
7. THE MOORING BUOY LOCATED IN WALKER COVE WITH A POSITION APPROXIMATE, WAS LOCATED AT LAT 55-43-57.1N, LONG 130-45-10.5W, 4.9 N MI BEARING 72 DEGREES TRUE FROM LEDGE POINT.

CHART EFFECTED: 17424

BT

#0040

NNNN

TOD 310220Z MAY 84 DEB 6338.5KHZ

FO



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

NOAA Ship FAIRWEATHER
1801 Fairview Ave. E.
Seattle, WA 98102

3 December 1984 1703-01.05

JLS
R Mueller
agree w/ Report

TO : N/MOP - Robert Sandquist

FEB 28 1985

FROM : S220 - Commanding Officer *Christian Anderson*

SUBJECT: Special Report on Raytheon DSF-6000N Depth Sounder

As per the request from the Chief, Nautical Charting Division (N/CG2) the following special evaluation report on the DSF-6000N depth sounder has been compiled.

The Raytheon DSF-6000N depth sounders were installed on FAIRWEATHER and her survey launches on 19 September 1984. After the completion of one project these new depth sounders have proven to be both a blessing and a hinderence to operations. They are a great improvement over the older Ross fathometers previously used, however many perplexities still exist.

Operational and maintenance training on the DSF-6000N depth sounders was minimal before receiving the equipment. One to two day classes were given to the anticipated operators and the electronic repair technicians nine to ten months before actual field use began. This time lag was due to a lack of DSF-6000N operational units for installation aboard FAIRWEATHER and our desire to continue using the Ross for the Shelikof Strait project where the bottom is characterized by extreme peaks which undoubtedly would have created problems with such a new system. In retrospect we are happy that we did so. This time lag between instruction and deployment made it difficult for personnel to begin using the system, i.e., the first couple of days in the field off Santa Barbara.

The problem was then alleviated through "in field training" furnished by LCDR Dean Seidel and Mr. Phil Libraro from the Office of Marine Operations along with EEB's Mike Webb. This additional "hands on" instruction was a great assistance to both operators and repair technicians. Procedures and problems not documented but known to these people were passed on to ship personnel.

Operational procedures for the DSF-6000N seem to be fairly well written, whereas the maintenance and repair instructions are lacking documentation. The depth sounders given to FAIRWEATHER in September were not adequately tuned (high and low receivers were misaligned) and would not have been realized by onboard Electronic Technicians since such procedures are not documented. The problem was remedied by the OMO personnel. Also, no preventive maintenance plan appears to be in existence at this time.



Difficulties encountered during field use are as follows:

1. The greatest problem experienced with the DSF-6000N echo sounders is its inability to distinguish between fish and peaks or shoals. Schools of fish at or near the bottom present a trace that is, for all practical purposes, identical to that produced by a shoal area. Indications of shoals/peaks have appeared on sounding lines which when immediately re-run gave no evidence of the features. This will create serious problems with shoreside data processing and review in that once such a trace is recorded the natural inclination is to chart it to be "safe" unless the field unit can positively disprove the item. This is frustrating in the field and many hours have been spent running developments in order to do so. Even then some of the suspected shoals/peaks will ultimately be charted. (Examples of analog traces are attached to this report.)
2. The DSF-6000N will also digitize on small items in the water column producing a large number of missed depths. This has required additional processing hours necessary to re-scan all echo sounding data.
3. The DSF-6000N will not sound less than 0.7 to 0.9 fathoms depending on the unit. The requirement for the zero fathom curve when performing a basic hydrographic survey cannot be met with this instrument. In order to adequately develop the inshore areas, it is necessary to equip a skiff with a portable echo sounder. Since this data must be hand logged, once again processing time is increased. It is far preferable for the launches to have the capability of defining the zero fathom curve.
4. When running in shoal waters (less than five fathoms) the operator is required to raise receiver gain levels. In order to maintain a consistent bottom trace when approaching shallower depths, the gain is increased which saturates the record. This excessive noise causes difficulties in analog interpretation as well as mis-digitization of actual depth.
5. The bottom trace will vary in depth depending on the amount of receiver gain that is set on the depth sounder. This can easily be seen when recording depths in units of feet. In 10 fathoms or greater, the appearance of the erroneous trace experienced by FAIRWEATHER personnel is equivalent to that produced by the low frequency alone. The appearance was not determined for shoal waters. When the quality of the depth sounder's analog trace is poor, distinguishing between the two can be a problem.
6. No in-between sounding marks are produced by the DSF-6000N when using an ASI Logger or the on-line logger programs. This is extremely inconvenient when scanning data and inserting peaks or deeps.
7. Whenever there is inadequate space for the DSF-6000N to automatically record fix numbers such as when two fixes are taken almost simultaneously, the second fix number is not annotated by the depth sounders. This occurs quite often at the end of a sounding line. In these cases, the last fix mark should take precedence.
8. The analog trace on the data record will override the printed depth scales when the two coincide. Many times the depth scale will stop at the edge of the trace, giving the appearance of a peak. It would be more

advantageous if the scales did not print within the limits of the specified gate width.

9. The 2.5, 7.5, etc., fathom grid marks on the analog record are highlighted the same as the 5.0 fathom increment marks. This has caused many misdepths to be recorded when scaling values from the analog trace.

10. The instrument's automatic gain control does not work with the precision necessary to keep a continuous acceptable bottom trace. This requires the operator to adjust the gain when the depth varies more than 30% of the phase.

11. On the average, the auto phase control does not switch scales fast enough to prevent missed depths when operating across steep slopes. The echo sounder loses the bottom trace, causing a time consuming process (usually longer than the sounding interval) to re-establish contact.

12. Occasionally, the gate will wander away from the bottom trace for no apparent reason whether in auto or manual mode. This causes a loss of digitized depths when the trace is easily readable.

13. The LCD digital readout on the instrument is difficult to read especially when the launch cabin lighting is very bright.

14. Styluses are used up at a fast rate. A hardy stock must be kept on hand for an entire field season of use.

Electronic problems that have been encountered during times of operations have been relatively minor however, there seems to be a fair amount of time spent on maintaining and adjusting the DSF-6000N's by the Electronics Department onboard the ship. Included in these problems have been failure of low and high frequency boards, bent styluses, broken stylus belts, event marks continuously printing due to electrical shorts in the launch systems, take up mechanisms sticking, and an intermittent wavy analog trace.

In general the Raytheon DSF-6000N depth sounders have been an improvement over previous echo sounders. Operator on line annotation has significantly decreased thus fewer annotating errors have occurred. It has reduced launch personnel workload when running deep, open water areas. Time lost to bar checks has diminished since only one depth is required. Bar checks may also soon be eliminated due to the use of the depth simulators. Elimination of bar checks is valuable on line time gained. Also, if some of the above problems can be resolved, our situation of scanning fathograms will be much improved.

Basically, the DSF-6000N as a system has a lot going for it, but it is essential that we overcome the nagging problems that remain. Utmost among these is the "fish finding" aspect. It is far better to minimize the potential for false returns and minimize the necessity for re-runs/developments/sweeps/dives to disprove them than to collect them in the first place.

Analog Traces -- DSF-6000N Depth Sounder

Sequence #1 - Figures 1 - 5

Area - FA-20-1-84, H-10161 Range-Azimuth Hydro:

- Figure #1 - School of fish on sounding line - JD 307
Position numbers 4549-4552, Hdg - inshore
- Figure #2 - Fish at and near the bottom between sounding lines
JD 307
- Figure #3 - Fish on the bottom on next sounding line - JD 307
Position numbers 4553 - 4556, Hdg - offshore
- Figure #4 - Same sounding line re-run approximately 10 minutes
later - no sign of fish or "shoal" - JD 307
Position numbers 4576 - 4578, Hdg - inshore
- Figure #5 - Detached position at the "fish/shoal" location - JD
307; Position number 4579

Sequence #2 - Figures 6 - 11

Area - FA-20-1-84, H-10161 Range-Range Hydro:

- Figure #6 - Indicated side echo on sounding line - JD 290
Position numbers 3112 - 3114, Hdg - inshore
- Figure #7 - Indicated side echo on sounding line - JD 290
Position numbers 3150 - 3152, Hdg - offshore
- Figure #8 - Same area - indicated side echo on sounding line -
JD 290, Position numbers 3183 - 3185, Hdg - offshore
- Figure #9 - Development consisting of 10 meter line spacing over
the area encompassing figures #6-8 - JD 292: No
indication of any feature, only dolphins playing
around the launch; Position numbers 3344 - 3365
- Figure #10 - Same as figure #9
- Figure #11 - Same as figure #9

Sequence #3 - Figures 12 - 21

Area - FA-20-1-84, H-10161 Range-Range Hydro: AWOIS Item
Investigation

- Figure #12 - First trace of submerged wreck, length - 90 ft.
JD - 296
- Figure #13 - Development over submerged wreck consisting of 20
meter spacing in the north/south and east/west
directions - JD 296, Position numbers 4055 - 4198
- Figure #14 - Same as figure #13
- Figure #15 - Same as figure #13
- Figure #16 - Same as figure #13; Indicates that something might
be only 3.4 fathoms from the surface.
- Figure #17 - Additional sounding lines over the wreck consisting
of 5 meter line spacing at headings of 135 and 315
degrees True - JD 305, Position numbers 4305-4414:
Traces have changed to light clouds in the water
column along with a maximum height off the bottom of
2.5 fathoms
- Figure #18 - Same as figure #17
- Figure #19 - Same as figure #17

Figure #19 - Same as figure #17
Figure #20 - Same as figure #17
Figure #21 - Same as figure #17

Sequence #2 - Figures 22 - 31

Area - FA-10-3-84, H-10165 Range-Azimuth Hydro:

- Figure #22 - Kelp/fish trace on sounding line #3240 - JD 312
Position numbers: 4369-4371, Hdg - offshore
- Figure #23 - Re-run of sounding line #3240 - JD 321: No
indication of the kelp/fish feature; Position
numbers: 4535 - 4547, Hdg - inshore
- Figure #24 - "Fish/peak" features on sounding line #3420 - JD 312
Position numbers: 4381-4386, Hdg - offshore
- Figure #25 - Re-run of sounding line #3420 - JD 321: No
indication of the features; Position numbers: 4524 -
4528, Hdg - inshore
- Figure #26 - "Kelp/fish peaks" on sounding line #3510 - JD 312
Position numbers 4387 - 4390, Hdg - inshore
- Figure #27 - Re-run of sounding line #3510 - JD 321: No
indication of previous indicated features; Position
numbers: 4519-4523, Hdg - offshore
- Figure #28 - Fish features on sounding line #3690 - JD 312
Position numbers 4403-4406, Hdg - inshore
- Figure #29 - Re-run of sounding line #3690 - JD 321: No
indication of the features; Position numbers 4506 -
4511, Hdg - offshore
- Figure #30 - Fish peaks on sounding line #3780 - JD 312
Position numbers 4414 - 4417, Hdg - offshore
- Figure #31 - Re-run of sounding line #3780 - JD 321: No
indication of the features; Position numbers 4500 -
4504, Hdg - inshore

SURVEY APPROVAL SHEET

- A. Amount and degree of personal supervision of field work and frequency of record and sheet inspection:

Direct supervision of the field work was done by the Field Operations Officer. CDR Wintermyre checked the records on a random basis, and checked the field sheets and progress daily.

- B. State whether the survey is complete and adequate, or if additional field work is recommended.

The survey is complete and adequate to supersede prior surveys or charting.

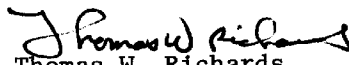
- C. Cite additional information or references that may be of assistance for verifying and reviewing the survey:

There are no additional information or references that may be of assistance for verifying and reviewing Hydrographic Survey H-10133.

- D. Signed statement of approval of the field sheet and all accompanying records..

13 July 1984
(Date)

Approved and forwarded for
CDR. J. M. Wintermyre


Thomas W. Richards
CDR, NOAA

OPR-0177-DA-84
 DA-20-1-84(H-10133)
 SIGNAL TAPE PRINTOUT

001	3	55	39	06287	130	56	46635	250	0001	000000	OFT 2 1929
002	3	55	41	19647	130	57	28635	250	0002	000000	PAD 2 1929
003	5	55	42	20171	130	58	16803	250	0002	000000	CELL 1891
004	4	55	43	34921	130	54	56800	139	0002	000000	GARB 2 1929
005	1	55	42	43184	130	54	04289	250	0000	000000	HUT 1931
006	1	55	42	50807	130	53	22870	250	0001	000000	ABE 1931
007	0	55	43	01580	130	52	38855	250	0002	000000	ISLET 1931
008	2	55	43	22253	130	52	02770	250	0001	000000	CHICK 1931
009	2	55	43	31770	130	50	40606	250	0002	000000	EL 1931
010	2	55	43	30460	130	50	34215	139	0001	000000	BLU 1931
011	1	55	43	40236	130	50	01407	250	0001	000000	STEP 1931
012	2	55	43	47853	130	48	06386	250	0001	000000	CULT 1931
013	3	55	43	58536	130	47	26769	250	0003	000000	MOST 1931
014	1	55	44	19133	130	46	53304	250	0023	000000	END 1931
015	1	55	44	21384	130	46	27937	139	0002	000000	JOANNY, 1982
016	4	55	45	41204	130	42	26619	250	0002	000000	LEE, 1982
017	4	55	43	40282	130	46	41296	250	0001	000000	GOOD 1931
018	6	55	43	06797	130	47	37392	250	0003	000000	FIN 1931
019	6	55	43	17881	130	49	26512	250	0005	000000	DIX 1931
020	6	55	43	05681	130	50	36718	250	0001	000000	FIX 1931
021	7	55	42	58303	130	51	55152	250	0001	000000	DUB 1931
022	7	55	42	38643	130	52	33256	250	0001	000000	BOT 1931
023	7	55	42	26157	130	53	30739	250	0002	000000	LEDGE 1931
024	4	55	40	49207	130	54	07679	139	0001	000000	BED 1891
025	0	55	44	31544	130	46	15978	250	0004	000000	BRO, 1984
026	0	55	45	10442	130	45	01391	250	0004	000000	BOLD R , 1984
027	1	55	45	20720	130	43	52287	250	0004	000000	REPEL, 1984
028	0	55	45	30742	130	43	01970	250	0002	000000	GOAT, 1984
029	6	55	45	09039	130	43	02100	250	0003	000000	SHADE, 1984
030	6	55	44	56672	130	44	19687	250	0003	000000	NOTCH, 1984
031	4	55	44	24862	130	44	56507	250	0004	000000	BALD, 1984
032	6	55	44	10180	130	46	07774	250	0004	000000	SCARP, 1984
033	0	55	43	04589	130	52	34826	254	0001	000000	BUBBA(TEMP PT.)
034	3	55	45	28571	131	01	54365	250	0001	000000	MAG 2 1929
035	1	55	44	55670	130	45	33640	252	0002	000000	TEMP PT. (Not adjusted)

FIELD TIDE NOTE
OPR-0177-DA-84
WALKER COVE, ALASKA
April-May 1984

Field tide reductions are based on Ketchikan predicted tides, corrected to Walker Cove, AK as per project instructions dated 14 FEB 1984 and Change #1 dated 21 FEB 1984. They were interpolated using the PDP 8/e computer and the AM 500 program, version date 11/10/72. All times of both predicted and recorded tides are Universal Time Coordinated(UTC).

Two Bristol bubbler tide gages have been installed in the project area. Location and operational periods are as follows:

<u>SITE</u>	<u>STATION NUMBER</u>	<u>LOCATION</u>	<u>PERIOD</u>
Hut Point	945-0695	55 42'52"N 130 54'07"W	27 APR- 30 MAY
FIN	945-0811	55 43'09"N 130 47'39"W	28 APR- 31 MAY

Hut Point

Gage 62A92 was installed on 17 APR (JD 108) as well as a 25-ft tide staff. The station became officially operational on 27 APR 1984 by virtue of successful levels and a 3-hour acceptance test. Gage 62A92 was removed on 13 MAY (JD 134) and replaced by two gages (67A16209 and 64A11032) in effort to resolve an uncorrectable ripple in the marigram trace. Gage 67A16209 was connected to the same orifice tube and nitrogen bottle as the previous gage. Gage 64A11032 was attached to a separate orifice located on the same anchor as the other gage (67A16209). Both gages were issued into official operation with simultaneous successful acceptance tests. It is recommended that data from gage 62A92 be used as control until 13 MAY (JD 134) from whence gage 64A11032 should be the control gage. Tidal information from gage 67A16209 should be used as a back-up. The marigrams for gages 67A16209 and 64A11032 read 4.15 ft and 4.55 ft greater than the staff respectively. Gage 62A92 had a staff-to-gage difference of 4.2 ft. The station was removed on 30 MAY (JD 151).

FIN

Gage 63A2920 was installed on 26 APR (JD 117) and began officially obtaining data on 29 APR (JD 120) after successful leveling and a 3-hour acceptance test. Staff was emplaced on 28 APR (JD 119). An error in adjustment of feed pressure on 17 MAY (JD 138) caused a loss of data between that date and 1700 UTC of 22 MAY (JD 143). Hydrography scheduled for 22 MAY (JD 143) was delayed 4 hours until 2100 UTC in accordance with project instructions. A one hour acceptance test was performed on the morning of that date to ensure that the gage was restored to proper functioning order. The marigram reads 4.25 ft greater than the staff. Station was removed on 31 MAY (JD 152).

LEVELING

Hut Point tide station was leveled to five newly established permanent bench marks, as well as to, horizontal control station HUT 1931. Beginning and ending levels were accomplished to third order class one accuracy and differed at most by 2 mm, denoting that no significant shift in staff nor benchmarks occurred (see Level Records dated 27 APR 1984 and 30 MAY 1984).

FIN tide station was leveled to four newly-established permanent benchmarks and horizontal control station FIN 1931. Beginning and ending levels were accomplished to third order class one accuracy with the maximum difference between them being 2 mm, confirming that no significant shift in tide staff nor benchmarks occurred (see Level Records dated 29 APR 1984 and 31 MAY 1984).

The Ketchikan tide station, control for this project, was leveled to 5 historical benchmarks. Leveling information agreed with historical records proving no significant shift in marks or staff had occurred. A table of comparisons follows:

BM	<u>June 1983 Elevations</u>	<u>Elevations 23 Apr/1 June 1984</u>
36	37.905ft(11.5537m)	37.913ft(11.556m)/ 37.907ft(11.554m)
24	36.836ft(11.2279m)	36.843ft(11.230m)/ 36.843ft(11.230m)
37	48.804ft(14.8756m)	48.812ft(14.878m)/ 48.825ft(14.882m)

<u>Differences in Elevations(m)</u>		
	<u>Historical</u>	<u>23 Apr/1 June 1984</u>
	{3.652	
	{3.650	
BM 24-37	{3.649	3.648/3.652
	{3.646	
	{3.648	
	{4.340	
BM 37-34	{4.336	4.337/4.334
	{4.332	
	{4.335	
	{1.454	
BM 34-32	{1.456	1.453/1.457
	{1.454	
	{1.454	

(Historical data recieved via telephone from Micky Moss-PTP)

TIDE AND CURRENT OBSERVATIONS

Current meter observations were made by the DAVIDSON while at anchorage in the mouth of Rudyerd Bay and in Walker Cove. A seperate report is appended.

The bar across the mouth of Walker Cove between Ledge Point and Hut Point was noticed to cause the sea state in that area to be chopier than elsewhere during ebb and flood currents.

RECOMMENDATIONS

It is recommended that data from the Hut Point tide station be used to reduce depths and heights west of the bar between Hut Point and Ledge Point. Reductions eastward of the bar should be made using tide station FIN as control.

It is also recommended that, based on accessibility and stability, BM 0695B and Horizontal Control Station FIN 1931 be used as primary benchmarks for tide stations Hut Point and FIN respectively.

Respectfully submitted,


Andrew J. Allen, ENS NOAA

Approved and Forwarded,


James M. Wintermyre, CDR NOAA

HOW TO REACH STATEMENT
Hut Point Tide Station
945-0695

Station is located at the entrance to Walker Cove from Behm Canal (Chart 17424). Installation site is on the northeastern extent of the northernmost islet of the two which lie off Hut Point. Tide staff was mounted to a vertical portion of the rock shore and gage was placed inshore on a moss and scrub covered area. Benchmarks are located about the two islets as described in the station's historical data.

HOW TO REACH STATEMENT
FIN Tide Station
945-0811

Station is located on the south shore of Walker Cove about 3.7 miles from the Cove's entrance from Behm Canal (Chart 17424). Installation site is about 200 yards east of a prominent water cascade. Tide staff was mounted to a vertical, offlying rock and the gage was beneath a large spruce tree. Benchmarks are located eastward about the shore as described in the station's historical data.

DATE: 11/15/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: 0177

Hydrographic Sheet: H-10133

Locality: Walker Cove, Alaska

Time Period: April 30 - May 29, 1984

Tide Station Used: 945-0695 Hut Point, AK
945-0811 Fin, AK.

Plane of Reference (Mean Lower Low Water): 945-0695 = 3.62 ft.
945-0811 = 1.46 ft..

Height of Mean High Water Above Plane of Reference: 945-0695 = 14.9 ft.
945-0811 = 15.1 ft. .


Remarks: Recommended Zoning:

1. East of a line formed by 2 points located at,

latitude $55^{\circ}42.9'$ and $55^{\circ}42.4'$
longitude $130^{\circ}53.8'$ $130^{\circ}53.4'$

Zone Direct on 945-0811 Fin.

2. West of the Previous Line Zone Direct on 945-0695 Hut Point.

for 
Chief, Tidal Datums Section

GEOGRAPHIC NAMES (Field)

H-10133

Name on Survey

A ON CHART NO. 17424
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

Name on Survey	A	B	C	D	E	F	G	H	K
Behm Canal	X								1
Hut Point	X								2
Ledge Point	X								3
Walker Cove	X								4
Walker Creek									5
Granite Creek									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
						Approved:			17
									18
						<i>Charles E. Harrington</i>			19
						Chief Geographer - N/Ca 2x5			20
						JUL 30 1984			21
									22
									23
									24
									25

HYDROGRAPHIC SURVEY STATISTICS

H-10133

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		10
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		3
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES	2				
ENVELOPES					
VOLUMES	1				
CANERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS(List): TP-00161
 PHOTOBATHYMETRIC MAPS(List):
 NOTES TO THE HYDROGRAPHER(List):
 SPECIAL REPORTS(List): Corrections to Echo Soundings, Elec Control, Horizontal Control
 NAUTICAL CHARTS(List): 17424, 5th Edition, August 1977

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			1687
POSITIONS REVISED	323		
SOUNDINGS REVISED	132		
CONTROL STATIONS REVISED	0		
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	1		1
VERIFICATION OF CONTROL	3		3
VERIFICATION OF POSITIONS	78.5		78.5
VERIFICATION OF SOUNDINGS	201		201
VERIFICATION OF JUNCTIONS	NA		
APPLICATION OF PHOTOBATHYMETRY	NA		
SHORELINE APPLICATION/VERIFICATION	8		8
COMPILATION OF SMOOTH SHEET	36		36
COMPARISON WITH PRIOR SURVEYS AND CHARTS		14.5	14.5
EVALUATION OF SIDESCAN SONAR RECORDS	NA		
EVALUATION OF WIRE DRAGS AND SWEEPS	NA		
EVALUATION REPORT	2	22.5	24.5
OTHER		20	20
Digitization	7		7
TOTALS	336.5	57	393.5

Pre-processing Examination by James L. Stringham	Beginning Date 8/21/84	Ending Date 8/21/84
Verification of Field Data by Thelma O. Jones	Beginning Date 8/21/84	Ending Date 5/21/85
Verification Check by B. Olmstead, J. Green, J. Stringham	Time(Hours) 109	Ending Date 6/13/85
Evaluation and Analysis by C.R. Davies	Beginning Date 5/23/85	Ending Date 6/13/85
Inspection by D. Hill	Time(Hours) 3	Ending Date 6/14/85

PACIFIC MARINE CENTER
EVALUATION REPORT

H-10133

1. INTRODUCTION

H-10133 was accomplished by the NOAA Ship DAVIDSON in accordance with the following project instructions:

OPR-0177-DA-84, dated February 14, 1984
Change No. 1, dated February 21, 1984
Change No. 2, dated April 27, 1984

This is a basic survey of Walker Cove, Alaska which is located on the eastside of Behm Canal. The survey extends one mile north of Hut Point and two and one half miles south of Ledge Point from the mouth of Walker Cove. Hydrography extends from the 100 fathom curve in Behm Canal to the head of Walker Cove.

Predicted tides based on the Ketchikan, Alaska gage was used during field processing. Tide correctors used for the reduction of final soundings reflect approved hourly heights zoned from Hut Point and Fin, Alaska.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic.

Numerous problems occurred with the new sounding equipment (DSF-6000N fathometer) during hydrographic operations (see section D of the hydrographer's report and NOAA Ship FAIRWEATHER letter, dated December 3, 1984; copy attached). The many problems with the DSF-6000N prolonged the verification of the survey data. Each fathogram had to be reviewed or rescanned because of the unreadable bottom traces and stray soundings caused by side echoes and false bottoms.

2. CONTROL AND SHORELINE

Hydrographic control and positioning are adequately discussed in the Descriptive Report (sections F and G) and Horizontal and Electronic Control Reports for OPR-0177-DA-84.

Geodetic positions for control stations used during hydrography are published and field positions on the North American 1927 datum.

Class III reviewed photogrammetric manuscript TP-01161 (scale 1:20,000) was used for location of offshore features:

Date of Photography June 1982
Date of Field Edit none

Except for four small islands, two in the vicinity of latitude 55°42'48"N, longitude 130°54'06"W, one at latitude 55°43'03"N, longitude 130°52'39"W, and one at latitude 55°42'11.5"N, longitude 130°53'42"W, shoreline is not shown

on the smooth sheet in an effort to expedite office processing (see memorandum Reduction of Marine Center Hydrographic Survey Processing Backlog, dated February 16, 1984).

Shoreline for these islands is shown to prevent possible interpretation that the islands no longer exist. The shoreline is available on manuscript T-01161 and there is no conflict with hydrography.

3. HYDROGRAPHY

Soundings at line crossings are in good agreement.

Delineation of the bottom configuration, development of shoal soundings, determination of least depths, and delineation of standard depth curves are adequate.

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change 3, except as noted in the Preprocessing Examination Report, dated August 23, 1984, and as follows:

a. Section I of the hydrographer's report notes that 22% of the crosslines agree within 1.5 fathoms for depths of 11 to 55 fathoms. This is not in accordance with the Hydrographic Manual 1.1.2 Part B.II.1 which requires that normal disagreement be less than 1.5 fathoms in these depths. This larger disagreement is acceptable only because of the abrupt change of depth directly off the shoreline.

b. Four rocks which originate from prior survey H-5185 (1931) were not located by a position during hydrographic operations although elevations were obtained for all four rocks. All rocks which are considered a hazard to navigation within the survey area should be located by approved positional methods (see Hydrographic Manual 4.5.8 and Section 6 of this report).

5. JUNCTIONS

No junctions were required, in accordance with Project Instruction OPR-0177-DA-84.

6. COMPARISON WITH PRIOR SURVEYS

H-5185 (1931) 1:20,000

The present survey soundings generally compare within 2-3 fathoms of the prior survey soundings, except where noted in the hydrographer's Descriptive Report.

The following rocks were transferred to H-10133 from H-5185:

<u>Feature</u>	<u>Latitude North</u>	<u>Longitude West</u>
*-rock	55°43'22"	130°54'42"
*-rock	55°42'42"	130°54'02"
*-rock	55°42'30"	130°52'49"
*-rock	55°42'53"	130°51'58"

These four rocks were not positioned during hydrographic operations but elevations were obtained. The appropriate elevations are shown on the smooth sheet.

Four AWOIS items which fall within the survey area are adequately discussed in section K of the hydrographer's report.

H-10133 is adequate to supersede the prior survey, within their common areas.

7. COMPARISON WITH CHART

Chart 17424, 5th Edition, dated August 6, 1977; revised October 1, 1983.

a. Hydrography - Charted information originates with the prior survey discussed in section 6 of this report. For more detail see section L of the hydrographer's report.

H-10133 is adequate to supersede charted hydrography within the common area.

The area covered by H-10133 was examined for dangers to navigation, seven were found and were forwarded by the NOAA Ship DAVIDSON to the Seventeenth Coast Guard District (see letter attached).

No additional dangers were identified during office processing.

b. Controlling Depths - There are no controlling depths within the limits of this survey.

c. Aids to Navigation - There are no fixed or floating aids within the limits of this survey.

The geographic names shown on the smooth sheet originate from this chart.

8. COMPLIANCE WITH INSTRUCTIONS

H-10133 adequately complies with the project instructions, except as noted in Section 4, Condition of Survey.

9. ADDITIONAL FIELD WORK

This is a good basic survey. No additional field work is recommended.

Charles R. Davies
Charles R. Davies
Cartographer

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting. The survey is recommended for approval.

Dennis Hill
Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10133

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

David W. Yeager 6/20/85
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LMMordock

SIGNATURE AND DATE:

Langford Mordock 6/21/85

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Robert L. Sanford 6-21-85
Director, Pacific Marine Center (Date)

MARINE CHART BRANCH RECORD OF APPLICATION TO CHARTS

H-10133

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. _____

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
17420	4/18/87	ALMACEN	Full Part Before After Marine Center Approval Signed Via <i>full application of</i> Drawing No. <i>soundings from 55. Soundings in agreement</i> <i>with 17424.</i>
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			STANDARDS CK'D 7-29-85 C. Loy