

10139

Diagram No. 8502-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. DA-40-1-84
Office No. H-10139

LOCALITY

State Alaska
General Locality Gulf of Alaska
Locality 26 Miles West of Cape
..... Saint Elias
..... 19 84
CHIEF OF PARTY
CDR T.W. Richards

LIBRARY & ARCHIVES

DATE January 9, 1986

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

Area 5

CHTS

16700

16013

531

500

530

to sign off see

Record of Application

HYDROGRAPHIC TITLE SHEET

H-10139

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form,
filled in as completely as possible, when the sheet is forwarded to the Office.

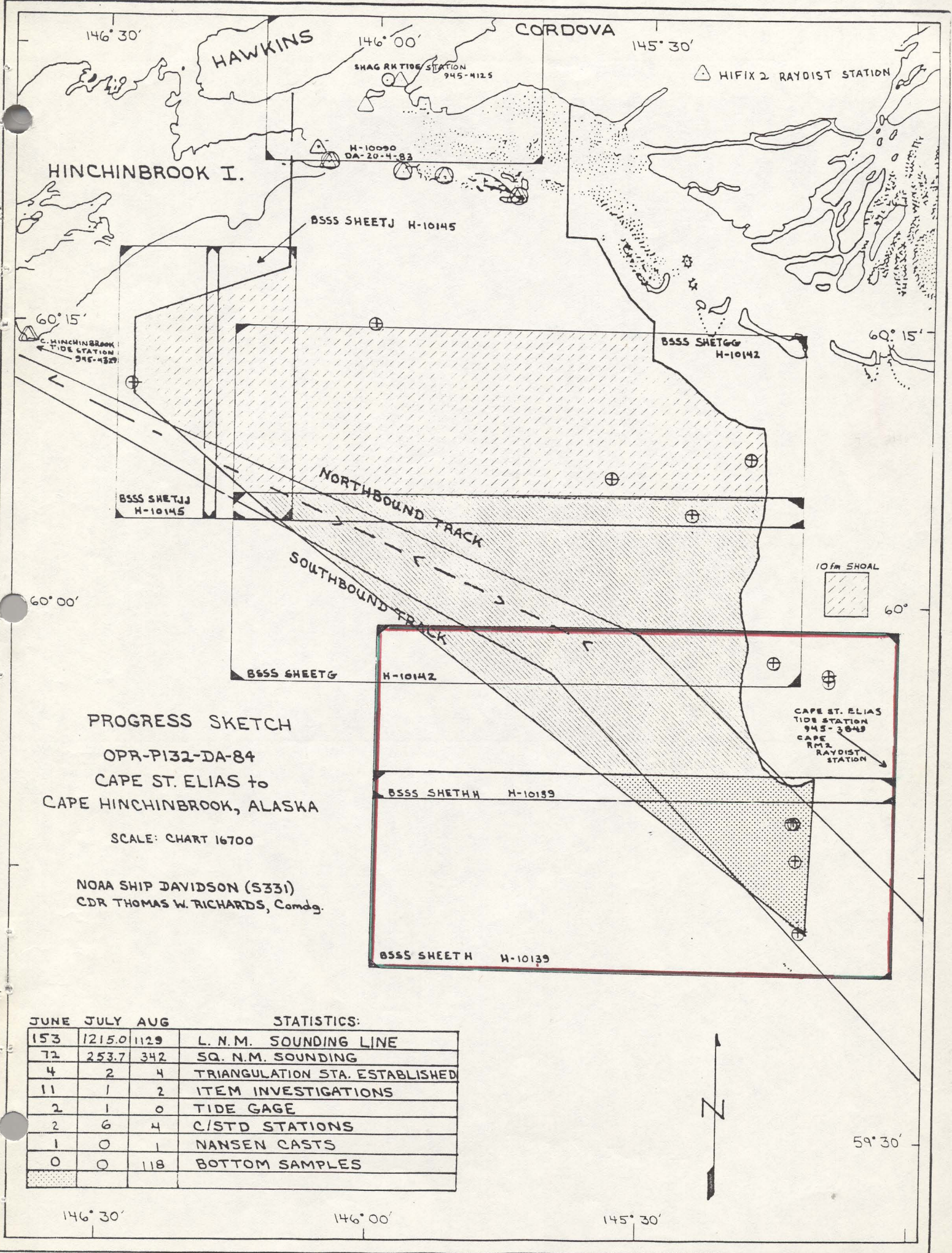
FIELD NO.

DA 40-1-84

State AlaskaGeneral locality Gulf of AlaskaLocality 26 Miles West of Cape Saint EliasScale 1:40,000 Date of survey 22 June - 16 August 1984Instructions dated April 12, 1984, Change No. 1, Project No. OPR-P132-DA-84
April 27, 1984, Change No. 2, July 6, 1984Vessel NOAA Ship DAVIDSON S331 (3130)Chief of party CDR T.W. RichardsSurveyed by CDR T.W. Richards, LCDR W. Wert, LT G. Wheaton, LT M. Koehn,
ENS J. Waddell, ENS A. Allen, ENS D. Moeller & Ship's PersonnelSoundings taken by echo sounder, hand lead, pole Bathymetric Swath Survey SystemGraphic record scaled by N/AGraphic record checked by Ship's PersonnelVerification L. Deodato Automated plot by PMC Xynetics plotterEvaluation A. Luceno

Verification by

Soundings in fathoms ~~XXX~~ at MLW MLLWREMARKS: Marginal notes in black by Evaluator. Separates are filed with the
hydrographic data.ANNOIS & SURF ✓ - AAA 1/15/86Notes in red in the Descriptive Report were
made during examination.



PROGRESS SKETCH

OPR-P132-DA-84

CAPE ST. ELIAS to
CAPE HINCHINBROOK, ALASKA

SCALE: CHART 16700

NOAA SHIP DAVIDSON (S331)
CDR THOMAS W. RICHARDS, Comdg.

JUNE	JULY	AUG	STATISTICS:
153	1215.0	1129	L. N. M. SOUNDING LINE
72	253.7	342	SQ. N. M. SOUNDING
4	2	4	TRIANGULATION STA. ESTABLISHED
11	1	2	ITEM INVESTIGATIONS
2	1	0	TIDE GAGE
2	6	4	C/STD STATIONS
1	0	1	NANSEN CASTS
0	0	118	BOTTOM SAMPLES

DESCRIPTIVE REPORT

H-10139

OPR-P132-DA-84

GULF OF ALASKA

A. PROJECT

Survey operations were conducted in accordance with Project Instructions OPR-P132-DA-84, dated 12 April 1984, Change No. 1, dated 27 April 1984, and Change No. 2, dated 06 July 1984. Registry No. H-10139 was requested on 26 June 1984 via radio message and assigned on 03 July 1984. ✓

B. AREA SURVEYED

This survey is the first sheet undertaken on this project during 1984 and is sheet H on the approved sheet layout for OPR-P132-DA-84. The northern limit of hydrography is 59/59.4N while the eastern limit is a jagged line centered on approximate longitude 145/13.0W. A diagonal line from 59/48.0N, 145/13.0W to 59/59.0N, 145/55.0W represents the southern and western limits for this survey. This area is in the offshore waters of the Gulf of Alaska west of Cape St. Elias, east of Middleton Island, and south of Hinchinbrook Island. The area is under consideration by the U.S. Coast Guard for proposed new tanker routes into Prince William Sound. ✓

Survey operations commenced on 22 June 1984 and were completed on 18 July 1984. Bottom samples for this survey were completed on 16 August 1984.

C. SOUNDING VESSEL

DAVIDSON (#3130) was used exclusively for gathering data during the course of this survey, utilizing the Bathymetric Swath Survey System with Raydist control. A faulty air conditioning unit in the plot room caused some down-time due to an overheated computer system, but this problem was resolved during the course of the survey.

The Datawell Heave, Roll, Pitch Sensor failed several times early in the survey, and a CASREP was filed on 28 June. The ship's ET's have solved the problem, but a spare HRP sensor was delivered to the ship in case any further difficulties arise. ✓

The Hazlow interface unit that links the Raydist Navigator to the PDP 11/34 lost track of Raydist lanes on two occasions, necessitating a trip to the calibration site. The problem was finally traced to a bad cable and normal operations resumed after almost 12 hours of lost time. See section G, Hydrographic Position Control, for details.

There were no unusual sounding vessel configurations.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The BSSS was used to collect all sounding information for this survey. The standard BSSS equipment configuration aboard DAVIDSON consisted of BOSUN Sonar, Datawell Heave, Roll, Pitch Sensor, PDP11/34 Computer, Peripherals, and Interfaces, Gould Printer/Plotter, and DP/3 Plotter. Serial numbers for all echo-sounding equipment can be found in the Corrections to Echo Soundings Report. A duplicate data processing system located in the new deckhouse was used as the primary data processing location. Data was processed concurrently with data acquisition operations in the plot room.

The primary tide station at Cordova, AK (945-4050) was used as the reference station for this survey. A 3-day duration bubbler tide gage was installed at Cape St. Elias (945-3849) and maintained throughout the period of hydrography. For further information, consult the Field Tide Note.

A check of the depth values of the center beam was made by ship's divers in Cordova in conjunction with a determination of ship's TRA. Lead line measurements were made from each of the fairing transducers and compared against the BSSS output to verify the satisfactory operation of the center beam. Comparisons of the transducer depth with the waterline depth provided an accurate determination of the TRA: a value of 1.9 fathoms resulted and is applied to all BSSS soundings. ✓

A Patch Test was run on 29 June in the Gulf of Alaska to determine whether the other twenty beams were operating properly. Results of the test can be found in the Corrections to Echo Soundings Report for OPR-P132-DA-84.

The automatic gates on the BOSUN Sonar system did not operate properly during the course of the survey. This necessitated constant monitoring and adjusting of the gates for changing bottom conditions. Because the slope of the survey area is quite gradual, few problems were encountered due to this added task.

Due to the massive amount of fresh water entering the Gulf of Alaska from the Copper, Bering, and Sheridan Rivers nearby, sound velocities at the surface were found to vary widely from east to east and from place to place. The difference seems to be much more evident on survey H-10142 - *survey rejected* (to the north of H-10139). Differences in sound velocity are *number rescinded* not believed to have adversely affected the accuracy of this survey.

Information concerning sound velocity determinations and other corrections to echo soundings can be obtained from the Corrections to Echo Soundings Report.

E. HYDROGRAPHIC SHEETS

Field sheets were prepared at 1:40,000 scale using the DAVIDSON's PDP 8/e and PDP 11/34 computers and DP/3 plotter systems along with standard NOS and BSSS software. Sheet DA-40-1A-84 covered the southern half of the survey area, to latitude 59/50/00, and sheet DA-40-1B-84 covered the northern half. The sheets were based on a modified transverse mercator projection. ✓

Only minimum depths (plot option 0, program SPLOT) were plotted on the preliminary and final field sheets.

All field records will be sent to the Pacific Marine Center, Nautical Chart Branch (MOP21) for verification and plotting of the smooth sheet.

F. CONTROL STATIONS

Raydist and Mini-Ranger equipment, as well as visual signals used for system checks, was set up over stations located to Third Order, Class I specifications. Stations used for control during this survey were:

CAPE RM2, 1979
HIFIX 2, 1984
BEACH 1899
TEMP ~~1, 1982~~
TEMP ~~2, 1982~~
EGG ISLAND LIGHT E., 1982
NEST, 1982 ✓

All computations are based on the North American Datum of 1927. All station descriptions and recovery notes have been submitted in accordance with section 3.1.1.2 of the Hydrographic Manual.

Station HIFIX, 1971 was recovered lying on its side due to frost heave. HIFIX 2 was established near the site of the original station and located from RATION, 1969 and USLM NO.827 1916 AZ MK 1969. For further information, consult the Horizontal Control Report.

G. HYDROGRAPHIC POSITION CONTROL

The Raydist system, operating in the range-range mode, was used for position control during the course of this survey. Mini-Ranger transponders were set up at 4 stations in the vicinity of the Egg Islands as a means of calibrating the Raydist system. The Falcon 484 transceiver was used on board DAVIDSON to acquire Mini-Ranger information. This system acquires ranges from up to 4 transponders simultaneously and can switch between 2 R/T units on the mast either automatically or by manual override to eliminate null zones in Mini-Ranger reception. The Falcon 484 was used only in the manual mode in order that the plot room ✓

personnel could determine which R/T unit (and therefore, which correctors) was being used.

Raydist stations with 100 foot high antennas were erected at stations HIFIX 2 (2 miles east of the Cordova Airport) and CAPE RM2 1979 (Cape St. Elias).

A Mini-Ranger Baseline Calibration was conducted in Orca Inlet on 11 June. After the four transponders were established in the field, sextant fixes were taken to verify the systems were in good operating order. All four codes were found to be operating acceptably for use in calibrating the Raydist system. A closing Mini-Ranger calibration was performed on 17 August.

Raydist control operated satisfactorily throughout the survey except for lane jumps caused by atmospheric conditions. The Raydist strip chart recorder was monitored continuously during operations and Raydist g.p.'s were compared to Loran-C positions twice hourly to detect major shifts in Raydist performance.

Six instances of individual lane jumps were noted during hydrographic operations, with an additional three multiple lane losses occurring on JD 179, JD 192, and JD 193. Data collected prior to the multiple lane jumps on JD 179 and 192 were rejected. On JD 193, however, 18 lines of mainscheme sounding data had been collected when a multiple lane jump affected both the red and the green signals. The jump occurred all at one time. A careful strip chart inspection of both signals prior to and after the jump using 10-point dividers was made. Constant spacing of the lanes and noting particularly that none of the turns made by the ship reflected anything but the usual appearance on the strip chart record indicated that no other jumps occurred during this period. It was decided to retain the 18 lines of data, confident that the jumped lanes were satisfactorily accounted for. Later inspection at crossings showed no systematic discrepancy in the area. ✓

Another positioning problem occurred twice on JD 200. The Hazlow Interface unit lost synchronization with the Raydist Navigator on two occasions. The problem was ultimately traced to a bad cable between the two units and the two small amounts of data (JD 200/0331 to 0418 UTC and JD 200/1532 to 1533 UTC) were later re-run.

Andist correctors (as well as Heave, Roll, Pitch sensor correctors) set forth in the BSSS Operating Manual dated August, 1983 for the fairing transducers and Raydist control were applied to all survey data collected.

For additional information concerning the Mini-Ranger Calibration and specific positioning equipment used, consult the Electronic Control Report.

H. SHORELINE

Not applicable.

I. CROSSLINES

Cross-swaths comprised 7.2% of the total sounding mileage on H-10139. Agreement at crossings was very good, with only 2 comparisons of 121 made being outside the 3% of the depth guideline set down in the Hydrographic Manual. Pairs of soundings chosen for comparison were within 1.5 mm of each other at the scale of the survey.

Additional cross-swaths were run to determine the mainscheme orientation and to develop the fifty-fathom curve. ✓

Of the 121 crossings inspected, 73 (60.3%) agreed exactly, 46 (38%) agreed within one fathom, and 2 (1.7%) differed by two fathoms. The two-fathom differences both occurred in depths of 60 fathoms, where 3% of the depth is 1.8 fathoms. No crossing discrepancies greater than two fathoms were found on H-10139.

J. JUNCTIONS

This survey junctions with HYDROPLOT surveys H-9829 and H-9830 (1979) on the west and with H-9205 and H-9206 (1971) on the east. Contemporary BSSS survey H-10142 junctions H-10139 to the north.

*H-10142
rejected;
number
rescinded*

Agreement was very good between the junction surveys and H-10139. No instances of sounding disagreements exceeding 3% of the depth were noted. As with the cross-swaths, soundings used for comparison were no further than 1.5mm apart at the scale of the survey.

*Refer to sect. 5
of Eval. Report*

One hundred and twenty-one soundings from H-10139 were compared with soundings from junction surveys with the following results: 75 soundings (62%) agreed exactly, 44 comparisons (36.3%) agreed within one fathom, and in 2 cases (1.7%), a difference of two fathoms was noted. In these two latter cases, the depths of water in which these discrepancies occurred were 69 and 90 fathoms, well within the 3% of the depth criteria for sounding comparisons. There were no instances of disagreements greater than two fathoms noted.

Some trends were noticed by the hydrographer during the course of making these comparisons: the 1971 surveys (H-9205, 9206) were more often than not slightly shoaler than H-10139; on the other hand, the 1979 surveys (H-9829, 9830) are slightly deeper than H-10139 in more than half the cases where a difference was noted. No such trend is apparent when comparing H-10139 with H-10142.

*← This survey was subsequently
rejected and the number
rescinded.*

K. COMPARISON WITH PRIOR SURVEYS

No AWOIS items were assigned in the project instructions for investigation within the limits of this survey. Prior survey H-3024 (1909), 1:200,000 scale, is the only prior survey within the limits of H-10139. Twenty-seven

*Refer to sect. 6
of Eval. Report.*

comparisons were made between the prior and current surveys, with some discrepancies noted. In 7 cases, the compared soundings agreed exactly; 4 comparisons were found to agree within 1 fathom; and 6 agreed within 2 fathoms. The ten remaining comparisons ranged from 3 to 5 fathoms, except in one case where the difference was found to be 12 fathoms. It should be noted that due to the lack of overlapping soundings, comparisons were made between soundings with a horizontal displacement of up to 5 mm at the scale of the survey, or 200 meters. In the case of the 12 fathom discrepancy, 180 meters separate the two soundings compared.

Slightly more than half of the present survey soundings are shoaler on H-10139, but a significant trend is not discernible. Modern positioning and sounding methods and equipment currently in use would tend to give the edge in accuracy to H-10139, since the ~~five~~^{four} junction surveys agree so well with H-10139. It is recommended that soundings from H-10139 supersede soundings from H-3024 shown on the appropriate charts.

No rocks or other significant features are shown on the prior survey within the limits of H-10139.

L. COMPARISON WITH THE CHART

The largest scale chart covering the survey area is No. 16700, 22nd edition, 01/01/83, at scale 1:200,000. Chart No. 16013, 23rd edition, 09/18/82, 1:969,761 scale also depicts the area bounded by this survey. No estimated or approximately positioned features are shown on the chart within the limits of H-10139 and no dangers to navigation were found to exist and no Dangers to Navigation Report was filed. Comparisons with soundings from the prior surveys are evaluated in section ~~X~~^K of this report.

*Refer to
sect. 7 of
Eval. Report.*

Several shoaler areas were investigated by running splits at 200 meter spacing in the northwest portion of the survey. This data was collected primarily to assist in drawing depth curves in the area; no significant shoaling was found to exist.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting purposes. ✓

N. AIDS TO NAVIGATION

No fixed or floating aids to navigation are located within the limits of H-10139. A negative report of Form 76-40 is attached to this report. ✓

O. STATISTICS

	<i>records</i>	21,177
Number of BSSS positions		2,397
Total nautical miles of sounding lines:		656.9 l.n.m.
Nautical miles of cross-swaths:		47.7 l.n.m.
Square miles of hydrography:		157.0 s.n.m.
Number of Bottom Samples:		22 21
Tide Stations		1
Velocity Casts		3

P. MISCELLANEOUS

Bottom samples taken were sent to the U.S. Geological Survey, Menlo Park, CA.

LORAN-C observations were sent to the U.S. Coast Guard, Washington, D.C.

There were no wire drag or side scan sonar operations conducted during the course of this survey.

A list of Geographic Names is appended to this report.

Q. RECOMMENDATIONS

It is recommended that the proposed deep-draft tanker routes be adopted as planned.

The CALIB Geodetic Calibration Program for the BSSS system should be modified to allow for a fix and a check fix during calibration of electronic control networks. This would make it possible to conduct the entire BSSS operation without the aid of the HYDROPLOT system.

It is recommended that data from this survey be further studied to determine if the present sounding selection software (COP) can be altered to filter out the unacceptable variability in sounding data.

R. AUTOMATED DATA PROCESSING

The following BSSS programs were used to collect and process data for H-10139:

PROGRAM	VERSION/DATE	TITLE
SURVEY	10T 1/84	Real Time Data Acquisition Program
TABGEN	5 8/83	Table Generator Package
TIDGEN	4 5/83	Tide Table Generator Program
GUPPY	2 2/83	Geodetic Utilities Program
GULP	5 8/83	BSSS Grid, Lattice, Stn Plot Prgm
TIDLST	3 2/83	Raw Tide Data Tape Listing Program
CALIB	4 8/83	Geodetic Calibration Program
MTUTIL	2 2/83	Magnetic Tape Utility Program
ABSTRT	7 5/83	Survey Summary File Abstract Prgm
SURF	8 2/83	Survey Summary File Editor

SMITEN	6	2/83	BSSS Smooth Tide Generator Prgm
NAVPLT	2	8/83	BSSS Navigation Plotting Program
LARD	4	2/83	Raw Data Tape Listing Program
COP	8	5/83	BSSS Combined Offline Program
POP	5	8/83	BSSS Position Plot Program
SPLIT	6	8/83	BSSS Sounding Plot Program
COPOUT	3	5/83	COP Output Tape Listing Program
MT0EOF	1	12/78	Tape Unit 0 End of File Program
MT1EOF	1	12/78	Tape Unit 1 End of File Program

The following HYDROPLOT programs were used during the course of this survey:

RK201	4/75	Grid, Signal, and Lattice Plot Program
RK561	12/82	Geodetic Calibration Program

In addition, the following programs were written in-house to process velocity cast data and operate on the Columbia portable computer: SV1, SV2, SV3.

S. REFERRAL TO REPORTS

For additional information, consult the following reports for OPR-P132-DA-84:

- Electronic Control Report
- Field Tide Note
- Corrections to Echo Soundings Report
- Horizontal Control Report
- Coast Pilot Report

Respectfully submitted,

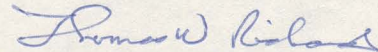


Mark P. Koehn, LT, NOAA

APPROVAL SHEET

This survey is complete and adequate to supersede prior survey H-3024 (1909) in the common area and to ensure that no dangers to deep-draft navigation exist in this area. The field work was conducted under my direct daily supervision.

Approved and Forwarded,



Thomas W. Richards, CDR, NOAA
Commanding Officer
NOAA Ship DAVIDSON

DATE: 12/18/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: P132

Hydrographic Sheet: H-10139

Locality: Gulf of Alaska

Time Period: June 24 - July 18, 1984

Tide Station Used: 945-3849 Cape St. Elias, AK

Plane of Reference (Mean Lower Low Water):
6/23 - 6/27 = 2.10 ft.
7/6 - 7/30 = 4.90 ft.

Height of Mean High Water Above Plane of Reference: 6/23 - 7/30 = 8.8 ft.

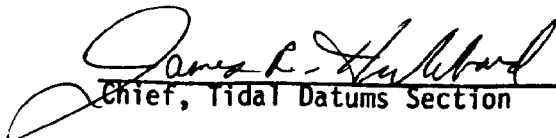
Remarks: Recommended Zoning:

1. Southeast of a line formed by 2 points located at:

latitude $59^{\circ}35.0'$ and latitude $60^{\circ}04.0'$
longitude $146^{\circ}15.0'$ longitude $145^{\circ}07.0'$

Apply x1.03 range ratio to all heights.

2. Northwest of the previous line apply x1.10 range ratio to all heights.


Chief, Tidal Datums Section

FIELD TIDE NOTE
 OPR-P132-DA-84
 Gulf of Alaska
 June-August 1984

Field tide corrections for this project were based on Cordova, Alaska predicted tides (945-4050) with zoning adjustments according to project instructions, dated 12 APR 1984. A magnetic tape containing the predicted data was provided by N/OMS132 and all interpolation and zonal corrections for BSSS operations were accomplished by BSSS program SMITEN, version #6. Times of both predicted and observed tides are Universal Time Coordinated (UTC) with one exception occurring on 04 AUG (JD 217) involving SSF # 217110 when an operator initiated the file with an incorrect time (one hour difference). Plotted soundings were corrected for this one hour error.

Three tide stations were installed in the project area. Locations and operating periods are as follows:

<u>SITE</u>	<u>STATION NUMBER</u>	<u>LOCATION</u>	<u>PERIOD</u>
Cape St. Elias	945-3849	59 47.7'N 144 35.5'W	22 JUN- 27 JUN and 06 JUL- 09 AUG
Shag Rock	945-4125	60 27.9'N 145 57.3'W	12 JUN- 20 JUN
Cape Hinchinbrook	945-4329	60 14.6'N 146 40.0'W	12 JUL- 16 AUG

CAPE ST. ELIAS

Two gages (S/N's 67A10945 and 73A229) were installed as well as a 15-ft tide staff on 8 JUNE (JD 160). Also on this date, the staff was leveled to five existing benchmarks. Station operation did not commence, however, until 22 JUNE (JD 174) when gages were activated and a 3-hour acceptance test was performed on gage 67A10945. (Gage 73A229 had yet to produce a trace steady enough to undergo acceptance test.) Difficulty was experienced in purging sea water from the orifice tubing, due to the tubing's great length (approximately 1050 ft). On 22 JUNE (JD 174), the tide staff was again leveled to the same benchmarks to resolve a discrepancy (see LEVELING below). On 29 JUNE (JD 181), after a period of heavy weather, the tide staff was discovered to have been destroyed. Also, the bubbler tubing had been detached from the orifices. Judging from the marigram the time of destruction was 0300 UTC on 27 JUNE (JD

179). Efforts at reinstallation were denied by continually dangerous sea conditions at the site. An unfortunate result of this was that more than three days loss of data occurred, disrupting the continuous thirty day span which was required by project instructions. In response to this, the DAVIDSON requested of N/OMS121 a reduction of the requirement to a minimum of three days. An affirmative reply was recieved via amendment to instructions, Change No. 2 dated 06 JULY 1984. On 06 JULY (JD 188), the station was restored with reinforced staff and orifice emplacements. A successful acceptance test was performed on both gages that same day. In order to monitor the station more effectively, two of ship's personnel were left ashore at the Cape St. Elias Lighthouse as observers for the remainder of the leg (while the ship completed survey H-10139). This measure proved to be most beneficial as on two occasions misfortune befell the gages. On 9 JUL (JD 191), the orifice tubing of gage 63A10294 was found to have been crimped by driftwood. Less than an hour's data was lost. A resident bear tipped over gage 73A229 at 0807 UTC on 10 JUL (JD 193) causing a 10-hr data loss.

Marigram for gage 67A10294 read 2.2 ft above the original staff and 0.4 ft above the new staff until it shifted for some unknown reason to 0.8 ft between 07 JUL and 8 JUL (JD's 189 & 190). Gage 73A229's marigram read above the new staff 0.3 ft until it altered to 0.2 ft on the same occasion. Station was removed on 09 AUG (JD 222). It is recommended that tidal information from this station be used as control for hydrography on sheet DA-40-1-84 (H-10139).

SHAG ROCK

Shag Rock tide station was installed and leveled on 11 JUNE (JD 163), gage S/N 67A16209 & a 15-ft tide staff. A 3-hour acceptance test issued the station into official operation on 12 JUNE (JD 164). Tidal control from this station was necessary in the reduction of several unresolved features from last year's project (OPR-P132-DA-83). During the DAVIDSON's offshore operating periods, this station was not needed and thusly shut down. Marigram reads 5.0 ft greater than the staff. Station was removed on 13 AUG (JD 226).

Cape Hinchinbrook

The tide station at Cape Hinchinbrook was installed on 12 JULY (JD 194), including a 10-ft tide staff and two gages (63A2920 & 67A16201). On 19 JULY (JD 201) acceptance tests and leveling were performed. The data obtained between 12 JULY (JD 194) and 19 JULY (JD 201) appears valid. No shift in the staff or orifice is suspected. During a routine inspection on the evening of 30 JULY (JD 212), the nitrogen bottle attached to gage 63A2920 was found to have a defective valve. The bottle was removed. The gage was still recording accurate data when the problem was found. Chart paper on gage 67A16209 was found to have jumped the

sprockets, affecting data after 1930 UTC on 31 JULY (JD 213) and losing data between approximately 2345UTC on 01 AUG (JD 214) and 2300 UTC on 02 AUG (JD 215). The same gage was inspected the next day (JD 215) and the same problem had recurred. No data was lost. However, gage time was affected from 0700 UTC on 03 AUG (JD 216) until the paper was changed. Henceforth, gage 63A2920 was employed and rendered a faithful record. Gage 67A16201's marigram read 6.0 ft above the staff, whereas the marigram of gage 63A2920 read 4.5 ft higher until it shifted to 5.0 ft after attaching a new cylinder on 14 AUG (JD 227). Station was discontinued on 16 AUG (JD 229). This station is recommended as tidal control for DA-40-2-84 (H-10142) and DA-20-2-84 (H-10145).

LEVELING

Cape St. Elias tide station was leveled to five existing benchmarks on three occasions during OPR-P132-DA-84. Initial levels were run on 8 JUNE (JD 160) with historical information in agreement with the exception of BM NO. 4, which appeared to have had an upward shift of 1.1 ft. Releveling on 22 JUNE (JD 174) confirmed the 8 JUNE values. An abbreviated level run was carried out on 6 JULY (JD 188) to tie the new staff into the benchmark scheme. Only the staff stop, BM NO.1, and BM NO.2 were leveled at this time. Final leveling took place on 09 AUG (JD 222) with all values comparing well with previous runs. The final run also confirmed a revised elevation for BM NO. 4. An abstract of comparative levels is presented below:

Leg	Difference in elevation (ft)				
	<u>Historical</u>	<u>8 JUNE</u>	<u>22 JUNE</u>	<u>6 JULY</u>	<u>16 AUG</u>
NO.1-2	{4.130				
	{4.129	4.127	4.134	4.127	4.134
	{4.131				
	{4.137				
NO.2-3	{-1.131				
	{-1.130	-1.135	-1.138		-1.135
	{-1.135				
	{-1.142				
NO.3-4	{1.922	3.058	3.051		3.058
	{1.924				
NO.4-5	{0.624	0.610	0.608		0.610
	{0.624				

Shag rock tide station was leveled to 3 existing benchmarks, as required by the project instructions, sec. 5.8.2. All recent leveling data agreed well with historical information. Beginning and ending level runs were on 11 JUNE (JD 163) and 13 AUG (JD 226) and they revealed no significant shift in staff nor benchmarks. A leveling abstract follows:

Leg	Differences in elevation (ft)		
	<u>Historical</u>	<u>11 JUNE</u>	<u>13 AUG</u>
NO.1-2	{-0.259		
	{-0.258		
	{-0.258		
	{-0.256	-0.256	-0.256
	{-0.259		
	{-0.261		
	{-0.256		
NO.1-3	{2.875		
	{2.870		
	{2.868		
	{2.874	2.867	2.871
	{2.871		
	{2.873		
	{2.868		

Cape Hinchinbrook tide station had three existing benchmarks and two new marks were established. Beginning levels took place on 19 JULY (JD 201). Levels were also run at station removal, 16 AUG (JD 229). Present information agreed well with historical as shown in following table:

Leg	Differences in elevation (ft)		
	<u>Historical</u>	<u>19 JULY</u>	<u>16 AUG</u>
NO.3-4329G	{-1.991	-1.978	-1.975
	{-1.978		
4329G-NO.5	{1.683	1.683	1.689
	{1.683		
NO.3-NO.5	3.660	3.661	3.665

Cordova control station was subjected to pre- and post-project level runs on 10 JUNE (JD 163) and 17-18 AUG (JD 230-231) respectively. Six existing benchmarks were involved. Results compared with historical data are shown below:

Leg	Differences in Elevation (m)		
	<u>Historical</u>	<u>DAVIDSON</u>	<u>DAVIDSON</u>
	<u>PTP</u>	<u>5 JUN/24 JUL '83</u>	<u>10 JUN/17-18 AUG '84</u>
	<u>13-14 JUL '82</u>		
a-NO13	---	0.670/0.670	0.672/0.674
NO13-E	-0.9690	-0.972/-0.971	-0.975/-0.977
E-M	1.9030	1.907/1.910	1.914/1.920
M-F	6.2247	6.225/6.220	6.219/6.214
F-G	-4.4332	-4.436/-4.436	-4.437/-4.436
G-NO9	-3.1048	-3.106/-3.103	-3.100/-3.101

The only BM suspected of movement is E, which appears to be sinking slowly. All other differences in elevation compare well.

Respectfully submitted,


Andrew J. Allen, ENS NOAA

Approved and forwarded,


Thomas W. Richards, CDR NOAA

GEOGRAPHIC NAMES

H-10139

Name on Survey	Source of Information											
	A	B	C	D	E	F	G	H	K			
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP ATLAS	GRAND MCNALLY	U.S. LIGHT LIST				
ALASKA (title)											1	
GULF OF ALASKA											2	
											3	
											4	
											5	
											6	
											7	
											8	
											9	
											10	
											11	
											12	
											13	
											14	
											15	
											16	
											17	
											18	
											19	
											20	
											21	
											22	
											23	
											24	
											25	

Approved:

Charles E. Harrington
Chief Geographer - n/cg 2x5

OCT 15 1984

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER H-10139	
HYDROGRAPHIC SURVEY STATISTICS					
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.					
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION	
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS	
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS	
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDION FILES	3				
ENVELOPES					
VOLUMES	1				
CAHIERS					
BOXES				1	
SHORELINE DATA					
SHORELINE MAPS (List):					
PHOTOBATHYMETRIC MAPS (List):					
NOTES TO THE HYDROGRAPHER (List):					
SPECIAL REPORTS (List):					
NAUTICAL CHARTS (List):					
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>					
PROCESSING ACTIVITY				AMOUNTS	
				VERIFICATION	EVALUATION
				TOTALS	
POSITIONS ON SHEET					
					21,177
POSITIONS REVISED					16,770
SOUNDINGS REVISED					25
CONTROL STATIONS REVISED					0
				TIME-HOURS	
				VERIFICATION	EVALUATION
				TOTALS	
PRE-PROCESSING EXAMINATION					
VERIFICATION OF CONTROL					
VERIFICATION OF POSITIONS				51.0	51.0
VERIFICATION OF SOUNDINGS				30.5	30.5
VERIFICATION OF JUNCTIONS					
APPLICATION OF PHOTOBATHYMETRY					
SHORELINE APPLICATION/VERIFICATION					
COMPILATION OF SMOOTH SHEET				18.0	18.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS					13.5
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT					29.0
GEOGRAPHIC NAMES					
OTHER* Digitizing				5.0	5.0
*USE OTHER SIDE OF FORM FOR REMARKS				TOTALS	147.0
Pre-processing Examination by M. Kenny				Beginning Date	Ending Date 12/10/84
Verification of Field Data by L. Decadato, I. Almacen				Time (Hours) 99.5	Ending Date 10/23/85
Verification Check by S. Otsubo, A. Luceno, B. Olmstead, J. Green				Time (Hours) 28.5	Ending Date 11/20/85
Evaluation and Analysis by A. Luceno				Time (Hours) 42.5	Ending Date 12/11/85
Inspection by D. Hill				Time (Hours) 2	Ending Date 12/13/85

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10139

1. INTRODUCTION

H-10139 was accomplished by NOAA Ship DAVIDSON in accordance with the following project instructions:

OPR-P132-DA-84, dated April 12, 1984
Change Number 1, dated April 27, 1984
Change Number 2, dated July 6, 1984

This is an offshore basic hydrographic survey of an area about 26 miles west of Cape Saint Elias in the Gulf of Alaska. Depths range from 36 to 103 fathoms with mud bottom.

Sounding data in this survey was gathered by means of the Bathymetric Swath Survey System (BSSS). Regular sounding lines were run at spacings of 600 and 800 meters with swath widths of 110 and 155 meters. Heave, roll and pitch corrections were applied to the soundings in this survey. The transducer draft and sound velocities at various depths were determined before the start of the survey and are the final values which were applied to the survey via the parameter table file.

Predicted tides based on the Cordova, Alaska, reference station were used during field processing. Tide correctors used for the reduction of final soundings reflect approved hourly heights zoned from the Cape Saint Elias tide gage.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. Electronic control correctors were also revised during processing. The revised data is listed in the smooth position/sounding printout.

The digital file for this survey has been generated and includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain descriptive information, however, may not be included in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Hydrographic control and positioning are adequately discussed in sections F and G of the hydrographer's report and in the Horizontal and Electronic Control Reports for OPR-P132-DA-84.

Horizontal control stations used during hydrography are published and field positions based on the North American Datum of 1927.

3. HYDROGRAPHY

Swath soundings at track line crossings are in good agreement. The depth curves could be completely and adequately drawn. Delineation of the bottom configuration and the determination of least depths are also adequate except for the 48-fathom depth in surrounding depths of 58 to 60 fathoms at latitude 59°43'40.21"N, longitude 145°17'31.17"W. Occasionally, spurious soundings were recorded by the center beam on the contour plot records. Except on two occasions, on DN 177 at 030628 hours and DN 189 at 101917 hours, the soundings were not included in the COP selected data.

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 Three, except:

The 48-fathom depth mentioned in section 3 above was not fully verified nor disproven during this survey. The least depth should have been determined by conventional methods if indeed a critical depth existed (see Table 2 under section 2.5.6 of the BSSS operating manual).

5. JUNCTIONS

H-10139 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Color</u>	<u>Area</u>
H-9205	1971	1:40,000	Red	East <i>(not reviewed)</i>
H-9206	1971	1:40,000	Violet	East <i>(not reviewed)</i>
H-9829	1979	1:40,000	Orange	West
H-9830	1979	1:40,000	Brown	West

All of the above surveys had been verified and submitted to Rockville for charting. Junction comparisons were made using copies. Soundings and depth curves are in agreement. Supplementary depth curves not shown on the junction smooth sheets are drawn on the H-10139 smooth sheet. Soundings were transferred from H-9829 (1979) to support depth curves on the smooth sheet.

A contemporary survey to the north was not accepted for Nautical Chart Branch processing because of questionable data quality. However, a comparison with charted depths reveals acceptable agreement with the present survey.

6. COMPARISON WITH PRIOR SURVEYS

H-3024 (1909) 1:200,000

There are about 50 soundings plotted on H-3024 (1909) spaced 3200 to 4000 meters apart in the area of common coverage with the present survey. 21,177 selected soundings were obtained in the same area in H-10139 spaced at 320 to 520 meters between swath limits. In the northwest portion of the survey area, closer line spacings were run for the development of an irregular

bottom feature which resulted in about 50% coverage of the bottom. With the substantial volume of soundings acquired covering the same area, a detailed configuration of the bottom not detectable in the prior survey was obtained. Some soundings in the present survey are generally 1 to 2 fathoms shoaler than the prior survey. Between latitudes 59°53'00"N and 59°57'00"N and longitudes 145°30'00"W and 145°42'00"W, soundings in the present survey are 1 to ~~1~~₂ fathoms shoaler than the prior survey.

The effect of the Alaskan earthquake of 1964 was considered in the comparison with the prior survey in accordance with Hydrographic Survey Guideline No. 39. A meaningful conclusion could not be reached because of the sparsity of prior survey data.

H-10139 is adequate to supersede the prior surveys within their common areas.

7. COMPARISON WITH CHART

Chart 16700, 22nd Edition, dated January 1, 1983; scale 1:200,000.

Chart 16013, 23rd Edition, dated September 18, 1982; scale 1:969,761.

a. Hydrography - Most charted information originates with the prior survey discussed in Section 6 of this report.

Geographic names appearing on the smooth sheet have been approved by the Chief Geographer and have been placed on the smooth sheet in accordance with these charts.

H-10139 is adequate to supersede charted hydrography within the common area.

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.

8. COMPLIANCE WITH INSTRUCTIONS

H-10139 adequately complies with the project instructions noted in section 1 of this report.

9. ADDITIONAL FIELD WORKSURF 1/15/86
AAA

This is a good basic hydrographic survey. Additional work for the verification or disproval of the 48-fathom depth at latitude $59^{\circ}43'40.21''\text{N}$, longitude $145^{\circ}17'31.17''\text{W}$ is recommended on a low priority basis.

Respectfully submitted,

Arsenio G. Luceno
Arsenio Luceno
Cartographer

This survey has been examined 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-10139

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.

Daniel W. Yeager 12-20-05
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

Larry Mordock 12-20-05

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 12-20-05
Director, Pacific Marine Center (Date)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

N/CG242:LQ

June 5, 1987

TO: N/CG24 - Roy K. Matsushige

FROM: N/CG242 - *George K. Myers, Jr.*
George K. Myers, Jr.

SUBJECT: Examination of Hydrographic Survey H-10139 (1984), Alaska, Gulf of Alaska, 26 Miles West of Cape Saint Elias

Chief of Party	T. W. Richards
Field Unit	NOAA Ship DAVIDSON
Processed by	Pacific Marine Center
Examined by	L. Quinlan

An examination of hydrographic survey H-10139 (1984) was accomplished to monitor the survey for adequacy with respect to data acquisition, conformance with applicable project instructions, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions made and actions taken by the evaluator, and the cartographic presentation of data.

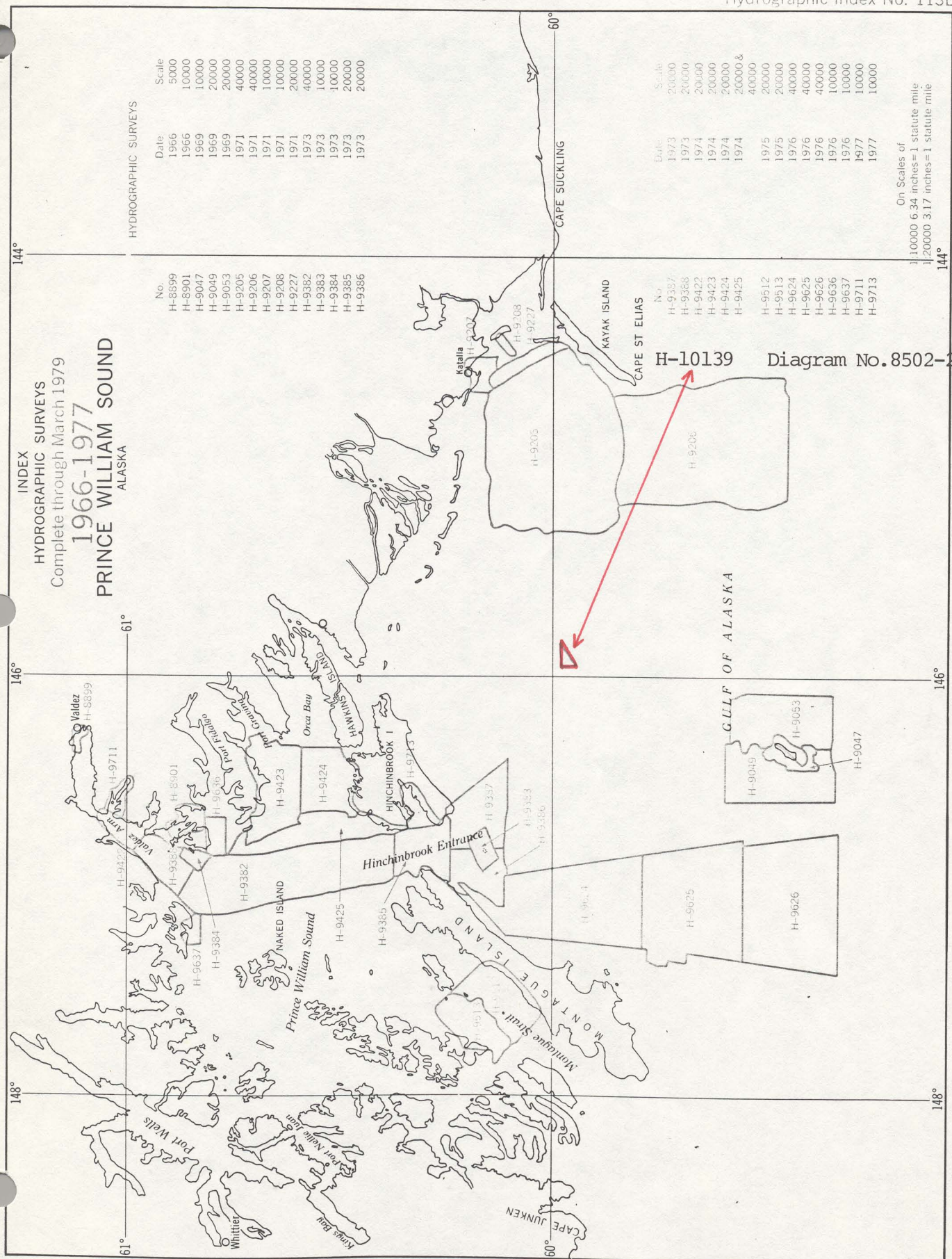
A digital plot from magnetic tape was not available during the examination of this survey. Therefore, an inspection of a plot from the certified tape was not performed.

In general, the survey was found to conform to National Ocean Service standards and requirements except as stated in the Evaluation Report.



DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Washington, D.C.

Hydrographic Index No. 113E



FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10139

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.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED

Appt to Stds 1-10-86 per