

FOO451

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

Type of Survey ..... Hydrographic.....  
Field No. .... RA-10-10-99.....  
Registry No. .... F00451.....

### LOCALITY

State ..... Alaska.....  
General Locality .... Icy Strait.....  
Sublocality Entrance to Excursion Inlet.....

19 99

### CHIEF OF PARTY

CAPT. Alan D. Anderson, NOAA.....

### LIBRARY & ARCHIVES

DATE ..... MAY 1 2000.....

## HYDROGRAPHIC TITLE SHEET

FOO451

INSTRUCTIONS -The hydrographic sheet should be accompanied by this form,  
filled in as completely as possible, when the sheet is forwarded to the office.FIELD NO.  
RA-10-10-99State AlaskaGeneral Locality Icy StraitSublocality Entrance to Excursion InletScale 1:10,000Date of Survey 20-May-99Instructions Date March 5, 1998 \*Project No. OPR-O340-RAVessel RA-5(2125) and RA-6(2126)Chief of Party CAPT A.D. Anderson, NOAASurveyed by RAINIER PERSONNELSoundings taken by echo sounder: DSF-6000N, Knudsen 320M, RESON 8101 MBGraphic record scaled by RAINIER PERSONNELGraphic record checked by RAINIER PERSONNELEvaluation by K. Sampadian Automated plot by HP Design Jet 650CVerification by R. Davies, R. Mayor, K.SampadianSoundings in Fathoms and tenths at MLLWREMARKS: Time in UTC. Revisions and marginal notes in blackwere generated during office processing. All separatesare filed with the hydrographic data. As a result pagenumbering may be interrupted or non-sequential.All depths listed in this report are referenced tomean lower low water unless otherwise noted.\* Change No. 1 dated 3/30/98, Change No. 2 dated 4/12/99,  
and Change No. 3 dated 5/06/99

# Descriptive Report to Accompany Field Examination FOO451

Field Number RA-10-10-99

Scale 1:10,000

May 1999

NOAA Ship RAINIER

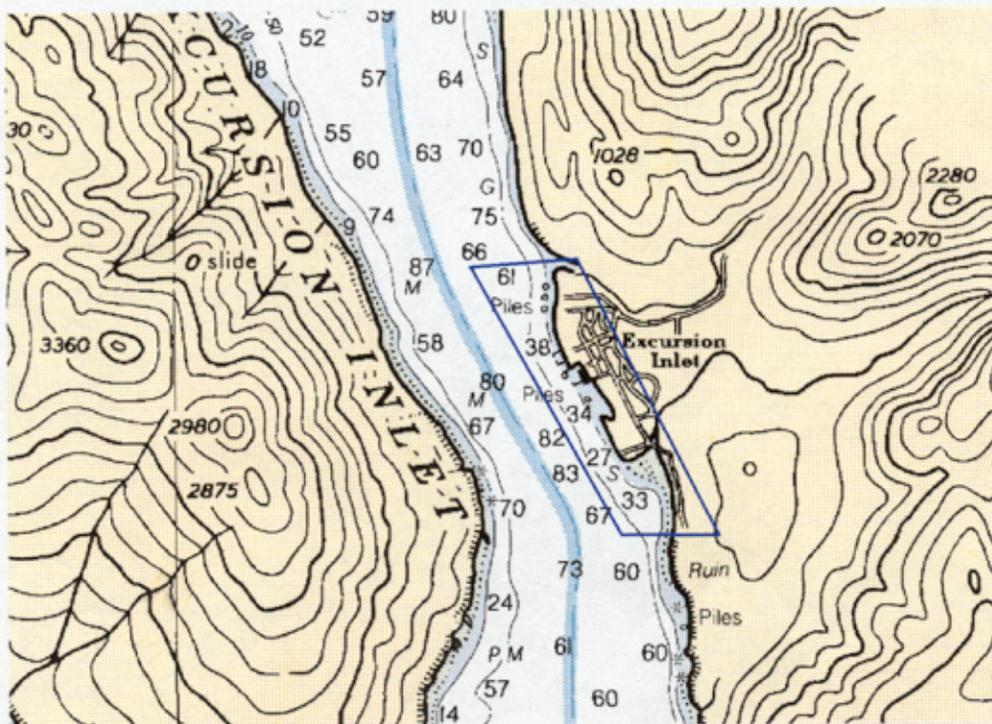
Chief of Party: Captain Alan D. Anderson, NOAA

## A. PROJECT ✓

This field examination was completed as specified by Project Instructions OPR-O340-RA dated March 5, 1998, Change number 1, dated March 30, 1998, Change number 2, dated April 12, 1999, Change number 3, dated May 6, 1999, and subsequent email correspondence. Survey FOO451 corresponds to sheet Y as defined in the sheet layout and sheet 13 as defined in the Hydrographic Processing System (HPS) program. This survey will provide contemporary hydrographic survey data as part of a continuing program to improve chart coverage of the Inside Passage in southeast Alaska. Requests for hydrographic surveys and updated charts in this area have been received from the Southeastern Alaska Pilot's Association (SEAPA) and the commercial fishing industry.

## B. AREA SURVEYED ✓ SEE EVAL. REPORT, SECTION B.

The survey area is Excursion Inlet. The survey was reduced from its original limits to a field examination including just the area in front of the cannery pier. The area surveyed has a northern limit at latitude  $58^{\circ} 25' 27''$  N and a southern limit at latitude  $58^{\circ} 24' 16''$  N. The survey's eastern limit is the shoreline and the western limit is about 400m offshore of the eastern shoreline. Marine traffic is heavy and varied in the area. The pier is used daily by vessels ranging from barges and fishing tenders to sport fishing boats. Data acquisition was conducted on May 20, 1999 (DN 140).



### C. SURVEY VESSELS ✓

Data were acquired by two of RAINIER's survey launches (vessel numbers 2125 and 2126) as noted in the Survey Information Summary included with this report. See Project Related Data for OPR-O340-RA for vessel descriptions. No unusual vessel configurations or problems were encountered.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓ SEE EVAL. REPORT, SECTION D.

Detached positions were acquired using HYPACK version 8.9 and preliminary processing was accomplished with HPS and MapInfo.

Shallow water multibeam (SWMB) echosounder data were acquired using the Reson SeaBat 8101 with ISIS version 4.32 and processed using CARIS software. Raster image and shoreline data in MapInfo facilitated charted and prior survey comparisons. Final Detached Positions and soundings based on predicted tides were saved in MapInfo 5.0 format. ~~A complete listing of software for HYPACK and HPS is included in Appendix VI. (NOT INCLUDED)~~

### E. SONAR EQUIPMENT ✓

Side Scan Sonar (SSS) equipment was not used on this survey. However, it should be noted that the Reson SeaBat 8101 provides a low-resolution digital SSS record of the SWMB swath. This SSS imagery is primarily used to aid in final processing of the SWMB depth data but can also be used to provide imagery of features such as wrecks, rocks, and obstructions. CONCUR

### F. SOUNDING EQUIPMENT ✓

Two different categories of echosounder systems were used and are described below. The individual system(s) chosen for use in a given area were decided at the discretion of the Hydrographer using the guidance stated in the Project Instructions and depended upon the limitations of each system, the bottom topography, the water-depth, and the ability of the platform vessel to safely navigate the area.

#### 1. Launch Vertical Beam Echo Sounder (VBES) (VN 2125): ✓

The VBES launch was not used to collect any mainscheme hydrography, but it was used to perform shoreline verification and take all Detached Positions.

#### 2. Launch Shallow Water Multibeam (SWMB) (VN 2126): ✓

Prior to beginning SWMB data acquisition, the launch CARIS Vessel Configuration File was updated to define the physical relationship between the various components that comprise the systems, including the transducer head, TSS motion sensor and POS/MV positioning system. In addition, this offset file contains heave, roll and pitch biases determined during a "patch test" conducted at Port Angeles, WA on March 26-28, 1999. A copy of the Vessel Configuration File is contained in Project Related Data for OPR-O340-RA\*

(RA06-99)

The Reson SeaBat 8101 is a multibeam echosounder system that measures relative water depths across a wide swath perpendicular to the vessel's path. The Reson SeaBat 8101 ensonifies the seafloor with a 150° swath consisting of 101 individual 1.5° x 1.5° beams. The system was designed to meet International Hydrographic Organization standards to measure the seafloor at a maximum range of 320 meters. The system's maximum depth range under actual field conditions has proven to be much less. RAINIER has discovered that maximum attainable depths are approximately 80-150 meters, depending on sea conditions and bottom topography. But the installation this winter of an extended range projector on VN 2126 has extended this maximum depth to greater than 250 meters under good conditions with cleaner data in the shallower ranges also. Serial numbers are included in the Separates. The SWMB launch was used to collect full-bottom coverage of select areas identified by the examination of the priors and current charts

determined to be less than 60 meters deep that could safely be investigated without the risk of damaging the SWMB transducer. The SWMB launch was not used for shoreline verification due to the extremely high risk of damaging the SWMB transducer on submerged rocks.

SeaBat depth data are displayed during acquisition and reviewed with CARIS-HIPS Data Cleaning programs. Depth flyers were identified and manually flagged as "rejected". Vessel positioning and attitude data from DGPS, POS/MV, heave, roll and pitch sensors were similarly displayed and manually cleaned. Additionally, instantaneous speed as computed from the positioning data was checked for jumps. For this survey, the outer ten beams on each side of the swath (beam numbers 1-10 and 92-101) were not used, reducing the effective swath width to 120°. **REPROCESSED USING A BEAM ANGLE FILTER OF 60° OFF NADIR AND RESET QUALITY FLAG 0.**

After review and cleaning, the depth, position and attitude data were merged with sound velocity, predicted tide and dynamic draft correctors to compute the true depth and position of each sonar footprint. These processed data were excessed by selecting shoal soundings at a density of 5 meters x 5 meters. Processed soundings were then exported into HPS through HSD Utilities. **NEW WORKFILE CREATED WITH A SOUNDING DENSITY OF 15M X 15M.**

**G. CORRECTIONS TO ECHO SOUNDINGS ✓ SEE EVAL REPORT, SECTION G.**

Two sound velocity casts were used for this survey. Information on the casts is included in the Survey Information Summary report. **CAST INFORMATION FOR VBES AND SWMB INCLUDED IN SEPARATES. \***

The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 219), calibrated November 13, 1998. Velocity correctors were computed using the PC program VELOCITY, version 4.0, 1998, in accordance with Hydrographic Survey Guideline (HSG) No. 69. Sound velocity correctors were applied in CARIS during post-acquisition processing.

**Vessel Offset Correctors**

The following table shows when the vessel offset correctors used for this survey were last measured:

Vessel No.	Date of static draft and transducer offset measurements	Method of Settlement and Squat Measurement	Date of Settlement and Squat Measurement	Location of Settlement and Squat Measurement
2125	March 1999	Rod leveling	March 1999	Port Angeles, WA ✓
2126	March 1999	OTF	March 1999	Port Angeles, WA ✓

Settlement and squat correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2, using FPM Fig. 2.4, and are included with project data for OPR-O340-RA-99. \*All offset tables contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables # 5-6 correspond to the last digit of the vessel number. Offsets were applied during CARIS processing.

The offset tables are included with project data for OPR-O340-RA-99. \*

**Predicted Tidal Correctors:**

For the 1999 field season the Oceanographic Products and Services Division, User Services Branch (N/CS41), supplied no predicted tides for OPR-O340. Preliminary predicted tide tables were generated for both HPS and CARIS using Tides & Currents v2.5. The HPS tide table (HPS #13) was used only for preliminary inspection of the VBES soundings. CARIS tide table juneau99new.tid was used throughout the entire CARIS processing pipeline.

Once data acquisition was complete and all sounding data consolidated in HPS, OPSD preliminary tides for

Juneau (945-2210) were downloaded from the Internet and used to create HPS table #1. The MapInfo tidal zoning table supplied by OPSD was then imported into HPS using the MapBasic application HPT\_UTIL.MBX and HP Tools. Finally, tide zone correctors were computed and applied to all soundings in HPS (SWMB & VBES) to produce a final product.

HPS listings of the data used in generating tide corrector tables are included in Appendix V of this report. Tidal correctors as provided in the project instructions for FOO451 are provided in the Survey Information Summary included with this report. **TIDE CORRECTORS NOT LISTED IN SURVEY INFORMATION SUMMARY.**

Juneau, Alaska (945-2210), Sitka, Alaska (945-1600), and Skagway, Alaska (945-2400) are the primary control stations for datum determination. RAINIER personnel installed a Sutron 8200 tide gage at Excursion Inlet (945-2437) on May 7, 1999, and the gage was removed on June 8, 1999. Refer to the Field Tide Notes and supporting data in Appendix V for individual gage performance and level closure information. This information has been forwarded to N/CS41 in accordance with HSG 50 and FPM 4.8. A request for approved tides was forwarded to N/CS41 in accordance with FPM 4.8. ✓

#### **H. HYDROGRAPHIC POSITION CONTROL ✓ SEE EVAL REPORT, SECTION H & I**

The horizontal datum for this project is NAD 83 (UTM, Zone 8). The control stations used for this survey are listed in Appendix III. See the OPR-O340-RA-99 Horizontal Control Report for more information. ✓

All soundings were positioned using differential GPS. Primary control was the US Coast Guard Beacon at GUSTAVUS. Launch-to-launch DGPS performance checks were performed in accordance with Section 3.2 of the FPM. Two observations of position were made from two different DGPS base stations, JOE and GUSTAVUS, while the launches were rafted together with their GPS antennae within 2-3 meters of each other. RAINIER also used SHIPDIM, version 2.2R (April 1996) with a Trimble Centurion P-code receiver and an Ashtech sensor (both differentially-corrected) to monitor the performance of the reference stations. JOE was compared to GUSTAVUS at least once a week while installed. Some outliers were noted, but none indicated systematic or continuous errors in either the GUSTAVUS beacon or the VHF station at JOE. The SHIPDIM OUTLIER.SUM results are included in the project data for OPR-O340-RA. ✱

The SWMB launch (VN 2126) used a Position and Orientation System for Marine Vessels (POS/MV) to determine its heading. The POS/MV delivers heading measurements by two distinct methods. First, the Dynamic Heading Alignment determines the vessel's heading by using data supplied by the Inertial Measurement Unit (IMU) and GPS receivers to achieve a heading that is, at best, accurate to within 0.35°. This method suffers from drift but is relatively unaffected by noise. Second, the GPS Azimuth Measurement System (GAMS) determines the geographic vector between two GPS antennas fixed to the vessel by comparing the phase of satellite signals that they receive. The error from this method is largely due to noise, but it exhibits no drift. The POS/MV uses the advantages of each method to compensate for the disadvantages of the other to arrive at an optimal accuracy of 0.05°.

#### **I. SHORELINE ✓ SEE EVAL. REPORT, SECTION J.**

No official shoreline document was supplied by N/CS341 for Excursion Inlet. Prior surveys and digitized versions of chart 17302 were used by RAINIER personnel to trace a representative shoreline in MapInfo for the area covered by FOO451. The resultant shoreline was then exported in .DXF format for use with Hypack and was treated as official shoreline for the purposes of distinguishing new shoreline features. This method proved to be adequate and accurately depicted the shoreline when checked against the DP's, soundings, and tracklines.

Limited shoreline verification was conducted in accordance with the Project Instructions. For this field examination the general limit of safe navigation of a survey launch is 5-30 meters offshore of apparent low

OPR-O340

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✱ FILED WITH HYDROGRAPHIC DATA

tide, with the exception of the mouth of a small stream south of the cannery pier, where the shoaling is quite extensive. Water depths along this limit of safe navigation are generally 2-5 meters at Mean Lower Low Water. Features shown inshore of the NALL are the hydrographer's representation of the shoreline while slowly transiting along the shore, and are intended to aid chart compilation.

Shoreline manuscript and field features were compared to an enlargement of chart 17302, plotted by RAINIER personnel, as well as digital overlay of data on the BSB chart image in MapInfo.

The following is a list of all Detached Positions taken on new features found during shoreline verification.

Fix Number	New Feature	Geographic Position	Height (MLLW)	Notes
50034	floating pier	58-25-17 N 135-26-54 W ✓	n/a	50034-36
50035	floating pier	58-25-16 N 135-26-54 W ✓	n/a	refer to the
50036	floating pier	58-25-17 N 135-26-54 W ✓	n/a	same pier
50038	floating pier	58-25-13 N 135-26-54 W ✓	n/a	50038-39 refer
50039	floating pier	58-25-13 N 135-26-53 W ✓	n/a	to the same pier
50048	limit of sand shoal	58-24-45 N 135-26-31 W ✓	-0.4m	

SS  
 FLOAT  
 FLOATING  
 PIER

**J. CROSSLINES ✓**

Crosslines agreed within 1 meter with mainscheme hydrography. There was a total of 0.38 nautical miles of crosslines, comprising 4.88% of mainscheme hydrography.

**K. JUNCTIONS ✓**

No contemporary surveys junction with FOO451. *concur*

**L. COMPARISON WITH PRIOR SURVEYS ✓ SEE EVAL REPORT, SECTION III.**

The following prior surveys share common area with FOO451:

Registry #	Scale	Date	Area covered	DATUM
H-10258	1:10,000	1987-1988	All except SE corner	NAD 27
H-10257	1:10,000	1987	SE corner	NAD 27

Prior survey H-10258 covers the majority of the present field examination FOO451, and the soundings agree very well between the two surveys. Prior survey H-10257 covers a small portion of FOO451 and is also in good agreement with the newly acquired depths.

The following table shows a representative sample of how the soundings from the present field examination FOO451 compare with those from prior H-10258:

H-10258 Depth (fm)	FOO451 Depth (fm)	FOO451 Fix #	Geographic Position
30	33	<del>80014</del>	58° 25' 24" N 135° 27' 00" W ✓
63	62.5	<del>80305</del>	58° 24' 46" N 135° 26' 50" W ✓
35	35	<del>80361</del>	58° 24' 38" N 135° 26' 33" W ✓
9	3.9	<del>80554</del>	58° 24' 20" N 135° 26' 02" W ✓
9.5	10	<del>80419</del>	58° 24' 43" N 135° 26' 32" W ✓
13.8	10.5	<del>80538</del>	58° 24' 28" N 135° 26' 15" W ✓

DIFFERENT DATA SET WITH DIFFERENT FIX NUMBERS DUE TO REPROCESSING.

Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

**M. COMPARISON WITH THE CHART ✓ SEE EVAL REPORT, SECTION O.**

This field examination was compared in the field to features portrayed on the following charts:

Chart	Scale	Edition Number	Date	Datum
17302	1:80,000	17 <sup>th</sup>	August 14, 1993	NAD 83
17316	1:80,000	<del>7<sup>th</sup></del> 17 <sup>th</sup>	June 14, 1997	NAD 83
17300	1:209,978	27 <sup>th</sup>	August 14, 1993	NAD 83

The field examination was compared with Chart 17302 and was in good agreement, generally within one fathom. Non-sounding features are discussed in Section J. Final sounding comparisons will be made at PHB after reduction to final vertical datum.

**Dangers to Navigation ✓**

No dangers to navigation were discovered during the survey. *CONCUR*

**O. ADEQUACY OF SURVEY ✓**

Survey FOO451 is complete and adequate to supersede prior soundings and features in their common areas.

**P. AIDS TO NAVIGATION ✓**

There are no Aids to Navigation within the survey limits of FOO451. *CONCUR*

**Q. STATISTICS ✓**

Statistics are listed in the Survey Information Summary included with this report. *CONCUR*

**R. MISCELLANEOUS ✓**

None.

**S. RECOMMENDATIONS ✓**

The hydrographer recommends that photogrammetric shoreline be acquired for survey areas before the hydrographic field party begins the survey. Precise, low-water shoreline information can greatly facilitate the acquisition of soundings and expedite the shoreline verification process.

**PHOTOGRAMMETRIC SHORELINE PROJECT CM-8405 (TP-01309) COVERS THIS SURVEY AREA.**

**T. REFERRAL TO REPORTS ✓**

The following supplemental reports contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
OPR-O340-RA Horizontal Control Report	July 1999	N/CS34
Project related data for OPR-O340-RA	July 1999	N/CS34
OPR-O340-RA Coast Pilot Report	July 1999	N/CS26

Respectfully Submitted,



Danielle Pattison  
Senior Survey Technician

Reviewed,



Douglas D. Baird Jr.  
Lieutenant, NOAA  
Field Operations Officer

Approved and Forwarded,

 CDR/NOAA

Alan D. Anderson *for*  
Captain, NOAA  
Commanding Officer

## List of Horizontal Control Stations

NAME	STATE	TYPE	LATITUDE	LONGITUDE	SITEID	DEC_LAT	DEC_LON
CURTIS	AK	DGPS Flyaway	58 27.2687N	134 58.7415W	n/a	58.45447833	134.97902500
GUSTAVUS	AK	USCG Beacon	58 25.1000N	135 41.8000W	892	58.41833333	135.69666667
JOE	AK	DGPS Flyaway	58 40.7343N	134 59.3429W	n/a	58.67890500	134.98904833

# Survey Information Summary

Project:  Project Name:

Instructions Dated:  Project Change Info:

Change #	Dated
1	3/30/98
2	4/12/99
3	5/6/99

Sheet Letter:  Registry Number:

Sheet Number:

Survey Title:

Data Acquisition Dates: From:   To:

### Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2125						1		
2126								

### Sound Velocity Cast Information

Launch Table #	Ship Table #	Cast DN	Max Depth	Position	Applicable DN
13		140	121	58/24/42	
				135/26/38	

### Tide Zone Information

### Tide Gage Information

Tide Gage #	Gage Name	Installed	Removed
945-2437	EXCURSION INLET	5/7/99	6/8/99
945-2542	PT GUSTAVUS	5/7/99	6/8/99
945-2294	HAWK INLET	4/29/99	6/9/99

### Statistics Summary

Type	Total:
DP	21
SWMB	7.78

Percent XL:	
SQNM:	5.6

APPROVAL SHEET

for

F00451

RA-10-10-99

Standard field surveying and processing procedures were followed in producing this survey in accordance with the NOS Hydrographic Surveys Specifications and Deliverables; the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1998.

The field sheet and accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Approved and Forwarded,

*Daniel R. Herlihy* CDR/NOAA

Alan D. Anderson *for*  
Captain, NOAA  
Commanding Officer  
NOAA Ship RAINIER



TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 6, 1999

HYDROGRAPHIC BRANCH: Pacific  
HYDROGRAPHIC PROJECT: OPR-0340-RA  
HYDROGRAPHIC SHEET: F00451

LOCALITY: Excursion Inlet, AK  
TIME PERIOD: May 20, 1999

TIDE STATION USED: 945-2437 Excursion Inlet (South End), AK  
Lat. 58° 25.0'N Lon. 135° 26.8'W  
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.248 meters

REMARKS: RECOMMENDED ZONING  
Use zone(s) identified as: SEA57.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

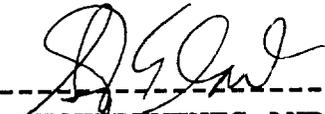
Note 2: Juneau, AK and Skagway, AK were used as datum control for subordinate tide stations and for tidal zoning in this hydrographic survey. Accepted datums for these two stations have been updated recently and have changed significantly from previous values.

The current National Tidal Datum Epoch (NTDE) used to compute tidal datums at tide stations is the 1960-78 NTDE. Traditionally, NTDEs have been adjusted when significant changes in mean sea level (MSL) trends are found through analyses among the stations of the National Water Level Observation Network (NWLON). Epochs are updated to ensure that tidal datums are the most accurate and practical for navigation, surveying and engineering applications and reflect the existing local sea level conditions. For instance, analyses of sea level trends show that a new NTDE is necessary and efforts are underway to update the 1960-78 NTDE to a more recent 19-year time period.



**TIDE NOTE FOR HYDROGRAPHIC SURVEY SHEET F00451 cont.**

However, analyses also show that there are several geographic areas which are strongly anomalous from the average sea level trends found across the NWLON and must be treated differently. One of these areas is in southeast Alaska covering the Lynn Canal, Icy Strait, and Glacier Bay region. Juneau and Skagway show relative sea level trends of -0.038 ft/yr and -0.052 ft/yr, respectively due to land emergence from the retreat of glaciers over recent geological time. NOS has adopted a procedure of computing accepted tidal datums for these anomalous regions by using a MSL value calculated from the last several years of data rather than the 19-year NTDE. The accepted range of tide is still based on the 19-year NTDE and, when applied to the updated MSL, will result in updated values for Mean High Water (MHW) and Mean Lower Low Water (MLLW) derived through standard datum calculation procedures. For both Juneau and Skagway, the MSL values were computed from the period of 1994-1998. This resulted in a lowering of the MLLW datums relative to land by -0.40 ft at Juneau and -0.53 ft at Skagway compared to the previous MLLW elevations used in last year's surveys. Subordinate tide stations in the area used for hydrographic surveys and controlled by Juneau or Skagway will be affected similarly. Accepted datums have been computed and may be accessed on the Internet through the URL specification <http://www.co-ops.nos.noaa.gov>.

*Fa*   
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CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR-O340-RA-99,  
 Sheet F00451.

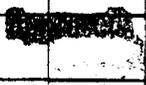
Format: Longitude in decimal degrees (negative value denotes  
 Longitude West),  
 Latitude in decimal degrees  
 Tide Station (in recommended order of use)  
 Average Time Correction (in minutes)  
 Range Correction

	Tide Station Order	AVG Time Correction	Range Correction
Zone SEA57			
-135.410569 58.14037	9452437	0	1.00
-135.30313 58.257005			
-135.450465 58.44808			
-135.497408 58.437591			
-135.483732 58.38105			
-135.536729 58.175477			
-135.529119 58.156155			
-135.410569 58.14037			

GEOGRAPHIC NAMES

FE00451

Name on Survey	<div style="display: flex; justify-content: space-between;"> <span>A CHART NO. 17516</span> <span>B ON PREVIOUS SURVEY NO.</span> <span>C ON U.S. QUADRANGLE MAPS</span> <span>D FROM LOCAL INFORMATION</span> <span>E ON LOCAL MAPS</span> <span>F P.O. GUIDE OR MAP</span> <span>G RAND McNALLY ATLAS</span> <span>H U.S. LIGHT LIST</span> <span>K</span> </div>											
	ALASKA (title)	X		X								
EXCURSION INLET	X		X									2
EXCURSION INLET (pp1)	X		X									3
ICY STRAIT (title)	X		X									4
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*Denise J. Rosenberg*  
 OCT 4 1999

NOAA FORM 77-27(H) (9-83)				U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER		
HYDROGRAPHIC SURVEY STATISTICS						FO0451		
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.								
RECORD DESCRIPTION			AMOUNT		RECORD DESCRIPTION			AMOUNT
SMOOTH SHEET			1		SMOOTH OVERLAYS: POS., ARC, EXCESS			
DESCRIPTIVE REPORT			1		FIELD SHEETS AND OTHER OVERLAYS			
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS			
ACCORDION FILES								
ENVELOPES	1							
VOLUMES								
CAHIERS								
BOXES								
SHORELINE DATA								
SHORELINE MAPS (List):		TP-01309						
PHOTOBATHYMETRIC MAPS (List):								
NOTES TO THE HYDROGRAPHER (List):								
SPECIAL REPORTS (List):								
NAUTICAL CHARTS (List):		Chart 17316, 18th ed. July 18, 1998						
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								
POSITIONS REVISED								
SOUNDINGS REVISED								
CONTROL STATIONS REVISED								
				TIME-HOURS				
				VERIFICATION	EVALUATION	TOTALS		
PRE-PROCESSING EXAMINATION								
VERIFICATION OF CONTROL								
VERIFICATION OF POSITIONS								
VERIFICATION OF SOUNDINGS								
VERIFICATION OF JUNCTIONS								
APPLICATION OF PHOTOBATHYMETRY								
SHORELINE APPLICATION-VERIFICATION								
COMPILATION OF SMOOTH SHEET				146		146		
COMPARISON WITH PRIOR SURVEYS AND CHARTS								
EVALUATION OF SIDE SCAN SONAR RECORDS								
EVALUATION OF WIRE DRAGS AND SWEEPS								
EVALUATION REPORT					37	37		
GEOGRAPHIC NAMES								
OTHER (Chart Compilation)					20	20		
USE OTHER SIDE OF FORM FOR REMARKS			TOTALS	146	57	203		
Pre-processing Examination by <b>R. Davies, R. Mayor, K. Sampadian</b>				Beginning Date 7-06-99	Ending Date 7-29-99			
Verification of Field Data by <b>R. Mayor, K. Sampadian</b>				Time (Hours) 146	Ending Date 2-10-00			
Verification Check by <b>D. Hill</b>				Time (Hours) 2.25	Ending Date 2-11-00			
Evaluation and Analysis by <b>K. Sampadian</b>				Time (Hours) 37	Ending Date 3-08-00			
Inspection by <b>D. Hill</b>				Time (Hours) 2	Ending Date 3-14-00			

## EVALUATION REPORT FOO451

### A. PROJECT

The hydrographer's report contains an adequate discussion of the project information.

### B. AREA SURVEYED

The survey area was reduced from its original limits as defined in project instructions dated, March 5, 1998, and the registry number was reassigned as a field examination. Definitive spatial limits for the revised layout are not adequately discussed in subsequent email correspondence between the hydrographer and the Operations Branch, N/CS31. Therefore the area surveyed is assumed to be complete.

The hydrographer determined the inshore limits of safe navigation by defining a Navigable Area Limit Line (NALL) throughout the surveyed area. Charted features and soundings inshore of this limit line which have not been specifically addressed during survey operations should be retained as charted. A page-size plot of the charted area depicting the limits of supersession accompanies this report as attachment 1.

Additional information pertaining to the survey area is contained in the hydrographer's report, section B.

Depths range from 0.2 to 77 fathoms.

### C. SURVEY VESSELS

The hydrographer's report contains adequate information relating to survey vessels.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING

Office processing of survey data was conducted using the same Computer Aided Resource Information System (CARIS) and Hydrographic Processing System (HPS) used by the hydrographer. MicroStation 95 was used to compile the smoothsheet.

Shallow water multibeam data (SWMB) were reprocessed to correct a problem related to the hydrographer's use of an incorrect vessel configuration file (VCF). The correct file, RA06\_99, was used for this processing. The outer ten beams on each side of the swath (1-10 and 92-101) were not used. Filter parameters used during data cleaning in HIPS Swath Editor included a beam angle of 60 degrees off nadir and a reject quality of 0. Processed soundings were read into a CARIS Workfile (foo451) by selecting shoal-biased "line-by-line" binning at a density of 15m x 15m. This data was then imported into HPS through HPTools.

Processed digital data for this survey exists in the standard HPS format, a database format using the .dbf extension. In addition, the smooth sheet drawing is filed in the MicroStation format, i.e. dgn extension. Copies of these files have been forwarded to the Hydrographic Surveys Division and a backup copy retained at PHB. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

The drawing files necessarily contain information that is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 35 and No. 75.

The data are plotted using a Universal Transverse Mercator projection, Zone 8 and are depicted on a single sheet. Additional information regarding field acquisition and processing of survey data has been adequately discussed in the hydrographer's report, section D and F.

#### **E. SONAR EQUIPMENT**

The hydrographer's report contains adequate information relating to side scan sonar equipment.

#### **F. SOUNDING EQUIPMENT**

Sounding equipment has been adequately addressed in the hydrographer's report.

#### **G. CORRECTIONS TO SOUNDINGS**

Soundings and elevations below Mean High Water (MHW) have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications.

Predicted tides were used for reduction of soundings during field processing. During office processing, tide reductions were derived from approved six-minute heights zoned direct from the following tide gage: Excursion Inlet (South End), AK (945-2437) was used for zone SEA57.

Other sounding reducers include corrections for static draft, dynamic draft and sound velocity. Heave, roll and pitch correctors were applied to SWMB data only. These reducers have been reviewed and are consistent with NOS specifications.

#### **H. CONTROL STATIONS**

Section H of the hydrographer's report contains adequate discussion of horizontal control and hydrographic positioning.

The positions of horizontal control stations used during hydrographic operations are published values based on horizontal datum NAD 83. The geographic positions of all survey data are based on this datum. The smooth sheet is annotated with an NAD 27 horizontal datum adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD 27 datum may be plotted on the smooth sheet by applying the following corrections:

Latitude:           -1.205 seconds (-35.287 meters)  
Longitude:         6.519 seconds (105.852 meters)

#### **I. HYDROGRAPHIC POSITION CONTROL**

Information concerning calibrations and system checks can be found in the hydrographer's report and in the separates related to horizontal position control and corrections to position data. DGPS performance checks were conducted in the field and found adequate.

#### **J. SHORELINE**

Shoreline map TP-01309, scale 1:20,000, was compiled on the NAD27 datum and applies to this survey. The map was digitized during survey processing for use in MicroStation. Shoreline drawn on the smooth sheet in black originates from this digital data. The shoreline data and the hydrographic data were merged during MicroStation processing.

The shoreline map and the results of the fieldwork as portrayed on the smooth sheet should supersede charted shoreline.

There were no MHW revisions on this survey.

#### **K. CROSSLINES**

Crosslines are adequately discussed in the hydrographer's report.

#### **L. JUNCTIONS**

Survey FOO451 does not junction with any contemporary survey.

## M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-10258	1987	1:10,000	NAD27
H-10257	1987	1:10,000	NAD27

The present survey was compared to digital raster copies of surveys H10257 and H10258. Prior survey H10258 covers the majority of the present survey area while prior survey H10257 only covers a small portion of the southeast corner of the present survey area. The legibility of the survey images and their registration and to the present survey were satisfactory. Sounding agreement is good with the present survey. Differences in depths generally range from 0.5 to 1 fathom with no consistent pattern of shoaling and or an increase in depths. Comparisons of standard depth curves with the prior surveys reveal little change in configuration. These differences are mostly based on the dynamics of natural bottom changes over the past twelve years. Justification for smaller changes can probably be attributed to better bottom coverage, improved positioning and sounding techniques, and relative accuracy of the data acquisition methods.

Because the present survey does not adequately cover the nearshore area numerous cultural features have been transferred to the present survey smoothsheet in color from prior survey H10258. This prior smoothsheet also depicts pier ruin areas that had been transferred from H6855 (1943). These areas have been transferred to the present survey and are color coded on the smoothsheet as originating with H10258. Most of these items fall near or inshore of the NALL line and were not specifically addressed by the hydrographer.

A rock submerged 1.1 fathoms located at Latitude 58°24'51" N; Longitude 135°26'34" W during survey H10258 was also investigated during the present survey. A minimum observed depth of 1.3 fathoms was obtained by shallow water multibeam. Since the actual size of the rock is unknown, it is not certain the least depth was determined. Accordingly, the prior depth of 1.1 fathoms was transferred to the present survey smoothsheet.

With the inclusion of the features listed above, survey FOO451 is adequate to supersede the prior surveys within the common area.

## N. ITEM INVESTIGATIONS

There were no AWOIS items assigned to this survey.

## O. COMPARISON WITH CHART

Survey FOO451 was compared with the following charts:

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
17316	18 <sup>th</sup>	July 18, 1998	1:80,000
17302	17 <sup>th</sup>	Aug. 14, 1993	1:80,000

### a. Hydrography

Charted hydrography originates with the previously discussed prior surveys, which have been adequately addressed in section M and require no further discussion.

The application of this survey to charts of a scale less than 1:40,000 may require the generalization of features such as piers, piles, and ruins. The application of this survey to charts of a scale greater than 1:40,000 may be accomplished without generalization of features.

Survey FOO451 is adequate to supersede charted hydrography within the charted area.

### b. Dangers to Navigation

No dangers to navigation were discovered during this survey and/or during office processing.

**P. ADEQUACY OF SURVEY**

With the exception of the items previously discussed in section M hydrography acquired during survey FOO451 and depicted on the smooth sheet is adequate to:

- a. Delineate the bottom configuration, determine least depths, and draw the required depth curves;
- b. Reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. Show the survey was properly controlled and soundings are correctly plotted.

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, the Field Procedures Manual, April 1994 Edition, and the NOS Hydrographic Surveys Specifications and Deliverables, dated April 23, 1999.

**Q. AIDS TO NAVIGATION**

There are no fixed and floating aids to navigation within the survey area. There were no features of landmark value located within the area of this survey.

**R. STATISTICS**

Statistics are adequately itemized in the hydrographer's report.

**S. MISCELLANEOUS**

No miscellaneous items were noted during office processing.

**T. RECOMMENDATIONS**

This is an adequate hydrographic survey. Additional work is recommended on a low priority basis to verify the items mentioned in section M of this report.

**U. REFERRAL TO REPORTS**

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

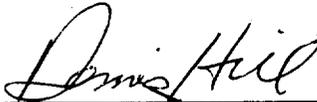


Kimberley Sampadian  
Physical Scientist

APPROVAL SHEET  
FOO451

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

  
\_\_\_\_\_  
Dennis Hill  
Chief, Cartographic Section  
Pacific Hydrographic Branch

Date: 3-15-00

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

  
\_\_\_\_\_  
James C. Gardner  
Commander, NOAA  
Chief, Pacific Hydrographic Branch

Date: 3-15-00

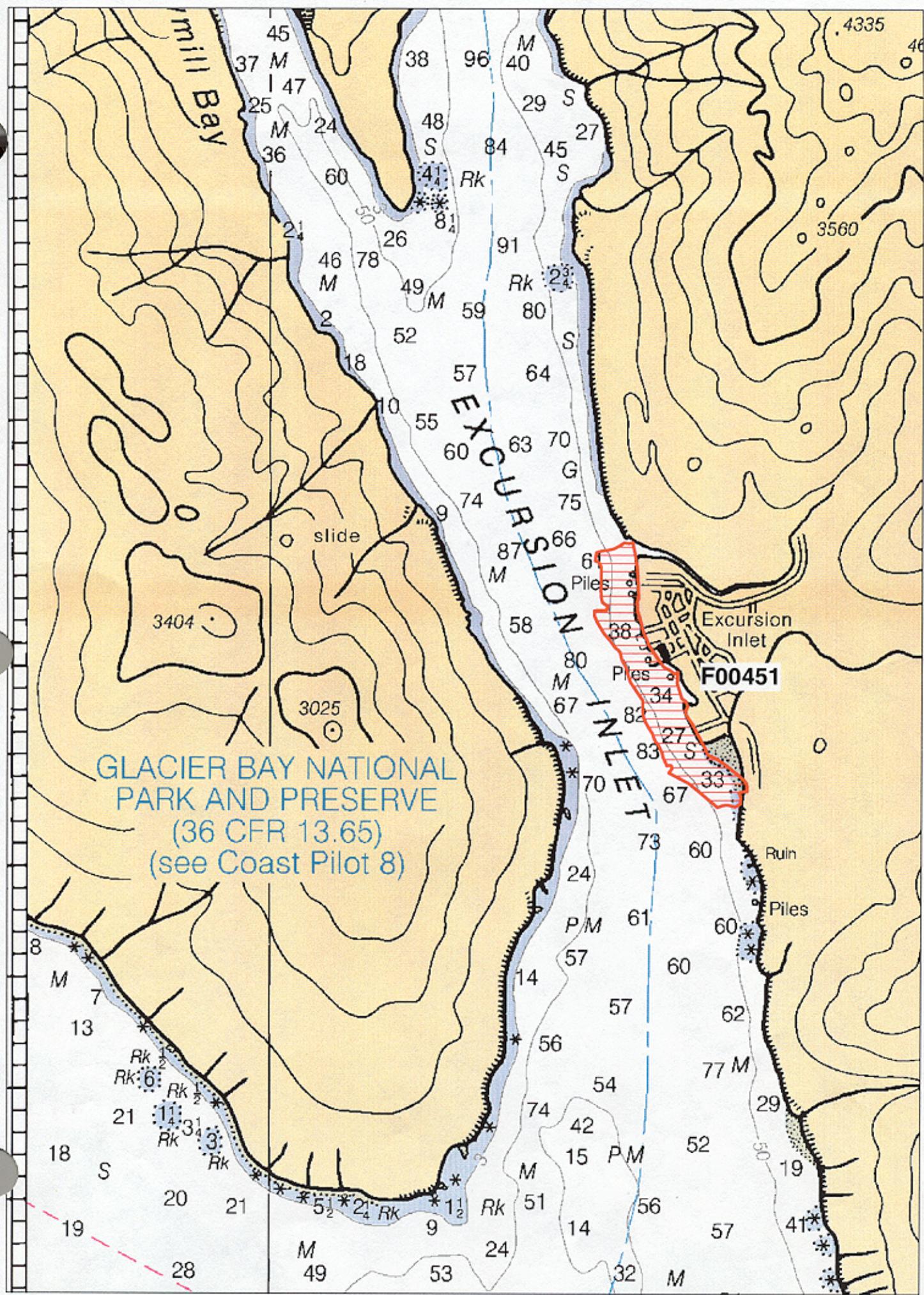
\*\*\*\*\*

Final Approval

Approved:

  
\_\_\_\_\_  
Samuel P. De Bow Jr.,  
Captain, NOAA  
Chief, Hydrographic Surveys Division

Date: May 1, 2000



GLACIER BAY NATIONAL  
PARK AND PRESERVE  
(36 CFR 13.65)  
(see Coast Pilot 8)

# PROGRESS SKETCH

May, 1999

OPR-0340-RA-99  
Lynn Canal, Alaska

Capt. A. D. Anderson  
COMMANDING

Chart 17300

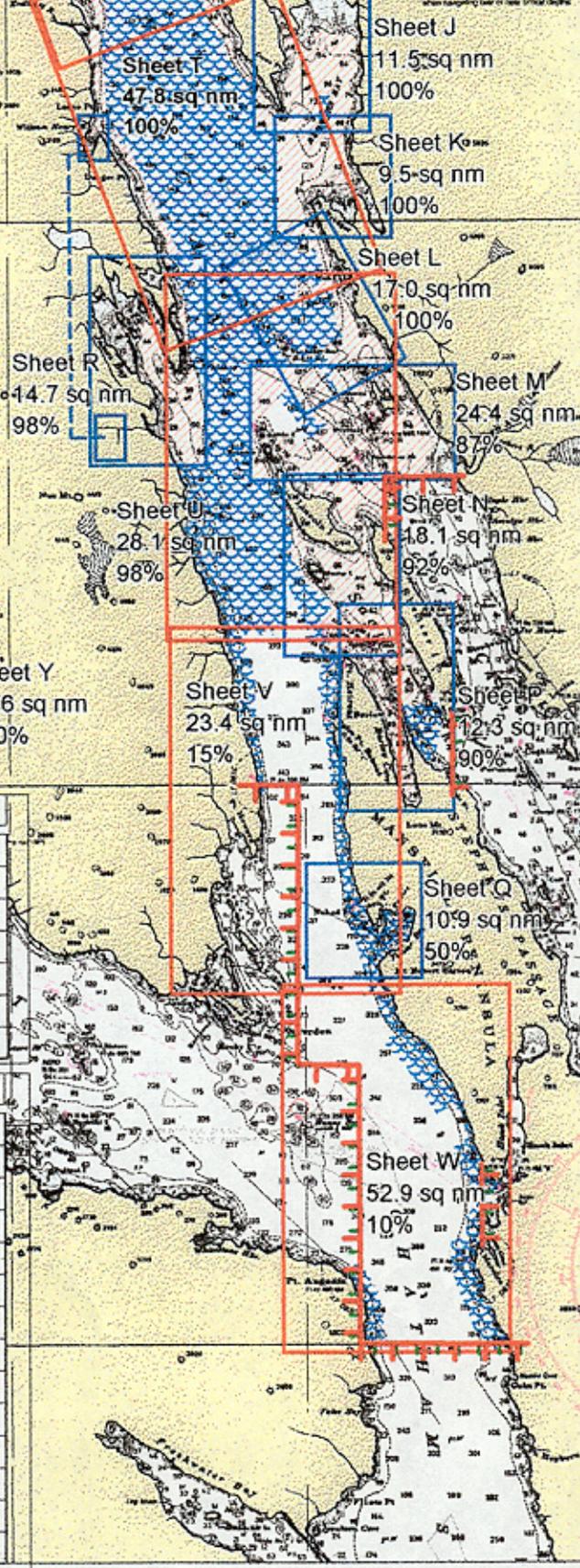


Downtime Type	April	May	June
Weather - Hr	0	0	
Mechanical -Hr	2	0	
Electronic -Hr	2	2	

Sheet X  
19.6 sq nm  
100%

Accomplished	April	May	June
LNM Hydro	2910	679	
LNM SSS	0	0	
SQ NM	43.89	144.17	
AWOIS Invest.	0	9	
Other Invest.	0	4	
LNM Multibeam	174.4	1053.64	
Days at Sea	28	26	

Sheet	Reg No	Started	Percent	Completed	Submitted	SQNM
J	H-10860	4/6	100	5/24		11.5
K	H-10861	4/6	100	5/22		9.5
L	H-10862	4/8	100	5/25		17.0
M	H-10866	4/14	87			21.2
N	H-10865	4/14	92			16.7
P	H-10870	4/20	90			11.1
Q	H-10879	5/1	50			5.5
R	H-10869	4/18	98	6/2		14.4
T	H-10864	4/13	100	5/25		47.8
U	H-10880	5/3	98	6/2		27.5
V	H-10881	5/2	15			3.5
W	H-10882	5/6	10			5.3
Y	F00451	5/20	100	5/20		0.16
X	H-10883	5/10	100	5/20		19.6



Sheet J  
11.5 sq nm  
100%

Sheet K  
9.5 sq nm  
100%

Sheet L  
17.0 sq nm  
100%

Sheet M  
21.2 sq nm  
87%

Sheet N  
16.7 sq nm  
92%

Sheet O  
5.5 sq nm  
50%

Sheet P  
11.1 sq nm  
90%

Sheet Q  
5.5 sq nm  
50%

Sheet R  
14.4 sq nm  
98%

Sheet S  
27.5 sq nm  
98%

Sheet T  
47.8 sq nm  
100%

Sheet U  
27.5 sq nm  
98%

Sheet V  
3.5 sq nm  
15%

Sheet W  
5.3 sq nm  
10%

Sheet X  
19.6 sq nm  
100%

Sheet Y  
0.16 sq nm  
100%

NOTE: This sketch is not to be used as a navigational aid. It is intended for planning purposes only. The actual survey track and coverage will be shown on the final survey report.

# Final Tidal Zoning for OPR-O340-RA-99 Lynn Canal, AK - Sheet F00451

COLREGS, 80.1705 (see note A)

International Regulations for Preventing Collisions at Sea, 1972.  
The entire area of this chart falls seaward of the COLREGS Demarcation Line.

### CAUTION

Shoalings amounting to as much as 6 feet have been disclosed in several critical shoal areas from Cross Sound to Excursion Inlet. It is probable that the Alaska Earthquake of July 10, 1958 created these shoalings and others not yet discovered. Mariners are urged to use caution when navigating over or near critical depths.

### WIRE DRAGGED AREAS

The area tinted green was swept in 1917-1923 for previously undetected dangers to navigation. All dangers found are shown on this chart.

### CAUTION

Only marine radiobeacons have been calibrated for surface use. Limitations on the use of certain other radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and Defense Mapping Agency Publication 117.

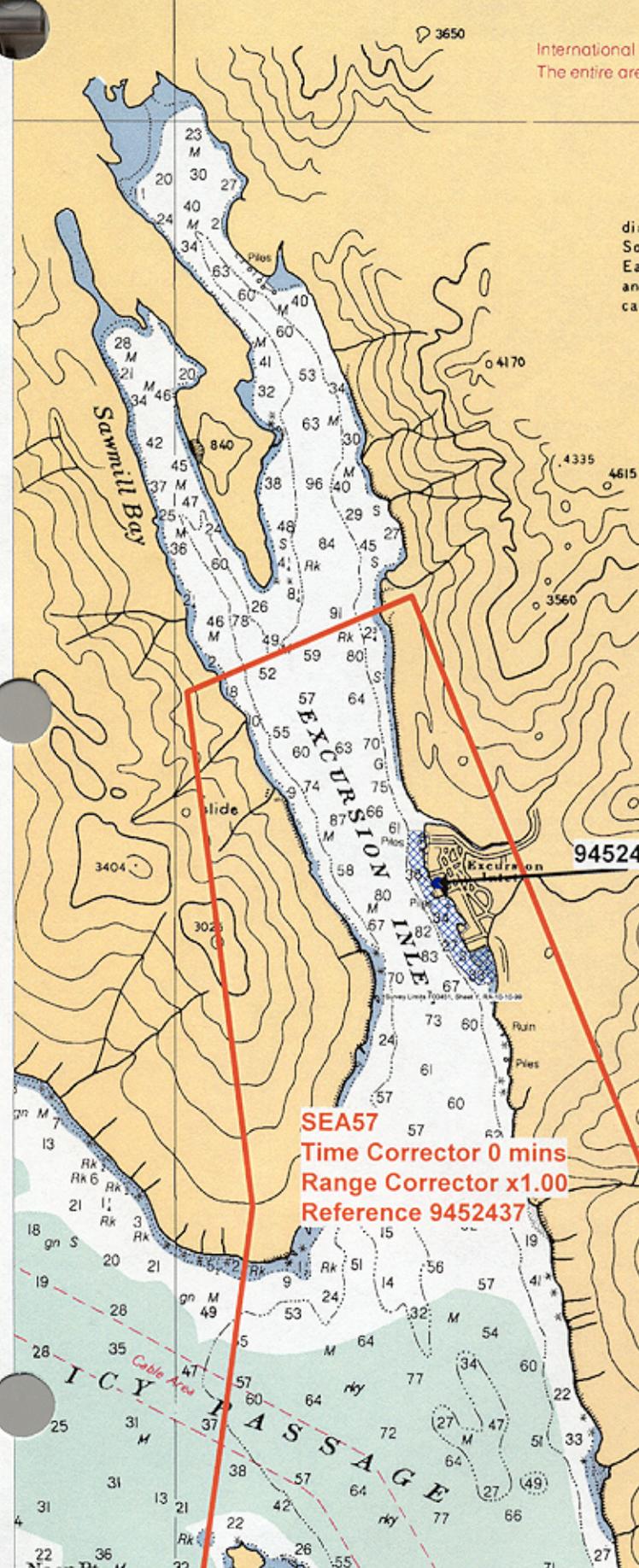
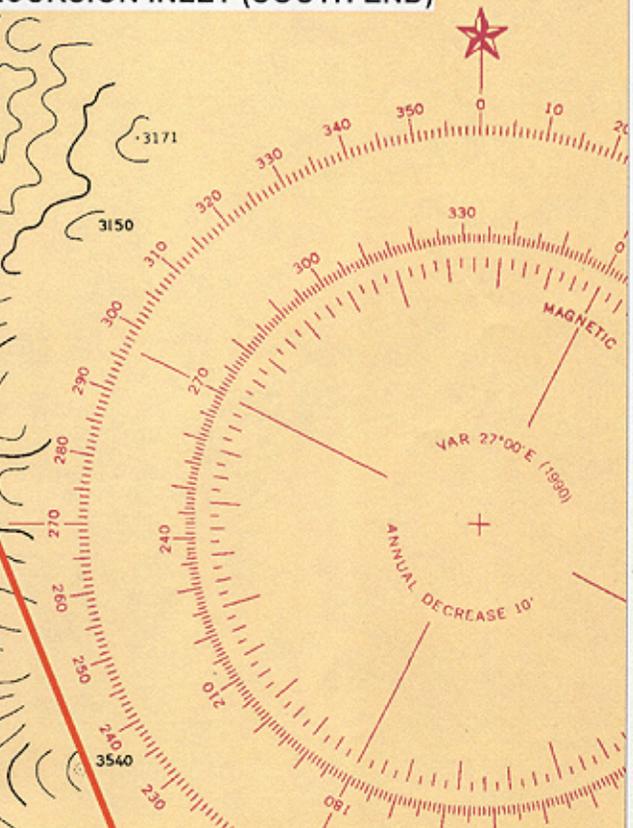
Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.

Station positions are shown thus:

○ (Accurate location) ◌ (Approximate location)

**9452437 EXCURSION INLET (SOUTH END)**

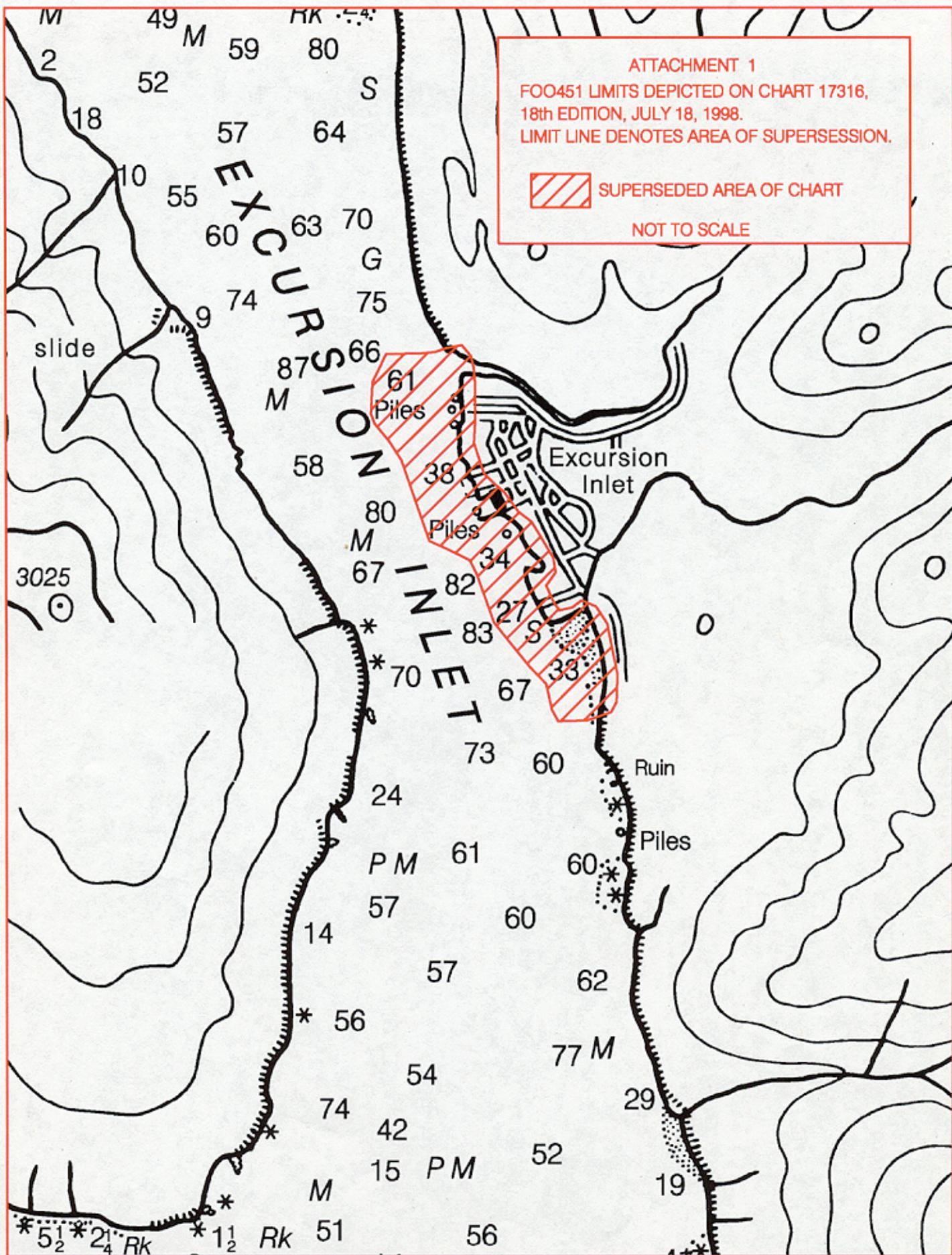
**SEA57**  
Time Corrector 0 mins  
Range Corrector x1.00  
Reference 9452437



ATTACHMENT 1  
FOO451 LIMITS DEPICTED ON CHART 17316,  
18th EDITION, JULY 18, 1998.  
LIMIT LINE DENOTES AREA OF SUPERSESION.

 SUPERSEDED AREA OF CHART

NOT TO SCALE



135° 28'00"

135° 27'30"

135° 27'00"

135° 26'30"

135° 26'00"

135° 25'30"

58° 25'30"

58° 25'30"

58° 25'00"

58° 25'00"

58° 24'30"

58° 24'30"

58° 24'00"

58° 24'00"

135° 28'00"

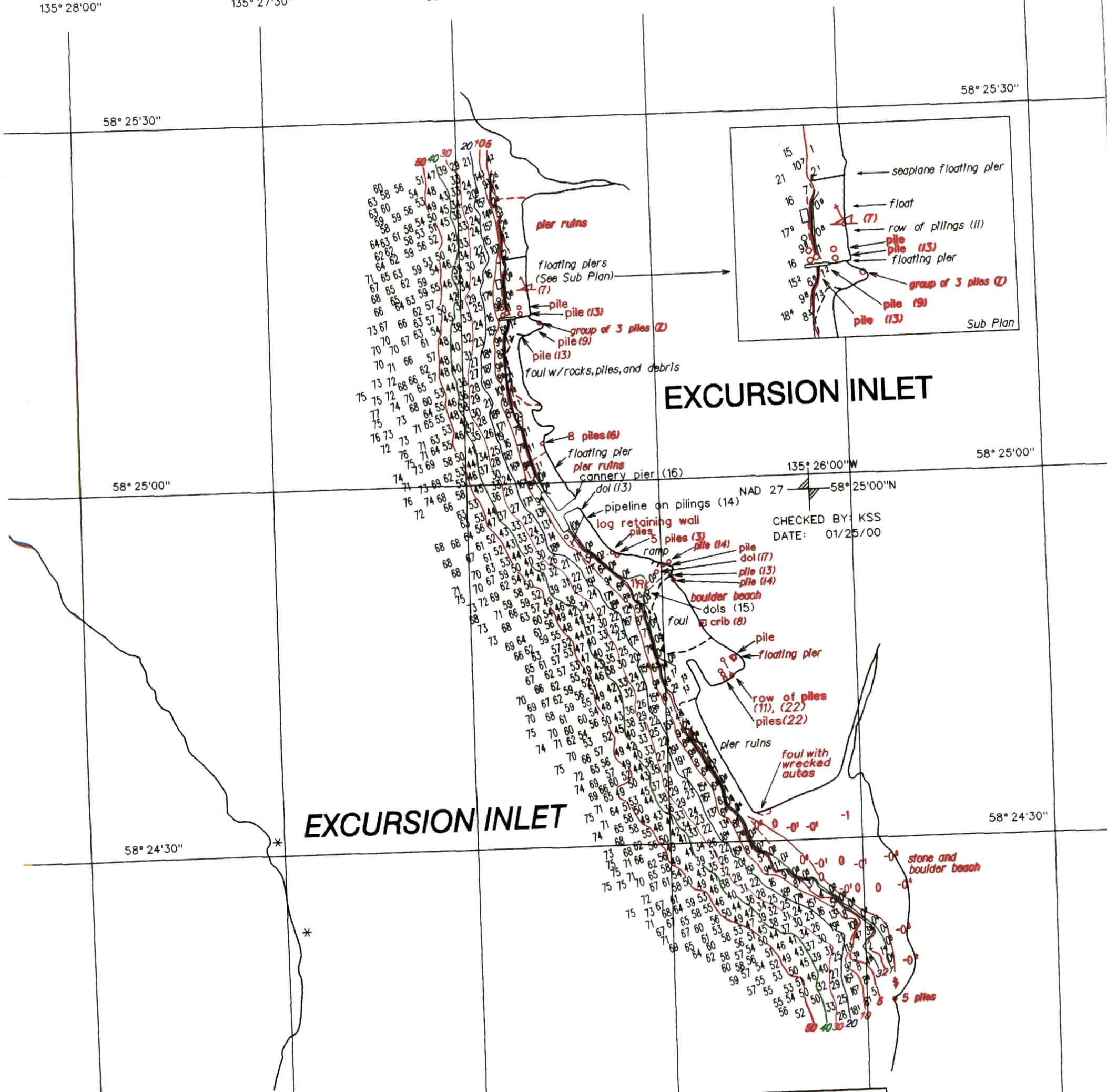
135° 27'30"

135° 27'00"

135° 26'30"

135° 26'00"

135° 25'30"



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
 NATIONAL OCEAN SERVICE

HYDROGRAPHIC SURVEY: F00451  
 AREA: Alaska, Icy Strait, Excursion Inlet  
 PROJECT: OPR-O340-RA  
 DATE: May 20, 1999

PROJECTION: UTM ZONE 8  
 CENTRAL MERIDIAN: 135°00'00" W  
 SCALE: 1:10,000  
 SOUNDING UNITS: FATHOMS AND TENTHS AT MLLW

DATUM: NAD83  
 SCALE FACTOR: 0.9996

Notes: Shoreline from TP-01309 (CM8405)  
 Soundings and features in red from H10258

Control Station  
**892 Gustavus, AK USCG Beacon**  
 Station is located beyond sheet limit.

CHECKED BY: KSS  
 DATE: 01/25/00

