

H-10988

NOAA FORM 78-35A

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

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. C

Registry No. H-10988

LOCALITY

State Alaska

General Locality Tongass Narrows

Sublocality Gravina Point to Ketchikan

2000

CHIEF OF PARTY

Gerald Douthit

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET**H-10988**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.

CState AlaskaGeneral Locality Tonass NarrowsSublocality Gravina Point to KetchikanScale 1:5,000Date of Survey Aug. 10 - Dec.3, 2000Instructions Date April 15, 2000Project No. OPR-O302-KR-00Vessel Zeus, Jolly Pickle and DucerChief of Party Gerald DouthitSurveyed by T. Howland, C. Kemp, B. Hocker, D. Batton, A. Dollard, F. White
D. Moistner, C. Cooper, B. TaylorSoundings taken by echo sounder, hand lead, pole Reson 8101, 8124

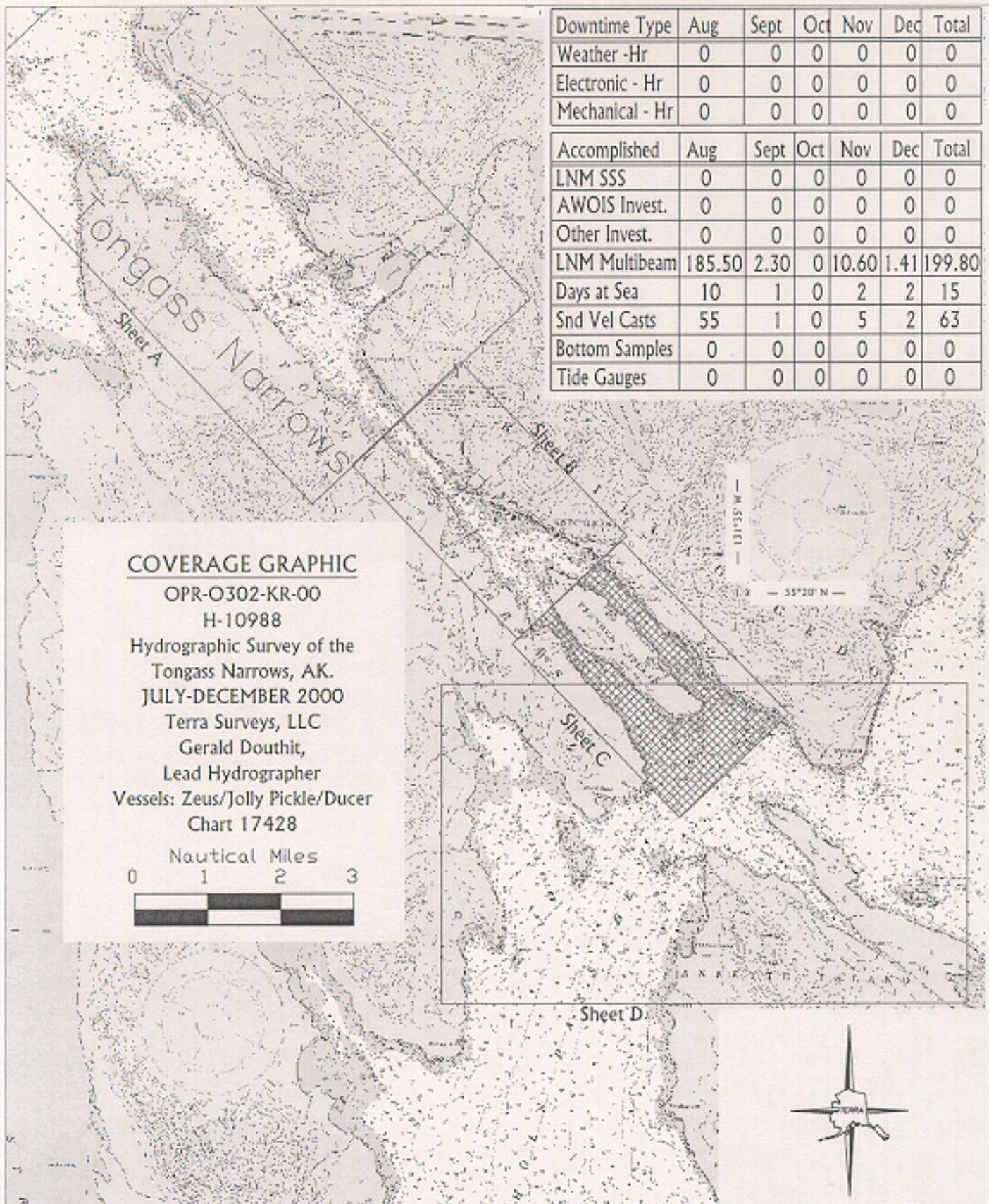
Graphic record scaled by _____

Graphic record checked by _____

Evaluation by R. DaviesAutomated plot by HP Designjet 750CVerification by R. DaviesSoundings in Fathoms and tenths

at

MLLWREMARKS: Time in UTC.**Revisions and annotations appearing as endnotes were****generated during office processing.****All separates are filed with the hydrographic data.****As a result, page numbering may be interrupted or non-sequential**



Descriptive Report to Accompany Hydrographic Survey H-10988

Sheet C

Scale 1:5,000

August 2000

Terra Surveys, LLC

Chief of Party: Gerald Douthit

A. AREA SURVEYED

This navigable area and shoreline verification survey was conducted in accordance with Hydrographic Project Instructions OPR-0302-KR, Gravina Pt. to Ketchikan, Tongass Narrows, Alaska dated April 15, 2000.¹

The purpose of this contract was to provide NOAA with modern, accurate hydrographic survey data with which to update the nautical charts of this area. Obstructions, wrecks and shoaling have been reported. The project area is approximately 3.1 square nautical miles with the southerly limits located at Gravina Pt. in southeastern Alaska. The survey area covers the southern portion of Tongass Narrows, bound by Revillagigedo Island on the northerly shore and Gravina Island on the southerly shore, and by the shores of Pennock Island. Tongass Narrows is transited by over 450 cruise ships annually, the Alaska State Marine Highway ferry system, commercial and sport fishing boats, log barges, recreational boaters (motor, sail and kayaks) and heavy float plane traffic. Ketchikan is a maritime community that depends on the accuracy of NOAA charts.

Two shallow water, multibeam sonar systems were used to locate and determine the least depth over the obstructions, wrecks and shoals as well as to determine the least depths over the entire project area.² Concurrently, a limited shoreline and near shoreline feature verification survey was conducted. The shoreline survey verified the general location of the MHW shoreline, the MLLW line and all features seaward of MLLW.³ Every effort was made to ensure that the survey products could be traced to and reconstructed from the raw data.⁴

Section B Data Acquisition and Processing

B.1 Equipment

Zeus

Approximately ninety-eight percent of the soundings for this survey were acquired from the motor vessel *Zeus*, with the remaining data collected from the jet boat *Jolly Pickle*. The *Zeus* is an aluminum retrofitted Vulcan crab vessel with an overall length of forty-four feet, a beam of thirteen and a half feet and a draft of five feet. Major systems used on the *Zeus* are listed on the following table.

VESSEL <i>ZEUS</i>	
LOA: 44 FT, BEAM 13.5 FT, DRAFT: 5 FT	
Equipment	Manufacturer & Model
Multibeam sonar	Reson SeaBat 8101
Positioning	Seatex Seapath 200
	Trimble 7400
Sound velocity	Applied Microsystems 3317 3279 4425
Vessel attitude	Seatex Seapath 200 SG Brown Meridian Gyro

Because of the Seapath unit's apparent sensitivity to elevated solar activity, project hydrographers used the Trimble 7400 as primary positioning aboard the *Zeus*. The Seatex Seapath 200 was used for roll, heave, and pitch data, with increased confidence provided by a SG Brown Meridian Gyro. Equipment performance details are provided in the Project-Wide Report, Sections A, Equipment and B, Quality Control.⁵

Jolly Pickle

The *Jolly Pickle* is a twenty-four foot Almar aluminum jet boat with an 8-foot beam and a draft of 1 ft. Major systems used on the *Jolly Pickle* are listed on the following table.

VESSEL JOLLY PICKLE	
LOA: 24 FT, BEAM 8 FT, DRAFT: 1 FT	
Equipment	Manufacturer & Model
Multibeam sonar	Reson SeaBat 8124
Positioning	Seatex Seapath 200 Trimble AG120 DGPS
Sound velocity	Applied Microsystems 3317 3279 77-3 4279
Vessel attitude	Seatex Seapath 200

Ducer

The motor vessel *Ducer*, a 19-foot aluminum Grayling Scamp, was employed for all shoreline verification in the survey area. The *Ducer* has a beam of seven feet and draft of one foot. Major systems used on the *Ducer* are listed in the following table.

VESSEL <i>DUCER</i>	
LOA: 19 FT, BEAM 7 FT, DRAFT: 1 FT	
Equipment	Manufacturer & Model
Singlebeam sonar	Odom 3100
Positioning	Trimble AG120 DGPS
Sound velocity	N/A
Vessel attitude	N/A

As noted in the Project-Wide Report, singlebeam sonar on the *Ducer* was coordinated with predicted tides for monitoring water depths in nearshore areas in the course of limited shoreline verification. Singlebeam sonar data was not utilized for project depth soundings.

B2. Quality Control

The internal consistency and integrity of the survey data was found to be good. ⁶ All soundings on the smooth sheet meet or exceed the accuracy requirements in the specifications. ⁷

Survey H-10988 (Sheet C) had 141.97 Nautical Miles of main scheme lines and 5.40 NM of crosslines, 3.8% of the mainscheme lines. This falls short of the 5% specified in the statement of work. Originally, the sheet was completely surveyed with line spacing based on a 60-degree swath width. The swath width was reduced to 45 degrees to ensure extra coverage and redundancy, and numerous holiday lines were needed to fill the resulting gaps. These holiday lines were not accounted for in the crossline planning. ⁸

Analysis of the crosslines was done by comparing each line in totality to a DTM of soundings made from the mainscheme lines. Crossline reports were generated from a DTM of the entire area of Sheet C. All showed general trends as well as inconsistencies. (See Separate V. Crossline Comparisons) ⁹

Two different methods of comparison were used. An analysis of individual beams was considered as well as by soundings grouped by angle from nadir. Both categories were also grouped by depth in 10-meter classes. Crossline reports were generated with the Caris program Makehist.exe using a class file which specified the acceptable NOAA specifications for this project. This is the class file used for these reports:

Min. Depth	Max. Depth	Allowable Error
0.0m	-10.00m	0.52m
-10.00m	-20.00m	0.54m
-20.00m	-30.00m	0.60m
-30.00m	-40.00m	0.68m
-40.00m	-50.00m	0.77m
-50.00m	-1000.00m	1.4%

Each error in the file is for a depth mid way between each group (ex. -10.00 to -20.00 uses -15 depth to compute an allowable error of .54). From -50m on a slope was computed. The computed allowable errors met NOAA specifications for this project.¹⁰

The analysis of the soundings grouped by angle from nadir was undertaken primarily to determine a useable filtering setting for line editing. Using the reports as a guideline, it was decided to filter out all beams collected outside of 60 degrees from nadir. Individual beam numbers were not necessarily eliminated. On the Reson 8101, this would effectively eliminate beams 1-9 and 92-101 if the vessel was level. The natural roll of the vessel during collection accounts for the small number of accepted soundings seen in the Smooth sheet histogram outside of 10-91.

The histogram showing the number of soundings on the smooth sheet for each beam demonstrates a smile trend, with the outer beams contributing more heavily. This is probably the result of standard deviations increasing as the angle off nadir is increases. Because of this, soundings from outer beams with higher standard deviations would more likely be selected in a shoal bias sounding set. It can also be seen from the histogram that the starboard channel (beams >51) contributes more than the port channel (beams < 51), with beam 91 contributing almost twice as much as any other beam. We believe that this is because almost all near-shore lines were run with the starboard side to the beach to protect the sonar. For the most part, this would result in all soundings shoreward of our most shoreward trackline being contributed by the starboard channel. Beam 91 contributes the most because it is the outermost remaining beam on the starboard side after the initial 60-degree beam filtering. The same situation occurs with beam 80, but with the Pickle rather than the Zeus.

The results also show a decreasing number of acceptable beams as depth increases. This was confirmed by observation of the soundings in subset mode. The probable cause of this phenomenon is compounding error caused by rays bending over increasing distances while depending on less than perfect SVP data. During subset editing it could be seen that especially on downward slopes, dispersion in soundings would increase with depth. A depth dependant angle from nadir filter would have been ideal in this case unfortunately one is not available at this time. In practice the subset editor would begin by filtering out beams greater than 60 degrees. There were cases where port and starboard swaths were filtered differently when one side was considerably deeper. A line, which was in relatively deep water (over 50m), would be filtered at 50 degrees before editing.

Several factors contributed to the inconsistencies in the crossline analysis. On a few lines (001_SheetC_X11, 002_SheetC_X2) the samples were relatively small in the 0-30m range. The lines ran perpendicular to the main channel; as a result few soundings were collected in the transition from the shore to the deeper channel. This transition is often very steep, where even valid soundings may have standard deviations greater than one. Another problem could be sound velocity as line 001_SheetC_X9 had a noticeable upward bending on the outer beams. Lastly, it appears there was bad sensor data on line 002_SheetC-X10, heave and roll seemed to have stuck for the first part of the line.

Generally, other than the few inconsistencies mentioned above, crossline analysis showed an expected and acceptable trend of slight data degradation as depth and the angle from nadir increased.¹¹

B3. Corrections To Echo Soundings

Hydrographic Survey H-10988 was performed with three other surveys in Project OPR-032-KR. Any changes to the corrections to echo soundings affects all four surveys in the area and is described in the project wide Data Acquisition and Processing Report.

C. Vertical and Horizontal Control

Soundings for this survey were tide adjusted using data from Tide Station Ketchikan 945-0460. Preliminary water level data was downloaded daily from the NOAA web site (<http://www.co-ops.nos.noaa.gov>) and applied as the data was processed in CARIS. Verified tide data from the Ketchikan gage was then downloaded off the Internet site and applied to the final smoothsheet soundings.¹²

The horizontal control datum for this survey is North American Datum of 1983(NAD 83). The projection used during collection was UTM, Zone 9. Control station *Penthouse* was established and used to send correctors to the survey vessels. A 24-hour observation on USGS Monument *WRONG* was used as a fixed point DGPS performance check on *Penthouse*. The observation survey showed the position on “Penthouse” to meet the required accuracy standards. The control survey to establish *Penthouse* and the 24-hour observation survey is detailed in the Project Wide Vertical and Horizontal Control report. In addition to station *Penthouse*, the United States Coast Guard (USCG) DGPS Beacon at Annette Island was used during hydrographic operations for the Shoreline Verification Survey and for daily confidence cross checks. A summary of the daily DGPS confidence checks can be found in the Project Wide Vertical and Horizontal Control report.¹³

D1. Chart Comparison¹⁴

The last Notice to Mariners to cover the time surveyed was the December monthly edition, Notice number 49. There were no items that prompted chart comparison.

There was no Danger to Navigation reports submitted for this survey.¹⁵

This survey was compared in Autocad Map to the following charts:

Chart	Scale	Edition	Date
17428 ¹⁶	1:40,000	7 th	February 25, 1995

General agreement between the chart and this survey was good.¹⁷ The West Channel near Pennock Island appears to be shallower than the chart indicates.¹⁸ The rest of the sheet varies in places and the most notable differences are listed in the table below.

Chart Depth	H-10988 Fathoms	Latitude				Longitude				Comment On Agreement With Chart
10.5	12.8	55°	18'	37.21"	N	131°	35'	45.79"	W	Near 10.5 fathoms
8	6.8	55°	19'	18.73"	N	131°	39'	04.23"	W	In channel near 8 fathoms
40	33	55°	17'	38.28"	N	131°	36'	39.25"	W	Near 40 fathoms
N/A	23	55°	18'	37.71"	N	131°	37'	27.88"	W	Inside 20 fathom curve
N/A	46	55°	17'	31.08"	N	131°	35'	46.21"	W	Outside 50 fathom curve
12	16.7	55°	18'	04.88"	N	131°	34'	46.68"	W	Near 12 fathoms
14	12.7	55°	18'	06.21"	N	131°	34'	59.00"	W	Near 14 fathoms
14	11.8	55°	19'	44.77"	N	131°	37'	40.43"	W	Near 14 fathoms
13	11.8	55°	18'	48.81"	N	131°	35'	55.90"	W	Near 13 fathoms
N/A	10.4	55°	18'	11.97"	N	131°	36'	04.77"	W	Inside 10 fathom curve
N/A	10.3	55°	19'	32.92"	N	131°	39'	37.84"	W	Inside 10 fathom curve
8	6.9	55°	19'	21.74"	N	131°	39'	00.86"	W	In channel near 8 fathoms
N/A	5.3	55°	18'	02.32"	N	131°	36'	16.34"	W	Outside 5 fathom curve

14	12.5	55°	18'	53.06"	N	131°	38'	34.85"	W	Near 14 fathoms
N/A	20.5	55°	18'	26.54"	N	131°	37'	05.54"	W	Inside 20 fathom curve
10.2	13.6	55°	20'	01.42"	N	131°	38'	19.28"	W	Near 10.2 fathoms
15	13.9	55°	18'	16.43"	N	131°	35'	00.85"	W	Near 15 fathoms
N/A	65	55°	17'	53.26"	N	131°	34'	32.83"	W	Inside 50 fathom curve
61	54	55°	17'	25.09	N	131°	36'	29.20"	W	Near 61 fathoms
37	35	55°	18'	31.74"	N	131°	37'	32.37"	W	Near 37 fathoms
40	36	55°	18'	26.45"	N	131°	37'	20.45"	W	Near 40 fathoms

AWOIS Items

This contract did not require AWOIS investigations. A list of AWOIS items in the area was provided for “informational purposes only”. A review of the items compared to the chart, the shoreline survey and a digital terrain model produced from the survey is summarized below.¹⁹

Record	Vessel Terms	Comments
51009	Unknown	Nothing obvious in the digital terrain model without further investigation and no notes verifying it during the shoreline survey. ²⁰
52510	Obstruction	Nothing obvious in the digital terrain model showing a sewer outfall without further investigation. Nothing verified by the shoreline crew. ²¹
52511	Obstruction	Piling falls inshore of the digital terrain model. Nothing verified by the shoreline crew. ²²

D.2 Additional Results

Shoreline Investigation Results²³

Limited shoreline verification was conducted from the *Ducer* along all shores in the survey area to confirm nearshore features. Three categories of results derived from limited shoreline verification of the survey area: verification of nearshore structures, verification of shorelines and natural features, and discovery of new, uncharted features. Each is discussed below.

Nearshore Structures

Table D.2.1²⁴ summarizes the nearshore or alongshore structures verified. Each structure was mapped (by area), annotated, and linked to all associated information and digital photographs in the Shoreline Verification MapInfo database under the following Workspace files:

Ketch_CNE1.wor

Ketch_CNE2.wor

Ketch_CNE3.wor

Ketch_CNE4.wor

Ketch_CPI1.wor

Ketch_CPI2.wor

Ketch_CSW1.wor

Shorelines and Natural Features

Shoreline types generally agreed with chart depictions and were annotated in the Shoreline Verification Aids, CSL-1 through CSL-11.²⁵

New Features

One new feature in the survey area was investigated.²⁶ Associated detached positioning data are mapped and detailed within the Shoreline Verification MapInfo database in Workspace file Ketch_ITBI.wor.²⁷ A summary of the new feature investigated is given in Table D.2.2.²⁸

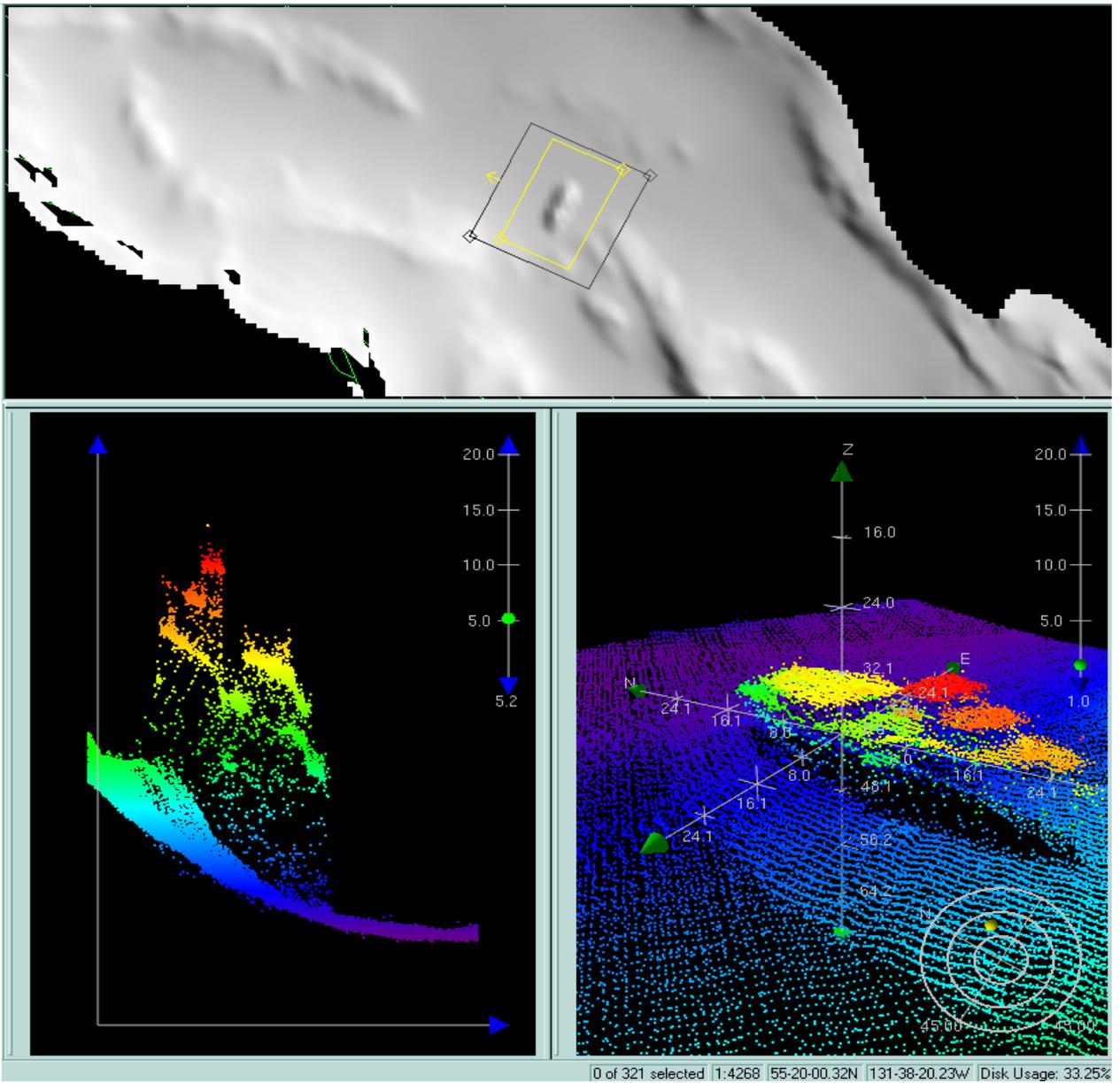


Figure 1

Disprovals

All charted items within the survey limits were found, with the exception of the aids to navigation discussed below. No disprovals were discovered.³⁰

Aids to Navigation

Aids to navigation in the survey area served their intended purpose and their general characteristics matched those given in the Charts and Light List. Positions of aids to navigation given in Table D.2.3³¹ are surveyed positions. Positions given for floating aids (shaded rows) are halfway between surveyed ebb and flood positions. The two white/red “7-knot” warning buoys, although observed, surveyed, and listed here, are private aids and may be seasonal. The two fixed, private aids to navigation appearing in the Light List as No. 22160, Standard Oil Company Pier Lights, were not found. Their listed location was observed from both land and water, and the survey team interviewed Standard Oil Company personnel and concluded that the lights have been removed and no longer exist.³²

Table D.2.3

H-10988 Aids to Navigation³³

NAME	INFORM A-TION	CHARA C-TERIST IC	USCG NO.	DESCRIPT ION	LATITUDE N	LONGITUDE W
“7 Knot” Warning Buoy	Restricted Ops			Buoy, White/Red	55° 19’ 28.9055”	131° 39’ 10.4883”
“7 Knot” Warning Buoy	Restricted Ops			Buoy, White/Red	55° 19’ 21.97”	131° 36’ 40.73”
Potter Rock Lighted Bell Buoy	Lighted Fl Red, Bell	Fl (2+1) R 6s	21980	Buoy, Red/Green Bands	55° 18’ 6.5580”	131° 34’ 39.2179”
W. Channel Lighted Buoy , 2	Lighted Fl Red	Fl R 2.5s	22130	Buoy, Red	55° 18’ 0.7018”	131° 36’ 22.0888”

NAME	INFORM A-TION	CHARA C- TERIST IC	USCG NO.	DESCRIPT ION	LATITUDE N	LONGITUDE W
West Channel Light 4	Fl red, Light Part Obscured	Fl R 4s	22135	Marine Light on Tower	55° 19' 8.0901"	131° 38' 35.2410"
W. Channel Lighted Buoy 5	Lighted Fl Gr	Fl g 4s	22140	Buoy, Green	55° 19' 8.8676"	131° 38' 52.5448"
E. Channel Entrance Buoy 2	Nun		22145	Buoy, Red	55° 18' 33.9325"	131° 35' 15.1383"
Saxman Breakwater Light	Flashing Red, Private	F R	22147	Marine Light on Post	55° 18' 52.3224"	131° 35' 46.5076"
California Rock Lighted Buoy 3	Lighted Fl Grn	Fl G 4s	22150	Buoy, Green	55° 18' 54.57005"	131° 36' 11.3238"
Idaho Rock Lighted Buoy 4	Lighted Fl red	Fl R 4s	22155	Buoy, Red	55° 19' 0.4593"	131° 36' 7.3936"
Coast Guard Station Light	Lighted Fl W	Fl W 4s	22158	Marine Light on Tower	55° 19' 49.0013"	131° 37' 24.6509"

Shaded rows are floating navigation aids

Bridges, Cables and Pipelines

No bridges, overhead cables or overhead pipelines were charted or discovered within the survey limits.³⁴ One submarine cable crossing was verified within the survey limits. Surveyed coordinates for the cable's signage are shown below.³⁵

Sign, East Channel, east side:

Latitude 55° 19' 51.53" north

Longitude 131° 37' 18.73" west

Sign, East Channel, west side:

Latitude 55° 19' 37.33" north

Longitude 131° 37' 37.78" west

Sign, West Channel, east side:

Latitude 55° 19' 29.516" north

Longitude 131° 39' 08.296" west

Sign, West Channel, west side:

Latitude 55° 19' 22.510" north

Longitude 131° 39' 23.295" west

Discussion

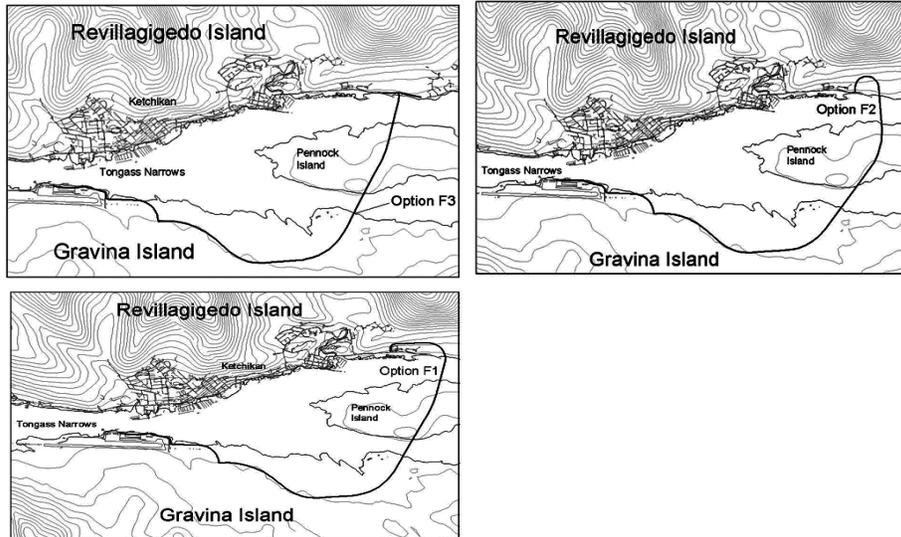
An uncharted item of practical value to mariners was discovered during the Shoreline Verification of the area. This new feature is discussed in more detail above. No new information of significant scientific value resulted from the survey. Anomalous tidal conditions were not encountered.

Environmental conditions bearing directly on the hydrographic data included the presence of bull kelp throughout many areas shoreward of the four-meter curve, as well as some areas seaward of the four-meter curve. Kelp beneath the sonar head may have caused occasional interference in bottom acquisition; however, in general such interference is readily detectable in processing. A further condition affecting data acquisition was an eleven-year peak in sunspot activity, which resulted in various intermittent effects on the survey vessels' DGPS positioning. Solar activity and its effects are discussed in detail in section B.2, Quality Control.

Planned Construction and Need for New Surveys

The survey area comprised the southern section of Tongass Narrows, a busy waterway used by AMHS ferries, cruise ships, fishing vessels, float planes, timber interests, and private watercraft. In addition, the shorelines of Revillagigedo, Pennock, and Gravina, islands are frequently impacted by private, commercial, and public development. A significant activity which may indicate the need for new survey of the area in the near future is the proposed Gravina Access Project.³⁶ The Gravina Access Project (State of Alaska Department of Transportation and Public Facilities Project #67698, Federal Project #ACHP-0922(5)) includes three options for new construction which would

directly impact the survey area. The Gravina Access Project is scheduled for implementation over the next five years.



Proposed Bridge and Tunnel Routes Potentially Affecting Surveyed Area

F1: Proposed Bridge; F2: Proposed Tunnel; F3: Proposed Br

LETTER OF APPROVAL REGISTRY NO. H-10988

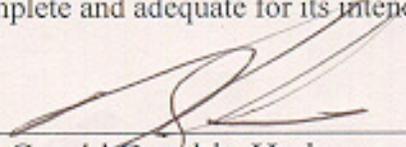
This Report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of survey H-10988 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report, smooth sheet, digital data, and accompanying records have been closely reviewed and are considered complete and adequate as per the Statement of Work. Other reports to be submitted with this survey include Data Acquisition and Processing Report, Vertical and Horizontal Report, which were submitted on ~~00/00/00~~

6/5/01 TSN

I believe this survey is complete and adequate for its intended purpose.

THOMAS S. NEWMAN


Gerald Douthit, Hydrographer
Terra Surveys, LLC

Date

6/5/01

Revisions Compiled During Office Processing and Certification

¹ Concur

² Concur

³ Shoreline verification conducted by the hydrographer was analyzed during office processing and shown on the smooth sheet as warranted.

⁴ Concur

⁵ Filed with the hydrographic records.

⁶ Concur

⁷ Concur

⁸ Concur

⁹ Filed with the hydrographic records.

¹⁰ Concur

¹¹ Concur

¹² Concur; additional tide and zone information are filed with the hydrographic data.

¹³ Concur

¹⁴ Survey H10988 was also compared with the following prior surveys;

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
H08758	1963	1:10,000
H08802	1964	1:5,000
H08872	1965	1:5,000

The soundings of the three prior surveys compare very well with the present survey. Soundings differ between 1 to 2 fathoms. The greatest difference is the cultural features along shore, especially in the vicinity of Ketchikan. Numerous marinas, piers and other man-made changes have occurred since the prior surveys were done. The hydrographer did not address several charted features falling within the survey limits. These features have been transferred to the chart from prior survey data and compiled in red, if the survey data did not support removal. Features shown in green on the H-Drawing could not be specifically identified with a source. It is recommended that the prior surveys be superseded in the common areas except for the features, soundings and bottom characteristics brought forward from the prior surveys.

¹⁵ Concur

¹⁶ This survey was also compared with chart 17430, 10th Edition, dated Feb. 7th, 1998.

¹⁷ Concur

¹⁸ Concur

¹⁹ AWOIS forms are also attached to this report.

²⁰ Retain charted submerged wreck *ED* at latitude 55/20/13.75N, longitude 131/38/20.06W.

²¹ Retain charted sewer at latitude 55/18/22.21N, longitude 131/34/31.55W.

²² Retain charted submerged dolphins at latitude 55/18/51.13N, longitude 131/35/36.10W and latitude 55/18/49.69N, longitude 131/35/34.66W.

²³ Shoreline verification conducted by the hydrographer was analyzed during office processing and shown on the smooth sheet as warranted.

²⁴ Filed with the hydrographic records.

²⁵ Filed with the hydrographic data.

²⁶ During office review a submerged wreck was discovered on the DTM and in the multibeam sounding records, see figures 1 and 2. Upon further investigation, this wreck is approximately 50 meters in length and 10 meters in width and has a depth of 14.2 fathoms. It is recommended that this *14 wreck* be charted at latitude 55/19/55.51N, longitude 131/37/53.14W. It is also recommended that this wreck be added to the AWOIS database and have additional work done to get a least depth and description of the wreck on a time available basis.

²⁷ Filed with the hydrographic data.

²⁸ Attached to this report.

²⁹ Chart as log boom.

³⁰ Do not concur, the hydrographer did not address several charted features falling within the survey limits. These features have been transferred to the chart from their original source. When a feature could not be identified from the prior survey, the feature was retained as charted. No bottom samples were taken during survey operations. Bottom characteristics were transferred from their prior source. Kelp symbols were also carried forward from their prior source.

³¹ Table D.2.3 is attached to this report

³² It is recommended that these lights be removed from the chart

³³ It is recommended that these aids to navigation be charted with the most recent information from the US CG. District 17.

³⁴ Concur

³⁵ The hydrographer confirmed the charted cable crossing area, therefore, retain charted cable area limits.

³⁶ Do not concur, this area should be resurveyed at an interval appropriate to local conditions and available resources. See National Survey Priorities 2004.

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

VLAT	<input type="text" value="55/20/15.00"/>	NATIVLON	<input type="text" value="131/38/14.00"/>	<input type="button" value="Convert"/>	NATIVDATUM	<input type="text" value="5"/>
LAT83	<input type="text" value="55/20/13.75"/>	LONG83	<input type="text" value="131/38/20.06"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="Low"/>
	<input type="text" value="55"/> <input type="text" value="20"/> <input type="text" value="13.75"/>		<input type="text" value="131"/> <input type="text" value="38"/> <input type="text" value="20.06"/>		GPSOURCE	<input type="text" value="Direct"/>
LATDEC	<input type="text" value="55.3371527777778"/>	LONDEC	<input type="text" value="131.638905555556"/>			

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History
HISTORY
LNM12/83(3/22/83)--17TH CGD; DANG SUBM WK, F/V 20FT LONG, BURNED TO THE WATER
LINE AT THE STERN AND SANK IN 15FMS OF WATER IN LAT 55-20-15N, LONG
131-38-14W, PA. EXTENSIVE HULL DAMAGE IS ALSO REPORTED.
FE263/84--OPR-O168-RA-84; DANG. SUBM WK, PA. NOT DISPROVED BY PRESENT SURVEY,
ATTRIBUTED TO INSUFFICIENT BOTTOM COVERAGE OF THE SSS, TOW FISH HEIGHT NOT
ADEQUATE OR LINES SHOULD HAVE BEEN SPLIT, AN ATTACHMENT TO THE DR BY N/CG24X1
STATES THAT A NON-DANGEROUS WK BE CHART AT THE REPORTED POSITION.
(ENTERED 11/85 RWD)
H10988--OPR-O302-KR-00; NEITHER VERIFIED NOR DISPROVED. RETAIN AS CHARTED. (UPDATED 3/03 BY MBH)
Hydrographers comments: Nothing obvious in the digital terrain model without further investigation and no notes verifying it
during the shoreline survey.
Evaluator comments: Inadequated investigation, retain as charted

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SENDINGCODE DEPTH

VLAT	<input type="text" value="55/18/22.21"/>	NATIVLON	<input type="text" value="131/34/31.55"/>	<input type="button" value="Convert"/>	NATVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/18/22.21"/>	LONG83	<input type="text" value="131/34/31.55"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="18"/> <input type="text" value="22.21"/>		<input type="text" value="131"/> <input type="text" value="34"/> <input type="text" value="31.55"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.306169444444"/>	LONDEC	<input type="text" value="131.575430555556"/>			

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History
Hydrographer comments: Nothing obvious in the digital terrain model showing a sewer outfall without further investigation.
Nothing verified by the shoreline crew.
Evaluators Comments: Inadequate investigation, retain as charted

Fieldnote

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SINDINGCODE DEPTH

VLAT	<input type="text" value="55/18/50.00"/>	NATIVLON	<input type="text" value="131/35/36.00"/>	<input type="button" value="Convert"/>	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/18/50.00"/>	LONG83	<input type="text" value="131/35/36.00"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="18"/> <input type="text" value="50"/>		<input type="text" value="131"/> <input type="text" value="35"/> <input type="text" value="36"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.313888888889"/>	LONDEC	<input type="text" value="131.593333333333"/>			

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

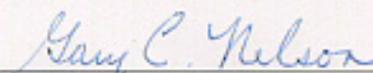
Proprietary

YEARSUNK NIMANUM SYSTEMNUM

APPROVAL SHEET
H10988

Initial Approvals:

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.



Gary Nelson
Chief Cartographic Team
Pacific Hydrographic Branch

Date: 1/05/05

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 Descriptive Report.



Donald W. Haines, LCDR/NOAA
LCDR, NOAA
Chief, Pacific Hydrographic Branch

Date: 10 JAN 2005

