

H11249

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. N/A
Registry No. H11249

LOCALITY

State Alaska
General Locality Cook Inlet
Sublocality North Point Shoal to Knik Arm

2004

CHIEF OF PARTY

Anne S. Dollard

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H-11249

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.

N/A

State Alaska

General Locality Cook Inlet

Sublocality North Point Shoal to Knik Arm

Scale 1:10,000

Date of Survey June 7 - October 29, 2004

Instructions Date 7/18/2003

Project No. OPR-P385-KR-04

Vessel Luna Sea (COD 1021765), SeaDucer (AK0691P)

Chief of Party Anne S. Dollard

Surveyed by Terra Surveys, LLC

Soundings taken by echo sounder, hand lead, pole Reson 8101, Reson 8124

Graphic record scaled by N/A

Graphic record checked by N/A

Evaluation by G. Nelson

Automated plot by HP Designjet 1050C

Verification by G. Nelson

Soundings in Feet

at

MLLW

REMARKS: Time in UTC Zone 5

Revisions and annotations appearing as endnotes were

generated during office processing.

All seperates are filed with the hydrographic data

As a result, page numbering may be interrupted or non-sequential

Descriptive Report to Accompany Hydrographic Survey H-11249

Sheet B

Scale 1:10,000

June 7 - October 29, 2004

Terra Surveys, LLC

Lead Hydrographer: Anne S. Dollard

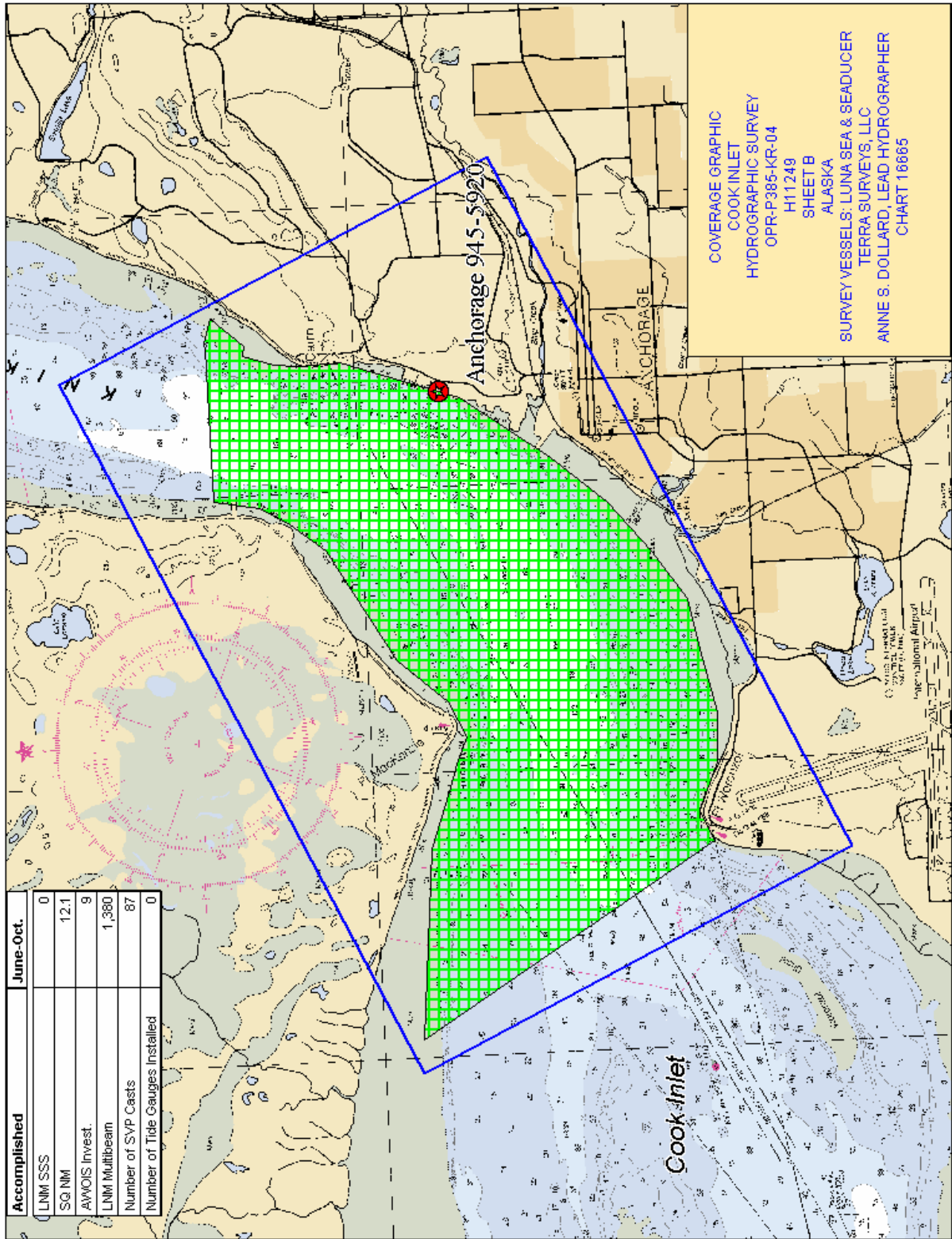
A. AREA SURVEYED

This navigable area survey was conducted in accordance with Hydrographic Project Instructions OPR-P385-KR-2004, Approaches to Anchorage, Northern Cook Inlet, Alaska dated July 18, 2003.

The purpose of this survey was to provide NOAA with modern, accurate hydrographic survey data with which to update the nautical charts of this area. Dramatic bottom changes, both shoaling and deepening have been reported. The project area is approximately 12.1 square nautical miles with the most southerly limits at Point Woronzof extending north to approximately one mile north of Cairn Point. Cook Inlet is a major commercial shipping lane for the Port of Anchorage, which lies on the eastern edge of this project, and Port MacKenzie, which lies on the western edge of this project. These ports and the ships that use them rely heavily on the accuracy of the nautical chart for this area. Both ports are detailed further in "Section D. Additional Results."

Approximately 80% of Alaska's commerce is delivered by vessel to Anchorage via Cook Inlet. Half the population of Alaska resides near its shores, and Anchorage, is the state's largest city and a focus for commerce, industry, recreation, and transportation. Tidal height variations at Anchorage are the second most extreme in the world, exceeded only by those in Canada's Bay of Fundy. Cook Inlet's extreme tidal range and the shallow bathymetry produce extreme tidal currents as well. During winter the marine ice that forms in the Inlet can have a substantial impact on human activities.

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. This survey has a maximum depth of 182 feet and a minimum depth of 15 feet above datum.¹



Section B Data Acquisition and Processing

B.1 Equipment

Soundings for this survey were acquired using the motor vessels *Luna Sea* and *SeaDucer*.

Luna Sea

The *Luna Sea* is a 38-foot aluminum hull boat with a 12.1-foot beam and a 2.25-foot draft. Major systems used on the *Luna Sea* are listed in the following table.

VESSEL <i>Luna Sea</i> LOA: 38 FT, BEAM 12.1 FT, DRAFT: 2.25 FT	
Equipment	Manufacturer & Model
Multibeam sonar	Reson SeaBat 8124
Positioning	Seatex Seapath 200 RTK
Sound velocity	Applied Microsystems 3317 4868
Vessel attitude	Seatex MRU-5

SeaDucer

The *SeaDucer* is a custom built aluminum Uscola Offshore Pilot vessel. Its overall length is 31 feet, with a beam of 10 feet and a draft of 1-2 feet. Major systems used on the *SeaDucer* are listed in the following table:

VESSEL <i>SeaDucer</i> LOA: 31 FT, BEAM 10.0 FT, DRAFT: 1-2 FT	
Equipment	Manufacturer & Model
Multibeam sonar	Reson SeaBat 8101
Positioning	TSS PosMV
Sound velocity	Applied Microsystems 3259
Vessel attitude	TSS PosMV

Equipment performance details are provided in the Project-Wide Report, Sections A, Equipment and B, Quality Control.²

B2. Quality Control

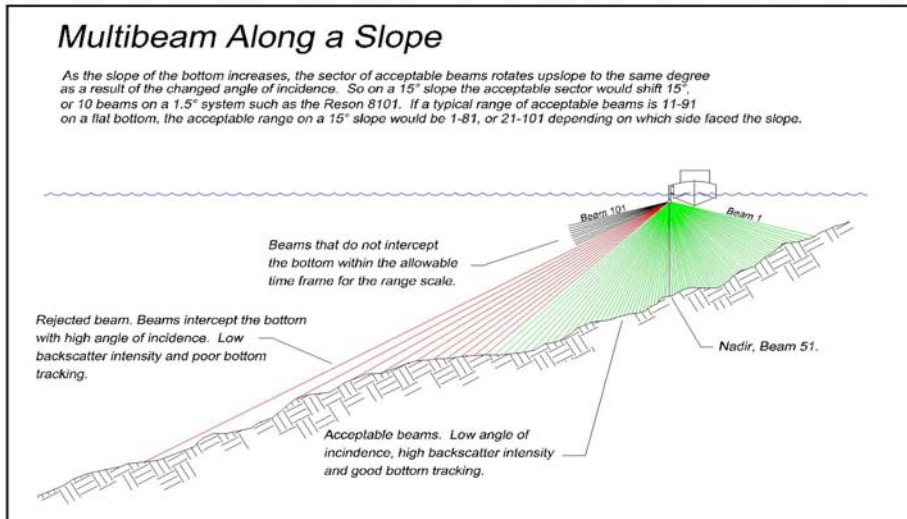
The internal consistency and integrity of the survey data was found to be good. All of the soundings that appear on the smooth sheet meet or exceed the accuracy requirements in the specifications. However, the dynamic characteristics of Cook Inlet prevail. The bottom will typically shift and change by as much as two meters. The powerful tides and currents combined with constant dredging and dumping of material is evident in the changes in depths when there is any amount of time (even days) between data collection. The hydrographer surveyed this area in 2001 and these bottom changes were evident then as well.³

Crosslines

Survey H-11249 had 1119.5 nautical miles of main scheme lines and 64.4 NM of crosslines. This equates to 5.8% of the mainscheme lines and exceeds the requirement of 5% set forth in the Specifications and Deliverables, Sec. 5.5.3. There were 179 crosslines and 1630 mainscheme lines. A total of 25 crossings were analyzed. The crossings varied spatially and temporally. A location plot is included in “Separate V Crossline Comparisons.”⁴

The crosslines were analyzed with a program developed in-house in accordance with Specifications and Deliverables 2003, Section 5.5.3. A comprehensive explanation of the program is in the Data Acquisition and Processing Report. The reports generated from the crossline analysis are in “Separate V Crossline Comparisons.”

An estimated 95% confidence level generated from crossline analysis was used as a guide in determining data acceptability. In practice, the subjective nature of multibeam data cleaning resulted in a slight variance of final smooth sheet soundings from the estimated 95% confidence level.⁵ This is represented by the overlay in the Smoothsheet Sounding Distribution graph. Conditions warranting accepting data from outer beams occurred along steep terrain where the outermost beams had a better angle of incidence on the up-hill side. This was often the case, due to the steep slopes encountered along the shoreline. This effect is shown in the following figure.



Smooth Sheet Soundings

Final smooth sheet soundings were compiled into a spreadsheet and plotted. Figure 1, on the following page, is a histogram depicting the number of soundings per beam on the smooth sheet. The Reson 8101 multi-beam echo sounder has 101 beams and is numbered from port to starboard, 1-101 with beam 51 representing the nadir beam. The Reson 8124 multi-beam echo sounder has 80 beams and is numbered from port to starboard, 1-80. There was no standard filtering practice overall. Each area was filtered as deemed necessary and the overall data quality was good. Refer to the Data Acquisition and Processing Report, Section B for filtering details.

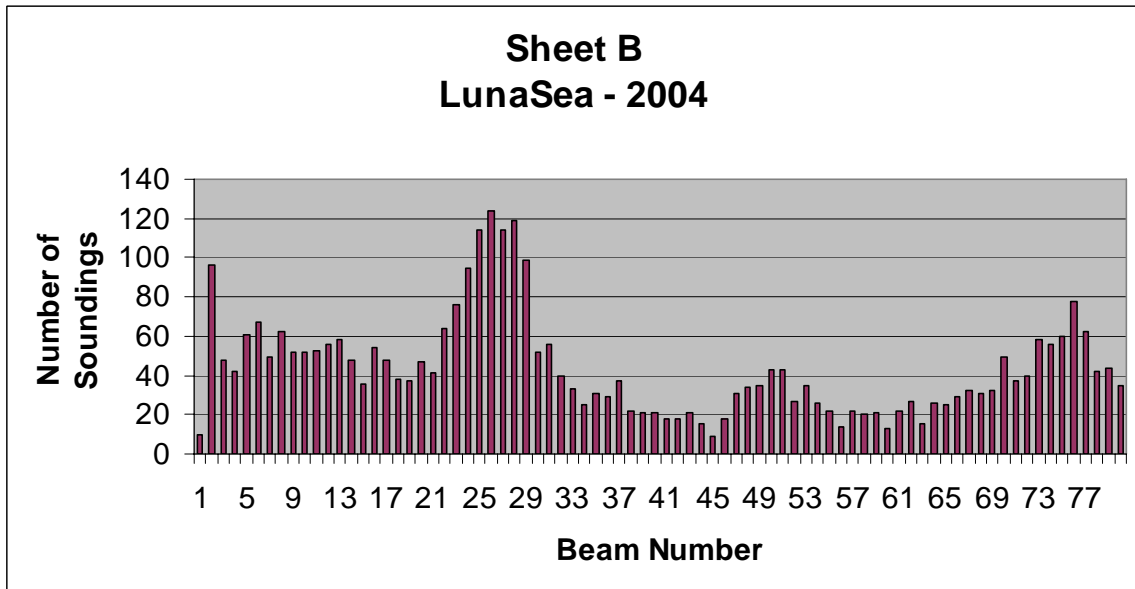
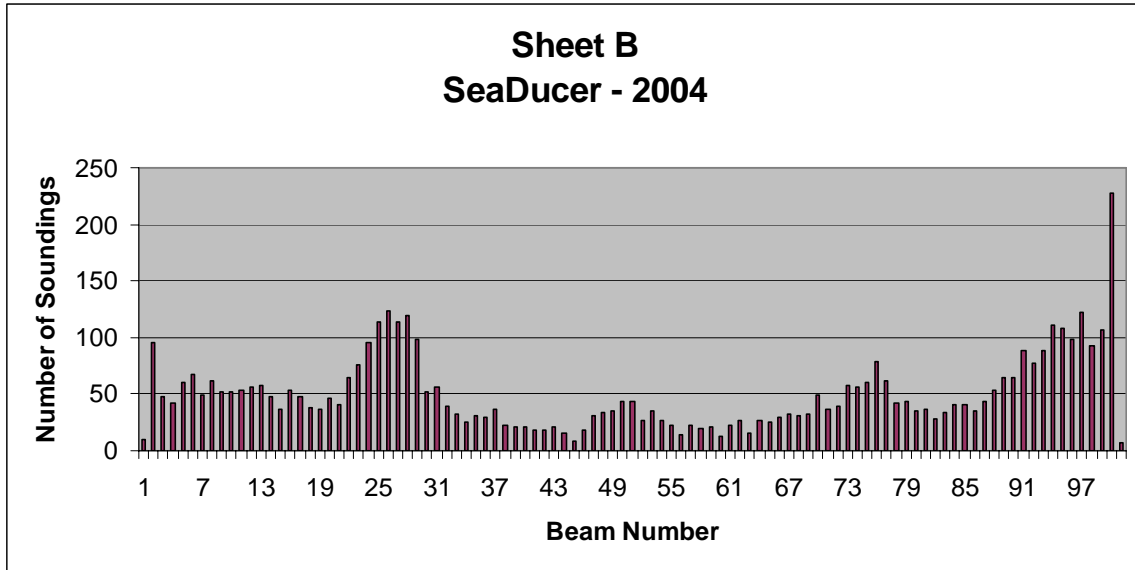
Reson 8101

This system was responsible for all the shoal areas, and had depths ranging from 15 feet above datum to 182 feet. The majority of the swath widths were very narrow and every attempt to use as much of the data as possible was made. This was possible as data quality was generally good. The boat was most often driven with the sounder on the shore side, resulting in a larger amount of soundings from beam 101. Refer to the Data Acquisition and Processing Report, Section B for filtering details.

Reson 8124

This system was used for the deeper areas, but the boat also worked in large shoal areas where swath width was narrow. Depths ranged from 4 feet to 179 feet. Data quality was within specifications; therefore was no common practice to filter outer beams. This can be seen in the histogram with a higher incidence of outer beams being used on the smoothsheet.

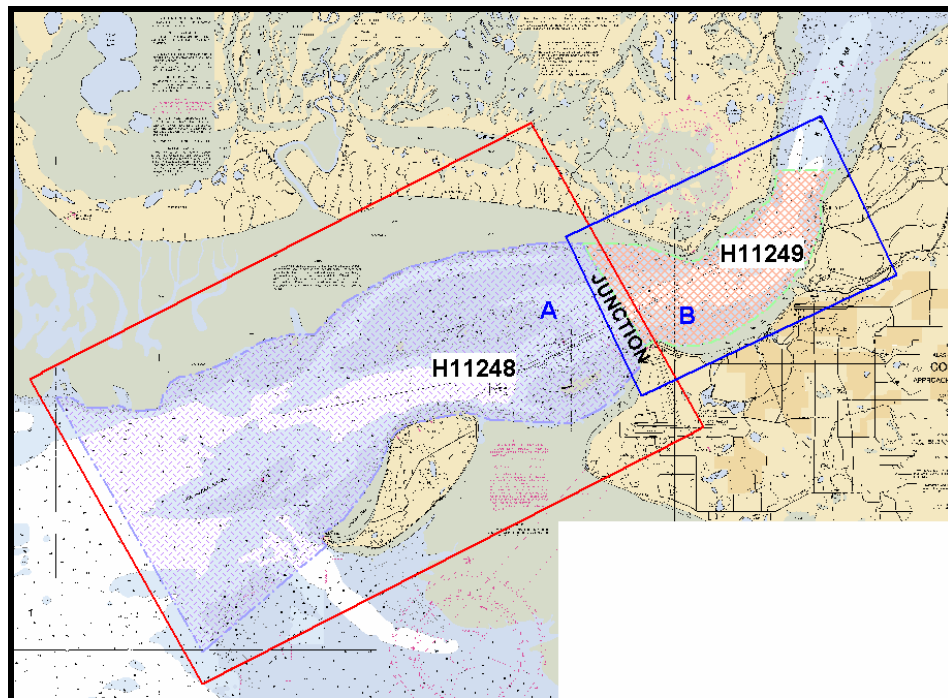
Figure 1.



Contemporary Survey Junctions

The southerly limits of this survey junctions the northerly limits of H-11248 (2004, Scale 1:20,000). The soundings generally agree between the two surveys. There are differences of 1 to 3 feet in the shoaler areas where depths are 30 feet and less. Further investigation reveals that the soundings that differ were surveyed 11 to 12 days apart. Past surveys have proven that it is common to see the soft bottom change over short periods of time in Cook Inlet due to the powerful tides and currents.⁶ There are no recommendations and no adjustments were made.

Figure 3.



The junction locations of H11248 and H11249

Quality Control Checks

Nadir Beam versus Lead line checks were done daily during the survey. The results of the quality control checks are contained in “Separate I Acquisition and Processing Logs”⁷ of this report. There were no unique problems that pertain to this survey. Line acquisition logs are also included in “Separate I Acquisition and Processing Logs”⁸ that details all required aspects of quality control for each line.

B3. Corrections To Echo Soundings

Hydrographic Survey H-11249 was performed with one other survey in Project OPR-P385-KR-04. Changes to the corrections to echo soundings effects all surveys in the area and are described in the Data Acquisition and Processing Report.

Tide Gauges

The survey data collected was reduced using stations Anchorage (945-5920) and Fire Island (945-5912).

Patch Tests

Below is a summary of the survey's patch tests. The test values can be found in the Data Acquisition and Processing Report.

Vessel *Lunasea*

DN 159: First patch test conducted to commence survey. Listed as DN 129 in vessel configuration file to cover another survey out of the scope of this contract.

DN 189: Timing Errors detected between MRU and sounding data. The timing issue was solved onboard using the software tool "PPS" (Pulse per second) provided by QPS. The error remained until DN 216 when the Lead Processor determined an additional option in the XTF conversion process needed to be enabled for the PPS tool to work. The Lead Processor was able to post calibrate for time error in heave and pitch prior to this observation; therefore no data was compromised.⁹ This error was elusive as it only appeared during rough seas and was not detected until the subset phase of data cleaning.

DN 226: The MRU failed possibly due to a malfunction in the vessels electrical system that corrupted the unit's configuration file. Another patch was run before continuing the survey. No data were compromised as a result of this issue¹⁰

DN 261: The *Lunasea* suffered damage at the dock during a gale force storm. Once the damages were addressed and repaired another patch test was conducted before continuing the survey. No data were compromised as a result of this issue.¹¹

Vessel *Seaducer*

DN 224: First patch test conducted to commence survey.

DN 255-260 Patch tests conducted after the sonar head was believed to have hit the muddy bottom. The results of these tests were back dated to DN 254 to coincide with the time of the incident. No data were compromised as a result of this issue.¹²

C. Vertical and Horizontal Control

Tide Correction Methodology

This survey was tide corrected using a combination of a dual gauge distance weighted interpolation and standard zoning. The standard zoning scheme (developed by John Oswald and Associates in 2001) using range correctors and time offsets was used north of the Anchorage gauge (945-5920). The weighted interpolation method, using the Anchorage and Fire Island gauges, was applied for the southerly portion of the survey. Refer to the Horizontal and Vertical Control Report¹³ for tide zone methods and operations. Verified final tides from both gauges were applied to the data after the final sounding extraction from CARIS.

Horizontal Datum and Projection

The horizontal control datum for this survey is North American Datum of 1983(NAD 83). The projection used during collection was UTM, Zone 5. United States Coast Guard Station (USCG) *Kenai* was used to send correctors to the survey vessels. A summary of the daily DGPS confidence checks can be found in “Separate 1 Acquisition and Processing Logs” included with this report.

D1. Chart Comparison

There were 30 Local Notice to Mariners that affected the survey area. Notice number 43 (Weekly Edition-October 2004) was the last notice reviewed for this project. There were four Dangers to Navigation Reports submitted for this survey.¹⁴ Refer to Appendice I of this report for that report and updated database forms.

Local Notice to Mariners Issued and Danger to Navigation Reports

The following tables list the Local Notice to Mariners items in the assigned survey area issued since December 1, 2003 and the Danger to Navigation items submitted by Terra Surveys, LLC for this survey. Each item is referenced by an ID number that can be located on the vicinity chartlets that follow the tables.¹⁵



Anchorage Mud Flats at Low Tide

OPR-P385-KR-04
H11249
Local Notice to
Mariners

ID#	Action	Item	Desc.	Lat.	Long.	LNM
1	Add (2)	SOUND IN FT	13	N 61 15' 41.500"	W 149 54' 57.000"	LNM 35/04, 17th Dist
2	Add (2)	SOUND IN FM	8	N 61 14' 49.700"	W 149 55' 48.600"	LNM 35/04, 17th Dist
3	Add (2)	SOUND IN FT	24	N 61 14' 35.900"	W 149 56' 09.000"	LNM 35/04, 17th Dist
3	Delete (2)	SOUND IN FT	46	N 61 14' 35.200"	W 149 56' 10.100"	LNM 35/04, 17th Dist
4	Add (2)	SOUND IN FM	2	N 61 14' 26.200"	W 149 56' 23.100"	LNM 35/04, 17th Dist
5	Add (2)	SOUND IN FT	29	N 61 14' 13.800"	W 149 56' 17.600"	LNM 35/04, 17th Dist
6	Add (2)	SOUND IN FM	8	N 61 14' 05.000"	W 149 56' 20.800"	LNM 35/04, 17th Dist
6	Add (2)	SOUND IN FT	48	N 61 14' 05.000"	W 149 56' 20.800"	Not Yet Published
7	Add (2)	SOUND IN FT	49	N 61 14' 00.000"	W 149 56' 53.500"	LNM 35/04, 17th Dist
8	Add	SOUND IN FT	56	N 61 13' 58.900"	W 149 57' 13.800"	LNM 35/04, 17th Dist
9	Add	SOUND IN FT	45	N 61 14' 16.200"	W 149 55' 45.000"	LNM 35/04, 17th Dist
10	Add (2)	SOUND IN FM	5	N 61 14' 24.400"	W 149 55' 42.000"	LNM 35/04, 17th Dist
11	Add (2)	SOUND IN FM & FT	7 fm 3 ft	N 61 14' 37.500"	W 149 55' 33.700"	LNM 35/04, 17th Dist
12	Delete (2)	SOUND IN FT	27	N 61 15' 43.500"	W 149 54' 54.300"	LNM 35/04, 17th Dist
13	Revise	DANGEROUS WRECK	none	N 61 15' 00.000"	W 149 53' 12.000"	LNM 32/04, 17th Dist
14	Add (2)	DANGEROUS WRECK	NONE	N 61 15' 00.000"	W 149 53' 12.000"	LNM 31/04, 17th Dist
15	Revise (2)	OBSTRUCTION	Obstn	N 61 15' 00.000"	W 149 53' 12.000"	LNM 38/04, 17th Dist
16	Delete (2)	SOUND IN FT	66	N 61 13' 57.600"	W 149 57' 06.800"	LNM 35/04, 17th Dist
17	Delete (2)	SOUND IN FT	53	N 61 14' 11.300"	W 149 56' 11.300"	LNM 35/04, 17th Dist
18	Delete	SOUND IN FT	66	N 61 14' 07.400"	W 149 56' 24.500"	LNM 35/04, 17th Dist
19	Delete	SOUND IN FT	63	N 61 14' 51.900"	W 149 55' 51.700"	LNM 35/04, 17th Dist
22	Add	SUBMARINE CABLE	PT 1 OF 7	N 61 14' 42.100"	W 150 01' 30.600"	Not Yet Published

ID#	Action	Item	Desc.	Lat.	Long.	LNМ
23	Relocate	SUBMARINE CABLE	PT 2 OF 7	N 61 13' 11.600"	W 150 01' 30.600"	Not Yet Published
24	Relocate	SUBMARINE CABLE	PT 3 OF 7	N 61 13' 00.100"	W 150 01' 24.600"	Not Yet Published
25	Relocate	SUBMARINE CABLE	PT 4 OF 7	N 61 13' 00.100"	W 150 01' 09.600"	Not Yet Published
26	Relocate	SUBMARINE CABLE	PT 5 OF 7	N 61 12' 50.400"	W 150 01' 09.700"	Not Yet Published
27	Relocate	SUBMARINE CABLE	PT 6 OF 7	N 61 12' 50.300"	W 150 01' 19.500"	Not Yet Published
28	Relocate	SUBMARINE CABLE	PT 7 OF 7	N 61 12' 15.100"	W 150 00' 56.900"	Not Yet Published
29	Delete	SUBMARINE CABLE	Pt 1 of 2	N 61 14' 44.100"	W 150 01' 39.900"	Not Yet Published
30	Delete	SUBMARINE CABLE	Pt 2 of 2	N 61 12' 12.400"	W 150 01' 12.900"	Not Yet Published

The above table provides all corrections to Chart 16665 since 12/1/2003, the Print Date of Edition 8.

		Submitted DTON's		
Additions				
<u>ID #</u>	<u>Feature</u>	<u>2004 Sounding Value (ft)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
1	Sounding	13	61° 15' 41.5"	149° 54' 57.0"
2	Sounding	48	61° 14' 49.7"	149° 55' 48.6"
3	Sounding	24	61° 14' 35.9"	149° 56' 09.0"
4	Sounding	12	61° 14' 26.2"	149° 56' 23.1"
5	Sounding	29	61° 14' 13.8"	149° 56' 17.6"
6	Sounding	48	61° 14' 05.0"	149° 56' 20.8"
7	Sounding	49	61° 14' 00.0"	149° 56' 53.5"
8	Sounding	56	61° 13' 58.9"	149° 57' 13.8"
9	Sounding	45	61° 14' 16.2"	149° 55' 45.0"
10	Sounding	30	61° 14' 24.4"	149° 55' 42.0"
11	Sounding	45	61° 14' 37.5"	149° 55' 33.7"
32	Sounding	30	61° 14' 48.0"	149° 53' 13.8"
Removals				
<u>ID #</u>	<u>Feature</u>	<u>2004 Sounding Value (ft)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
3	sounding	46	61° 14' 35.2"	149° 56' 10.1"
12	sounding	27	61° 15' 43.5"	149° 54' 54.3"
16	sounding	66	61° 13' 57.6"	149° 57' 06.8"
17	sounding	53	61° 14' 11.3"	149° 56' 11.3"
31	sounding	45	61° 14' 19.3"	149° 56' 01.8"
32	sounding	33	61° 14' 48.0"	149° 53' 13.8"

Issued Notice to Mariners and Submitted Dangers to Navigation

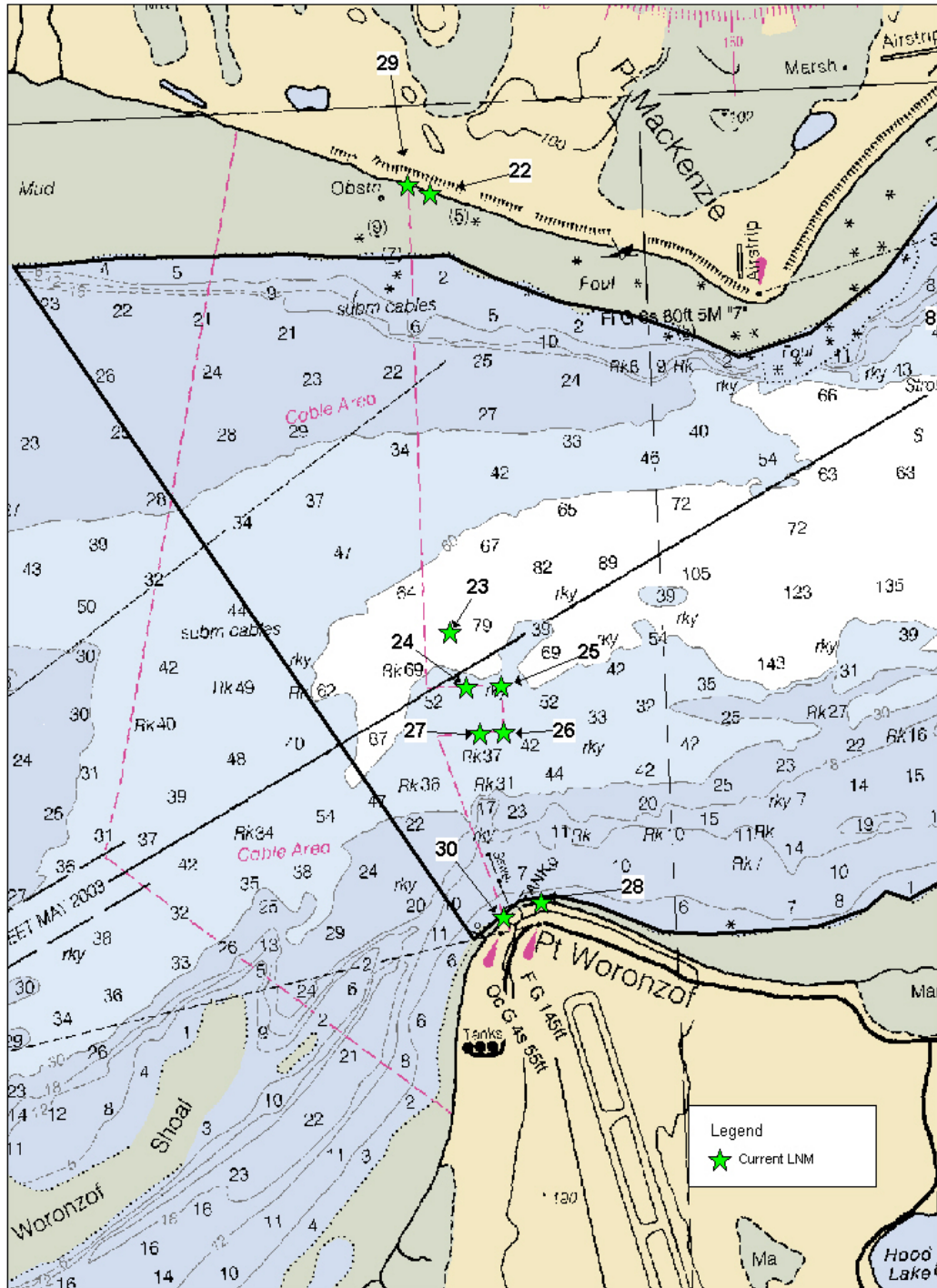


Chart 16665 8th Ed. with LNM and DTON Positions

Issued Notice to Mariners and Submitted Dangers to Navigation

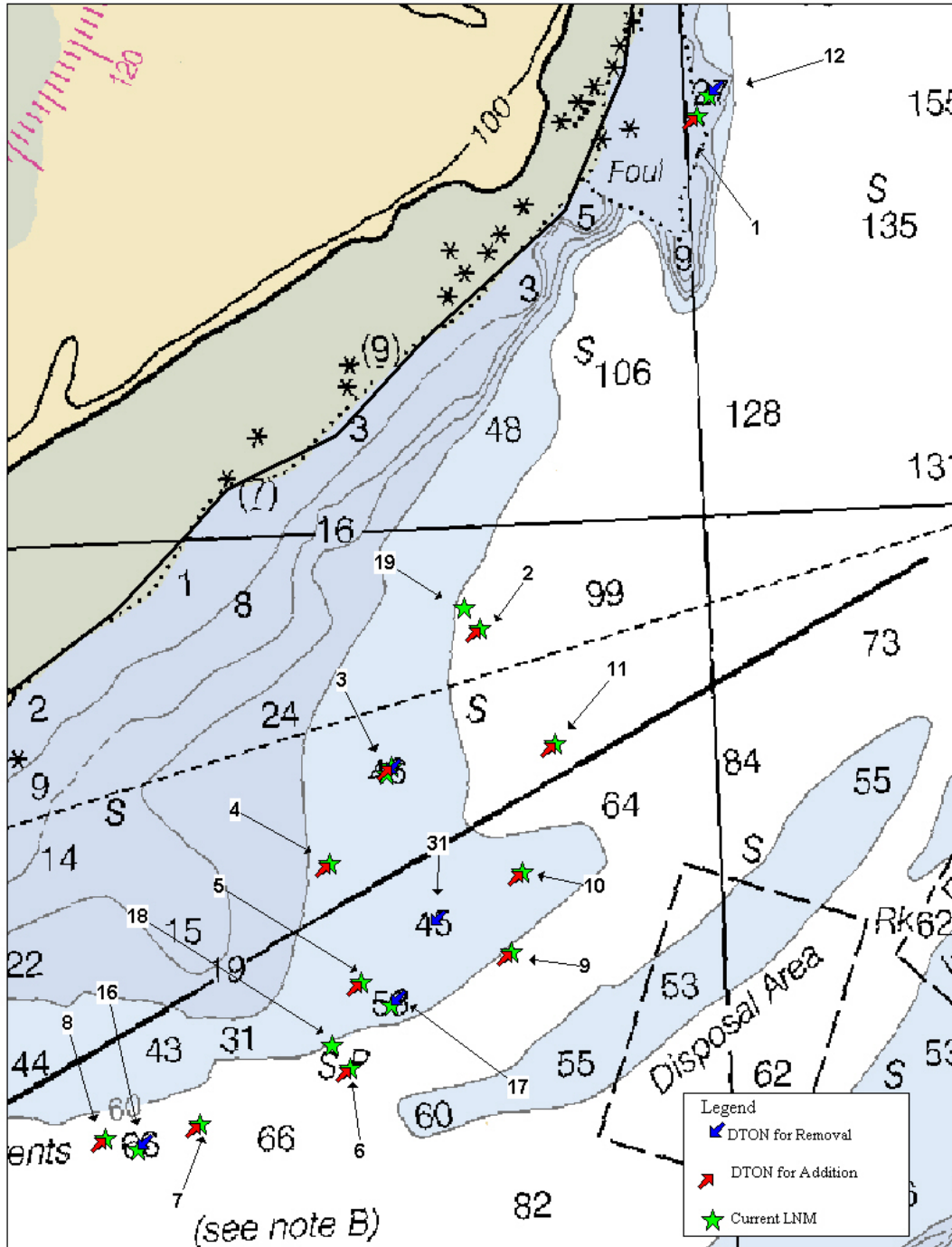


Chart 16665 8th Ed. with LNM and DTON Positions

Issued Notice to Mariners and Submitted Dangers to Navigation

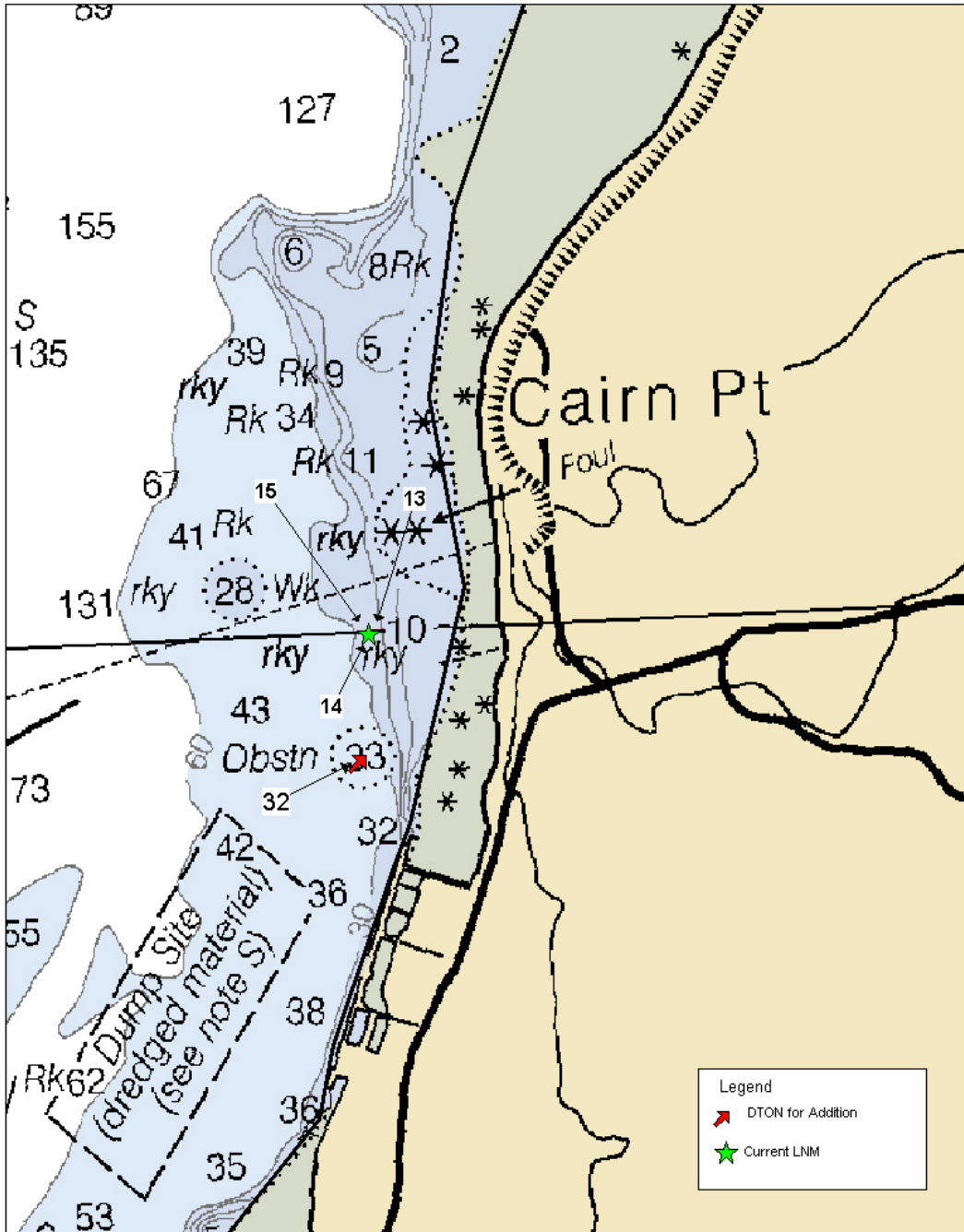


Chart 16665 8th Ed. with LNM and DTON Positions

DTONS for Chart 16665 Inset

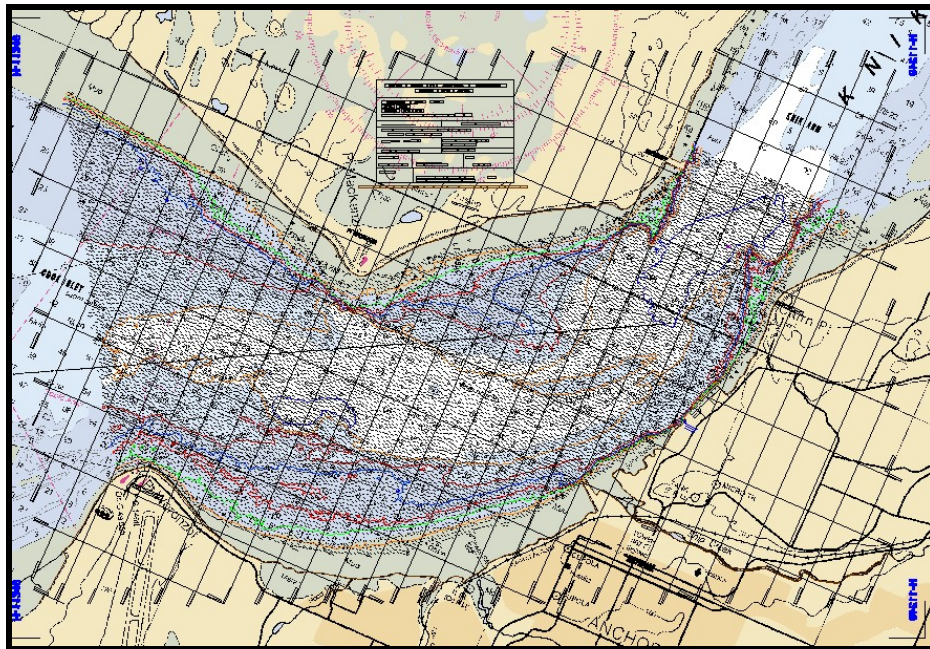
In addition to the aforementioned submitted dangers to navigation; there were two reports submitted for Chart 16665 Inset after the survey was completed.¹⁶ The COTR worked with the latest raster chart that is not currently available to this contractor. The values noted for addition and removal reflect the changes as compared to the most current raster inset image as of this date. See Appendice I for the submitted DTON reports.

This survey was compared in MicroStation to the following charts:

Chart	Scale	Edition	Date
16660	1:194,154	29 th	Jan. 2004
16663	1:100,000	7 th	Jan. 2004
16665	1:20,000	8 th	Dec. 03

Chart 16665

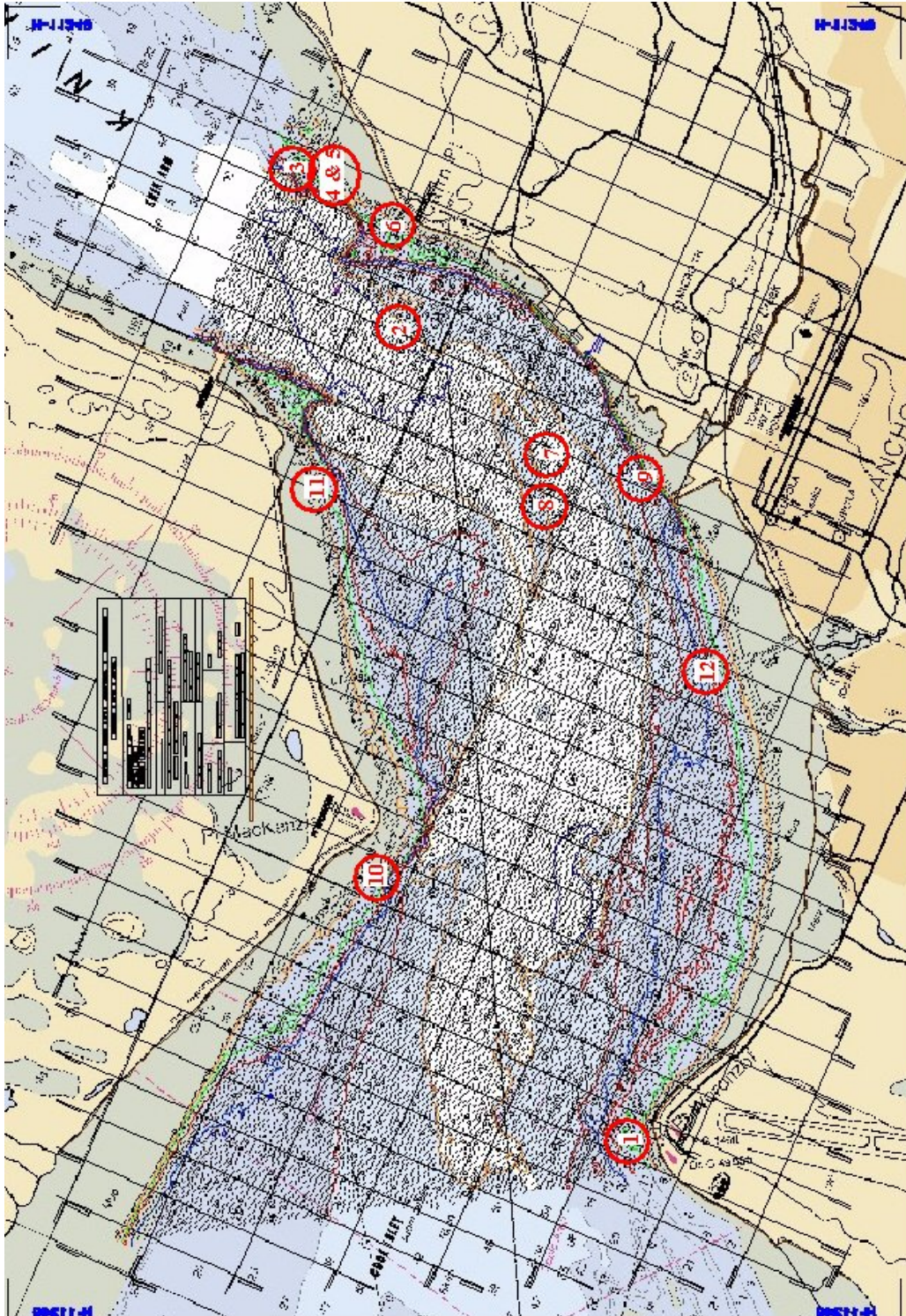
While this survey generally agreed well with the charts, the dynamic characteristics of Cook Inlet prevail. The corrections submitted by the Local Notice to Mariners Reports agree with many of the corrections recommended as a result of this survey.¹⁷



Smooth sheet H-11249 overlaid on Chart 16665 8th Ed. for comparison

New Rocks Vicinity Chart

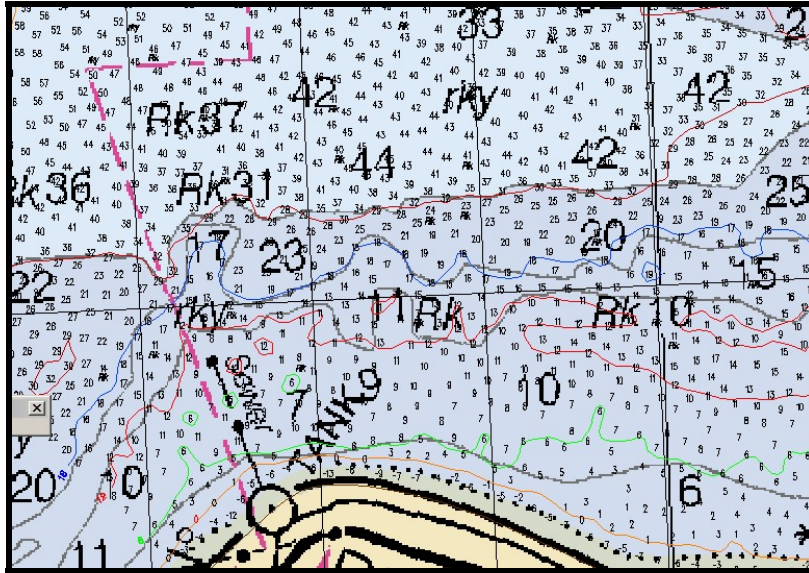
Twelve new rocks or rocky areas are numbered and circled in the chartlet (Chart 16665 8th Ed) below.



New Rocks

Figure D1.1

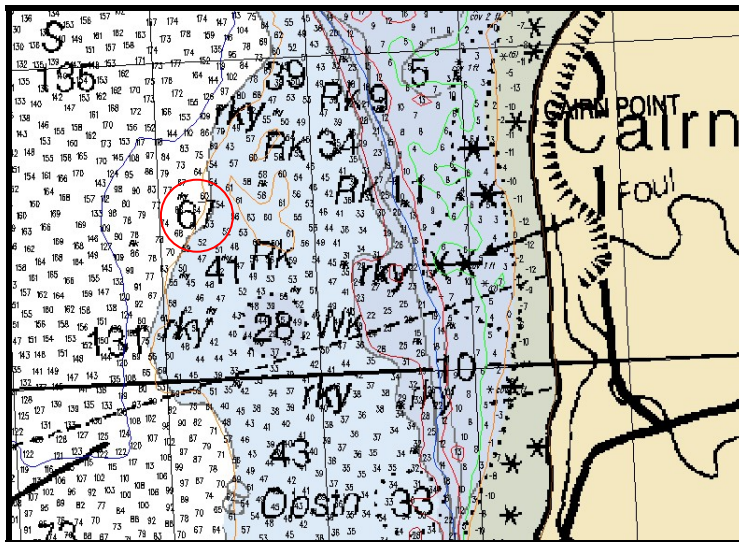
The rock field north of Point Woronzoff has some additional rocks and is represented by the “rky” and “Rk” symbols. The hydrographer recommends retaining the symbols as charted in this area.¹⁸



Rock field North of Point Woronzoff, Chart 16665 8th Ed.

Figure D.1.2

The rock field west of Cairn Point has additional rocks. The hydrographer recommends an additional “rky” symbol near the 2004 67-foot sounding at latitude 61°15’16.13”N and longitude 149°53’52.67”W.¹⁹



Rock field West of Cairn Point, Chart 16665 8th Ed.

New Rock
Figure D.1.3

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet MLLW</u>	<u>Hydrographer's Recommendation Next Chart Edition</u>
61°16'09.20"	149°52'47.56"	7.06	Add Rk ²⁰

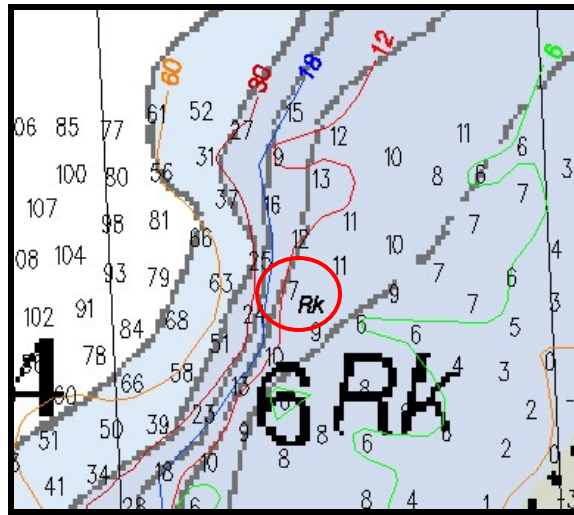


Chart 16665 8th Ed

New Rock
Figure D.1.4

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet MLLW</u>	<u>Hydrographer's Recommendation Next Chart Edition</u>
61°15'56.00"	149°52'46.43"	2.28	Add + ²¹

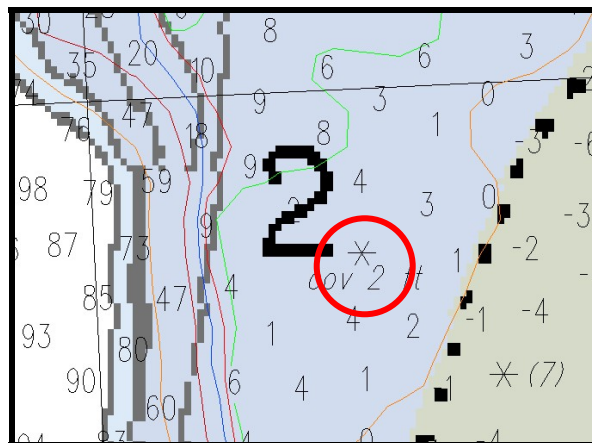


Chart 16665 8th Ed

New Rocks
Figure D.1.5

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet</u> <u>MLLW</u>	<u>Hydrographer's</u> <u>Recommnedation</u> <u>Next Chart Edition</u>
61°15'52.88"	149°52'39.52"	-6.48	Add * (7) ²²
61°15'56.00"	149°52'46.44"	2.28	Add + ²³
61°16'03.48"	149°52'23.98"	-6.35	Add *(7) ²⁴

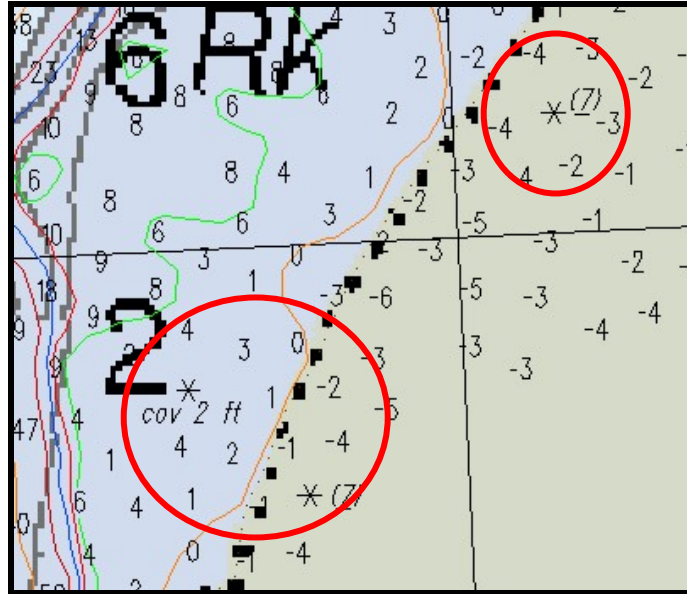


Chart 16665 8th Ed

Additional Foul Area
Figure D.1.6

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth Feet</u>
61°15'29.12"	149°52'51.53"	-5.65
61°15'28.85"	149°53'00.27"	1.19
61°15'27.31"	149°53'02.47"	3.05
61°15'33.69"	149°52'56.62"	2.05

The hydrographer recommends adjusting the foul line to include the new rocks on the next chart edition. ²⁵

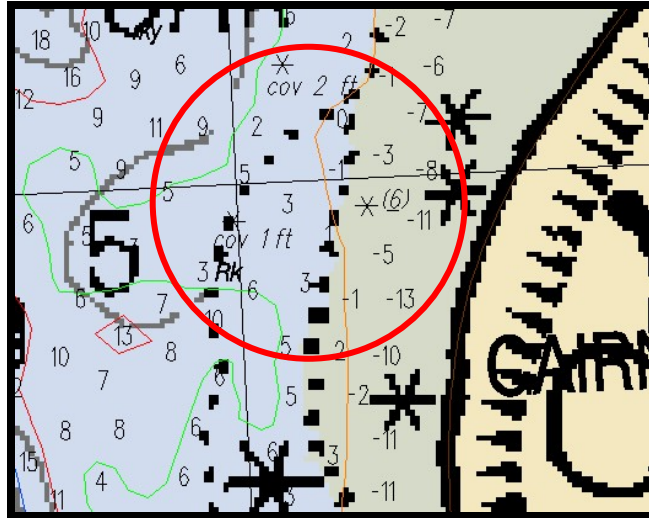


Chart 16665 8th Ed

New Rock
Figure D.1.7

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet</u> <u>MLLW</u>	<u>Hydrographer's</u> <u>Recommendation</u> <u>Next Chart Edition</u>
61°14'14.24"	149°54'35.25"	69.24	Add Rk ²⁶

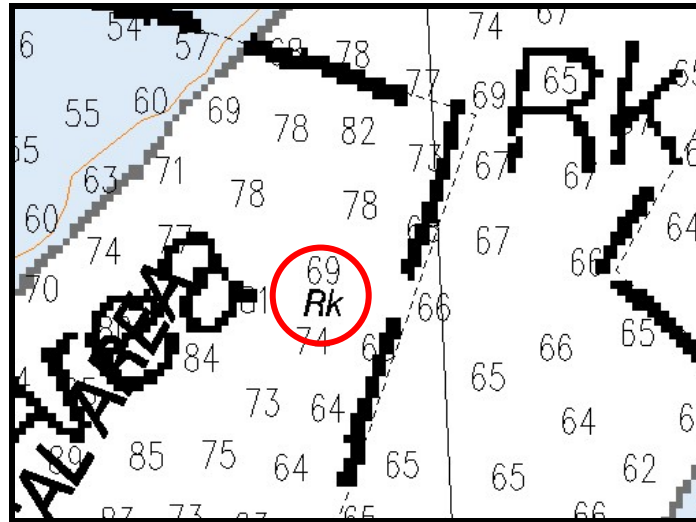


Chart 16665 8th Ed

New Rock
Figure D.1.8

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet</u> <u>MLLW</u>	<u>Hydrographer's</u> <u>Recommendation</u> <u>Next Chart Edition</u>
61°14'11.35"	149°55'02.39"	52.61	Add Rk ²⁷

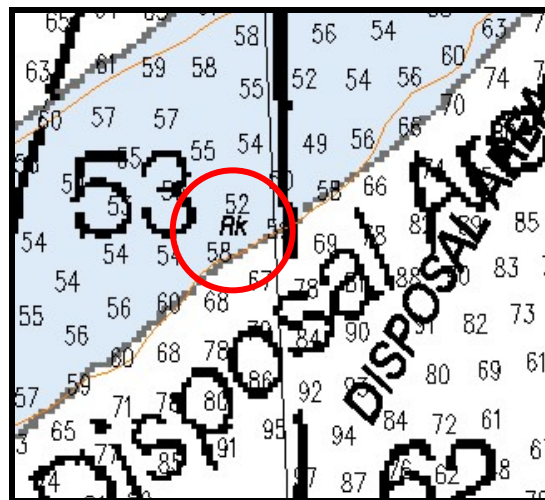


Chart 16665 8th Ed

New Rock
Figure D.1.9

Latitude N	Longitude W	Depth feet MLLW	Hydrographer's Recommendation Next Chart Edition
61°13'44.924"	149°54'27.738"	37.43	Add <i>Rk</i> ²⁸

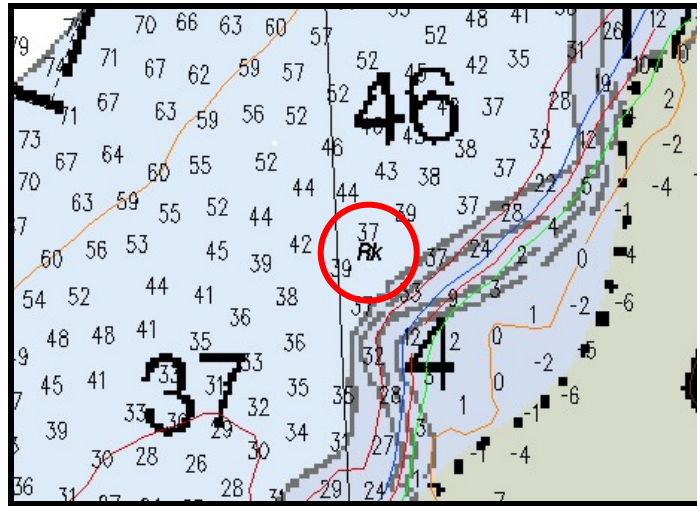


Chart 16665 8th Ed

New Rock
Figure D.1.10

Latitude N	Longitude W	Depth feet MLLW	Hydrographer's Recommendation Next Chart Edition
61°14'10.909"	150°00'47.8"	6.13	Add <i>Rk</i> ²⁹

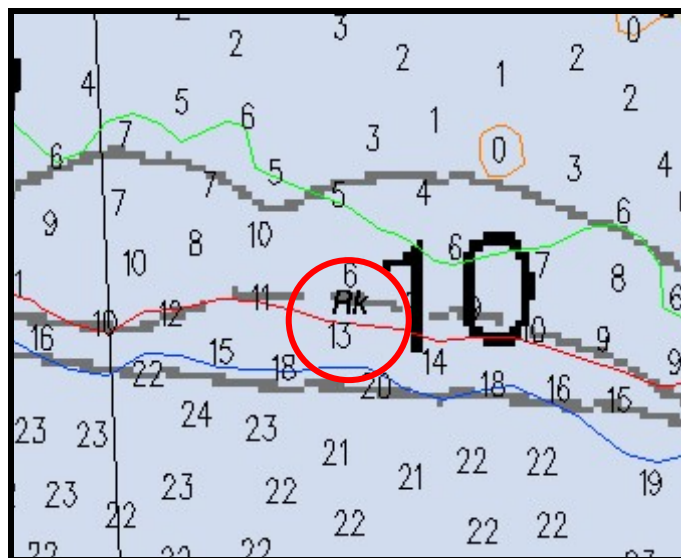


Chart 16665 8th Ed

New Rock
Figure D.1.11

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet MLLW</u>	<u>Hydrographer's Recommendation Next Chart Edition</u>
61°15'18.376"	149°55'54.859"	2.22 above MLLW	Add <u>* (2)</u> ³⁰

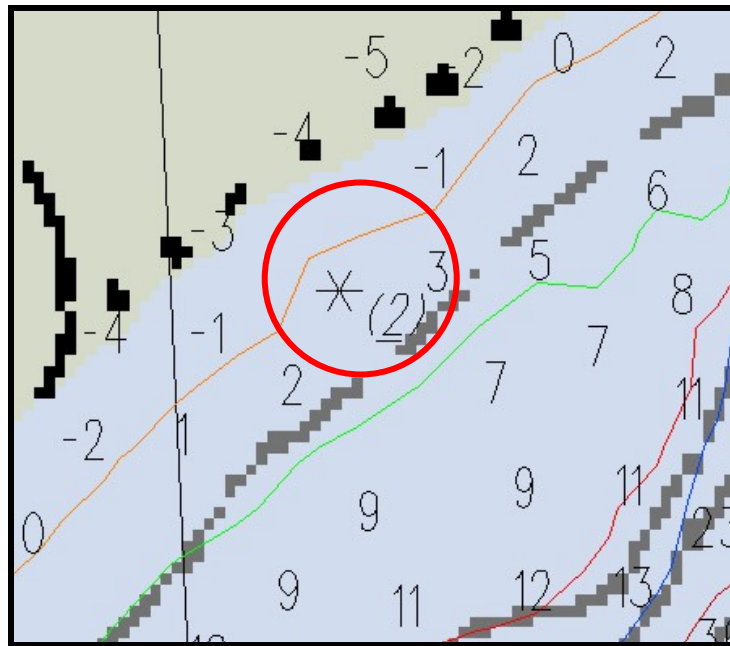


Chart 16665 8th Ed

New Rock
Figure D.1.12

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet MLLW</u>	<u>Hydrographer's Recommendation Next Chart Edition</u>
61°12'54.39"	149°56'26.77"	14.17	Add <i>Rk</i> and 2004 Soundings ³¹

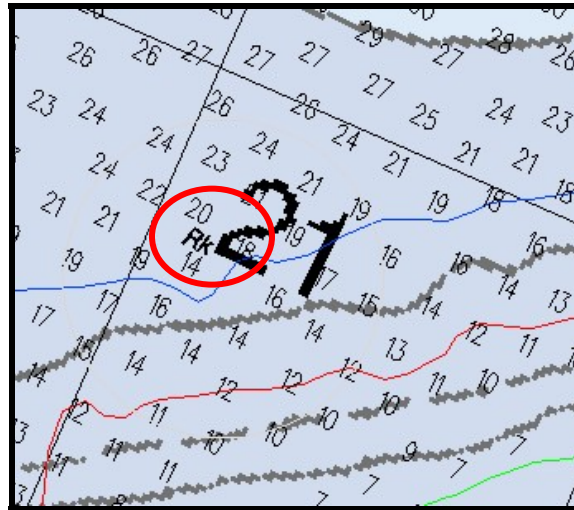


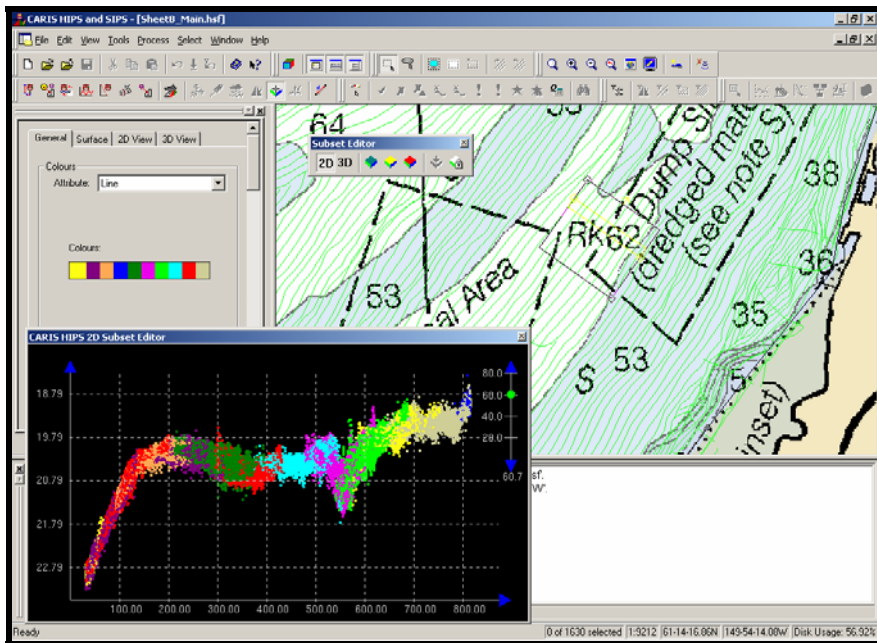
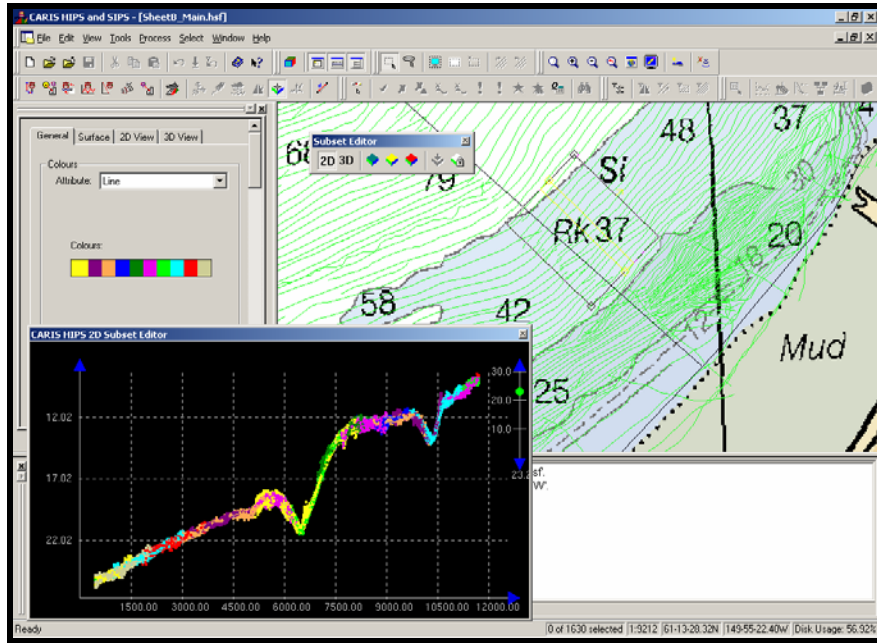
Chart 16665 8th Ed

Nearshore Rocks

Rocks that were located between the four and zero meter curves did not receive full bottom coverage as a result of this surveys task order requirements. These areas were surveyed with 100 meter line spacing, and as a result, charted rocks between the four and zero meter curves were neither verified or disproved. The hydrographer recommends retaining these rocks as charted. ³²

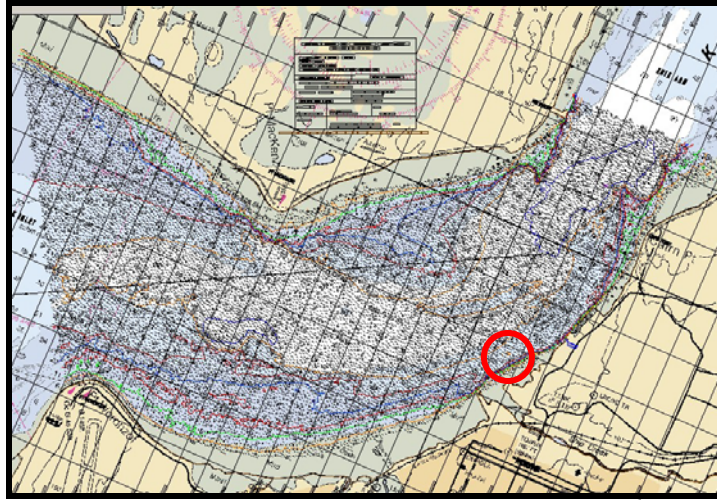
Disproved Rocks

There were two charted rocks not found in this survey. The hydrographer recommends their removal from the next chart edition.³³ The following pages contain positions and location maps of charted rocks. Below are screen shots from CARIS subset editor. Data for these lines can be located in the session file SheetB_Main.hsf included with in the digital data for this survey.

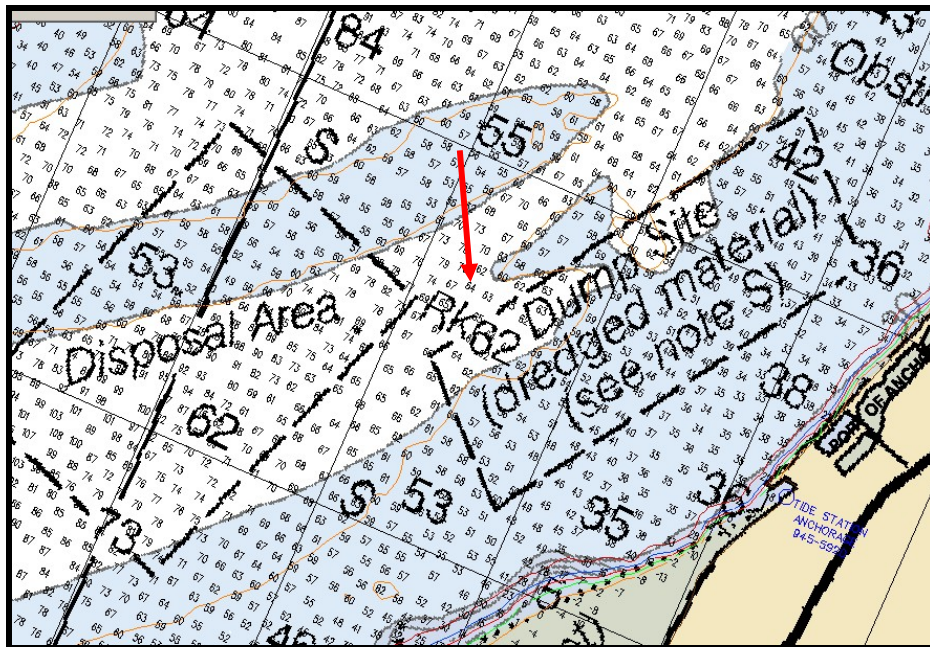


CARIS Subset editor screen captures of disproved rocks

Location Area of Rock Disproved: Lat 61° 14' 17.29" N Long 149° 54' 15.26" W

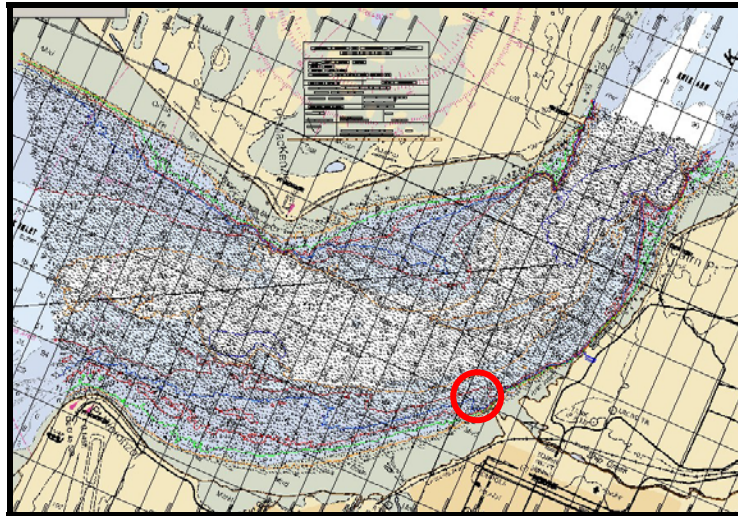


Location of Disproved Rock on Chart 16665 8th Ed.

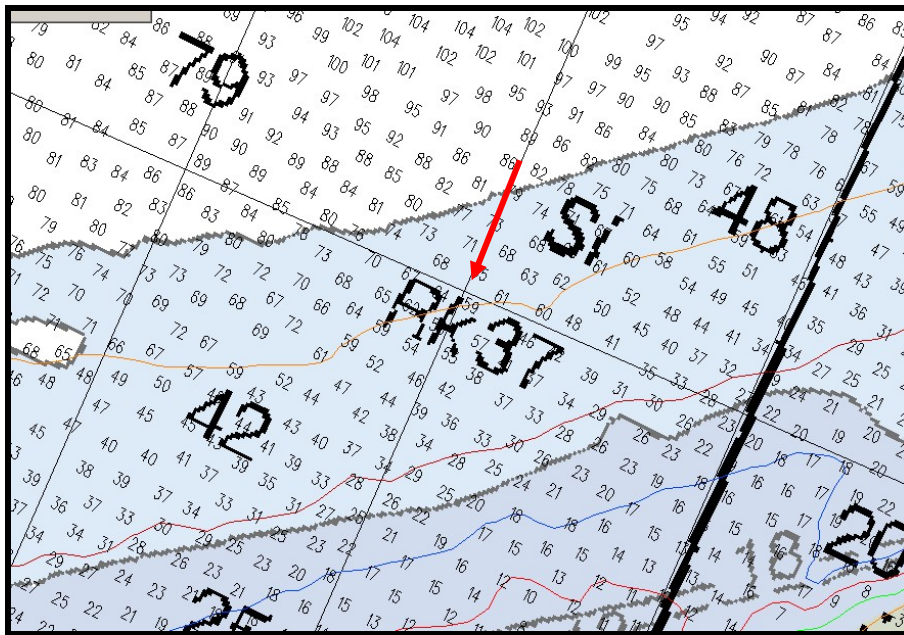


Rock recommended to be removed from next edition of the chart

Location Area of Rock Disproved: Lat 61° 13' 27.62"N Long 149° 55' 23.56"W



Location of Disproved Rock on Chart 16665 8th Ed.



Rock recommended to be removed from next edition of the chart

Trends and Changeable Areas

There are significant changes to the contours due to the soft bottom type and powerful tides and currents in Cook Inlet. The following pages highlight the interested area and notes applicable comments.

The area below is deepening along the charted zero contour by as much as 20 feet. The hydrographer recommends this area be labeled “Changeable Area” on the next chart edition.³⁴

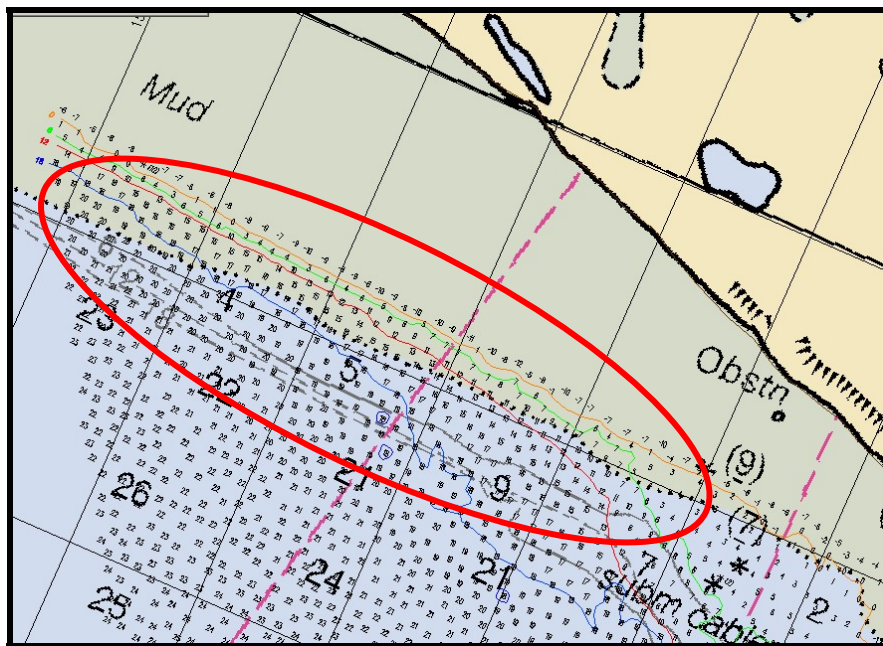
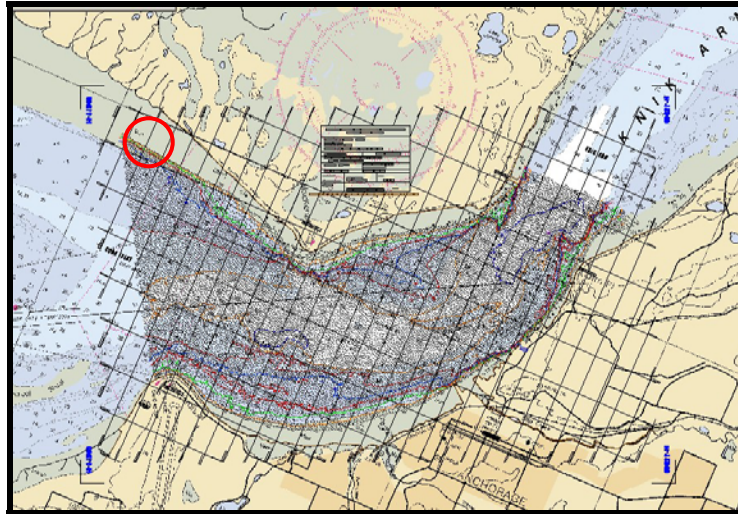


Chart 16665 8th Ed

The area below contains a 30-foot and 60-foot contour that is receding by as much as 300 meters. The hydrographer recommends the next edition of the chart use the contours from the 2004 survey.³⁵

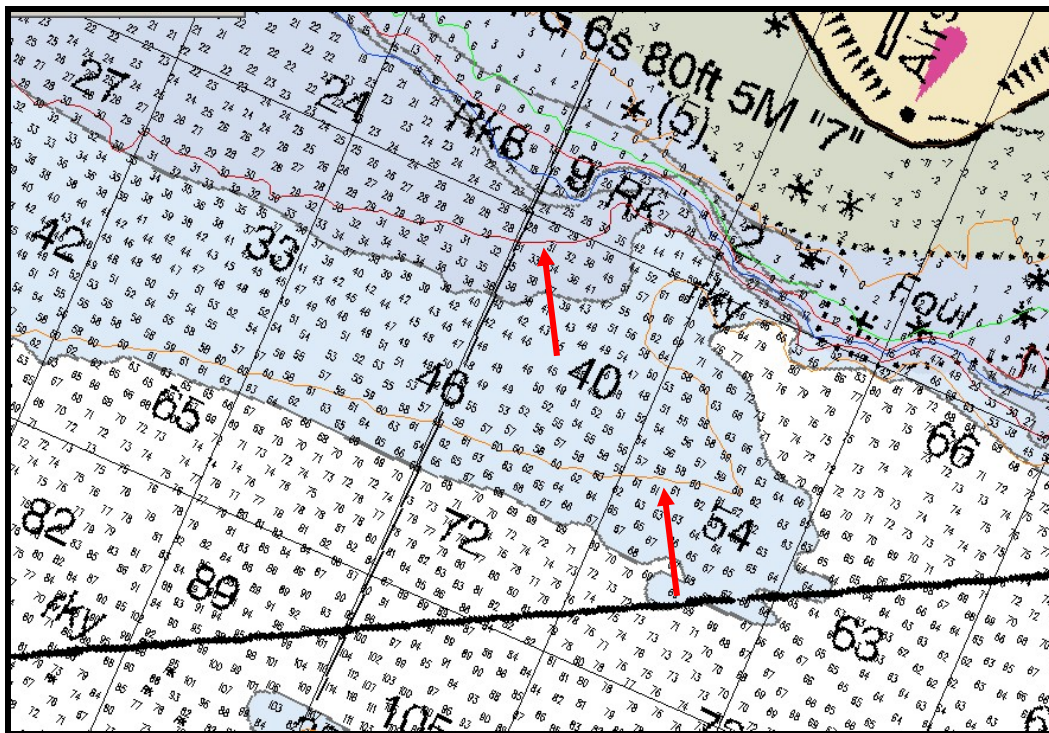
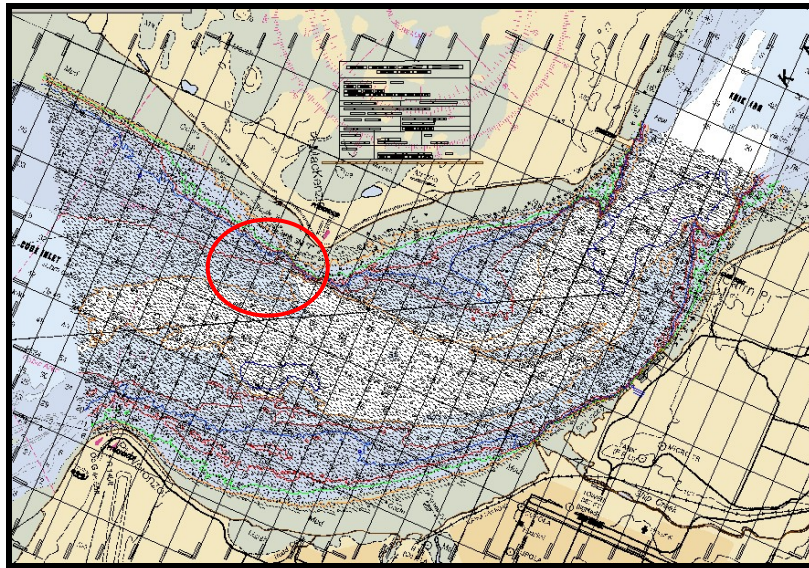


Chart 16665 8th Ed

The area below contains a 30-foot and 60-foot contour that is advancing seaward by as much as 500 meters. The hydrographer recommends the next edition of the chart use the contours from the 2004 survey.³⁶

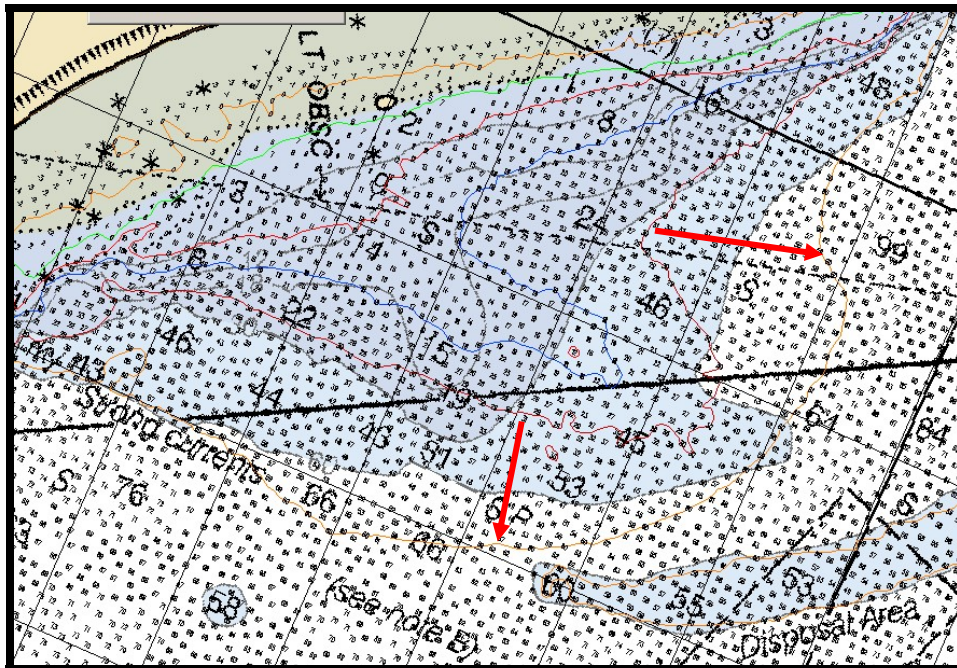
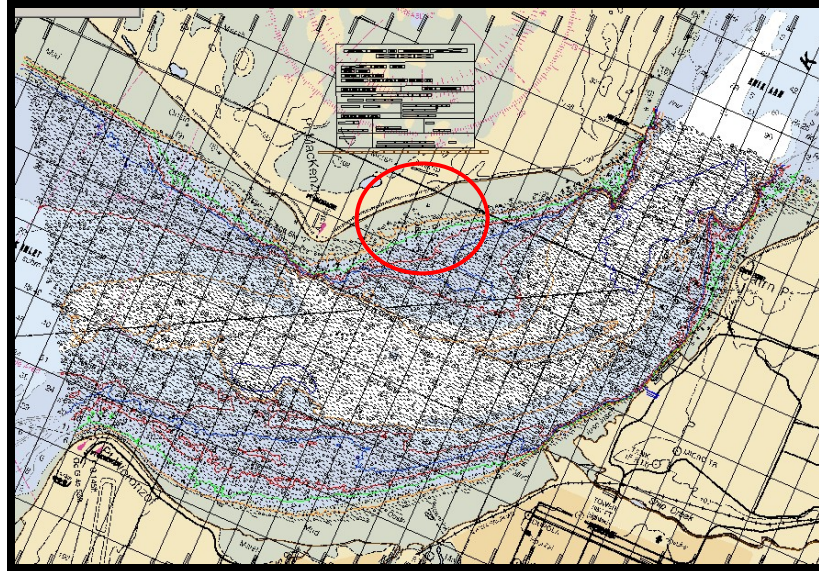


Chart 16665 8th Ed

The area below contains a 60-foot contour that is receding by as much as 200 meters. The hydrographer recommends the next edition of the chart use the contours from the 2004 survey.³⁷

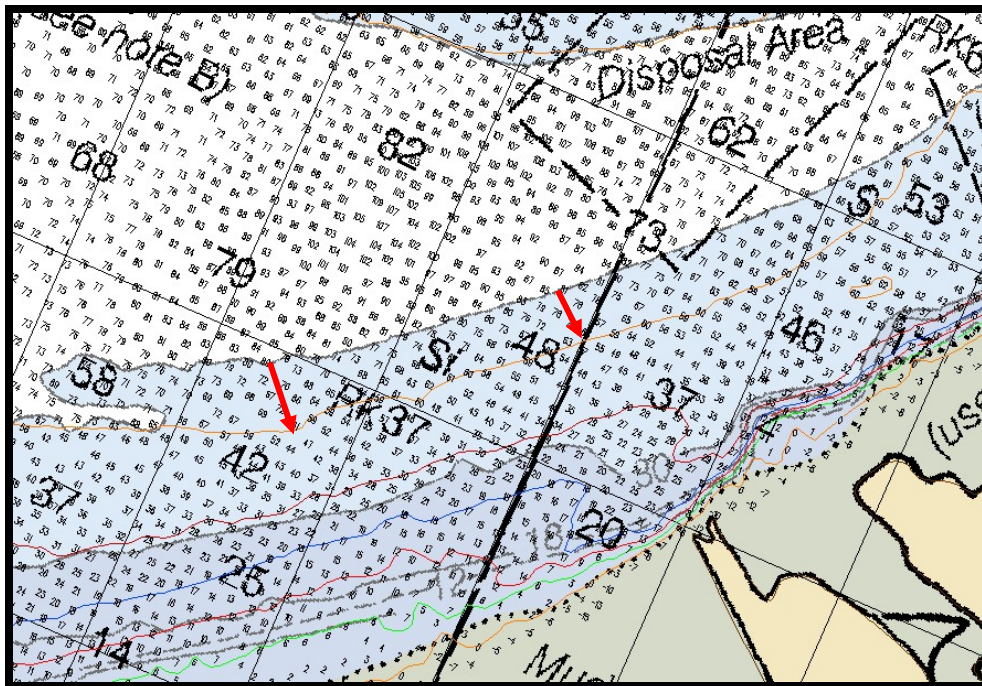
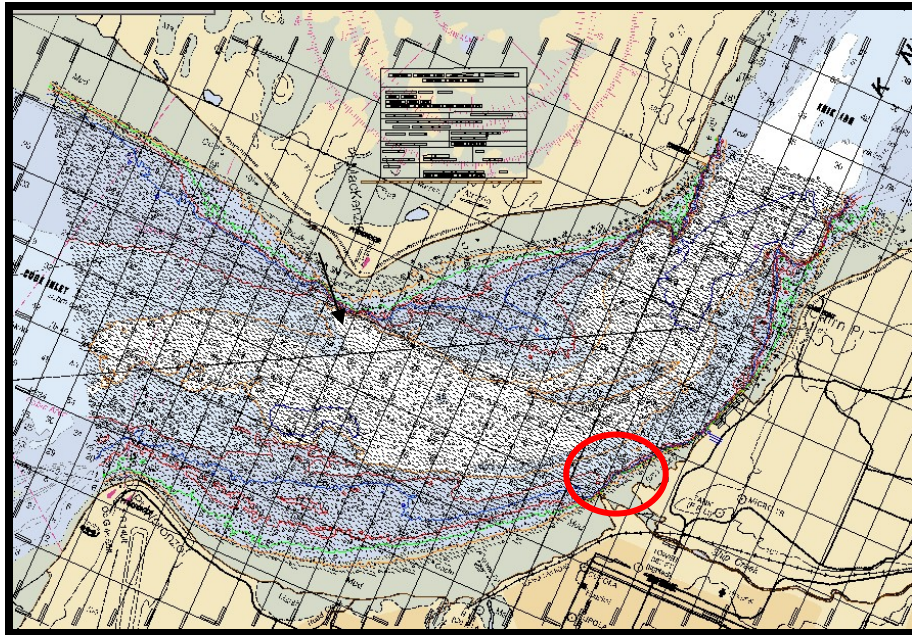


Chart 16665 8th Ed

The area just north of Point Mackenzie is deepening by as much as 60 feet. The hydrographer recommends using the 2004 contours on the next chart edition.³⁸

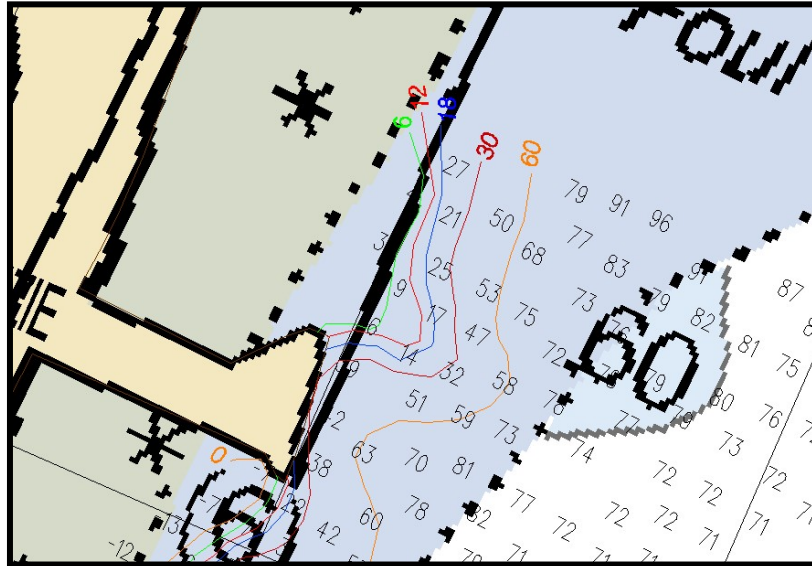


Chart 16665 8th Ed

Latitude N	Longitude W	Depth feet MLLW	Hydrographer's Recommendation Next Chart Edition
61°13'40.96"	149°57'17.95"	67.84	Remove the 58 sounding. Remove 60-foot contour. ³⁹

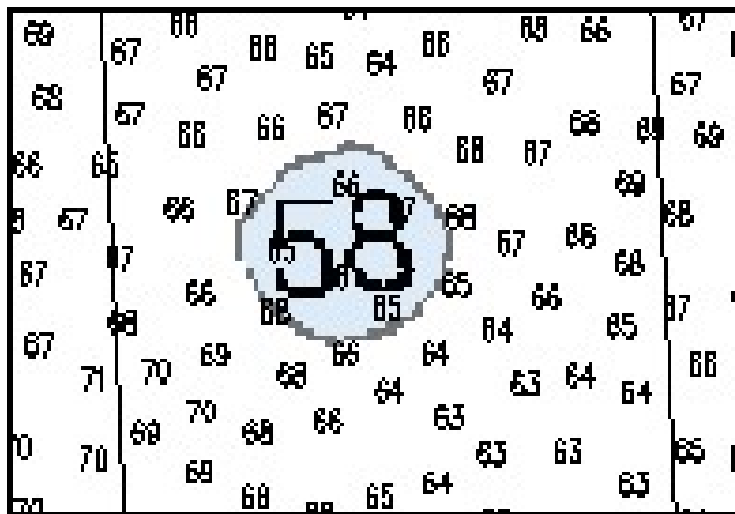


Chart 16665 8th Ed

Chart 16660

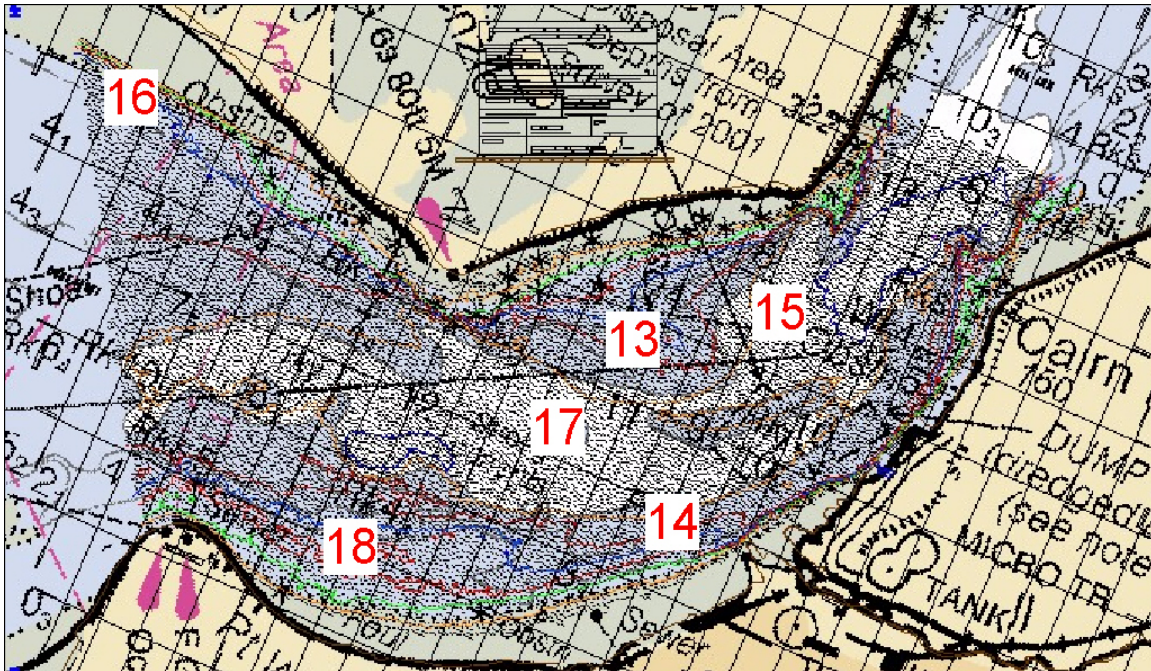


Chart with 2004 soundings overlaid on Chart 16660 29th Ed

The chart compares relatively well with the 2004 survey. The hydrographer recommends updating the next edition of the chart with the most current contours and soundings.⁴⁰ The following are significant differences found in the comparison. The vicinity chart above is referenced to each items figure number, e.g. 13 on the vicinity chart above is the same as figure D1.13 below.

Figure D.1.13

The 2₃ fathom (12.3 feet) sounding has 2004 soundings as deep as 32 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings.⁴¹

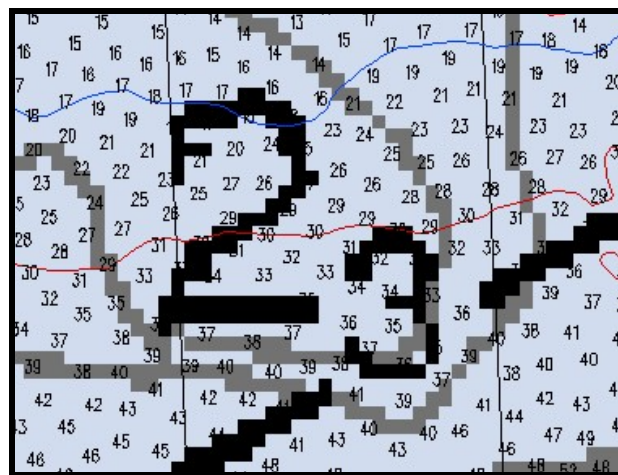


Chart 16660 29th Ed

Figure D.1.14

There was no rock found at this location. Refer to the Chart 16665 comparison for location and disproval information.⁴²

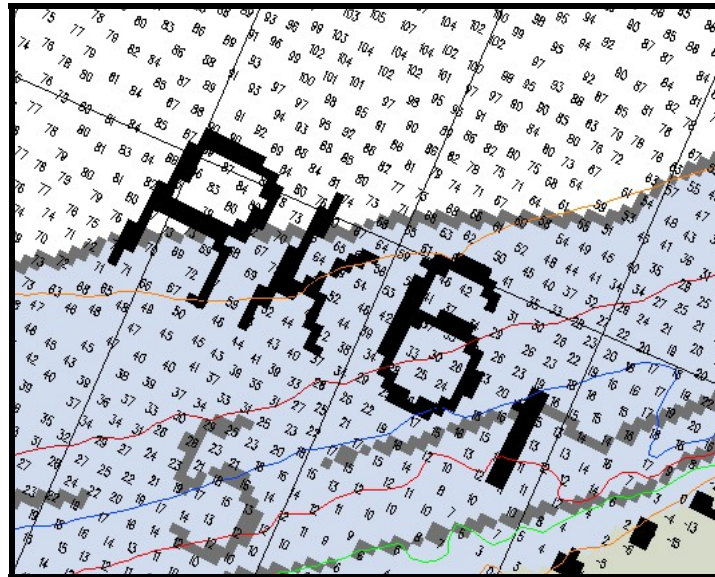


Chart 16660 29th Ed

Figure D.1.15

The charted 16 fathom (96 feet) sounding has 2004 soundings as shoal as 61 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings.⁴³

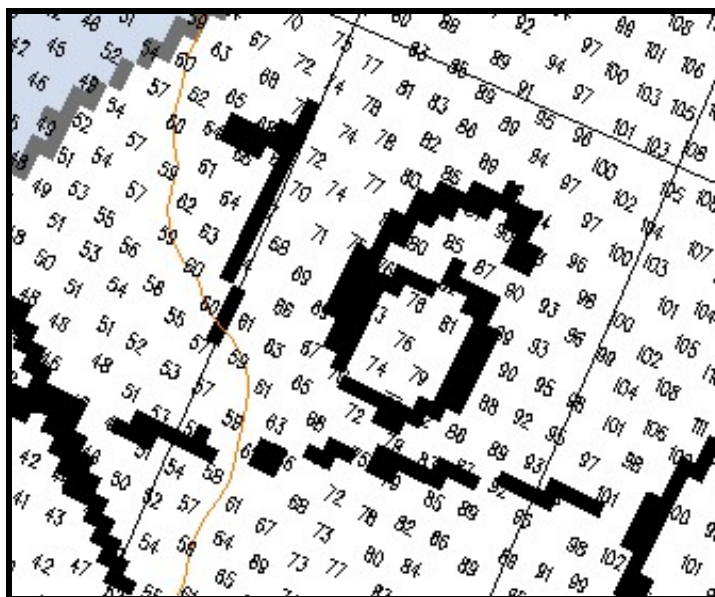


Chart 16660 29th Ed

Figure D.1.16

The 0₄ fathom (4 feet) sounding has 2004 soundings as deep as 20 feet in the same location. The hydrographer recommends this area be labeled “Changeable Area” on the next chart edition.⁴⁴

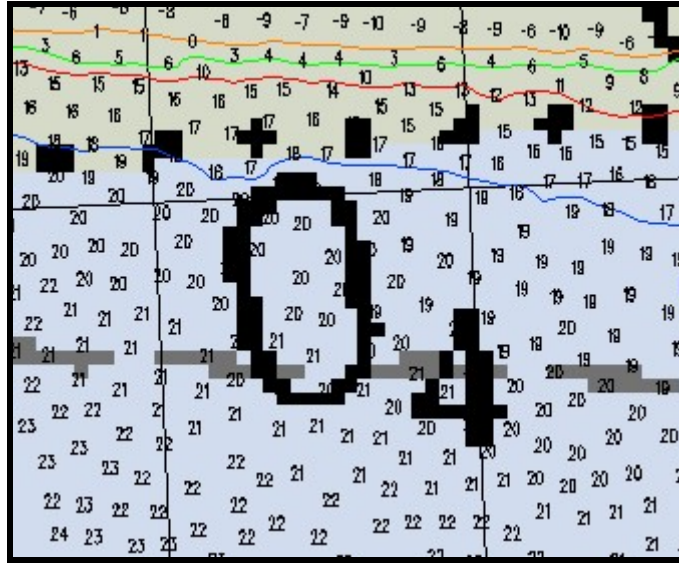


Chart 16660 29th Ed

Figure D.1.17

The 9₄ fathom (54.4 feet) sounding has 2004 soundings as deep as 68 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings and removing the 10-fathom contour.⁴⁵

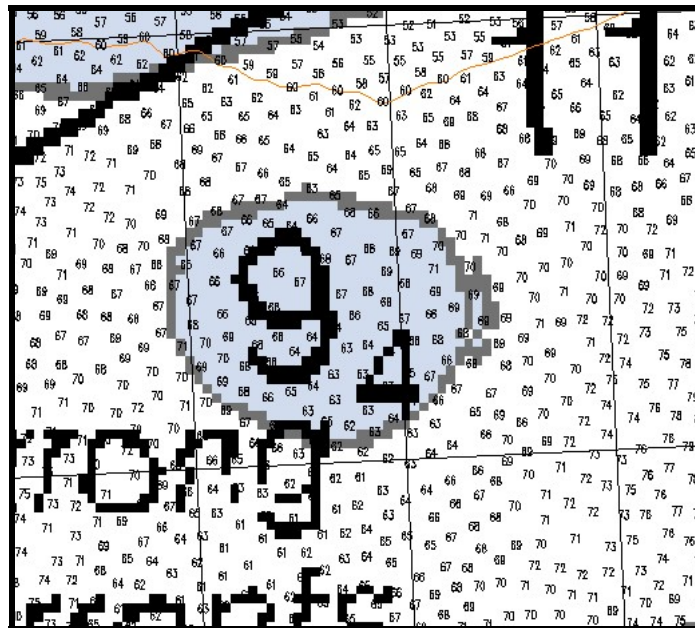


Chart 16660 29th Ed

Figure D.1.18
New Rock

<u>Latitude N</u>	<u>Longitude W</u>	<u>Depth feet</u> <u>MLLW</u>	<u>Hydrographer's</u> <u>Recommnedation</u> <u>Next Chart Edition</u>
61°12'32.28"	149°59'01.51"	10.70	Add <i>Rk</i> ⁴⁶

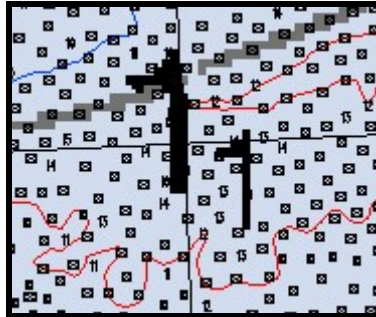
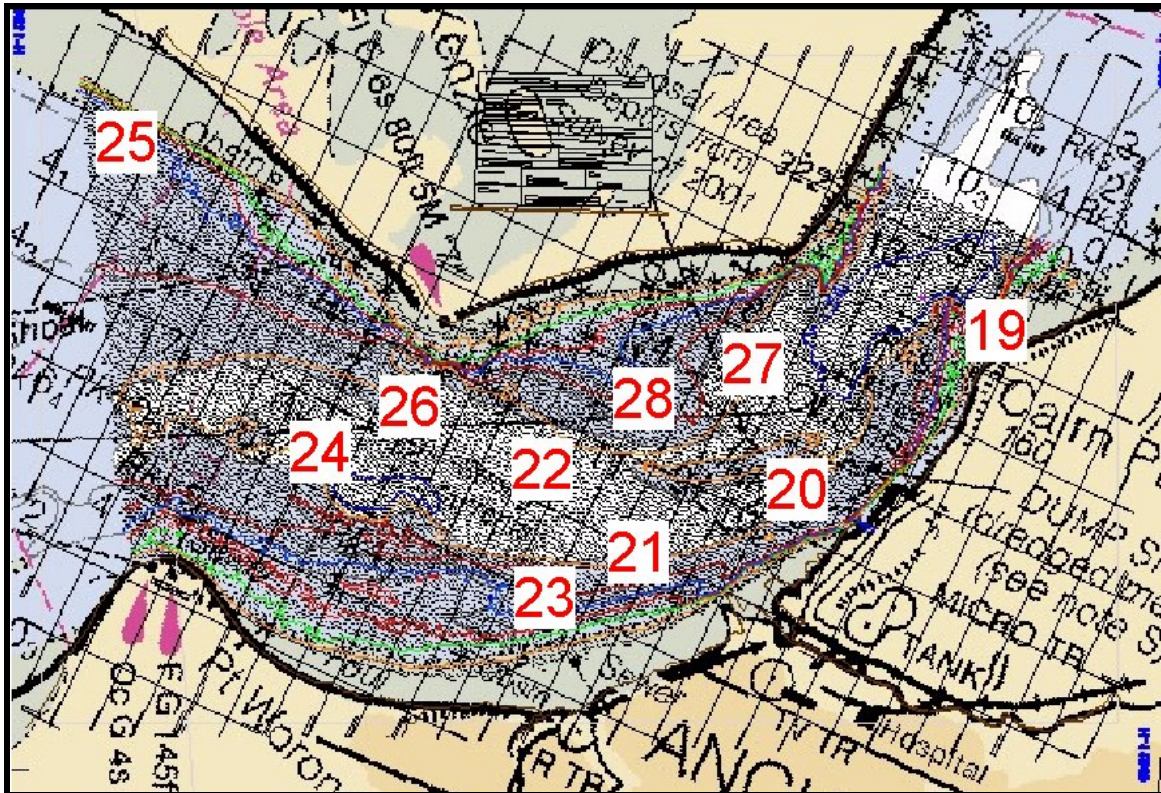


Chart 16660 29th Ed

Chart 16663

Smooth sheet H-11249 overlaid on Chart 16663 7th Ed. for comparison

Chart 16663 compares relatively well with the 2004 survey. The hydrographer recommends updating the next edition of the chart with the most current contours and soundings.⁴⁷ The following are significant differences found in the comparison. The vicinity chart above is referenced to each items figure number.

Rock Disproval

Figure D.1.21

There was no rock found at this location. Refer to the Chart 16665 comparison for location and disproval information.⁵⁰

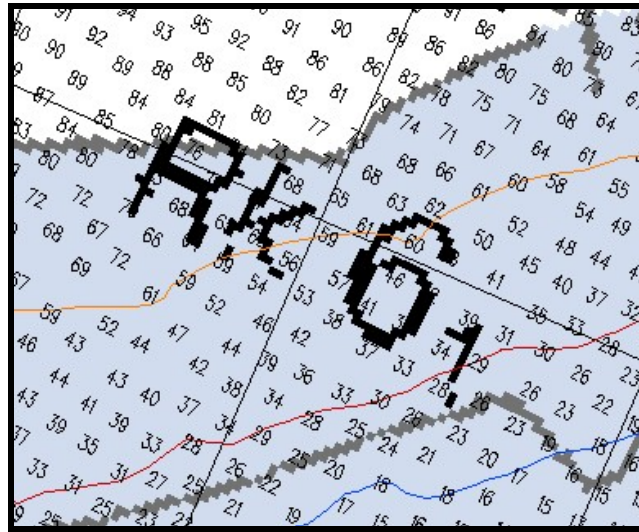


Chart 16663 7th Ed

New Sounding Value

Figure D.1.22

The 9₄ fathom (58 feet) sounding has 2004 soundings as deep as 68 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings and removing the 10-fathom contour.⁵¹

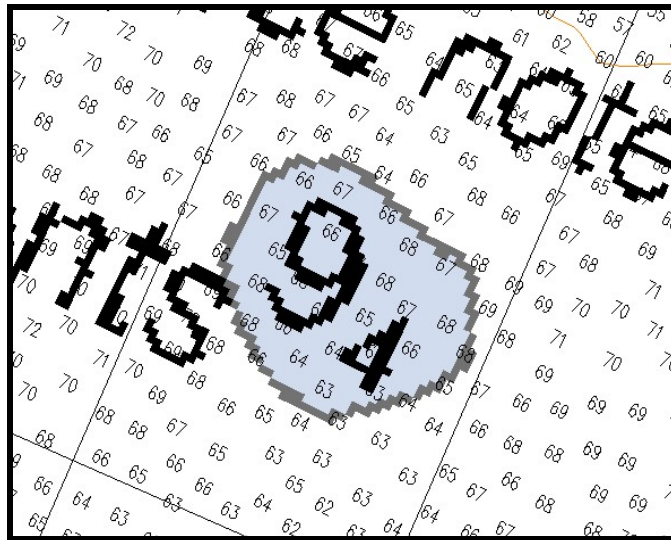


Chart 16663 7th Ed

New Sounding Value

Figure D.1.23

Latitude	Longitude	Depth Fthms	Hydrographer's Recommendation
61°12'5.39"	149°56'26.77"	24	Next Chart Edition Add Rk ⁵²

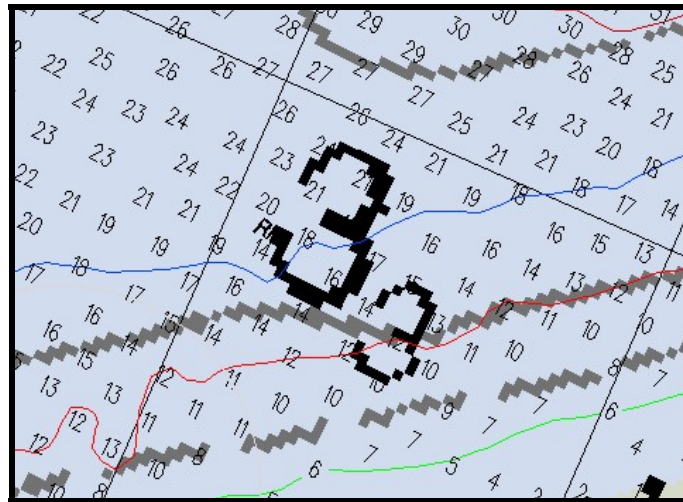


Chart 16663 7th Ed

New Sounding Value

Figure D.1.24

The 6₃ fathom (39 feet) sounding has 2004 soundings as deep as 100 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings and curves.⁵³

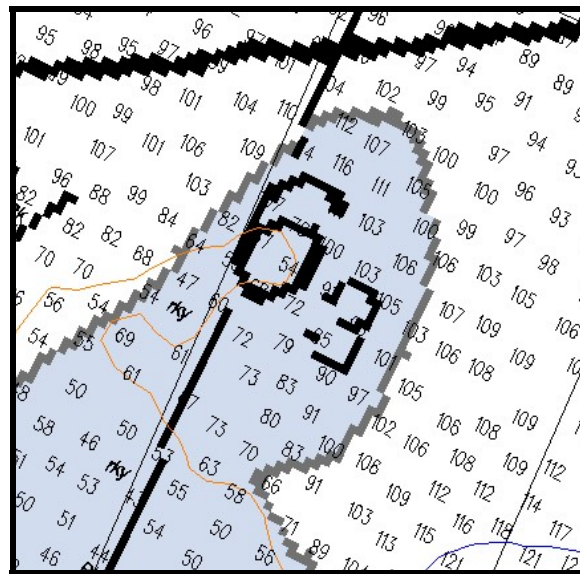


Chart 16663 7th Ed

Changeable Area

Figure D.1.25

The 0₄ fathom (4 feet) sounding has 2004 soundings as deep as 20 feet in the same location. The hydrographer recommends this area be labeled “Changeable Area” on the next chart edition.⁵⁴

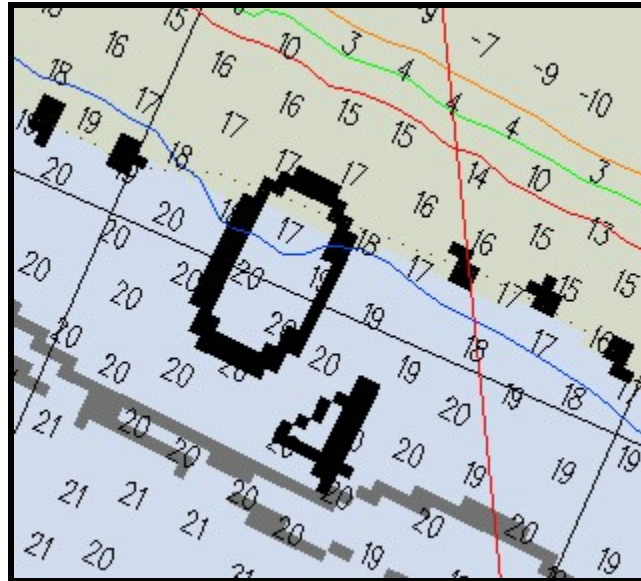


Chart 16663 7th Ed

New Sounding Value

Figure D.1.26

The 9 fathom (54 feet) sounding has 2004 soundings as deep as 62 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings and contours.⁵⁵

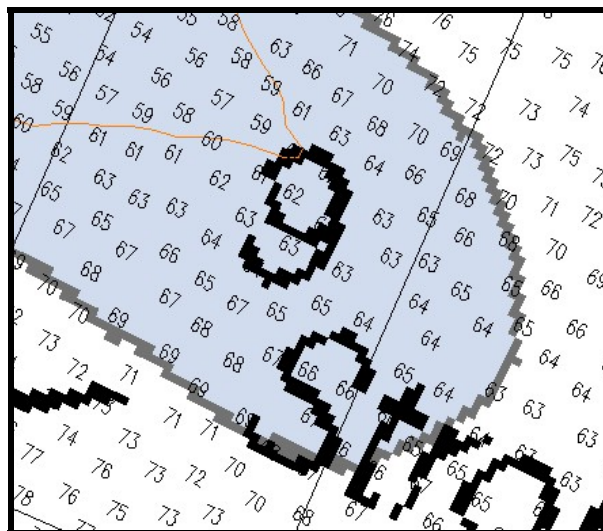


Chart 16663 7th Ed

New Sounding Value

Figure D.1.27

The 16 fathom (96 feet) sounding has 2004 soundings as shoal as 76 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings and contours.⁵⁶

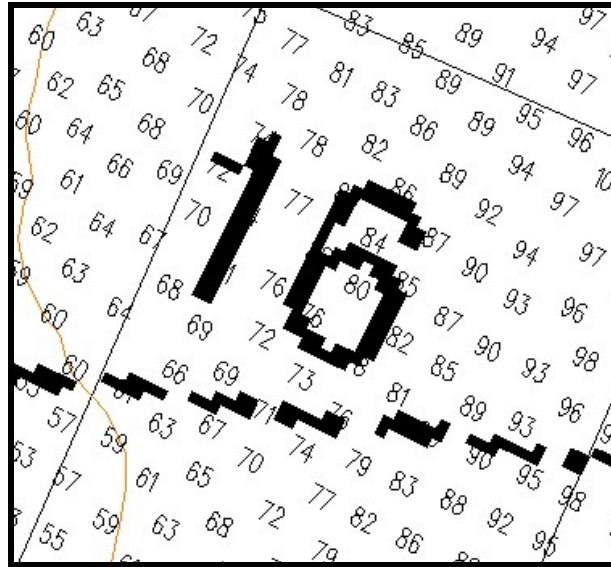


Chart 16663 7th Ed

New Sounding Value

Figure D.1.28

The 2₃ fathom (15 feet) sounding has 2004 soundings as deep as 27 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings and contours.⁵⁷

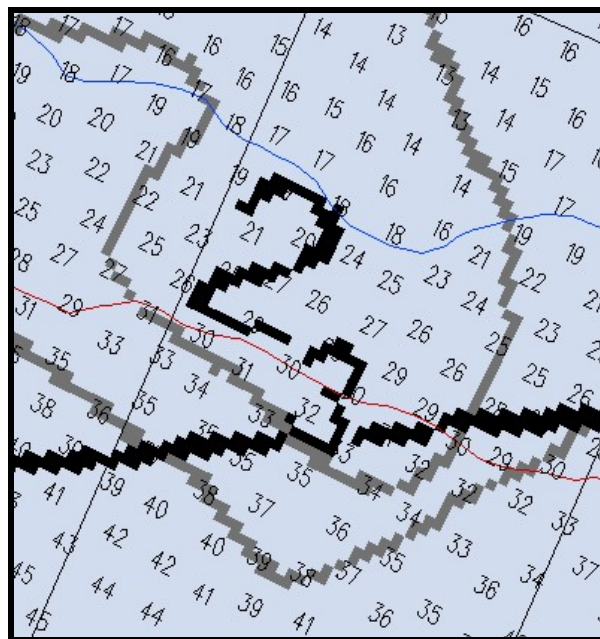


Chart 16663 7th Ed

AWOIS Items Summary

This contract required investigation of nine AWOIS items, three⁵⁸ of which required full investigation. The table below is a summary of the items and their results. Refer to Appendice IV⁵⁹ for database records and graphics.⁶⁰

Record	Description and Search Type	Comment
50721	Unknown FULL ⁶¹	Found. Recommend charted as shown on smoothsheet. ⁶²
51900	Obstruction INFORMATION	Outside the Limits of Hydrography, Visual inspection of the shoreline produced no detection of item. Full Investigation required for further verification. Recommend charted as shown on smoothsheet. ⁶³
51901	Unknown INFORMATION	Outside the Limits of Hydrography. Visual Inspection of the shoreline found the item which appears as charted. Photos taken. Recommend retain as charted. ⁶⁴
51907	Unknown INFORMATION	Outside the Limits of Hydrography. Visual Inspection of the shoreline found the item which appears as charted. Photos taken. Recommend retain as charted. ⁶⁵
52648	Obstruction INFORMATION	The obstruction was found in 2001. The item was not detected in 2004. There is a least depth change from 33 feet (2001) to 30 feet (2004). Recommend updating next edition with 30-foot sounding. ⁶⁶
52650	Rocks INFORMATION	Found. Recommend retain as charted. ⁶⁷
52651	Obstruction INFORMATION	Visual inspection of the shoreline could not determine if the item exists. Recommend full investigation for disproval. ⁶⁸
52652	Obstruction INFORMATION	The obstruction is considered disproved and is recommended to be removed from the charts. ⁶⁹
52653	Dump Site FULL	The dumpsite is no longer in use per the USACE in 2001 and in 2004, and is recommended to be removed from the charts. There is no evidence of the dumpsite in the multibeam data. ⁷⁰

Wrecks and Obstructions from Miscellaneous Sources

Discovery of “Pill box” Barge wreck

The Local Notice to Mariner ID #13 was submitted by Terra Surveys, LLC, and the USACE outside the scope of this contract, while surveying for the Port of Anchorage. A sunken barge or “pill box” was discovered and moved by dredgers. The area was first surveyed as contracted for NOAA on DN 165. The area was surveyed again on 262 to fill in data gaps allowing the hydrographers to detect the barge. It should be noted that the NOAA survey puts the barge’s position approximately 100 meters southwest from the Local Notice to Mariners position, which was submitted to the nearest decimal minute. Refer to Appendice I of this report for correspondence related to this wreck.

Survey Dates and Findings

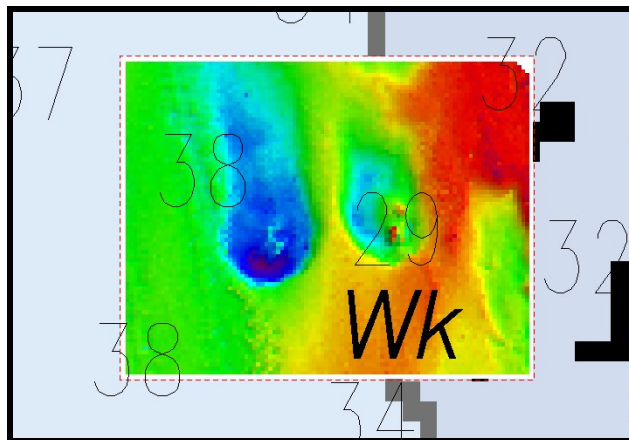
DN 165 and 262:

- NOAA 2004 Wreck Position and Least Depth MLLW
Latitude 61°14’57.54”N Longitude 149°53’16.56”W Least Depth 29 feet

DN 208

- Outside Scope of Contract Survey Values and Least Depth MLLW
Latitude 61°15’03.58”N Longitude 149°53’10.86”W Least Depth 19.5 feet

The differences in the least depth values between the two surveys are most likely a result of the barge’s position at the time of each survey.⁷¹



DTM showing discovered wreck with Chart 16665 8th ed. and 2004 soundings

Summary

The hydrographer recommends the least depth be verified through diver investigation. This DTON was reviewed by Capt D.T. Glenn of the USCG, who determined it did not qualify as a “hazard to navigation”. Refer to Appendice I for correspondence regarding this finding.⁷²

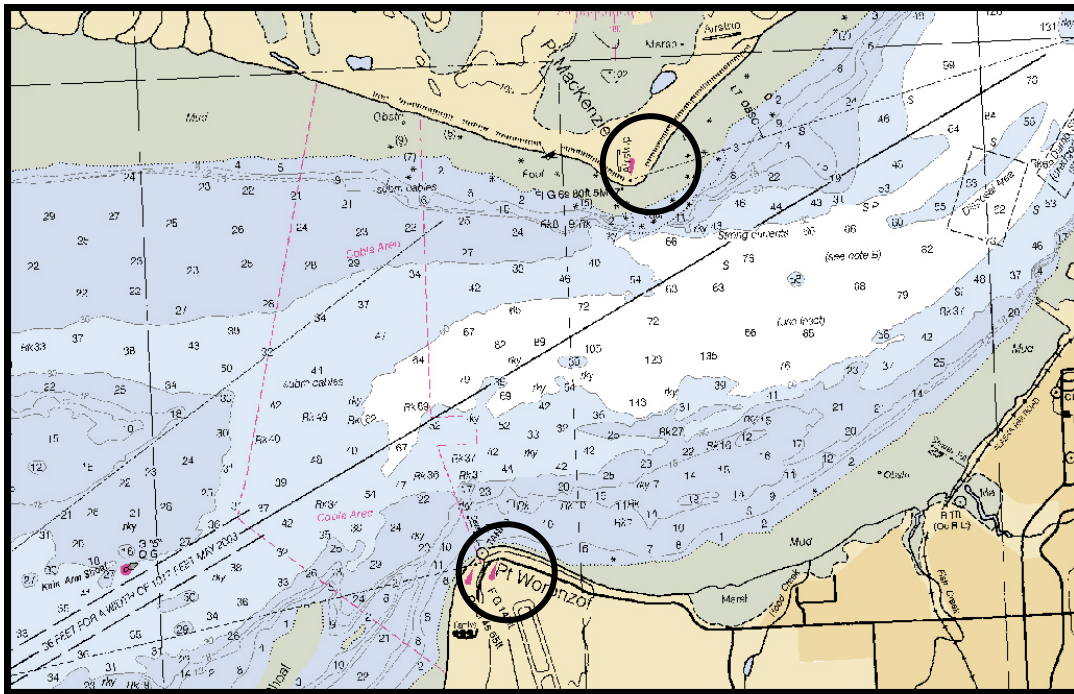
D2. Additional Results

Submarine cables

There are 138-kilovolt submarine cables, maintained by Chugach Electric Association that span the inlet from Point Woronzof to Point MacKenzie. These cables are charted but there positions have changed according to submitted Local Notice to Mariners reports. The new positions have not been published as of the date of this report. Some cables appear in the digital terrain model and are depicted on the smoothsheet. Local knowledge confirms they extend across the inlet towards Point Mackenzie The hydrographer recommends updating the next edition of the chart with the new cable positions.⁷³ Refer to Section D.1 of this report for the new positions.

Aids to Navigation

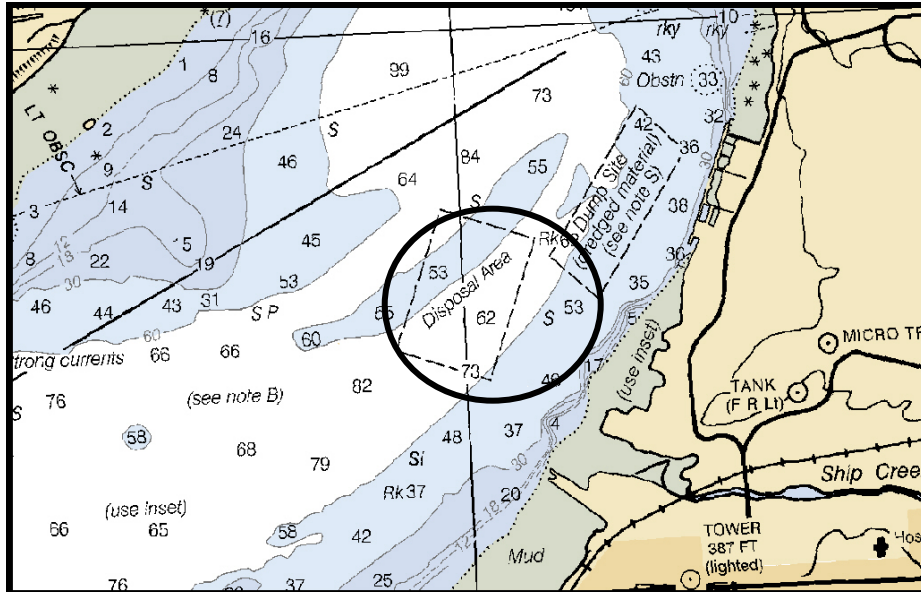
All the aids to navigation in this survey appear as charted, match the Light List and chart characteristics and serve their intended purpose.⁷⁴



Aids to Navigation Chart 16665 8th Ed

Ongoing Dredging

There is a USACE authorized disposal area for the Port of Anchorage dredge spoils in this survey. Slurry material is also discharged in deeper waters. The constant dredging, swift currents, and powerful tides most likely contribute to the bottom changes.⁷⁵



Disposal Area Chart 16665 8th Ed



Manson Dredging Operation at the Port of Anchorage

New Construction

Port MacKenzie Deep Draft Dock Addition

In addition to an existing 500-foot bulkhead, construction for a 1200-foot deep draft dock began in August 2004.⁷⁶



Port MacKenzie deep draft dock construction in the winter



Asbuilt of deep draft dock addition to Port MacKenzie

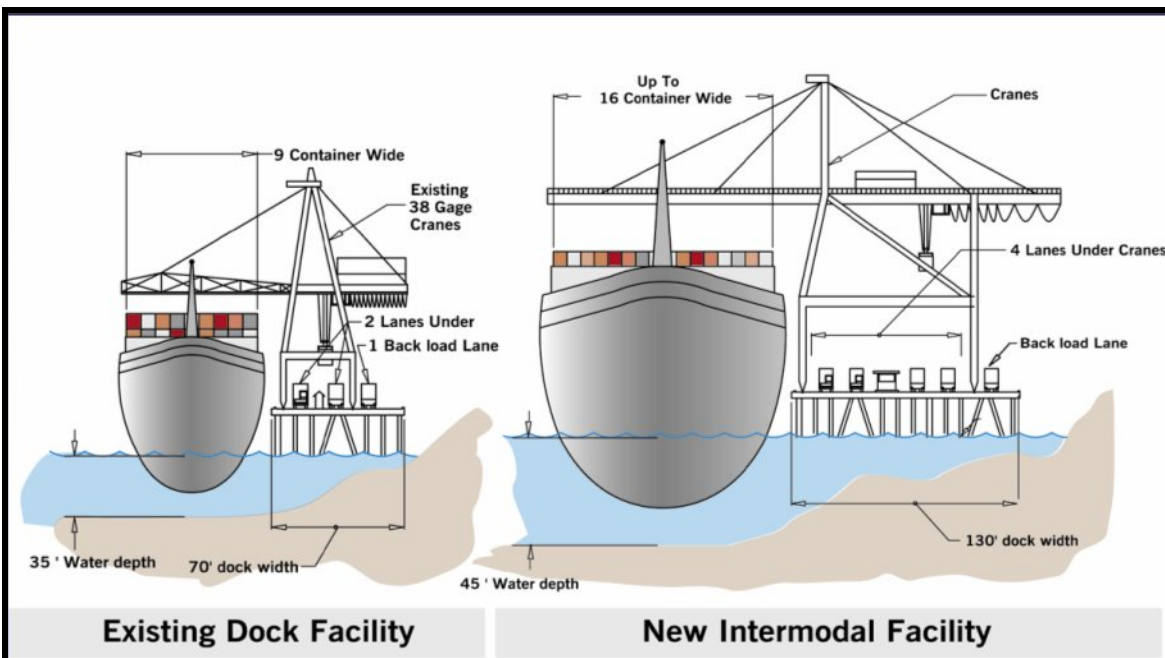
Planned construction

Port of Anchorage Intermodal Expansion

The Port of Anchorage's intermodal expansion program involves two main facility improvements: road and rail extension and marine terminal redevelopment. The Port is currently in the planning and permitting stage of this project with construction scheduled to begin in 2006.



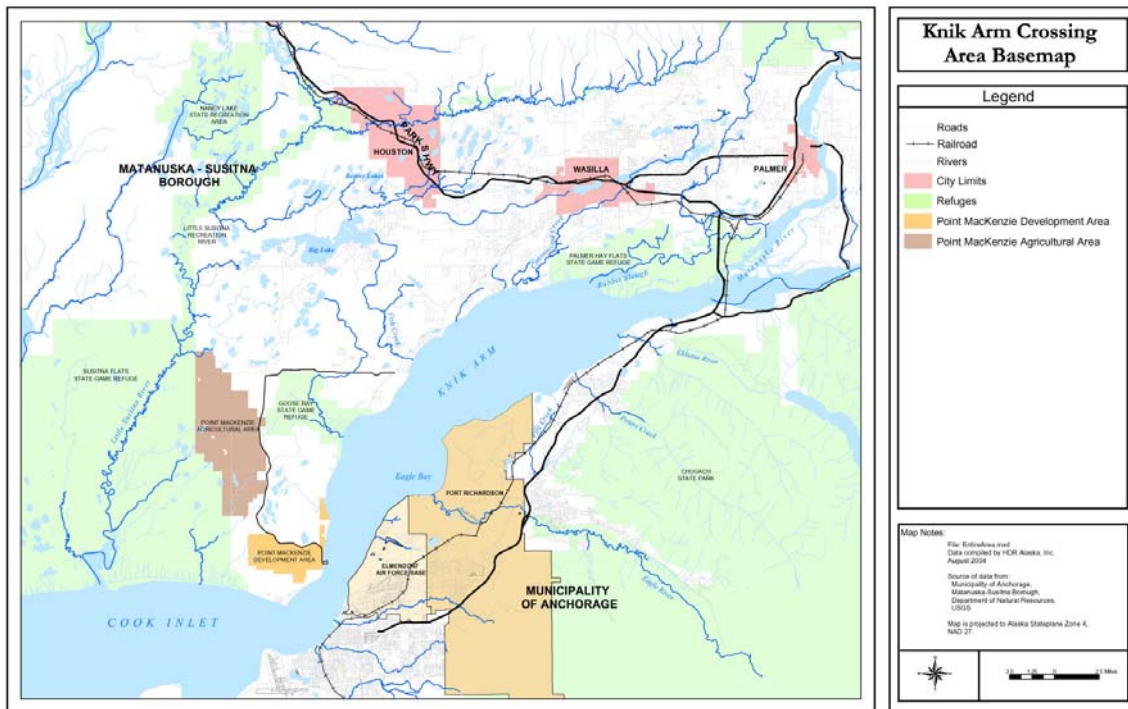
Aerial Overview of POA Intermodal Expansion Project



POA Intermodal Proposed Dock Improvements

Knik Arm Bridge and Tolling Authority

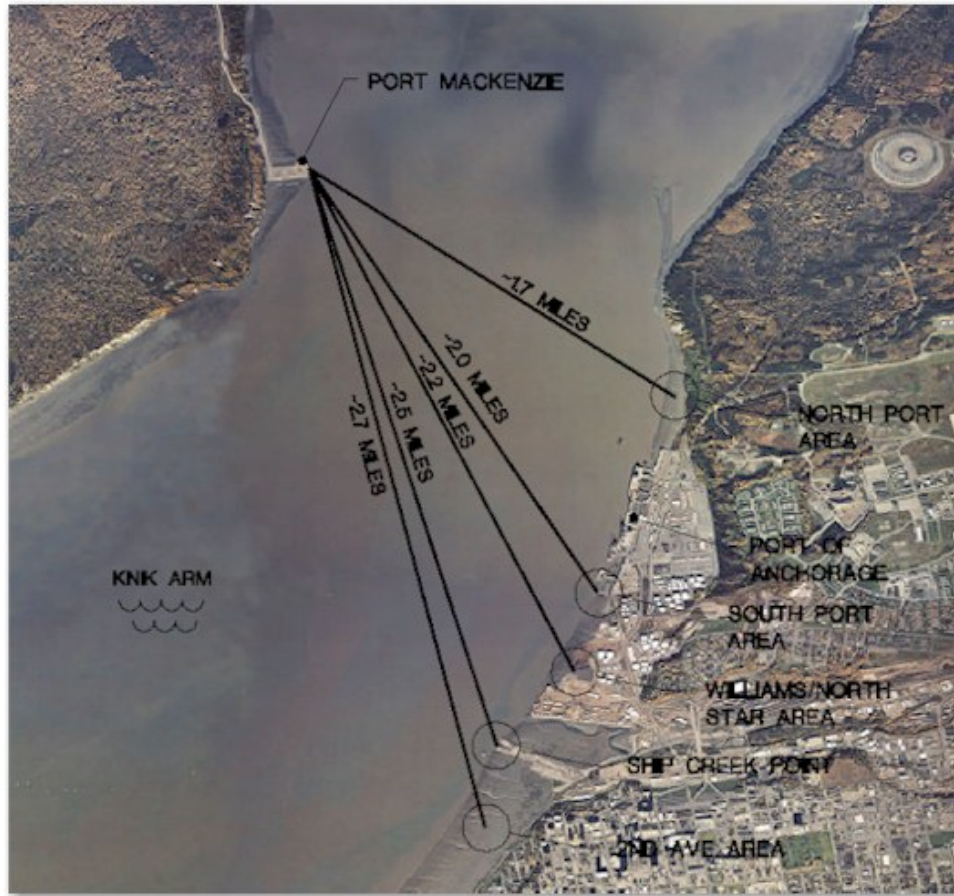
KABATA, the Knik Arm Bridge and Toll Authority, was created in 2003 to construct a bridge across Knik Arm connecting the Municipality of Anchorage and the Mat-Su Borough. The approximately two mile bridge would link the Port of Anchorage and Port MacKenzie now separated by 80 miles of road. At the time of this report the environmental process is underway. The design and construction process is anticipated to occur from 2006 to 2010.



Base map of KABATA area available to the public

Knik Arm Ferry

The Mat-Su Borough and the Municipality of Anchorage are proposing to construct ferry landings and operate a ferry between Anchorage and Port MacKenzie. The Knik Arm Ferry would serve commuters from the Mat-Su Borough traveling to Anchorage and those traveling to Port MacKenzie work sites. At the time of this report there has been no construction of the ferry-landing sites.



Potential ferry routes

**LETTER OF APPROVAL
REGISTRY NO. H-11249**

This Report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of survey H-11249 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 submitted with this survey include Data Acquisition and Processing Report, Vertical and Horizontal Report, and the Shoreline Verification Field Notes.

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

Anne S. Dollard

Anne S. Dollard, Hydrographer
Terra Surveys, LLC

Date JUNE 8, 2005

Revisions Compiled During Office Processing and Certification

¹ Concur

² Data Acquisition and Processing Report. Filed with the project records.

³ Concur with the hydrographer's comments above.

⁴ Filed with the hydrographic records.

⁵ Concur with clarification. The dynamic nature of the seabed in Cook Inlet makes crossline agreement difficult in many areas. A PHB review of the data indicated the data were within specifications.

⁶ Concur with the hydrographer's comments above.

⁷ Filed with the hydrographic records.

⁸ Filed with the hydrographic records.

⁹ Concur

¹⁰ Concur

¹¹ Concur

¹² Concur

¹³ Filed with the project records.

¹⁴ Do not concur. There were five DTON Reports submitted for this survey. Nineteen DTON's were found in the survey area. In addition, fourteen soundings were recommended for removal.

¹⁵ Concur with clarification. There were numerous changes in the survey area due to the dynamic nature of the Cook Inlet seabed. Some of the DTON's listed may not have been shown on the final Hdrawing due to chart scale and final sounding selection. Chart the survey area as shown on the Hdrawing.

¹⁶ See endnote 15.

¹⁷ See endnote 15.

¹⁸ Do not concur. Chart the area as shown on the Hdrawing.

¹⁹ Do not concur. Chart the area as shown on the Hdrawing.

²⁰ Concur

²¹ Concur

²² Concur with clarification. Chart as shown on the Hdrawing

²³ Concur with clarification. This feature was noted previously in the report. See endnote 19.

²⁴ Concur

²⁵ Concur

²⁶ Do not concur. Chart area as shown on the Hdrawing.

²⁷ Concur

²⁸ Concur

²⁹ Concur

³⁰ Concur with clarification. Chart as shown on the Hdrawing.

-
- 31 Concur
- 32 Concur
- 33 Concur
- 34 Concur
- 35 Concur
- 36 Concur
- 37 Concur
- 38 Concur
- 39 Concur
- 40 Concur
- 41 Concur with clarification. There is a 12' (2 fathoms) (61/14/26.2N, 149/56/22.5W) near the 2 fathom 3 feet sounding. The 2 fathom 3 feet sounding was not shown on the latest continuous maintenance drawing for chart 16660 reviewed by PHB. Chart as shown on the Hdrawing.
- 42 Concur
- 43 Concur
- 44 Concur
- 45 Concur
- 46 Concur with clarification. Chart as shown on Hdrawing. Smooth sheet shows a 10.7 ft sounding in the position of the 1 fathom 1 foot shown in the chartlet below.
- 47 Concur
- 48 Concur
- 49 Concur
- 50 Concur
- 51 Concur
- 52 Concur
- 53 Concur
- 54 Concur
- 55 Concur
- 56 Concur
- 57 Concur
- 58 Strike "~~three~~" insert one.
- 59 Strike "~~Appendix IV~~" insert Appendix VI
- 60 Attached to this report.
- 61 Strike "~~FULL~~" insert INFORMATION
- 62 Concur
- 63 Do not concur. Retain as charted.
- 64 Concur
- 65 Concur
- 66 Concur with clarification. Silting may have obscured the obstruction. Recommend updating depth to 30 feet and charting an Obstruction at 61/14/48.0N, 149/53/13.8W.
- 67 Concur
- 68 Concur with clarification. Retain as charted.

⁶⁹ Concur

⁷⁰ Concur with clarification. Chart area with the latest survey information.

⁷¹ Concur

⁷² Concur with clarification. Chart 29 foot wreck at surveyed location. The area was not resurveyed after the barge was moved. It has not been disproved at this location. The 19 foot wreck at 61/15/03.6N, 149/53/10.9W is not shown on the Hdrawing a 15 foot Rk supersedes in this location. PHB recommends the wreck be added to the AWOIS database.

⁷³ Do not concur. Chart cable area with the latest available information.

⁷⁴ Concur. Chart Aids to Navigation with the most current ATONIS information.

⁷⁵ Concur

⁷⁶ Concur with clarification. Chart pier facility with the latest "as-built" information. PHB recommends revising the inset for Chart 16665 to include the Port MacKenzie pier facility.

APPENDIX I

Danger To Navigation Reports

Hydrographic Survey Registry Number: H11249

Survey Title: Shoal to Knik Arm **State:** Alaska **Locality:** Cook Inlet **Sub-locality:** North Point

Project Number: OPR-P385-KR-04

Survey Dates: July 2004

Depths are reduced to Mean Lower Low Water using verified tides. Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

Chart	Scale	Edition	Date
16660	1:194,154	29 th	01/01/04
16663	1:100,000	7 th	01/01/04
16665	1:50,000	8 th	12/01/03

DANGERS:

Feature	Depth(ft)	Latitude (N)	Longitude (W)
Sounding	56	61° 13' 58.9"	149° 57' 13.8"
Sounding	49	61° 14' 00.0"	149° 56' 53.5"
Sounding	48	61° 14' 05.0"	149° 56' 20.8"
Sounding	29	61° 14' 13.8"	149° 56' 17.6"
Sounding	45	61° 14' 16.2"	149° 55' 45.0"
Sounding	30	61° 14' 24.4"	149° 55' 42.0"
Sounding	12	61° 14' 26.2"	149° 56' 23.1"
Sounding	45	61° 14' 37.5"	149° 55' 33.7"
Sounding	48	61° 14' 49.7"	149° 55' 48.6"
Sounding	24	61° 14' 35.9"	149° 56' 09.0"
Sounding	13	61° 15' 41.5"	149° 54' 57.0"

COMMENTS: Significant shoal movement has occurred east of Pt. MacKenzie. Recommend charting the soundings above and removal of the following currently charted soundings:

66	61° 13' 57.6" N	149° 57' 06.8" W
53	61° 14' 11.3" N	149° 56' 11.3" W
45	61° 14' 19.3" N	149° 56' 01.8" W
46	61° 14' 35.2" N	149° 56' 10.1" W
27	61° 15' 43.5" N	149° 54' 54.3" W

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206) 526-6840

Danger to Navigation Report

Hydrographic Survey Registry Number: H11249

Survey Title: State: Alaska Locality: Cook Inlet Sub-locality: North Point Shoal to Knik Arm

Project Number: OPR-P385-KR-04

Survey Dates: June-October 2004

Depths are reduced to Mean Lower Low Water using verified tides. Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

Chart	Scale	Edition	Date
16660	1:194,154	29 th	01/01/04
16663	1:100,000	7 th	01/01/04
16665	1:50,000	8 th	12/01/03

DANGERS:

Feature	Depth(ft)	Latitude (N)	Longitude (W)
Sounding	32	61° 14' 34.7"N	149° 53' 21.8"W
Sounding	35	61° 14' 30.9"N	149° 53' 17.6"W
Sounding	29	61° 14' 40.1"N	149° 53' 11.9"W
Sounding	32	61° 14' 28.6"N	149° 53' 28.1"W
Sounding	33	61° 14' 23.6"N	149° 53' 29.2"W
Sounding	35	61° 14' 43.4"N	149° 53' 26.9"W

COMMENTS: The soundings listed above affect the Chart 16665 Inset around the Port of Anchorage. Removal of the following currently charted soundings is recommended:

Feature	Depth (ft)	Latitude (N)	Longitude (W)
Sounding	32	61° 14'40" N	149° 53'12" W
Sounding	41	61° 14'44" N	149° 53'26" W
Sounding	36	61° 14'35" N	149° 53'23" W
Sounding	37	61° 14'32" N	149° 53'16" W
Sounding	38	61° 14'28" N	149° 53'27" W
Sounding	38	61° 14'23" N	149° 53'29" W

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206) 526-6840

Danger to Navigation Report

Hydrographic Survey Registry Number: H11249

Survey Title: State: Alaska Locality: Cook Inlet Sub-locality: North Point Shoal to Knik Arm

Project Number: OPR-P385-KR-04

Survey Dates: June 2004

Depths are reduced to Mean Lower Low Water using verified tides. Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
16660	1:194,154	29 th	01/01/04
16663	1:100,000	7 th	01/01/04
16665	1:50,000	8 th	12/01/03

DANGERS:

<u>Feature</u>	<u>Depth(ft)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Obstruction	30	61° 14' 48.0"	149° 53' 13.8"

COMMENTS: Feature is a charted obstruction and AWOIS Item 52648. Charted depth is 33 feet. 2004 survey depth is 30 feet.

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206) 526-6840

Danger to Navigation Report

Hydrographic Survey Registry Number: H11249

Survey Title: State: Alaska Locality: Cook Inlet Sub-locality: North Point Shoal to Knik Arm

Project Number: OPR-P385-KR-04

Survey Dates: June-October 2004

Depths are reduced to Mean Lower Low Water using verified tides. Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
16660	1:194,154	29 th	01/01/04
16663	1:100,000	7 th	01/01/04
16665	1:50,000	8 th	12/01/03

DANGERS:

<u>Feature</u>	<u>Depth(ft)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
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COMMENTS: During office review of H11249 the following soundings from 16665 (inset) are recommended for removal. Significant shoaling has occurred in this area

<u>Feature</u>	<u>Depth (ft)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Sounding	39	61° 14' 25.2" N	149° 56' 13.8" W
Sounding	45	61° 14' 19.4" N	149° 56' 02.3" W
Sounding	56	61° 14' 24.0" N	149° 56' 49.4" W

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206) 526-6840

U.S. Department of
Homeland Security

United States
Coast Guard



Commander
Seventeenth Coast Guard District

Staff Symbol: (o)
Phone: (907) 463-2243
Fax: (907) 463-2256

16670
17 Sep 2004

MEMORANDUM

D. T. Glenn
From: D. T. Glenn, CAPT
CGD SEVENTEEN (o)

Reply to (oan)
Attn of: CDR Rothchild
(907) 463-2263

To: CG MSO ANCHORAGE

Subj: HAZARD TO NAVIGATION ASSESSMENT FOR UNDERWATER
OBSTRUCTION NEAR THE PORT OF ANCHORAGE DOCK

Ref: (a) Your memo 16670 of 26 July 04
(b) USCG/USACE MOA regarding Marking and Removal of Sunken Vessels and Other
Obstructions to Navigation

1. As requested in reference (a), and after consultation with the US Army Corps of Engineers as required by reference (b), we have completed our assessment of the underwater obstruction in the vicinity of the Port of Anchorage in position 61-15.0N, 149-53.2W.
2. Since the obstruction is not in an area normally used by vessel traffic, and since the obstruction lies shoreward of two other known and charted obstructions, we have determined that this obstruction does not present sufficient danger to navigation to qualify as a hazard to navigation.
3. In lieu of marking or removal, we have issued a Broadcast Notice to Mariners and initiated corrections to charts of the area. Please contact CDR Steve Rothchild, Chief of my Aids to Navigation Branch, if you require additional information.

#

Copy: Port of Anchorage
D17 (m)
USACE Alaska District

APPENDIX II

List of Geographic Names

There was one correction to the geographical names. Chart 16660 29th edition does not contain the geographical name “Woronzof Shoal”.

APPENDIX IV

Tides and Water Levels

2004 FIELD and FINAL TIDE NOTE
Hydrographic Sheet: H11249
Sheet B
North Point Shoal to Knik Arm
Cook Inlet, Alaska

NOAA Project No:	OPR-P385-KR-04 Cook Inlet, Alaska				
NOAA Contract No:	50-DGNC-0-90003				
The NOS Anchorage, AK tide station (945-5920) and Nikiski (956-5760) served as control for the subordinate stations on this project. Datum determinations were made for the tertiary subordinate stations: Fire Island (945-5912). The NTDE 1983-2001 was utilized.					
Location and Time Meridian	Name:	Lat (NAD83)	Long(NAD83)	Time Meridian:	
	Fire Island	N 61° 10' 20.8"	W 150° 12' 19.3"	0° (UTC)	
Time Period and Datum Reference	Name:	Established:	Removed:	MLLW	MHW
	Fire Island	6/11/2004	11/6/2004	1.122 M	9.159
Tide Observer	Terra Surveys, LLC 1930 South Whiting Circle Palmer, Alaska 99645 (907) 745-7215				
Gauges	Design Analysis Ass. H350XL/355 bubbler systems.				
Install Type	Each gauge was secured inside a waterproof case, and fastened vertically to a wooden brace above the high water line. A weather port covered the gauges.				
Tide Staff	No tide staff was installed. Levelling was performed from a tidal bench mark to the water surface. The water height was read using a metric rod with a stilling well attached to remove interference from waves.				
Bench Marks	The following bench marks were installed at these sites: none				
	The following bench marks were recovered at these sites: Fire Island:13,N,C,D,E,Rife,12				
Levels	Bench marks were levelled at the installation and removal of the tidal stations. The bench marks and station datums were connected through frequent water level measurements. The level runs closed within NOS tolerance.				
Final Tidal Zoning	This survey was tide corrected using a combination of a dual gauge distance weighted interpolation and standard zoning(developed by John Oswald and Associates in 2001).				
Reduction of Hydrographic Data	Six minute tide data reduced to MLLW and applied with verified Anchorage (945-5920) tides after the final extraction from CARIS.				

Abstract of Times of Hydrography for Smooth Tides

Project: OPR-P385-KR-04

Registry No.: H-11249

Sheet: B

Inclusive Dates: June 13, – Oct. 28, 2004

START		END	
Day (Julian)	Time (UTC)	Day (Julian)	Time (UTC)
159	22:25	159	23:03
160	18:47	161	02:19
162	00:21	162	02:07
162	17:07	163	01:23
163	16:09	164	01:39
164	17:27	165	00:32
165	19:15	166	01:11
166	15:56	167	01:42
167	15:56	168	01:49
207	23:53	208	02:16
227	01:06	227	01:50
240	20:15	240	20:20
262	20:43	263	02:49
263	20:10	264	02:45
266	18:41	267	01:44
274	18:37	275	02:46
281	20:02	282	02:08
282	17:03	283	01:09
284	16:24	285	02:59
285	16:05	286	02:51
286	16:50	287	02:44
287	16:44	288	01:11
289	22:36	290	02:53
290	22:25	291	02:19
291	17:51	292	00:47

RECRD VESSTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

NATIVLAT NATIVLON NATIVDATUM
LAT83 LONG83 GPQUALITY
 GPSOURCE
LATDEC LONDEC

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History GIVEN IN LAT 61-15-04.25N, LONG 149-53-38.80W(NAD83). DIVE NOT ACCOMPLISHED, POSITIVE IDENTIFICATION NOT DETERMINED, ECHO SOUNDER DEPTH 8.9M(29FT) AT MLLW. (UPDATED 1/94 RWD)
H11031/01--OPR-P385-KR; THE AREA WAS COVERED BY FULL COVERAGE MULTIBEAM. THE WRECK WAS FOUND IN LAT. 61/15/04.35N, LONG. 149/53/39.41W (NAD83) WITH A LEAST DEPTH OF 28 FEET MLLW. THE WRECK WAS NOT DIVER INVESTIGATED. (UPDATED 7/03 BY MBH)"/>

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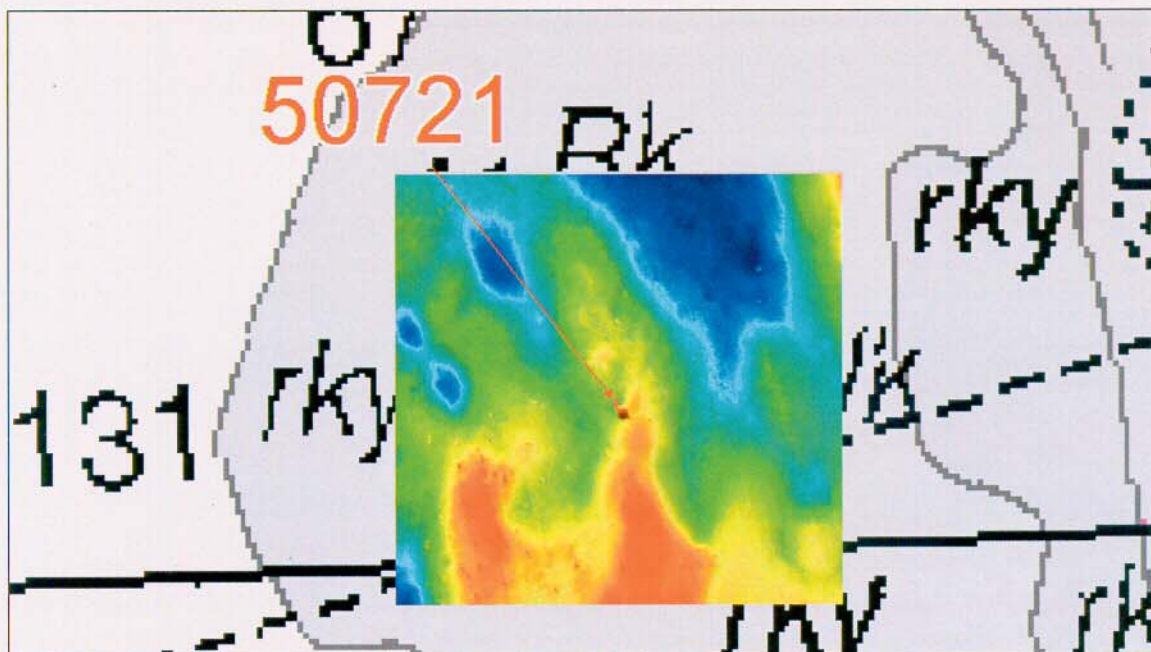
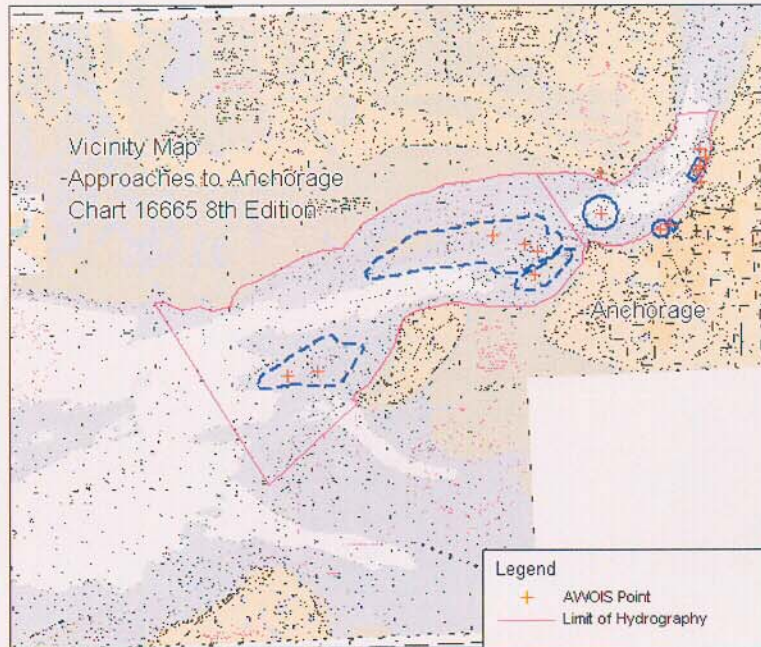
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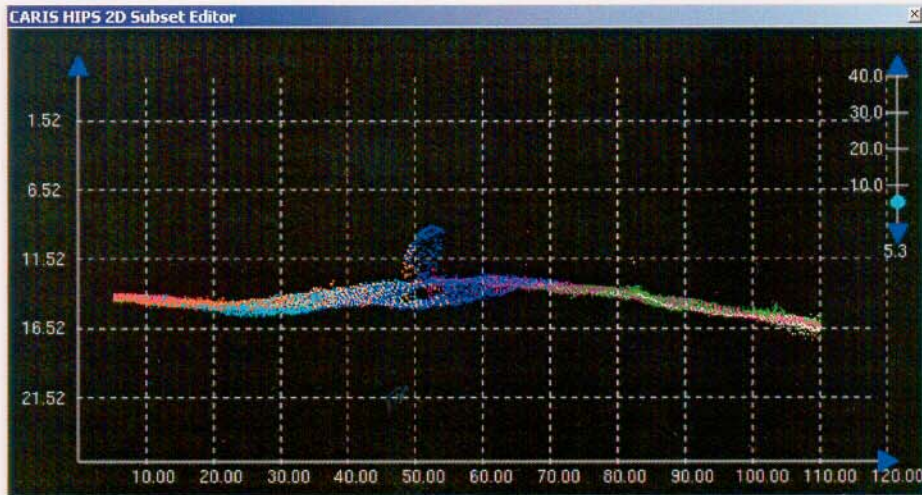
YEARSUNK NIMANUM SYSTEMNUM

Historical and 2004
AWOIS Positions

H-11249 Sheet B

50721





AWOIS Item 50721 as seen in CARIS subset editor

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CARTOCODE SNDINGCODE DEPTH

NATIVLAT NATIVLON NATIVDATUM
LAT83 LONG83 GPQUALITY
 GPSOURCE
LATDEC LONDEC

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED

TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

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PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

Evaluators Comment:

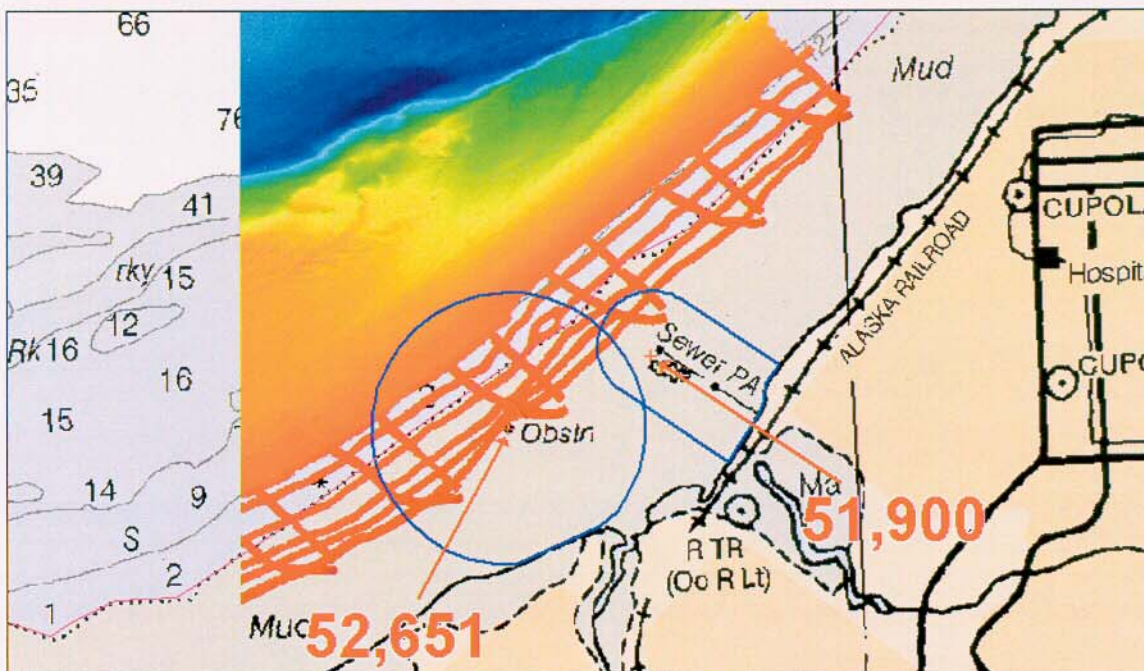
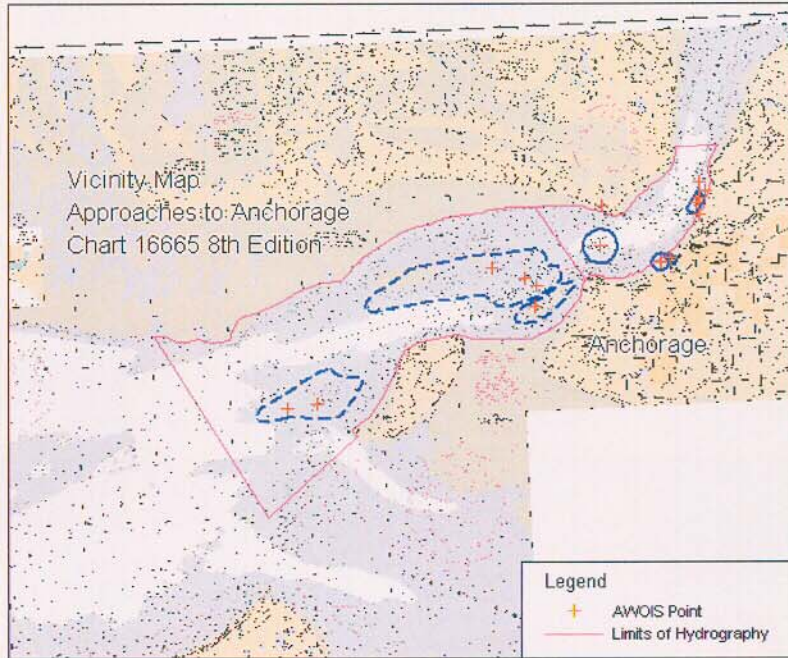
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YEARSUNK NIMANUM SYSTEMNUM

Historical and 2004
AWOIS Positions

H-11249 Sheet B

51900
52651



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PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

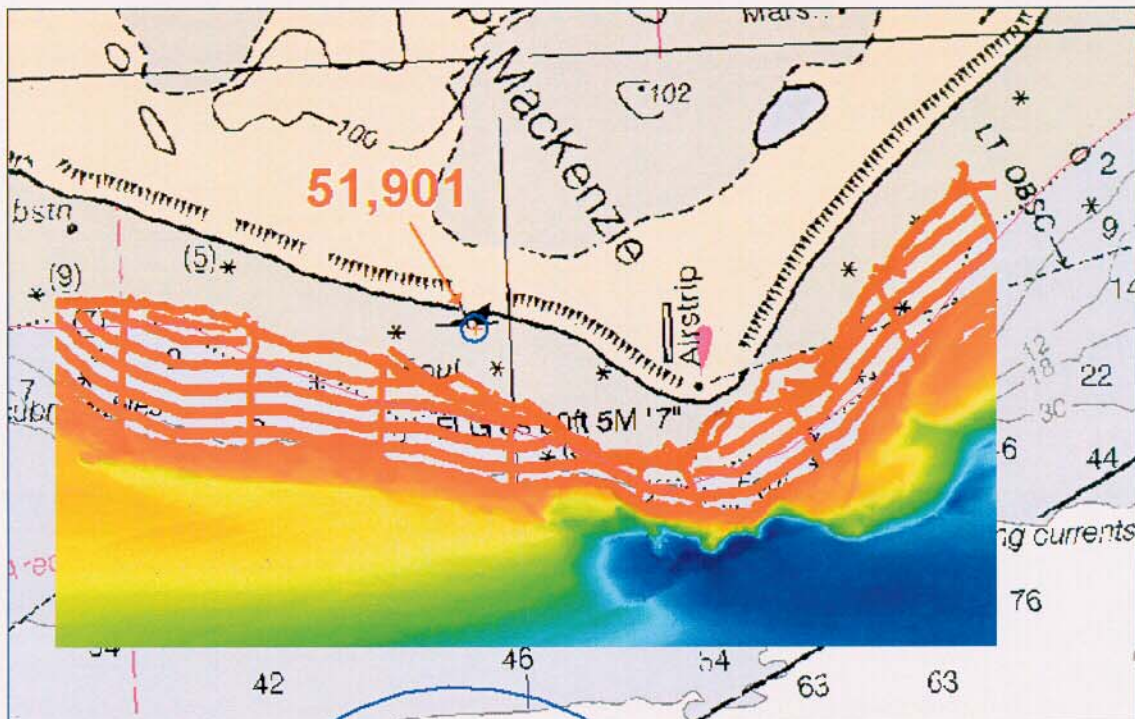
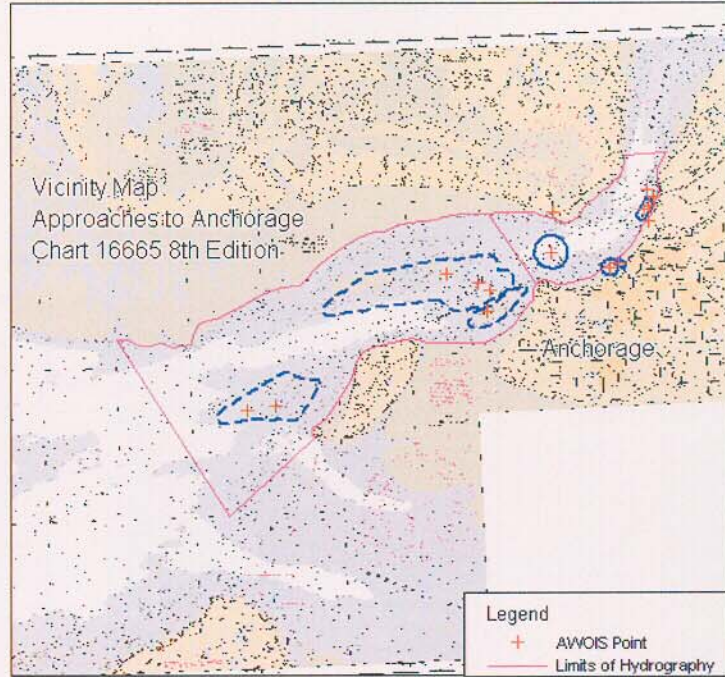
Proprietary

YEARSUNK NIMANUM SYSTEMNUM

Historical and 2004
AWOIS Positions

H-11249 Sheet B

51901





AWOIS 51901, looking North

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 CARTOCODE SNDINGCODE DEPTH

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PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECHNIQ

Techniqnote

History

Fieldnote
 Evaluators Comment:

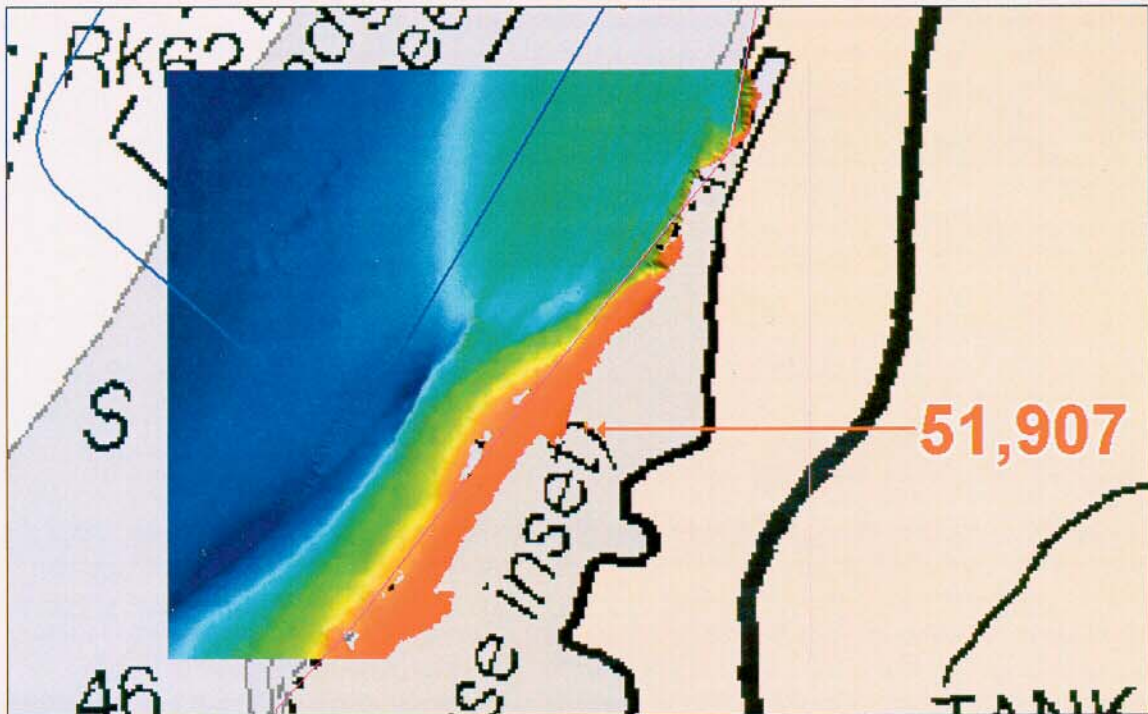
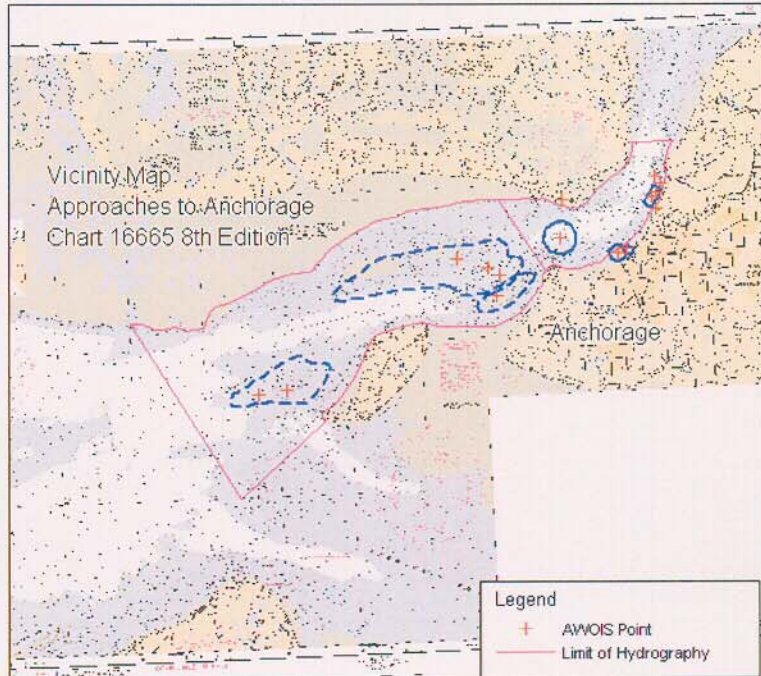
Proprietary

YEARSUNK NIMANUM SYSTEMNUM

Historical and 2004
AWOIS Positions

H-11249 Sheet B

51907



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PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

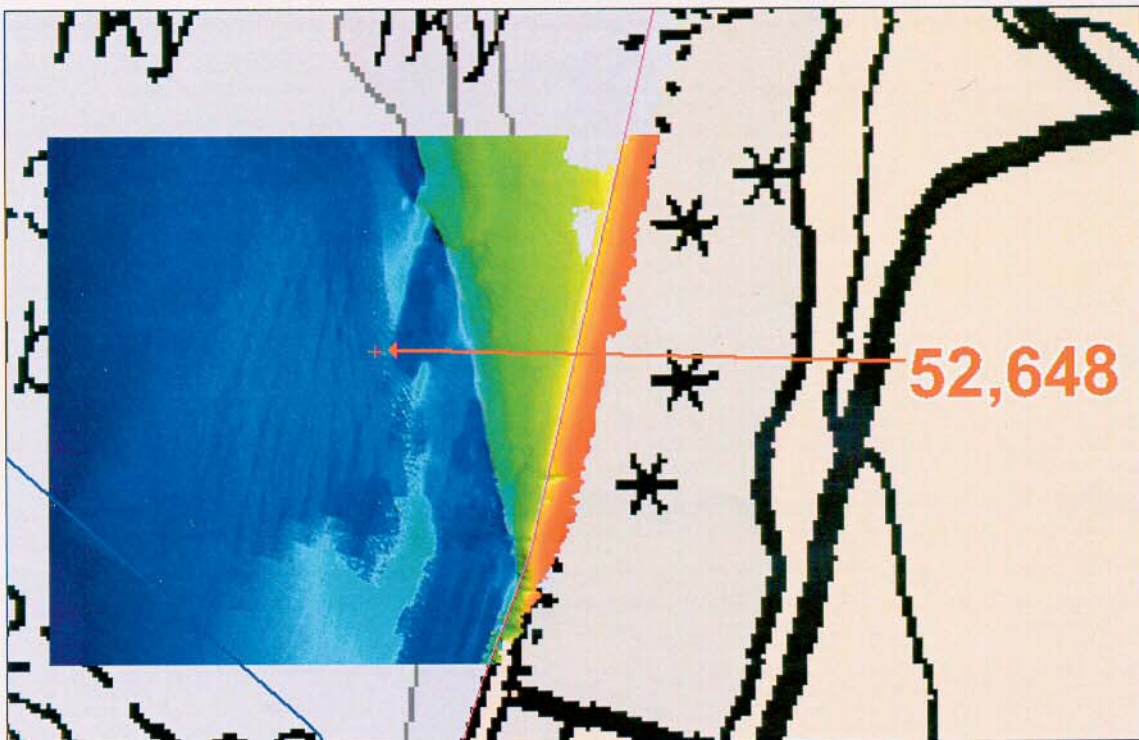
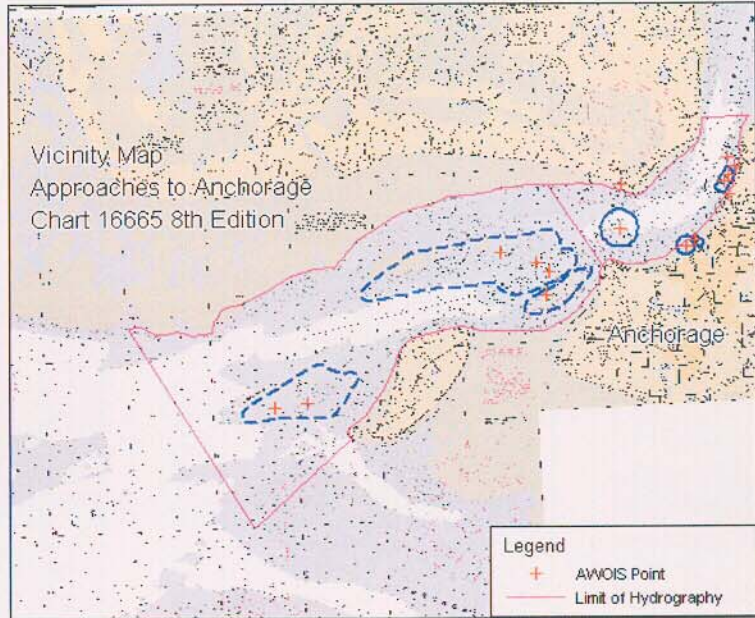
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YEARSUNK NIMANUM SYSTEMNUM

Historical and 2004
AWOIS Positions

H-11249 Sheet B

52648



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 CARTOCODE SNDINGCODE DEPTH

NATIVLAT NATIVLON NATIVDATUM
 LAT83 LONG83 GPQUALITY
 GPSOURCE
 LATDEC LONDEC

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History
 61RK IN LAT. 61/13/15.5N, LONG. 150/00/52.8W (NAD83)
 38RK IN LAT. 61/13/16.2N, LONG. 149/59/57.3W (NAD83)
 45RK IN LAT. 61/13/02.8N, LONG. 150/00/21.9W (NAD83)
 45RK IN LAT. 61/13/03.2N, LONG. 150/00/09.8W (NAD83)
 31RK IN LAT. 61/13/00.7N, LONG. 149/59/45.3W (NAD83)
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 (ENTERED 1/01 BY MBH)

Fieldnote

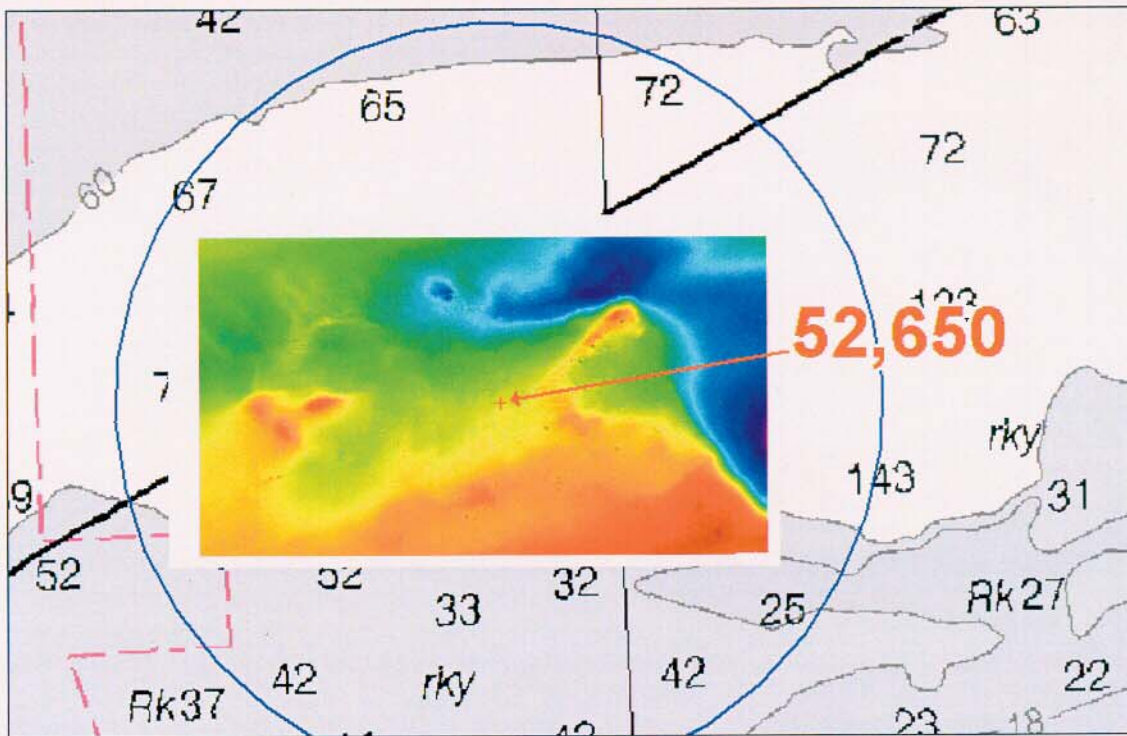
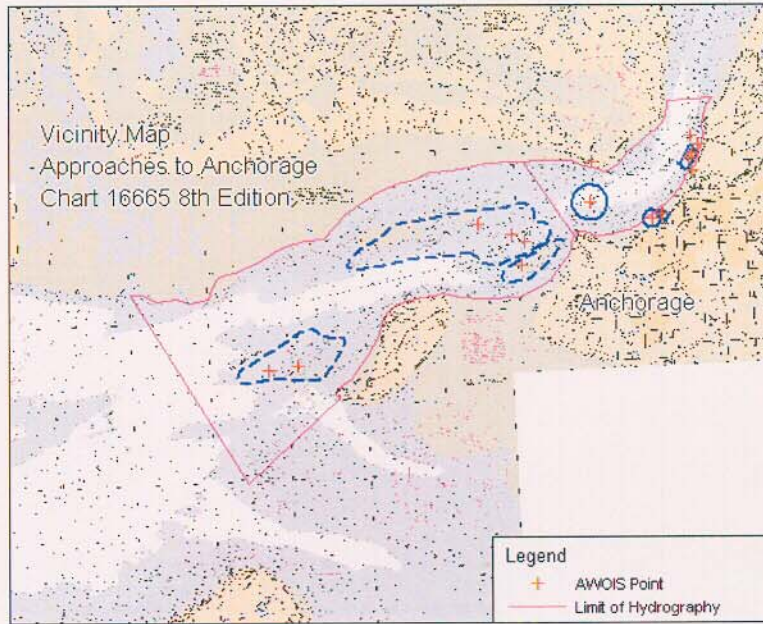
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YEARSUNK NIMANUM SYSTEMNUM

Historical and 2004
AWOIS Positions

H-11249 Sheet B

52650



RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT NATIVLON NATIVDATUM
 LAT83 LONG83 GPQUALITY
 GPSOURCE
 LATDEC LONDEC

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

NATIVLAT NATVLON NATVDATUM
LAT83 LONG83 GPQUALITY
 GPSOURCE
LATDEC LONDEC

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

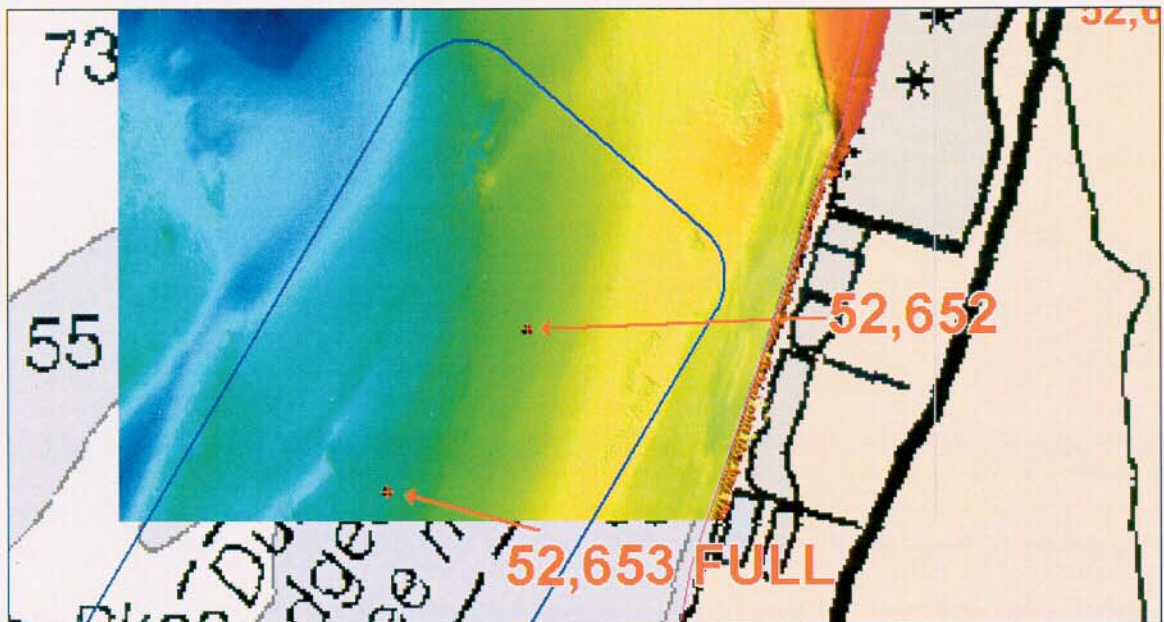
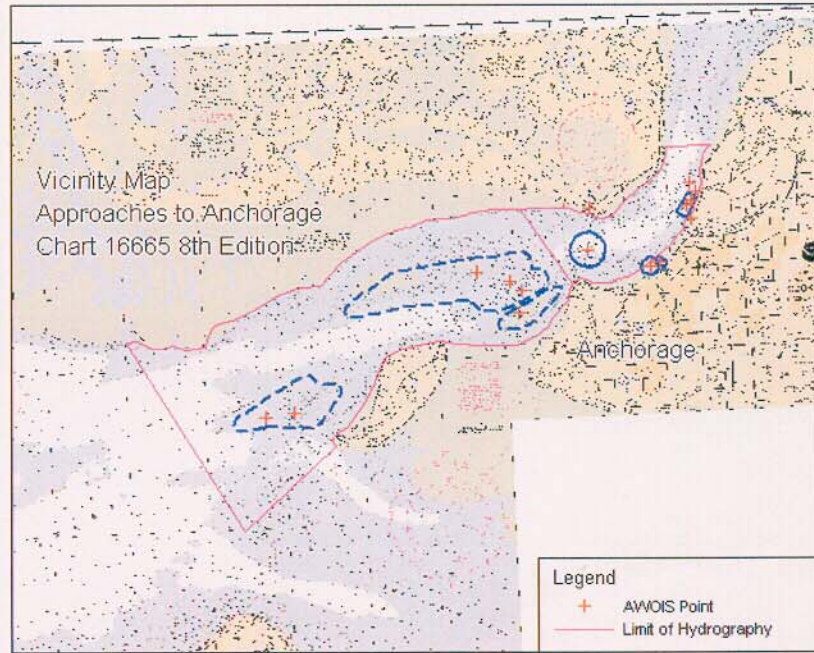
Proprietary

YEARSUNK NIMANUM SYSTEMNUM

Historical and 2004
AWOIS Positions

H-11249 Sheet B


52652
52653



APPROVAL SHEET
H11249

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 disproval 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.



Russ Davies
Cartographic Team
Pacific Hydrographic Branch

Date: 11/10/05

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
CDR, NOAA
Chief, Pacific Hydrographic Branch

Date: 17 Nov. 2005

