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
	H11249
	LOCALITY
State	Alaska
General Locality	Cook Inlet
	North Point Shoal to Knik Arm
	2004
	CHIEF OF PARTY Anne S. Dollard
DATE	LIBRARY & ARCHIVES
DAIL	

NOAA FORM 77-2 (11-72)		U.S. DEPARTMENT OF COMMERCE CAND ATMOSPHERIC ADMINISTRATION	REGISTER NO.
	HYDROGRAPHIC TI	TI E QUEET	
	TITEROORAL IIIO II	TEE OHEET	Н-11249
NSTRUCTIONS	The hydrographic sheet should be	e accompanied by this form,	FIELD NO.
filled in as com	pletely as possible, when the sheet	is forwarded to the office.	N/A
State	Alaska		
General Locality	y_Cook Inlet		
Sublocalit <u>y</u>	_North Point Shoal to Knik A	rm	
Scale	1:10,000	Date of Survey June 7 - Oct	ober 29, 2004
Instructions Dat	re 7/18/2003	Project No. OPR-P385-F	KR-04
Vessel	Luna Sea (COD 1021765), Se	eaDucer (AK0691P)	
Chief of Party	Anne S. Dollard		
Surveyed by	Terra Surveys, LLC		
	_		
Soundings taker	n 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 Designje	t 1050C
Verification by	G. Nelson		
Soundings in	Feet	at MLLW	
REMARKS:	Time in UTC Zone 5		
	Revisions and annotations a	ppearing as endnotes were	
	generated during office proc	ressing.	
	All seperates are filed with the	he hydrographic data	
		may be interrupted or non-seque	ential
	www.ms		

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

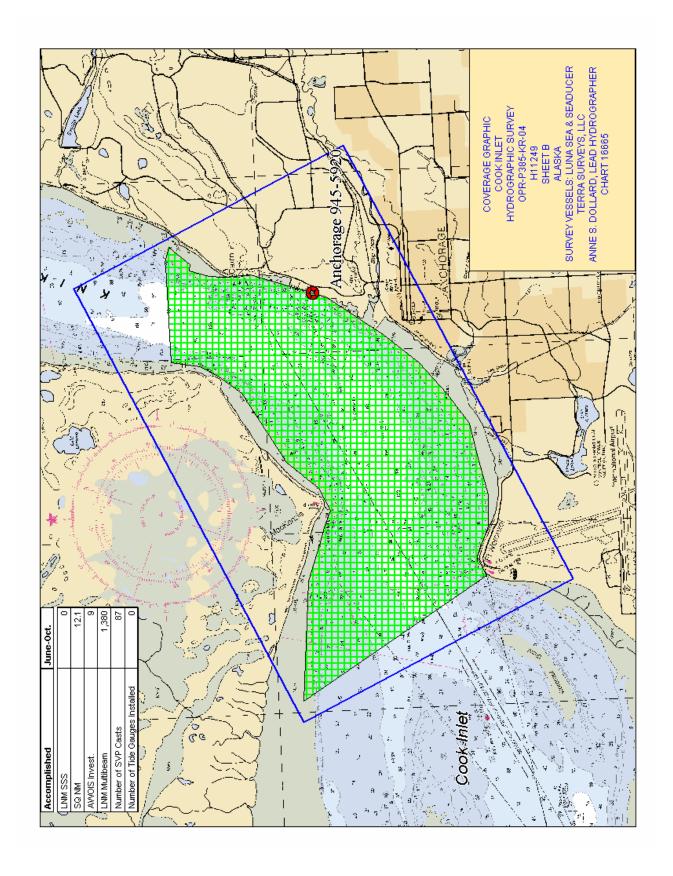
A. AREA SURVEYED

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 Luna Sea 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 SeaDucer 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

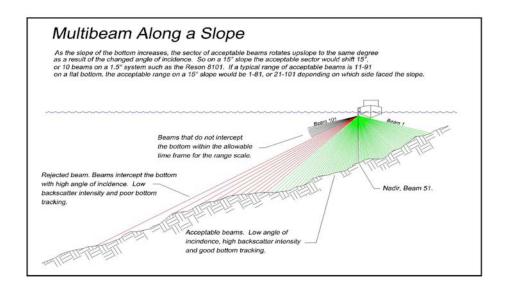
The internal consistency and integrity of the survey data was found to be good. All of the soundings that appear on the smooth sheet meet or exceed the accuracy requirements in the specifications. However, the dynamic characteristics of Cook Inlet prevail. The bottom will typically shift and change by 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."

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 <u>Data Acquisition and Processing Report</u>. 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 uphill 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.

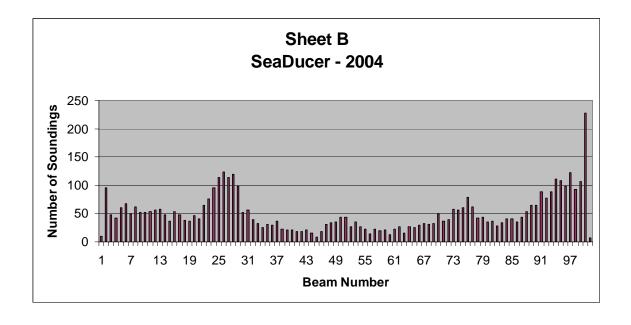
Reson 8101

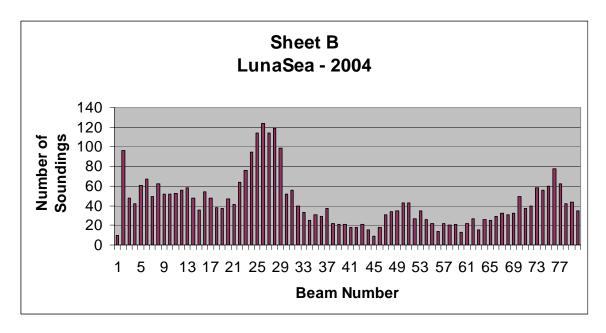
This system was responsible for all the shoal areas, and had depths ranging from 15 feet above datum to 182 feet. The majority of the swath widths were very narrow and every attempt to use as much of the data as possible was made. This was possible as data quality was generally good. The boat was most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

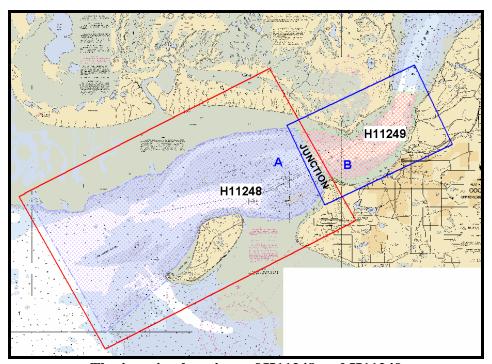




Contemporary Survey Junctions

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. 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" ⁷of 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. <u>The test values can be found in the Data Acquisition and Processing Report.</u>

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. 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 Report ¹³ 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. 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
						LNM 35/04, 17th
1	Add (2)	SOUND IN FT	13	N 61 15' 41.500"	W 149 54' 57.000"	Dist
2	V 44 (3)	SOUND IN FM	8	N 61 14' 40 700"	W 149 55' 48.600"	LNM 35/04, 17th Dist
	Add (2)	SOUND IN FINI	0	N 61 14' 49.700"	VV 149 55 46.600	LNM 35/04, 17th
3	Add (2)	SOUND IN FT	24	N 61 14' 35.900"	W 149 56' 09.000"	Dist
	Delete					LNM 35/04, 17th
3	(2)	SOUND IN FT	46	N 61 14' 35.200"	W 149 56' 10.100"	Dist
4	۷ ۲۲ (۵)	COLIND IN EM	_	N C4 441 0C 000"	W 440 FC! 22 400"	LNM 35/04, 17th
4	Add (2)	SOUND IN FM	2	N 61 14' 26.200"	W 149 56' 23.100"	Dist LNM 35/04, 17th
5	Add (2)	SOUND IN FT	29	N 61 14' 13.800"	W 149 56' 17.600"	Dist
						LNM 35/04, 17th
6	Add (2)	SOUND IN FM	8	N 61 14' 05.000"	W 149 56' 20.800"	Dist
6	Add (2)	SOUND IN FT	48	N 61 14' 05.000"	W 149 56' 20.800"	Not Yet Published
						LNM 35/04, 17th
7	Add (2)	SOUND IN FT	49	N 61 14' 00.000"	W 149 56' 53.500"	Dist
0	A .1.1	OOLIND IN ET	50	N 04 401 50 0001	M 4 40 571 40 000"	LNM 35/04, 17th
8	Add	SOUND IN FT	56	N 61 13' 58.900"	W 149 57' 13.800"	Dist
9	Add	SOUND IN FT	45	N 61 14' 16.200"	W 149 55' 45.000"	LNM 35/04, 17th Dist
9	Auu	300ND IN FT	45	11 01 14 10.200	VV 149 55 45.000	
10	Add (2)	SOUND IN FM	5	N 61 14' 24.400"	W 149 55' 42.000"	LNM 35/04, 17th Dist
- 10	7100 (2)	SOUND IN FM &		14 01 11 21:100	VV 110 00 12.000	LNM 35/04, 17th
11	Add (2)	FT	7 fm 3 ft	N 61 14' 37.500"	W 149 55' 33.700"	Dist
	Delete					LNM 35/04, 17th
12	(2)	SOUND IN FT	27	N 61 15' 43.500"	W 149 54' 54.300"	Dist
		DANGEROUS				LNM 32/04, 17th
13	Revise	WRECK	none	N 61 15' 00.000"	W 149 53' 12.000"	Dist
		DANGEROUS				LNM 31/04, 17th
14	Add (2)	WRECK	NONE	N 61 15' 00.000"	W 149 53' 12.000"	Dist
	Revise					LNM 38/04, 17th
15	(2)	OBSTRUCTION	Obstn	N 61 15' 00.000"	W 149 53' 12.000"	Dist
40	Delete	COLIND IN ET	00	NI C4 40! E7 000"	W 440 E7! 00 000"	LNM 35/04, 17th
16	(2)	SOUND IN FT	66	N 61 13' 57.600"	W 149 57' 06.800"	Dist
17	Delete (2)	SOUND IN FT	53	N 61 14' 11.300"	W 149 56' 11.300"	LNM 35/04, 17th Dist
17	(4)	SOUND IN F1	JJ	11 01 14 11.300	VV 148 JU 11.30U	LNM 35/04, 17th
18	Delete	SOUND IN FT	66	N 61 14' 07.400"	W 149 56' 24.500"	Dist
	20,000	333.13			11 110 00 211000	LNM 35/04, 17th
19	Delete	SOUND IN FT	63	N 61 14' 51.900"	W 149 55' 51.700"	Dist
		SUBMARINE	PT 1			
22	Add	CABLE	OF 7	N 61 14' 42.100"	W 150 01' 30.600"	Not Yet Published

Terra Surveys, LLC

ID#	Action	Item	Desc.	Lat.	Long.	LNM
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>	2004 Sounding Value (ft)	Latitude (N)	Longitude (W)
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>	2004 Sounding Value (ft)	Latitude (N)	Longitude (W)
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

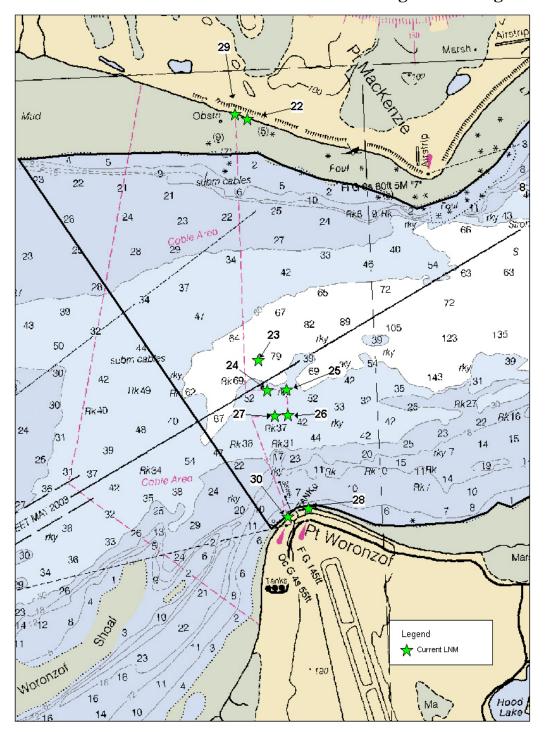


Chart 16665 8th Ed. with LNM and DTON Positions

Issued Notice to Mariners and Submitted Dangers to Navigation

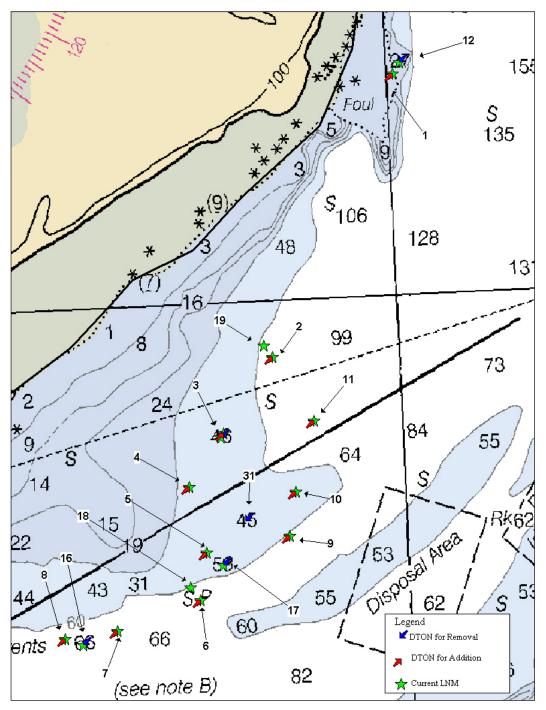


Chart 16665 8th Ed. with LNM and DTON Positions

Issued Notice to Mariners and Submitted Dangers to Navigation

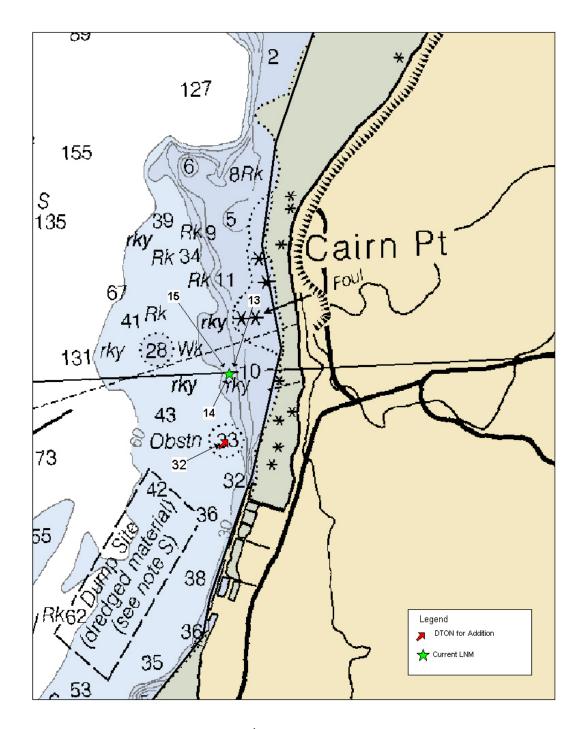


Chart 16665 8th Ed. with LNM and DTON Positions

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. 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 rastor inset image as of this date. See Appendice I for the submitted DTON reports.

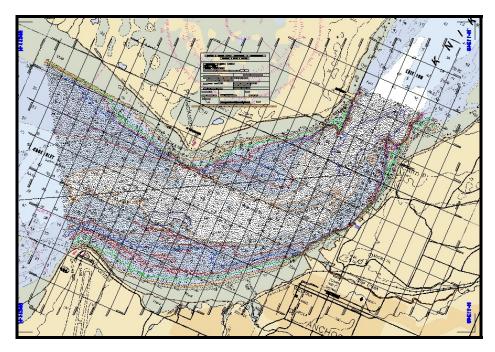
18

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	7th	Jan. 2004
16665	1:20,000	8th	Dec. 03

Chart 16665

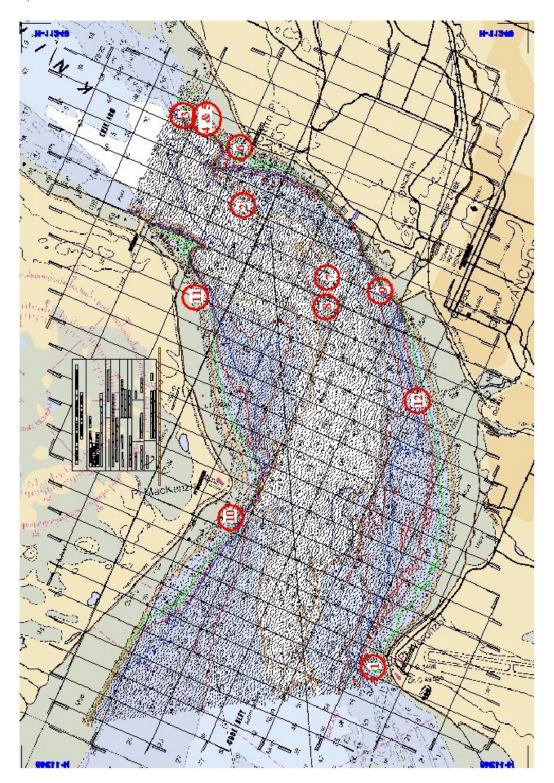
While this survey generally agreed well with the charts, the dynamic characteristics of Cook Inlet prevail. The corrections submitted by the Local Notice to Mariners Reports agree with many of the corrections recommended as a result of this survey.¹⁷



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

New Rocks Vicinity Chart

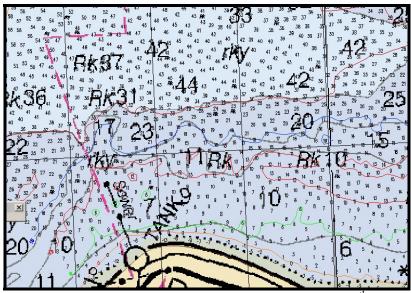
Twelve new rocks or rocky areas are numbered and circled in the chartlet (Chart 16665 8th Ed) below.



New Rocks

Figure D1.1

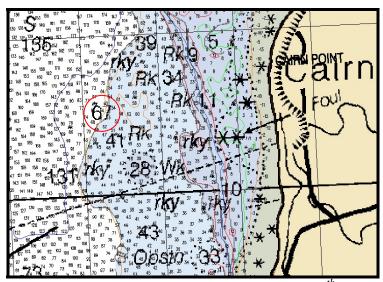
The rock field north of Point Woronzoff has some additional rocks and is represented by the "rky" and "Rk" symbols. The hydrographer recommends retaining the symbols as charted in this area.¹⁸



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

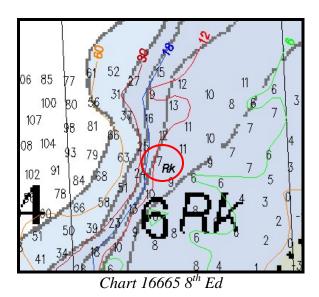
Figure D.1.2

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.

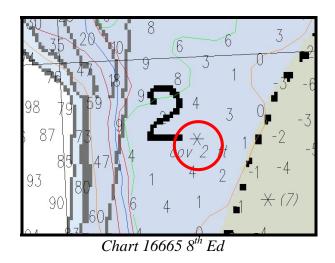
			Hydrographer's
		Depth feet	Recommnedation
Latitude N	Longitude W	MLLW	Next Chart Edition
61°16'09.20"	149°52'47.56"	7.06	Add Rk 20



New Rock Figure D.1.4

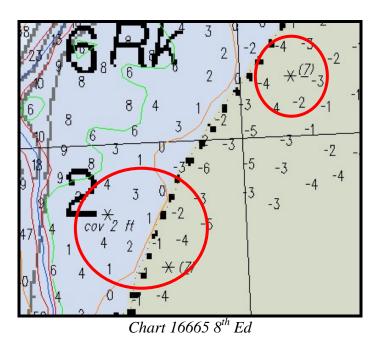
			Hydrographer's
		Depth feet	Recommnedation
Latitude N	Longitude W	MLLW	Next Chart Edition
61°15'56.00"	149°52'46.43"	2.28	$Add + {21 \over 2}$

.



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



Additional Foul Area Figure D.1.6

Latitude N	Longitude W	Depth Feet
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

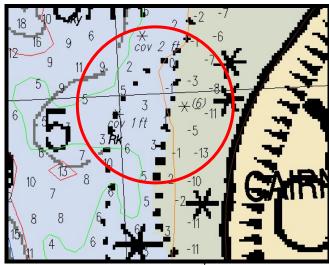
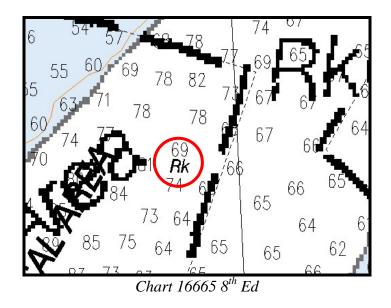


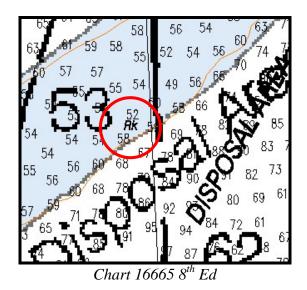
Chart 16665 8th Ed

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

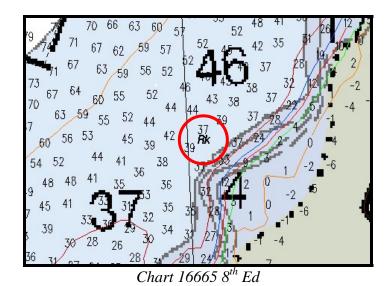


New Rock Figure D.1.8

			Hydrographer's
		Depth feet	Recommnedation
Latitude N	Longitude W	MLLW	Next Chart Edition
61°14'11 35"	149°55'02 39"	52 61	Add Rk^{27}

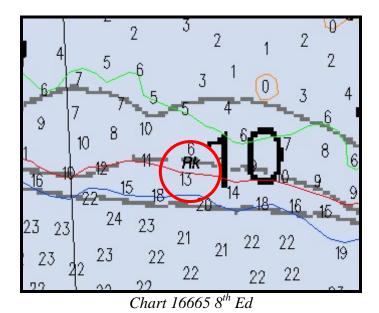


_			Hydrographer's
		Depth feet	Recommnedation
Latitude N	Longitude W	MLLW	Next Chart Edition
61°13'44.924"	149°54'27.738"	37.43	Add Rk ²⁸

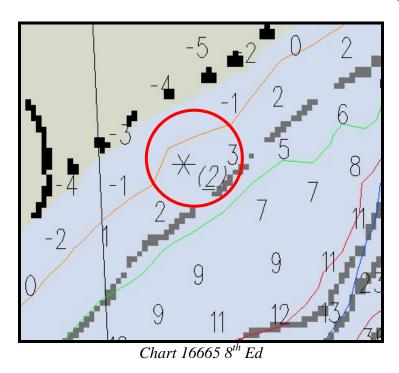


New Rock Figure D.1.10

			Hydrographer's
		Depth feet	Recommnedation
Latitude N	Longitude W	MLLW	Next Chart Edition
61°14′10 909"	150°00'47 8"	6.13	Add Rk ²⁹



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



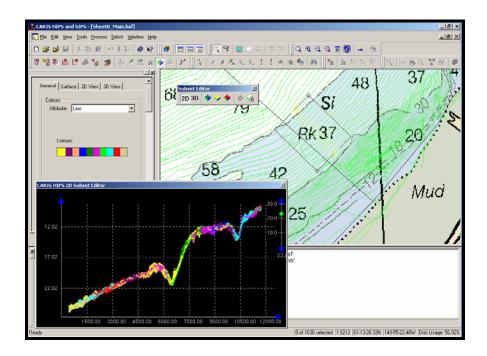
Latitude N	Longitude W	Depth feet MLLW	Hydrographer's Recommnedation Next Chart Edition
61°12'54.39"	149°56'26.77" 26 26 27 27 23 24 24 23 24 21 21 22 20 19 14 14 3 14 14 3 17 16 16 Chart 16	14.17 27 29 27 28 28 24 23 21 21 21 21 21 21 21 21 21 21 21 21 21	Add Rk and 2004 Soundings 31
	Chart 10	.005 0 Lu	

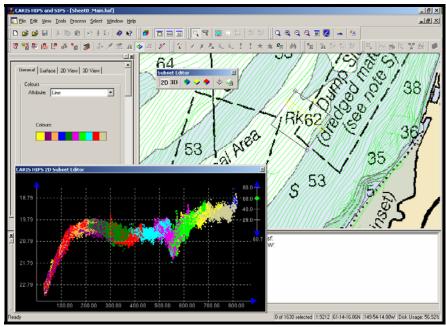
Nearshore Rocks

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

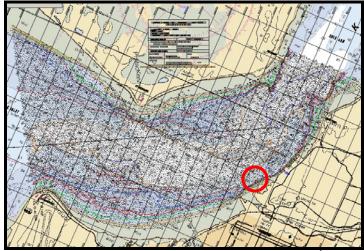
There were two charted rocks not found in this survey. The hydrographer recommends their removal from the next chart edition.³³ The following pages contain positions and location maps of charted rocks. Below are screen shots from CARIS subset editor. Data for these lines can be located in the session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



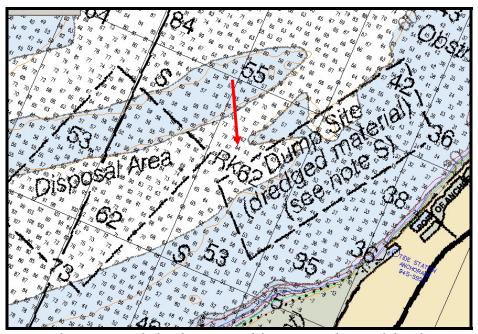


CARIS Subset editor screen captures of disproved rocks

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

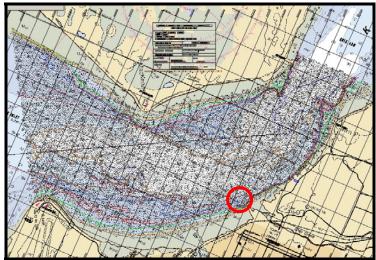


Location of Disproved Rock on Chart 16665 8th Ed.

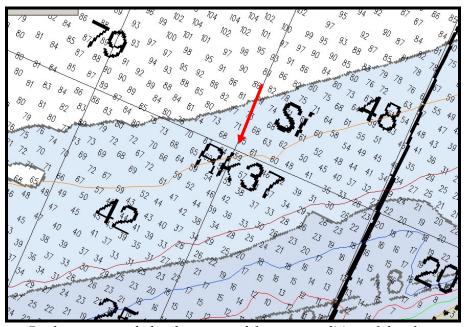


Rock recommended to be removed from next edition of the chart

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.

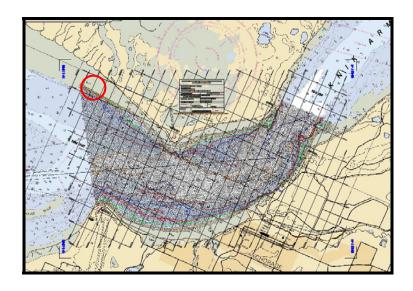


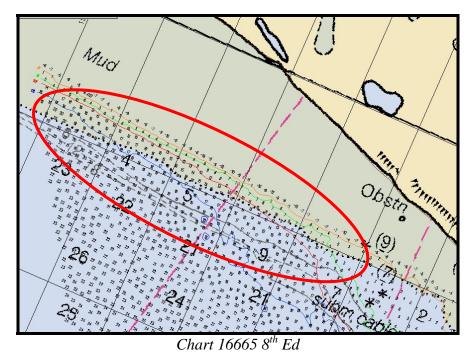
Rock recommended to be removed from next edition of the chart

Trends and Changeable Areas

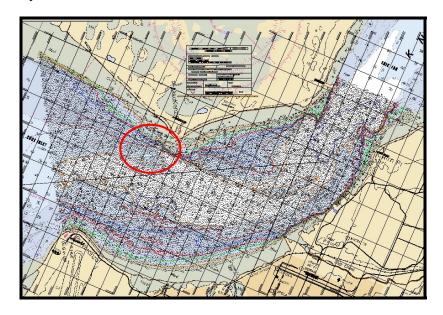
There are significant changes to the contours due to the soft bottom type and powerful tides and currents in Cook Inlet. The following pages highlight the interested area and notes applicable comments.

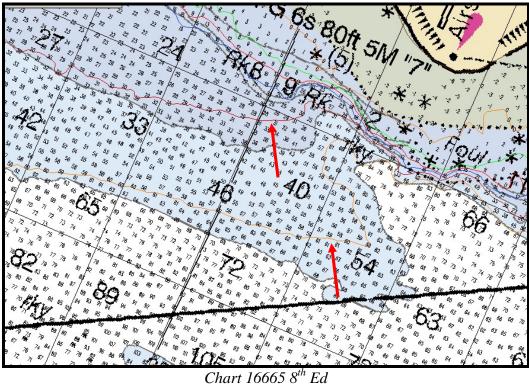
The area below is deepening along the charted zero contour by as much as 20 feet. The hydrographer recommends this area be labeled "Changeable Area" on the next chart edition.³⁴



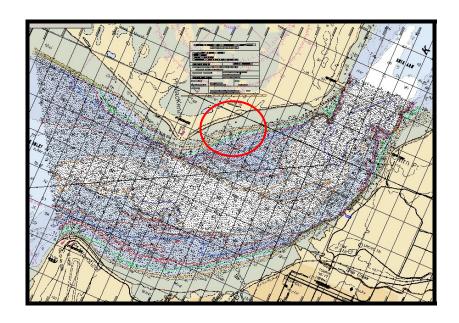


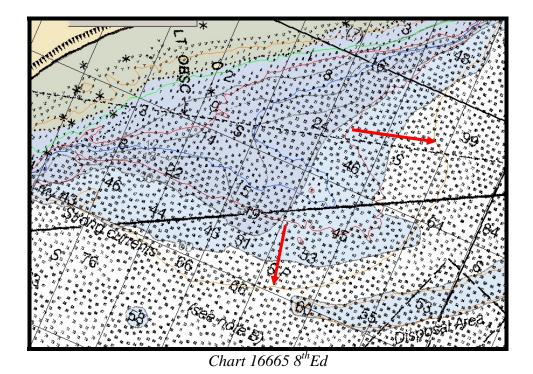
The area below contains a 30-foot and 60-foot contour that is receding by as much as 300 meters. The hydrographer recommends the next edition of the chart use the contours from the 2004 survey.³⁵



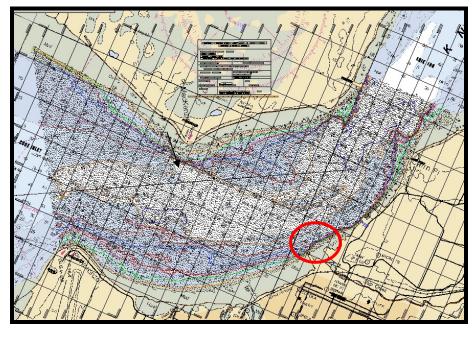


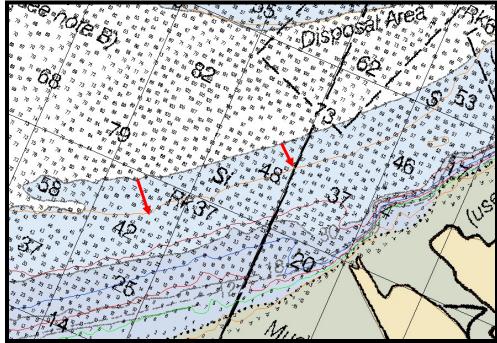
The area below contains a 30-foot and 60-foot contour that is advancing seaward by as much as 500 meters. The hydrographer recommends the next edition of the chart use the contours from the $2004 \, \text{survey.}^{36}$



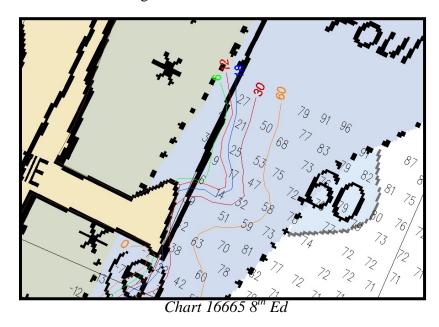


The area below contains a 60-foot contour that is receding by as much as 200 meters. The hydrographer recommends the next edition of the chart use the contours from the 2004 survey.³⁷





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



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

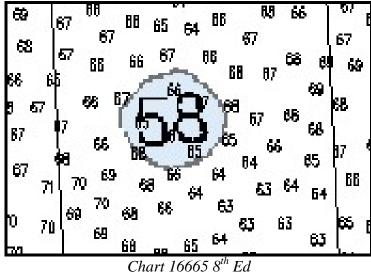


Chart 16660

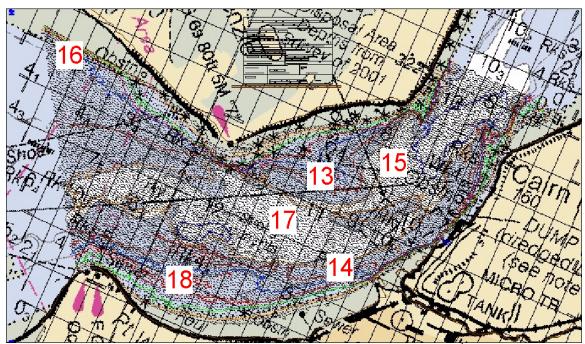


Chart with 2004 soundings overlaid on Chart 16660 29th Ed

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

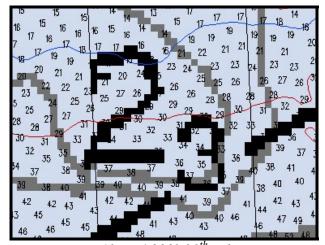


Chart 16660 29th Ed

Figure D.1.14
There was no rock found at this location. Refer to the Chart 16665 comparison for location and disproval information.⁴²

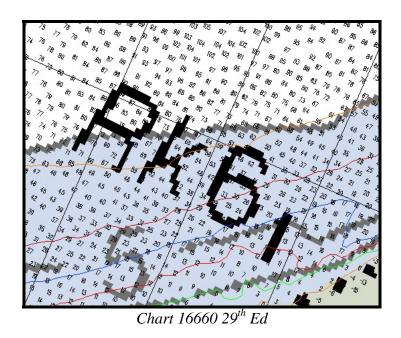


Figure D.1.15
The charted 16 fathom (96 feet) sounding has 2004 soundings as shoal as 61 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings.⁴³

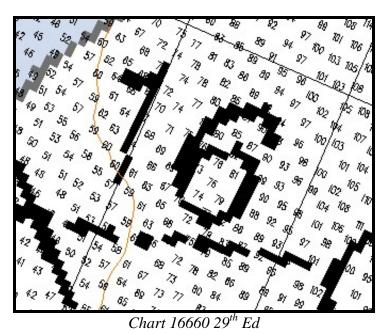


Figure D.1.16

The 0_4 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

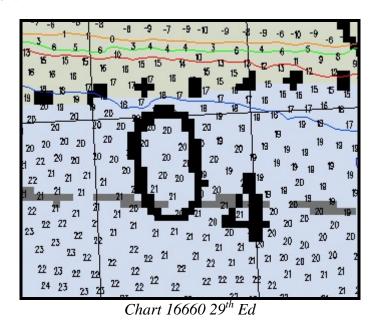


Figure D.1.17 The 9_4 fathom (54.4 feet) sounding has 2004 soundings as deep as 68 feet in the same location. The hydrographer recommends updating the next chart edition with the 2004 soundings and removing the 10-fathom contour. 45

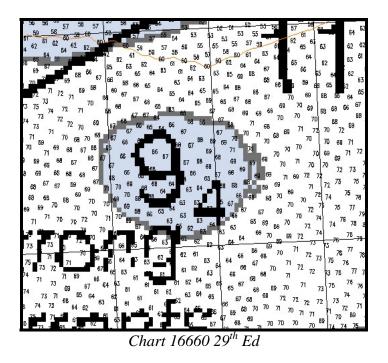


Figure D.1.18
New Rock

			Hydrographer's
		Depth feet	Recommnedation
Latitude N	Longitude W	MLLW	Next Chart Edition
61°12'32.28"	149°59'01.51"	10.70	Add Rk^{46}

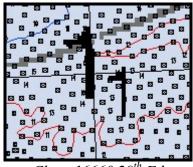
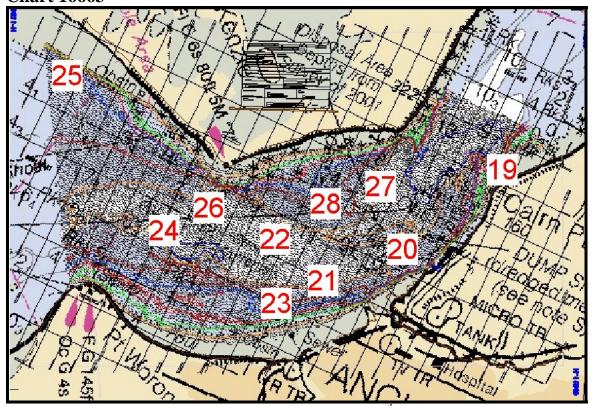


Chart 16660 29th Ed

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.

New Rock

Figure D.1.19

			Hydrographer's
			Recommnedation
Latitude	Longitude	Depth Feet	Next Chart Edition
61°15'56.00"	149°52'46.44"	2.28	Add + 48

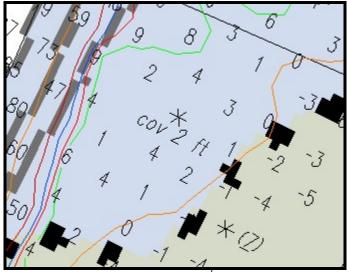
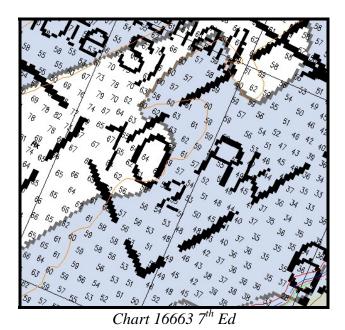


Chart 16663 7th Ed

Rock Disproval

Figure D.1.20

There was no rock found at this location. Refer to the Chart 16665 comparison for location and disproval information.⁴⁹

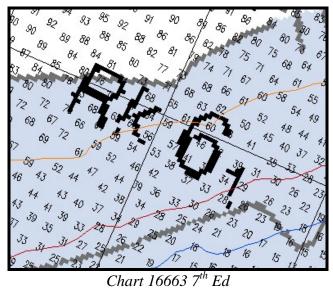


42

Rock Disproval

Figure D.1.21

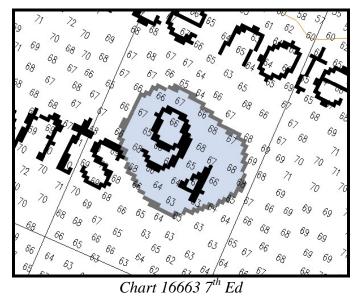
There was no rock found at this location. Refer to the Chart 16665 comparison for location and disproval information.⁵⁰



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

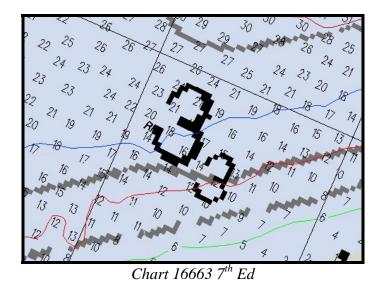


2...... 19992 / 20.

New Sounding Value

Figure D.1.23

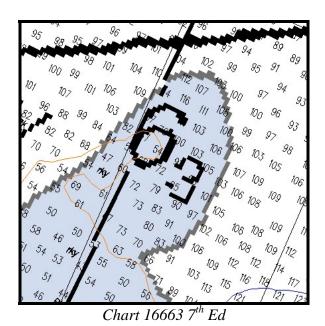
			Hydrographer's
			Recommnedation
Latitude	Longitude	Depth Fthms	Next Chart Edition
61°12'5.39"	149°56'26.77"	2_4	Add Rk^{52}



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



Changeable Area

Figure D.1.25

The 0_4 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

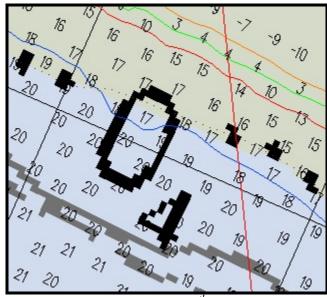


Chart 16663 7th Ed

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

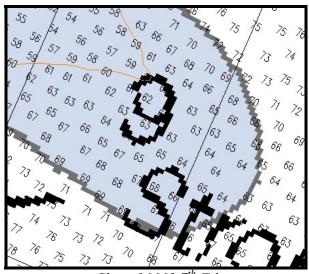
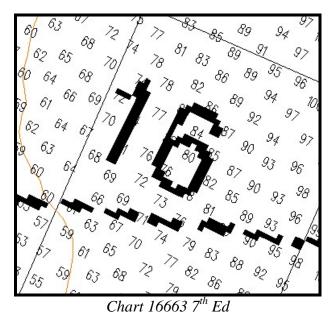


Chart 16663 7th Ed

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



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

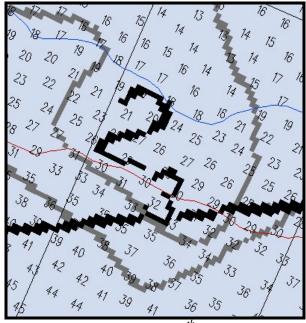


Chart 16663 7th Ed

AWOIS Items Summary

This contract required investigation of nine AWOIS items, three 58 of which required full investigation. The table below is a summary of the items and their results. Refer to Appendice IV 59 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.
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.
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 dumpstite in the multibeam data. 70

Wrecks and Obstructions from Miscellaneous Sources

Discovery of "Pill box" Barge wreck

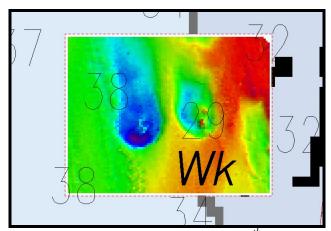
The Local Notice to Mariner ID #13 was submitted by Terra Surveys, LLC, and the USACE outside the scope of this contract, while surveying for the Port of Anchorage. A sunken barge or "pill box" was discovered and moved by dredgers. The area was first surveyed as contracted for NOAA on DN 165. The area 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

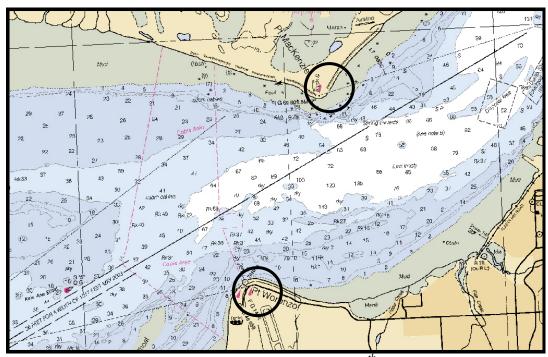
D2. Additional Results

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. Refer to Section D.1 of this report for the new positions.

Aids to Navigation

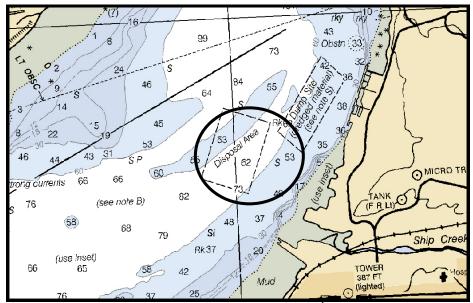
All the aids to navigation in this survey appear as charted, match the Light List and chart characteristics and serve their intended purpose.⁷⁴



Aids to Navigation Chart16665 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 contributes 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 $\underline{\text{August } 2004.}^{76}$



Port MacKenzie deep draft dock construction in the winter



Asbuilt of deep draft dock addition to Port MacKenzie

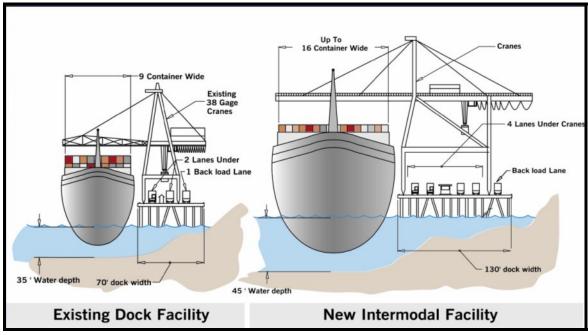
Planned construction

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.



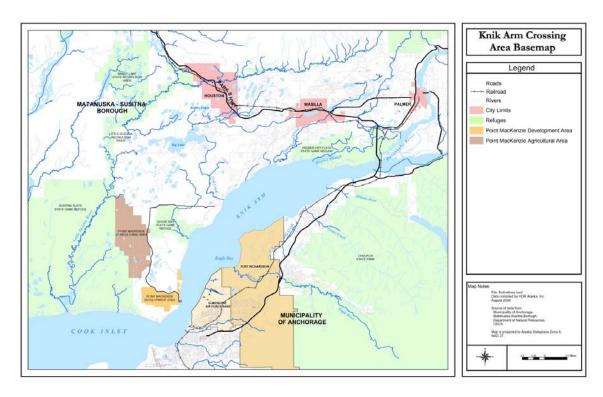
Aerial Overview of POA Intermodal Expansion Project



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, 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
Strike "three" insert one.
59 Strike "Appendice 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.
Concur with Clariffcation. Actain as Charlet.

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: State: Alaska Locality: Cook Inlet Sub-locality: North Point

Shoal to Knik Arm

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:

<u>Feature</u>	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

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>	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:

<u>Feature</u>	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

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>	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:

<u>Feature</u>	Depth(ft)	Latitude (N)	Longitude (W)	
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.

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)	
---------	-----------	--------------	---------------	--

COMMENTS: During office review of H11249 the following soundings from 16665 (inset) are recommended for removal. Significant shoaling has occurred in this area

Feature	Depth (ft)	Latitude (N)	Longitude (W)	
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	



Commander Seventeenth Coast Guard District Staff Symbol: (o) Phone: (907) 463-2243 Fax: (907) 463-2256

16670 17 Sep 2004

MEMORANDUM

From: D. T. Glenn, CAPT

CGD SEVENTEEN (o)

Reply to

Attn of:

(oan) 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 I	No:	OPR-P385-KR-04 C	ook Inlet, Alaska		
NOAA Contract No: 50-DGNC-0-90003					
The NOS Anch	orage, AK tide statio	n (945-5920) and Nikisl	ri (956-5760) served as c	ontrol for the sul	bordinate
stations on this	project. Datum dete	rminations were made f	or the tertiary subordinate	e stations: Fire Is	sland (945-
5912). The NTI	DE 1983-2001 was u	tilized.			And and an analysis of the second
Location and	Name:	Lat (NAD83)	Long(NAD83)	Time Me	eridian:
Time Meridian	Fire Island	N 61° 10' 20.8"	W 150° 12' 19.3"	0° (U	TC)
Time Period	Name:	Established:	Removed:	MLLW	MHW
and Datum	Fire Island	6/11/2004	11/6/2004	1.122 M	9.159
Reference	and the second s				
Tide Observer	Terra Surveys, LLC				
0.000. VOI	1930 South Whiting				
	Palmer, Alaska 996				
	(907) 745-7215	• 5			
Gauges		s. H350XL/355 bubbler	svstems.		
Install Type				rtically to a wood	den brace
	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.				
nac otan	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:				
Delicii wang	none				
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	This survey was tide corrected using a combination of a dual gauge distance weighted interpolation				
Zoning			swald and Associates in 2		
Reduction of			applied with verified Ancl		20) tides afte
Hydrographic	the final extraction f				
Data	FILE CONTROL OF THE SECOND SEC				

Abstract of Times of Hydrography for Smooth Tides

Project: OPR-P385-KR-04 Registry No.: H-11249

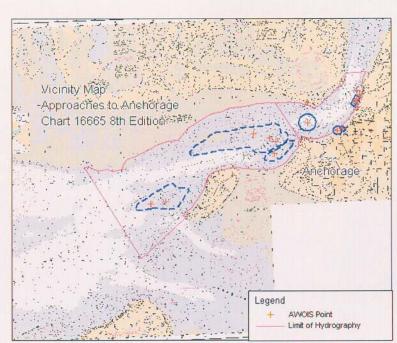
Sheet: B Inclusive Dates: June 13, – Oct. 28, 2004

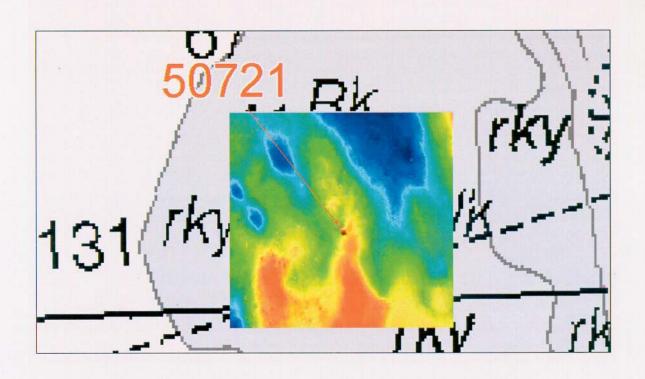
START		END	
Day (Julian)	Time (UTC)	Day (Julian)	Time (UTC)
159	22:25	159	23:03
160	18:47	161	02:19
162	00:21	162	02:07
162	17:07	163	01:23
163	16:09	164	01:39
164	17:27	165	00:32
165	19:15	166	01:11
166	15:56	167	01:42
167	15:56	168	01:49
207	23:53	208	02:16
227	01:06	227	01:50
240	20:15	240	20:20
262	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

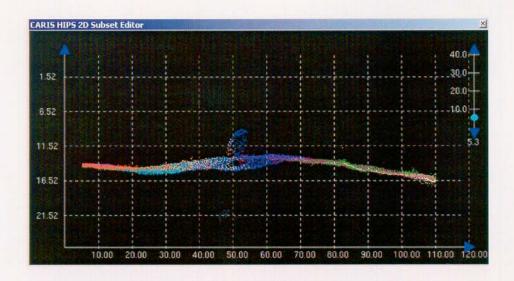
START		END	
Time (UTC)	Day (Julian)	Time (UTC)	
17:34	293	01:59	
17:08	294	02:07	
19:25	295	01:54	
17:00	295	19:36	
19:31	302	02:49	
	Time (UTC) 17:34 17:08 19:25 17:00	Time (UTC) Day (Julian) 17:34 293 17:08 294 19:25 295 17:00 295	

RECRD	50721 VESSLTERMS UNKNOWN CHART 16665 AREA P
	CARTOCODE 0100 SNDINGCODE 127 DEPTH 28
Christian American September 1997	
NATIVLAT	61/15/04.18 NATIVLON 149/53/39.04 convert NATIVDATUM 31
LAT83	61/15/04.18 LONG83 149/53/39.04 Update GP GPQUALITY High
	61 15 4.35 149 53 39.41 GPSOURCE Direct
LATDEC	61.251208333333 LONDEC 149.89428055556
PROJECT	OPR-P385-04 ITEMSTATUS Completed SEARCHTYPE Information
RADIUS	50 INIT MBH ASSIGNED 1/19/2001
TECNIQ	MB,ES,S2,SD
Techniquote	
History	H10012/82OPR-P358-RA-82; SUBMERGED WRECK IDENTIFIED BY HYDROGRAPHER ON FATHOGRAM. NO OTHER DOCUMENTATION IN SURVEY RECORDS DISCUSS THIS ECHO SOUNDER DEVELOPMENT. WRECK DISCUSSED IN EVALUATOR'S REPORT. ESTIMATED DEPTH 29FT. MLLW IN LAT.61-15-06.08N, LONG.149-53-31.22W(NAD27). H10430/92OPR-P319-RA; FEATURE LOCATED BY ES AND SS, POSITION ì□GIVEN IN LAT 61-15-04.25N, LONG 149-53-38.80W(NAD83). DIVE NOT ì□ACCOMPLISHED, POSITIVE IDENTIFICATION NOT DETERMINED, ECHO ì□SOUNDER DEPTH 8.9M(29FT) AT MLLW. (UPDATED 1/94 RWD) H11031/01OPR-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)
Fieldnote	H11249/04OPR-P385-KR-04; The area was covered by full coverage multibeam. The wreck was found in Lat. 61/15/04.18N, Long. 149/53/39.04W (NAD83) with a least depth of 28 feet MLLW. Evaluators Comment: Concur
Proprietary	
	YEARSUNK NIMANUM SYSTEMNUM 9412 Print Record

N







AWOIS Item 50721 as seen in CARIS subset editor

RECRD	51900 VESSLTERMS OBSTRUCTION CHART 16665 AREA P
	CARTOCODE 0067 SNDINGCODE DEPTH 0
NATIVLAT	61/12/42.00 NATIVLON 149/55/49.00 convert NATIVDATUM 31
LAT83	61/12/42.00 LONG83 149/55/49.00 Upcate GP GPQUALITY Med 61 12 42 149 55 49 GPSOURCE Direct
LATDEC	61 12 42 149 55 49 GPSOURCE Direct 61.211666666667 LONDEC 149.93027777778
PROJECT	OPR-P385-04 ITEMSTATUS Unassigned SEARCHTYPE Information
RADIUS	INIT RWD ASSIGNED 2/7/1991
TECNIQ	VS,ES,DI
Techniqnot	DETERMINE POSITION AND ELEVATION AT TERMINUS, SEARCH 200M IDWIDTH THE ENTIRE LENGTH.
History	CL1194/58COE PERMIT; SEWER(PA) TERMINUS SCALED FROM CHART IN 1 LAT 61-12-42N LONG 149-55-49W(NAD 83). THE PIPE AS SCALED FROM 1 THE SOURCE DOCUMENT APPEARS TO EXTEND APPROX 525YDS FROM THE HWL, 1 WHICH FALLS WELL ABOVE THE MLLW LINE. THE CROSS SECTION SHOWS 1 THE PIPE LYING ON THE BOTTOM, COVERED WITH AND EIGHT FOOT HIGH BY 1 TWENTY-TWO FOOT WIDE GRAVEL AND BOULDER BERM. IN REPLY: COE FILE 1 OO. 800.6(COOK INLET, ALASKA) 24(9 MAY 1956). T12016(2)/73-74-SEWER NOT SHOWN ON THE 1973 LW PHOTOGRAPHY OF 1 THIS MAP. (ENTERED 2/91 RWD) H10430/92-OPR-P319-RA; SEWERLINE VIS AT LW, ES 5M LINESPACING 1 FAILED TO LOCATE OFFSHORE END OF SEWERLINE, RETAIN AS CHARTED. 1 (UPDATED 1/94 RWD)
Fieldnote	H11249/04OPR-P385-04: Outside of the limits of hydrography. Visual Inspection of the shoreline produced no detection of the item. Evaluators Comment: Retain as charted.
Proprietary	·
	YEARSUNK NIMANUM SYSTEMNUM 10167 Print Record

•								
RECRD	52651 VESSLTERMS OBS CARTOCODE 067	2027	CHART 16665 .	AREA DEPTH	P TYPO Madahana			,
NATIVLAT	61/12/34.20 NATIVLO	N 149/56/24.60	convert	NATIVDATUM	[31]	,	•	
LAT83	61/12/34.20 LONG83	149/56/24.60 149 56 24.6		GPQUALITY GPSOURCE	Low			
LATDEC	61.2095 LONDEC	149.94016666667			OF CALL PARKET IN IT CONTRACTORS AND STOCKED STATES OF THE			
PROJECT	OPR-P385-04 ITE	MSTATUS Unassigned	SE/	ARCHTYPE In	formation	1		
RADIUS	500 INIT	MBH NOTO THE PROPERTY OF THE P	AS	SIGNED	1/19/2001			
TECNIQ Techniqnot	VS,BD,DI,SD		ana amangan na mara y kaka kilik kan na nanga wagan kan ka ka ka nana wan ka ka ka na ka na ka na ka na ka na	WAN AND				
History	UNDERTIMINED SOURCE FIRST A 16664. SUBSEQUENTLY APPEARS A FOR CHART 16664 IS NOT AVAILABL (ENTERED 1/01 BY MBH)	S AN OBSTRUCTION ON T	「HF MAY 19७७ だいけん	DM OF 16664 TH	JE OUADT DIOTORY			
Fieldnote	H11249/04OPR-P385-KR-04: Item is the item was there. Full investigation re	outside the area of hydrogra commended for disproval.	phy. Visual inspection	of the shoreline	could not determine if			•
	Evaluators Comment: Retain as charter	d.	constitution of the state of th			The management of the state of		
Proprietary					~~~~~;#IIA@@@@@@@@@##########################	et		
	YEARSUNK NIMA	NUM L	SYSTEMNUM	12588	Print Record			
					-	·		

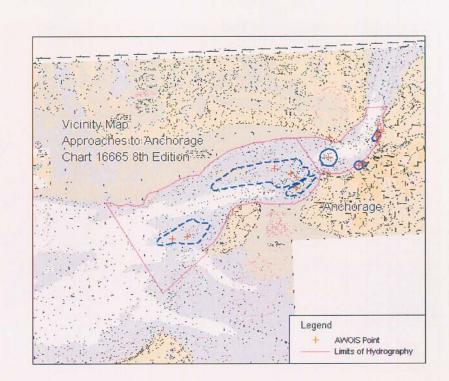
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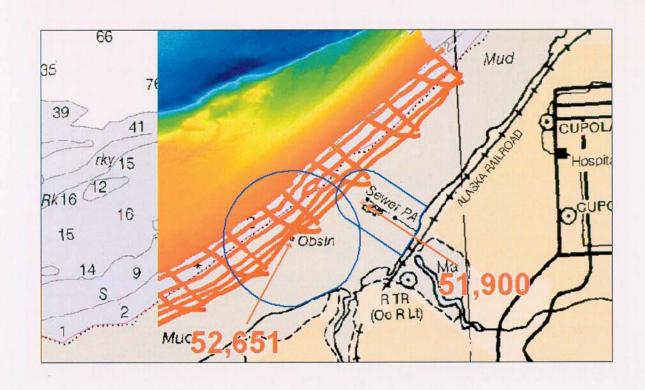
V

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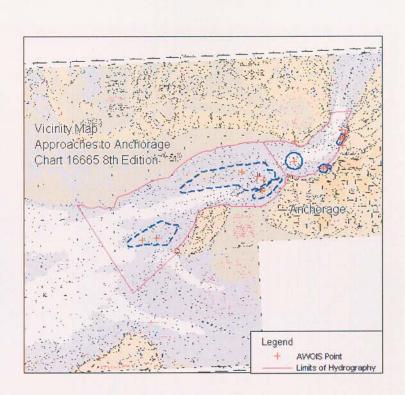
Historical and 2004 AWOIS Positions

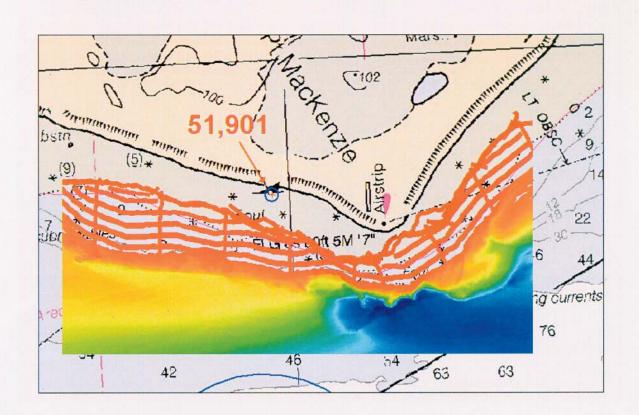
H-11249 Sheet B





RECRD	51901 VESSLTERMS UNKNOWN CHART 16665 AREA P	
	CARTOCODE 0098 SNDINGCODE DEPTH 0	
NATIVLAT	61/14/26.72 NATIVLON 150/00/09.11 convert NATIVDATUM 31	
LAT83	61/14/26.72 LONG83 150/00/09.11 Update GP GPQUALITY High	
80.4-1-T-1.00099	61 14 26.72 150 0 9.11 GPSOURCE Direct	
LATDEC	61.24075555556 LONDEC 150.00253055556	
PROJECT	OPR-P385-04 ITEMSTATUS Completed SEARCHTYPE Information	
RADIUS	50 INIT RWD ASSIGNED 2/12/1991	
TECNIQ	VS,SD	
Techniqnot	e e	
History	H9441/74OPR-469;BARGE(VISIBLE) APPROX 10X55M, OFFSHORE i⊡POSITION SCALED FROM SURVEY IN LAT 61-14-29N, LONG 150-00-01W(NAD i□27). BARGE IS N-S ORIENTED. (ENTERED 2/91 RWD) H10431/92OPR-P319; WK (BARES 1.1M AT MHW), POSITION GIVEN IN LAT i□61-14-26.72N, LONG 150-00-09.11W(NAD83). (UPDATED 10/93 RWD)	
Fieldnote	H11249/04OPR-P385-04: Outside the limits of hydrography. Visual Inspection of the Shoreline found the item appears as charted. Recommend the item be retained as charted.	
	Evaluators Comment: Concur	
Proprietary	and the state of t	
	YEARSUNK NIMANUM SYSTEMNUM 10168 Print Record	

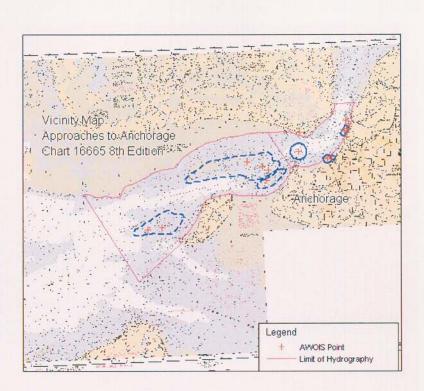


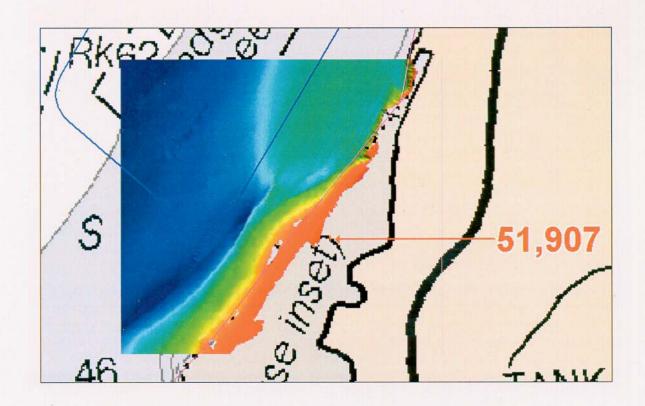




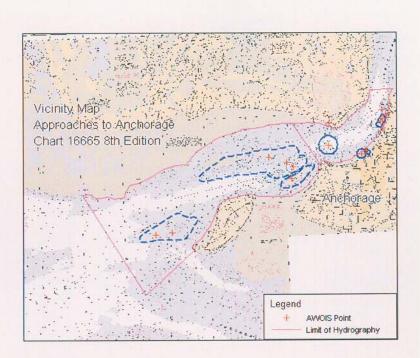
AWOIS 51901, looking North

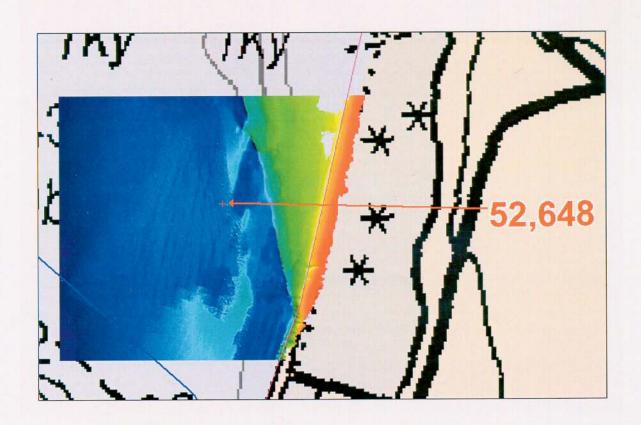
RECRD	51907 VESSLTERMS UNKNOWN CHART 16665 AREA P CARTOCODE 0098 SNDINGCODE DEPTH 0
NATIVLAT	61/14/00.26 NATIVLON 149/53/40.99 convert NATIVDATUM 31
LAT83	61/14/00.26 LONG83 149/53/40.99 Update GP GPQUALITY High 61 14 0.26 149 53 40.99 GPSOURCE Direct
LATDEC	61.233405555556 LONDEC 149.89471944444
PROJECT	OPR-P385-04 ITEMSTATUS Completed SEARCHTYPE Information
RADIUS	INIT RWD ASSIGNED 2/12/1991
TECNIQ	VS,DI,SD
Techniqnot	VERIFY NAME, EXISTENCE, AND/OR CONDITION. POSITION NOT REQUIRED UNLESS OBVIOUSLY RELOCATED IS CHARTING SYMBOLIZATION ACCURATE?
History	HISTORY H9438/74OPR-469 WRECK(VISIBLE) APPROX 17X100M LONG, STERN POSITION SCALED FROM SURVEY IN LAT 61-13-59.2N, LONG i□149-53-30W(NAD 27). VESSEL ORIENTED N-S. (ENTERED 2/91 RWD). H10430/92OPR-P319; VIS WK LOCATED, POSITION GIVEN IN LAT 61-14-00.26N, LONG 143-53-40.99W(NAD83). (UPDATED 1/94 RWD) H11031/01OPR-P385-KR; ITEM NOT INVESTIGATED; OUTSIDE AREA OF HYDROGRAPHY. (UPDATED 7/03 BY MBH)
Fieldnote	H11249/04OPR-P385-KR-04: Outside of the limits of hydrography. Visual inspection of the shoreline found the item appears as charted. Recommend the item be retained as charted.
	Evaluators Comment: Concur.
Proprietary	
	YEARSUNK NIMANUM SYSTEMNUM 10172 Print Record





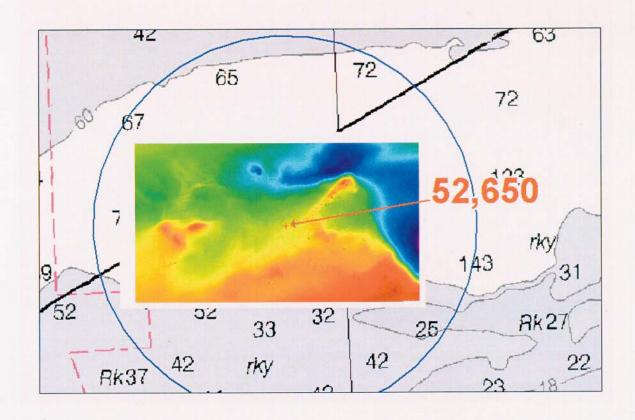
RECRD	52648 VESSLTERMS OBSTRUCTION CHART 16665 AREA P CARTOCODE 067 SNDINGCODE 127 DEPTH 33
NATIVLAT	61/14/47.64 NATIVLON 149/53/14.51 convert NATIVDATUM 31
LAT83	61/14/47.64 LONG83 149/53/14.51 Update GP GPQUALITY High
LATDEC	61 14 47.64 149 53 14.51 GPSOURCE Direct 61.246566666667 LONDEC 149.88736388889
PROJECT	OPR-P385-04 ITEMSTATUS Completed SEARCHTYPE Information
RADIUS	100 INIT MBH ASSIGNED 1/19/2001
TECNIQ	MB,S2,ES
Techniqnot	e .
History	H10430/92OPR-P319-RA; INVESTIGATED AS AWOIS ITEM 51912 AND LOCATED THE OBSTRUCTION IN LAT. 61/14/47.71N, LONG. 149/53/15.03W (NAD83) WITH A LEAST DEPTH OF 33 FEET (MLLW). ECHOSOUNDER SEARCH USING 5-METER LINE SPACING AND 200% SIDE SCAN SONAR SEARCH WAS USED FOR THIS INVESTIGATION. THE AWOIS 51912 WAS PURGED FROM THE SYSTEM ON 2/2/94. THIS ITEM ORIGINATED WITH CL433/92 WHICH REPORTED THIS OBSTRUCTION TO BE A 30 X 40-FOOT CONCRETE SLAB EITH REBAR. (ENTERED 1/01 BY MBH) H11031/01OPR-P385-KR; THE AREA WAS COVERED BY FULL COVERAGE MULTIBEAM. THE OBSTRUCTION WAS FOUND IN LAT. 61/14/47.64N, LONG. 149/53/14.51W (NAD83) WITH A LEAST DEPTH OF 33 FEET MLLW. THE WRECK WAS NOT DIVER INVESTIGATED. (UPDATED 7/03 BY MBH)
Fieldnote	H11249/04 OPR-P385-KR-04: The area was covered by full multibeam coverage. No distinct item was found. There is a 30 foot shoal sounding at 61/14/48.0N, 149/53/13.8W Evaluators Comment: Possible silting in the area. Recommend charting a 30 foot Obstruction at 61/14/48.0N, 149/53/13.8N.
Proprietary	
	YEARSUNK NIMANUM SYSTEMNUM 12585 Print Record





RECRD	52650 VESSLTERMS ROCKS CHART 16665 AREA P CARTOCODE 104 SNDINGCODE DEPTH
NATIVLAT	61/13/10.00 NATIVLON 150/00/20.00 convert NATIVDATUM 31
LAT83	61/13/10.00 LONG83 150/00/20.00 Update GP GPQUALITY High
LATDEC	61 13 10 150 0 20 GPSOURCE Scaled 61.219444444444 LONDEC 150.00555555556
PROJECT	OPR-P385-04 ITEMSTATUS Completed SEARCHTYPE Information
RADIUS TECNIQ	1000 INIT MBH ASSIGNED 1/19/2001 S2,MB,ES
Techniquote	Jacob and the state of the stat
History	H10431/92OPR-P319-RA; THE FOLLOWING CHARTED ROCKS ORIGINATE WITH THIS SURVEY. THE LISTED DEPTHS (IN FEET) AND POSITIONS WERE TAKEN DIRECTLY FROM CHART 16665: 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) 34RK IN LAT. 61/12/58.0N, LONG. 149/59/47.8W (NAD83) THE AWOIS POSITION IS THE GENERAL CENTER OF THIS GROUP OF ROCKS. (ENTERED 1/01 BY MBH) H11030/01OPR-P385-KR; THE AREA WAS SURVEYED BY FULL COVERAGE MULTIBEAM. A LARGE NUMBER OF ROCKS EXIST IN THE AREA. THEY RANGE IN DEPTH FROM 33-91 FEET MLLW. THE AREA IS RECOMMENDED TO BE CHARTED AS SHOWN ON THE SMOOTH SHEET. (UPDATED 7/03 BY MBH)
	H11249/04OPRP385-KR-04: The area was covered with full multibeam coverage. Rocks found. Recommend retain as charted.
	Evaluators Comment: Chart as shown on the smooth sheet.
Proprietary	YEARSUNK NIMANUM SYSTEMNUM 12587 Print Record



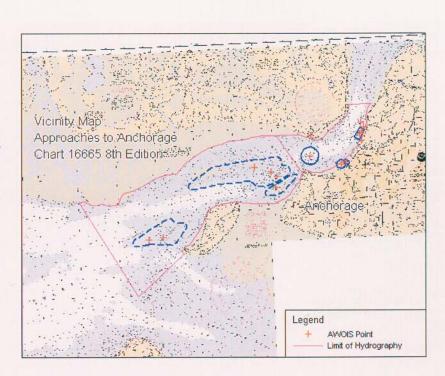


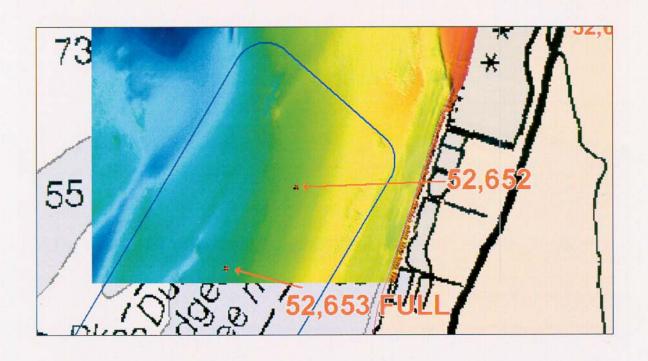
RECRD	52652 VESSLTERM	s OBSTR	UCTION		CHART	16665		AREA	P
	CARTOCOD	E 067		SNDING	GCODE	127		DEPTH	58 0 02120040400000000000000000000000000000
NATIVLAT	61/14/31.70	NATIVLON	149/53/38.60		conver		NA	ΓΙVDΑΤUΜ	31
LAT83	The commence of the commence o	LONG83	149/53/38.60	27077	Update	G P	GP	QUALITY	Med MERCAPOR CORRERADORANO CANOS CANESTE CA CA CAADOR
LATDEC	61 14 31.7	LONDEC	149 53	38.6 55556			GP:	SOURCE	Scaled
PROJECT	OPR-P385-04	ITEMS	TATUS Dis	sproved	17541 open (1914)		SEARC	HTYPE	Information
RADIUS	0	INIT	ME	3H			ASSIGN	IED	1/19/2001
TECNIQ	S2,MB,ES,DI	*************************	******************************	**************				•	
Techniqnot	e .								
History	UNDETERMINED SOURCE THERE IS NO ENTRY PERT. EXAMINATION OF ALL AVAI AS TO THE SOURCE OF TH H11031/01OPR-P385-KR; WAS NOT FOUND. THE PRI OBSTRUCTION. THE OBST THE CHARTS. (UPDATED 7	AINING TO T LABLE SOUI IS OBSTRUC THE SEARC ESENT SUR' RUCTION IS	HIS OBSTRUC RCES NOTED CTION. (ENTE CH AREA WAS VEY DEPTHS A CONSIDERED	OTION IN E ON THE F RED 1/01 COVERE ARE 39-47	EITHER 1 PRECEEL BY MBH) D BY FUI 7 FEET IN	THE CHA DING STA) LL COVE N THE LO	ART HIST ANDARD ERAGE N	ORY OR 1 PROVIDE MULTIBEAN	THE CRIT LISTING. D NO INFORMATION M. THE OBSTRUCTION CHARTED 58-FOOT
Fieldnote	H11249OPR-P385-KR-04: item be removed from the cha	irts.	covered by full	l coverage	multibea	m. The	obstructio	on was not	found. Recommend this
Proprietary	TO COMPANY TO THE STATE OF THE		***	***************************************	***************************************			***************************************	
•	YEARSUNK	NIMANU	M DIMERSTAND DEPOSITION	A Comment of the Comm	SYSTEM	INUM [)	12589	Print Record

RECRD	52653	VESSLTERMS	DUMP :	SITE		CHART	16665	Waterway	AREA	Р	
•		CARTOCODE	067		SNDIN	IGCODE	***************************************	D	EPTH	1949-117333-1770	
NATIVLAT	61/14/24.00	0 N	ATIVLON	149/53/	53.90	conver		NATI\	/DATUM	1 31	:
LAT83	61/14/24.0) L	ONG83	149/53/	53.90	Update	GP	GPQL	JALITY	Med	P5744-8505 c/2019 000 000 000 000 000 000 000 000 000
LATDEC	[61] [14]	24 61.24 Lu	ONDEC	prince 1	53 53.9 830555556	17-101111111111111111111111111111111111	903845454522cc.5	GPSC	URCE	Scale	d
PROJECT	OPR-P3	85-04	ITEMS	STATUS	Assigned	**************************************	***************************************	SEARCH	TYPE	Full	NO MONEY MONEY AND A 12 YEAR OF THE
RADIUS	***************************************	0	INIT		мвн			ASSIGNE	D		1/19/2001
TECNIQ	S2,MB,E	S			CTT(Y07526171.00000000000000000000000000000000000	*********					
Techniqnot	te SURVEY SCAN SO	TO 100 METER ONAR AND BY 1	S BEYONI 00% COVE	O THE CH ERAGE B'	ARTED LIMIT Y MULITBEAN	S OF THE	DUMP S	SITE BY 20	0% CO\	/ERAGE E	BY SIDE
History	POSITION IS THE PREVIOU POSITION IS THE HITOSTALLY FAS MUCH AS TOUMP SITE. TO	NED SOURCE- IS EDITION WAS THE CENTER OF PR-P385-KR; T REMAINS WITH 20 FEET. ADDIT THE HYDROGRA EA IS TO BE CH	S IN 1967. THE DUN HE SEAR(SIMILAR D FIONALLY, APHER NO	THE CHA MP SITE. CH AREA DEPTHS A THERE H TTED THA	ART HISTORY (ENTERED 1/4 WAS COVERI S CHARTED I HAS BEEN SIG T THE USACE	FOR CHA 11 BY MBI ED BY FU BUT THE I BNIFICAN INDICAT	ART 1666 H) LL COVE NORTH E T SHOAL FD THAI	ERAGE MUEAST POR ING TO THE	VAILAE LTIBEAI TION HA IE SOU'	M. THE D AS SHOAL TH WEST	AWOIS UMP SITE LED BY UP TO
Fieldnote	H11249/04OF The hydrograph the chart.	PR-P385-Kr-04: ner noted that the	The area w USACE ir	as covere	d by full covera at the dump si	age multib te is no lo	eam. Ch nger in us	arted depth se. Recom	ns agree Imend th	with the 2 is item be	004 survey. removed from
	Evaluators Con	nment: Concur v	vith clarifica	ation. Cha	rt with the late	st informa	tion.		~~	97 .15 571.1	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Proprietary											
	YEARSUNK [))))	NIMANU	M .	O-U-1*15-34000	SYSTEM	INUM [**************************************	12590	F	rint Record

Historical and 2004 AWOIS Positions

H-11249 Sheet B





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

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.

, COR/NOAD Date: 17 Nov. 2005

Donald W. Haines

CDR, NOAA

Chief, Pacific Hydrographic Branch

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H11249

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

- 1. Letter all information.
- 2. In "Remarks" column cross out words that do not apply.

CHART	DATE	CARTOGRAPHER	REMARKS
16665	11/7/05	GARY C. NELSON	Full Part Before After Marine Center Approval Signed Via Application of
			Drawing No. SOUNDINGS, FEATURES + CURVES FROM
			SMOOTH SHEET
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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			Full Part Before After Marine Center Approval Signed Via Drawing No.
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		*	Full Part Before After Marine Center Approval Signed Via Drawing No.