H11202

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. OPR-P356-KR-03

Registry No. H-11202

LOCALITY

State Alaska

General Locality Approaches to Prince William Sound

Sublocality 14 NM ESE of Hinchinbrook Ent.

2003

CHIEF OF PARTY

Dean Moyles

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H11202

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 **Approaches to Prince William Sound**

Sublocality **14 NM ESE of Hinchinbrook Entrance**

Scale **1:20,000** Date of Survey **08/21/03-09/10/03**

Instructions Date **3/5/2005** Project No. **OPR-P356-KR-03**

Vessel **R/V DAVIDSON & R/V QUICKSILVER**

Chief of Party **Dean Moyles**

Surveyed by **Moyles, Orthmann, Reynolds, Gill, Mount, Stock, Busey, Briggs, et al**

Soundings taken by echo sounder, hand lead, pole **Reson 8111**

Graphic record scaled by **FUGRO PELAGOS, Inc. PERSONNEL**

Graphic record checked by **FUGRO PELAGOS, Inc. PERSONNEL**

Evaluation by **R.Shipley** Automated plot by **HP Designjet 1050C**

Verification by **R.Shipley**

Soundings in **Fathoms** at **MLLW**

REMARKS: **All times are recorded in UTC**

UTM Zone 6

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

A - Area Surveyed

H11202 (Sheet C), is bounded by the coordinate listing below, and encompasses an area 14 NM ESE of Hinchinbrook Entrance.

The R/V Davidson started hydrographic data collection on August 21, 2003 and ended on September 10, 2003.

Table 1 H11202 Survey Limits[1]

Survey Limits Task Order # 12 H11202 Sheet C Scale 1:20,000		
Point #	Positions on NAD83	
	Degrees Latitude (N)	Degrees Longitude (W)
1	60º11’39.790” N	146º25’01.945” W
2	60º06’42.757” N	146º00’36.472” W
3	59º59’06.760” N	146º06’46.919” W
4	60º04’03.792” N	146º31’12.392” W
5	60º11’39.790” N	146º25’01.945” W

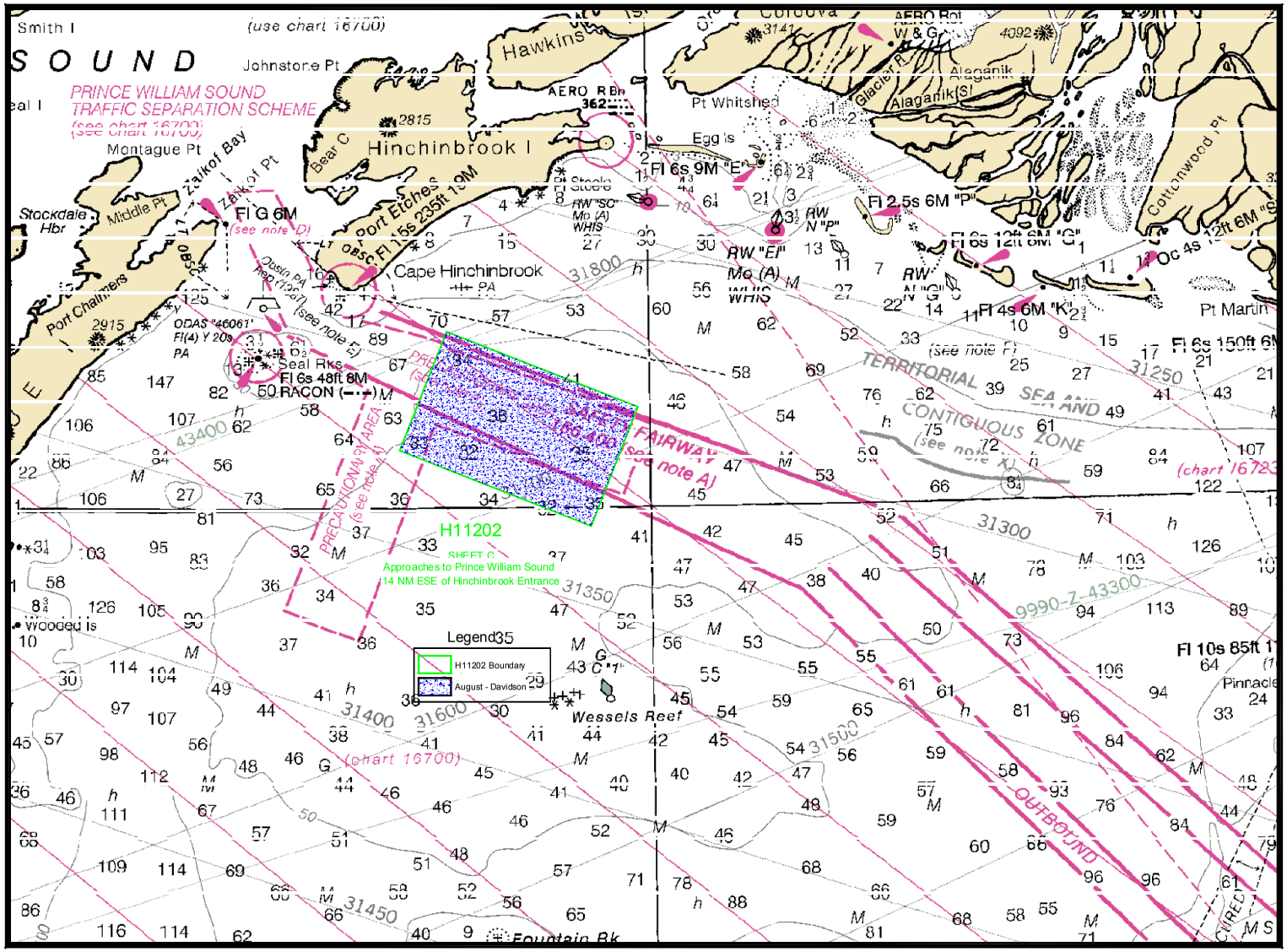


Figure 1 H11202 Survey Limits

B – Data Acquisition & Processing

Refer to the OPR-P356-KR-03 Data Acquisition and Processing Report[2] for a detailed description of all equipment, survey vessels, processing procedures and quality control features. Items specific to this survey and any deviations from the Data Acquisition and Processing Report are discussed in the following sections.

Equipment & Vessels

The R/V Davidson acquired all sounding data for H11202. The Davidson is 153-foot survey vessel, with a draft of 17.75 feet, equipped with a hull mounted Reson SeaBat 8111 with option 033 (pseudo SideScan) for medium multibeam data acquisition. The Davidson was also equipped with two AML sound velocity and pressure sensors for sound velocity profiles. Vessel attitude and position was measured using an Applanix Position and Orientation System for Marine Vessel (POS/MV) and XTF files logged in ISIS V 6.24.

Refer to OPR-P356-KR-03 Data Acquisition & Processing Report for a complete listing of equipment and vessel descriptions.

Quality Control

Crosslines

Quality control tielines were planned to measure 5 percent of the main scheme line length. Total crossline length surveyed was 115.36 km (62.29 nautical miles) or 5.6 percent of the total main scheme miles. Tielines that were conducted were well distributed throughout the sheet to insure adequate crossline quality control. A total of 159 tie line crossings were examined using the CARIS HIPS Q/C report, all within the 95 percent confidence level.

Note: The QC reports were generated based on the given accuracy specification of:

$$\pm\sqrt{[a^2 + (b * d)^2}$$

where, a = 0.5, b = 0.013 and d = depth.

However, since a variance of a difference, rather than a variance from a mean is being used, the a and b values defined in the makehist.cla file within CARIS will use:

$$a = 0.5 * \sqrt{2} = 0.707$$
$$b = 0.013 * \sqrt{2} = 0.018$$

Data Quality

In general the multibeam data quality for H11202 was excellent. One problem to note is as follows:

- During data acquisition and routine processing, a general downward and/or upward cupping was noticed in the across track sounding profiles for certain areas. This is possibly due to the high volume of thermal layering and strong under currents in the water column, an example of this can be seen in the figure below. In an attempt to resolve this cupping, SVP casts were conducted more frequently and line spacing reduced. (Refer to Separate 2 for SVP plots).[3]

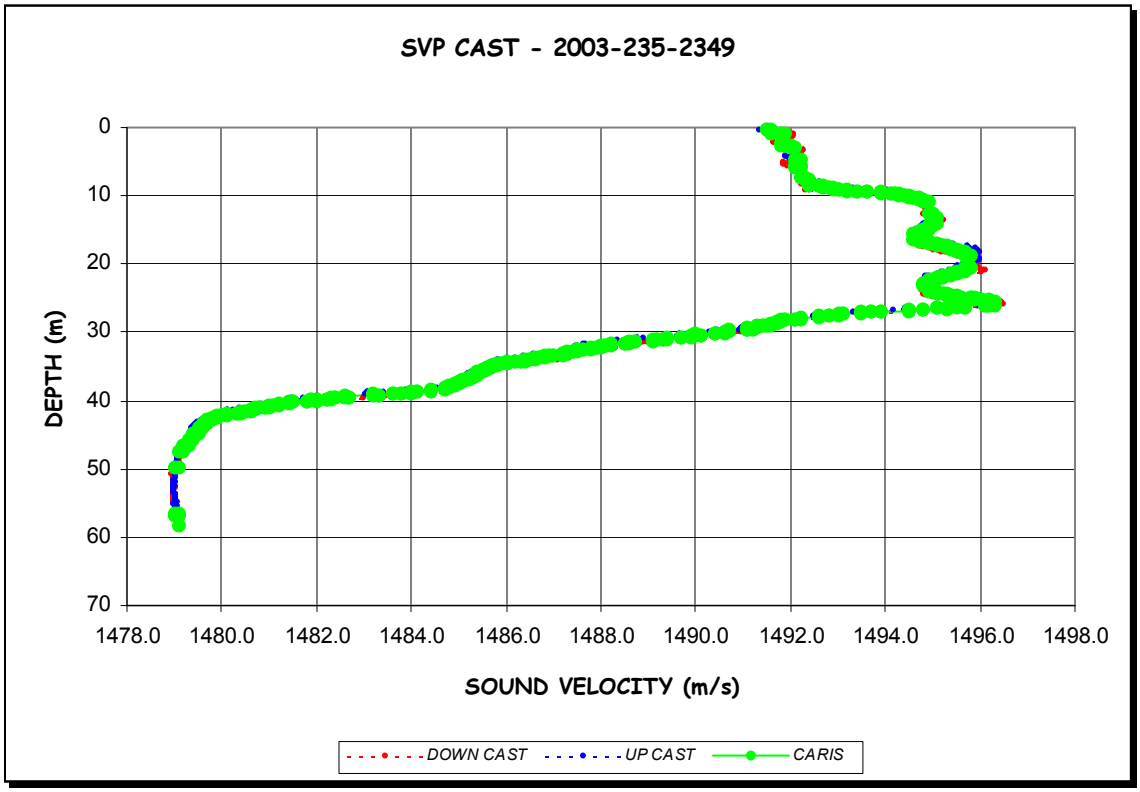


Figure 2 Sample SVP Plot

Survey Junctions

H11202 (Sheet C) junctions with:

Registry #	Scale	Date	Junction Side
H11200	1:20,000	2003	ESE[4]
H11201	1:20,000	2003	NW Corner[5]
H11203	1:20,000	2003	WNW[6]

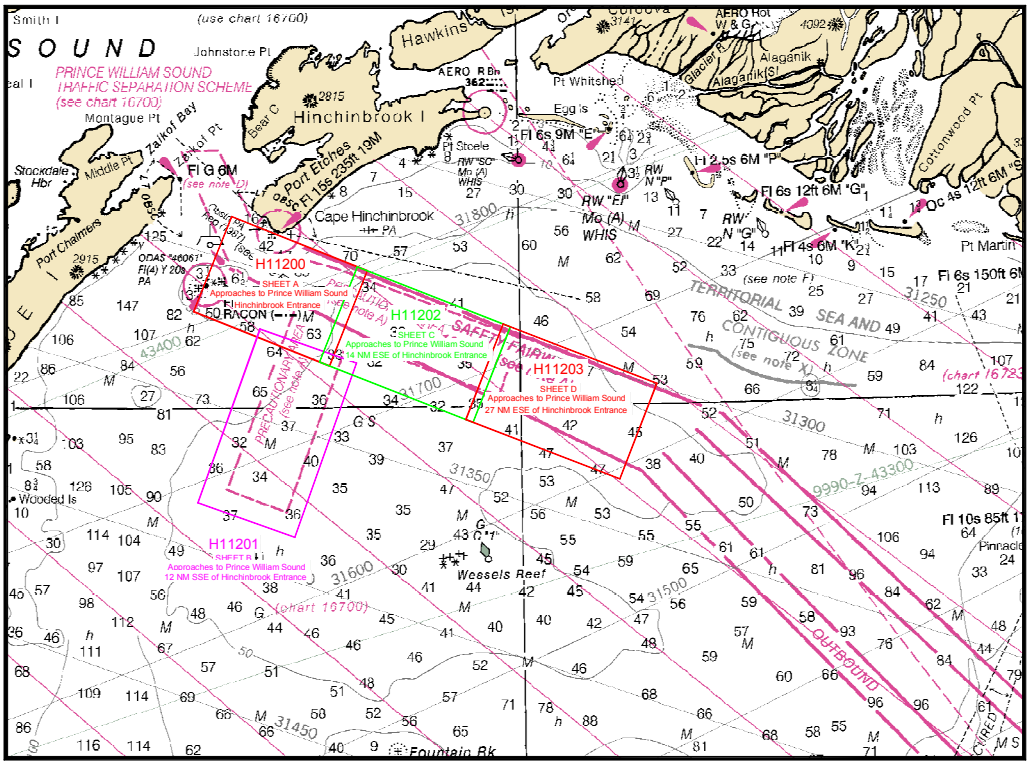


Figure 3 H11202 Survey Junctions

The surveys are in agreement along their common borders. The agreement was noted in the field using the 5-meter DTM's created for coverage verification. The conformity is also apparent in their preliminary smooth sheets.[7]

Smooth Sheet Histograms

Histograms of the selected smooth sheet soundings are displayed below. Although soundings used to compile the smooth sheet fell within the specified error budget at nearly 100% confidence, the distribution of soundings across sonar beams is not perfectly even.

Figure 4 Histogram is for the Reson 8111 data collected from August 21, 2003 to September 10, 2003 on the Davidson. The histogram reveals several distinct features; one being the spikes on the nadir beams and around beams 41 and 63. These spikes can be contributed to a couple of factors: one being SVP error; hence, if the data is frowning then the nadir beams will be shoaler then the outer beams and if the data is cupping then the opposite is true. Secondly, the increase in the number of selected sounding taken from around the nadir beams can be also contributed to data density. Since the lines were run, port beams overlapped with port beams and starboard beams overlapped with starboard beams from the adjacent lines. This makes it possible to have higher density data per square meter on the outer edges, leading to a higher chance of sounding selection on the smooth sheet. It is also apparent on these examinations the transition from phase to amplitude detection method of the sonar (around beams 33 and 69). The decrease of selected soundings on the outer beams is the result of deterioration of data quality on the outer beams, especially in deep water. In most cases set filters were used to flag the outer beams as rejected, but in other cases additional cleaning or filters were used on a line by line bases resulting in fewer selected soundings.

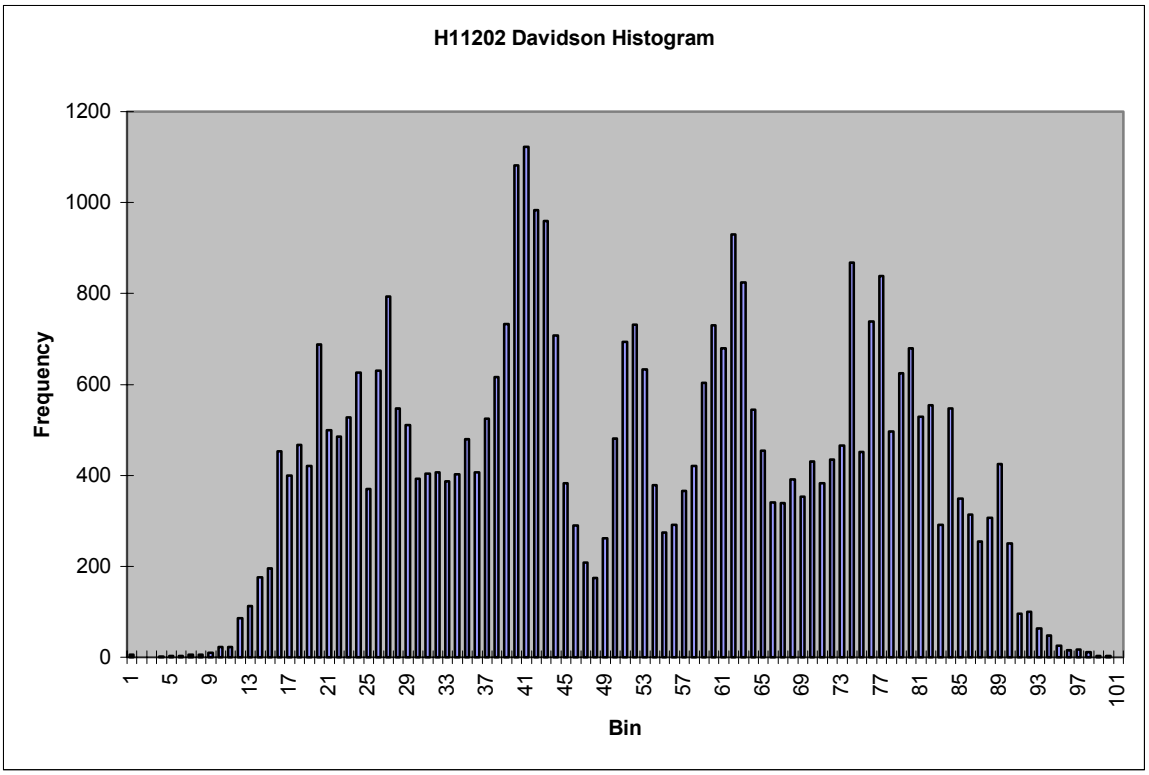


Figure 4 Histogram for 8111 (Davidson)

Quality Control Checks

During the hydrographic survey OPR-P356-KR-03 the R/V's Davidson and Quicksilver conducted a number of confidence checks. This usually consisted of the vessels running two lines in the opposite direction over a reference surface. The Reson systems that were installed on the Davidson and Quicksilver usually compared to within 5 to 10 centimeters.

Positioning system confidence checks where conducted on a daily basis. The POS/MV controller software has numerous real time displays that were monitored throughout the survey to ensure the positional accuracies specified in the NOS Hydrographic Surveys Specifications and Deliverables (version June 2000) were achieved. These include, but are not limited to the following: GPS Status, Position accuracy, Receiver Status (which included HDOP) and Satellite Status. During periods of high HDOP and/or low number of available satellites survey operations were stopped.

Corrections to Echo Soundings

Refer to the OPR-P356-KR-03 Data Acquisition and Processing Report for a detailed description of all corrections to echo soundings. No deviations from the report occurred.

C – Horizontal & Vertical Control

Refer to the OPR-P356-KR-03 Horizontal and Vertical Control Report[8] for a detailed description of the horizontal and vertical control used on this Survey. A summary of the projects horizontal and vertical control follows. No deviations from the report occurred.

Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83). All positions were originally collected in WGS84 and transformed to NAD83 during HIPS workfile creation. Projection of smooth sheet is in NAD83, UTM (Central Meridian 147º00'00").

Two MBX-3 differential receivers that used the U.S. Coast Guard (USCG) network of differential beacons were the main source of RTCM. Refer to the OPR-P356-KR-03 Horizontal and Vertical Control Report for DGPS verification results.

Vertical Control

All soundings were reduced to MLLW initially using unverified tidal data from the Wooded Island gauge. The gauge was operated and maintained by the sub-contractor, LCMF.

Table 2 Tide Gauges

Gauge	Model	Gauge Type	Location	Latitude	Longitude	Operational
9454562	H350/355	Digital Bubbler	Wooded Is.	59°52'30"N	147º24'09" W	07/30/03–10/08/03
9454329	H350/355	Digital Bubbler	Hinchinbrook	60°14'18"N	146º38'54" W	06/10/03–06/12/03

On November 17, 2003, LCMF issued verified tidal data and final zoning for OPR-P356-KR-03. The tidal zoning was modified by LCMF, providing only fine adjustments from those issued in the Statement of Work. On November 17, 2003 all sounding data were re-merged using CARIS HIPS tide routine. Verified tidal data was used for the Preliminary Smooth Sheet. Refer to the Vertical and Horizontal Control Report for additional tidal information and station descriptions.

D – Results and Recommendations

Chart Comparison

H11202 survey was compared with charts:

• 500	1:3,500,000	7th	June 1, 1996
• 530	1:4,860,700	30th	Mar 23, 2002
• 531	1:2,100,000	21st	Feb 2, 2002
• 16013	1:969,761	28th	Apr 14, 2001
• 16700	1:200,000	27th	July 1, 2003
• 16709	1:80,000	22nd	Jan 19, 2002

Comparison of Soundings

The soundings in general compare well with the existing charts.[9] Figure 5 Comparison of Contours reveals that the 50-fathom contour has migrated approximately 0.20 NM to the northwest from the existing one on chart 16700. It should be noted that the 40-fathom contour is not present on the existing charts.[10]

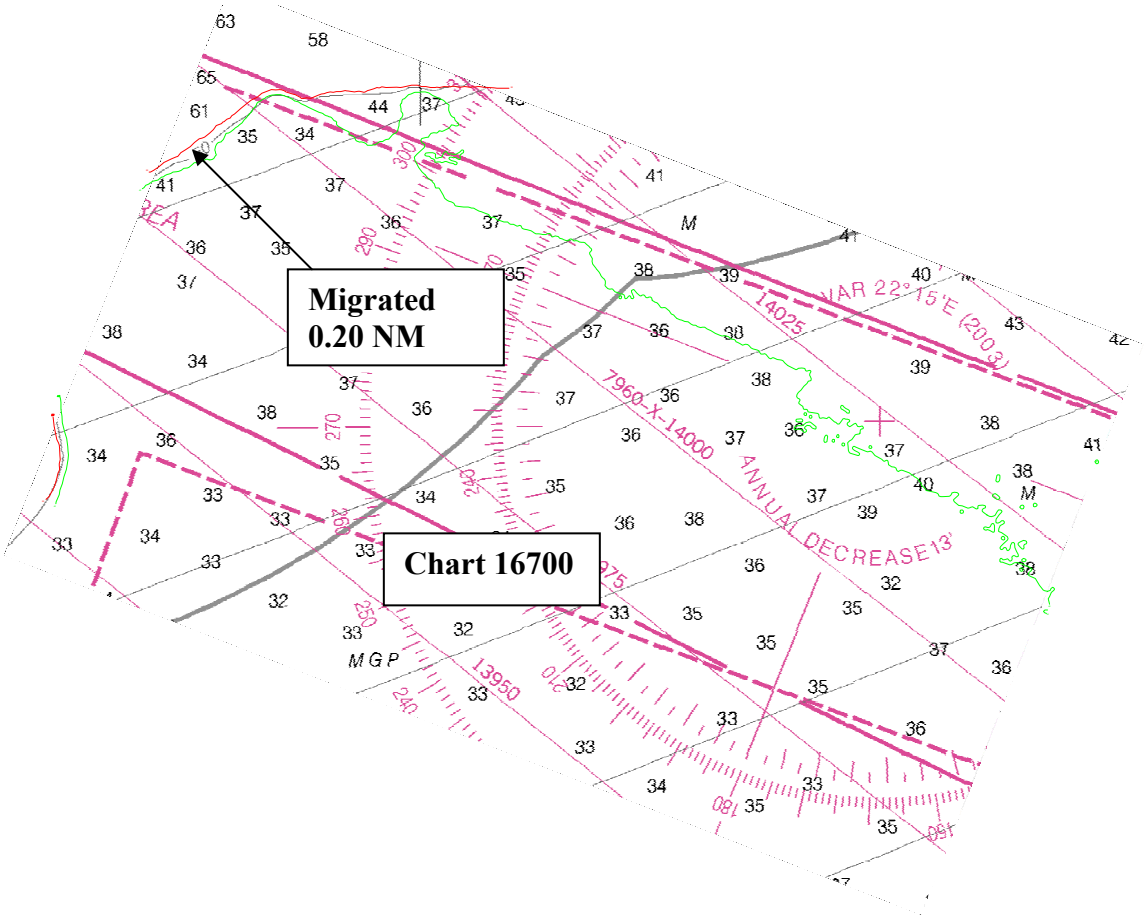


Figure 5 Comparison of Contours

Automated Wreck and Observation Information System

There were no AWOIS items assigned to OPR-P356-KR-03.[11]

Charted Features

There were no charted features labeled PA, ED, PD, or Rep within the limits of H11202.[12]

Dangers to Navigation

There were no dangers to navigation located during the hydrographic survey of H11202.[13]

Additional Results

Shoreline Verification

Shoreline verification was not required under this contract.[14]

Tidal Range

LCMF established the tidal range for OPR-P356-KR-03 to be 2.841meters (9.32 feet or 1.55 fathoms).

Bottom Samples

Bottom Samples were not required under this contract.[15]

Aids to Navigation

There were no charted aids to navigation in the survey area. No uncharted aids to navigation were found in the survey area.

E – Approval Sheet

Approval Sheet

For

H11202

Standard field surveying and processing procedures were followed in producing this survey in accordance with the following documents:

OPR-P356-KR-03 statement of work and hydrographic manual;[16]
Fugro Pelagos, Inc. Acquisition Procedures (2003-NOAAAcquisitionProcedures);
Fugro Pelagos, Inc. Processing Procedures (2003-NOAAProcessingProcedures);
Technical Report for Tides, Prince William Sound.[17]

This report has been reviewed and approved. All records are forwarded for final review and processing to the Chief, Pacific Hydrographic Branch.

The data were reviewed daily during acquisition and processing.

Approved and forwarded,

Dean Moyles, Fugro Pelagos, Inc.
Lead Hydrographer
Fugro Pelagos, Inc. Survey Party

Appendix A - Danger to Navigation

No dangers to navigation were located during the hydrographic survey of H11202.

Appendix B - List of Geographic Names

No new geographic names in the survey were discovered.

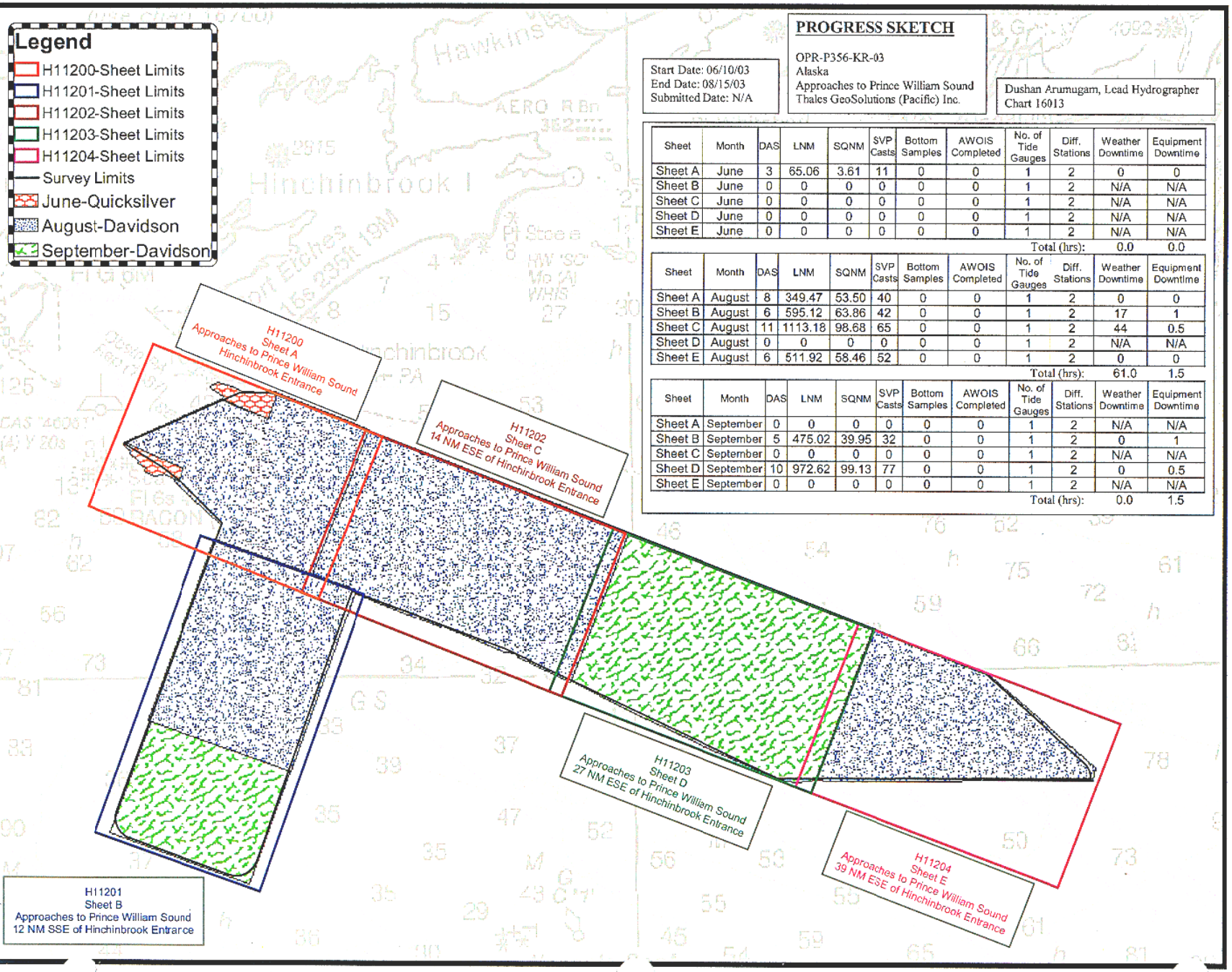
Appendix C – Progress Sheet

PROGRESS SKETCH

OPR-P356-KR-03
Alaska
Approaches to Prince William Sound
Thales GeoSolutions (Pacific) Inc.

Start Date: 06/10/03
End Date: 08/15/03
Submitted Date: N/A

Dushan Arumugam, Lead Hydrographer
Chart 16013



Sheet	Month	DAS	LNM	SQNM	SVP Casts	Bottom Samples	AWOIS Completed	No. of Tide Gauges	Diff. Stations	Weather Downtime	Equipment Downtime
Sheet A	June	3	65.06	3.61	11	0	0	1	2	0	0
Sheet B	June	0	0	0	0	0	0	1	2	N/A	N/A
Sheet C	June	0	0	0	0	0	0	1	2	N/A	N/A
Sheet D	June	0	0	0	0	0	0	1	2	N/A	N/A
Sheet E	June	0	0	0	0	0	0	1	2	N/A	N/A
									Total (hrs):	0.0	0.0

Sheet	Month	DAS	LNM	SQNM	SVP Casts	Bottom Samples	AWOIS Completed	No. of Tide Gauges	Diff. Stations	Weather Downtime	Equipment Downtime
Sheet A	August	8	349.47	53.50	40	0	0	1	2	0	0
Sheet B	August	6	595.12	63.86	42	0	0	1	2	17	1
Sheet C	August	11	1113.18	98.68	65	0	0	1	2	44	0.5
Sheet D	August	0	0	0	0	0	0	1	2	N/A	N/A
Sheet E	August	6	511.92	58.46	52	0	0	1	2	0	0
									Total (hrs):	61.0	1.5

Sheet	Month	DAS	LNM	SQNM	SVP Casts	Bottom Samples	AWOIS Completed	No. of Tide Gauges	Diff. Stations	Weather Downtime	Equipment Downtime
Sheet A	September	0	0	0	0	0	0	1	2	N/A	N/A
Sheet B	September	5	475.02	39.95	32	0	0	1	2	0	1
Sheet C	September	0	0	0	0	0	0	1	2	N/A	N/A
Sheet D	September	10	972.62	99.13	77	0	0	1	2	0	0.5
Sheet E	September	0	0	0	0	0	0	1	2	N/A	N/A
									Total (hrs):	0.0	1.5

Appendix D - Tides and Water Levels

Abstract of Times of Hydrography For Smooth Tides
Project Number: OPR-P356-KR-03 Registry Number: H11202
Contractor Name: Fugro Pelagos, Inc. Date: January 16, 2004
Sheet Letter: C
Inclusive Dates: August 21, 2003 to September 10, 2003
Fieldwork is complete and verified tides were applied for the production of the smooth sheet. Refer to LCMF's final verified tides report for additional information.

Table 3 Abstract of Times of Hydrography for R/V Davidson

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2003	233	01:03:04	23:51:02	
2003	234	00:07:02	17:11:29	
2003	235	02:55:31	23:59:59	
2003	236	00:00:00	23:59:59	
2003	237	00:00:00	23:59:59	
2003	238	00:00:00	23:59:59	
2003	239	00:00:00	16:28:50	Transit to H11201
2003	240	20:17:41	23:59:59	
2003	241	00:00:00	19:13:36	Down on Weather
2003	242	18:00:31	23:55:02	
2003	243	00:05:51	12:57:52	
2003	252	19:28:39	21:21:42	In-Fils and Tielines
2003	253	00:46:03	07:59:18	

Appendix E - AWOIS

No AWOIS were assigned under OPR-P356-KR-03.

Revisions Compiled During Office Processing and Certification

[1] Revise sheet limits to the following:
60/11/50N, 146/24/59W (North)
60/06/48N, 146/00/25W (East)
59/59/53N, 146/06/05W (South)
60/05/00N, 146/30/38W (West)
[2] Filed with the Project Records.
[3] Concur.
[4] PHB Revision--Strikethrough ~~ESE~~ and insert WNW.
[5] PHB Revision--Strikethrough ~~NW corner~~ and insert SW corner.
[6] PHB Revision--Strikethrough ~~WNW~~ and insert ESE.
[7] Concur.
[8] Filed with the Project Records.
[9] Concur.
[10] Concur with hydrographer's statements
[11] Concur.
[12] Concur.
[13] Concur.
[14] Concur.
[15] Concur with clarification. Some bottom samples were retained from Charts 16700. Chart bottoms samples as shown on the Hdrawing.
[16] Filed with the Project Records.
[17] Filed with the Project Records.

APPROVAL SHEET
H11202

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.

Gary C. Nelson Date: 5 Dec 2006

Gary Nelson
Chief, 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.

, CDR/NOAA Date: 5 Dec. 2006

Donald W. Haines
CDR, NOAA
Chief, Pacific Hydrographic Branch

Digitally signed by Mark Lathrop
Reason: AWOIS & Surf Check
Date: 2006.12.13 14:02:55 -05'00'

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H 11202

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.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16700	11/01/06	R. Chapley	~~Full Part~~ Before After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SOUNDINGS, CURVES AND features
			from the SMOOTH SHEET.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.