

H11390

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.

Registry No. H-11390

LOCALITY

State Alaska

General Locality Prince William Sound

Sublocality Port Bainbridge

2004

CHIEF OF PARTY

..... David A. Sinson, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11390

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.

State Alaska

General Locality Prince William Sound

Sublocality Port Bainbridge

Scale 1:10,000

Date of Survey Sept 21 - Oct 21, 2004

Instructions Date 9/22/2004

Project No. OPR-P139-TC-04

Vessel R/V DAVIDSON, LAUNCHES D2 and R2

Chief of Party P.S. David A. Sinson, NOAA

Surveyed by SAIC Personnel

Soundings taken by echo sounder RESON 8111, RESON 8101 MB, RESON 8125 MB

Graphic records SAIC Personnel

Graphic record checked by SAIC Personnel

Evaluation by R. Davies

Automated plot by HP Designjet 1050C

Verification by S.Allen

Soundings in Fathoms and tenths

at

MLLW

REMARKS: Time in UTC. UTM Projection Zone 6

Revisions and annotations appearing as endnotes were

generated during office processing.

All separates are filed with the hydrographic data.

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

Descriptive Report to Accompany Hydrographic Survey H11390

Project OPR-P139-TC-04
Port Bainbridge
Prince William Sound, Alaska
Scale 1:10,000

September-October 2004

NOAA Time Charter R/V DAVIDSON

Lead Hydrographer: PS David A. Sinson, NOAA

Survey Manager: PS David A. Sinson, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P139-TC-04, dated September 22, 2004, and the Draft Standing Project Instructions dated March 23, 2004. The survey area includes the northern extents of Port Bainbridge, Prince William Sound, Alaska. H11390 junctions with survey H11389 and H11391, conducted concurrently at the eastern and southern limits.

Northern Limit	Southern Limit	Western Limit	Eastern Limit
60° 11' 27.69" N	60° 4' 52.71"	148° 24' 14.0" W	148° 15' 59.03"

Data acquisition was conducted from September 21 to October 21, 2004 (Julian day numbers 265 to 295).

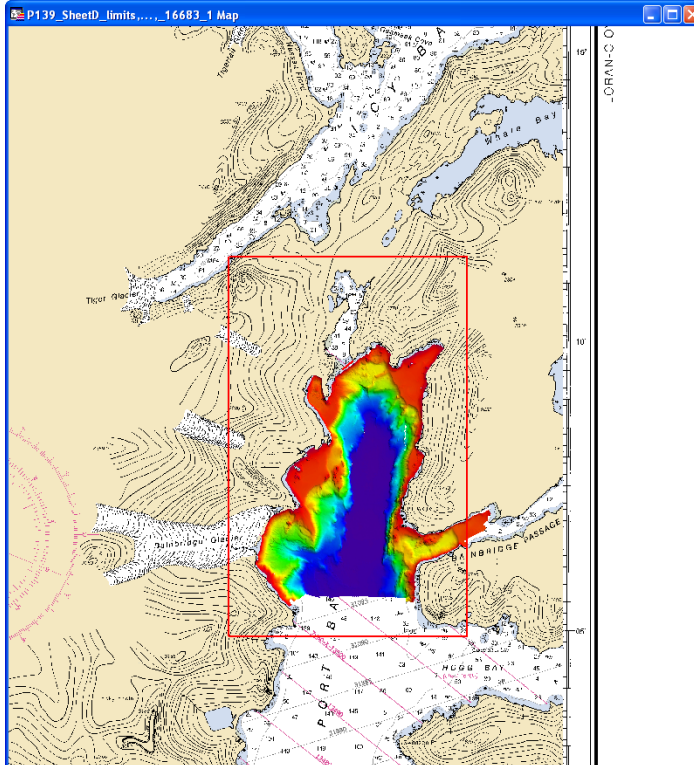


Figure 1 OPR-P139-TC-04 Survey H11390 limits and coverage

B. DATA ACQUISITION AND PROCESSING

Refer to *OPR-P139-TC-04 Data Acquisition and Processing Report (DAPR)* for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods, submitted under a separate cover.¹ Additional information to supplement sounding and survey data, and any deviations from the DAPR are included in this descriptive report.

B1. Equipment and Vessels

Data were acquired by the R/V DAVISON, survey launches R2 and D2 and a skiff (DP). The ship was used to acquire mid-water multibeam soundings (MWMB) in depths generally greater than 40 meters, sound velocity profiles and bottom samples. Launch D2 acquired shallow-water multibeam sounding in depths generally less than 120 meters, sound velocity profiles and bottom samples. Launch R2 acquired high-resolution shallow water multibeam soundings in depths generally less than 60 meters, sound velocity profiles and bottom samples. The skiff acquired vertical-beam soundings for shoreline buffers and high-precision geographic positions for shoreline feature verification. Vessel configurations, equipment operation and data acquisition and processing were consistent with specifications described in the DAPR.

B2. Quality Control

B2.1 System Certification and Calibration

Refer to *OPR-P139-TC-04 Data Acquisition and Processing Report (DAPR)* for a description of SAIC's quality assurance (QA) and quality control (QC) plan. A System Acceptance Test Report, included as an appendix to the DAPR, describes system integration and initial calibration results for equipment and sensors utilized for this survey.

A system calibration survey was performed in Seward Harbor on September 27, 2004 (JD 271) to verify sensor performance as well as tide, sound velocity, alignment and offset corrections.

B2.2 Crosslines

Multibeam echosounder crosslines totaled 10.85 nautical miles, comprising 4.8% of Shallow Water Multibeam (SWMB) hydrography.² Crossline soundings were evaluated with respect to main scheme soundings in CARIS HIPS subset area editor and a gridded base surface model. In general, there was excellent agreement between mainscheme and crossline soundings. Observed sounding differences were generally less than 1 meter in less than 100 meter water depths and no significant systematic, sound velocity, or water level offsets were observed in the crossline evaluation.³

B2.3 Junctions

The following contemporary surveys junction with H11390:

Registry #	Scale	Date	Junction side
H11389	1:10,000	Concurrent	East
H11391	1:10,000	Concurrent	South

Figure 2 displays the boundaries of the junction surveys. H11390 junctions with survey H11389, conducted concurrently at the eastern limits, and H11391, conducted concurrently at the southern limits. Complete coverage was acquired with concurrent surveys. ⁴

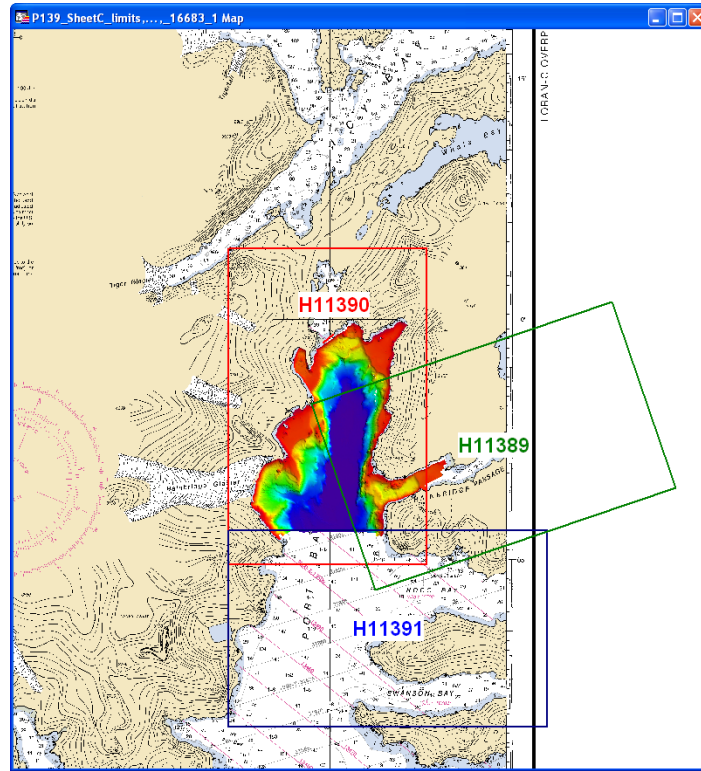


Figure 2. H11390 Junction Surveys

B2.4 Data Quality Factors

Caris QC review BASE surfaces were created at 5-meter resolution for ship soundings and 2 meter resolution for the launch soundings. BASE surfaces were used to focus full-density sounding evaluations and editing in areas of high standard deviation and total propagated error (TPE). Sounding subsets were evaluated in areas of high topographic relief to ensure that the depth BASE surface accurately represented shoal soundings and features. Significant soundings were designated from full raw data to ensure representation in the final BASE surface models.

B2.4.1 Sound Velocity Profiles

ISS2000 applies sound velocity correction in real-time during echosounder acquisition. Sound velocity profiles were collected often to characterize the variable and complex water column conditions in the survey area. Surface sound velocity was monitored continuously on R2 with

the Reson 8125 HRSWMB and on the DAVISON with the Reson 8111ER to ensure correct beam formation. Surface sound velocity was used by the 8125 system for correct beam formation on the flat-faced transducer for directional accuracy, and on the 8111ER for correct beam formation for pitch stabilization. Changes in surface sound velocity were also evaluated as an indicator of changes in the water column sound velocity. In general, there was good agreement of depths between overlapping outer beams of survey lines. There is no indication of significant sound velocity errors in the final base surface.

B2.4.2 Water level correction

ISS2000 applies predicted water-level correctors with CO-OPS supplied zoning in real-time during echosounder acquisition. Observed tides from the primary tide gauges are applied to soundings prior to NOAA quality review in CARIS HIPS/SIPS. Soundings from crosslines and overlapping lines were examined in 3-D sounding subsets and base surfaces to identify temporal variation of water level modeling. In general, there was no indication of significant water level correction errors visible in line-to-line comparisons or the final base surfaces.

B2.4.3 Residual Sounding Fliers and Noise

CARIS BASE surfaces were evaluated by NOAA hydrographers to focus data editing on areas of high standard deviation of depth. Full-density sounding subsets were reviewed where high standard deviation was indicated. Residual gross flyers and noise were identified in areas of unusually high standard deviation and flagged as rejected. The total range of standard deviation was reduced to a value that corresponded to general bathymetric relief for the survey area. Soundings from multiple lines were evaluated when possible to distinguish noise from bathymetric features. In general, NOAA quality review required minimal editing and any significant quality deficiencies were corrected before final submission. ⁵

B2.4.4 Systematic Errors

CARIS BASE surfaces were evaluated by NOAA hydrographers to identify systematic errors in data correctors including motion, attitude, tide and sound velocity. Sunlight illuminated surface digital terrain models (DTM) were reviewed to find errors in heave, pitch and roll correction. Standard deviation surface models were reviewed to find areas where disagreement occurred between multiple lines – an indication of inaccurate tide or sound velocity correction. There were no significant systematic errors observed during review of this survey. ⁶

B2.4.5 Sounding Coverage

Daily coverage was evaluated with DTM models created from preliminary, gridded sounding data. SAIC submitted 5-meter resolution, shoal-biased binned data for the ship and 2-meter resolution, shoal-biased data for the launches. Easting, Northing, depth data were imported into MapInfo and re-gridded in Vertical Mapper. DTMs were subsequently evaluated for significant features, coverage and a preliminary assessment of data quality. Final sounding coverage was evaluated in CARIS using BASE surface DTM, TPE and sounding density models.

B2.4.6 Swath Angle Filtering

All soundings were filtered (flagged as offline) by SAIC processing software (ISS-2000) to within 55 degrees of nadir for mutibeam echosounder bathymetry to increase confidence in sounding accuracy and minimize sound velocity errors. In some cases, outer-beam soundings were re-accepted for holidays and general bathymetry in deeper water to fill in small gaps in the final BASE surface. All data used to create the final base surfaces were filtered to meet IHO Order 1 quality tolerances.⁷

B2.4.7 Total Propagated Error (TPE)

Raw soundings were not filtered for TPE. BASE surfaces were created from soundings filtered for TPE values that met IHO Order 1 tolerance. TPE filtering increased the confidence of sounding accuracy based upon system parameter settings in the HIPS Vessel File (.hvf). The HVF was created from manufacturer system performance specifications and offsets provided by SAIC from the System Acceptance Test (SAT). CARIS configuration files for the ship were submitted to HSTP and PHB for review and validation. TPE was viewed in CARIS surface models to evaluate sounding accuracy and confidence for significant features and final coverage. Total propagated error for the survey ranged from 0.26 – 3.0 meters in depths from 0 – 280 meters. All soundings are qualified by an associated TPE confidence value.

B3. Water Level Datum Reduction

HDCS sounding data were reduced to mean lower-low water (MLLW) using verified tides from the primary station at Cordova (945-4050). Verified tides were adjusted for zoned range and amplitude correctors provided by CO-Ops as specified in the project instructions and illustrated in Figure 4.

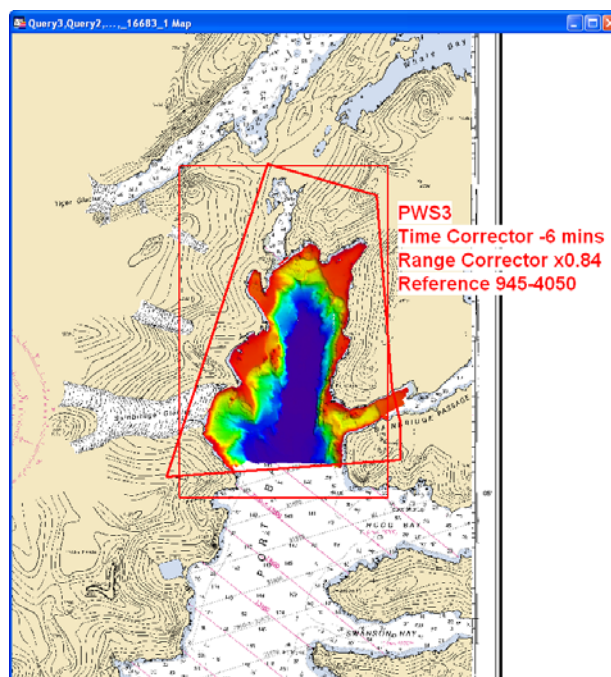


Figure 4. Tide Zoning for H11388

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11390 can be found in the *OPR-P139-TC-04 Horizontal and Vertical Control Report*.⁸ A summary of horizontal and vertical control for this survey is included in the following sections.

C1.1 Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacons at Potato Point (323 kHz) and Hichenbrook (288 kHz) were utilized during this survey. DGPS Confidence checks were performed daily by comparing positions acquired by primary (POS/MV) and secondary (Trimble MS 750) positioning systems on the ship and launches.

C1.2 Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide stations at Cordova, AK (945-4050) will serve as control for datum determination and as the primary source for water level reducers for survey H11390.

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing.⁹ A request for delivery of final approved (smooth) tides for this survey was forwarded to N/OPS1 on December 01, 2004 in accordance with the FPM and project letter instructions.¹⁰

D. RESULTS AND RECOMMENDATIONS

D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations

No AWOIS items were assigned to this survey.¹¹

D.2 Chart Comparison

Survey H11390 was compared with charts 16683 (9th Ed.; Jan., 2000, 1: 80,000),¹² shown in figure 5. Chart comparisons were performed in MapInfo using xyz (E,N,d) sounding data exported from the final QC base surface. Xyz data from the base surface were exported at 5-meter resolution from the finalized base surface. Base surface soundings were evaluated within an appropriate search radius of the charted depths and features. Chart comparison differences and comments were recorded as an attribute of a digital MapInfo radius table and compiled to a final chart comparison workspace and plot.

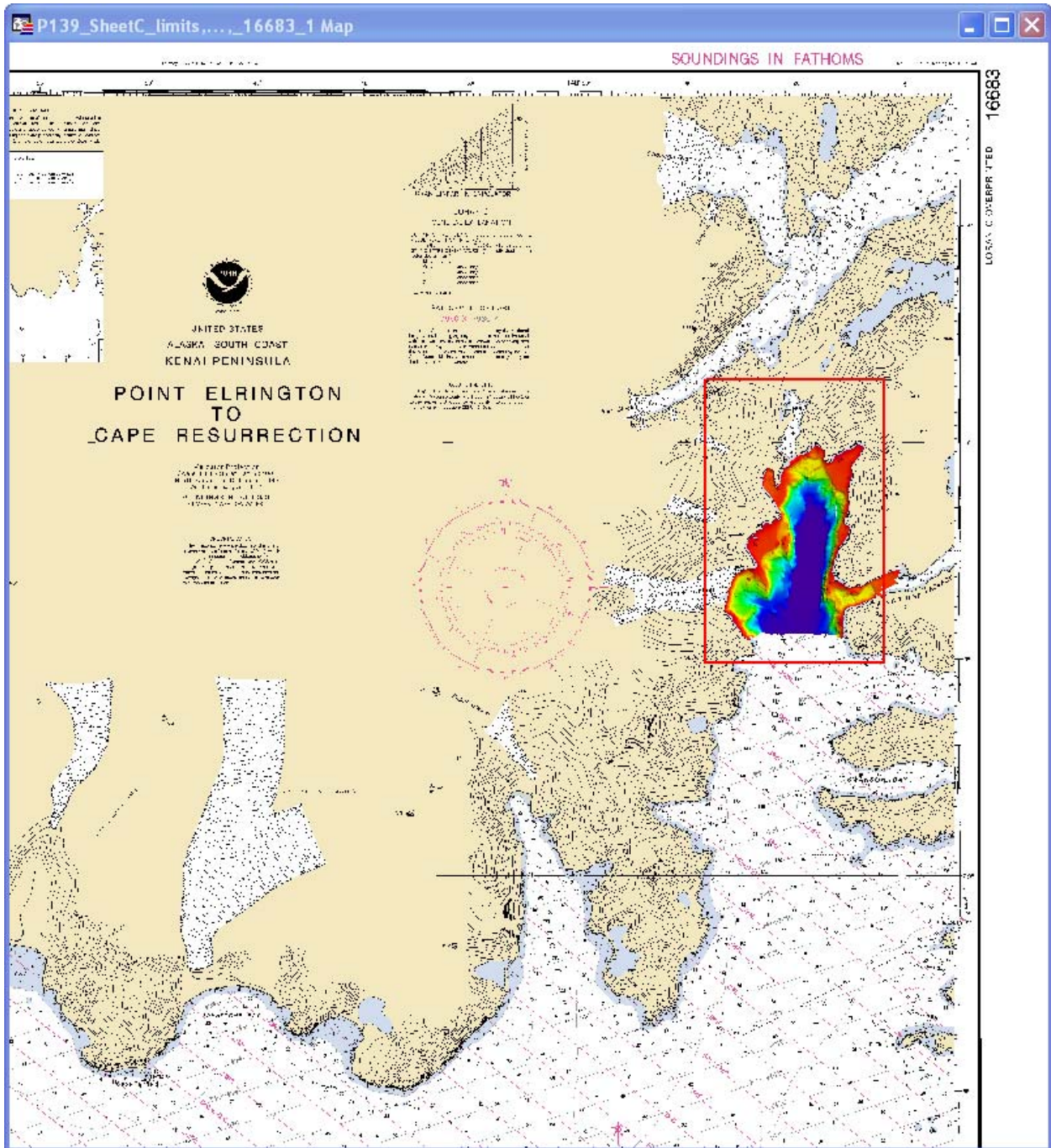


Figure 5. Chart 16683

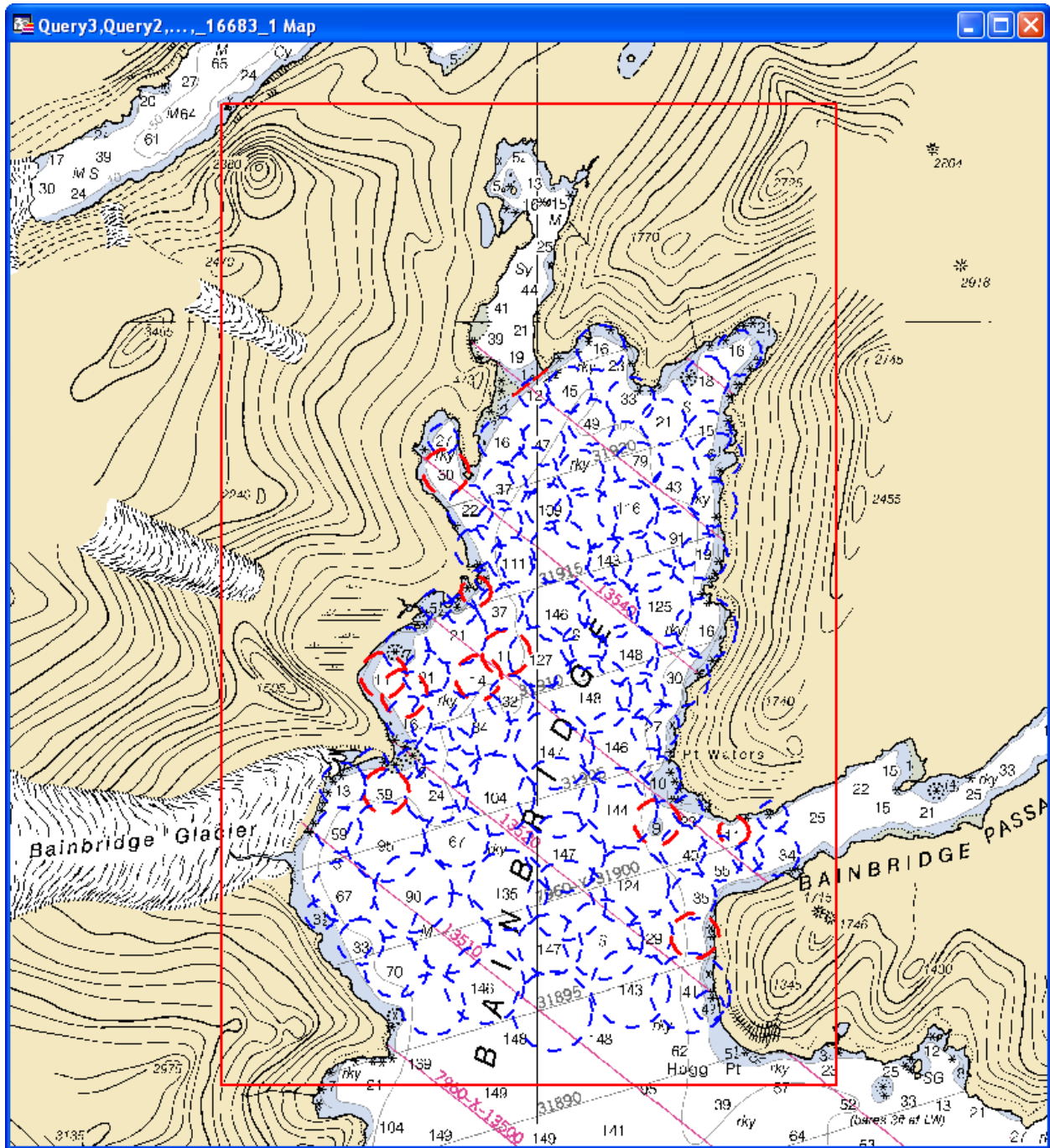


Figure 6. Chart Comparison: Differences > 5 fathom and significant soundings in red;
< 1 fathom in blue

Chart 16683 and 16702

Most survey depths agreed within 0 - 1 fathoms with depths on chart 16683 and 16702. Differences vary from 1 – 33 fathoms. ¹³

Differences greater than 2 fathoms were found in several locations where reefs or features created high relief. In these areas, shoal features were reviewed in full-density sounding subsets and least-depth soundings were designated to make sure they would be identified to the branch cartographer. Designated soundings are preserved in the final base surfaces and converted to bathymetry features in the pydro PSS. Additional remarks and attributes were updated in pydro. Navigationally significant, dangerous shoal soundings were identified and reported as DtoN's.

D.3 Shoreline

Very limited shoreline data were acquired for this survey and complete verification was not performed.¹⁴ Few low-water shoreline windows were available during the survey period. RSD source data digital manuscripts (DM) were converted to Trimble format and transferred to a Trimble ProXRS horizontal positioning system. Positions for source features (predominantly rocks) were verified with visual observations above or near the water surface. Awash, new, or misrepresented DM features were surveyed with detached positions (DP) and heights relative to the local stage of tide. DM features that were not observed were investigated with visual searches and disproved with multibeam sonar coverage when possible. Shoreline data were imported and processed in HSTP pydro software as geographic positions (GP) or detached positions with height or depth information (DP) and submitted with the final PSS. Refer to the DAPR and the FPM for a description of pydro processing procedures.

In most areas the shoreface was steep, descending to deep water within close proximity to the shoreline. In general, the survey limits approximated the 8-meter depth and a 100-meter buffer distance from the MHW shoreline.¹⁵

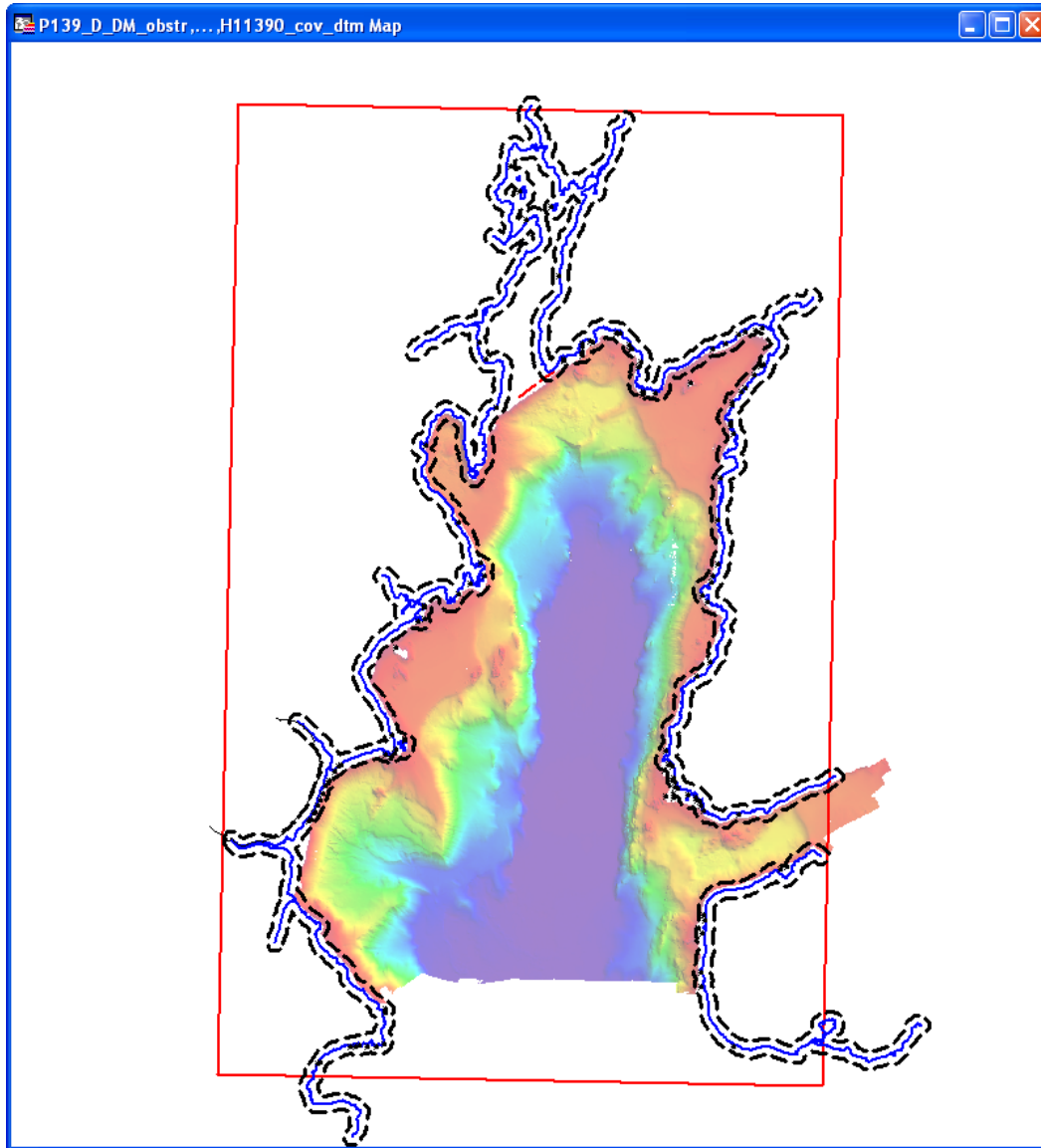


Figure 7. H11390 inshore limit. RSD MHW shoreline in blue; 100 meter buffer in black.

D.4 Dangers to Navigation and Shoals

D4.1 DTON

Eight dangers to navigation (Dton) were observed and reported for this survey. Dton were processed in pydro and are included in the final PSS and feature report.¹⁶ A Dton report and pydro xml data file was reviewed at PHB and submitted to MCD.

D4.2 Shoals

Significant shoals or features were identified with least-depth soundings from full-density multibeam data and processed in pydro. Designated soundings were preserved in the final base

surface and attributed as S-57 soundings and features in the pydro PSS. Navigationally significant, dangerous shoal soundings were identified and reported as DtoN's.

D.5 Aids to Navigation

No aids to navigation (ATONs) are located within the limits of H11390. ¹⁷

D.6 Coast Pilot Information

Coast Pilot 8 was reviewed and revised with survey observations and a project Coast Pilot Report was submitted as a separate attachment with the project data.

D.7 Miscellaneous

D7.1 Bottom Samples

Nineteen (19) bottom samples were collected in accordance with the HSSDM and are attributed as SBDARE S-57 objects in the final Pydro PSS. ¹⁸

D7.2 BASE Surface Deliverables

BASE surfaces were compiled and submitted in accordance with section 4.2.6.3 of the Field Procedures Manual (FPM 2004). The submission field sheet contains 0.5 1, 2, and 5 meter resolution BASE surfaces.

D7.3 Software Versions

The following list specifies what versions and updates of Pydro and CARIS were used during the processing of H11390 data.

Final PSS files were created with Pydro version 5.3.2

Data converted and processed with CARIS HIPS version 5.4, service pack 1 and hot fixes 12 - 21.

BASE surfaces created with CARIS HIPS version 5.4, service pack 1 and hot fix 21.

D.8 Statistics

Survey day	Linear nmi
265	16.1
266	8.41
275	34.43
276	14.86
277	11.09
278	29.53
279	26.38
288	23.41
289	13.0
294	1.47
295	7.04

Survey totals:

Survey days	Linear nmi	Square nmi	SVP	Bottom Samples
11	185.74	9.3	75	19

D.9 Adequacy of Survey

Summary and Recommendations for Additional Work

Survey H11390 is adequate to supersede charted soundings within the survey coverage and scope. ¹⁹

E. APPROVAL

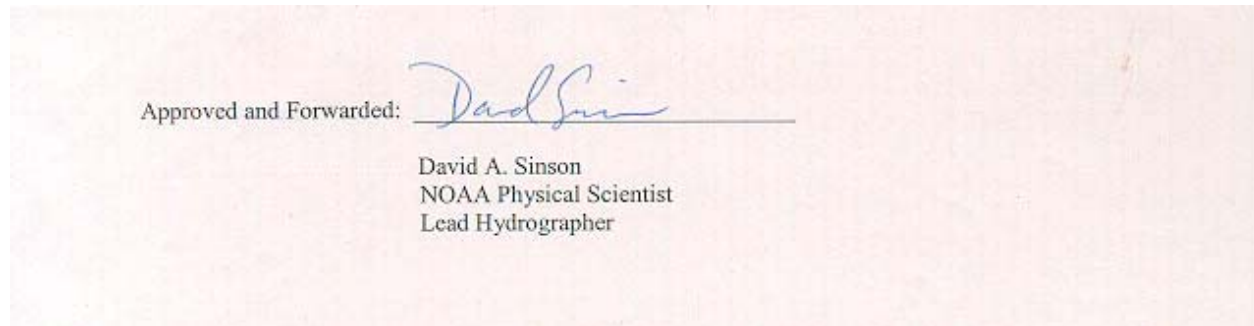
As Lead Hydrographer, I have ensured that data acquired during this survey fulfils project requirements and conforms to the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2004.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Survey H11390 is complete and adequate to supersede charted soundings within the scope and coverage of the survey. ²⁰

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

<u>Title</u>	<u>Office</u>
Data Acquisition and Processing Report for OPR-P139-TC-04	N/CS34
Horizontal and Vertical Control Report for OPR-P139-TC-04	N/CS34
Tides and Water Levels Package for OPR-P139-TC-04	N/OPS1
Coast Pilot Report for OPR-P139-TC-04	N/CS26



Revisions Compiled During Office Processing and Certification

¹ Filed with the project records

² 4.8% is less than the 5% requirement

³ Crosslines were sufficient to evaluate the data

⁴ Concur. A visual inspection between the combined surfaces of the two junction surveys and survey H11390 was done in CARIS Base Editor. No significant differences were noted.

⁵ Concur

⁶ Concur

⁷ Concur

⁸ Files with the project records

⁹ Final tides were applied during office processing at PHB. See attached Tide Note, dated April 25, 2005.

¹⁰ Filed with the hydrographic records

¹¹ Concur

¹² During office processing this survey was compared with chart 16702 13th Edition, Nov. 2005, corrected through LM 11/12/2005 and chart 16683 11th Edition, June 2007, corrected through NM June 16, 2007.

¹³ Concur

¹⁴ Bluenotes have been drawn on the Hcell in areas where the RSD shoreline conflicts with the hydrography.

¹⁵ The nearshore hydrographic limits ranged from 0.5 m to 8.0 m in depth.

¹⁶ Attached to this report.

¹⁷ Concur

¹⁸ Concur

¹⁹ Concur

²⁰ Concur

H11390 Shoreline Report

Registry Number: H11390
State: Alaska
Locality: Prince William Sound
Sub-locality: Port Bainbridge
Project Number: P139-TC-04
Survey Dates: September 21, 2004 - October 21, 2004

Charts Affected

Number	Version	Date	Scale
16702	13th Ed.	11/01/2005	1:40000
16683	10th Ed.	02/01/2004	1:81436
16680	10th Ed.	07/10/1999	1:200000
16700	29th Ed.	07/01/2004	1:200000
16013	30th Ed.	07/01/2006	1:969761
531	23rd Ed.	01/01/2006	1:2100000
500	8th Ed.	06/01/2003	1:3500000
530	31st Ed.	06/01/2005	1:4860700
50	6th Ed.	06/01/2003	1:10000000

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Rock	-1.24 m	60° 05' 30.977" N	148° 17' 41.082" W	---
1.2	Rock	-5.38 m	60° 05' 55.824" N	148° 17' 42.857" W	---
1.3	Rock	-1.21 m	60° 08' 05.820" N	148° 17' 35.308" W	---
1.4	Rock	-1.35 m	60° 08' 26.905" N	148° 17' 32.910" W	---
1.5	Rock	-1.86 m	60° 08' 28.273" N	148° 17' 33.248" W	---
1.6	Rock	-2.80 m	60° 07' 47.993" N	148° 21' 54.230" W	---
1.7	GP	[None]	60° 09' 41.710" N	148° 19' 48.000" W	---
2.1	Rock	-0.23 m	60° 09' 38.628" N	148° 19' 54.329" W	---
2.2	Shoal	13.13 m	60° 07' 37.949" N	148° 20' 50.596" W	---
2.3	Shoal	6.21 m	60° 05' 51.304" N	148° 17' 47.624" W	---

2.4	Shoal	12.27 m	60° 06' 33.038" N	148° 17' 22.255" W	---
2.5	Shoal	10.86 m	60° 06' 46.364" N	148° 18' 21.766" W	---
2.6	Shoal	6.00 m	60° 06' 38.800" N	148° 17' 36.167" W	---
2.7	Shoal	7.48 m	60° 09' 42.086" N	148° 19' 32.834" W	---
2.8	Shoal	7.88 m	60° 07' 37.063" N	148° 21' 48.388" W	---

1 - New Features

1.1) Profile/Beam - 1/1 from h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp

Survey Summary

Survey Position: 60° 05' 30.977" N, 148° 17' 41.082" W
Least Depth: -1.24 m
Timestamp: 2004-275.19:27:12.000 (10/01/2004)
DP Dataset: h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp
Profile/Beam: 1/1
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

dp27501 is location of uncharted rk

Hydrographer Recommendations

Add rock awash at DP

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)
 0fm 4ft (531_1)
 -1.3m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - dp27501 is location of uncharted rk
 OBJNAM - a new rk
 QUASOU - 1:depth known
 RECDAT - 20041001
 SORDAT - 20041001
 SORIND - us,us,surve,H11390
 STATUS - 1:permanent
 TECSOU - 12:found by levelling
 VALSOU - -1.235 m
 VERDAT - 12:Mean lower low water

WATLEV - 4:covers and uncovers

Office Notes

Concur, chart rock uncovers 4 ft at MLLW

1.2) Profile/Beam - 2/1 from h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp

Survey Summary

Survey Position: 60° 05' 55.824" N, 148° 17' 42.857" W
Least Depth: -5.38 m
Timestamp: 2004-275.19:38:02.000 (10/01/2004)
DP Dataset: h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp
Profile/Beam: 2/1
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

dp27502 verifies location of dm rk with observed depth/height

Hydrographer Recommendations

Chart source rk with height

Cartographically-Rounded Depth (Affected Charts):

-1fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)
 -2fm 5ft (531_1)
 -5.4m (500_1, 50_1)

S-57 Data

Geo object 1: Land area (LNDARE)
Attributes: SORDAT - 2004,10,01
 SORIND - us,us,surve,11390
 STATUS - 1:permanent
Geo object 2: Land elevation (LNDELV)
Attributes: ELEVAT - -5.38 m
 SORDAT - 20041001
 SORIND - us,us,surve,11390
 VERDAT - 16:Mean high water
Geo object 3: Underwater rock / awash rock (UWTROC)
Attributes: QUASOU - 1:depth known

RECDAT - 20041001
STATUS - 1:permanent
TECSOU - 12:found by levelling
VALSOU - -5.385 m
VERDAT - 16:Mean high water

Office Notes

Chart islet bares 18 ft at MHW

1.3) Profile/Beam - 6/1 from h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp

Survey Summary

Survey Position: 60° 08' 05.820" N, 148° 17' 35.308" W
Least Depth: -1.21 m
Timestamp: 2004-275.20:45:07.000 (10/01/2004)
DP Dataset: h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp
Profile/Beam: 6/1
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

dp27506 new rk

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)
 0fm 4ft (531_1)
 -1.2m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - dp27506 new rk
 OBJNAM - a new rk
 QUASOU - 1:depth known
 RECDAT - 20041001
 SORDAT - 20041001
 SORIND - us,us,surve,H11390
 STATUS - 1:permanent
 TECSOU - 12:found by levelling
 VALSOU - -1.211 m
 VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

Office Notes

Concur chart rock uncovers 4 ft at MLLW

1.4) Profile/Beam - 7/1 from h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp

Survey Summary

Survey Position: 60° 08' 26.905" N, 148° 17' 32.910" W
Least Depth: -1.35 m
Timestamp: 2004-275.20:55:37.000 (10/01/2004)
DP Dataset: h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp
Profile/Beam: 7/1
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

dp27507 new rk

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)
 0fm 4ft (531_1)
 -1.4m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - dp27507 new rk
 OBJNAM - a new rk
 QUASOU - 1:depth known
 RECDAT - 20041001
 SORDAT - 20041001
 SORIND - us,us,surve,H11390
 STATUS - 1:permanent
 TECSOU - 12:found by levelling
 VALSOU - -1.347 m
 VERDAT - 12:Mean lower low water

WATLEV - 4:covers and uncovers

Office Notes

Concur chart rock uncovers 5 ft at MLLW

1.5) Profile/Beam - 8/1 from h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp

Survey Summary

Survey Position: 60° 08' 28.273" N, 148° 17' 33.248" W
Least Depth: -1.86 m
Timestamp: 2004-275.20:56:57.000 (10/01/2004)
DP Dataset: h11390 / dolphin_0 / 2004-275 / p139d1_dn275_uwtroc_point.shp
Profile/Beam: 8/1
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

dp27508 new rk

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

-1fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)
-1fm 0ft (531_1)
-1.9m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - dp27508 new rk
OBJNAM - a new rk
QUASOU - 1:depth known
RECDAT - 20041001
SORDAT - 20041001
SORIND - us,us,surve,H11390
STATUS - 1:permanent
TECSOU - 12:found by levelling
VALSOU - -1.864 m
VERDAT - 12:Mean lower low water

WATLEV - 4:covers and uncovers

Office Notes

Concur, chart rock uncovers 6 ft at MLLW

1.6) Profile/Beam - 1/1 from h11390 / dolphin_0 / 2004-294 / p139d1_dn294_uwtroc_point.shp

Survey Summary

Survey Position: 60° 07' 47.993" N, 148° 21' 54.230" W
Least Depth: -2.80 m
Timestamp: 2004-294.19:52:07.000 (10/20/2004)
DP Dataset: h11390 / dolphin_0 / 2004-294 / p139d1_dn294_uwtroc_point.shp
Profile/Beam: 1/1
Charts Affected: 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

dpdn29401 charted dangerous sumerged rock is location of reef

Hydrographer Recommendations

revise location and surrounding depths for reef from multibeam and selected VBES soundings

Cartographically-Rounded Depth (Affected Charts):

-1 ½fm (16683_1, 16680_1, 16700_1, 16013_1, 530_1)
-1fm 3ft (531_1)
-2.8m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - dpdn29401 charted dangerous sumerged rock is location of reef
OBJNAM - v cm rk
QUASOU - 1:depth known
RECDAT - 20041020
SORDAT - 20041020
SORIND - us,us,surve,H11390
STATUS - 1:permanent
TECSOU - 12:found by levelling
VALSOU - -2.799 m
VERDAT - 12:Mean lower low water

WATLEV - 5:awash

Office Notes

Concur, chart rock uncovers 9 ft at MLLW

1.7) GP No. - 1 from P139D1_DN289_WEDKLP_region.shp

Survey Summary

Survey Position: 60° 09' 41.710" N, 148° 19' 48.000" W
Least Depth: [None]
Timestamp: [None]
GP Dataset: P139D1_DN289_WEDKLP_region.shp
GP No.: 1
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

[None]

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1: Weed/Kelp (WEDKLP)
Attributes: CATWED - 1:kelp
OBJNAM - kelp area
RECDAT - 10/15/2005
SORDAT - 20041015
SORIND - us,us,surve,11390

Office Notes

Chart kelp area

2 - Dangers to Navigation

2.1) Profile/Beam - 1/1 from h11390 / dolphin_0 / 2004-289 / p139d1_dn289_uwtroc_point.shp

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 09' 38.628" N, 148° 19' 54.329" W
Least Depth: -0.23 m
Timestamp: 2004-289.17:01:22.000 (10/15/2004)
DP Dataset: h11390 / dolphin_0 / 2004-289 / p139d1_dn289_uwtroc_point.shp
Profile/Beam: 1/1
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

dpdn28901 is dangerous rk awash

Hydrographer Recommendations

Add rk at DP location

Cartographically-Rounded Depth (Affected Charts):

0fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)

0fm 1ft (531_1)

-.3m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - dpdn28901 is dangerous rk awash
OBJNAM - a rk
QUASOU - 1:depth known
RECDAT - 20041015
SORDAT - 20041015
SORIND - us,us,surve,H11390
STATUS - 1:permanent
TECSOU - 12:found by levelling

VALSOU - -0.234 m

VERDAT - 12:Mean lower low water

WATLEV - 5:awash

Office Notes

Concur chart rock uncovers 1 ft at MLLW

2.2) Profile/Beam - 922/34 from h11390 / tpe_r2_mb_0 / 2004-275 / r2mba04275a_d20

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 07' 37.949" N, 148° 20' 50.596" W
Least Depth: 13.13 m
Timestamp: 2004-275.19:45:46.459 (10/01/2004)
Survey Line: h11390 / tpe_r2_mb_0 / 2004-275 / r2mba04275a_d20
Profile/Beam: 922/34
Charts Affected: 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

7.18 fathom sounding is shoal depth on feature in charted 14 fathoms

Hydrographer Recommendations

Chart shoal depth and revise contour

Cartographically-Rounded Depth (Affected Charts):

7fm (16683_1, 16680_1, 16700_1, 16013_1, 530_1)

7fm 1ft (531_1)

13.1m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
INFORM - 7.18 fathom sounding is shoal depth on feature in charted 14 fathoms
QUASOU - 1:depth known
STATUS - 1:permanent
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Concur

2.3) Profile/Beam - 1467/91 from h11390 / tpe_d2_mb_0 / 2004-276 / d2mba04276_d09

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 05' 51.304" N, 148° 17' 47.624" W
Least Depth: 6.21 m
Timestamp: 2004-276.00:54:23.793 (10/02/2004)
Survey Line: h11390 / tpe_d2_mb_0 / 2004-276 / d2mba04276_d09
Profile/Beam: 1467/91
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

3.39 fathom sounding is shoal depth on feature charted in greater than 10 fathoms

Hydrographer Recommendations

Chart shoal sounding and revise contour

Cartographically-Rounded Depth (Affected Charts):

3 ¼fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)

3fm 2ft (531_1)

6.2m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
 INFORM - 3.39 fathom sounding is shoal depth on feature charted in greater than 10 fathoms
 QUASOU - 1:depth known
 STATUS - 1:permanent
 TECSOU - 3:found by multi-beam
 VERDAT - 12:Mean lower low water

Office Notes

Concur

2.4) Profile/Beam - 1531/14 from h11390 / tpe_d2_mb_0 / 2004-276 / d2mba04276_d13

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 06' 33.038" N, 148° 17' 22.255" W
Least Depth: 12.27 m
Timestamp: 2004-276.01:22:13.491 (10/02/2004)
Survey Line: h11390 / tpe_d2_mb_0 / 2004-276 / d2mba04276_d13
Profile/Beam: 1531/14
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

6.71 fathom sounding on feature 180 meters offshore of the 10 fathom contour line in charted 11 fathoms

Hydrographer Recommendations

Chart shoal depth and revise contour

Cartographically-Rounded Depth (Affected Charts):

6 ¾fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)

6fm 4ft (531_1)

12.2m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
INFORM - 6.71 fathom sounding on feature 180 meters offshore of the 10 fathom contour line in charted 11 fathoms
QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Concur

2.5) Profile/Beam - 608/37 from h11390 / tpe_d2_mb_0 / 2004-278 / d2mba04278_d16

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 06' 46.364" N, 148° 18' 21.766" W
Least Depth: 10.86 m
Timestamp: 2004-278.18:17:45.112 (10/04/2004)
Survey Line: h11390 / tpe_d2_mb_0 / 2004-278 / d2mba04278_d16
Profile/Beam: 608/37
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

5.94 fathom shoal sounding on feature seaward of charted 10 fathom contour

Hydrographer Recommendations

Chart shoal depth and revise contour

Cartographically-Rounded Depth (Affected Charts):

6fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)

5fm 5ft (531_1)

10.8m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
INFORM - 5.94 fathom shoal sounding on feature seaward of charted 10 fathom contour
QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Concur

2.6) Profile/Beam - 1176/36 from h11390 / tpe_d2_mb_0 / 2004-278 / d2mba04278_d22

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 06' 38.800" N, 148° 17' 36.167" W
Least Depth: 6.00 m
Timestamp: 2004-278.18:46:22.111 (10/04/2004)
Survey Line: h11390 / tpe_d2_mb_0 / 2004-278 / d2mba04278_d22
Profile/Beam: 1176/36
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

3.28 fathom shoal sounding on feature seaward of charted 10 fathom contour

Hydrographer Recommendations

Chart shoal depth and revise contour

Cartographically-Rounded Depth (Affected Charts):

3 ¼fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)

3fm 1ft (531_1)

6.0m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
INFORM - 3.28 fathom shoal sounding on feature seaward of charted 10 fathom contour
QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Concur

2.7) Profile/Beam - 249/52 from h11390 / tpe_d2_mb_0 / 2004-289 / d2mba04289_d02

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 09' 42.086" N, 148° 19' 32.834" W
Least Depth: 7.48 m
Timestamp: 2004-289.00:02:19.881 (10/15/2004)
Survey Line: h11390 / tpe_d2_mb_0 / 2004-289 / d2mba04289_d02
Profile/Beam: 249/52
Charts Affected: 16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

4.09 fathom sounding on feature 100 meters seaward of 10 fathom contour

Hydrographer Recommendations

Chart shoal depth and revise contour

Cartographically-Rounded Depth (Affected Charts):

4fm (16702_1, 16683_1, 16680_1, 16700_1, 16013_1, 530_1)

4fm 0ft (531_1)

7.5m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
INFORM - 4.09 fathom sounding on feature 100 meters seaward of 10 fathom contour
QUASOU - 1:depth known
TECSOU - 3:found by multi-beam
VERDAT - 12:Mean lower low water

Office Notes

Concur

2.8) Profile/Beam - 364/79 from h11390 / tpe_d2_mb_0 / 2004-294 / d2mba04294_d64

DANGER TO NAVIGATION

Survey Summary

Survey Position: 60° 07' 37.063" N, 148° 21' 48.388" W
Least Depth: 7.88 m
Timestamp: 2004-294.23:36:55.079 (10/20/2004)
Survey Line: h11390 / tpe_d2_mb_0 / 2004-294 / d2mba04294_d64
Profile/Beam: 364/79
Charts Affected: 16683_1, 16680_1, 16700_1, 16013_1, 531_1, 500_1, 530_1, 50_1

Remarks:

4.31 sounding is shoal depth on reef 300 meters offshore of 10 fathom curve in charted 11 fathoms

Hydrographer Recommendations

Chart shoal depth and revise contour for offshore reef

Cartographically-Rounded Depth (Affected Charts):

4 ¼fm (16683_1, 16680_1, 16700_1, 16013_1, 530_1)

4fm 2ft (531_1)

7.9m (500_1, 50_1)

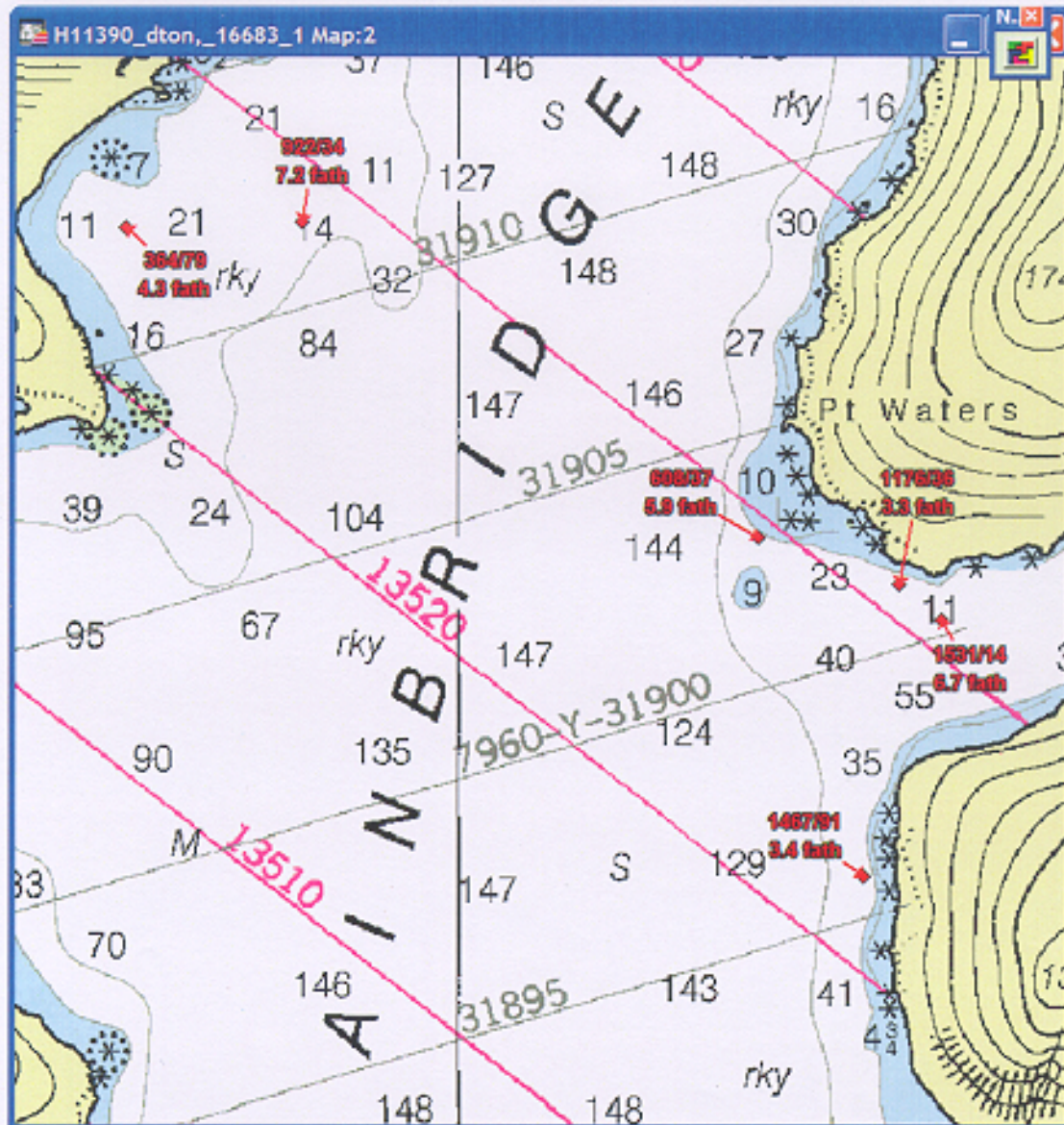
S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: EXPSOU - 2:shoaler than range of depth of the surrounding depth area
INFORM - 4.31 sounding is shoal depth on reef 300 meters offshore of 10 fathom curve in charted 11 fathoms
QUASOU - 1:depth known
TECSOU - 3:found by multi-beam

Office Notes

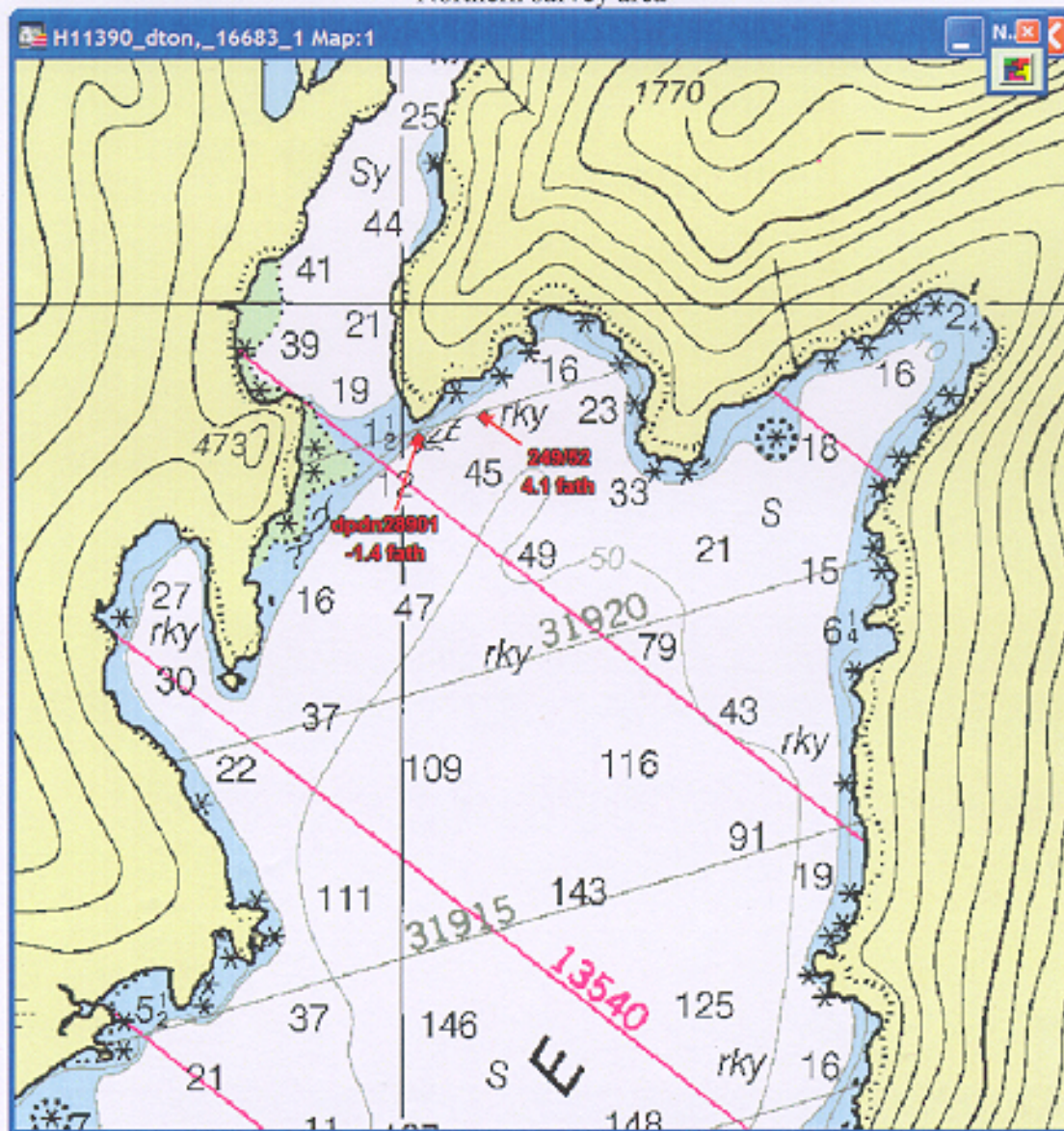
Concur

OPR-P139-TC-04, H11390 (Sheet D) DtoN Report Overview
Southern survey area



OPR-P139-TC-04, H11390 (Sheet D) DtoN Report Overview
Items are referenced with Display Name (ping/beam) and depth in fathoms

Northern survey area



H-11390 H-Cell Supplemental Report

Russ Davies, Cartographer
Pacific Hydrographic Branch

Introduction

The primary purpose of the H-Cell is to directly update NOAA ENC's with new survey information in International Hydrographic Organization (IHO) format S-57. H-Cell compilation of survey H-11390 utilized Office of Coast Survey H-Cell Specifications Version 2.0, April 2, 2007. H-Cell H-11390 will be used to update chart 16702, scale 1:40,000, 13th Ed.; Nov. 1, 2005 and chart 16683, scale 1:81436, 11th Ed.; June 1 2007.

1. Compilation Scale

The density of soundings in the H-Cell is compiled as appropriate to emulate those soundings on Chart 16702. Position and density of non-bathymetric features included in the H-Cell have not been generalized from the scale of the hydrographic survey, 1:10,000.

2. Soundings

2.1 Source Data

A 5 meter resolution Combined BASE, **H11390_combined.hns**, surface was used as the basis for H-Cell production following Branch certification.

For multibeam data a survey-scale full density sounding (SOUNDG) feature object source layer was built from the **H11390_combined** surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 survey scale. The sounding feature object source layer was exported from BASE Editor as **H11390_ss**, and imported into HOM.

2.2 Sounding Feature Objects

In CARIS BASE Editor, soundings were manually selected from the high density sounding layer and imported into new layer created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that more closely represents the seafloor morphology and that emulates density and distribution of soundings on chart 16702 than is possible using automated methods. See section 10.1, Data Processing Notes, for details about the use of manual sounding selection for H11390. The sounding feature object source layer was exported and imported into HOM.

3. Depth Areas

3.1 Source Data

The BASE surfaces were used to generate all encompassing depth areas, and, for survey evaluation and verification purposes only, sets of chart equivalent contours. No actual depth contours were delivered per OCS H-Cell Specifications version 2.0.

3.2 Depth Area Feature Objects

One all-encompassing depth range, 0 meters to 240 meters, was used for all depth area objects below MLLW. Upon conversion to NOAA charting units, this depth range is 0 fathoms to 131 fathoms.

4. Meta Areas

The following Meta object areas are included in H-Cell 11390:

M_QUAL M_NSYS
M_COVR

Meta area objects were constructed on the basis of perimeter lines delineating the surveyed limits, “islands of coverage” for point and line features surveyed outside the hydrographic limits, and extents of data gaps inside the survey area. These perimeters were first used to create the Skin of The Earth (SOTE) layer, then were duplicated to the Meta object layers and attributed per the H-Cell Specifications, version 2.0.

5. Survey Features

All features for survey H11390 are fully documented with attribution and action taken during compilation. These features can be found in the Descriptive Report under the Shoreline Report which is included in DR.

Dangers to Navigation

There were eight dangers to navigation reported during survey operations. NO additional were found during office processing.

Aids to Navigation

H11389 did not contain any federally or private maintained aids.

6. Shoreline / Tide Delineation

Depth areas (DEPARE) and Seabed areas (SBDARE) were created for all SOTE features.

7. Attribution

All S-57 Feature Objects have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with OCS H-Cell Specifications, version 2.0.

8. Layout

8.1 CARIS HOM Layering Scheme

100	Chart scale soundings
101	Survey scale soundings
200	Group 1 objects (Skin of the Earth)
300	Hydro rocks
301	Bottom samples
302	Islet
303	Kelp area
600	M_COVR
601	M_QUAL
602	M_NSYS
800	Blue Notes
900	Depth countours
1001	RSD shoreline

8.2 Blue Notes

Notes regarding shoreline conflicts are in CARIS HOM as layers 800 and as Shape file sets, **H11389bluenotes** (with the appropriate extensions) for point and line figures, respectively.

9. Spatial Framework

9.1 Coordinate System

All spatial map and base cell file deliverables are in an LLDG geographic coordinate system, with WGS84 horizontal, MHW vertical, and MLLW (1983-2001 NTDE) sounding datums.

9.2 Horizontal and Vertical Units

During creation of sounding sets in CARIS BASE Editor, and creation of the H-Cell in CARIS HOM, units are maintained as metric with millimeter resolution. NOAA rounding is applied at the same time that conversion to chart units is made to the metric H-Cell base cell file, at the end of the H-Cell compilation process.

A CARIS environment variable, uslXsounding round, controls the depth at which rounding occurs. Setting this variable to NOAA fathoms and feet displays all soundings from 0 to equal to or greater than 11 fathoms as whole units.

In an ENC viewer fathoms and feet display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. For fathoms and feet between 0 and 10 fathoms 4.5 feet (10.75 fms), soundings round to the deeper foot if the decimals of the foot are X.Y75000 or greater. For fathoms and feet deeper or equal to 11 fathoms, soundings round to the deeper fathom if feet and decimals of the foot are X.45000 (X.Y75000) or greater. Drying heights are in feet and are rounded using arithmetic methods. In an ENC viewer, heights greater than 6 feet will register in fathoms and feet using the above stated rules.

HOM Units

Sounding Units:	Meters rounded to the nearest millimeter
Spot Height Units:	Meters rounded to the nearest meter

Chart Unit Base Cell Units

Depth Units (DUNI):	Fathoms and feet
Height Units (HUNI):	Feet (or fathoms and feet above 6 feet)
Positional Units (PUNI):	Meters

10. QA/QC

10.1 Data Processing Notes

Manual chart scale sounding selections were made for this survey. Experience has shown that in areas where bathymetry is steep sided, as in the case of this extremely steep edged fjord, automated sounding selection is impractical. None of the default sounding suppression options offered in CARIS BASE Editor or HOM yields an acceptable density and distribution of depths, generally bunching soundings nearshore with too sparse coverage seaward. While the customized options are more practical for this type of terrain, an inordinate amount of time must be spent in experimentation with variations on the algebraic terms in order to devise the most suitable formula, and manual adjustments are still required to the resulting sounding set.

10.2 ENC Validation Checks

H11390 was subjected to QA and Validation checks in HOM prior to exporting to the H-Cell base cell (000) file. Full millimeter precision was retained in the export of the metric S-57 base cell data set. This data set was converted to a chart unit 000 file. dKart Inspector 5.0 (Service Pack 1) was then used to further check the data set for conformity using the S-58 version. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and errors investigated and corrected where necessary.

11. Products

11.1 HSD, MCD and CGTP Deliverables

- H11390 Base Cell File, Chart Units, Soundings compiled to 1:40,000
- H11390 Base Cell File, Chart Units, Soundings compiled to 1:10,000
- H11390 Descriptive Report including end notes compiled during office processing and certification
- H11390H-Cell Supplemental Report
- Blue Notes shape files
- H11390combined_5m.bag (Bathymetry Attributes Grid)
- 000 Features File

11.2 File Naming Conventions

HOM file set prefix: *H11390_hc*

MCD Chart units base cell file: *US511390_CU.000*

MCD Chart units base cell file, survey scale soundings: *US511390_SS.000*

BAG (for CGTP): *H1139combined_5m.bag*

Features File (for CGTP): *H11390_Features.000*

11.3 Software

HIPS 6.1:	Management and inspection of Combined BASE surfaces
BASE Editor 2.0:	Combination of Product Surfaces and initial creation of the S-57 bathymetry-derived features
BASE Editor 2.0:	Creation of BAG deliverable
HOM 3.3:	Assembly of the H-Cell, S-57 products, QA
GIS 4.4a:	Setting the sounding rounding variable
Pydro v7.3 (r2014_TCfix)	Creation of DTON and Shoreline reports
dKart Inspector 5.0:	Validation of the base cell file

12. Contacts

Inquiries regarding this H-Cell content or construction should be directed to:
Russ Davies, Cartographer, PHB, Seattle, WA; 206-526-6843;
Russ.Davies@noaa.gov.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: April 25, 2005

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P139-TC-2004
HYDROGRAPHIC SHEET: H11390

LOCALITY: Port Bainbridge, Alaska
TIME PERIOD: September 21 - October 21, 2004

TIDE STATION USED: 945-4050 Cordova, Alaska
Lat. $60^{\circ} 33.5'N$ Lon. $145^{\circ} 45.2'W$
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.559 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PWS2, PWS3 & PWS4

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Thomas V. Mew 5/3/05

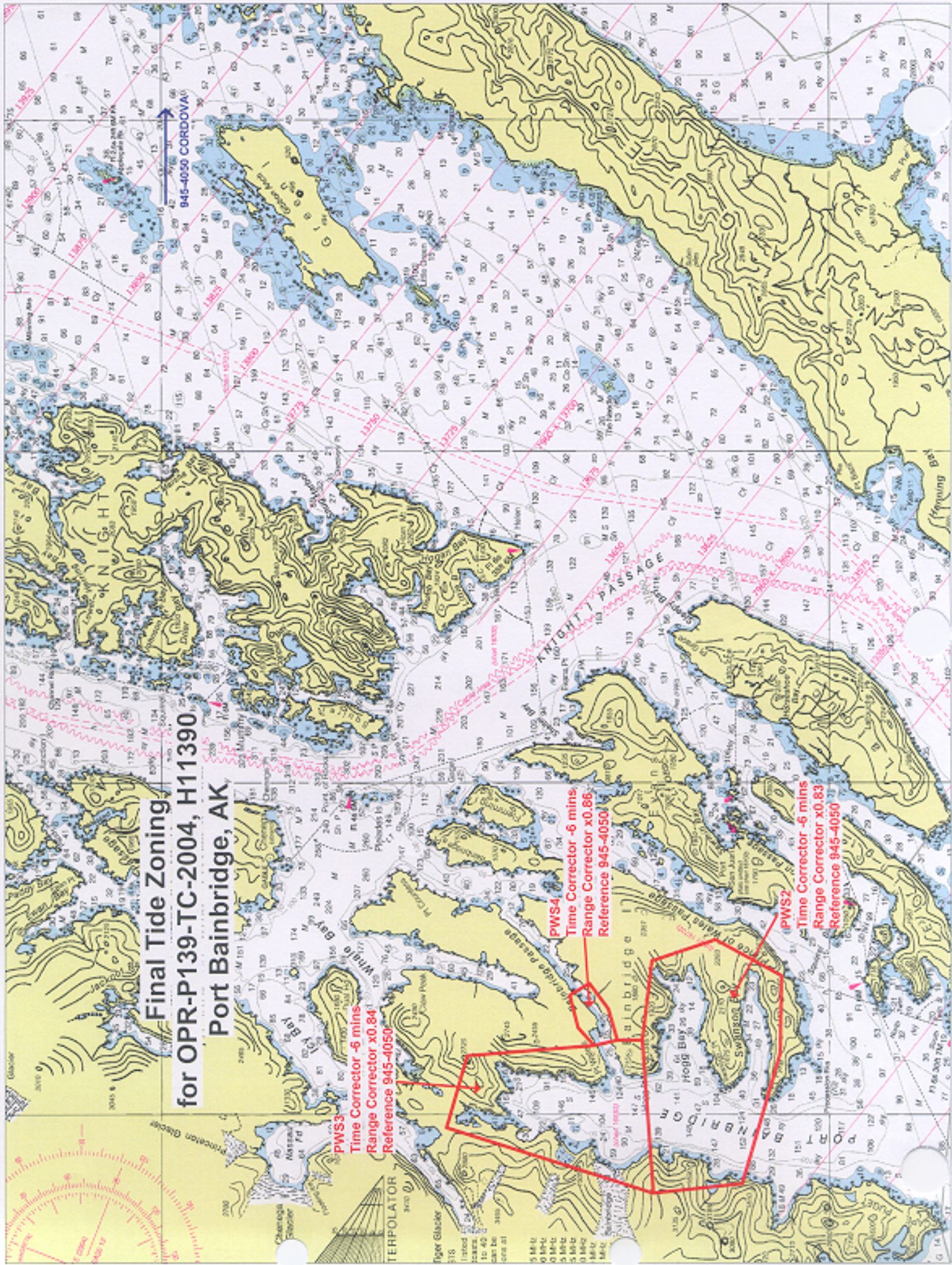
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for OPR-P139-TC-2004, H11390

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

	Tide Station Order	AVG Time Correction	Range Correction
Zone PWS2	945-4050	-6	0.83
-148.402947 60.043849			
-148.412469 60.088282			
-148.258525 60.093858			
-148.178861 60.089078			
-148.157324 60.05723			
-148.193595 60.024143			
-148.271815 60.024853			
-148.402947 60.043849			
Zone PWS3	945-4050	-6	0.84
-148.412469 60.088282			
-148.258525 60.093858			
-148.25857 60.106337			
-148.264025 60.117906			
-148.274295 60.181381			
-148.346322 60.191699			
-148.412469 60.088282			
Zone PWS4	945-4050	-6	0.86
-148.264025 60.117906			
-148.246003 60.12596			
-148.213579 60.130152			
-148.201307 60.120288			
-148.227212 60.110761			
-148.25857 60.106337			
-148.264025 60.117906			



**Final Tide Zoning
for OPR-P139-TC-2004, H11390
Port Bainbridge, AK**

PWS3
Time Corrector -6 mins
Range Corrector x0.84
Reference 945-4050

PWS4
Time Corrector -6 mins
Range Corrector x0.86
Reference 945-4050

PWS2
Time Corrector -6 mins
Range Corrector x0.83
Reference 945-4050

TERPOLATOR
3000

APPROVAL SHEET
H-11390

Initial Approvals:

The survey evaluation and verification has been conducted according to branch processing procedures and the H-Cell compiled per the latest OCS H-Cell Specifications.

The survey and associated records have been inspected with regard to survey coverage, development of critical depths, S-57 classification and attribution of soundings and features, cartographic characterization, and verification or disproof of charted data within the survey limits. The survey records and digital data comply with OCS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

I have reviewed the H-Cell, accompanying data, and reports. This survey and accompanying digital data meet or exceed OCS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.