**REVISION NOTICE TABLE**

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| **DATE** | **DESCRIPTION OF REVISION** |
| 29-Aug-2017 | Corrected MISSION metadata field in header. R.H. |

**PROCESSING NOTES**

Cruise: 9905

Agency: IOS

Location: Strait of Georgia / Juan de Fuca / Effingham Inlet

Project: Strait of Georgia / Wide Strait

Agencies: OSAP/MEHS

Party Chief: Tom Juhasz

Platform: J.P.Tully

Date: January 21, 1999 - January 28, 1999

Processed by: Germaine Gatien

Date of Processing : 12 April 1999 - 4 May 1999

Number of original CTD casts: 69

Number of casts processed: 67

**INSTRUMENT SUMMARY**

A SeaBird Model SBE 911+ CTD (#0443) was used.

**SUMMARY OF QUALITY AND CONCERNS**

The data is of good quality requiring little editing.

**PROCESSING SUMMARY**

**1**. **Seasave** - This step was completed at sea; the raw data files are \*.dat.

**2. Preliminary Steps**

The Log Book was obtained and note was made of problems that occurred during the cruise.

The salinity data was obtained.

The cruise summary sheet was completed.

The configuration file was obtained and the calibrations constants were found to be correct.

1. **Conversion of Raw Data**

The raw data was converted (without salinity) using conversion file 99050001.con. ROS files were created separately with salinity. An initial look at casts #5, 19, 49 and 64 suggests that the primary and secondary channels tracked well.

**4. ALIGNCTD**

The secondary conductivity channel was advanced by 0.060. The primary channel was aligned at sea by the deck unit. Comparing cast #5 before and after this step showed that it was very effective at removing spikes from the secondary salinity.

**5. WILDEDIT**

Program WILDEDIT was used to remove spikes in Pressure. Parameters used were:

Pass 1 Std Dev = 2

 Pass 2 Std Dev = 5

 Points per block = 50

**6. CELLTM**

The conductivity cell thermal mass correction was done for both channels (alpha = 0.03; 1/beta = 9.0.)

**7. DERIVE**

Program DERIVE was run twice:

1. on all casts to calculate primary and secondary salinity.
2. on a selection of casts to calculate the differences between primary and secondary channels for temperature, conductivity and salinity.

**8. Test Plots and Channel Check**

A sample of casts (#5, 19 and 49) was plotted to check for agreement between the pairs of T and C sensors. The temperature variations are ~0.001 C below 100dbars while the conductivity difference varies by ~0.001 to 0.0015 units. Salinity values varied by less than 0.01psu when the descent rate was fairly smooth, but by 0.017psu when it was noisy. Primary values were higher in all cases. These results are similar to those found during 9836 and 9839 when the same equipment and calibrations were used.

**9. Conversion to IOS Headers**

The IOSSHELL routine was used to convert SEA-Bird 911+ data to IOS Headers. The rosette files were converted and renamed \*.bot.

**10. Checking Headers**

A header summary was produced and errors in the station names found in casts #15 and 20 were fixed.

The surface check was run. The average surface pressure is 2.43dbars which is as expected.

The header check was produced. No errors were found

The cruise track was plotted and looks reasonable.

1. **DELETE**

Since the CTD was lowered very slowly during many of the casts a study was done of the descent rate before running DELETE. Plots were examined to see if the Low Drop Rate feature should be turned off, or the minimum set differently from the usual 0.33m/s. It was found that 0.33m/s would remove too much data, but not using the feature at all would allow some bad data to get through when the CTD actually reversed direction during the downcast. While the swell deletion would remove most of the bad data, using a drop rate minimum of 0.1m/s would improve the results without causing any significant loss of good data. The log was examined and no problems found.

The following DELETE parameters were used:

 Surface Record Removal: Last Press Min

 Maximum Surface Pressure (relative): 20.00

 Surface Swell Pressure Tolerance: .50

 Pressure filtered over width: 11

 Swells deleted. Warning message if pressure difference of 2.00

 Drop rates< .10 m/s (calculated over 11 points) was deleted.

 Sample interval = .04 seconds.

**13. BIN AVERAGE**

The following Bin Average values were used:

Bin channel = pressure

Averaging interval = 1.000

Minimum bin value = .000

Average value will be used

Interpolated values are NOT used for empty bins

**14. Test Plots**

Profiles of all casts were examined (on screen) for large inconsistencies between primary and secondary values and for any evidence of problems with the processing. None were found. Primary sensors will be chosen for final processing as these have proven to be most accurate during previous cruises.

Page plots were produced using T0,S0 for all casts. These plots were examined for spikes and instabilities and used to guide the use of CTDEDIT.

**15. CTDEDIT**

CTDEDIT was used to clean noise in S and/or T near the surface or at the bottom for the following casts: 1,5,9,11,13,17,24,27,30,31,32,36,37,47,48,56.

CTDEDIT was used for more extensive cleaning in the following casts: 49,50,57

Note was made of the editing details in the relevant files.

**16. Intercomparisons**

Repeat casts - There were no repeat casts.

Previous experience with these sensors - These sensors were used for 4 cruises during 1998: 9829 (Aug/Sept), 9835 (Sept/Oct), 9836(Oct) and 9839(Nov). In each case the primary sensors were used. The primary salinities were found to be high by 0.003psu, 0.0037psu, 0.005psu and 0.0046psu respectively.

Historic ranges - Plots were examined with historic ranges superimposed for casts 5,6,7,15 and 49. All fell within those ranges, but there are no deep casts so the ranges are large and of limited value.

COMPARE - Hydro bottle salinities were compared with those from the CTD using the IOSSHELL routine COMPARE. The differences were quite scattered and there is no cast deeper than 530db. Neglecting the data above 100db and points with differences greater than 0.015 or less than -0.005 a fairly flat trend line is achieved (y = -2E-06x + 0.0035) and the average difference using those points is +0.0030psu.

1. **Recalibration**

Based on the intercomparisons the edited CTD files, the rosette files and \*.sam files were all recalibrated using file 9905rcal.ccf to lower the salinity by 0.003psu. COMPARE was rerun using the recalibrated salinities and the average differences (using the same data points as were used in the first run of COMPARE) were then found to be +0.0002psu.

**19. Final Plots**

Page plots were prepared using the edited data.

**19. REMOVE**

The following channels were removed from all casts: Secondary Temperature, Secondary Salinity, Conductivity:Primary, Conductivity:Secondary and Flag.

**20. Producing final files**

a.) The final files were renamed \*.ctd.

b.) A cross-reference listing was produced.

**Particulars**

1. E-buoy in Saanich Inlet
2. Touched bottom
3. Touched bottom
4. Started logging before pumps on; waited to descend

12. Only 2.5m of data. Deleted. Same site as cast #11.

1. Warm, salty layer at bottom
2. Transmissivity minimum at 65-70m

41. No data. Delete.

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**CRUISE SUMMARY**

Cruise ID#: 9905

Dates: Start: January 21, 1999 End: January 28, 1999

Location: Georgia Strait/ Juan de Fuca/ La Perouse/ Effingham

Vessel: J.P.Tully

Chief Scientist: Tom Juhasz

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CTD#** | **Make** | **Model** | **Serial#** | **Used with Rosette?** | **CTD Calibration Sheet Competed?** |
| 1 | SEABIRD | 911+ | 0437 | yes | yes |

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**CTD Calibration Information**

**Make/Model/Serial#: SEABIRD/911+/0437**

**Cruise ID#: 9905**

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| --- |
| **Calibration Information** |
| **Sensor** | **Pre-Cruise** | **Post Cruise** |
| **Name** | **S/N** | **Date** | **Location** | **Date** | **Location** |
| **Temperature** | **2095** | **15Aug 1998** | **factory** |  |  |
| **Conductivity** | **1766** | **18Aug 1998** | **factory** |  |  |
| **Secondary Temp.** | **2038** | **1May 1998** | **factory** |  |  |
| **Secondary Cond.** | **2128** | **5May 1998** | **factory** |  |  |
| **Transmissometer** | **182D** | **7Aug 1998** | **IOS** | **15Mar1999** | **IOS** |
| **Pressure Sensor** | **63507** | **11Jan 1996** | **factory** |  |  |

**Sensor Calibration Notes:**

The configuration file used is attached; this includes the sensor calibrations.