**REVISION NOTICE TABLE**

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| **DATE** | **DESCRIPTION OF REVISION** |
| 3 Dec. 2024 | Added Data Description to CTD files. G.G. |

**PROCESSING NOTES**

Cruise: 1990-61

Agency: OSAP

Location: North-East Pacific

Project: SWAPP

Party Chief: Farmer D.

Platform: Parizeau

Date: 19 February 1990 – 26 March 1990

Processed by: Germaine Gatien Data Transcribed by: Danielle Caleb

Date of Processing: 20 June 2017 – 28 June 2017

Number of original CTD casts: 44 Number of CTD files: 43 (1 lost)

Number of original bottle casts: 28 Number of bottle casts processed: 0

**SUMMARY**

There is no record of the instrument used but it was likely a Guildline CTD.

CTD data were transcribed from paper computer output found at IOS. There was no cast #25 and no paper output for cast #4. Also available are a Daily Science Log Book, a Bridge Log, dissolved oxygen analysis sheets and printed sheets with the dissolved oxygen analysis final values.

The dissolved oxygen data were not digitized; they include nominal sampling depths only, rather than computed depths from reversing thermometers. There was no DO sampling For the MP stations.

There are a few salinity values in the log book that were gathered for calibration purposes. The salinity calibration data agree well with the two CTD casts with which they are associated. It is possible that the conductivity was recalibrated to make the salinity agree or that no recalibration was found necessary.

The latitude for CTD event #17 appears to be wrong in the log book. It was changed in the header of the CTD file from 36º 8.86’N as found in the log to 35º 8.86’N as found in the paper computer output.

**PROCESSING SUMMARY**

* + - * 1. **Transcription**

The data for this cruise were not in the OSD data archive or the World Ocean Data Base, and no digital records could be found. A spreadsheet was prepared by transcribing data found on paper (computer output) in storage at IOS.

The original version of the transcribed data is in file 90-61 SWAPP Salinity\_Orig\_from\_Danielle.xlsx.

There are some errors in that file. For the corrected data see file 1990-61-ctd2.csv.

* + - * 1. **Preliminary Checks**

There was a log book available, but it did not contain a list of personnel or equipment used. One participant was.Svein Vagel who reported that the chief scientist was David Farmer; Svein recalls that Dr. Farmer was not on board for the whole cruise. The main purpose of the cruise was to take part in SWAPP, the Surface Wave Processes Project. The return trip was arranged so as to visit stations MP12 to MP01 (standard Line P sites).

* + - * 1. **CTD File Processing**

The spreadsheet was obtained from the transcriber. It was saved as 1990-61-ctd2.csv.

The entries for the latitude and longitude were manipulated to get them into IOS Header format so that they could be converted directly to the headers.

Converting date and time directly to headers was unsuccessful, so they were converted to separate channels first. For some reason the TIME channel format needed to be chosen every single time the file was converted. The format did not get saved so when corrections were made and the data reconverted the program would not run.

At this point profile and T-S plots were made to check for outliers. Outliers were checked against the paper records and where transcription errors were found, they were corrected in the converted file and in the spreadsheet 1990-61-ctd2.csv. Where the data are clearly bad even in the paper record, the values were replaced with pad values.

2 – 380.4db – Transcription error in salinity. Fixed.

2 – 283.6db – Temperature and salinity extreme outliers in paper record. Values padded.

3 – 120.0db- Transcription error in salinity. Fixed.

7 - 0db – Transcription error in salinity. Fixed.

9 – 2.4db - surface salinity low (~21psu) but transcribed correctly and ok in T-S plot. Not an unreasonable value though possibly pressure should be lower. Left unchanged.

16 – 81.0db- Transcription error in salinity. Fixed.

22 – 141.0db – Transcription error in salinity. Fixed.

24 – 20.4db - Transcription error in salinity. Fixed.

30 - 6.6db– Transcription error in salinity. Fixed.

31 - 91.0db & 95.2db – Transcription errors in salinity. Fixed.

34 – Small salinity reversal around 50m but looks ok in T-S. Left unchanged.

36 – 2.4db. Very low salinity and high temperature. Stable but odd in T-S but hard to believe such a low salinity at that depth. Since both T and S odd, probably pressure is wrong. Maybe out of water. Comparison with adjacent casts shows salinity values of about 32.5 at 2.6db at MP11 and at 0.9db at MP09. Pad values were entered for both temperature and salinity at 2.4db.

36 – 120.9db 0 Transcription error in salinity. Fixed.

37 – 20.0db– Transcription error in salinity. Fixed.

45 – Salinity very low at 1.7db. Temperature looks fine. This cast is quite close to shore so it is possible that surface water was fairly fresh, but a value of 0.7psu is hard to believe. This cast was well mixed and shallow. The salinity value was padded.

For the MP12 to MP01 plots, local climatology was superimposed on profile plots. The only excursions were around 70m at stations MP12 and MP4 where salinity was a little high. These look like cases of a shallow mixed layer rather than calibration issues.

A track plot was made to check for obvious errors. The position for event #17 looks out of line, being 1º north of the adjacent casts, but it is the same as the log record and the paper records. There was enough time for the ship to have travelled that far. When plots were made of casts #15 to #19 to see if #17 stood out, it did not. The cast that did stand out was #16, with warmer and saltier water down to 75db. There was some dissolved oxygen data available so that was checked and it also showed event #16 as the outlier with low DO values down to about 50m. So any variability seen among these casts may be due to storm-related vertical mixing. Perhaps the ship travelled north to avoid a storm or to get some idea of local variability. However, both #16 and #17 are said to be at station S-12, and there is no evidence in the Bridge Log of a move to 36ºN although not all casts are entered. It is most likely that there is an error in the log position for event #17. It will be changed to 35ºN, but a note will be added to the header to indicate that this may be wrong.

A header check turned up no obvious errors.

A cross-reference list was used to check that positions matched those in the log book. Three errors were found and corrected that were due to errors in adjusting the formats. There was one other major discrepancy for the position of event #30 but clearly the log book is wrong and the position in the printed output looks much more reasonable than the log.

CLEAN was used to add a Start Time to the headers based on the Date and Time channels. This also produced a Stop Time which is inaccurate since it is the same as the start time.

The spreadsheet was examined and it was found that there was an error in the date for CTD #3.

A track plot was produced and that turned up a number of errors in positions either at the transcription stage or during manipulation of the spreadsheet. These were corrected in the spreadsheet 1990-61-ctd2.csv.

The conversion and CLEAN routines were rerun until all errors were corrected.

REMOVE was run to remove conductivity, date and time channels.

HEADEDIT was used to add a comment, fix some units and formats and remove the END TIME and TIME ZERO from the headers.

A comment was added to the header of 1990-61-0017.ctd about the questionable latitude.

Standards check was run; the formats for temperature and salinity are non-standard but fitting for the instrument used.

* + - * 1. **BOTTLE FILE PREPARATION**

There were hydro casts in the southern section of the cruise.

There are notes in the log about salinity samples but the only values found were written in the log book. That may be all that were taken.

* In one case there is a salinity sample at MP10 where there is no record of a bottle cast, so presumably it was just a single bottle fired and not considered a normal bottle cast. The 3 readings at station MP10 agree well with the CTD data (#36).
* There are also some salinity readings entered for a bottle cast that was run after CTD cast #26 between 40.2 and 40.6m. The salinity values correspond to CTD values at about 35m and 45m, though a little lower than at 40m. There are temperatures recorded corresponding to the salinity sample values.

It looks like the CTD conductivity was either recalibrated to match these samples, OR the comparison was considered good and no adjustment was made. In either case, no further recalibration of salinity looks appropriate.

We do have paper records for dissolved oxygen and analysis sheets, but only for the southern section of the cruise. There are no temperatures from reversing thermometers, and so, no corrected depths. The DO records could be digitized but we only have nominal depths, so it may not be worth the effort.