

EP1-94-MB
NOAA Ship Malcolm Baldrige
Rodman, Panama - San Diego
April 14 - May 11, 1994

Chief Scientist: LCDR M. Koehn
Survey Department: CST Sweeney, Lamire, Zaragoza
CTD Personnel: M. McCarty
Final Processing: M. Swapp and K. McTaggart

ACQUISITION:

A total of 24 CTD casts were taken along 95W, 110W, and 125W during leg 1 of the spring EPOCS cruise using PMEL Neil Brown CTD s/n 1114 and 12-bottle rosette sampling package. All casts were to a depth of 1000 meters. Typically 12 bottles were fired on each cast and salinity samples were taken for calibration checks of the NBIS CTD. Survey department personnel under the supervision of Margie McCarty were responsible for preparing the CTD, all data acquisition, collection of water samples, and analyzing the samples for salinity using the ship's Autosol.

The CTD data were acquired using the ship's LOGGER software. Audio backups were made on VCR tapes. Raw CTD data were transferred from the acquisition microVAX to the processing microVAX where PMEL programs reduced the data for analysis. Final calibrations were determined at PMEL after the cruise.

Cast 10 of EP194-MB used CTD s/n 1111 which was not working properly. These data were not processed and a second cast was taken at this station with CTD s/n 1114.

CONDUCTIVITY CALIBRATIONS:

CALIB.DAT precruise calibrations for PMEL CTD 1114:

1114	6	380							
-31.33027	0.9964779	0.740232E-6	-0.420914E-10	P	DN	S/N 1114	AUG 93		
-33.06427	0.9928080	0.227357E-5	-0.187309E-09	P	UP	S/N 1114	AUG 93		
-0.00211	0.9997917	0.000000E-6	0.000000E-10	T	68	S/N 1114	AUG 93		
-0.00036	1.0000150	0.000000E-6	0.000000E-10	C		S/N 1112	JUN 92		

Post-cruise, files were restored to the VAX computer system at PMEL from Exabyte 8mm tapes. The .CAL file was created on the ship using CALDSK which takes the CTD values from those written on the cast logs during acquisition and not from the READER listings. The .CAL file was proofed, typos corrected, and put into the latest format compatible with WOCE modified programs at the lab. LINCALW.FOR, CALMSTRW.FOR, CALMCONW.PPC, and CALMDEEPW.PPC were used to find the best calibrations to apply to this data set.

CTD s/n 1114 pressure sensor was drifting significantly with an increasingly negative offset. EP1-294-MB was the last cruise prior to it's tweaking and recalibration at EG&G in July, 1994. The NRCC August 1993 pressure offset calibration was not good enough with the continued drift. So, an average on-deck pressure was computed for EP1-294-MB, 56.76 db, and used as the pressure offset for this data set. In order to not have to redo DLAGB processing, an additional offset of -31 db was applied in EPCTDW. The correct pressure offset of -56.76 was used in the calibration fitting and CALMSTRW.

Final calibrations applied were from an overall fit of bottles from both EP194 and EP294 cruises:

```
A0 = 0.8888686E-02
A1 = 0.9983918E+00
max residual = -0.0320
std error = 0.0120 (37/488 discarded in 7 reps)
```

CONDUCTIVITY CALIBRATION PROGRAMS & PPLUS COMMAND FILES:

```
CALDSKW - creates .CAL uncalibrated data file on SCS system
CALMSTRW - inputs .CAL uncalibrated data file
           - outputs .CLB calibrated data file (from .COM), and
             .SEA calibrated WOCE data file (edit quality bytes)
LINCALW - inputs .CAL uncalibrated data file (may be broken into
           groups), applies a linear fit to the data and throws out
           any points greater than 2.8 times the standard deviation,
           iterates through the program until no points are thrown out
           outputs .COEF file containing linear fit coefficients and
           .LOG file of fit iterations
CALMCONW.PPC - reads .CLB calibrated bottle data file and makes five
              separate scatter plots: P, T, C, S, and cast number vs.
              delta-C (CTD-bottle). These are examined for cast
              breaks and drifts in the CTD.
CALMDEEPW.PPC - reads .CLB calibrated bottle data file and makes two
               separate scatter plots: CTD salinity and bottle salinity
               vs. potential temperature from theta=0.6 to 2.2 C.
DEEPCTD.PPC - reads .CTD EPIC pointer file and .BOT EPIC pointer file
              of deep casts only and overplots the bottle salinity
              data and CTD salintiy trace from theta=.8 to 2.4 C for
              each deep cast.
```

PROCESSING:

Raw data files were restored from Exabyte 8mm tapes to the VAX at PMEL. Standard processing programs for the Baldrige with default parameters were used to reduce these data. Single point spikes were removed in cast 15 using NOMIT subroutine in EPCTDW.

The EP1-294-MB data set was a mess as noted at sea by Margie McCarty. Post-cruise calibrations included 1) an overall linear fit applied to all casts. 2) Then CTD upcast data were compared to bottle data line by line (95W, 110W, 125W, 140W) and salinity offsets were determined for outlying CTD casts and applied using program EPCTDW_OFF:

```
if (ncast.eq.001) soffset = -.067
if (ncast.eq.003) soffset = -.021
if (ncast.eq.004) soffset = -.056
if (ncast.eq.005) soffset = -.029
if (ncast.eq.007) soffset = 0.015
if (ncast.eq.008) soffset = 0.017
if (ncast.eq.009) soffset = -.008
if (ncast.eq.012) soffset = -.033
if (ncast.eq.013) soffset = 0.019
if (ncast.eq.014) soffset = 0.008
if (ncast.eq.015) soffset = 0.015
if (ncast.eq.016) soffset = -.008
if (ncast.eq.018) soffset = 0.008
if (ncast.eq.021) soffset = 0.017
if (ncast.eq.023) soffset = 0.017
```

