R/V Shumpu Maru Cruise SU9309

1 Cruise Narrative

1.1 Highlights

 Expedition Designation
        Shumpu Maru Cruise SU9309

 Chief Scientists
        Leg 3:Noriya YOSHIOKA, Kobe Marine Observatory(KMO)

 Ship
        R/V Shumpu Maru

 Ports of Call
        Leg 3:Hososima to Kochi

 Cruise Dates
        Leg 3:October 2 to October 6,1993

1.2 Cruise Summary

   The cruise track and station locations of leg 3 are shown in Figure 1.
   The ship departed Hososima on October 2,1993, and made 3 CTD/rosette stations
of a section PR17. 1 XBT stations were made between CTD/rosette stations.
To first CTD/rosette station the ship reached at 1153 UTC on October 2, from
last station departed at 2009 UTC on October 2.

   The CTD is EG&G NBIS Mark III B(6500 db type, no oxygen sensor). Water samples
were collected from 1.7 liter Niskin bottles mounted on the General Oceanics
Rosette multisampler. However, surface water samples were collected by a bucket.

1.3 List of Principal Investigators

   The principal investigators for all the parameters measured on the cruise
are listed in Table 1.

Table 1: Principal Investigators for All Measurements

Name	Responsibility	Affiliation
Sukeyoshi TAKATANI	Oxygen,Nutrients	KMO
Ryohei OKADA	CTD,S	KMO

1.4 List of Cruise Participants

   The cruise participants for leg 3 are listed in Table 2.

Table 2: Cruise Participants for leg 3

Name	Responsibility	Affiliation
Noriya YOSHIOKA	Chief Scientist	KMO
Ryohei OKADA	CTD Hardware	KMO
Nobuo SATO	Oxygen, Nutrients	KMO
Satoshi SUGIMOTO	CTD Software	KMO
Sukeyosi TAKATANI	Oxygen, Nutrients	KMO
Keiichi SATO	Watch Stander	KMO
Akira NAKADATE	Oxygen, Nutrients	KMO
Toshiaki BABA	Watch Stander	KMO
Hiroki SUZUKI	Watch Stander	KMO

2 Measurement Techniques and Calibrations

2.1 CTD

   The CTD is EG&G NBIS Mark III B(6500 db type, no oxygen sensor).
   A HP 9000 Series 300 model 330(Hewlett Packard) with a 4 MByte of memory
was used as the primary data collection device.

   The temperature and pressure sensor were calibrated at the calibration
facility of S¥E¥A CO., LTD before the cruise. The results are shown in Table 3.
   Temperature and pressure(increasing) calibration values are used to correct
CTD data, by linear interpolation inside the calibrated regime. CTD data
outside of the regime is corrected by the calibration values on the boundary,
at the each side.

   Notice that the upcast pressure data is corrected by Pressure(increasing),
not Pressure(decreasing) in Table 3.

        Table 3: The temperature and pressure sensor calibration values

   Temperature(Caliblated on October 9, pre-cruise)
      Standard Temperature   CTD Temperature   Difference
              0.1512   0.1522   0.0000
             15.1490   15.1498   0.0008
             30.0912   30.0912   0.0010

   Pressure (increasing, Caliblated on september 6, pre-cruise)
      Standard Pressure   CTD Pressure   Difference
              0.0   0.1   -0.1
           1516.8   1515.8   1.0
           3033.7   3030.3   3.4
           4550.5   4545.7   4.8
           6067.4   6067.8   -0.4

   Pressure (decreasing, Caliblated on september 6, pre-cruise)
      Standard Pressure   CTD Pressure   Differrence
              0.0   0.1   -0.1
           1516.8   1520.0   -3.2
           3033.7   3030.8   -2.9
           4550.5   4545.8   4.7
           6067.4   6068.0   -0.6

   The conductivity sensor were calibrated at sea using data from the analyses
of salinity collected at 4 stations. The salinometer is AUTOSAL 8400B(Guildline)
for the analyses of salinity of the water samples. The calibration constant is
determined assuming that the bias 0. The results are shown in Table 4.

        Table 4: The conductivity sensor calibration constants

           Bias   Slope
            0   1.00040

   The temperature of "SU9309.SEA" and "SU9309.CTD" files is described with
the international temperature scale of 1990, ITS-90.

2.2 Oxygen Measurements

   The determination of dissolved oxygen was done by the modified version of
the Winkler method described in "Kaiyo Kansoku Shishin (Manual of Oceanographic
Observation)" published by the Oceanographical Society of Japan(1970).
No estimation of accuracy and precision and reagent blank has been done.

2.3 Nutrients Analyses

   The nutrients analyses were done by the Technicon Auto Analyzer II described in "Kaiyo Kansoku Shishin (Manual of Oceanographic Observation)" published by the Oceanographical Society of Japan(1970). No estimation of accuracy and precision has been done.