

PERSONNEL

| | |
|----------------|-----------|
| B Stewart | SSO (SIC) |
| P Elliott | SO |
| S Bloomfield | ASO |
| M Charlesworth | Student |
| J Hunter | Student |

CRUISE OBJECTIVE

To map the temperature, salinity and nutrient distributions in the NW Irish Sea.

CRUISE NARRATIVE

Tuesday 17 November 1992

The vessel departed Belfast harbour at 0700 hrs and arrived at Beaufort Dyke (see attached sampling grid and work schedule) in the North Channel at 0930 hrs. The weather was dry and bright with a force 5-6 south westerly wind. In an attempt to isolate and identify a dense particulate material observed during the October "camera trial" cruise water samples and a vertical net haul were taken. The vessel then proceeded southwards along the standard grid of stations to finish sampling on station 45 at 2230 hrs. The vessel sheltered overnight behind Lambay island.

Wednesday 18 November 1992

Gale force winds prevented the vessel from sampling open sea stations 62, 57 and 50. The survey continued from station 46 at 0800 hrs and followed the inshore grid of stations. Conditions were overcast and showery with a force 7-8 south westerly wind. Sampling finished on station 14 at 1830 hrs with the vessel eventually docking in Belfast at 2115 hrs.

PARAMETERS MONITORED

The entire cruise track was surface mapped for temperature and salinity while, at approximately one mile intervals, water samples were taken and stored for nutrient analysis. At each station on the sampling grid the CTD/rosette was deployed to acquire temperature and salinity data from the depth profile. Water samples were also taken and stored for nutrient analysis. Duplicate, vertical zooplankton hauls were also taken at each station and underwater light measurements were made at stations 4, 47 and 22.

SUMMARY OF RESULTS

The absence of TRAACS from this cruise has meant that nutrient data is not yet at hand. However from the acquired CTD data the survey area was

shown to be mixed from surface to bottom with the exception of station 38 which still showed some stratification. On the open sea the temperatures were consistently around 11.3 °C with little change in salinity along the north-south transect. A strong freshwater influence was detected at station 36 in Dundalk bay where during descent at 10 metres temperature and salinity increased from 7.9 to 9.0 °C and 33.05 to 33.80 ppt respectively.

ACKNOWLEDGEMENTS

The ship's master, officers, engineers, catering staff and crew are thanked for their cooperation during this cruise.

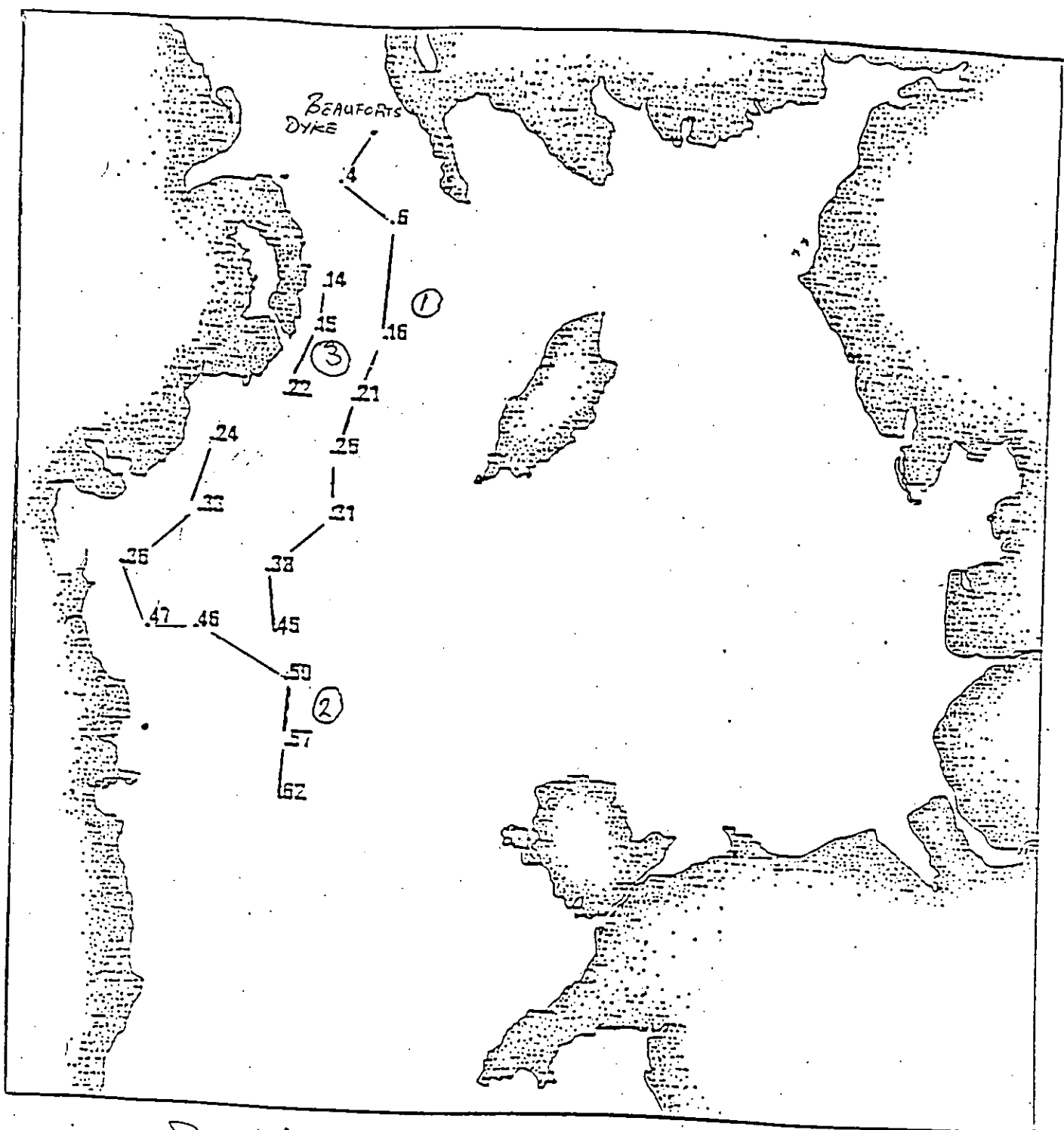


B STEWART

20 November 1992

...ography course 4/27/72

| Station | Position | Activity |
|-------------------|-----------|-------------------------------------|
| BEAUFORTS DYKE | 5455 0520 | CTD |
| 4 | 5441 0520 | CTD; Light; secchi; Zooplankton; |
| 6 | 5436 0510 | CTD; Zooplankton; Secchi |
| 16 | 5421 0510 | CTD; Zooplankton; Secchi |
| 21 | 5413 0516 | CTD; Zooplankton; Secchi |
| 26 | 5406 0521 | CTD; Zooplankton; Secchi |
| 31 | 5358 0520 | CTD; Zooplankton; Secchi |
| 33 | 5358 0550 | CTD; Zooplankton; secchi |
| 38 | 5351 0534 | CTD; Zooplankton; secchi Light; |
| 45 | 5343 0532 | CTD; Zooplankton; Secchi Light; |
| 62 | 5321 0530 | CTD; Zooplankton; Secchi Light; |
| 57 | 5328 0528 | CTD; Zooplankton; Secchi |
| 50 | 5337 0528 | CTD; Zooplankton; Secchi |
| 46 | 5343 0550 | CTD; Zooplankton; secchi |
| 36 | 5351 0611 | CTD; Zooplankton; Secchi |
| 47 | 5343 0609 | CTD; Zooplankton; Secchi Light; |
| 24 | 5406 0552 | CTD; Zooplankton; secchi Light; |
| 22 | 5413 0531 | CTD; Zooplankton; secchi |
| 15 | 5421 0525 | CTD; Zooplankton; secchi |
| 14 | 5428 0523 | CTD; Zooplankton; secchi |



Proposed water light measurements.

Station grid 1992 and 1993

An intensive series of cruises was undertaken in 1992 and 1993 for many of which no cruise reports can now be found. The cruises covered a grid of stations, the locations of which can be found in the introduction to this volume. Summary data from the 1993 cruises follow, both as mean values for each station by cruise and as overall annual maxima and minima. Phi is the potential energy anomaly J m^{-3} , where values <10 are taken to be unstratified water and >20 to be stratified.

Data Summary by cruise, 1993- see introduction for station locations

| CRUISE | STAT | D_DATE | MAX(TEM) | MIN(SALIN) | MIN(NO3) | MIN(SRP) | MIN(SIO2) | MAX(CHA) | PHI |
|--------|------|-----------|----------|------------|----------|----------|-----------|----------|-------|
| 1 | 4 | 05-Jan-93 | 8.91 | 33.84 | 7.38 | 0.89 | 5.21 | 0.23 | 0.04 |
| 1 | 14 | 07-Jan-93 | 8.73 | 33.8 | 7.33 | 0.9 | 6.08 | 0.22 | 2.14 |
| 1 | 15 | 06-Jan-93 | 8.36 | 33.86 | 8.14 | 0.96 | 7.07 | 0.26 | 0 |
| 1 | 21 | 06-Jan-93 | 8.8 | 33.64 | 7.55 | 0.93 | * | 0.27 | 22.74 |
| 1 | 22 | 06-Jan-93 | 7.68 | 33.65 | 11.49 | 1.19 | * | 0.42 | 2.04 |
| 1 | 24 | 06-Jan-93 | 7.9 | 33.72 | 11.59 | 1.12 | * | 0.49 | 0.83 |
| 1 | 36 | 06-Jan-93 | 7.49 | 33.47 | 12.48 | 1.19 | * | 0.59 | 4.17 |
| 1 | 38 | 06-Jan-93 | 9.43 | 34.11 | 7.01 | 0.81 | 6.29 | 0.42 | 3.77 |
| 1 | 45 | 06-Jan-93 | 9.38 | 34 | 7.14 | 0.83 | 6.53 | 0.44 | 5.82 |
| 1 | 47 | 06-Jan-93 | 7.47 | 33.63 | 11.8 | 1.19 | * | 0.49 | 1.45 |
| 1 | 57 | 06-Jan-93 | 9.36 | 34.12 | 6.98 | 0.84 | 6.28 | 0.44 | 0 |
| 1 | 62 | 06-Jan-93 | 9.58 | 34.17 | 6.85 | 0.82 | 6.02 | 0.77 | 0.27 |
| 2 | 4 | 31-Mar-93 | 7.37 | 33.78 | 10.65 | 0.87 | 5.06 | 0.42 | 32.04 |
| 2 | 6 | 31-Mar-93 | * | * | 10.38 | 0.9 | 4.75 | 0.86 | * |
| 2 | 14 | 02-Apr-93 | 7.4 | 34.14 | 10.48 | 0.88 | 5.51 | 0.37 | 0 |
| 2 | 15 | 02-Apr-93 | 7.43 | 33.96 | 10.18 | 0.89 | 6.69 | 0.47 | 0 |
| 2 | 16 | 31-Mar-93 | 7.5 | 33.92 | 9.66 | 0.85 | 5.46 | 1.12 | 30.89 |
| 2 | 21 | 31-Mar-93 | 7.57 | 33.94 | 8.76 | 0.91 | 5.51 | 1.12 | 13.52 |
| 2 | 22 | 01-Apr-93 | 7.78 | 33.8 | 9.66 | 0.97 | 6.69 | 1.08 | 4.57 |
| 2 | 24 | 01-Apr-93 | 7.82 | 33.71 | 10.72 | 0.98 | 7.23 | 1.22 | 0.94 |
| 2 | 26 | 31-Mar-93 | 7.56 | 33.86 | 8.33 | 0.89 | 5.29 | 1.06 | 20.53 |
| 2 | 31 | 31-Mar-93 | 7.46 | 33.89 | 9.23 | 0.88 | 5.98 | 1.12 | 1.33 |
| 2 | 33 | 01-Apr-93 | 7.82 | 33.93 | 8.17 | 0.96 | 5.41 | 1.16 | 1.34 |
| 2 | 36 | 01-Apr-93 | 7.89 | 33.74 | 10.54 | 1.15 | 6.46 | 1.67 | 0.85 |
| 2 | 38 | 31-Mar-93 | 7.58 | 33.85 | 15.93 | 1.57 | 4.94 | 0.99 | 8.79 |
| 2 | 45 | 01-Apr-93 | 7.39 | 33.89 | 9.44 | 0.85 | 5.7 | 0.96 | 10.32 |
| 2 | 46 | 01-Apr-93 | 7.56 | 33.95 | 9.28 | 0.9 | 5.71 | 0.57 | 0.57 |
| 2 | 47 | 01-Apr-93 | 7.71 | 33.74 | 10.31 | 1.13 | 6.35 | 1.67 | 1.88 |
| 2 | 50 | 01-Apr-93 | 7.43 | 33.87 | 8.82 | 0.9 | 5.92 | 0.95 | 7.3 |
| 2 | 57 | 01-Apr-93 | 7.64 | 33.84 | 8.85 | 0.89 | 5.58 | 0.93 | 1.19 |
| 2 | 62 | 01-Apr-93 | 7.76 | 33.94 | 8.64 | 0.86 | 5.25 | 0.8 | 2.44 |
| 3 | 4 | 12-Apr-93 | 7.52 | 33.7 | 10.11 | 0.89 | 5.12 | 0.96 | 27.52 |
| 3 | 6 | 12-Apr-93 | 7.52 | 33.67 | 10.68 | 0.94 | 5.56 | 1.27 | 29.97 |
| 3 | 14 | 15-Apr-93 | 7.88 | 34.06 | 9.34 | 0.8 | * | 1.03 | 1.9 |
| 3 | 15 | 15-Apr-93 | 7.94 | 33.97 | 9.31 | 0.78 | * | 0.97 | 3.12 |
| 3 | 16 | 12-Apr-93 | 7.81 | 33.54 | 9.91 | 0.91 | 5.5 | 0.98 | 31.54 |
| 3 | 21 | 15-Apr-93 | 8.12 | 33.92 | 8.54 | 0.85 | * | * | 31.51 |
| 3 | 22 | 15-Apr-93 | 8.06 | 33.92 | 9.66 | 0.89 | * | 0.98 | 6.25 |
| 3 | 24 | 15-Apr-93 | 8.22 | 33.74 | 9.58 | 0.95 | 6.15 | 0.92 | 0.86 |
| 3 | 26 | 15-Apr-93 | 7.98 | 33.96 | 7.15 | 0.77 | 5.52 | 2.11 | 29.36 |
| 3 | 31 | 15-Apr-93 | 7.94 | 33.96 | 8.58 | 0.9 | 5.05 | 0.63 | 9.25 |
| 3 | 33 | 14-Apr-93 | 7.91 | 33.91 | 7.88 | 0.9 | 4.97 | 0.95 | 0 |
| 3 | 36 | 14-Apr-93 | 8.46 | 32.7 | 11.28 | 0.9 | 6.32 | 4.09 | 10.85 |
| 3 | 38 | 15-Apr-93 | 7.84 | 33.94 | 8.09 | 0.84 | 5.37 | 2.08 | 11.67 |
| 3 | 45 | 14-Apr-93 | 8.08 | 33.98 | 8.5 | 0.91 | 4.49 | 0.59 | 3.24 |
| 3 | 46 | 13-Apr-93 | 7.91 | 33.86 | 8.59 | 0.93 | 5.33 | 0.82 | 3.23 |
| 3 | 47 | 14-Apr-93 | 8.36 | 33.19 | 10.91 | 0.96 | 5.99 | 1.91 | 4 |
| 3 | 48 | 13-Apr-93 | 9.06 | 32.76 | 10.95 | 1.01 | 5.16 | 3.78 | 13.88 |
| 3 | 49 | 13-Apr-93 | 8.06 | 33.88 | 8.65 | 0.76 | 5.33 | 1.69 | 5.46 |
| 3 | 50 | 13-Apr-93 | 7.89 | 33.98 | 8.76 | 0.75 | 4.74 | 0.8 | 0 |
| 3 | 57 | 13-Apr-93 | 7.96 | 34.05 | 8.27 | 0.73 | 4.85 | 1.44 | 0 |
| 3 | 59 | 13-Apr-93 | 8.56 | 33.67 | 9.59 | 1.03 | 4.56 | 3.04 | 0.85 |
| 3 | 62 | 13-Apr-93 | 8.14 | 34.03 | 8.22 | 0.93 | 4.45 | 0.73 | 0 |
| 4 | 4 | 26-Apr-93 | 7.94 | 33.98 | 10.2 | 0.88 | 3.74 | 1.08 | 8.37 |

Data Summary by cruise, 1993- see introduction for station locations

| CRUISE | STAT | D_DATE | MAX(TEM) | MIN(SALIN) | MIN(NO3) | MIN(SRP) | MIN(SIO2) | MAX(CHA) | PHI |
|--------|------|-----------|----------|------------|----------|----------|-----------|----------|-------|
| 4 | 6 | 26-Apr-93 | 8.08 | 33.72 | 9.6 | 0.81 | 4.71 | 0.74 | 37.55 |
| 4 | 14 | 28-Apr-93 | 8.43 | 34.12 | 8.57 | 0.9 | 3.64 | 2.96 | 0 |
| 4 | 15 | 28-Apr-93 | 9.05 | 33.82 | 8.33 | 0.75 | 5.82 | 1.02 | 7.73 |
| 4 | 16 | 26-Apr-93 | 8.42 | 33.88 | 8.9 | 0.85 | 5.58 | 1.53 | 30.57 |
| 4 | 21 | 26-Apr-93 | 8.84 | 33.77 | 6.3 | 0.89 | 5.48 | 3.1 | 46.03 |
| 4 | 22 | 28-Apr-93 | 8.96 | 33.81 | 8.23 | 0.74 | 5.66 | 1.78 | 11.67 |
| 4 | 24 | 28-Apr-93 | 9.17 | 33.74 | 7.32 | 0.75 | 4.89 | 2.03 | 0.44 |
| 4 | 26 | 26-Apr-93 | 8.82 | 33.82 | 6.3 | 1.63 | 8.1 | 1.26 | 35.13 |
| 4 | 31 | 26-Apr-93 | 8.58 | 33.81 | 6.45 | 0.74 | 4.18 | 2.1 | 31.6 |
| 4 | 33 | 26-Apr-93 | 8.95 | 33.58 | 8.12 | 0.71 | 4.34 | 0.96 | 13.56 |
| 4 | 35 | 27-Apr-93 | 9.05 | 33.59 | 5.89 | 0.65 | 3.42 | 7.96 | 0.33 |
| 4 | 36 | 27-Apr-93 | 9.94 | 32.3 | 2.98 | 0.55 | 1.01 | 19.47 | 19.15 |
| 4 | 38 | 28-Apr-93 | 8.82 | 33.85 | 2.84 | 0.45 | 1.82 | 5.27 | 39.18 |
| 4 | 45 | 27-Apr-93 | 9.29 | 33.87 | 5.81 | 0.63 | 4 | 2.64 | 32.41 |
| 4 | 46 | 27-Apr-93 | 9.69 | 33.93 | 7.01 | 0.66 | 4.51 | 1.23 | 12.79 |
| 4 | 47 | 27-Apr-93 | 9.23 | 33.67 | 8.59 | 0.63 | 4.02 | 1.39 | 0.22 |
| 4 | 48 | 27-Apr-93 | 10.82 | 33.15 | 7.95 | 0.84 | 3.04 | 2.32 | 19.25 |
| 4 | 49 | 27-Apr-93 | 9.36 | 33.97 | 7.66 | 0.77 | 4.06 | 0.87 | 12.81 |
| 4 | 50 | 27-Apr-93 | 9.1 | 34.13 | 8.63 | 0.85 | 4.64 | 0.9 | 0 |
| 5 | 4 | 03-May-93 | 8.44 | 33.58 | 9.95 | 0.89 | 7.13 | 1.09 | 37.56 |
| 5 | 6 | 03-May-93 | 8.37 | 33.85 | 10.07 | 0.75 | 2.91 | 0.69 | 12.53 |
| 5 | 14 | 06-May-93 | 8.73 | 34.15 | 8.4 | 0.78 | 4.18 | 1.41 | 0 |
| 5 | 15 | 06-May-93 | 8.74 | 34.18 | 8.53 | 0.83 | 4.07 | 1.32 | 0 |
| 5 | 16 | 03-May-93 | 9.67 | 33.75 | 0.22 | 0.23 | 0.66 | 12.07 | 41.48 |
| 5 | 21 | 06-May-93 | 9.54 | 34.05 | 1.26 | 0.31 | 1.12 | 7.01 | 18.75 |
| 5 | 22 | 06-May-93 | 9.97 | 34 | 0 | 0.14 | 0 | 10.94 | 12.67 |
| 5 | 24 | 06-May-93 | 10.94 | 33.99 | 0 | 0.08 | 0 | 8.7 | 3.32 |
| 5 | 26 | 06-May-93 | 10.56 | 34.02 | 0.08 | 0.15 | 0.07 | 5.33 | 49.86 |
| 5 | 31 | 05-May-93 | 10.48 | 34.15 | 4.26 | 0.6 | 4.5 | 4.46 | 35.48 |
| 5 | 33 | 05-May-93 | 10.75 | 34 | 0 | 0.11 | 0 | 10.87 | 17.59 |
| 5 | 35 | 05-May-93 | 10.09 | 33.85 | 0.38 | 0.25 | 0.65 | 6.42 | 0 |
| 5 | 36 | 05-May-93 | 10.47 | 33.63 | 0.09 | 0.15 | 0.46 | 6.89 | 3.85 |
| 5 | 38 | 05-May-93 | 10.35 | 34.14 | 5.2 | 0.62 | 2.14 | 6.83 | 46.8 |
| 5 | 45 | 05-May-93 | * | * | 8.81 | 0.32 | 4.47 | 9.48 | * |
| 5 | 46 | 04-May-93 | 10.21 | 34.11 | 3.23 | 0.49 | 3.2 | 2.47 | 19.12 |
| 5 | 47 | 05-May-93 | 10.45 | 33.68 | 0 | 0.18 | 0.09 | 13.72 | 4.41 |
| 5 | 48 | 04-May-93 | 10.68 | 33.14 | 0.03 | 0.14 | 0.19 | 11.77 | 10.78 |
| 5 | 49 | 04-May-93 | 10.04 | 33.95 | 0 | 0.15 | 0.09 | 8.98 | 20.5 |
| 5 | 50 | 04-May-93 | 8.84 | 33.98 | 7.26 | 0.74 | 4.49 | 0.56 | 9.08 |
| 5 | 57 | 04-May-93 | 8.67 | 34.11 | 7.89 | 0.81 | 4.66 | 0.76 | 0 |
| 5 | 59 | 04-May-93 | 9.59 | 33.99 | 0.74 | 0.36 | 0.66 | 11.54 | 8.64 |
| 5 | 62 | 04-May-93 | 8.69 | 34.14 | 8 | 0.89 | 4.66 | 0.65 | 0 |
| 6 | 4 | 22-May-93 | 8.56 | 33.71 | 9.07 | 0.75 | 4.57 | 0.86 | 7.61 |
| 6 | 6 | 22-May-93 | 9.11 | 33.65 | 7.52 | 0.74 | 3.65 | 1.5 | 32.69 |
| 6 | 14 | 22-May-93 | 9.41 | 33.77 | 6.34 | 0.63 | 3.32 | 1.94 | 0.73 |
| 6 | 16 | 22-May-93 | 9.3 | 33.72 | 6.33 | 0.36 | 2.95 | 2.52 | 33.65 |
| 6 | 31 | 23-May-93 | 9.99 | 33.85 | 0.22 | 0.1 | 0 | 7.23 | 22.9 |
| 7 | 4 | 21-Jun-93 | 10.48 | 33.5 | 1.87 | 0.45 | 1.44 | 13.04 | 18.13 |
| 7 | 6 | 21-Jun-93 | 10.87 | 33.56 | 4.12 | 0.61 | 2.76 | 1.23 | 32.81 |
| 7 | 14 | 24-Jun-93 | 10.73 | 33.74 | 3.88 | 0.51 | 1.52 | 5.3 | 1.14 |
| 7 | 15 | 24-Jun-93 | 10.44 | 33.76 | 4.91 | 0.58 | 1.9 | 4.15 | 0 |
| 7 | 16 | 21-Jun-93 | 10.72 | 33.62 | 4.41 | 0.58 | 2.83 | 2.78 | 50.55 |
| 7 | 21 | 24-Jun-93 | 10.83 | 33.81 | 4.41 | 0.55 | 2.42 | 2.07 | 12.24 |
| 7 | 22 | 24-Jun-93 | 10.61 | 33.74 | 3.12 | 0.54 | 2.06 | 4.96 | 1.97 |

Data Summary by cruise, 1993- see introduction for station locations

| CRUISE | STAT | D_DATE | MAX(TEM) | MIN(SALIN) | MIN(NO3) | MIN(SRP) | MIN(SIO2) | MAX(CHA) | PHI |
|--------|------|-----------|----------|------------|----------|----------|-----------|----------|-------|
| 7 | 24 | 24-Jun-93 | 11.43 | 33.69 | 0 | 0.25 | 0.39 | 14.37 | 1.51 |
| 7 | 26 | 21-Jun-93 | 12.18 | 33.76 | 0 | 0.27 | 0.78 | 2.94 | 53.69 |
| 7 | 31 | 21-Jun-93 | 12.83 | 33.8 | 0 | 0.14 | 0.52 | 2.5 | 56.92 |
| 7 | 33 | 24-Jun-93 | 11.92 | 33.65 | 0 | 0.23 | 0.1 | 8.1 | 22.09 |
| 7 | 36 | 22-Jun-93 | 12.88 | 32.69 | 0.05 | 0.27 | 1.4 | 6.91 | 13.92 |
| 7 | 38 | 22-Jun-93 | 12.87 | 33.88 | 0.07 | 0.17 | 0.4 | 5.06 | 68.77 |
| 7 | 45 | 23-Jun-93 | 12.86 | 33.8 | 0 | 0.15 | 0.76 | 4.81 | 69.07 |
| 7 | 46 | 22-Jun-93 | 12.46 | 33.68 | 0.25 | 0.19 | 1.1 | 2.75 | 40.68 |
| 7 | 47 | 22-Jun-93 | 12.78 | 32.85 | 2.16 | 0.28 | 3.49 | 5.16 | 15.48 |
| 7 | 48 | 23-Jun-93 | 13.05 | 33.06 | 0.83 | 0.24 | 2.01 | 6.19 | 11.33 |
| 7 | 49 | 23-Jun-93 | 12.54 | 33.76 | 0 | 0.15 | 1.37 | 1.9 | 47.1 |
| 7 | 50 | 23-Jun-93 | 12.44 | 33.87 | 0.41 | 0.18 | 0.99 | 2.13 | 50.7 |
| 7 | 57 | 23-Jun-93 | 12.11 | 33.78 | 1.44 | 0.27 | 1.77 | 1.98 | 41.33 |
| 7 | 59 | 23-Jun-93 | 12.51 | 33.2 | 2.49 | 0.36 | 3.3 | 3.97 | 0 |
| 7 | 62 | 23-Jun-93 | 11.72 | 34.15 | 4.55 | 0.43 | 1.81 | 1.33 | 3.59 |
| 8 | 4 | 15-Jul-93 | 11.64 | 33.77 | 3.73 | 0.51 | 2.69 | 2.61 | 23.64 |
| 8 | 6 | 15-Jul-93 | 11.45 | 33.84 | 4.36 | 0.57 | 3.03 | 2.43 | 24.57 |
| 8 | 14 | 19-Jul-93 | 11.46 | 33.62 | 4.39 | 0.61 | 2.54 | 2 | 0.38 |
| 8 | 15 | 19-Jul-93 | 11.41 | 33.64 | 4.32 | 0.63 | 2.62 | 2.16 | 0.37 |
| 8 | 16 | 15-Jul-93 | 12.05 | 33.78 | 1.88 | 0.43 | 2.58 | 5 | 60.91 |
| 8 | 21 | 18-Jul-93 | 12.04 | 33.57 | 1.82 | 0.34 | 2.08 | 4.55 | 42.96 |
| 8 | 22 | 19-Jul-93 | 12.22 | 33.56 | 1.11 | 0.37 | 1.04 | 1.59 | 8.78 |
| 8 | 24 | 19-Jul-93 | 12.85 | 33.46 | 0.28 | 0.19 | 0.38 | 1.21 | 1.92 |
| 8 | 26 | 18-Jul-93 | 13.77 | 33.84 | 0.16 | 0.24 | 0.23 | 1.96 | 88.02 |
| 8 | 31 | 16-Jul-93 | 13.89 | 33.78 | 0.36 | 0.19 | 0.34 | 8.91 | 79.95 |
| 8 | 33 | 16-Jul-93 | 12.71 | 33.63 | 0.47 | 0.27 | 0.47 | 0.41 | 16.52 |
| 8 | 36 | 18-Jul-93 | 14.17 | 33.26 | 0.22 | 0.36 | 0.48 | 5.71 | 5.17 |
| 8 | 45 | 17-Jul-93 | 13.84 | 33.74 | 0.13 | 0.23 | 0.43 | 2.21 | 73.95 |
| 8 | 46 | 17-Jul-93 | 14.02 | 33.63 | 0.18 | 0.2 | 0.08 | 0.88 | 42.6 |
| 8 | 47 | 18-Jul-93 | 13.93 | 33.39 | 0.23 | 0.06 | 0.06 | 8.84 | 12.24 |
| 8 | 48 | 18-Jul-93 | 13.53 | 33.56 | 0.49 | 0.19 | 1.15 | 5.12 | 5.61 |
| 8 | 49 | 17-Jul-93 | 13.83 | 33.66 | 0.3 | 0.18 | 0.05 | 4.86 | 46.77 |
| 8 | 50 | 17-Jul-93 | 14.02 | 33.64 | 0.07 | 0.2 | 0.2 | 23.68 | 76.86 |
| 8 | 57 | 17-Jul-93 | 13.81 | 33.7 | 0.43 | 0.11 | 0.35 | 1.97 | 40.57 |
| 8 | 59 | 17-Jul-93 | 13.72 | 33.39 | 0.72 | 0.36 | 1.21 | 5.7 | 1.86 |
| 8 | 62 | 17-Jul-93 | 12.78 | 33.91 | 0.95 | 0.22 | 0.48 | 4.63 | 9.9 |
| 9 | 4 | 03-Aug-93 | 12.47 | 33.82 | 4.79 | 1.1 | 2.4 | 1.37 | 14.26 |
| 9 | 6 | 03-Aug-93 | 13.17 | 33.78 | 3.12 | 0.78 | 2.35 | 1.3 | 30.81 |
| 9 | 14 | 31-Jul-93 | 11.8 | 33.69 | 5.62 | 0.99 | 3.1 | 1.48 | 0 |
| 9 | 15 | 31-Jul-93 | 11.78 | 33.7 | 5.45 | 0.83 | 3.08 | 1.38 | 0.37 |
| 9 | 16 | 03-Aug-93 | 12.07 | 33.8 | 1.49 | 0.55 | 1.59 | 1.52 | 40.79 |
| 9 | 21 | 02-Aug-93 | 12.67 | 33.78 | 1.07 | 0.48 | 0.73 | 8.18 | 22.66 |
| 9 | 22 | 31-Jul-93 | 12.16 | 33.69 | 4.16 | 0.86 | 2.37 | 3.56 | 4.8 |
| 9 | 24 | 31-Jul-93 | 11.89 | 33.59 | 2.76 | 1.04 | 5.12 | 1.59 | 0.32 |
| 9 | 26 | 02-Aug-93 | 12.75 | 33.77 | 0.99 | 0.53 | 0.84 | 7.14 | 34.53 |
| 9 | 31 | 02-Aug-93 | 13.36 | 33.75 | 5.6 | 1.05 | 3.01 | 3.08 | 62.1 |
| 9 | 33 | 31-Jul-93 | 13.13 | 33.62 | 0.42 | 0.24 | 0 | 7.35 | 22.31 |
| 9 | 35 | 31-Jul-93 | 12.75 | 33.28 | 0.49 | 0.62 | 1.35 | 9.91 | 7.2 |
| 9 | 36 | 31-Jul-93 | 13.02 | 33.38 | 0.6 | 0.69 | 0.91 | 6.59 | 7.38 |
| 9 | 38 | 02-Aug-93 | 13.21 | 33.8 | 0.53 | 0.44 | 0.56 | | 41.06 |
| 9 | 46 | 02-Aug-93 | 13.23 | 33.5 | 0.92 | 0.55 | 0.43 | 6.92 | 41.51 |
| 9 | 47 | 01-Aug-93 | 13.85 | 33.29 | 0.67 | 0.43 | 0 | 7.2 | 9.59 |
| 9 | 48 | 01-Aug-93 | 13.65 | 33.18 | 0.91 | 0.63 | 0.34 | 6.16 | 4.04 |
| 10 | 4 | 17-Sep-93 | 13.23 | 33.87 | 4.97 | 0.69 | 3.73 | 0.99 | 0.86 |

Data Summary by cruise, 1993- see introduction for station locations

| CRUISE | STAT | D_DATE | MAX(TEM) | MIN(SALIN) | MIN(NO3) | MIN(SRP) | MIN(SIO2) | MAX(CHA) | PHI |
|--------|------|-----------|----------|------------|----------|----------|-----------|----------|-------|
| 10 | 6 | 17-Sep-93 | 12.92 | 33.84 | 5.98 | 0.82 | 4.34 | 0.65 | 0 |
| 10 | 14 | 17-Sep-93 | 13.03 | 33.89 | 5.17 | 0.73 | 3.99 | 1.22 | 0 |
| 10 | 15 | 16-Sep-93 | 13.01 | 33.89 | 5.32 | 0.65 | 3.8 | 1.22 | 0 |
| 10 | 22 | 16-Sep-93 | 13 | 33.86 | 4.78 | 0.61 | 3.8 | 1.26 | 0.52 |
| 10 | 24 | 15-Sep-93 | 12.99 | 33.7 | 1.72 | 0.57 | 2.14 | 3.75 | 0.25 |
| 10 | 26 | 16-Sep-93 | 13.18 | 33.74 | 3.47 | 0.5 | 2.84 | 2.01 | 27.62 |
| 10 | 31 | 16-Sep-93 | 13.7 | 33.87 | 3.94 | 0.52 | 2.12 | 1.19 | 16.68 |
| 10 | 36 | 15-Sep-93 | 12.98 | 33.21 | 1.84 | 1.07 | 5.04 | 2.97 | 1.7 |
| 10 | 38 | 16-Sep-93 | 13.62 | 33.92 | 4.21 | 0.58 | 2.48 | 1.05 | 8.12 |
| 10 | 46 | 16-Sep-93 | 13.11 | 33.82 | 3.87 | 0.55 | 3.08 | 2.36 | 0 |
| 10 | 47 | 16-Sep-93 | 13.09 | 33.69 | 1.22 | 0.64 | 2.74 | 1.27 | 0.91 |
| 10 | 48 | 15-Sep-93 | 13.14 | 33.78 | 0.85 | 0.64 | 2.57 | 1.41 | 0 |
| 10 | 59 | 15-Sep-93 | 13.42 | 33.67 | 1.05 | 0.91 | 3.24 | 2.21 | 0 |
| 11 | 14 | 04-Oct-93 | 12.9 | 33.71 | 5.68 | 0.67 | 4.25 | 1.19 | 0 |
| 11 | 15 | 04-Oct-93 | 12.9 | 33.76 | 6.2 | 0.76 | 4.88 | 1.27 | 0 |
| 11 | 22 | 04-Oct-93 | 12.93 | 33.74 | 5.86 | 0.72 | 5.47 | 1.19 | 0.72 |
| 11 | 24 | 04-Oct-93 | 12.84 | 33.52 | 2.75 | 0.8 | 6.38 | 1.9 | 1.47 |
| 11 | 33 | 04-Oct-93 | 13.11 | 33.8 | 3.03 | 0.7 | 4.79 | 1.41 | 0 |
| 11 | 45 | 05-Oct-93 | 14.25 | 34.39 | 4.6 | 0.31 | 2.56 | 1.16 | 0 |
| 11 | 46 | 04-Oct-93 | 13.42 | 33.88 | 3.94 | 0.7 | 3.84 | 1.81 | 0 |
| 11 | 48 | 04-Oct-93 | 13.22 | 33.66 | 4.11 | 0.97 | 4.72 | 2.46 | 0 |
| 11 | 50 | 05-Oct-93 | 14.18 | 34.18 | 3.98 | 0.49 | 2.36 | 1.39 | 6.9 |
| 11 | 57 | 05-Oct-93 | 14.21 | 34.41 | 2.28 | 0.54 | 2.45 | 1.46 | 0 |
| 11 | 59 | 04-Oct-93 | 13.27 | 33.75 | 4.08 | 0.98 | 4.24 | 1.66 | 0 |
| 11 | 62 | 05-Oct-93 | 14.21 | 34.41 | 4.32 | 0.53 | 2.49 | 1.58 | 0 |
| 12 | 4 | 23-Nov-93 | 11.71 | 33.88 | 6.62 | 0.83 | 4.11 | 0.31 | 10.27 |
| 12 | 6 | 23-Nov-93 | 11.8 | 34.13 | 6.62 | 0.77 | 4.04 | 0.35 | 1.03 |
| 12 | 14 | 24-Nov-93 | 11.5 | 34.15 | 6.14 | 0.8 | 4.14 | 0.45 | 1.64 |
| 12 | 15 | 24-Nov-93 | 11.09 | 34.22 | 6.27 | 0.79 | 4.24 | 0.54 | 0 |
| 12 | 16 | 23-Nov-93 | 11.87 | 34.12 | 5.61 | 0.72 | 3.8 | 0.34 | 2.38 |
| 12 | 21 | 23-Nov-93 | 11.34 | 34.15 | 5.77 | 0.49 | 4.12 | 0.48 | 0 |
| 12 | 22 | 24-Nov-93 | 10.36 | 34.1 | 7.04 | 0.86 | 5 | 0.62 | 0 |
| 12 | 26 | 23-Nov-93 | 11.32 | 34.16 | 5.1 | 0.72 | 3.93 | 0.47 | 1.04 |
| 12 | 36 | 24-Nov-93 | 8.09 | 33.22 | 12.05 | 1.38 | 9.57 | 1 | 0.13 |
| 12 | 38 | 23-Nov-93 | 11.91 | 34.35 | 4.53 | 0.69 | 3.75 | 0.42 | 0.1 |
| 12 | 45 | 23-Nov-93 | 11.83 | 34.32 | 4.82 | 0.71 | 3.65 | 0.36 | 0 |
| 12 | 47 | 24-Nov-93 | 8.98 | 33.48 | 10.83 | 1.26 | 7.91 | 0.93 | 0 |
| 12 | 48 | 24-Nov-93 | 9.17 | 33.71 | 10.19 | 1.2 | 6.14 | 0.92 | 0.08 |
| 12 | 59 | 24-Nov-93 | 9.55 | 33.97 | 8.73 | 1.08 | 4.27 | 0.77 | 0 |

Annual Data Summary by station, 1993- see introduction for station locations

| station | Max Temp | | Min Salinity | | Min NO3 | | Min SRP | | Min SIO2 | | Max CHA | | PHI | |
|-----------|----------|-------|--------------|-------|---------|-------|---------|------|----------|------|---------|-------|------|-------|
| | min | max | min | max | min | max | min | max | min | max | min | max | min | max |
| 4 | 7.37 | 13.23 | 33.5 | 33.98 | 1.87 | 10.65 | 0.45 | 1.1 | 1.44 | 7.13 | 0.23 | 13.04 | 0.04 | 37.56 |
| 6 | 7.52 | 13.17 | 33.56 | 34.13 | 3.12 | 10.68 | 0.57 | 0.94 | 2.35 | 5.56 | 0.35 | 2.43 | 0 | 37.55 |
| 14 | 7.4 | 13.03 | 33.62 | 34.15 | 3.88 | 10.48 | 0.51 | 0.99 | 1.52 | 6.08 | 0.22 | 5.3 | 0 | 2.14 |
| 15 | 7.43 | 13.01 | 33.64 | 34.22 | 4.32 | 10.18 | 0.58 | 0.96 | 1.9 | 7.07 | 0.26 | 4.15 | 0 | 7.73 |
| 16 | 7.5 | 12.07 | 33.54 | 34.12 | 0.22 | 9.91 | 0.23 | 0.91 | 0.66 | 5.58 | 0.34 | 12.07 | 2.38 | 60.91 |
| 21 | 7.57 | 12.67 | 33.57 | 34.15 | 1.07 | 8.76 | 0.31 | 0.93 | 0.73 | 5.51 | 0.27 | 8.18 | 0 | 46.03 |
| 22 | 7.68 | 13 | 33.56 | 34.1 | 0 | 11.49 | 0.14 | 1.19 | 0 | 6.69 | 0.42 | 10.94 | 0 | 12.67 |
| 24 | 7.82 | 12.99 | 33.46 | 33.99 | 0 | 11.59 | 0.08 | 1.12 | 0 | 7.23 | 0.49 | 14.37 | 0.25 | 3.32 |
| 26 | 7.56 | 13.77 | 33.74 | 34.16 | 0 | 8.33 | 0.15 | 1.63 | 0.07 | 8.1 | 0.47 | 7.14 | 1.04 | 88.02 |
| 31 | 7.46 | 13.89 | 33.75 | 34.15 | 0 | 9.23 | 0.1 | 1.05 | 0 | 5.98 | 0.63 | 8.91 | 1.33 | 79.95 |
| 33 | 7.82 | 13.13 | 33.58 | 34 | 0 | 8.17 | 0.11 | 0.96 | 0 | 5.41 | 0.41 | 10.87 | 0 | 22.31 |
| 35 | 9.05 | 12.75 | 33.28 | 33.85 | 0.38 | 5.89 | 0.25 | 0.65 | 0.65 | 3.42 | 6.42 | 9.91 | 0 | 7.2 |
| 36 | 7.49 | 14.17 | 32.3 | 33.74 | 0.05 | 12.48 | 0.15 | 1.38 | 0.46 | 9.57 | 0.59 | 19.47 | 0.13 | 19.15 |
| 38 | 7.58 | 13.62 | 33.8 | 34.35 | 0.07 | 15.93 | 0.17 | 1.57 | 0.4 | 6.29 | 0.42 | 6.83 | 0.1 | 68.77 |
| 45 | 7.39 | 14.25 | 33.74 | 34.39 | 0 | 9.44 | 0.15 | 0.91 | 0.43 | 6.53 | 0.36 | 9.48 | 0 | 73.95 |
| 46 | 7.56 | 14.02 | 33.5 | 34.11 | 0.18 | 9.28 | 0.19 | 0.93 | 0.08 | 5.71 | 0.57 | 6.92 | 0 | 42.6 |
| 47 | 7.47 | 13.93 | 32.85 | 33.74 | 0 | 11.8 | 0.06 | 1.26 | 0 | 7.91 | 0.49 | 13.72 | 0 | 15.48 |
| 48 | 9.06 | 13.65 | 32.76 | 33.78 | 0.03 | 10.95 | 0.14 | 1.2 | 0.19 | 6.14 | 0.92 | 11.77 | 0 | 19.25 |
| 49 | 8.06 | 13.83 | 33.66 | 33.97 | 0 | 8.65 | 0.15 | 0.77 | 0.05 | 5.33 | 0.87 | 8.98 | 5.46 | 47.1 |
| 50 | 7.43 | 14.18 | 33.64 | 34.18 | 0.07 | 8.82 | 0.18 | 0.9 | 0.2 | 5.92 | 0.56 | 23.68 | 0 | 76.86 |
| 57 | 7.64 | 14.21 | 33.7 | 34.41 | 0.43 | 8.85 | 0.11 | 0.89 | 0.35 | 6.28 | 0.44 | 1.98 | 0 | 41.33 |
| 59 | 8.56 | 13.72 | 33.2 | 33.99 | 0.72 | 9.59 | 0.36 | 1.08 | 0.66 | 4.56 | 0.77 | 11.54 | 0 | 8.64 |
| 62 | 7.76 | 14.21 | 33.91 | 34.41 | 0.95 | 8.64 | 0.22 | 0.93 | 0.48 | 6.02 | 0.65 | 4.63 | 0 | 9.9 |
| Min/Max | 7.37 | 14.25 | 32.3 | 34.41 | 0 | 15.93 | 0.06 | 1.63 | 0 | 9.57 | 0.22 | 23.68 | 0 | 88.02 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| cruise | Max Temp | | Min Salinity | | Min NO3 | | Min SRP | | Min SIO2 | | Max CHA | | PHI | |
| | min | max | min | max | min | max | min | max | min | max | min | max | min | max |
| 25-Mar-93 | 7.47 | 9.58 | 33.47 | 34.17 | 6.85 | 12.48 | 0.81 | 1.19 | 5.21 | 7.07 | 0.22 | 0.77 | 0 | 22.74 |
| 7-Apr-93 | 7.37 | 7.89 | 33.71 | 34.14 | 8.17 | 15.93 | 0.85 | 1.57 | 4.75 | 7.23 | 0.37 | 1.67 | 0 | 32.04 |
| 14-Apr-93 | 7.52 | 9.06 | 32.7 | 34.06 | 7.15 | 11.28 | 0.73 | 1.03 | 4.45 | 6.32 | 0.59 | 4.09 | 0 | 31.54 |
| 22-Apr-93 | 7.94 | 10.82 | 32.3 | 34.13 | 2.84 | 10.2 | 0.45 | 1.63 | 1.01 | 8.1 | 0.74 | 19.47 | 0 | 46.03 |
| 28-Apr-93 | 8.37 | 10.94 | 33.14 | 34.18 | 0 | 10.07 | 0.08 | 0.89 | 0 | 7.13 | 0.56 | 13.72 | 0 | 49.86 |
| 5-May-93 | 8.56 | 9.99 | 33.65 | 33.85 | 0.22 | 9.07 | 0.1 | 0.75 | 0 | 4.57 | 0.86 | 7.23 | 0.73 | 33.65 |
| 16-Jun-93 | 10.44 | 13.05 | 32.69 | 34.15 | 0 | 4.91 | 0.14 | 0.61 | 0.1 | 3.49 | 1.23 | 14.37 | 0 | 69.07 |
| 15-Jul-93 | 11.41 | 14.17 | 33.26 | 33.91 | 0.07 | 4.39 | 0.06 | 0.63 | 0.05 | 3.03 | 0.41 | 23.68 | 0.37 | 88.02 |
| 2-Aug-93 | 11.78 | 13.85 | 33.18 | 33.82 | 0.42 | 5.62 | 0.24 | 1.1 | 0 | 5.12 | 1.3 | 9.91 | 0 | 62.1 |
| 16-Aug-93 | 12.92 | 13.7 | 33.21 | 33.92 | 0.85 | 5.98 | 0.5 | 1.07 | 2.12 | 5.04 | 0.65 | 3.75 | 0 | 27.62 |
| 17-Sep-93 | 12.84 | 14.25 | 33.52 | 34.41 | 2.28 | 6.2 | 0.31 | 0.98 | 2.36 | 6.38 | 1.16 | 2.46 | 0 | 6.9 |
| 24-Nov-93 | 8.09 | 11.91 | 33.22 | 34.35 | 4.53 | 12.05 | 0.49 | 1.38 | 3.65 | 9.57 | 0.31 | 1 | 0 | 10.27 |
| Min/Max | 7.37 | 14.25 | 32.3 | 34.41 | 0 | 15.93 | 0.06 | 1.63 | 0 | 9.57 | 0.22 | 0.77 | 0.73 | 6.9 |