DISTRIBUTION OF LEAD-210 AND POLONIUM-210 BETWEEN SOLUBLE
AND PARTICULATE PHASES IN SEAWATER

During the past year, we have continued our investigations of Pb-210 ($T_{1/2}=22\text{yr}$) and Po-210 ($T_{1/2}=138\text{d}$) distributions in seawater and suspended particulate matter. The aim of this study, as discussed more fully in our preceding report (Spencer, 1974), is to further understand mechanisms and rates of scavenging and transport of materials by particulate matter in the sea.

Additional sampling was carried out during Cruise 86 of R/V ATLANTIS II in January, 1975, when approximately 50 samples (water samples and particulate samples combined) were collected at three stations in the Gulf of Maine. We are also analyzing plankton and sediment samples collected during that cruise. Combined with our earlier collections, these samples bring our totals to approximately 300 water samples and 200 particulate samples, all of which have now been analyzed for Po-210. Lead-210 analyses should be completed by September of this year.

Sampling and analytical procedures used in our laboratory were described in last year's report (Spencer, 1974). Our counting system has now been expanded to include eight alpha-detectors coupled through an eight-input router to our Northern 1024-channel analyzer.

RESULTS FROM THE NORTH ATLANTIC

In Figures 1 and 2 are presented results from two Meteor stations for which we have completed both Pb-210 and Po-210 analyses. Station 18 is

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is located over the western flank of the Mid-Atlantic Ridge, while Station 32 was occupied in the eastern basin approximately 500 miles southwest of Gibraltar. To the best of our knowledge, these represent the first profiles in which Pb-210 and Po-210 have both been measured in soluble and particulate forms. Analyses of Ra-226 are being made at Heidelberg, but these results are not yet available. Consequently, we have estimated Ra-226 concentrations on the basis of their observed correlation with silica concentrations (W. S. Broecker, unpublished data; GEOSECS Atlantic Preliminary Data Reports).

LEAD-210 AND POLONIUM-210 IN THE SURFACE OCEAN

At both stations Pb-210 activities near the surface exceed those of Ra-226 by as much as a factor of two or more. This excess is maintained by delivery of unsupported Pb-210 from the atmosphere, where it is formed by radioactive decay of Rn-222 (Rama, et al., 1961). The influence of this source is seen to penetrate to considerable depths in the water column: about 500 m at Station 18 and 1000 m at Station 32.

Polonium-210, on the other hand, is strongly depleted in surface water relative to its Pb-210 parent. This effect results largely from the preferential scavenging of Po-210 by marine plankton. Shannon, et al. (1970) reported Po-210/Pb-210 activity ratios of 2.5-5.5 for phytoplankton and 10-25 for zooplankton collected off the coast of South Africa. Turekian, et al. (1974) found a similar range of values for zooplankton and noted an inverse relation-

ship with productivity, zooplankton from more productive waters having lower Po-210/Pb-210 ratios. Our analyses of particulate matter collected near the sea surface show enrichments of Po-210 by a factor of 2-4 relative to Pb-210, similar to the phytoplankton ratios measured by Shannon, et al. (1970).

It is possible from our data to calculate the rate of Po-210 removal from the surface ocean. We may neglect the small input of Po-210 from the atmosphere and the small changes that result from fluid exchange with deeper water, and we require that production by decay of Pb-210 be balanced by chemical removal and radioactive decay:

$$\lambda_2 A_1 = \lambda_2 A_2 + k_2 A_2 \quad (1)$$

where

λ_2 = decay constant of Po-210 (1.83 yr^{-1})

k_2 = scavenging coefficient for Po-210 (yr^{-1} ; scavenging assumed to be a first-order rate process)

A_1 = soluble Pb-210 activity (dpm cm^{-2})

A_2 = soluble Po-210 activity (dpm cm^{-2}).

From hydrographic observations the thickness of the mixed layer is taken to be 20 m at Station 18 and 100 m at Station 32. Calculated removal rates ($k_2 A_2$) are 0.58 and 1.52 $\text{dpm cm}^{-2} \text{ yr}^{-1}$ for Stations 18 and 32, respectively, and corresponding residence times ($1/k_2$) are 0.17 and 0.47 yr. These parameters characterize the net transfer of Po-210 in the mixed layer from soluble to particulate form.

Knowledge of these transfer rates permits us to estimate mean exposure ages or residence times of particulate matter in the mixed layer. Particulate Po-210 is supplied by chemical transfer from the soluble form and by decay of particulate Pb-210, and this supply is assumed to be balanced by sinking out of the mixed layer and radioactive decay:

$$k_2 A_2 + \lambda_2 A_{1p} = R + \lambda_2 A_{2p} \quad (2)$$

where

R = rate of removal by sinking ($\text{dpm cm}^{-2} \text{ yr}^{-1}$)

A_{1p} = particulate Pb-210 activity (dpm cm^{-2})

A_{2p} = particulate Po-210 activity (dpm cm^{-2}).

For Stations 18 and 32, we calculate particle residence times of 0.050 and 0.096 yr. These times are short relative to the radioactive mean life of Po-210 (0.55 yr) and relative to the residence times calculated above for soluble Po-210, and they imply that the removal of Po-210 from the surface ocean is controlled largely by the rate at which Po-210 is incorporated into particulate phases.

Corresponding settling velocities for particulate matter of 400 and 1040 m yr^{-1} (1.3 and $3.3 \times 10^{-3} \text{ cm sec}^{-1}$) may be calculated. However, much of the particle removal may result from grazing rather than from sinking (Riley, et al., 1949).

We note that the short residence time of polonium in the surface ocean (a few months) is similar to that of other reactive elements such as thorium (Broecker, et al., 1973; Matsumoto, 1975).

By using equations for Pb-210 similar to (1) and (2), we may estimate the rate of removal that must be supported by the Pb-210 flux from the atmosphere. These fluxes are estimated to be 0.22 and 0.33 dpm cm⁻² yr⁻¹, which are in favorable agreement with estimates of Lambert and Nezami (1965) for the mean global Pb-210 flux of 0.22 and 0.42 dpm cm⁻² yr⁻¹ at 0-15°N and 15-45°N. Residence times for Pb-210 in the mixed layer of 1.9 and 5.2 yr have been calculated, in good agreement with the results of previous workers (Rama, et al., 1961; Shannon, et al., 1970; Tatsumoto and Patterson, 1963).

Calculations similar to the above have been performed by Turekian, et al. (1974), who obtained lower values for the atmospheric Pb-210 flux (0.05-0.10 dpm cm⁻² yr⁻¹) and longer Pb-210 residence times (9-24 yr). The principal reason for the discrepancy lies in their assumption that the Po-210/Pb-210 transport ratio is represented by their activity ratios measured in zooplankton (ca 20) while we feel that our values in total suspended matter and those of Shannon, et al. (1970) in phytoplankton are more representative of the particulate flux.

An independent estimate of the atmospheric Pb-210 delivery can be made by integrating our Ra-226 and Pb-210 profiles to depths at which the effect of surface input appears to be insignificant -- 500 m at Station 18 and 1000 m at Station 32. As discussed in the next section, Pb-210 appears to be chemically scavenged throughout the water column, and, as an estimate of the scavenging rate in the upper layers, we use a chemical residence time of 60 yr, derived from our deep water data. If the decay of unsupported Pb-210 and chemical removal are to be balanced by the atmospheric input, we

require fluxes of 0.19 and $0.29 \text{ dpm cm}^{-2} \text{ yr}^{-1}$, in good agreement with values estimated by considering the mixed layer only.

SCAVENGING IN THE DEEP SEA

Below depths of 500-1000 m, we may regard the input of atmospheric Pb-210 as being insignificantly small compared with the in situ generation of Pb-210 following decay of Ra-226. Rates of chemical removal are, therefore, readily calculated from measurements of parent and daughter decay rates. Both of our profiles show strong depletions of Pb-210 throughout the deep water column and imply the operation of processes that remove Pb-210 from the deep sea. Mean deep-ocean residence times for soluble Pb-210 of 52 and 67 yr have been calculated from our data. These results confirm the findings of Craig, et al. (1973) and their suggestion that the Ra-226/Pb-210 disequilibrium is an ocean-wide phenomenon.

Following earlier suggestions by Goldberg (1954) and Krauskopf (1956), Craig, et al. (1973) assume that Pb-210 is scavenged from the deep ocean by suspended particulate matter and eliminated by sinking. We have indeed found measurable Pb-210 activities in our deep particulate samples ranging from 0.2-1.6 dpm/100 kg seawater. These values are well above those that we would attribute to terrigenous background ($<0.002 \text{ dpm/100 kg}$), and we conclude that they represent Pb-210 derived by scavenging from seawater.

At any given level in the water column, a portion of the particulate Pb-210 activity will have been inherited from scavenging in the upper layers, and to assess rates of vertical transport we must observe increases in particulate activity with depth. No such increase is found at Station 32, however, and this implies either that the residence time of particles is very short (< 1 yr.) at this location or that Pb-210 is being scavenged at a remote sink toward which it is being transported by diffusion or advection. It should be noted that at both stations a divergence of the Ra-226 and Pb-210 profiles occurs near the bottom, indicating a strong scavenging effect at the sediment-water interface. If such a process were operating at the boundaries of an ocean basin (continental margin, mid-oceanic ridge), its effect will be felt at distances approximated by $(K_h \tau)^{1/2}$, where K_h is the horizontal eddy diffusion coefficient, and τ is the radioactive mean life (30 yr. for Pb-210). Adopting a value for K_h of $6 \times 10^6 \text{ cm}^2 \text{ sec}^{-1}$ (Kuo and Veronis, 1973), we calculate a distance of about 750 km. Both of our profiles are from locations close enough to basin boundaries that such an effect may be important in determining the extent and distribution of the Ra-226/Pb-210 disequilibrium.

At Station 18 the increase in particulate Pb-210 activity below 2000 m presents a somewhat more reasonable picture of scavenging by sinking particles, but the values decrease again in the lowermost two samples. As we acquire data from other locations, we hope to determine which of these two types of profiles is more typical and to further evaluate the importance of reactions at the sediment-water interface.

It is likely that Po-210, with its shorter half-life, will be a less ambiguous indicator of in situ processes than Pb-210, because the influence of remote sources and sinks will be less. With the exception of two levels in the water column at Station 18, which will be discussed in the next section, we find a systematic depletion of soluble Po-210 relative to its Pb-210 parent. The particulate matter is correspondingly enriched in Po-210, implying that Po-210 is being removed in situ and that it is being taken by the particles in preference to Pb-210. This preferential uptake is similar to that noted previously for plankton and suspended matter in the surface ocean. Mean residence times for soluble Po-210 with respect to transfer to the particulate phase are 2-3 yr., about twenty times shorter than for Pb-210. Increases in particulate Po-210 with depth are observed in both profiles, which are qualitatively consistent with the view that polonium is scavenged by sinking particles.

As previously noted, the contribution of Po-210 from the atmosphere is small compared with its production in the water column by decay of Pb-210, and it is of interest to sum our soluble and particulate analyses and integrate them over the entire length of the water column to see how closely secular equilibrium is approached. Station 18 shows a nearly perfect balance, the water column as a whole being in secular equilibrium. For Station 32 we estimate a 13% Po-210 deficit (11% if the two surface values are omitted). While this result may be within error limits for summing this number of analyses, the difference lies in the direction that one would expect for preferential scavenging of Po-210.

ORIGIN OF EXCESS POLONIUM-210 AT DEPTH

It is clear that Po-210 is preferentially removed from seawater and enriched in particulate phases relative to Pb-210. This behavior is reflected consistently in our data except for two levels in the water column at Station 18, where we find soluble Po-210 occurring in excess. A well-defined Po-210 maximum occurs at about 125 m and coincides with the subsurface mass of high-salinity water which is formed at slightly higher latitudes (Wust, 1964). A second maximum containing excess Po-210 appears at about 1200-1500 m, between the low-salinity Antarctic Intermediate Water and the weak salinity-maximum of Mediterranean origin. Experimentally this second feature is less well established, as only one point shows an excess within our 1 σ confidence limits. Until the existence of this second feature is confirmed in other profiles, we shall confine our discussion to the shallower layer.

We are presently analyzing surface water samples collected in the formation region of this high-salinity water to determine whether processes occurring at the air-sea interface could lead to Po-210 enrichments which would thus characterize the water mass. Such a possibility is suggested by recent results of Lambert (personal communication), who has measured enrichments of Po-210 in marine aerosols collected over the South Atlantic and Antarctic Oceans. This enrichment, however, may be related to the injection of Po-210 from the sea surface into the atmosphere, as suggested by Turekian *et al.* (1974), and probably does not imply that excess Po-210 is being delivered to the ocean.

If a Po-210 excess were being produced at the surface by some unknown mechanism, we can estimate the excess Po-210 flux that would be required to maintain it. We consider the horizontal distribution of excess Po-210 in the high-salinity layer, allow horizontal diffusion in one direction only, and neglect losses due to scavenging. The distribution is given by:

$$K_h \frac{\partial^2 C}{\partial x^2} = \lambda C \quad (3)$$

where

K_h = horizontal eddy diffusion coefficient

λ = decay constant of Po-210 (1.83 yr.^{-1})

C = excess Po-210 (dpm/100 kg)

x = distance from source

The solution is

$$C = C_0 e^{- (\lambda/K_h)^{1/2} x} \quad (4)$$

where C_0 is the Po-210 excess at the surface. The excess Po-210 flux at the surface is

$$F_0 = (\lambda K_h)^{1/2} C_0 \quad (5)$$

We take $x = 100 \text{ km}$ at the distance from Station 18 to the source region and $C = 4 \text{ dpm/100 kg}$ at $x = 100 \text{ km}$. For $K_h = 10^6 - 10^8 \text{ cm}^2 \text{ sec}^{-1}$, an excess Po-210 flux at the surface of about $3000 \text{ dpm cm}^{-2} \text{ yr}^{-1}$ would be required to maintain the subsurface maximum that we observe. This is orders of magnitude higher

than the estimated Pb-210 flux (ca $0.2 \text{ dpm cm}^{-2} \text{ yr}^{-1}$). Allowing for chemical removal and mixing in other directions would make the required source even larger.

Because the subsurface Po-210 maximum cannot be explained by lateral transport without invoking an enormous source, it must be accounted for by in situ recycling below the euphotic zone. By integrating vertical profiles, we can estimate the rate of transfer of Po-210 from the surface layer, where it is depleted, to the subsurface layer, where it is enriched. The rates calculated are $1.5 \text{ dpm cm}^{-2} \text{ yr}^{-1}$ for removal from the surface layer and $0.6 \text{ dpm cm}^{-2} \text{ yr}^{-1}$ for injection at depth. The subsurface input is thus easily accounted for by local recycling. Such recycling is probably of general occurrence, but results in an observable maximum only in areas of very stable stratification in the upper layers of the water column. A similar behavior for Pb-210 is implied, and may be largely responsible for the deep vertical penetration of excess Pb-210 observed at both our stations.

LEAD-210 DATING OF SHALLOW-WATER SEDIMENTS

In shallow water, unsupported Pb-210 delivered from the atmosphere is rapidly removed to the bottom, where its exponential decay with time forms the basis for dating rapidly accumulating lake and coastal marine sediments. This tool has recently been examined by a number of investigators (Koide, et al., 1972; Krishnaswamy et al., 1971; Robbins and Edgington, 1975).

We have measured Pb-210 in sections of a core taken from Buzzards Bay, Massachusetts, by Dr. J. W. Farrington. Dried sediment samples were treated by leaching with hot, concentrated HNO_3 for four hours in the presence of Po-208

tracer. The hot leachate was separated by filtration through glass fiber filters and the nitric acid eliminated by evaporation with periodic additions of concentrated HCl. Sample solutions were then made 2 N in HCl by dilution with distilled water and polonium analyses completed according to our usual procedure (Spencer, 1974). It is assumed that Pb-210 and Po-210 are in secular equilibrium throughout the length of the core, and our results are reported as Pb-210 (dpm/g dried sediment).

Figure 3 is a semi-logarithmic plot of excess Pb-210 vs. depth. The supported Pb-210 background (1.24 ± 0.15 dpm/g) was estimated by averaging three analyses from deeper levels of the core at which Pb-210 activity was independent of depth. For constant rates of sediment accumulation and delivery of Pb-210 to the sediment surface, the data should plot as a straight line given by

$$\log A = \log A_0 - \lambda x/S \quad (6)$$

where

A = activity of unsupported Pb-210 at depth x

A₀ = activity at x=0

λ = decay constant of Pb-210 (0.0312 yr.^{-1})

S = sedimentation rate

Our curve appears to consist of two distinct portions, each of which may be approximately fit by straight lines with different slopes, with a break occurring at about 12 cm. Apparent sedimentation rates given by the slopes

of these two lines are 0.47 cm yr.^{-1} for the upper portion and 0.11 cm yr.^{-1} for the lower portion.

Integration of these two portions of the curve, however, reveals that such an increase in sedimentation would have required a simultaneous increase in the rate of Pb-210 supply. Otherwise, we should observe a sudden decrease in activity by dilution just above the 12 cm level.

It appears more likely to us that the Pb-210 distribution in the upper level of the core is largely controlled by biological mixing processes. This interpretation is consistent with the distribution of artificial fallout radionuclides Cs-137 and Pu-239 (H. D. Livingston, unpublished data), which show strong penetration to depths of 10-15 cm and smaller, but measurable, levels down to 20 cm.

Goldberg and Koide (1962) have constructed a model describing the depth distribution of a radioactive tracer with constant input, which allows for uniform mixing from the surface down to some finite depth in the sediment. Rates of mixing are expressed mathematically as a diffusion coefficient, D . We have attempted to apply this model to our Pb-210 data by taking 12 cm at the depth of mixing and a Pb-210 delivery rate of $0.71 \text{ dpm cm}^{-2} \text{ yr.}^{-1}$ (obtained by integrating excess Pb-210 over the length of the core). The model equations predict a concave upward curvature in the upper part of the plot, which is not followed by our data points. The best fit we could obtain would indicate a mixing coefficient, D , of about $2 \text{ cm}^2 \text{ yr.}^{-1}$ ($6 \times 10^{-8} \text{ cm}^2 \text{ sec}^{-1}$).

We are presently analyzing a second core from this area with samples taken at 1 cm intervals in order to improve our resolution, especially about the 12 cm break, which is more likely a region of continuous transition. Our data will then be used with a more realistic model that allows for changes in the rate of mixing with depth (T. Goreau, unpublished manuscript).

If we take the 12 cm "break" as an effective lower limit to disturbance by mixing, we may consider the slope of the lower portion of the curve as representing the true sedimentation rate: in this case about 0.1 cm yr.^{-1} . More detailed analyses will allow us to determine whether a truly linear region exists at depth. It is worth noting that, had the sedimentation rate been much lower, or the penetration by mixing deeper, the Pb-210 profile would be completely dominated by mixing effects, and strict application of Equation (6) would lead to erroneously high sedimentation rates. For higher sedimentation rates or shallower mixing depths, mixing effects would be minimal. Evidently conditions in Buzzards Bay are such that both sedimentation rates and mixing rates can be studied by the Pb-210 method.

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STUDIES IN THE GULF OF MAINE

At the time of writing this report, we have completed the proposed cruise of the R/V ATLANTIS II to the Gulf of Maine during January 4-11, 1975. The hydrographic data from this cruise has been partially reduced and assembled and some preliminary interpretations will be given. A complete report will be issued later. During the cruise, which concentrated in the area of the Murray-Wilkinson Basin, we occupied 35 stations at the locations shown on Figure 4. Work conducted during the cruise consisted of continuous salinity and temperature profiling at all stations using a C.T.D. At selected stations, we ran nephelometer profiles and collected samples for on-board measurement of salinity, temperature, dissolved oxygen, phosphate and silicate. Samples collected for laboratory processing included particulate matter for both major and trace element and Pb^{210} - Po^{210} studies, water samples for Pb^{210} - Po^{210} studies. Samples were also collected by Dr. V. T. Bowen for determination of Sr^{90} , Cs^{137} and Pu^{239} . A total of 7 large diameter cores were collected for fallout radioisotope and stable element studies.

The Murray-Wilkinson Basin was chosen for study because of its relatively stable deep water structure. Deep water in the Gulf of Maine originates in intermittent flows through the Northeast Channel and is principally Slope Water and Coastal Water of Labrador origin. The deep water temperature and salinity of the Gulf of Maine responds to variations in the composition and relative proportions of these waters entering the Northeast Channel. Colton (1968) has shown that the Murray-Wilkinson Basin bottom water is

least affected by these intermittent variations and Colton and Stoddard (1973) have shown that the average bottom water temperature encountered in the deep part of the Murray-Wilkinson Basin tend to be relatively constant.

The Murray-Wilkinson Basin is an elongated (NNW-SSE) depression in the sea floor, about 80 miles long, which reaches a maximum depth of about 285 meters. It is open to the east and southeast, where the Rodgers passage and a passage to the Franklin Basin form sills of about 185 meters depth. To the north, a channel connected to the Platts Basin has a sill of about 170 meters. The Franklin Basin is a southwestward extension of the Georges Basin and is connected to the open North Atlantic Ocean with sills deeper than 200m. The deep part of the basin is split by the Wilkinson divide, a ridge of about 250 meters depth which separates the Wilkinson and Murray Basins.

Hydrographic data collected during ATLANTIS II cruise, 86, is summarized in the appendices. Appendix 1 lists station locations and casts, Appendix 2 gives a selection of data from the CTD, Appendix 3 gives discrete sample data and Appendix 4 gives particulate matter concentrations.

HYDROGRAPHIC DATA

Examination of the salinity and temperature data show that deep water conditions existing now in the Gulf of Maine are considerably different from those of the previous decades. A succession of mild winters, particularly 1973-1974 and 1974-1975 has led to warmer water compared with earlier years.

Table 1 compares the average temperature at five deep water stations in January 1975 with the range found during the first three months of the year in the years 1920 to 1970. Above 100 meters the water is warmer than the maximum temperature observed during this period, while below 100 m the current temperature is close to the maximum observed historically.

The salinity and temperature distributions along the sections identified A-A¹, B-B¹ and C-C¹ in Figure 4 are given in Figures 5 to 10. A composite plot of potential temperature versus salinity is given in Figure 11 and this shows that with the exception of three of the most easterly stations, there is a very limited vertical range in temperature (between about 6.6°C and 7.8°C) and that most stations are characterized by a major inversion in the temperature profile. Surface water, with a density of about 26.10 σ_t has a range of temperature from about 6.98°C to 7.70°C and a salinity range from 33.165‰ to 33.402‰. Figure 12 shows that the warmer, saltier surface water exists in isolated lobes that are being eroded by the colder fresher water contained in a major anti-cyclonic gyre in the Gulf of Maine. The small arrows on Figure 12 illustrate the direction and strength of surface currents interpreted from a leeway analysis of the ATLANTIS II (R. Miller, 1975) during the period January 4-11, 1975. The two easternmost stations (2141 and 2142) have the warmest surface water and mid-water warm cores that reach temperatures of 8.69°C. These stations are closer to the central region of the Gulf of Maine and probably represent a residual of "summer" water that has been less well mixed with the colder fresher water in the major gyre.

A "residual" warm water core is present at about 130m depth in all of the stations

(see Figures 5, 7 and 9). In the deep water a major feature is a cold water core which is most pronounced in the southern regions of the basin. At stations 2144, 2149 and 2154, temperature minima of 6.60°C , 6.77°C and 6.65°C occur respectively at depths of 156m, 164m and 160m, with salinities of 33.657‰, 33.798‰ and 33.700‰. This cold layer persists throughout the basin at about 180 to 200m depth but is at a maximum thickness at the southern end. Figure 9 shows that at the northern end of the basin, the cold water core is thickest toward the western margin and a general rise of the isotherms takes place on the western slope. This suggests that the cold water core may be part of the major gyre and represent a mixture of Labrador Coastal Water and Slope Water advecting in from the Franklin Basin. Although a narrow passage with a depth of about 185m connects the Wilkinson and Franklin Basins, there is a very broad sill with a depth of about 160m corresponding to the depth of the cold water core in the south and east.

Below 200m, in the deepest portions of the basin, the bottom water has temperatures from 7.20°C to 7.35°C and salinities from 34.080‰ to 34.165‰. Bottom water temperatures of about 7.2°C are principally restricted to the Wilkinson Basin. In the Murray Basin, such temperatures occur only in the very deepest portions toward the southern end. This is undoubtedly due to the more extensive mixing with the cold water core immediately above and the presence of the Wilkinson divide which restricts the circulation of the bottom water. Station 2142 is unique in having bottom water temperatures of 7.85°C at 205 meters with salinities of 34.270‰. This salty warm water is probably

connected to the deep warm water core of station 2141 and probably represents deep water from the Northeast Channel of predominantly Slope Water origin with a salinity of about 35‰ and temperature of about 9°C (McLellan, 1957).

The relationships between salinity and both dissolved oxygen and silicate are shown in Figure 13. Each relationship may be described by essentially three linear sections representative of 1) mixing between the high oxygen and low silica surface water and warm mid-water core of salinity 33.5‰, 2) mixing between the warm water core and the cold water core of salinity 33.75‰ where a marked decrease in oxygen and increase in silicate are observed and 3) mixing between the cold water core and the bottom water of slightly lower oxygen and higher silicate. The oxygen and silicate concentrations of the cold water core are consistent with its origin in a mixture of Labrador Coastal Water and Slope Water. The bottom water has lower oxygen and higher silicate than would be expected in either the Labrador Coastal Water or Slope Water and may indicate some in situ oxydation, during a relatively long residence time of the bottom water in the Gulf of Maine.

DISTRIBUTION OF PARTICULATE MATTER

Particulate matter samples were collected by direct filtration of sea water from 30 liter Niskins into evacuated glass carboys. This procedure was chosen in order to remove any risk of contamination of the sample during the intermediate pressure filtration storage tank that characterized our earlier procedures. The samples were collected on 47mm preweighed Nuclepore filters with a pore diameter of 0.6 μ . The filters were loaded into the filter holders inside a clean glove box and after the filtration the holders were

returned to the glove box where they were opened, the filters rinsed to remove sea salt and the filters were stored, sealed in clean individual polycarbonate boxes. After return to the laboratory, the filters were dried, equilibrated with the temperature and humidity conditions of the balance room and reweighed to determine the mass of suspended matter. The results of these operations are given in Appendix 4. As was expected from our earlier results (Spencer and Sachs, 1970; Spencer, et al., 1971), the near surface concentrations of suspended matter were not markedly in excess of the mid-water concentrations. This is typical of winter conditions. However, the near bottom nepheloid layer appears to be just as well developed as that observed in our earlier cruises during 1966-1968. Concentrations of suspended matter in near bottom samples were about $350\mu\text{g/kg}$ in the northern end of the deep Murray-Wilkinson Basin and about $520\mu\text{g/kg}$ toward the southern end.

At several stations nephelometer profiles were taken using a laser nephelometer designed and built by P. L. Sachs. Data on the in situ light scattering recorded by this instrument was telemetered to the surface acoustically and recorded on a standard P.G.R.

The relationship between the nephelometer data and the particulate matter data for one station, 2138, are shown in Figure 14 and a selection of profiles showing the nephelometer and CTD data are given in Figures 15 to 19.

Although not all of the data has been reduced, we are able at this time to make the following observations.

The nephelometer data in the upper 50m to 75m of the water column is affected by scatter from ambient light and the results depend heavily upon whether the station was taken in daylight or darkness. In the deep water below 75m, a close relationship exists between light scattering values and particulate matter concentration.

An intensive near bottom nepheloid layer is a characteristic feature of all the deep stations. It is most intense in the southern part of the basin and its vertical extent depends upon the vertical density gradient and mixing between the bottom water and the overlying cold water core. In most cases, the density gradient established above the bottom water is sufficient to restrict the vertical diffusion of particles from the nepheloid layer and they rarely penetrate into the cold water core. Rather, at the southern end, where the cold water core initially penetrates into the basin, it is characterized by a mid-water particle maximum (see Figure 15) which is probably the result of passage of this cold water as bottom water across the broad sill from the Franklin Basin.

This mid-water maximum in the cold water core can be detected only about half way up the basin, being present at stations 2138 and 2151 but absent from stations 2133, 2132 and 2122. At the northern end of the basin, a separate mid-water particle maximum appears above the cold water core and may be the result of local bottom winnowing of sediments from the Cat Knoll and Jeffreys Ledge area to the west of the basin.

In general, the warm water at 100 to 130 meters is the most particle free water existing in the basin.

The distribution of the hydrographic data and the particulate matter appear to be consistent with the hypothesis that a fairly extensive resuspension of bottom sediments, probably principally by tidal currents, is taking place. This deep suspended matter diffuses vertically up to, but rarely penetrates the cold water core at 160-200m depth and is thus largely retained within the basin. The cold water core appears to be carrying suspended sediment into the basin and other mid-water particle maxima suggest occasional contributions of sediment from the flanks of the basin.

Our future work during the coming year will complete the hydrographic interpretations and concentrate on the analysis of the particulate matter and the Pb^{210} and Po^{210} distributions.

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FIGURE CAPTIONS

Figures 1 and 2. Pb-210 and Po-210 profiles from the North Atlantic. Data points in parantheses were obtained from unfiltered water samples with particulate contributions estimated by interpolation.

Figure 3. Excess Pb-210 distribution in Buzzards Bay sediment core: 41-29.0 N, 70-52.5 W. Apparent sedimentation rates from equation (6) are indicated.

Figure 4. Station locations

Figure 5. Potential temperature vs. depth for section A-A'

Figure 6. Salinity vs. depth for section A-A'

Figure 7. Potential temperature vs. depth for section B-B'

Figure 8. Salinity vs. depth for section B-B'

Figure 9. Potential temperature vs. depth for section C-C'

Figure 10. Salinity vs. depth for section C-C'

Figure 11. Composite plot of potential temperature vs. salinity

Figure 12. Plot of salinity at 10m, showing direction and strength of surface currents

Figure 13. Salinity vs. dissolved oxygen and silicate

Figure 14. Relationship of nephelometer data and particulate concentrations

Figures 15-19. Nephelometer and CTD data vs. depth for Stations 2132, 2133, 2135, 2154 and 2155.

PARTICULATE

dpm/100 kg SEAWATER

SOLUBLE

CHECK PRINT ONLY

Figure 1

EXCESS Pb-210 (dpm/g)

CHECK PRINT ONLY

Figure 3

Fig. 4. Station Locations

Fig. 5. Potential temperature vs. depth for section A-A'

Fig. 6. Salinity vs. depth for section A-A'

Fig. 7. Potential temperature vs. depth for section B-B'

Fig. 8. Salinity vs. depth for section B-B'

Fig. 9. Potential temperature vs. depth for section C-C'

Fig. 10. Salinity vs. depth for section C-C'

Fig. 11. Composite plot of potential temperature vs. salinity

Fig. 12. Plot of salinity at 10m, showing direction and strength of surface currents

Fig. 13. Salinity vs. dissolved oxygen and silicate

Fig. 14. Relationship of nephelometer data and particulate concentrations

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

APPENDIX 1

Station locations and casts

ATLANTIS II CRUISE 86 LEG.1 (a)

GULF OF MAINE

Station	Cast	Type	Date	Time	N Latitude Deg. Min.		W Longitude Deg. Min.		Depth (m)
2122	1	CTD	1/4/75	2118	42	42.17	69	38.90	277
	2	NEPHEL		2152	42	42.00	69	39.60	
	3	NISKIN		2245	42	41.32	69	39.96	
	4	BODMAN		0020	42	40.53	69	39.23	281
	5	NISKIN		0612	42	41.81	69	41.32	270
	6	BODMAN		0740	42	40.76	69	41.12	
	7	NISKIN		0818					267
	8	PLANKTON TOW		1538	to→42	39.5	69	43.0	
	9	CTD		1647	42	41.0	69	43.0	255
2123	1	CTD	1/5/75	2003	43	02.8	69	47.4	172
	2	NANSEN		2055	43	2.51	69	48.29	
2124	1	CTD		2203	43	01.4	69	55.0	207
	2	CORE		2308	43	01.0	69	56.7	
	3	PLANKTON TOW		2346	to→43	01.39	69	58.42	210
	4	NEPHEL		0005	43	01.94	70	01.79	
2125	1	CTD	1/6/75	0040	43	02.5	70	02	51
2126	1	CTD	1/6/75	0250	42	50.3	70	02.2	147
2127	1	CTD	1/6/75	0438	42	51.54	69	56.34	205
2128	1	NISKIN	1/6/75	0640					
	2	CTD		1021	42	52.0	69	48.9	254
	3	NEPHEL		1042	42	52.1	69	48.3	
	4	PLANKTON TOW		1114	to→42	52.3	69	47.1	
2129	1	CTD	1/6/75	1138	42	52.5	69	46.5	227
2130	1	CTD	1/6/75	1245	42	53	69	41.5	180
2131	1	CTD	1/6/75	1442	42	46.0	69	31.0	181
	2	NEPHEL		1510	42	46.1	69	30.34	
	3	NANSEN		1535					

Station	Cast	Type	Date	Time	N Latitude Deg. Min.	W Longitude Deg. Min.	Depth (m)
2132	1	CTD	1/6/75	1710	42 45.5	69 36.5	241
	2	NEPHEL		1738	42 44.67	69 37.09	
2133	1	CTD	1/6/75	1925	42 40.60	69 49.59	258
2134	1	CTD	1/6/75	2120	42 39.2	69 54.1	190
2135	1	CTD	1/7/75	0000	42 20.6	70 00.6	181
	2	PLANKTON TOW		0118to→	42 22.5	69 56.3	
2136	1	CTD	1/7/75	0138	42 23.0	69 55.5	164
2136A	2	CORE		0245	42 21.9	69 55.1	211
2137	1	CTD	1/7/75	0528	42 28.7	69 37.8	256
2138		arrive	1/7/75	0742	42 32.4	69 31.5	284
					heavy weather		
		return to station	1/7/75	1925	42 36.4	69 29.0	278
		leave station		2220			266
2139	1	CTD	1/8/75	0020	42 35	69 21	225
2140	1	CTD	1/8/75	0255	42 39.3	69 10.9	175
2141	1	CTD	1/8/75	0545	42 34.5	68 43.0	195
	2	PLANKTON TOW		0620	42 32.5	68 43.5	
2142	1	CTD	1/8/75	0738	42 30.5	68 51.7	210
2143	1	CTD	1/8/75	0903	42 27.3	68 58.5	224
2144	1	CTD	1/8/75	1210	42 22.0	69 16.0	240
	2	NISKIN		1300			
	3	PLANKTON TOW		1324	42 20.02	69 15.86	
2145	1	CTD	1/8/75	1415	42 19.0	69 26.4	221
2146	1	CTD	1/8/75	1550	42 16.3	69 38.5	242
	2	NANSEN		1658	42 15.8	69 38.3	
2147	1	CTD	1/8/75	1835	42 12.1	69 52.5	155
	2	NANSEN		1909			
	3	PLANKTON TOW		1918			
2148	1	CTD	1/8/75	2147	42 06	69 28	178
2149	1	CTD	1/8/75	2310	42 03.38	69 32.85	216
	2	NISKIN	1/9/75	0005	42 03	69 34	
	3	BOD. & NANSEN		0113			

Station	Cast	Type	Date	Time	N Latitude Deg. Min.		W Longitude Deg. Min.		Depth (m)
2149	4	BOD. & NANSEN		0129					
	5	"		0144					
	6	"		0157					
	7	PLANKTON TOW		0235					
2150	1	CTD	1/9/75	0330	42	02.33	69	42.60	186
2151		CMC BODMAN	1/9/75	0630	42	26.47	69	44.60	272
				0936	42	26.36	69	45.18	279
		PLANKTON TOW		1310	42	25.69	69	46.16	
2152	1	CTD	1/11/75	0110	42	26.5	68	58.1	225
	2	NEPHEL							
2153	1	CTD	1/11/75	0248	42	24.3	69	06.5	218
	2	NEPHEL							
2154	1	CTD	1/11/75	0420	42	22.0	69	16.0	247
	2	NEPHEL							
2155	1	CTD	1/11/75	0550	42	18.6	69	26.5	224
	2	NEPHEL							
2156	1	CTD	1/11/75	0733	42	16.5	69	40.0	242
	2	NEPHEL		0754					

APPENDIX 2

Summary of corrected CTD data

ST. NO. 2123

DATE: 75 1 5

LO# NO. 1 INST. NO. 2

TIME CONST. = 30.0

43 2.8 11.65 47.4 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 0/00 MMH0/CM TEMP.

166.0	6.8347	33.7403	34.1128	26.4640	6.8724
160.4	6.9337	33.6415	34.1087	26.3729	6.9719
153.6	7.1157	33.5750	34.1627	26.3025	7.1044
147.2	7.3837	33.5368	34.3634	26.2352	7.3729
140.5	7.4382	33.4497	34.3734	26.1521	7.4779
133.7	7.4757	33.4239	34.3354	26.1336	7.4661
126.8	7.4662	33.4061	34.3074	26.1219	7.4573
120.1	7.4652	33.4058	34.3034	26.1209	7.4569
113.1	7.4747	33.4044	34.3074	26.1184	7.4671
106.5	7.4742	33.4036	34.3034	26.1179	7.4672
99.6	7.4757	33.4033	34.2014	26.1175	7.4693
92.6	7.4617	33.4005	34.2834	26.1173	7.4560
86.0	7.4517	33.3983	34.2694	26.1169	7.4466
79.2	7.4547	33.3975	34.2684	26.1159	7.4503
72.1	7.4237	33.3885	34.2294	26.1132	7.4209
65.1	7.3427	33.3604	34.1285	26.1025	7.3396
58.0	7.2587	33.3274	34.0206	26.0883	7.2563
50.6	7.2287	33.3294	33.9926	26.0840	7.2270
43.2	7.2292	33.3311	33.9916	26.0953	7.2281
36.0	7.2732	33.3312	34.0275	26.0893	7.2728
29.8	7.2817	33.3193	34.0215	26.0791	7.2819
22.5	7.2137	33.3291	33.9666	26.0958	7.2146
15.1	7.2157	33.3253	33.9616	26.0926	7.2172
11.6	7.2217	33.3299	33.9696	26.0954	7.2236
7.1	7.2642	33.3269	34.0325	26.0871	7.2665

ALL 486 ST. NO. 2124

DATE: 75 1 5

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

43 1.4 N 69 55.0 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHO/CM		TEMP.

199.8	7.1207	34.0334	34.6364	26.6623	7.1050
195.2	7.1142	34.0256	34.5914	26.6568	7.0989
187.9	6.9307	33.8965	34.3057	26.5826	6.9163
181.0	6.8637	33.7877	34.1438	26.5342	6.8501
174.1	6.8797	33.6577	34.0289	26.4709	6.8577
167.1	6.9967	33.6004	34.0085	26.3388	6.5843
160.6	7.1182	33.5573	34.1517	26.2883	7.1063
153.4	7.3662	33.5117	34.3275	26.2189	7.3548
146.4	7.6502	33.5370	34.6012	26.1975	7.6392
139.4	7.6487	33.5061	34.5682	26.1735	7.6384
132.4	7.5337	33.4682	34.4273	26.1641	7.5242
125.7	7.4747	33.4092	34.3174	26.1222	7.4659
119.5	7.4622	33.4079	34.3024	26.1230	7.4540
111.8	7.4652	33.3968	34.2914	26.1139	7.4577
104.7	7.4487	33.3912	34.2684	26.1117	7.4419
97.8	7.4357	33.3918	34.2544	26.1141	7.4295
91.0	7.4392	33.3917	34.2544	26.1135	7.4337
84.5	7.4362	33.3901	34.2474	26.1127	7.4313
77.5	7.4372	33.3935	34.2484	26.1152	7.4329
70.5	7.4447	33.3940	34.2524	26.1145	7.4411
63.2	7.4392	33.3919	34.2424	26.1137	7.4363
56.9	7.4297	33.3922	34.2314	26.1152	7.4274
49.6	7.4192	33.3917	34.2184	26.1165	7.4176
42.4	7.4197	33.3903	34.2144	26.1152	7.4187
35.3	7.4277	33.3903	34.2184	26.1141	7.4274
28.5	7.4262	33.3907	34.2143	26.1145	7.4265
21.3	7.4257	33.3924	34.2123	26.1160	7.4267
13.6	7.4252	33.3912	34.2073	26.1151	7.4269
7.2	7.4267	33.3906	34.2053	26.1144	7.4290

AIL #86

ST. NO. 2125

DATE: 75 1 6

LGW. NO. 1 INST. NO. 2

TIME CONST. = 30.3

43 2.5 N 70 2.0 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C M/00 MMH0/CM TEMP.

43.2	7.2492	33.3252	34.0036	26.0878	7.2482
39.9	7.2477	33.3238	33.9996	26.0870	7.2470
35.0	7.2407	33.3210	33.9886	26.0857	7.2404
30.2	7.2372	33.3201	33.9826	26.0855	7.2374
25.3	7.2187	33.3033	33.9486	26.0749	7.2193
20.2	7.1757	33.2862	33.8926	26.0674	7.1768
19.7	7.1937	33.2892	33.9106	26.0673	7.1949
18.4	7.1762	33.2811	33.8876	26.0634	7.1774
18.7	7.1727	33.2811	33.8846	26.0636	7.1739
18.7	7.1732	33.2806	33.8846	26.0633	7.1744
18.7	7.1757	33.2826	33.8886	26.0645	7.1769
15.8	7.1747	33.2827	33.8866	26.0648	7.1762
11.7	7.1822	33.2829	33.8916	26.0639	7.1840
9.0	7.2332	33.2841	33.9366	26.0578	7.2353

ALL 486

ST. NO. 2127

DATE: 75 1 6

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 51.5 N 69 56.3 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	PCT.
DB	DEG C	g/100	MMHO/CM		TEMP.

199.1	7.1552	34.9522	34.6633	26.6786	7.1495
196.7	7.1222	34.9028	34.5784	26.6378	7.1368
190.6	7.0857	33.9717	34.5145	26.6184	7.0709
185.1	6.9727	33.8412	34.2916	26.5313	6.9586
179.8	6.9432	33.8124	34.2367	26.5127	6.9296
173.8	6.9307	33.7726	34.1867	26.4832	6.9177
168.5	6.9577	33.6927	34.1357	26.4166	6.9452
163.0	7.1632	33.5724	34.2366	26.2939	7.1510
157.8	7.1707	33.5534	34.1936	26.2783	7.1590
151.4	7.4222	33.4715	34.3394	26.1785	7.4109
146.2	7.6837	33.4553	34.5552	26.1286	7.6728
140.7	7.7087	33.4425	34.5632	26.1149	7.6983
135.0	7.7262	33.4380	34.5722	26.1089	7.7163
129.1	7.7262	33.4354	34.5672	26.1069	7.7169
123.6	7.7187	33.4323	34.5552	26.1055	7.7099
117.7	7.6887	33.4262	34.5292	26.1051	7.6805
112.2	7.6707	33.4213	34.4972	26.1038	7.6631
106.5	7.6427	33.4175	34.4662	26.1049	7.6356
100.7	7.6127	33.4071	34.4273	26.1010	7.6062
95.1	7.5782	33.4019	34.3893	26.1018	7.5722
89.2	7.5332	33.3829	34.3024	26.0975	7.4973
83.9	7.4427	33.3711	34.2354	26.0968	7.4378
77.9	7.4362	33.3759	34.2314	26.01315	7.4319
71.6	7.4072	33.3613	34.1894	26.0942	7.4035
66.2	7.4027	33.3769	34.1974	26.1070	7.3995
60.3	7.3992	33.3690	34.1844	26.1013	7.3966
54.3	7.3987	33.3669	34.1794	26.0998	7.3966
48.7	7.3977	33.3651	34.1744	26.0985	7.3962
42.6	7.3912	33.3645	34.1654	26.0989	7.3902
36.8	7.3942	33.3623	34.1634	26.0967	7.3938
30.6	7.4087	33.3621	34.1734	26.0946	7.4088
24.7	7.4017	33.3662	34.1684	26.0988	7.4024
18.8	7.4067	33.3653	34.1654	26.0974	7.4079
12.5	7.4137	33.3692	34.1763	26.0994	7.4155
7.0	7.4237	33.3697	34.1833	26.0985	7.4260

AIL #86 ST. NO. 2128

DATE: 75 1 6

LOL. NO. 1 INST. NO. 2

TIDE CONST. = 30.3

42 52.3 N 69 48.9 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHO/CM		TEMP.

248.1	7.2677	34.1217	34.8413	26.7108	7.2472
242.4	7.2537	34.1121	34.8173	26.7052	7.2337
235.3	7.2447	34.1091	34.8033	26.7042	7.2254
228.1	7.2287	34.0989	34.7763	26.6984	7.2131
221.6	7.2277	34.0943	34.7683	26.6949	7.2098
214.2	7.2197	34.0894	34.7533	26.6922	7.2025
206.3	7.1637	34.0682	34.6843	26.6827	7.1523
199.9	7.0662	34.0072	34.5335	26.6490	7.0505
192.3	6.9327	33.9320	34.3416	26.6082	6.9179
185.2	6.9017	33.8979	34.2797	26.5856	6.8876
178.4	6.8622	33.8675	34.2137	26.5671	6.8483
170.9	6.8057	33.7715	34.0728	26.4993	6.7931
163.4	6.8877	33.6748	34.0548	26.4121	6.8757
156.0	6.9572	33.6176	34.0618	26.3577	6.9453
149.6	7.0997	33.5828	34.1537	26.3108	7.0883
141.8	7.2027	33.5485	34.2106	26.2697	7.1925
135.0	7.3512	33.4872	34.2835	26.2008	7.3415
127.5	7.4742	33.4121	34.3204	26.1245	7.4652
120.4	7.4257	33.3842	34.2485	26.1095	7.4174
112.9	7.3222	33.3563	34.1276	26.1021	7.3147
105.7	7.3037	33.3471	34.0996	26.0975	7.2963
98.4	7.2912	33.3420	34.0806	26.0952	7.2850
91.0	7.2702	33.3386	34.0556	26.0955	7.2647
83.8	7.2552	33.3370	34.0376	26.0963	7.2504
76.3	7.2632	33.3401	34.0416	26.0980	7.2561
69.1	7.2527	33.3290	34.0216	26.0904	7.2493
61.9	7.2472	33.3366	34.0206	26.0971	7.2444
54.2	7.2457	33.3363	34.0156	26.0971	7.2436
47.1	7.2452	33.3359	34.0116	26.0968	7.2438
39.9	7.2452	33.3350	34.0076	26.0961	7.2445
32.5	7.2447	33.3346	34.0036	26.0959	7.2446
25.0	7.2472	33.3326	34.0005	26.0939	7.2473
17.6	7.2472	33.3339	33.9985	26.0950	7.2485
9.8	7.2447	33.3347	33.9935	26.0959	7.2467

AII #86 ST. NO. 2126
 DATE: 75 1 6
 LOW. NO. 1 INST. NO. 2
 TIME CONST. = 30.3
 42 53.3 N 70 2.2 W

RESS. DB	TEMP. DEG C	SALINITY g/100	COND. MMHO/CM	SIGMA-T	POT. TEMP.
131.5	7.4272	33.3720	34.2435	26.0998	7.4178
128.4	7.4187	33.3688	34.2315	26.0984	7.4097
123.0	7.3862	33.3571	34.1895	26.0938	7.3777
118.7	7.3807	33.3557	34.1815	26.0935	7.3726
113.6	7.3757	33.3532	34.1725	26.0922	7.3681
108.1	7.3952	33.3533	34.1875	26.0896	7.3881
103.7	7.3642	33.3440	34.1495	26.0866	7.3575
98.1	7.3347	33.3361	34.1136	26.0845	7.3285
93.4	7.2962	33.3255	34.0676	26.0815	7.2985
88.2	7.3042	33.3267	34.0736	26.0814	7.2990
82.7	7.2777	33.3223	34.0436	26.0816	7.2730
77.3	7.2897	33.3232	34.0526	26.0807	7.2855
71.4	7.2897	33.3237	34.0506	26.0811	7.2861
66.1	7.2742	33.3184	34.0296	26.0790	7.2710
60.6	7.2442	33.2966	33.9806	26.0661	7.2416
55.4	7.2537	33.3258	34.0136	26.0877	7.2515
49.2	7.2427	33.3368	33.9836	26.0743	7.2411
43.7	7.2522	33.3046	33.9876	26.0713	7.2511
38.2	7.2172	33.3018	33.9516	26.0739	7.2166
32.7	7.2267	33.3007	33.9566	26.0718	7.2266
27.4	7.2352	33.3327	33.9636	26.0722	7.2356
21.3	7.2262	33.3034	33.9536	26.0739	7.2272
15.6	7.2237	33.3031	33.9486	26.0741	7.2252
10.3	7.2267	33.3036	33.9466	26.0717	7.2287

AI 086

ST. NO. 2129

DATE: 75 1 6

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 52.5 N 69 46.5 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 0/00 MMHC/CM TEMP.

219.6	7.1717	34.0642	34.6894	26.6792	7.1540
217.4	7.1632	34.0584	34.6754	26.6758	7.1458
215.4	7.1282	34.0406	34.6244	26.6666	7.1115
203.1	7.0587	34.0098	34.5305	26.6521	7.0428
196.0	7.0272	33.9961	34.4865	26.6456	7.0123
188.5	6.9352	33.9699	34.4216	26.6308	6.9707
181.4	6.9467	33.9378	34.3546	26.6108	6.9329
174.0	6.9157	33.8917	34.2817	26.5788	6.9026
166.5	6.8667	33.8270	34.1757	26.5347	6.8544
159.1	6.8887	33.7386	34.1118	26.4621	6.8771
151.7	6.9607	33.6836	34.1227	26.4091	6.9497
144.4	7.0757	33.5945	34.1407	26.3233	7.0653
137.1	7.2932	33.5076	34.2515	26.2249	7.2834
129.7	7.4852	33.4405	34.3574	26.1453	7.4760
121.9	7.4572	33.3965	34.2884	26.1147	7.4487
114.7	7.3147	33.3573	34.1226	26.1039	7.3070
106.3	7.2507	33.3434	34.0496	26.1019	7.2438
99.8	7.2462	33.3412	34.0406	26.1009	7.2399
91.6	7.2327	33.3363	34.0206	26.0989	7.2272
85.2	7.2312	33.3377	34.0176	26.1002	7.2263
77.0	7.2317	33.3378	34.0146	26.1002	7.2275
69.8	7.2327	33.3381	34.0126	26.1003	7.2292
62.2	7.2332	33.3391	34.0106	26.1010	7.2304
54.8	7.2312	33.3381	34.0046	26.1005	7.2291
47.0	7.2302	33.3374	33.9996	26.1000	7.2288
39.6	7.2377	33.3402	34.0056	26.1012	7.2373
32.0	7.2457	33.3394	34.0086	26.0995	7.2457
24.4	7.2492	33.3407	34.0095	26.1000	7.2499
17.0	7.2532	33.3400	34.0135	26.0982	7.2596
9.4	7.2652	33.3423	34.0185	26.0991	7.2673

ALL 486

ST. NO. 2132

DATE: 75: 1 6

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 53.0 N 69 41.5 W

PRESS.	TEMP.	SALINITY	CGND.	SIGMA-T	POT.
DB	DEG C	P/00	MMHO/CM		TEMP.

167.5	6.9392	33.8222	34.02367	26.5219	6.9267
162.8	6.9387	33.7327	34.1527	26.4507	6.9267
157.5	6.9367	33.7230	34.1397	26.4433	6.9252
151.1	6.9897	33.6435	34.1117	26.3736	6.9788
145.7	6.9962	33.6003	34.0757	26.3387	6.9858
140.7	7.0142	33.5840	34.0747	26.3235	7.0042
135.4	7.1597	33.5596	34.1796	26.2843	7.1501
129.8	7.2227	33.5174	34.1946	26.2425	7.2136
124.5	7.3477	33.5064	34.2935	26.2164	7.3390
119.0	7.3712	33.3995	34.2135	26.1292	7.3631
112.9	7.2822	33.3470	34.0836	26.1004	7.2747
106.3	7.2802	33.3456	34.3776	26.0996	7.2733
99.6	7.2737	33.3431	34.0666	26.0985	7.2674
92.8	7.2717	33.3439	34.0626	26.0995	7.2661
86.1	7.2662	33.3416	34.0526	26.0984	7.2612
79.3	7.2637	33.3408	34.0466	26.0981	7.2593
72.4	7.2627	33.3417	34.0436	26.0989	7.2590
65.2	7.2617	33.3406	34.0386	26.0983	7.2586
58.7	7.2577	33.3389	34.0306	26.0975	7.2552
51.6	7.2542	33.3381	34.0236	26.0973	7.2524
44.8	7.2522	33.3378	34.0186	26.0974	7.2513
37.7	7.2507	33.3383	34.0146	26.0980	7.2502
30.7	7.2457	33.3403	34.0086	26.1000	7.2453
24.1	7.2442	33.3359	34.0005	26.0970	7.2449
17.3	7.2432	33.3369	33.9975	26.0978	7.2445
10.3	7.2627	33.3410	34.0155	26.0984	7.2647

AII #86 ST. NO. 2131
 DATE: 75: 1 6
 LOG. NO. 1 INST. NO. 2
 TIME CONST. = 30.0
 42 45.0 N 69 31.0 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHO/CM		TEMP.
171.3	7.2357	33.6273	34.6453	26.4630	7.3725
166.2	7.5682	33.7257	34.7112	26.3573	7.5553
159.4	7.6272	33.6965	34.7341	26.3259	7.6153
152.5	7.7312	33.6487	34.7800	26.2734	7.7196
146.1	7.8197	33.5632	34.7770	26.1935	7.8086
139.9	7.8842	33.5298	34.8010	26.1580	7.8737
133.3	7.6322	33.5123	34.7800	26.1446	7.8724
126.7	7.8767	33.4993	34.7600	26.1351	7.8675
120.5	7.8727	33.4985	34.7530	26.1351	7.8641
113.5	7.6317	33.4938	34.7090	26.1374	7.8238
107.4	7.8552	33.4914	34.7250	26.1321	7.8479
101.2	7.8462	33.4784	34.7020	26.1232	7.8395
95.1	7.7792	33.4672	34.6291	26.1242	7.7732
89.2	7.7632	33.4622	34.6071	26.1225	7.7578
81.8	7.7497	33.4610	34.5911	26.1235	7.7453
75.7	7.7422	33.4571	34.5781	26.1216	7.7381
69.2	7.7322	33.4545	34.5621	26.1213	7.7267
62.6	7.7287	33.4537	34.5571	26.1203	7.7258
56.0	7.7277	33.4534	34.5531	26.1203	7.7255
49.7	7.7312	33.4531	34.5530	26.1203	7.7296
43.2	7.7292	33.4495	34.5450	26.1175	7.7282
36.6	7.7277	33.4530	34.5440	26.1205	7.7273
30.1	7.7217	33.4510	34.5340	26.1198	7.7219
23.6	7.7217	33.4509	34.5310	26.1197	7.7226
17.2	7.7192	33.4499	34.5250	26.1193	7.7207
10.4	7.7122	33.4480	34.5140	26.1198	7.7143

AIJ #86

ST. NO. 2132

DATE: 75. 1 6

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 45.5 N 69 36.5 W

PRESS. DB	TEMP. DEG C	SALINITY 0/00	COND. MMHO/CM	SIGMA-T	PCT. TEMP.
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233.4	7.3592	34.1646	34.9591	26.7316	7.3395
235.9	7.3562	34.1644	34.9551	26.7319	7.3367
229.7	7.3452	34.1576	34.9361	26.7281	7.3263
222.9	7.3317	34.1330	34.8712	26.7149	7.2835
215.6	7.1942	34.0636	34.7073	26.6755	7.1769
208.8	7.1822	34.0569	34.6873	26.6719	7.1656
201.7	7.1442	34.0344	34.6294	26.6596	7.1283
193.4	7.0597	33.9171	34.4425	26.5791	7.0447
184.4	6.8817	33.7387	34.1168	26.4631	6.8678
175.9	7.0342	33.5847	34.1088	26.3214	7.0209
167.2	7.2412	33.5316	34.2406	26.2511	7.2286
159.4	7.6102	33.4998	34.5363	26.1740	7.5981
149.6	7.5672	33.4180	34.4184	26.1160	7.5560
143.6	7.5697	33.4177	34.4163	26.1154	7.5594
132.0	7.5502	33.4124	34.3904	26.1141	7.5497
123.4	7.4942	33.4002	34.3254	26.1124	7.4856
114.4	7.4402	33.3818	34.2565	26.1056	7.4325
105.4	7.4072	33.3702	34.2125	26.1011	7.4003
96.5	7.4167	33.3739	34.2205	26.1027	7.4107
87.4	7.4677	33.3778	34.2654	26.0986	7.4625
78.6	7.3367	33.3467	34.1165	26.0926	7.3324
69.9	7.2817	33.3289	34.00476	26.0863	7.2782
61.3	7.2662	33.3197	34.00216	26.08312	7.2635
52.1	7.2917	33.3234	34.00435	26.0806	7.2898
42.8	7.2852	33.3134	34.00245	26.0736	7.2842
33.9	7.2872	33.3180	34.00265	26.0769	7.2870
26.6	7.2862	33.3127	34.00175	26.0729	7.2867
20.2	7.2892	33.3116	34.00155	26.0718	7.2893
13.8	7.2772	33.3101	34.00015	26.0721	7.2789
7.3	7.2922	33.2966	33.9995	26.0594	7.2945

AlI #86 ST. NO. 2135

DATE: 75 1 6

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.7

42 47.6 N 69 49.6 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 0/00 MMHG/CM TEMP.

246.8	7.1937	34.1014	34.7552	26.7053	7.1734
244.1	7.1947	34.0918	34.7462	26.6976	7.1747
236.4	7.1682	34.0769	34.7052	26.6896	7.1489
228.8	7.1457	34.0645	34.6702	26.6830	7.1272
221.2	7.1427	34.0536	34.6542	26.6749	7.1249
213.2	7.1357	34.0491	34.6402	26.6723	7.1187
205.1	7.1147	34.0333	34.6032	26.6627	7.0985
197.0	6.9757	33.9451	34.3942	26.6126	6.9604
189.4	6.9862	33.9022	34.3612	26.5774	6.9716
181.9	7.0772	33.8788	34.4182	26.5465	7.0633
174.0	7.1057	33.8196	34.3862	26.4961	7.0925
166.2	7.1997	33.7739	34.4251	26.4471	7.1871
158.9	7.4222	33.6823	34.5371	26.3440	7.4102
150.9	7.4922	33.6496	34.5660	26.3384	7.4809
143.2	7.5702	33.6274	34.6120	26.2799	7.5596
135.6	7.6302	33.5968	34.6340	26.2473	7.6203
128.4	7.6512	33.5875	34.6409	26.2369	7.6420
120.8	7.7202	33.5212	34.6379	26.1751	7.7117
113.1	7.6752	33.4637	34.5409	26.1364	7.6675
105.2	7.5762	33.4149	34.4039	26.1123	7.5693
97.5	7.5492	33.3991	34.3619	26.1037	7.5430
89.9	7.4667	33.3696	34.2580	26.0923	7.4613
82.1	7.4202	33.3606	34.2050	26.0918	7.4155
74.1	7.4212	33.3602	34.2020	26.0913	7.4173
66.3	7.4192	33.3583	34.1950	26.0921	7.4160
58.5	7.4157	33.3599	34.1899	26.0919	7.4132
50.7	7.4102	33.3559	34.1779	26.0895	7.4085
42.2	7.4092	33.3566	34.1739	26.0890	7.4083
33.9	7.4087	33.3573	34.1709	26.0912	7.4085
27.7	7.4117	33.3600	34.1729	26.0925	7.4121
22.3	7.4052	33.3591	34.1639	26.0928	7.4061
16.5	7.4147	33.3582	34.1689	26.0907	7.4162
10.4	7.4262	33.3587	34.1769	26.0895	7.4282
6.1	7.4177	33.3570	34.1659	26.0893	7.4201

ALL 486 ST. NO. 2134

DATE: 75 1 6

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 39.2 N 69 54.1 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 0/00 MMHG/CM TEMP.

187.1	7.0217	33.8918	34.3826	26.5644	7.00073
183.9	7.0057	33.8871	34.3626	26.5629	6.9916
181.9	6.9367	33.8408	34.2577	26.5360	6.9229
181.6	6.9372	33.8284	34.2467	26.5261	6.9234
181.7	6.9367	33.8288	34.2467	26.5265	6.9229
182.0	6.9372	33.8347	34.2527	26.5311	6.9234
181.6	6.9367	33.8365	34.2537	26.5326	6.9229
181.7	6.9367	33.8332	34.2507	26.5300	6.9229
178.8	6.9367	33.8027	34.2217	26.5060	6.9232
171.6	7.0017	33.7567	34.2347	26.4609	6.9888
164.1	6.9517	33.7238	34.1567	26.4419	6.9396
156.3	6.9942	33.6782	34.1497	26.4003	6.9828
148.5	7.01462	33.6516	34.2576	26.3585	7.01354
140.5	7.3012	33.6342	34.3764	26.3232	7.2910
132.8	7.3502	33.6000	34.3854	26.2895	7.3407
125.0	7.4022	33.5620	34.3934	26.2524	7.3934
117.3	7.5427	33.5293	34.4853	26.2068	7.5346
109.4	7.5072	33.4906	34.4143	26.1815	7.4999
101.9	7.5732	33.4672	34.4482	26.1538	7.5666
95.3	7.6937	33.4880	34.5721	26.1528	7.6877
88.8	7.7327	33.4525	34.5711	26.1193	7.7273
82.4	7.6367	33.4348	34.4662	26.1192	7.6319
75.7	7.5882	33.4155	34.4022	26.1111	7.5841
69.2	7.5602	33.4110	34.3703	26.1115	7.5567
62.4	7.5337	33.4030	34.3363	26.1090	7.5309
55.8	7.5487	33.4036	34.3473	26.1073	7.5465
49.3	7.5407	33.3993	34.3333	26.1051	7.5391
42.8	7.3522	33.3445	34.1125	26.0887	7.3512
36.0	7.3302	33.3403	34.0935	26.0947	7.3298
29.4	7.3527	33.3524	34.0965	26.0976	7.3329
23.0	7.3402	33.3449	34.0934	26.0907	7.3410
20.9	7.3287	33.3516	34.0984	26.0975	7.3297
18.0	7.3492	33.3549	34.1084	26.0973	7.3505
15.3	7.3302	33.3463	34.0824	26.0932	7.3318
12.4	7.3357	33.3609	34.0994	26.1039	7.3375
9.4	7.3477	33.3594	34.1074	26.1010	7.3498

ALL #86 ST. NO. 2135

DATE: 75 1 7

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 20.6 N 70 0.6 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHO/CM		TEMP.

159.9	7.5897	33.4584	34.4803	26.1445	7.5775
158.3	7.5817	33.4636	34.4773	26.1497	7.5697
154.5	7.5832	33.4564	34.4703	26.1439	7.5715
150.7	7.5887	33.4594	34.4763	26.1454	7.5774
146.9	7.5827	33.4583	34.4683	26.1455	7.5718
142.5	7.5832	33.4556	34.4643	26.1432	7.5727
138.8	7.5827	33.4550	34.4613	26.1428	7.5726
133.3	7.5817	33.4560	34.4593	26.1438	7.5721
128.2	7.5797	33.4571	34.4563	26.1449	7.5706
123.2	7.5787	33.4529	34.4493	26.1417	7.5700
117.9	7.5752	33.4484	34.4323	26.1325	7.5671
113.2	7.5607	33.3951	34.3753	26.0989	7.5530
109.0	7.5447	33.3800	34.3453	26.0894	7.5374
104.7	7.5452	33.3751	34.3393	26.0855	7.5383
100.6	7.5422	33.3734	34.3333	26.0846	7.5357
96.4	7.5417	33.3759	34.3333	26.0866	7.5356
92.2	7.5412	33.3773	34.3323	26.0878	7.5355
87.9	7.5397	33.3743	34.3263	26.0856	7.5344
82.3	7.5417	33.3761	34.3273	26.0868	7.5370
76.6	7.5412	33.3739	34.3223	26.0851	7.5370
71.6	7.5397	33.3734	34.3183	26.0850	7.5360
66.8	7.5362	33.3736	34.3133	26.0856	7.5329
61.5	7.5357	33.3734	34.3103	26.0855	7.5329
55.5	7.5367	33.3731	34.3083	26.0851	7.5345
50.1	7.5362	33.3751	34.3073	26.0867	7.5345
44.9	7.5342	33.3741	34.3023	26.0863	7.5330
39.6	7.5362	33.3736	34.3013	26.0856	7.5355
34.0	7.5347	33.3745	34.2983	26.0865	7.5345
28.6	7.5322	33.3762	34.2953	26.0882	7.5326
23.1	7.5277	33.3745	34.2872	26.0875	7.5286
17.7	7.5282	33.3723	34.2832	26.0857	7.5296
11.8	7.5322	33.3734	34.2852	26.0860	7.5341
6.1	7.5352	33.3732	34.2852	26.0855	7.5377

ALL 186

ST. NO. 2136

DATE: 75 1 7

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 25.0 N 69 55.5 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 0/00 MMHC/CM TEMP.

147.4	7.5472	33.5193	34.4933	26.1983	7.5362
144.8	7.5597	33.5096	34.4943	26.1889	7.5490
140.2	7.5657	33.4876	34.4773	26.1708	7.5554
135.4	7.5862	33.4734	34.4803	26.1567	7.5764
129.7	7.6292	33.4293	34.4753	26.1160	7.6199
124.8	7.6112	33.4025	34.4323	26.0976	7.6324
119.2	7.6047	33.3984	34.4203	26.0953	7.5964
113.8	7.5797	33.3797	34.3783	26.0842	7.5720
108.9	7.5537	33.3660	34.3403	26.0772	7.5464
103.7	7.5342	33.3656	34.3204	26.0796	7.5274
98.7	7.5342	33.3615	34.3144	26.0764	7.5279
93.3	7.5342	33.3662	34.3164	26.0801	7.5284
88.4	7.5247	33.3636	34.3034	26.0754	7.5194
83.5	7.5167	33.3628	34.2934	26.0799	7.5119
77.8	7.4952	33.3592	34.2684	26.0801	7.4909
73.0	7.5032	33.3559	34.2704	26.0764	7.4994
67.9	7.4932	33.3561	34.2594	26.0779	7.4898
63.1	7.4922	33.3561	34.2563	26.0781	7.4893
58.0	7.5167	33.3619	34.2813	26.0792	7.5143
52.9	7.5167	33.3633	34.2803	26.0803	7.5148
46.8	7.5002	33.3594	34.2593	26.0795	7.4988
41.9	7.5012	33.3564	34.2553	26.0771	7.5003
36.8	7.4902	33.3543	34.2413	26.0770	7.4898
31.0	7.4862	33.3555	34.2363	26.0785	7.4863
26.0	7.4867	33.3563	34.2353	26.0790	7.4873
20.5	7.4822	33.3546	34.2273	26.0784	7.4833
15.1	7.4787	33.3540	34.2213	26.0784	7.4803
9.5	7.4747	33.3552	34.2163	26.0798	7.4768

ALL #86

ST. NO. 2137

DATE: 75 1 7

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 28.7 N 69 37.8 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHO/CM		TEMP.
247.5	7.1987	34.0821	34.7424	26.6854	7.1783
243.6	7.1912	34.0771	34.7294	26.6866	7.1712
241.8	7.1847	34.0695	34.7154	26.6815	7.1650
234.9	7.1417	34.0482	34.6544	26.6708	7.1226
231.5	7.1347	34.0382	34.6374	26.6638	7.1160
225.4	7.1282	34.0248	34.6094	26.6553	7.1021
221.1	7.1132	34.0217	34.5984	26.6539	7.0955
215.4	7.0727	33.9865	34.5255	26.6321	7.0536
210.6	7.0617	33.9791	34.5385	26.6275	7.0451
206.3	7.0437	33.9582	34.4395	26.6215	7.0275
201.0	7.0737	33.9593	34.5015	26.6096	7.0629
196.4	7.1522	33.9482	34.5554	26.5907	7.1368
190.7	7.0242	33.8887	34.3856	26.5616	7.0095
186.5	7.0112	33.8786	34.3536	26.5492	6.9969
181.5	7.0037	33.8322	34.3096	26.5280	6.9899
176.7	7.0222	33.7769	34.2736	26.4740	7.0088
172.0	7.0082	33.7007	34.1897	26.4161	6.9953
167.0	7.0567	33.6601	34.1937	26.3775	7.0442
161.9	7.2757	33.6041	34.3355	26.3032	7.2635
157.3	7.5612	33.5692	34.5563	26.2355	7.5493
152.6	7.8217	33.5282	34.7491	26.1658	7.8103
143.1	7.7752	33.4793	34.5631	26.1343	7.7649
143.6	7.7337	33.4694	34.6392	26.1329	7.7200
139.0	7.7277	33.4626	34.5982	26.1283	7.7174
133.4	7.7202	33.4693	34.5952	26.1343	7.7105
129.6	7.7172	33.4599	34.5822	26.1274	7.7378
124.1	7.7132	33.4589	34.5752	26.1272	7.7344
120.1	7.7047	33.4582	34.5652	26.1278	7.6963
115.4	7.7082	33.4570	34.5652	26.1264	7.7302
110.8	7.7102	33.4562	34.5641	26.1255	7.7027
106.6	7.7052	33.4554	34.5571	26.1256	7.6981
101.4	7.6982	33.4506	34.5441	26.1229	7.6916
97.0	7.6812	33.4497	34.5262	26.1246	7.6750
92.0	7.6687	33.4457	34.5092	26.1233	7.6630
88.0	7.6732	33.4458	34.5152	26.1258	7.6679
83.5	7.6587	33.4454	34.4962	26.1244	7.6538
76.5	7.6162	33.4333	34.4442	26.1211	7.6120
73.2	7.6182	33.4407	34.4512	26.1266	7.6143
69.0	7.6202	33.4494	34.4592	26.1331	7.6167
63.7	7.6207	33.4515	34.4592	26.1346	7.6177
59.1	7.6157	33.4496	34.4512	26.1341	7.6132
54.7	7.6082	33.4462	34.4392	26.1323	7.6061
50.1	7.5167	33.4144	34.3263	26.1204	7.5150
45.0	7.4527	33.3984	34.2523	26.1169	7.4515
41.3	7.4157	33.3741	34.1954	26.1030	7.4148
35.4	7.3952	33.3717	34.1724	26.1040	7.3949
31.0	7.3852	33.3661	34.1564	26.1010	7.3853
25.6	7.3307	33.3622	34.1464	26.0986	7.3813
21.3	7.3742	33.3618	34.1384	26.0992	7.3752
15.3	7.3732	33.3591	34.1324	26.0972	7.3748
12.2	7.3702	33.3603	34.1294	26.0985	7.3720
8.3	7.3687	33.3603	34.1264	26.0988	7.3700

AIJ 486 ST. NO. 2140

DATE: 75 1 8

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 39.3 N 69 10.9 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHO/CM		TEMP.
164.7	7.7702	33.6408	34.8130	26.2616	7.7573
162.1	7.8177	33.5855	34.8030	26.2113	7.8051
153.0	7.8537	33.4404	34.6961	26.0923	7.8420
146.6	7.7872	33.4020	34.5982	26.0719	7.7762
142.2	7.7862	33.4007	34.5942	26.0712	7.7756
134.4	7.7762	33.3936	34.5752	26.0669	7.7664
130.6	7.7742	33.3929	34.5712	26.0667	7.7647
123.9	7.7822	33.3927	34.5751	26.0653	7.7734
119.1	7.7927	33.3935	34.5831	26.0644	7.7843
114.7	7.7962	33.3890	34.5801	26.0604	7.7883
107.6	7.7362	33.3736	34.5092	26.0570	7.7290
100.6	7.7217	33.3714	34.4912	26.0573	7.7152
95.9	7.7147	33.3674	34.4792	26.0552	7.7086
90.7	7.7042	33.3627	34.4632	26.0531	7.6986
85.4	7.6937	33.3602	34.4492	26.0526	7.6886
80.8	7.6987	33.3652	34.4562	26.0558	7.6941
75.2	7.6987	33.3624	34.4512	26.0536	7.6946
69.4	7.7022	33.3639	34.4532	26.0543	7.6987
65.6	7.6982	33.3610	34.4452	26.0526	7.6950
57.5	7.6992	33.3627	34.4442	26.0538	7.6968
51.6	7.7007	33.3630	34.4431	26.0538	7.6989
46.8	7.7002	33.3615	34.4391	26.0527	7.6988
38.3	7.6932	33.3615	34.4291	26.0536	7.6927
34.0	7.6887	33.3613	34.4231	26.0542	7.6886
27.1	7.6877	33.3602	34.4181	26.0535	7.6882
21.6	7.6862	33.3600	34.4141	26.0535	7.6873
16.7	7.6857	33.3606	34.4121	26.0541	7.6872
11.0	7.7037	33.4021	34.4641	26.0840	7.7058

AII #86 ST. NO. 2141
 DATE: 75 1 8
 LOW. NO. 1 INST. NO. 2
 TIME CONST. = 30.0
 42 34.5 N 68 43.0 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	PCT.
DB	DEG C	0/00	MMHO/CM		TEMP.

173.5	7.1227	33.9238	34.4964	26.5756	7.1395
171.1	7.0702	33.9077	34.4335	26.5702	7.0573
166.2	7.0322	33.9298	34.7502	26.5411	7.3894
163.6	7.6802	33.9861	35.0519	26.5454	7.6674
158.9	8.2387	34.0864	35.6503	26.5413	8.2259
153.2	8.3727	34.1068	35.7891	26.5370	8.3684
149.6	8.4507	34.1040	35.8560	26.5228	8.4387
143.8	8.5542	34.0965	35.9409	26.5010	8.5429
139.0	8.6877	34.0922	36.0566	26.4769	8.6767
134.2	8.6587	34.0530	35.9909	26.4507	8.6482
127.2	8.3402	33.8522	35.5083	26.3426	8.3306
122.5	8.3062	33.7311	35.3614	26.2529	8.2972
118.7	8.3307	33.7433	35.3934	26.2588	8.3220
112.1	8.4157	33.7391	35.4633	26.2425	8.4077
107.8	8.4482	33.6973	35.4513	26.2348	8.4406
103.4	8.2347	33.6174	35.1815	26.1747	8.2277
99.6	8.0457	33.5852	34.9797	26.1776	8.0391
93.4	8.3757	33.5721	34.9917	26.1629	8.0697
87.8	7.7232	33.4610	34.9701	26.1274	7.7179
83.4	7.6357	33.4816	34.6610	26.1316	7.6808
80.0	7.7922	33.4801	34.6460	26.1324	7.7876
74.3	7.7722	33.4580	34.6050	26.1179	7.7682
68.3	7.7607	33.4718	34.6050	26.1325	7.7573
64.9	7.7342	33.4634	34.5721	26.1277	7.7311
60.4	7.7387	33.4666	34.5773	26.1295	7.7360
56.0	7.7297	33.4655	34.5660	26.1338	7.7275
52.1	7.7312	33.4638	34.5640	26.1284	7.7293
48.1	7.7377	33.4659	34.5700	26.1291	7.7362
43.3	7.7462	33.4611	34.5710	26.1241	7.7452
38.4	7.7132	33.4564	34.5352	26.1252	7.7126
33.2	7.7142	33.4503	34.5280	26.1203	7.7141
25.8	7.7217	33.4523	34.5330	26.1206	7.7224
20.6	7.7277	33.4518	34.5363	26.1196	7.7288
14.2	7.7537	33.4558	34.5602	26.1199	7.7555
10.9	7.7347	33.4531	34.5393	26.1195	7.7368
9.1	7.7367	33.4531	34.5422	26.1192	7.7390

ALL #86 ST. NO. 2142

DATE: 75 1 8

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.3

42 33.5 N 68 51.7 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	PCT.
DB	DEG C	2/00	MMHC/CM		TEMP.
193.3	7.8492	34.2320	35.4466	26.7136	7.8323
189.3	7.8482	34.2327	35.4446	26.7143	7.8327
183.6	7.8457	34.1938	35.4036	26.6842	7.8327
179.3	7.8492	34.1698	35.3826	26.6649	7.8347
173.0	7.8387	34.1444	35.3466	26.6465	7.8248
166.9	7.8682	34.1174	35.3456	26.6289	7.8549
161.2	7.8917	34.0759	35.3296	26.5881	7.8791
156.9	7.8587	34.0379	35.2587	26.5600	7.8464
151.9	7.8312	34.0136	35.1817	26.5454	7.7895
148.4	7.8232	33.9723	35.1617	26.5138	7.8118
142.7	7.8272	33.9668	35.1577	26.5389	7.8164
136.4	7.8657	33.9506	35.1747	26.4906	7.8555
131.4	7.8242	33.9461	35.1307	26.4931	7.8145
127.0	7.6432	33.8659	34.8909	26.4565	7.6341
122.5	7.3302	33.7930	34.5403	26.4438	7.3217
116.7	7.3257	33.7316	34.4773	26.3963	7.3177
111.7	7.6742	33.7653	34.8190	26.3731	7.6666
106.6	7.9472	33.7837	35.0797	26.3477	7.9399
102.8	8.2997	33.8177	35.4283	26.3217	8.2927
97.8	8.5372	33.8449	35.6671	26.3068	8.5306
93.0	8.3257	33.8069	35.4373	26.3093	8.3197
88.7	8.3212	33.7007	35.3314	26.2268	8.3156
84.6	7.4847	33.4581	34.3533	26.1592	7.4798
80.1	7.4742	33.4617	34.3453	26.1635	7.4697
74.6	7.4682	33.4604	34.3363	26.1633	7.4642
70.5	7.4667	33.4605	34.3333	26.1636	7.4631
66.4	7.4677	33.4615	34.3333	26.1643	7.4645
61.2	7.4647	33.4615	34.3283	26.1647	7.4620
56.5	7.4672	33.4613	34.3283	26.1642	7.4649
52.4	7.4692	33.4602	34.3273	26.1631	7.4673
48.4	7.4707	33.4607	34.3273	26.1632	7.4692
43.7	7.4727	33.4610	34.3273	26.1632	7.4716
38.2	7.4687	33.4599	34.3203	26.1629	7.4681
33.4	7.4627	33.4583	34.3113	26.1624	7.4626
27.8	7.4667	33.4603	34.3143	26.1635	7.4671
23.6	7.4677	33.4603	34.3132	26.1633	7.4685
18.6	7.4662	33.4598	34.3092	26.1631	7.4675
11.4	7.4567	33.4594	34.2972	26.1642	7.4586
7.8	7.4527	33.4618	34.2942	26.1666	7.4550
6.5	7.4597	33.4630	34.3012	26.1666	7.4621

Alt #86

ST. NO. 2142

DATE: 75 1 8

LOW. NO. 2 INST. NO. 2

TIME CONST. = 30.0

42 39.5 N 68 51.7 W

RESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 0/00 MMHC/CM TEMP.

204.0	7.8397	34.2663	35.4746	26.7419	7.8227
201.2	7.8417	34.2635	35.4726	26.7394	7.8250
192.2	7.8532	34.2361	35.4533	26.7162	7.8374
184.6	7.8422	34.1914	35.3986	26.6820	7.8272
177.1	7.8297	34.1362	35.3326	26.6413	7.8154
169.9	7.8592	34.1183	35.3396	26.6230	7.8456
161.9	7.8652	34.0518	35.2796	26.5699	7.8524
155.2	7.8177	34.0196	35.2037	26.5517	7.8056
146.4	7.6712	33.9718	35.0229	26.5355	7.6601
138.9	7.5682	33.9117	34.8710	26.5032	7.5579
131.5	7.4327	33.8547	34.6931	26.4779	7.4233
123.8	7.5457	33.8165	34.7561	26.4317	7.5369
116.5	8.4752	33.8789	35.6511	26.3428	8.4667
109.6	8.6727	33.8671	35.8159	26.3031	8.6649
101.2	8.5652	33.8176	35.6681	26.2810	8.5502
94.1	8.1097	33.6351	35.0316	26.2072	8.1036
86.2	7.6417	33.5004	34.5331	26.1700	7.6366
77.7	7.5522	33.4683	34.4292	26.1566	7.5570
70.4	7.5417	33.4758	34.4142	26.1650	7.5381
65.3	7.5372	33.4718	34.4042	26.1625	7.5341
59.3	7.5502	33.4762	34.4262	26.1627	7.5576
51.9	7.5617	33.4761	34.4242	26.1624	7.5598
43.6	7.5587	33.4733	34.4152	26.1606	7.5576
36.7	7.5587	33.4755	34.4142	26.1623	7.5583
30.5	7.5592	33.4736	34.4102	26.1608	7.5594
22.6	7.5472	33.4728	34.3952	26.1618	7.5481
15.5	7.5552	33.4739	34.4001	26.1616	7.5568
9.8	7.5457	33.4747	34.3881	26.1639	7.5459
7.3	7.5477	33.4763	34.3921	26.1646	7.5501

ALL #86

ST. NO. 2144

DATE: 75. 1 8

LCW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 22.0 N 69 16.0 W

PRESS. TEMP. SALINITY COND. SIGMA-T PGT.
DB DEG C 0/00 MMH0/CM TEMP.

235.7	7.1402	34.0362	34.6424	26.6615	7.1211
231.2	7.1377	34.0332	34.6354	26.6595	7.1193
224.1	7.1387	34.0193	34.5935	26.6526	7.0997
217.8	7.1332	34.0168	34.5835	26.6514	7.0858
211.0	7.0857	34.0115	34.5635	26.6491	7.0733
202.0	7.0632	34.0000	34.5255	26.6437	7.0473
193.2	7.0362	33.9667	34.4665	26.6213	7.0212
185.9	7.0052	33.9426	34.4136	26.6066	6.9909
178.5	6.8307	33.8060	34.1298	26.5230	6.8173
172.1	6.7147	33.7447	33.9679	26.4974	6.7020
164.8	6.6632	33.7073	33.8850	26.4678	6.6513
157.7	6.6027	33.6708	33.7951	26.4471	6.5915
149.6	6.5947	33.6499	33.7651	26.4317	6.5843
139.4	6.6807	33.6152	33.8060	26.3933	6.6713
129.8	7.0212	33.5945	34.0857	26.3338	7.0122
120.6	6.8902	33.4864	33.8669	26.2636	6.8821
107.3	7.2017	33.4722	34.1246	26.2099	7.1947
100.0	7.4177	33.4569	34.2994	26.1677	7.4113
92.3	7.6647	33.4462	34.5062	25.1242	7.6590
84.8	7.6282	33.3932	34.4212	26.0079	7.6232
76.2	7.1722	33.2518	33.8827	26.0049	7.1631
63.5	7.1072	33.1972	33.7693	26.0069	7.1043
57.2	7.1192	33.1942	33.7748	26.0029	7.1169
48.0	7.1262	33.1907	33.7738	25.9892	7.1247
39.2	7.1157	33.1887	33.7583	25.9993	7.1150
30.7	7.1117	33.1868	33.7498	25.9981	7.1118
19.7	7.1037	33.1819	33.7308	25.9958	7.1018
7.2	7.1242	33.1784	33.7427	25.9898	7.1264

ALL #86

ST. NO. 2149

DATE: 75. 1 8

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.3

42 3.4 N 69 32.35 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 8/03 MMHO/CM TEMP.

209.4	7.1447	34.0339	34.6374	26.6631	7.1283
204.3	7.1432	34.0396	34.6344	26.6638	7.1273
196.9	7.1327	34.0372	34.6194	26.6633	7.1172
189.9	7.1217	34.0307	34.6304	26.6597	7.1069
182.9	7.0472	33.9959	34.4985	26.6427	7.0332
175.9	6.9327	33.9224	34.3256	26.6306	6.9194
168.9	6.8732	33.8800	34.2327	26.5754	6.8607
162.1	6.7842	33.8191	34.0928	26.5395	6.7724
155.4	6.7787	33.7759	34.0458	26.5363	6.7675
148.5	6.8292	33.7373	34.0528	26.4691	6.8186
141.0	6.9427	33.6900	34.1077	26.4166	6.9327
134.1	6.9782	33.6761	34.1237	26.4408	6.9683
127.2	7.0082	33.6643	34.1367	26.3874	6.9994
119.7	7.0422	33.6522	34.1526	26.3735	7.0341
113.0	7.2137	33.6084	34.2625	26.3152	7.2062
106.1	7.4762	33.5502	34.4403	26.2327	7.4692
99.2	7.4767	33.5354	34.3963	26.1975	7.4704
92.0	7.5767	33.4783	34.4572	26.1619	7.5710
85.2	7.5877	33.4428	34.4312	26.1326	7.5827
77.7	7.5947	33.4148	34.4082	26.1096	7.5904
70.6	7.4452	33.3544	34.2164	26.0834	7.4416
62.9	7.3972	33.3371	34.1544	26.0766	7.3943
55.9	7.2467	33.2780	33.9636	26.0511	7.2445
48.5	7.1542	33.2366	33.8407	26.0314	7.1527
41.0	7.1232	33.2268	33.7988	26.0285	7.1193
34.5	7.1177	33.2261	33.7927	26.0282	7.1174
27.4	7.1102	33.2248	33.7817	26.0281	7.1106
19.6	7.1057	33.2241	33.7737	26.0283	7.1068
11.4	7.0977	33.2238	33.7627	26.0291	7.0995

AI 486 ST. NO. 2150

DATE: 75 1 9

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 2.3 N 69 42.6 W

PRESS. TEMP. SALINITY COND. SIGMA-T PCT.
DB DEG C 0/00 MMHO/CM TEMP.

172.0	7.0502	33.7133	34.2386	26.4282	7.0373
167.8	7.0752	33.7008	34.2476	26.4069	7.0626
161.5	7.1617	33.6805	34.3136	26.3790	7.1496
155.1	7.2187	33.6803	34.3515	26.3789	7.2072
148.5	7.3737	33.6479	34.4574	26.3238	7.3627
142.4	7.4882	33.6048	34.5173	26.2738	7.4777
135.9	7.5857	33.5708	34.5702	26.2332	7.5758
129.9	7.6852	33.5456	34.6331	26.1992	7.6758
123.3	7.7577	33.5208	34.6721	26.1693	7.7489
116.8	7.7767	33.4991	34.6661	26.1495	7.7685
110.8	7.8117	33.4934	34.6890	26.1402	7.8042
104.3	7.7747	33.4791	34.6580	26.1313	7.7873
97.3	7.7452	33.4635	34.5961	26.1262	7.7391
90.2	7.6782	33.4398	34.5042	26.1104	7.6647
84.7	7.6517	33.4300	34.4762	26.1134	7.6467
79.3	7.6212	33.4220	34.4392	26.1114	7.6167
73.1	7.6107	33.4199	34.4252	26.1113	7.6063
67.3	7.5732	33.4080	34.3782	26.1073	7.5689
61.7	7.4972	33.3757	34.2783	26.0928	7.4944
56.2	7.4487	33.3579	34.2164	26.0857	7.4465
51.1	7.3897	33.3532	34.1574	26.0903	7.3379
45.2	7.3772	33.3572	34.1474	26.0952	7.3763
39.2	7.3732	33.3542	34.1384	26.0934	7.3725
34.2	7.3852	33.3559	34.1484	26.0920	7.3357
29.1	7.3817	33.3530	34.1404	26.0912	7.3820
23.1	7.2537	33.3163	33.9905	26.0833	7.2545
17.2	7.0927	33.2586	33.7927	26.0571	7.0941
11.1	7.0257	33.2333	33.7078	26.0464	7.0275

AII 486

ST. NO. 2151

DATE: 75 1 9

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 26.4 N 69 44.9 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHO/CM		TEMP.

265.2	7.2342	34.1127	34.8193	26.7385	7.2121
258.5	7.2242	34.1073	34.7933	26.7956	7.2027
243.7	7.2217	34.1057	34.7853	26.7947	7.2012
239.1	7.2087	34.0992	34.7633	26.7314	7.1891
233.5	7.1927	34.0874	34.7343	26.6944	7.1743
222.8	7.0957	34.0032	34.5665	26.6417	7.0779
213.0	7.0777	33.9797	34.5245	26.6258	7.0639
192.6	7.1872	33.8403	34.4865	26.5911	7.1722
184.1	7.2842	33.7528	34.4894	26.4183	7.2699
175.1	7.3767	33.6685	34.4834	26.3333	7.3632
166.8	7.3782	33.6326	34.4554	26.3112	7.3655
157.8	7.4287	33.6172	34.4324	26.2919	7.4163
150.2	7.4072	33.5885	34.4334	26.2725	7.3963
141.4	7.4792	33.5825	34.4383	26.2576	7.4688
134.5	7.5047	33.5503	34.4783	26.2287	7.4958
127.0	7.5902	33.5285	34.5312	26.1995	7.5812
118.1	7.6672	33.4715	34.5432	26.1437	7.6593
110.2	7.6642	33.4372	34.5352	26.1172	7.6563
99.2	7.4977	33.4061	34.3234	26.1166	7.4914
92.3	7.4737	33.3935	34.2874	26.1101	7.4683
83.1	7.4202	33.3813	34.2244	26.1088	7.4154
75.5	7.4197	33.3832	34.2224	26.1096	7.4156
68.3	7.4017	33.3812	34.2014	26.1105	7.3983
61.2	7.3682	33.3594	34.1465	26.0981	7.3655
53.6	7.3492	33.3553	34.1245	26.0976	7.3472
45.9	7.3077	33.3450	34.0785	26.0984	7.3064
39.1	7.2557	33.3241	34.0066	26.0861	7.2550
30.5	7.2457	33.3227	33.9926	26.0864	7.2458
24.0	7.2392	33.3234	33.9846	26.0878	7.2399
16.2	7.2402	33.3229	33.9815	26.0873	7.2416

Al1 486 ST. NO. 2152

DATE: 75 1 11

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 26.5 N 68 58.1 W

PRESS. TEMP. SALINITY COND. SIGMA-T POT.
DB DEG C 0/00 MHQ/CM TEMP.

215.4	7.5877	34.0670	35.0660	26.6223	7.5699
211.5	7.5787	34.0658	35.0550	26.6226	7.5613
205.6	7.5497	34.0493	35.0110	26.6139	7.5329
199.8	7.5257	34.0313	34.9700	26.6032	7.5095
193.2	7.4582	33.9890	34.8671	26.5797	7.4426
187.2	7.4277	33.9632	34.8131	26.5637	7.4129
181.6	7.4192	33.9384	34.7802	26.5455	7.4049
175.8	7.4537	33.9041	34.7771	26.5126	7.4400
169.2	7.4877	33.8589	34.7631	26.4733	7.4746
162.9	7.7962	33.8068	34.9899	26.3879	7.7835
156.6	7.8792	33.7916	35.0478	26.3639	7.8670
150.1	7.9097	33.7480	35.0318	26.3253	7.9921
144.9	7.9102	33.7135	34.9978	26.2982	7.8992
137.8	7.8477	33.6807	34.9079	26.2816	7.8374
131.4	7.8512	33.5999	34.8329	26.2177	7.8416
125.4	7.8257	33.5900	34.7890	26.2059	7.8167
119.5	7.7642	33.5281	34.6831	26.1741	7.7558
113.8	7.7237	33.5171	34.6341	26.1713	7.7150
108.3	7.6977	33.4909	34.5841	26.1545	7.6904
101.3	7.7117	33.4807	34.5841	26.1445	7.7051
95.5	7.6912	33.4709	34.5541	26.1398	7.6852
89.4	7.7662	33.4759	34.6230	26.1329	7.7687
83.4	7.7052	33.4535	34.5451	26.1241	7.7003
76.6	7.6712	33.4496	34.5081	26.1259	7.6679
70.9	7.7532	33.4584	34.5871	26.1211	7.7495
65.0	7.7032	33.4114	34.4961	26.0914	7.7001
58.1	7.6377	33.4075	34.4312	26.0877	7.6353
52.5	7.6387	33.4071	34.4292	26.0973	7.6363
46.8	7.6337	33.4016	34.4172	26.0937	7.6323
40.5	7.6357	33.4006	34.4152	26.0926	7.6349
33.7	7.6412	33.3985	34.4151	26.0902	7.6411
27.4	7.6357	33.3917	34.4011	26.0856	7.6362
21.2	7.5852	33.3687	34.3322	26.0748	7.5863
16.0	7.5777	33.3547	34.3102	26.0648	7.5793
10.5	7.5777	33.3551	34.3082	26.0652	7.5798

ALL 386

ST. NO. 2154

DATE: 75 1 11

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 22.0 N 69 16.0 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	g/g	MMHO/CM		TEMP.
235.3	7.1922	34.0703	34.7204	26.6811	7.1734
233.1	7.1732	34.0555	34.6874	26.6721	7.1545
223.7	7.1352	34.0305	34.6274	26.6577	7.1172
219.2	7.1312	34.0279	34.6194	26.6562	7.1133
214.8	7.1282	34.0242	34.6114	26.6538	7.1111
208.7	7.1192	34.0186	34.5954	26.6506	7.1327
202.2	7.1017	34.0105	34.5694	26.6467	7.0858
196.9	7.1012	34.0070	34.5634	26.6440	7.0852
192.0	7.0557	33.9863	34.5015	26.6340	7.0408
186.5	6.9927	33.9283	34.3896	26.5971	6.9784
181.0	6.8827	33.8614	34.2277	26.5595	6.8693
176.1	6.7902	33.8041	34.0908	26.5270	6.7771
171.6	6.7597	33.7867	34.0459	26.5174	6.7470
166.1	6.6857	33.7287	33.9250	26.4316	6.6736
160.1	6.6397	33.6011	33.7661	26.3873	6.6282
153.9	6.6537	33.6744	33.8420	26.4432	6.6427
149.4	6.7437	33.6732	33.9189	26.4332	6.7331
145.4	6.8477	33.6557	33.9938	26.4925	6.8374
139.2	6.9382	33.6327	34.0508	26.5721	6.9234
133.8	7.0062	33.6379	34.0314	26.6255	7.0267
129.0	7.0152	33.5934	34.0464	26.6393	7.0361
124.1	7.0797	33.5636	34.0374	26.6256	7.0710
118.9	7.0872	33.5371	34.0354	26.6249	7.0793
113.6	7.0232	33.4843	34.0245	26.6205	7.0156
107.5	7.0317	33.4626	34.0234	26.6172	7.0246
102.1	7.0937	33.4335	34.0463	26.6136	7.0371
97.4	7.0962	33.3889	34.0216	26.6117	7.0901
91.2	7.0492	33.3679	34.0241	26.6093	7.0437
87.0	7.0337	33.3577	34.0216	26.6087	7.0286
81.4	7.0152	33.3370	34.0178	26.6074	7.0106
74.9	7.0102	33.2871	34.0036	26.6049	7.0062
69.4	7.0228	33.2567	33.9933	26.6037	7.0240
64.1	7.0027	33.2511	33.9937	26.6036	7.0197
59.1	7.0182	33.2468	33.8777	26.6039	7.0177
53.7	7.0037	33.2251	33.7738	26.6031	7.0057
46.9	6.9457	33.1794	33.6340	26.6014	6.9443
41.4	6.9422	33.1756	33.5949	26.6012	6.9413
37.0	6.9462	33.1793	33.5999	26.6014	6.9457
30.5	6.9407	33.1768	33.5899	26.6013	6.9408
23.9	6.9372	33.1757	33.5829	26.6013	6.9379
19.1	6.9347	33.1765	33.5789	26.6014	6.9359
12.8	6.9332	33.1757	33.5719	26.6014	6.9319
7.9	6.9437	33.1811	33.5939	26.6015	6.9508

ALL #86 ST. NO. 2155

DATE: 75 1 11

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 13.6 N 69 26.5 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	POT.
DB	DEG C	0/00	MMHC/CM		TEMP.

220.0	7.2197	34.0058	34.6794	26.6266	7.2020
216.2	7.2192	33.9995	34.6714	26.6216	7.2013
208.5	7.2182	34.0063	34.6733	26.6271	7.2016
201.1	7.2172	34.0054	34.6683	26.6265	7.2013
195.2	7.2157	34.0021	34.6613	26.6242	7.2003
188.8	7.1752	33.9839	34.6054	26.6155	7.1605
182.2	7.0027	33.8624	34.3366	26.5439	6.9888
175.2	6.9217	33.8170	34.2197	26.5193	6.9885
168.2	6.9347	33.7736	34.1887	26.4834	6.9222
161.3	6.9072	33.7293	34.1238	26.4523	6.8954
154.6	7.0037	33.6971	34.1747	26.4139	6.9924
147.9	7.1107	33.6756	34.2476	26.3823	7.1000
141.1	7.1537	33.6675	34.2756	26.3700	7.1436
133.8	7.4277	33.6404	34.4923	26.3104	7.4181
127.4	7.5847	33.6244	34.6152	26.2754	7.5756
120.9	7.6327	33.6037	34.6361	26.2523	7.6242
113.9	7.6902	33.5827	34.6651	26.2276	7.6824
107.2	7.7542	33.5393	34.6790	26.1843	7.7470
100.4	7.7982	33.4797	34.6680	26.1312	7.7916
94.1	7.6717	33.4516	34.5182	26.1274	7.6658
87.4	7.7757	33.4527	34.6091	26.1123	7.7704
81.3	7.7652	33.4183	34.5651	26.0879	7.7605
74.6	7.7467	33.4027	34.5311	26.0783	7.7427
67.7	7.7642	33.3967	34.5381	26.0711	7.7603
60.7	7.5297	33.3190	34.2543	26.0437	7.5273
54.1	7.3747	33.2849	34.0825	26.0387	7.3727
47.4	7.3382	33.2548	34.0195	26.0202	7.3363
41.6	7.2882	33.2448	33.9636	26.0193	7.2873
34.8	7.2087	33.2212	33.8687	26.0118	7.2084
28.0	7.1352	33.1917	33.7737	25.9987	7.1355
21.5	7.0407	33.1753	33.6728	25.9998	7.0416
15.1	7.0182	33.1653	33.6409	25.9939	7.0197

ALL #86

ST. NO. 2156

DATE: 75 1 11

LOW. NO. 1 INST. NO. 2

TIME CONST. = 30.0

42 12.5 N 69 40.0 W

PRESS.	TEMP.	SALINITY	COND.	SIGMA-T	PCT.
DB	DEG C	0/00	MMHO/CM		TEMP.
232.1	7.0412	34.1862	34.6155	26.7303	7.0225
232.5	6.9997	34.1382	34.6065	26.7611	6.9812
224.7	6.9837	34.1163	34.5695	26.7461	6.9658
218.8	6.9337	34.0895	34.5425	26.7251	6.9663
213.0	6.9517	34.0702	34.4935	26.7143	6.9349
208.0	6.9357	34.0313	34.4416	26.6859	6.9194
202.6	6.9517	34.0115	34.4356	26.6681	6.9359
197.0	6.9357	33.9553	34.3676	26.6261	6.9205
191.5	7.0477	33.9211	34.4345	26.5838	7.0329
184.9	7.1757	33.8815	34.5104	26.5350	7.1614
179.3	7.3037	33.8308	34.5763	26.4773	7.2898
173.8	7.3037	33.7681	34.5164	26.4280	7.2903
167.5	7.3757	33.7259	34.5393	26.3848	7.3629
161.6	7.4957	33.6933	34.6142	26.3422	7.4834
156.0	7.5597	33.6411	34.6212	26.2921	7.5478
150.7	7.5597	33.6148	34.5942	26.2715	7.5484
144.3	7.5917	33.6312	34.6352	26.2798	7.5810
138.4	7.6317	33.6277	34.6651	26.2713	7.6215
133.2	7.6717	33.6249	34.6961	26.2633	7.6620
127.4	7.6557	33.5892	34.6461	26.2376	7.6466
123.8	7.6237	33.5801	34.6061	26.2351	7.6152
115.0	7.4717	33.5265	34.4183	26.2147	7.4639
109.2	7.4317	33.4911	34.3474	26.1926	7.4244
103.7	7.4297	33.4869	34.3394	26.1896	7.4230
98.4	7.3117	33.4755	34.2215	26.1972	7.3055
92.6	7.3117	33.4772	34.2205	26.1985	7.3060
86.9	7.3117	33.4745	34.2155	26.1964	7.3066
81.1	7.3117	33.4751	34.2135	26.1969	7.3071
75.7	7.3037	33.4800	34.2085	26.2018	7.2996
69.9	7.3037	33.4773	34.2034	26.1997	7.3002
64.0	7.3037	33.4791	34.2324	26.2011	7.3007
58.8	7.3037	33.4783	34.1994	26.2005	7.3012
53.3	7.3117	33.4732	34.1994	26.1954	7.3097
47.1	7.3037	33.4796	34.1954	26.2015	7.3023
41.7	7.3037	33.4756	34.1894	26.1984	7.3028
36.6	7.3037	33.4759	34.1874	26.1985	7.3033
29.7	7.3037	33.4738	34.1824	26.1969	7.3039
23.8	7.3037	33.4712	34.1774	26.1949	7.3045
17.6	7.3037	33.4709	34.1744	26.1947	7.3050
12.2	7.3117	33.4636	34.1724	26.1878	7.3135

APPENDIX 3

Hydrographic Discrete Sample Data

Station 2122

1/4/75

G.M.T. 16.7

Depth m	Pres. db	Temp. °C	Sal. ‰	O ₂ ml/l	Si1. μM/l	Theta °C	Sigth	PO ₄ μM/l	Dynht m
0			33.464	6.25	10.20			.87	
5	5	7.690	33.476	6.47	9.13	7.690	26.144	.82	.009
10	10	7.710	33.468	6.24	8.84	7.709	26.135	.82	.019
20	20	7.730	33.463	6.19	9.52	7.728	26.129	.89	.038
35	35	7.690	33.465	6.16	8.93	7.687	26.136	.91	.066
50	50	7.740	33.465	6.18	8.84	7.735	26.129	.92	.095
74	74	7.720	33.471	6.17	9.13	7.713	26.137	1.0	.141
98			33.441	6.14	9.22			1.02	
99	100	7.770	33.484	6.18	8.84	7.760	26.141	.95	.189
121	122	7.670	33.460		8.84	7.658	26.136	1.05	.231
124	125	7.760	33.486	6.15	8.54	7.748	26.144	.95	.236
144	145	7.800	33.495	6.10	8.54	7.786	26.145	3.05	.275
149	150	7.920	33.637	5.02	12.53	7.905	26.239	1.14	.284
168	169	7.570	33.671	4.76	13.40	7.554	26.317	1.3	.318
189	190	6.920	33.746	4.68	15.34	6.903	26.466	1.25	.354
204	205	7.080	34.026	4.24	19.23	7.061	26.665	1.48	.376
223	224	7.260	34.112	4.19	18.64	7.239	26.708	1.56	.403
232	234	7.360	34.178	4.09	18.55	7.338	26.746	1.59	.416
242			34.184	4.04	18.74			1.63	
251	253	7.380	34.188	3.94	18.64	7.356	26.751	1.67	.441

SPECIAL NISKIN CAST

Station 2122

1/4/75

Corr Depth	Temp. °C	Sal.‰
2	7.49	33.399
19	7.45	33.399
39	7.51	33.410
67	-	33.451
96	-	33.459
125	7.76	33.483
163	7.63	33.631
192	-	33.766
221	7.12	34.060
255	7.37	no sample

STATION 2122

NANSENS FROM BODMAN CASTS

SERIES VTB

Wire Out	Depth (Calc.)	Temp. °C	Nansen Sal. ‰	Bodman Sal. ‰
Surface from S. W. line				33.460
50 ^F	43	7.66	33.461	33.462
50	88	7.63	33.416	33.424
100	93	7.74	33.474	33.476
175	162	7.64	33.699	33.695
175 ^F	-	-	33.663	33.663
200	191	6.87	33.951	33.848
275 ^F	-	-	34.207	34.210
275	263	7.42	34.200	34.109

F = Filtered Sample

STATION 2122

NANSEN BODMAN CAST

SERIES MB

Bodman Wire Out	Nansen Depth Calc.	Temp. °C	Nansen Sal. ‰	Bodman Sal. ‰
0				33.359 33.362
40	37	7.50	33.374 33.379	33.378 33.379
90	78	7.69	33.455	33.455 33.457
125	115	7.71	33.448	33.449 33.452
170	148	7.89	33.632 33.639	33.507 33.510
185		6.96	33.717 33.721	33.792 33.792
200	189	6.95	33.805 33.809	No Sample
230	-	-	34.041 34.043	34.062 34.066
260	246	7.36	34.173 34.178	34.185 34.188

ATLANTIS II CRUISE 86

Station 2123

1/5/75

G.M.T. 20.0

Depth m	Pres. db	Temp. °C	Sal. ‰	Theta °C	Sigth	Dynht m
3	3	7.270	33.348	7.270	26.103	.000
50	50	7.300	33.358	7.295	26.108	.091
74	74	7.400	33.388	7.393	26.118	.137
98	99	7.440	33.414	7.431	26.133	.183
123	124	7.510	33.428	7.498	26.134	.231
143	144	7.510	33.474	7.496	26.170	.269
152	153	7.290	33.557	7.276	26.267	.286

ATLANTIS II CRUISE 86

Station 2128

1/6/75

G.M.T. 12.7

Depth m	Pres. db	Temp. °C	Sal. ‰	Theta °C	Sigth	Dynht m
0	0	7.270	33.360	7.270	26.113	.000
45	45	7.270	33.357	7.266	26.111	.087
69	69	7.290	33.358	7.284	26.109	.133
94			33.359			
119			33.360			
144	145	7.380	33.518	7.366	26.223	.275
168	169	6.930	33.728	6.915	26.451	.316
193			33.943			
218	219	7.250	34.106	7.229	26.704	.392
243	245	7.300	34.147	7.277	26.730	.426

ATLANTIS II CRUISE 86

Station 2131

1/6/75

G.M.T. 14.0

Depth m	Pres. db	Temp. °C	Sal. ‰	Theta °C	Sigth	Dynht m
1	1	7.520	33.432	7.520	26.412	.000
10	10	7.640	33.467	7.639	26.354	.015
30	30	7.730	33.468	7.727	26.142	.051
70	70	7.750	33.476	7.743	26.137	.127
100	101	7.730	33.480	7.720	26.134	.184
130	131	7.720	33.734	7.707	26.107	.242
170	171	7.610	33.786	7.594	26.124	.320

ATLANTIS II CRUISE 86Station 21381/7/75G.M.T. 9.5

Depth m	Pres. db	Temp. °C	Sal. ‰	O ₂ ml/l	Sil. μM/l	Theta °C	Sigth	PO ₄ μM/l	Dynht m
2	2	7.104	33.200	6.42	8.84	7.104	26.010	1.06	.000
12	12	7.090	33.200	6.59	8.84	7.089	26.012	.94	.020
25	25	7.100	33.201	6.40	8.84	7.098	26.012	.96	.046
48	48	7.340	33.321	6.46	8.84	7.336	26.073	.95	.092
66	66	7.800	33.510	6.38	8.74	7.794	26.156	.88	.127
84	85	7.790	33.515	6.19	8.64	7.782	26.162	1.00	.161
102	103	7.740	33.512	6.16	8.64	7.730	26.167	.98	.195
120			33.523	6.13	8.64			.97	
136	137	7.730	33.517	6.08	8.16	7.717	26.173	.87	.259
140	141	7.600	33.726	4.72	14.27	7.586	26.355	1.26	.266
154	155	7.730	33.687	4.96	13.50	7.715	26.306	1.28	.291
169	170	6.930	33.803	4.50	16.99	6.915	26.510	1.36	.316
173	174	7.180	33.793	4.43	14.57	7.164	26.468	1.42	.322
191	192	7.030	33.924	4.43	17.19	7.012	26.591	1.39	.350
209	210	7.150	34.049	4.34	17.77	7.130	26.673	1.47	.376
218	219	7.190	34.083	4.19	18.35	7.169	26.695	1.45	.389
227	229	7.270	34.077	4.18	18.35	7.248	26.679	1.40	.402
236			34.160	4.12	18.35			1.47	
245	247	7.360	34.182	4.08	18.64	7.336	26.749	1.47	.427
250	252	7.370	34.187	4.07	18.64	7.346	26.751	1.52	.434

STATION 2138

BODMAN CASTS

SERIES MB

Wire Out	Nansen Calc. Depth	Temp. °C	Nansen Sal. ‰	Bodman Sal. ‰
10	4	7.132	33.238	33.237
100	93	7.76	33.516	33.511
190	-	-	33.883	33.980
220	-	-	34.055	34.114
250	238	7.29	34.150	34.187
280	259	7.36	34.189	34.184

BODMAN CASTS

SERIES VTB

Surface from S. W. line			(33.196)	
50	44	7.70	33.517	
100	94	7.73	33.519	33.519
200	192	7.00	33.950	34.015
200	189	7.025	33.932	33.209
275	260	7.38	34.193	34.190
280	-	-	34.190	34.190

ATLANTIS II CRUISE 86

Station 2144

1/8/75

G.M.T. 11.5

Depth m	Pres. db	Temp. °C	Sal. ‰	Theta °C	Sigth	Dynht m
2	2	6.990	33.163	6.990	25.996	.000
33	33	6.990	33.174	6.987	26.005	.063
63	63	7.040	33.191	7.034	26.012	.124
94	95	7.650	33.444	7.641	26.126	.185
120	121	7.000	33.558	6.989	26.307	.233
148	149	6.640	33.680	6.627	26.451	.280
178	179	6.960	33.980	6.944	26.645	.326
207			34.024			
225	227	6.610	34.027	6.590	26.730	.392
235	237	7.090	34.028	7.068	26.665	.406

ATLANTIS II CRUISE 86

Station 2146

1/8/75

G.M.T. 16.2

Depth m	Pres. db	Temp. °C	Sal. ‰	Theta °C	Sigth	Dynht m
0	0	7.460	33.390	7.460	26.110	.000
32	32	7.450	33.390	7.447	26.112	.062
64	64	7.480	33.396	7.474	26.112	.123
107	108	7.470	33.399	7.460	26.117	.206
139	140	7.680	33.606	7.667	26.250	.266
182	183	7.030	33.853	7.013	26.535	.339
214	215	7.040	33.979	7.020	26.634	.387
235	237	7.110	34.055	7.088	26.684	.417
257	259	7.130	34.059	7.106	26.685	.448

ATLANTIS II CRUISE 86

Station 2147

1/8/75

G.M.T. 18.7

Depth m	Pres. db	Temp. °C	Sal. ‰	Theta °C	Sigth	Dynht m
10	10	6.998	33.368	6.997	26.156	.000
30	30	7.403	33.366	7.400	26.099	.038
50	50	7.421	33.373	7.416	26.102	.077

ATLANTIS II CRUISE 86

Station 2149

1/8/75

G.M.T. 23.0

Depth m	Pres. db	Temp. °C	Sal. ‰	Theta °C	Sigth	Dynht m
5	5	7.070	33.228	7.070	26.037	.000
26	26	7.070	33.228	7.068	26.037	.042
51	51	7.120	33.241	7.115	26.041	.092
82	83	7.450	33.369	7.442	26.096	.153
102	103	7.610	33.492	7.600	26.170	.191
128	129	7.150	33.640	7.138	26.351	.238
153	154	6.920	33.725	6.906	26.449	.280
184	185	6.980	33.977	6.963	26.640	.328
194	195	7.050	34.047	7.032	26.685	.342
209	210	7.130	34.054	7.110	26.680	.363

ATLANTIS II CRUISE 86

STATION 2151

1/9/75

G.M.T. 7.0

Depth m	Pres db	Temp. °C	Sal. o/oo	O ₂ ml/l	Si1 μM/l	Theta °C	Sigth	PO ₄ μM/l	Dynth m
1	1	7.440	33.304	6.44	8.64	7.440	26.045	.93	.000
21	21	7.430	33.304	6.58	8.84	7.428	26.047	.93	.040
42	42	7.450	33.305	6.43	8.84	7.446	26.045	.95	.081
62	62	7.540	33.305	6.49	10.10	7.534	26.033	.95	.121
80	80	7.630	33.306	6.52	10.10	7.622	26.021	.95	.158
99	100	7.640	33.307	6.37	9.13	7.631	26.020	.95	.196
118									
137	138	7.170	33.307	6.20	9.22	7.157	26.087	1.00	.272
140	141	7.830	33.559	5.65	11.75	7.816	26.191	1.07	.278
153	154	7.510	33.653	4.93	14.57	7.495	26.311	1.26	.301
157	158	7.740	33.567	5.52	10.49	7.725	26.211	1.15	.309
167	168	7.370	33.691	4.82	14.66	7.354	26.361	1.34	.327
176	177	7.510	33.598	5.35	12.72	7.493	26.268	1.31	.342
181	182	7.290	33.780	4.72	15.15	7.273	26.442	1.42	.351
195	196	7.110	33.917	4.56	16.90	7.092	26.575	1.49	.373
209			34.031	4.30	18.06			1.53	
223	224	7.170	34.069	4.33	18.45	7.149	26.686	1.57	.414
237	239	7.180	34.098	4.51	19.52	7.158	26.708	1.60	.434
246	248	7.200	34.102	4.30	19.52	7.177	26.709	1.60	.446
256	258	7.220	34.109	4.28		7.196	26.711	--	.460

STATION 2151

BODMAN CASTS

(VTB)

Bodman Wire Out	Nansen Calc. Depth	Temp. °C	Nansen Sal. ‰	Bodman Sal. ‰
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Surface from S. W. line

50	43	7.38	33.375	33.379
50 ^F	44	7.40	33.383	33.373
100	96	7.36	33.373	33.395
150 ^F	141	7.45	33.602	33.621
200	193	7.28	33.812	33.897
250 ^F	244	7.23	34.116	34.141
275	267	7.23	34.118	34.120

STATION 2151

BODMAN CASTS

(MB)

Bodman Wire Out	Nansen Calc. Depth	Temp. °C	Nansen Sal. ‰	Bodman Sal. ‰
10	-	-		33.390
40	37	7.47	33.305	33.309
70	65	7.46	33.396	33.396
100	95	7.54	33.438	33.471
130	123	7.74	33.532	33.557
160	154	7.45	33.618	33.659
190	181	7.29	33.789	33.859
220	208	7.09	33.986	34.020
250	-	-	34.015	34.131

APPENDIX 4

Particulate matter concentration data

STATION 2122

Corr. Depth M	Wtr. Vol. L.	Part. Wt. mg.	Part. Conc. µg/kg
0	8.1	.718	88.64
5	8.4	.719	85.59
10	9.2	.779	84.67
20	8.8	.778	88.41
35	4.3	.354	82.32
50	8.4	1.047	124.64
74	4.8	.501	104.37
98	8.3	.806	97.11
99	9.5	.713	75.05
121	8.6	.851	98.95
124	9.4	.747	79.47
144	8.7	.713	81.95
149	10.2	1.083	106.18
168	9.6	.941	98.02
189	10.5	1.120	106.67
204	9.2	1.404	152.61
223	7.9	1.479	187.21
232	7.6	2.226	292.89
242	6.8	2.195	322.79
251	7.5	2.547	339.60

STATION 2128

Corr. Depth M	Wtr. Vol. L.	Part. Wt. mg.	Part. Conc. µg/kg
0	7.8	.934	119.74
45	7.9	1.143	144.68
69	7.5	.947	126.27
94	8.1	.985	121.60
119	8.3	1.063	128.07
144	8.7	1.449	166.55
168	.8	.145	181.25
193	11.9	1.348	113.28
218	8.0	2.380	297.50
243	8.8	3.016	342.73

STATION 2144

Corr. Depth M	Wtr. Vol. L.	Part. Wt. mg	Part. Conc. µg/kg
2	7.0	.964	137.71
33	7.0	.816	116.57
63	7.5	.862	114.93
94	11.5	1.037	90.17
120	11.5	.947	82.35
148	9.0	1.960	217.78
178	8.0	1.911	238.87
207	9.0	4.635	515.0
225	8.8	4.769	541.93
235	9.2	4.805	522.28

STATION 2138

Corr. Depth M	Wtr. Vol. L.	Part. Wt. mg.	Part. Conc. µg/kg
2	6.8	.522	76.76
12	7.1	.511	71.97
25	6.9	.569	82.46
48	8.7	.560	64.37
66	9.8	.530	54.08
84	10.9	.489	44.86
102	10.7	.413	38.60
120	10.3	.568	55.14
136	10.5	.750	71.43
140	10.9	1.007	92.38
154	10.0	1.005	100.50
169	7.8	1.070	137.18
173	8.5	.651	76.59
191	12.0	1.196	99.67
209	8.5	1.219	143.41
218	8.5	1.439	169.29
227	7.5	1.196	159.47
236	8.0	2.388	298.50
245	7.5	3.330	444.0
250	7.5	3.462	461.60

STATION 2149

Corr. Depth M	Wtr. Vol. L.	Part. Wt. mg.	Part. Conc. µg/kg
5	7.2	1.818	252.50
26	8.0	.906	113.25
51	8.1	.859	106.05
82	9.0	1.172	130.22
102	8.7	1.301	149.54
128	10.8	2.295	212.50
153	9.7	1.834	189.07
184	9.0	2.378	264.22
194	7.8	3.438	440.77
209	8.0	4.097	512.12

STATION 2151

Corr. Depth M	Wtr. Vol. L.	Part. Wt. mg	Part. Conc. µg/kg
1	9.9	.554	55.96
21	.75	.124	165.33
42	10.5	.657	62.57
62	10.0	.625	62.50
80	10.5	.609	58.0
99	9.8	.627	63.98
118	-	.050	-
137	10.5	.694	66.09
140	9.25	.904	97.73
153	2.5	.276	110.40
157	11.0	.792	72.00
167	8.75	1.686	192.69
176	9.0	1.100	122.22
181	8.5	2.087	245.53
195	7.25	1.814	250.21
209	9.25	2.260	244.32
223	8.25	2.110	255.76
237	7.5	2.788	371.73
246	8.5	3.524	414.59
256	7.75	3.681	474.97

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