RU 719

2089/WP # 4282

FISHERIES OCEANOGRAPHY OF THE SOUTHEAST BERING SEA: RELATIONSHIPS OF GROWTH, DISPERSION, AND MORTALITY OF HERRING LARVAE TO ENVIRONMENTAL CONDITIONS IN THE PORT MOLLER ESTUARY

APPENDICES TO THE 1990 ANNUAL REPORT

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FOR

ENVIRONMENTAL STUDIES UNIT
Leasing and Environment Office
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Fig. G2. Regression of concentration of microzooplankton prey for herring larvae on time of day for plankton station 36 in Herendeen Bay and station 39 in Moller Bay [equation (G1)]. Concentrations at station 36 were adjusted to a depth of 20 m.

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Appendix A. Temperature and salinity profiles in **Port Moller** in **1990.**

Appendix A. Temperature and salinity profiles in Port Moller in 1990.

Average temperatures in the upper 30 m of Port Moller rose from about 4.0°C on April 30 to about 12.0°C on July 30. This was similar to the temperature trajectory measured in 1989 by Greengrove (1991). There was very little vertical variation in temperature at the boundary of the estuary (stations 21, 22 and 23), a condition that is characteristic of the well-mixed coastal domain of the Bering Sea (Coachman and Charnell 1977; Kinder and Schumacher 1981).

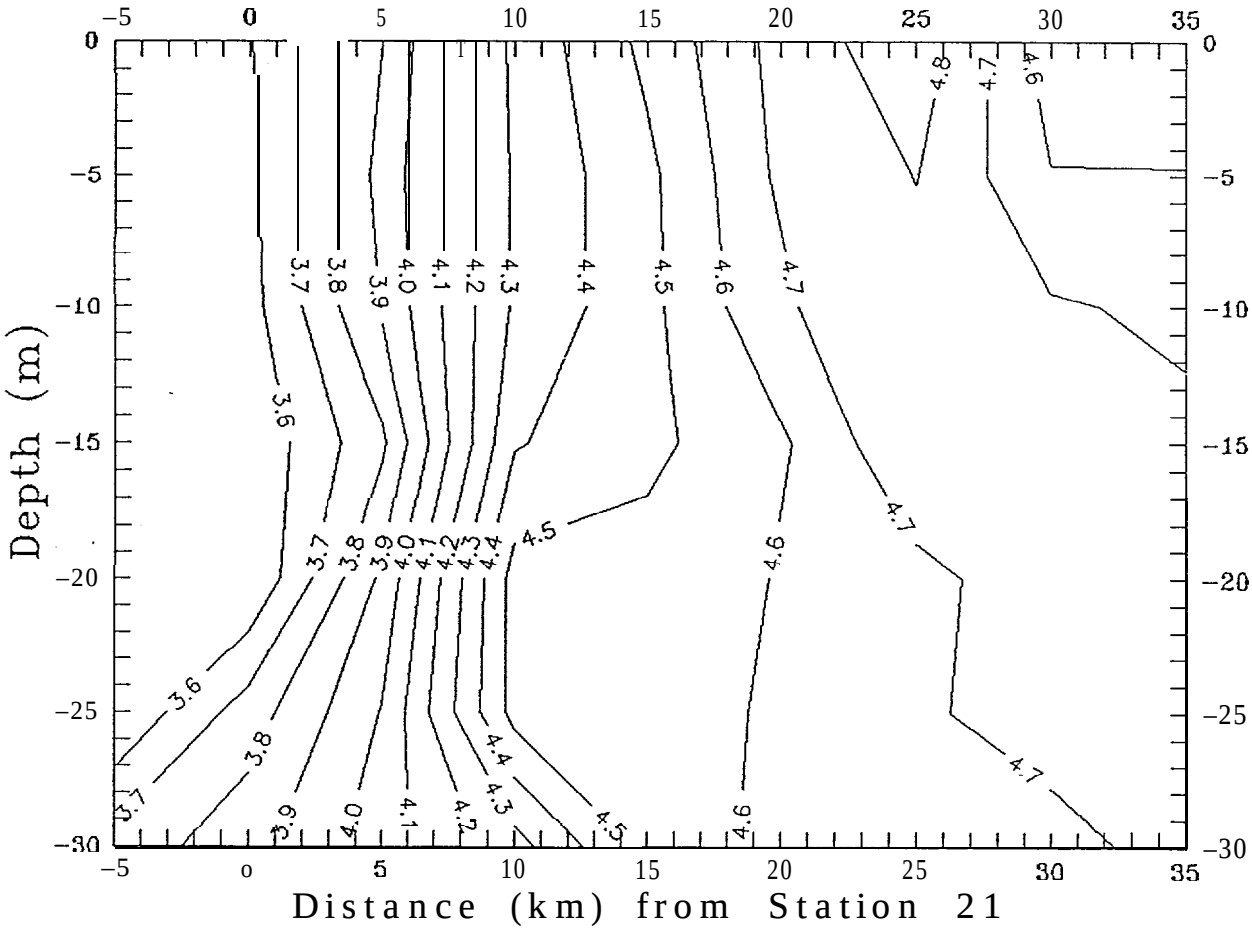
There was only slightly more vertical variation in temperature throughout Moller Bay (stations 38,39,41,42,45,46 and 47), Hague Channel (stations 25,26, 27 and 28), and Johnston Channel (stations 29 and 31). Greater vertical temperature variation in the inner estuary in 1989 was measured by McGurk (1989c) and Greengrove (1991). The difference between 1989 and 1990 was apparently due to reduced baroclinic flows of cold, oceanic water into the estuary in 1990 due to low rainfall that year compared to 1991.

There was considerable depth variation in temperature in the deep water of Herendeen Bay (stations 33,34,35,36 and 37) in 1990. At station 35 a vertical temperature difference of 4-10°C was maintained throughout the study period.

Average salinity of the upper 30 m ranged from 28.3 to 29.3 ppt at the boundary of the estuary, from 24.2 to 27.3 ppt at the head of Moller Bay, and from 26.0 to 28.0 ppt at the head of Herendeen Bay. Salinity tended to decrease throughout the summer due to inflow of fresh water. Vertical differences in salinity were apparent at all stations, with the largest differences occurring in the deep basin at the head of Herendeen Bay. The cold, high-salinity bottom water in that basin may represent intrusions of cold oceanic water during wintertime. The surface of Herendeen Bay is slightly cooler and more saline than Moller Bay, suggesting a slow upwelling of this cold, saline water to the surface.

The longitudinal gradients of salinity were much less steep in May-July, 1990, than those measured in the estuary in June, 1989 (McGurk 1989c; Greengrove 1991). This was because baroclinic circulation was less strong in 1990 than in 1989.

Temperature (C) in Moller Bay (5/3/90–5/5/90)



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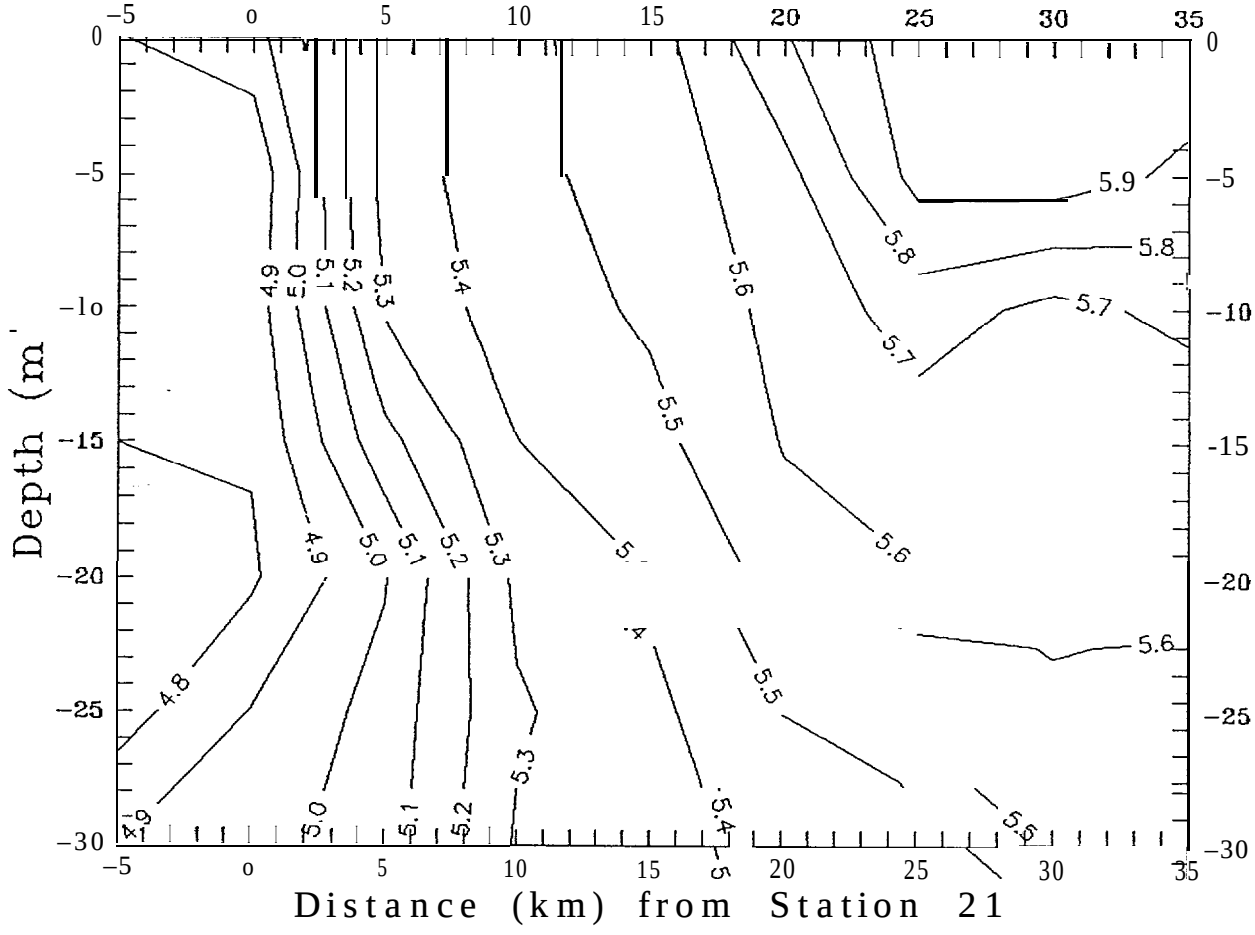

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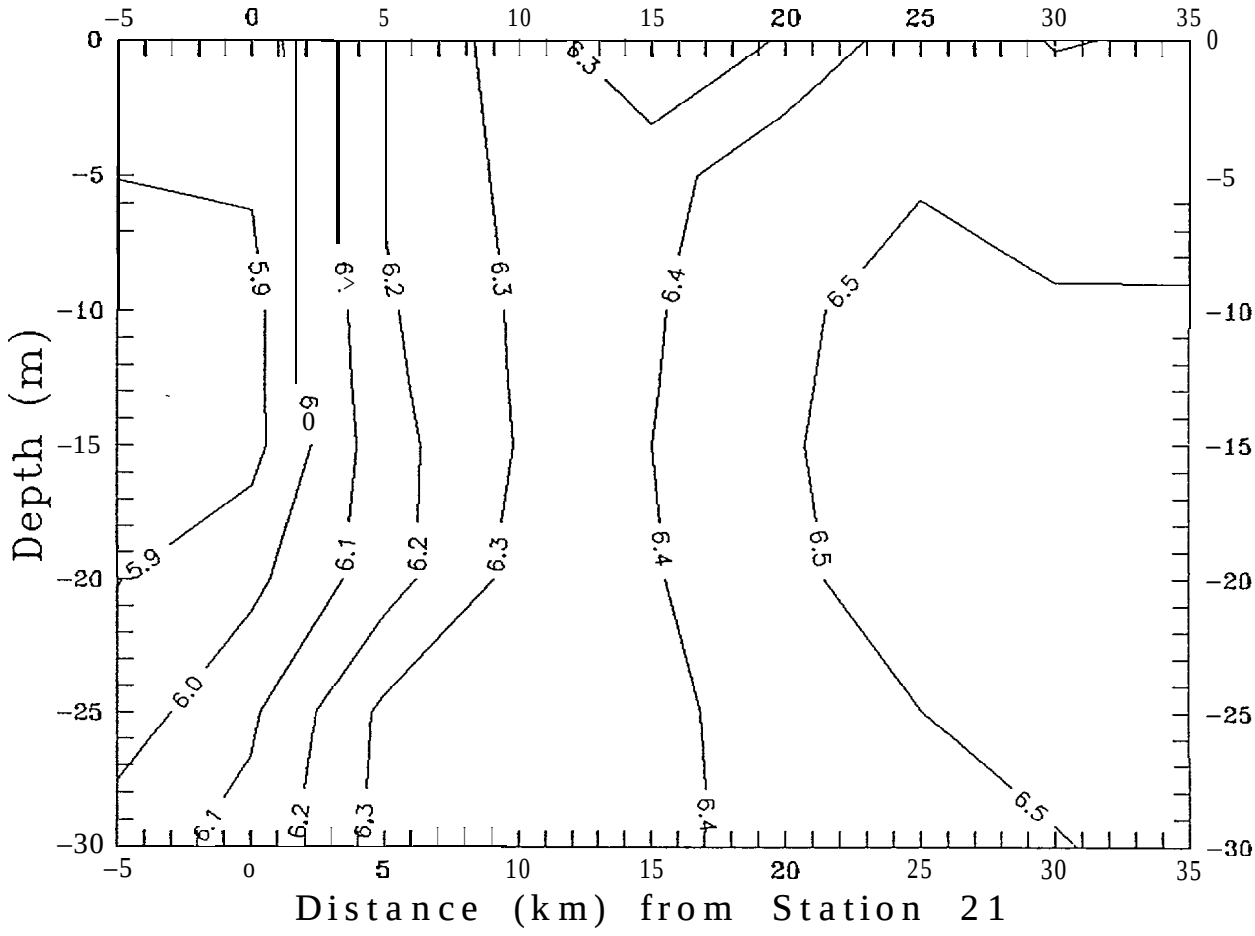

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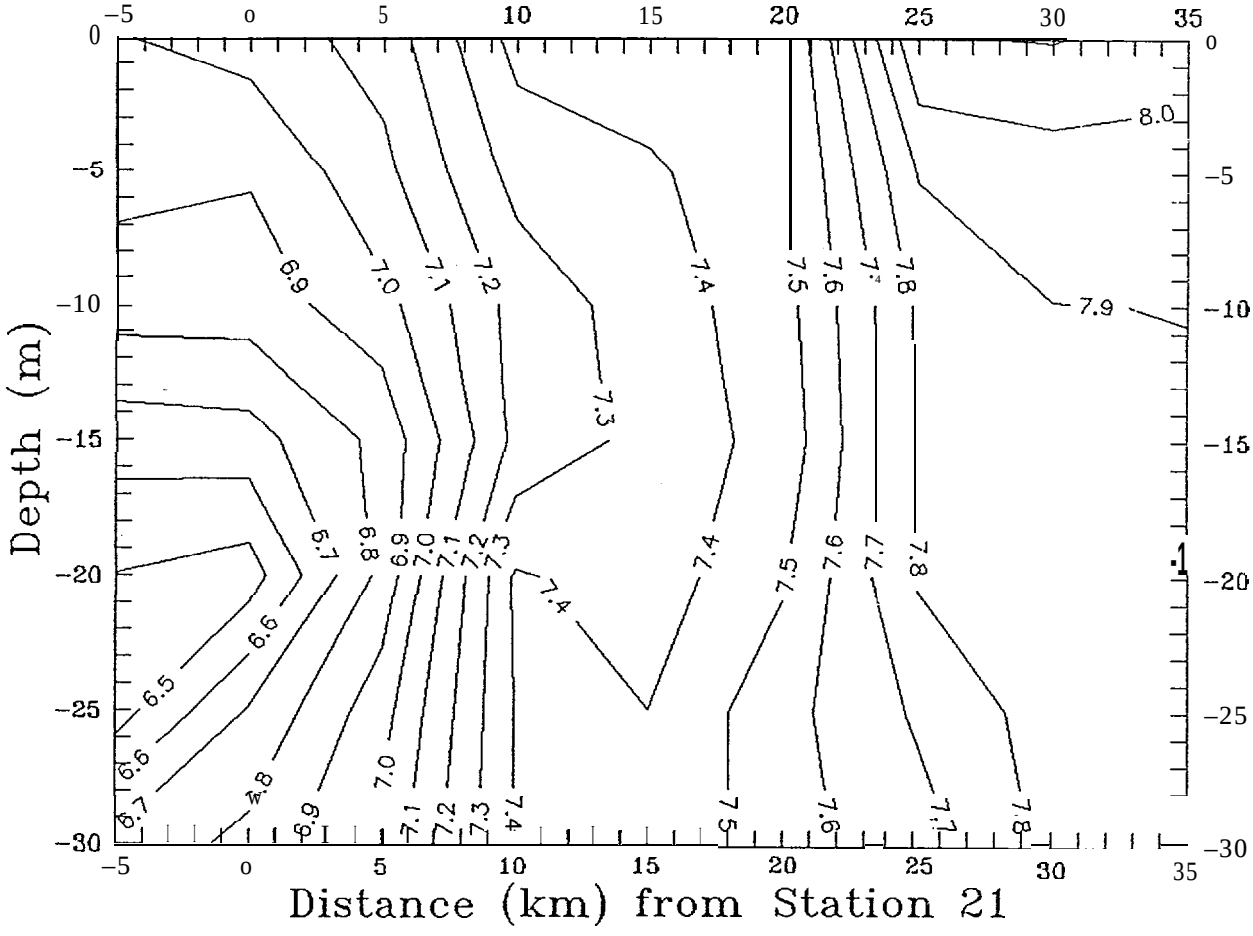

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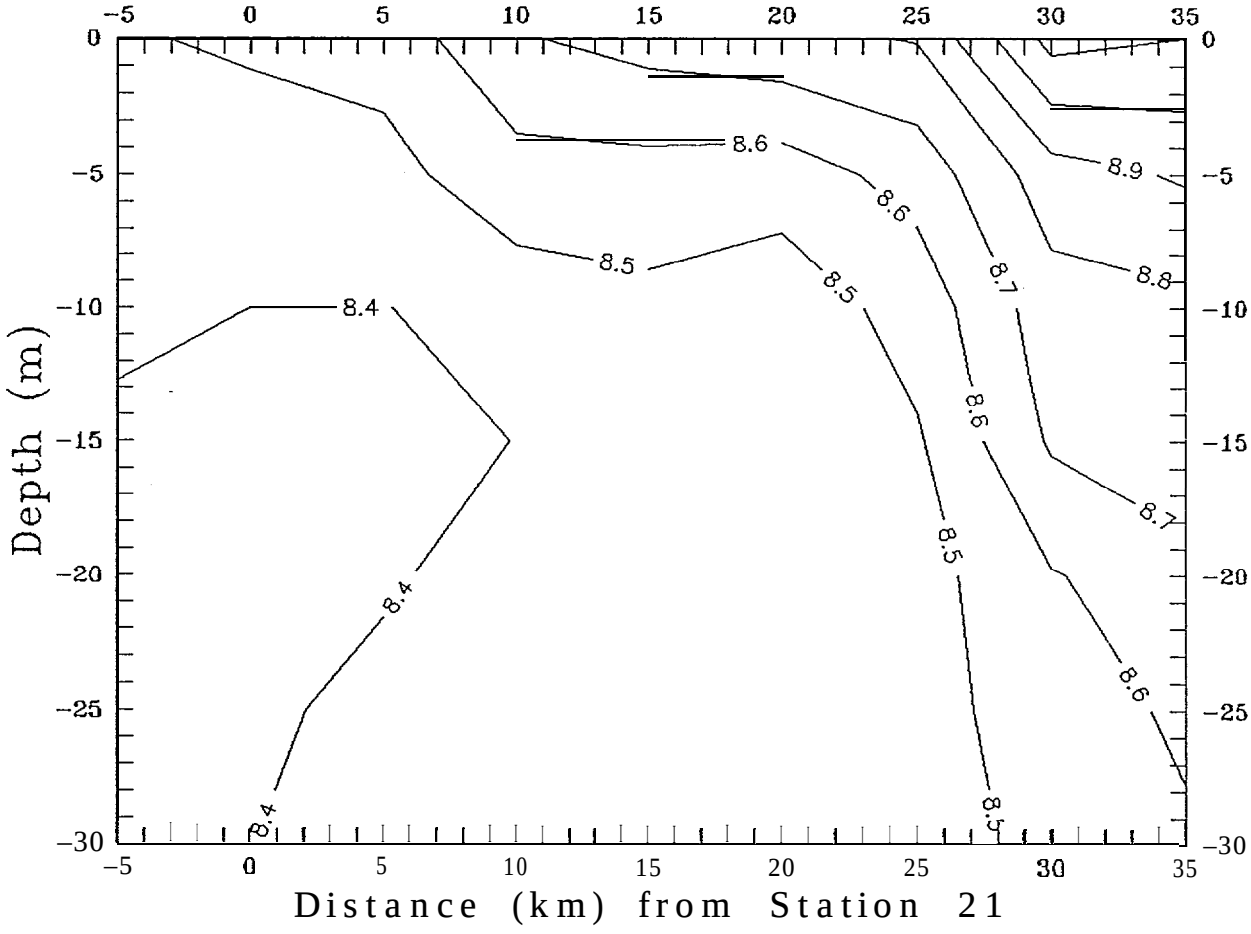

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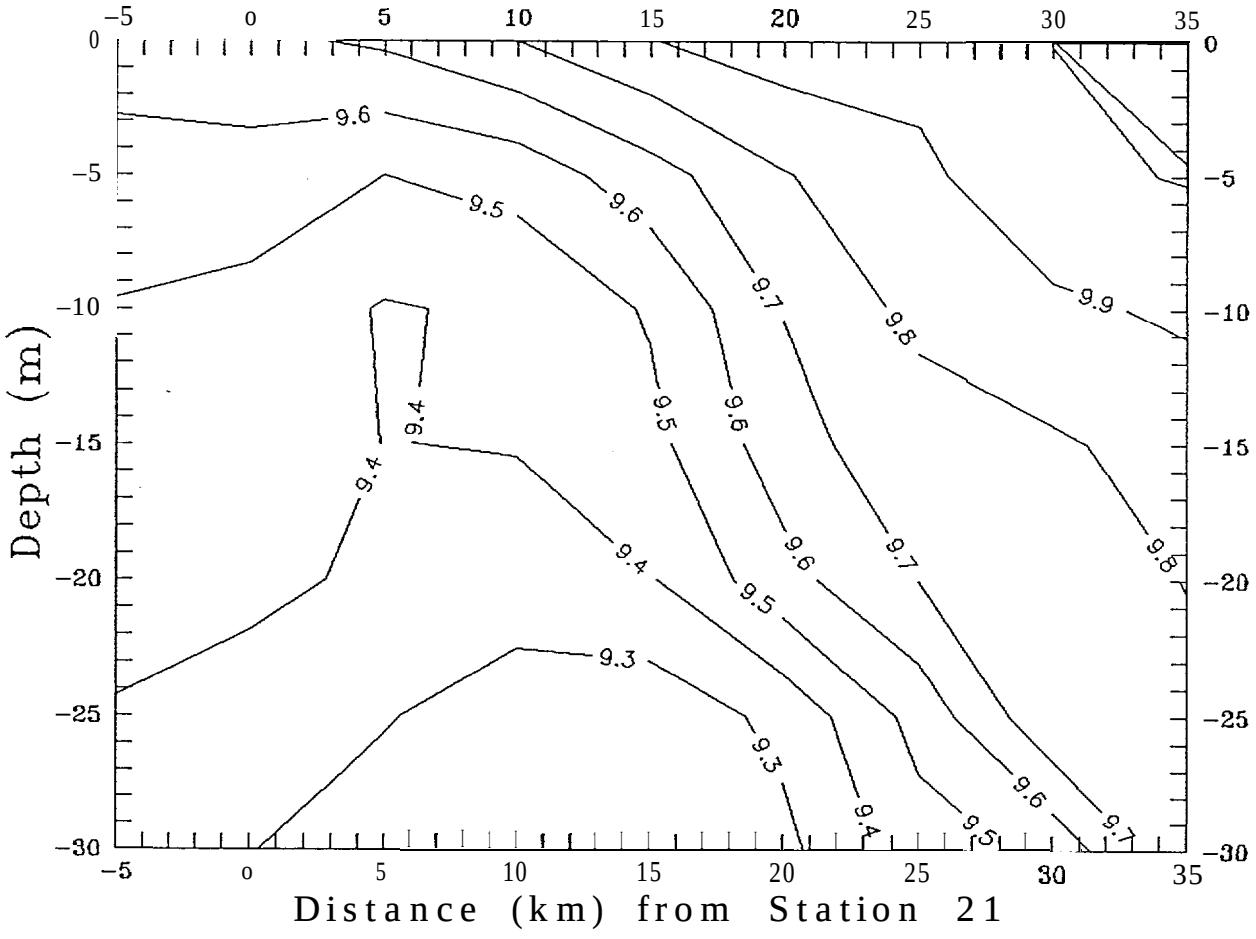

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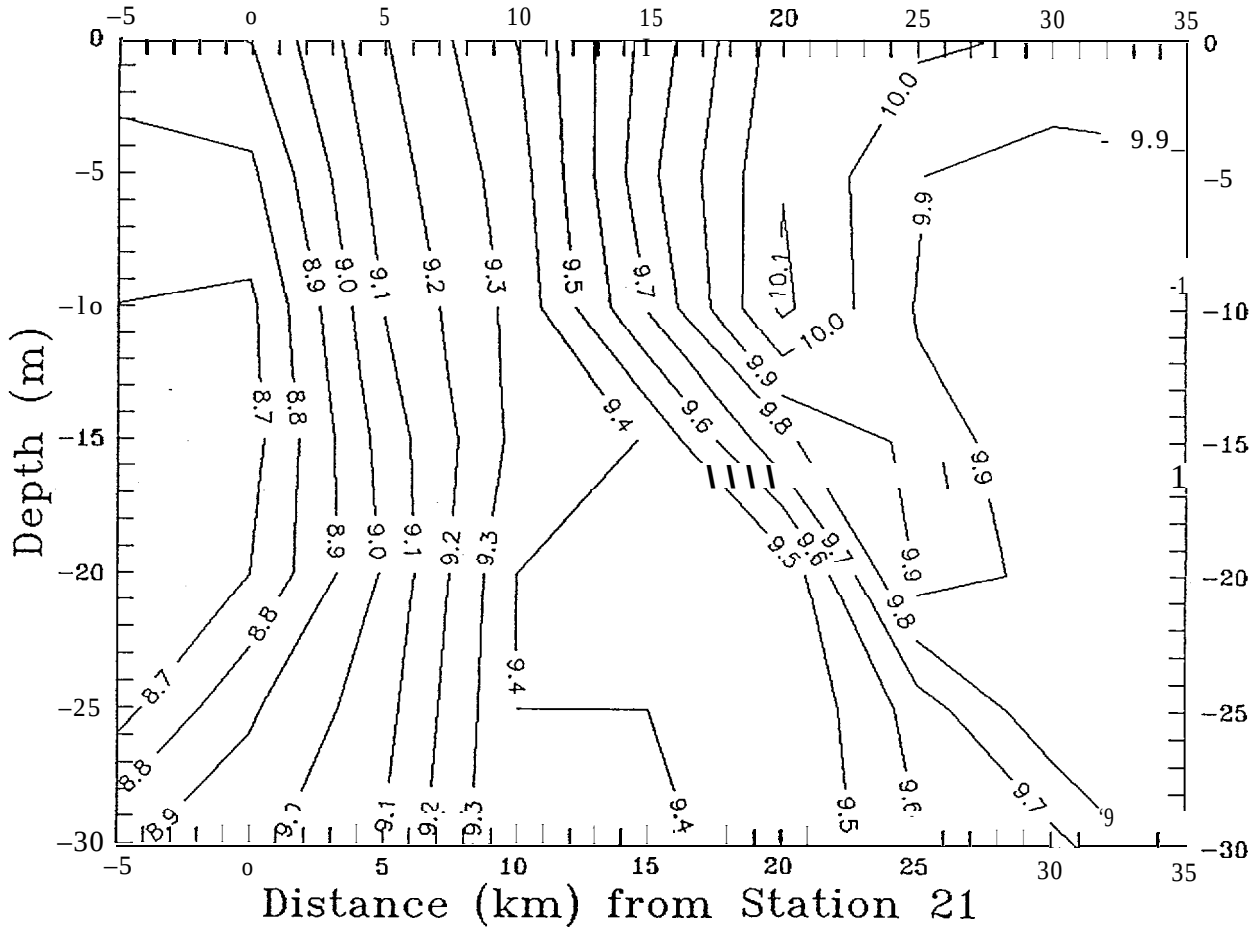

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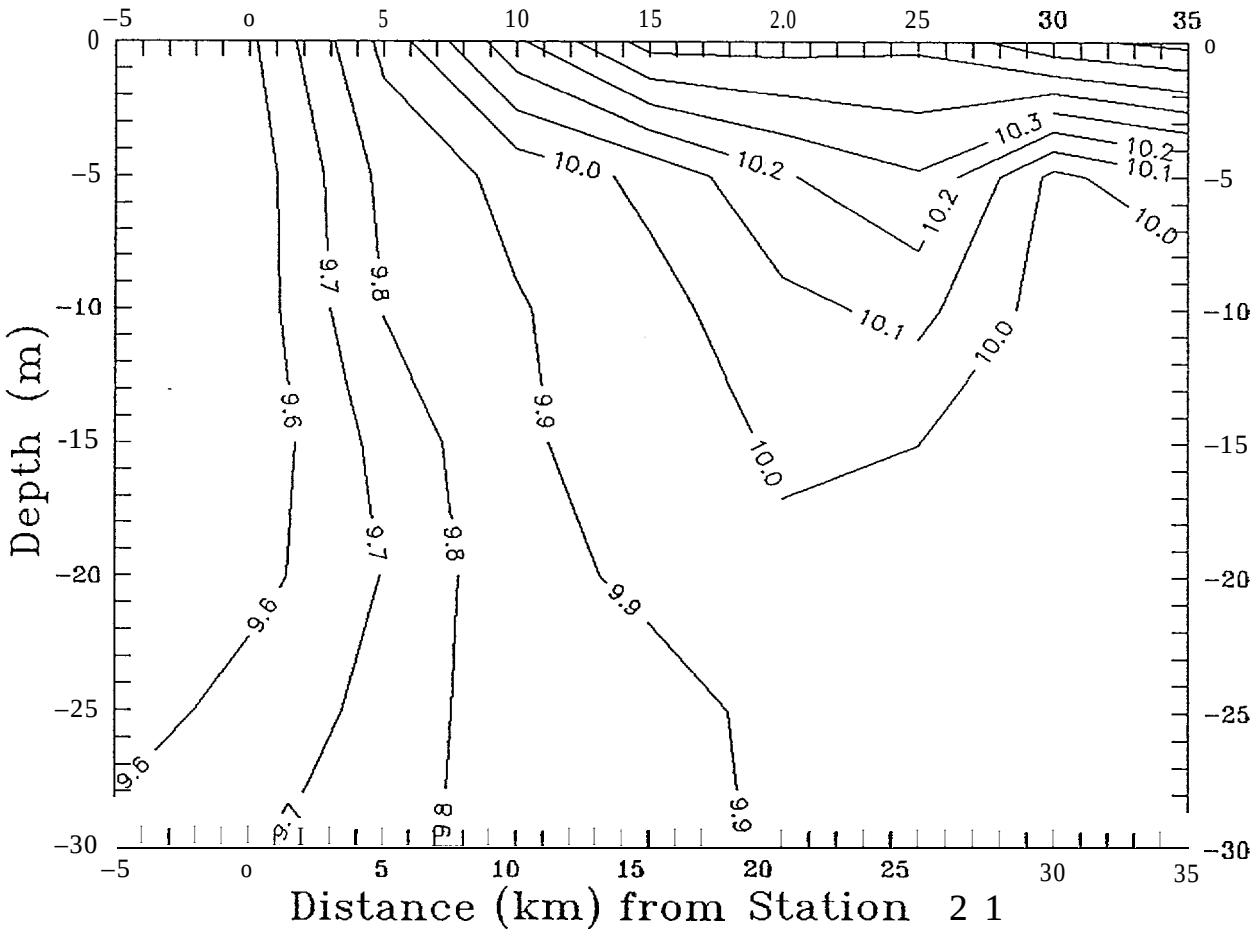

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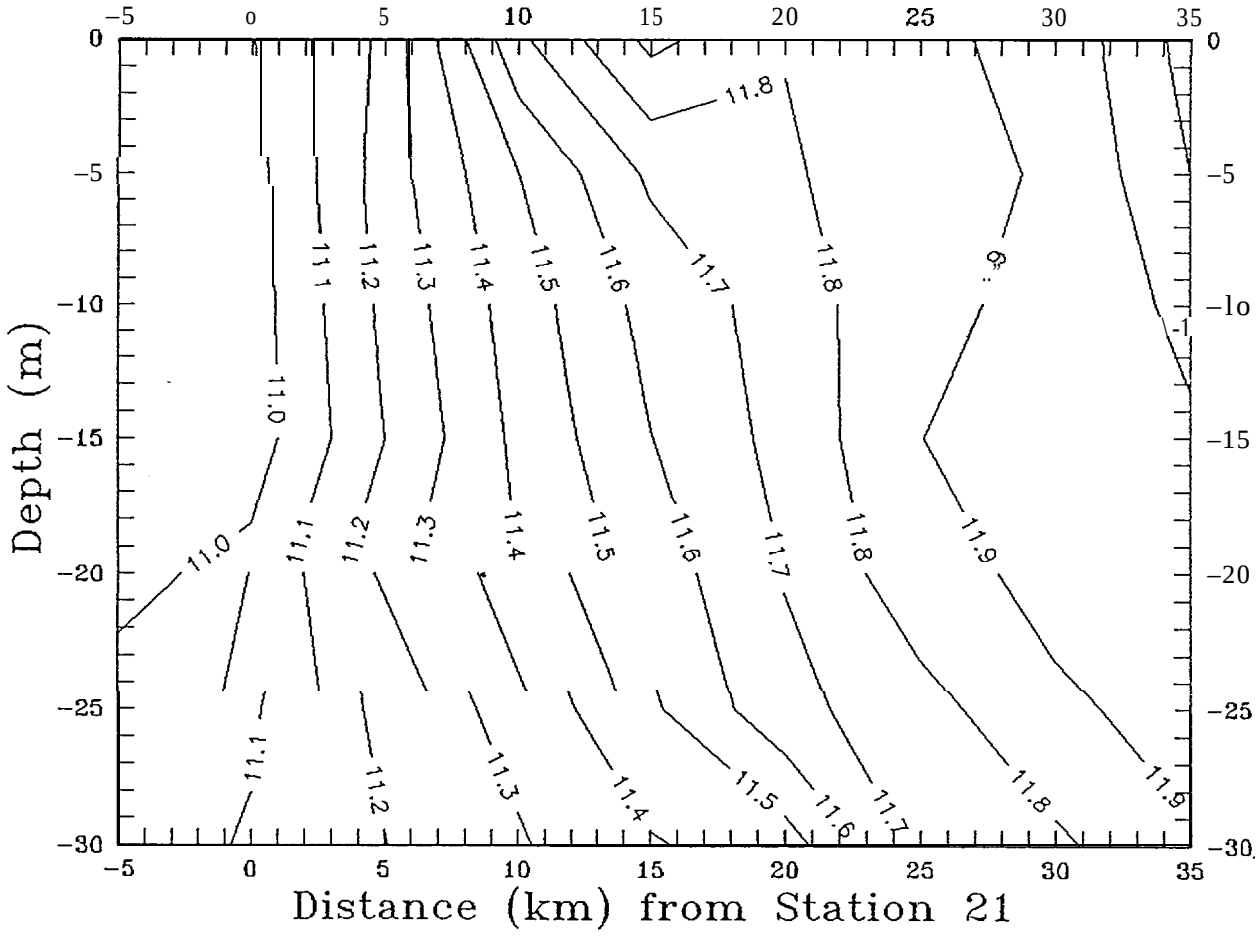

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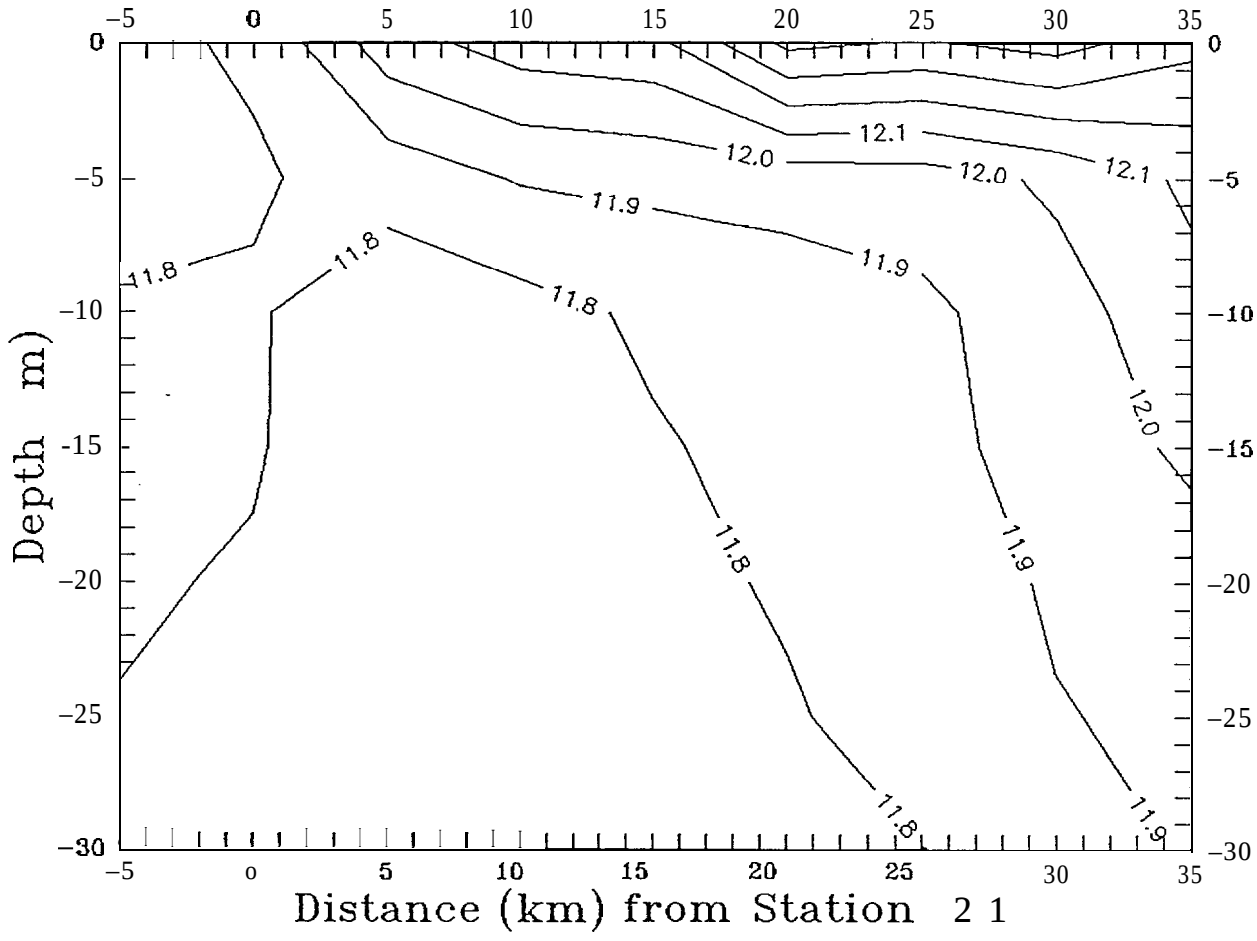

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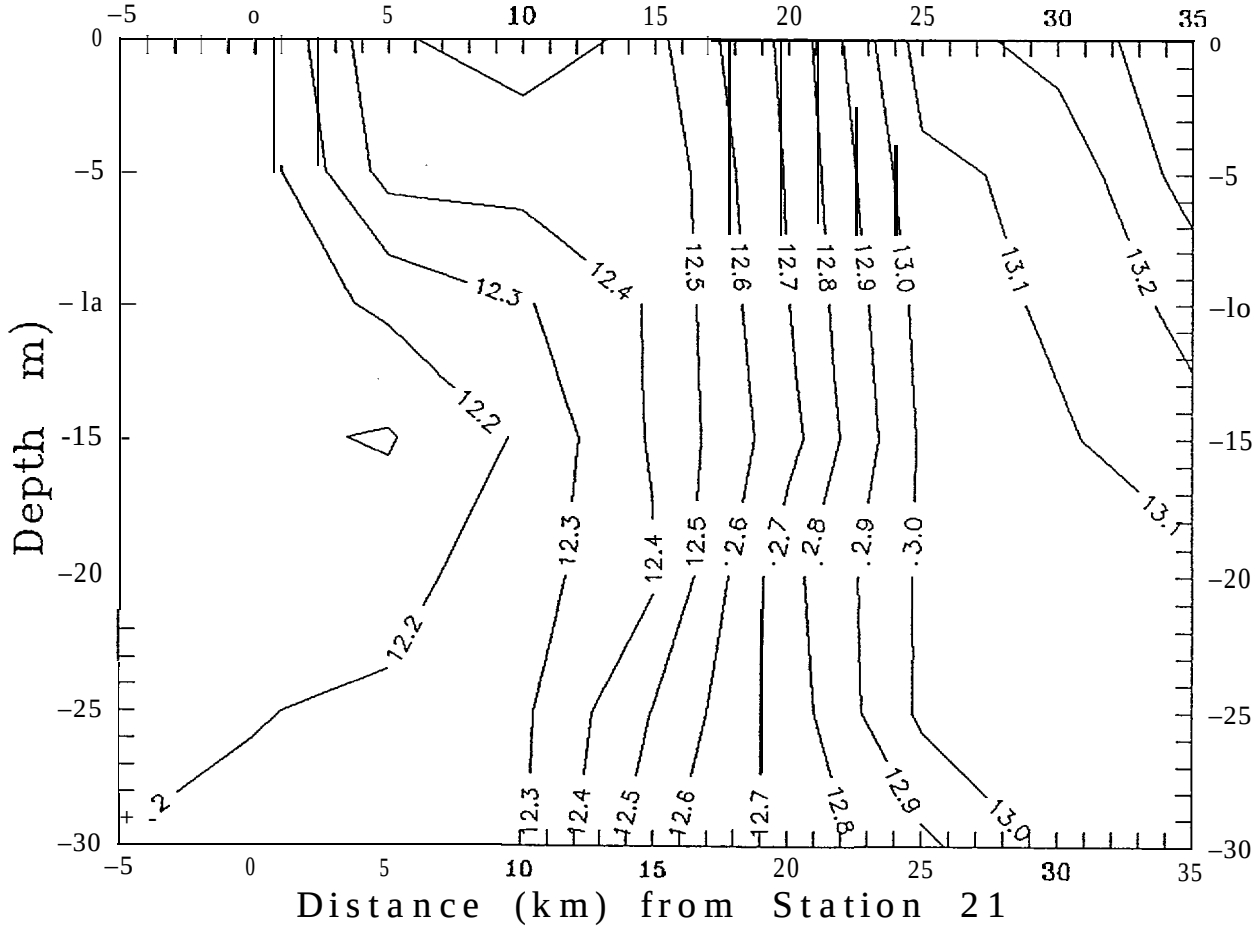

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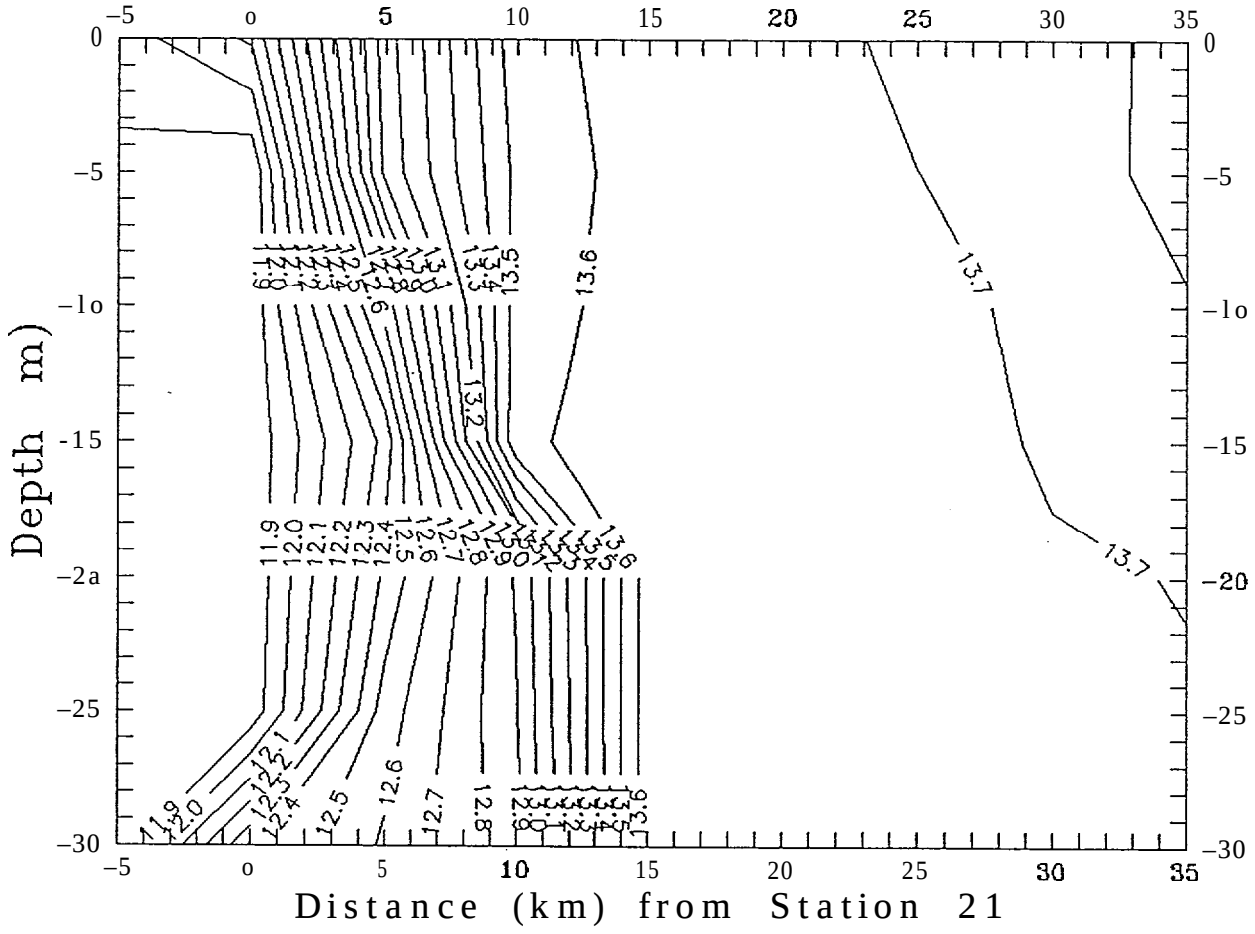

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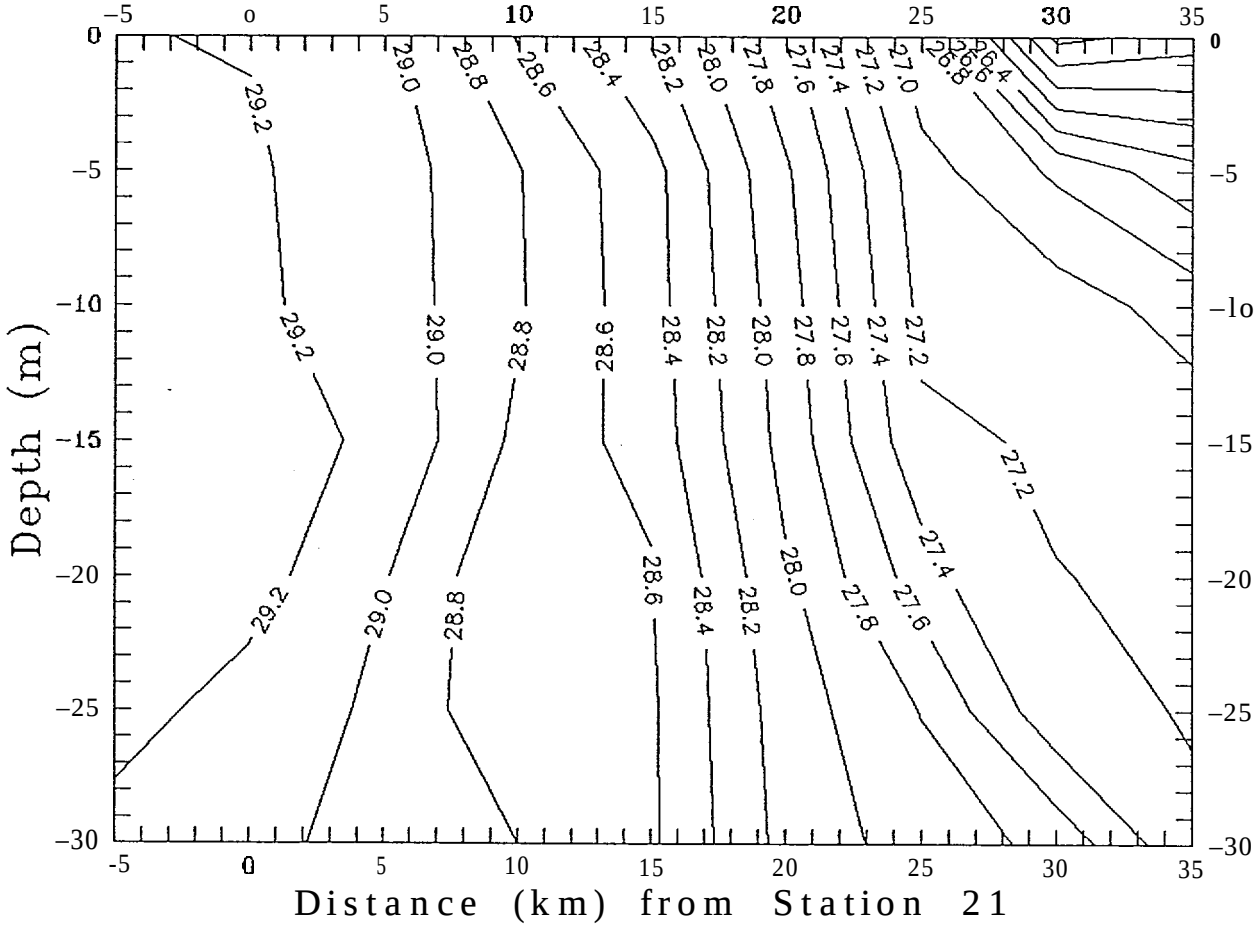

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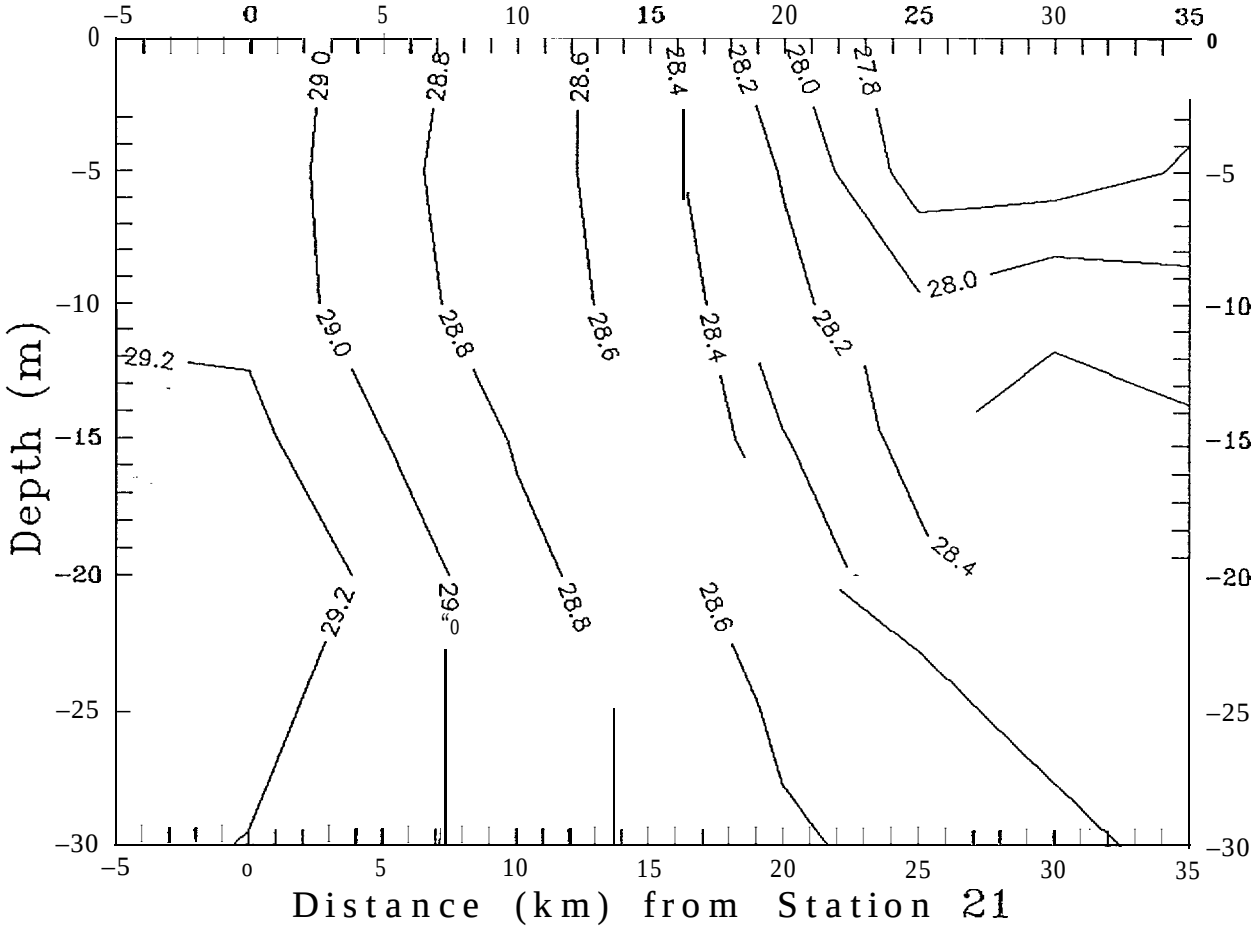

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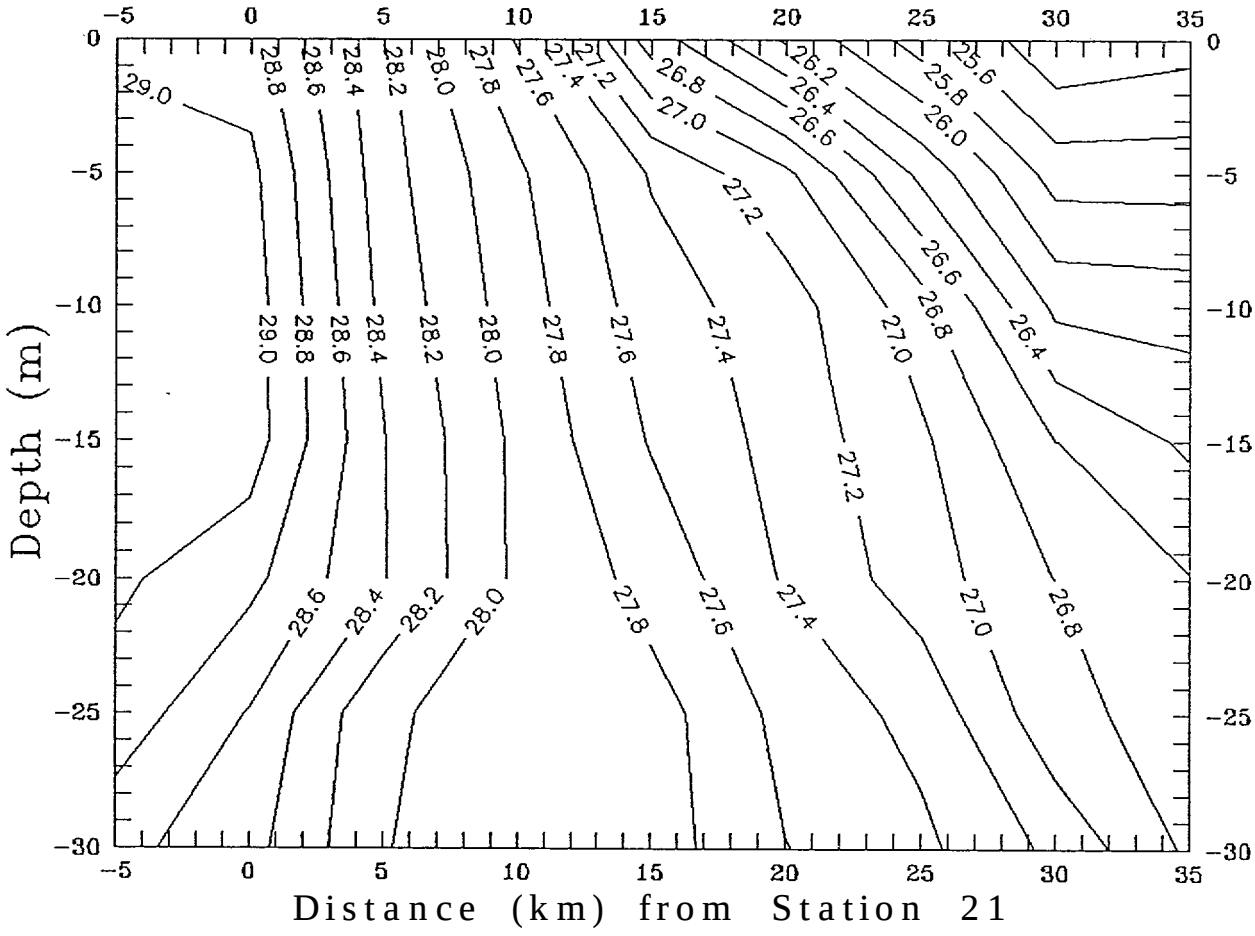

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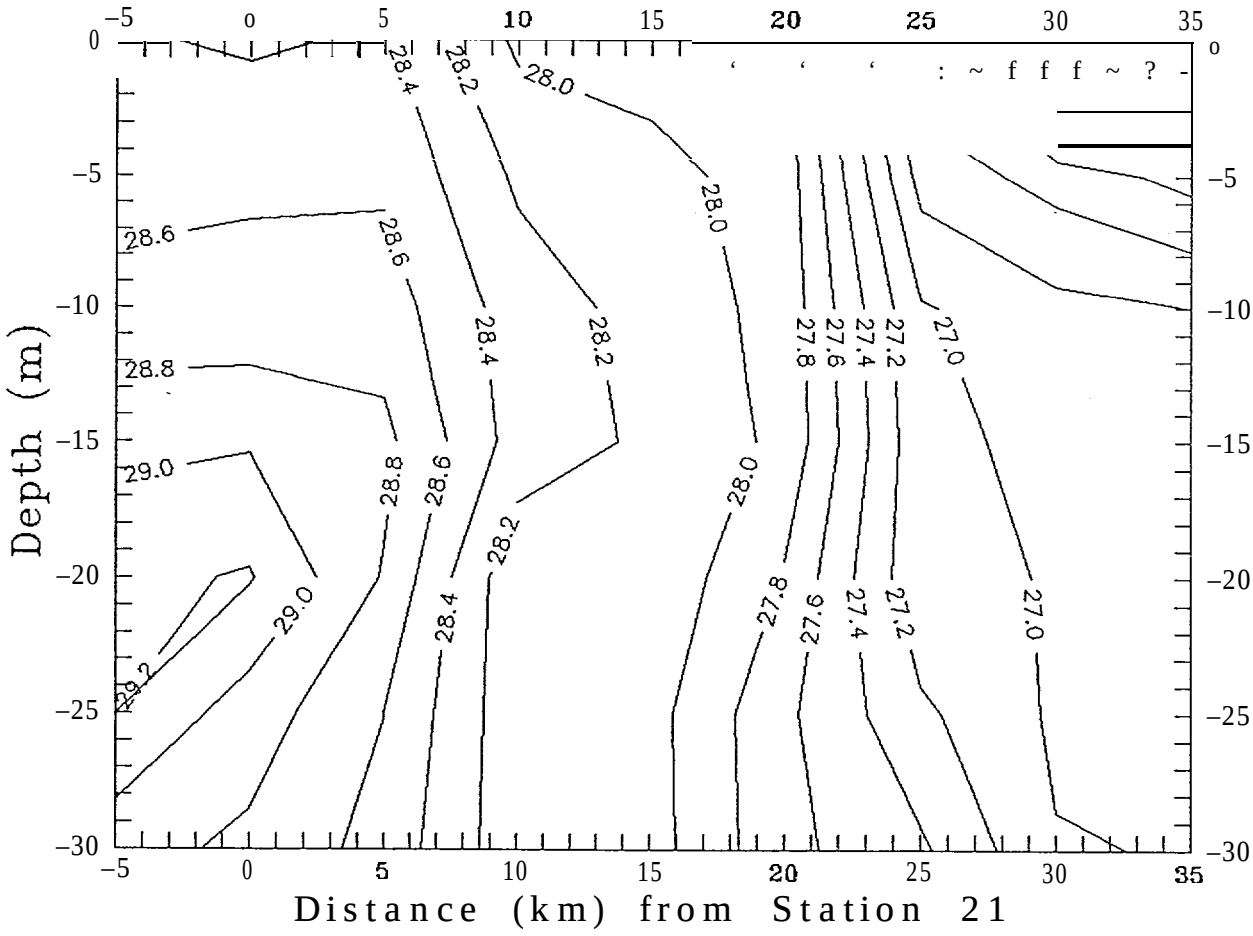

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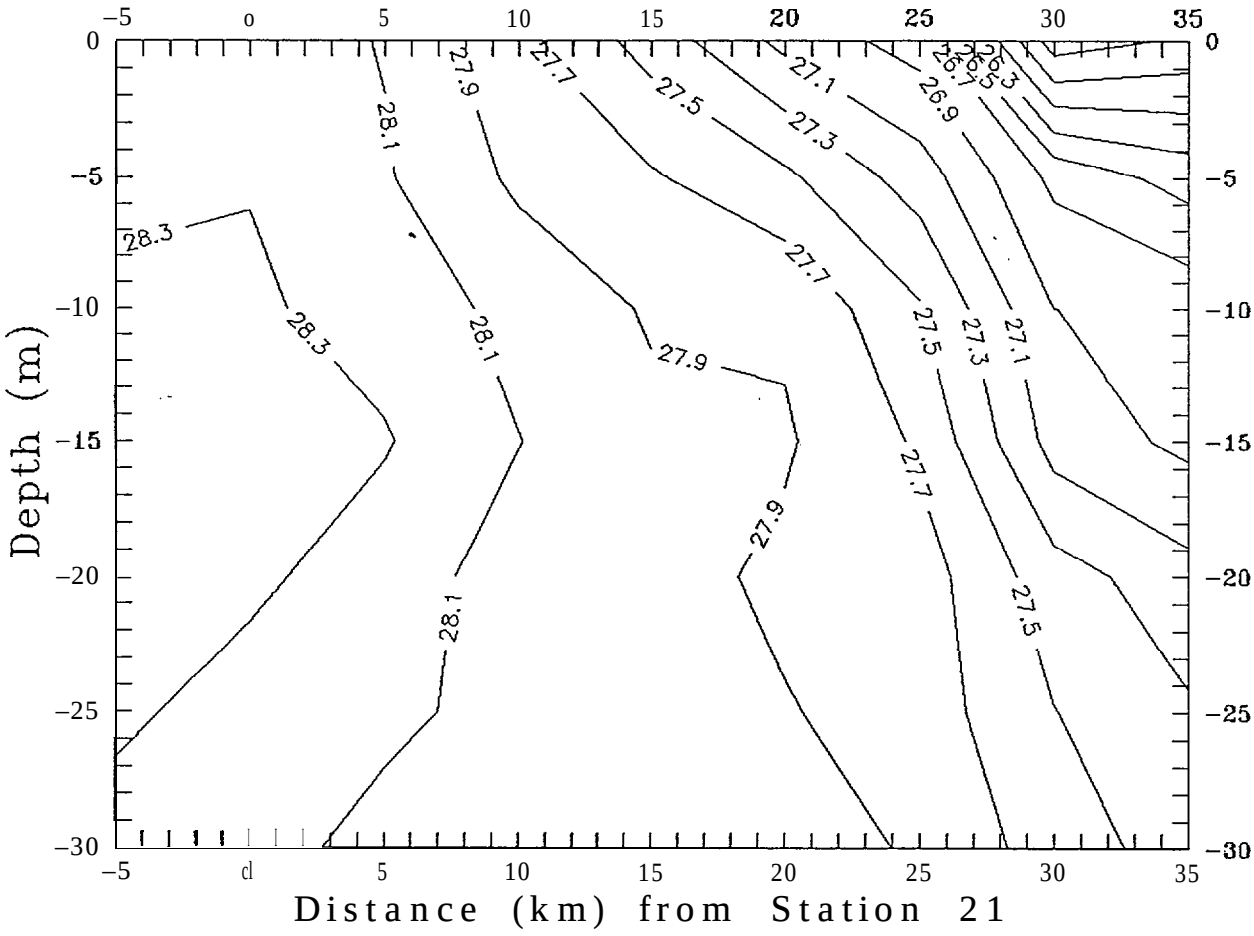

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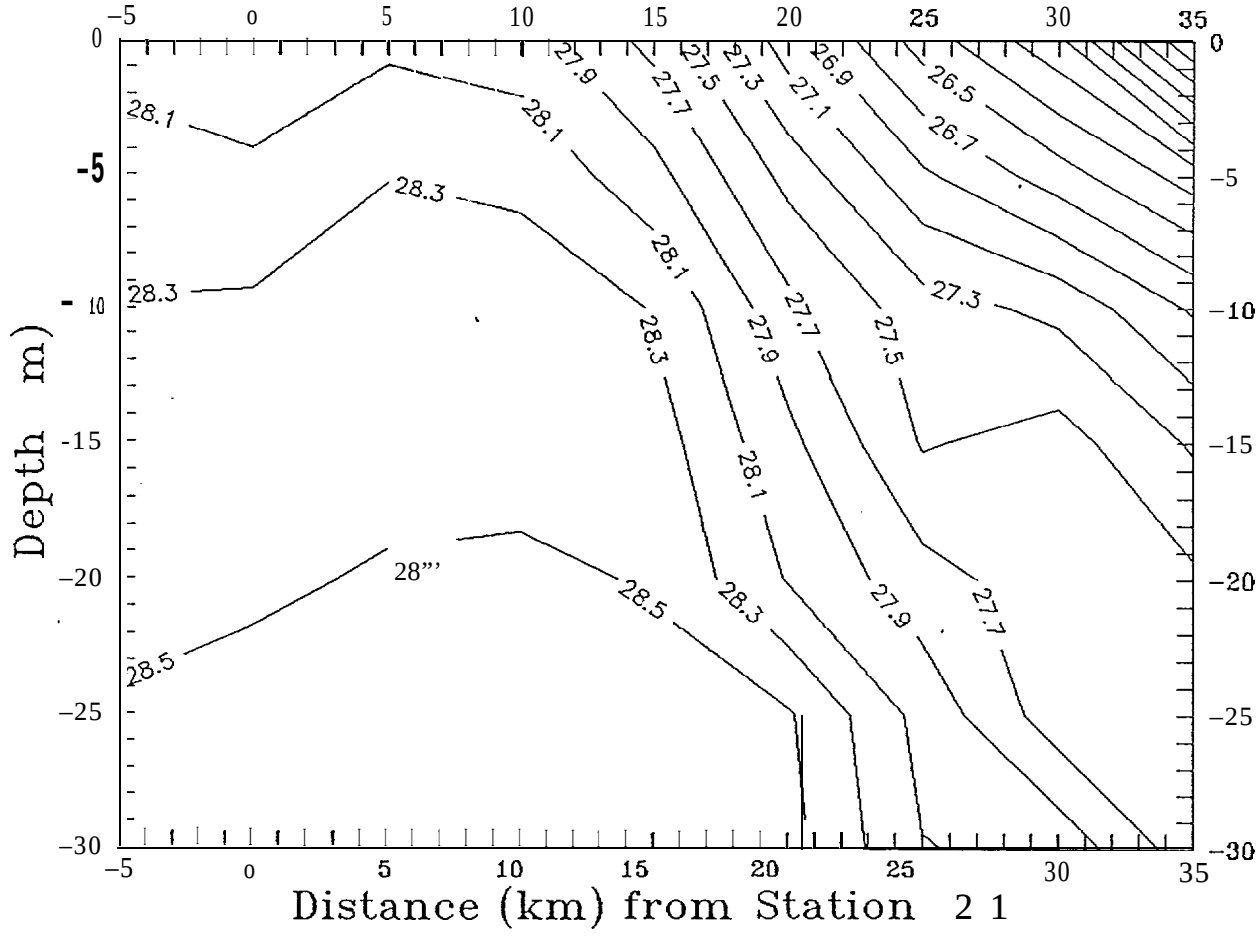

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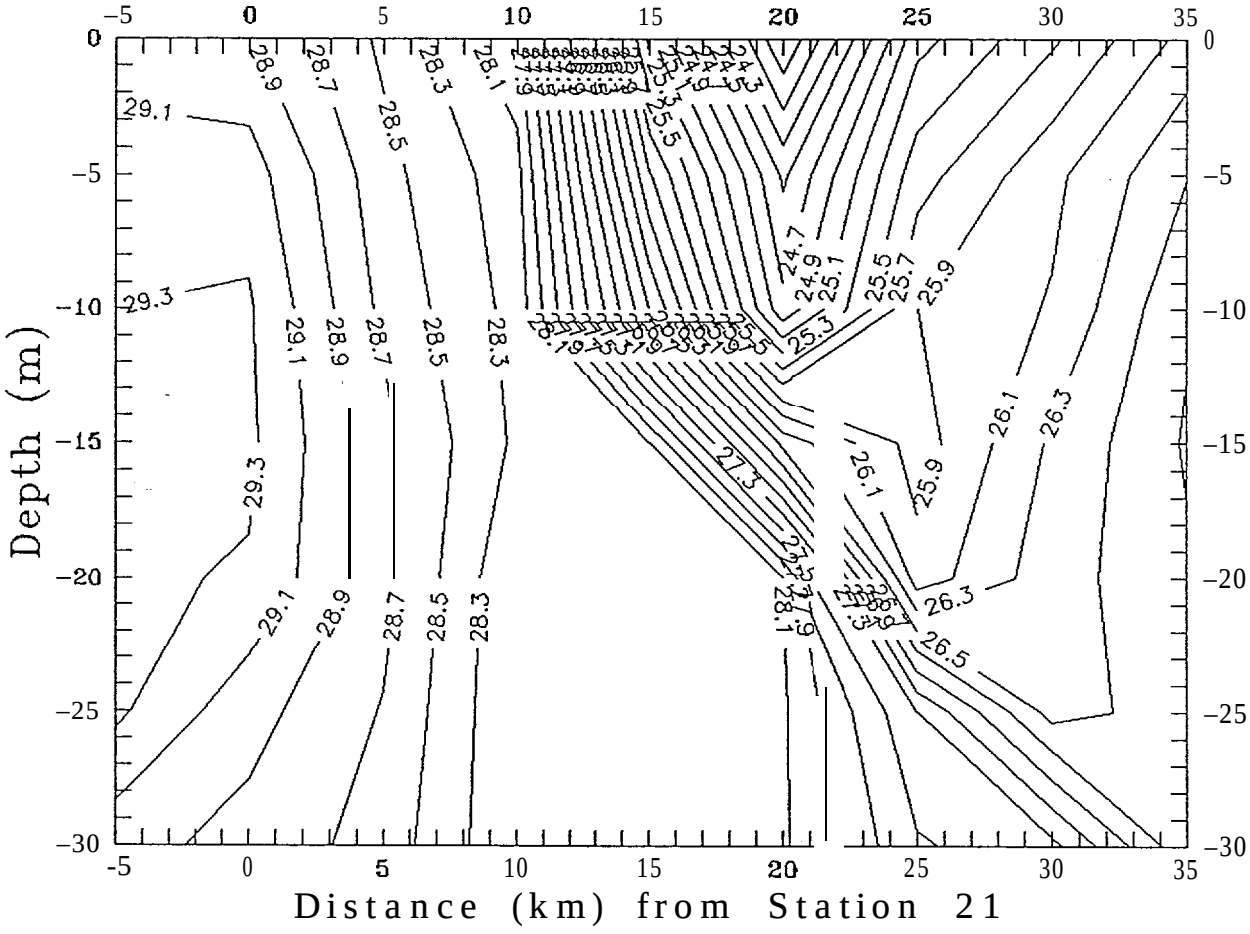

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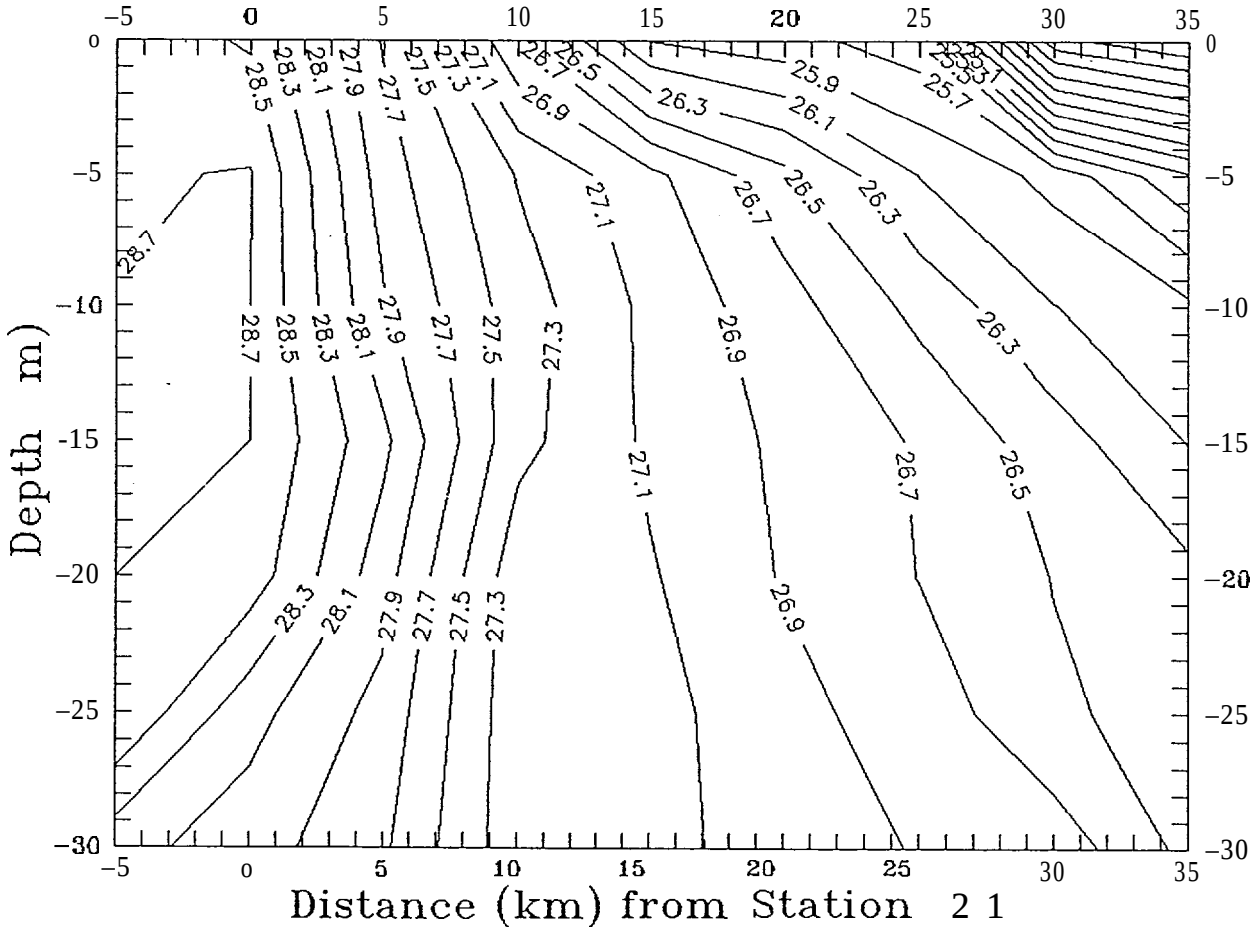

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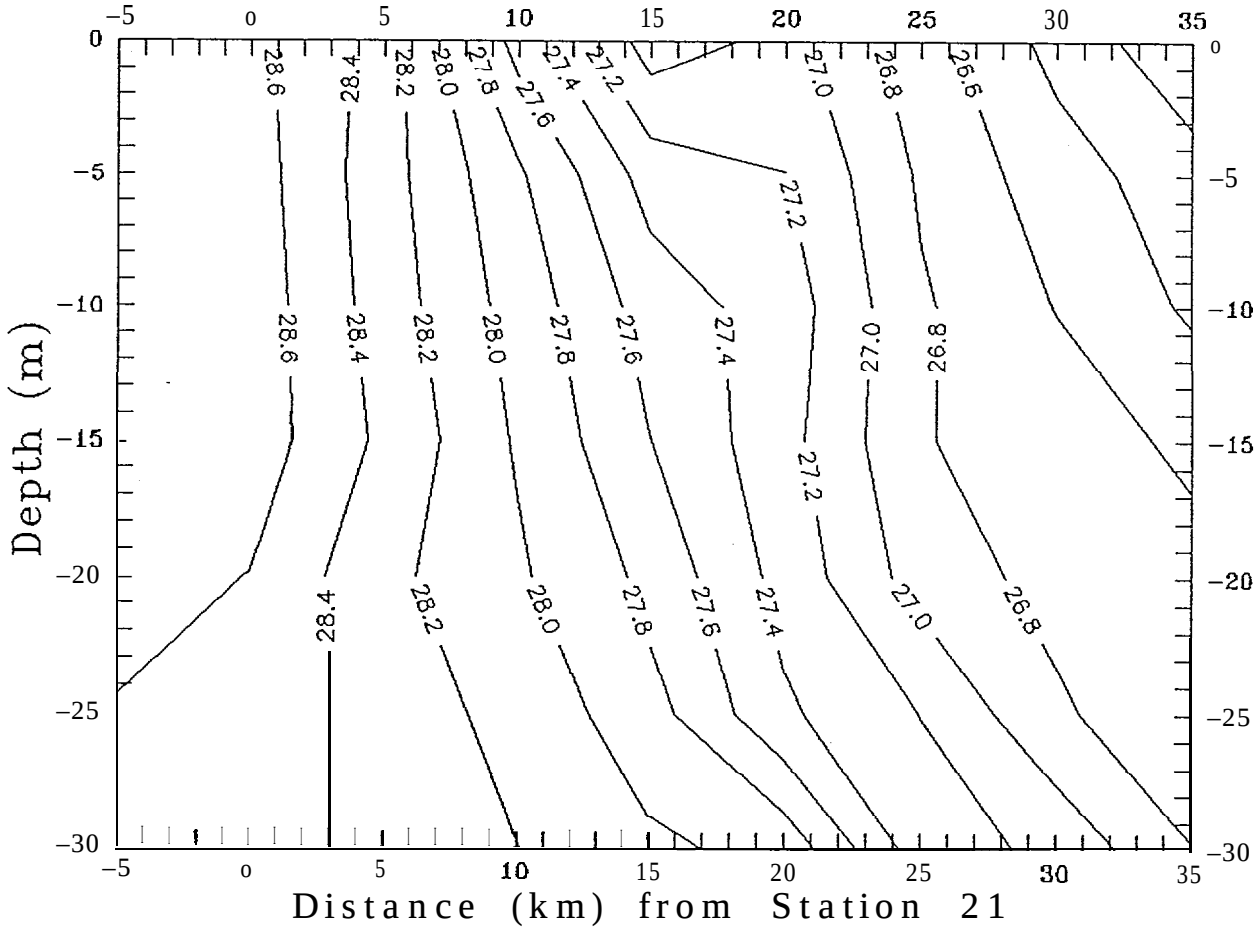

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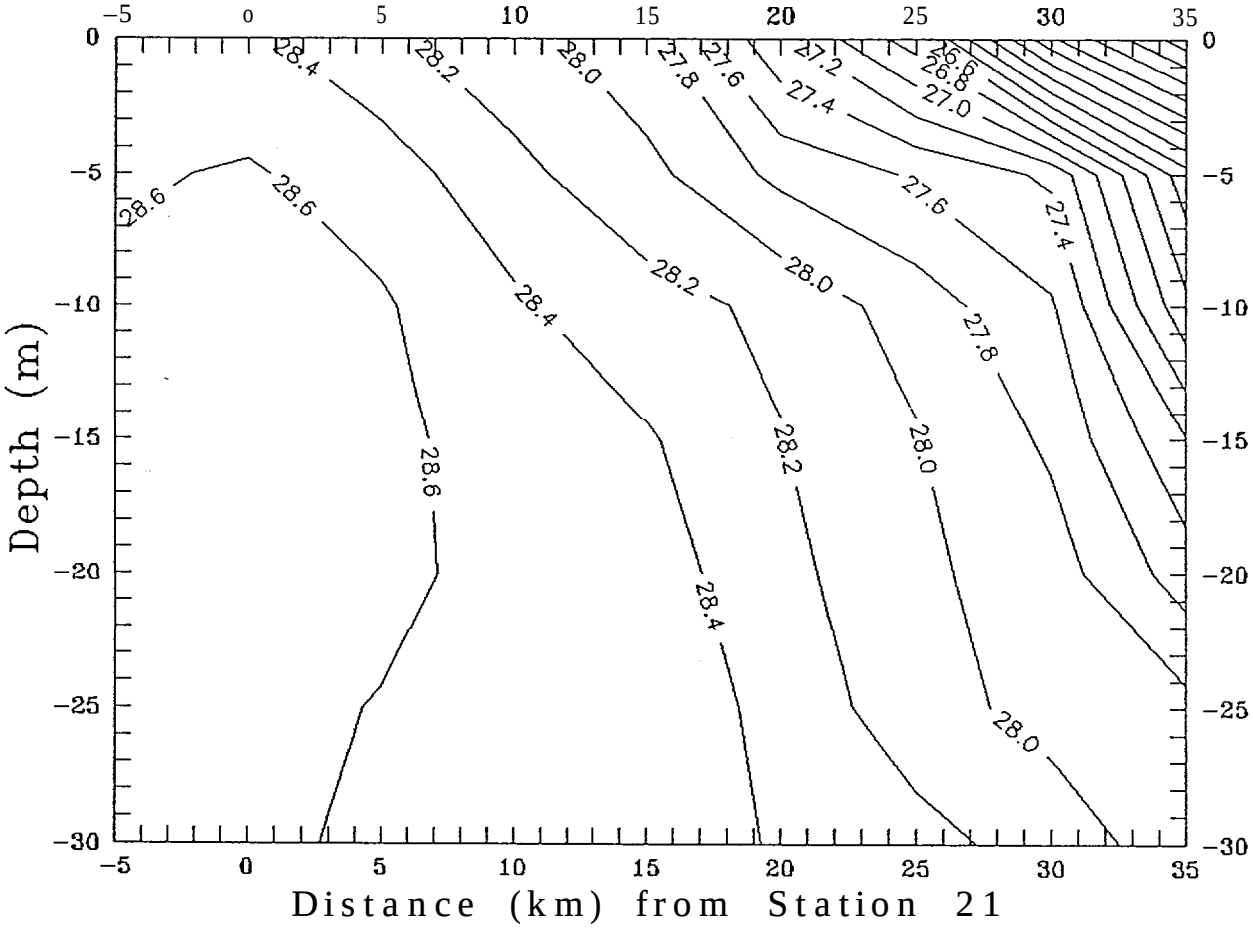

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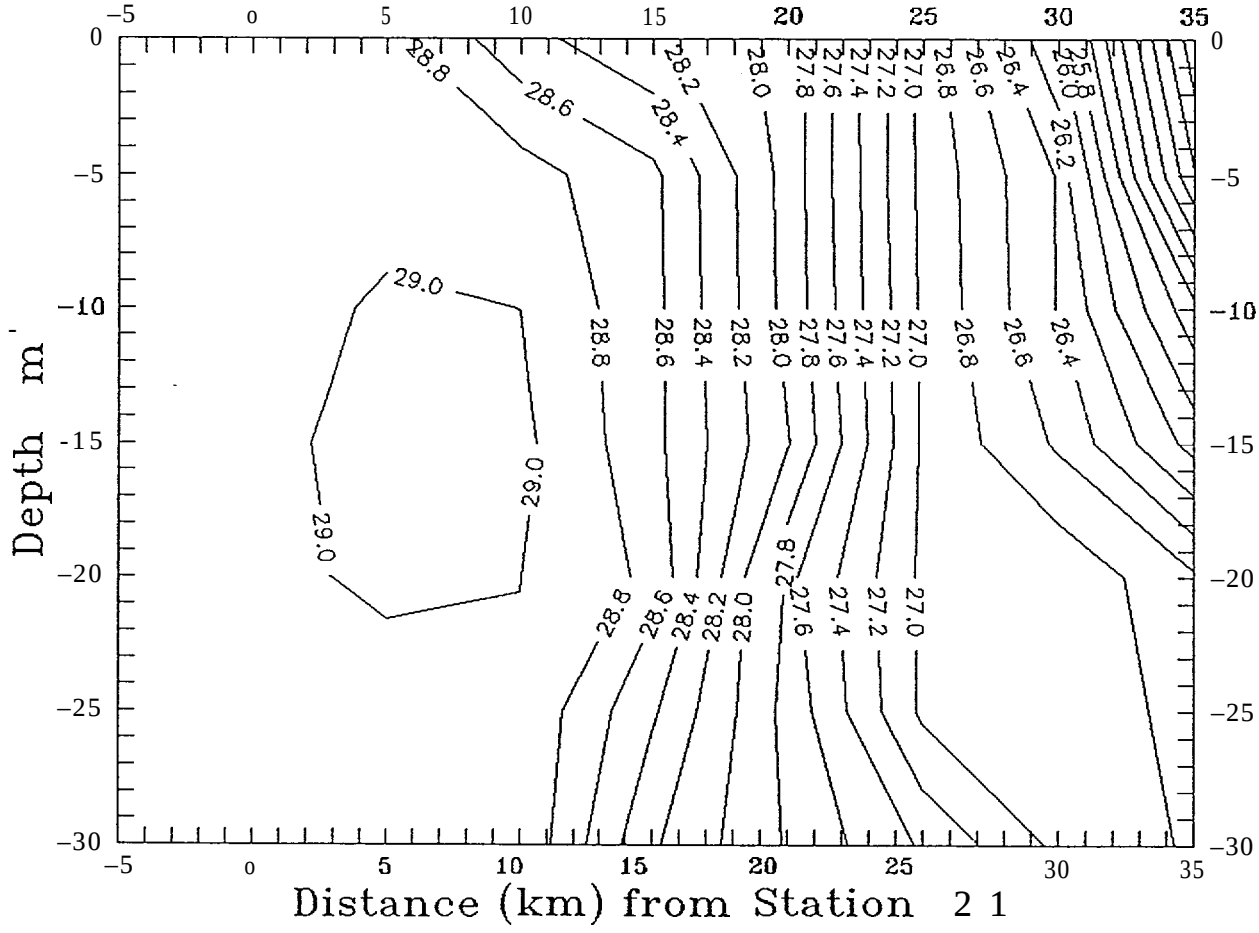

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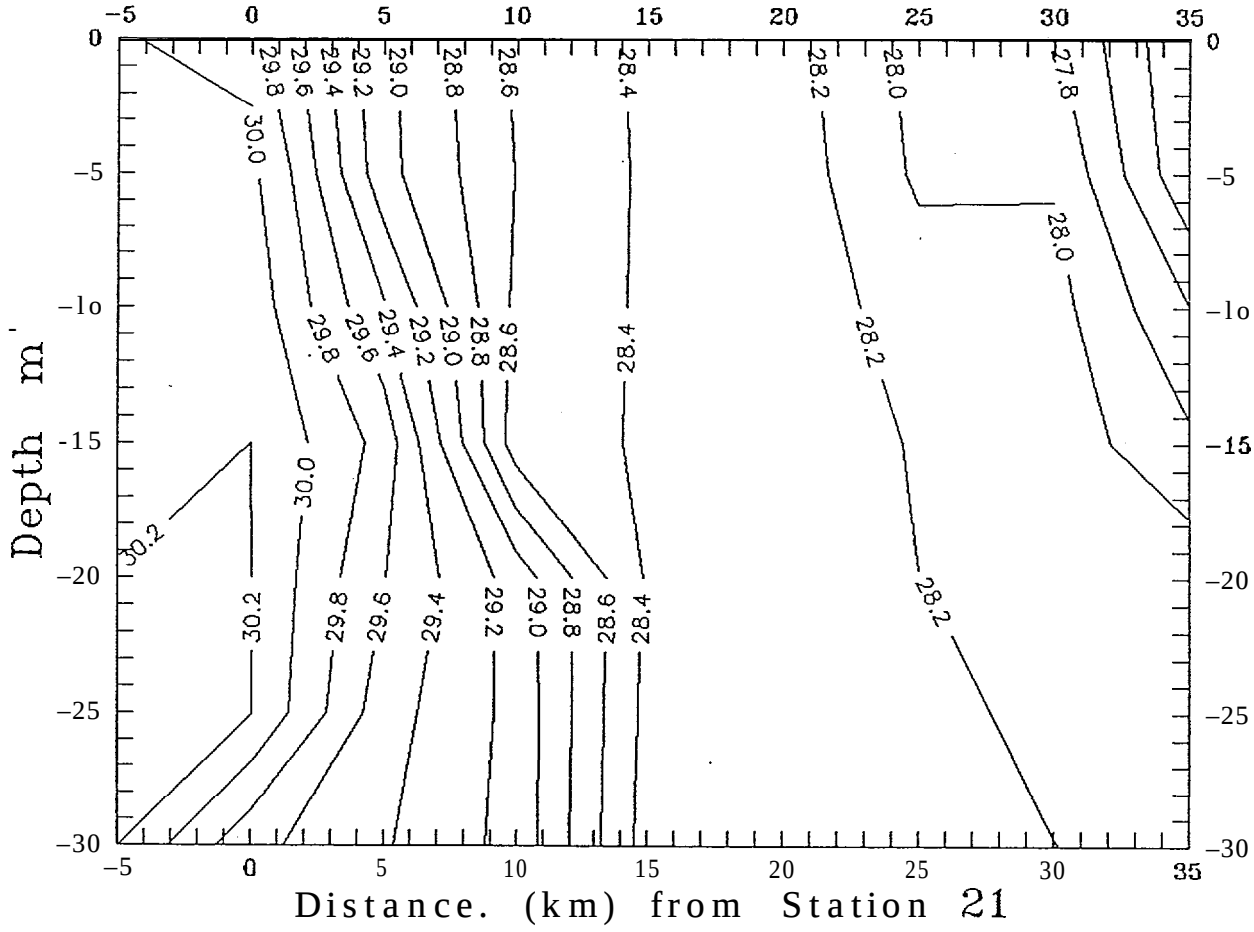

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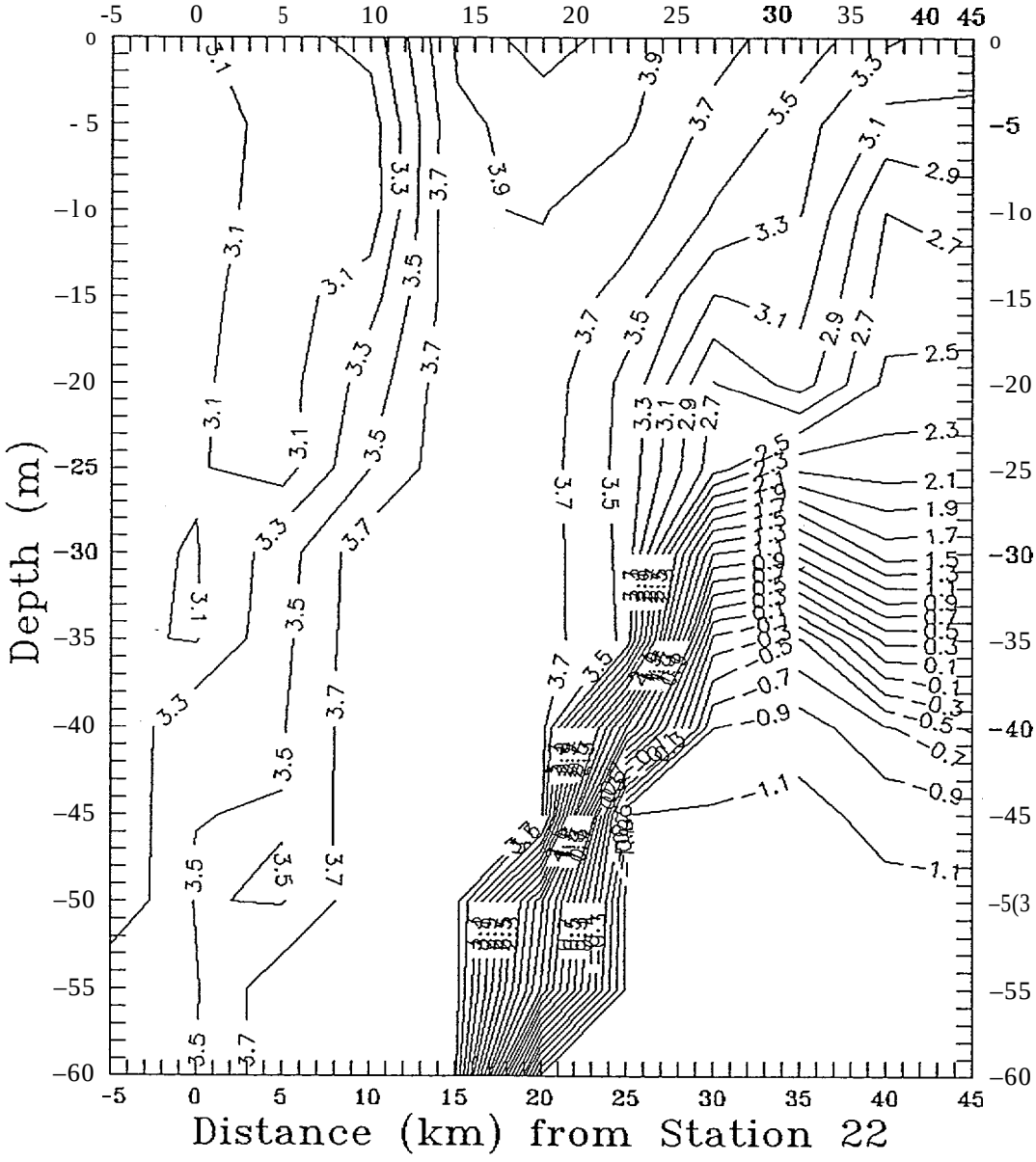

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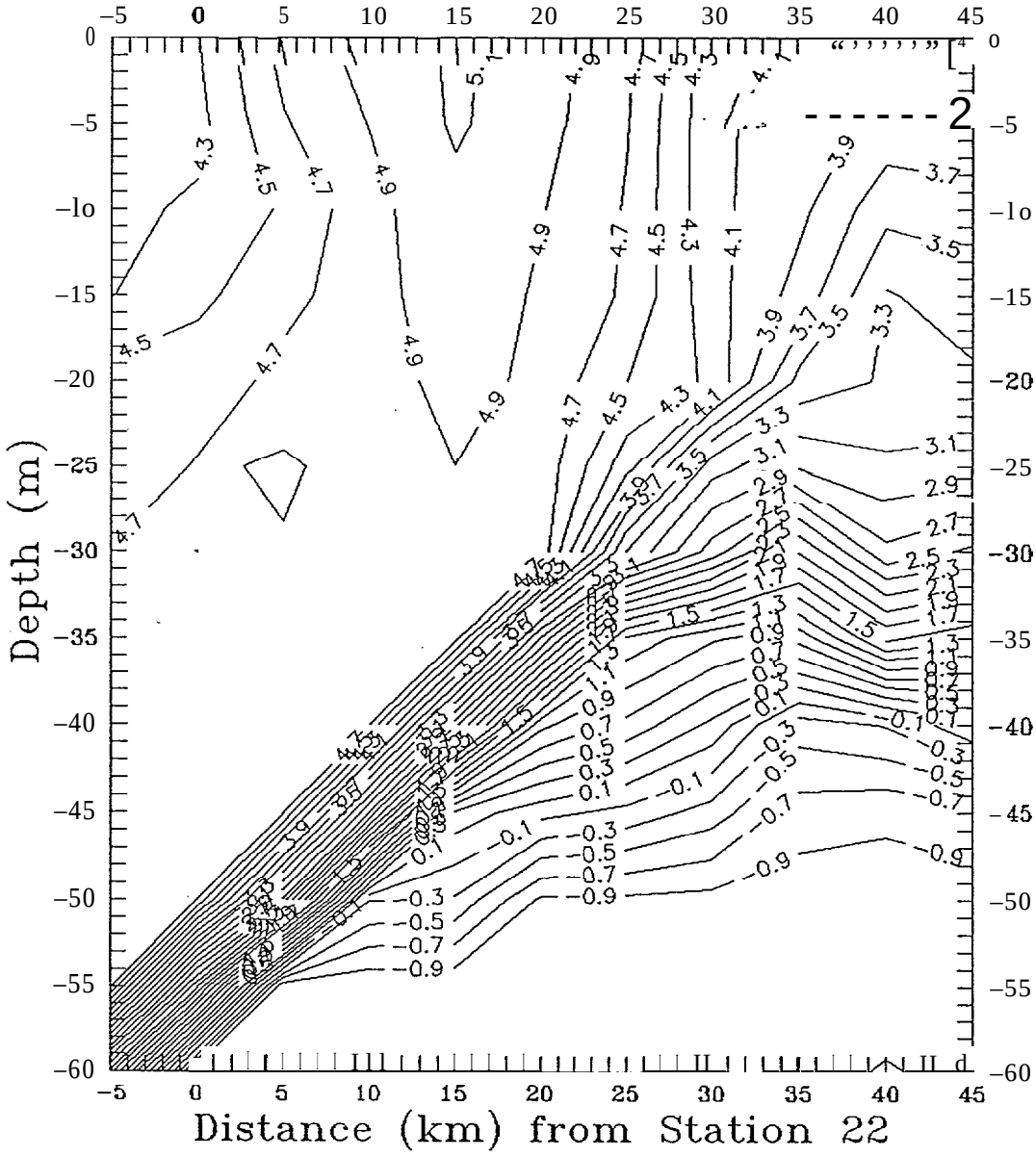

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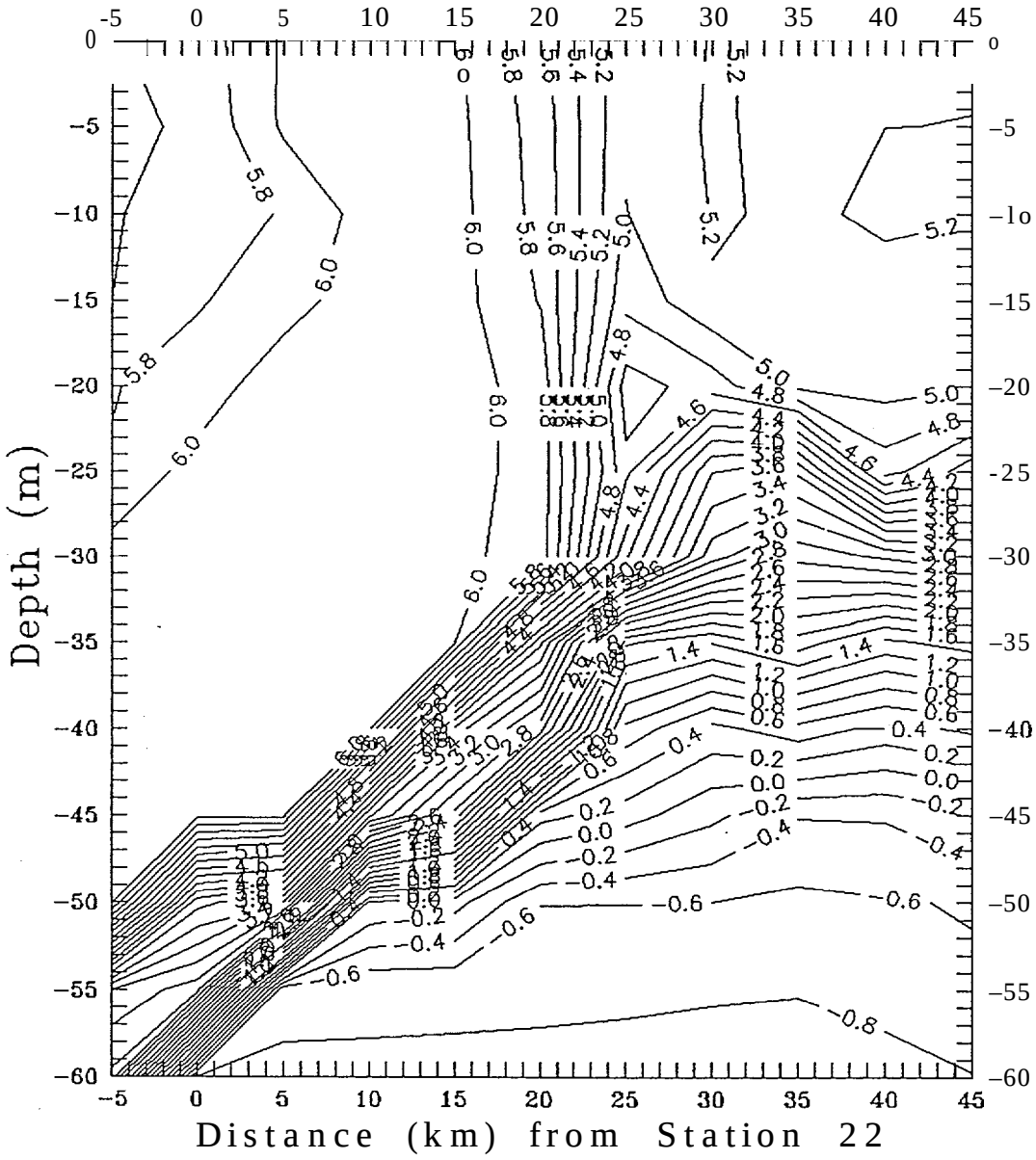

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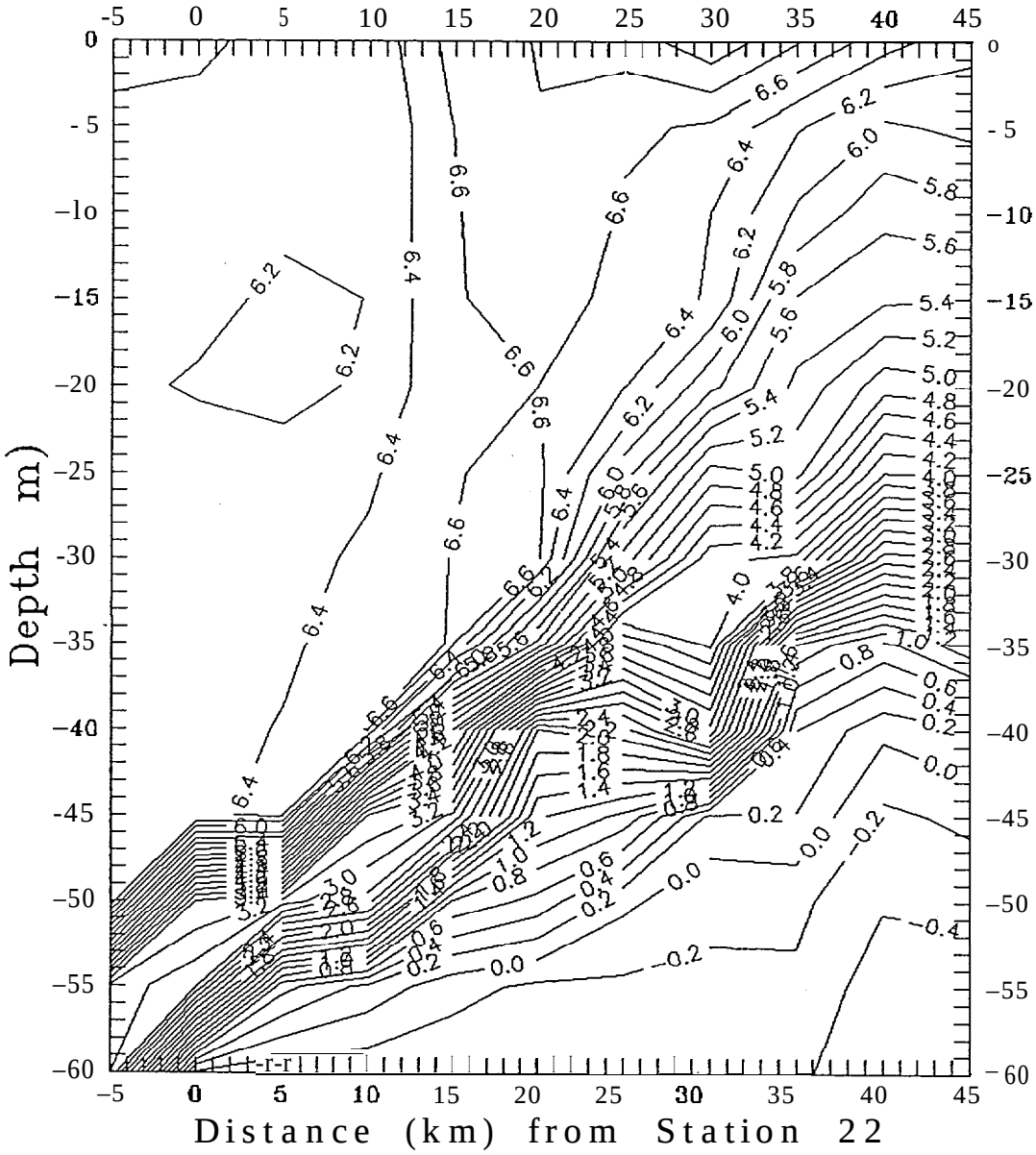

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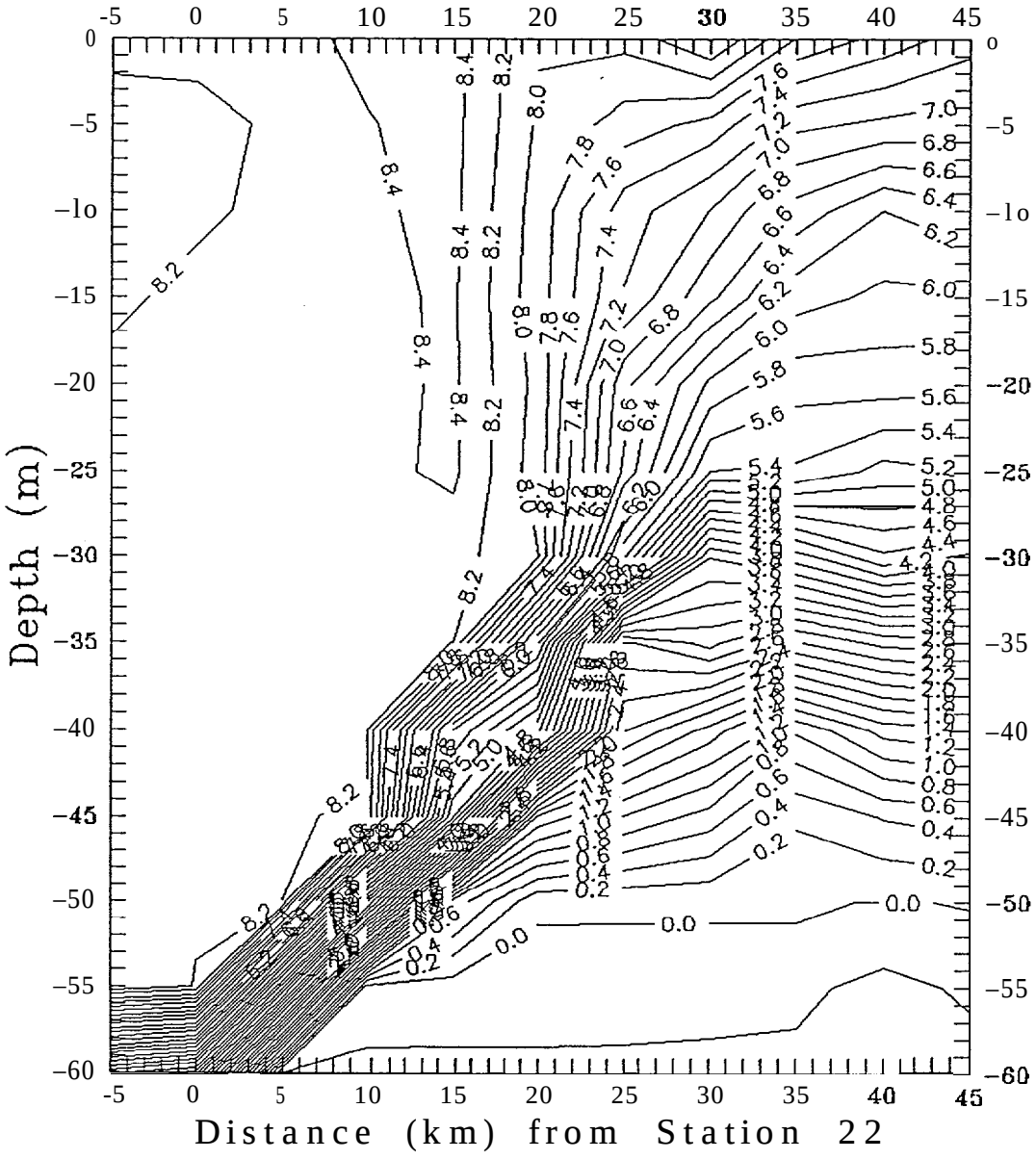

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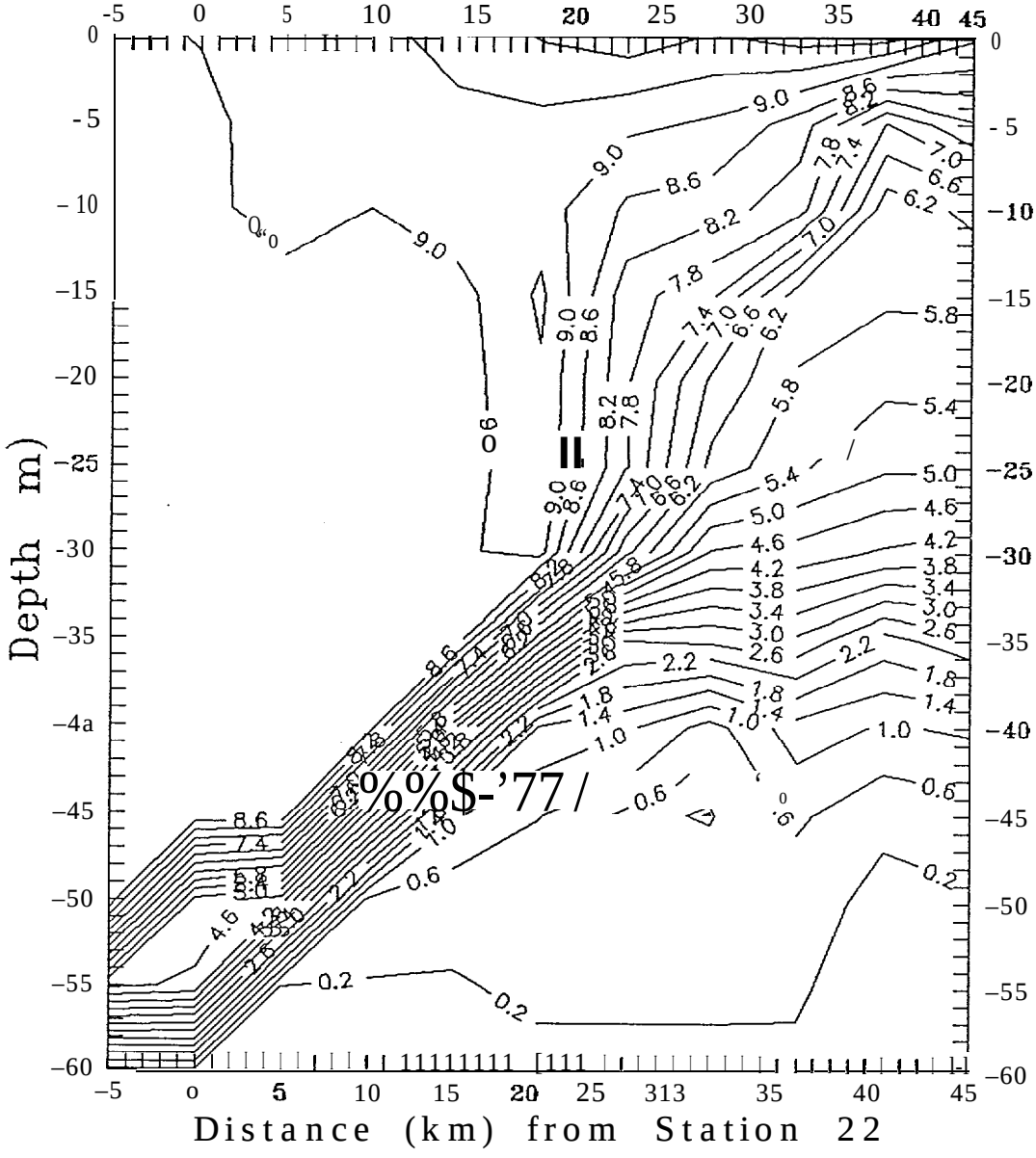

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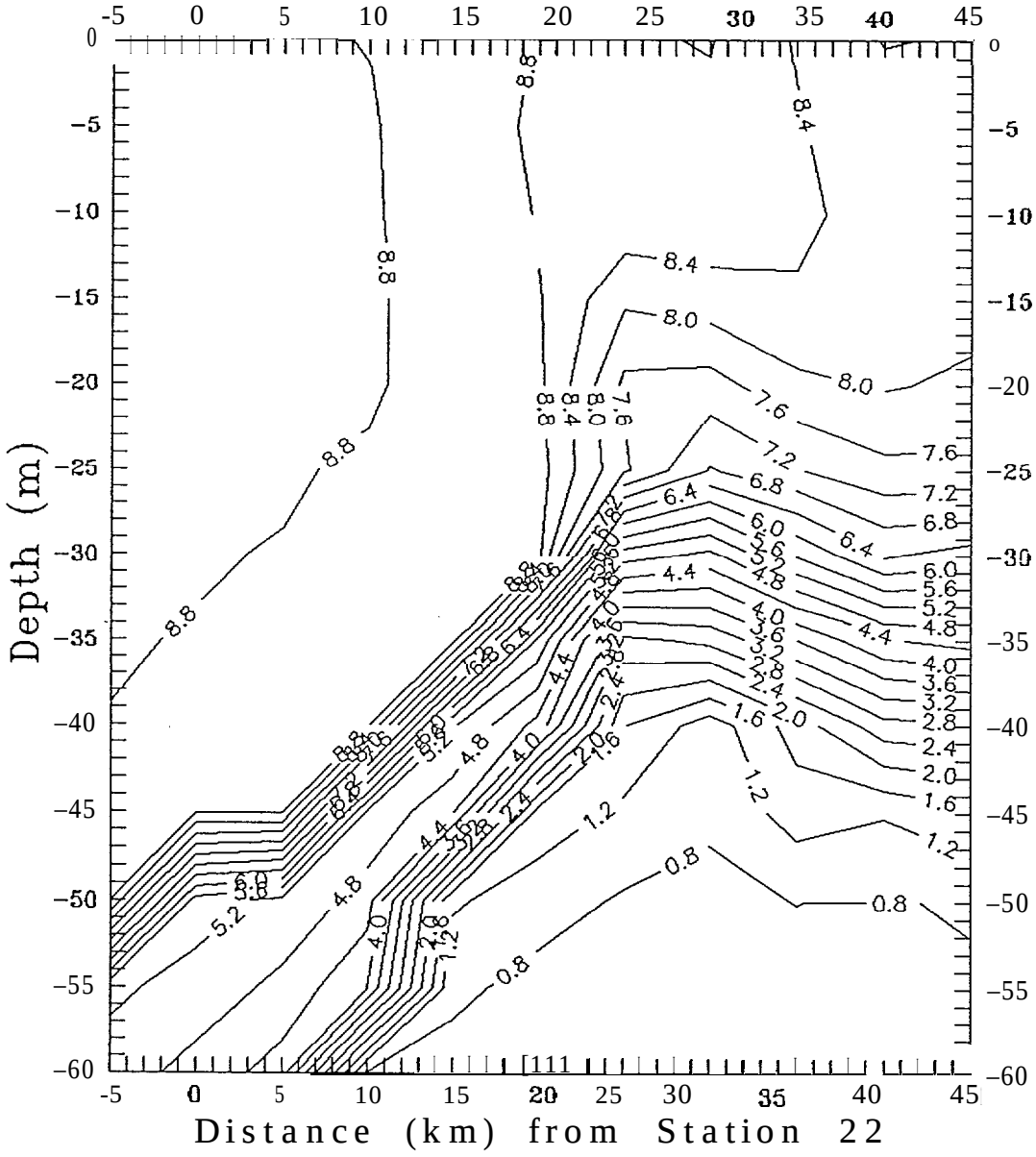

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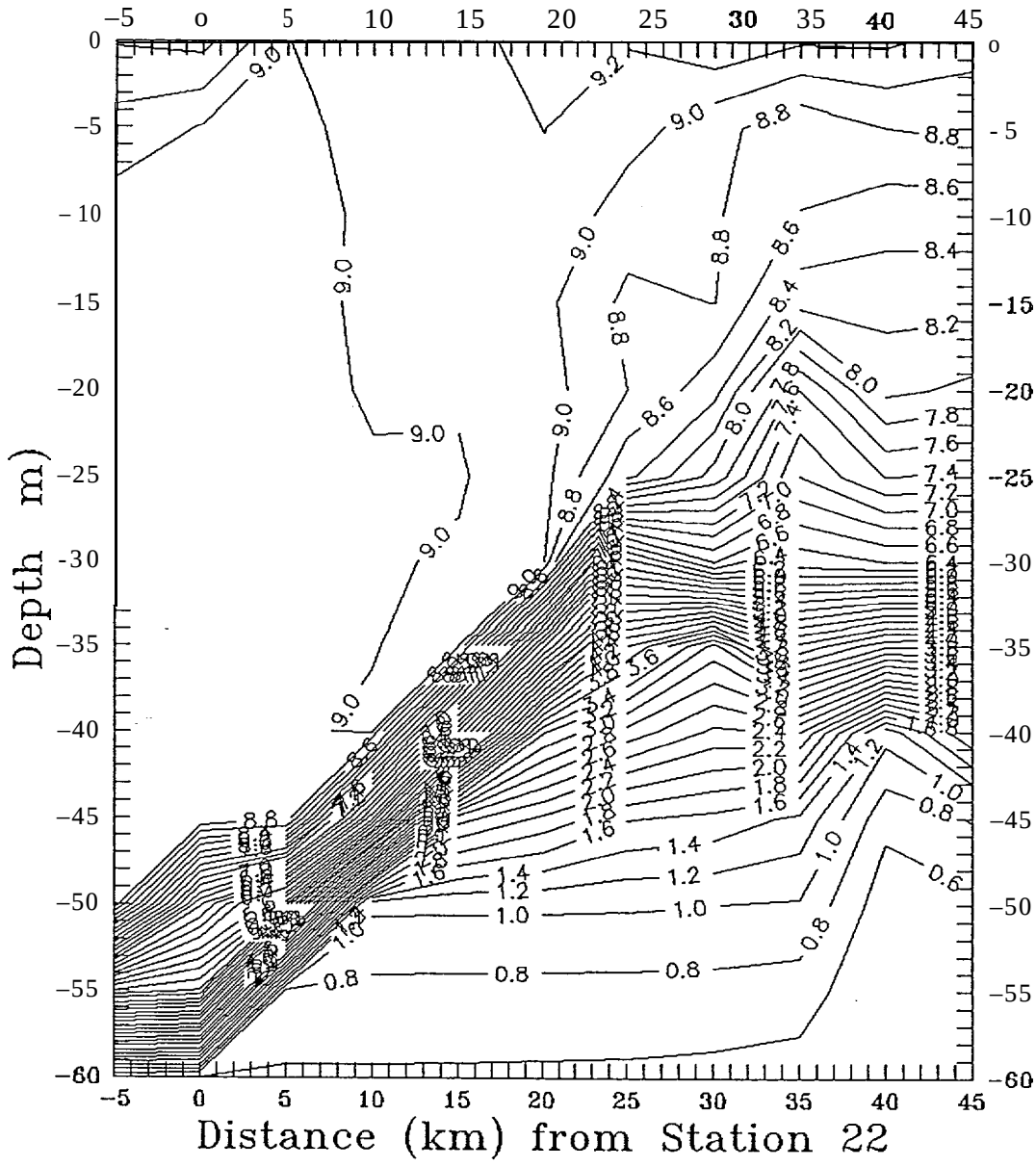

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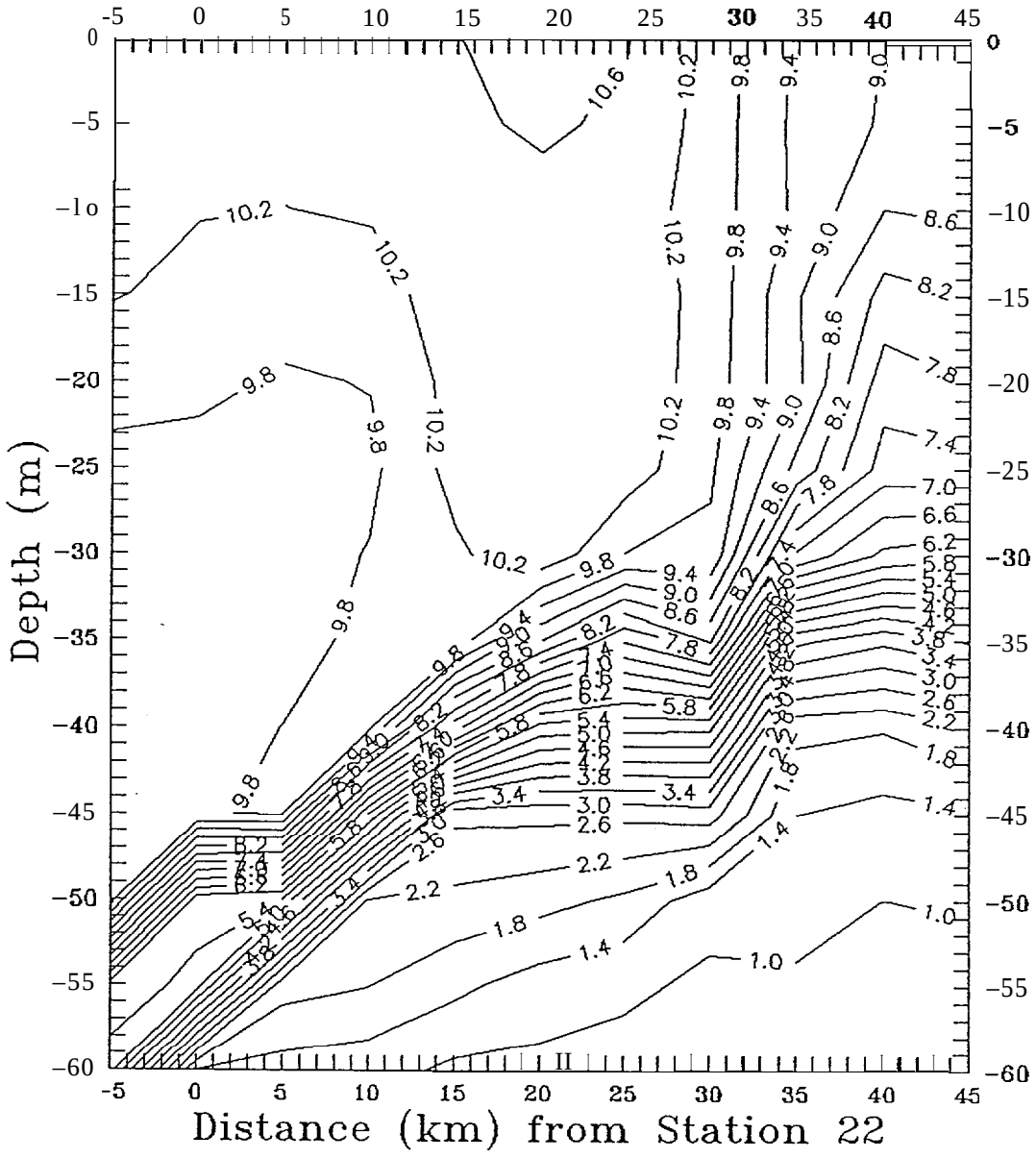

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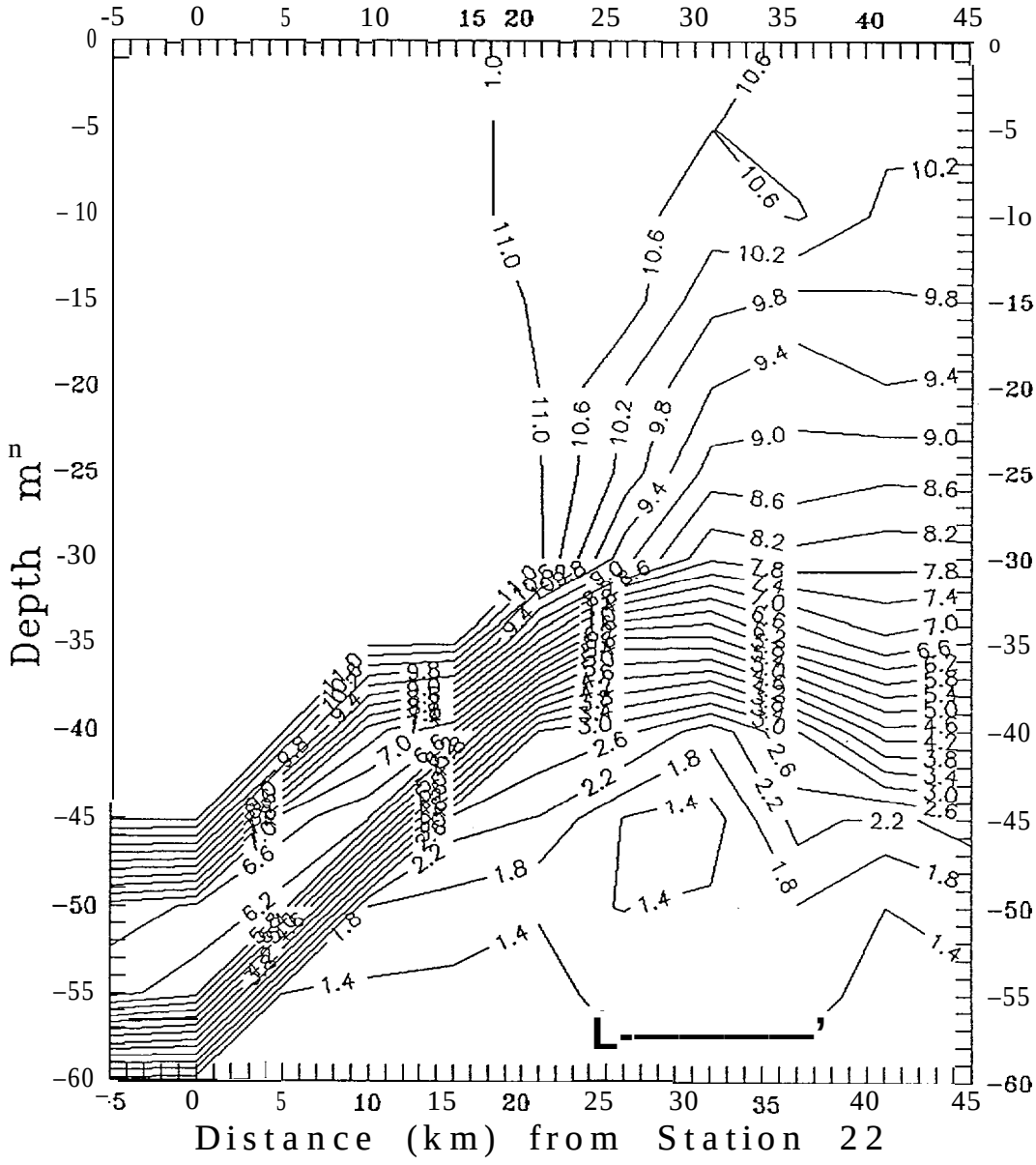

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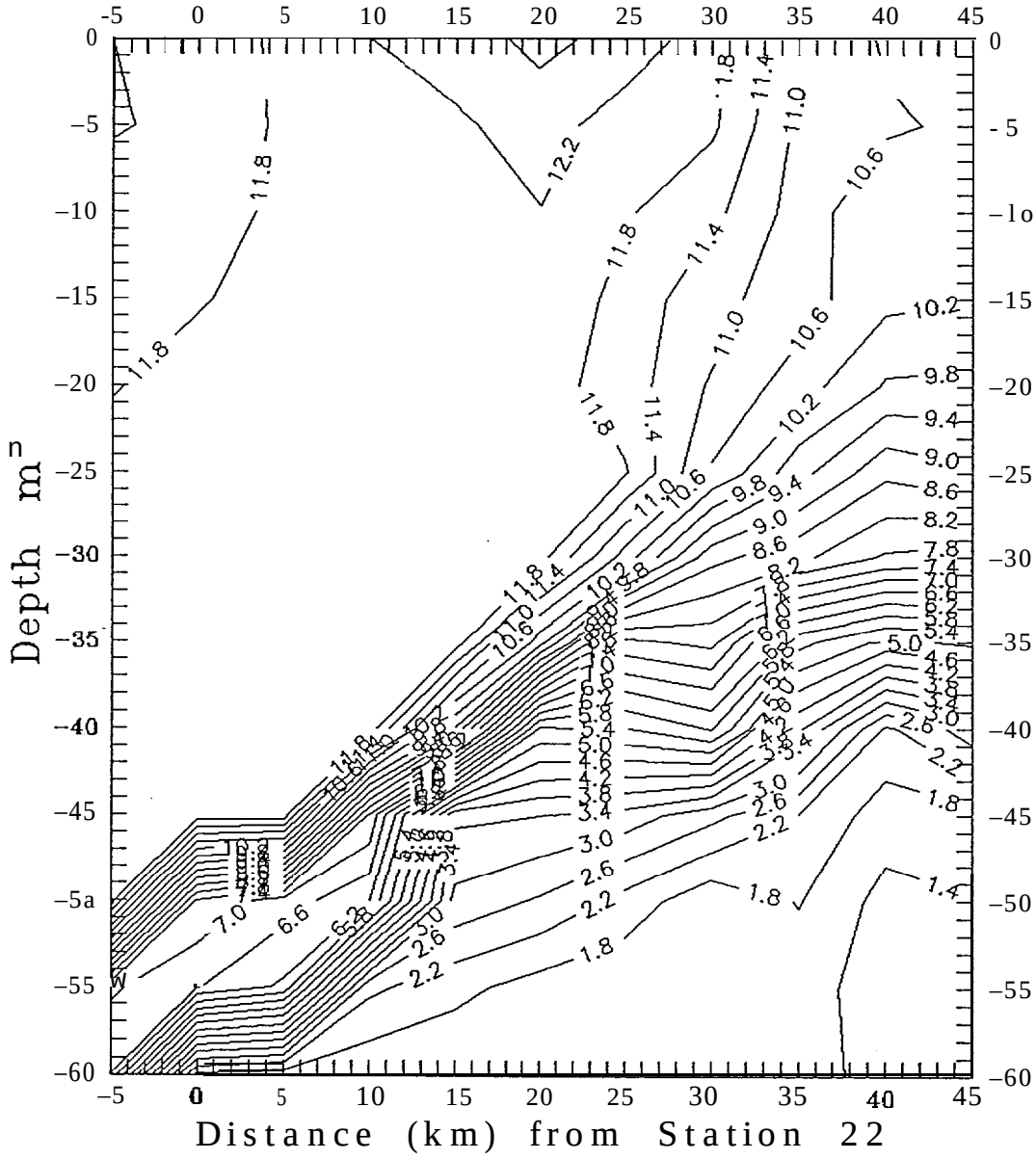

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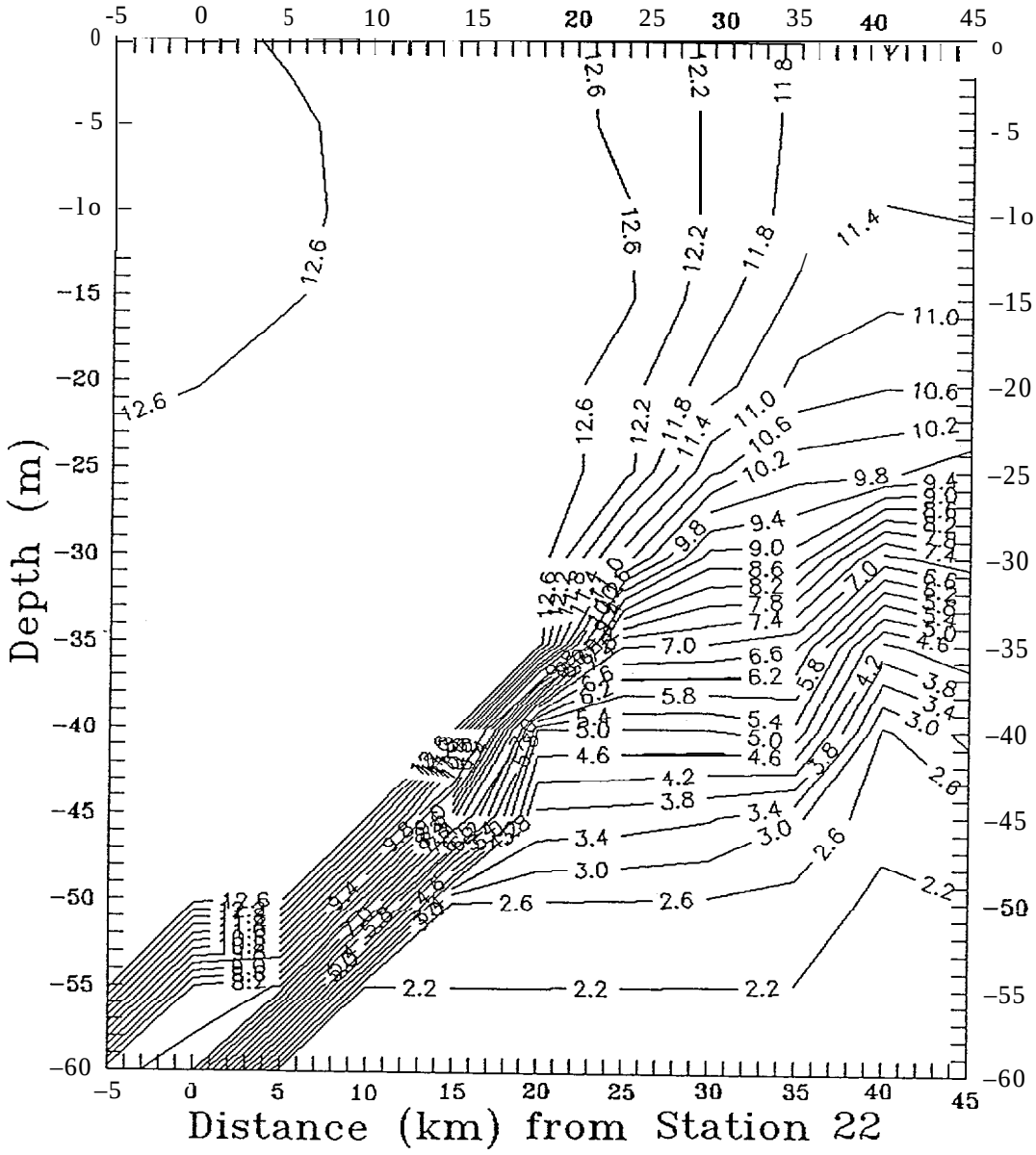

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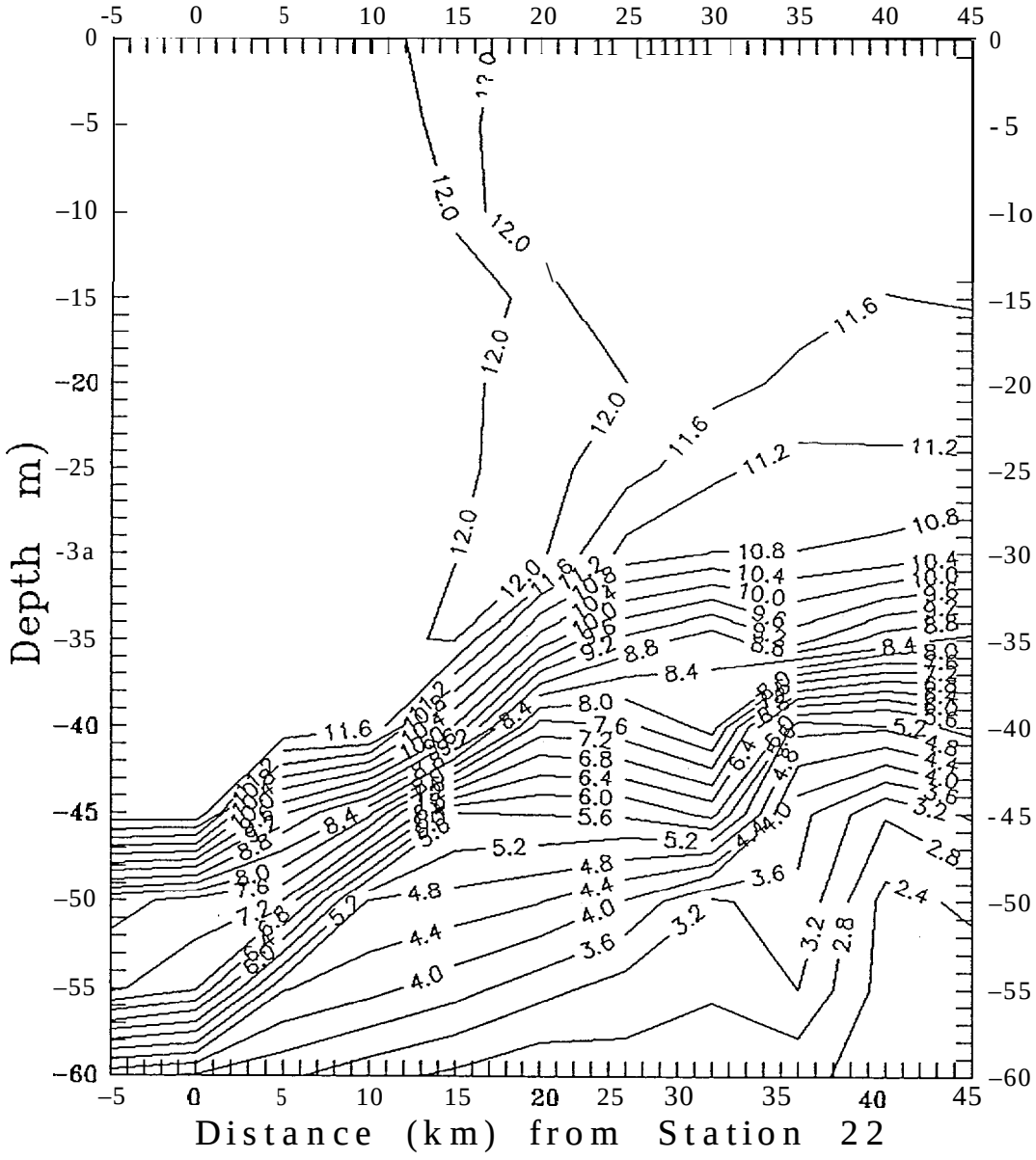

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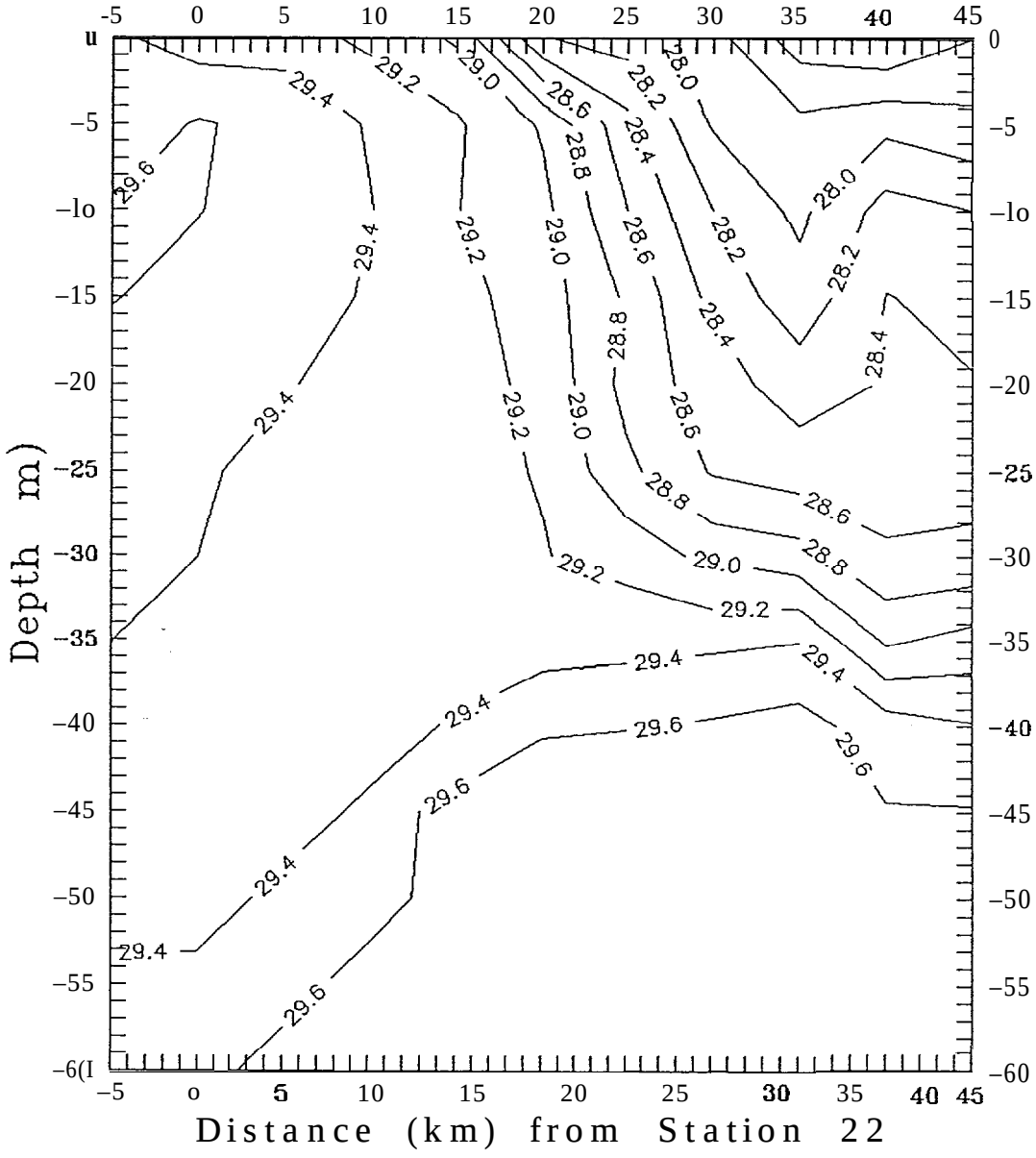

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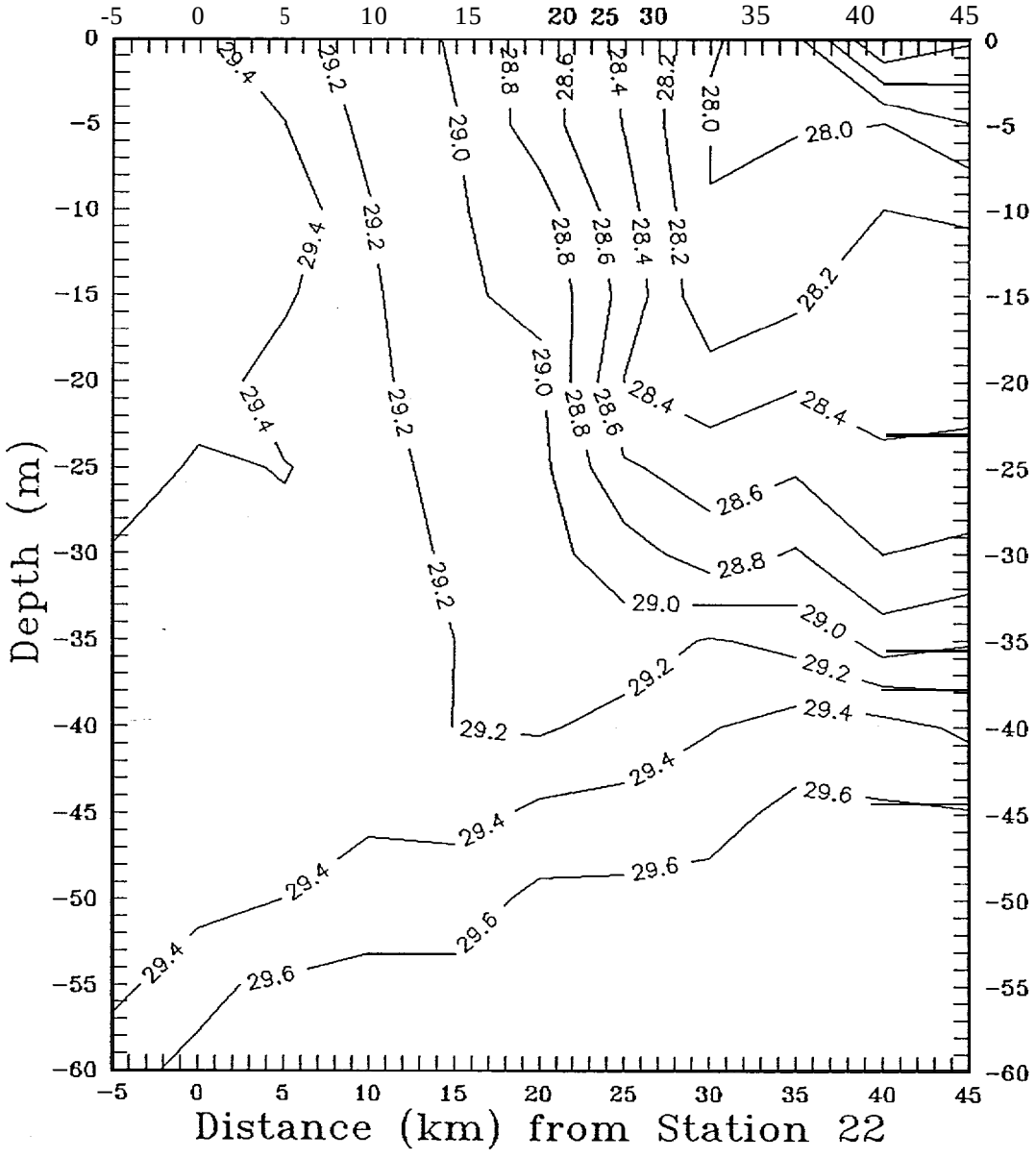

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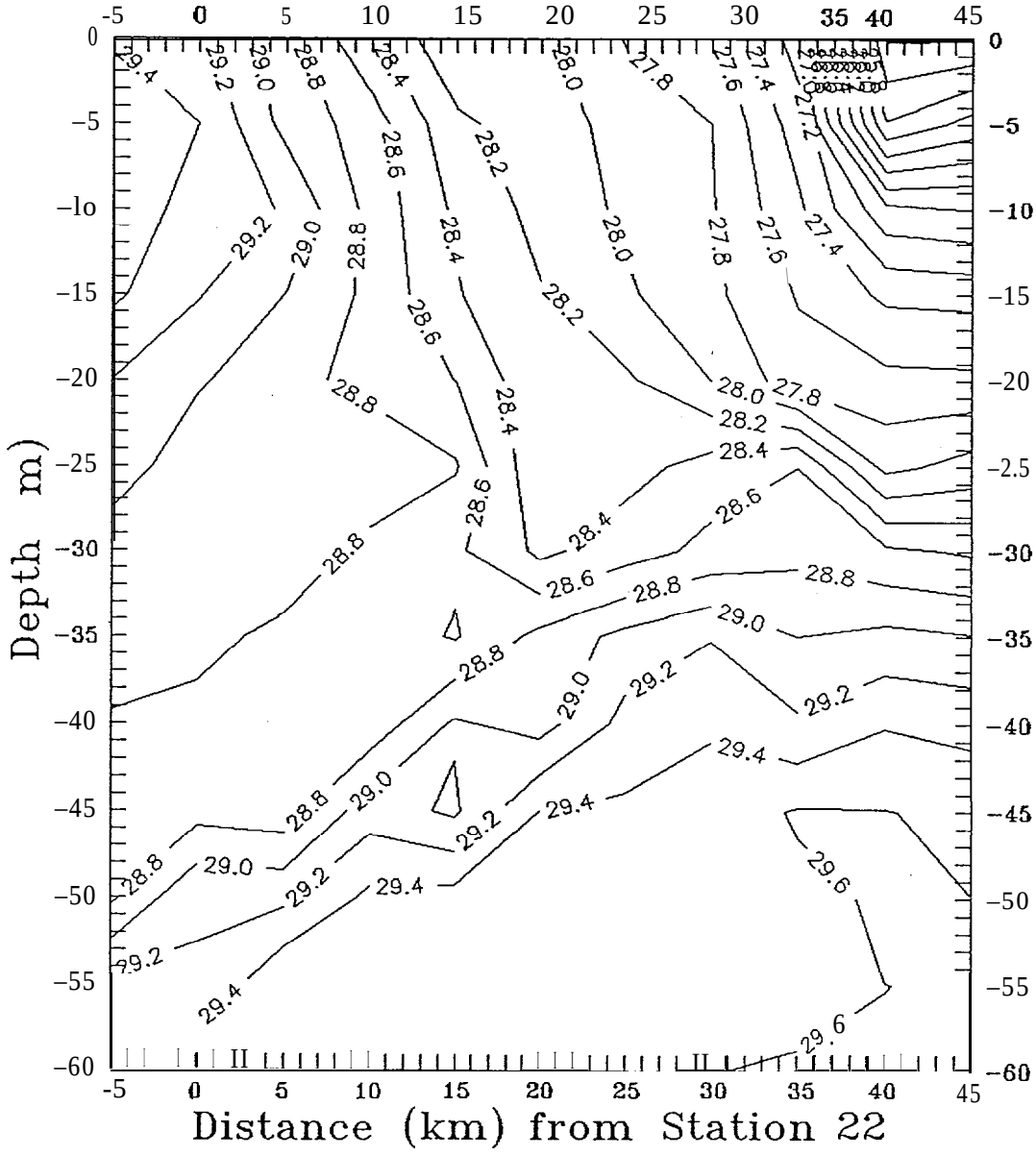

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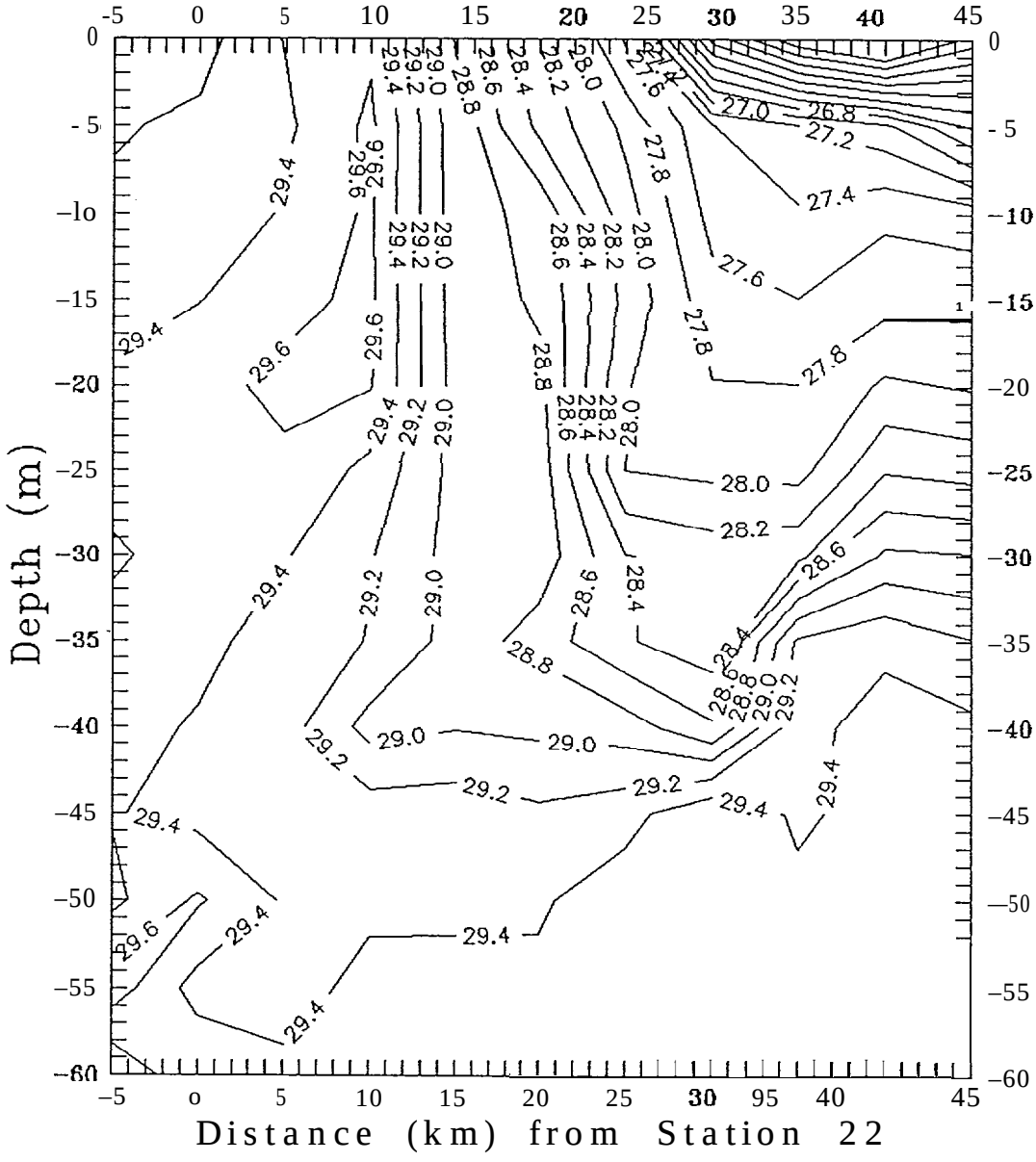

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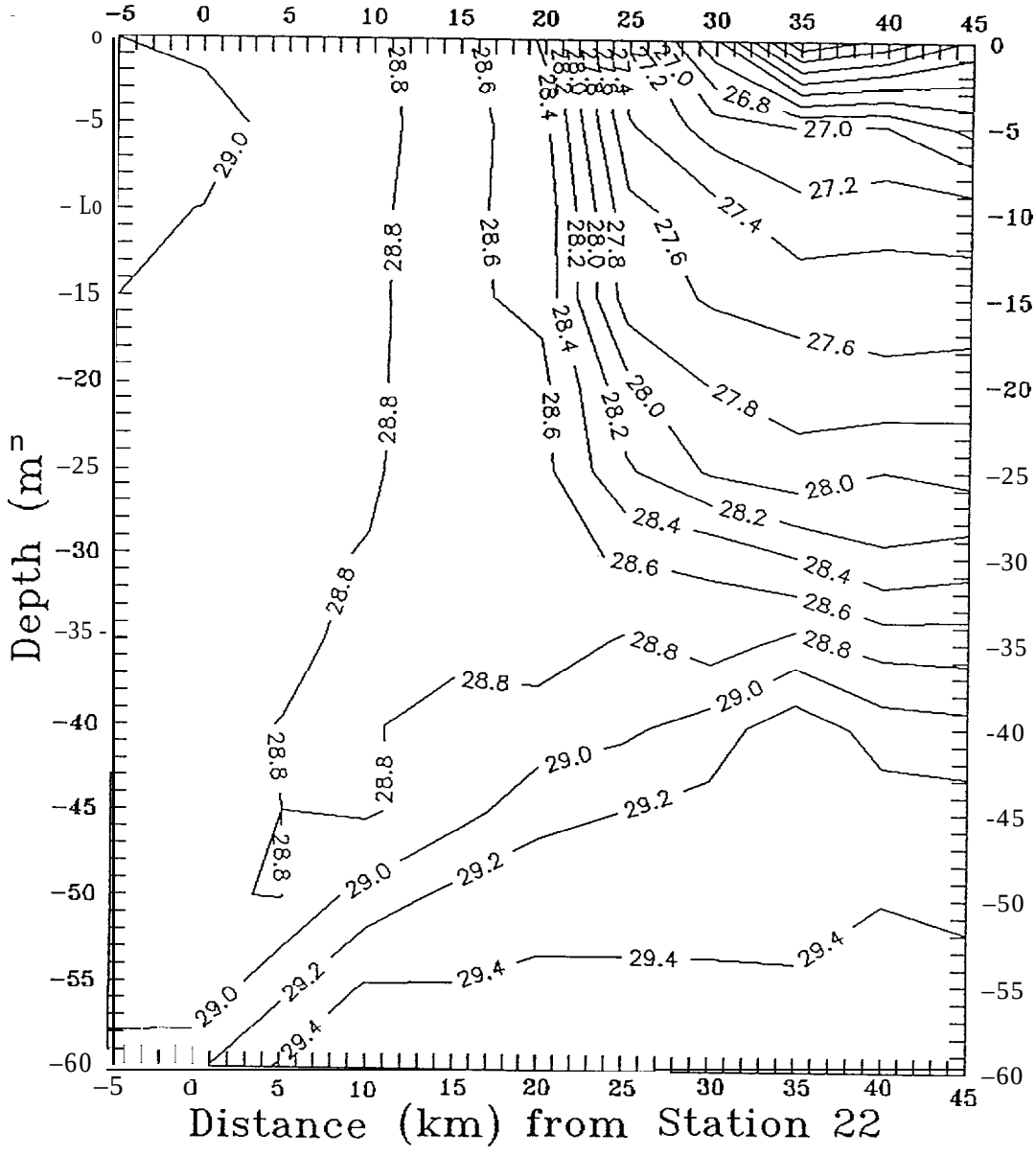

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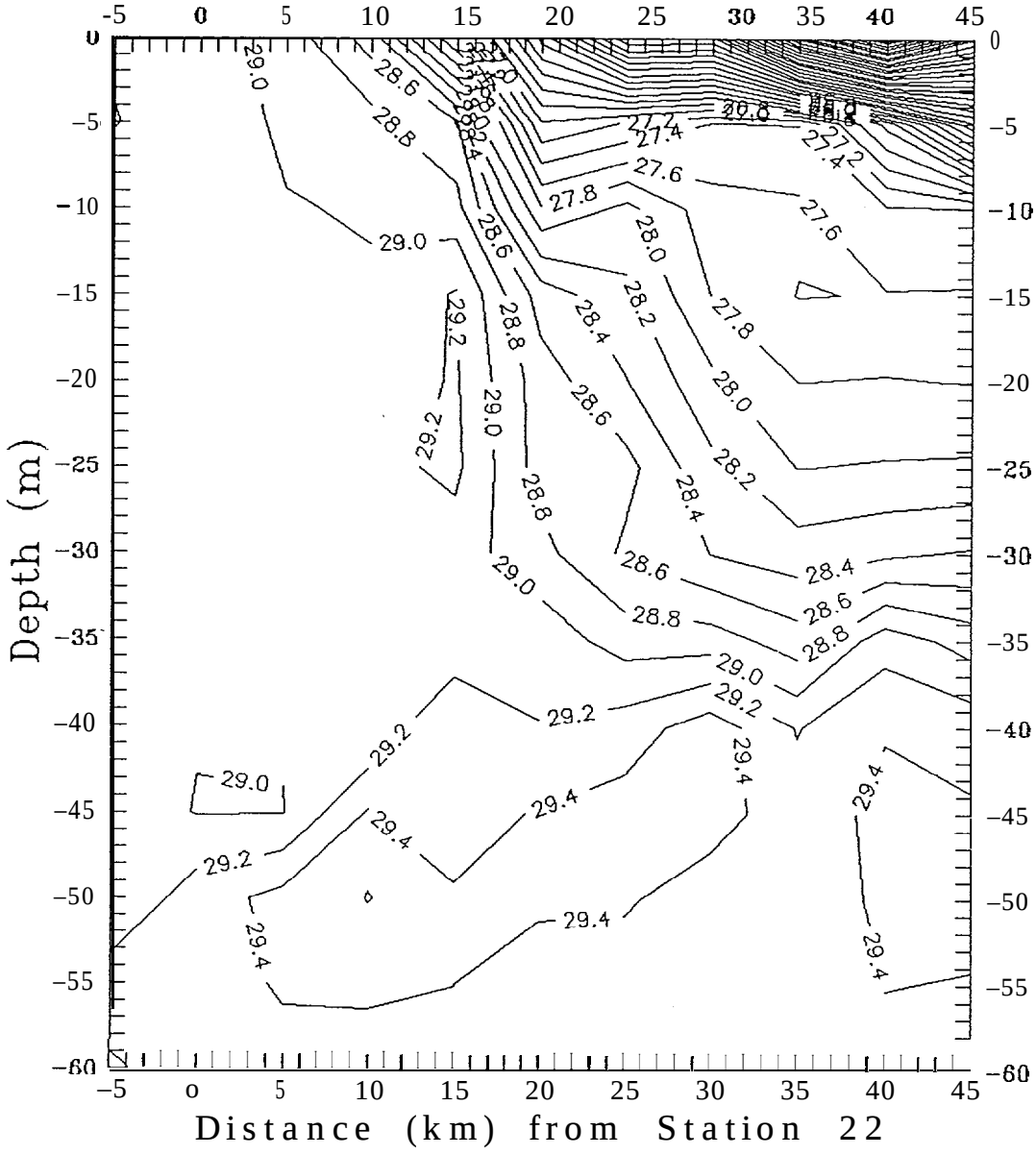

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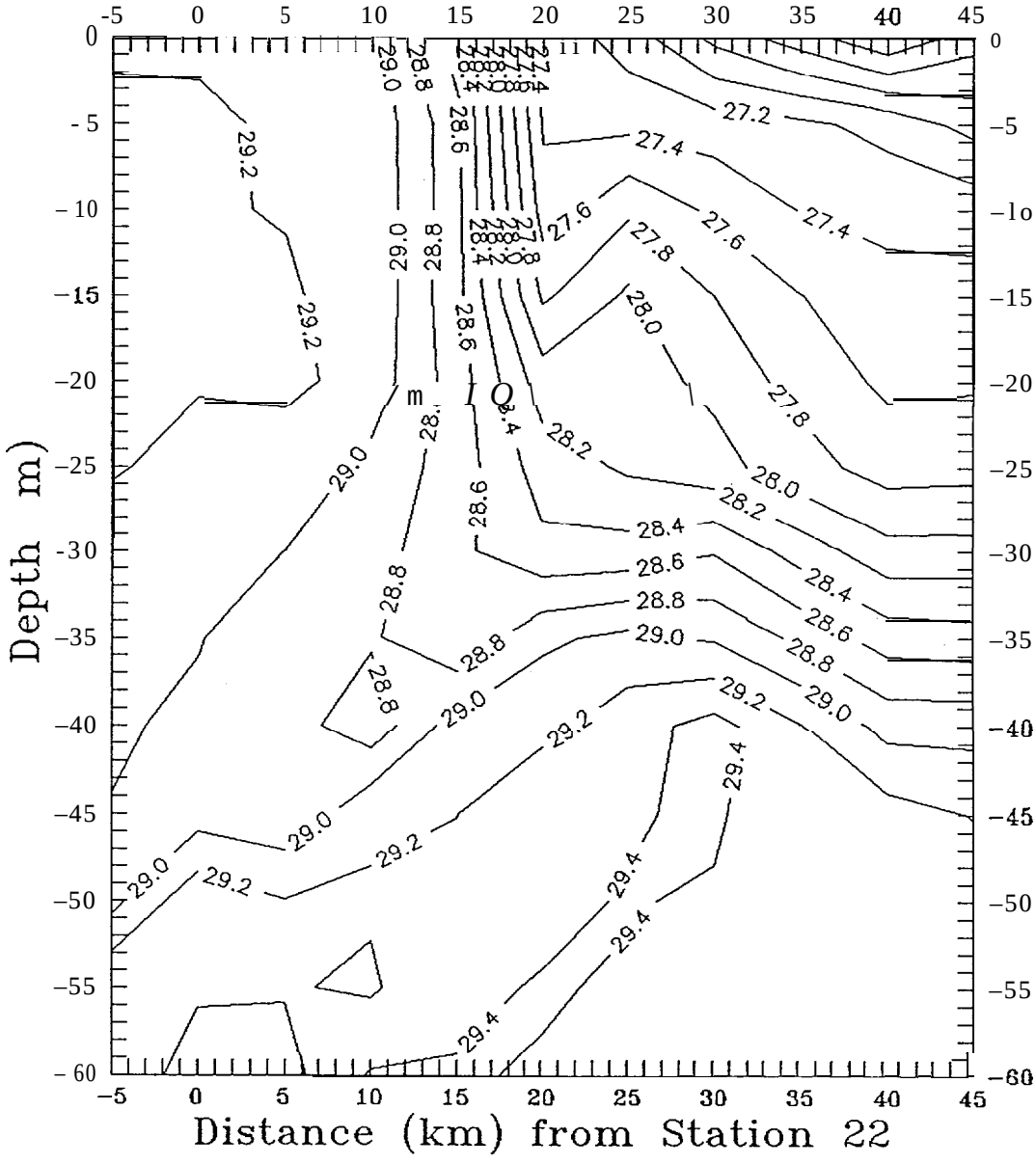

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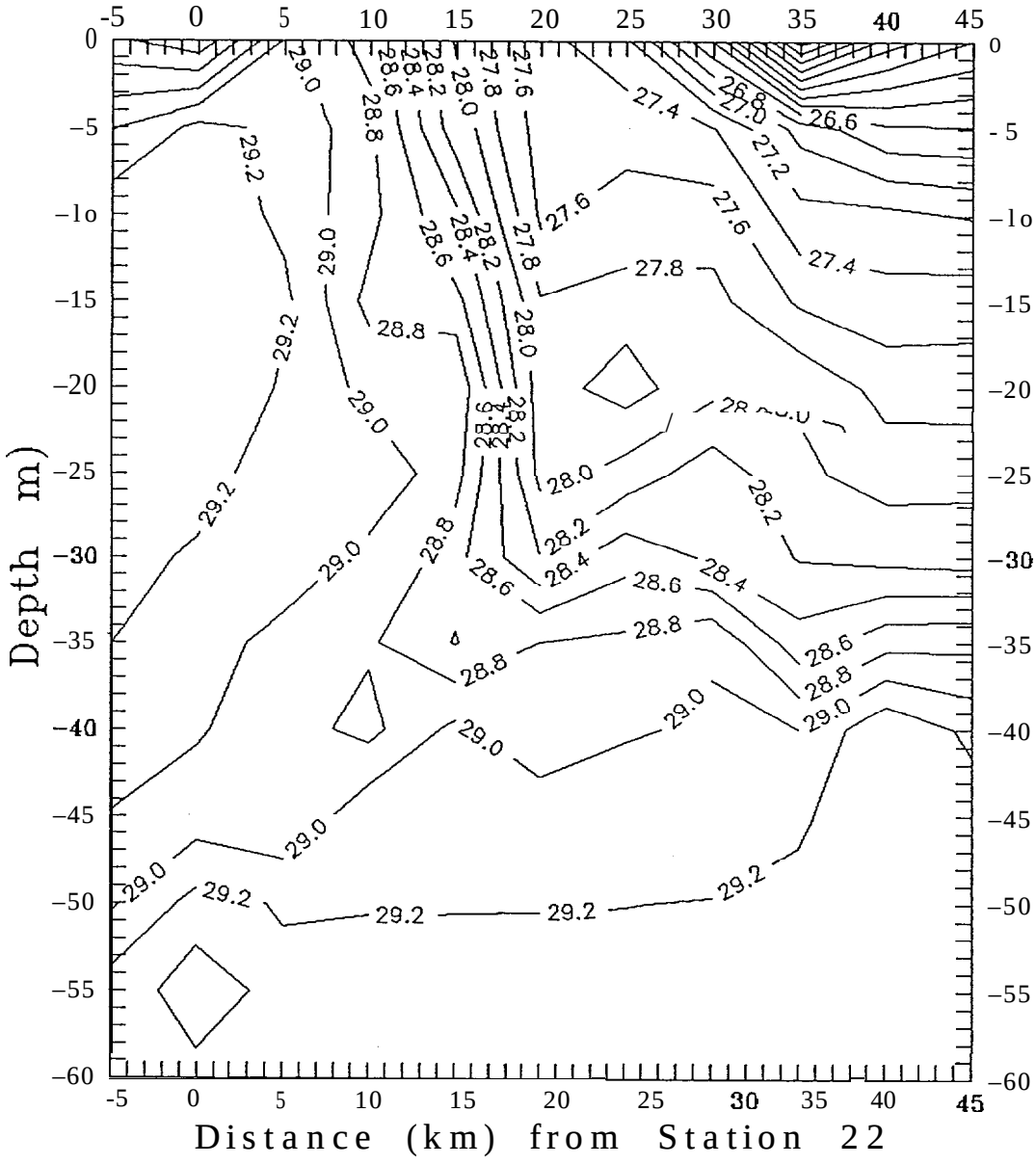

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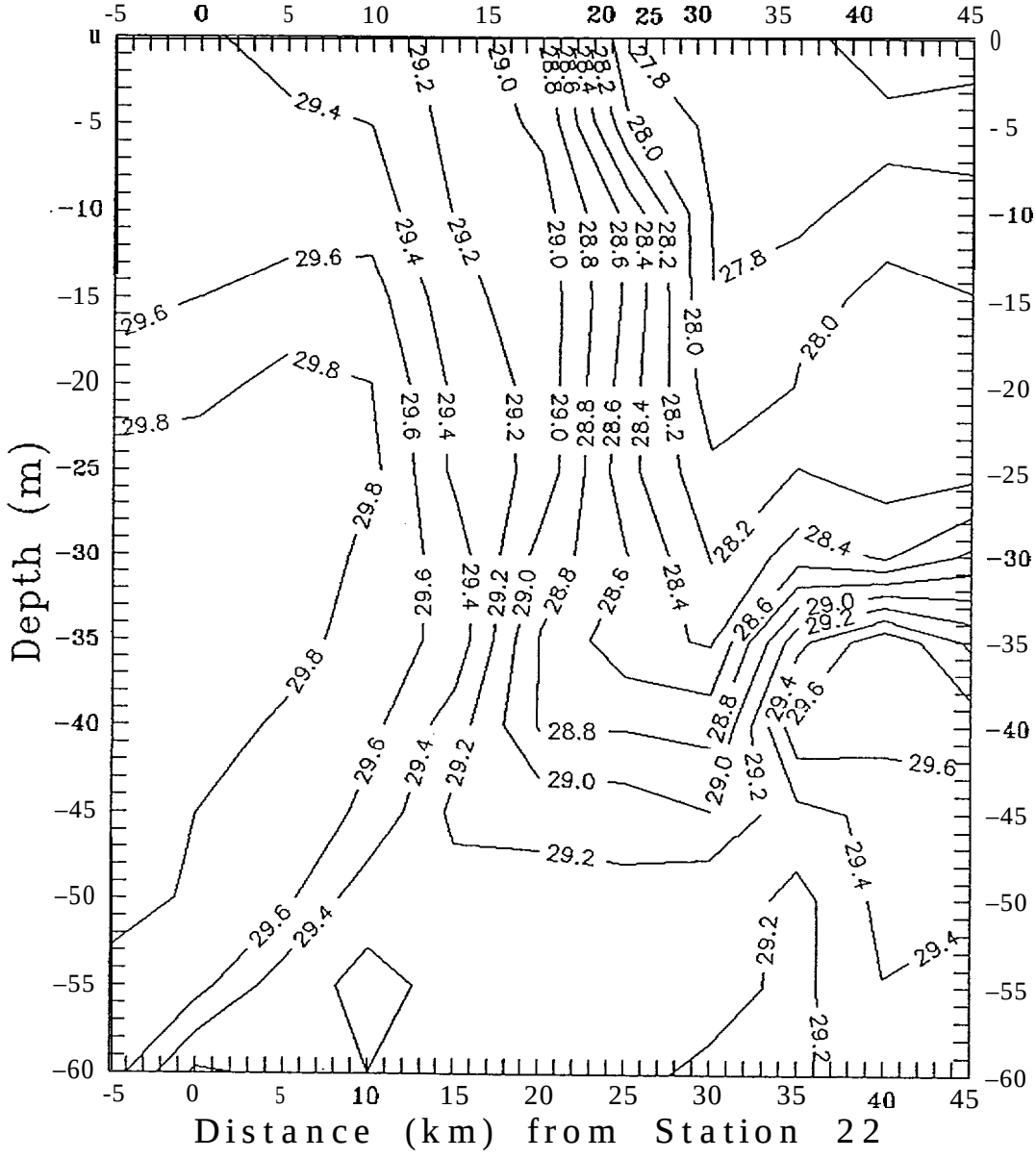

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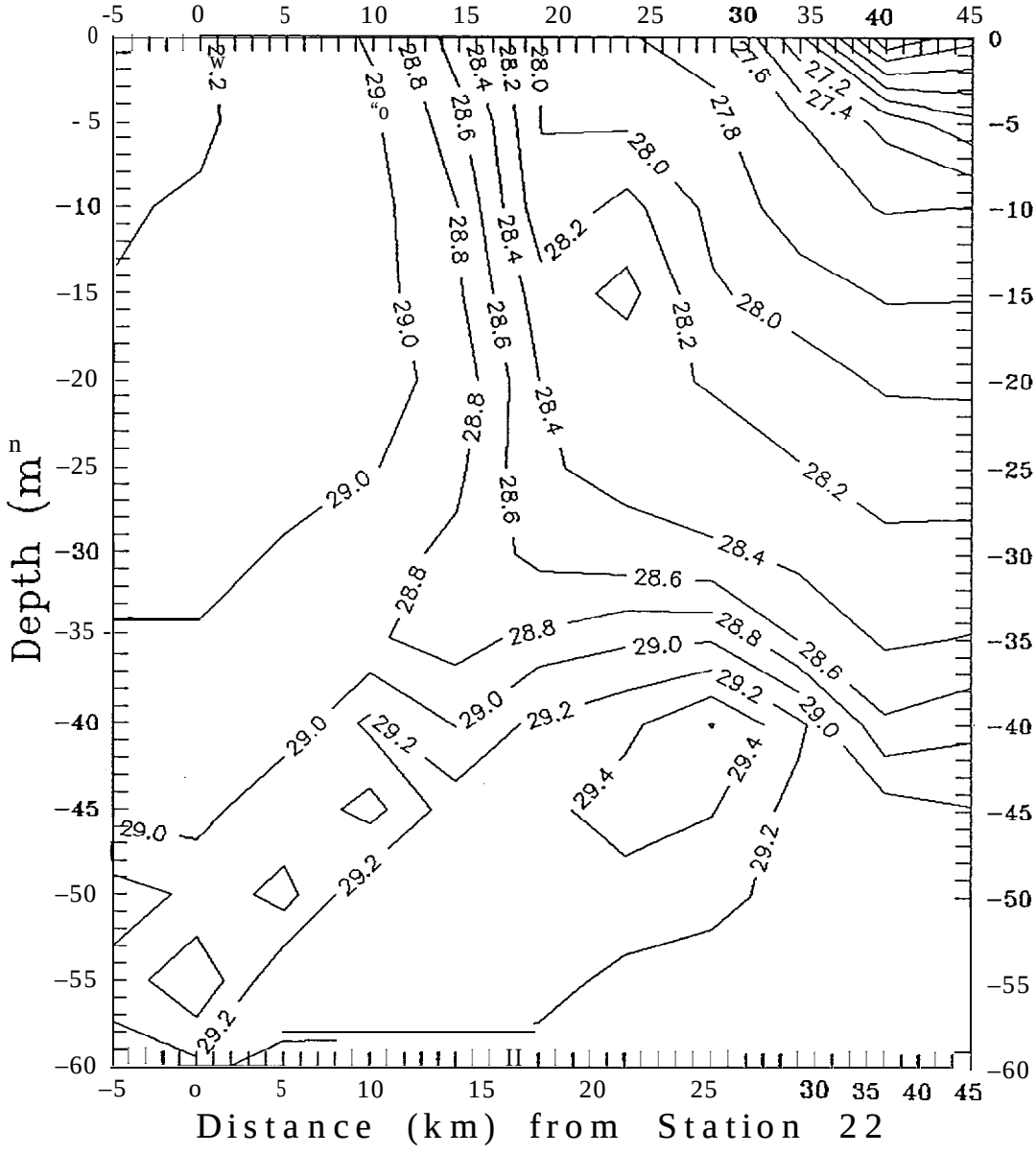

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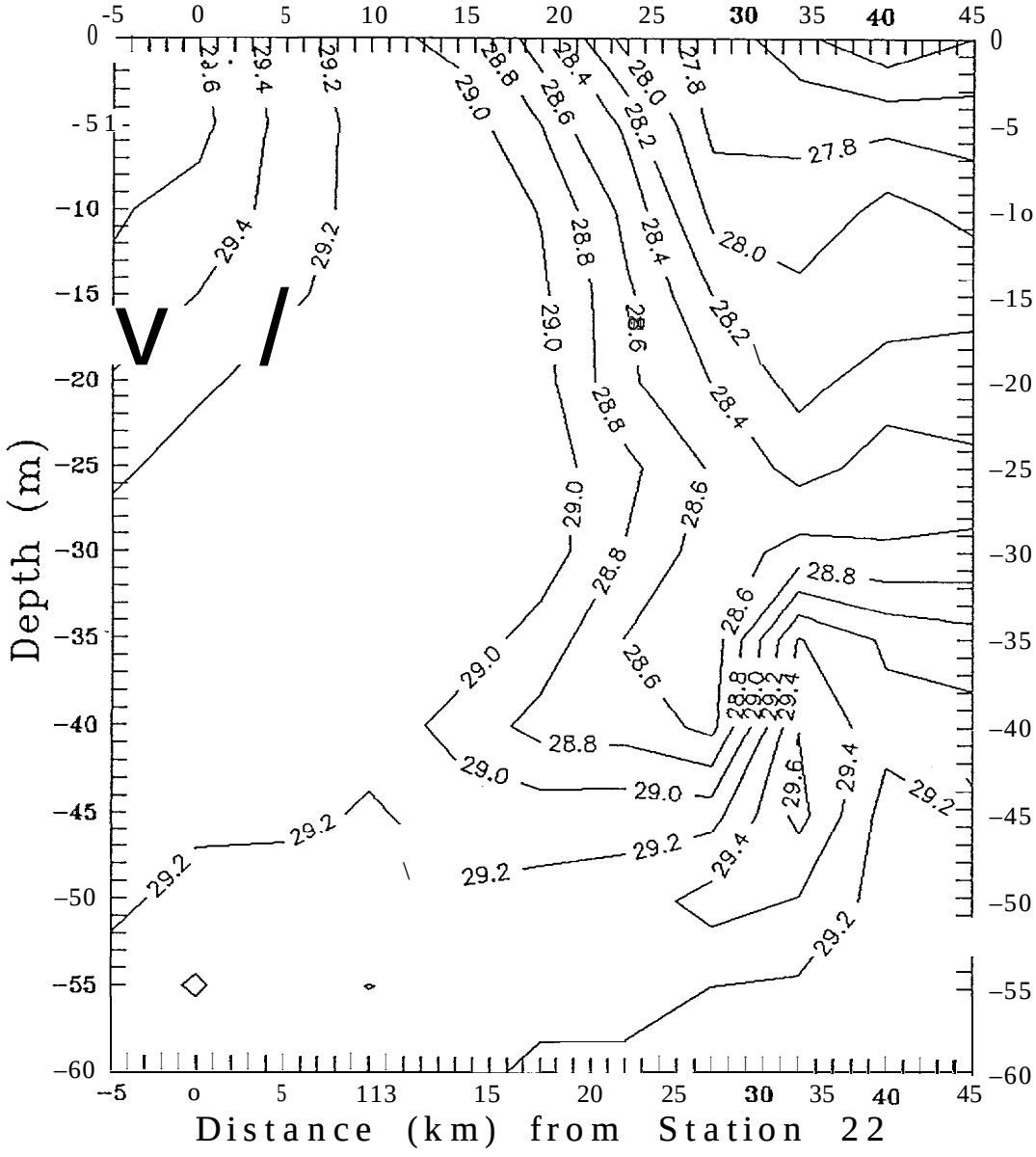

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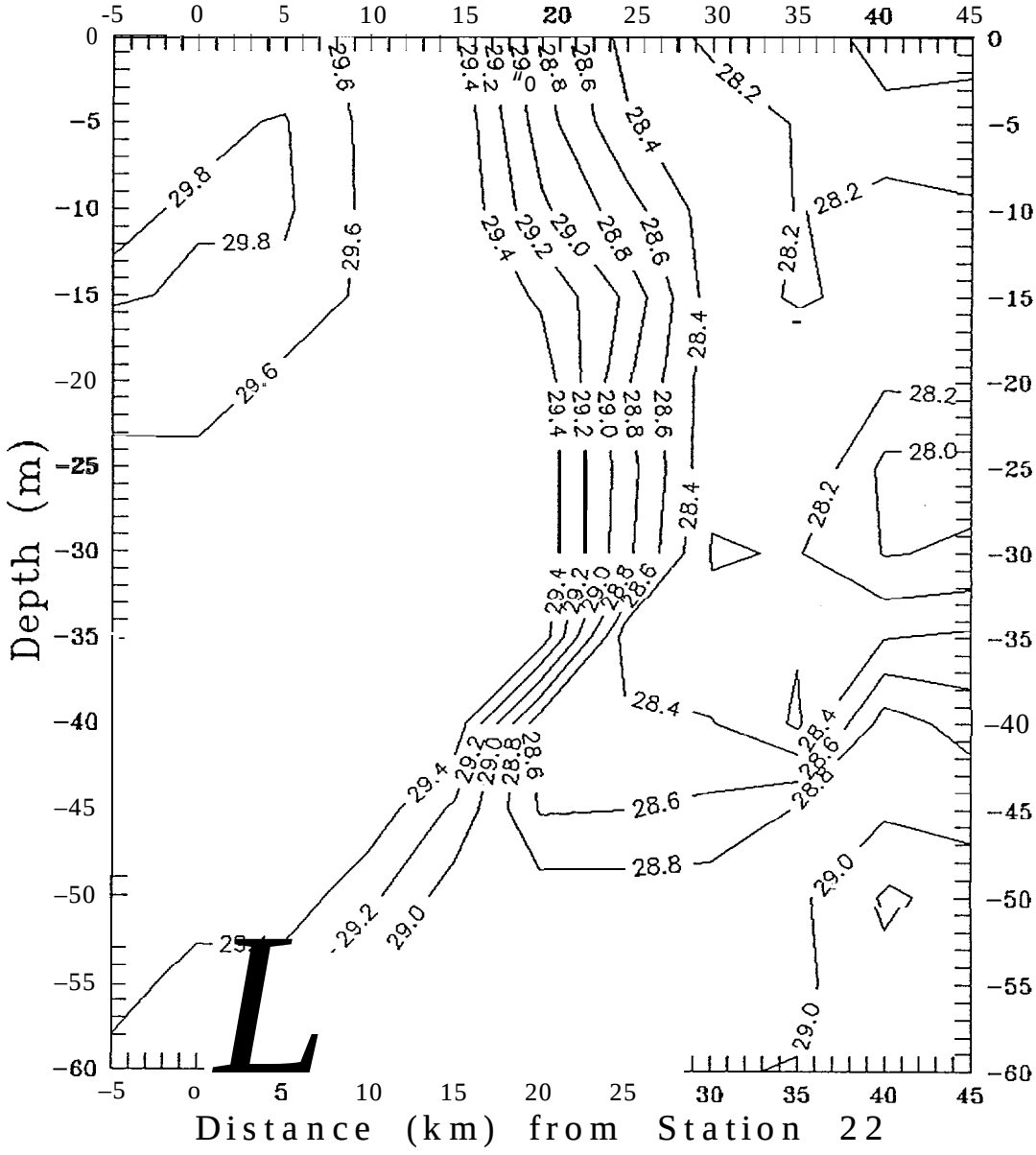

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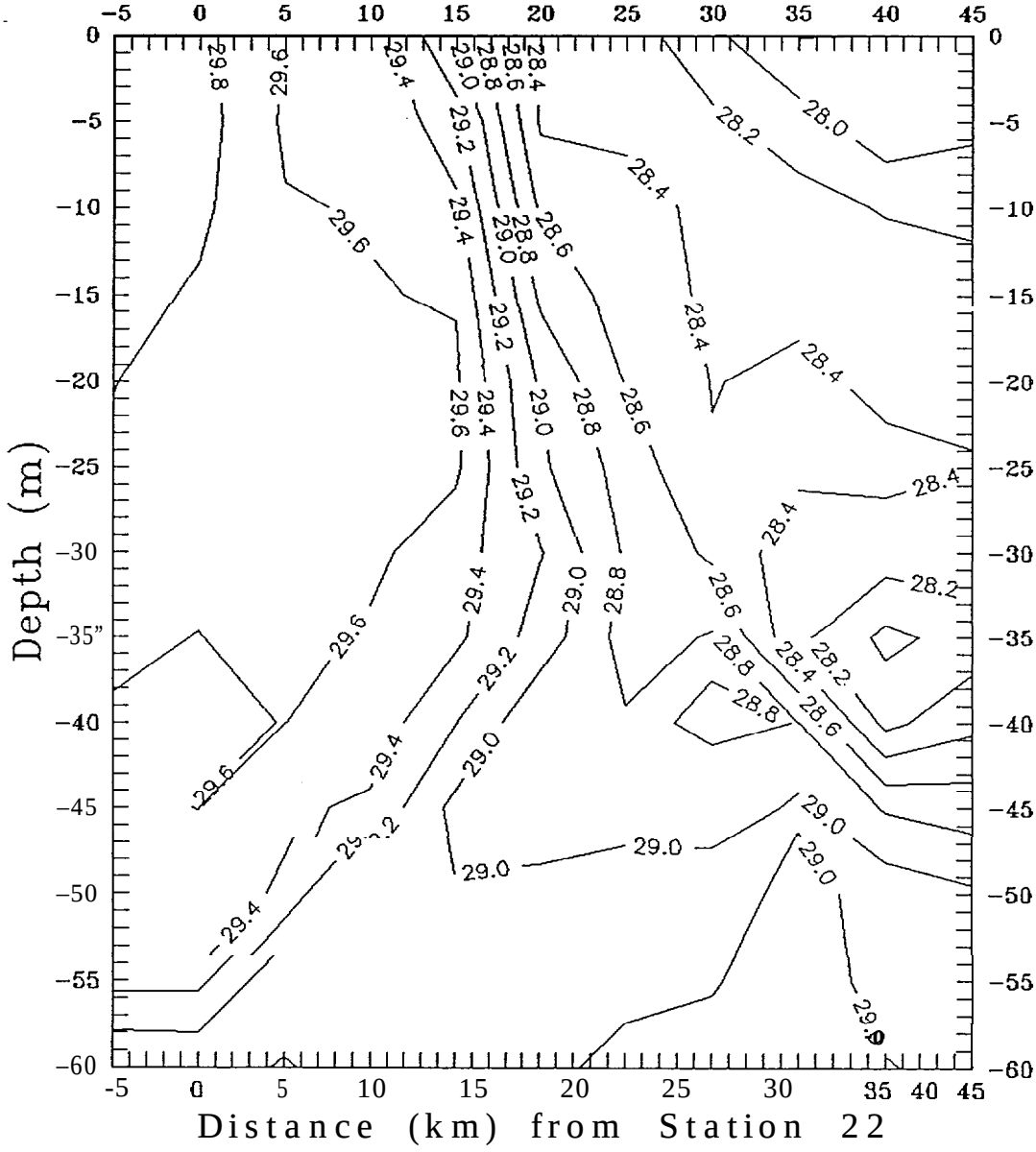

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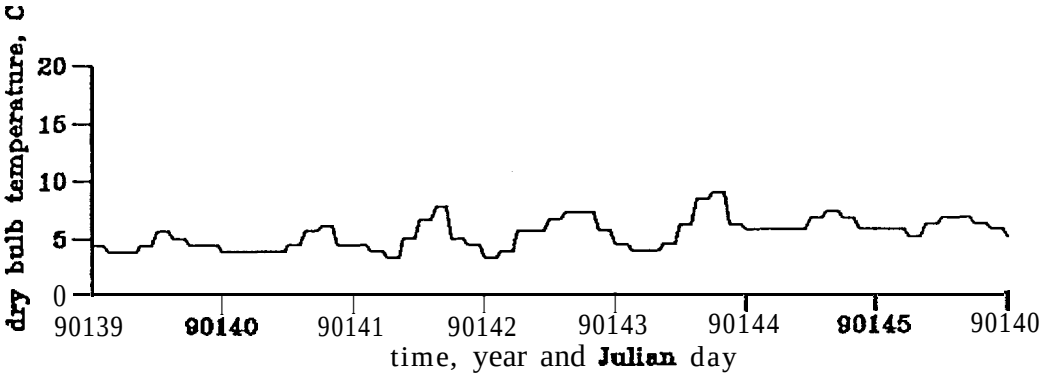
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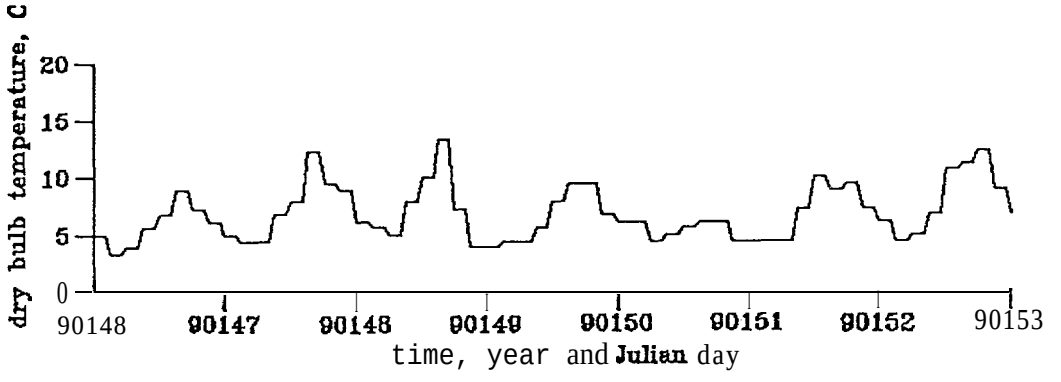
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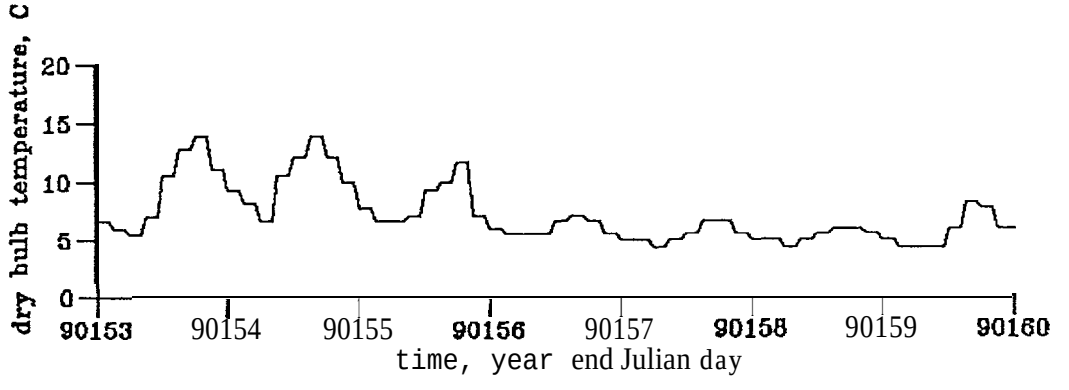
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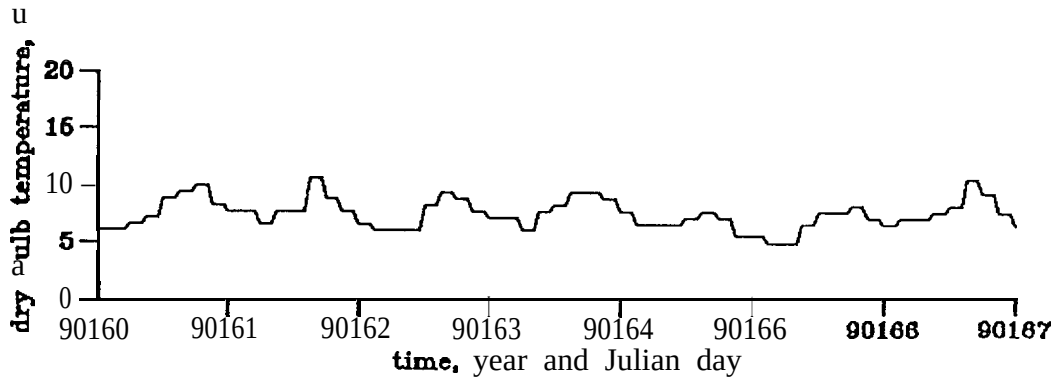
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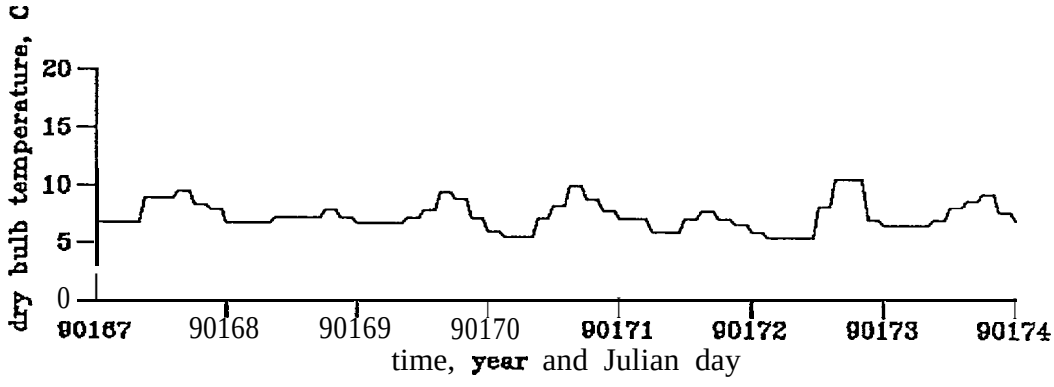
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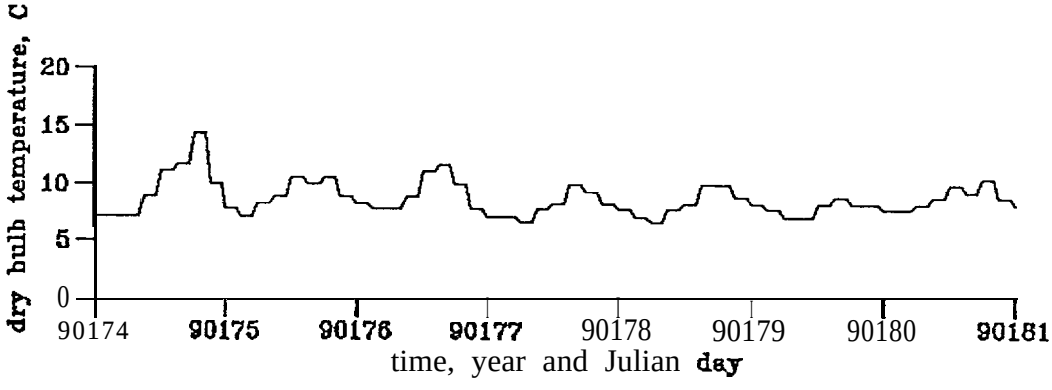
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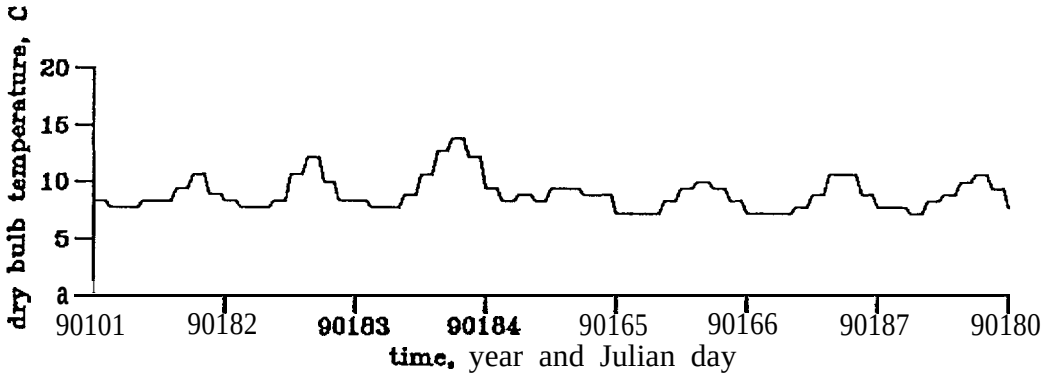
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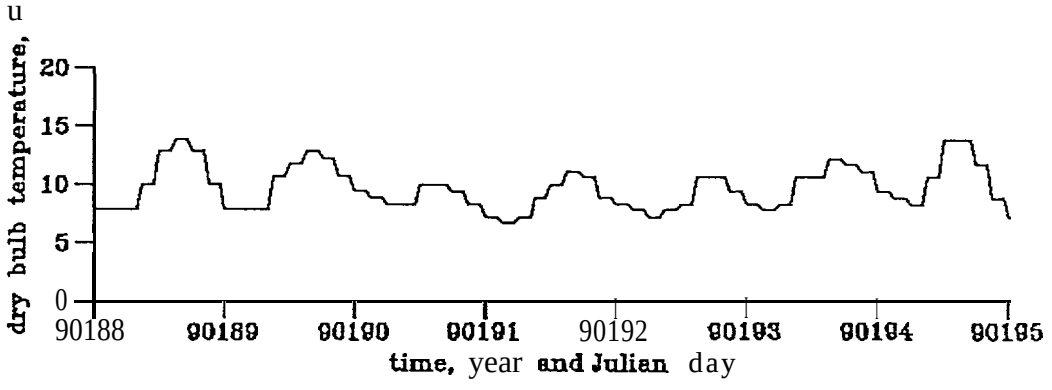
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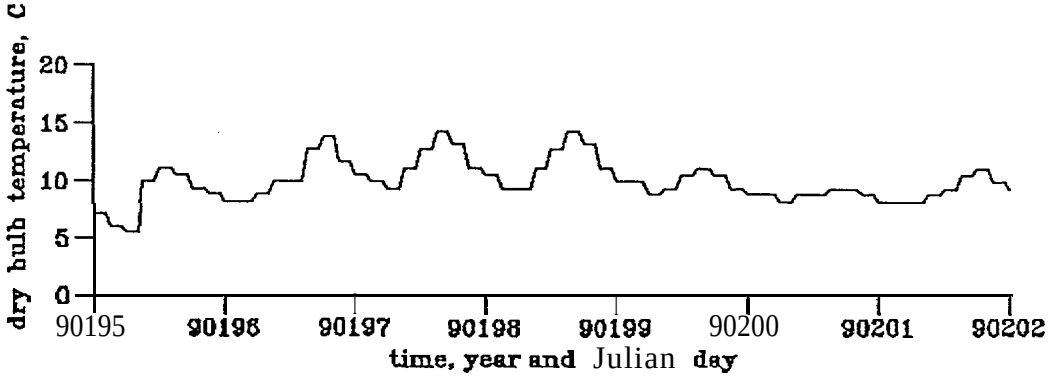
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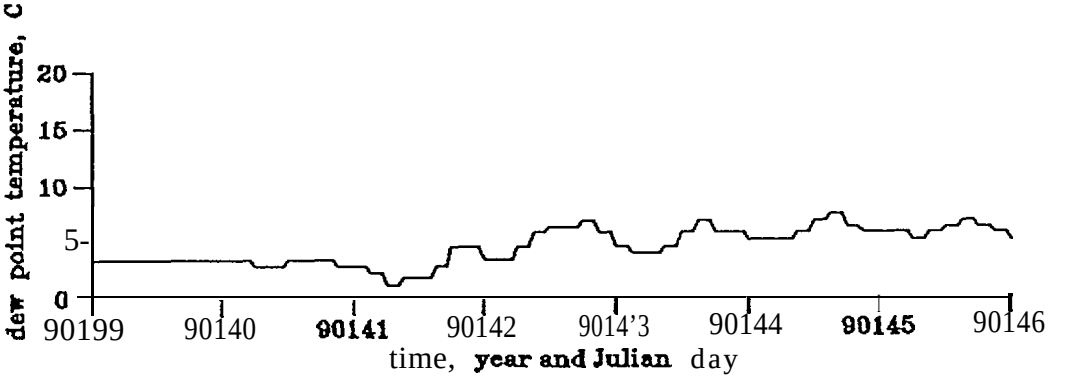
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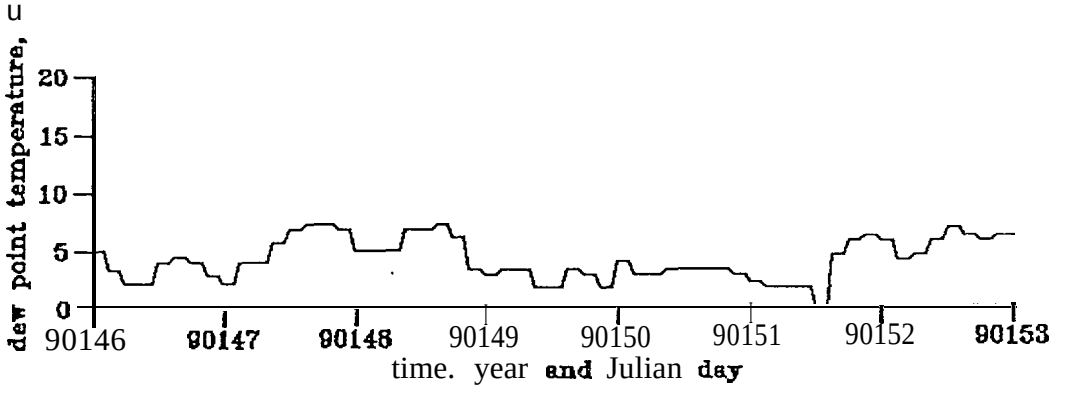
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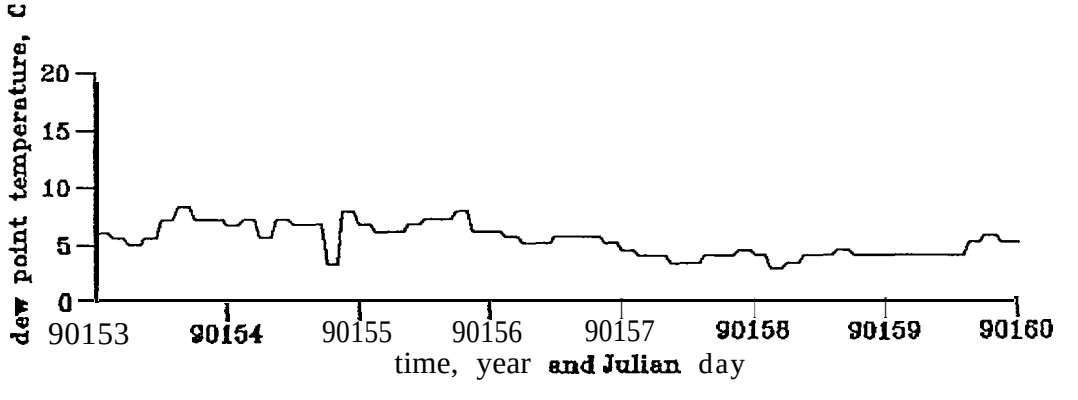
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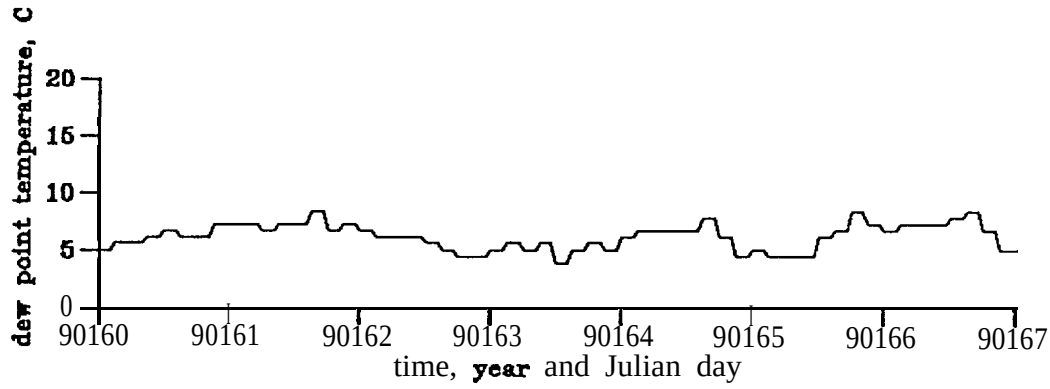
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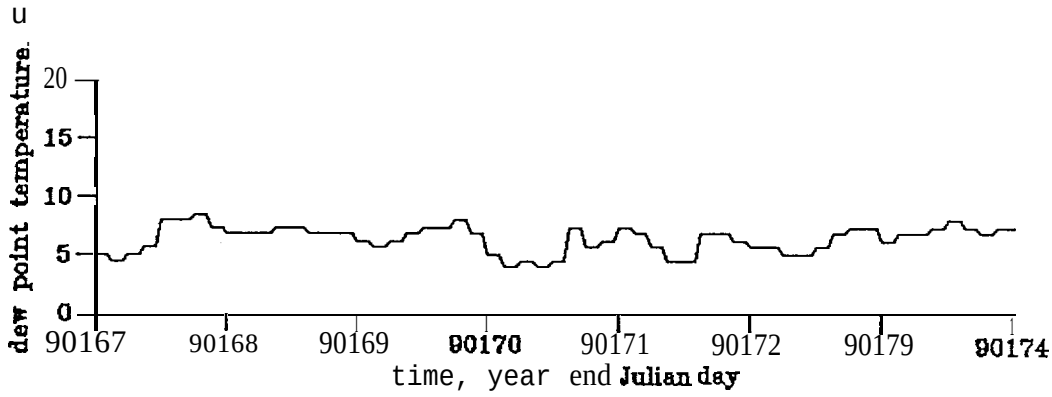
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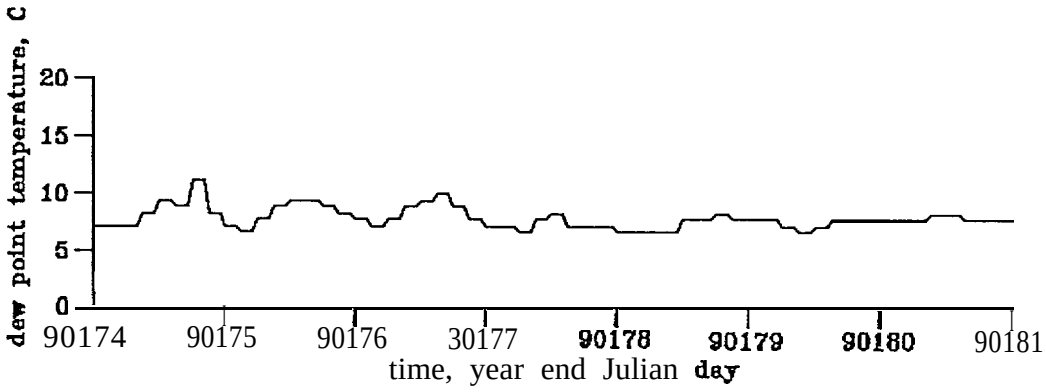
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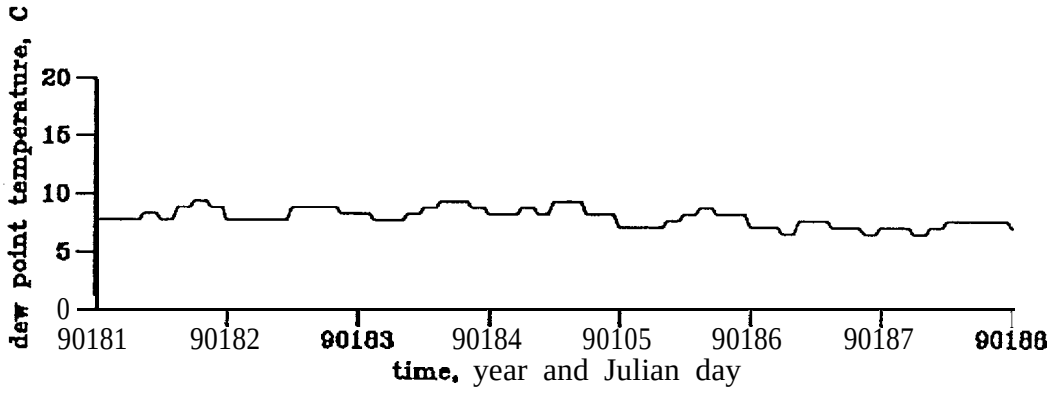
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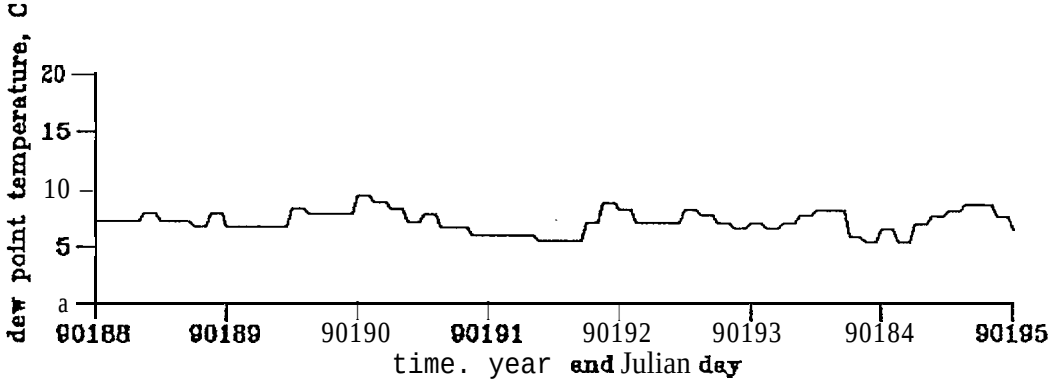
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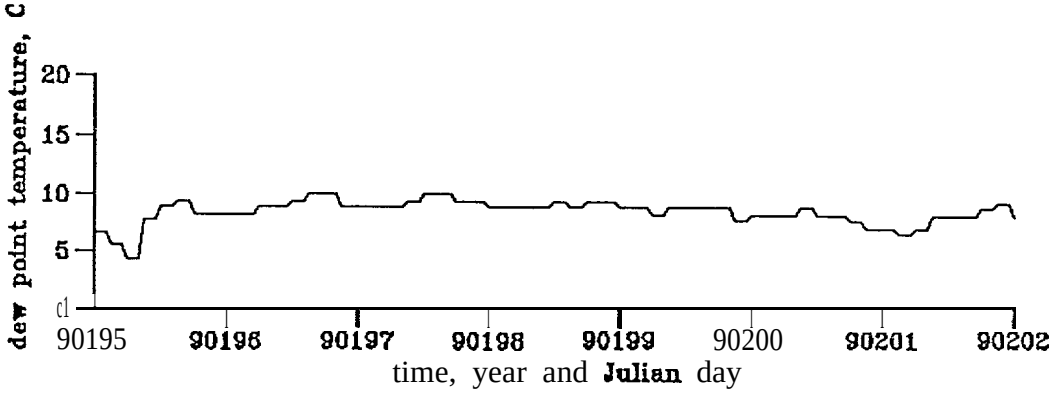
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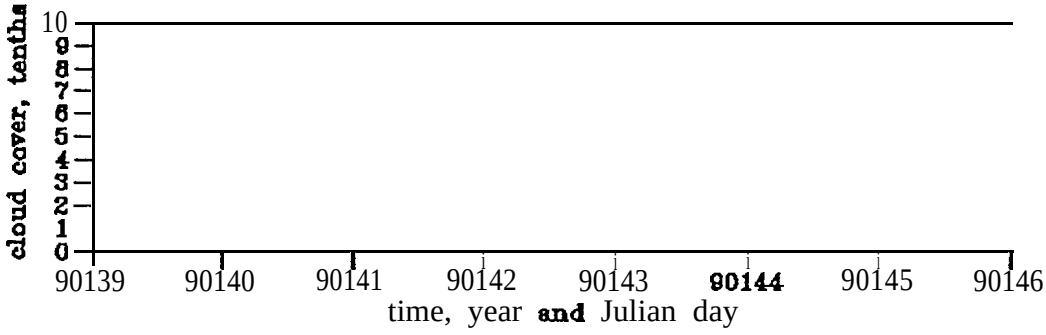
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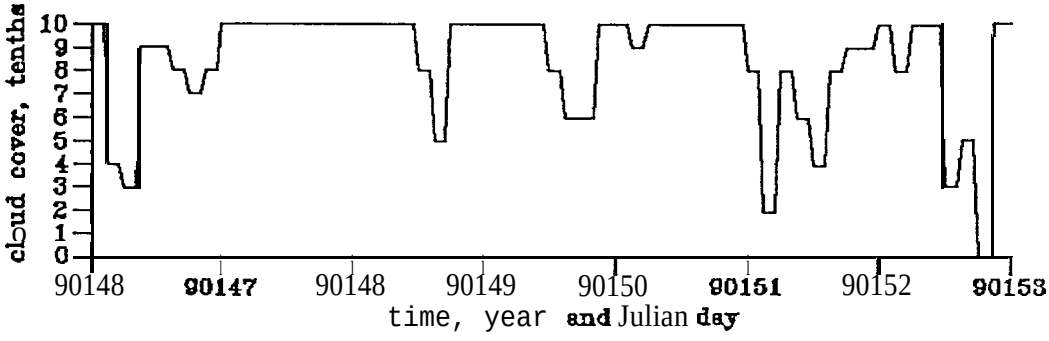
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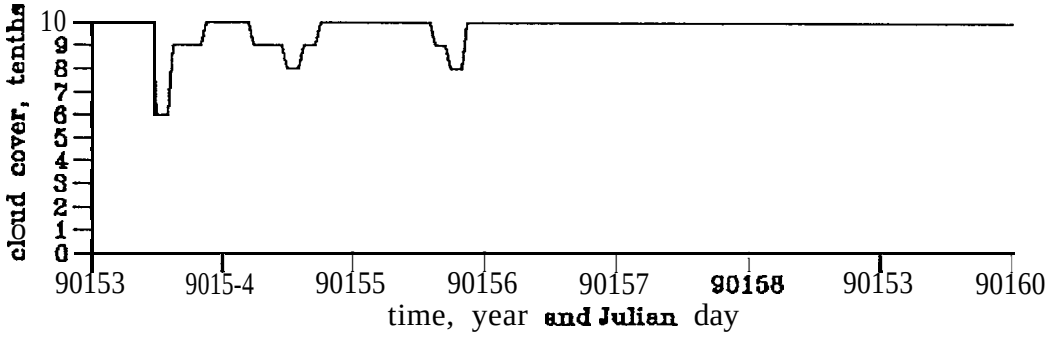
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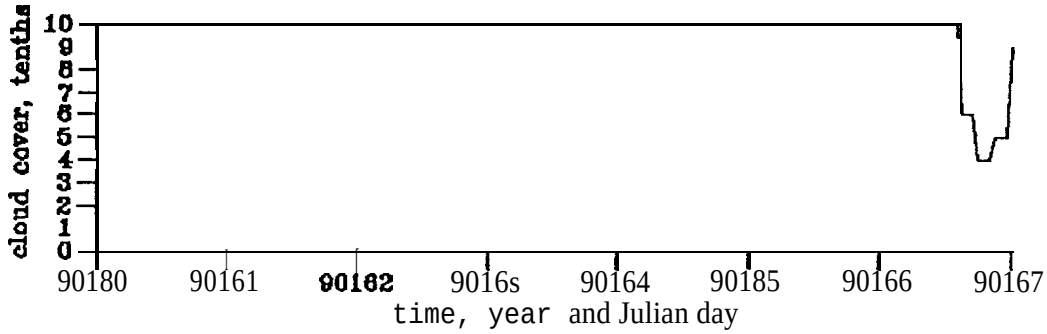
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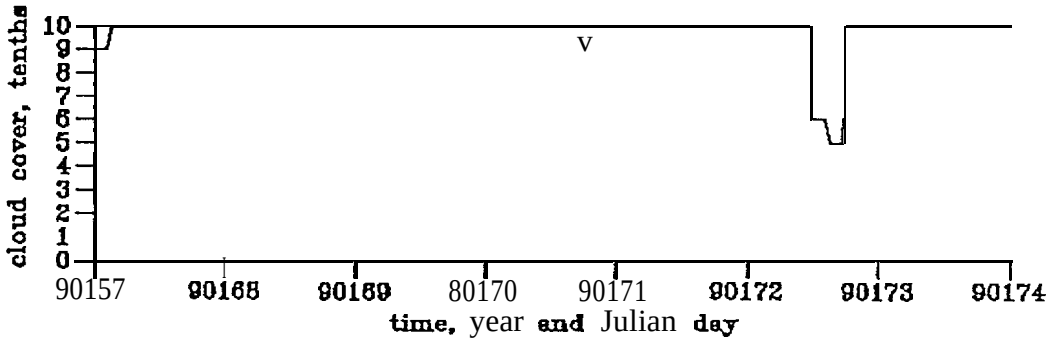
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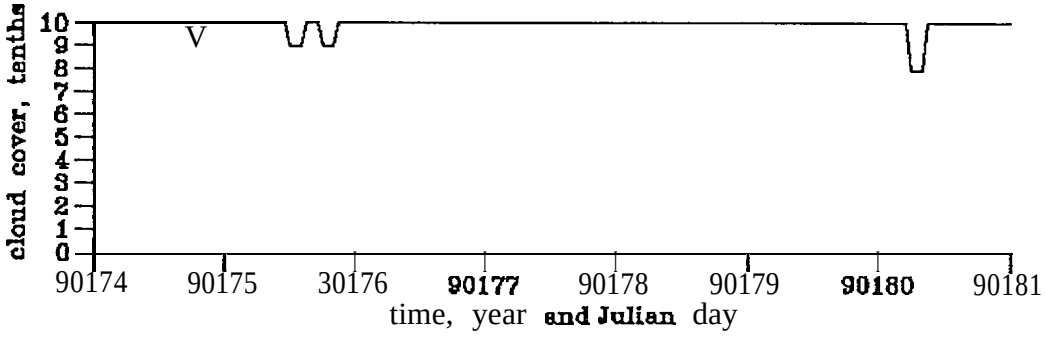
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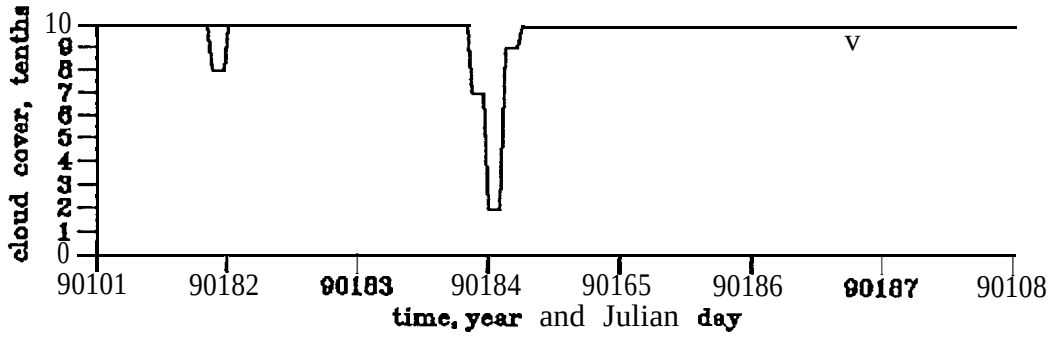
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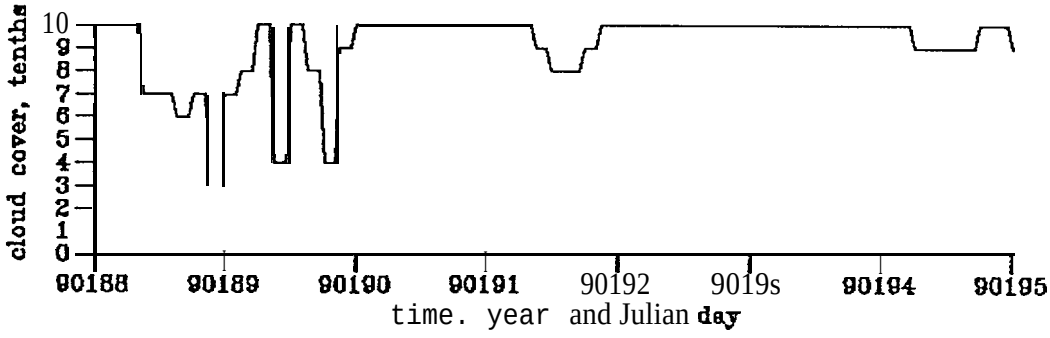
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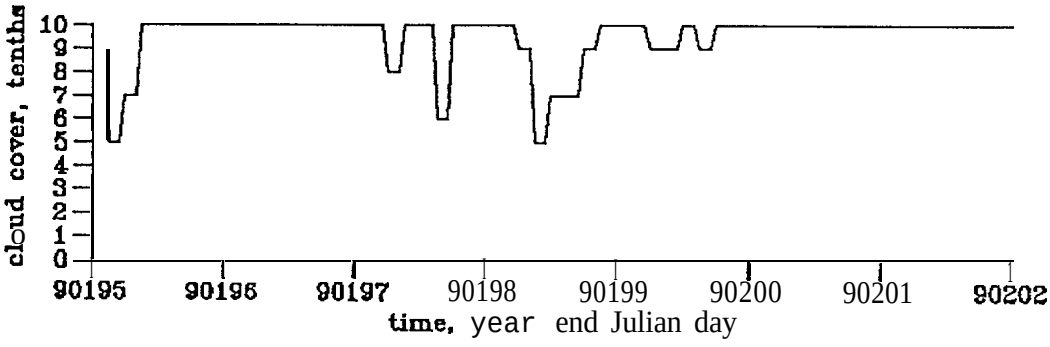
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Appendix C. Hydrodynamic conditions in the Port Moller estuary in relation to the dispersion and mortality of herring larvae.

Hydrographic Conditions in the Port Moller Estuary in Relation to the Dispersion and Mortality of Herring Larvae

Prepared for

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#120 -13511 Commerce Parkway
Richmond, B.C. V6V 2L1
CANADA

Prepared by

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Wayne, Pennsylvania 19087-3226

May 2, 1991

Document No. 91-038-R

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Appendix . . . . . .

Background

The 1990 hydrography of the Port Moller Estuary in relation to the dispersion and mortality of herring larvae is derived from tidal and meteorological boundary data and the three dimensional model GLLVHT chosen for analysis of the estuary (McGurk, et al. 1989). In response to these boundary data GLLVHT computes horizontal and vertical velocities, salinity and temperature at of the points in the three-dimensional grid. The horizontal gridsize chosen for the application to Port Moller Estuary is 2.1 km and the vertical gridsize is 2 m, resulting in a representation of Port Moller Estuary which consists of up to 151 points in the horizontal at extreme high tide and up to 51 layers in the vertical at the deepest portion of the Estuary in Herendeen Bay. Time steps as small as 2 to 15 minutes are required to accommodate the large flows induced by the boundary tidal signal, wind stress and freshwater inflow.

One objective of the 1990 Moller Bay studies was to examine larval transport using an inter-tidal volume integrated transport model (Buchak et al., 1989) that was successful for long transport residence times. However, an extensive review of the larval movement literature, such as summarized in Boehlert and Mundy (1988), indicates that larval mobility needs to be considered on an intra-tidal basis. Furthermore, McGurk (1991) ha-s found that larval properties can be evaluated without volume integration as performed for the 1989 data. Also, computations for the 1990 hydrographic data indicated that large portions of Moller Bay had short transport residence times because of the large inter-tidal displacement. These shifted the modeling objectives to two questions: (1) what hydrographic information from the GLLVHT model (or any hydrodynamic and transport model) is important in examining the larval data? (2) how is larval mobility incorporated in the intra-tidal hydrodynamic and transport computations of

GLLVHT?

An extensive examination of the hydrodynamic-larval transport literature (see bibliography) showed in most cases that little of hydrodynamic modeling "output" was used directly in interpreting larval transport. The most direct result from hydrodynamic and transport modeling that can be compared to larval mortality and dispersion is the transport residence time at different locations throughout the water body. This can be computed from dye flushing computations. Time averaged (detided) velocity distributions indicate general transport between surveys but do not represent the intra-tidal velocities relative to larval movement; they are presented to show changes in circulation from week to week. Boehlert and Mundy (1988) indicate that one of the important processes of larvae relative to an estuary is entrance and egress at the open boundary on an intra-tidal basis; this process is shown to be quite complex for Moller Bay.

The question of how to incorporate larval mobility in the intra-tidal hydrodynamic and transport computations now seems axiomatic. McGurk (1989) and McGurk, et al. (1989) show that larval transport and other properties should be developed from the basic advective-dispersive transport balance. Edinger (1991) examines how different larval transport and fate terms might enter the advective-dispersive balance. This is the starting place, however it does not show how to derive the algorithms for larvae that maintain practically the same density and layer thickness throughout vertical migration (Stephenson and Power, 1988; McGurk, 1991; Wainwright, 1991) or how to relate horizontal movement to the vertical movement. Part of the answer may rest in the 1990 vertical trawl data taken at two stations and for which detailed horizontal and vertical velocity profile data have been provided from the GLLVHT model.

Bathymetry and Tidal Mixing

Bathymetric data for Moller Bay are mapped onto the rectangular computational grid of GLLVHT as shown in Table 1. Grid points are identified by an I, J horizontal grid reference and the number of 2 m layers is identified on the grid. For geographical references, point Divide is located at 1=8, J=8; Harbor Point is located at 1=5, J= 15; Port Moller is located at I=2, J= 16; and, Point Edward is located at 1=2, J=6. The outer boundary of the model extends from Port Moller to Point Edward. The I, J coordinates of the Triton sampling stations are given in Table 3.

Basically, Moller Bay has tidal flats which go dry on low tides, incised channels, and a shelf region between the tidal flats and the channels. The model cells for the flats, shelves and channels are given in Table 2. It shows that Moller Bay has a greater extent of tidal flats and shelf area than Herendeen Bay and that the latter has more well defined channel. The model cells for the channels shows Hague Channel of Herendeen Bay extending out through the boundary and Moller Bay having a sill near the outer boundary.

The hypsographs for all of Moller Bay, upper Moller Bay (upestuary from Harbor Point), outer Moller Bay and Herendeen Bay are given in Tables 4 through 7. A summary of the areas and volumes of each portion of the Estuary is given in Table 8. It shows a greater change in area between high tide and low tide for upper Moller Bay than for Herendeen Bay. This coincides with the greater area of flats in upper Moller Bay shown in Table 2. The effect of windspeed in driving the circulation is a function of surface area and Table 8 shows that the effective surface area changes dramatically between high tide and low tide.

Table 8 shows that there is a large tidal prism between high tide and low tide and that

it is a greater percentage of volume for upper Moller Bay than for Herendeen Bay. If the tidal prism is taken as an approximate indicator of tidal flushing then all of Moller Bay has a tidal flushing rate of 0.647 per day; upper Moller Bay has a tidal flushing rate of 0.95 per day; and, Herendeen Bay has a tidal flushing rate of 0.512 per day. For the simplest volume weighted larval model, these can be compared to natural **mortality rates** found by McGurk (1989) of 0.02 to O. 16-per day. Comparing the flushing and mortality rates indicates that there are portions of Moller Bay for which transport might be an important component of the fish egg and larval balance.

The tidal flushing rates can also be compared to the larval patch dispersion rates given in McGurk (1989). The decay rate for dispersion is given by K_{rc}/l^2 in relation to the McGurk (1989) Figure 8. The value from that figure is 0.018 per day and is much smaller than the tidal flushing rates. Thus, the large scale flushing rate for Moller Bay is much larger than the patch dispersion rate and also at a greater scale.

Distribution of Flushing Rates

The tidal prism flushing rate computation given above assumes that all of the water between high tide and low tide leaves the estuary and is completely replaced by "new" water. Furthermore, it is assumed that the replacement water completely mixes with the volume of the estuary on rising tide. Some of the volume in the estuary may mix with some of the replacement water but different fractions of the volume mix with different fractions of the replacement water as well as with water in the bay. Thus, the tidal prism flushing rates will vary by differing amounts throughout the estuary.

One way to illustrate and quantify the flushing of the estuary is to "dye" the whole waterbody and determine the dye fraction remaining in the estuary as a function of time. Figure 1 shows the dye fraction of the estuary over a long period of time. It shows that there are early days with flushing of some portion of the estuary at the high rate given by the tidal flushing computations and shows that as time passes there is some volume of the estuary which flushes at a much 'slower rate. One feature of the dye flushing curve is that it is relatively smooth over time and, for this waterbody, indicates no perturbations due to meteorological events.

Dye flushing can be determined for each computational point given in Table 1 so that the spatial distribution can be identified. Values for the week between the first and second surveys are given in Table 9 for different layers of the estuaries. The values are largest in the outer estuary near the boundary then decrease inward toward the head of each estuary. The flushing rates are smallest in the deeper portions of Herendeen Bay as would be expected. Comparison of the dye flushing rates for other weeks shows that the larger and shorter time values change most between weeks and the smaller longer time values change least between weeks.

The flushing rates at the sampling stations in Moller Bay and in Herendeen Bay are given for the first sampling week in Table 10 and Table 11 respectively. In Moller Bay they give half lives ranging from 5.3 days at the bottom of Triton Station 38 to 13 days at the bottom of Triton Station 47. For Herendeen Bay the flushing rates give half lives that range from 4.6 days at the ,. bottom of Station 25 to 69 days or more at Stations 35,36 and 37. Flushing is much slower in the deeper upestuary stations of Herendeen Bay than in Moller Bay.

Spatial Velocity Distributions

The velocity distributions in Moller-Herendeen Bay are quite complex and are three-dimensional due to the lateral flows in and out of the channels and over the shelves and flats. They vary from day to day due to the soli-lunar semi-diurnal tide inequalities and to some extent due to the wind. An example of the hour to hour tidal variations is presented for the surface velocities over one tidal cycle that shows some of the complexities of the flows in the bay that are "averaged out" when examining longer term records. Next, the velocities are averaged over seven day periods, between the time of the end of one sampling period and the beginning of another sampling period, to examine the longitudinal and vertical velocity distributions along the axis of the sampling stations in each Bay and to compare the variations in these velocity profiles from one survey period to another (Appendices 1 to 4).

The tide and wind for the first seven day period of record is shown in Figures 2 and 3, respectively. They are shown for the remaining seven day periods in Appendix 1 and 2. During this first period, the tide has a large semi-diurnal inequality that makes the tide appear to be diurnal in variation. Toward the end of the seven day period, the tide approaches a more normal semi-diurnal variation. The wind for the period, Figure 3, is generally steady out of the north-northwest through most of the period. It shows some higher speed wind events for the sixth and seventh day and a reversal in direction after the seventh day.

The surface currents every two hours beginning with midnight on 12 May 1990 are shown in Figure 6. At midnight the current is still flooding into outer Moller Bay and into Herendeen Bay; however, the current is ebbing from upper Moller Bay. This shows that the current does not flood and ebb at the same time throughout the bays. One result of the upper

Moller Bay lagging on ebb current is that there is a convergence of surface currents off Harbor Point.

Ebb tide begins at 2 am and extends to 8 am. The tendency is for the surface ebb tide to leave the bay through Hague Channel. Beginning at 6 am, the ebb tide in Herendeen Bay is mostly in the channel and tidal currents off the shelves are less than the channel currents.

The currents turn rapidly from ebb tide at 8am to the beginning of flood tide at 10 am. The exception is lagging ebb tide from upper Moller Bay. The flood tide enters mostly through the channel off Port Moller and initially heads into Herendeen Bay.

During flood tide from noon to 4 pm, the surface currents split between Herendeen Bay and upper Moller Bay. However, the currents in the head of Herendeen Bay are low and tending to ebb. The outward currents in Herendeen Bay may also be related to the fresh water inflow filling that portion of the estuary.

The tidal currents at the estuary mouth in Hague channel and off Port Moller have been examined for their long term (seven day average) trend and it has been found rather consistently from one seven day period to the next that there is a net inflow off Port Moller and a net outflow out of Hague channel. The intra-tidal relationships of these two currents will be shown in detail later.

The longitudinal-vertical, seven day velocity averages for the first seven day period are shown for Moller Bay in Figure 5 and for Herendeen Bay in Figure 6. The horizontal velocity component at each sampling station is taken as the horizontal component paralleling the direction of the channel nearest the sampling station. These plots are shown for the remaining periods in Appendix 3 and Appendix 4. The striking feature of these plots is the relatively large

upwelling between Triton sampling Station 38 and Station 39. As shown in Appendix 3, this upwelling is found through each of the periods regardless of the wind. It appears to be the result of tide and bathymetry including the relatively narrow channel near Station 39 and the tidal inflow required to reflood the tidal flats. It may also be related to the non-linear interaction of the surface currents and raising tide height. It would take extensive simulation investigations to identify the dominant dynamic processes producing the Moller Bay upwelling; its existence should first be demonstrated from long term velocity profile observations.

In Moller Bay, upestuary of Station 39, there is a convergence of the upwelling and slower net circulation. The slower net circulation is due to the fresh water inflow at the head of the bay and the resulting baroclinic circulation due to the mixing of the freshwater inflow and the higher salinity water.

Herendeen Bay, Figure 6, has relatively low residual velocities for the seven day period. The exception is the outflow at Hague channel which shows a rather large surface outflow. As described above from the hourly surface current results, there tends to be an outflow from Hague channel that is supported in part by an inflow off Port Moller and currents across the outer Moller Bay. As shown in Appendix 4, the location of this outflow in the vertical and in intensity varies from period to period and is probably controlled by wind conditions.

During the 1990 surveys there were hardly any longitudinal gradients of salinity to . produce baroclinic circulation of surface outflows and bottom density inflows because of the low precipitation and runoff. The 1989 data (McGurk, et al., 1989) showed strong longitudinal salinity gradients up both arms of the estuary. Relative to the 1990 flow patterns, it is expected that in a year as wet as 1989 there would be baroclinic flow in upper Moller Bay as far down

estuary as Station 39, but that it would be overridden by the convergence found for 1990. In Herendeen Bay, the residual velocities are so low that it is expected that in a wet year the baroclinic circulation could extend to Hague channel. No study has been made to determine which year, 1989 or 1990, may represent the more normal conditions.

Boundary Vertical Velocity Profiles

One of the more important problems related to larval transport is movement into an estuary and or the losses from an estuary across its open boundary. The boundary problem needs to be examined in detail to determine what parts of the velocity field larvae may be responding to and what parts of the velocity field may be doing the transporting, if any. Another reason to examine the detailed boundary vertical velocity profiles is to show how the Hague channel station becomes a net outflow station and the Port Moller station becomes a net inflow station. The vertical velocity profiles at these two stations are examined over the first four tidal cycles given in Figure 4.

The velocity profiles at the boundary to Moller Bay in Hague channel are given in Table 12. During the first two hours of 12 May 1990, there is a surface inflow and a bottom layer outflow which does not repeat itself until early on 14 May 1990. The tides on 12 May 1990 through 13 May 1990 show long periods of ebb tide and relatively short periods of flood tide. This behavior may be due to the near diurnal variation of the tide for this period shown above. However, it clearly demonstrates that currents can have a different periodicity than the normal tide.

One characteristic of the tidal vertical velocity profiles is the tendency for velocities near

the bottom to change direction first followed by the turning of the next higher layers. This is shown for example for the profiles between 8 hours and 11 hours on May 12. It happens because there is a point in time when the water surface slope just balances the bottom friction slope and should happen through each reversal in the tidal cycle. This can be compounded by the wind surface stress as shown for 8 hr to 12 hr on 13 May 1990.

The period of 21 hours to 23 hours on 15 May 1990 shows the appearance of very high ebb tidal velocities relative to the rest of the periods. It serves to illustrate that under real time conditions the tidal velocities are more likely to be "anomalous" rather than periodic.

An anomaly of the tide turning in the bottom layers is shown from 23 hr on 14 May 1990 to 3 hr on 15 May 1990 but not turning in the surface layers. This could be related to wind shear conditions. These cases, however, illustrate the complexities of relating tidal velocities in the water column to larval migration or transport.

The Port Moller velocity profile is shown in Table 13. The flood and ebb tides are more periodic than the Hague channel profile. Also, the Hague channel profile appears to lag the Port Moller velocities by 2 to 4 hours. More of the profiles appear to be normal, that is turning direction first on the bottom then later up through the water column.

One feature of the velocity profile results given in Table 12 and Table 13 are the zero horizontal velocity lines dividing the different periods of flood and ebb velocity. These lines may serve as a path of vertical movement with little or no horizontal movement and should be considered when designing larval movement scenarios for testing. The zero horizontal velocity line between ebb and flood tide for the Port Moller station rises from the bottom at a rate of about two meters per hour. The zero velocity line for the Hague channel is more complex and

extends from the surface downward probably due to windshear and from the bottom upward due to friction.

The detailed hourly profiles off Port Moller in Table 13 and Hague channel in Table 12 as well as the hourly surface velocities in Figure 6 were reviewed by Greengrove (1991) relative to the 1989 velocity surveys. The comments were that the hourly profile data at the two stations looked 'realistic relative to cross-sectional measurements and in particular the lag of the Port Moller profiles relative to the Hague channel profiles; also, the hourly surface velocities showing flows from Port Moller into Herendeen Bay looked realistic but there was not enough observed velocity data to verify them. However, based on the earlier gas transport studies, Greengrove (1991) thought that there should be more outflow toward the Port Moller side of the boundary. Also, surface currents at the boundary were observed to reach 100 cm s^{-1} and the model results appear to be a little low. Greengrove (1991) could give no comment on the persistent upwelling showing up in the detided (7 day average) data at Station 39 off harbor point but indicated that continuous velocity profile measurements at that station would be difficult because of the high velocities indicated by the model.

Relation of Vertical Migration to Velocity Profiles

Two field surveys of the vertical distribution of larvae over time were conducted. The first was for 24 June 1990 to 26 June 1990 at Station 36 in Herendeen Bay. The second was for 1 July 1990 to 2 July 1990 at Station 39 in Moller Bay. The GLLVHT can provide the detailed hourly horizontal and vertical velocity components in 2 meter depth intervals at these stations during the vertical sampling. The first step in developing descriptions of the

relationships between vertical migration and velocities can be made from these data.

The water surface elevation during the 24 to 26 June 1990 survey in Herendeen Bay is shown in Figure 9. It is a tide with a semi-diurnal inequality on falling tide but with almost equal maximum heights.

The horizontal velocities for Station 36 are given in Table 14. The horizontal velocities are relatively small for intra-tidal velocities although there is a very small tidal prism remaining upestuary of Station 36 and not very extensive tidal flats. This deep station exhibits periodic two and three layer flow that is related to the tide and possibly the freshwater inflow at the head of the estuary. The largest horizontal velocities are found in the surface layers.

The vertical velocity components for the Herendeen Bay study are given in Table 15. These vertical velocities are on the order of 0.01 mm s^{-1} in magnitude. Yet they show a very striking pattern of alternately being upward in the surface layers and downward in the bottom layers then switching directions in each layer at the next phase of tide. This alternating pattern of layer and direction appears to have held throughout the whole survey period.

The complex circulation around Station 36 may be related to a possible long term upwelling indicated by the 1990 salinity and temperature data. Profiles near Station 36 show high salinity low temperature bottom water possibly resulting from wintertime intrusion. The surface of Herendeen Bay is slightly cooler and more saline then Moller Bay suggesting a slow upwelling at these deeper stations into the Herendeen Bay surface waters and may be related to the complex circulation patterns indicated in Table 14 and 15.

The zero velocity lines between ebb and flood tide for the Herendeen Bay horizontal velocities are quite complex. They separate two or three layers of velocity shear and, unlike the

boundary velocities shown previously, tend to begin at the surface and slope downward with time. They appear not to be affected by windshear because of their persistence from one tidal period to the next.

The tide during the Moller Bay study is shown in Figure 10. It has a *strong* semi-diurnal inequality on both high tide and low tide.

The horizontal velocities for the Moller Bay studies are shown in Table 16. The Station 39 is much more shallow than Station 36 and is in the relatively narrow cross-section inside Harbor Point. The velocities reach relatively high values of 20-40 cm/s. The shift from ebb to flood tide velocity tends to follow the tidal periodicity. Also, through most of the tides, the bottom velocities turn direction first followed by the other depths successively through the water column. For this station, the latter results in a zero velocity line between ebb and flood tide of about 1 meter per hour which is less than the slope of the zero velocity line at the Port Moller station examined previously.

The Moller Bay vertical velocity components, shown in Table 17, are 10 to 100 times those in Herendeen Bay. They tend to be relatively uniform and are either moving upward coincident with the ebbing tide (Table 16) or downward coincident with a flooding tide. It would be the net vertical movement averaged over many tidal cycles that produces the net non-tidal upwelling shown earlier for Station 39.

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Table 1. Number of layers in each surface cell in the finite difference representation of the Moller Bay. Each layer is 2 m thick with the surface taken as elevation 10 m above MLLW. Bathymetry developed from U.S. Department of Commerce (1976). The sequence of numbers down the page is the I-index for the grid, across the page (from left to right) is the J-index. (Run 2.35).

I \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2						9	9	9	27	11	11	12	13	11	6										
3						8	5	5	27	11	12	11	12	9	8										
4				4		8		4	27	14	13	10	11	11											
5		4	4	4	6	8		4	27	18	11	11	a	21		6									
6		4	4	4	6			24	27	12	11	9	9	29	9	6	6	6							
7		4	4			7	22	22	7	6	5	4	9	9	20	18	17	9	7						
8		4	5	6	7	8	21			6	5	5	5	5	9	9	15	13	11	12					
9				4	11	9	16	16									6	9	11	13	15	11			
10			4	5	7	9	7	19										5	5	5	11	12	9	6	
11			4	5	6	9	7	1	4									5	5	5	13				
12					6	7	8	14										4		5	10	11			
13						8	9	16													6	6	6		
14						9	15	22	30	33															
15							12	16	4	51	49														
16								13			38														
17											31														
18																									

Table 2. Model cells in **Moller** Bay subject to tidal flooding ("flats" – areas with bottom elevations O to 3 m above MLLW, Run 2.35).

I \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2															6										
3							5	5																	
4																									
5					6											6									
6					6											6	6	6							
7										6	5														
8			5	6						6	5	5	5	5											
9																	6								
10				5														5	5	5				6	
11				5	6													5	5	5					
12					6															5					
13																					6	6	6		
14																									
15																									
16	6																								
17																									
18																									

Table 2 (continued). Model cells in **Moller** Bay shallows ("shelves" -- areas with bottom elevations O m to 10 m below MLLW, Run 2.35).

I \ J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2						9	9	9		11	11			11											
3						8				11		11		9	8										
4						8						10	11	11											
5						8					11	11	8												
6											11	9	9		9										
7						7			7				9	9				9	7						
8					7	8									9	9			11						
9					11	9												9	11			11			
10					7	9	7														11		9		
11						9	7																		
12						7	8														10	11			
13						8	9																		
14						9																			
15																									
16																									
17																									
18																									

Table 2 (continued). Model cells in Moller Bay channels (areas with bottom elevations below 10 m and below MLLW, Run 2.35).

I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1																									
2									27			12	13												
3									27		12		12												
4									27	14	13														
5									27	18				21											
6								24	27	12				29											
7							22	22							20	18	17								
8							21										15	13		12					
9							16	16												13	15				
10								19														12			
11								14													13				
12								14																	
13								16																	
14							15	22	30	33															
15							12	16		51	49														
16								13			38														
17											31														
18																									

Table 3. Triton stations and nominal model cell coordinates. The reference station for both the Moller Bay and Herendeen Bay stations is Triton station 21, located in the mouth of Moller Bay.

Moller Bay Station	I	J	distance (km) from reference
21	2	13	0.0000
38	5	14	7.0907
39	7	15	12.8116
41	8	17	17.3239
42	8	19	21.8362
45	9	21	25.0592
46	10	22	30.1355
47	12	22	33.8420
Herendeen Bay stations	**I**	**J**	**distance (km) from reference**
22	2	12	0.0000
23	2	9	0.0000
25	4	11	4.4317
26	6	10	8,9440
27	7	7	14.9066
29	9	8	19.4189
31	11	8	23,4477
33	13	8	27.6377
35	14	9	31,3442
36	15	11	34.8896
37	16	11	38.5961

Table 4. Hypsometric data for Moller Bay. Shown for each layer are its thickness, elevation, area, cumulative volume integrated from the bottom up and mean depth (values are for the top of each layer).

layer	Thickness, m	Elevation, m	Area, 10^6 m^2	Cumulative vol, 10^6 m^3	Mean depth,
2	2.00	10.00	665.910	13476.960	20.:4
3	2.00	8.00	665.910	12145.140	18.24
4	2.00	6.00	665.910	10813.320	16.24
5	2.00	4.00	586.530	9481.500	16.17
6	2.00	2.00	511.560	8308.440	16.24
7	2.00	.00	436.590	7285.320	16.69
8	2.00	-2.00	401.310	6412.140	15.98
9	2.00	-4.00	366.030	5609.520	15.33
10	2.00	-6.00	282.240	4877.460	17.28
11	2.00	-8.00	273.420	4312.980	15.77
12	2.00	-10.00	202.860	3766.140	18.57
13	2.00	-12.00	171.990	3360.420	19.54
14	2.00	-14.00	145.530	3016.440	20.73
15	2.00	-16.00	132.300	2725.380	20.60
16	2.00	-18.00	119.070	2460.780	20.67
17	2.00	-20.00	101.430	2222.640	21.91
18	2.00	-22.00	97.020	2019.780	20.82
19	2.00	-24.00	88.200	1825.740	20.70
20	2.00	-26.00	83.790	1649.340	19.68
21	2.00	-28.00	79.380	1481.760	18.67
22	2.00	-30.00	70.560	1323.000	18.75
23	2.00	-32.00	57.330	1181.880	20.62
24	2.00	-34.00	57.330	1067.220	18.62
25	“2.00	-36.00	52.920	952.560	18.00
26	2.00	-38.00	52.920	846.720	16.00
27	2.00	-40.00	52.920	740.880	14.00
28	2.00	-42.00	30.870	635.040	20.57
29	2.00	-44.00	30.870	573.300	18.57
30	2.00	-46.00	26.460	511.560	19.33
31	2.00	-48,00	22.050	458.640	20.80
32	2.00	-50.00	17.640	414.540	23.50
33	2.00	-52.00	17.640	379.260	21.50
34	2.00	-54.00	13.230	343.980	26.00
35	2.00	-56.00	13.230	317.520	24.00
36	2.00	-58.00	13.230	291.060	22.00
37	2.00	-60.00	13.230	264.600	20.00
38	2.00	-62.00	13.230	238.140	18.00
39	2.00	-64.00	8.820	211.680	24.00

Table 4 (continued). Hypsometric data for Moller Bay. Shown for each layer are its thickness, elevation, area, cumulative volume integrated from the bottom up and mean depth (values are for the top of each layer).

layer	Thickness,	Elevation,	Area, 10^6 m^2	Cumulative vol, 10^6 m^3	Mean depth,
40	2.0%	-66.0:	8.820	194.040	22.80
41	2.00	-68.00	8.820	176.400	20.00
42	2.00	-70.00	8.820	158.760	18.00
43	2.00	-72.00	8.820	141.120	16.00
44	2.00	-74.00	8.820	123.480	14.00
45	2.00	-76.00	8.820	105.840	12.00
46	2.00	-78.00	8.820	88.200	10.00
47	2.00	-80.00	8.820	70.560	8.00
48	2.00	-82.00	8.820	52.920	6.00
49	2.00	-84.00	8.820	35.280	4.00
50	2.00	-86.00	4.410	17.640	4.00
51	2.00	-88.00	4.410	8.820	2.0.0

Table 5. Hypsometric data for upper Moller Bay. Shown for each layer are its thickness, elevation, area, cumulative volume integrated from the bottom up and mean depth (values are for the top of each layer).

layer	Thickness, m	Elevation,	Area, 10^6 m^2	Cumulative vol, 10^6 m^3	Mean depth, m
2	2.00	10.0:	145.530	2266.740	15.58
3	2.00	8.00	145.530	1975.680	13.58
4	2.00	6.00	145.530	1684.620	11.58
5	2.00	4.00	141.120	1393.560	9.88
6	2.00	2.00	110.250	1111.320	10.08
7	2.00	.00	79.380	890.820	11.22
8	2.00	-2.00	74.970	732.060	9.76
9	2.00	-4.00	74.970	582.120	7.76
10	2.00	-6.00	61.740	432.180	7.00
11	2.00	-8.00	57.330	308.700	5.38
12	2.00	-10.00	35.280	194.040	5.50
13	2.00	-12.00	‘ “26.460	123.480	4.67
14	2.00	-14.00	13.230	70.560	5.33
15	2.00	-16.00	13.230	44.100	3.33
16	2.00	-18.00	4.410	17.640	4.00
17	2.00	-20.00	4.410	8.820	2.00

Table 6. Hypsometric data for outer **Moller** Bay. Shown for each layer are its thickness, elevation, area, cumulative volume integrated from the bottom up and mean depth (values are for the top of each layer).

layer	Thickness,	Elevation,	Area, 10^6 m^2	Cumulative vol, 10^6 m^3	Mean depth,
2	2.08	10.03	282.240	6024.060	21.:4
3	2.00	8.00	282.240	5459.580	19.34
4	2.00	6.00	282.240	4895.100	17.34
5	2.00	4.00	269.010	4330.620	16.10
6	2.00	2.00	238.140	3792.600	15.93
7	2.00	.00	216.090	3316.320	15.35
8	2.00	-2.00	207.270	2884.140	13.91
9	2.00	-4.00	185.220	2469.600	13.33
10	2.00	-6.00	136.710	2099.160	15.35
11	2.00	-8.00	132.300	1825.740	13.80
12	2.00	-10.00	88.200	1561.140	17.70
13	2.00	-12.00	70.560	1384.740	19.62
14	2.00	-14.00	61.740	1243,620	20.14
15	2.00	-16.00	57.330	1120.140	19.54
16	2.00	-18.00	57.330	1005.480	17.54
17	2.00	-20.00	57.330	890.820	15.54
18	2.00	-22.00	57.330	776.160	13.54
19	2.00	-24.00	48.510	661.500	13.64
20	2.00	-26.00	48.510	564.480	11.64
21	2.00	-28.00	44.100	467.460	10.60
22	2.00	-30.00	39.690	379.260	9.56
23	2.00	-32.00	30.870	299.880	9.71
24	2.00	-34.00	30.870	238.140	7.71
25	2.00	-36.00	26.460	176.400	6.67
26	2.00	-38.00	26.460	123.480	4.67
27	2.00	-40.00	26.460	70.560	2.67
28	2.00	-42.00	4.410	17.640	4.00
29	2.00	-44.00	4.410	8.820	2.00

Table 7. Hypsometric data for Herendeen Bay. Shown for each layer are its thickness, elevation, area, cumulative volume integrated from the bottom up and mean depth (values are for the top of each layer).

layer	Thickness, m	Elevation,	Area, 10^6 m^2	Cumulative vol, 10^6 m^3	Mean depth,
2	2.00	10.05	238.140	5186.160	21.:8
3	2.00	8.00	238.140	4709.880	19.78
4	2.00	6.00	238.140	4233.600	17.78
5	2.00	4.00	176.400	3757.320	21.30
6	2.00	2.00	163.170	3404,520	20.86
7	2.00	.00	141.120	3078.180	21.81
8	2.00	-2.00	119.070	2795.940	23.48
9	2.00	-4.00	105.840	2557.800	24.17
10	2.00	-6.00	83.790	2346.120	28.00
11	2.00	-8.00	83.790	2178.540	26.00
12	2.00	-10.00	79.380	2010.960	25.33
13	2.00	-12.00	74.970	1852.200	24.71
14	2.00	-14.00	70.560	1702.260	24.13
15	2.00	-16.00	61.740	1561,140	25.29
16	2.00	-18.00	57.330	1437.660	25.08
17	2.00	-20.00	39.690	1323.000	33.33
18	2.00	-22.00	39.690	1243.620	31.33
19	2.00	-24.00	39.690	1164.240	29.33
20	2.00	-26.00	35.280	1084.860	30.75
21	2.00	-28.00	35.280	1014.300	28.75
22	2.00	-30.00	30.870	943.740	30.57
23	2.00	-32.00	26.460	882.000	33.33
24	2.00	-34.00	26.460	829.080	31.33
25	2.00	-36.00	26.460	776.160	29.33
26	2.00	-38.00	26.460	723,240	27.33
27	2.00	-40.00	26.460	670.320	25.33
28	2.00	-42.00	26.460	617.400	23.33
29	2.00	-44.00	26.460	564.480	21.33
30	2.00	-46.00	26.460	511.560	19.33
31	2.00	-48.00	22.050	458.640	20.80
32	2.00	-50.00	17.640	414.540	23.50
33	2.00	-52.00	17.640	379.260	21.50
34	2.00	-54.00	13.230	343.980	26.00
35	2.00	-56.00	13.230	317.520	24.00
36	2.00	-58.00	13.230	291.060	22.00
37	2.00	-60.00	13.230	264.600	20.00
38	2.00	-62.00	13.230	238.140	18.00
39	2.00	-64.00	8.820	211.680	24.00

Table 7 (continued). Hypsometric data for Herendeen Bay. Shown for each layer are its thickness, elevation, area, cumulative volume integrated from the bottom up and mean depth (values are for the top of each layer).

layer	Thickness, m	Elevation,	Area, 10^6 m^2	Cumulative vol, 10^6 m^3	Mean depth, m
40	2.00	-66.08	8.820	194.040	22.00
41	2.00	-68.00	8.820	176.400	20.00
42	2.00	-70.00	8,820	158.760	18.00
43	2.00	-72.00	8.820	141.120	16.00
44	2.00	-74.00	8.820	123.480	14.00
45	2.00	-76.00	8.820	105.840	12.00
46	2.00	-78.00	8.820	88.200	10.00
47	2.00	-80.00	8.820	70.560	8.00
48	2.00	-82.00	8.820	52.920	6.00
49	2.00	-84.00	8.820	35.280	4.00
50	2.00	-86.00	4.410	17.640	4.00
51	2.00	-88.00	4.410	8.820	2.00

Table 8. Areas and volumes of Moller Bay and subregions for extremes of high and low tides.

Region	Area at high tide, millions of m^2	Area at low tide, millions of m^2	Difference, millions of m^2 (%)	Volume at high tide, millions of m^3	Volume at low tide, millions of m^3	Difference, millions of m^3 (%)
Moller Bay	587	401	186 (32)	9482	6412	3070 (32)
Upper Moller Bay	141	75	66 (47)	1394	732	662 (47)
Outer Moller Bay	269	207	62 (23)	4331	2884	1447 (33)
Herendeen Bay	176	119	57 (32)	3757	2796	961 (26)

Table 9. Dye rate constants (per day) for **Moller** Bay flat, shelf, channel and deep channel areas (Run 2.29). The zero values refer to very small values of the dye rate constant.

or layer 6

I	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
2																					
3						0.218	0.200	0.200	0.175	0.157	0.157	0.243									
4						0.165	0.165	0.157	0.137	0.132											
5						0.118	0.132	0.137	0.127	0.122	0.118		0.186								
6					0.084	0.094	0.114	0.122	0.118	0.110	0.106	0.106	0.122	0.118							
7			0.060	0.060	0.069	0.091	0.132			0.106	0.100	0.100	0.110	0.100	0.094	0.086					
8	0.094	0.065	0.057	0.054			0.165					0.106	0.097	0.089	0.077	0.075	0.073				
9		0.055	0.051	0.048	0.047									0.097	0.073	0.069	0.065	0.062	0.063		
10		0.063	0.047	0.041	0.042													0.062	0.063	0.079	0.106
11		0.079	0.043	0.033	0.036													0.067			
12		0.077	0.034	0.029	0.033													0.079	0.091		
13			0.026	0.026	0.031													0.094	0.122	0.175	
14			0.024	0.025	0.031	0.026	0.022														
15				0.024	0.028		0.015	0.011													
16					0.027			0.007													
17								0.007													

or layer 9

I	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	23
2																				
3				0.218	0.157	0.165	0.175	0.175	0.157											
4				0.165		0.137	0.149	0.149	0.127											
5				0.132	0.132		0.132		0.118											
6			0.086	0.103	0.118	0.118	0.118	0.110	0.100	0.097										
7		0.062	0.073					0.106	0.094	0.091	0.103	0.094	0.089							
8		0.054								0.097	0.086	0.077	0.073		0.067	0.067				
9	0.050	0.048	0.050	0.047										0.065	0.062	0.060	0.060	0.060		
10	0.046		0.041-													0.060	0.060	0.062	0.079	
11	0.043		0.037													0.063				
12			0.034													0.067	0.073			
13		0.026	0.031																0.175	
14	0.025	0.025	0.028	0.021	0.020															
15		0.025	0.027		0.014	0.009														
16			0.024			0.007														
17						0.006														

Table 9 (continued). Dye rate constants (per day) for Moller Bay flat, shelf, channel and deep channel areas (Run 2.29). The zero values refer to very small values of the dye rate constant.

layer 14

I \ J	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
2															
3			0.218												
4			0.175	0.122											
5			0.149	0.122				0.118							
6		0.094	0.118					0.118							
7	0.067	0.081							0.086	0.091	0.086				
8	0.057										0.075				
9	0.052	0.044													0.054
10		0.039													
11		0.035													
12		0.031													
13		.0.025													
14	0.023	0.020	0.019	0.015											
15		0.023		0.012	0.009										
16					0.007										
17					0.005										

or layer 22

I \ J	7	8	9	10	11	12	13	14
2								
3			0.243					
4			0.200					
5			0.165					
6		0.110	0.127					0.075
7	0.091	0.097						
8		0.013	0.012	0.010				
9				0.008	0.007			
10					0.005			
11					-0.005			

Table-l 1. Dye rate constants (per day) for **Herendeen** Bay stations (Run 2.34). The zero values refer to very small values of the dye rate constant.

	Triton Stations								
	25	26	27	29	31	33	35	36	37
	Distance km rom Station 22								
layer	4.4	8.9	14.9	19.4	23.4	27.6	31.3	34.9	38.6
6	0.1079	0.0790	0.0542	0.0555	0.0396	0.0372	0.0627	0.0308	0.0222
7	0.0960	0.0853	0.0593	0.0526	0.0392	0.0371	0.0554	0.0289	0.0223
8	0.0981	0.0972	0.0613	0.0493	0.0368	0.0363	0.0435	0.0254	0.0215
9	0.0998	0.0915	0.0613	0.0455	0.0339	0.0326	0.0298	0.0206	0.0202
10	0.0995	0.0790	0.0604	0.0412	0.0305	0.0268	0.0179	0.0160	0.0188
11	0.1098	0.0696	0.0589	0.0370	0.0276	0.0206	0,0102	0.0129	0.0176
12	0.1392	0.0644	0.0569	0.0333	0.0251	0.0157	0.0068	0.0117	0.0168
13	0.1516		0.0543	0.0303	0.0229	0.0123	0.0063	0.0122	0.0166
14			0.0512	0.0288	0.0242	0.0113	0.0067	0.0135	0.0167
15			0.0480	0.0294		0.0138	0.0068	0.0150	0.0170
16			0.0455	0.0324		0.0154	0.0064	0.0163	0.0172
17			0.0439				0.0061	0.0172	0.0169
18			0.0435				0.0061	0.0175	0.0164
19			0.0445				0.0062	0.0170	0.0154
20			0.0479				0.0060	0.0159	0.0141
21			0.0537				0.0053	0.0145	0.0124
22			0.0629				0.0042	0.0129	0.0106
23							0.0030	0.0112	0.0088
24							0.0015	0.0094	0.0069
25							0.0000	0.0074	0.0052
26							0.0000	0.0054	0.0037
27							0.0000	0.0036	0.0024
28							0.0000	0.0020	0.0013
29							0.0000	0.0008	0.0006
30							0.0000	0.0000	0.0001
31								0.0000	0.0000
32								0.0000	0.0000
33								0.0000	0.0000
34								0.0000	0.0000
35								0.0002	0.0000
36								0.0008	0.0000
37								0.0015	0.0003
38								0.0020	0.0004
39								0.0026	
40								0.0028	
41								0.0026	
42								0.0018	
43								0.0004	
44								0.0000	
45								0.0000	
46								0.0000	
47								0.0000	
48								0.0000	
49								0.0000	

Table 12. Time-depth velocity in cm s^{-1} hourly for May 12 to May 16, 1990 for a deep station in the mouth of **Herendeen** Bay at the critical cross-section shown in Table 3 (grid location I =2, J =9, Runs 2.23, 2.26). **Upestuary** is positive.

2,9:1

	May 12							time, h								
layer	O	1	2	3	4	5	6	7	8	9	IO	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	17	111	-2	-11	-25	-30	-99	-99	-99	-99	-99	-99	-99	-99	41	31
7	17	12	1	-9	-23	-31	-31	-33	-29	-20	-5	17	35	33	40	30
8	16	122	2	-8	-22	-31	-31	-34	-28	-19	-4	18	34	33	40	30
9	15	111	2	-7	-22	-31	-31	-34	-27	-18	-2	18	33	32	40	30
10	-14	100	11	-7	-22	-31	-31	-34	-26	-17	-1	19	33	32	40	29
11	13	9	1	-8	-22	-32	-31	-34	-27	-17	-2	19	33	32	40	29
12	11	88	0	-9	-23	-33	-33	-36	-29	-19	-2	18	33	32	40	29
13	8	77	-2	-lo	-24	-34	-34	-38	-30	-20	-4	18	33	32	40	29
14	4	5	-3	-12	-26	-35	-36	-39	-32	-21	-5	17	34	32	40	30
15	-1	2	-6	-14	-28	-37	-37	-40	-33	-23	-6	17	34	32	40	30
16	-6	-2	-9	-17	-30	-38	-38	-41	-34	-23	-6	17	34	33	40	30
17	-13	-7	-13	-20	-33	-41	-40	-42	-35	-24	-7	17	34	33	40	30
18	-21	-14	-18	-24	-36	-43	-42	-44	-36	-24	-7	17	34	33	40	30
19	-29	-21	-24	-30	-40	-47	-44	-46	-37	-25	-7	17	35	33	40	30
20	-38	-29	-31	-36	-46	-51	-48	-18	-39	-26	-7	17	35	33	40	30
21	-45	-37	-38	-43	-52	-56	-52	-51	-41	-27	-7	18	36	34	40	30
22	-50	-43	-45	-50	-58	-62	-56	-54	-42	-27	-6	21	37	34	40	30
23	-51	-46	-50	-55	-64	-67	-59	-55	-42	-24	-1	25	37	34	40	29
24	-44	-44	-50	-56	-66	-69	-60	-53	-37	-16	8	29	38	33	40	29
25	-31	-33	-43	-52	-63	-65	-54	-43	-24	-3	18	32	36	31	38	27
26	-15	-19	-29	-37	-46	-45	-33	-23	-7	9	23	30	30	26	32	22
27	-5	-8	-12	-13	-15	-12	-8	-4	5	10	14	16	17	13	16	10

									time, h		May 13					
layer	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	14	-1	-13	-26	-37	-34	-28	-22	-14	-15	-lo	-8	-14	-23	-23	-99
7	14	-1	-13	-26	-35	-34	-27	-19	-lo	-12	-lo	-9	-15	-24	-27	-36
8	14	-1	-13	-27	-35	-33	-27	-18	-9	-11	-lo	-11	-17	-26	-30	-39
9	14	-1	-14	-27	-34	-33	-27	-18	-9	-11	-11	-13	-20	-28	-32	-41
10	14	-1	-14	-27	-35	-33	-26	-18	-lo	-12	-13	-16	-22	-31	-34	-43
11	13	-2	-14	-28	-35	-33	-27	-19	-11	-13	-15	-18	-25	-34	-37	-46
12	13	-2	-14	-28	-35	-33	-28	-20	-13	-15	-16	-21	-29	-38	-41	-51
13	13	-2	-14	-28	-36	-34	-28	-21	-14	-16	-18	-23	-32	-42	-45	-54
14	14	-2	-14	-28	-36	-34	-28	-21	-14	-17	-19	-24	-34	-45	-49	-59
15	14	-2	-14	-28	-36	-34	-28	-21	-15	-17	-20	-25	-36	-48	-53	-63
16	14	-2	-14	-28	-36	-34	-28	-21	-15	-18	-20	-26	-37	-50	-56	-67
17	13	-2	-14	-28	-36	-34	-28	-21	-15	-18	-20	-26	-37	-51	-59	-70
18	13	-2	-14	-28	-36	-34	-28	-21	-14	-17	-20	-26	-37	-51	-60	-72
19	13	-2	-15	-2s	-36	-34	-28	-20	-14	-16	-19	-26	-37	-51	-60	-73
20	13	-2	-15	-29	-36	-34	-28	-20	-13	-16	-18	-24	-36	-50	-59	-73
21	13	-2	-15	-29	-37	-34	-28	-20	-13	-15	-17	-23	-34	-48	-57	-71
22	13	-2	-15	-30	-38	-35	-28	-20	-12	-13	-15	-20	-31	-45	-54	-66
23	13	-3	-16	-31	-39	-36	-28	-19	-10	-11	-12	-17	-28	-41	-49	-60
24	12	-4	-17	-33	-40	-35	-26	-15	-6	-7	-9	-14	-24	-37	-43	-51
25	10	-5	-20	-34	-37	-29	-18	-7	11	-2	-5	-11	-21	-31	-34	-39
26	7	-8	-21	-29	-27	-18	-7	2	6	0	-3	-8	-17	-24	-22	-26
27	1	-9	-12	-13	-lo	-4	2	6	6	0	-2	-5	-9	-lo	-7	-9

Table 12 (continued). **Time-depth** velocity in cm S-l hourly for May 12 to May 16, **1990** for a deep station in the mouth of Herendeen Bay at the critical cross-section shown in Table 3 (grid location 1=2, J=9, Runs 2.23, 2.26). **Upestuary** is positive. **2,9:2**

	time, h															
layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-99	-99	-99	-99	-99	-99	47	32	23	0	-18	-28	-32	-25	-17	-12
7	-26	-20	-10	13	32	35	43	32	22	1	-18	-29	-34	-28	-18	-8
8	-28	-21	-11	10	30	34	42	33	22	1	-19	-33	-38	-30	-19	-8
9	-30	-23	-12	7	26	32	42	33	21	1	-19	-36	-42	-34	-21	-9
10	-32	-24	-14	4	24	31	41	33	21	c	-20	-38	-46	-37	-24	-10
11	-35	-27	-17	0	21	29	40	33	21	0	-20	-39	-49	-41	-27	-13
12	-40	-31	-21	-4	18	28	39	32	21	0	-20	-39	-53	-47	-33	-17
13	-44	-36	-26	-8	14	26	39	33	21	0	-20	-40	-55	-52	-38	-21
14	-49	-41	-31	-13	10	25	39	33	21	0	-20	-41	-s7	-57	-44	-26
15	-53	-46	-36	-18	5	23	38	33	21	0	-20	-41	-58	-60	-50	-32
16	-58	-51	-41	-23	0	20	37	33	21	0	-20	-41	-59	-64	-55	-38
17	-62	-56	-46	-29	-4	18	37	33	21	0	-20	-41	-60	-67	-60	-45
18	-65	-59	-51	-34	-9	17	37	33	21	0	-20	-41	-61	-69	-64	-51
19	-67	-62	-54	-3a	-11	16	37	33	21	0	-20	-41	-62	-71	-68	-57
20	-67	-52	-55	-39	-11	17	38	33	21	0	-20	-42	-62	-72	-72	-62
21	-64	-59	-51	-35	-8	19	39	33	21	0	-20	-42	-62	-73	-74	-66
22	-58	-51	-41	-25	0	23	39	33	21	0	-20	-42	-63	-74	-74	-67
23	-49	-39	-28	-12	10	26	40	33	21	0	-21	-43	-64	-73	-72	-66
24	-37	-26	-15	0	17	27	40	32	20	-1	-22	-45	-64	-69	-65	-59
25	-23	-12	-3	9	22	27	39	30	18	-3	-24	-45	-59	-57	-50	-43
26	-8	0	6	13	22	24	36	25	14	-6	-25	-38	-43	-36	-29	-24
27	3	5	8	10	14	14	17	13	7	-8	-15	-16	-15	-12	-9	-8

	May 14															
	time, h															
layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	2	10	10	4	-3	-13	-19	-22	-99	-99	-99	-99	-99	-99	-99	48
7	3	9	9	5	-3	-14	-21	-23	-26	-20	-11	0	20	36	36	45
8	3	9 9	8 8	4 4	3	-15	-22	-23	-27	-20	-12	0	20	35	35	44
9	3	7 7	7 7	3 3	5	-16	-23	-24	-28	-20	-12	0	21	35	35	44
10	2	6	5	2	-6	-17	-24	-25	-28	-21	-11	1	21	35	35	44
11	0	5	4 4	0	-8	-19	-26	-26	-29	-21	-12	0	21	35	35	44
12	-2	3	2	-2	-9	-21	-28	-28	-31	-23	-13	-1	20	35	35	44
13	-6	0	0	-4	-11	-23	-31	-31	-33	-25	-15	-2	20	35	35	44
14	-10	-2	-2	-6	-14	-26	-33	-33	-35	-27	-17	-3	19	35	35	44
15	-15	-6	-5	-8	-16	-2a	-36	-36	-37	-29	-18	-5	18	34	35	44
16	-20	-lo	-8	-11	-19	-31	-39	-39	-40	-31	-20	-6	17	34	35	44
17	-26	-15	-12	-15	-23	-35	-43	-42	-43	-33	-22	-8	16	34	35	44
18	-33	-20	-17	-19	-26	-39	-46	-45	-46	-36	-25	-lo	14	33	35	44
19	-39	-26	-22	-24	-31	-43	-51	-49	-49	-39	-27	-12	13	33	35	44
20	-46	-33	-28	-29	-36	-48	-56	-55	-53	-42	-30	-15	11	32	35	44
21	-51	-39	-34	-35	-41	-53	-61	-59	-58	-46	-33	-17	9	32	35	44
22	-55	-45	-40	-40	-46	-58	-66	-63	-62	-49	-35	-19	9	32	35	44
23	-55	-47	-43	-43	-50	-62	-69	-66	-63	-49	-35	-19	10	33	35	44
24	-50	-45	-42	-44	-s1	-63	-69	-65	-60	-45	-31	-13	15	35	35	44
25	-36	-36	-38	-41	-47	-58	-63	-56	-50	-36	-19	-1	23	35	33	42
26	-20	-22	-25	-29	-35	4 - 4	8 - 4	0	-34	-18	-3	11	25	31	27	34
27	-6	-8	-lo	-11	-13	-15	-13	-lo	-7	-1	7	11	15	18	15	18

Table 12 (continued). Time-depth velocity in cm s^{-1} hourly for May 12 to May 16, 1990 for a deep station in the mouth of Herendeen Bay at the critical cross-section shown in Table 3 (grid location I =2, J=9, Runs 2.23, 2.26). Upestuary is positive.

2,9:3

	time, h										May 15					
layer	16	17	II?	19	20	21	22	23	0			3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	38	18	4	-5	-19	-26	-24	-19	-11	-8	-1	4	-3	-16	-28	-31
7	37	17	4	-5	-20	-27	-2s	-20	-11	-6	-1	33	-3	-16	-28	-34
8	36	17	3	-5	-20	-28	-27	-21	-12	-6	-2	2	-5	-17	-29	-36
9	35	16	3	-6	-21	-29	-28	-22	-13	-7	-3	1	-6	-19	-31	-38
10	35	16	3	-6	-21	-29	-29	-23	-14	-8	-4	-1	-8	-21	-33	-41
11	35	16	3	-6	-21	-30	-30	-24	-15	-9	-5	-2	-9	-23	-35	-43
12	35	16	3	-6	-21	-30	-30	-25	-16	-lo	-7	-4	-11	-24	-37	-46
13	35	16	3	-6	-21	-30	-30	-25	-16	-11	-7	-1	-12	-26	-39	-49
14	35	16	3	-6	-21	-30	-30	-25	-17	-12	-8	-5	-13	-26	-41	-51
15	35	16	3	-6	-21	-30	-30	-25	-17	-12	-8	-6	-13	-27	-41	-52
16	35	16	3	-6	-21	-30	-30	-25	-17	-12	-8	-6	-13	-27	-42	-53
17	35	16	3	-6	-21	-30	-30	-25	-17	-11	-8	-5	-13	-27	-42	-53
18	35	16	3	-6	-21	-30	-30	-25	-17	-11	-8	-5	-12	-26	-41	-52
19	35	16	3	-6	-21	-30	-31	-25	-17	-11	-7	-4	-12	-25	-40	-51
20	35	16	3	-6	-21	-31	-31	-26	-17	-11	-7	-3	-10	-24	-38	-49
21	35	16	3	-6	-22	-32	-32	-26	-16	-lo	-6	-2	-9	-22	-36	-47
22	35	16	3	-6	-23	-33	-33	-25	-15	-9	-4	0	-7	-20	-34	-45
23	35	16	2	-7	-24	-34	-32	-24	-13	-6	-1	2	-5	-18	-31	-41
24	34	15	1	-9	-26	-34	-30	-21	-9	-2	3	5	-2	-M	-29	-37
25	31	12	-1	-11	-26	-31	-26	-16	-3	4	7	8	-1	-14	-26	-32
26	25	9	-3	-12	-24	-25	-17	-7	5	9	8	8	1	-13	-21	-23
27	13	3	-6	-9	-12	-10	-6	1	8	7	6	6	2	-lo	-9	-8

	time, h															
layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-s9	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99.	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-27	-99	-99	-99	-99	-99	-99	26	34	22	0	-21	-33	-34	-2s	-14
-1	-32	-33	-26	-15	1	24	36	26	33	22	0	-21	-34	-37	-27	-15
8	-35	-36	-27	-16	0	22	35	26	32	21	0	-23	-39	-42	-29	-16
9	-37	-38	-28	-16	-1	20	33	25	31	20	-1	-25	-43	-47	-33	-18
10	-39	-40	-30	-18	-2	18	32	24	31	20	-2	-26	-47	-53	-38	-20
11	-42	-43	-34	-21	-5	16	31	23	30	20	-2	-26	-50	-60	-44	-24
12	-46	-48	-39	-25	-9	13	29	23	30	19	-2	-26	-52	-68	-s2	-30
13	-50	-52	-44	-30	-13	9	28	22	30	20	-2	-27	-54	-7s	-61	-37
14	-52	-56	-49	-36	-19	4	26	22	30	20	-2	-27	-56	-81	-71	-44
15	-55	-59	-53	-41	-24	-1	24	21	30	20	-2	-28	-57	-86	-80	-53
16	-56	-61	-56	-45	-29	-5	22	21	30	20	-2	-28	-57	-89	-89	-63
17	-56	-62	-58	-48	-33	-9	21	21	30	20	-2	-27	-58	-92	-98	-73
18	-56	-62	-58	-49	-35	-lo	21	21	30	20	-1	-27	-58	-95	-106	-84
19	-55	-60	-57	-47	-32	-8	22	22	31	20	-1	-27	-58	-97	-112	-96
20	-53	-58	-53	-42	-25	-1	25	23	31	20	-1	-27	-58	-98	-117	-107
21	-50	-55	-48	-35	-16	8	29	24	31	20	-1	-27	-59	-99	-121	-116
22	-47	-51	-41	-26	-7	16	32	25	31	20	-2	-28	-59	-loo	-122	-122
23	-42	-44	-33	-16	3	22	34	25	31	20	-2	-29	-60	-loo	-120	-122
24	-36	-35	-23	-6	12	26	35	2s	30	19	-3	-30	-61	-95	-112	-114
2s	-27	-25	-11	5	18	28	34	23	28	17	-5	-32	-58	-83	-90	-90
26	-16	-13	1	12	19	26	29	17	23	13	-8	-30	-47	-59	-57	-56
27	-4	-1	7	9	10	15	16	10	13	6	-9	-16	-19	-22	-21	-20

Table 13. Time-depth velocity in cm s^{-1} for the four days May 12, 1990 to May 16, 1990 for a deep station in mouth of Moller Bay at the critical cross-section shown in Table 3 (grid location 1=2, J= 13, Runs 2.23, 2.26). Upestuary is positive.

2,13:1

	May 12								time, h							
layer	O	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	35	27	14	4	-12	-21	-99	-99	-99	-99	-99	-99	-99	-99	51	41
7	35	28	17	7	-9	-19	-20	-26	-20	-8	19	49	58	51	51	40
8	34	28	17	7	-8	-18	-18	-24	-15	-3	23	50	57	50	50	39
9	33	27	16	7	-8	-17	-15	-18	-8	4	27	50	55	48	48	38
10	31	25	15	6	-9	-17	-12	-13	-1	10	30	48	50	44	44	35
11	26	21	11	3	-10	-14	-7	-6	5	13	29	41	42	38	38	29
12	13	10	5	0	-9	-9	-2	1	7	9	17	23	22	18	19	14

									time, h	May 13						
layer	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	23	6	-6	-18	-25	-15	-4	17	26	25	26	20	7	-7	-12	-99
7	22	6	-6	-18	-22	-13	-1	19	29	28	26	20	7	-6	-12	-26
8	22	5	-7	-20	-20	-10	2	21	30	29	27	19	7	-6	-12	-26
9	20	4	-8	-21	-20	-8	5	23	30	29	26	19	6	-6	-12	-25
10	18	2	-11	-22	-18	-4	8	23	29	27	24	17	4	-8	-12	-24
11	14	-1	-13	-20	-13	0	10	22	25	23	20	13	2	-9	-11	-20
12	5	-5	-11	-11	-5	4	8	11	13	11	10	7	-1	-8	-7	-10

									time, h							
layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-99	-99	-99	-99	-99	-99	76	52	39	18	13	10	2	2	0	7
7	-11	5	31	57	70	66	70	52	38	17	13	10	2	0	8	23
8	-10	6	31	56	69	65	69	51	37	17	11	8	0	-1	8	24
9	-8	8	32	55	66	63	68	50	35	16	10	6	1	-2	7	23
10	-4	11	32	52	62	58	63	46	32	14	8	5	-3	-3	6	23
11	1	13	29	47	53	50	58	40	27	10	6	3	-4	-4	6	20
12	5	9	17	23	27	24	19	19	12	3	3	1	-5	-3	5	13

Table 13 (continued). Time-depth velocity in cm s^{-1} hourly for the four days May 12, 1990 to May 16, 1990 for a deep station in mouth of **Moller** Bay at the critical cross-section shown in Table 3 (grid location 1=2, J= 13, Runs 2.23, 2.26). **Upestuary** is positive. 2,13:2

	May 14															
									time, h							
layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
s	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	34	38	36	27	12	-6	-19	-26	-99	-99	-99	99	-99	-99	-99	57
7	34	38	36	27	12	-6	-19	-2s	-31	-23	-12	5	38	54	47	54
8	35	38	35	27	11	-6	-19	-24	-30	-21	-10	8	38	53	46	52
9	34	37	34	26	10	-7	-20	-22	-25	-15	-4	13	40	51	45	51
10	.33	34	31	23	8	-9	-20	-19	-20	-8	3	18	40	48	41	48
11	29	30	26	19	5	-11	-17	-13	-11	0	9	20	35	42	35	41
12	16	15	14	11	2	-lo	-lo	-7	-2	5	8	13	19	21	17	19

											May 15					
									time, h							
layer	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	46	25	6	-5	-22	-31	-29	-15	9	23	30	32	19	3	-6	-13
7	45	24	5	-5	-22	-32	-30	-15	8	24	30	32	19	4	-4	-12
8	43	23	4	-6	-24	-33	-28	-12	10	24	30	32	18	3	-4	-11
9	42	21	3	-8	-26	-32	-25	-8	15	26	30	31	17	2	-4	-12
10	38	19	1	-10	-27	-30	-19	-1	19	26	28	28	15	0	-6	-12
11	33	15	-2	-13	-24	-22	-11	5	21	24	24	23	11	-2	-7	-11
12	16	4	-6	-10	-13	-10	-3	8	12	12	13	13	5	-4	-6	-7

									time, h							
layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99.	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-11	-99	-99	-99	-99	-99	-99	56	63	52	29	21	22	19	14	11
7	-11	-16	-7	8	36	60	61	56	62	51	29	21	22	19	15	12
8	-lo	-16	-5	10	36	59	60	55	61	50	29	21	20	18	14	12
9	-9	-14	-2	12	36	57	58	53	59	48	27	19	19	16	13	11
10	-8	-12	1	15	36	54	53	49	54	44	24	17	17	14	12	10
11	-6	-8	5	15	33	48	46	43	47	38	19	14	14	12	10	8
12	-3	-1	7	9	17	24	23	2!	24	19	9	8	9	8	7	6

Table 14. Time-depth longitudinal velocity in cm s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive.

15,11:U

June 24								time, h							
layer	0	1	2	3	4	5	6	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-1
6	-5	-5	-7	-8	-8	-6	-99	-99	-99	-99	-99	-99	2	0.1	-1
7	-3	-3	-5	-7	-7	-7	-6	-4	-2	-1	0	2	2	2	1 -0.1
8	0	0	-2	-4	-6	-6	-6	-4	-3	-1	0	2	2	2	2 0.1
9	2	2	0.1	-1	-4	-5	-5	-4	-3	-2	0	2	2	3	2 2
1 0	- 2	3	2	0.1	-2	-3	-4	-4	-3	-2	0	2	2	3	3 2
1 1	2	3	3	2	0	-2	-3	-3	-3	-2	0	1	2	2	3 3
12	2	3	3	2	0.1	0	-1	-2	-2	-2	0	1	1	2	2 3
1	3 2	3	3	3	2	0.1	0	-1	-2	-2	-0.1	0.1	0.1	2	2 3
14	I	2	3	3	2	1	0.1	0	-1	-2	-0.1	0	0.1	1	2 3
15	0.1	2	2	2	2	2	1	0	-0.1	-1	-0.1	0	0	0.1	1 2
16	0	1	2	2	2	2	1	0.1	0	-1	o.	1	0	0	0 1 2
17	0	0	0.1	2	2	2	2	1	0	-0.1	0	0	0	0	0.1 2
18	-1	0	0	0.1	1	2	2	1	0	-0.1	0	0	0	0	0 1
19	-1	-1	0	0	0.1	2	2	1	0	0	0	0	0	0	0 1
20	-2	-2	-1	0	0	1 1	1	0.1	0	0	0.1	0	0	0	0.1
21	-2	-2	-2	-0.1	0	0.1	0.1	1	0.1	0	0	0.1	0	0	0 0.1
22	-2	-2	-2	-1	-0.1	0	0.1	0.1	0.1	0	0.1	1	0.1	0	0 0
23	-2	-2	-2	-2	-1	0	0	0	0	0	1	2	0.1	0.1	0 0
24	-2	-2	-3	-2	-2	-0.1	0	0	0	0.1	1	2	1	0.1	0 0
25	-1	-2	-3	-2	-2	-1	-0.1	0	0	0.1	2	3	2	1	0.1 0
26	-0.1	-2	-3	-3	-2	-2	-1	-0.1	0	0.1	2	3	2	2	0.1 0
27	0	-2	-2	-3	-2	-2	-2	-0.1	0	0.1	2	3	3	2	0.1 0
28	0.1	-1	-2	-2	-3	-2	-2	-1	0	0.1	3	4	3	2	1 0
29	1	0	-1	-2	-3	-2	-2	-2	-0.1	0.1	3	4	4	3	1 0
30	2	0	-0.1	-2	-2	-3	-2	-2	-0.1	0.1	3	4	4	3	2 0
31	3	0.1	0	-1	-2	-3	-3	-2	-1	0.1	3	4	4	3	2 0
32	3	1	0	-0.1	-2	-3	-3	-2	-1	0	3	5	4	3	2 0
33	4	2	0.1	0	-2	-3	-3	-3	-2	0	3	5	5	4	2 0
34	4	3	1	0	-2	-3	-3	-3	-2	0	3	5	5	4	2 0
35	5	3	2	0	-1	-3	-3	-3	-2	0	3	5	5	4	2 0
36	5	3	2	0	-1	-2	-3	-3	-2	0	3	5	5	4	2 0
3	7 4	3	1	0	-1	-2	-3	-3	-1	0.1	3	5	4	3	2 0
38	3	2	1	0	-0.1	-2	-3	-2	-1	0.1	3	4	4	3	1 -0.1

Table 14 (continued). **Time-depth** longitudinal velocity in cm s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for **TEC** Station 36 in **Herendeen** Bay (**grid** location I= 15, J= 11, Run 2.36). Upestuary is positive.

15,11:U

time, h — June 25

layer	16	17	18	19	20	21	22	23				3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-4	-5	-4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-2	-4	-3	-2	0	0	-2	-3	-3	-3	-2	-2	-3	-4	-2	-99
7	-0.1	-2	-2	-1	0	0.1	-1	-2	-2	-2	-2	-3	-4	-5	-5	-4
8	-0.1	0	-1	-0.1	0.1	0.1	-0.1	-0.1	-0.1	0	0	-2	-4	-5	-6	-5
9	2	0.1	0	0	1	1	0	0	0	0.1	0.1	-0.1	-2	-4	-5	-5
10	3	2	0.1	0	1	1	0	0	0	1	2	0.1	-0.1	-3	-4	-4
11	3	2	1	0.1	2	1	0	0	0	2	2	1	0.1	-1	-2	-3
12	3	3	2	1	2	1	0	0	0	1	2	2	1	0	-0.1	-2
13	3	3	2	1	2	1	0	0.1	0	1	2	2	2	0.1	0	-0.1
14	3	3	2	1	2	0.1	-0.1	-0.1	0	0.1	2	2	2	1	1	0
15	3	3	2	1	1	0.1	-0.1	-1	-0.1	0	1	2	2	2	2	1
16	3	3	2	1	1	0.1	-0.1	-1	-1	0	0.1	0.1	1	2	2	2
17	3	2	2	0.1	1	0	-1	-1	-1	-0.1	0	0.1	1	1	2	2
18	2	2	1	0.1	0.1		-1	-2	-2	-1	-0.1	0	0.1	1	2	2
19	2	2	1	0	0.1	0	-1	-2	-2	-1	-1	-0.1	0	0.1	2	2
20	2	1	0.1	0	0	0	-1	-1	-2	-2	-2	-1	0	0	1	2
21	1	1	0	0	0	0	-1	-1	-2	-2	-2	-2	-0.1	0	0.1	1
22	1	0.1	0	-0.1	0	0	-0.1	-1	-1	-2	-2	-2	-1	-0.1	0	0.1
23	0.1	0	0	-0.1	-0.1	0	-0.1	-0.1	-1	-2	-2	-2	-2	-1	0	0
24	0.1	0	-0.1	-1	-0.1	-0.1	0	0	-0.1	-1	-2	-2	-2	-1	-0.1	0
25	0.1	0	-1	-2	-1	-0.1	0	0	0	-0.1	-2	-2	-2	-2	-1	0
26	0	0	-1	-2	-1	-0.1	0	0.1	0.1	0	-2	-2	-2	-2	-1	-0.1
27	0	0.1	-2	-2	-2	-0.1	0.1	1	1	0	-1	-2	-2	-2	-2	-1
28	0	-1	-2	-3	-2	-0.1	0.1	2	2	1	0	-2	-2	-2	-2	-2
29	0	-2	-3	-3	-2	-1	1	2	2	2	0	-1	-2	-2	-2	-2
30	-0.1	-2	-3	-4	-3	-1	1	2	3	2	0	-0.1	-1	-2	-3	-2
31	-0.1	-3	-4	-5	-3	-2	1	3	3	3	1	0	-1	-2	-3	-3
32	-1	-3	-5	-5	-4	-2	1	3	4	3	2	0	0	-2	-3	-3
33	-1	-3	-5	-6	-4	-2	1	3	4	4	3	0	1	-2	-3	-3
34	-2	-4	-6	-6	-5	-2	1	3	5	4	3	1	0	1	-3	-4
35	-2	-4	-6	-7	-5	-2	2	4	5	5	3	2	0.1	-1	-3	-4
36	-2	-4	-6	-7	-5	-2	2	4	5	5	3	2	0.1	-1	-3	-4
37	-2	-5	-6	-6	-4	-2	2	4	5	4	3	2	0.1	-1	-3	-4
38	-2	-4	-5	-5	-3	-4	1	3	4	3	2	1	0.1	-1	-2	-3

Table 14 (continued). Time-depth longitudinal velocity in cm s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive. 15,11:U

	time, h															
layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-3	-4	-5	-99	-99	-99	-99	-99
6	-99	-99	-99	-99	-99	5	4	1	-3	-6	-7	-6	-3	0.1	1	-4
7	-1	2	6	7	6	5	3	0.1	-3	-4	-6	-6	-4	-2	-1	-2
8	-3	-3	-3	-0.1	3	4	2	0	-2	-2	-4	-5	-4	-2	-2	-2
9	-4	-4	-4	-2	0	2	2	0.1	0	0	-1	-3	-3	-2	-2	-1
10	-4	-4	-4	-3	-0.1	0.1	2	1	0.1	1	0	1	-2	-1	-0.1	-0.1
11	-4	-4	-4	-2	-0.1	0	1	1	2	2	2	0	-0.1	0	0	0
12	-3	-3	-4	-2	-0.1	0	1	2	2	3	3	1	0	0.1	0	0
13	-2	-2	-3	-2	0	0	1	2	2	4	3	2	1	1	0.1	0.1
14	-0.1	-2	-2	-1	0	0	1	2	3	4	3	3	2	2	1	0.1
15	0	-0.1	-2	-1	0	0	0.1	1	3	4	4	3	2	2	1	0.1
16	0.1	0	-1	-0.1	0	0	0.1	1	2	4	3	3	2	2	2	0.1
17	1	0	-0.1	0	0	0	0	1	1	2	3	3	3	2	2	0.1
18	1	0.1	0	0	0	0	0	0.1	2	3	3	2	2	2	1	0.1
19	1	0.1	0	0	0	0	0	0	1	2	3	3	2	2	2	1 0
20	1	1	0	0	1	0	1	0	0	0	1	2	2	2	1	2 0 1 0
21	1	1	0.1	0.1	1	0	0	0	0.1	2	2	1	0.1	1	0.1	0
22	1	1	0.1	1	1	0	0	0	0.1	2	1	0.1	0	0.1	0	0
23	0.1	1	1	2	2	0.1	0.1	0	0.1	1	0.1	0	0	0	0	0
24	0	0.1	1	2	2	1	0.1	0	0	1	0.1	0	0	1	0	0 0
25	0	0.1	2	3	3	2	1	0.1	0	0	1	0	0.1	-0.1	0	0 0
26	0	0.1	2	3	3	2	2	0.1	0	0.1	0	-1	-1	-0.1	0	0
27	0.1	0	2	3	4	2	2	0.1	0	0	-0.1	-2	-2	-1	-0.1	0
28	-1	0	2	3	4	3	2	1	0	0	-0.1	-2	-2	-2	-0.1	0
29	-1	0	0	2	3	4	3	3	1	0	0	-1	-3	-3	-2	-1 0
30	-2	0	0	1	4	4	3	3	2	0	0	-2	-3	-4	-3	-2 0
31	-2	-0.2	1	1	3	4	3	3	2	0	-0.1	-2	-4	-4	-3	-2 0
32	-3	-1	1	3	4	4	3	2	0	0.1	-3	-4	-5	-4	-2	0
33	-3	-1	1	0	1	3	5	4	3	2	0	-1	-3	-5	-5	-4 -3 0
34	-3	-2	0.1	3	5	4	4	2	0	-1	-4	-6	-6	-5	-3	0
35	-4	-2	0.1	3	5	4	4	2	0	-2	-1	-6	-6	-5	-3	0
36	-4	-2	0.1	3	5	4	4	2	0	-2	-4	-6	-6	-5	-3	0
37	-3	-2	0.1	3	4	3	3	2	0	-2	-4	-6	-6	-4	-2	0.1
38	-3	-3	-1	-1	1	3	4	3	3	1	0	-2	-4	-5	-5	-3 -2 0.1

Table 14 (continued). **Time-depth** longitudinal velocity in cm S-* hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive. **15,11:U**

	June 26									time, h						
layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-6	-4	-2	-3	-5	-7	--I	-6	-99	-99	-99	-99	-99	-99	-99	2
7	-3	-3	-2	-2	-4	-6	-7	-7	-6	-5	-4	-3	-1	1	2	2
8	-2	-0.1	0	0	-1	-3	-5	-6	-6	-5	-5	-3	-0.1	2	3	3
9	-0.1	0	1	1	0.1	0	-2	-4	-5	-5	-4	-3	0	2	3	3
10	0	1	2	3	3	1	0	-2	-3	-4	-4	-2	0	2	3	3
11	-0.1	2	3	3	3	3	1	0	-1	-3	-3	-2	0	2	3	3
12	1	2	3	4	4	3	2	1	0	-2	-2	-2	0	2	2	3
13	1	2	3	3	4	3	3	2	1	0	-1	-1	0	1	2	2
14	1	2	3	3	3	3	3	3	2	0	0.1	-0.1	0	0.1	1	2
15	1	2	2	2	3	3	3	3	2	1	0	-0.1	0	0.1	0.1	1
16	1	1	1	2	2	2	3	3	3	1	0	0	0	0	0	0.1
17	0.1	0.1	0.1	0.1	1	2	2	3	3	2	0.1	0	0	0	0	0
18	0	0	0	0	0	0.1	1	2	2	2	0.1	0	0	0	-0.1	0
19	0	0	-0.1	-0.1	0	0	0.1	2	2	1	0.1	0	0	0	-0.1	0
20	0	-0.1	-1	-2	-1	-0.1	0	0.1	1	1	0.1	0	0	0	-0.1	-0.1
21	0	-0.1	-2	-2	-2	-2	-0.1	0	0.1	0.1	0.1	0.1	0.1	0	-0.1	-0.1
22	0	-0.1	-2	-3	-2	-2	-2	-0.1	0	0.1	0.1	0.1	0.1	0.1	0	0
23	0	-0.1	-2	-3	-3	-3	-2	-1	0	0	0.1	0.1	1	0.1	0	0
24	0	-0.1	-2	-3	-3	-3	-3	-2	-0.1	0	0.1	1	1	1	0	0
25	0	0	-2	-3	-3	-3	-3	-2	-1	-0.1	0	1	2	2	0.1	0.1
26	0	0	-1	-2	-3	-3	-3	-3	-2	-0.1	0	1	2	2	1	1
27	0.1	0	-0.1	-2	-2	-3	-3	-3	-2	-1	0	1	2	3	2	2
28	1	0.1	0	-1	-2	-3	-3	-3	-2	-2	0	2	3	3	2	2
29	1	1	0	-0.1	-1	-2	-3	-3	-3	-2	0	2	3	3	3	2
30	1	2	1	0	-0.1	-2	-3	-3	-3	-2	0	2	3	4	3	3
31	2	2	2	0.1	0	-1	-3	-3	-3	-2	0	2	3	4	3	3
32	2	3	2	2	0.1	-0.1	-2	-3	-3	-2	-0.1	1	3	4	3	3
33	2	3	3	2	2	0	-2	-3	-3	-3	-0.1	1	3	4	4	3
34	2	3	3	3	2	0.1	-1	-3	-3	-3	-0.1	1	3	4	4	3
35	2	4	4	3	3	1	-0.1	-3	-3	-3	-0.1	1	3	4	4	4
36	3	4	4	3	3	1	-0.1	-2	-3	-3	-0.1	1	3	4	4	3
37	3	4	4	3	3	1	-0.1	-2	-3	-3	-0.1	2	3	4	4	3
38	3	3	3	3	2	1	-0.1	-2	-3	-2	0	2	3	3	3	3

Table 14 (continued). Time-depth longitudinal velocity in cm s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive. 15,11:U

layer	16	17	18	19	20	21	22	23
	time, h							
2	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99
6	-0.1	-3	-5	-7	-7	-7	-7	-99
7	0	-2	-4	-5	-6	-5	-4	-4
8	1	0	-1	-2	-4	-3	-3	-3
9	2	1	0.1	0	-1	-2	-2	-1
10	3	2	2	2	0	0	0	0
11	3	3	3	2	2	0.1	0.1	0
12	3	3	3	3	2	2	1	0.1
13	2	3	3	3	3	2	2	0.1
14	2	2	3	3	3	2	2	0.1
15	1	2	2	3	3	2	2	0.1
16	0.1	1	2	2	2	2	2	0.1
17	0	1	2	2	2	2	1	0
18	0	0.1	1	2	2	2	1	0
19	0	0	0.1	1	1	1	0.1	0
20	-0.1	0	0.1	0.1	0.1	0.1	0.1	0
21	-0.1	0	0	0	0	0.1	0	0
22	-0.1	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
25	0	0	0	0	-0.1	-0.1	0	0
26	0	0	0	-0.1	-1	-0.1	-0.1	0
27	0.1	0	0	-0.1	-1	-1	-0.1	0
28	0.1	0	-0.1	-1	-2	-2	-1	0
29	1	0	-0.1	-2	-2	-2	-1	0
30	1	0	-0.1	-2	-3	-3	-2	-0.1
31	2	0	-1	-2	-3	-3	-2	-1
32	2	0	-1	-3	-4	-4	-3	-1
33	2	0	-2	-3	-5	-4	-3	-2
34	2	0	-2	-4	-5	-5	-4	-2
35	2	0	-2	-4	-6	-5	-4	-2
36	2	0	-2	-4	-6	-5	-4	-2
37	2	0	-2	-4	-6	-5	-4	-2
38	2	0	-2	-4	-5	-4	-3	-1

Table 15. Time-depth vertical velocity in 10-s m s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive.

15,11:W

	June 24								time, h							
layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-6
6	-15	-9	2	14	23	23	-99	-99	-99	-99	-99	-99	-99	-26	-15	-6
7	-19	-14	-1	14	25	25	27	20	15	5	-15	-33	-30	-25	-14	-4
8	-22	-20	-6	12	26	27	29	22	15	4	-16	-32	-28	-25	-15	-5
9	--25	-25	-11	9	26	28	30	23	16	4	-17	-33	-29	-27	-18	-8
10	-27	-29	-15	6	25	28	31	24	17	4	-17	-34	-30	-28	-20	-11
11	-27	-31	-18	3	23	27	30	24	17	5	-17	-34	-30	-29	-22	-14
12	-26	-33	-20	0	20	25	29	24	18	6	-15	-32	-28	-29	-24	-17
13	-24	-33	-22	-2	18	23	27	23	18	8	-13	-30	-26	-28	-24	-19
14	-22	-33	-22	-3	16	20	24	21	18	1	-11	-27	-23	-25	-23	-20
15	-18	-32	-22	-4	13	17	21	19	17	11	-8	-23	-19	-22	-22	-20
16	-14	-30	-22	-5	11	14	17	16	16	12	-6	-20	-15	-18	-19	-20
17	-1	-27	-20	-5	9	10	13	12	14	12	-3	-16	-lo	-14	-16	-19
18	-5	-23	-18	-4	8	7	8	7	11	12	-2	-12	-6	-9	-12	-17
19	-0.1	-19	-15	-3	6	3	4	3	7	10	-0.1	-9	-1	-4	-8	-14
20	4	-15	-12	-2	6	0	-0.1	-2	3	9	0	-7	3	1	-3	-11
21	8	-10	-8	0.1	6	-2	-5	-7	-1	6	-0.1	-5	7	6	2	-8
22	12	-5	-4	4	6	-5	-9	-12	-6	3	-2	-4	10	11	7	-4
23	16	-0.1	0.1	7	7	-6	-13	-17	-10	-0.1	-4	-3	13	15	11	0
24	18	4	5	11	9	-7	-16	-21	-15	-4	-6	-3	15	19	15	4
25	20	8	10	15	11	-7	-18	-25	-19	-8	-9	-4	16	22	19	8
26	21	12	14	18	13	-7	-19	-28	-23	-12	-12	-6	16	24	23	11
27	21	15	18	22	16	-5	-20	-30	-26	-16	-15	-7	16	26	26	15
28	21	17	22	26	19	-4	-19	-31	-29	-19	-18	-1	15	27	29	18
29	19	19	25	29	22	-2	-18	-31	-30	-22	-21	-12	14	28	31	22
30	17	19	27	32	25	0.1	-17	-31	-31	-24	-24	-14	12	28	32	25
31	13	19	28	34	27	4	-14	-29	-31	-25	-26	-17	11	27	33	27
32	1	18	29	36	30	7	-12	-27	-30	-26	-28	-19	8	26	34	30
33	5	16	28	36	31	9	-9	-25	-29	-27	-29	-21	6	25	34	31
34	0.1	14	27	36	33	12	-5	-22	-27	-26	-30	-24	3	23	34	33
35	-4	11	25	35	33	14	-2	-18	-25	-26	-31	-26	0.1	21	33	34
36	-8	8	23	34	34	17	1	-15	-22	-25	-32	-28	-2	18	32	34
37	-12	5	21	33	34	19	5	-11	-20	-24	-32	-29	-4	16	30	34
38	-15	3	19	31	33	20	7	-8	-17	-23	-32	-30	-6	13	28	33

Table 15 (continued). **Time-depth** vertical velocity in 10^{-5} m s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for **TEC** Station 36 in **Herendeen** Bay (grid location I= 15, J= 11, Run 2.36), Down is positive. **15,11:W**

									time, h		June 25					
layer	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-4	13	25	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-0.1	17	27	29	13	3	-4	-9	-16	-20	-23	-13	-3	13	18	-99
7	0.1	19	30	29	11	0.1	-4	-1	-17	-24	-30	-20	-8	11	17	21
8	0	20	31	29	9	-1	-4	-9	-18	-28	-35	-23	-9	11	18	22
9	-2	20	32	30	8	-2	-3	-8	-18	-30	-38	-25	-1	12	20	24
10	-4	18	32	30	7	-2	-1	-5	-17	-31	-41	-27	-lo	14	21	25
11	-7	17	31	29	7	-2	2	-0.1	-14	-31	-43	-28	-10	14	22	26
12	-lo	15	30	29	6	1	6	4	-11	-30	-43	-29	-10	15	22	26
13	-13	12	29	28	5	0	1	9	-7	-27	-43	-29	-10	14	22	25
14	-15	10	27	27	4	0	13	13	-2	-25	-42	-28	-1	14	20	23
15	-16	8	25	25	3	0	17	18	2	-22	-40	-27	-9	13	17	19
16	-17	7	23	23	1	0	19	22	7	-18	-38	-26	-9	12	15	15
17	-18	5	21	20	1	-1	21	25	11	-14	-35	-23	-7	11	11	10
18	-17	4	19	18	-4	-3	22	28	15	-10	-31	-21	-6	10	8	5
19	-17	3	17	15	-7	-6	22	30	18	-6	-27	-17	-4	1	5	-0.1
20	-15	3	15	12	-11	-9	22	31	21	2	-22	-13	-0.1	10	2	-6
21	-14	2	14	9	-15	-12	20	31	24	2	-17	-8	3	11	-0.1	-11
22	-12	2	12	5	-19	-16	18	30	25	6	-12	-3	7	12	-2	-15
23	-9	3	10	2	-23	-20	14	28	26	9	-7	2	11	13	-4	-19
24	-7	3	9	-0.1	-27	-25	10	25	26	11	-2	8	16	16	-4	-22
25	-4	4	8	-3	-31	-30	6	22	25	13	3	13	20	18	-4	-24
26	-1	5	7	-6	-34	-34	0.1	17	23	14	7	18	25	21	-3	-26
27	2	7	7	-7	-37	-38	-4	12	20	14	10	23	30	25	1	-26
28	5	8	7	-9	-39	-42	-1	7	17	13	13	28	34	28	0.1	-25
29	8	10	8	-9	-41	-45	-15	2	13	12	15	31	38	32	3	-24
30	11	13	9	-9	-42	-48	-20	-4	8	1	16	34	42	35	6	-22
31	14	15	10	-8	-42	-50	-25	-1	3	7	16	36	44	38	9	-19
32	17	18	12	-7	-40	-50	-29	-15	-2	3	15	37	46	41	13	-16
33	20	21	15	-4	-38	-50	-32	-20	-7	-0.1	14	37	47	43	16	-12
34	22	24.	18	1	-36	-50	-35	-25	-13	-5	11	36	47	44	19	-8
35	25	27	21	3	-32	-48	-38	-29	-18	-9	9	35	46	45	21	-4
36	27	29	2.5	6	-28	-46	-40	-34	-23	-13	6	33	44	45	23	0
37	28	32	28	10	-25	-44	-42	-37	-27	-17	4	30	42	44	25	3
38	29	“34	30	13	-22	-42	-43	-40	-30	-19	2	28	40	43	27	6

Table 15 (continued). Time-depth vertical velocity in 10^{-5} m s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive. 15,11:W

	time, h															
layer	8	9	10	11	12	13	14	1,5	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-16	-12		5	-99	-99	-99	-99
6	-99	-99	-99	-99	-99	-48	-4S	-33	-16	-12		7	30	29	11	8 3
7	15	6	-7	-32	-48	-48	-52	-38	-18	-1		11	34	31	13	9 7
8	15	7	-5	-31	-52	-55	-55	-40	-18	-8		14	37	34	15	12 11
9	17	1	0	-26	-50	-57	-56	-39	-17	-6		17	40	37	17	15 14
10	19	14	6	-20	-46	-55	-55	-38	-16	-5		18	42	39	19	17 17
11	21	17	11	-14	-41	-52	-53	-37	-15	-6		17	42	39	20	19 20
12	22	20	16	-9	-37	-48	-50	-35	-15	-7		M	41	39	20	20 22
13	22	22	21	4	-32	4	-46	-32	-15	-8		13	39	37	19	20 23
14	20	22	24	0.1	-2a	-40	-43	-30	-14	-9		11	35	35	17	20 25
15	18	21	2s	4	-24	-35	-38	-27	-13	-11		8	32	32	15	19 26
16	14	19	26	7	-20	-30	-33	-23	-12	-12		5	28	28	12	17 27
17	9	16	26	9	-16	-25	-28	-19	-10	-13		2	24	23	8	15 27
18	3	12	24	10	-13	-20	-23	-14	-8	-13		0	20	19	4	13 27
19	-3	7	22	11	-1	-15	-17	-9	-5	-12		-1	17	15	0	1 26
20	-9	1	19	10	-7	-10	-11	-3	-2	-11		-3	13	10	-4	6 25
21	-15	-4	15	9	-5	-6	-5	3	2	-1		-3	10	6	-9	2 23
22	-21	-10	11	8	-4	-2	0.1	8	6	-8		-3	8	2	-14	-2 20
23	-26	-16	6	5	-4	2	6	14	10	-6		-3	5	2	-18	-6 16
24	-31	-21	1	2	-4	5	10	19	15	-3		-2	4	-6	-23	-11 12
25	-35	-26	-4	1	-5	7	14	24	19	0		-0.1	2	-9	-27	-16 8
26	-38	-31	-9	-5	-6	8	18	28	23	3		0.1	2	-11	-31	-21 3
27	-41	-35	-13	-9	-8	9	20	32	27	6		2	1	-13	-34	-25 -3
28	-42	-37	-18	-13	-10	9	22	35	30	9		4	2	-15	-37	-29 -8
29	-42	-39	-21	-16	-13	8	23	37	33	13		7	2	-15	-39	-33 -13
30	-41	-41	-24	-20	-15	7	24	39	36	16		9	4	-15	-40	-36 -18
31	-40	-41	-27	-23	-18	6	24	40	38	19		12	5	-15	-40	-38 -23
32	-37	-40	-28	-26	-20	5	2 3	4 1	4 0	2 1	1	5	7	-13	-40	-39 -26
33	-34	-39	-29	-28	-22	3	22	41	42	24		18	10	-11	-38	-40 -29
34	-31	-36	-29	-30	-25	0.1	20	40	42	26		21	13	-7	-36	-39 -32
35	-26	-34	-29	-31	-27	-1	18	39	43	28		24	17	-4	-33	-38 -33
36	-22	-31	-29	-32	-29	-3	16	37	42	29		27	21	0	-29	-36 -35
37	-18	-28	-28	-33	-30	-5	14	35	41	30		29	24	4	-26	-34 -36
38	-14	-2s	-27	-34	-31	-7	11	33	40	31		31	26	7	-23	-33 -36

Table 15 (continued). **Time-depth vertical** velocity in 10^{-5} m s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive. **15,11:W**

	June 26								time, h							
layer	0	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-6	-16	-21	-16	-8	7	23	25	-99	-99	-99	-99	-99	-99	-99	-29	-30
7	-2	-14	-24	-21	-11	6	25	29	27	25	13	0.1	-16	-32	-32	-33
8	0	-14	-27	-2S	-15	4	25	31	30	29	17	4	-15	-32	-35	-36
9	3	-14	-29	-29	-18	2	24	31	32	32	21	6	-14	-34	-37	-39
10	5	-14	-32	-32	-22	1	21	30	33	34	24	9	-13	-35	-39	-41
11	6	-14	-34	-35	-25	-4	18	27	31	35	27	12	-12	-35	-40	-42
12	8	-14	-36	-38	-27	-7	15	24	29	34	28	14	-1	-34	-40	-42
13	10	-14	-36	-39	-28	-9	12	20	25	32	29	17	-7	-32	-38	-40
14	12	-13	-36	-39	-29	-1	9	16	21	30	29	19	-4	-29	-35	-38
15	14	-11	-35	-37	-28	-10	7	12	16	26	28	21	-2	-26	-31	-34
16	16	-9	-32	-35	-26	-9	5	8	11	22	26	21	0	-22	-27	-29
17	17	-6	-29	-31	-22	-8	4	4	6	17	23	21	2	-19	-22	-24
18	19	-3	-25	-27	-18	-6	4	0	0.1	11	20	21	4	-15	-17	-18
19	20	0	-21	-22	-13	-3	4	-3	-5	6	15	19	4	-12	-12	-13
20	21	2	-16	-16	-8	1	5	-5	-1	0	11	17	4	-1	-8	-7
21	21	5	-11	-1	-2	6	6	-7	-14	-6	6	14	3	-8	-4	-0.1
22	21	7	-7	-3	5	11	8	-8	-19	-11	0	1	2	-6	0	5
23	19	8	3	2	11	16	11	-9	-22	-16	-5	5	-0.1	-6	3	9
24	17	8	0	8	18	21	14	-9	-25	-21	-11	0.1	-3	-6	6	14
25	14	8	3	13	23	26	17	-8	-27	-25	-16	-4	-7	-6	7	18
26	1	6 4	1	7 2	9 3	1 2	1	-6	-28	-28	-21	-9	-10	-8	8	21
27	5	4	5	20	33	36	24	-4	-28	-31	-25	-13	-14	-9	9	2 3
28	0	0.1	5	22	37	40	28	-2	-28	-32	-28	-18	-17	-11	9	2 5
29	-5	-3	4 4	24	40	44	31	0.1	-27	-33	-31	-22	-21	-13	8	26
30	-1	-6	2 2	24	41	46	34	4	-25	-33	-33	-25	-24	-15	7	26
31	-15	-11	0	23	42	48	37	7	-23	-32	-34	-27	-26	-17	6	26
32	-19	-15	-3	21	41	49	39	9	-20	-30	-34	-29	-29	-19	5	26
33	-24	-19	-6	19	40	49	40	12	-17	-28	-33	-30	-30	-21	3	25
34	-28	-23	-1	16	37	48	41	14	-13	-25	-32	-31	-32	-23	2	23
35	-31	-27	-14	12	34	46	41	17	-10	-22	-31	-31	-33	-24	0	22
36	-35	-31	-17	8	30	43	40	18	-7	-19	-28	-31	-34	-25	-2	20
37	-37	-34	-20	5	26	40	39	20	-3	-15	-26	-30	-34	-26	-4	17
38	-39	-36	-22	2	23	37	37	21	0	-12	-24	-30	-34	-27	-5	15

Table 15 (continued). Time-depth vertical velocity in 10-S m s^{-1} hourly for the three days June 24, 1990 to June 26, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive. 15,11:W

	time, h							
layer	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99
6	-17	-4	9	22	31	26	18	-99
7	-19	-4	10	2S	35	29	21	14
8	-22	-6	9	26	37	32	22	14
9	-2s	-9	7	24	37	33	23	15
10	--27	-11	4	22	36	33	24	15
11	-28	-13	2	20	35	32	23	16
12	-28	-15	0	17	32	31	23	16
13	-27	-15	-2	14	29	29	22	17
14	-25	-15	-4	12	26	26	20	17
15	-23	-14	-5	1	23	23	18	16
16	-19	-12	-5	7	20	19	15	15
17	-14	-10	-5	6	17	15	12	14
18	-9	-7	-4	4	13	11	8	12
19	-4	-4	-3	3	1	7	4	9
20	2	0	-2	2	7	2	0.1	6
21	7	3	0	0.1	3	-3	-5	2
22	13	8	2	0.1	0	-7	-10	-2
23	18	12	4	0	-2	-12	-15	-6
24	23	16	6	0.1	-4	-16	-20	-11
25	28	20	9	1	-6	-20	-25	-15
26	32	23	12	2	-8	-23	-30	-20
27	35	27	14	3	-99	-26	-34	-2s
28	38	30	17	4	-9	-28	-37	-29
29	40	33	19	6	-9	-29	-40	-33
30	42	36	22	8	-8	-30	-42	-36
31	43	38	25	10	-7	-29	-43	-39
32	43	40	27	13	-5	-28	-42	-40
33	43	41	30	16	-2	-26	-41	-41
34	43	42	32	19	1	-23	-39	-41
35	42	42	33	22	5	-19	-36	-40
36	40	42	35	25	9	-15	-33	-39
37	38	41	36	27	13	-11	-30	-37
38	35	40	36	29	16	-7	-27	-35

Table 16. Time-depth longitudinal velocity in cm s^{-1} hourly for the two days July 1, 1990 and July 2, 1990 for TEC Station 39 in Moller Bay (grid location 1=7, J= 15, Run 2.37). Upestuary is positive.

7,15:U

July 1 — time, h

layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-35	-99	-99	-99	-99	-99	-99	74	74	93	93	67	67	29	8	-1
7	-38	-36	-28	-12	4	39	60	69	85	63	30	6	-13	-24	-24	-6
8	-37	-35	-29	-9	9	36	54	59	67	53	24	0.1	-16	-25	-23	-5
9	-37	-34	-28	-8	11	29	41	49	54	37	15	5	-19	-27	-23	-5
10	-36	-33	-27	-8	12	28	36	43	45	29	7	-11	-23	-28	-24	-5
11	-40	-36	-31	-9	10	25	28	34	32	19	0	-16	-28	-32	-27	-6
12	-40	-36	-31	-9	10	23	22	27	23	1	-7	-21	-31	-34	-28	-7
13	-40	-35	-30	-8	11	22	19	22	16	2	-13	-25	-33	-35	-28	-7
14	-38	-33	-28	-7	12	23	17	18	11	-5	-18	-28	-35	-35	-28	-6
15	-35	-30	-25	-4	14	24	16	16	7	-8	-21	-30	-35	-35	-26	-5
16	-31	-26	-21	-0.	17	25	15	13	3	-11	-24	-30	-33	-32	-23	-3
17	-24	-21	-15	3	20	22	11	10	0	-15	-22	-24	-26	-25	-18	1
18	-15	-13	-8	7	13	11	5	7	-3	-11	-1	-12	-13	-12	-8	6

7,15:U

time, h — July 2

layer	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-2	16	58	55	32	19	4	-17	-25	-22	-99	-99	-99	-99	-99	-99
7	8	24	51	50	30	15	-2	-24	-33	-35	-27	-13	6	23	60	70
8	1	25	42	40	22	8	-9	-28	-35	-35	-31	-17	1	18	50	61
9	10	22	32	27	15	3	-13	-31	-36	-34	-32	-19	0	14	39	45
10	10	22	29	21	9	-2	-17	-33	-36	-34	-32	-19	-1	14	33	37
11	9	20	24	14	3	-6	-21	-37	-40	-38	-36	-22	-2	11	26	27
12	8	18	20	9	2	-10	-24	-39	-41	-39	-37	-22	-3	11	22	20
13	8	18	19	5	-6	-14	-26	-40	-41	-38	-36	-22	-2	11	20	14
14	9	18	18	3	-9	-16	-28	-40	-40	-37	-35	-20	0	12	20	12
15	10	19	17	0.1	-12	-18	-29	-39	-38	-34	-32	-18	2	14	20	10
16	12	20	16	-2	-13	-19	-28	-35	-33	-30	-28	-14	5	17	21	9
17	14	19	12	-4	-14	-17	-23	-29	-26	-23	-21	-9	9	19	18	5
18	10	10	7	-5	-8	-1	-15	-18	-16	-12	-11	-3	11	11	9	1

7,15:U

time, h

layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	72	99	72	33	18	3	-16	-13	3	16	28	41	41	30	13	-5
7	65	86	63	27	11	-4	-21	-17	0	14	2s	35	35	25	1	-10
8	54	66	48	19	3	-12	-25	-19	-1	13	21	28	27	18	3	-15
9	44	50	34	1	-4	-16	-28	-20	-2	11	16	21	18	10	2	-18
10	38	42	25	2	-11	-21	-30	-21	-3	11	15	18	14	6	-6	-21
11	28	31	15	-5	-17	-25	-34	-24	-5	9	13	14	9	2	-9	-24
12	21	22	6	-12	-21	-29	-36	-25	-5	8	11	12	6	1	-12	-26
13	15	16	0	-17	-25	-31	-38	-26	-5	8	11	11	4	-4	-14	-27
14	10	11	-5	-21	-28	-32	-38	-25	-5	8	11	10	3	-5	-15	-28
15	8	7	-9	-25	-31	-33	-37	-24	-4	9	11	10	2	-6	-16	-28
16	5	4	-13	-27	-30	-30	-34	-21	-1	11	12	10	1	-7	-17	-28
17	2	0.1	-15	-24	-23	-23	-27	-14	4	14	12	9	0	-9	-17	-24
18	1	-1	-11	-11	-11	-12	-14	-	6	8	9	6	4	-2	-8	-9	-13

Table 17. Time-depth vertical velocity in 10-s m s^{-1} hourly for the two days July 1, 1990 and July 2, 1990 for TEC Station 39 in Moller Bay (grid location 1=7, J= 15, Run 2.37). Down is positive.

7,15:W

July 1 — time, h

layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-68	-99	-99	-99	-99	-99	-99	53	56	14	-24	-74	-94	-85	-59	-16
7	-181	-140	-110	-26	41	99	97	118	102	23	-45	-127	-169	-173	-134	-32
8	-264	-231	-186	-40	88	171	156	171	145	21	-74	-168	-222	-237	-186	-37
9	-284	-251	-205	-35	115	194	161	182	129	12	-102	-190	-243	-256	-200	-30
10	-250	-220	-179	-27	103	167	127	141	85	-16	-109	-180	-221	-229	-177	-25
11	-212	-185	-150	-18	93	143	100	108	55	-34	-109	-164	-195	-199	-152	-19
12	-174	-151	-121	-1	84	121	79	82	33	-43	-103	-144	-166	-166	-12.5	-12
13	-136	-117	-92	-2	74	100	61	61	17	-46	-91	-120	-134	-133	-98	-6
14	-100	-86	-66	5	62	78	45	44	6	-42	-74	-92	-101	-99	-72	0
15	-67	-57	-42	9	48	55	30	29	0	-35	-54	-64	-68	-66	-47	4
16	-37	-32	-23	1	32	31	15	16	3	-24	-31	-35	-37	-35	-25	7
17	-14	-12	-8	7	13	10	4	7	-3	-10	-9	-12	-12	-12	-8	6
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

7,15:W

July 2 — time, h

layer	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	11	43	51	20	-9	-29	-72	-101	-78	-42	-99	-99	-99	-99	-99	-99
7	37	95	102	36	-18	-54	-133	-202	-193	-160	-135	-69	-lo	44	95	81
8	70	142	147	48	-31	-84	-180	-272	-276	-248	-22a	-127	-3	94	161	128
9	87	156	155	39	-51	-106	-201	-294	-298	-272	-255	-141	17	115	179	128
10	77	136	127	19	-59	-105	-185	-263	-263	-240	-225	-123	18	101	147	93
11	69	117	105	6	-62	-99	-165	-228	-225	-203	-191	-102	20	91	123	68
12	61	99	85	-2	-60	-89	-142	-191	-185	-167	-156	-81	23	81	103	49
13	53	82	67	-7	-54	-76	-117	-153	-146	-130	-121	-61	24	70	84	35
14	44	65'	50	-9	-45	-61	-90	-114	-108	-95	-88	-41	25	59	65	24
15	35	46	34	-1	-34	-43	-63	-78	-72	-63	-57	-24	23	45	45	15
16	23	28	19	-8	-21	-25	-37	-44	-40	-34	-31	-11	19	29	26	6
17	1	I	7	-5	-8	-9	-14	-17	-15	-11	-10	-3	10	11	9	1
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

7,15:W

time, h

layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	29	46	6	-36	-75	-92	-97	-59	-18	13	26	30	15	-4	-30	-72
7	77	88	99	-66	-128	-160	-190	-125	-28	39	58	61	29	-9	-59	-140
8	116	125	9	-103	-168	-206	-254	-167	-25	71	89	89	40	-16	-92	-190
9	122	126	5	-133	-188	-224	-274	-177	-14	82	97	94	36	-32	-110	-209
10	86	86	30	-135	-178	-205	-246	-157	-11	n	83	n	23	-37	-105	-189
11	59	57	-44	-130	-162	-180	-214	-134	-7	63	71	64	14	-39	-96	-166
12	40	36	-50	-119	-142	-153	-179	-100	-2	56	60	52	8	-38	-85	-142
13	25	21	-50	-103	-118	-124	-143	-86	3	49	50	42	4	-34	-72	-116
14	15	10	-45	-83	-91	-93	-107	-61	7	41	40	32	1	-29	-57	-89
15	8	3	-37	-59	-61	-62	-71	-39	11	32	29	22	1	-23	-42	-62
16	4	0	-25	-33	-33	-33	-38	-18	12	22	17	12	-2	-16	-25	-35
17	1	-1	-10	-10	-lo	-11	-13	-5	8	8	6	4	-2	-8	-9	-12
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A-1. Time-depth longitudinal velocity in cm S-l hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive.

15,11:U

	July 23								time, h							
layer	0	1	2	3	4	5	6	7	8	9	1 0	1 1	1 2	1 3	1 4	1 5
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	0	-4	-5	-6	-6	-99	-99	-99	-99	-99	-99	-99	0	-2	-3	-5
7	0	-2	-4	-6	-6	-5	-5	-5	-1	0	-1	0	0	0	-2	-4
8	2	0	-1	-4	-5	-5	-5	-5	-5	-3	0	0	0	0	0	-1
9	3	2	0	-2	-3	-4	-4	-4	-4	-3	0	0	1	1	0	0
10	3	3	2	0	-2	-2	-3	-3	-3	-2	0	0	1	2	2	1
11	3	3	2	0	0	0	-2	-2	-2	-2	0	1	1	2	2	2
12	3	3	2	2	0	0	0	-1	-2	-1	0	1	1	2	2	2
13	2	3	2	2	1	1	0	0	0	0	0	1	1	1	2	2
14	2	2	2	2	2	2	0	0	0	0	0	0	0	1	2	2
15	1	1	2	I	2	2	1	1	0	0	0	0	0	0	1	2
16	0	0	0	o	1	2	1	1	0	0	0	0	0	0	1	1
17	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	1
18	-1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
19	-2	-2	-1	0	0	1	1	1	0	0	0	0	0	0	0	0
20	-3	-2	-2	-2	0	0	0	1	0	0	0	0	0	0	0	0
21	-3	-3	-3	-2	-1	0	0	1	0	0	1	0	0	0	0	0
22	-3	-3	-3	-3	-2	0	0	0	0	1	1	1	0	0	0	0
23	-3	-3	-3	-3	-2	0	0	0	0	1	2	2	0	0	0	0
24	-3	-3	-3	-3	-2	-1	0	0	0	1	2	2	I	0	0	0
25	-3	-3	-3	-3	-3	-2	-1	0	0	2	2	2	2	1	0	0
26	-2	-3	-3	-3	-3	-2	-2	0	0	2	3	3	2	2	1	0
27	-1	-2	-3	-3	-3	-2	-2	0	0	2	3	3	2	2	1	0
28	0	-1	-2	-3	-3	-2	-2	0	0	2	3	3	3	2	1	0
29	0	0	-1	-3	-3	-3	-2	0	0	2	3	4	3	2	1	0
30	0	0	0	-2	-3	-3	-2	-1	0	2	3	4	3	2	1	0
31	1	0	0	-2	-2	-3	-3	-1	0	2	3	4	3	3	1	0
32	2	2	0	0	-2	-2	-3	-1	0	2	4	4	4	3	1	0
33	2	2	1	0	-2	-2	-3	-1	0	2	4	4	4	3	1	0
34	3	3	2	0	-1	-2	-3	-1	0	2	4	4	4	3	1	0
35	3	3	3	0	-1	-2	-3	-2	0	2	4	4	4	3	1	0
36	4	4	3	0	0	-2	-3	-1	0	2	4	4	4	3	1	0
37	4	4	3	0	0	-2	-2	-1	0	2	4	4	4	3	0	0
38	3	2	2	0	0	-2	-2	0	0	2	3	3	3	2	0	0

Table A-1 (continued). Time-depth longitudinal velocity in cm s^{-1} hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive.

15,11:U

	time, h								July 24							
layer	16	17	18	19		20	21	22	23	01		23	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-7	-7	-6	-4	-3	-2	-2	-2	-2	-3	-5	-7	-8	-7	-6	-99
7	-6	-6	-5	-4	-2	-1	0	0	0	-1	-3	-5	-7	-7	-6	-6
8	-3	-4	-4	-3	-1	0	0	0	1	1	0	-1	-3	-5	-5	-6
9	0	-1	-2	-2	0	0	1	2	2	2	2	1	0	-3	-4	-5
10	1	0	0	0	0	1	2	2	3	3	3	2	1	-1	-2	-3
11	2	1	0	0	1	2	2	3	3	3	3	3	2	0	0	-2
12	2	2	2	2	2	2	2	3	3	3	3	3	3	1	0	0
13	2	2	2	2	2	2	2	2	3	3	3	3	3	2	2	0
14	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	1
15	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
16	2	2	2	2	2	2	1	1	0	0	1	1	1	2	2	2
17	2	2	2	2	2	2	0	0	0	0	0	0	0	1	2	2
18	1	2	2	2	2	1	0	0	0	0	0	0	0	0	1	1
19	1	1	1	1	1	0	0	0	-1	-2	-1	0	0	0	1	1
20	1	1	1	1	1	0	0	-1	-2	-2	-2	-2	-1	0	0	0
21	1	0	0	0	0	0	0	-1	-2	-3	-3	-2	-2	-1	0	0
22	0	0	0	0	0	0	0	-1	-2	-3	-3	-3	-2	-2	0	0
23	0	0	0	0	0	0	0	-1	-2	-3	-3	-3	-3	-2	0	0
24	0	0	0	0	0	0	0	-1	-2	-3	-3	-3	-3	-2	-1	0
25	0	0	0	0	0	0	0	0	-1	-2	-3	-3	-3	-3	-2	-1
26	0	0	0	0	0	0	0	0	0	-2	-2	-3	-3	-3	-2	-1
27	0	0	0	0	0	0	0	0	0	-1	-2	-2	-3	-3	-2	-2
28	0	0	-1	-1	0	0	0	0	0	0	-1	-2	-3	-3	-2	-2
29	0	-1	-2	-2	-t	0	0	0	0	0	0	-1	-2	-3	-2	-2
30	0	-2	-3	-2	-2	0	0	1	1	0	0	0	-2	-3	-3	-2
31	0	-2	-3	-3	-2	0	0	1	2	2	0	0	-1	-2	-3	-3
32	-1	-3	-4	-4	-3	-1	0	1	2	2	2	0	0	-2	-3	-3
33	-2	-4	-5	-4	-3	-2	0	2	3	3	2	1	0	-2	-2	-3
34	-2	-4	-5	-5	-4	-2	0	2	3	3	3	2	0	-2	-2	-3
35	-2	-5	-6	-5	-4	-2	0	2	3	4	3	2	0	-1	-2	-3
36	-3	-5	-6	-6	-4	-2	0	2	4	4	3	2	0	-1	-2	-3
37	-3	-5	-6	-5	-3	-1	0	3	4	4	3	2	0	-1	-2	-3
38	-3	-4	-5	-4	-3	0	1	3	3	3	2	2	0	-1	-2	-3

Table A-1 (continued). Time-depth longitudinal velocity in cm S-* hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive. 15,11:U

layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	time, h															
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-99	-99	-99	-99	-99	-1	-3	-5	-7	-7	-6	-6	-7	-9	-99	-99
7	-5	-4	-4	-2	-1	0	-2	-3	-5	-6	-6	-5	-4	-3	-5	-5
8	-5	-4	-3	-1	0	1	0	0	-1	-3	-4	-3	-2	-2	-1	-2
9	-4	-3	-2	0	0	2	1	1	0	0	-2	-2	-1	0	0	1
10	-3	-2	-1	0	1	2	2	2	2	1	0	0	0	0	2	2
11	-2	-2	0	0	1	2	2	2	2	2	1	0	1	1	2	3
12	0	0	0	0	1	2	2	2	3	2	2	2	2	2	2	3
13	0	0	0	1	1	2	2	2	2	2	2	2	2	2	2	3
14	0	0	0	1	1	2	1	2	2	2	2	2	3	2	2	2
15	1	1	0	1	0	1	0	2	2	2	2	2	3	2	2	2
16	2	1	0	1	0	1	0	1	2	2	2	2	2	2	2	1
17	2	1	1	1	0	0	0	0	1	1	2	2	2	2	1	0
18	2	1	1	0	0	0	0	0	1	1	1	1	2	1	0	0
19	1	1	1	0	0	0	0	0	0	0	0	1	2	1	0	0
20	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0
21	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
22	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
23	0	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0
24	0	1	2	2	2	1	0	0	0	0	0	0	0	0	0	0
25	0	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0
26	0	1	2	3	2	2	0	0	0	0	0	-1	0	0	0	0
27	0	1	2	3	3	2	1	0	0	0	-1	-1	0	0	0	0
28	0	0	2	3	3	3	1	0	0	0	-1	-2	-1	-1	0	0
29	0	0	2	3	3	3	2	0	0	0	-2	-2	-2	-1	0	0
30	-1	0	2	3	3	3	2	0	0	-1	-2	-3	-2	-2	0	0
31	-1	0	2	3	3	3	2	0	0	-1	-3	-3	-3	-2	0	0
32	-2	0	2	3	3	3	2	0	0	-2	-3	-4	-4	-3	0	0
33	-2	0	2	3	4	4	2	0	0	-2	-4	-5	-4	-3	-1	0
34	-2	0-	2	3	4	4	2	1	0	-2	-4	-5	-5	-4	-1	0
35	-2	0	2	3	4	4	2	1	0	-3	-5	-6	-5	-4	-1	0
36	-2	0	2	4	4	4	2	0	0	-3	-5	-6	-5	-4	-1	1
37	-2	0	2	4	4	4	2	0	0	-3	-5	-6	-5	-3	0	1
38	-2	0	2	3	3	3	2	0	-1	-3	-4	-5	-4	-2	0	2

Table A-1 (continued). Time-depth longitudinal velocity in cm s^{-1} hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive. 15,11:U

	July 25									time, h						
layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-99	-8	-1	-13	-14	-13	-11	-9	-99	-99	-99	-99	-99	-4	-4	-5
7	-5	-4	-4	-7	-8	-9	-8	-6	-5	-5	-6	-6	-4	-1	0	-2
8	-2	-1	0	0	0	-3	-5	-5	-4	-3	-1	0	-1	0	3	2
9	2	2	3	3	3	1	-1	-2	-2	-1	0	2	2	3	4	4
10	4	4	5	5	5	4	1	0	0	0	0	2	3	4	5	4
11	4	5	5	5	5	4	3	1	0	0	0	2	3	4	4	4
12	4	5	5	5	5	4	4	2	1	0	0	1	2	3	4	3
13	4	4	5	4	5	4	4	3	2	1	1	1	1	2	3	3
14	3	3	4	3	4	4	3	3	2	1	1	0	0	1	2	2
15	2	3	3	2	3	3	3	3	2	1	1	0	0	0	0	0
16	2	2	2	2	2	2	2	2	2	1	1	0	0	0	0	0
17	1	0	0	0	1	1	2	2	2	1	1	0	0	0	0	0
18	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	-1
19	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	-1
20	0	-1	-1	-2	-1	-1	0	0	0	0	0	0	0	0	0	-2
21	0	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0	0	-2
22	0	-2	-2	-3	-2	-2	-1	0	0	0	0	0	0	0	0	-1
23	0	-2	-2	-3	-3	-2	-2	-1	0	0	0	1	0	0	0	-1
24	0	-1	-2	-3	-3	-3	-2	-2	0	0	0	1	1	0	0	0
25	0	0	-1	-3	-3	-3	-2	-2	-1	0	0	2	2	1	0	0
26	0	0	0	-2	-2	-3	-3	-2	-1	0	0	2	2	2	1	0
27	0	0	0	-2	-2	-3	-3	-3	-2	0	0	2	2	2	2	0
28	1	0	0	-1	-2	-2	-3	-3	-2	0	0	2	3	3	2	1
29	1	1	1	0	-1	-2	-3	-3	-2	-1	0	2	3	3	3	1
30	2	2	2	0	0	-2	-3	-3	-3	-1	0	2	3	3	3	2
31	2	2	2	0	0	-1	-2	-3	-3	-2	0	2	3	3	3	2
32	2	3	3	2	0	0	-2	-3	-3	-2	0	2	3	3	3	2
33	2	3	3	2	1	0	-2	-3	-3	-2	0	1	3	4	4	2
34	3	4-	4	3	2	0	-2	-3	-3	-2	0	1	3	4	4	3
35	3	4	4	3	2	0	-2	-3	-4	-3	0	1	3	4	4	3
36	3	4	4	3	2	0	-2	-3	-4	-3	0	1	3	4	4	3
37	3	4	4	3	2	0	-2	-3	-3	-2	0	1	3	4	4	2
38	3	3	3	2	2	0	-2	-3	-3	-2	0	2	3	3	3	2

Table A-1 (continued). Time-depth longitudinal velocity in cm S-* hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Upestuary is positive. 15,11:U

	time, h							
layer	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99
6	-8	-9	-8	-7	-5	-5	-99	-99
7	-4	-6	-7	-5	-3	-1	0	0
8	2	0	-2	-3	-2	0	0	1
9	4	3	0	0	0	0	0	2
10	5	4	3	1	0	2	1	2
11	4	4	3	2	2	2	1	2
12	4	4	3	3	2	2	1	1
13	3	3	3	3	2	2	1	0
14	2	2	2	2	2	2	0	0
15	1	1	2	2	2	2	0	0
16	0	0	0	1	2	2	0	0
17	0	0	0	0	1	1	0	0
18	0	0	0	0	0	0	0	0
19	-1	0	0	0	0	0	0	0
20	-1	0	0	0	0	0	0	-1
21	-1	-1	0	0	0	0	-1	-1
22	-1	-1	-1	0	0	0	-1	0
23	-1	0	-I	0	0	0	-1	0
24	0	0	-1	-1	-1	0	-i	0
25	0	0	-1	-1	-1	0	-1	0
26	0	0	-1	-1	-2	-1	-i	0
27	0	0	-1	-2	-2	-1	-1	0
28	0	0	-1	-2	-2	-2	-2	0
29	0	0	-1	-2	-3	-2	-2	0
30	0	0	-2	-3	-3	-3	-2	0
31	0	0	-2	-3	-4	-3	-2	0
32	1	0	-2	-3	-4	-4	-3	0
33	1	0	-2	-4	-5	-4	-3	0
34	1	0	-2	-4	-5	-4	-3	0
35	1	0	-2	-4	-5	-5	-3	0
36	1	0	-3	-5	-5	-5	-3	0
37	1	0	-3	-4	-5	-4	-3	0
38	1	0	-3	-4	-4	-3	-2	0

Table A-2. Time-depth vertical velocity in 10^{-5} m s^{-1} hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive.

15,11:W

	July 23																							
												time, h												
layer	0	1	2	3	4	5	6	7	8	9	10		11	12	13	14	15							
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99							
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99							
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99							
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99							
6	-22	-15	-3	16	23	-99	-99	-99	-99	-99	-99	-99	-99	-37	-32	-24	-1							
7	-27	-20	-7	14	23	21	21	9	-2	-18	-34	-43	-43	-38	-29	-12								
8	-29	-22	-9	14	24	23	23	12	0	-16	-35	-47	-46	-41	-30	-13								
9	-29	-23	-1	13	24	25	25	15	5	-12	-33	-48	-47	-41	-30	-13								
10	-29	-23	-lo	13	25	26	27	18	9	-7	-30	-46	-46	-41	-30	-13								
11	-28	-23	-11	12	24	26	28	20	13	-3	-26	-43	-44	-39	-29	-12								
12	-27	-23	-11	11	23	25	28	22	16	0	-22	-39	-41	-37	-27	-11								
13	-26	-23	-11	11	21	23	27	22	17	4	-18	-36	-38	-33	-25	-lo								
14	-24	-22	-11	1	20	21	25	21	18	6	-15	-32	-34	-30	-22	-9								
15	-21	-21	-lo	9	17	18	22	19	18	7	-12	-28	-30	-26	-20	-8								
16	-18	-18	-9	8	15	14	18	16	16	8	-10	-24	-25	-21	-16	-6								
17	-14	-16	-8	8	13	10	13	12	14	8	-8	-21	-20	-16	-12	-4								
18	-1	-12	-5	8	11	6	9	7	11	7	-7	-17	-15	-11	-8	-2								
19	-5	-8	-2	9	9	3	4	3	7	5	-6	-14	-10		-6	-4	1							
20	0	-3	2	11	8	0	-2	-3	3	3	-5	-lo	-5	0	0	4								
21	5	3	6	13	7	-4	-6	-8	-1	0	-5	-8	-1	5	5	7								
22	1	8	10	15	7	-7	-11	-13	-6	-3	-6	-6	3	9	1	10								
23	14	13	15	18	7	-9	-15	-19	-11	-6	-7	-4	6	14	14	13								
24	18	18	20	21	8	-11	-19	-23	-15	-1	-9	-3	9	18	18	16								
25	21	23	24	24	9	-12	-22	-27	-20	-13	-lo	-3	12	21	21	19								
26	22	27	28	27	11	-12	-24	-31	-24	-17	-12	-3	14	24	25	22								
27	23	30	32	30	12	-11	-25	-34	-27	-20	-14	-3	15	26	28	24								
28	23	32	34	33	14	-11	-25	-35	-30	-22	-16	-4	16	28	30	27								
29	22	32	36	35	16	-9	-25	-36	-32	-25	-18	-4	17	30	33	29								
30	20	32	37	37	18	-7	-24	-37	-33	-26	-20	-5	17	31	35	32								
31	17	31	37	38	20	-6	-22	-36	-33	-27	-21	-6	17	32	36	34								
32	14	29	35	38	21	-4	-20	-35	-33	-28	-22	-7	16	32	38	36								
33	10	25-	33	37	22	-1	-18	-33	-32	-28	-23	-8	16	32	39	37								
34	6	22	30	36	23	0	-15	-30	-30	-28	-23	-9	15	31	39	39								
35	1	17	27	34	23	3	-12	-27	-28	-27	-24	-1	13	31	39	40								
36	-4	13	23	32	23	5	-9	-24	-26	-26	-24	-11	12	29	39	40								
37	-8	8	19	29	23	6	-6	-21	-24	-26	-2.5	-12	10	28	38	40								
38	-11	5	16	27	22	8	-3	-18	-22	-25	-25	-13	9	26	36	40								

Table A-2 (continued). Time-depth vertical velocity in 10^{-5} m S-* hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive.

15.11:W

	time, h									July 24						
layer	16	17	18	19	20	21	22	23	24	30	12	3	4	5	6	7
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	4	18	24	17	5	-6	-13	-19	-24	-21	-14	-4	11	23	19	-99
7	3	19	26	19	7	-4	-11	-20	-27	-26	-20	-8	8	23	20	23
8	3	20	28	21	1	0	-8	-18	-28	-29	-23	-11	7	23	22	26
9	4	21	30	24	12	3	-5	-16	-27	-30	-25	-13	6	23	24	28
10	4	22	31	25	15	6	-1	-13	-26	-31	-26	-14	4	23	24	30
11	4	22	31	26	16	8	2	-11	-25	-31	-27	-15	3	22	24	30
12	4	21	31	26	17	10	4	-9	-24	-31	-28	-16	2	20	23	30
13	4	20	29	25	17	12	6	-6	-22	-30	-28	-17	0	18	21	29
14	3	18	27	23	16	12	8	-4	-20	-29	-27	-17	0	17	18	27
15	3	17	25	21	14	12	1	-1	-17	-26	-26	-17	-1	14	15	24
16	3	15	22	18	12	11	11	1	-14	-24	-24	-16	-1	12	12	20
17	3	13	19	15	9	10	12	4	-11	-20	-21	-14	0	11	9	16
18	3	11	16	11	6	9	12	6	-7	-16	-17	-12	0	9	5	11
19	3	9	12	7	3	7	12	9	-3	-11	-12	-8	2	8	2	7
20	4	7	8	2	-1	5	12	11	1	-5	-7	-4	4	8	-1	2
21	4	5	5	-2	-5	2	12	13	5	0	0	0	7	8	-4	-3
22	5	4	1	-7	-1	-2	10	14	9	5	5	6	10	8	-6	-8
23	6	2	-2	-11	-15	-5	8	14	12	10	11	11	14	9	-8	-12
24	7	1	-6	-16	-19	-1	5	14	14	15	17	16	18	10	-9	-15
25	8	0	-9	-20	-24	-14	2	13	16	19	22	22	22	12	-1	-18
26	1	0	-11	-24	-29	-19	-2	11	16	21	26	26	26	14	-1	-20
27	11	0	-13	-27	-33	-24	-6	8	15	23	30	30	30	16	-9	-22
28	13	0	-15	-30	-37	-28	-11	5	14	24	32	34	33	19	-8	-23
29	15	0	-16	-32	-40	-32	-15	0	12	24	34	36	36	21	-7	-23
30	17	1	-15	-33	-42	-35	-19	-3	9	22	34	38	38	23	-5	-22
31	19	3	-15	-33	-43	-38	-23	-7	6	20	33	39	40	25	-3	-21
32	21	5	-13	-32	-43	-40	-26	-11	2	18	32	38	40	27	0	-19
33	23	8	-10	-30	-43	-41	-29	-15	-2	14	29	37	40	28	1	-16
34	26	11	-7	-27	-41	-41	-31	-18	-6	10	26	35	39	29	4	-13
35	28	15	-3	-23	-38	-40	-32	-22	-10	6	22	32	37	29	6	-10
36	30	18	1	-19	-35	-39	-33	-25	-15	2	18	28	35	29	8	-7
37	32	21	5	-15	-32	-38	-34	-28	-18	-2	14	25	33	29	1	-4
38	33	24	8	-11	-29	-37	-35	-30	-21	-5	11	22	30	28	11	-1

Table A-2 (continued). Time-depth vertical velocity in 10^{-5} m s^{-1} hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive.

15,11:W

layer	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
											time, h					
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-99	-99	-99	-99	-99	-41	-27	-17	-2	15	26	30	20	16	-99	-99
7	10	-6	-18	-33	-37	-47	-33	-22	-3	16	29	34	2S	21	13	7
8	12	-3	-16	-34	-41	-50	-36	-24	-5	16	31	36	28	24	17	12
9	15	1	-12	-32	-41	-50	-38	-25	-6	15	31	38	30	26	18	12
10	18	6	-7	-28	-39	-50	-37	-26	-6	14	31	38	30	27	19	12
11	21	9	-2	-24	-35	-48	-36	-25	-7	14	29	37	29	27	20	12
12	22	12	2	-19	-32	-45	-34	-24	-7	13	28	35	28	27	20	13
13	22	14	5	-16	-28	-42	-32	-23	-7	12	26	32	26	25	20	13
14	21	15	8	-12	-24	-38	-29	-21	-6	11	23	29	23	23	20	14
15	19	15	1	-9	-20	-34	-25	-19	-6	1	21	25	19	21	20	15
16	16	14	11	-6	-16	-29	-20	-16	-5	9	18	22	15	18	19	15
17	13	12	11	-4	-13	-25	-16	-12	-3	9	16	18	11	14	18	16
18	8	9	10	-2	-9	-20	-11	-8	-1	8	13	14	6	10	17	16
19	3	6	9	-1	-6	-15	-5	-4	0	9	11	9	2	6	15	17
20	-2	2	7	0	-3	-	1	0	0	3	9	9	5	-3	2	13
21	-i'	-3	4	0	0	-	5	6	5	6	1	7	1	-8	-3	10
22	-13	-8	0	-1	1	-	1	1	1	1	9	1	1	5	-2	-13	-7	7	15
23	-18	-13	-3	-2	3	3	15	14	12	12	3	-	6	-18	-12	4	13
24	-23	-18	-7	-4	3	6	20	19	15	13	2	-9	-23	-17	0	11
25	-27	-23	-11	-7	3	8	24	23	18	14	1	-12	-27	-22	-5	8
26	-31	-28	-15	-9	3	10	27	26	21	16	0	-15	-31	-27	-1	4
27	-34	-32	-19	-12	2	11	30	30	23	17	0	-17	-34	-31	-14	0
28	-36	-35	-22	-14	0	12	32	32	26	19	0	-18	-37	-35	-19	-4
29	-38	-38	-25	-16	0	13	33	35	28	21	1	-19	-39	-38	-23	-9
30	-38	-40	-28	-19	-2	13	35	37	31	23	3	-19	-40	-40	-27	-13
31	-38	-40	-30	-20	-3	13	35	39	33	25	4	-18	-40	-42	-30	-17
32	-37	-41	-31	-22	-4	12	36	40	35	27	6	-16	-38	-42	-32	-20
33	-35	-40	-31	-23	-6	11	35	41	36	29	9	-13	-36	-41	-34	-24
34	-32	-39-	-31	-24	-7	10	35	41	38	31	12	-1	-33	-40	-35	-26
35	-29	-37	-31	-25	,-8	9	34	41	38	33	15	-6	-30	-37	-35	-28
36	-26	-34	-30	-26	-1	7	32	40	39	34	18	-2	-26	-35	-35	-30
37	-23	-32	-30	-26	-11	5	30	39	39	36	21	2	-22	-32	-34	-32
38	-20	-30	-29	-26	-12	4	28	37	38	36	24	6	-18	-29	-34	-33

Table A-2 (continued). Time-depth vertical velocity in 10^{-5} ms^{-1} hourly forthethree days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I= 15, J= 11, Run 2.36). Down is positive.

15.1 1:W

	July 25								time, h							
layer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99
6	-99	-9	-8	8	13	22	26	27	-99	-99	-99	-99	-99	-18	-17	-4
7	-4	-5	-7	9	14	25	30	30	22	16	8	-1	-1	-14	-16	-3
8	0	-4	-1	4	9	22	29	30	23	17	9	1	-6	-13	-19	-7
9	0	-6	-14	-3	2	16	26	29	23	17	9	0	-6	-14	-22	-12
10	-1	-9	-20	-9	-5	1	22	26	21	17	8	0	-7	-16	-26	-17
11	-3	-12	-24	-15	-11	4	17	23	19	16	9	0	-7	-17	-28	-20
12	-3	-15	-28	-19	-16	-1	12	19	17	16	1	3	-5	-16	-28	-21
13	-3	-16	-30	-22	-19	-5	8	16	15	15	11	5	-2	-14	-27	-21
14	-3	-16	-30	-24	-21	-7	5	13	13	15	12	8	1	-11	-25	-20
15	-2	-16	-30	-23	-22	-8	3	1	10	13	12	10	5	-7	-22	-17
16	0	-14	-28	-22	-21	-9	1	7	8	12	12	12	8	-3	-18	-14
17	1	-12	-25	-19	-19	-8	0	5	5	9	11	12	1	0	-14	-1
18	3	-8	-22	-15	-16	-6	0	2	1	6	8	12	11	3	-9	-5
19	5	-5	-17	-11	-12	-4	0	0	-2	2	5	1	12	6	-5	0
20	7	-1	-12	-5	-7	0	0	-1	-6	-2	1	7	12	9	0	4
21	8	2	-7	0	-2	3	1	-3	-9	-7	-4	4	11	10	3	9
22	9	6	-2	7	4	7	3	-4	-13	-12	-9	0	9	11	6	14
23	1	8	3	13	1	11	5	-5	-16	-17	-14	-4	7	12	9	18
24	9	10	7	19	15	16	7	-6	-19	-22	-20	-9	4	11	11	22
25	8	12	10	24	21	21	9	-6	-22	-26	-25	-14	0	10	13	25
26	6	12	13	28	26	25	12	-5	-24	-30	-30	-19	-3	9	14	28
27	3	12	15	32	31	30	14	-5	-25	-33	-34	-24	-7	7	14	30
28	0	10	15	35	35	34	17	-3	-26	-36	-38	-28	-11	5	14	31
29	-3	8	15	37	38	37	20	-1	-25	-37	-41	-32	-14	3	14	32
30	-7	5	14	38	40	40	23	0	-25	-38	-43	-35	-17	0	13	33
31	-11	2	12	37	42	42	26	3	-23	-38	-44	-37	-20	-2	12	33
32	-15	-1	1	36	42	43	28	6	-21	-37	-44	-39	-22	-4	11	33
33	-19	-5	7	34	41	44	30	8	-18	-35	-44	-39	-24	-6	9	32
34	-23	-9	-3	31	40	43	31	11	-15	-33	-42	-39	-26	-8	7	31
35	-26	-13	0	28	37	42	32	13	-12	-30	-40	-39	-27	-10	5	29
36	-29	-17	-5	24	34	40	32	15	-8	-26	-38	-38	-28	-12	3	27
37	-32	-21	-8	20	31	38	32	17	-5	-23	-35	-37	-29	-14	1	24
38	-34	-23	-11	17	28	36	32	19	-2	-20	-33	-36	-29	-15	0	22

Table A-2 (continued). Time-depth vertical velocity in 10^{-5} m s^{-1} hourly for the three days July 23, 1990 to July 25, 1990 for TEC Station 36 in Herendeen Bay (grid location I=15, J=11, Run 2.36). Down is positive. 15,11:W

	time, h							
layer	16	17	18	19	20	21	22	23
2	-99	-99	-99	-99	-99	-99	-99	-99
3	-99	-99	-99	-99	-99	-99	-99	-99
4	-99	-99	-99	-99	-99	-99	-99	-99
5	-99	-99	-99	-99	-99	-99	-99	-99
6	3	12	26	29	27	17	-99	-99
7	4	14	29	31	28	17	15	-2
8	-1	9	28	32	28	15	13	-4
9	-7	4	25	30	26	13	12	-5
10	-12	-1	20	27	23	10	1	-5
11	-16	-5	17	24	20	8	9	-4
12	-18	-8	14	21	17	6	9	-2
13	-19	-9	12	18	15	4	9	0
14	-19	-1	10	16	12	1	9	3
15	-17	-9	1	14	9	-1	8	4
16	-15	-8	9	12	6	-4	7	5
17	-12	-6	9	1	3	- 8	5	6
18	-8	-3	9	8	0	-12	2	5
19	-4	0	1	6	-4	-16	0	4
20	0	3	11	5	-8	-20	-5	2
21	5	6	12	3	-11	-24	-8	0
22	10	1	13	2	-15	-29	-13	-3
23	15	13	14	0	-18	-33	-17	-7
24	19	17	15	0	-21	-37	-21	-11
25	23	20	17	0	-23	-40	-25	-15
26	27	24	18	0	-25	-43	-29	-19
27	30	27	20	0	-26	-46	-33	-23
28	33	30	22	0	-26	-47	-35	-26
29	35	32	24	1	-26	-48	-38	-30
30	37	35	26	3	-25	-48	-39	-33
31	39	37	28	5	-23	-47	-40	-35
32	40	38	31	8	-21	-45	-40	-37
33	40	40	32	10	-18	-42	-39	-38
34	40	40	34	13	-14	-39	-37	-38
35	39	40	36	16	-1	-34	-35	-38
36	37	40	37	19	-5	-30	-32	-38
37	36	39	38	22	-1	-26	-29	-37
38	33	38	38	24	2	-22	-27	-36

Figure 1. Flushing of instantaneous dye mass, entire Moller Bay system (Run 2.08).

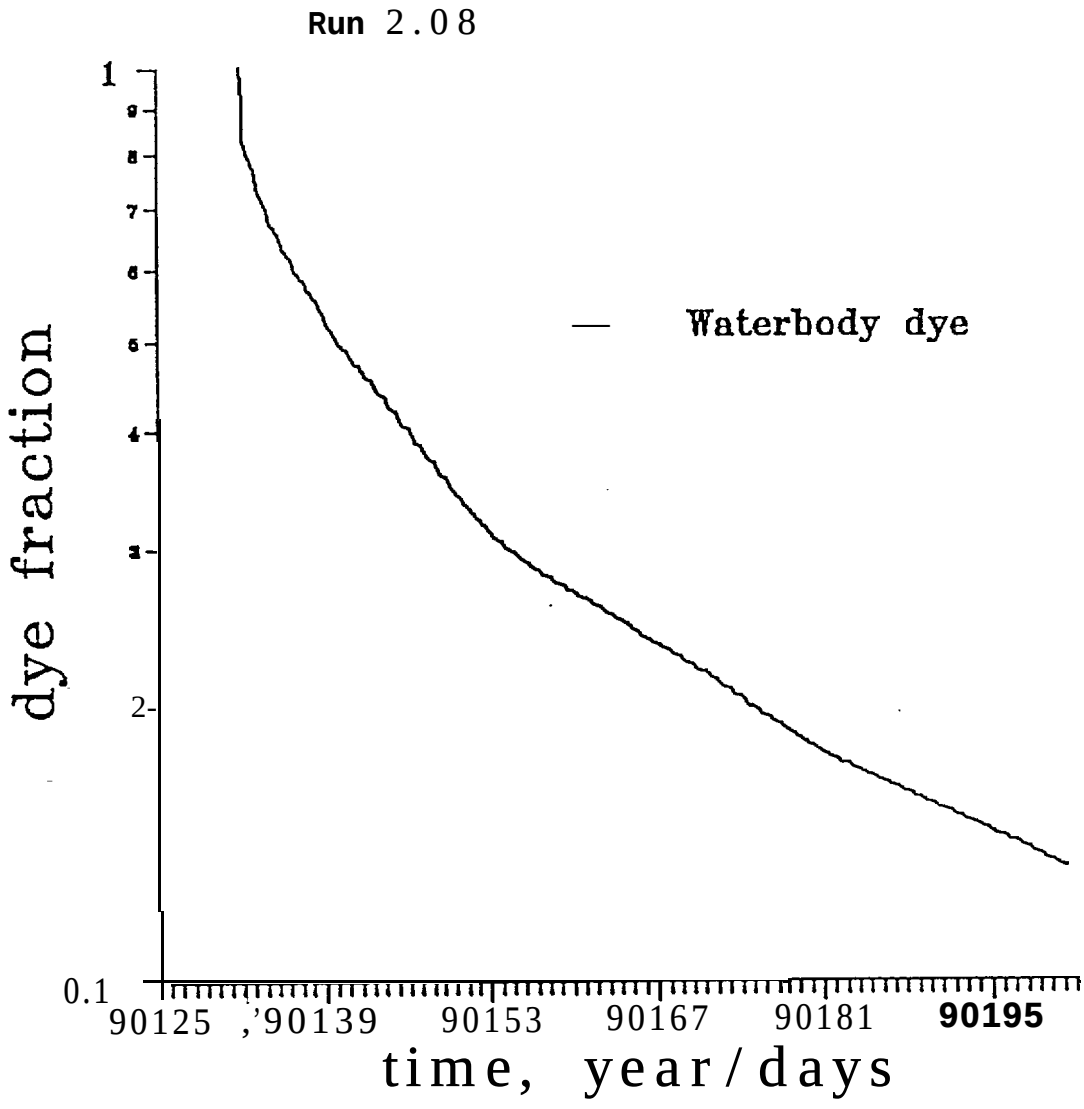


Figure 2. Observed Port Moller water surface elevation for the first 7-day period, 12 May 1990 to 19 May 1990. Additional 7-day periods appear in Appendix 1. (Run 1.29).

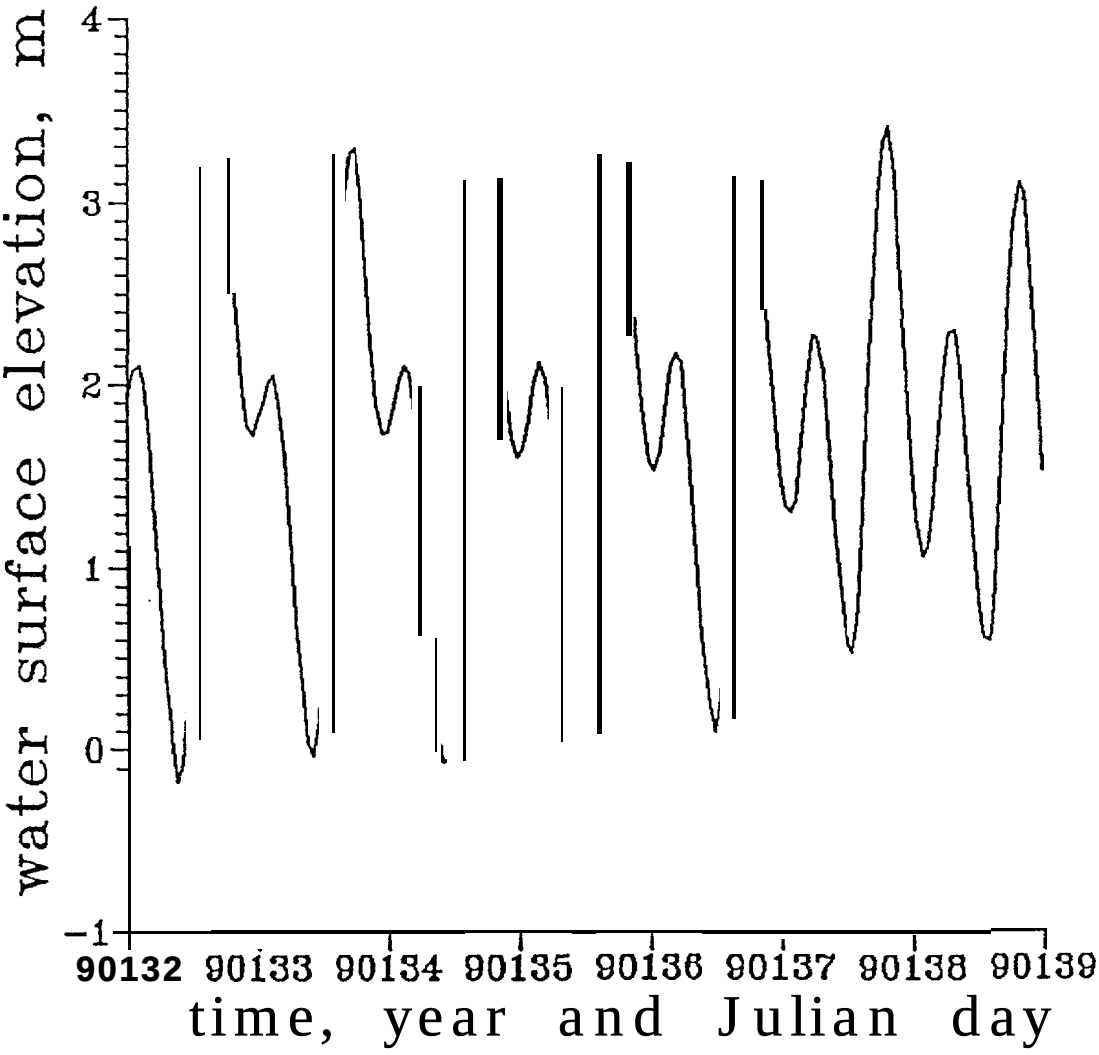


Figure 3. Wind vector plot for the first 7-day period, 12 May 1990 to 18 May 1990. Shown are three hour mean speed and direction for the on-site anemometer located at Harbor Point. Additional 7-day periods appear in Appendix 2. (Run 1.29).

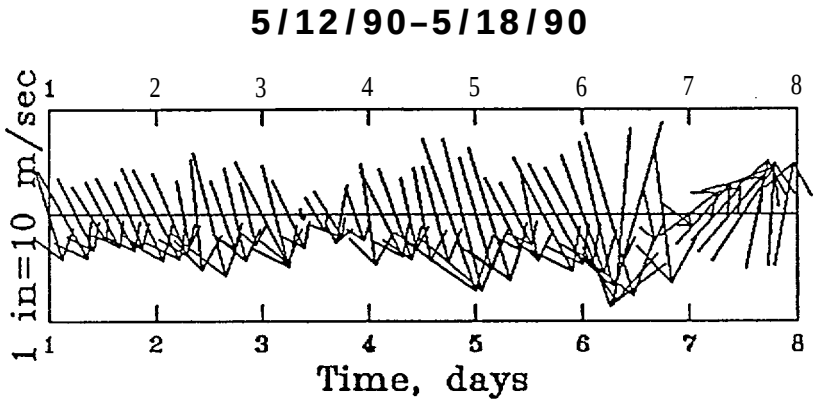


Figure 4. Surface vector plots every two hours for May 12, 1990 (Run 2.28).

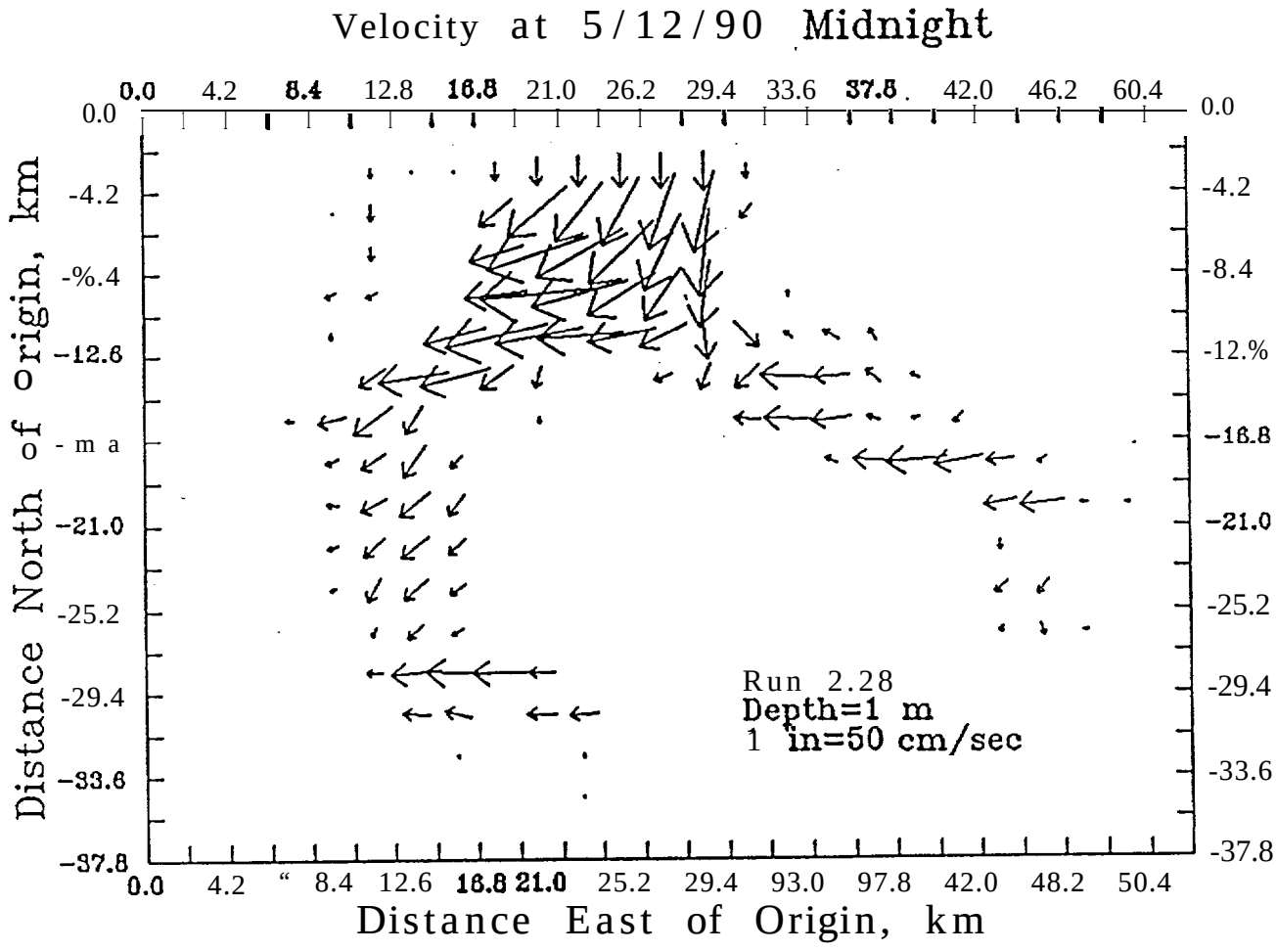


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

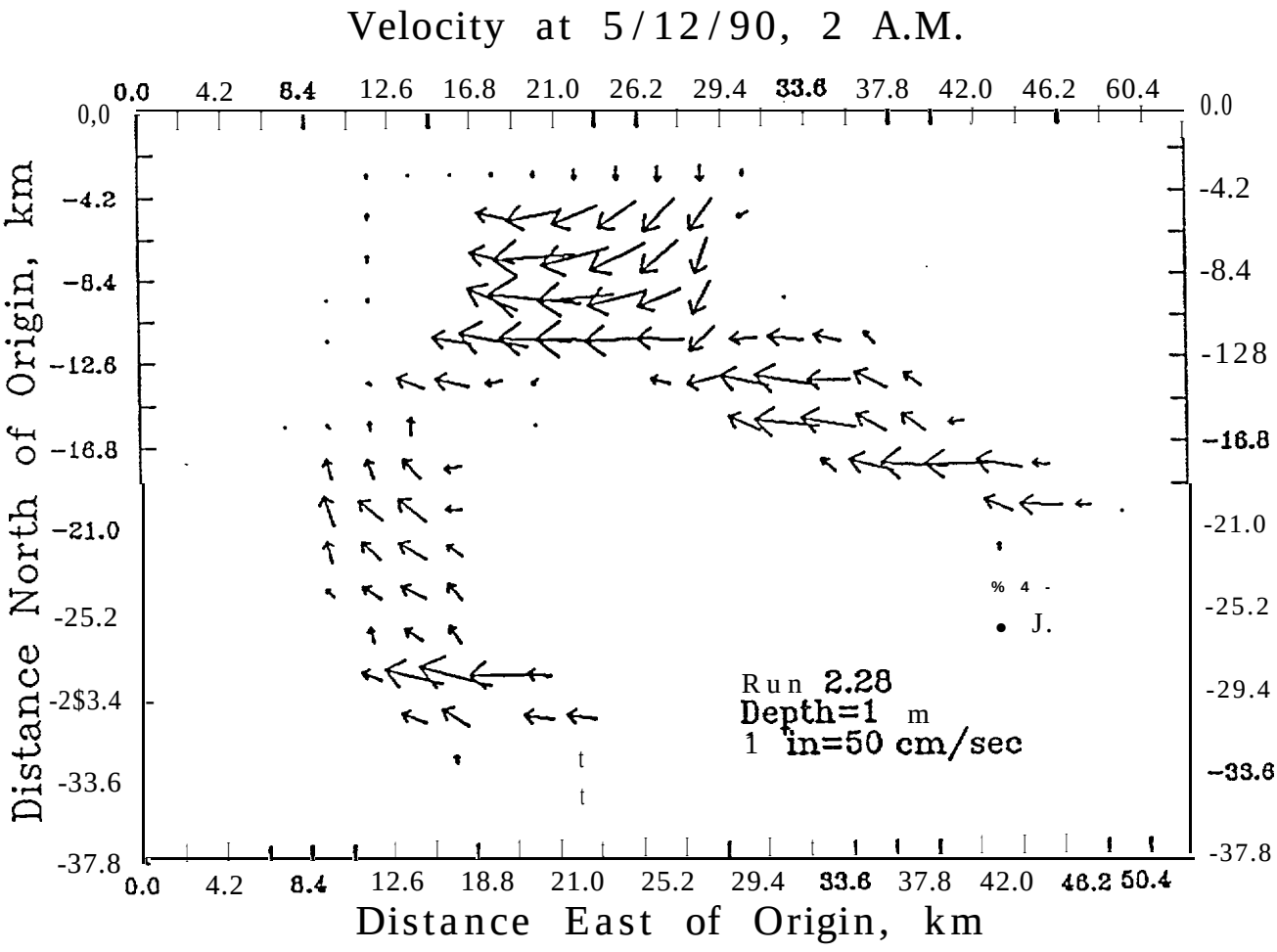


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

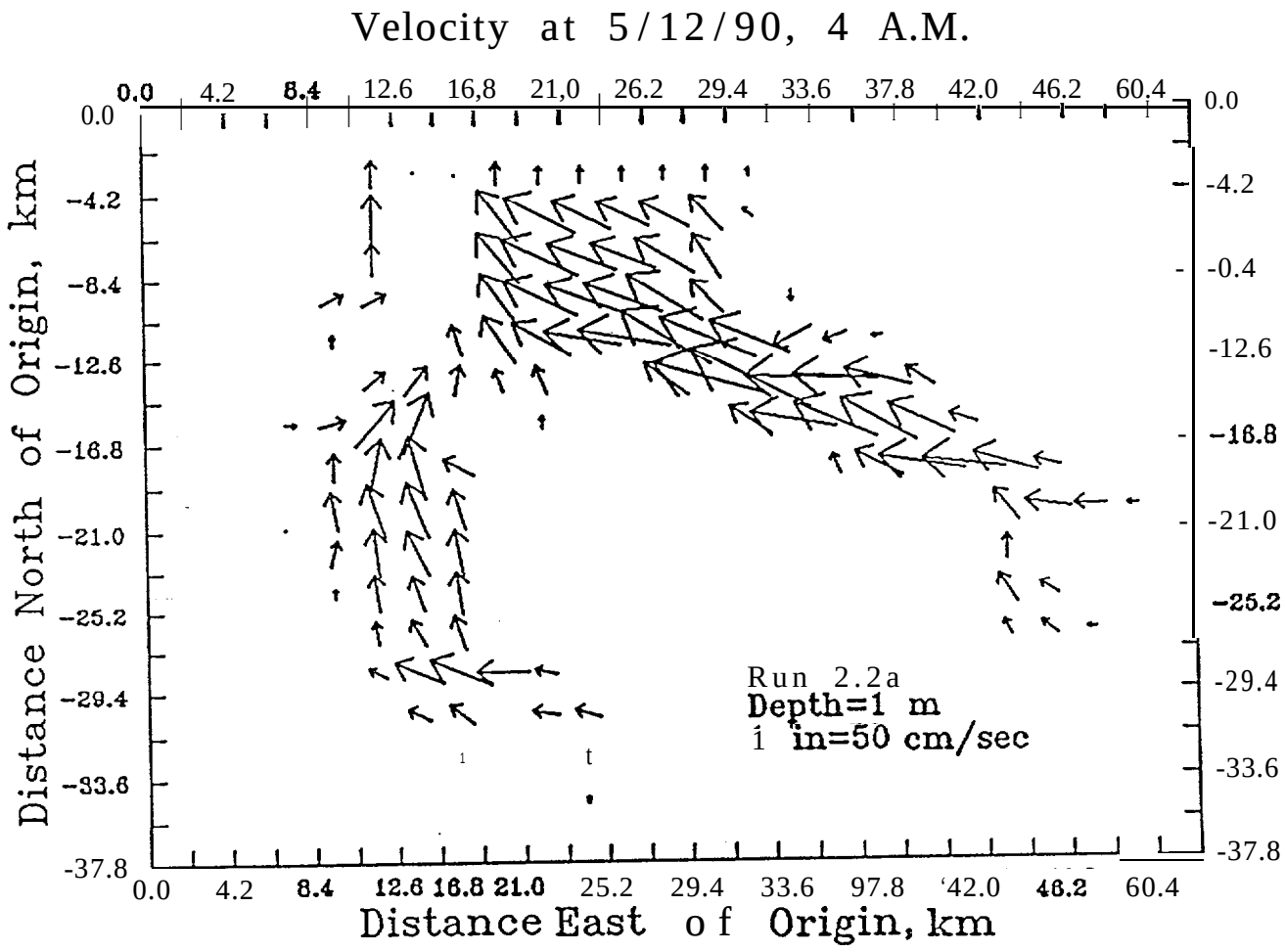


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

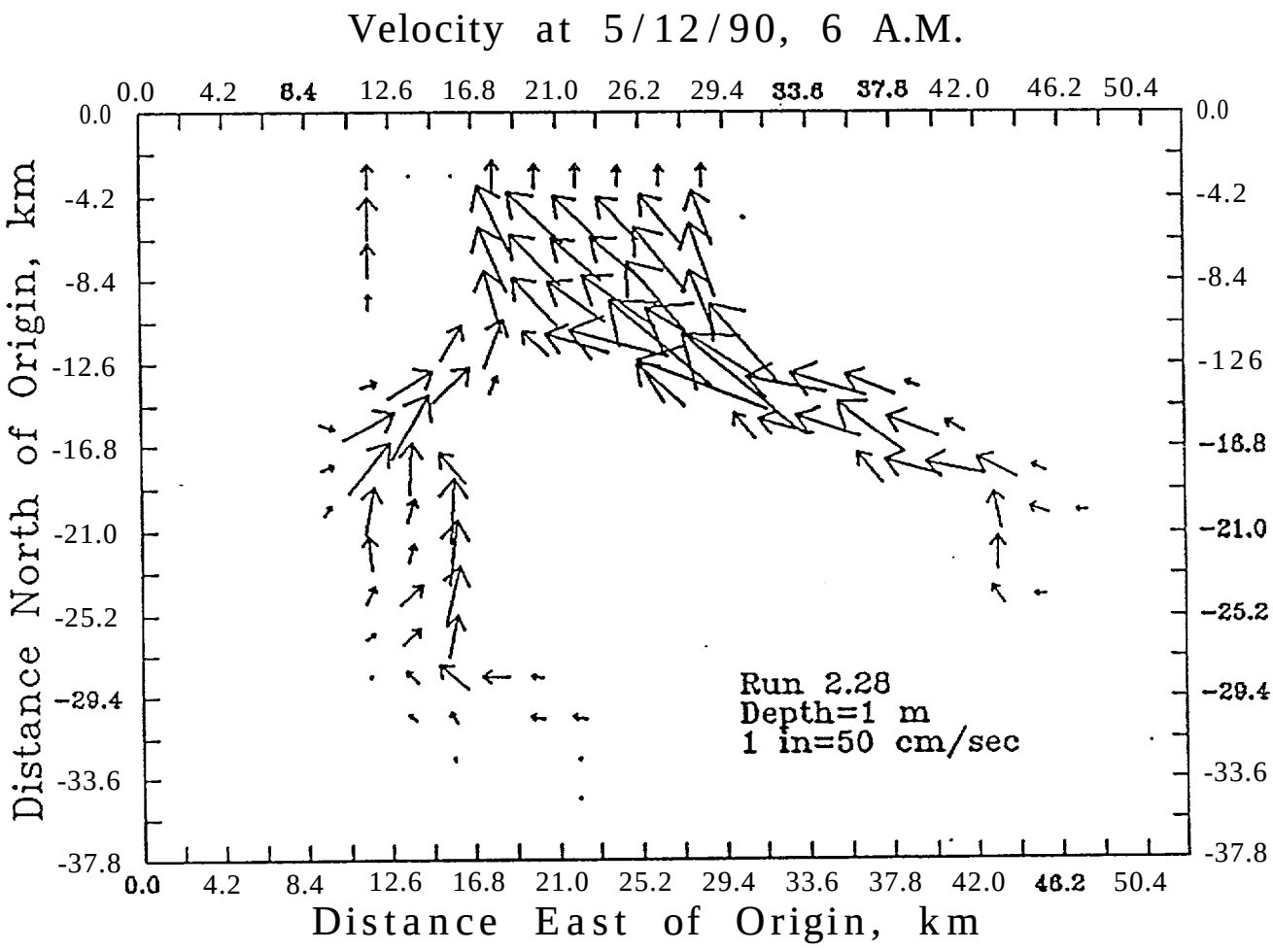


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

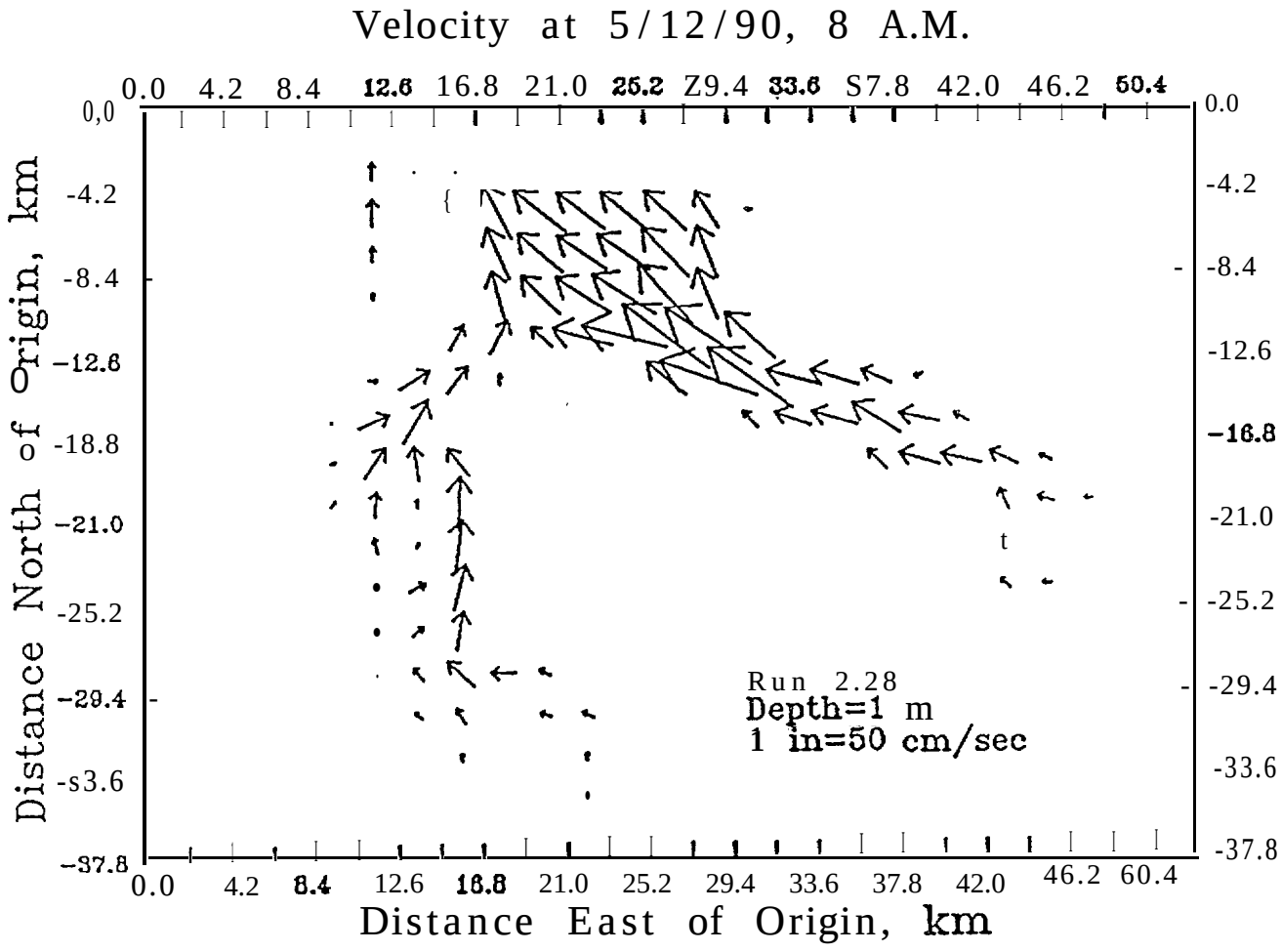


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

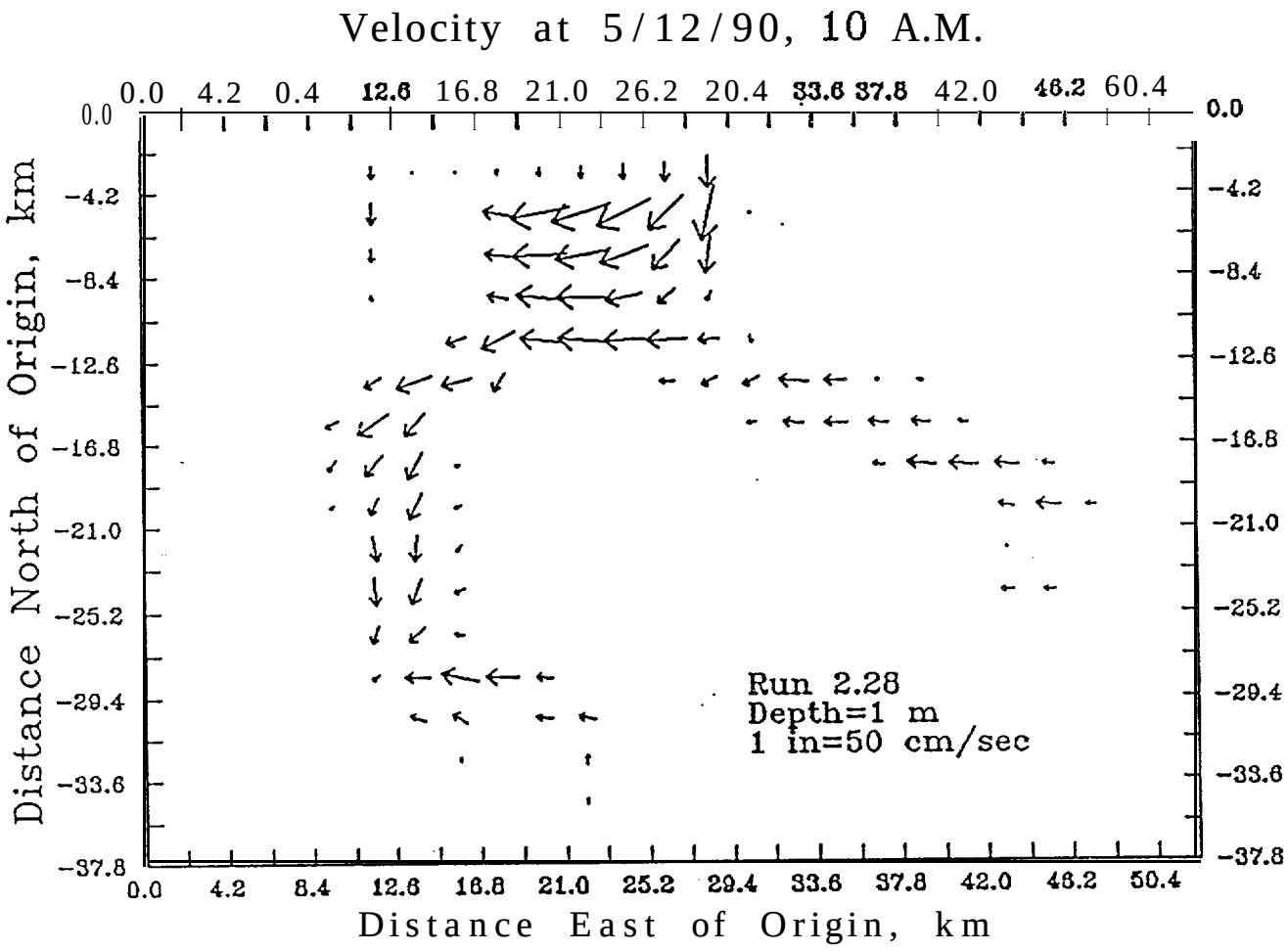


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

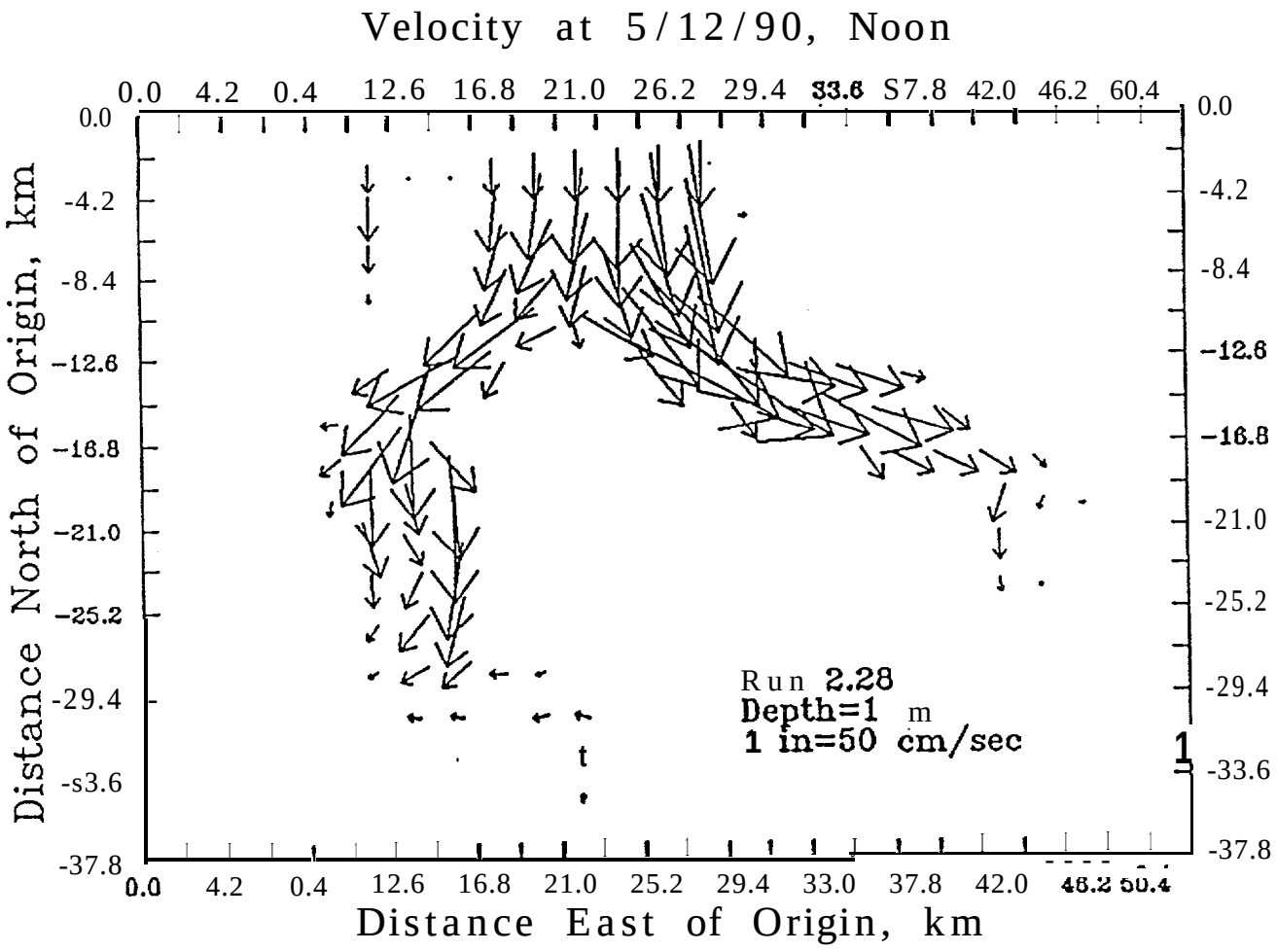


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

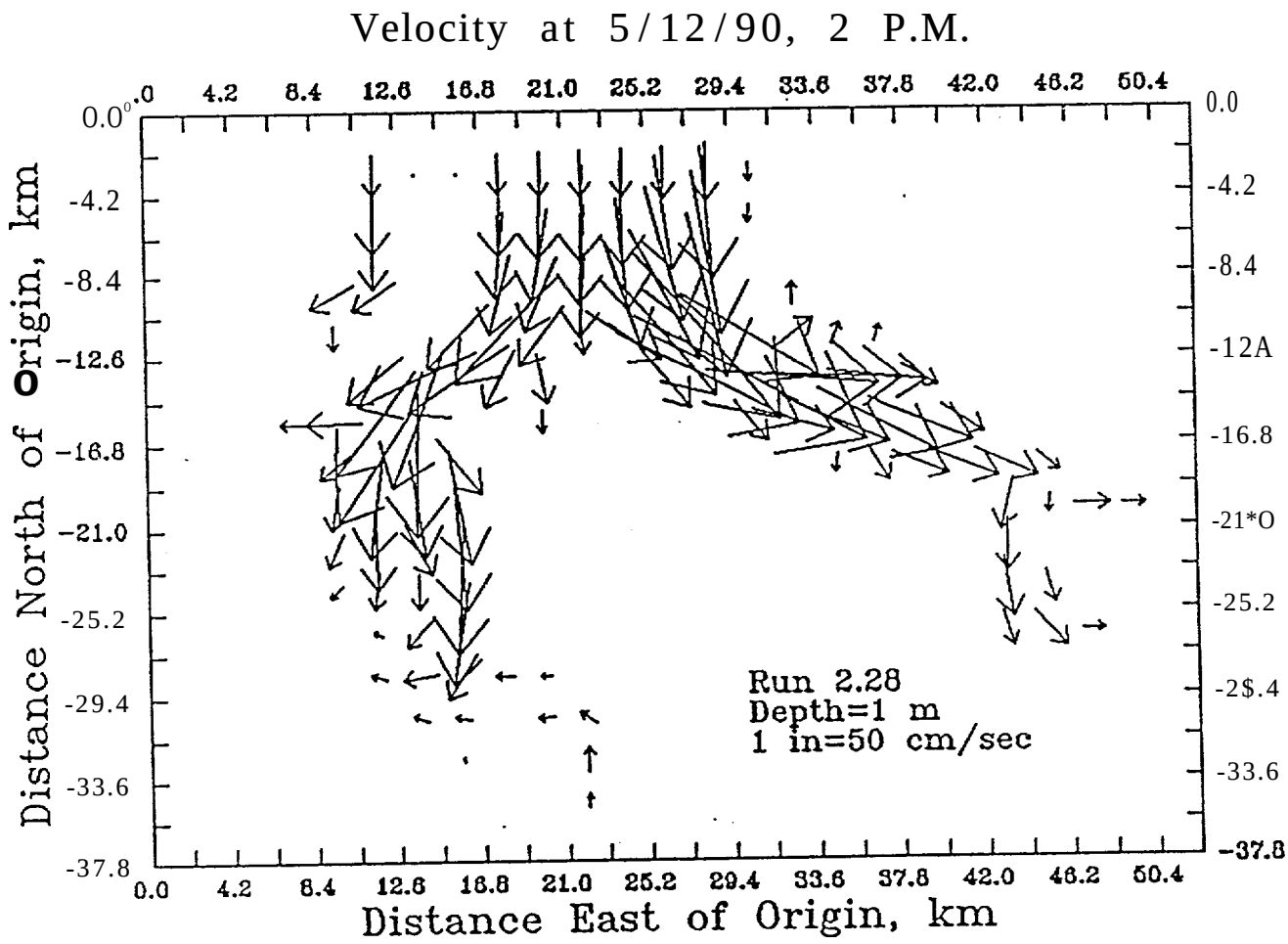


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

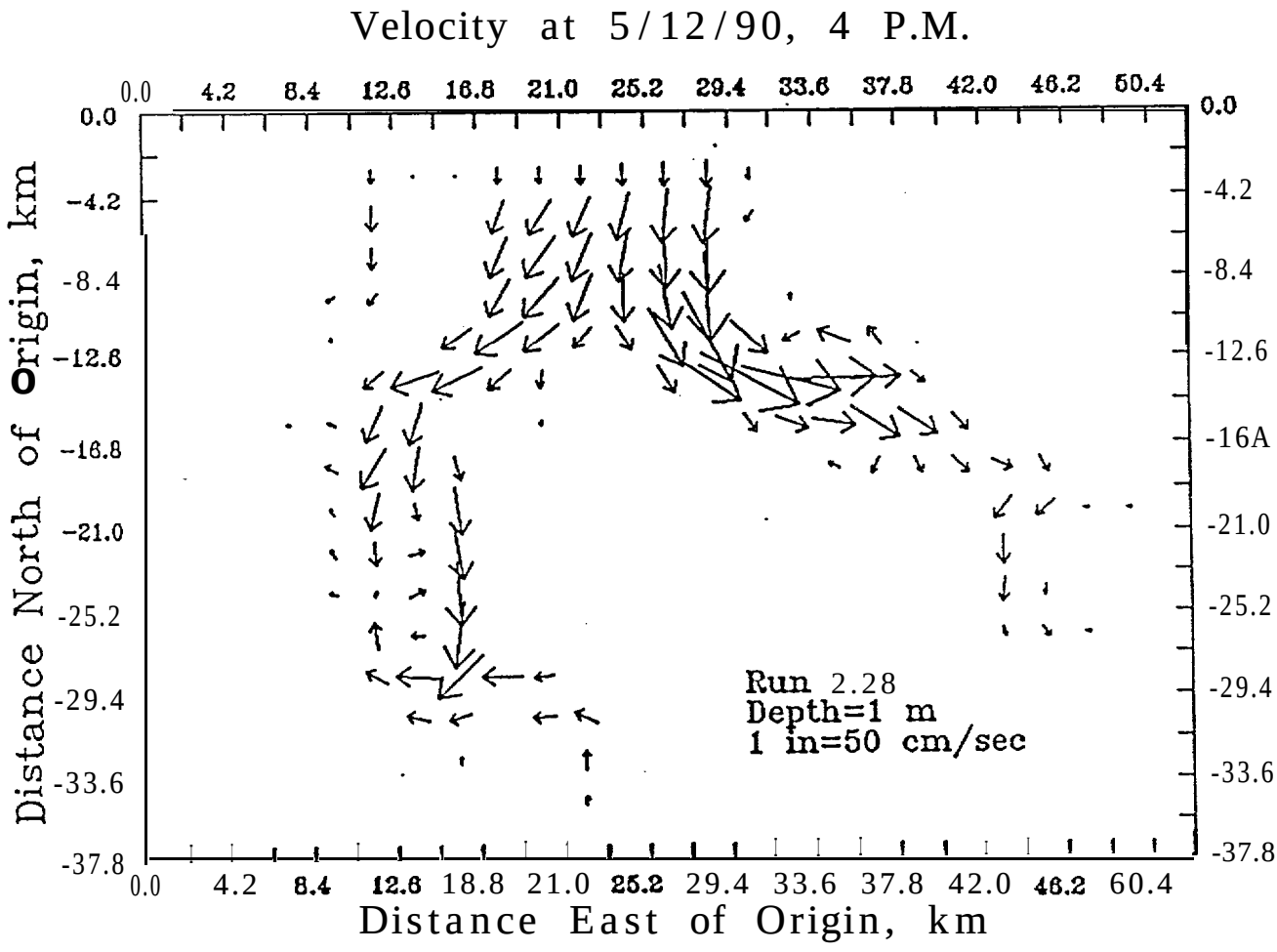


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

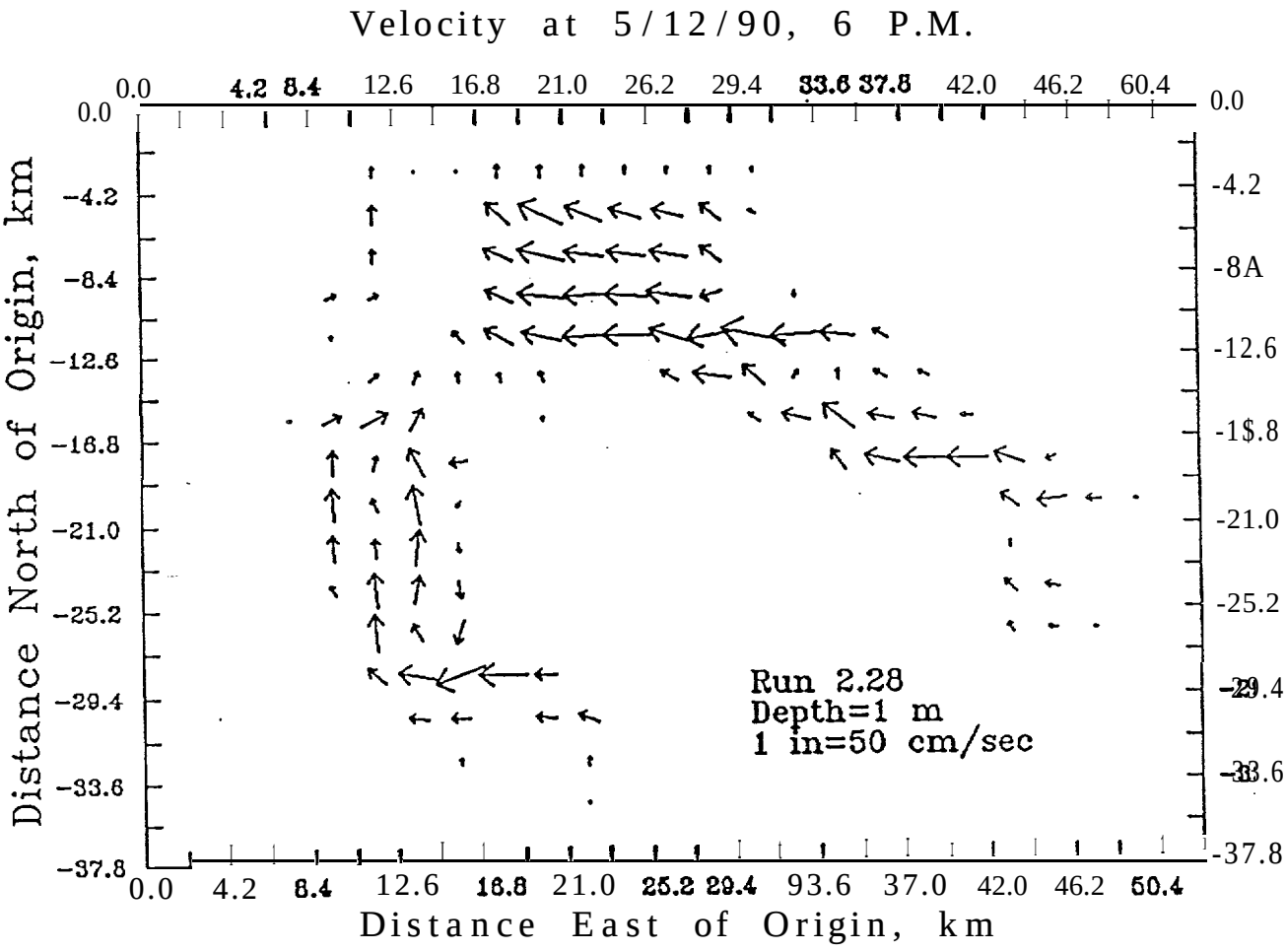


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

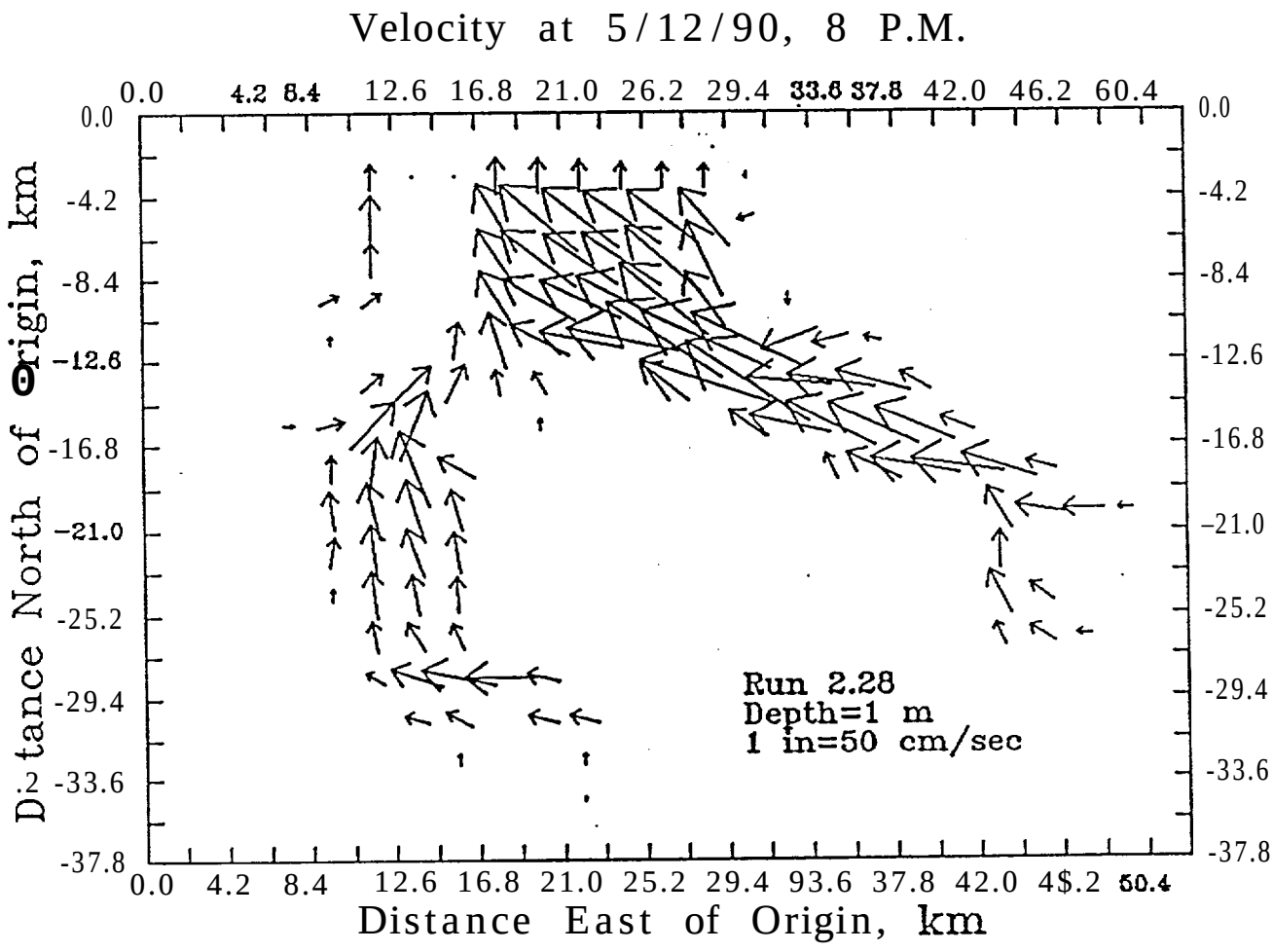


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

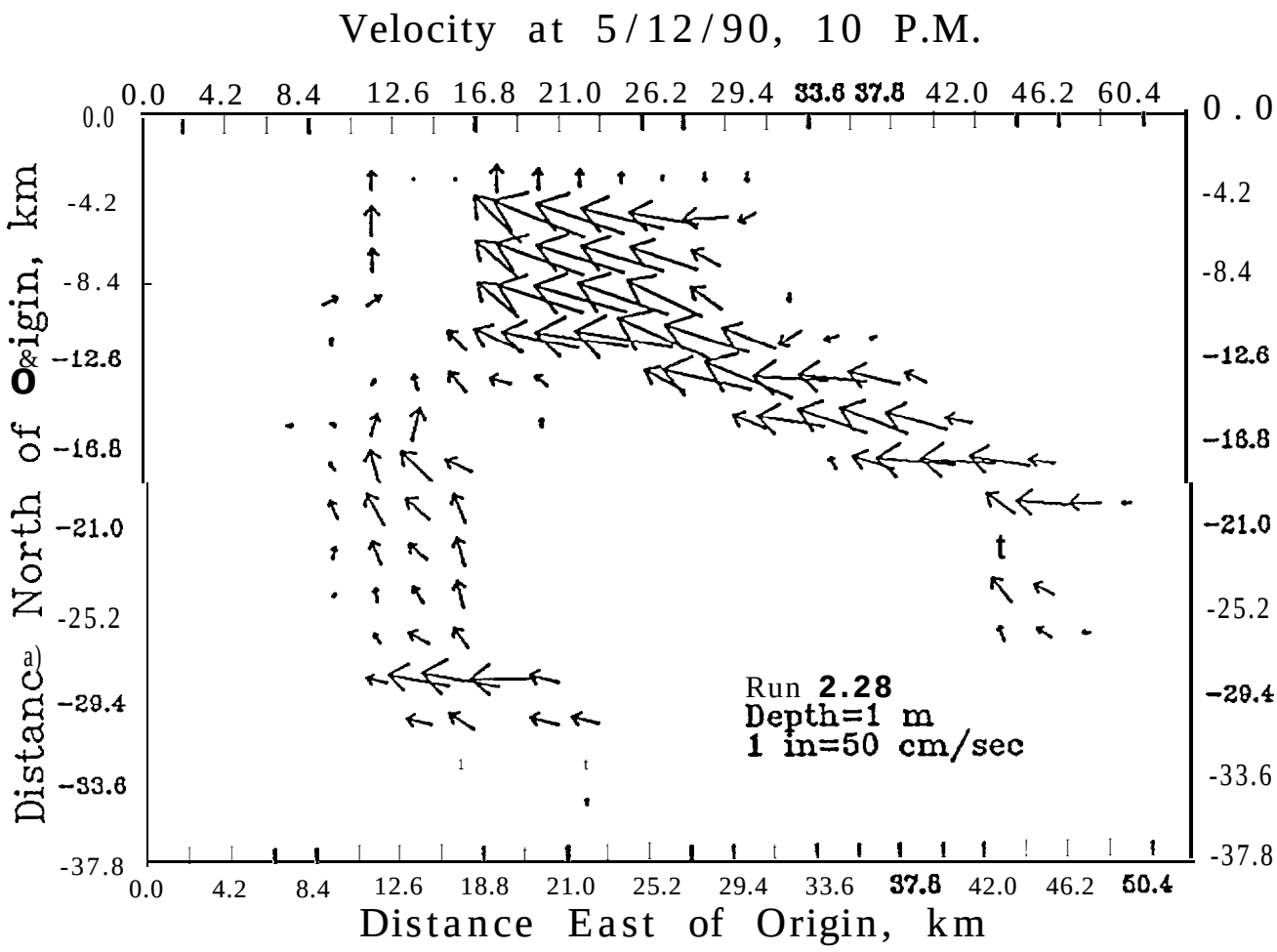


Figure 4 (continued). Surface vector plots every two hours for May 12, 1990 (Run 2.28).

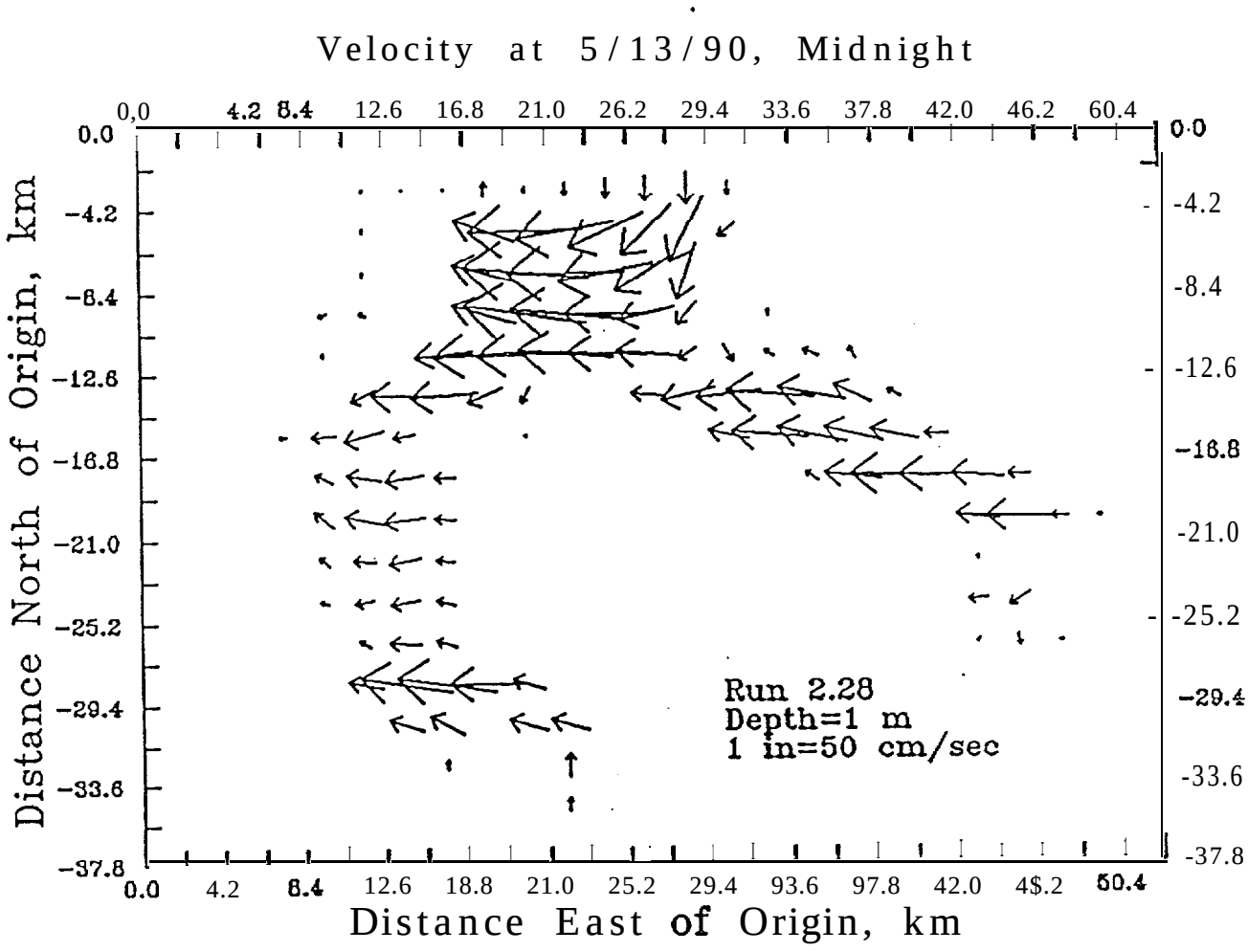


Figure 5. Longitudinal-vertical plots of average velocities along **Triton** centerline stations shown in Table 3 for the first 7-day period, 12 May 1990 to 19 May 1990, for **Moller** Bay Run 2.31).

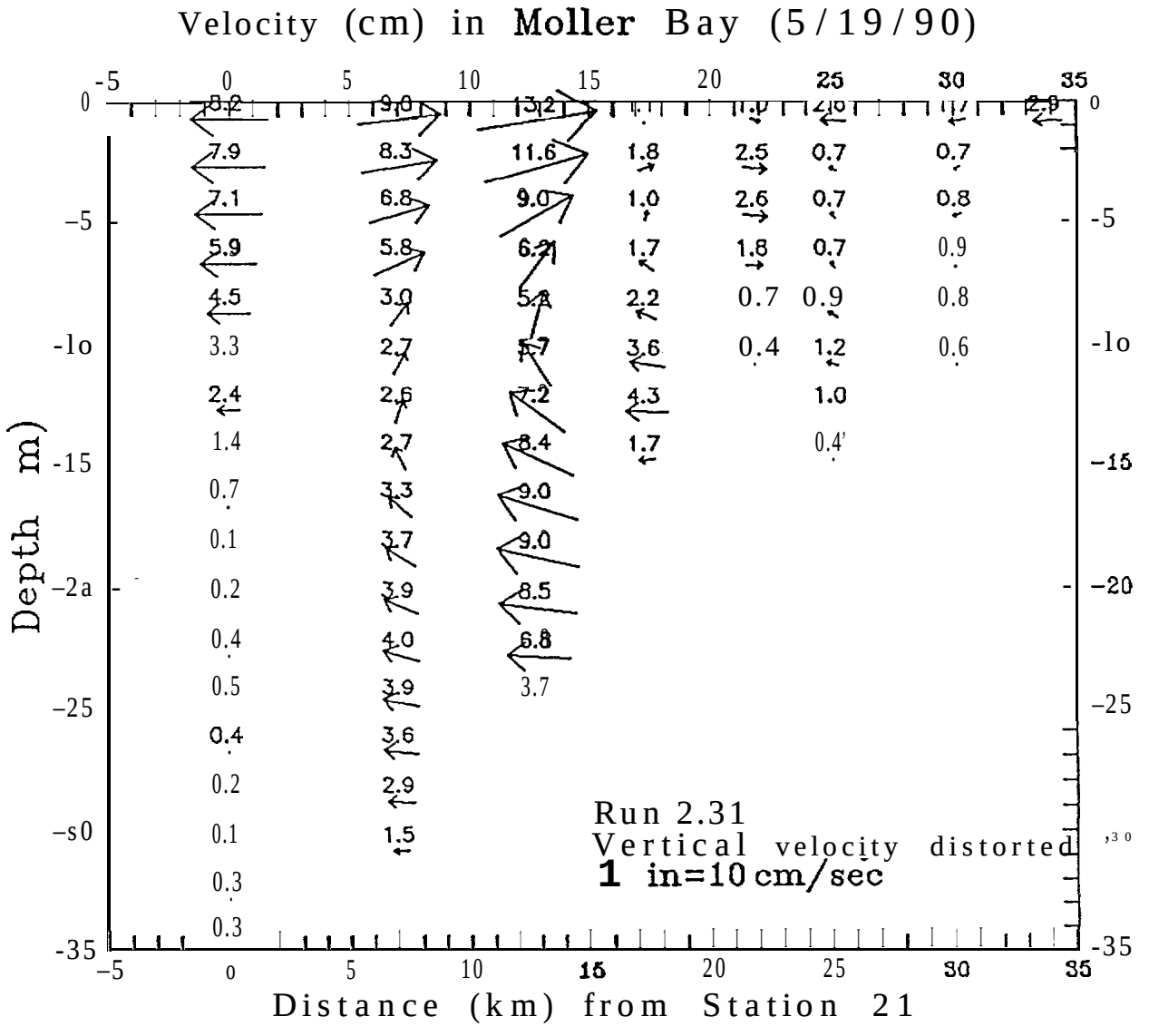


Figure 6. Longitudinal-vertical plots of average velocities along Triton centerline stations shown in Table 3 for the first 7-day period, 12 May 1990 to 19 May 1990, for Herendeen Bay (Run 2.32).

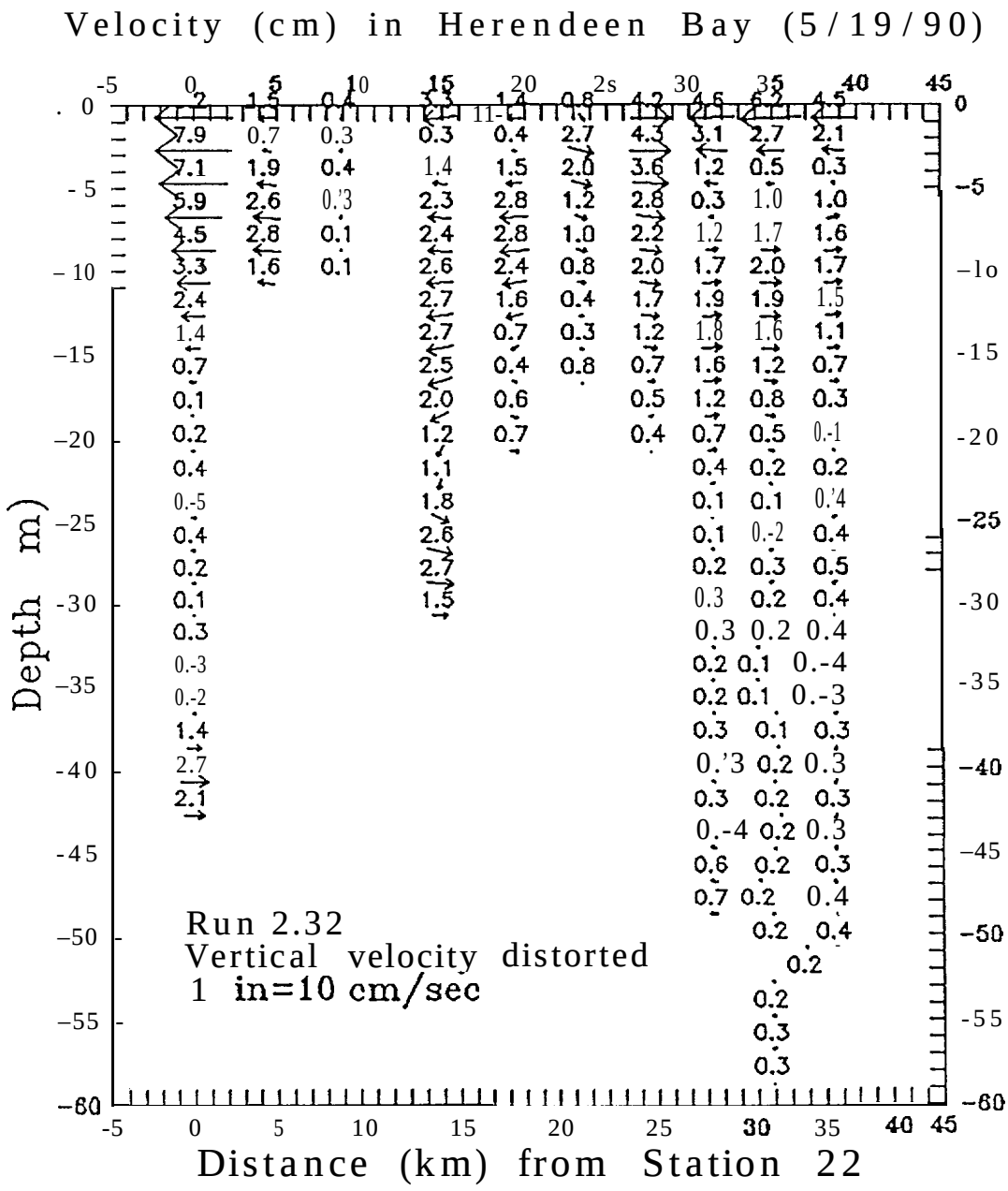


Figure 9. Observed Port Moller water surface elevation based on National Ocean Service data for the 24 to 26 June 1990 survey in Herendeen Bay (Run 1.29).

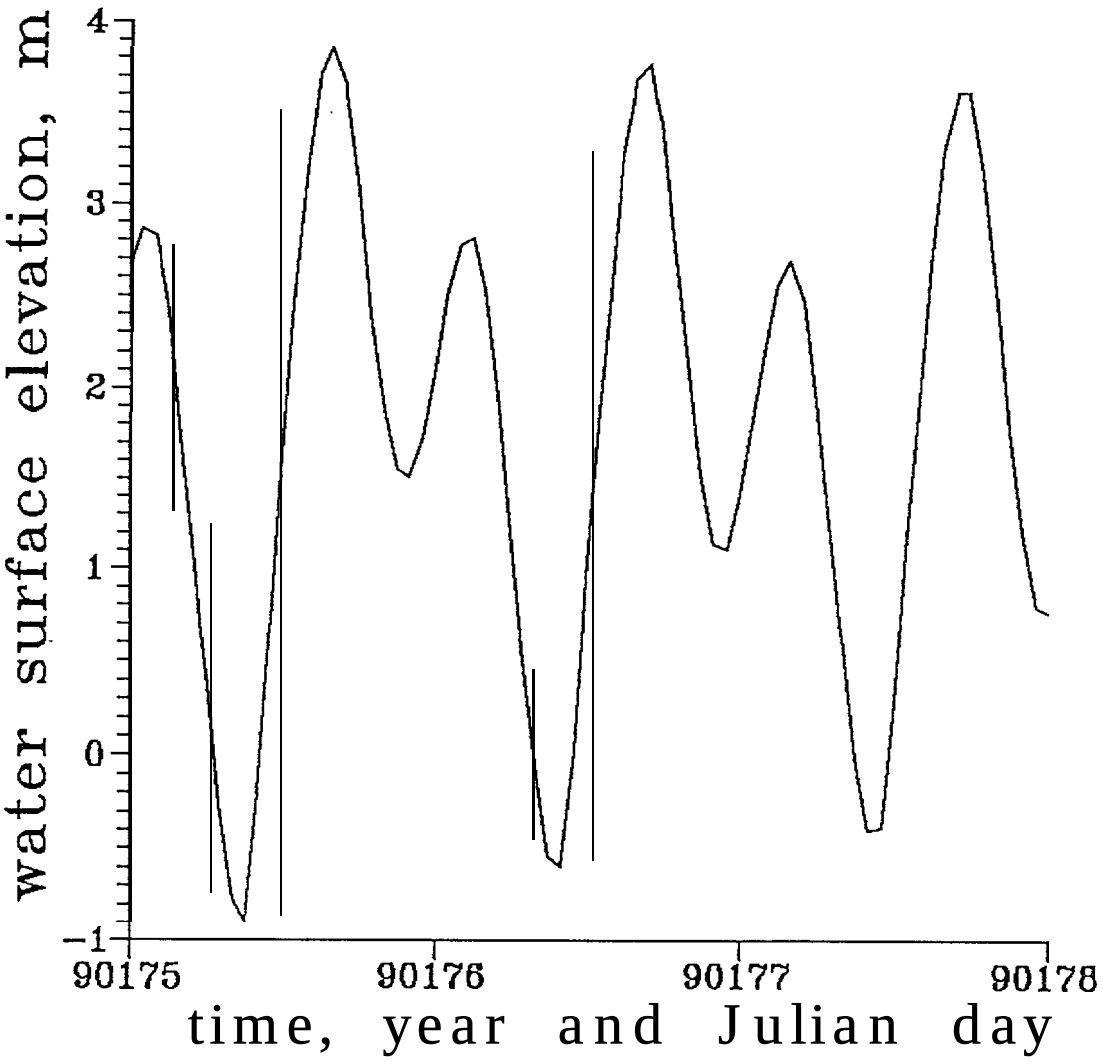
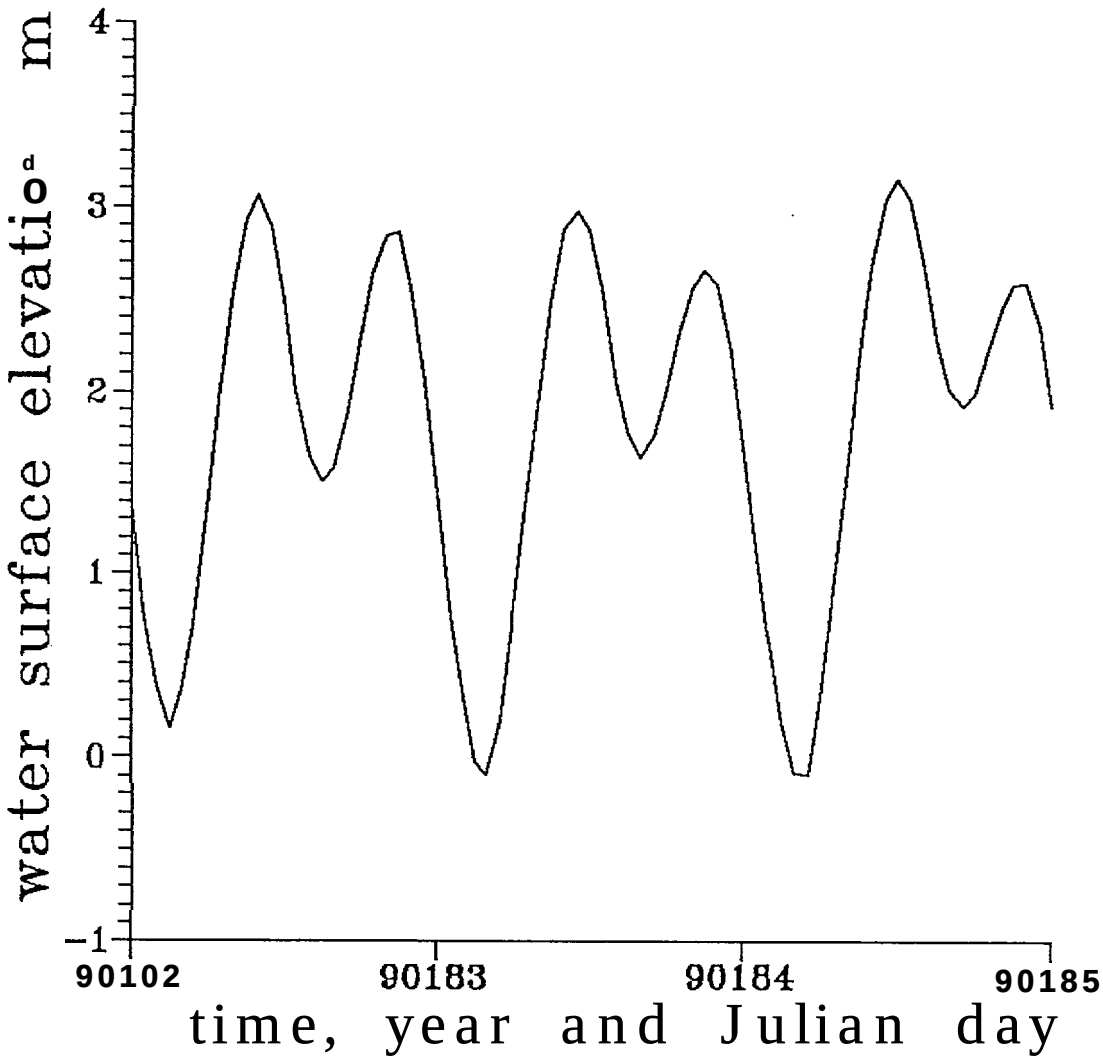
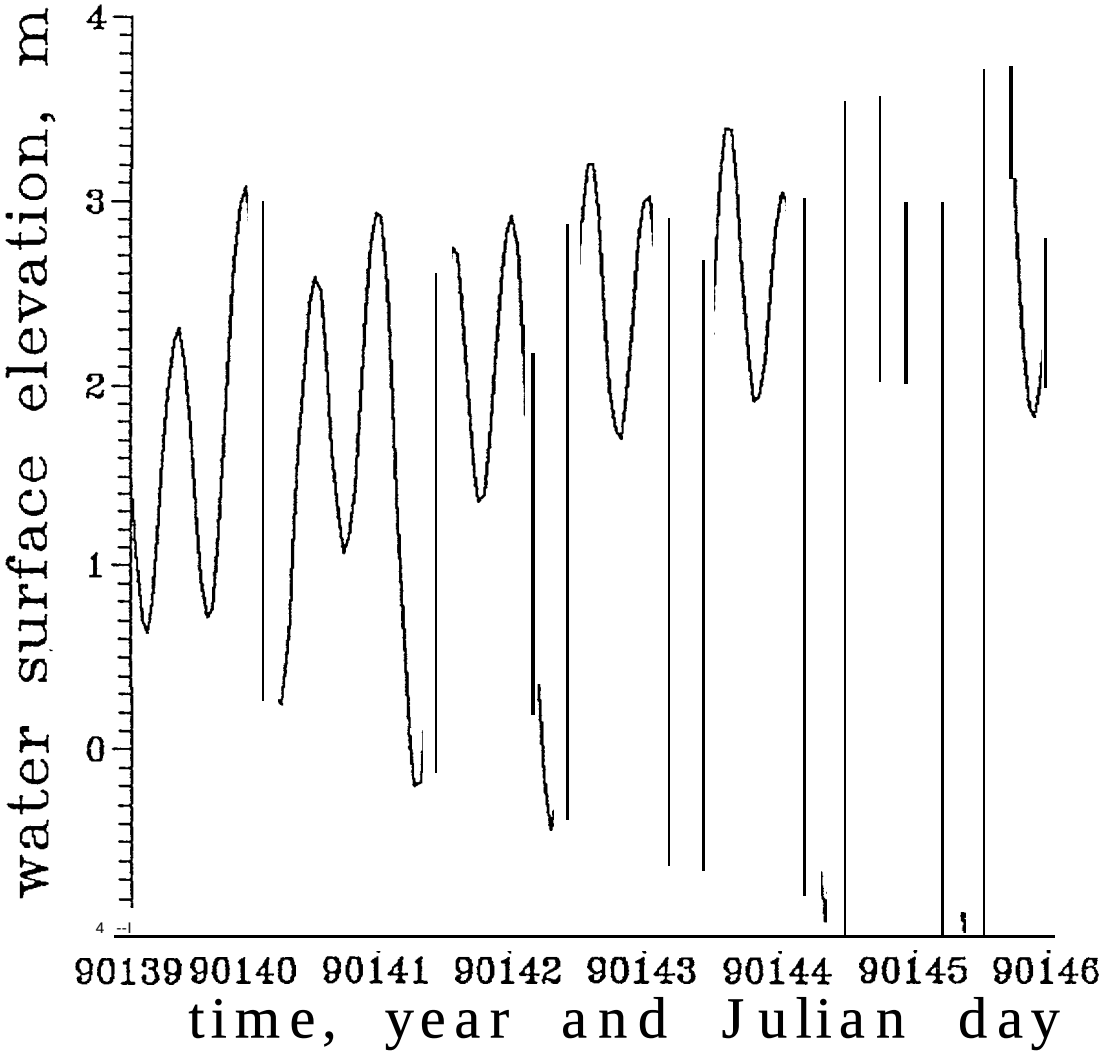


Figure 10. Observed Port Moller water surface elevation based on National Ocean Service data for the 1 July 1990 to 2 July 1990 survey in Moller Bay (Run 1.29).



Appendix 1. Observed Port Moller water surface elevation for 7-days intervals through the study period (Run 1.29).


water surface elevation, m
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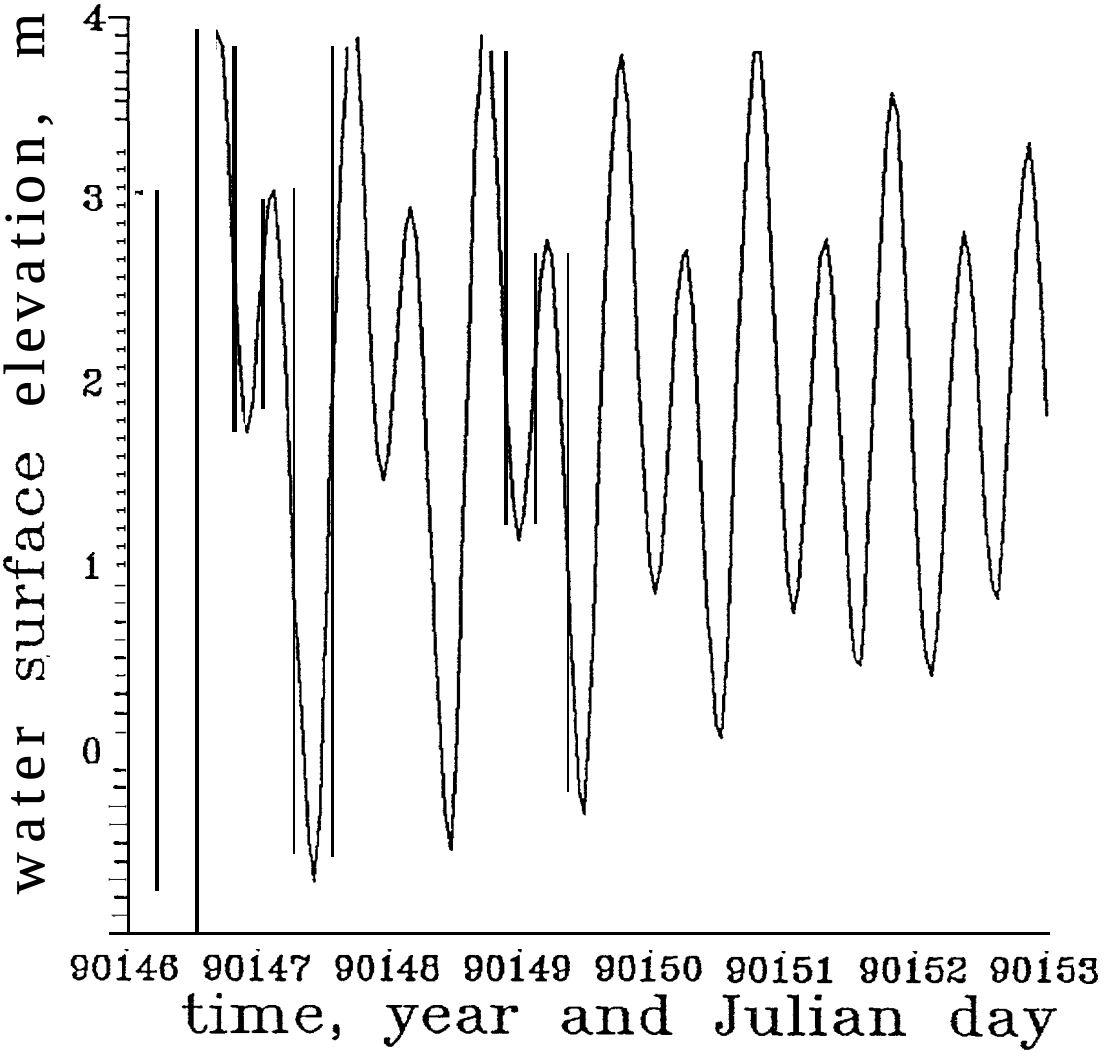
3
2
1
0
-1
90139 90140 90141 90142 90143 90144 90145 90146
time, year and Julian day


water surface elevation, m
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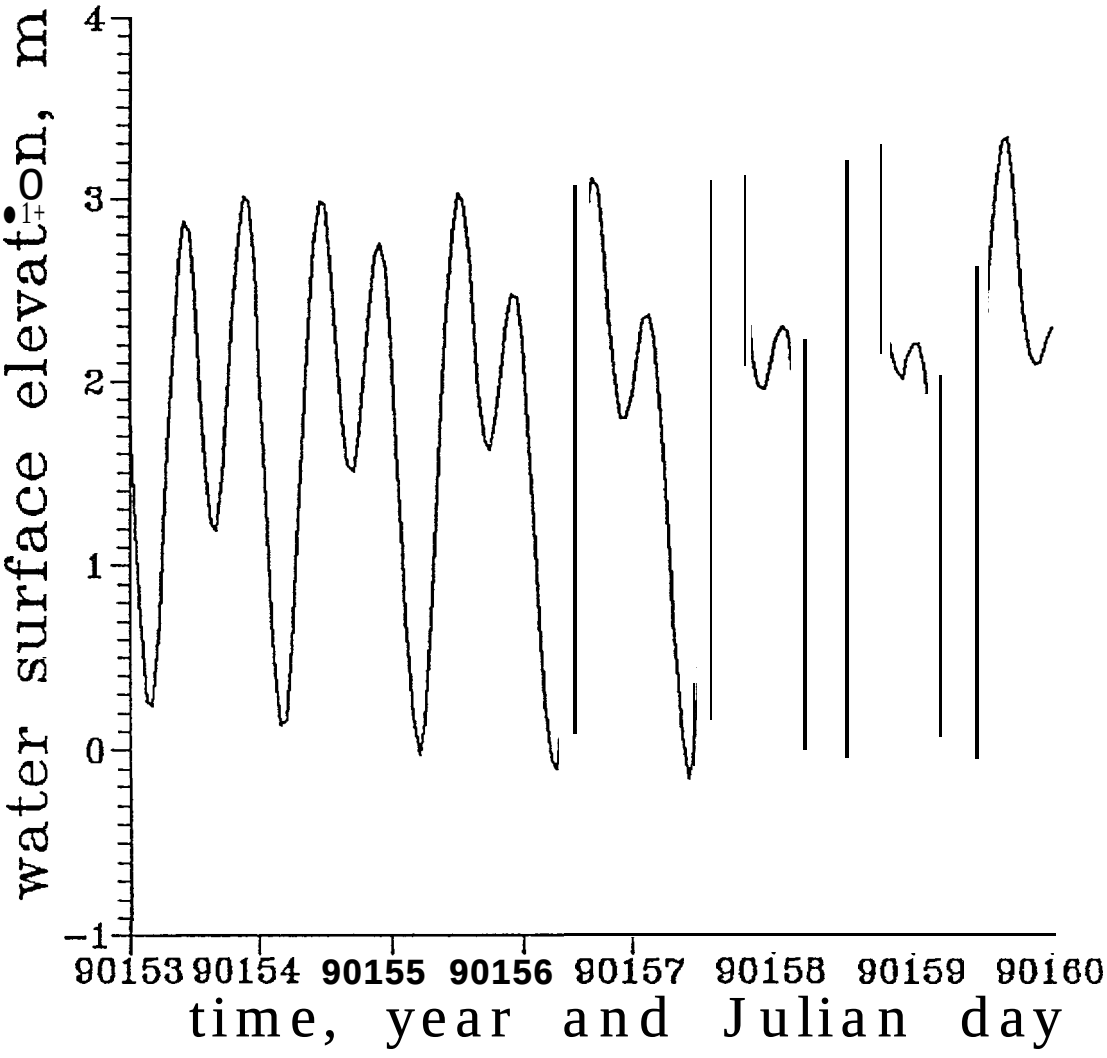
3
2
1
0
90146 90147 90148 90149 90150 90151 90152 90153
time, year and Julian day


water surface elevation, m
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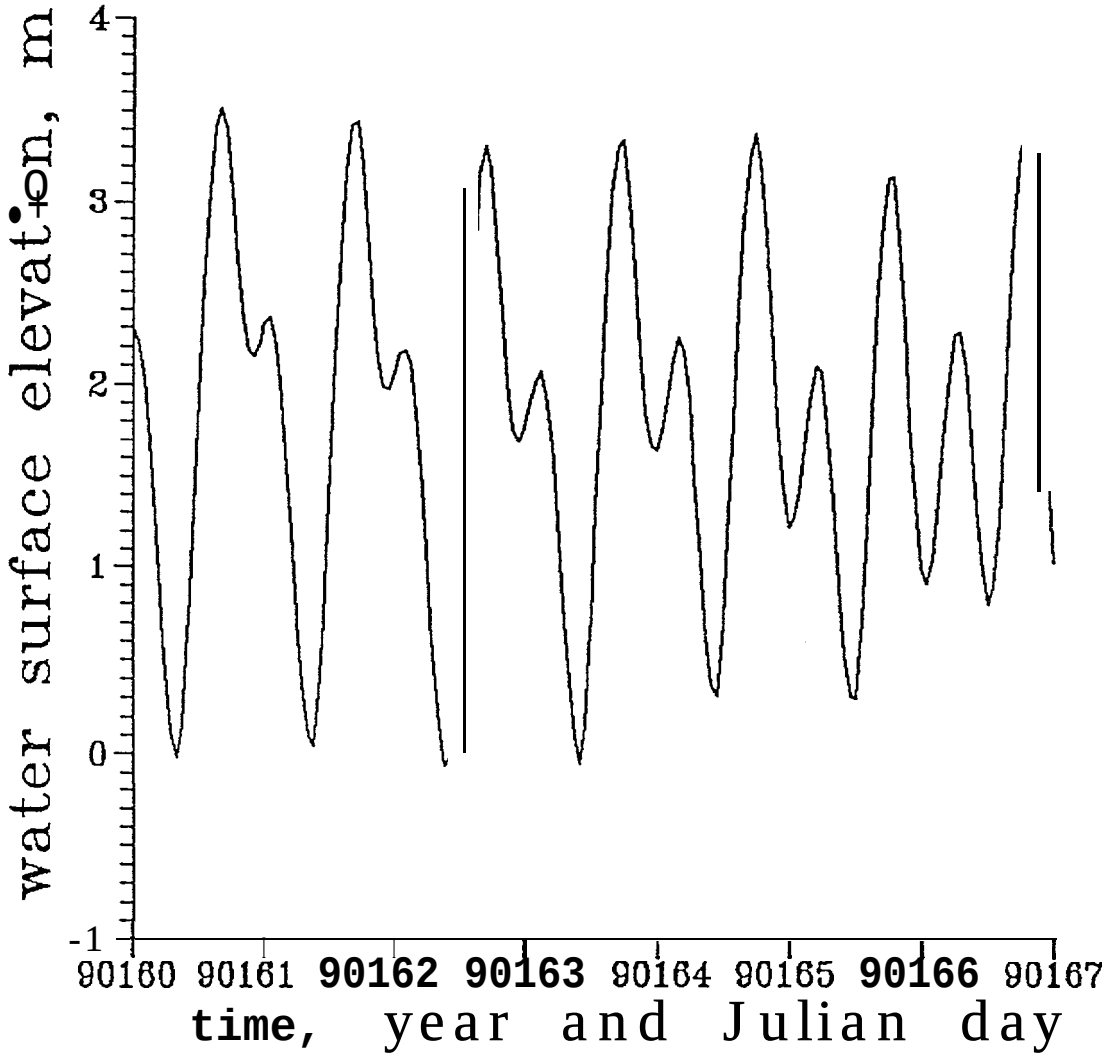
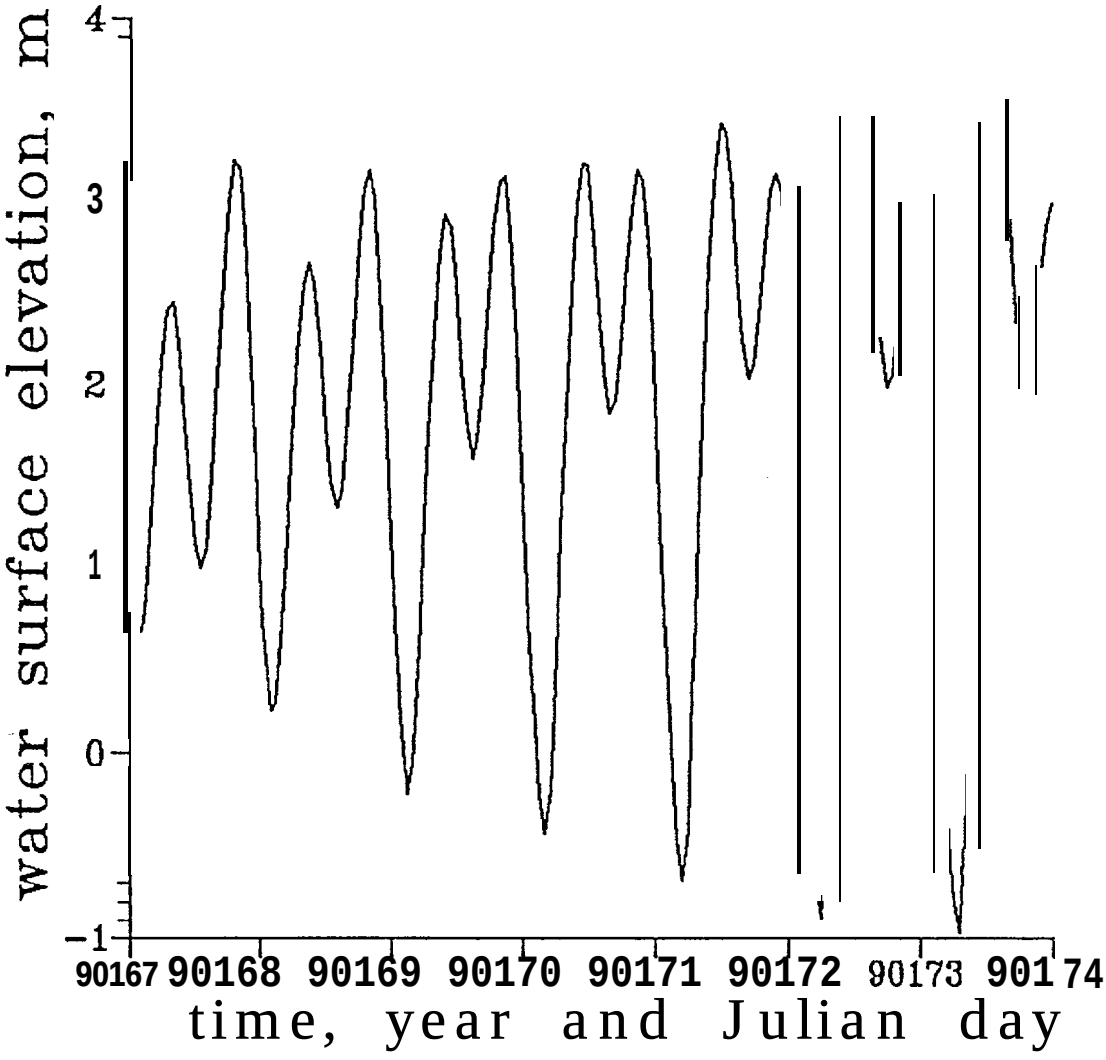
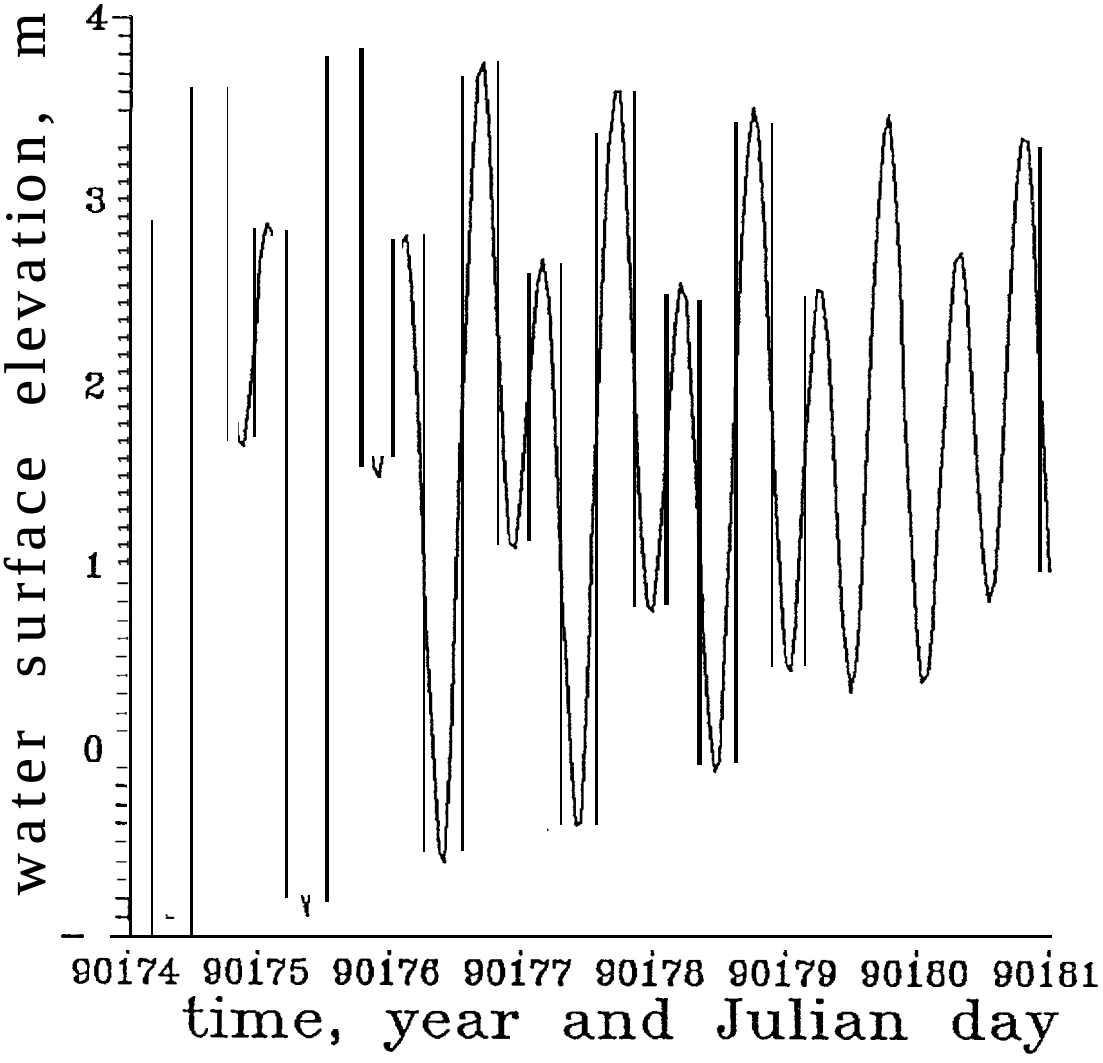
3
2
1
0
−1
90153
90154
90155
90156
90157
90158
90159
90160
time, year and Julian day


water surface elevation, m
4
3
2
1
0
-1
90160 90161 90162 90163 90164 90165 90166 90167
time, year and Julian day


water surface elevation, m
4
3
2
1
0
−1
90167
90168
90169
90170
90171
90172
90173
90174
time, year and Julian day


water surface elevation, m
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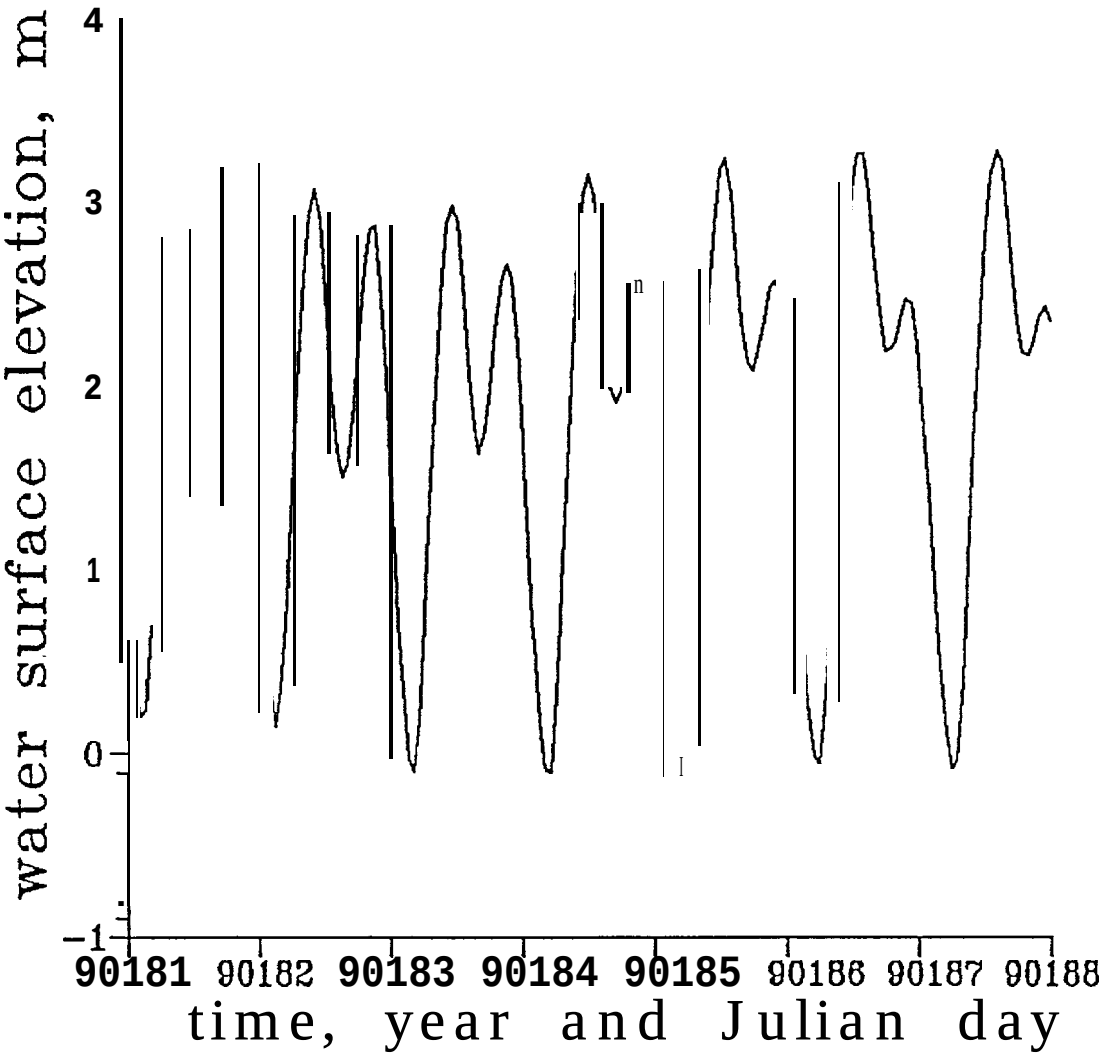
3
2
1
0
90i74 90i75 90i76 90i77 90i78 90i79 90i80 90i81
time, year and Julian day


water surface elevation, m
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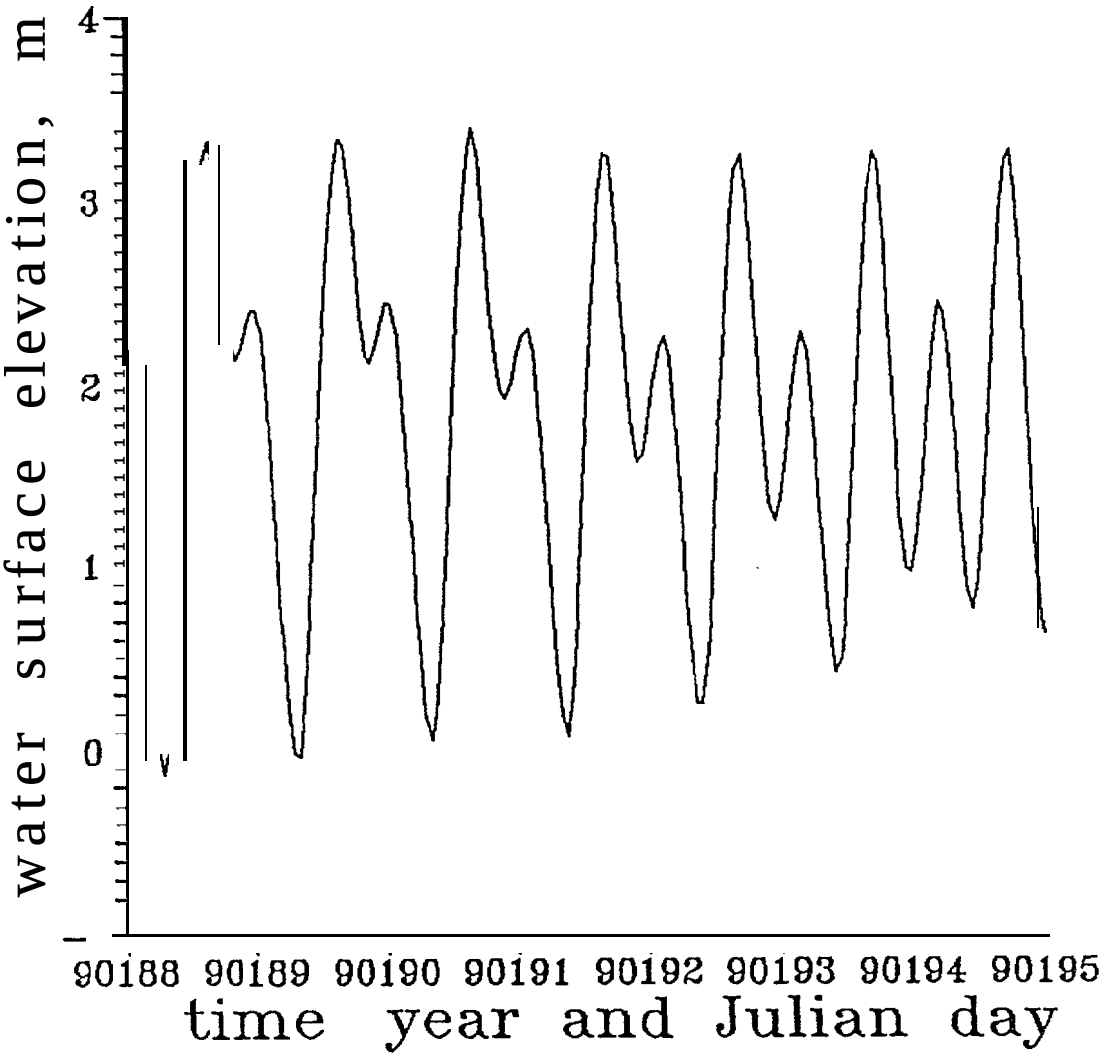
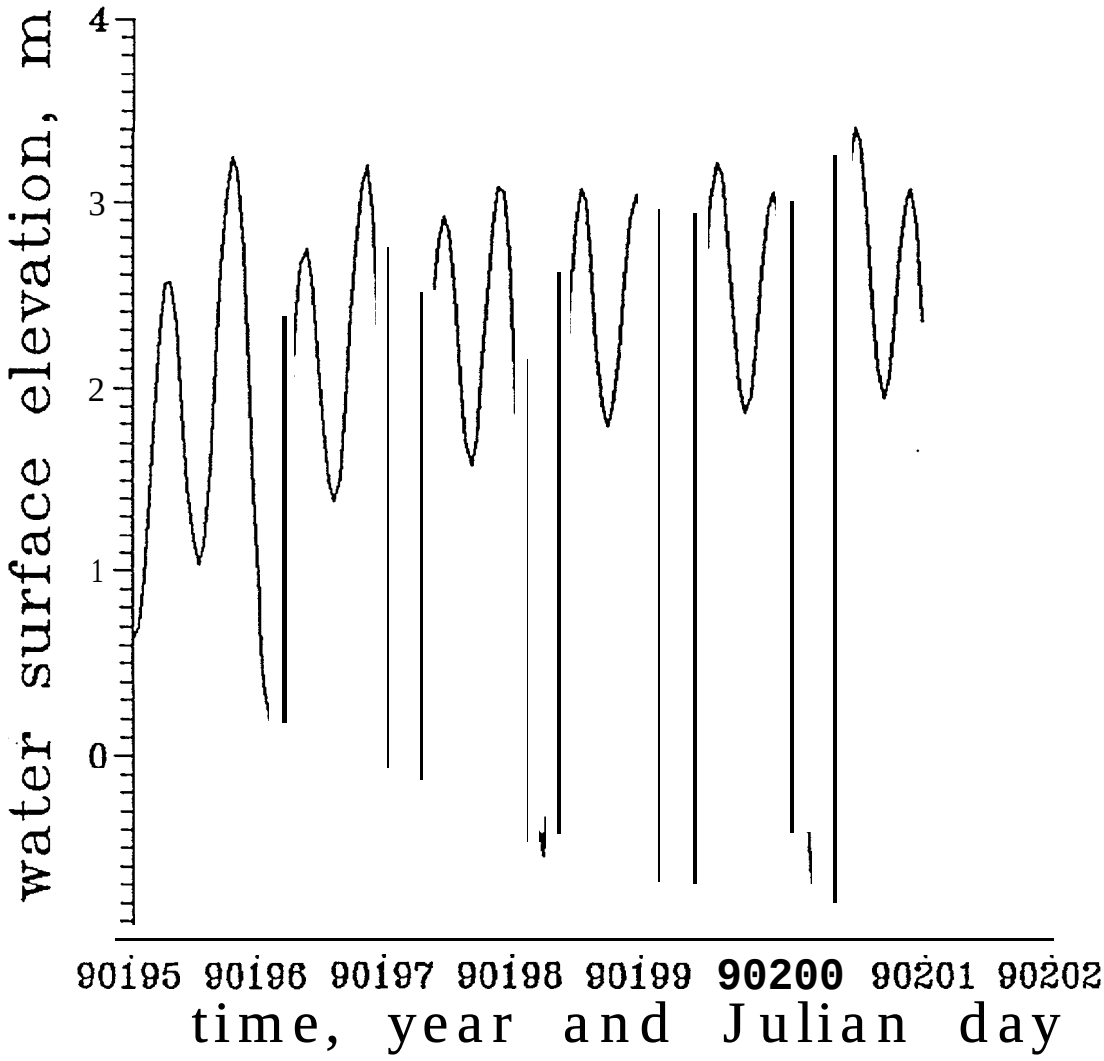
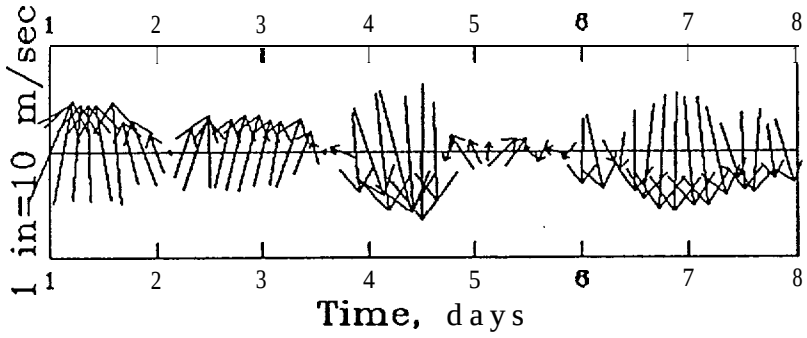
3
2
1
0
-1
90181
90182
90183
90184
90185
90186
90187
90188
time, year and Julian day


water surface elevation, m
4
3
2
1
0
-1
90188 90189 90190 90191 90192 90193 90194 90195
time year and Julian day

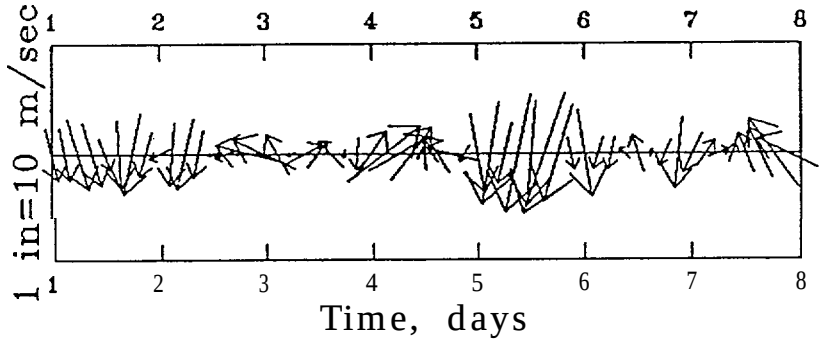

water surface elevation, m
4
3
2
1
0
90195 90196 90197 90198 90199 90200 90201 90202
time, year and Julian day

Appendix 2. Wind vector plot for 7-days intervals through the study period (Run 1.29).

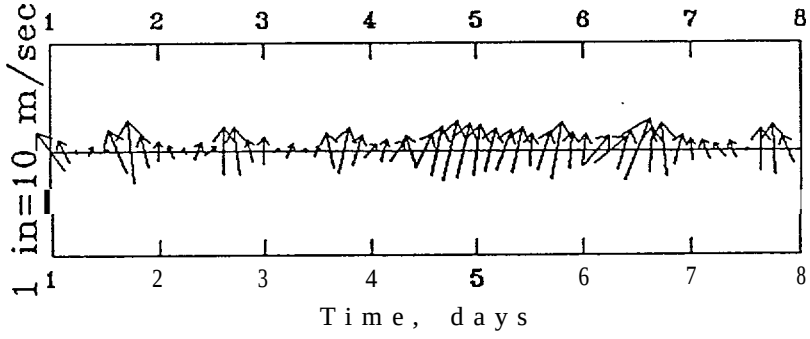
5/19/90–5/25/90



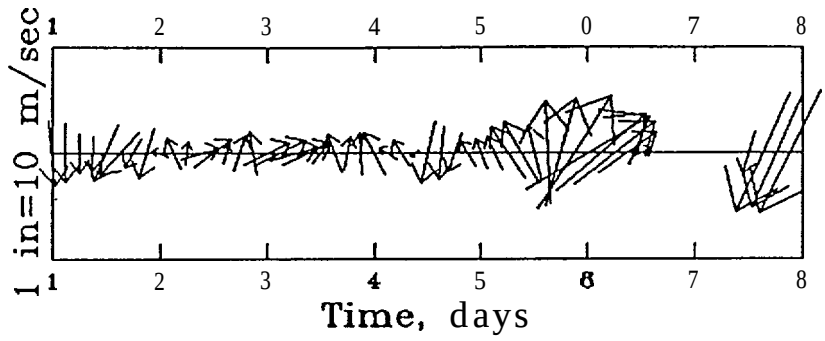
5/26/90–6/01/90



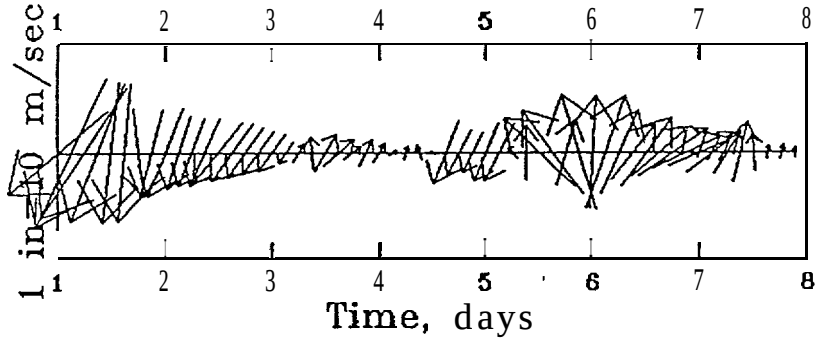
6/02/90–6/08/90



6/09/90–6/15/90



6/16/'90-6/22/90



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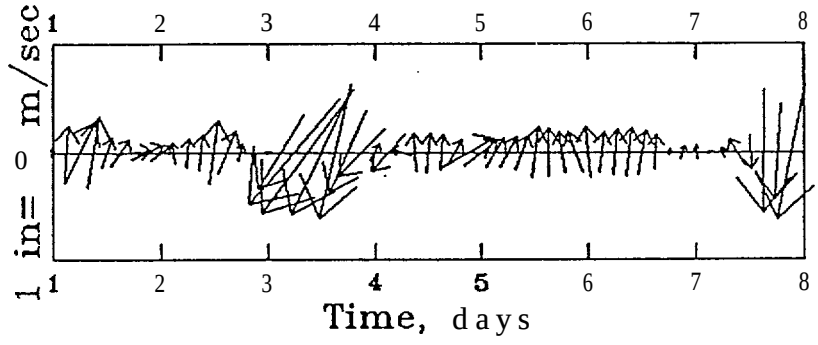
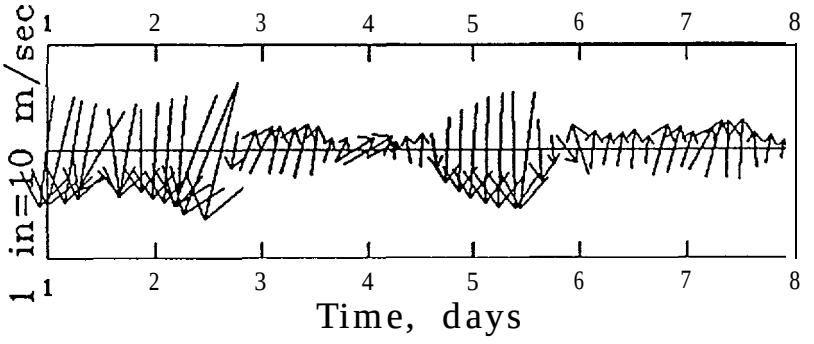
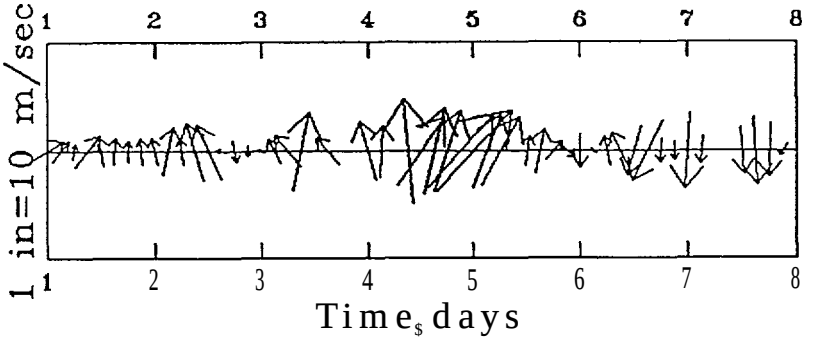


6/30/90-7/06/90



7/07/90-7/13/90



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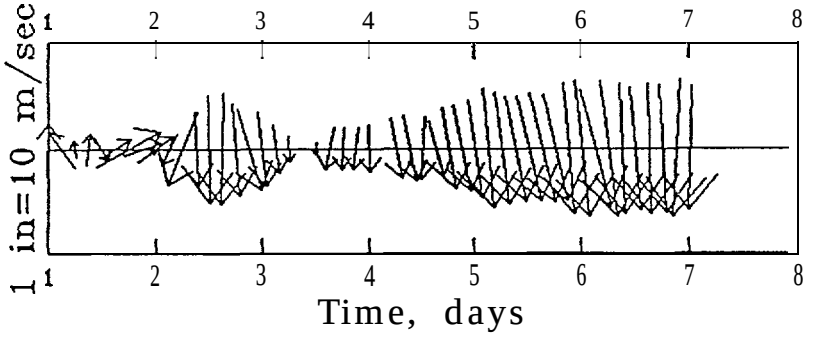
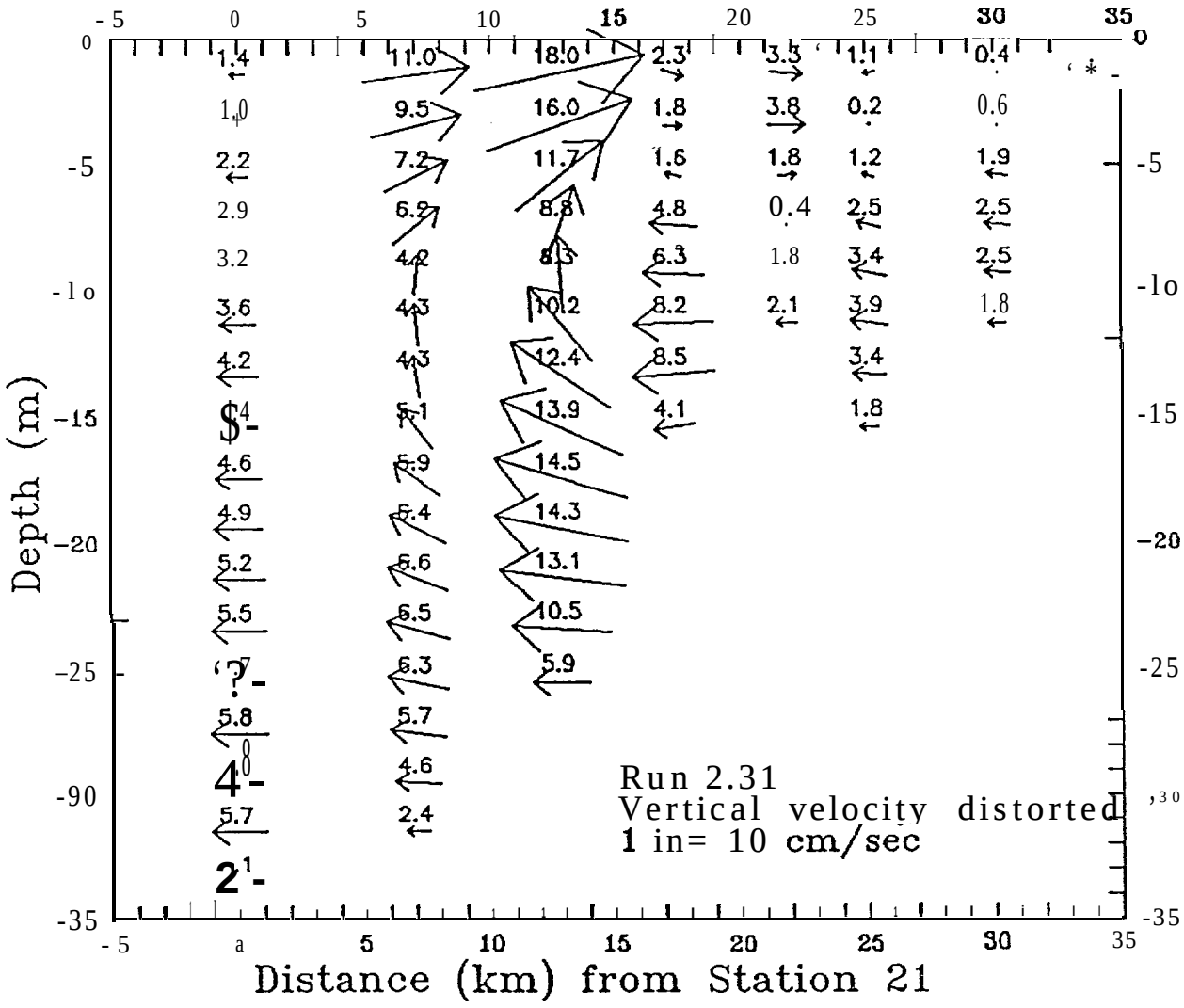
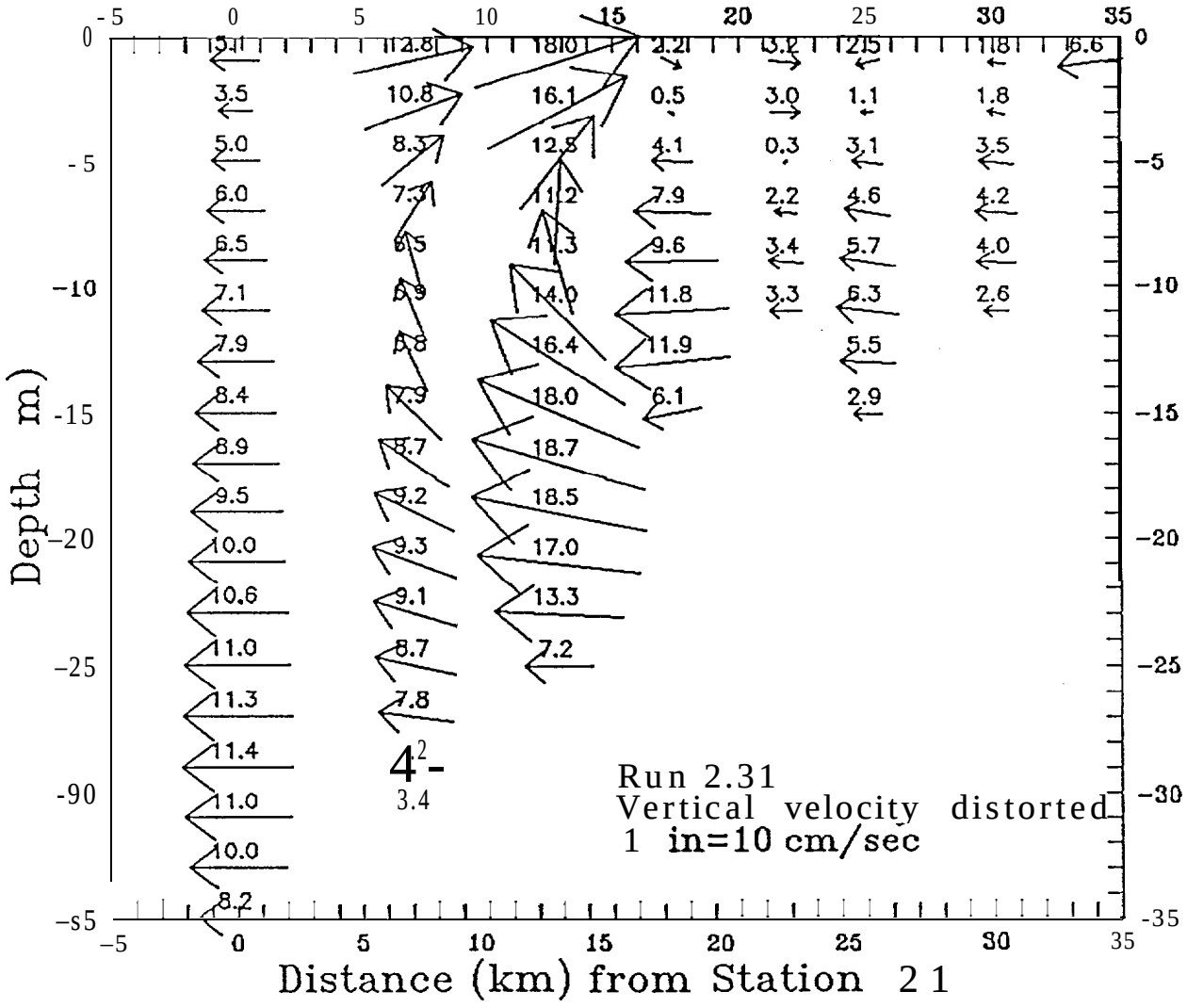


Appendix 3. Longitudinal-vertical plots of average velocities along Triton centerline stations for Moller Bay shown in Table 3 for 7-days intervals through the study period (Run 2.31).

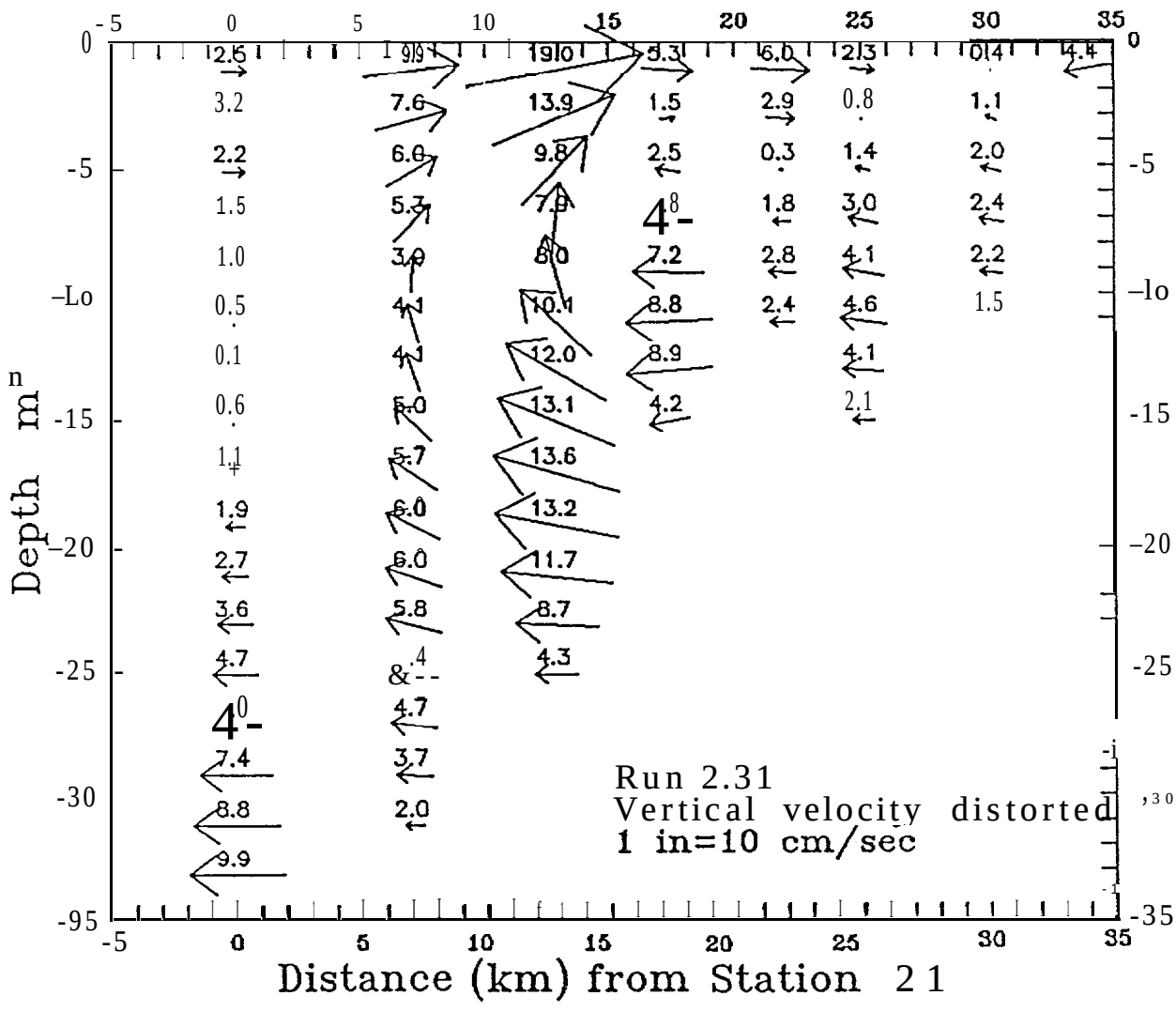
Velocity (cm) in Moller Bay (5/26/90)

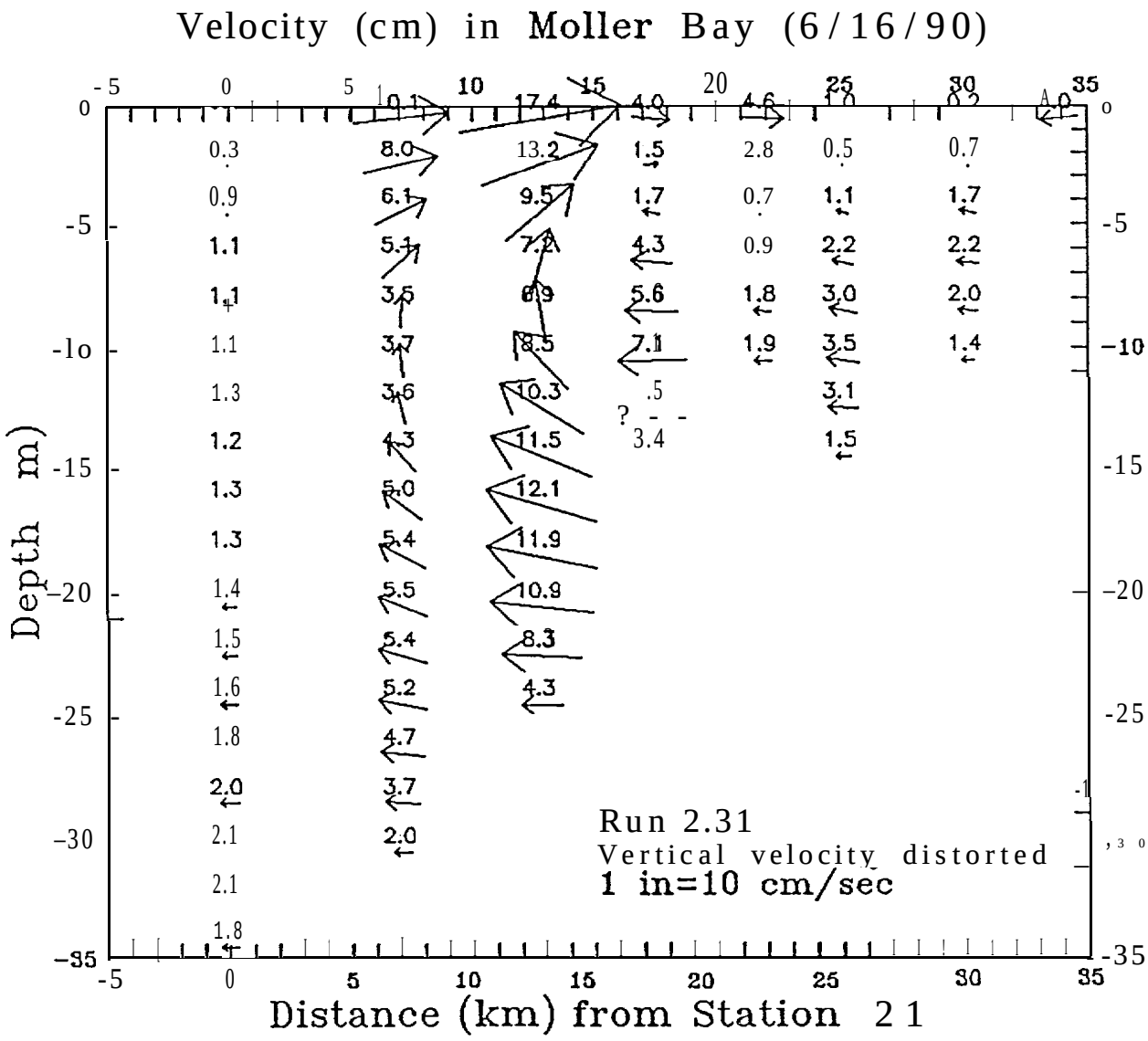


Velocity (cm) in **Moller** Bay (6/02/90)

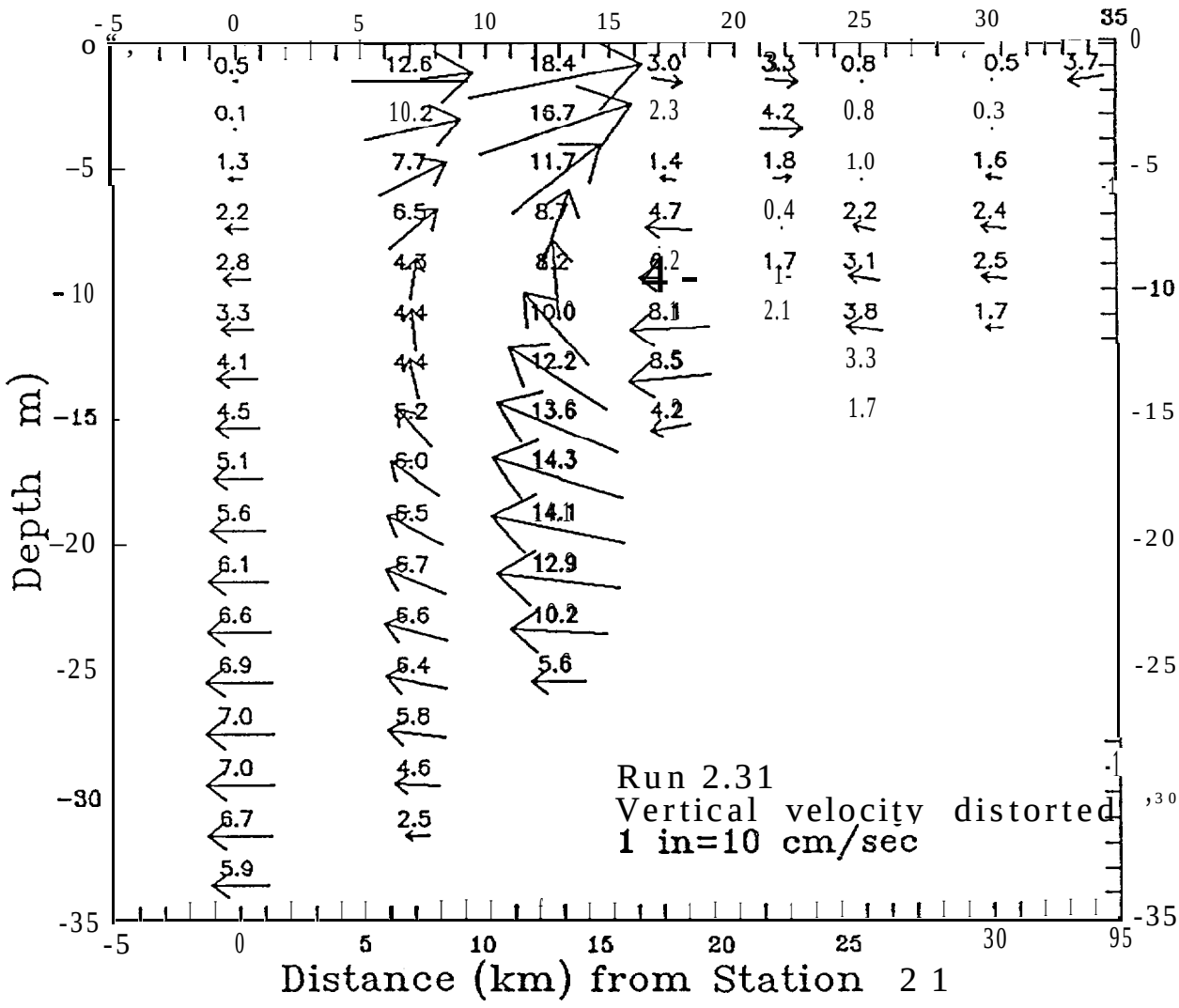


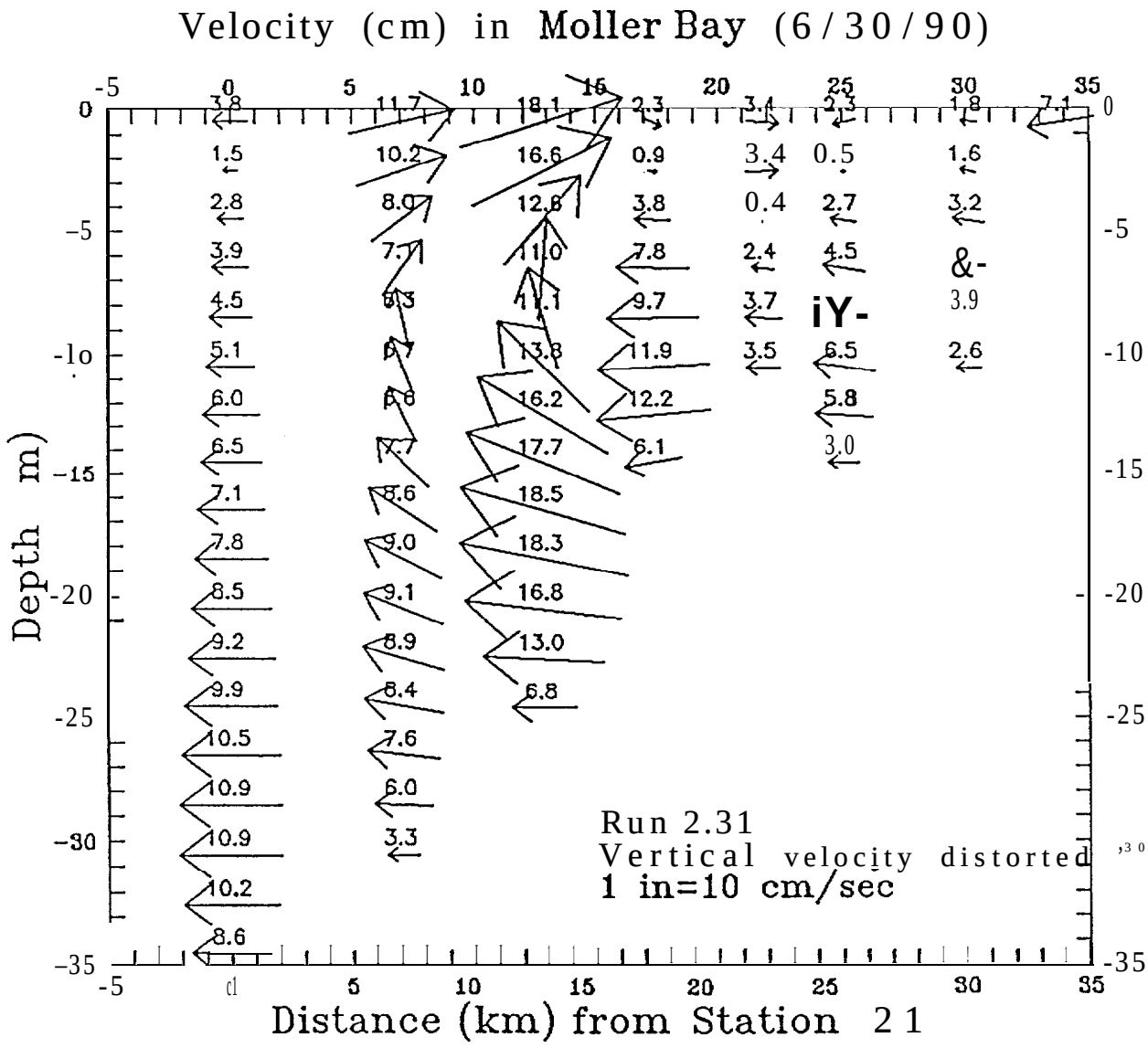
Velocity (cm) in Moller Bay (6/09/90)



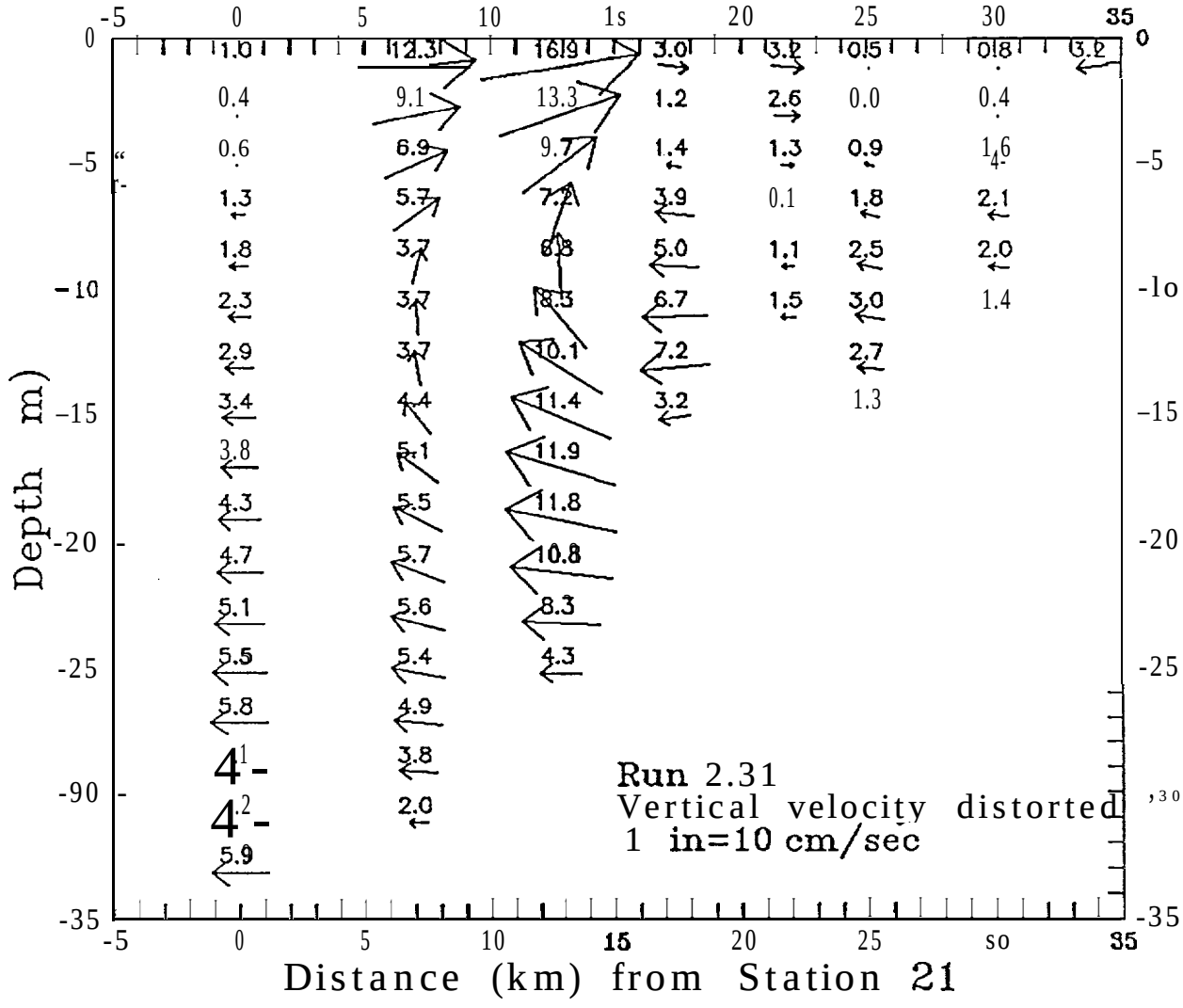

Velocity (cm) in Moller Bay (6/16/90)
Depth (m)
Distance (km) from Station 21
Run 2.31
Vertical velocity distorted
1 in=10 cm/sec

Velocity (cm) in Moller Bay (6/23/90)

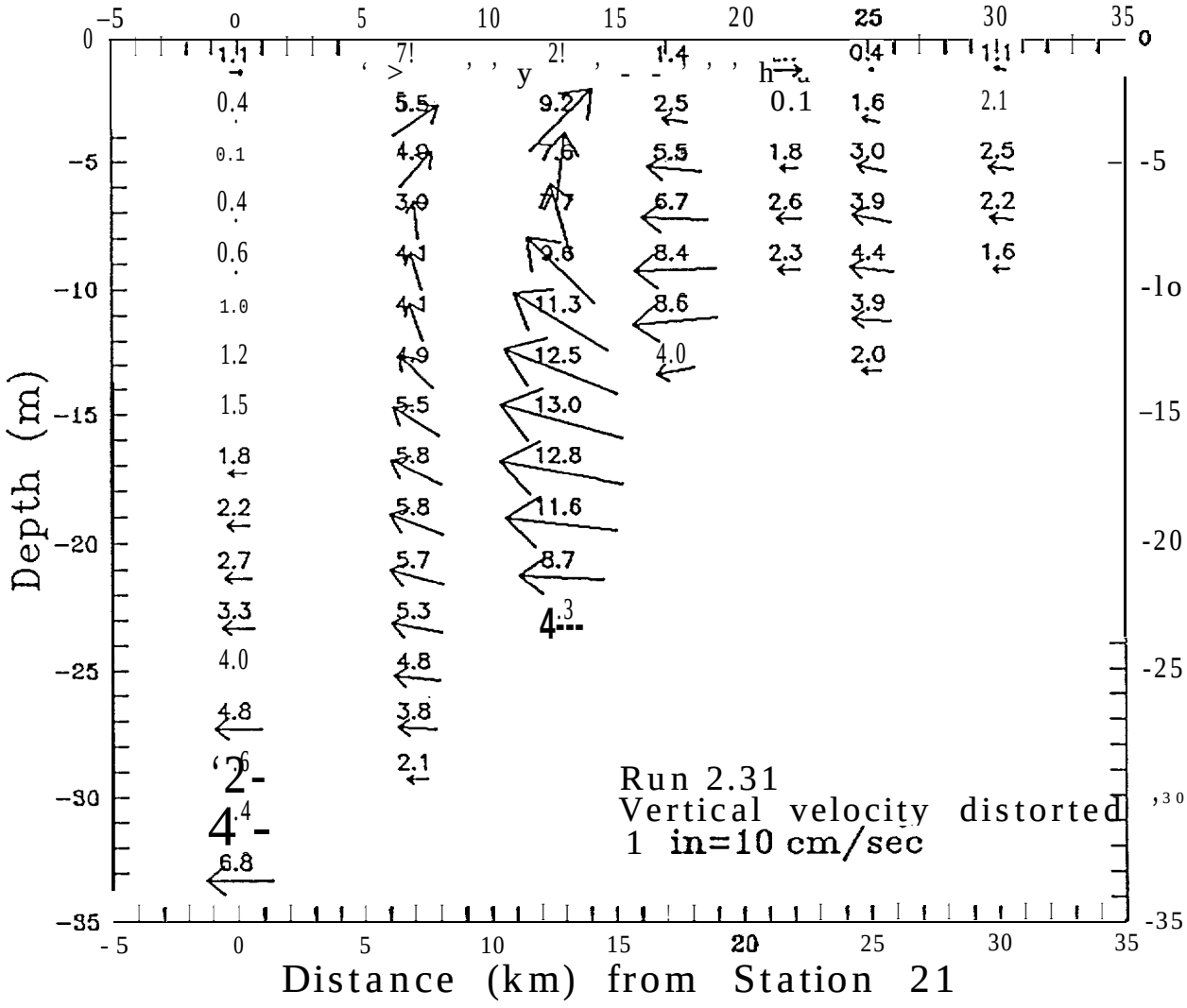


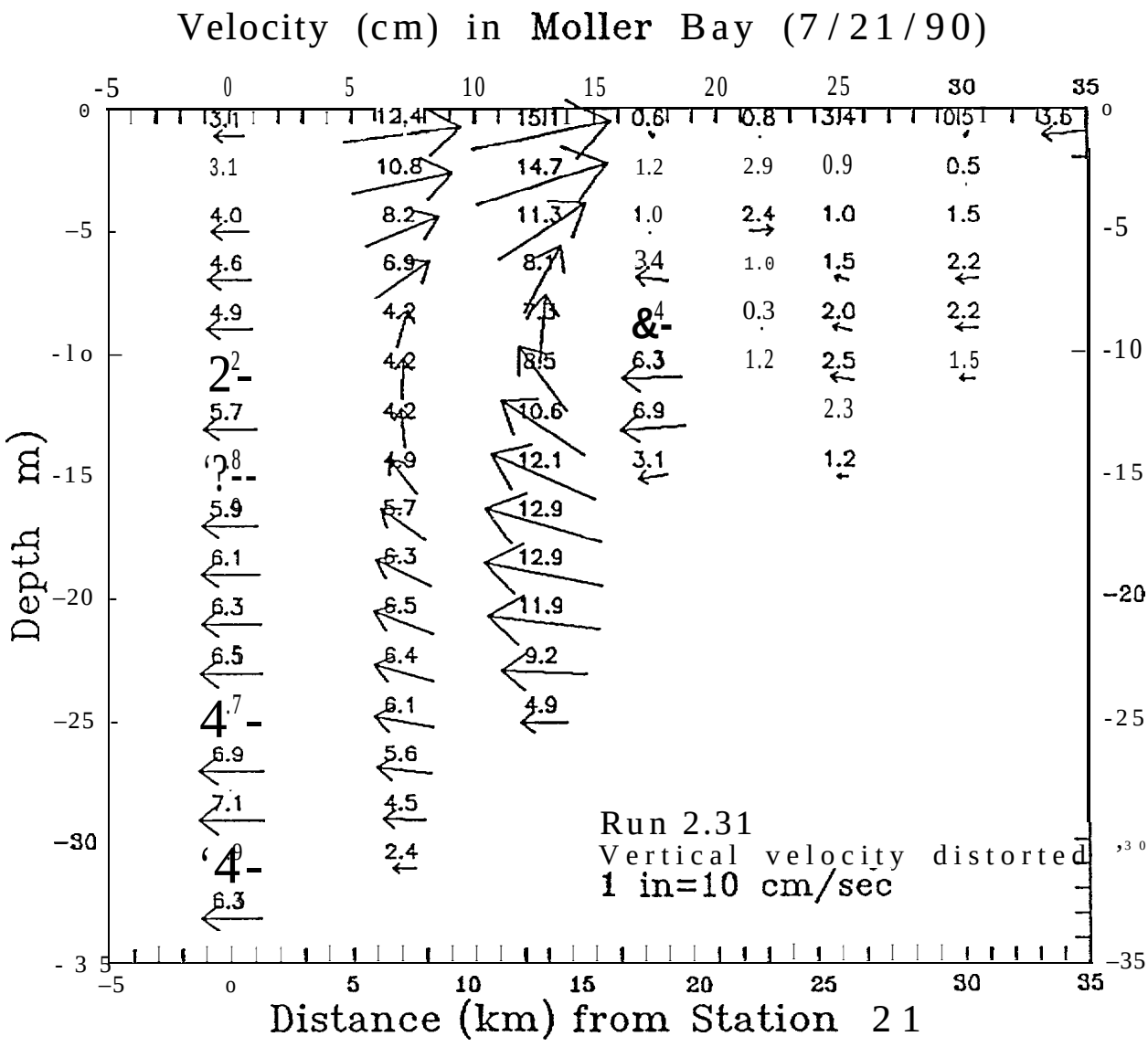

Velocity (cm) in Moller Bay (6/30/90)
Depth m)
Distance (km) from Station 21
Run 2.31
Vertical velocity distorted
1 in=10 cm/sec

Velocity (cm) in Moller Bay (7/07/90)



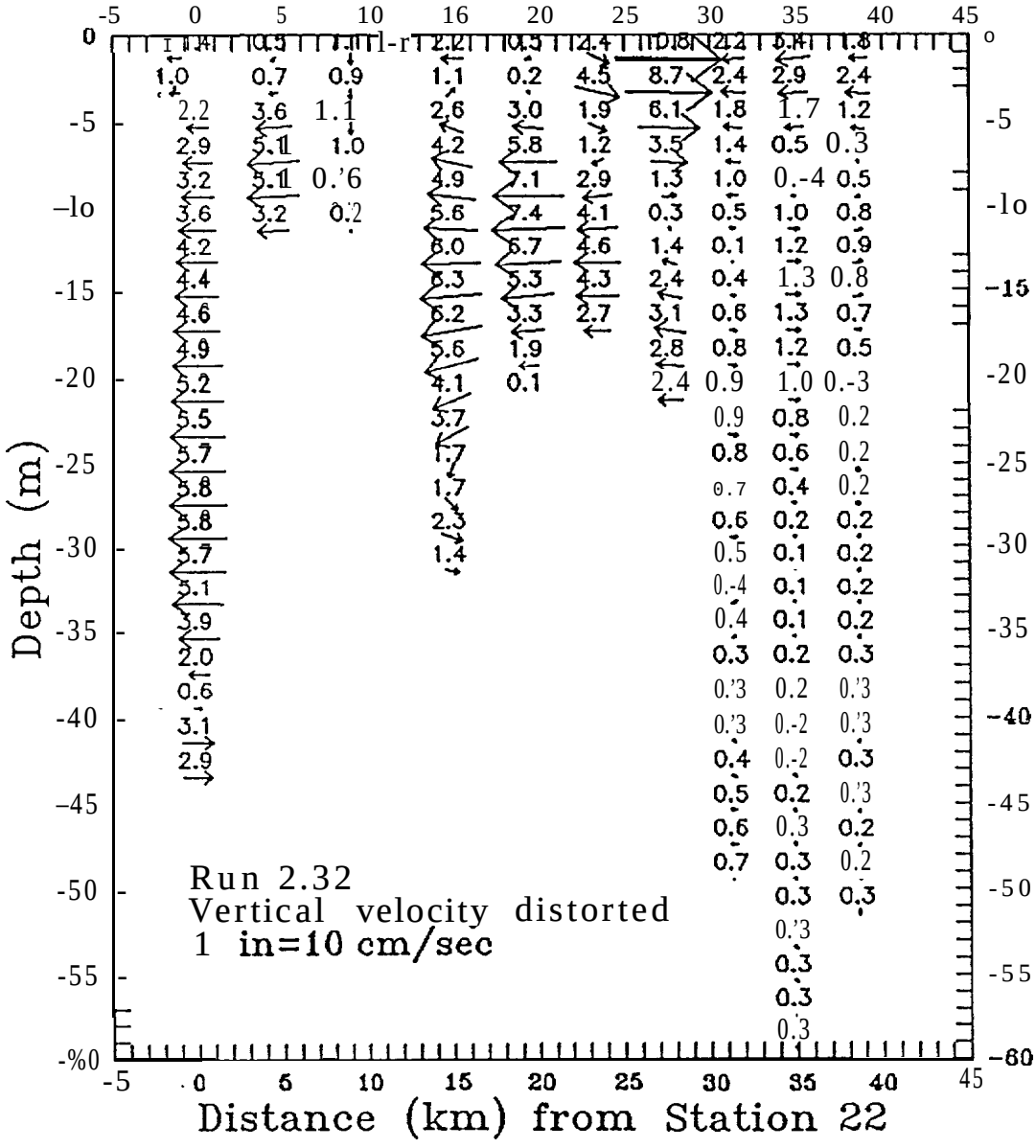
Velocity (cm) in Moller Bay (7/14/90)



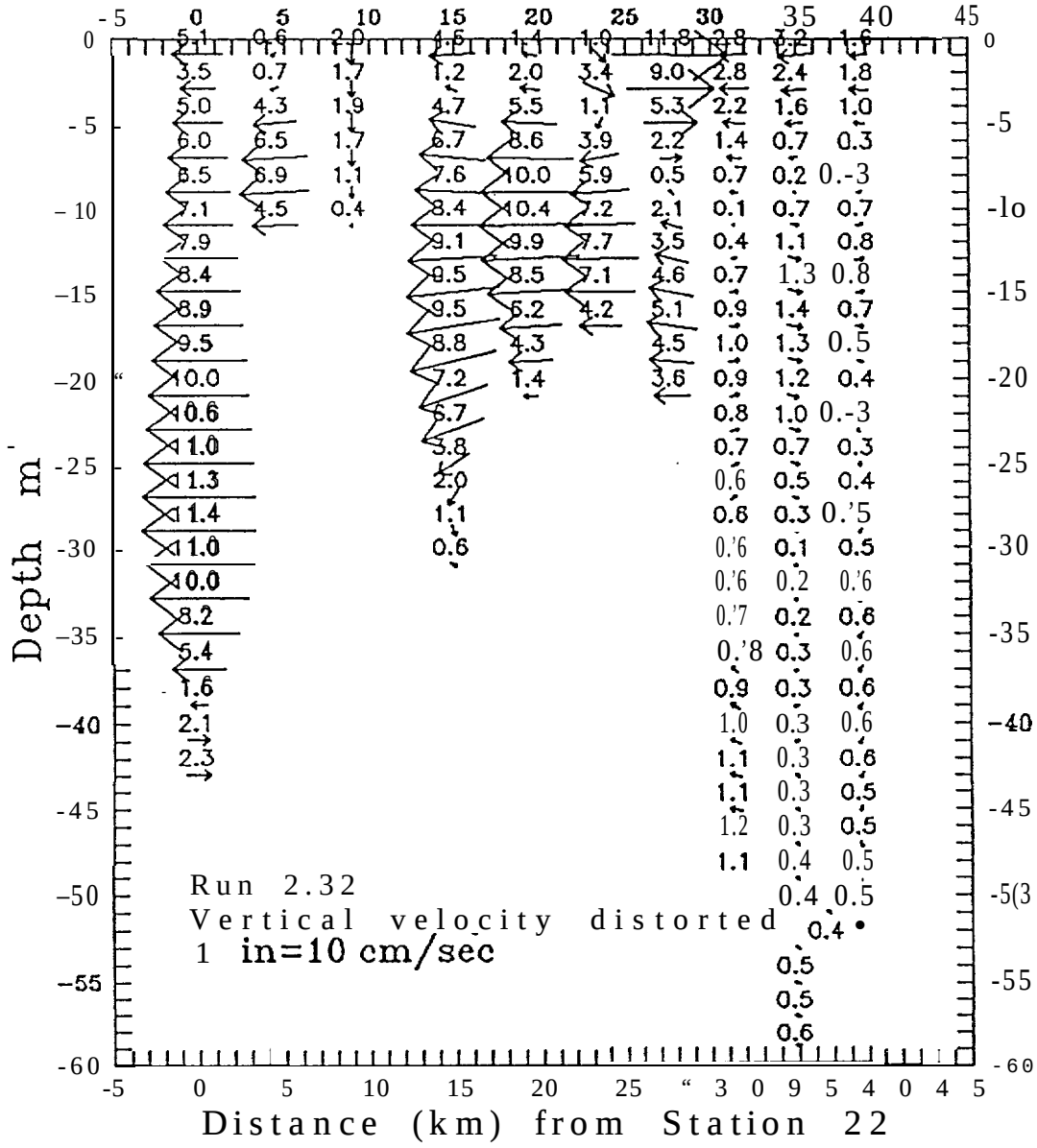

Velocity (cm) in Moller Bay (7/21/90)
Depth (m)
Distance (km) from Station 21
Run 2.31
Vertical velocity distorted
1 in=10 cm/sec

Appendix 4. Longitudinal-vertical plots of average velocities along Triton centerline stations for Herendeen Bay shown in Table 3 for 7-days intervals through the study period (Run 2.32).

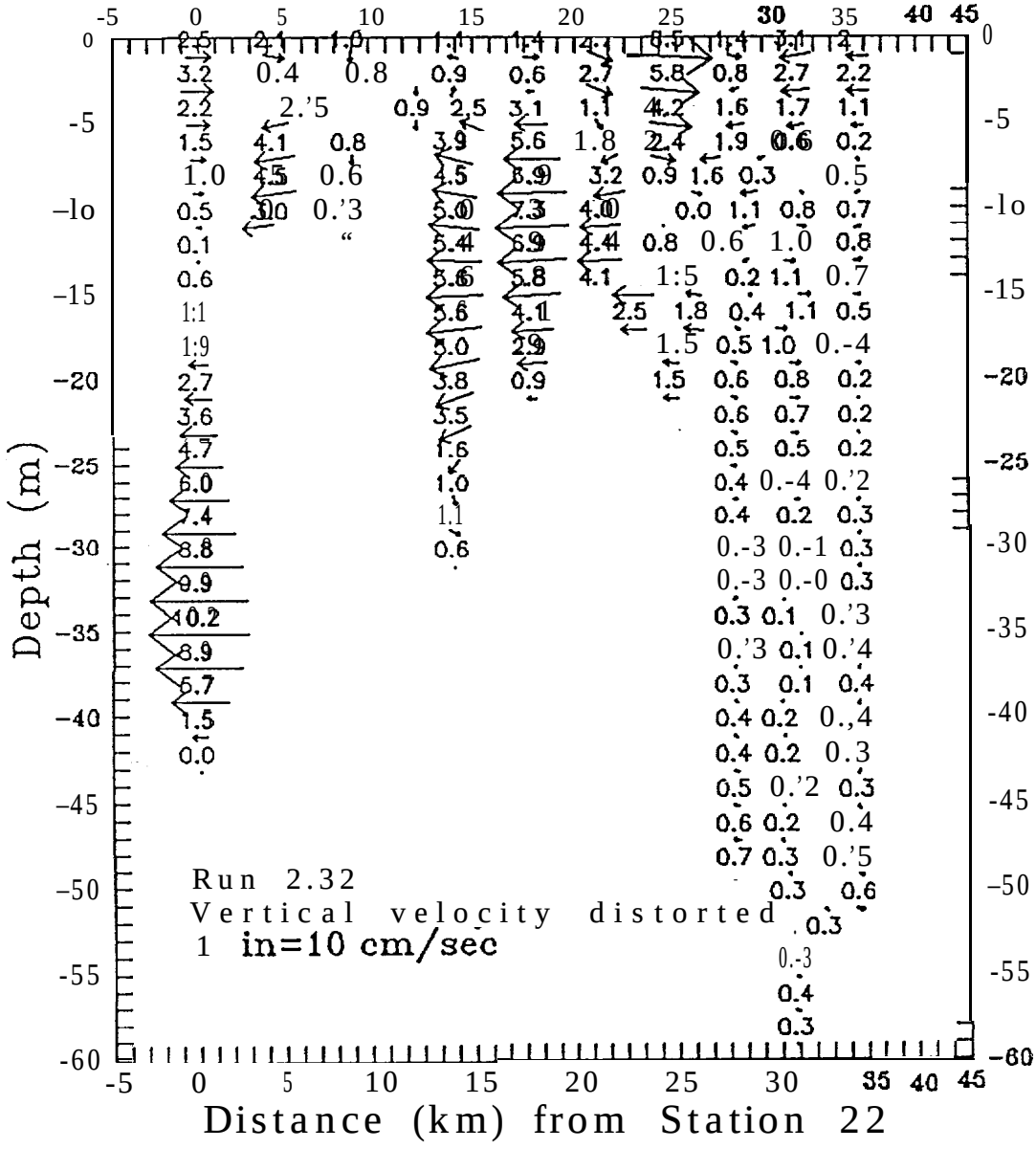
Velocity (cm) in Herendeen Bay (5/26/90)



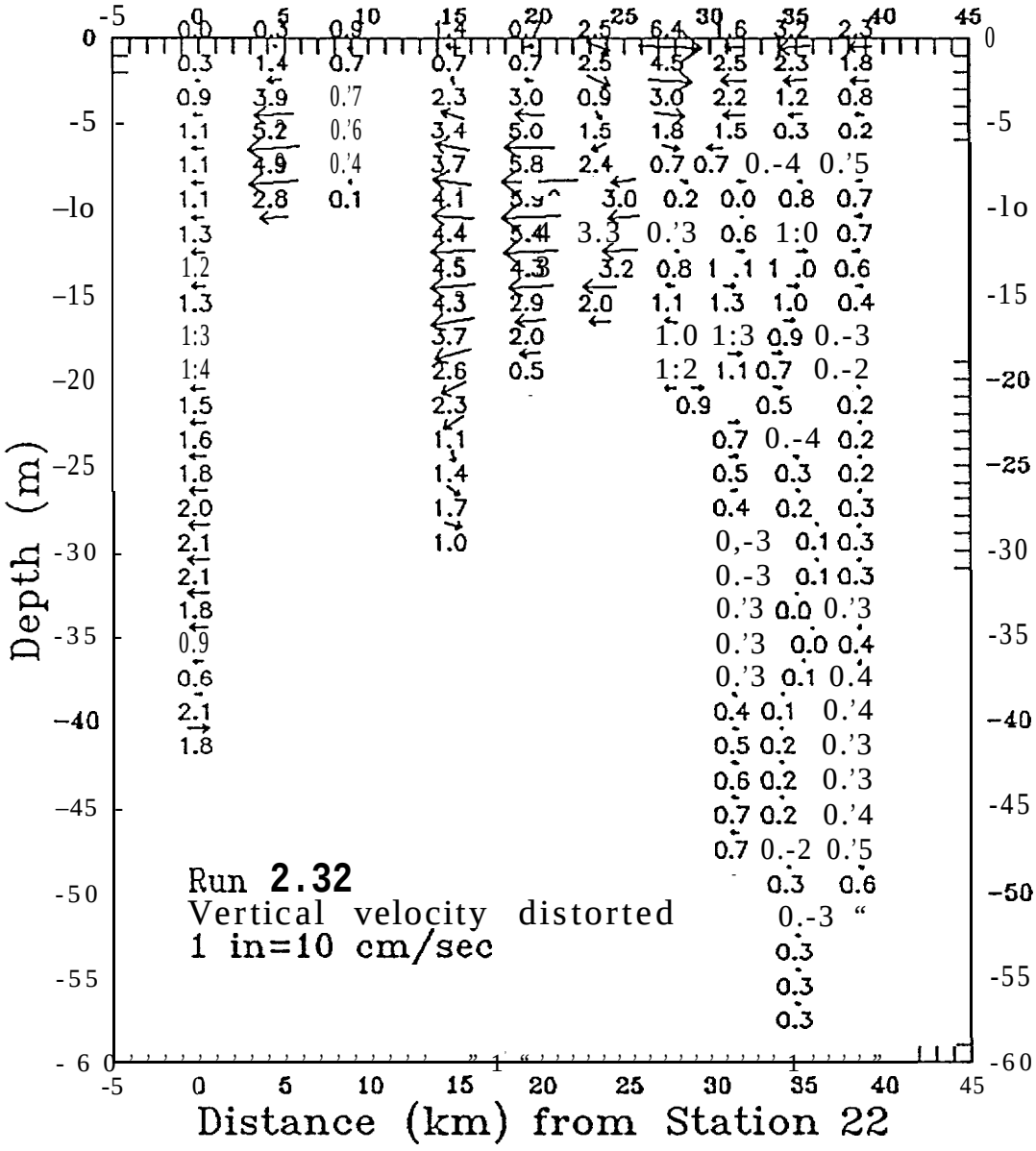
Velocity (cm) in Herendeen Bay (6/02/90)



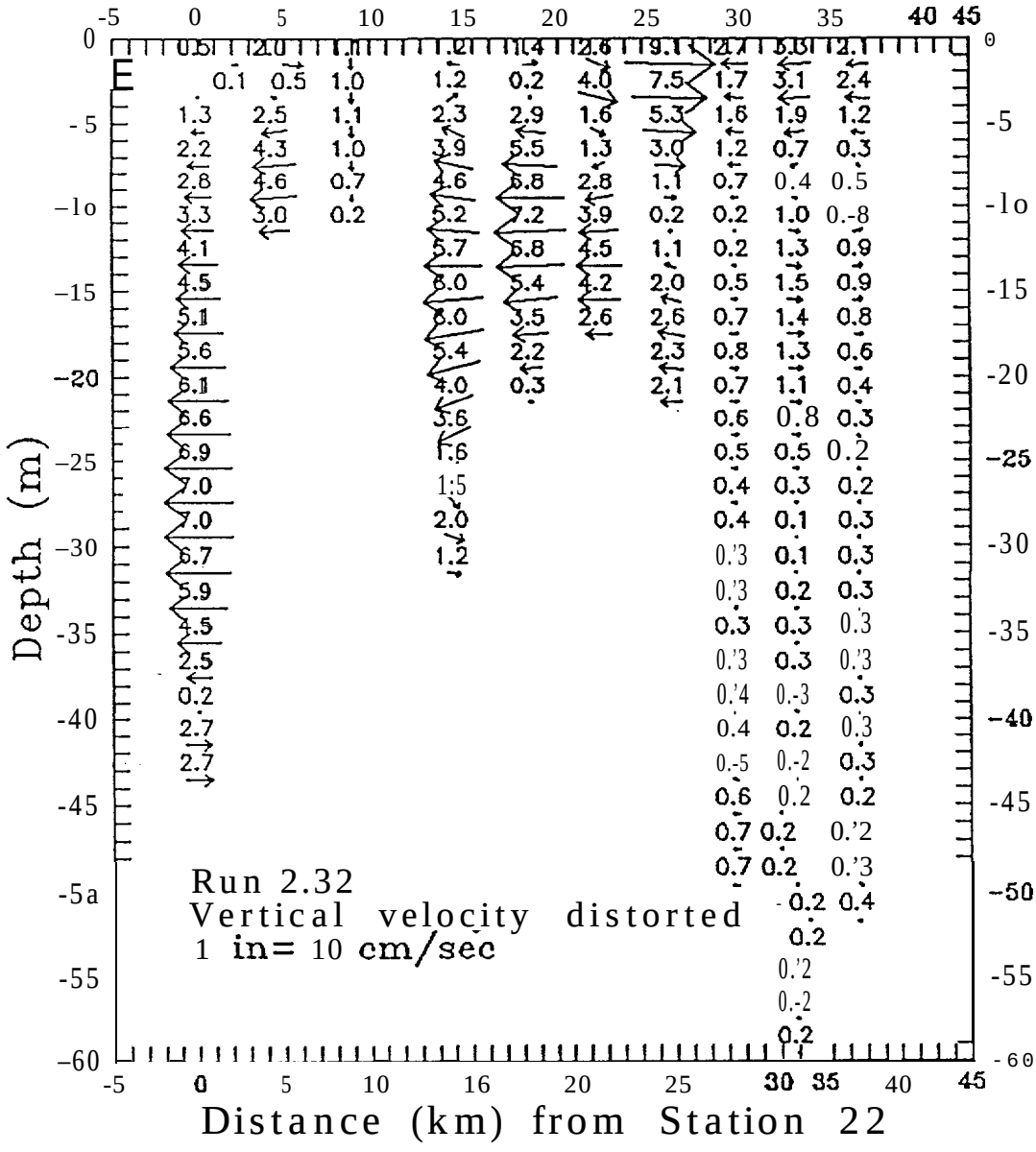
Velocity (cm) in Herendeen Bay (6/09/90)



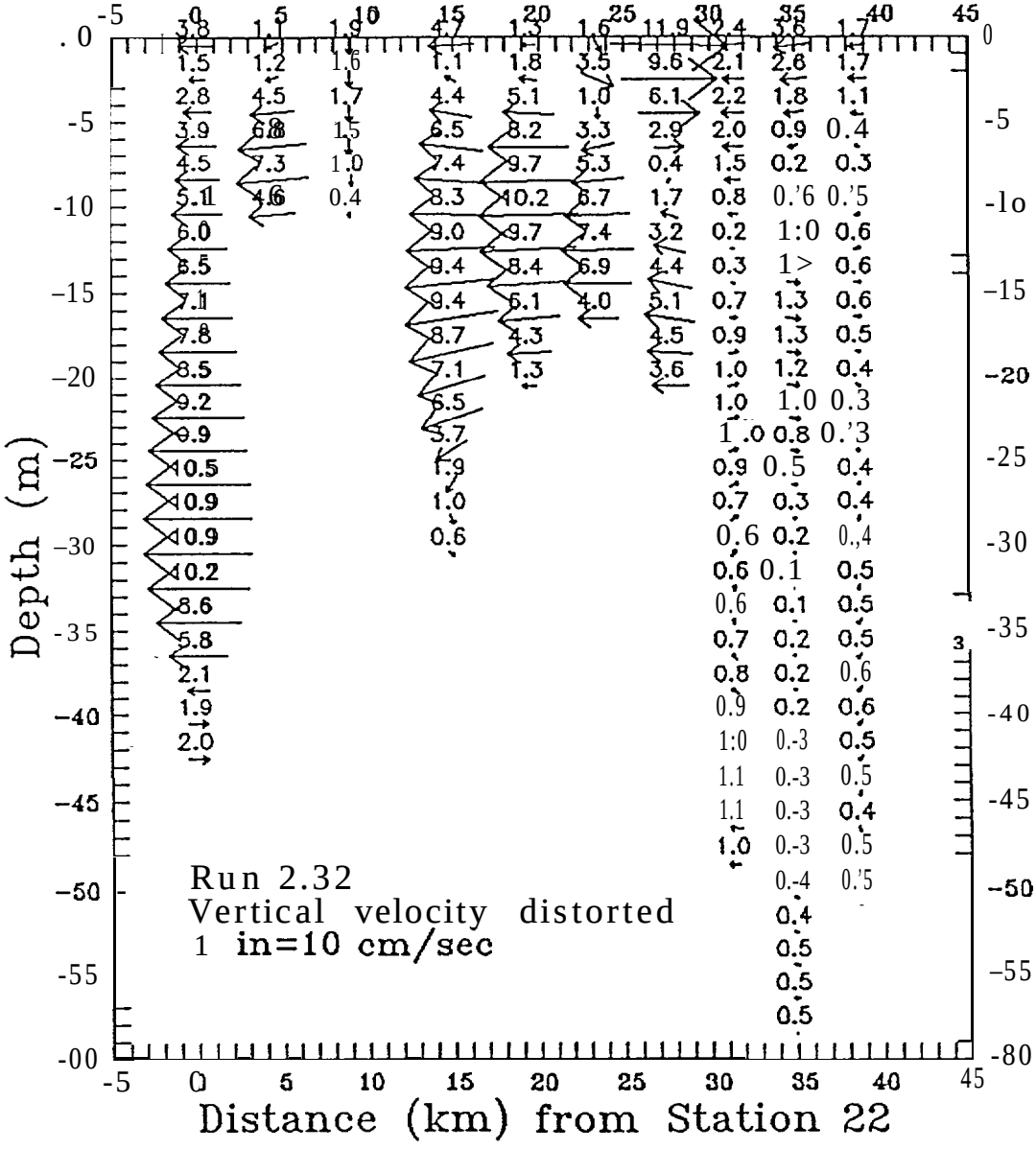
Velocity (cm) in Herendeen Bay (6/16/90)



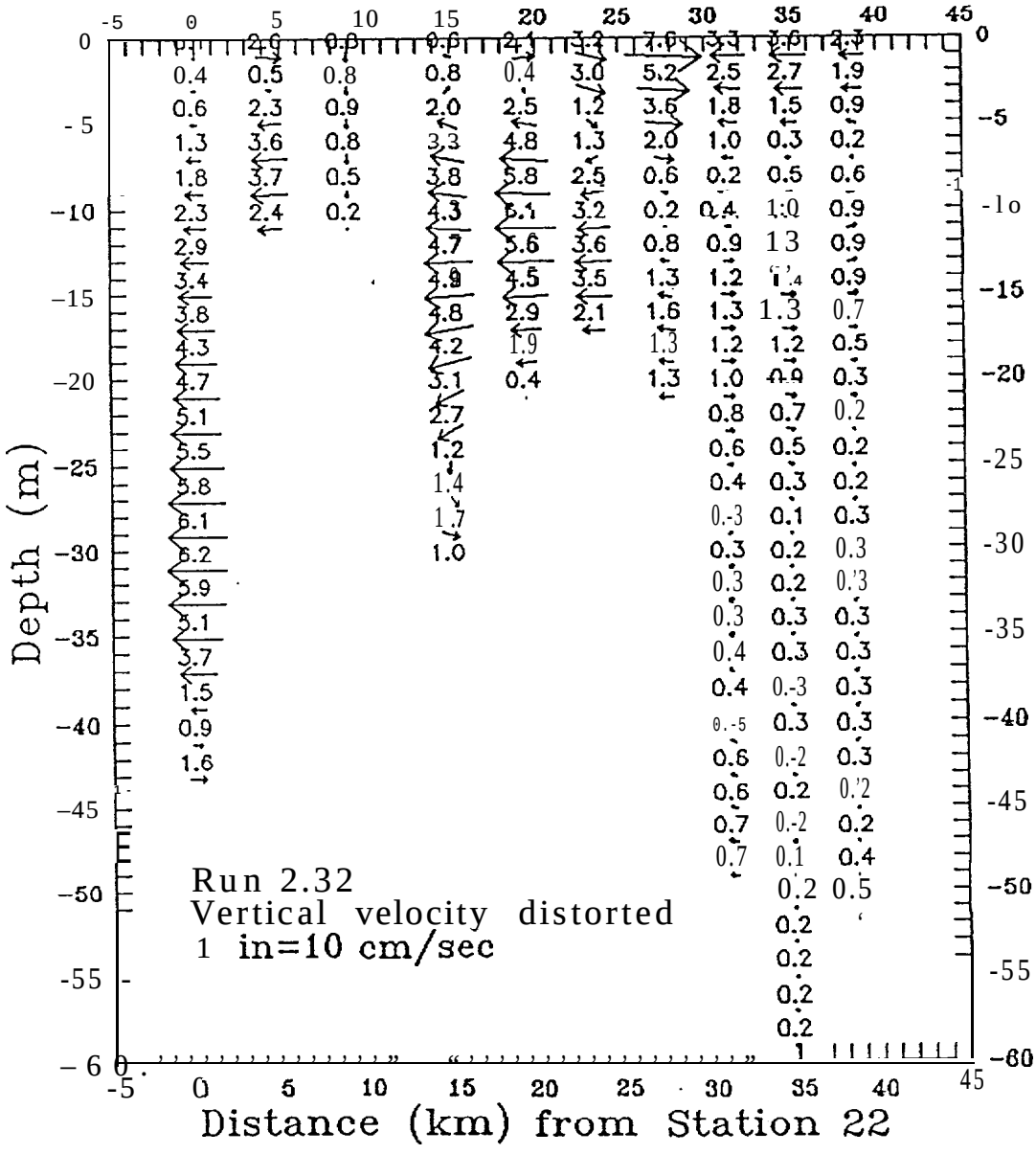
Velocity (cm) in **Herendeen** Bay (6/23/90)



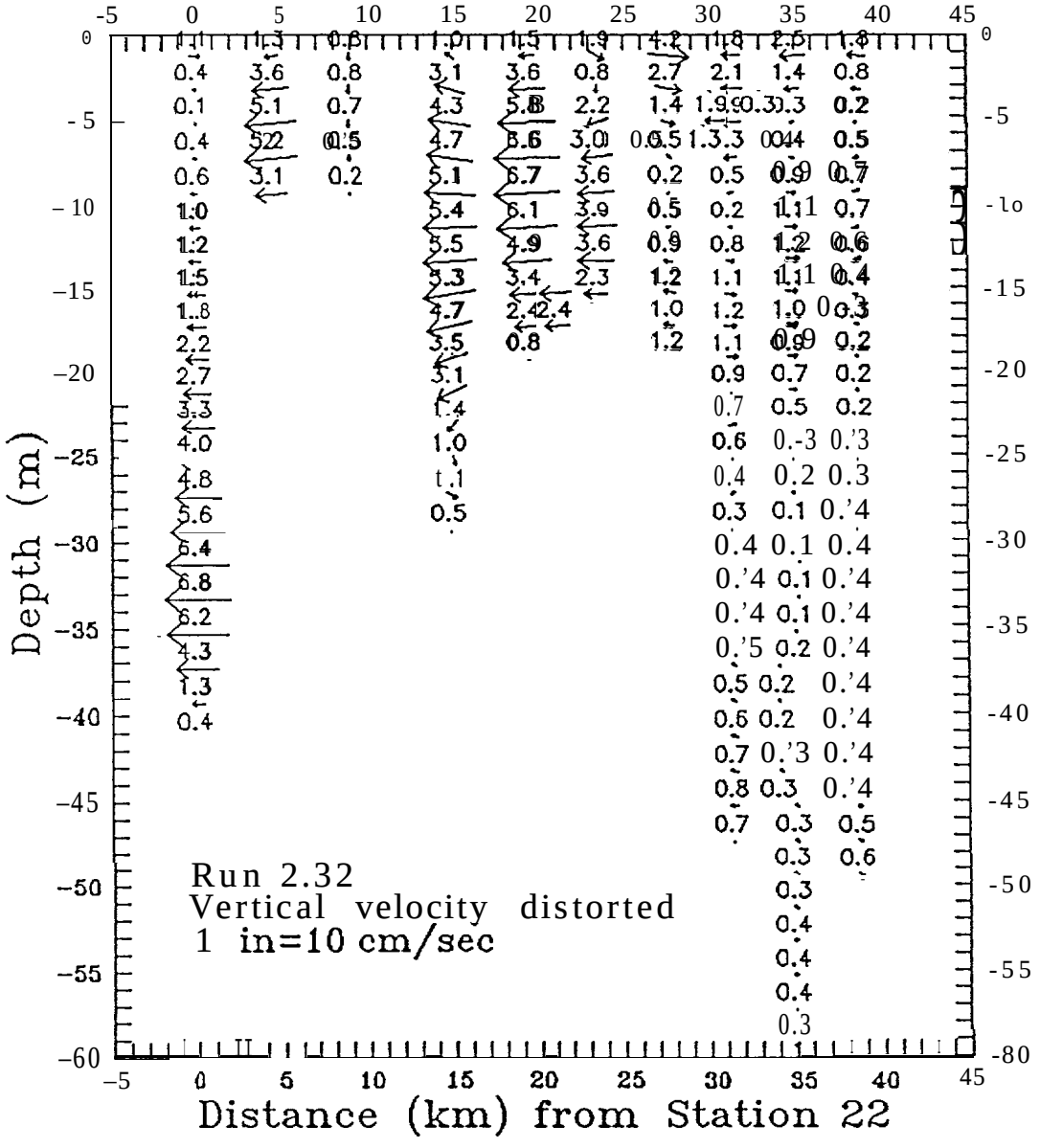
Velocity (cm) in Herendeen Bay (6/30/90)



Velocity (cm) in Herendeen Bay (7/07/90)



Velocity (cm) in Herendeen Bay (7/14/90)



Verification of the GLLVHT Application to Moller Bay, Alaska

Prepared for

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CANADA

Prepared by

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37 West Avenue
Wayne, Pennsylvania 19087-3226

May 23, 1991

Document No. 91-069-R

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Figure 10. Herendeen Bay computed temperature distributions for July 1990.

Background

Verification of a model is dependent on having data which is independent of the model computations. It is necessary to distinguish between the initialization data and time series boundary data used in the simulations and the independent verification data.

For the GLLVHT simulations of Moller Bay, the initialization data were the salinity and temperature distributions observed during the surveys around Julian day 132. The time varying boundary data at the open boundary extending from Port Moller to Edwards Point were the salinity and temperature data collected at stations 21,22 and 23 at the beginning and end of each survey, and the NOS water surface elevation data collected at Port Moller. For surface heat exchange computations, cloud cover, air temperature and dew point temperature observations were used from Cold Bay and windspeed were used from a weather station at Point Divide. The windspeed and direction data from Point Divide was used in the windshear computations. The freshwater inflows were estimated as an average over the period of simulation.

Given the initial data and the *time varying* boundary data, the GLLVHT model computes the water surface elevations, each of three velocity components, and salinity and temperature throughout the three dimensional grid set up for the waterbody.

One set of independent verification data are the water surface elevation pressure sensors located near Edward Point and at the head of Herendeen Bay. These are used to verify the water surface elevation computations produced by the model.

The other set of verification data are the salinity and temperature profiles observed at each of the larval sampling stations on each cruise.

Water Surface Elevations

Differences in water surface elevations along with windshear and baroclinic processes essentially "drive" the three dimensional flow fields of GLLVHT. Boundary elevations were input from the NOS record at Port Moller. Verification pressure sensors were located near Entrance Point and near the head of Herendeen Bay.

The comparison of the observed and computed water surface elevations for Entrance Point and Herendeen Bay are shown in Figure 1 and Figure 2, respectively, for a seven day period. The results for all other periods are similar to those shown in the figures. The comparisons show that it is difficult to distinguish between the observed and computed water surface elevations at the two locations. There are a few times that the amplitudes do not match which may be due to short term wind events not reflected in the pressure sensors.

Salinity and Temperature Comparison Methods

Salinity-and temperature data for verification were collected on the approximately weekly cruises to the larval sampling stations. These data were not used in the modeling process and therefore constitute truly independent data. Model computations of salinity and temperature were saved at the sampling station times and depths for comparison to the observations.

Comparisons between the observed and computed salinities and temperatures were made using longitudinal-vertical contour plots for the days of observation. The plots were made for the sampling station locations and depths of sampling for both the observed plots and the computed plots. The same contouring procedure was used for both the observed and computed plots.

Comparisons between the observed and computed plots were made at the sampling interval to determine the spatial differences between the two and these spatial differences were examined from one survey time to the next to search for trends. It was found for both salinity and temperature that there was very little change in these differences from one time to the next and that the differences that could be found in the individual surveys were found in the last survey. Any cumulative effects of the computations will show up by examining the last survey. The last survey is also furthest in time from the model initialization data. Thus verification comparisons can be reliably made based on the last survey. No adjustments were made in model input data or parameters previous to making the comparisons presented below.

Salinity Distributions

The Moller Bay observed salinity distributions for July 1990 are shown in Figure 3. They show a moderate longitudinal salinity gradient with lower salinities in the upper end. The latter do not show up in the previous sampling and must be attributable to a period of freshwater inflow between the two samplings. There is very little vertical salinity stratification. The salinities between the mouth, at O km, and midway up the estuary to 15 km are almost uniform indicating rapid exchange over this portion of the waterbody with the open coast.

The Moller Bay computed salinity distributions are shown in Figure 4. They show the relatively uniform salinity between O km and 15 km. The 28.9 ppt isohaline corresponds quite closely with the observed data in Figure 3. The computed salinity distributions do not show the lower salinity in the upper end of the estuary because separate storm events were not incorporated into the input data to the model. The computed salinity distributions for Moller

Bay show very little vertical stratification which is also indicated by the data.

The Herendeen Bay observed salinities are quite complex as indicated in Figure 5. The show relatively uniform salinities between the mouth and 20 km and vertical stratification at the head of the estuary. The computed salinities in Figure 6 show the same relatively uniform salinities between the mouth and 20 km into the estuary and show nearly the same vertical stratification in the head of the estuary. Both the data and the model results show nearly the same salinity in the headwater surface layers indicating that the magnitude of the freshwater inflow used in the model was correct.

Temperature Distributions

The Moller Bay observed temperature distributions are shown in Figure 7. They show little vertical stratification and about a 1 ‘C longitudinal temperature gradient between the mouth and the headwaters. The headwaters may be slightly warmer due to being shallower than downbay and due to less mixing with the cooler waters at the mouth.

The Moller Bay computed temperature distributions are shown in Figure 8. They show computed temperatures which are 1 °C to 2 ‘C lower than the observed temperatures. The heat budget computations are based on meteorological data from Cold Bay including cloud cover for short wave solar radiation computations. During the spring and summer of 1990 the precipitation was lower over Moller Bay than over Cold Bay. Consequently cloud cover would have been lower over Moller Bay and there would have been greater actual solar heating than computed by the model.

The Herendeen Bay observed temperatures are shown in Figure 9 and the computed

temperatures are shown in Figure 10. Both show relatively uniform temperatures between the mouth and 20 km upestuary. Both show vertical stratification at the deep head water stations. The computed temperatures in the upper layers are 1 “C to 2°C lower than observed due to the actual lower cloud cover over Moller Bay than over Cold Bay where the cloud cover was observed.

The Herendeen Bay observed temperatures show very low temperatures in the bottom of the deep headwater stations. The observed salinities at these stations are also high. These low temperature high salinity waters are probably wintertime inflows to the bays from the boundary. In addition, comparing Herendeen Bay and Moller Bay temperatures and salinities, it is found that the former has lower temperatures and higher salinities in the surface layers. This suggests that there is a slow upwelling of the deeper Herendeen Bay waters into the surface layers.

Results of Comparisons

The results of the water surface elevation comparisons are excellent and indicate that the dynamics of the model were performing properly.

The temperature and salinity longitudinal and vertical comparisons show two main features; mixing between the boundary and about 15 km, and vertical stratification or lack of it. The model results show the relatively complete mixing region between the boundary and 15 km for both salinity and temperature indicating that model mixing parameters are correct. In addition, the model results show the proper degree of stratification particularly in the upper end of Herendeen Bay.

The observed Moller Bay salinities show a freshwater runoff event that does not appear

in the computed data while for the same time period the Herendeen Bay head water observed surface salinities are quite similar to the computed salinities for the same time period, thus it makes it difficult to attribute all the differences in head water salinities to the freshwater inflow boundary data. However, it is expected that the freshwater inflows are a complex function of drainage basin morphology, rainfall events and snowmelt runoff which in turn is a function of meteorological conditions. A runoff model should be developed for the Moller Bay-Herendeen Bay drainage systems.

As shown above, temperatures were consistently under computed which was attributed to the extreme cloud cover conditions over Cold Bay. It would be useful to have solar radiation measurements performed at Moller Bay for calibration to the Cold Bay cloud cover. Past observations may be available for this purpose.

The GLLVHT simulations show that the detailed hydrodynamic and transport computations could in the future be carried out from water surface elevation data at Port Moller and from meteorological data from Cold Bay. It is thus recommended that the Port Moller tide gage be reinstalled and maintained for future use.

Figure 1. Computed and observed normalized depth at Entrance Point.

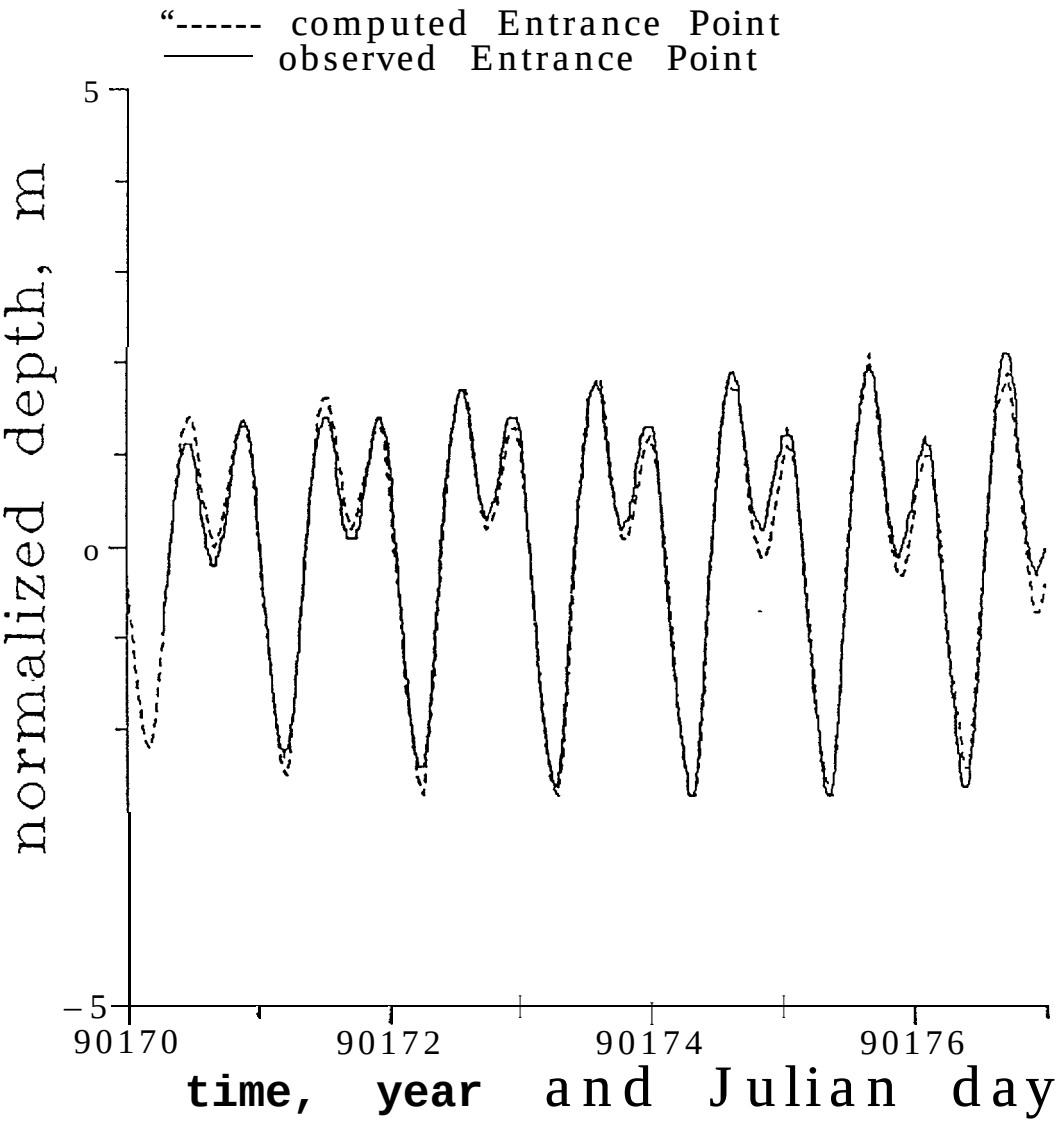


Figure 2. Computed and observed normalized depth in Herendeen Bay.

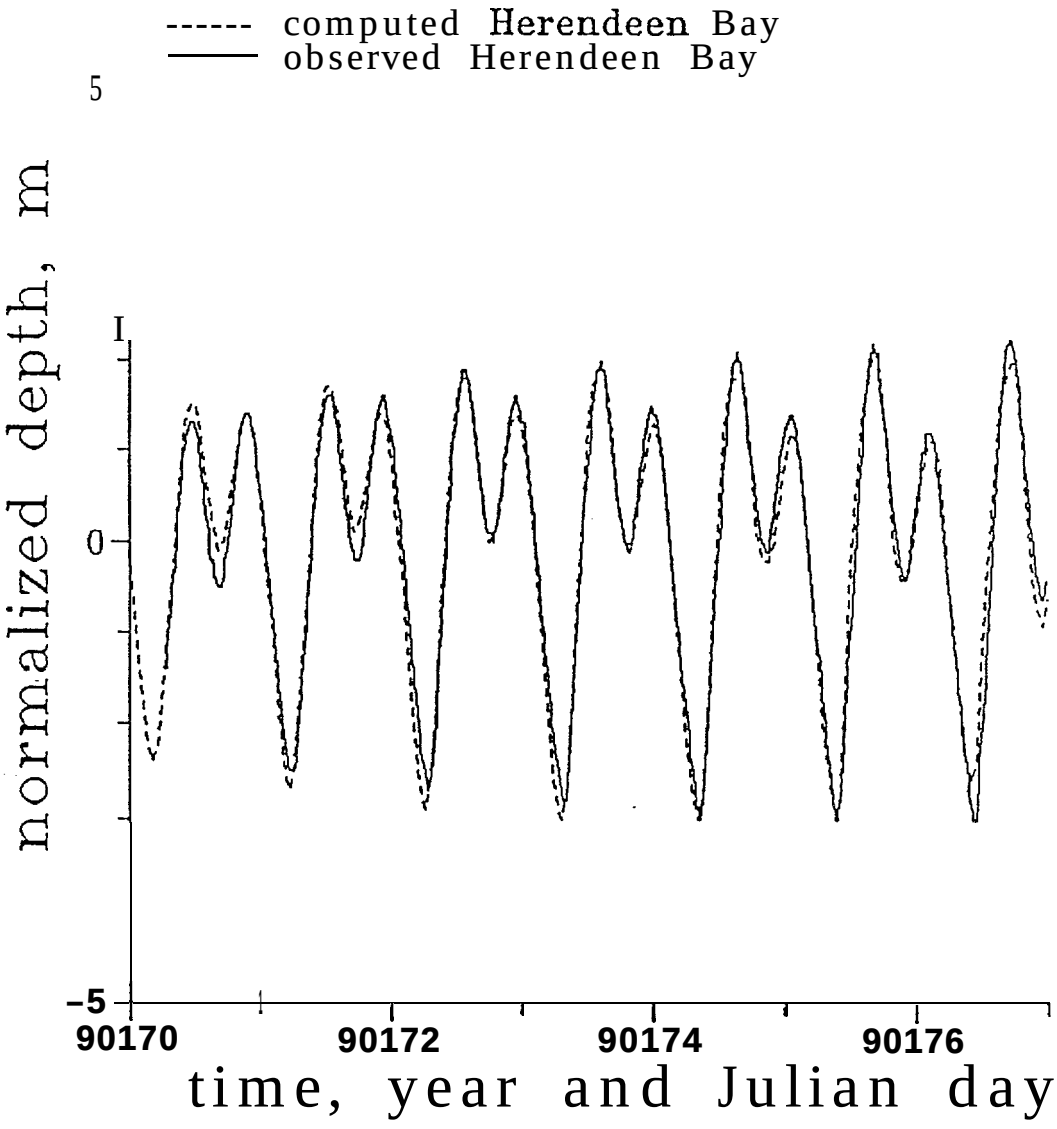


Figure 3. Moller Bay observed salinity distributions for July 1990.

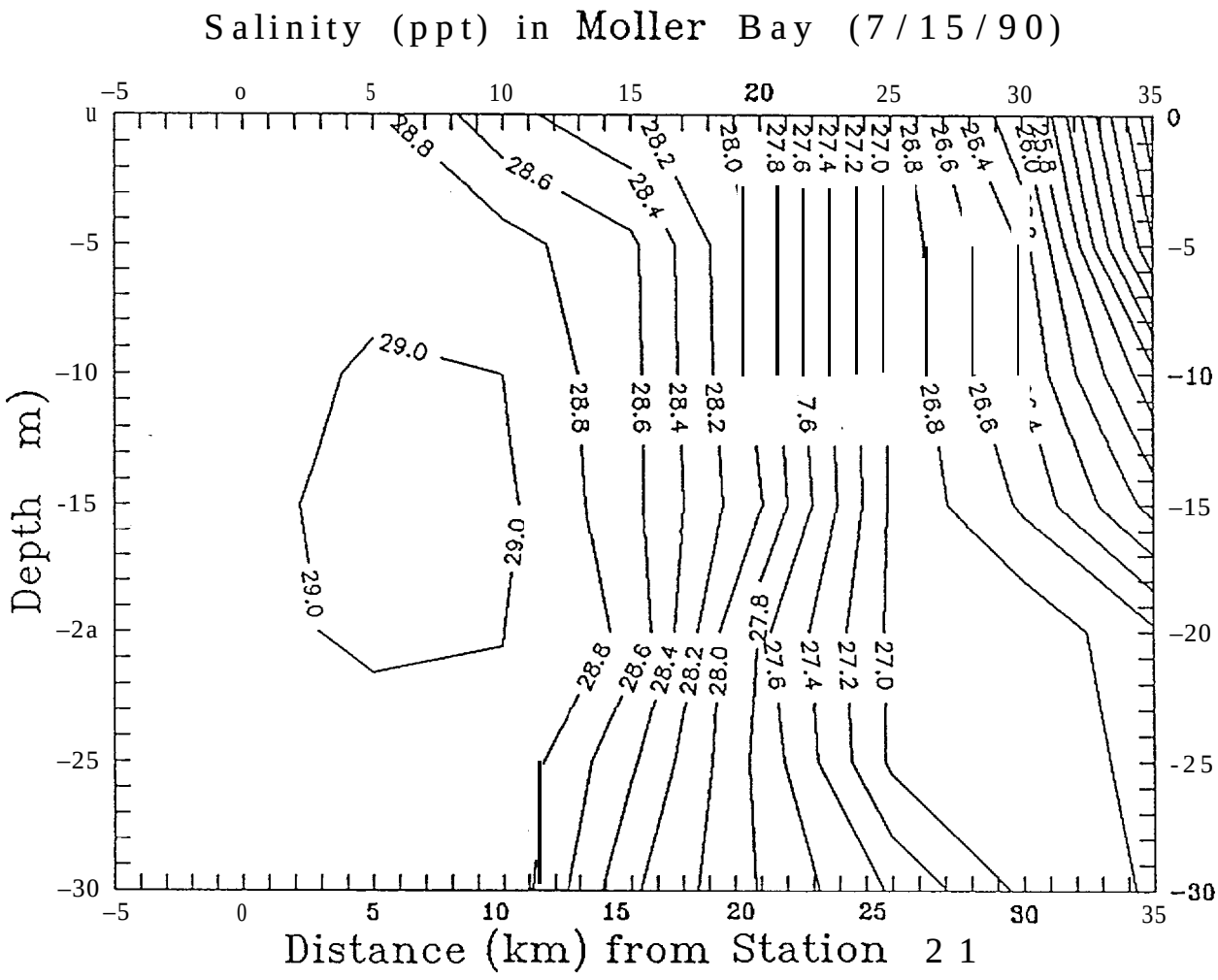


Figure 4. Moller Bay computed salinity distributions for July 1990.

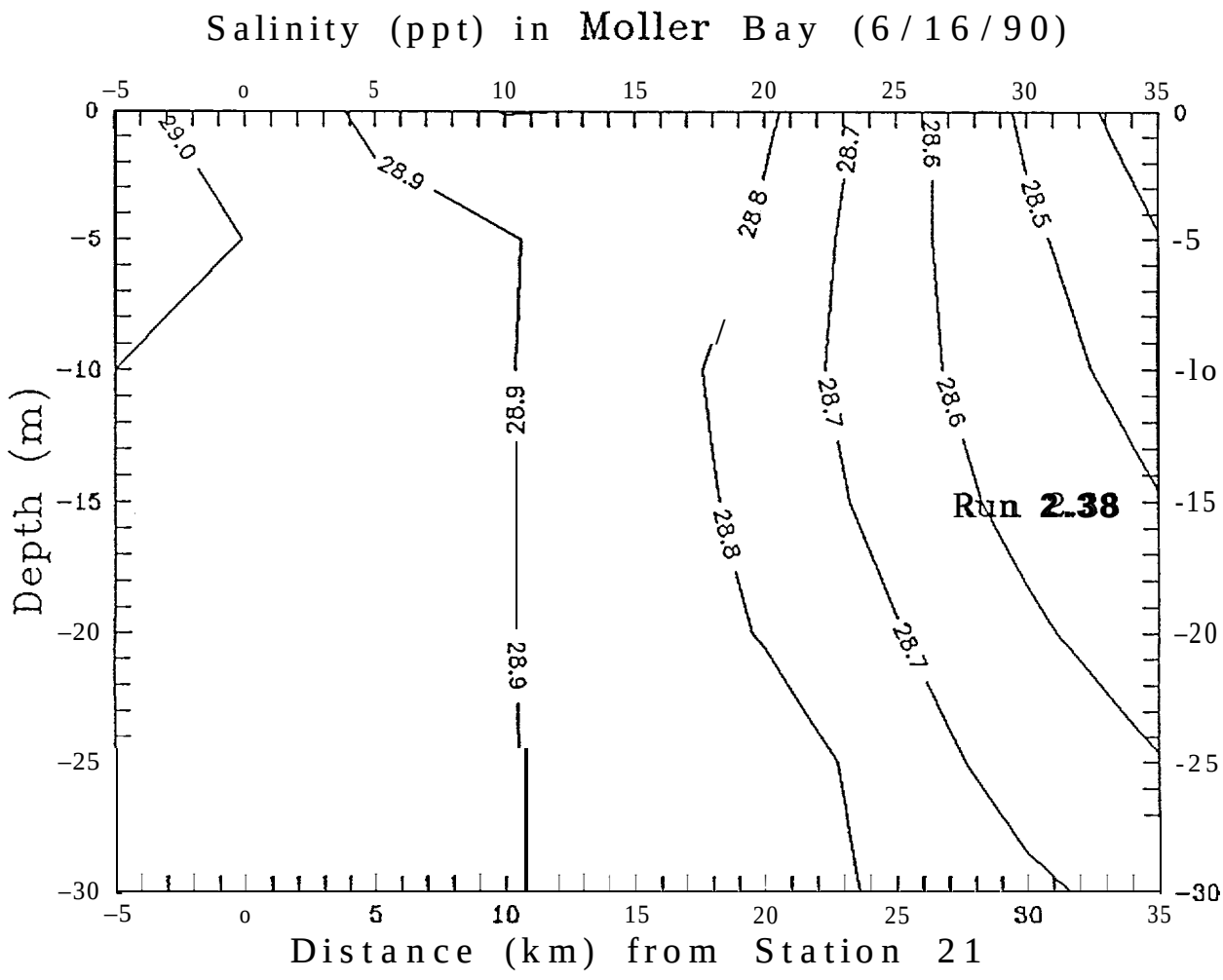


Figure 5. Herendeen Bay observed salinity distributions for July 1990.

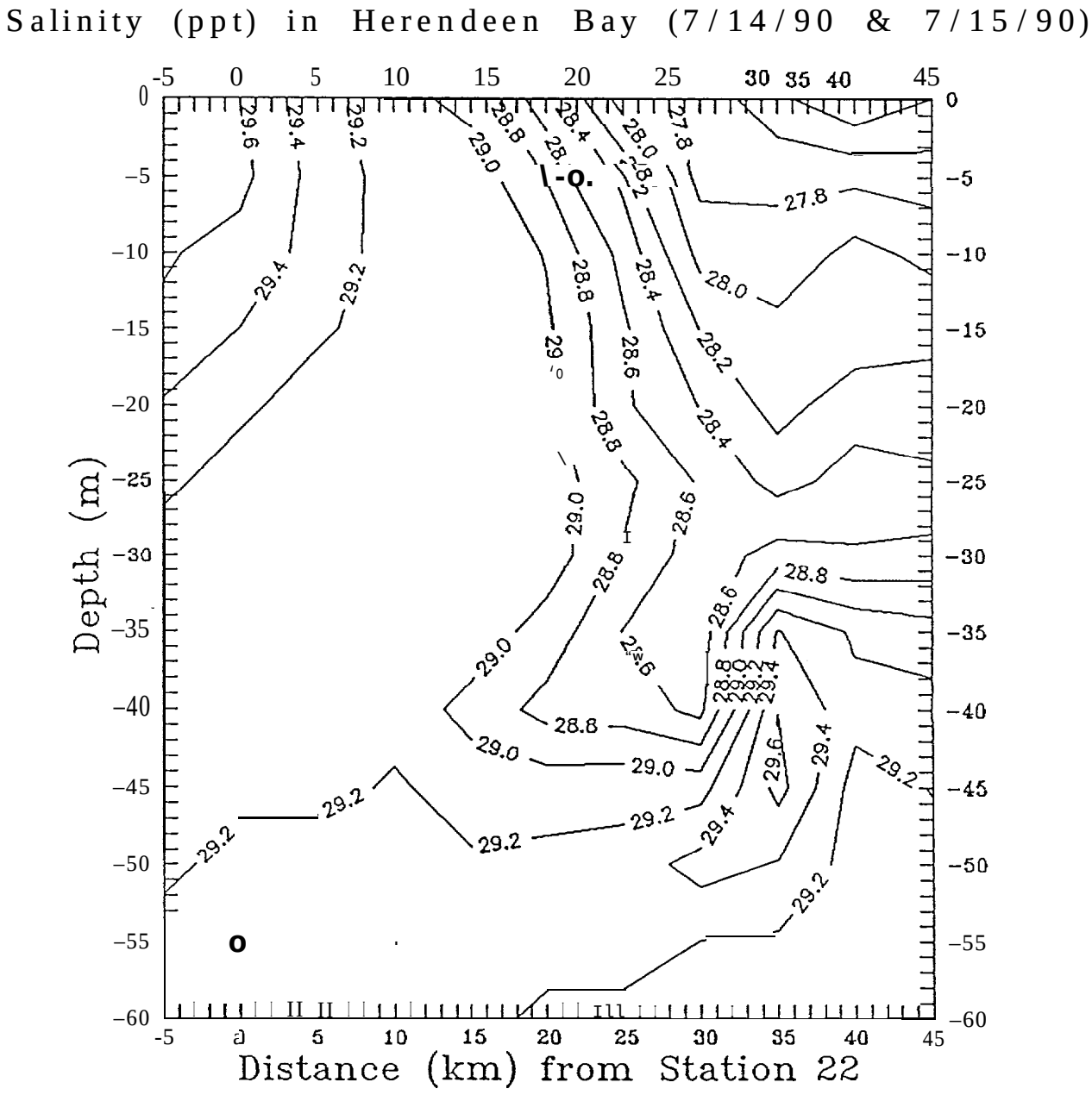


Figure 6. Herendeen Bay computed salinity distributions for July 1990.

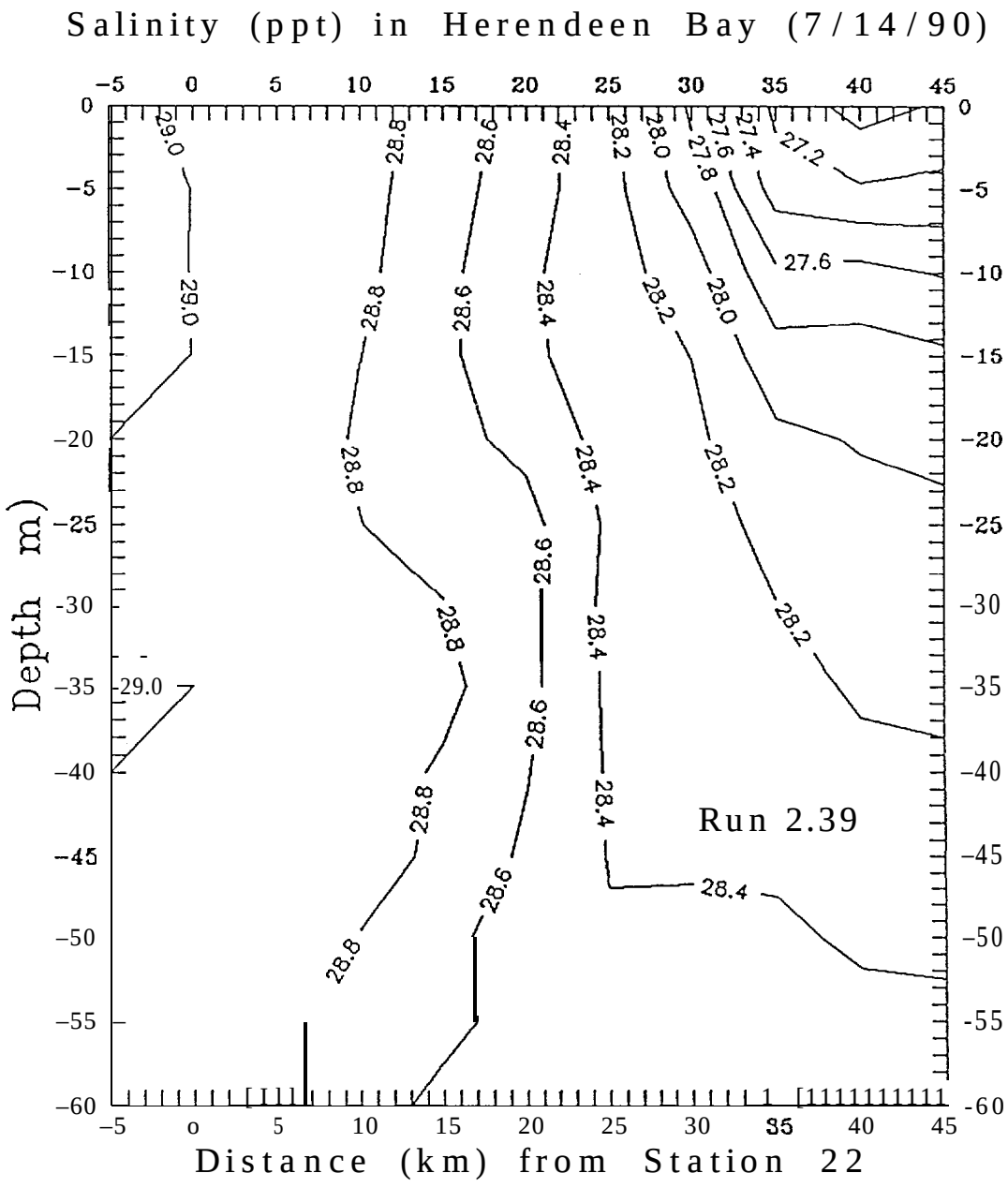


Figure 7. Moller Bay observed temperature distributions for July 1990.

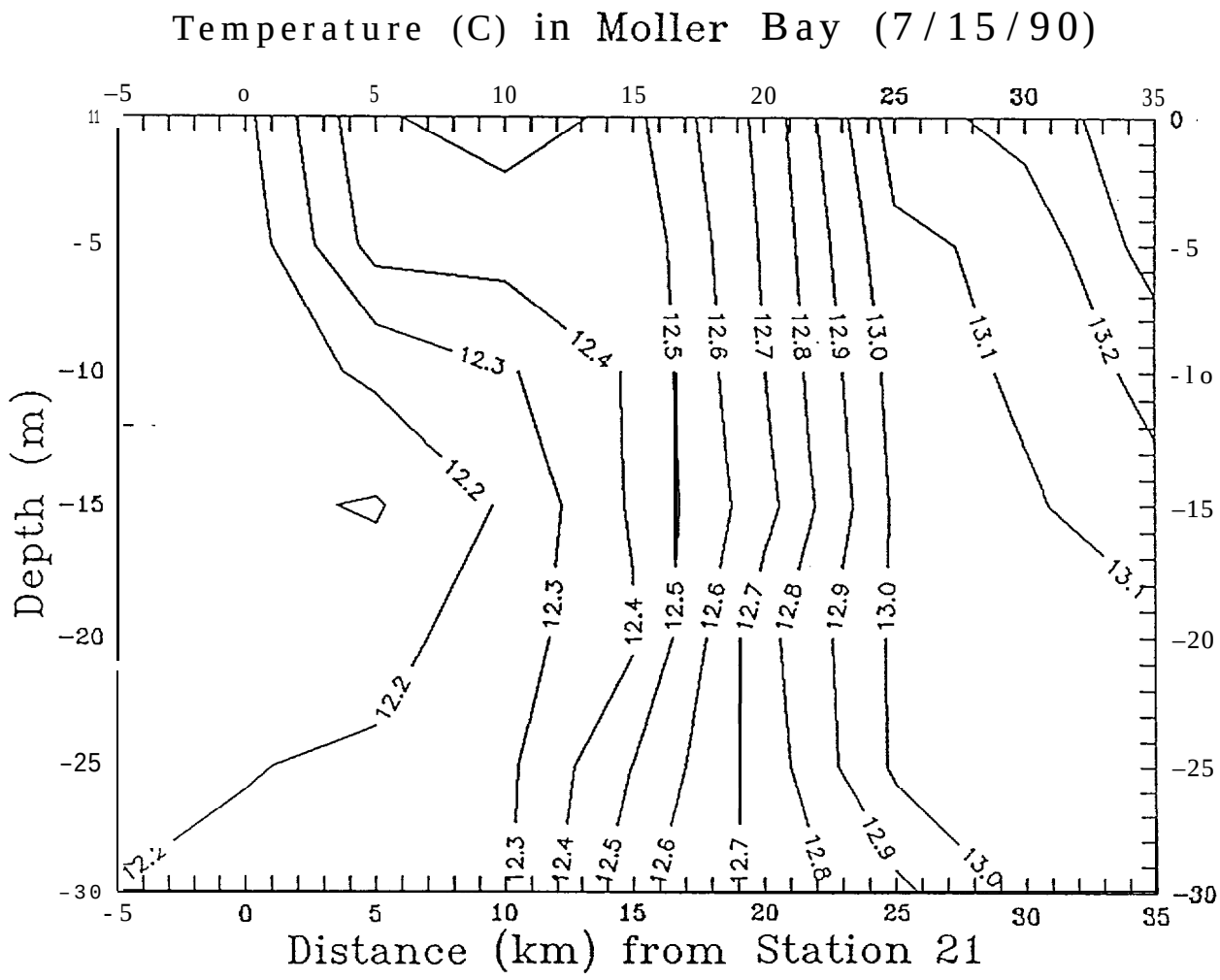


Figure 8. Moller Bay computed temperature distributions for July 1990.

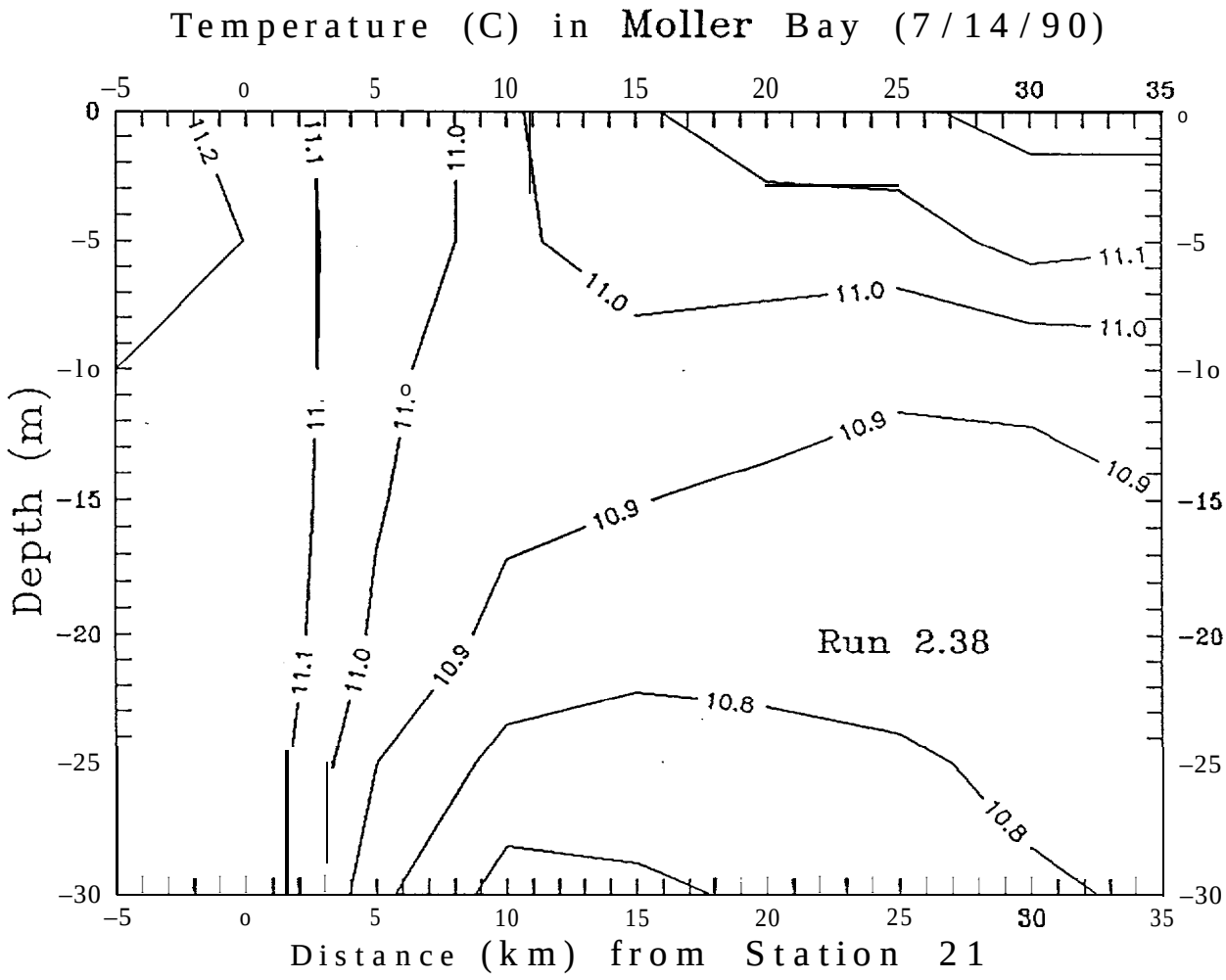


Figure9. **Herendeen Bay observed** temperature distributions for July 1990.

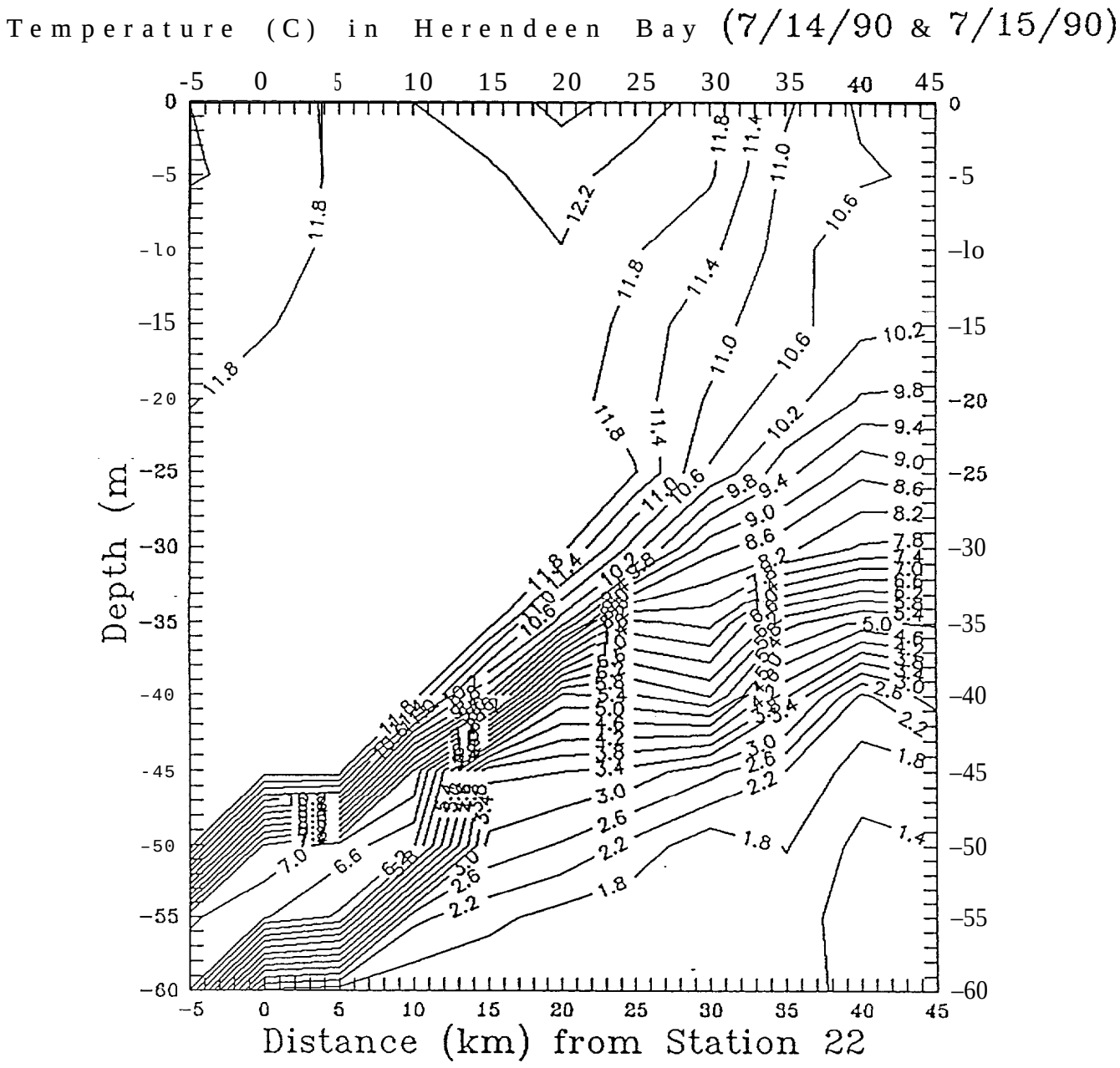
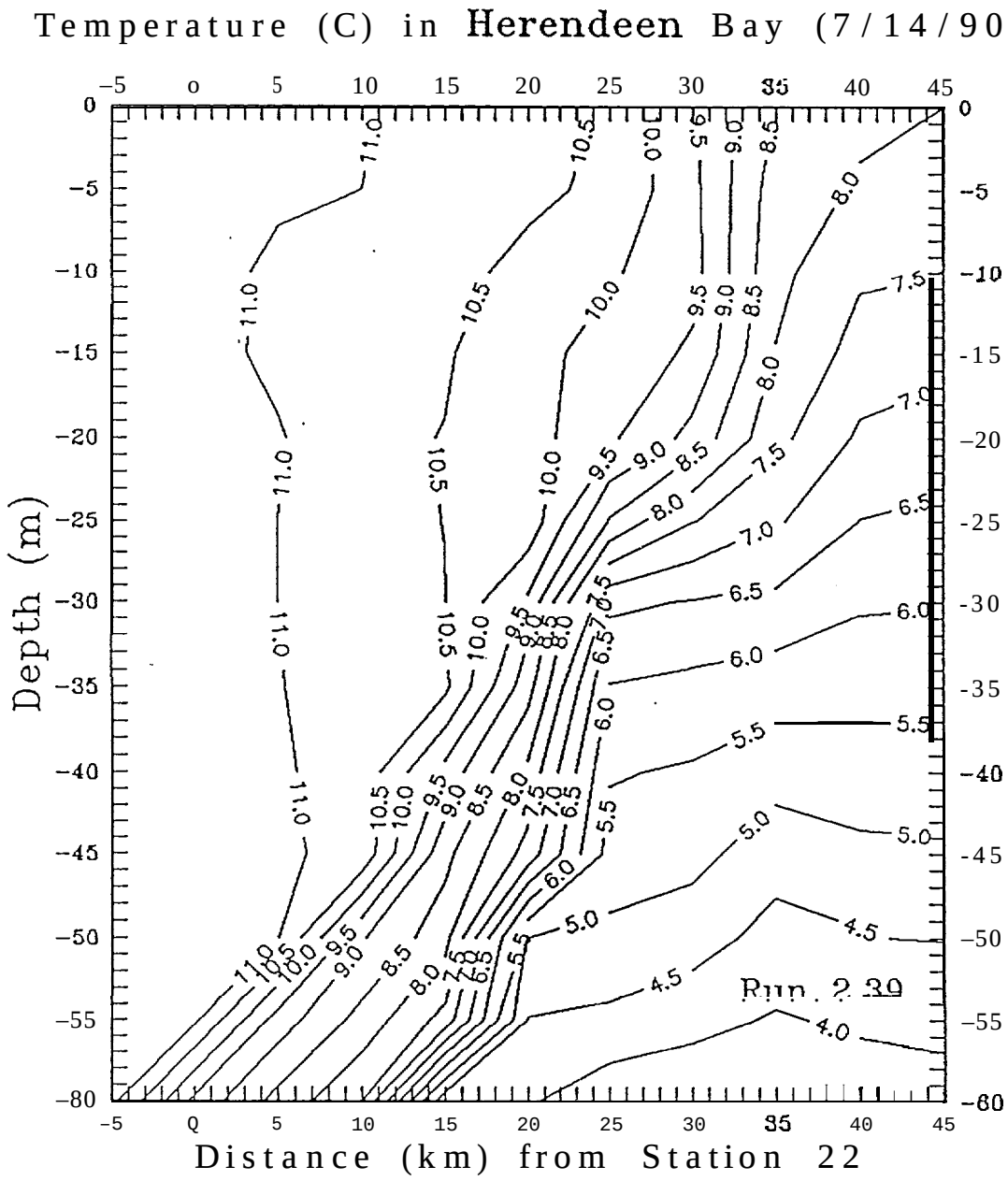


Figure 10. Herendeen Bay computed temperature distributions for **July 1990.**



Appendix E. Plankton samples collected in Port Moller in 1990.

Appendix E. Plankton samples collected in Port Moller in 1990.

Date	Site	Time	Depth (m)	Sample number	Gear	Mesh (μm)	Herring density (m^{-3})
27-Apr	R2	1999	90	R1	60 cm bongo	*	0.000
27-Apr	R11	839	18	R7	60 cm bongo	333	0.000
27-Apr	R11	839	18	R7	60 cm bongo	505	0.000
27-Apr	R10	1137	14	R11	60 cm bongo	333	0.000
27-Apr	R10	1137	14	R11	60 cm bongo	505	0.000
27-Apr	R9	1246	14	R13	60 cm bongo	333	0.000
27-Apr	R9	1246	14	R13	60 cm bongo	505	0.000
27-Apr	R8	1528	17	R16	60 cm bongo	333	0.000
27-Apr	R8	1528	17	R16	60 cm bongo	505	0.000
29-Apr	R7	1315	40	R19	60 cm bongo	333	0.000
29-Apr	R7	1315	40	R19	60 cm bongo	505	0.000
29-Apr	R3	1530	30	R23	60 cm bongo	333	0.000
29-Apr	R3	1530	30	R23	60 cm bongo	505	0.000
30-Apr	R12	1243	25	R29	60 cm bongo	333	0.000
30-Apr	R12	1243	25	R29	60 cm bongo	505	0.000
7-May	R2	1345	10	R32	60 cm bongo	333	0.000
7-May	R2	1345	10	R32	60 cm bongo	505	0.000
7-May	R2	1411	20	R33	60 cm bongo	333	0.000
7-May	R2	1411	20	R33	60 cm bongo	505	0.000
7-May	R2	1432	30	R34	60 cm bongo	333	0.000
7-May	R2	1432	30	R34	60 cm bongo	505	0.000
7-May	R2	1458	40	R35	60 cm bongo	333	0.000
7-May	R2	1458	40	R35	60 cm bongo	505	0.000
7-May	R2	1520	50	R36	60 cm bongo	333	0.000
7-May	R2	1520	50	R36	60 cm bongo	505	0.000
7-May	R2	1545	60	R37	60 cm bongo	333	0.000
7-May	R2	1545	60	R37	60 cm bongo	505	0.000
7-May	R2	1609	70	R38	60 cm bongo	333	0.000
7-May	R2	1609	70	R38	60 cm bongo	505	0.000
7-May	R2	1635	80	R39	60 cm bongo	505	0.000
7-May	R2	1635	80	R39	60 cm bongo	333	0.000
8-May	R2	846	10	R42	60 cm bongo	333	0.000
8-May	R2	846	10	R42	60 cm bongo	505	0.000
8-May	R2	902	20	R43	60 cm bongo	505	0.000
8-May	R2	902	20	R43	60 cm bongo	333	0.000
8-May	R2	922	30	R44	60 cm bongo	505	0.000
8-May	R2	922	30	R44	60 cm bongo	333	0.000
8-May	R2	940	40	R45	60 cm bongo	333	0.000
8-May	R2	940	40	R45	60 cm bongo	505	0.000
8-May	R2	959	50	R46	60 cm bongo	333	0.000
8-May	R2	959	50	R46	60 cm bongo	505	0.000
8-May	R2	1024	60	R47	60 cm bongo	333	0.000
8-May	R2	1024	60	R47	60 cm bongo	505	0.000
8-May	R2	1047	70	R48	60 cm bongo	333	0.000
8-May	R2	1047	70	R48	60 cm bongo	505	0.000

8-May	R2	1111	80	R49	60 cm bongo	333	0.000
8-May	R2	1111	80	R49	60 cm bongo	505	0.000
l-May	37	1336	40	1	60 cm bongo	333	0.000
l-May	36	1412	60	2	60 cm bongo	333	0.000
l-May	36	1437	60	3	20 cm bongo	165	
l-May	36	1454	10	4	30 L bottle	25	
l-May	36	1458	20	5	30 L bottle	25	
l-May	36	1505	30	6	30 L bottle	25	
l-May	36	1510	40	7	30 L bottle	25	-
l-May	35	1558	35	8	60 cm bongo	333	0.000
l-May	34	1647	15	9	60 cm bongo	333	0.000
l-May	33	1740	10	10	60 cm bongo	333	0.000
l-May	31	1808	15	11	60 cm bongo	333	0.000
l-May	29	1845	15	12	60 cm bongo	333	0.000
l-May	28	1930	10	13	60 cm bongo	333	0.000
l-May	27	2020	25	14	60 cm bongo	333	0.000
2-May	38	1022	10	15	60 cm bongo	333	0.000
2-May	39	1115	25	16	60 cm bongo	333	0.000
2-May	39	1128	25	17	20 cm bongo	165	
2-May	39	1145	25	18	30 L bottle	25	
2-May	39	1147	25	19	30 L bottle	25	
2-May	39	1150	25	20	30 L bottle	25	
2-May	39	1200	25	21	30 L bottle	25	-
3-May	46	1412	5	22	60 cm bongo	333	0.000
3-May	45	1452	15	23	60 cm bongo	333	0.000
3-May	42	1523	10	24	60 cm bongo	333	0.000
3-May	41	1602	15	25	60 cm bongo	333	0.000
4-May	21	820	20	26	60 cm bongo	333	0.000
4-May	22	850	7	27	60 cm bongo	333	0.000
4-May	23	927	10	28	60 cm bongo	333	0.000
4-May	25	1056	10	29	60 cm bongo	333	0.000
4-May	26	1140	15	30	60 cm bongo	333	0.000
9-May	23	1430	7	31	60 cm bongo	333	0.000
9-May	22	1500	5	32	60 cm bongo	333	0.000
12-May	21	1025	17	33	60 cm bongo	333	0.000
12-May	25	1010	10	34	60 cm bongo	333	0.000
12-May	26	1139	20	35	60 cm bongo	333	0.000
12-May	27	1215	25	36	60 cm bongo	333	0.000
12-May	28	1300	20	37	60 cm bongo	333	0.000
12-May	29	1343	20	38	60 cm bongo	333	0.000
12-May	31	1416	15	39	60 cm bongo	333	0.000
12-May	33	1445	30	40	60 cm bongo	333	0.000
12-May	34	1515	15	41	60 cm bongo	333	0.000
12-May	35	1550	40	42	60 cm bongo	333	0.000
12-May	36	1615	50	43	60 cm bongo	333	0.000
12-May	36	1635	50	44	20 cm bongo	165	
12-May	36	1650	10	45	30 L bottle	25	
12-May	36	1655	20	46	30 L bottle	25	
12-May	36	1700	30	47	30 L bottle	25	
12-May	36	1705	40	48	30 L bottle	25	-
12-May	37	1745	50	49	60 cm bongo	333	0.000
13-May	46	905	5	50	60 cm bongo	333	0.000
13-May	45	940	20	51	60 cm bongo	333	0.000
13-May	42	1010	1 0	52	60 cm bongo	333	0.000

13-May	41	1045	15	53	60 cm bongo	333	0.000
13-May	39	1125	25	54	60 cm bongo	333	0.000
13-May	39	1146	25	55	20 cm bongo	165	
13-May	39	1155	5	56	30 L bottle	25	
13-May	39	1200	10	57	30 L bottle	25	
13-May	39	1203	15	58	30 L bottle	25	
13-May	38	1245	10	59	60 cm bongo	333	6.000
18-May	21	950	17	60	60 cm bongo	333	0.000
18-May	22	1025	5	61	60 cm bongo	333	0.000
18-May	23	1105	10	62	60 cm bongo	333	0.000
18-May	25	1210	10	63	60 cm bongo	333	0.000
18-May	26	1250	20	64	60 cm bongo	333	0.000
18-May	27	1325	25	65	60 cm bongo	333	0.000
18-May	28	1400	20	66	60 cm bongo	333	0.000
19-May	37	1140	45	67	60 cm bongo	333	0.000
19-May	36	1310	45	68	60 cm bongo	333	0.000
19-May	36	1325	45	69	60 cm bongo	333	0.000
19-May	36	1300	45	70	20 cm bongo	165	
19-May	36	1235	10	71	30 L bottle	25	
19-May	36	1240	20	72	30 L bottle	25	
19-May	36	1245	30	73	30 L bottle	25	
19-May	36	1250	40	74	30 L bottle	25	
19-May	35	1350	40	75	60 cm bongo	333	0.000
19-May	34	1440	10	76	60 cm bongo	333	0.000
19-May	33	1510	15	77	60 cm bongo	333	0.000
19-May	31	1545	15	78	60 cm bongo	333	0.000
19-May	29	1625	25	79	60 cm bongo	333	0.000
20-May	46	1100	7	80	60 cm bongo	333	0.000
20-May	45	1130	2 0	81	60 cm bongo	333	0.000
20-May	42	1150	10	82	60 cm bongo	333	0.000
20-May	41	1220	17	83	60 cm bongo	333	0.000
20-May	39	1245	25	84	60 cm bongo	333	0.000
20-May	39	1300	25	85	20 cm bongo	165	
20-May	39	1315	5	86	30 L bottle	25	
20-May	39	1320	10	87	30 L bottle	25	
20-May	39	1325	15	88	30 L bottle	25	
20-May	39	1330	20	89	30 L bottle	25	-
20-May	38	1400	15	90	60 cm bongo	333	0.000
26-May	21	835	15	91	60 cm bongo	333	0.000
26-May	22	905	5	92	60 cm bongo	333	0.000
26-May	23	940	10	93	60 cm bongo	333	0.000
26-May	25	1025	10	94	60 cm bongo	333	0.000
26-May	26	1050	20	95	60 cm bongo	333	0.000
26-May	27	1125	23	96	60 cm bongo	333	0.000
26-May	28	1155	15	97	60 cm bongo	333	0.000
26-May	29	1245	25	98	60 cm bongo	333	0.000
26-May	31	1315	15	99	60 cm bongo	333	0.000
27-May	39	815	23	100	60 cm bongo	333	0.008
27-May	39	835	20	101	20 cm bongo	165	
27-May	39	850	5	102	30 L bottle	25	
27-May	39	855	10	103	30 L bottle	25	
27-May	39	900	15	104	30 L bottle	25	
27-May	39	905	20	105	30 L bottle	25	-
27-May	46	1025	10	106	60 cm bongo	333	0.011

27-May	45	1105	20	107	60 cm bongo	333	0.027
27-May	42	1245	15	108	60 cm bongo	333	0.031
27-May	41	1305	20	109	60 cm bongo	333	0.031
27-May	38	1400	15	110	60 cm bongo	333	0.000
28-May	37	1030	70	111	60 cm bongo	333	0.000
28-May	36	1147	10	112	30 L bottle	25	
28-May	36	1155	20	113	30 L bottle	25	
28-May	36	1200	30	114	30 L bottle	25	
28-May	36	1205	40	115	30 L bottle	25	
28-May	36	1210	40	116	20 cm bongo	165	
28-May	36	1225	80	117	60 cm bongo	333	0.000
28-May	36	1245	40	118	60 cm bongo	333	0.000
28-May	35	1315	40	119	60 cm bongo	333	0.000
28-May	34	1400	15	120	60 cm bongo	333	0.000
28-May	33	1435	20	121	60 cm bongo	333	0.000
1-Jun	37	1205	60	125	60 cm bongo	333	0.000
1-Jun	36	1335	60	126	60 cm bongo	333	0.000
1-Jun	36	1350	40	127	60 cm bongo	333	0.000
1-Jun	36	1320	40	128	20 cm bongo	165	
1-Jun	36	1300	10	129	30 L bottle	25	
1-Jun	36	1303	20	130	30 L bottle	25	
1-Jun	36	1306	30	131	30 L bottle	25	
1-Jun	36	1309	40	132	30 L bottle	25	
1-Jun	35	1420	40	133	60 cm bongo	333	6.000
1-Jun	34	1505	10	134	60 cm bongo	333	0.023
1-Jun	33	1540	20	135	60 cm bongo	333	0.000
1-Jun	31	1615	15	136	60 cm bongo	333	0.000
1-Jun	29	1650	20	137	60 cm bongo	333	0.040
2-Jun	46	912	15	138	60 cm bongo	333	0.465
2-Jun	45	945	20	139	60 cm bongo	333	0.250
2-Jun	42	1005	15	140	60 cm bongo	333	0.317
2-Jun	41	1030	15	141	60 cm bongo	333	0.083
2-Jun	39	1055	25	142	60 cm bongo	333	0.078
2-Jun	39	1145	20	143	20 cm bongo	165	
2-Jun	39	1210	5	144	30 L bottle	25	
2-Jun	39	1215	10	145	30 L bottle	25	
2-Jun	39	1220	15	146	30 L bottle	25	
2-Jun	39	1225	20	147	30 L bottle	25	-
2-Jun	38	1355	15	148	60 cm bongo	333	0.094
2-Jun	21	1340	15	149	60 cm bongo	333	0.115
2-Jun	22	1405	5	150	60 cm bongo	333	0.026
2-Jun	23	1435	10	151	60 cm bongo	333	0.009
2-Jun	25	1518	1 5	152	60 cm bongo	333	0.018
2-Jun	26	1348	25	153	60 cm bongo	333	0.018
2-Jun	27	1620	25	154	60 cm bongo	333	0.000
2-Jun	28	1645	15	155	60 cm bongo	333	0.024
8-Jun	37	1011	60	156	60 cm bongo	333	0.000
8-Jun	36	1120	60	157	60 cm bongo	333	0.015
8-Jun	36	1155	40	158	20 cm bongo	165	
8-Jun	36	1210	10	159	30 L bottle	25	
8-Jun	36	1213	20	160	30 L bottle	25	
8-Jun	36	1216	30	161	30 L bottle	25	
8-Jun	36	1220	40	162	30 L bottle	25	-
8-Jun	36	1140	40	163	60 cm bongo	333	0.000

8-Jun	35	1245	40	164	60 cm bongo	333	0.092
8-Jun	34	1325	15	165	60 cm bongo	333	1.273
8-Jun	33	1357	20	166	60 cm bongo	333	0.217
8-Jun	31	1430	15	167	60 cm bongo	333	0.199
8-Jun	29	1455	25	168	60 cm bongo	333	0.150
8-Jun	28	1535	15	169	60 cm bongo	333	0.015
8-Jun	27	1610	20	170	60 cm bongo	333	0.019
8-Jun	26	1640	20	171	60 cm bongo	333	0.022
8-Jun	25	1712	10	172	60 cm bongo	333	0.000
8-Jun	22	1740	7	173	60 cm bongo	333	0.012
8-Jun	21	1855	15	174	60 cm bongo	333	0.044
8-Jun	23	1810	10	175	60 cm bongo	333	0.000
10-Jun	47	910	10	176	60 cm bongo	333	2.562
10-Jun	46	940	10	177	60 cm bongo	333	4.170
10-Jun	45	1012	15	178	60 cm bongo	333	1.058
10-Jun	42	1120	15	179	60 cm bongo	333	1.055
10-Jun	41	1152	15	180	60 cm bongo	333	0.098
10-Jun	39	1345	5	181	30 L bottle	25	
10-Jun	39	1350	10	182	30 L bottle	25	
10-Jun	39	1355	15	183	30 L bottle	25	
10-Jun	39	1400	20	184	30 L bottle	25	-
10-Jun	39	1257	20	185	60 cm bongo	333	0.167
10-Jun	39	1330	20	186	20 cm bongo	165	-
10-Jun	38	1440	10	187	60 cm bongo	333	0.142
17-Jun	37	735	60	188	60 cm bongo	333	0.087
17-Jun	36	850	60	189	60 cm bongo	333	0.050
17-Jun	36	915	40	190	60 cm bongo	333	0.000
17-Jun	36	935	40	191	20 cm bongo	165	
17-Jun	36	1050	10	192	30 L bottle	25	
17-Jun	36	1055	20	193	30 L bottle	25	
17-Jun	36	1100	30	194	30 L bottle	25	
17-Jun	- 36	1105	40	195	30 L bottle	25	-
17-Jun	35	1130	40	196	60 cm bongo	333	0.096
17-Jun	34	1227	15	197	60 cm bongo	333	0.275
17-Jun	33	1257	20	198	60 cm bongo	333	2.228
17-Jun	31	1330	15	199	60 cm bongo	333	3.858
17-Jun	2	9 1355	25	200	60 cm bongo	333	2.907
17-Jun	28	1440	10	201	60 cm bongo	333	2.490
17-Jun	27	1515	25	202	60 cm bongo	333	1.987
17-Jun	26	1615	15	203	60 cm bongo	333	1.256
17-Jun	25	1650	10	204	60 cm bongo	333	0.064
17-Jun	22	1725	15	205	60 cm bongo	333	0.005
17-Jun	23	1755	10	206	60 cm bongo	333	0.000
17-Jun	21	1832	15	207	60 cm bongo	333	0.012
18-Jun	38	845	10	208	60 cm bongo	333	1.009
18-Jun	39	930	20	209	60 cm bongo	333	1.548
18-Jun	39	940	20	210	20 cm bongo	165	
18-Jun	39	950	5	211	30 L bottle	25	
18-Jun	39	955	10	212	30 L bottle	25	
18-Jun	39	1000	15	213	30 L bottle	25	
18-Jun	39	1005	20	214	30 L bottle	25	-
18-Jun	41	1420	15	215	60 cm bongo	333	5.492
18-Jun	42	1350	15	216	60 cm bongo	333	4.331
18-Jun	45	1322	15	217	60 cm bongo	333	4.189

18-Jun	46	1245	10	218	60 cm bongo	333	16.916
18-Jun	47	1230	7	219	60 cm bongo	333	25.225
22-Jun	37	925	60	220	60 cm bongo	333	0.024
22-Jun	37	925	60	221	60 cm bongo	505	0.119
22-Jun	36	1007	60	222	60 cm bongo	333	0.180
22-Jun	36	1007	60	223	60 cm bongo	505	0.084
22-Jun	36	1037	40	224	20 cm bongo	165	
22-Jun	36	1055	10	225	30 L bottle	25	
22-Jun	36	1100	20	226	30 L bottle	25	
22-Jun	36	1110	30	227	30 L bottle	25	
22-Jun	36	1120	40	228	30 L bottle	25	
22-Jun	35	1230	40	229	60 cm bongo	333	0.378
22-Jun	35	1230	40	230	60 cm bongo	505	0.340
22-Jun	36	1200	40	231	60 cm bongo	505	-
22-Jun	34	1405	15	232	60 cm bongo	333	1.358
22-Jun	34	1405	15	233	60 cm bongo	505	1.102
22-Jun	33	1425	15	234	60 cm bongo	333	0.702
22-Jun	33	1425	15	235	60 cm bongo	505	0.573
22-Jun	31	1525	15	236	60 cm bongo	333	2.359
22-Jun	31	1525	15	237	60 cm bongo	505	1.760
22-Jun	29	1550	25	238	60 cm bongo	333	5.069
22-Jun	29	1550	25	239	60 cm bongo	505	6.722
22-Jun	28	1630	12	240	60 cm bongo	333	0.663
22-Jun	28	1630	12	241	60 cm bongo	505	0.501
22-Jun	27	1655	25	242	60 cm bongo	333	1.955
22-Jun	27	1655	25	243	60 cm bongo	505	0.765
22-Jun	26	1730	7	244	60 cm bongo	333	0.311
22-Jun	26	1730	7	245	60 cm bongo	505	0.156
22-Jun	25	1820	10	246	60 cm bongo	333	0.144
22-Jun	25	1820	10	247	60 cm bongo	505	0.293
22-Jun	22	1925	15	248	60 cm bongo	333	0.405
22-Jun	22	1925	15	249	60 cm bongo	505	0.396
22-Jun	37	1000	45	250	Methot trawl	1000	0.009
22-Jun	36	1120	55	251	Methot trawl	1000	0.011
22-Jun	35	1421	45	252	Methot trawl	1000	0.012
22-Jun	34	1616	20	253	Methot trawl	1000	0.053
22-Jun	33	1715	20	254	Methot trawl	1000	0.122
22-Jun	31	1936	15	255	Methot trawl	1000	0.562
22-Jun	29	2000	15	256	Methot trawl	1000	0.180
23-Jun	27	1200	15	257	Methot trawl	1000	0.032
23-Jun	27	1217	20	258	60 cm bongo	333	0.070
23-Jun	27	1217	20	259	60 cm bongo	505	0.220
23-Jun	28	1239	25	260	60 cm bongo	333	0.493
23-Jun	28	1239	25	261	60 cm bongo	505	0.541
23-Jun	28	1250	15	262	Methot trawl	1000	0.005
23-Jun	29	1320	20	263	Methot trawl	1000	0.020
23-Jun	29	1335	30	264	60 cm bongo	333	0.919
23-Jun	29	1335	30	265	60 cm bongo	505	0.838
23-Jun	33	1411	25	266	60 cm bongo	505	1.958
23-Jun	33	1411	25	267	60 cm bongo	333	1.800
23-Jun	33	1425	20	268	Methot trawl	1000	0.008
23-Jun	36	1636	50	269	Methot trawl	1000	0.004
22-Jun	23	1855	15	280	60 cm bongo	333	0.233
22-Jun	23	1855	15	281	60 cm bongo	505	0.172

22-Jun	21	2000	15	282	60 cm bongo	333	0.410
22-Jun	21	2000	15	283	60 cm bongo	505	0.204
23-Jun	47	1430	7	284	60 cm bongo	505	14.166
23-Jun	46	1455	15	285	60 cm bongo	505	11.161
23-Jun	45	1520	25	286	60 cm bongo	505	5.352
23-Jun	42	1545	15	287	60 cm bongo	505	6.606
23-Jun	41	1605	20	288	60 cm bongo	505	5.770
23-Jun	39	1635	25	289	60 cm bongo	505	5.714
23-Jun	39	1650	25	290	20 cm bongo	165	
23-Jun	39		5	291	30 L bottle	25	
23-Jun	39	1715	10	292	30 L bottle	25	
23-Jun	39	1720	15	293	30 L bottle	25	
23-Jun	39	1725	20	294	30 L bottle	25	-
23-Jun	38	1810	20	295	60 cm bongo	505	2.006
25-Jun	36	1137	5	296	Tucker trawl	505	**0.258**
25-Jun	36	1155	15	297	Tucker trawl	505	**0.456**
25-Jun	36	1209	25	298	Tucker trawl	505	0.000
25-Jun	36	1229	35	299	Tucker trawl	505	0.000
25-Jun	36	1253	45	300	Tucker trawl	505	0.000
25-Jun	36	1310	55	301	Tucker trawl	505	0.000
25-Jun	36	1326	65	302	Tucker trawl	505	0.000
25-Jun	36	1343	75	303	Tucker trawl	505	0.000
26-Jun	36	0012	5	304	Tucker trawl	505	0.512
26-Jun	36	0047	15	305	Tucker trawl	505	0.046
26-Jun	36	0109	25	306	Tucker trawl	505	0.004
26-Jun	36	0126	35	307	Tucker trawl	505	0.004
26-Jun	36	0144	45	308	Tucker trawl	505	0.000
26-Jun	36	0201	55	309	Tucker trawl	505	0.000
26-Jun	36	0218	65	310	Tucker trawl	505	0.004
26-Jun	36	0236	75	311	Tucker trawl	505	0.000
26-Jun	36	0604	5	312	Tucker trawl	505	0.699
26-Jun	36	0617	15	313	Tucker trawl	505	0.103
26-Jun	36	0632	25	314	Tucker trawl	505	0.000
26-Jun	36	0647	35	315	Tucker trawl	505	0.000
26-Jun	36	0659	45	316	Tucker trawl	505	0.000
26-Jun	36	0714	55	317	Tucker trawl	505	0.000
26-Jun	36	0728	65	318	Tucker trawl	505	0.000
26-Jun	36	0745	75	319	Tucker trawl	505	0.000
23-Jun	36	1707	55	320	60 cm bongo	333	0.070
23-Jun	36	1707	55	321	60 cm bongo	505	0.089
24-Jun	49	1730	15	322	60 cm bongo	333	0.220
24-Jun	49	1730	15	323	60 cm bongo	505	0.207
24-Jun	49	1748	12	324	Methot trawl	1000	0.029
24-Jun	48	1813	12	325	Methot trawl	1000	0.038
24-Jun	48	1823	15	326	60 cm bongo	333	0.240
24-Jun	48	1823	15	327	60 cm bongo	505	0.212
24-Jun	22	1838	15	328	60 cm bongo	333	0.429
24-Jun	22	1838	15	329	60 cm bongo	505	0.616
24-Jun	22	1849	12	330	Methot trawl	1000	0.037
24-Jun	25	1920	12	331	Methot trawl	1000	0.043
24-Jun	25	1931	10	332	60 cm bongo	333	0.230
24-Jun	25	1931	10	333	60 cm bongo	505	0.188
24-Jun	26	2057	15	334	Methot trawl	1000	0.010
24-Jun	26	2108	15	336	60 cm bongo	505	0.466

24-Jun	26	2108	15	335	60 cm bongo	333	0.346
26-Jun	36	1208	5	351	Tucker trawl	505	0.162
26-Jun	36	1220	15	352	Tucker trawl	505	0.317
26-Jun	36	1230	25	353	Tucker trawl	505	0.000
26-Jun	36	1242	35	354	Tucker trawl	505	0.000
26-Jun	36	1256	45	355	Tucker trawl	505	0.000
26-Jun	36	1310	55	356	Tucker trawl	505	0.000
26-Jun	36	1320	65	357	Tucker trawl	505	0.000
26-Jun	36	1335	75	358	Tucker trawl	505	0.000
26-Jun	36	1801	5	359	Tucker trawl	505	0.274
26-Jun	36	1814	15	360	Tucker trawl	505	0.068
26-Jun	36	1825	25	361	Tucker trawl	505	0.004
26-Jun	36	1842	35	362	Tucker trawl	505	0.000
26-Jun	36	1854	45	363	Tucker trawl	505	0.000
26-Jun	36	1907	55	364	Tucker trawl	505	0.000
26-Jun	36	1921	65	365	Tucker trawl	505	0.004
26-Jun	36	1935	75	366	Tucker trawl	505	0.000
29-Jun	37	1205	60	367	60 cm bongo	505	0.010
29-Jun	36	1300	75	368	60 cm bongo	505	0.006
29-Jun	36	1320	40	369	60 cm bongo	505	
29-Jun	36	1330	40	370	20 cm bongo	165	
29-Jun	36	1345	10	371	30 L bottle	25	
29-Jun	36	1350	20	372	30 L bottle	25	
29-Jun	36	1355	30	373	30 L bottle	25	
29-Jun	36	1400	40	374	30 L bottle	25	
29-Jun	35	1545	50	375	60 cm bongo	505	0.152
29-Jun	34	1635	15	376	60 cm bongo	505	0.397
29-Jun	33	1710	25	377	60 cm bongo	505	1.277
29-Jun	31	1740	20	378	60 cm bongo	505	0.36’7
29-Jun	29	1810	25	379	60 cm bongo	505	0.207
29-Jun	28	1850	25	380	60 cm bongo	505	0.337
29-Jun	27	1920	20	381	60 cm bongo	505	0.756
29-Jun	26	1945	25	382	60 cm bongo	505	0.434
29-Jun	25	2015	15	383	60 cm bongo	505	0.519
30-Jun	23	1020	10	384	60 cm bongo	505	0.416
30-Jun	22	1105	7	385	60 cm bongo	505	0.470
30-Jun	21	1127	20	386	60 cm bongo	505	3.667
30-Jun	38	1217	25	387	60 cm bongo	505	6.229
30-Jun	39	1255	25	388	60 cm bongo	505	4.637
30-Jun	39	1305	25	389	20 cm bongo	165	
30-Jun	39	1315	5	390	30 L bottle	25	
30-Jun	39	1320	10	391	30 L bottle	25	
30-Jun	39	1325	15	392	30 L bottle	25	
30-Jun	39	1330	20	393	30 L bottle	25	
30-Jun	41	1445	25	394	60 cm bongo	505	12.870
30-Jun	42	1515	15	395	60 cm bongo	505	1.977
30-Jun	45	1540	17	396	60 cm bongo	505	13.040
30-Jun	46	1605	10	397	60 cm bongo	505	5.213
30-Jun	47	1625	10	398	60 cm bongo	505	5.710
2-Jul	39	5	5	399	Tucker trawl	505	2.390
2-Jul	39	17	15	400	Tucker trawl	505	14.334
2-Jul	39	29	25	401	Tucker trawl	505	6.556
2-Jul	39	40	5	402	Tucker trawl	505	3.632
2-Jul	39	50	15	403	Tucker trawl	505	13.450

2-Jul	39	103	25	404	Tucker trawl	505	4.882
2-Jul	39	545	5	405	Tucker trawl	505	6.670
2-Jul	39	554	15	406	Tucker trawl	505	7.491
2-Jul	39	606	25	407	Tucker trawl	505	7.104
2-Jul	39	618	5	408	Tucker trawl	505	3.702
2-Jul	39	628	15	409	Tucker trawl	505	3.368
2-Jul	39	639	25	410	Tucker trawl	505	5.144
2-Jul	39	1158	5	411	Tucker trawl	505	2.480
2-Jul	39	1207	15	412	Tucker trawl	505	3.616
2-Jul	39	1218	25	413	Tucker trawl	505	4.378
2-Jul	39	1230	5	414	Tucker trawl	505	7.521
2-Jul	39	1245	15	415	Tucker trawl	505	2.027
2-Jul	39	1256	25	416	Tucker trawl	505	4.420
2-Jul	39	1751	5	417	Tucker trawl	505	6.383
2-Jul	39	1822	15	418	Tucker trawl	505	7.434
2-Jul	39	1834	25	419	Tucker trawl	505	4.453
2-Jul	39	1900	5	420	Tucker trawl	505	2.039
2-Jul	39	1910	15	421	Tucker trawl	505	3.653
2-Jul	39	1937	25	422	Tucker trawl	505	4.366
6-Jul	37	1030	60	423	60cmbongo	505	0.055
6-Jul	36	1115	65	424	60cmbongo	505	0.078
6-Jul	36	1145	40	425	20cmbongo	165	
6-Jul	36	1200	10	426	30 L bottle	25	
6-Jul	36	1205	20	427	30 L bottle	25	
6-Jul	36	1210	30	428	30 L bottle	25	
6-Jul	36	1215	40	429	30 L bottle	25	
6-Jul	35	1315	40	430	60cmbongo	505	0.073
6-Jul	34	1400	15	431	60cmbongo	505	0.447
6-Jul	33	1430	25	432	60cmbongo	505	0.786
6-Jul	31	1500	15	433	60cmbongo	505	0.190
6-Jul	29	1520	25	434	60cmbongo	505	0.162
6-Jul	28	1555	15	435	60cmbongo	505	0.480
6-Jul	27	1620	25	436	60 cm bongo	505	0.405
6-Jul	26	1650	20	437	60cmbongo	505	0.610
6-Jul	25	1715	10	438	60cmbongo	505	0.190
6-Jul	23	1648	7	439	60cmbongo	505	0.179
6-Jul	22	1810	5	440	60cmbongo	505	0.444
6-Jul	21	1835	10	441	60cmbongo	505	0.110
7-Jul	47	1030	7	442	60 cm bongo	505	1.958
7-Jul	46	1058	15	443	60cmbongo	505	6.090
7-Jul	45	1125	20	444	60cmbongo	505	2.151
7-Jul	42	1150	15	445	60cmbongo	505	1.490
7-Jul	41	1215	17	446	60cmbongo	505	1.108
7-Jul	39	1245	25	447	60 cm bongo	505	0.630
7-Jul	39	1255	25	448	20cmbongo	165	
7-Jul	39	1310	5	449	30 L bottle	25	
7-Jul	39	1315	10	450	30 L bottle	25	
7-Jul	39	1320	15	451	30Lbottle	25	
7-Jul	39	1325	20	452	30Lbottle	25	
7-Jul	38	1440	15	453	60cmbongo	505	0.947
11-Jul	38	1810	20	454	Methot trawl	1000	0.016
11-Jul	38	1840	15	455	60 cm bongo	505	0.512
11-Jul	39	1925	25	456	60 cm bongo	505	2.348
11-Jul	39	1950	25	457	Methot trawl	1000	0.008

11-Jul	41	2025	15	458	Methot trawl	1000	0.121
11-Jul	41	2040	15	459	60 cm bongo	505	9.735
11-Jul	42	2120	15	460	60 cm bongo	505	20.871
11-Jul	42	2130	15	461	Methot trawl	1000	0.001
13-Jul	37	1105	50	462	Methot trawl	1000	0.016
13-Jul	37	1130	50	463	60 cm bongo	505	0.092
13-Jul	36	1225	40	464	20 cm bongo	165	
13-Jul	36	1245	10	465	30 L bottle	25	
13-Jul	36	1250	20	466	30 L bottle	25	
13-Jul	36	1255	30	467	30 L bottle	25	
13-Jul	36	1300	40	468	30 L bottle	25	-
13-Jul	36	1400	60	469	60 cm bongo	505	0.018
13-Jul	35	1420	40	470	60 cm bongo	505	0.186
13-Jul	35	1435	40	471	Methot trawl	1000	0.022
13-Jul	34	1523	15	472	60 cm bongo	505	1.024
13-Jul	33	1555	20	473	60 cm bongo	505	0.166
13-Jul	33	1605	20	474	Methot trawl	1000	0.019
13-Jul	31	1645	15	475	60 cm bongo	505	0.080
13-Jul	29	1710	25	476	60 cm bongo	505	0.074
13-Jul	29	1725	25	477	Methot trawl	1000	0.009
13-Jul	28	1810	10	478	60 cm bongo	505	0.122
13-Jul	27	1835	25	479	60 cm bongo	505	0.102
13-Jul	27	1855	20	480	Methot trawl	1000	0.006
13-Jul	26	1930	15	481	60 cm bongo	505	0.068
13-Jul	25	1955	10	482	60 cm bongo	505	0.136
13-Jul	25	2007	10	483	Methot trawl	1000	0.019
14-Jul	21	840	15	484	60 cm bongo	505	0.301
14-Jul	22	905	5	485	60 cm bongo	505	0.023
14-Jul	22	925	5	486	Methot trawl	1000	0.041
14-Jul	23	1000	7	487	60 cm bongo	505	0.042
14-Jul	47	1235	7	488	60 cm bongo	505	4.710
14-Jul	46	1310	10	489	60 cm bongo	505	9.872
14-Jul	46	1325	10	490	Methot trawl	1000	0.114
14-Jul	45	1405	20	491	Methot trawl	1000	0.111
14-Jul	45	1430	20	492	60 cm bongo	505	2.728
14-Jul	42	1500	15	493	60 cm bongo	505	4.361
14-Jul	41	1535	15	494	60 cm bongo	505	0.670
14-Jul	39	1605	25	495	60 cm bongo	505	0.287
14-Jul	39	1625	25	496	20 cm bongo	165	
14-Jul	39	1635	5	497	30 L bottle	25	
14-Jul	39	1700	10	498	30 L bottle	25	
14-Jul	39	1705	15	499	30 L bottle	25	
14-Jul	39	1710	20	500	30 L bottle	25	-
14-Jul	38	1735	15	501	60 cm bongo	505	0.073
21-Jul	21	940	20	502	60 cm bongo	505	0.000
21-Jul	22	959	10	503	60 cm bongo	505	0.039
21-Jul	23	1030	12	504	60 cm bongo	505	0.005
21-Jul	25	1130	13	505	60 cm bongo	505	0.262
21-Jul	26	1210	28	506	60 cm bongo	505	0.312
21-Jul	27	1307	28	507	60 cm bongo	505	0.398
21-Jul	38	1508	7	508	60 cm bongo	505	0.203
21-Jul	39	1910	23	509	60 cm bongo	505	0.368
21-Jul	39	1928	20	510	20 cm bongo	165	
21-Jul	39	1938	5	511	30 L bottle	25	

21-Jul	39	1949	10	512	30 L bottle	25	
21-Jul	39	1953	15	513	30 L bottle	25	
21-Jul	39	1957	20	514	30 L bottle	25	
21-Jul	no bottle #		515	25		-	
21-Jul	41	2010	17	516	60 cm bongo	505	0.505
22-Jul	42	800	13	517	60 cm bongo	505	0.611
22-Jul	45	821	22	518	60 cm bongo	505	0.709
22-Jul	46	852	17	519	60 cm bongo	505	0.395
22-Jul	47	920	12	520	60 cm bongo	505	0.363
22-Jul	28	1255	15	521	60 cm bongo	505	0.291
22-Jul	29	1331	29	522	60 cm bongo	505	0.296
22-Jul	31	1404	18	523	60 cm bongo	505	0.595
22-Jul	33	1440	23	524	60 cm bongo	505	0.411
22-Jul	34	1510	16	525	60 cm bongo	505	0.507
22-Jul	35	1546	40	526	60 cm bongo	505	0.197
22-Jul	37	1931	56	527	60 cm bongo	505	0.304
22-Jul	36	2010	89	528	60 cm bongo	505	0.082
22-Jul	36	2030	89	529	20 cm bongo	165	
22-Jul	36	2042	10	530	30 L bottle	25	
22-Jul	36	2055	20	531	30 L bottle	25	
22-Jul	36	2100	30	532	30 L bottle	25	
22-Jul	36	2105	40	533	30 L bottle	25	
24-Jul	36	1235	5	534	Tucker trawl	505	6.034
24-Jul	36	1253	15	535	Tucker trawl	505	0.588
24-Jul	36	1316	25	536	Tucker trawl	505	0.075
24-Jul	36	1331	35	537	Tucker trawl	505	0.000
24-Jul	36	1348	45	538	Tucker trawl	505	0.000
24-Jul	36	1400	55	539	Tucker trawl	505	0.000
24-Jul	36	1424	65	540	Tucker trawl	505	0.000
24-Jul	36	1436	75	541	Tucker trawl	505	0.003
24-Jul	36	1809	5	542	Tucker trawl	505	0,086
24-Jul	36	1823	15	543	Tucker trawl	505	0.196
24-Jul	36	1834	25	544	Tucker trawl	505	0.161
24-Jul	36	1853	35	545	Tucker trawl	505	0.131
24-Jul	36	1908	45	546	Tucker trawl	505	0.000
24-Jul	36	1930	55	547	Tucker trawl	505	0.000
24-Jul	36	1944	65	548	Tucker trawl	505	0.000
24-Jul	36	2006	75	549	Tucker trawl	505	0.000
25-Jul	36	11	5	550	Tucker trawl	505	0.366
25-Jul	36	25	15	551	Tucker trawl	505	0.294
25-Jul	36	103	25	552	Tucker trawl	505	0.104
25-Jul	36	118	35	553	Tucker trawl	505	0.022
25-Jul	36	135	45	554	Tucker trawl	505	0.000
25-Jul	36	155	55	555	Tucker trawl	505	0.004
25-Jul	36	215	65	556	Tucker trawl	505	0.000
25-Jul	36	230	75	557	Tucker trawl	505	0.000
25-Jul	36	620	5	558	Tucker trawl	505	0.201
25-Jul	36	633	15	559	Tucker trawl	505	0.028
25-Jul	36	645	25	560	Tucker trawl	505	0.014
25-Jul	36	658	35	561	Tucker trawl	505	0.007
25-Jul	36	711	45	562	Tucker trawl	505	0.000
25-Jul	36	725	55	563	Tucker trawl	505	0.000
25-Jul	36	753	65	564	Tucker trawl	505	0.000
25-Jul	36	840	75	565	Tucker trawl	505	0.000

26-Jul	25	836	11	566	60 cm bongo	505	0.176
26-Jul	26	908	18	567	60 cm bongo	505	0.239
26-Jul	27	946	24	568	60 cm bongo	505	0.383
26-Jul	28	1014	14	569	60 cm bongo	505	0.304
26-Jul	29	1045	28	570	60 cm bongo	505	0.555
26-Jul	31	1110	16	571	60 cm bongo	505	0.013
26-Jul	33	1131	17	572	60 cm bongo	505	0.416
26-Jul	34	1206	17	573	60 cm bongo	505	0.107
26-Jul	35	1230	53	574	60 cm bongo	505	0.033
26-Jul	36	1317	10	575	30 L bottle	25	
26-Jul	36	1320	20	576	30 L bottle	25	
26-Jul	36	1324	30	577	30 L bottle	25	
26-Jul	36	1330	40	578	30 L bottle	25	
26-Jul	36	1337	93	579	20 cm bongo	165	
26-Jul	36	1356	93	580	60 cm bongo	505	0.024
26-Jul	37	1417	61	581	60 cm bongo	505	0.103
27-Jul	38	906	16	582	60 cm bongo	505	0.067
27-Jul	39	940	29	583	60 cm bongo	505	0.418
27-Jul	39	950	30	584	20 cm bongo	165	
27-Jul	39	1003	5	585	30 L bottle	25	
27-Jul	39	1006	10	586	30 L bottle	25	
27-Jul	39	1010	15	587	30 L bottle	25	
27-Jul	39	1015	20	588	30 L bottle	25	-
27-Jul	41	1018	16	589	60 cm bongo	505	1.386
27-Jul	42	1108	14	590	60 cm bongo	505	0.722
27-Jul	45	1136	20	591	60 cm bongo	505	1.937
27-Jul	46	1200	14	592	60 cm bongo	505	1.782
27-Jul	47	1228	10	593	60 cm bongo	505	1.370
27-Jul	21	1559	20	594	60 cm bongo	505	0.024
27-Jul	22	1623	10	595	60 cm bongo	505	0.011
27-Jul	23	1643	12	596	60 cm bongo	505	0.019

Notes:

1. R indicates Rae Baxter's site or sample number.
2. * indicates 333 and 505 urn samples combined.
3.- indicates not available or not applicable.

Appendix F. Analysis of zooplankton samples from Port Moller, 1990.

ANALYSIS OF ZOOPLANKTON SAMPLES FROM PORT MOLLER 1990

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Taxonomic Notes for Port Moller 1990

The larger calanoids were almost absent from the samples taken from Port Moller. There were no Neocalanus present in any of the samples but if they were very few in numbers it is possible that they were overlooked in the splitting procedure.

The Pseudocalanus key out to minutus with some newmani. 'In almost all the samples the adult females are carrying eggs or have spermatophores attached. In most cases the eggs had been knocked loose by the sampling procedure but pieces of the egg sac attachment remained.

Acartia clausi is a littoral species found in warm surface waters, penetrating into slightly freshened estuarine environments. This species occurs in large numbers in the littoral zones and can be a major component in t-he diet of young fish.

Eurytemora herdmani and pacifica are both littoral species characteristic of freshened sea waters. In almost all samples, the adult females were carrying eggs or spermatophores. It was unusual to note that in many cases there were multiple spermatophores attached to the urosome of the females. Some females carried over twenty while most averaged around ten, very few had only one attached.

The jellies (ctenophores, medusa and siphonophores) were "in much better shape this year as is reflected in the longer list of identifiable forms.

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER						04				05				06				07				18				19		
Date						010590				010590				10590				010590				020590				020590		
Site						36				36				36				36				39				39		
Time						1437				1458				1505				1510				1145				1147		
Mesh (urn)						25				2 5				25				25				25				25		
Oepth of tow (m)						10				20				30				40				25				25		
Volume filtered (m^3)						0.03				0.03				0.03				0.03				0.03				0.03		
Fraction enumerated						0.5				0.5				1				1				1				1		
SPECIES	TAXONOMIC STAGE	COOE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA																								
Tintinid		3540	0.1	0.3		0.00		0,00		0.00		0.00	2	66.67		0.00								
Foraminifera		3448	0.1	0.2		0,00		0.00		0.00		0.00	1	33.33		0.00								
CTENOPHORA						0,00		0.00		0.00		0.00		0.00		0.00								
Pl eurobrachi a		38020101	1.0	2.5		0.00		0,00		0.00		0.00		0,00		0.00								
CNIDARIA						0.00		0.00		0.00		0.00		0.00		0.00								
Medusa juveniles		3701	0,7	2,1		0.00		0.00		0.00		0.00		0.00		0.00								
Aglantha		37110411	1.0	3.0		0.00		0.00		0.00	1	33.33		D.00		0.00								
			5,0	7.0		0.00		0.00		0.00		0.00		0.00		0.00								
Euphysa		37030312	1.5	2,0		0.00		0.00		0.00		0.00		0.00		0.00								
Aurelia juvenile		37340302	1.8	3.5		0.00		0.00		0.00		0.00		0.00		0.00								
Obelia		37040102	0.6	1.0	18	1200,00	5	333.33	5	200.00	1	33.33	10	333.33	13	433.33								
			1.1	2.0	6	400.00	1	66.67	1	0,00		0.00	1	33.33		0.00								
			2.1	4.0		0,00		0.00		0.00		0.00		0.00		0.00								
Rathkea		37031902	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00								
Sarsia		37030609	5.0	6.0		0.00		0.00		0.00		0.00		0,00		0.00								
Proboscidactyla		37050602	3.0	7.0		0.00		0,00		0.00		0,00		0.00		0.00								
TREMATODA						0.00		0,00		0,00		0.00		0.00		0,00								
F 1 atworms		3901	0.6	1.0		0.00		0.00		0.00		0.00		0.00		0.00								
NEMATODA						0.00		0.00		0.00		0.00		0.00		0.00								
Nematodes		47	0.8	1.5		0.00		0.00		0.00		0.00		0,00		0.00								
ROTIFERA						0.00		0,00		0.00		0.00		0.00		0.00								
Roti fers		45	0.2	0.6		0.00		0.00		0.00		0.00		0,00		0.00								
CHAETOGNATHA						0,00		0.00		0.00		0.00		0.00		0.00								

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER					04		05		06		07		18		19	
Sagitta elegans		8300000303	15.0	27.0		0.00		0,00		0.00		0.00		0.00		0.00
Chaetognath juveniles		83	3.0	7.0		0.00		0,00		0,00		0.00	1	33,33		0.00
BRYOZOA						0,00		0.00		0.00		0.00		0.00		0,00
Cyphonautes 1 arvae		78	0.4	048		0.00		0,00		0.00	3	100.00		0.00		0.00
PHORONI DA						0.00		0,00		0.00		0.00		0,00		0.00
Acti notrocha 1 arvae		77	0.8	1.0		0.00		0.00	1	33.33		0,00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00		0,00		0.00
Limacina		51130101	0.6	2.0	1	66.67		0.00		0.00		0.00		0,00		0.00
Nudi branch l arvae		5127	0.7	0.8		0.00		0.00		0.00		0.00		0,00		0.00
Bivalve veliger		55	0.0	0.2		0.00		0.00		0,00		0.00		0,00		0.00
			0.2	0.4		0.00		0,00		0.00		0.00		0.00		0.00
Gastropod vel iger		51	0.0	0.2		0.00		0.00		0.00		0.00		0.00		0.00
			0.2	0.4		0.00		0.00	1	33.33	3	100.00	1	33.33		0.00
			0.4	0.6		0.00		0.00		0.00		0.00		0.00		0.00
POLYCHAETA						0.00		0.00		0.00		0.00		0.00		0.00
Spionid 1 arvae		500143	0,8	4,0	11	733.33	10	666.67	2	66.67	1	33.33	12	400.00	17	566.67
Pol ynoid 1 arvae		50012015	0.5	1.5		0.00	1	66.67		0.00		0.00	2	66.67		0.00
Pol ychaete l arvae		5001	0.6	1.5	3	200.00	58	3866,67	6	200.00	3	100.00	11	366,67	6	200.00
Trochophore 1 arvae		5001	0,2	0,6	71	4733.33	54	3600.00	128	4266,67	48	1600,00	95	3166.67	31	1033.33
Autolytus sp		50012301	3,0	3,5		0.00		0.00		0.00		0.00		0.00		0,00
CRUSTACEA						0.00		0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0,00		0.00		0.00
Nauplii larvae		6130	0,2	0.8	3	200.00	4	266.67		0.00	3	100.00	10	333.33		0.00
Cypris larvae		6130	0.8	1.2	5	333.33	2	133.33		0,00		0.00		0.00		0.00
CLADOCERA						0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0,6	1,0		0.00		0.00		0.00		0.00		0.00		0.00
COPEPODA						0.00		0.00		0.00		0.00		0.00		0.00
Copepod naupli i		6118	0.0	0.2	17	1133,33	19	1266,67	5	166.67	2	66.67	7	233,33	2	66.67
			0.2	0.4	20	1333,33	30	2000.00	1	33.33	1	33.33	9	300,00	4	133.33
			0.4	0.6	1	66.67	2	133.33		0.00		0.00		0,00	1	33.33
			0.6	1,0		0.00		0.00		0.00		0.00		0.00		0.00
Copepodi tes	I-III	6118	0.2	0.4	5	333.33		0.00		0.00		0,00	4	133,33	1	33.33
			0.4	0.6	9	600.00	13	866.67		0.00		0.00	5	166.67	2	66,67
			0.6	0,8	9	600.00	7	466.67	1	33.33		0.00	3	100.00		0.00
Epi labidocera sp	I	61182701	0.5	0.8		0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					04		05		06		07		18		19	
	II		0.8	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Epi labidocera long ipedata	VIf	6118270102	2.7	3.1		0.00		0.00		0.00		0,00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00		0.00		0.00		0.00		0.00
	IV		0.8	1.1		0,00		0.00		0.00		0.00		0.00		0.00
	v		1.0	1.7		0.00		0.00		0.00		0.00		0.00		0.00
Tortanus d iscaudatus	VIf	6118300101	1.8	2.3		0.00		0,00		0.00		0.00		0.00		0.00
	VIm		1.6	2,2		0.00		0.00		0.00		0.00		0.00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	1	66.67		0.00		0.00		0,00		0.00		0.00
	Vf		1.1	1.3	10	666,67		0.00	4	133.33		0,00	1	33.33		0.00
	Vm		1.0	1.3	9	600.00	6	400.00	1	33.33	1	33.33	1	33.33		0.00
	VIf		1.1	2.0	2	133,33	9	600.00	12	400.00	10	333.33		0.00		0.00
	VIm		1.1	1.5		0.00	5	333.33	2	66.67		0.00		0.00		0.00
Microcalanus pygmeus pusillus	V	61180504	0.6	0.7		0.00	2	133.33		0.00		0.00		0,00		0,00
Metridia sp	I-III	61181602	0.5	1.1		0.00	1	66,67		0.00		0.00		0.00		0,00
Centropages abdomi nal is	IV	6118170101	0.9	1.1		0.00		0.00	1	33.33		0.00		0,00	1	33.33
	v		1.1	1.3		0.00		0,00		0.00		0.00		0.00	1	33.33
	VIf		1.6	2.1		0.00		0.00		0.00		0.00		0.00		0,00
	VIm		1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Eurytemora herdman i i	v	6118200203	0.9	1.2	3	200.00		0.00		0.00		0.00		0.00		0.00
	VIf		1.1	1.4	1	66.67	1	66,67		0.00		0.00		0.00		0.00
	VIm		1.1	1.4		0.00	1	66.67		0.00		0.00	1	33.33		0,00
Eurytemora paci f ica	VIf	6118200206	1.4	1.5		0,00		0.00		0,00		0.00		0.00		0.00
	VIm		1.4	1.4		0.00		0.00		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0,5	0.7	2	133,33		0.00		0,00	1	33.33	4	133.33	2	66.67
Acartia longiremis	v	6118290103	0.7	1.0	1	66.67		0.00		0.00		0.00		0.00		0.00
	VIf		1.0	1.3		0.00	1	66,67		0.00		0.00		0.00		0.00
	VIm		0.9	1.1	1	66.67		0.00		0,00		0.00		0.00		0.00
Acartia clausii	v	6118290101	0.6	0.8		0.00		0.00		0.00		0.00		0.00	1	33,33
	VIf		0.9	1.3		0.00		0.00		0.00		0.00	1	33.33		0.00
	VIm		0,8	1.2		0.00		0.00		0.00		0.00		0.00		0.00
Harpacti coida	v	6119	0.6	0.8		0.00		0.00	1	33,33		0,00	2	66.67	7	233.33
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00
Microsetel 1 a	VIf	61190901	0.5	0.9		0.00		0.00		0.00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7	1	66,67		0,00		-0.00		0.00	1	33.33		0.00

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER					04	05	06	07	08	09
Oithona similis	V	6120090103	0.6	0.8	0.00	0.00	0.00	0.00	0.00	0.00
	VIf		0.7	1.0	0.00	0.00	0.00	0.00	0.00	0.00
	VIm		0.5	0.7	0.00	0.00	0.00	0.00	0.00	0.00
Oncaea sp	V	61200103	0.5	0.7	0.00	0.00	0.00	0.00	0.00	0.00
CHELICERATA					0.00	0.00	0.00	0.00	0.00	0.00
Halicaridae		58	0.2	0.3	0.00	0.00	0.00	0.00	0.00	0.00
PYCNOGONIDA					0.00	0.00	0.00	0.00	0.00	0.00
Protonymphon		60	0.2	0.4	0.00	0.00	0.00	0.00	0.00	0.00
CUMACEAN					0.00	0.00	0.00	0.00	0.00	0.00
Cumacea		6154	1.2	1.2	0.00	0.00	0.00	0.00	0.00	0.00
ISOPODA					0.00	0.00	0.00	0.00	0.00	0.00
Isopod		6158	0.8	2.2	0.00	0.00	0.00	0.00	0.00	0.00
AMPHIPODA					0.00	0.00	0.00	0.00	0.00	0.00
Hyperiid juveniles		6170	1.5	2.0	0.00	0.00	0.00	0.00	0.00	0.00
Gammarid		6169	1.2	2.0	0.00	0.00	0.00	0.00	0.00	0.00
EUPHAUSIACEA					0.00	0.00	0.00	0.00	0.00	0.00
Thysanoessa sp		61740209	5.5	8.0	0.00	0.00	0.00	0.00	0.00	0.00
Euphausiid nauplii		6174	0.5	0.6	0.00	0.00	0.00	0.00	0.00	0.00
Euphausiid protozoea		6174	0.0	0.5	0.00	0.00	0.00	0.00	0.00	0.00
			0.5	1.0	0.00	0.00	0.00	0.00	0.00	0.00
			1.0	1.5	0.00	0.00	0.00	0.00	0.00	0.00
Euphausi d zoea		6174	2.0	2.5	0.00	0.00	0.00	0.00	0.00	0.00
			2.5	3.0	0.00	0.00	0.00	0.00	0.00	0.00
			3.5	4.0	0.00	0.00	0.00	0.00	0.00	0.00
Euphausiid juven les		6174	4.5	6.0	0.00	0.00	0.00	0.00	0.00	0.00
DECAPODA					0.00	0.00	0.00	0.00	0.00	0.00
Caridea mysis		6[illegible]79	[illegible].5	7.[illegible]	0.00	0.00	0.00	0.00	33.33	0.00
Crangon mysis		617[illegible]22	[illegible].0	3.[illegible]	0.00	0.00	0.00	0.00	0.00	0.00
Pandalus sp		617[illegible]18	[illegible].0	25.[illegible]	0.00	0.00	0.00	0.00	0.00	0.00
Brachyuran zoea		6[illegible]84	[illegible].5	3.[illegible]	0.00	66.67	0.00	0.00	0.00	0.00
Pagurid zoea		6[illegible]83	[illegible].5	6.[illegible]	0.00	0.00	0.00	0.00	0.00	0.00
ECHINODERMATA					0.00	0.00	0.00	0.00	0.00	0.00
Bipinnaria larvae		81	0.6	0.7	0.00	0.00	0.00	0.00	0.00	0.00
Echinopluteus larvae		81	0.6	1.5	0.00	66.67	33.33	33.33	0.00	0.00
Auricularia larvae		81	0.4	1.0	0.00	0.00	0.00	0.00	0.00	0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER		04		05		06		07		18		19	
Brachiol ari a 1 arvae	81 1.5 2.5		0,00		0.00		0.00		0,00		0,'00		0.00
TUNICATA			0.00		0.00		0,00		0.00		0.00		0.00
Fritillaria	841302 1,5 2.0		0.00		0.00		0.00		0.00	1	33.33	3	100.00
VERTEBRATE			0.00		0.00		0.00		0.00		0,00		0.00
Fish eggs	8735 3.0 3,0		0.00		0.00		0.00		0.00		0.00		0.00
Fish larvae	8735 7.0 10.0		0.00		0.00		0,00	1	33.33	3	0.00		0,00
Herring 1 arvae	874701 6.0 9.0	1	66.67		0.00		0.00		0.00		33.33	1	0.00
MISCELLANEOUS			0,00		0,00		0.00		0.00		0.00		0.00
Smal 1 eggs	0.2 0.4		0.00	1	66,67	4	133,33	2	66.67		0.00		0.00
		211	14066.67	235	15666,67	177	5900.00	82	2733.33	190	6333.33	93	3100.00

SAMPLE NUMBER	20	21	45	46	47	48
Date	020590	020590	120590	120590	120590	120590
Site	39	39	36	36	36	36
Time	1150	1200	1650	1655	1700	1705
Mesh (urn)	25	25	25	25	25	25
Depth of tow (m)	25	25	10	20	30	40
Volume filtered (m^3)	0.03	0.03	0.03	0.03	0 . 0 3	0.03
Fraction enumerated	1	1	1	1	1	1

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	LENGTH mm MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA															
Tintinid	3540	0,1	0,3		0.00		0.00		0,00		0.00		0.00		0.00
Forami ni fera	3448	0,1	0.2		0.00		0.00		0.00		0.00		0.00		0.00
CTENOPHORA					0.00		0.00		0,00		0.00		0.00		0.00
Pleurobrachia	38020101	1.0	2,5		0,00		0.00		0.00		0.00		0.00		0.00
CNIDARIA					0.00		0.00		0.00		0.00		0.00		0,00
Medusa juveniles	3701	0.7	2.1		0,00		0.00		0.00		0.00		0.00		0.00
Ag 1 antha	37110411	1.0	3,0		0,00		0.00		0.00		0.00	1	33.33		0.00
		5.0	7,0		0.00		0.00		0.00	1	33.33	1	33.33	2	66.67
Euphysa	37030312	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Aurel la juveni le	37340302	1.8	3.5		0.00		0,00		0.00		0.00		0.00		0.00
Obelia	37040102	0.6	1,0	13	433,33	3	100.00	4	133,33		0.00		0.00		0.00
		1.1	2.0		0,00		0.00	6	200.00		0.00		0.00		0,00
		2.1	4.0		0,00		0.00		0.00		0,00		0.00		0.00
Rathkea	37031902	1,5	2,0		0,00		0.00	1	33,33		0,00		0.00		0.00
Sars i a	37030609	5.0	6.0		0,00		0.00		0,00		0.00		0.00		0.00
Probosci dactyl a	37050602	3.0	7.0		0,00		0.00		0,00		0.00		0,00		0.00
TREMATODA					0,00		0.00		0,00		0.00		0.00		0.00
F 1 atworms	3901	0.6	1,0		0.00		0,00		0.00		0.00	2	66.67		0.00
NEMATODA					0.00		0.00		0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5		0.00	1	33.33		0.00		0.00		0,00		0.00
ROTIFERA					0.00		0.00		0.00		0.00		0.00		0.00
Rot if ers	45	0.2	0.6		0.00		0.00		0.00		0.00		0.00		0.00
CHAETOGNATHA					0,00		0.00		0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00		0.00		0.00	1	33.33		0.00
Chaetognath juveniles	83.	3.0	7.0	2	66,67		0.00		0.00		0.00		0.00		0,00
BRYOZOA					0.00		0.00		0.00		0,00		0.00		0.00
Cyphonautes larvae	78	0.4	0.8		0.00		0.00		0.00		0.00		0,00		0.00
PHORONIDA					0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					20		21		45		46		47		48	
Actl notrocha 1 arvae		77	0.8	1,0		0.00		0.00		0.00		0,00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00		0.00		0.00
Limacina		51130101	0.6	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Nud i branch 1 arvae		5127	0.7	0.8		0.00		0.00		0.00		0.00		0.00		0,00
Bivalve veliger		55	0.0	0.2		0.00		0.00		0,00		0.00		0.00		0.00
			0.2	0.4		0.00		0,00		0,00		0.00		0.00		0,00
Gastropod vel i ger		51	0,0	0.2		0.00		0.00		0.00		0.00		0.00		0.00
			0.2	0.4		0,00		0.00		0,00		0.00	2	66.67		0,00
			0,4	0.6		0,00		0.00		0.00		0.00		0.00		0.00
POLYCHAETA						0.00		0.00		0.00		0.00		0,00		0.00
Spionid larvae		500143	0,8	4.0	8	266.67	11	366.67	11	366.67	1	33.33	1	33.33		0,00
Pol ynoid 1 awae		5001201'5	0.5	1.5		0.00		0,00	2							
Pol ychaete 1 arvae		5001	0.6	1,5	7	233.33	19	633.33	13	433.33	2	66.67	2	66.67	1	33.33
Tmchophore 1 awae		5001	0.2	0.6	72	2400.00	34	1133.33	81	2700.00	44	1466.67	21	700.00	6	200.00
Autolytus sp		50012301	3.0	3.5		0.00		0.00		0.00		0.00		0.00		0,00
CRUSTACEA						0.00		0.00		0,00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0,00		0.00		0.00		0.00		0.00
Naupl i i larvae		6130	0.2	0.8	3	100.00		0.00	2	66.67		0.00		0.00		0.00
Cypris larvae		6130	0.8	1,2		0,00		0.00	1	33.33		0.00	1	33,33	1	33,33
CLADOCERA						0.00		0,00		0.00		0,00		0.00		0.00
Podon		61090502	0.6	1.0		0.00		0.00		0.00		0.00		0.00		0.00
COPEPODA						0,00		0.00		0,00		0.00		0.00		0,00
Copepod nauplii		6118	0.0	0.2	3	100.00	2	66.67		0.00	1	33,33	1	33.33		0.00
			0.2	0.4	6	200,00	5	166.67	49	1633,33	11	366.67	8	266.67		0.00
			0.4	0.6	1	33.33		0.00	3	100,00		0.00		0.00		0.00
			0.6	1.0		0.00		0.00		0.00		0,00		0.00		0.00
Copepodites	I-III	6118	0,2	0.4		0.00		0.00	10	333.33		0.00	1	33.33		0.00
			0.4	0.6	5	166.67	6	200.00	27	900.00	14	466.67	1	33.33	1	33.33
			0.6	0,8	6	200.00	3	100.00	8	266.67	5	166.67	2	66,67		0.00
Epi labidocera sp	I	61182701	0.5	0.8		0.00		0.00		0.00		0,00		0.00		0.00
	II		0,8	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Epi 1 abidocera longi pedata	VIf	6118270102	2.7	3.1		0.00		0,00		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00		0.00		0.00		0.00		0 . 0 0
	IV		0.8	1.1		0.00		0.00		0.00		0,00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER					20		21		45		46		47		48	
	v		1.0	1.7		0.00		0.00		0.00		0.00		0.00		0.00
Tortanus discaudatus	VIf	6118300101	1.8	2.3		0.00		0.00		0,00		0.00		0.00		0,00
	VIm		1.6	2.2		0.00		0.00		0.00		0.00		0.00		0.00
Pseudocal anus sp. complex	IV	61180505	0.9	1.1		0.00		0.00	8	266.67	3	100.00	1	33.33		0,00
	Vf		1.1	1.3	1	33.33	2	66.67	11	366.67	33	1100.00	4	133.33	1	33.33
	Vm		1.0	1.3		0.00	3	100.00	8	266.67	16	533.33	4	133.33		0.00
	VIf		1.1	2.0		0.00		0.00	5	166.67	30	1000.00	12	400.00	27	900.00
	VIm		1.1	1.5		0.00		0.00	1	33.33	23	766.67	4	133.33	1	33,33
Microcalanus pygmeus pusi llus	V	61180504	0.6	0.7		0.00		0.00		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0.00		0.00		0.00		0.00		0.00		0.00
Centropages abdominalis	IV	6118170101	0.9	1.1		0.00		0.00	1	33.33		0.00		0.00		0,00
	v		1.1	1.3		0.00		0.00		0,00		0,00		0.00		0.00
	VIf		1.6	2.1		0.00		0.00		0.00		0.00		0.00		0,00
	VIm		1.4	1.5		0.00		0.00		0.00		0,00		0.00		0.00
Eurytemora herdmanii	v	61182002'03	0.9	1.2	1	33.33		0.00	2	66.67		0.00		0.00		0.00
	VIf		1.1	1.4		0.00	1	33.33	3	100.00	3	100.00	1	33.33		0.00
	VIm		1.1	1.4		0.00		0.00	2	66,67	1	33.33	1	33.33		0.00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.4		0.00		0.00		0.00		0.00		0.00		0.00
Acartia sp	i-IV	61182901	0.5	0.7	4	133.33	6	200.00	28	933.33		0.00		0.00		0.00
Acartia longiremis	V	6118290103	0.7	1.0		0,00		0.00		0.00		0.00		0.00		0.00
	VIf		1.0	1.3		0,00		0.00	1	33.33		0.00		0,00		0.00
	VIm		0.9	1.1		0,00		0.00	1	33.33		0.00		0.00	1	33.33
Acartia clausii	v	6118290101	0.6	0.8		0.00	7	233.33	8	266.67		0.00	1	33.33		0.00
	VIf		0.9	1.3		0.00	2	66.67	3	100,00		0.00		0.00		0.00
	VIm		0.8	1.2		0.00		0.00		0.00		0.00		0.00		0.00
Harpacticoida	v	6119	0.6	0.8		0.00	1	33.33		0.00		0.00		0.00		0,00
	VIf		0.7	1.0		0.00	5	166.67		0.00		0.00		0,00		0.00
Mi crosetel 1 a	VIf	61190901	0.5	0.9		0.00		0,00		0.00	1	33.33		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00		0.00		0,00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8		0,00		0.00		0.00		0.00		0.00		0.00
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		0.5	0.7		0.00		0.00		0.00		0,00		0.00		0,00
Oncaea sp	v	61200103	0.5	0.7	1	33.33		0,00		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0,00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER				20		21		45		46		47		48	
Halicaridae	58	0.2	0.3		0.00		0.00		0.00		0.00		0.00		0.00
PYCNOGONIDA					0.00		0.00		0.00		0.00		0.00		0.00
Protonymphon	60	0.2	0.4		0.00	2	66.67		0.00		0.00		0.00		0.00
CUMACEAN					0.00		0.00		0.00		0.00		0.00		0.00
Cumacea	6154	1.2	1.2		0.00		0.00		0.00		0.00		0.00		0.00
ISOPODA					0.00		0.00		0.00		0.00		0.00		0.00
Isopod	6158	0.8	2.2		0.00		0.00		0.00		0.00		0.00		0.00
AMPHIPODA					0.00		0.00		0.		0.		0.		0.00
Hyperiid juveniles	6170	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Gammarid	6169	1.2	2.0		0.00		0.00		0.00		0.00		0.00		0.00
EUPHAUSIACEA		.			0.00		0.00		0.00		0.00		0.00		0.00
Thysanoessa sp	61740209	5.5	8.0		0.00		0.00		0.00		0.00		0.00		0.00
Euphausiid nauplii	6174	0.5	0.6		0.00		0.00		0.00		0.00		0.00		0.00
Euphausiid protozoea	6174	0.0	0.5		0.00		0.00		0.00		0.00		0.00		0.00
		0.5	1.0	1	33.33		0.00		0.00		0.00		0.00		0.00
		1.0	1.5		0.00		0.00		0.		0.		0.		0.00
Euphausiid zoea	6174	2.0	2.5		0.		0.		0.00		0.00		0.00		0.00
		2.5	3.0		0.00		0.00		0.00		0.00		0.00		0.00
		3.5	4.0		0.00		0.00		0.00		0.00		0.00		0.00
Euphausiid juveniles	6174	4.5	6.0		0.00		0.00		0.00		0.00		0.00		0.00
DECAPODA					0.00		0.00		0.00		0.00		0.00		0.00
Caridea mysis	6179	2.5	7.0		0.00		0.00		0.00		0.00		0.00		0.00
Crangon mysis	61722	3.0	3.0		0.00		0.00		0.00		0.00		0.00		0.00
Pandalus sp	61718	1.0	25.0		0.00		0.00		0.		0.		0.		0.00
Brachyuran zoea	6 84	1.5	3.0		0.		0.		0.00		0.00	1	33.33		0.00
Pagurid zoea	6.83	1.5	6.0		0.00		0.00		0.00		0.00		0.00		0.00
ECHINODERMATA					0.00		0.00		0.00		0.00		0.00		0.00
Bipinnaria larvae	81	0.6	0.7		0.00		0.00		0.00		0.00		0.00		0.00
Echinopluteus larvae	81	0.6	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Auricularia larvae	81	0.4	1.0		0.00		0.00		0.00		0.00		0.00		0.00
Brachiolaria larvae	81	1.5	2.5		0.00		0.00		0.00		0.00		0.00		0.00
TUNICATA					0.00		0.00		0.		0.		0.00		0.00
Fritillaria	41302	1.5	2.0	1	33.33		0.00		0.00		0.00		0.00		0.00
VERTEBRATA					0.00		0.00		0.00		0.00		0.00		0.00
Fish eggs	8735	3.0	3.0		0.00		0.00		0.00		0.00		0.00		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER	20		21		45		46		47		48	
Fi sh 1 arvae	8735 7.0 10,0	0.00		0.00		0.00		0,00		0.00		0.00
Herri ng larvae	‘374701 6.0 9.0	1 33.33		2 66.67		0.00		0.00		0.00		0.00
MISCELLANEOUS		0.00		0.00		0.00		0.00		0.00		D.00
Smal 1 eggs	0,2 0.4	0.00		1 0.00		6 0.00		0.00		6 0,00		0.00
		136 4533.33		116 3866,67		306 10000.00		189 6300.00		80 2666.67		41 1366.67

SAMPLE NUMBER	56	57	58	71	72	73	74
Date	130590	130590	130590	190590	190590	190590	190590
Site	39	39	39	3	36	36	36
Time	1155	1200	1203	1235	1240	1245	1250
Mesh (urn)	25	25	25	25	25	25	25
Oepth of tow (m)	5	10	15	10	20	30	40
Volume filtered (m3)	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Fraction enumerated	1	1	1	0.25	1	1	1

SPECIES	TAXONOMIC STAGE CODE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	No PER STN	No PER M3
PROTOZOA																	
Tintinid	3540	0,1	0.3		0.00		0,00	4	133.33	2	266.67		0.00		0.00		0.00
Forami ni f era	3448	0,1	0.2		0.00		0.00	1	0.00		0.00		0.00		0.00		0.00
CTENOPHORA					0.00		0.00		0.00		0.00		0.00		0.00		0.00
Pleurobrachi a	38020101	1.0	2.5		0.00	1	33.33		0.00		0.00		0,00		0.00		0.00
CNIDARIA					0.00		0.00		0,00		0,00		0.00		0.00		0.00
Medusa juveni les	3701	0.7	2$1		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Aglantha	37110411	1.0	3,0		0.00		0.00		0.00		0,00		0.00		0.00		0.00
		5.0	7.0		0.00		0.00		0,00		0.00		0.00		0.00		0.00
Euphysa	37030312	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Aurelia juveni le	37340302	1.8	3.5		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Obelia	37040102	0,6	1,0	7	233.33	6	200.00	12	400.00		0,00	3	100.00		0.00		0.00
		1.1	2.0	1	33.33		0.00		0.00	1	133.33	7	366,67		0.00		0.00
		2.1	4.0		0.00		0.00		0.00		0.00	4	0.00		0.00		0.00
Rathkea	37031902	1.5	2.0		0.00		0.00		0.00	1	133.33		0,00		0,00		0.00
Sarsi a	37030609	5.0	6.0		0.00		0.00	1	33,33		0.00		0.00		0.00		0.00
Proboscidactyl a	37050602	3.0	7,0		0.00		0.00		33.33		0.00		0.00		0.00		0.00
TREM4TODA					0.00		0.00		0,00		0.00		0.00		0.00		0.00
Fl atworms	3901	0.6	1.0		0.00		0.00		0.00	3	400.00	1	33,33	1	33.33		0.00
NEMATODA					0.00		0,00		0,00		0.00		0.00		0.00		0,00
Nematodes	47	0.8	1.5		0.00		0.00		0.00		0.00		0.00		0.00		0.00
ROTIFERA					0,00		0.00		0.00		0.00		0.00		0.00		0.00
Rotifers	45	0.2	0.6		0,00		0,00		0.00		0.00		0.00		0,00		0.00
CHAETOGNATHA					0.00		0.00		0.00		0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27,0		0,00		0.00		0.00		0.00		0.00		0.00		0.00
Chaetognath juveni les	83	3.0	7.0		0.00		0.00	3	100.00		0.00	1	33.33		0.00		0.00
BRYOZOA					0.00		0.00		0.00		0.00		0.00		0,00		0,00
Cyphonautes 1 arvae	78	0.4	0,8		0.00		0.00		0.00		0.00		0.00		0.00		0.00
PHORONIDA					0.00		0,00		0,00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0.25mm mesh)

Actinotrocha larvae		7	0.8	∞		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
MOLLUSCA						0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
Limacina		51130101	0.6	2.0		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
Nudibranch larvae		5127	0.7	0.8		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
Bivalve veliger		55	0.0	0.2		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
			0.2	0.4		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
Gastropod veliger		51	0.0	0.2		0.00	2	66.67		0.00		0.00		0.∞		0.∞		0.∞
			0.2	0.4		33.33		0.00		0.00		0.00		0.∞		0.∞		0.∞
			0.4	0.6		0.00		0.00		0.00		0.00		0.00		33.33		0.00
POLYCHAETA						0.00		0.00		0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0	8	600.00	22	733.33	11	366.67	1	133.33	1	33.33		0.00		0.00
Polynoid larvae		5-012015	0.5	1.5	1			0.00		0.00		0.00		0.00		0.00		0.00
Polychaete larvae		5001	0.6	1.5	28	933.33	29	966.67	16	533.33	48	6400.00	7	233.33	1	33.33		0.00
Trochophore larvae		5001	0.2	0.6	87	2900.00	137	4566.67	80	2666.67	81	10800.00	61	2033.33	5	500.00	7	233.33
Autolytus sp		5-012301	3.0	3.5		0.00		0.00		0.00		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	9	300.00	6	200.00	2	66.67		0.00		0.00		0.00		0.00
Cypris larvae		6130	0.8	1.2	1	33.33		0.00	1	33.33	1	133.33		0.00		0.00		0.00
CLADOCERA						0.00		0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00
COPEPODA						0.00		0.00		0.00		0.00		0.00		0.00		0.00
Copepod nauplii		6118	0.0	0.2	5	166.67	2	66.67	1	33.33	5	666.67	4	133.33	1	33.33		0.00
			0.2	0.4	23	766.67	21	700.00	4	133.33	50	6666.67	15	500.00	4	33.33		33.33
			0.4	0.6		0.00		0.00		0.00		0.00		0.00		0.00		0.00
			0.6	0.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Copepodites	I-III	6118	0.2	0.4	4	133.33	7	233.33	4	133.33	6	800.00	4	133.33		0.00		0.00
			0.4	0.6	5	166.67	10	333.33	4	133.33	10	1333.33	7	233.33		33.33		33.33
			0.6	0.8	2	66.67	1	33.33	1	33.33	6	800.00	5	166.67		0.00		33.33
Epilabidocera sp	I	61182701	0.5	1.8		0.00		0.00		0.00		0.00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00
	III		1.1	3.5		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Epilabidocera longipedata	VIf	6118270102	2.7	1		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
Tortanus sp	III	61183001	0.7	0.9		0.00	2	66.67	2	66.67	1	133.33		0.∞		0.∞		0.∞
	IV		0.8	1.1		0.00		0.00		0.00	1	133.33		0.∞		0.∞		0.∞
	V		1.0	1.7		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞
Tortanus discaudatus	VIf	6118300101	1.8	2.3		0.00		0.00		0.00		0.00		0.∞		0.∞		0.∞

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0. 25mm mesh)

	VIm		1,6	2,2		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Pseudocalanus sp. ccmplex	IV	61180505	0.9	1.1		0.00	1	33,33		0.00		0.00	9	300. 00	1	33.33		0.00		0.00		0.00	
	Vf		1.1	1.3	1	33.33		0.00		0.00	3	400.00	10	333.33		0,00		0.00		0.00		0.00	
	Vm		1.0	1.3		0.00		0,00		0.00	2	266.67	17	566.67	1	33.33	1	33.33		0.00		0.00	
	VIf		1.1	2.0		0,00		0.00		0.00	2	266.67	10	333.33	14	466.67	15	500.00		0.00		0.00	
	VIm		1.1	1.5	1	33.33		0.00		0.00	2	266,67	9	300.00	3	100.00	3	100.00		0.00		0.00	
Microcalanus pygmeus pusi 1 lus	V	"180504	0.6	0.7		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Metridia sp	I-III	.,1181602	0.5	1.1		0.00		0.00		0.00		0.00		0.00		0,00		0.00		0.00		0.00	
Centropages abdomi nal is	IV	61'19170101	0.9	1.1	2	66,67	2	66.67	1	33.33		0.00		0.00		0.00		0.00		0.00		0.00	
	V		1.1	1.3		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	VIf		1.6	2.1		0.00		0,00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	VIm		1.4	1.5		0.00		0.00		0,00		0.00		0.00		0.00		0.00		0.00		0.00	
Eurytemora herdmani i	v	6118200203	0.9	1.2	3	100.00	3	100.00	2	66.67	11	1466.67	4	133,33	1	33.33		0.00		0.00		0.00	
	VIf		1.1	1.4	1	33.33		0,00		0.00		0.00	1	33.33		0.00		0.00		0.00		0.00	
	VIm		1.1	1.4	2	66.67	2	66,67	3	100.00	3	400.00		0.00		0.00		0.00		0.00		0.00	
Eurytemora paci f i ca	VIf	6118200206	1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	VIm		1.4	1.4		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Acartia sp	I-IV	61182901	0.5	0,7	24	600,00	15	500.00	1	33.33	19	2533.33	6	200,00		0.00		0.00		0.00		0.00	
Acartia longiremis	v	6118290103	0.7	1,0		0.00	2	66.67		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	VIf		1.0	1.3		0.00		0.00		0.00		0,00		0.00		0.00		0.00		0.00		0.00	
	VIm		0.9	1.1	2	66.67		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Acartia clausii	v	6118290101	0,6	0.8	6	200,00	5	166.67	1	33.33	11	1466.67	3	100.00		0.00		0.00		0.00		0.00	
	VIf		0.9	1.3	9	300.00	8	266.67	1	33,33	4	533.33	3	100.00		0.00		0.00		0.00		0.00	
	VIm		0.8	1.2	5	166,67	1	33.33		0.00	2	266.67	3	100.00		0.00		0.00		0.00		0.00	
Harpacticoida	v "	6119	0,6	0.8	5	166.67	2	66,67	4	133.33		0.00		0,00		0,00		0.00		0.00		0.00	
	VIf		0.7	1.0		0.00		0.00		0.00	1	133.33		0.00		0.00		0.00		0.00		0.00	
Mi crosetel l a	VIf	61190901	0,5	0,9		0,00	5	166.67	17	533.33		0.00		0.00		0.00		0.00		0.00		0.00	
Oithona sp	I-IV	61200901	0.4	0.7		0,00		0.00		0.00		0.00		0.00		0.00		0,00		0.00		0.00	
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0,00		0,00		0.00		0.00		0.00		0.00	
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	VIm		0.5	0.7		0,00		0.00		0,00		0.00		0.00		0.00		0,00		0.00		0,00	
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0.00		0.00		0,00		0.00		0.00		0.00		0.00	
CHELICERATA						0.00		0.00		0.00		0,00		0.00		0.00		0,00		0.00		0,00	
Hal icaridae		58	0.2	0.3		0.00		0.00		0.00		0.00		0,00		0.00		0.00		0.00		0.00	
PYCNOGONI DA						0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Protonymphon		60	0.2	0.4		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
CUMACEAN						0.00		0.00		0.00		0.00		0,00		0.00		0.00		0.00		0.00	

DENSITY OF ZOOPLANKTON CAPTURED FROM PORT MOLLER 1990 (0.25mm mesh)

Cumacea	6154	1.2	1,2		0.00			0.00			0.00			0.00			.0.00			0.00			0.00	
ISOPODA					0.00			0.00			0.00			0.00			0.00			0,00			0.00	
Isopod	6158	0.8	2,2		0.00			0.00			0.00			0.00			0.00			0.00			0,00	
AMPHIPODA					0.00			0.00			0.00			0,00			0,00			0.00			0.00	
Hyperi id juveniles	6170	1.5	2.0		0.00			0.00			0.00			0.00			0.00			0,00			0.00	
Gammarid	6169	1.2	2.0		0.00		1	33,33			0.00			0,00			0.00			0.00			0.00	
EUPHAUSIACEA					0,00			0,00			0.00			0.00			0.00			0.00			0.00	
Thysanoessa sp	61740209	5.5	8.0		0.00			0.00			0.00			0.00			0.00			0.00			0,00	
Euphausi id naupl i i	6174	0.5	0.6		0.00			0.00			0.00			0.00			0.00			0.00			0.00	
Euphausi Id protozoea	6174	0.0	0.5		0,00		2	66,67			0.00			0,00			0.00			0.00			0.00	
		0.5	1.0	1	33.33			0.00			0.00			0,00			0.00			0.00			0.00	
		1.0	1.5	2	66.67			0,00			0,00			0.00			0.00			0,00			0.00	
Euphausi id zoea	6174	2.0	2.5		0.00			0.00			0.00			0.00			0.00			0.00			0.00	
		2.5	3.0		0.00			0.00			0.00			0.00			0.00			0.00			0.00	
		3.5	4.0		0.00			0.00			0.00			0,00			0,00			0.00			0.00	
Euphausi id juveniles	6174	4.5	6,0		0.00			0,00			0.00			0.00			0.00			0,00			0.00	
DECAPODA					0.00			0.00			0.00			0,00			0,00			0.00			0.00	
CarIdea mysis	6179	2,5	7.0		0,00			0,00			0.00			0,00			0.00			0.00			0.00	
Crangon mysis	617922	3.0	3,0		0.00			0.00			0.00			0,00			0.00			0.00			0.00	
Pandalus sp	617918	11.0	25.0		0,00			0.00			0.00			0.00			0.00			0.00			0.00	
Brachyuran zoea	6184	1.5	3.0		0.00			0.00			0.00			0,00			0.00			0.00			0.00	
Pagurid zoea	61B3	1.5	6.0		0,00			0.00			0.00			0.00			0.00			0.00			0.00	
ECHINODERMATA					0.00			0.00			0.00			0.00			0.00			0.00			0.00	
Bipinnaria larvae	81	0.6	0,7		0.00			0,00			0.00			0.00			0,00			0.00			0.00	
Echinopluteus larvae	81	0.6	1.5		0.00			0.00			0.00			0,00			0,00			0.00			0.00	
Auricularia larvae	81	0.4	1.0		0.00			0,00			0.00			0.00			0.00			0.00			0.00	
Brachiolaria larvae	81	1.5	2.5		0.00			0.00			0,00			0.00			0.00			0.00			0.00	
TUNICATA					0.00			0.00			0,00			0,00			0.00			0.00			0.00	
Fritillaria	841302	1.5	2,0		0.00			0.00		1	33,33			0.00			0.00			0.00			0.00	
VERTEBRATA					0.00			0.00			0.00			0.00			0.00			0.00			0.00	
Fish eggs	8735	3.0	3.0		0,00			0.00			0.00			0,00			0.00			0.00			0.00	
Fish larvae	8735	7.0	10,0		0,00			0.00			0,00		1	133.33			0.00			0.00			0.00	
Herring larvae	874701	6.0	9.0	1	33,33			0,00		1	33,33			0.00			0.00			0.00			0,00	
MISCELLANEOUS					0.00			0.00			0,00			0.00			0.00			0.00			0.00	
Small eggs		0.2	0.4		0.00			0.00			0,00			0.00		5	166.67		1	33.33		1	33.33	
				257	8566.67		295	9833.33		179	.5966,67		278	37066,67		200	6666.67		45	1500.00		30	1000.00	

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER						86			87			88			89			102			103			
Date						200590			200590			200590			200590			2 7 0 5 9 0			270590			
Site						39			39			39			39			39			39			
Time						1315			1320			1325			1330			0850			0855			
Mesh (urn)						25			2 5			25			25			25			25			
Depth of tow (m)						5			10			15			20			5			10			
Volume filtered (m^3)						0,03			0.03			0.03			0,03			0.03			0.03			
Fracti on enumerated						1			1			1			1			1			1			
SPECIES	TAXONOMIC STAGE	CODE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA																						
Tintinid		3540	0.'1	0.3	2	66.67		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Foramini fera		3448	0,1	0.3	1	33.33		0.00		0,00		0.00		0.00		0.00		0,00		0.00		0.00
CTENOPHORA						0.00		0.00		0.00		0.00		0.00		0.00		0.00		0,00		0.00
Pleurobrachia		38020101	1.0	2.5		0.00		0.00		0.00		0.00		0.00		0,00		0.00		0.00		0.00
CNIDARIA						0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Medusa juveni les		3701	0.7	2,1		0.00		0,00		0.00		0.00		0.00		0,00		0,00		0,00		0,00
Aglantha		37110411	1.0	3.0		0,00		0.00		0.00		0,00		0.00		0.00		0.00		0.00		0.00
			5.0	7.0		0.00		0,00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Euphysa		37030312	1.5	2.0		0,00		0.00		0,00		0,00	1	33.33		0.00	1	33.33		0.00		0.00
Aurelia juvenil e		37340302	1.8	3.5		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Obelia		37040102	0,6	1.0	4	133.33	5	166.67		0.00	1	33.33		0.00		0.00		0.00		0.00		0.00
			1.1	2.0	1	33.33		0.00		0,00		0.00		0.00		0.00		0.00		0.00		0.00
			2.1	4.0		0.00		0.00		0.00		0,00		0.00		0.00		0.00		0.00		0.00
Rathkea		37031902	1.5	2.0		0.00		0.00		0.00		0,00		0.00		0.00		0.00		0.00		0.00
Sarsi a		37030609	1.5	3.0	1	33.33		0.00		0.00		0.00		0.00		0.00		0,00		0.00		0,00
Proboscidactyl a		37050602	3.0	7.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
TREMATODA						0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Fl atworms		3901	0.6	1,5		0.00		0.00	1	33,33		0,00	3	100.00		0.00		0.00		0.00		0.00
NEMATODA						0,00		0,00		0.00		0,00		0.00		0.00		0.00		0.00		0.00
Nematodes		47	0.8	1.5		0.00	1	33.33		0..00	1	33.33		0.00		0,00		0.00		0,00		0,00
ROTIFERA						0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Roti fers		45	0.2	0,6		0.00		0,00		0.00		0.00		0.00		0.00	1	33.33		0.00		0.00
CHAETOGNATHA						0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					86		87		88		89		102		103	
Sagitta elegans		8300000303	15,0	27,0		0.00		0.00		0.00		0.00		0.00		0.00
Chaetognath juveni les		83	2.0	7.0		0.00		0.00		0.00		0.00	1	33.33	3	100moo
BRYOZOA						0.00		0.00		0.00		0.00		0.00		0.00
Cyphonautes 1 arvae		78	0.4	0.8		0.00		0.00		0.00		0.00		0.00		0.00
PHORONIDA						0,00		0.00		0.00		0.00		0.00		0.00
Act I notrocha 1 arvae		77	0.8	1.0		0,00		0.00		0.00		0.00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00		0,00		0.00
Limaci na		51130101	0.6	2.0		0,00		0.00	1	33.33		0.00		0.00		0,00
Nudi branch l arvae		5127	0,7	0.8		0.00	1	33.33		0.00		0.00		0.00		0.00
Bivalve vel iger		55	0.0	0.2		0.00		0.00		0.00	1	33.33	1	33.33		0.00
			0.2	0,4		0,00		0.00		0.00		0.00		0.00		0,00
Gastropod vel iger		51	0.0	0.2	1	33.33		0,'00		0.00		0.00		0,00		0.00
			0.2	0,4		0.00		0.00		0.00		0.00		0.00	2	66.67
			0.4	0.6	1	33.33		0.00		0.00		0,00		0.00		0.00
POLYCHAETA						0.00		0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0,8	4,0	15	500.00	11	366.67	3	100.00	4	133,33	19	633.33	14	466.67
Pol ynoid 1 arvae		50012015	0.5	1.5		0.00		0.00		0,00		0,00		0.00		0.00
Pol ychaete 1 arvae		5001	0.6	1.5	7	233.33	23	766,67	8	266,67	15	500.00	31	1033.33	41	1366.67
Trochophore 1 arvae		5001	0.2	0,6	36	1200,00	26	866.67	36	1200.00	56	1866,67	30	1000.00	35	1166.67
Autolytus sp		50012301	3	3.5		0,00		0,00		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0.00		0.00		0,00
Naupl i i larvae		6130	0.2	0.8	60	2000.00	74	2466.67	34	1133.33	10	333.33	39	1300.00	29	966.67
Cypris larvae		6130	0,8	1.2		0.00		0.00		0.00		0.00		0,00		0,00
CLADOCERA						0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1,0		0.00		0.00		0.00		0,00		0.00		0.00
COPEPODA						0,00		0.00		0,00		0.00		0.00		0.00
Copepod naupl i i		6118	0.0	0.2	1	33.33		0.00	1	33.33		0.00	2	66.67		0.00
			0,2	0.4	11	366.67	9	300.00	6	200.00	9	300,00	13	433.33	9	300,00
			0.4	0.6		0.00		0.00		0,00		0.00	1	33.33	1	33.33
			0.6	1.0		0.00		0.00		0.00		0.00		0.00		0.00
Copepodi tes	I-III	6118	0.2	0.4	1	33.33		0.00		0.00		0.00	1	33.33		0,00
			0.4	0.6	1	33.33	1	33.33	2	66.67		0.00	2	66.67	1	33.33
			0.6	0.8		0.00	3	100.00		0,00		0.00		0.00		0.00
Epi labidocera sp	I	61182701	0,5	0.8		0,00		0.00		0,00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					86		87		88		89		102		103	
	II		0.8	1.0		0.00		0.00		0.00		0.00		0.00		0,00
	III		1.1	1.5		0.00		0.00		0.00		0,00		0.00		0.00
Epi labidocera longi pedata	VIm	6118270102	2,7	3,1		0.00		0.00		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00		0.00		0.00		0.00		0.00
	IV		0.8	1.1		0,00	2	66.67		0.00		0,00	2	66,67	1	33.33
	v		1.0	1.7		0.00		0.00		0.00		0.00		0.00		0.00
Tortanus di scaudatus	VIf	6118300101	1.8	2,3		0,00		0.00		0.00		0.00		0,00		0.00
	VIm		1.6	2.2		0.00		0.00		0.00		0.00		0.00		0.00
Pseudocal anus sp. complex	IV	61180505	0.9	1.1		0.00		0.00		0.00		0.00		0.00	2	66.67
	Vf		1.1	1.3		0.00		0,00		0.00	1	33.33		0.00	1	33.33
	Vm		1.0	1.3		0.00		0,00		0.00		0.00	2	66.67		0.00
	VIf		1.1	2.0		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.1	1.5	1	33.33		0,00		0.00		0.00		0.00	1	33.33
Microcalanus pygmeus pusi l lus	V	61180504	0.6	0,7		0,00	2	66,67		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0.00		0.00		0,00		0.00		0,00		0,00
Centropages abdominalis	IV	6118170101	0,9	1.1		0,00		0,00		0.00		0,00		0.00		0.00
	v		1.1	1.3		0.00		0.00		0.00		0,00		0.00		0.00
	VIf		1.6	2.1		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.5		0.00		0.00		0.00		0,00		0.00		0.00
Eurytemora herdmanii	v	6118200203	0,9	1,2	3	100.00	5	166.67	1	33,33	7	233.33	3	100.00	3	100.00
	VIf		1.1	1.4		0.00	2	66,67	3	100,00	4	133.33		0.00	2	66.67
	VIm		1.1	1.4	3	100,00	5	166,67	4	133.33	9	300,00	2	66,67	3	100.00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0.00		0.00		0,00		0.00		0.00		0.00
	VIm			1.4		0.00		0,00		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	15	500.00	18	600.00	26	866.67	13	433,33	12	400.00	7	233.33
Acartia longiremis	v	6118290103	0.7	1.0		0.00		0.00		0.00		0.00		0,00		0.00
	VIf		1.0	1.3		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		0.9	1.1	1	33.33		0,00		0.00		0.00		0.00		0.00
Acartia clausii	v	6118290101	0.6	0.8	3	100.00	5	166.67	8	266,67	5	166,67	1	33.33	3	100.00
	VIf		0.9	1.3	51	1700.00	39	1300.00	19	633,33	26	866.67	17	566.67	22	733.33
	VIm		0.8	1,2	29	966.67	35	1166,67	22	733.33	26	866.67	9	300.00	10	333.33
Harpacticoida	v	6119	0.6	0.8	14	466.67	10	333,33	10	333.33	4	133,33	2	66.67	4	133.33
	VIf		0,7	1,0	4	133.33	17	566.67	12	400.00	7	233,33	12	400.00	4	133.33
Microsetel 1 a	VIf	61190901	0.5	0.9		0.00		0.00	5	166.67	3	100,00	1	33.33	2	66.67
Oithona sp	I-IV	61200901	0.4	0.7		0.00	1	33.33		0.00		0.00	1	33,33		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER					86		87		88		89		102		103	
Oithona similis	V	6120090103	0.6	0.8		0.00		0.00		0,00		0.00		0.00		0.00
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		0.5	0.7		0.00		0.00		0,00		0.00		0.00		0.00
Oncaea sp	v	61200103	0,5	0.7		0.00		0.00		0.00		0,00		0.00		0.00
CHELICERATA						0.00		0.00		0,00		0.00		0.00		0.00
Halacaridae		58	0.2	0,3		0.00	1	33.33		0.00		0.00		0.00		0.00
PYCNOGONIDA						0.00		0.00		0.00		0,00		0.00		0.00
Protonymphon		60	0,2	0,4		0.00		0.00		0.00		0.00		0.00		0.00
CUMACEAN						0.00		0.00		0,00		0.00		0.00		0.00
Cumacea		6154	1,2	1.2		0.00		0.00		0.00		0,00		0.00		0.00
ISOPODA						0.00		0.00		0,00		0.00		0.00		0.00
Isopod		6158	0.8	2.2		0.00		0.00		0,00		0.00		0,00		0.00
AMPHIPODA						0,00		0.00		0.00		0.00		0.00		0,00
Hyperi id juveni les		6170	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Gammarid		6169	1.2	2.5	2	66.67	1	33.33		0.00	1	33,33		0.00		0.00
EUPHAUSIACEA						0.00		0.00		0.00		0.00		0,00		0.00
Thysanoessa sp		61740209	5.5	8.0		0,00		0.00		0.00		0.00		0.00		0,00
Euphausiid naupli i		6174	0,5	0.6		0.00		0.00		0.00		0.00		0.00		0.00
Euphausi id protozoea		6174	0,0	0,5		0.00		0.00		0.00		0.00		0.00		0.00
			0.5	1.0		0.00		0.00		0.00		0.00		0.00		0.00
			1.0	1.5		0,00		0.00		0.00		0.00		0.00		0,00
Euphausi id zoea		6174	2.0	2,5		0,00		0.00		0,00		0.00		0.00		0.00
			2.5	3.0		0,00		0.00		0.00		0.00		0.00		0.00
			3.5	4.0		0.00		0.00		0.00		0.00		0.00		0.00
Euphausi id juveniles		6174	4.5	6,0		0,00		0,00		0.00		0,00		0.00		0.00
DECAPODA						0.00		0.00		0.00		0,00		0.00		0.00
Cari dea zoea		6179	1,5	4.0	6	200.00	3	100,00		0.00		0.00	2	66.67	1	33.33
Crangon mysis		617922	3.0	3,0		0.00		0.00		0.00		0,00		0.00		0.00
Pandalus sp		617918	11.0	25.0		0.00		0.00		0.00		0.00		0,00		0.00
Brachyuran zoea		6184	1,5	3.0		0.00		0,00		0.00		0.00		0.00		0.00
Pagurid zoea		6183	1,5	6,0		0.00		0.00		0.00		0.00		0.00		0.00
ECHINODERMATA						0.00		0.00		0.00		0.00		0.00		0.00
Bipinnaria larvae		81	0.6	0.8		0.00		0,00		0,00		0.00		0.00		0.00
Echi nopluteus 1 arvae		81	0.6	1.5		0,00		0,00		0.00		D.00		0.00		0.00
Auricularia larvae		81	0,4	1.0		0.00		0.00		0.00		0.00		0.00		0,00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER				86		87		88		89		102		103	
Brachiolaria 1 arvae	81	1.5	2.5		0.00		0,00		0.00		0.00		0.00		0.00
TUNICATA					0.00		0.00		0.00		0.00		0.00		0.00
Fritillaria	841302	1.5	3.0	1	33.33		0.00		0.00		0.00	2	66.67	7	233.33
VERTEBRATA					0.00		0.00		0.00		0.00		0.00		0.00
Fi sh eggs	8735	0.8	3.0		0.00		0.00		0.00		0.00		0.00		0.00
Fish larvae	8735	7.0	10.0		0.00		0.00		0.00		0.00		0.00		0.00
Herring larvae	874701	6.0	9.0		0.00		0.00		0.00		0.00		0.00		0.00
MISCELLANEOUS					0,00		0,00		0.00		0.00		0.00		0.00
Small eggs		0.2	0.4		0.00		0.00		0.00		0.00		0.00		0.00
TOTALS FOR SAMPLE				274	9133,33	300	10000,00	202	6733.33	204	6800.00	211	7033.33	210	7000.00

SAMPLE NUMBER	104	105	112	113	114	115
Date	270590	270590	280590	280590	280590	280590
Site	39	39	36	36	36	36
Time	0900	0905	1147	1155	1200	1205
Mesh (urn)	25	25	25	25	25	25
Depth of tow (m)	15	20	10	20	30	40
Volume filtered (m^3)	0.03	0.03	0,03	0.03	0 . 0 3	0.03
Fraction enumerated	1	1	1	1	1	1

SPECIES	TAXONOMIC STAGE CODE	LENGTH mm MIN	LENGTH mm MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	No PER M3
PROTOZOA															
Tintinid	3540	0,1	0,3	9	300.00	8	266.67		0.00		0.00		0.00		0.00
Foraminifera	3448	0.1	0.3		0.00	1	33,33		0.00		0.00		0.00		0.00
CTENOPHORA					0,00		0.00		0.00		0.00		0.00		0,00
Pleurobrachi a	38020101	1.0	2.5		0.00		0.00		0.00	1	33.33		0.00		0.00
CNIDARIA					0.00		0.00		0.00		0.00		0,00		0.00
Medusa juveniles	3701	0,7	2,1		0.00		0.00		0.00		0.00		0.00		0.00
Agl antha	37110411	1.0	3.0		0,00		0.00		0.00		0.00		0.00		0.00
		5.0	7.0		0.00		0.00		0,00		0.00	2	66.67		0.00
Euphysa	37030312	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Aurelia juvenile	37340302	1.8	3.5		D.00		0.00		0,00		0.00		0.00		0.00
Obelia	37040102	0.6	1,0	2	66,67		0.00	2	66.67		0.00		0.00		0.00
		1,1	2.0		0.00		0.00	39	1300,00	6	200.00	1	33.33		0.00
		2.1	4.0		0.00		0.00	26	866.67	2	66.67		0.00		0,00
Rathkea	37031902	1.5	2.0		0,00		0,00	6	200.00		0.00		0.00		0.00
Sarsi a	37030609	1.5	3.0		0.00		0.00		0,00		0.00		0.00		0.00
Proboscidactyl a	37050602	3.0	7.0		0.00		0,00		0.00		0.00		0.00		0.00
TREMATODA					0.00		0.00		0.00		0.00		0.00		0.00
Fl atworms	3901	0.6	1.5		0.00	1	33.33	2	66.67	8	266,67	2	66.67		0.00
NEMATODA					0.00		0.00		0,00		0.00		0.00		0.00
Nematodes	47	0,8	1,5		0.00		0.00		0.00		0.00		0.00		0.00
ROTIFERA					0.00		0.00		0.00		0.00		0.00		0.00
Rot if ers	45	0.2	0.6	5	166.67	4	133.33		0,00		0.00		0.00		0,00
CHAETCGNATHA					0.00		0.00		0.00		0.00		0.00		0,00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00		0.00		0.00		0.00		0.00
Chaetognath juveni 1 es	83	2.0	7.0		0.00	1	33.33	8	266.67	2	66.67		0.00		0.00
BRYOZOA					0,00		0.00		0.00		0.00		0.00		0.00
Cyphonautes 1 awae	78	0.4	0.8		0.00		0.00		0.00		0.00		0.00		0.00
PHORONIDA					0,00		0.00		0.00		0.00		0.00		0,00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					104		105		112		113		114		115	
Actl notrocha 1 arvae		77	0.8	1.0		0,00		0.00		0.00		0,00		0.00		0.00
MOLLUSCA						0.00		0,00		0.00		0.00		0.00		0.00
Limacina		51130101	0.6	2,0		0.00		0.00		0.00		0.00		0,00		0.00
Nudi branch 1 arvae		5127	0.7	0.8		0.00		0.00		0.00		0.00		0.00		0.00
Bivalve vel iger		55	0.0	0.2		0.00	1	33,33		0.00		0.00		0.00		0.00
			0.2	0.4		0.00		0.00		0.00		0.00		0.00		0.00
Gastropod vel iger		51	0.0	0.2	3	100.00		0.00		0.00		0.00		0.00		0.00
			0.2	0.4	4	133.33		0.00	2	66.67		0.00	1	33,33		0.00
			0.4	0.6		0.00		0.00		0.00	1	33.33		0.00		0.00
POLYCHAETA						0.00		0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4,0	10	333.33	18	600.00	73	2433,33	8	266.67		0,00		0.00
Polynoid larvae		50012015	0.5	1.5		0.00		0.00		0.00		0,00		0.00		0.00
Polychaete larvae		5001	0.6	1.5	29	966.67	12	400.00	9	300.00	6	200.00		0.00		0.00
Trochophore larvae		5001	0.2	0.6	21	700.00	18	600.00	34	1133.33	8	266.67	4	133,33	3	100.00
Autolytus Sp		50012301	3	3,5	1	33,33		0,00		0.00		0.00		0,00		0.00
CRUSTACEA						0.00		0.00		0,00		0,00		0,00		0.00
CIRRIPEDIA						0.00		0,00		0,00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	12	400.00	5	166,67	1	33.33	1	33.33		0.00		0.00
Cypris larvae		6130	0.8	1.2	1	33.33		0.00		0,00		0.00		0.00		0.00
CLADOCERA						0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0,6	1,0		0.00		0.00		0,00		0.00		0.00		0.00
COPEPODA						0.00		0.00		0.00		0.00		0.00		0.00
Copepod nauplii		6118	0,0	0.2	1	33.33	2	66.67	9	300,00	1	33.33		0.00		0.00
			0.2	0.4	3	100.00	3	100.00	61	2033.33	9	300.00	2	66.67		0.00
			0.4	0.6		0.00	1	33.33		0,00		0.00		0.00		0.00
			0.6	1.0		0.00		0.00		0.00		0.00		0.00		0.00
Copepodites	I-III	6118	0.2	0,4	1	33.33		0.00	4	133,33	2	66.67		0.00		0.00
			0.4	0.6	1	33,33	1	33.33	22	733.33	4	133.33		0.00		0,00
			0.6	0.8	1	33.33	1	33.33	26	866,67	3	100.00		0.00		0.00
Epilabidocera sp	I	61182701	0.5	0.8		0.00		0.00		0.00		0.00		0.00		0.00
	II		0.8	1,0		0.00		0,00		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0.00		0.00		0.00		0,00		0.00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1		0.00		0,00		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00	2	66.67		0.00		0,00		0.00
	IV		0.8	1,1		0,00		0.00	1	33.33		0.00		0,00		0,00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MÖLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					104		105		112		113		114		115	
	v		1.0	1.7		0.00		0.00		0.00		0.00		0.00	1	33.33
Tortanus d i scaudatus	VIf	6118300101	1.8	2,3		0.00		0.00		0.00		0.00		0,00		0.00
	VIm		1.6	2,2		0.00		0.00		0.00		0.00		0.00		0,00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1		0.00		0,00	7	233.33	2	66.67		0.00		0.00
	Vf		1.1	1.3	2	66.67	2	66.67	15	500.00	11	366.67	2	66.67	6	200.00
	Vm		1.0	1.3		0.00		0.00	14	466.67	7	233,33	2	66.67	1	33.33
	VIf		1.1	2.0		0.00	1	33,33	2	66.67	22	733.33	11	366.67	22	733.33
	VIm		1.1	1.5		0.00	1	33.33	6	200,00	7	233.33		0.00		0.00
Microcalanus pygmeus pusi 1 lus	V	61180504	0.6	0,7		0.00		0,00		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0.00		0.00		0,00		0.00		0.00		0.00
Centropages abdominal is	IV	6118170101	0.9	1.1		0.00		0.00		0,00		0.00		0,00		0.00
	v		1.1	1.3		0.00		0.00		0.00		0.00		0,00		0.00
	VIf		1.6	2.1		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Eurytemora herdmani i	v	6118200203	0.9	1.2	1	33.33	1	33.33	3	100.00	2	66.67		0.00		0.00
	VIf		1.1	1.4	2	66.67	2	66,67		0.00	11	366.67		0.00		0.00
	VIm		1.1	1.4	2	66,67	2	66,67	7	233.33	1	33.33	1	33.33		0.00
Eurytemora paci f ica	VIf	6118200206	1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
	VIm			1,4		0.00		0.00		0,00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	5	166.67	1	33.33	8	266,67		0.00		0.00		0.00
Acartia longiremis	v	6118290103	0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		1.0	1.3		0.00		0,00	1	33,33		0.00		0,00		0.00
	VIm		0.9	1,1		0.00		0.00		0.00		0.00		0.00	1	33.33
Acartia clausi i	v	6118290101	0,6	0.8		0.00		0,00	6	200.00		0,00		0.00		0.00
	VIf		0.9	1.3	6	200.00	1	33.33	16	533.33	3	100.00		0.00		0.00
	VIm		0.8	1.2	9	300.00	5	166.67	3	100.00		0.00		0.00	1	33.33
Harpacticoida	v	6119	0.6	0,8	1	33.33	1	33.33		0.00		0.00		0,00		0.00
	VIf		0.7	1.0	11	366.67	14	466,67		0.00		0.00		0.00		0.00
Microsetel1 a	VIf	61190901	0,5	0,9	3	100.00	6	200.00		0.00	1	33.33		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00		0.00		0.00		0.00		0.00
Oithona simi 1 is	v	6120090103	0.6	0,8		0.00		0.00		0.00		0.00		0,00		0.00
	VIf		0.7	1.0		0,00		0.00		0.00		0,00		0.00		0.00
	VIm		0.5	0.7		0,00		0.00		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0,7		0.00		0.00		0.00		0.00		0,00		0.00
CHELICERATA						0.00		0.00		0.00		0,00		0.00		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER		104	105	112	113	114	115
Hal acari dae	58 0.2 0.3	0.00	0.00	0.00	0,00	0.00	0.00
PYCNOGONI DA		0.00	0.00	0.00	0.00	0.00	0.00
Protonymphon	60 0.2 0.4	0.00	0,00	0.00	0.00	0.00	0.00
CUMACEAN		0.00	0.00	0.00	0,00	0.00	0.00
Cumacea	6154 1.2 1,2	0.00	0,00	0.00	0.00	0,00	0,00
ISOPODA		0.00	0.00	0.00	0.00	0.00	0.00
Isopod	6158 0.8 2.2	0.00	0.00	0.00	0.00	0.00	0,00
AMPHIPODA		0.00	0.00	0.00	0.00	0.00	0.00
Hyperi id juveni les	6170 1,5 2,0	0.00	0.00	0.00	0.00	0.00	0.00
Gammarid	6169 1,2 2,5	0.00	1 33.33	0.00	2 66.67	0.00	0.00
EUPHAUSIACEA		0.00	0,00	0.00	0.00	0,00	0.00
Thysanoessa sp	61740209 5,5 8.0	0.00	0.00	0.00	0,00	0.00	0.00
Euphausi Id naupl i i	6174 0.5 0.6	0.00	0.00	0.00	0.00	0.00	0.00
Euphausi Id protozoea	6174 0,0 0.5	0.00	0.00	0.00	0.00	0.00	0.00
	0.5 1,0	0.00	0.00	0.00	0.00	0.00	0.00
	1.0 1.5	0.00	0.00	0,00	0.00	0.00	0,00
Euphausi id zoea	6174 2,0 2,5	0.00	0.00	0.00	0.00	0.00	0.00
	2.5 3.0	0.00	0.00	0.00	0.00	0.00	0.00
	3.5 4.0	0.00	0.00	0.00	0.00 "	0.00	0.00
Euphausi id juveni 1 es	6174 4.5 6.0	0.00	0.00	0.00	0.00	0.00	0.00
DECAPDDA		0.00	0.00	0.00	0,00	0.00	0.00
Caridea zoea	6179 1.5 4.0	0.00	0.00	0.00	0,00	0.00	0.00
Crangon mysis	617922 3.0 3.0	0,00	0.00	0.00	0.00	0.00	0.00
Pandalus sp	617918 11.0 25,0	0.00	0.00	0.00	0.00	0.00	0.00
Brachyuran zoea	6184 1.5 3.0	0.00	0.00	0.00	0.00	0,00	1 33.33
Pagurid zoea	6183 1.5 6.0	0.00	0.00	0.00	0.00	0,00	0.00
ECHINODERMATA		0.00	0.00	0.00	0.00	0.00	0.00
Bipinnaria larvae	81 0.6 0.8	0.00	0.00	0,00	0,00	0.00	0.00
Echi nopluteus 1 arvae	81 0.6 1,5	0.00	0.00	0.00	0.00	0,00	0.00
Auricularia larvae	81 0.4 1.0	0,00	0.00	0.00	0,00	0,00	0.00
Brachiolaria 1 arvae	81 1.5 2.5	0.00	0.00	0.00	0.00	0.00	0.00
TUNICATA		0.00	0.00	0.00	0.00	0,00	0.00
Fritillaria	841302 1,5 3.0	4 133.33	5 166.67	0.00	0.00	0.00	0,00
VERTEBRATE		0.00	0.00	0.00	0.00	0.00	0.00
Fish eggs	8735 0.8 3.0	0.00	0,00	0.00	1 33.33	0.00	0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER	104		105		112		113		114		115	
Fish larvae	8735 7,0 10.0	0,00		0.00		0.00		0.00		0.00		0.00
Herring larvae	874701 6.0 9,0	1	33.33	1	33.33	1	33,33	2	66.67		0.00	0.00
MISCELLANEOUS			0.00		0.00		0.00		0,00		0.00	0.00
Small eggs	0.2 0.4		0 . 0 0		0.00	1	33.33	1	33.33		0.00	0.00
TOTALS FOR SAMPLE		142	4733.33	113	3766.67	417	13900.00	135	4500.00	28	933.33	36 1200,00

SAMPLE NUMBER	129	130	131	132	
Date	010690	010690	010690	010690	
Site	36	36	36	3	6
Time	1300	1303	1306	1309	
Mesh (urn)	25	25	25	25	
Depth of tow (m)	10	20	30	40	
Volume filtered (m^3)	0.03	0,03	0,03	0.03	
Fraction enumerated	0.5	1	1	1	

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA											
Tintinid	3540	0.1	0,3		0.00		0.00		0.00		0.00
Forami ni fera	3448	0,1	0.3		0.00		0.00		0.00		0.00
CTENOPHORA					0.00		0.00		0.00		0.00
Pl eurobrachi a	38020101	1.0	2.5		0.00		0.00		0.00		0.00
CNIDARIA					0.00		0.00		0.00		0,00
Medusa juveniles	3701	0.7	2.1		0.00		0.00		0.00		0.00
Ag 1 antha	37110411	1,0	3,0		0.00		0.00		0.00		0.00
		5.0	7.0		0.00		0.00	3	100.00	1	33.33
Euphysa	37030312	1.5	2.0		0.00		0.00		0.00		0.00
Aurelia juvenile	37340302	1.8	3.5		0.00		0.00		0.00		0.00
Obelia	37040102	0.6	1.0	2	133.33		0,00	1	33,33		0.00
		1.1	2.0	14	933.33	3	100.00	2	66.67		0.00
		2.1	4.0	20	1333.33		0,00		0.00		0.00
Rathkea	37031902	1.5	2.0	1	66,67		0.00		0.00		0,00
Sarsi a	37030609	1.5	3.0		0.00		0.00	1	33.33		0,00
Probosci dactyl a	37050602	3.0	7.0		0.00		0.00		0.00		0.00
TREMATODA					0.00		0.00		0.00		0.00
F l atworms	3901	0.6	1.5	2	133.33	1	33.33	3	100.00	1	33.33
NEMATODA					0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5		0.00		0.00		0.00		0.00
ROTIFERA					0.00		0.00		0.00		0.00
Roti fers	45	0.2	0.6		0.00		0.00		0.00		0.00
CHAETOGNATHA					0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00		0.00		0.00
Chaetognath juveniles	83	2.0	7,0	3	200.00		0.00		0.00		0.00
BRYOZOA					0.00		0.00		0,00		0.00
Cyphonautes larvae	78	0.4	0.8		0.00		0.00		0.00	1	33.33
PHORONI DA					0.00		0.00		0,00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					129		130		131		132	
Acti notrocha 1 arvae		77	0.8	1.0		0.00		0.00		0.00		0,00
MOLLUSCA						0.00		0.00		0.00		0,00
Limacina		51130101	0.6	2.0		0.00		0.00		0,00		0.00
Nudi branch 1 arvae		5127	0.7	0.8		0.00		0.00		0.00		0,00
Bivalve veliger		55	0.0	0.2	3	200.00	2	66,67		0.00		0,00
			0.2	0.4	1	66.67	1	33.33		0.00		0.00
Gastropod vel iger		51	0,0	0,2		0.00		0,00	2	66.67	1	33,33
			0.2	0.4		0.00		0.00	1	33.33		0,00
			0.4	0.6		0.00		0.00	1	33,33		0,00
POLYCHAETA						0,00		0.00		0.00		0.00
Spionid larvae		500143	0,8	4.0	20	1333.33	1	33.33	1	33,33	2	66.67
Pol ynoid 1 arvae		50012015	0.5	1.5		0.00		0.00		0.00		0,00
Pol ychaete 1 arvae		5001	0.6	1,5	6	400.00	6	200.00	1	33.33		0,00
Trochophore l arvae		5001	0.2	0.6	24	1600.00	15	500,00	1	33,33	3	100.00
Autolytus sp		50012301	3	3.5		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00
CIRRIPEDIA						0,00		0.00		0,00		0.00
Nauplii larvae		6130	0.2	0.8	1	66,67		0.00		0.00	1	33,33
Cypris larvae		6130	0.8	1.2		0.00		0.00		0.00		0,00
CLADOCERA						0.00		0.00		0.00		0,00
Podon		61090502	0.6	1.0		0.00		0.00		0.00		0,00
COPEPODA						0.00		0.00		0,00		0.00
Copepod nauplii		6118	0.0	0.2	2	133.33	2	66.67		0.00	1	33.33
			0.2	0.4	44	2933.33	13	433.33	1	33.33		0.00
			0.4	0.6	3	200,00		0.00		0.00		0.00
			0.6	1.0		0.00		0,00		0.00		0.00
Copepod i tes	I-III	6118	0.2	0.4	8	533.33		0.00		0,00		0.00
			0,4	0.6	35	2333,33	8	266.67		0.00	1	33.33
			0.6	0.8	9	600.00	2	66,67		0.00	1	33.33
Epilabidocera sp	I	61182701	0.5	0.8		0,00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0.00		0.00		0,00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1		0.00		0.00		0,00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00	2	66.67		0.00		0.00
	IV		0.8	1.1	3	200.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					129		130		131		132	
	v		1.0	1.7	1	66.67		0.00		0.00		0,00
Tortanus discaudatus	VIf	6118300101	1.8	2.3		0.00		0.00		0.00		0.00
	VIm		1.6	2.2		0.00		0.00		0.00		0,00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	2	133,33	9	300,00		0.00		0.00
	Vf		1.1	1.3	4	266.67	21	700.00	1	33.33	1	33.33
	Vm		1.0	1,3	8	533,33	24	800.00	1	33.33		0.00
	VIf		1.1	2.0	3	200.00	8	266.67	29	966.67	29	966.67
	VIm		1.1	1,5		0.00	7	233.33	2	66.67		0.00
Microcalanus pygmeus pusillus	V	61180504	0.6	0.7		0,00		0,00		0.00		0.00
Metridia sp	I-III	611 81602	0.5	1.1		0.00		0,00		0.00		0.00
Centropages abdominalis	IV	6118170101	0.9	l.l		0.00		0.00		0.00		0.00
	v		1.1	1.3		0.00		0.00		0.00		0,00
	VIf		1.6	2.1		0,00		0.00		0.00		0.00
	VIm		1,4	1.5		0.00		0.00		0.00		0.00
Eurytemora herdmanii	v	6118200203	0.9	1.2	5	333,33	1	33.33		0.00		0.00
	VIf		1.1	1.4	2	133.33	3	100.00	1	33.33		0,00
	VIm		1.1	1.4	2	133.33	1	33.33	1	33.33		0,00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0,00		0.00		0.00		0,00
	VIm			1.4		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	1	66.67		0.00		0.00		0.00
Acartia longiremis	v	6118290103	0.7	1.0		0.00		0,00		0.00		0.00
	VIf		1.0	1.3		0.00		0.00		0.00		0.00
	VIm		0.9	1.1	1	66,67		0.00		0.00		0.00
Acartia clausii	v	6118290101	0.6	0.8		0,00		0.00		0.00		0.00
	VIf		0.9	1.3	3	200.00		0.00		0.00		0.00
	VIm		0.8	1.2	2	133.33		0.00		0.00		0.00
Harpacticoida	v	6119	0,6	0,8	1	66.67	1	33.33		0.00	1	33.33
	VIf		0.7	1.0		0.00		0.00		0.00		0.00
Microsetel 1 a	VIf	61190901	0.5	0.9		0.00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7	1	66,67		0.00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0.00
	VIf		0,7	1,0		0.00		0.00		0,00	1	33.33
	VIm		0,5	0,7		0,00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER				129	30	131	132
Halacaridae	58	0.2	0.3	0.00	0.00	0.00	0.00
PYCNOGONIDA				0.00	0.00	0.00	0.00
Protonymphon	60	0.2	0.4	0.00	0.00	0.00	0.00
CUMACEAN				0.00	0.00	0.00	0.00
Cumacea	6154	1.2	1.2	0.00	0.00	0.00	0.00
ISOPODA				0.00	0.00	0.00	0.00
Isopod	6158	0.8	2.2	0.00	0.00	0.00	0.00
AMPHIPODA				0.00	0.00	0.00	0.00
Hyperiid juveniles	6170	1.5	2.0	0.00	0.00	0.00	0.00
Gammarid	6169	1.2	2.5	0.00	0.00	0.00	0.00
EUPHAUSIACEA				0.00	0.00	0.00	0.00
Thysanoessa sp	61740209	5.5	8.0	0.00	0.00	0.00	0.00
Euphausiid nauplii	6174	0.5	0.6	0.00	0.00	0.00	0.00
Euphausiid protozoea	6174	0.0	0.5	0.00	0.00	0.00	0.00
		0.5	1.0	0.00	0.00	0.00	0.00
		1.0	1.5	0.00	0.00	0.00	0.00
Euphausiid zoea	6174	2.0	2.5	0.00	0.00	0.00	0.00
		2.5	3.0	0.00	0.00	0.00	0.00
		3.5	4.0	0.00	0.00	0.00	0.00
Euphausiid juveniles	6174	4.5	6.0	0.00	0.00	0.00	0.00
DECAPODA				0.00	0.00	0.00	0.00
Caridea zoea	6179	1.5	4.0	0.00	0.00	0.00	0.00
Crangon mysis	617922	3.0	3.0	0.00	0.00	0.00	0.00
Pandalus sp	617918	11.0	25.0	0.00	0.00	0.00	0.00
Brachyuran zoea	6184	1.5	3.0	0.00	0.00	0.00	0.00
Pagurid zoea	6183	1.5	6.0	0.00	0.00	0.00	0.00
ECHINODERMATA				0.00	0.00	0.00	0.00
Bipinnaria larvae	81	0.6	0.8	0.00	0.00	0.00	0.00
Echinopluteus larvae	81	0.6	1.5	0.00	0.00	0.00	0.00
Auricularia larvae	81	0.4	1.0	0.00	0.00	0.00	0.00
Brachiolaria larvae	81	1.5	2.5	0.00	0.00	0.00	0.00
TUNICATA				0.00	0.00	0.00	0.00
Fritillaria	841302	1.5	3.0	0.00	0.00	0.00	0.00
VERTEBRATA				0.00	0.00	0.00	0.00
Fish eggs	8735	0.8	3.0	0.00	33.33	0.00	0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER	129	130	131	132
Fish larvae	8735 7.0 10.0 0.00	0.00	0,00	0,00
Herring larvae	874701 6.0 9.0 0.00	0.00	0.00	0.00
MISCELLANEOUS	0.00	0,00	0,00	0.00
Small eggs	0.2 0.4 3 200.00	10 333.33	0.00	0.00
TOTALS FOR SAMPLE	240 16000.00	142 4733.33	53 1766.67	45 1500,00

SAMPLE NUMBER	144	. 145	146	1 4 7	159	160
Oate	020690	020690	020690	020690	080690	080690
Site	39	39	39	3 9	36	36
Time	1210	1215	1220	1225	1210	1213
Mesh (urn)	25	25	25	25	25	25
Depth of tow (m)	5	10	15	20	10	20
Volume filtered (m^3)	0.03	0.03	0,03	0.03	0 , 0 3	0.03
Fraction enumerated	1	0.5	1	1	0.5	0,5

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	No PER M3
PROTOZOA															
Tintinid	3540	0.1	0.3	6	200.00	7	466.67	12	400.00	6	200.00		0,00		0.00
Foramini fera	3448	0.1	0.3		0.00		0.00		0.00		0.00		0.00		0.00
CTENOPHORA					0.00		0,00		0,00		0.00		0.00		0.00
Pl eurobrachi a	38020101	1,0	2.5		0.00		0,00		0.00		0.00		0,00		0.00
CNIDARIA					0.00		0.00		0,00		0.00		0.00		0.00
Medusa juveni les	3701	0.7	2.1		0.00		0.00		0,00		0.00		0.00		0,00
Aglantha	37110411	1.0	3.0		0.00		0,00		0.00		0.00		0.00		0.00
		5.0	7.0		0.00		0,00		0.00		0,00		0.00		0.00
Euphysa	37030312	1.5	2.0	1	33.33	2	133.33	1	33.33	2	66.67	1	66.67		0,00
Aurelia juvenile	37340302	1.8	3.5		0.00		0,00		0.00		0.00		0,00		0.00
Obelia	37040102	0.6	1.0		0.00		0.00		0,00		0.00	1	66.67	1	66.67
		1.1	2,0	1	33.33		0,00		0.00		0.00	9	600,00		0.00
		2.1	4.0		0.00		0.00		0,00		0.00	11	733.33		0.00
Rathkea	37031902	1.5	2,0		0.00		0.00		0.00		0.00	1	66.67		0,00
Sarsi a	37030609	1.5	3.0	1	33,33		0.00		0.00		0.00		0.00		0.00
Proboscidactyl a	37050602	1	2.5		0.00		0.00		0.00		0.00		0,00		0.00
TREMATOOA					0.00		0.00		0,00		0,00		0.00		0.00
Fl atworms	3901	0.6	1.S		0.00	2	133.33	4	133.33	1	33.33		0,00	1	66.67
NEMATODA					0.00		0.00		0.00		0.00		0,00		0.00
Nematodes	47	0.8	1.5		0,00		0,00		0.00		0,00		0,00		0.00
ROTIFERA					0.00		0.00		0.00		0.00		0.00		0.00
Roti fers	45	0.2	0,6		0.00		0,00	4	133.33	3	100.00	1	66.67	1	66.67
CHAETOGNATHA					0.00		0.00		0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00		0.00		0,00		0.00		0.00
Chaetognath juveniles	83	2.0	7.0		0.00		0.00	1	33,33		0.00	2	133.33	1	66.67
BRYOZOA					0.00		0.00		0.00		0.00		0.00		0.00
Cyphonautes 1 arvae	78	0.4	0.8		0.00		0.00		0.00		0.00		0,00		0,00
PHORONI OA					0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					144		145		146		147		I 59		160	
Acti notrocha 1 arvae		77	0.8	1,0		0.00		0,00		0.00		0.00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00		0.00		0.00
Limacina		51130101	0.6	2.0	1	33.33		0.00		0.00		0.00		0,00		0.00
Nud i branch 1 arvae		5127	0.7	0.8		0.00		0.00		0,00		0.00		0.00		0.00
Bivalve vel iger		55	0.0	0.2		0.00		0.00		0.00		0.00	10	666.67	6	400.00
			0.2	0.4		0.00		0,00		0.00		0.00	6	400,00		0.00
Gastropod vel iger		51	0.0	0.2		0.00		0.00		0.00	5	166.67	1	66,67	1	66.67
			0.2	0.4	.5	166.67	1	66.67	2	66.67	2	66.67		0.00	2	133.33
			0.4	0,6		0.00		0.00	2	66.67		0.00		0.00		0.00
POLYCHAETA						0,00		0.00		0,00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0		0.00	4	266.67	6	200.00	5	166.67	5	333.33	6	400,00
Pol ynoid 1 arvae		50012015	0.5	1.5		0.00		0.00		0.00		0.00		0.00	2	133.33
Pol ychaete 1 arvae		5001	0.6	1.5	8	266.67	7	466.67	27	900,00	18	600.00	14	933.33	1	66.67
Trochophore 1 arvae		5001	0,2	0.6	25	833.33	38	2533.33	32	1066.67	35	1166,67	52	3466.67	6	400.00
Autolytus sp		50012301	3	3.5		0.00		0.00		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00		0,00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	107	3566.67	86	5733.33	131	4366.6?	46	1533.33	2	133.33	1	66.67
Cypris larvae		6130	0.8	1.2		0,00		0.00		0,00	1	33.33	1	66,67		0.00
CLADOCERA						0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0		0.00		0.00		0.00		0.00		0.00		0.00
COPEPODA						0.00		0,00		0.00		0.00		0,00		0,00
Copepod naupl ii		6118	0.0	0.2	4	133.33	1	66.67		0.00	3	100.00	1	66.67	4	266.67
			0.2	0.4	49	1633.33	21	1400.00	25	833,33	12	400.00	55	3666.67	4	266.67
			0.4	0.6	1	33.33		0,00	1	33.33	2	66.67		0,00		0.00
			0.6	1.0		0.00		0,00		0.00		0,00		0.00		0,00
Copepodites	I-III	6118	0.2	0.4		0.00		0.00		0.00		0.00		0.00		0.00
			0,4	0.6	3	100,00	5	333.33	4	133.33	3	100.00	15	1000.00	22	1466.67
			0.6	0.8	3	100.00	5	333.33	5	166.67	5	166.67	19	1266.67	33	2200.00
Epilabidocera sp	I	61182701	0.5	0.8		0.00		0.00		0.00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0,00		0,00		0.00		0,00		0.00
	III		1.1	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1		0.00		0.00		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00		0.00		0.00		0.00		0.00
	IV		0.8	1.1		0.00	2	133.33		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					144		145		146		147		159		160	
	v		1.0	1.7		0.00		0.00		0.00		0.00		0.00		0,00
Tortanus discaudatus	VIf	6118300101	1.8	2.3		0.00		0,00	1	33.33		0.00		0.00	1	66.67
	VIm		1,6	2,2		0.00		0.00		0.00		0.00		0.00		0,00
Pseudocal anus sp. complex	IV	61180505	0.9	1.1		0.00		0.00		0.00		0.00	1	66,67	22	1466.67
	Vf		1.1	1.3		0.00	1	66.67		0.00		0.00	1	66,67	27	1800.00
	Vm		1.0	1.3		0.00		0.00	2	66.67		0.00		0,00	20	1333.33
	VIf		1.1	2.0	1	33.33		0.00		0,00		0.00	1	66,67	3	200.00
	VIm		1.1	1.5	1	33.33		0.00	1	33.33	1	33,33		0.00	7	466.67
Microcalanus pygmeus PUS I 1 lus	V	61180504	0,6	0.7		0.00		0.00		0,00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0.00		0.00		0.00		0.00		0.00		0.00
Centropages abdominalis	IV	6118170101	0.9	1.1		0.00		0.00		0.00		0.00	1	66,67		0.00
	v		1.1	1.3		0.00		0.00		0,00		0,00		0.00		0.00
	VIf		1.6	2.1		0.00		0.00		0,00		0.00		0.00		0.00
	VIm		1.4	1.5		0.00		0.00		0,00		0.00		0.00		0.00
Eurytemora herdmanii	v	6118200203	0.9	1,2	7	233.33	1	66.67	8	266,67	5	166.67	6	400.00	3	200.00
	VIf		1,1	1,4	1	33.33	1	66.67	3	100,00		0.00		0.00		0.00
	VIm		1.1	1.4	3	100.00	1	66.67	3	100,00	5	166,67	1	66.67		0.00
Eurytemora pacifica	VIf	6118200206	1,4	1,5		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.4		0.00		0,00		0,00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0,7	21	700.00	13	866.67	5	166,67	4	133.33	7	466,67	2	133.33
Acartia longiremis	v	6118290103	0.7	1.0	1	33.33		0.00	1	33.33		0.00		0.00		0.00
	VIf		1.0	1,3		0.00		0.00		0,00		0,00		0.00		0.00
	VIm		0.9	1.1	1	33.33		0.00	1	33.33		0.00		0,00		0.00
Acartia clausi i	v	6118290101	0.6	0.8	6	200.00	3	200,00	2	66.67	4	133,33	2	133.33		0.00
	VIf		0,9	1,3	9	300.00	11	733.33	13	433.33	15	500.00	3	200.00	1	66.67
	VIm		0.8	1.2		0.00	3	200.00	5	166.67	9	300.00	2	133.33		0.00
Harpacticoida	v	6119	0.6	0.8		0.00		0.00		0.00		0.00		0.00	1	66,67
	VIf		0,7	1,0	58	1933.33	40	2666,67	16	533.33	17	566.67		0,00		0,00
Microsetella	VIf	61190901	0.5	0,9		0.00		0.00		0.00	4	133.33		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00	1	33.33		0.00		0.00		0,00
Oithona similis	v	6120090103	0.6	0.8		0,00		0.00		0.00		0.00		0.00		0.00
	VIf		0.7	1.0		0,00		0,00		0.00		0.00		0.00		0,00
	VIm		0.5	0.7		0.00		0,00		0.00		0.00		0.00		0,00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER				144		145		146		147		159		160	
Hal acaridae	58	0.2	0,3		0.00		0.00		0.00		0.00		0. 00		0.00
PYCNOGONIDA					0.00		0.00		0.00		0,00		0.00		0.00
Protonymphon	60	0.2	0.4		0.00		0,00		0.00		0.00		0.00		0.00
CUMACEA					0,00		0.00		0.00		0.00		0.00		0.00
Cumacean	6154	1.2	1.2		0.00		0,00	1	33.33		0.00		0,00		0.00
ISOPODA					0.00		0.00		0,00		0.00		0.00		0.00
Isopod	6158	0.8	2.2		0.00		0,00		0.00		0.00		0.00		0.00
AMPHIPODA					0.00		0.00		0.00		0.00		0.00		0.00
Hyperiid juveni les	6170	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Gammarid	6169	1.2	2.5		0.00	1	66.67		0.00		0.00		0.00		0,00
EUPHAUSIACEA					0.00		0.00		0.00		0.00		0.00		0.00
Thysanoessa sp	61740209	5.5	8.0		0.00		0.00		0,00		0.00		0.00		0.00
Euphausiid naupl i i	6174	0,5	0,6		0.00		0.00		0.00		0.00		0.00		0.00
Euphausi id protozoea	6174	0.0	0.5		0.00		0.00		0.00		0.00		0,00		0.00
		0.5	1.0		0.00		0.00		0.00		0.00		0.00		0.00
		1.0	1.5	1	33.33		0.00		0,00		0.00		0.00		0.00
Euphausi id zoea	6174	2,0	2,5		0.00		0.00		0.00		0.00		0.00		0.00
		2.5	3.0		0.00		0.00		0.00		0.00		0.00		0.00
		3.5	4.0		0.00		0.00		0.00		0,00		0.00		0.00
Euphausi id juveniles	6174	4.5	6.0		0.00		0.00		0.00		0.00		0.00		0.00
DECAPODA					0,00		0.00		0.00		0.00		0,00		0.00
Caridea zoea	6179	1.5	4.0	1	33.33	7	466.67	2	66.67		0.00		0,00		0.00
Crangon mysis	617922	3.0	3.0		0.00		0.00		0.00		0.00		0,00		0.00
Pandalus sp	617918	11.0	25.0		0.00		0.00		0,00		0.00		0.00		0.00
Brachyuran zoea	6184	1.5	3.0		0.00		0.00		0,00		0.00		0.00		0.00
Pagurid zoea	6183	1.5	6.0		0.00		0.00		0.00		0.00		0.00		0.00
ECHINODERMATA					0.00		0,00		0.00		0.00		0.00		0,00
Bipi nnaria larvae	81	0.6	0.8		0.00		0.00		0.00		0.00		0.00		0.00
Echi nopl uteus 1 arvae	81	0.6	1.5	1	33.33		0.00	1	33.33		0.00		0.00		0.00
Auricularia larvae	81	0.4	1.0		0.00	4	266.67	1	33.33	1	33.33	1	66.67		0.00
Brachiol ari a 1 arvae	81	1.5	2.2		0.00		0.00		0.00		0.00		0.00		0.00
TUNICATA					0.00		0.00		0,00		0.00		0.00		0.00
Fritillaria	841302	1.5	3.0	3	100.00	5	333.33	12	400.00	12	400.00		0.00		0.00
VERTEBRATE					0.00		0.00		0.00		0.00		0.00		0.00
Fish eggs	8735	0.8	3.0		0.00		0.00		0,00		0,00		0.00		0,00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER	144	145	146	147	159	160
Fish larvae	8735 7.0 10,0 0.00	0.00	0.00	0.00	0.00	0,00
Herring larvae	874701 6.0 9.0 1 33.33	0.00	0.00	0.00	0.00	0.00
MISCELLANEOUS	0.00	0,00	0.00	0.00	0.00	0.00
Small eggs	0.2 0.4 0,00	0.00	0.00	0,00	7 466.67	0,00
TOTALS FOR SAMPLE	325 10833,33	265 17666.67	324 10800.00	220 7333.33	240 16000.00	179 11933.33

SAMPLE NUMBER	161	162	181	182	183	184
Date	080690	080690	100690	100690	100690	100690
Site	36	36	39	3 9	39	39
Time	1216	1220	1345	1350	1355	1400
Mesh (urn)	25	25	25	25	25	25
Depth of tow (m)	30	40	5	10	15	20
Volume filtered (m3)	0.03	0,03	0.03	0.03	0 . 0 3	0.03
Fraction enumerated	1	1	1	0.5	1	1

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA															
Tintinid	3540	0.1	0.3		0,00		0,00	1	33.33	4	266.67		0.00		0.00
Foraminifera	3448	0.1	0.3		0.00		0.00		0.00		0.00		0.00		0.00
CTENOPHORA					0.00		0.00		0,00		0.00		0.00		0.00
Pleurobrachi a	38020101	1.0	2.5	6	200.00		0.00		0.00		0.00		0.00		0.00
CNIDARIA					0.00		0,00		0.00		0.00		0.00		0.00
Medusa juveniles	3701	0.7	2.1		0.00		0,00		0.00		0.00	1	33.33		0.00
Ag 1 antha	37110411	1.0	3.0		0.00		0.00		0.00		0.00		0.00		0.00
		5.0	7.0	1	33.33	1	33.33		0.00		0.00		0.00		0.00
Euphysa	37030312	1,5	2.0		0.00		0.00		0.00		0.00	3	100,00		0.00
Aurelia juvenile	37340302	1.8	3.5		0.00		0.00		0.00		0.00		0.00		0.00
Obelia	37040102	0.6	1.0		0.00		0.00		0.00		0.00	1	33.33	3	100.00
		1.1	2.0		0.00		0.00		0.00		0.00		0,00		0.00
		2.1	4.0		0.00		0.00		0.00		0.00		0.00		0.00
Rathkea	37031902	1.5	2.0		0.00		0.00		0.00		0.00		0.00	1	33.33
Sarsia	37030609	1.5	3.0		0.00		0.00		0.00		0.00		0.00		0.00
Proboscidactyl a	37050602	1	2.5		0.00		0,00		0.00		0.00		0.00		0.00
TREMATODA					0.00		0.00		0.00		0.00		0,00		0.00
F l atworms	3901	0.6	1.5	6	200.00	1	33.33		0.00		0.00		0.00		0.00
NEMATODA					0.00		0.00		0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5		0,00		0.00		0,00		0.00		0.00		0.00
ROTIFERA					0.00		0.00		0.00		0.00		0.00		0.00
Rotifers	45	0.2	0.6		0.00	2	66.67	3	100.00	12	800.00	1	33.33		0.00
CHAETOGNATHA					0.00		0,00		0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00		0.00		0,00		0.00		0.00
Chaetognath juveniles	83	2.0	7.0		0,00		0.00	1	33.33		0.00		0.00	1	33.33
BRYOZOA					0.00		0.00		0.00		0.00		0,00		0.00
Cyphonautes larvae	78	0.4	0.8		0.00		0,00		0.00		0.00		0.00		0.00
PHORONIDA					0.00		0.00		0.00		0.00		0.00		0,00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER					161		62		181		182		183		184	
Actinotrocha larvae		77	0.8	1.0		0.00		0.00		0.00		0.00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00		0.00		0.00
Limacina		51130101	0.6	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Nudibranch larvae		5127	0.7	0.8		0.00		0.00		0.00		0.00		0.00		0.00
Bivalve veliger		55	0.0	0.2		0.00		33.33		0.00		0.00		0.00		0.00
			0.2	0.4		0.00		0.00		0.00		0.00		0.00		0.00
Gastropod veliger		51	0.0	0.2		0.00		0.00		0.00		0.00		0.00		0.00
			0.2	0.4		0.00		0.00		0.00		0.00		0.00	2	66.67
			0.4	0.6		0.00		0.00		0.00		0.00		0.00	2	66.67
POLYCHAETA						0.00		0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0	3	100.00		0.00	5	166.67	9	600.00	2	66.67		0.00
Polynoid larvae		50012015	0.5	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Polychaete larvae		5001	0.6	1.5	3	100.00		0.00	10	333.33	6	400.00	8	266.67	7	233.33
Trochophore larvae		5001	0.2	0.6	2	66.67		33.33	13	433.33	20	1333.33	11	366.67	11	366.67
Autolytus sp		50012301	3	3.5		0.00		0.00		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8		0.00		0.00	2	66.67	33	2200.00	109	3633.33	91	3033.33
Cypris larvae		6130	0.8	1.2		0.00		0.00		0.00		0.00		0.00		0.00
CLADOCERA						0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0		0.00		0.00		0.00	1	66.67		0.00		0.00
COPEPODA						0.00		0.00		0.00		0.00		0.00		0.00
Copepod naupli		6118	0.0	0.2		0.00		0.00	12	400.00	3	200.00	2	66.67		0.00
			0.2	0.4		0.00		0.00	145	4833.33	24	1600.00	12	400.00	14	466.67
			0.4	0.6		0.00		0.00	1	33.33	1	66.67		0.00		0.00
			0.6	1.0		0.00		0.00		0.00		0.00		0.00		0.00
Copepodites	I-III	6118	0.2	0.4		0.00		0.00	1	33.33		0.00		0.00	1	33.33
			0.4	0.6	2	66.67		0.00	132	4400.00	36	2400.00	13	433.33	9	300.00
			0.6	0.8	1	33.33		0.00	27	900.00	18	1200.00	3	100.00	3	100.00
Epilabidocera sp	I	61182701	0.5	0.8		0.00		0.00		0.00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0.00		0.00	1	66.67		0.00		0.00
	III		1.1	1.[illegible]		0.00		0.00		0.00		0.00		0.00		0.00
Epilabidocera ongipedata	VIm	6118270102	2.7	3.[illegible]		0.00		0.00		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.[illegible]		0.00		0.00		0.00	4	266.67	2	66.67		0.00
	IV		0.8	1.[illegible]		0.00		0.00		0.00		0.00		0.00	1	33.33

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					161		162		181		182		183		184	
	V		1.0	1.7		0,00		0.00		0,00		0.00		0. 00		0,00
Tortanus di scaudatus	VIf	6118300101	1.8	2,3		0.00		0.00		0.00		0.00		0,00		0.00
	VIm		1.6	2.2		0.00		0.00		0.00		0.00		0,00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	7	233.33		0.00		0.00		0,00		0.00	2	66.67
	Vf		1.1	1.3	41	1366.67	5	166.67		0.00		0,00		0.00		0.00
	Vm		1.0	1.3	46	1533.33		0.00		0.00		0.00		0.00	1	33.33
	VIf		1.1	2,0	37	1233,33	24	800.00		0,00		0.00		0.00	1	33.33
	VIm		1.1	1.5	20	666.67		0.00		0,00		0.00		0,00		0.00
Microcalanus pygmeus pusillus	V	61180504	0,6	0.7		0.00		0.00		0,00		0.00		0,00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0,00		0.00		0.00		0.00		0.00		0.00
Centropages abdominalis	Iv	6118170101	0.9	1.1		0.00	2	66.67	1	33,33	13	866.67	6	200.00	12	400.00
	v		1.1	1.3		0.00		0.00		0.00	2	133,33	2	66,67		0.00
	VIf		1.6	2.1		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.5		0.00		0.00		0.00		0,00		0.00		0.00
Eurytemora herdmanii	v	6118200203	0.9	1.2		0.00		0.00		0.00		0.00	3	100,00	10	333.33
	VIf		1.1	1,4		0.00		0.00		0.00		0.00	1	33.33	2	66.67
	VIm		1.1	1.4	5	166.67		0.00	1	33.33		0.00	2	66,67	5	166.67
Eurytemora pacifica	VIf	6118200206	1,4	1,5		0.00		0.00		0.00		0.00		0,00		0.00
	VIm		1.4	1.4		0.00		0.00		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7		0.00		0,00	8	266.67	15	1000,00	18	600.00	8	266.67
Acartia longiremis	v	6118290103	0.7	1.0		0.00		0.00		0.00		0.00		0,00		0.00
	VIf		1.0	1.3		0.00		0.00		0.00		0.00		0,00		0.00
	VIm		0.9	1.1		0.00		0,00		0.00		0.00		0.00		0.00
Acartia clausii	v	6118290101	0.6	0.8		0,00		0.00	1	33.33	5	333.33	2	66.67	1	33.33
	VIf		0.9	1.3		0,00		0.00	5	166.67	22	1466.67	22	733,33	1	33.33
	VIm		0.8	1,2		0.00		0.00	1	33.33	1	66.67	1	33.33	1	33.33
Harpact icoida	v	6119	0.6	0.8		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		0.7	1.0		0,00		0.00		0.00		0.00	8	266.67		0.00
Mi crosetel 1 a	VIf	61190901	0.5	0,9		0.00		0.00		0.00		0.00	8	266.67		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00	1	33.33	2	133.33		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8	1	33,33		0.00		0.00		0,00		0,00		0.00
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		0,5	0,7		0,00		0.00		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0,00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER				161		162		181		182		183		184	
Halacaridae	58	0.2	0,3		0.00		0,00		0.00		0.00		0.00		0.00
PYCNOGONIDA					0.00		0.00		0.00		0.00		0.00		0.00
Protonymphon	60	0,2	0,4		0.00		0.00		0.00		0.00		0.00		0.00
CUMACEA					0 . 0 0		0.00		0.00		0.00		0.00		0.00
Cumacean	6154	1.2	1.2		0.00		0.00		0.00		0.00		0.00		0.00
ISOPODA					0.00		0.00		0.00		0.00		0.00		0,00
Isopod	6158	0.8	2.2		0.00		0,00		0,00		0.00		0.00		0.00
AMPHIPODA					0.00		0.00		0.00		0.00		0.00		0.00
Hyperi id juveniles	6170	1,5	2,0		0.00		0.00		0.00		0.00		0.00		0.00
Gammarid	6169	1.2	2.5		0,00		0.00		0,00		0.00		0.00		0.00
EUPHAUSIACEA					0.00		0.00		0.00		0.00		0.00		0.00
Thysanoessa sp	61740209	5.5	8.0		0.00		0.00		0.00		0.00		0.00		0.00
Euphausi Id naupl i i	6174	0.5	0.6		0.00		0.00		0.00		0,00		0.00		0.00
Euphausi id protozoea	6174	0.0	0.5		0.00		0.00		0.00		0.00		0.00		0.00
		0.5	1.0		0,00		0.00		0,00		0.00		0.00		0.00
		1.0	1.5		0.00		0.00		0.00		0.00		0.00		0,00
Euphausi Id zoea	6174	2.0	2.5	1	33.33		0.00		0.00		0.00		0,00		0,00
		2.5	3.0		0.00		0.00		0,00		0.00		0.00		0.00
		3.5	4.0		0.00		0.00		0.00		0.00		0.00		0.00
Euphausi id juveniles	6174	4.5	6.0		0,00		0.00		0,00		0.00		0.00		0.00
DECAPODA					0.00		0.00		0.00		0.00		0,00		0.00
Carl dea zoea	6179	1,5	4.0		0.00		0.00		0.00	2	133.33		0,00		0.00
Crangon mysis	617922	3.0	3.0		0.00		0.00		0.00		0.00		0.00		0.00
Pandalus sp	617918	11.0	25.0		0,00		0,00		0.00		0,00		0.00		0.00
Brachyuran zoea	6184	1.5	3.0		0,00		0.00		0.00		0.00		0.00	1	33,33
Pagurid zoea	6183	1.5	6.0		0.00		0.00		0.00		0.00		0.00		0.00
ECHINODERMATA					0.00		0,00		0.00		0.00		0.00		0.00
Bi pi nnari a 1 arvae	81	0.6	0.8		0.00		0.00		0.00		0.00		0.00		0.00
Echi nopluteus 1 arvae	81	0.6	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Auricularia larvae	81	0.4	1.0		0.00		0.00		0.00		0.00		0,00		0.00
Brachiol aria 1 arvae	81	1.5	2.2		0.00		0.00		0.00		0.00		0.00		0.00
TUNICATA					0.00		0.00		0.00		0.00		0.00		0.00
Fritillaria	841302	1.5	3.0		0,00		0.00	6	200.00	17	1133.33	1 5	500,00		0.00
VERTEBRATE					0.00		0.00		0.00		0.00		0.00		0.00
Fish eggs	8735	0.8	3.0		0.00		0.00		0,00		0.00	1	33.33		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER					161		162		181		182		183		184	
Fish 1 arvae	8735	7.0	10,0			0.00		0.00		0.00	1	66,67		0.00		0.00
Herring larvae	874701	6.0	9.0	1		33.33		0.00		0,00		0.00		0.00		0,00
MISCELLANEOUS						0.00		0.00		0.00		0.00		0.00		0.00
Small eggs		0.2	0.4			0.00	2	66.67		0.00		0.00		0.00		0.00
TOTALS FOR SAMPLE					183	6100.00	39	1300.00	376	12533.33	248	16533.33	257	8566.67	191	6366.67

SAMPLE NUMBER	192	193	194	195	
Date	170690	170690	170690	170690	
Site	36	36	36	3	6
Time	1050	1055	100	1105	
Mesh (urn)	25	25	25	25	
Depth of tow (m)	10	20	30	40	
Volume filtered (m-3)	0.03	0.03	0.03	0,03	
Fraction enumerated	0.25	0.5	1	1	

SPECIES	STAGE	TAXONOMIC CODE	LENGTH mm MIN	LENGTH mm MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA												
Tintinid		3540	0.1	0.3		0.00		0.00		0.00		0.00
Foramini fera		3448	0.1	0.3		0.00		0.00		0.00		0.00
CTENOPHORA						0.00		0.00		0.00		0,00
PI eurobrachi a		38020101	1,0	2.5		0.00		0.00	1	33.33		0.00
CNIDARIA						0.00		0.00		0.00		0.00
Medusa juveni les		3701	0.7	2.1		0.00		0.00		0.00		0.00
Ag 1 antha		37110411	1.0	3.0		0,00		0.00		0.00		0.00
			5.0	7.0		0.00		0.00		0.00	3	100,00
Euphysa		37030312	1.5	2.0		0.00		0.00		0.00		0.00
Aurelia juvenile		37340302	1.8	3.5		0.00		0.00		0.00		0.00
Obelia		37040102	0.6	1.0	2	266.67	1	66.67		0.00		0,00
			1,1	2,0	9	1200.00	2	133.33		0.00		0.00
			2.1	4.0	6	800.00	1	66.67	1	33.33		0,00
Rathkea		37031902	1.5	2.0	7	933.33		0.00		0.00		0.00
Sarsia		37030609	1.5	3.0		0,00		0.00		0,00		0.00
Probosci dactyl a		37050602	1	2.5		0.00		0.00		0,00		0.00
TREMATODA						0.00		0.00		0,00		0.00
Fl atworms		3901	0.6	1.5	1	133.33		0.00	2	66.67	1	33.33
NEMATODA						0.00		0.00		0.00		0,00
Nematodes		47	0.8	1.5		0.00		0.00		0.00		0.00
ROTIFERA						0.00		0.00		0,00		0.00
Roti fers		45	0.2	0.6	16	2133.33	27	1800.00	23	766.67	10	333.33
CHAETOGNATHA						0.00		0.00		0.00		0.00
Sagitta elegans		8300000303	15.0	27.0		0.00		0.00		0.00		0.00
Chaetognath juveniles		83	2.0	7.0	2	266.67	1	66.67		0.00	1	33.33
BRYOZOA						0.00		0.00		0.00		0.00
Cyphonautes 1 arvae		78	0.4	0.8	2	266.67	1	66.67	6	200.00	1	33.33
PHORONIDA						0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					192		193		194		195	
Acti notrocha 1 arvae		77	0,8	1,0		0.00		0.00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0,00
Limacina		51130101	0.6	2.0		0.00		0,00		0,00		0.00
Nud i branch 1 arvae		5127	0.7	0.8		0.00		0.00		0.00		0.00
Bivalve veliger		55	0.0	0.2	1	133.33	69	4600.00	1	33.33		0.00
			0.2	0.4	1	133.33	10	666.67	2	66,67		0.00
Gastropod veliger		51	0.0	0.2	2	266.67	4	266.67	1	33.33		0.00
			0.2	0.4		0.00	2	133.33	1	33.33		0.00
			0.4	0.6		0.00		0.00		0,00		0.00
POLYCHAETA						0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0	3	400.00	1	66.67		0.00		0,00
Polynoid larvae		50012015	0,5	1,5		0,00		0.00		0.00		0.00
Pol ychaete 1 arvae		5001	0.6	1.5	7	933.33	3	200,00	3	100.00	6	200,00
Trochophore l arvae		5001	0,2	0.6	14	1866.67	27	1800.00	8	266.67	14	466.67
Autolytus sp		50012301	3	3.5		0.00		0.00		0,00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0.00
Naupl ii larvae		6130	0.2	0.8	2	266.67	3	200.00		0,00		0.00
Cypris 1 arvae		6130	0.8	1.2	2	266.67		0,00		0.00		0,00
CLADOCERA						0.00		0.00		0,00		0,00
Podon		61090502	0.6	1.0		0,00		0.00		0,00		0.00
COPEPODA						0.00		0.00		0.00		0.00
Copepod naupl i i		6118	0.0	0.2	11	1466.67	8	533.33	6	200.00	1	33.33
			0,2	0.4	46	6133,33	31	2066.67	3	100.00		0,00
			0.4	0.6		0.00		0.00		0,00		0.00
			0.6	1.0		0.00		0.00		0.00		0.00
Copepod i tes	I-III	6118	0.2	0.4		0.00		0.00		0.00		0.00
			0,4	0.6	17	2266.67	3	200.00		0.00		0,00
			0.6	0.8	27	3600.00	4	266.67	1	33.33	1	33.33
Epi l abidocera sp	I	61182701	0.5	0,8		0.00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0,00		0.00		0.00
	III		1.1	1.5	1	133.33		0.00		0,00		0.00
Epi 1 abidocera longi padata	VIm	6118270102	2.7	3.1		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9	1	133.33	1	66,67		0,00	2	66.67
	IV		0.8	1.1		0.00	2	133,33	1	33.33		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					192		193		194		195	
	v		1.0	1,7		0.00	1	66.67		0.00		0.00
Tortanus d i scaudatus	VIf	6118300101	1.8	2.3		0.00		0.00		0,00		0.00
	VIm		1.6	2,2		0,00		0.00		0.00		0.00
Pseudocal anus sp. complex	Iv	61180505	0.9	1.1	5	666.67	3	200.00		0.00		0,00
	Vf		1.1	1.3	21	2800.00	19	1266,67	5	166.67	9	300.00
	Vm		1.0	1.3	25	3333.33	14	933.33	2	66,67	9	300,00
	VIf		1.1	2,0	10	1333,33	13	866.67	39	1300.00	30	1000.00
	VIm		1.1	1.5	9	1200.00	5	333.33	3	100.00	1	33.33
Microcalanus pygmeus pusi 1 lus	V	61180504	0,6	0,7		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0,00		0.00		0,00		0.00
Centropages abdominalis	IV	6118170101	0.9	1.1		0,00		0.00	1	33,33		0.00
	v		1.1	1.3		0.00	3	200.00		0.00	1	33.33
	VIf		1.6	2.1		0.00	1	66.67		0.00		0.00
	VIm		1.4	1.5		0.00		0.00		0.00		0,00
Eurytemora herdmanii	v	6118200203	0.9	1.2	7	933.33	3	200.00		0.00		0.00
	VIf		1.1	1.4	3	400.00	7	466.67	4	133.33	10	333.33
	VIm		1.1	1,4	9	1200.00	12	800.00	1	33.33	6	200,00
Eurytemora pacifica	VIf	6118200206	1,4	1,5		0.00		0,00		0.00		0.00
	VIm		1.4	1.4		0.00		0.00		0,00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	32	4266.67	4	266.67	3	100.00		0.00
Acartia longiremis	v	6118290103	0.7	1,0		0.00		0.00		0.00	1	33.33
	VIf		1.0	1.3		0.00		0.00		0.00		0.00
	VIm		0.9	1.1	1	133,33		0.00		0.00		0.00
Acartia clausii	v	6118290101	0.6	0,8	5	666.67		0.00		0.00	1	33.33
	VIf		0.9	1.3	2	266.67	1	66.67		0,00	3	100.00
	VIm		0,8	1,2	6	800.00		0.00		0.00	2	66,67
Harpacticoida	v	6119	0,6	0,8		0.00		0.00	1	33.33		0.00
	VIf		0.7	1.0		0.00		0.00		0.00	1	33,33
Microsetella	VIf	61190901	0.5	0.9		0.00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0.00
	VIf		0.7	1.0		0.00		0,00		0.00		0.00
	VIm		0.5	0.7		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER				192		193	194		195	
Halacaridae	58	0.2	0.3		0.0	0.00		0.		0.
PYCNOGONIDA					0.0	0.00		0.		0.
Protonymphon	60	0.2	0.4		0.0	0.00		0.		0.
CUMACEA					0.0	0.00		0.		0.
Cumacean	6154	1.2	1.2		0.0	0.00		0.		0.
ISOPODA					0.0	0.00		0.		0.
Isopod	6158	0.8	2.2		0.0	0.00		0.		0.
AMPHIPODA					0.0	0.00		0.		0.
Hyperiid juveniles	6170	1.[illegible]	2.0		0.	0.00		0.		0.
Gammarid	6169	1.[illegible]	2.5		0.	0.00		0.		0.
EUPHAUSIACEA					0.	0.00		0.		0.
Thysanoessa sp	61740209	5.5	8.0		0.	0.00		0.		0.
Euphausiid nauplii	6174	0.5	0.6		0.	0.00		0.		0.
Euphausiid protozoea	6174	0.0	0.5		0.	0.00		0.		0.
		0.5	1.0		0.	0.00		0.		0.
		1.0	1.5		0.	0.00		0.		0.
Euphausiid zoea	6174	2.0	2.5		0.	0.00		0.		0.
		2.5	3.0		0.	66.67		0.		0.
		3.5	4.0		0.	0.00		0.		0.
Euphausiid juveniles	6174	4.5	6.0		0.	0.00		0.		0.
DECAPODA					0.	0.00		0.		0.
Caridea zoea	6179	1.5	4.0		0.	66.67		0.		0.
Crangon mysis	617922	3.0	3.0		0.	0.00		0.		0.
Pandalus sp	617918	11.0	25.0		0.	0.00		0.		0.
Brachyuran zoea	6184	1.5	3.0		0.00	0.00		0.		0.
Pagurid zoea	6183	1.5	6.0		0.00	66.67		0.		0.
ECHINODERMATA					0.00	0.00		0.		0.
Bipinnaria larvae	81	0.6	0.8		0.00	0.00		0.		0.
Echinopluteus larvae	81	0.6	1.5		0.00	0.00		0.		0.
Auricularia larvae	81	0.4	1.0	4	533.33	66.67		0.		0.
Brachiolaria larvae	81	1.5	2.2		0.00	0.00		0.		0.
TUNICATA					0.00	0.00		0.		0.
Fritillaria	841302	1.5	3.0		0.00	0.00		0.00		0.
VERTEBRATA					0.00	0.00		0.00		0.
Fish eggs	8735	0.8	3.0	2	266.67	0.00	1	33.33		0.

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SAMPLE NUMBER				192		193		194		195	
Fish larvae	8735	7.0	10.0		0.00		0.00		0,00		0.00
Herring 1 arvae	874701	6.0	9.0		0.00		0.00		0.00		0,00
MISCELLANEOUS					0.00		0.00		0.00		0,00
Smal 1 eggs		0.2	0.4		0.00	3	200.00	5	166.67	1	33.33
TOTALS FOR SAMPLE				321	42800,00	294	19600.00	125	4166.67	115	3833,33

SAMPLE NUMBER	213	214	225	226
Date	180690	180690	180690	220690
Site	39	39	36	3 6
Time	1000	1005	1055	1100
Mesh (urn)	25	25	25	25
Depth of tow (m)	15	20	10	20
Volume filtered (m^3)	0.03	0.03	0.03	0.03
Fraction enumerated	0.5	0,5	0.25	0.5

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	LENGTH mm MAX	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA												
Tintinid	3540	0,1	0.3	0.00	1	66.67	1	66.67		0.00		0,00
Foraminifera	3448	0.1	0.3	0.00		0.00	4	266.67		0,00		0,00
CTENOPHORA				0.00		0.00		0.00		0.00		0.00
Pleurobrachia	38020101	1.0	2,5	0.00		0.00		0.00		0.00		0.00
CNIDARIA				0,00		0.00		0,00		0.00		0.00
Medusa juveniles	3701	0.7	2.1	0.00		0.00		0.00		0.00		0.00
Aglantha	37110411	1.0	3.0	0.00		0.00		0,00		0.00		0.00
		5.0	7,0	0.00		0.00		0.00		0.00		0.00
Euphysa	37030312	1.5	2,0	66.67		0.00		0.00		0.00		0.00
Aurelia juvenile	37340302	1.8	3.5	0.00		0.00		0.00		0.00	1	66.67
Obelia	37040102	0.6	1.0	0.00		0.00		0.00		0,00		0.00
		1.1	2.0	66.67		0.00		0.00	3	400.00	1	66,67
		2.1	4.0	0.00		0,00		0.00	1	133.33	1	66.67
Rathkea	37031902	1.5	2,0	200.00	2	133,33		0.00	23	3066.67	3	200.00
Sarsia	37030609	1.5	3.0	0.00		0.00		0.00		0.00		0.00
Proboscidactyla	37050602	3.0	7.0	0.00		0.00		0.00		0.00		0.00
TREMATODA				0.00		0.00		0.00		0.00		0.00
Flatworms	3901	0.6	1.5	66.67		0.00		0.00		0.00		0,00
NEMATODA				0.00		0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5	0.00		0.00		0.00		0.00		0,00
ROTIFERA				0.00		0.00		0.00		0.00		0.00
Rotifers	45	0.2	0.6	533.33	17	1133.33	9	600,00	2	266.67	2	133,33
CHAETOGNATHA				0.00		0.00		0,00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0	0.00		0.00		0.00		0,00		0.00
Chaetognath juveniles	83	2.0	7.0	0.00		0.00		0.00	4	533,33	2	133.33
BRYOZOA				0.00		0.00		0.00		0.00		0.00
Cyphonautes larvae	78	0.4	0.8	0.00		0.00		0.00	2	266,67	3	200.00
PHORONIDA				0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER						213		214		225		226	
Actinotrocha larvae		77	0.8	1.0	0.00		0.00		0.00		0.00		0.00
MOLLUSCA					0.00		0.00		0.00		0.00		0.00
Limacina		51130101	0.6	2.0	0.00		0.00		0.00		0,00		0.00
Nudi branch 1 arvae		5127	0.7	0,8	0.00		0.00		0.00		0.00		0,00
Bivalve vel iger		55	0.0	0.2	0.00		0.00	3	200.00	4	533,33	30	2000.00
			0.2	0.4	0.00	1	66,67		0.00	88	11733,33	83	5533.33
Gastropod vel iger		51	0.0	0,2	200.00	4	266.67	2	133.33		0.00		0,00
			0.2	0.4	333.33	3	200.00	3	200.00	32	4266.67	7	466.67
			0.4	0.6	0.00		0.00		0.00	12	1600.00	1	66.67
POLYCHAETA					0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4,0	66.67	1	66.67	1	66.67	3	400.00	4	266.67
Pol ynoi d 1 arvae		50012015	0,5	1.5	0.00		0.00		0.00		0.00		0,00
Pol ychaete 1 awae		5001	0,6	1,5	466.67	8	533,33	3	200.00	3	400.00	6	400,00
Trochophore 1 arvae		5001	0.2	0.6	66.67	2	133.33	3	200,00	2	266.67	33	2200,00
Autolytus Sp		50012301	3	3.5	0.00		0.00		0.00		0.00		0.00
CRUSTACEA					0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA					0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	2600,00	50	3333.33	40	2666.67		0.00	1	66,67
Cypris larvae		6130	0.8	1.2	466.67	7	466,67	3	200.00	1	133,33	1	66.67
CLADOCERA					0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0	66.67	1	66,67		0.00	2	266.67	1	66.67
COPEPODA					0.00		0.00		0.00		0,00		0.00
Copepod naupl i i		6118	0.0	0,2	200.00	3	200.00	2	133.33	3	400.00	17	1133.33
			0.2	0.4	2800,00	22	1466,67	29	1933.33	36	4800.00	31	2066.67
			0.4	0,6	0.00		0.00		0.00		0.00		0.00
			0.6	1.0	0.00		0,00		0.00		0,00		0,00
Copepodites	I-III	6118	0.2	0.4	0.00		0,00		0.00		0.00		0.00
			0.4	0.6	733.33	13	866.67	17	1133.33	13	1733,33	3	200.00
			0.6	0.8	466.67	17	1133.33	8	533,33	3	400,00	1	66,67
Epi labidocera sp	I	61182701	0.5	0.8	0.00		0,00		0,00		0.00		0.00
	II		0.8	1,0	66.67		0.00		0.00		0.00		0.00
	III		1.1	1.5	0,00		0,00		0.00		0.00		0.00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1	0.00		0.00		0.00		0.00		0,00
Tortanus sp	III	61183001	047	0,9	0.00		0.00		0.00		0.00		0.00
	IV		0.8	1.1	0.00		0.00		0.00	1	133,33		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER						213		214		225		226	
	V		1.0	1.7	0.00		0.00		0.00		0.00		0,00
Tortanus di scaudatus	VIf	611 B300101	1,8	2,3	0.00		0,00		0,00		0.00		0.00
	VIm		1.6	2.2	0.00		0.00		0.00		0.00		0,00
Pseudocal anus sp. complex	IV	61180505	0.9	1.1	0.00		0.00		0,00		0.00		0.00
	Vf		1.1	1.3	0.00		0.00		0.00	11	1466.67	5	333,33
	Vm		1.0	1.3	0.00		0.00		0.00	4	533.33	6	400.00
	VIf		1.1	2.0	66.67		0,00		0.00	3	400.00	11	733.33
	VIm		1.1	1.5	0.00	1	66.67		0.00	4	533,33	14	933.33
Microcalanus pygmeus PUSI 1 lus	V	61180504	0.6	0,7	0.00		0.00		0.00		0,00		0.00
Metridia sp	I-III	61181602	0.5	1.1	0.00		0.00		0.00		0.00		0,00
Centropages abdominal is	IV	6118170101	0.9	1.1	200.00	8	533.33	6	400.00		0.00		0.00
	v		1.1	1.3	200.00	2	133.33	2	133.33	1	133.33	1	66.67
	VIf		1.6	2.1	0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.5	0.00		0.00		0.00		0.00		0.00
Eurytemora herdmani i	v	6118200203	0,9	1,2	0.00	6	400.00	11	733.33		0.00		0.00
	VIf		1.1	1.4	333.33	1	66.67	2	133.33		0,00	3	200.00
	VIm		1.1	1.4	333,33	6	400,00	3	200.00	2	266.67	5	333.33
Eurytemora pacifi ca	VIf	6118200206	1.4	1.5	0.00		0.00		0.00		0.00		0.00
	VIm		1,4	1.4	0.00		0,00		0.00		0,00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	2800.00	44	2933.33	46	3066,67	8	1066.67	1	66.67
Acartia longiremis	v	611 8290103	0.7	1.0	0.00		0.00		0.00		0.00		0.00
	VIf		1.0	1.3	0.00		0,00		0.00		0,00		0.00
	VIm		0.9	1,1	0.00		0.00		0.00	2	266.67		0.00
Acartia clausii	v	6118290101	0.6	0.8	1066.67	9	600.00	16	1066.67	5	666.67	1	66.67
	VIf		0.9	1.3	600.00	7	466.67	7	466.67	2	266.67	3	200.00
	VIm		0.8	1,2	533.33	5	333.33	11	733.33	3	400,00		0,00
Harpacticoi da	v	6119	0.6	0.8	200.00		0.00		0.00		0,00		0.00
	VIf		0.7	1.0	133.33	5	333,33	3	200.00		0.00		0.00
Microsetel la	VIf	61190901	0.5	0.9	0.00	2	133.33	2	133.33		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7	0.00		0.00		0.00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8	0.00		0.00		0.00		0.00		0.00
	VIf		0,7	1.0	0,00		0.00		0.00		0,00		0.00
	VIm		0.5	0.7	0.00		0.00		0.00		0.00		0,00
Oncaea sp	v	61200103	0.5	0.7	0.00		0.00		0.00		0.00		0.00
CHELICERATA					0.00		0.00		0,00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER				213		214		225		226	
Hal acaridae	58	0.2	0.3	0.00	0,00		0,00		0.00		0.00
PYCNOGONIDA				0.00	0.00		0.00		0.00		0.00
Protonymphon	60	0.2	0.4	0.00	0.00		0.00		0.00		0.00
CUMACEA				0.00	0.00		0.00		0.00		0.00
Cumacean	6154	1.2	1.2	0.00	0.00		0,00		0.00		0.00
ISOPODA				0.00	0.00		0.00		0.00		0.00
I sopod	6158	0,8	2.2	0.00	0.00		0.00		0.00		0.00
AMPHIPODA				0.00	0.00		0.00		0.00		0.00
Hyperi Id juveni les	6170	1.5	2,0	0,00	0.00		0.00		0,00		0,00
Gammarid	6169	1.2	2.5	66.67	0,00		0.00		0.00		0.00
EUPHAUSIACEA				0.00	0.00		0.00		0,00		0.00
Thysanoessa sp	61740209	5,5	8.0	0,00	0.00		0.00		0.00		0.00
Euphausiid naupl i 1	6174	0.5	0.6	0.00	0.00		0.00		0.00		0.00
Euphausi Id protozoea	6174	0.0	0.5	0.00	0.00		0.00		0.00		0.00
		0.5	1.0	0.00	0.00		0.00		0,00		0,00
		1.0	1.5	0.00	0.00		0.00		0.00		0.00
Euphausi Id zoea	6174	2.0	2.5	0.00	0.00		0.00		0.00		0,00
		2.5	3.0	0.00	0.00		0.00		0.00		0.00
		3.5	4.0	0.00	0.00		0,00		0.00		0.00
Euphausi Id juveni les	6174	4.5	6.o	0.00	0.00		0.00		0.00		0,00
DECAPODA				0.00	0.00		0,00		0,00		0,00
Carl dea zoea	6179	1.5	4.0	133.33	1	66.67		0.00	1	133.33	0.00
Crangon mysis	617922	3.0	3.0	0.00		0.00		0.00		0.00	0.00
Pandalus sp	617918	11.0	25.0	0.00		0.00		0.00		0.00	0.00
Brachyuran zoea	6184	1.5	3.0	0.00		0.00		0.00		0.00	0,00
Pagurid zoea	6183	1.5	6.0	0.00		0,00		0.00		0.00	0.00
ECHINODERMATA				0.00		0.00		0.00		0.00	0.00
Bipinnaria larvae	81	0.6	0.8	0.00		0,00		0.00		0.00	0.00
Echinopluteus larvae	81	0.6	1.5	0.00		0.00	1	66.67	2	266.67	0.00
Auricularia larvae	81	0,4	1.0	0.00	1	66.67		0.00	6	800,00	1	66.67
Brachiolaria larvae	81	1.5	2.5	0.00		0,00		0.00		0.00	0.00
TUNICATA				0.00		0.00		0.00		0.00	0.00
Fritillaria	841302	1.5	3.0	200.00	1	66.67	1	66.67		0.00	0.00
VERTEBRATA				0.00		0.00		0.00		0.00	0.00
Fish eggs	8735	0.8	3.0	0.00		0.00		0.00		0.00	0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER				213		214		225		226	
Fish larvae	8735	7.0	10.0	0.00	0.00	0.00	0,00	0 . 0 0			
Herring larvae	874701	6.0	9.0	0,00	0.00	0.00	0.00	0.00			
MISCELLANEOUS				0.00	0.00	0,00	0.00	0.00			
Small eggs		0.2	0.4	0.00	0 . 0 0	0.00	0.00	6	400.00		
TOTALS FOR SAMPLE				16333.33	250 16666.67	23815866.67	292 38933.33	289 19266.67			

SAMPLE NUMBER				227		228		291		292		293		294	
Date				220690		220690		230690		230690		230690		230690	
Site				36		36		39		39		39		39	
Time				1110		1120		1710		1715		1720		1725	
Mesh (um)				25		25		25		25		25		25	
Depth of tow (m)				30		40		5		10		15		20	
Volume filtered (m^3)				0.03		0.03		0.03		0.03		0.03		0.03	
Fraction enumerated				1		1		0.25		0.5		0.5		1	
SPECIES	STAGE	TAXONOMIC CODE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA																
Tintinid		3540	0.1	0.3		0.00		0.00		0.00		0.00		0.00		0.00
Foraminifera		3448	0.1	0.3		0.00		0.00		0.00		0.00		0.00		0.00
CTENOPHORA						0.00		0.00		0.00		0.00		0.00		0.00
Pleurobrachia		38020101	[illegible]	2.5		0.00		0.00		0.00		0.00		0.00		0.00
CNIDARIA						0.00		0.00		0.00		0.00		0.00		0.00
Medusa juvenes		3701	[illegible].7	2.1		0.00	6	200.00		0.00		0.00		0.00		0.00
Aglantha		[illegible]71 0411	1.0	3.0		0.00		0.00		0.00		0.00		0.00		0.00
			5.0	7.0		0.00		0.00		0.						0.00
Euphysa		37030312	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Aurelia juvenile		37340302	1.8	3.5		0.00		0.00		0.00		0.00		0.00		0.00
Obelia		37040102	0.6	1.0		33.33	3	100.00		0.00		0.00		0.00		0.00
			1.1	2.0		100.00	6	200.00		0.00		0.00		0.00		0.00
			2.1	4.0		166.67	1	33.37		0.00		0.00		0.00		33.33
Rathkea		37031902	1.5	2.0		33.33	5	133.60		0.00		0.00		0.00		0.00
Sarsia		37030609	1.5	3.0		0.00		66.00		0.00		0.00		0.00		0.00
Proboscidactyla		37050602	3.0	7.0		0.00		0.00		0.00		0.		0.00		0.00
TREMATODA						0.00		0.00		0.00		0.00		0.00		0.00
Flatworms		3901	0.6	1.5		0.00		0.33		0.00		0.00		0.00		0.00
NEMATODA						0.00		33.00		0.00		0.00		0.00		0.00
Nematodes		47	0.8	1.5		0.00		0.00		0.00		0.00		0.00		0.00
ROTIFERA						0.00		0.00		0.00		0.00		0.00		0.00
Rotifers		45	0.2	0.6	29	966.67	[illegible]	33.33		0.00	2	33.33		0.00		33.33
CHAETOGNATHA						0.00		0.00		0.00		0.00		0.00		0.00
Sagitta elegans		[illegible]300[illegible]0[illegible]	5.0	27.0		0.00		0.00		0.00		0.00		0.00		0.00
Chaetognath juveniles		8[illegible]	2.0	7.0		33.33		0.00		0.00		0.00		0.00		0.00
BRYOZOA						0.00		0.00		0.00		0.00		0.00		0.00
Cyphonautes larvae		[illegible]	0.*	[illegible]	2	66.67		33.33		0.00		0.00		0.00		0.00
PHORONIDA						0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER					227		228		291		292		293		294	
Actinotrocha larvae		77	0.8	1,0		0.00		0.00	1	133.33		0,00	1	66,67		0.00
MOLLUSCA						0.00		0.00		0,00		0.00		0.00		0,00
Limacina		51130101	0.6	2,0		0.00		0.00		0.00		0,00		0.00		0.00
Nudibranch larvae		5127	0.7	0.8		0.00		0.00		0,00		0.00		0.00		0.00
Bivalve veliger		55	0.0	0.2		0.00	3	100.00		0.00		0.00		0.00		0.00
			0.2	0.4	5	166,67	2	66,67		0.00	1	66.67		0,00		0.00
Gastropod veliger		51	0.0	0,2	1	33.33	1	33,33	2	266.67	2	133.33		0.00		0.00
			0.2	0.4	5	166,67	4	133.33	3	400.00	6	400,00	1	66.67	2	66.67
			0.4	0.6	1	33.33		0.00	1	133,33		0,00		0.00		0.00
POLYCHAETA						0.00		0,00		0.00		0,00		0.00		0.00
Spionid larvae		500143	0.8	4,0	2	66.67	1	33.33	1	133.33		0.00	1	66.67		0,00
Polynoid larvae		50012015	0.5	1.5		0.00		0.00		0.00		0.00		0.00		0,00
Polychaete larvae		5001	0.6	1.5	2	66.67	33	1100.00	3	400,00	1	66,67		0.00	4	133.33
Trochophore larvae		5001	0.2	0.6	27	900.00	7	233.33		0.00		0.00	1	66.67		0,00
Autolytus Sp		50012301	3	3.5		0.00		0.00		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0,00		0.00		0.00		0.00		0,00
CIRRIPEDIA						0,00		0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	1	33.33	3	100.00	67	8933,33	82	5466.67	81	5400.00	65	2166.67
Cypris larvae		6130	0,8	1.2	2	66,67		0.00	3	400.00	1	66,67	5	333.33	5	166.67
CLADCCERA						0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0		0,00		0.00	1	133.33		0.00		0.00		0,00
COPEPODA						0.00		0,00		0.00		0,00		0,00		0,00
Copepod nauplii		6118	0.0	0.2	3	100.00	2	66.67	9	1200.00	3	200.00	1	66.67	3	100.00
			0.2	0.4	4	133.33	3	100.00	10	1333,33	4	266.67	4	266.67	15	500.00
			0.4	0,6		0.00		0.00		0.00		0.00		0.00	2	66,67
			0.6	1.0		0.00		0.00		0.00		0.00		0,00		0.00
Copepodites	I-III	6118	0,2	0.4		0.00		0.00		0.00		0.00		0.00		0.00
			0.4	0.6	1	33,33		0,00	7	933,33	1	66.67	2	133,33		0.00
			0.6	0.8		0.00	1	33.33		0.00	1	66.67	2	133.33	2	66,67
Epilabidocera sp	I	61182701	0.5	0.8		0.00		0,00		0.00		0.00		0,00		0.00
	II		0.8	1.0		0.00		0.00		0.00		0.00		0.00		0,00
	III		1.1	1,5		0.00		0,00		0,00		0,00		0.00		0.00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1		0.00		0.00		0,00		0.00		0,00		0.00
Tortanus sp	III	61183001	0,7	0.9		0.00		0,00		0.00		0.00	2	133.33		0.00
	IV		0.8	1.1		0,00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					227		228		291		292		293		294	
	v		1.0	1.7	1	33.33	2	66.67		0.00		0.00		0.'00		0.00
Tortanus di scaudatus	VIf	6118300101	1.8	2.3		0.00	1	33.33		0.00		0.00	1	66,67		0.00
	VIm		1,6	2,2		0.00		0.00		0,00		0,00		0.00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1,1		0.00		0.00		0.00		0.00		0.00		0.00
	Vf		1.1	1.3	27	900.00	42	1400,00		0.00		0.00	1	66.67		0.00
	Vm		1.0	1.3	32	1066.67	33	1100.00		0.00		0.00		0.00		0.00
	VIf		1.1	2.0	42	1400.00	35	1166.67	1	133.33		0.00		0,00		0.00
	VIm		1,1	1.5	5	166.67	12	400.00	1	133,33		0,00		0.00		0.00
Microcalanus pygmeus PUS I 1 lus	V	61180504	0.6	0.7		0.00		0.00		0.00		0.00		0,00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0.00		0.00		0.00		0.00		0,00		0.00
Centropages abdominalis	IV	6118170101	0.9	1.1		0.00		0.00	1	133.33		0,00	3	200.00	4	133.33
	v		1.1	1,3	3	100.00	2	66.67	6	800.00	4	266.67	1	66.67	2	66.67
	VIf		1.6	2.1		0,00	1	33.33		0.00		0.00		0.00		0.00
	VIm		1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Eurytemora herdmanii	v	6118200203	0.9	1.2		0,00	1	33.33	3	400,00		0,00		0.00		0.00
	VIf		1.1	1.4	13	433.33	10	333,33	3	400.00	1	66.67		0.00	3	100.00
	VIm		1,1	1,4	14	466,67	10	333.33	4	533,33	2	133.33	1	66.67	3	100.00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.4		0,00		0.00		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	1	33.33	2	66.67	38	5066.67	38	2533,33	37	2466.67	40	1333.33
Acartia longiremis	v	6118290103	0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		1.0	1.3		0.00	1	33.33		0.00		0.00		0.00		0.00
	VIm		0.9	1.1		0.00		0.00		0,00	1	66.67		0.00		0.00
Acartia clausii	v	6118290101	0.6	0.8	1	33.33		0.00	23	3066.67	24	1600.00	25	1666,67	27	900.00
	VIf		0.9	1.3	4	133.33	6	200.00	29	3866.67	26	1733.33	10	666,67	10	333.33
	VIm		0.8	1,2	2	66,67	3	100.00	29	3866.67	24	1600.00	18	1200,00	24	800.00
Harpacticoida	v	6119	0.6	0.8		0.00		0.00	2	266.67	6	400.00		0.00	2	66.67
	VIf		0.7	1.0		0.00		0.00	2	266.67		0,00	8	533.33		0.00
Microsetella	VIf	61190901	0.5	0.9		0.00		0.00		0.00		0.00	8	533.33	3	100moo
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00		0.00		0.00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0,00		0.00
	VIm		0.5	0.7		0.00		0.00		0.00		0,00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER				227	228	291	292	293	294
Halacaridae	58	0.2	0.3	0.00	0.00	0.00	0.00	0.00	0.00
PYCNOGONIDA				0.00	0.00	0.00	0.00	0.00	0.00
Protonymphon	60	0.2	0.4	0.00	0.00	0.00	0.00	0.00	0.00
CUMACEA				0.00	0.00	0.00	0.00	0.00	0.00
Cumacean	6154	1.2	1.2	0.00	0.00	0.00	0.00	0.00	0.00
ISOPODA				0.00	0.00	0.00	0.00	0.00	0.00
Isopod	6158	0.8	2.2	0.00	0.00	1 33.33	0.00	0.00	0.00
AMPHIPODA				0.	0.	0.00	0.	0.	0.
Hyperiid juveniles	6170	.5	2.0	0.00	0.00	1 33.33	0.00	0.00	0.00
Gammarid	6169	.2	2.5	0.00	0.00	0.00	0.00	0.00	0.00
EUPHAUSIACEA				0.00	0.00	0.00	0.00	0.00	0.00
Thysanoessa sp	61740209	5.5	8.0	0.00	0.00	0.00	0.00	0.00	0.00
Euphausiid nauplii	6174	0.5	0.6	0.00	0.00	0.00	0.00	0.00	0.00
Euphausiid protozoea	6174	0.0	0.5	0.00	0.00	0.00	0.00	0.00	0.00
		0.5	1.0	0.00	0.00	0.00	0.00	0.00	0.00
		1.0	1.5	0.00	0.00	0.00	0.00	0.00	0.00
Euphausiid zoea	6174	2.0	2.5	0.	0.	0.	0.	0.	0.
		2.5	3.0	0.00	0.00	0.00	0.00	0.00	0.00
		3.5	4.0	1 33.3	0.00	0.00	0.00	0.00	0.00
Euphausiid juveniles	6174	4.5	6.0	0.00	0.00	0.00	0.00	0.00	0.00
DECAPODA				0.00	0.00	0.00	0.00	0.00	0.00
Caridea zoea	6179	1.5	4.0	0.00	0.00	33.33	0.00	0.00	0.00
Crangon mysis	617922	3.0	3.0	0.00	0.00	0.00	0.00	0.00	0.00
Pandalus sp	617918	11.0	25.0	0.00	0.	0.00	0.	0.	0.
Brachyuran zoea	6184	1.5	3.0	0.00	0.00	0.00	0.00	0.00	0.00
Pagurid zoea	6183	1.5	6.0	0.00	0.00	33.33	0.00	0.00	0.00
ECHINODERMATA				0.00	0.00	0.00	0.00	0.00	0.00
Bipinnaria larvae	81	0.6	0.8	0.00	0.00	0.00	0.00	0.00	0.00
Echinopluteus larvae	81	0.6	1.5	0.00	0.00	0.00	0.00	0.00	0.00
Auricularia larvae	81	0.4	1.0	0.00	0.00	0.00	0.00	0.00	0.00
Brachiolaria larvae	81	1.5	2.5	0.00	0.00	0.00	0.00	0.00	0.00
TUNICATA				0.	0.	0.00	0.	0.	0.
Fritillaria	841302	1.5	3.0	0.00	0.00	0.00	0.00	0.00	0.00
VERTEBRATA				0.00	0.00	0.00	0.00	0.00	0.00
Fish eggs	8735	0.8	3.0	0.00	33.33	0.00	0.00	0.00	0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER	227	228	291	292	293	294
Fish larvae	8735 7,0 10.0	0.00	0,00	0.00	0.00	0.′00	0.00
Herring larvae	874701 6.0 9.0	0.00	0.00	0.00	0.00	0.00	0.00
MISCELLANEOUS		0,00	0.00	0.00	0.00	0.00	0.00
Small eggs	0.2 0.4 1	33.33	0.00	0.00	0.00	0.00	0.00
TOTALS FOR SAMPLE	243 8100.00	258 8600.00	254 33866.67	230 15333.33	214 14266.67	218 7266.67

SAMPLE NUMBER	373	374	390	391
Date	290690	290690	300690	300690
Site	36	36	39	39
Time	1355	1400	1315	1320
Mesh (urn)	25	25	25	25
Depth of tow (m)	30	40	5	10
Volume filtered (m-3)	0.03	0.03	0.03	0.03
Fraction enumerated	1	1	0,5	0.5

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	MAX	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA												
Tintinid	3540	0,1	0,3	0.00		0.00		0.00		0,00		0.00
Foramini fera	3448	0.1	0,3	0,00		0.00		0,00	1	66.6,7	2	133.33
CTENOPHORA				0.00		0.00		0.00		0.00		0.00
Pleurobrachia	38020101	1.0	2.5	0.00	1	33.33		0.00		0,00		0.00
CNIDARIA				0.00		0.00		0.00		0.00		0.00
Medusa juveni les	3701	0.7	2,1	0,00		0.00		0.00		0.00		0.00
Ag 1 antha	37110411	1.0	3.0	0.00		0.00		0.00		0,00		0.00
		5.0	7.0	33.33		0.00	1	33.33		0.00		0.00
Euphysa	37030312	1.5	2.0	0.00		0.00		0.00		0.00		0,00
Aurel ia juvenile	37340302	1.8	3,5	0,00		0,00		0.00		0.00		0.00
Obelia	37040102	0,6	1.0	0.00		0,00		0.00		0.00		0.00
		1.1	2.0	0.00		0.00		0.00		0.00		0.00
		2.1	4.0	366.67		0.00		0.00		0.00		0.00
Rathkea	37031902	1.5	2.0	33.33		0.00		0.00		0.00		0.00
Sarsia	37030609	1.5	3.0	0,00		0.00		0.00		0.00		0.00
Proboscidactyl a	37050602	3.0	7.0	0.00		0.00		0,00		0.00		0.00
TREMATODA				0.00		0.00		0.00		0,00		0.00
Fl atworms	3901	0,6	1.5	33.33		0.00		0.00	1	66.67	1	66.67
NEMATOOA				0.00		0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5	0.00		0.00		0,00		0.00		0.00
ROTIFERA				0.00		0.00		0.00		0.00		0.00
Rot if ers	45	0.2	0.6	166.67	2	66.67	2	66.67	2	133.33	1	66.67
CHAETOGNATHA				0.00		0.00		0.00		0,00		0.00
Sagitta elegans	8300000303	15.0	27.0	166.67		0.00	3	100.00		0.00		0.00
Chaetognath juveni les	83	2.0	7.0	0,00		0.00		0.00		0.00		0,00
BRYOZOA				0.00		0.00		0.00		0.00		0.00
Cyphonautes 1 arvae	78	0.4	0.8	66.67	2	66.67	2	66.67		0,00		0.00
PHORONIDA				0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER						373		374		390		391	
Acti notrocha 1 arvae		77	0.8	1,0	0.00		0.00		0.00		0.00		0.00
MOLLUSCA					0.00		0.00		0,00		0.00		0,00
Limacina		51130101	0.6	2,0	0.00		0.00		0.00		0.00		0.00
Nudi branch 1 arvae		5127	0.7	0.8	0.00		0 . 0 0		0.00		0.00		0.00
Bivalve vel iger		55	0.0	0,2	133.33		0.00		0,00		0.00		0.00
			0,2	0.4	700.00	2	66,67		0.00		0.00		0.00
Gastropod vel iger		51	0.0	0.2	0.00	12	400.00	3	100,00		0.00	1	66.67
			0.2	0,4	33.33	6	200.00	6	200.00	4	266.67	5	333.33
			0,4	0,6	0.00		0.00		0.00		0,00		0.00
POLYCHAETA					0,00		0,00		0.00		0.00		0,00
Spionid larvae		500143	0.8	4,0	66.67		0.00		0.00		0.00	1	66.67
Pol ynoid l arvae		50012015	0,5	1,5	0.00		0.00		0.00		0.00		0.00
Pol ychaete 1 arvae		5001	0.6	1,5	33.33	1	33.33		0.00		0.00	2	133,33
Trochophore larvae		5001	0.2	0.6	400.00	7	233.33	4	133,33	6	400,00	1	66.67
Autolytus sp		50012301	3	3.5	0,00		0,00		0.00		0.00		0.00
CRUSTACEA					0.00		0.00		0,00		0,00		0.00
CIRRIPEDIA					0.00		0.00		0.00		0,00		0.00
Naupl I i 1 arvae		6130	0.2	0,8	0.00		0.00		0.00	57	3800,00	44	2933.33
Cypris l arvae		6130	0.8	1,2	0.00		0.00		0.00	1	66.67	1	66.67
CLADOCERA					0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0	0.00		0.00		0.00	1	66.67		0.00
COPEPODA					0,00		0.00		0.00		0.00		0.00
Copepod naupl11		6118	0,0	0,2	700.00	3	100.00	1	33.33	9	600.00	2	133.33
			0.2	0.4	2166.67	5	166.67		0.00	37	2466,67	21	1400.00
			0.4	0,6	0.00		0.00		0.00	3	200.00		0.00
			0.6	1.0	0.00		0.00		0.00		0.00		0.00
Copepodites	I-III	6118	0.2	0,4	33.33	1	33.33	1	33.33		0,00	1	66,67
			0.4	0.6	800.00	2	66,67	2	66.67	7	466.67	6	400.00
			0.6	0.8	400,00		0.00		0,00	4	266.67	13	866.67
Epi labidocera sp	I	61182701	0.5	0.8	0.00		0.00		0.00		0.00		0.00
	II		0.8	1,0	0.00		0.00		0.00		0.00		0,00
	III		1.1	1.5	0.00		0.00		0.00		0.00		0.00
Epi labidocera long ipedata	VIm	6118270102	2.7	3.1	33,33		0,00		0.00				0,00
Tortanus sp	III	61183001	0.7	0.9	0.00		0.00		0.00		0.00		0.00
	IV		0.8	1.1	0,00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER						373		374		390		391	
	v		1,0	1,7	0.00		0,00		0.00		0.00		0 . 0 0
Tortanus discaudatus	VIf	6118300101	1.8	2.3	0.00	1	33.33		0.00		0.00		0.00
	VIm		1,6	2.2	33,33		0,00	1	33.33				0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	0.00		0.00		0.00		0.00		0.00
	Vf		1.1	1.3	433.33	19	633.33	10	333.33		0.00	2	133.33
	Vm		1.0	1.3	333.33	21	700,00	16	533.33	2	133.33	1	66.67
	VIf		1.1	2.0	1133.33	35	1166.67	28	933,33	1	66.67		0.00
	VIm		1.1	1,5	166,67	1	33.33	1	33.33		0.00		0.00
Microcalanus pygmeus PUS I 1 lus	V	61180504	0,6	0.7	0.00		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1	0,00		0.00		0.00		0.00		0.00
Centropages abdomi nal is	Iv	6118170101	0.9	1.1	0.00		0,00		0.00		0.00		0.00
	v		1.1	1,3	0.00		0.00		0.00	4	266.67	7	466.67
	VIf		1.6	2.1	33.33		0,00		0,00		0.00	1	66.67
	VIm		1.4	1.5	0.00		0,00		0.00		0.00	1	66.67
Eurytemora herdman i i	v	6118200203	0.9	1.2	100.00		0.00		0.00	7	466.67	8	533.33
	VIf		1.1	1.4	0.00		0.00	1	33.33	2	133.33	3	200.00
	VIm		1.1	1.4	33.33		0.00		0.00	6	400,00	6	400.00
Eurytemora paci f i ca	VIf	6118200206	1.4	1.5	0.00		0,00		0.00		0.00		0.00
	VIm		1.4	1.4	0.00		0.00		0,00		0.00		0.00
Acarti a sp	I-IV	61182901	0.5	0.7	0.00		0,00	3	100.00	27	1800.00	18	1200.00
Acartia longi remis	v	6118290103	0.7	1.0	33.33		0.00		0.00	1	66.67	1	66.67
	VIf		1.0	1.3	0.00		0.00		0.00		0,00	1	66.67
	VIm		0,9	1,1	33.33		0.00		0.00	4	266.67	3	200.00
Acartia clausi i	v	6118290101	0.6	0.8	0.00		0.00		0.00	8	533.33	19	1266,67
	VIf		0.9	1,3	0,00		0.00		0.00	37	2466.67	46	3066,67
	VIm		0.8	1.2	0.00		0.00		0.00	14	933.33	23	1533.33
Harpacticoida	v	6119	0.6	0.8	0.00		0.00		0.00	2	133.33	3	200.00
	VIf		0.7	1,0	0.00		0.00		0.00		0.00		0.00
Microsetel l a	VIf	61190901	0.5	0.9	0,00		0.00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7	0,00		0.00		0.00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8	0.00		0.00		0.00		0.00		0.00
	VIf		0.7	1.0	0.00		0.00		0.00	1	66.67		0.00
	VIm		0,5	0.7	0.00		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7	0.00		0.00		0,00		0.00		0,00
CHELICERATA					0.00		0,00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER		373	374	390	391
Hal acaridae	5a 0.2 0.3	0.00	0,00	1 33.33	0,00	0 . 0 0
PYCNOGONIDA		0.00	0.00	0.00	0.00	0,00
Protonymphon	60 0.2 0.4	0.00	0.00	0.00	0.00	0.00
CUMACEA		0,00	0.00	0.00	0.00	0.00
Cumacean	6154 1.2 1.2	0.00	0.00	0.00	0.00	0.00
ISOPODA		0.00	0.00	0,00	0.00	0.00
Isopod	6158 0.8 2.2	0.00	0.00	0.00	0.00	0.00
AMPHIPODA		0.00	0.00	0.00	0.00	0.00
Hyperiid juveniles	6170 1.5 2.0	0.00	0.00	0.00	0.00	0.00
Gammarid	6169 1.2 2.5	0.00	0.00	0.00	0.00	0.00
EUPHAUSIACEA		0.00	0.00	0.00	0.00	0.00
Thysanoessa sp	61740209 5.5 8,0	0.00	0.00	5 166.67	0.00	0,00
Euphausi id nauplii	6174 0.5 0.6	0.00	0.00	0.00	0,00	0.00
Euphausiid protozoea	6174 0,0 0.5	0.00	0.00	0.00	0.00	0.00
	0.5 1.0	0,00	0.00	0.00	0.00	0.00
	1.0 1.5	0.00	0,00	0.00	0,00	0.00
Euphausi id zoea	6174 2.0 2.5	0.00	0.00	0.00	0.00	0.00
	2.5 3.0	0,00	0,00	0,00	0.00	0.00
	3.5 4.0	0.00	0.00	0,00	0,00	0.00
Euphausiid juveniles	6174 4.5 6.0	0.00	0.00	0,00	0.00	0.00
DECAPODA		0,00	0.00	0.00	0.00	0.00
Caridea zoea	6179 1.5 4.0	0.00	0.00	0.00	1 66.67	0.00
Crangon mysis	617922 3,0 3.0	0,00	0.00	0.00	0.00	0.00
Pandalus sp	617918 11.0 25.0	0.00	0,00	0,00	0.00	0.00
Brachyuran zoea	6184 1.5 3.0	0.00	0.00	0.00	0.00	0.00
Pagurid zoea	6183 1.5 6.0	33,33	0.00	0.00	1 66.67	1 66,67
ECHINODERMATA		0.00	0.00	0.00	0.00	0.00
Bipinnaria larvae	81 0.6 0,8	133.33	0,00	0.00	0.00	0.00
Echi nopluteus 1 arvae	81 0.6 1.5	0.00	0,00	0.00	0,00	0,00
Auricul aria larvae	81 0,4 1.0	0,00	0,00	1 33.33	0,00	0.00
Brachiolaria larvae	81 1.5 2.5	0.00	0.00	0,00	0.00	0.00
TUNICATA		0,00	0,00	0.00	0.00	0.00
Friti 1 laria	841302 1.5 3.0	0.00	0.00	0.00	0.00	1 66.67
VERTEBRATE		0.00	0.00	0.00	0.00	0.00
Fish eggs	8735 0.8 3.0	33.33	1 33.33	1 33.33	0.00	0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER				373		374		390		391	
Fish larvae	8735	7.0	10.0	0.00		0.00		0,00		0.00	0,00
Herring larvae	874701	6.0	9.0	0.00		0.00		0,00	1	66.67	0,00
MISCELLANEOUS				0.00		0,00		0,00		0.00	0,00
Small eggs		0.2	0.4	300.00	1	33.33		0,00		0.00	0.00
TOTALS FOR SAMPLE				9200.00	123	41 OO. (10	93	3100,00	252	16800.00	247 16466.67

SAMPLE NUMBER	392	393	426	427	42a	429
Date	300690	300690	060790	060790	060790	060790
Site	39	39	36	36	36	36
Time	1325	1330	1200	1205	1210	1215
Mesh (urn)	25	25	25	25	25	25
Depth of tow (m)	15	20	10	20	30	40
Volume filtered (m^3)	0.03	0.03	0.03	0.03	0.03	0.03
Fraction enumerated	0.5	0.5	0,5	1	1	1

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	N O PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA															
Tintinid	3540	0.1	0.3		0.00		0.00		0.00		0.00		0.00		0.00
Forami ni fera	3448	0.1	0.3		0.00		0.00		0.00		0.00		0.00		0.00
CTENOPHORA					0.00		0.00		0.00		0.00		0.00		0.00
Pleurobrachia	38020101	1.0	2.5		0,00		0.00		0,00		0.00	1	33.33		0.00
CNIDARIA					0.00		0.00		0.00		0.00		0.00		0.00
Medusa juveniles	3701	0.7	2.1		0.00		0.00		0.00		0.00		0.00		0.00
Aglantha	37110411	1.0	3.0		0.00		0.00		0.00		0.00		0.00		0.00
		5.0	7.0		0,00		0.00		0.00		0.00		0.00	2	66.67
Euphysa	37030312	1.5	2.0		0.00		0.00		0.00		0.00		0.00		0.00
Aurelia juvenile	37340302	1.8	3.5		0.00		0,00		0.00		0,00		0.00		0.00
Obel ia	37040102	0.6	1.0		0.00		0.00	1	66.67		0.00		0.00		0.00
		1.1	2.0		0.00		0.00		0,00	1	33.33		0.00		0,00
		2.1	4.0		0.00		0,00	9	600.00		0.00		0.00		0.00
Rathkea	37031902	1.5	2.0		0.00	1	66.67	22	1466.67		0.00		0.00		0.00
Sarsia	37030609	1.5	3.0		0.00		0.00		0.00		0.00		0.00		0.00
Probosci dactyl a	37050602	3.0	7.0		0.00		0.00	1	66.67		0.00		0.00		0.00
TREMATODA					0.00		0.00		0.00		0,00		0.00		0.00
Fl atworms	3901	0.6	1.5		0.00	3	200.00	1	66.67		0.00		0.00		0.00
NEMATODA					0.00		0.00		0.00		0,00		0.00		0.00
Nematodes	47	0.8	1.5		0.00		0.00		0.00	1	33.33		0.00		0.00
ROTIFERA					0.00		0.00		0,00		0.00		0.00		0.00
Roti fers	45	0.2	0.6		0.00	1	66.67		0.00		0.00		0.00		0.00
CHAETOGNATHA					0.00		0.00		0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00	2	133.33	2	66.67		0,00		0.00
Chaetognath juveni l es	83	2.0	7.0		0.00		0.00	1	66.67		0.00		0.00		0.00
BRYOZOA					0.00		0.00		0.00		0.00		0.00		0.00
Cyphonautes l arvae	78	0.4	048		0.00		0.00	2	133.33	1	33.33	2	66,67	1	33.33
PHORONI OA					0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					392		393		426		427		428		429	
Acti notrocha 1 arvae		77	0.8	1.0		0,00		0.00	1	66.67		0.00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00		0.00		0.00
Limacina		51130101	0,6	2,0		0.00		0.00		0.00		0.00		0.00		0.00
Nud i branch l arvae		5127	0,7	0.8		0.00		0.00		0.00		0.00		0.00		0.00
Bivalve vel iger		55	0.0	0.2		0.00		0.00		D.00	1	33.33		0.00		0.00
			0.2	0.4		0.00		0.00	28	1866.67	21	700.00		0.00		0.00
Gastropod vel iger		51	0.0	0.2	2	133.33		0.00	7	466,67		0.00	42	1400,00	4	133.33
			0.2	0.4	3	200.00	8	533,33	11	733.33	6	200.00	9	300,00	1	33,33
			0.4	0,6	1	66.67		0.00	24	1600,00	2	66.67	1	33.33		0.00
POLYCHAETA						0.00		0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0		0.00	1	66.67		0.00		0,00		0,00		0,00
Pol ynoid 1 arvae		50012015	0.5	1,5		0.00		0,00		0,00		0,00		0.00		0.00
Pol ychaete 1 arvae		5001	0.6	1.5	1	66.67	2	133,33	2	133.33	1	33.33	1	33.33		0.00
Trochophore 1 arvae		5001	0.2	0.6	2	133.33	6	400.00	2	133.33	2	66.67	4	133.33		0.00
Autolytus Sp		50012301	3	3.5		0.00		0.00		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0,00		0.00		0.00		0.00		0.00
Naupl i i larvae		6130	0.2	0.8	12	800.00	19	1266.67		0.00	1	33.33		0.00		0,00
Cypris 1 arvae		6130	0.8	1.2		0.00	1	66.67	2	133.33		0,00		0.00		0.00
CLADOCERA						0.00		0,00		0.00		0.00		0.00		0.00
Podon		61090502	0,6	1.0	1	66.67		0.00	2	133,33		0.00		0.00		0.00
COPEPODA						0.00		0.00		0,00		0.00		0.00		0.00
Copepod naupl ii		6118	0.0	0.2		0.00	3	200.00	11	733.33	6	200.00	5	166.67		0.00
			0.2	0.4	12	800,00	22	1466.67	36	2400.00	17	566.67	4	133.33		0,00
			0.4	0.6		0.00		0.00		0,00		0,00		0.00		0.00
			0.6	1.0		0.00		0.00		0.00		0.00		0,00		0.00
Copepodites	I-III	6118	0.2	0.4	2	133.33		0.00	3	200.00		0.00	1	33.33		0.00
			0.4	0.6	7	466.67	5	333.33	3	202.00	7	233.33	12	400.00		0.00
			0.6	0.8	6	400.00	10	666.67	1	66.67	2	66.67	1	33.33	2	66.67
Epi labidocera sp	I	61182701	0,5	0.8		0,00		0.00		0.00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0.00		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Epi labidocera longi pedata	VIm	6118270102	2.7	3.1		0.00		0.00		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0,7	0,9		0.00		0.00		0.00		0.00	2	66,67		0.00
	IV		0.8	1.1		0,00		0.00		0.00		0,00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER					392		393		426		427		428		429	
	v		1.0	1.7		0,00		0.00		0.00		0.00		0.00		0.00
Tortanus di scaudatus	VIf	6118300101	1.8	2.3		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.6	2.2		0.00		0,00		0.00		0.00		0.00		0.00
Pseudocalanus sp, complex	IV	61180505	0.9	1.1		0.00		0.00	1	66.67		0.00		0.00	2	66.67
	Vf		1.1	1.3		0.00		0.00	10	666.67	4	133.33	17	566,67	20	666.67
	Vm		1.0	1.3		0.00	2	133.33	9	600.00	8	266.67	23	766,67	28	933,33
	VIf		1.1	2.0		0.00		0,00	22	1466.67	23	766.67	54	1800.00	35	1166.67
	VIm		1.1	1.5		0.00		0,00	6	400.00	4	133.33	5	166.67	1	33.33
Microcalanus pygmeus pusillus	V	61180504	0.6	0.7		0.00		0.00		0.00		0.00		0.00		0,00
Metridia sp	I-III	61181602	0.5	1.1		0,00		0.00		0.00		0.00		0.00		0.00
Centropages abdominalis	IV	6118170101	0.9	1.1		0.00	2	133.33		0.00		0.00		0.00		0.00
	V		1.1	1.3	9	600.00	12	800.00		0.00		0.00		0.00		0,00
	VIf		1.6	2.1		0.00		0.00	1	66.67		0.00		0.00		0.00
	VIm		1.4	1.5	1	66,67		0.00		0.00		0.00		0.00		0.00
Eurytemora herdmanii	V	6118200203	0.9	1.2	3	200.00	2	133.33		0.00		0.00		0.00		0.00
	VIf		1.1	1.4	5	333.33	1	66.67	1	66.67		0.00		0,00		0,00
	VIm		1.1	1.4	8	533.33	10	666.67		0.00		0,00		0.00		0,00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.4		0.00		0.00		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0,7	20	1333,33	27	1800.00	6	400.00	1	33.33	1	33.33	1	33.33
Acartia longiremis	v	6118290103	0.7	1.0		D.00		0.00	1	66.67	1	33,33		0.00		0.00
	VIf		1.0	1.3		0.00		0,00		0.00		0.00		0,00		0.00
	VIm		0.9	1.1	3	200.00	1	66,67	4	266.67		0.00		0.00		0.00
Acartia clausii	v	6118290101	0.6	0.8	10	666.67	25	1666.67		0.00		0.00		0.00		0.00
	VIf		0.9	1.3	54	3600.00	53	3533,33	2	133.33		0.00		0.00		0,00
	VIm		0.8	1.2	65	4333.33	46	3066,67		0.00		0.00		0.00		0.00
Harpacticoida	v	6119	0.6	0.8	3	200,00	3	200,00		0.00		0.00		0,00		0.00
	VIf		0.7	1,0		0.00	3	200.00		0.00		0,00		0.00		0.00
Mi crosetel 1 a	VIf	61190901	0.5	0,9		0.00		0,00		0.00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0,00		0.00		0,00		0,00		0.00
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0,00		0.00		0.00
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0.00		0,00
	VIm		0.5	0.7		0,00		0.00		0.00		0,00		0,00		0,00
Oncaea sp	v	61200103	0.5	0.7		0,00		0.00		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0,00		0.00		0.00		0,00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER		392	393	426	427	428	429
Hal acaridae	58 0,2 0.3	0.00	0.00	0.00	0,00	0.00	0.00
PYCNOGONIDA		0.00	0,00	0,00	0.00	0.00	0.00
Protonymphon	60 0.2 0,4	0.00	0.00	0.00	0.00	0.00	0.00
CUMACEA		0 . 0 0	0.00	0.00	0.00	0.00	0,00
Cumacean	6154 1.2 1.2	0.00	0,00	0.00	0,00	0.00	0.00
ISOPODA		0.00	0.00	0.00	0,00	0.00	0.00
Isopod	6158 0.8 2.2	0.00	0.00	0.00	0.00	0.00	0.00
AMPHIPODA		0.00	0,00	0.00	0.00	0.00	0.00
Hyperi Id juveni les	6170 1.5 2.0	0.00	0,00	0.00	0,00	0.00	0.00
Gammarid	6169 1.2 2.5	0,00	0.00	0.00	0.00	0.00	0.00
EUPHAUSIACEA		0.00	0.00	0.00	0.00	0.00	0.00
Thysanoessa sp	61740209 5,5 8.0	0.00	0.00	0.00	0.00	0.00	0,00
Euphausiid nauplii	6174 0,5 0.6	0,00	0.00	0.00	0.00	0.00	0.00
Euphausiid protozoea	6174 0.0 0.5	0,00	0,00	0,00	0.00	0.00	0.00
	0.5 1.0	0.00	0.00	0.00	0.00	0.00	0.00
	1.0 1.5	0.00	0,00	0.00	0.00	0.00	0.00
Euphausiid zoaa	6174 2,0 2,5	0,00	0.00	0.00	0.00	0.00	0.00
	2,5 3.0	0.00	0.00	0.00	0.00	0.00	0,00
	3.5 4.0	0.00	0.00	0.00	0,00	0,00	0.00
Euphausiid juveniles	6174 4.5 6,0	0.00	0.00	0.00	0.00	0.00	0,00
DECAPODA		0.00	0,00	0.00	0.00	0.00	0.00
Caridea z o e a	6179 1.5 4.0 1	66.67	0.00	1 66.67	0.00	0.00	0.00
Crangon mysis	617922 3.0 3.0	0.00	0.00	1 66.67	0.00	0.00	0,00
Pandalus sp	617918 11.0 25,0	0.00	0.00	0.00	0.00	0.00	0.00
Brachyuran zoea	6184 1,5 3,0	0.00	0.00	0.00	0,00	0.00	0.00
Pagurid zoea	6183 1.5 6.0	0.00	0.00	1 66.67	0,00	0.00	0,00
ECHINODERMATA		0.00	0.00	0.00	0.00	0.00	0.00
Bipinnaria larvae	81 0.6 0.8	0.00	0,00	6 400.00	0.00	0.00	0.00
Echinopluteus larvae	81 0.6 1.5	0.00	0.00	0.00	0.00	0.00	0.00
Auricularia larvae	81 0.4 1.0	0.00	0.00	1 66.67	0.00	0.00	0.00
Brachiolaria larvae	81 1.5 2.5	0.00	0.00	2 133.33	0.00	0.00	0.00
TUNICATA		0.00	0.00	0.00	0,00	0.00	0.00
Fritillaria	841302 1.5 3.0	0.00	0.00	0.00	0.00	0.00	0.00
VERTEBRATE		0,00	0,00	0.00	0.00	0.00	0.00
Fish eggs	8735 0.8 3.0	0.00	0.00	2 133,33	0.00	0.00	0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER	392		393		426		427		428		429	
Fish larvae	8735 7.0 10.0	0.00		0.00	1	66.67		0.00		0,00		0.00
Herring larvae	874701 6.0 9,0	1 66.67		0.00		0.00		0,00		0.00		0,00
MISCELLANEOUS		0.00		0.00		0,00		0.00		0.00		0.00
Small eggs	0.2 0.4	0 . 0 0		0.00	3	200.00	11	366.67	2	66.67		0,00
TOTALS FOR SAMPLE		232 15466.67		269 17933.33	253	16866.67	123	4100.00	187	6233.33	97	3233.33

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER (0.25 mesh)

SAMPLE NUMBER				497		498		499		500	
PYCNOGONIDA					0.00		0.00		0.00		0.00
Protonymphon	60	0.2	0.4		0.00		0.00		0.00		0.00
CUMACEA					0.00		0.00		0.00		0.00
Cumacean	6154	1.2	1.2		0.00		0.00		0.00		0.00
ISOPODA					0.00		0.00		0.00		0.00
Isopod	6158	0.8	2.2		0.00		0.00		0.00		0.00
AMPHIPODA					0.00		0.00		0.00		0.00
Hyperiid juveniles	6170	1.5	2.0		0.00		0.00		0.00		0.00
Gammarid	6169	1.2	2.5		0.00		0.00		0.00		0.00
EUPHAUSIACEA					0.00		0.00		0.00		0.00
Thysanoessa sp	61740209	5.5	8.0		66.67		0.00		0.00		0.00
Euphausiid nauplii	6174	0.5	0.6		0.00		0.00		0.00		0.00
Euphausiid protozoea	6174	0.0	0.5		0.00		0.00		0.00		0.00
		0.5	1.0		0.00		0.00		0.00		0.00
		1.0	1.5		0.00		0.00		0.00		0.00
Euphausiid zoea	6174	2.0	2.5		0.00		0.00		0.00		0.00
		2.5	3.0		0.00		0.00		0.00		0.00
		3.5	4.0		0.00		0.00		0.00		0.00
Euphausiid juveniles	6174	4.5	6.0		0.00		0.00		0.00		0.00
DECAPODA					0.00		0.00		0.00		0.00
Caridea zoea	6179	[illegible].5	4.[illegible]	2	33.33	1	66.67	1	66.67	1	66.67
Crangon mysis	617922	[illegible].0	3.[illegible]		0.00		0.00		0.00		0.00
Pandalus sp	617918	[illegible].0	25.[illegible]		0.00		0.00		0.00		0.00
Brachyuran zoea	6184	[illegible].5	3.[illegible]		0.00		0.00		0.00		0.00
Pagurid zoea	6183	[illegible].5	6.[illegible]		66.67	1	66.67		0.00		0.00
ECHINODERMATA					0.00		0.00		0.00		0.00
Bipinnaria larvae	81	0.6	0.8		0.00		0.00		0.00		0.00
Echinopluteus larvae	81	0.6	1.5	2	33.33		0.00	1	66.67		0.00
Auricularia larvae	81	0.4	1.0		0.00		0.00		0.00		0.00
Brachiolaria larvae	81	1.5	2.5		0.00	1	66.67		0.00		0.00
TUNICATA					0.00		0.00		0.00		0.00
Fritillaria	841302	1.5	3.0		0.00	1	66.67	1	66.67		0.00
VERTEBRATA					0.00		0.00		0.00		0.00
Fish eggs	8735	0.8	3.0		0.00		0.00	1	66.67		0.00
Fish larvae	8735	7.0	10.0		0.00		0.00		0.00		0.00

Sy-Tech Research Ltd.

SAMPLE NUMBER	449	450	451	452
Date	070790	070790	070790	070790
Site	39	39	39	39
Time	1310	1315	1320	1325
Mesh (urn)	25	25	25	25
Depth of tow (m)	5	10	15	20
Volume filtered (m^3)	0.03	0.03	0.03	0.03
Fraction enumerated	1	1	1	1

SPECIES	TAXONOMIC STAGE CODE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	N O PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA											
Tintinid	3540	0.1	0.3		0.00		0.00		0.00		0,00
Foramini fera	3448	0.1	0.3		0.00		0.00		0.00	4	133.33
CTENOPHORA					0.00		0,00		0.00		0.00
Pleurobrachi a	38020101	1,0	2.5		0.00		0.00		0.00		0.00
CNIDARIA					0.00		0.00		0.00		0.00
Medusa juveniles	3701	0.7	2.1		0.00		0.00		0.00		0.00
Aglantha	37110411	1.0	3.0		0,00		0.00		0.00		0.00
		5.0	7.0		0.00		0,00		0.00		0.00
Euphysa	37030312	1.5	2,0		0.00		0.00		0.00		0.00
Aurelia juvenile	37340302	1.8	3.5		0,00		0.00		0.00		0.00
Obelia	37040102	0.6	1.0		0.00		0.00		0.00		0.00
		1.1	2.0		0.00		0,00		0,00		0.00
		2.1	4,0		0.00		0.00		0.00		0,00
Rathkea	37031902	1.5	2.0		0,00		0.00		0.00		0.00
Sarsi a	37030609	1,5	3.0		0.00		0.00		0.00		0.00
Proboscidactyl a	37050602	3.0	7.0		0.00		0,00		0.00		0.00
TREMATODA					0.00		0,00		0.00		0.00
F 1 atworms	3901	0.6	1.5		0.00		0.00		0.00	1	33.33
NEMATODA					0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5		0.00		0,00		0.00		0.00
ROTIFERA					0.00		0.00		0.00		0.00
Rotifers	45	0.2	0.6	5	166.67		0.00	1	33.33		0.00
CHAETOGNATHA					0.00		0,00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0,00		0.00		0.00		0.00
Chaetognath juveni les	83	2.0	7.0		0.00		0.00		0.00		0.00
BRYOZOA					0.00		0.00		0.00		0.00
Cyphonautes 1 arvae	78	0.4	0.8		0.00		0.00		0,00		0.00
PHORONIDA					0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER					449		450		451		452	
Acti notrocha 1 arvae		77	0,8	1.0		0.00		0.00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0,00
Limacina		51130101	0,6	2,0		0.00		0.00		0,00		0.00
Nudi branch larvae		5127	0.7	0.8		0.00		0.00		0.00		0.00
Bivalve veliger		55	0.0	0.2		0.00		0.00	1	33,33		0.00
			0.2	0.4	1	33.33		0.00		0.00		0.00
Gastropod vel iger		51	0.0	0,2	2	66.67	4	133.33	2	66,67	13	433.33
			0.2	0.4		0.00	1	33.33	2	66.67	6	200,00
			0.4	0.6		0.00		0.00		0,00	2	66.67
POLYCHAETA						0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0	1	33.33	1	33.33		0.00		0.00
Polynoid larvae		50012015	0.5	1.5		0.00		0.00		0.00		0.00
Polychaete larvae		5001	0,6	1.5	2	66,67		0,00	1	33.33	1	33,33
Trochophore larvae		5001	0.2	0,6		0.00	3	100.00	2	66,67		0,00
Autolytus sp		50012301	3	3,5		0,00		0,00		0.00		0,00
CRUSTACEA						0.00		0.00		0,00		0.00
CIRRIPEDIA						0.00		0,00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	6	200,00	22	733,33	45	1500,00	14	466,67
Cypris larvae		6130	0,8	1,2		0.00	1	33,33		0.00		0.00
CLADOCERA						0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0		0.00	1	33.33		0.00	4	133.33
COPEPODA						0.00		0.00		0.00		0.00
Copepod nauplii		6118	0.0	0.2	5	166.67	3	100,00	1	33.33	6	200,00
			0.2	0.4	13	433.33	19	633,33	13	433,33	17	566.67
			0.4	0.6		0.00	1	33,33	1	33,33	3	100,00
			0.6	1.0		0.00		0.00		0.00		0.00
Copepodi tes	I-III	6118	0.2	0.4		0.00	8	266.67	14	466,67	12	400.00
			0.4	0.6	6	200.00	36	1200,00	41	1366.67	45	1500.00
			0.6	0.8	2	66.67	22	733,33	21	700.00	25	833.33
Epilabidocera sp	I	61182701	0.5	0.8		0,00		0,00		0.00		0.00
	II		0.8	1.0		0,00		0.00		0.00	1	33.33
	III		1.1	1.5		0.00		0,00		0.00		0.00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1		0.00		0,00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00		0.00		0.00
	IV		0.8	1.1		0.00	1	33,33	1	33.33		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER					449		450		451		452	
	v		1,0	1.7		0.00		0.00		0,00		0.00
Tortanus di scaudatus	VIf	6118300101	1.8	2.3		0.00		0.00		0.00		0.00
	VIm		1.6	2.2		0.00		0.00		0.00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1		0.00	‘ 2	66.67	1	33.33		0.00
	Vf		1.1	1.3	1	33.33	3	100.00	1	33.33	6	200.00
	Vm		1.0	1.3		0.00	5	166.67	2	66.67	4	133.33
	VIf		1.1	2.0	2	66,67		0.00	1	33.33	4	133.33
	VIm		1.1	1.5		0,00		0.00	3	100,00	6	200,00
Microcalanus pygmeus PUS I 1 lus	V	61180504	0.6	0.7		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0.00		0.00		0.00		0.00
Centropages abdominalis	IV	6118170101	0,9	1.1		0.00		0,00	9	300.00		0.00
	v		1.1	1,3	1	33.33	10	333.33	16	533.33	6	200.00
	VI f		1.6	2.1		0.00		0.00	1	33.33	22	733.33
	VIm		1,4	1,5		0,00	1	33.33		0,00		0.00
Eurytemora herdmanii	v	6118200203	0.9	1.2		0.00	1	33.33	2	66.67	8	266.67
	VIf		1.1	1.4		0.00	1	33.33		0.00	2	66.67
	VIm		1.1	1.4		0.00	2	66.67	7	233,33	12	400.00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0,00		0.00		0.00		0.00
	VIm		1,4	1,4		0.00		0,00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	1	33.33	7	233.33	9	300.00	16	533.33
Acartia longiremis	v	6118290103	0.7	1.0		0.00		0.00		0.00	4	133.33
	VIf		1.0	1.3		0.00	4	133.33	1	33.33		0.00
	VIm		0.9	1.1		0,00	1	33.33	7	233.33	4	133,33
Acartia clausii	v	6118290101	0.6	0.8		0.00	8	266.67	6	200.00	4	133.33
	VIf		0.9	1.3	1	33,33	6	200.00	11	366.67	23	766.67
	VIm		0.8	1.2		0.00	4	133.33	4	133.33	14	466.67
Harpacticoida	v	6119	0.6	0.8		0.00		0.00		0.00		0,00
	VIf		0.7	1.0		0.00		0.00		0.00	3	100.00
Microsetel 1 a	VIf	61190901	0.5	0.9		0.00		0.00	1	33.33		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0,00	1	33.33		0.00		0,00
Oithona similis	v	6120090103	0,6	0.8	1	33,33		0.00	1	33.33	2	66.67
	VIf		0.7	1.0	2	66.67		0.00	2	66.67	1	33.33
	VIm		0,5	0,7		0,00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0,00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER				449	450	451	452
Halacaridae	58	0.2	0.3	0.00	0.00	0.00	0.00
PYCNOGONIDA				0.00	0.00	0.00	0.00
Protonymphon	60	0.2	0.4	0.00	0.00	0.00	0.00
CUMACEA				0.00	0.00	0.00	0.00
Cumacean	6154	1.2	1.2	0.00	0.00	0.00	0.00
ISOPODA				0.00	0.00	0.00	0.00
Isopod	6158	0.8	2.2	0.00	0.00	0.00	0.00
AMPHIPODA				0.	0.0	0.	0.
Hyperiid juveniles	6170	1.5	2.0	0.00	0.00	0.00	0.00
Gammarid	6169	1.2	2.5	0.00	0.00	0.00	0.00
EUPHAUSIACEA				0.00	0.00	0.00	0.00
Thysanoessa sp	61740209	5.5	8.0	0.00	0.00	0.00	0.00
Euphausiid nauplii	6174	0.5	0.6	0.00	0.00	0.00	0.00
Euphausiid protozoea	6174	0.0	0.5	0.00	0.00	0.00	0.00
		0.5	1.0	0.00	0.00	0.00	0.00
		1.0	1.5	0.	0.	0.	0.
Euphausi < zoea	6174	2.0	2.5	0.00	0.00	0.00	0.00
		2.5	3.0	0.00	0.00	0.00	0.00
		3.5	4.0	0.00	0.00	0.00	0.00
Euphausiid juveniles	6174	4.5	6.0	0.00	0.00	0.00	0.00
DECAPODA				0.00	0.00	0.00	0.00
Caridea zoea	6179	1.5	4.0	0.00	33.33	33.33	33.33
Crangon mysis	617922	3.0	3.0	0.00	0.00	0.00	0.00
Pandalus sp	617918	11.0	25.0	0.	0.00	0.00	0.00
Brachyuran zoea	6184	1.5	3.0	0.00	0.00	0.00	33.33
Pagurid zoea	6183	1.5	6.0	0.00	0.00	0.00	0.33
ECHINODERMATA				0.00	0.00	0.00	0.00
Bipinnaria larvae	81	0.6	0.8	0.00	0.00	0.00	0.00
Echinopluteus larvae	81	0.6	1.5	0.00	0.00	0.00	0.00
Auricularia larvae	81	0.4	1.0	0.00	0.00	0.00	0.00
Brachiolaria larvae	81	1.5	2.5	0.00	0.00	0.00	0.00
TUNICATA				0.	0.00	0.	0.00
Fritillaria	841302	1.5	3.0	0.00	0.00	33.33	2 66.67
VERTEBRATA				0.00	0.00	0.00	0.00
Fish eggs	8735	0.8	3.0	0.00	0.00	0.00	0.00

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DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER	449	450	451	452
Fish 1 arvae	8735 7,0 10.0	0.00	0.00	0.00	0.00
Herring 1 arvae	874701 6.0 9.0	0.00	0.00	0.00	0.00
MISCELLANEOUS		0.00	0.00	0.00	0.00
Small eggs	0.2 0.4	0.00 '	0.00	0.00	0.00
TOTALS FOR SAMPLE	52 1733,33	180 6000,00	233 7766.67	299 9966.67

SAMPLE NUMBER	465	466	467	468	
Date	130790	130790	130790	130790	
Site	36	36	36	3	6
Time	1245	1350	1255	1300	
Mesh (urn)	25	25	25	25	
Depth of tow (m)	10	20	30	40	
Volume filtered (m^3)	0.03	0.03	0,03	0,03	
Fraction enumerated	0.5	1	1	1	

SPECIES	STAGE	TAXONOMIC CODE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA												
Tintinid		3540	0.1	0.3		0.00		0,00		0.00		0.00
Foramini fera		3448	0.1	0.3		0.00		0.00		0.00		0.00
CTENOPHORA						0.00		0.00		0.00		0,00
Pleurobrachia		38020101	1.0	2.5		0.00		0.00	1	33.33		0.00
CNIDARIA						0.00		0.00		0.00		0.00
Medusa juveni les		3701	0,7	2.1		0.00	19	633.33		0.00		0.00
Aglantha		37110411	1,0	3,0		0.00	1	33.33		0.00		0.00
			5.0	7.0		0.00		0.00		0,00	1	33.33
Euphysa		37030312	1.5	2.0		0.00		0.00		0.00		0.00
Aurelia juvenile		37340302	1.8	3.5		0.00		0,00		0,00		0.00
Obelia		37040102	0.6	1.0	7	466.67		0.00		0.00		0.00
			1.1	2.0		0.00		0.00		0.00		0.00
			2.1	4.0	2	133.33	2	66.67		0.00		0.00
Rathkea		37031902	1.5	2.0	5	333,33	1	33.33		0.00		0.00
Sarsi a		37030609	1.5	3.0		0.00		0.00		0.00		0.00
Proboscidactyl a		37050602	3.0	7.0	6	400,00		0,00		0.00		0.00
TREMATODA						0.00		0.00		0.00		0,00
Flatworms		3901	0.6	1.5		0.00		0.00		0.00		0.00
NEMATODA						0.00		0.00		0.00		0.00
Nematodes		47	0.8	1.5		0.00		0.00		0.00		0.00
ROTIFERA						0.00		0.00		0.00		0.00
Roti fers		45	0.2	0.6		0.00	1	33.33		0.00		0,00
CHAETDGNATHA						0.00		0.00		0.00		0.00
Sagitta elegans		8300000303	15.0	27.0	2	133.33		0.00		0.00	2	66.67
Chaetognath juveni les		83	2.0	7.0	1	66.67		0.00		0.00		0.00
BRYOZOA						0.00		0,00		0.00		0.00
Cyphonautes 1 arvae		78	0.4	0.8		0.00	1	33.33		0.00	1	33.33
PHORONIDA						0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER (0,25 mesh)

SAMPLE NUMBER					465		466		467		468	
Acti notrocha 1 arvae		77	0.8	1.0		0.00		0.00		0.00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00
Limacina		51130101	0.6	2.o		0.00		0.00		0.00		0.00
Nudi branch 1 arvae		5127	0,7	0,8		0.00		0.00		0.00		0.00
Bivalve vel iger		55	0.0	0.2	1	66.67		0.00		0.00		0,00
			0.2	0.4	48	3200.00	13	433,33	1	33.33		0.00
Gastropod vel iger		51	0,0	0,2	5	333.33	3	100.00	1	33.33		0.00
			0.2	0.4	19	1266.67	14	466.67	64	2133,33	9	300.00
			0.4	0.6	5	333.33	1	33.33		0.00		0.00
POLYCHAETA						0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0		0.00		0.00		0.00		0.00
Pol ynoi d 1 awae		50012015	0.5	1.5		0.00		0,00		0.00		0.00
Pol ychaete 1 arvae		5001	0.6	1.5		0,00		0.00		0.00		0.00
Trochophore 1 awae		5001	0,2	0,6		0.00	3	100.00	2	66.67	3	100.00
Autolytus sp		50012301	3	3.5		0,00		0.00		0.00		0,00
CRUSTACEA						0.00		0,00		0.00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0.00
Naupl i i larvae		6130	0.2	0.8	9	600.00	2	66.67		0.00		0,00
Cypris 1 awae		6130	0.8	1,2	2	133.33		0.00		0.00		0.00
CLADOCERA						0.00		0.00		0.00		0.00
Podon		61090502	0,6	1,0	45	3000.00	2	66,67		0,00		0.00
COPEPODA						0.00		0,00		0.00		0.00
Copepod naupl ii		6118	0.0	0.2	17	1133.33	2	66,67	1	33.33	1	33.33
			0.2	0.4	70	4666,67	48	1600,00	10	333.33		0.00
			0.4	0.6		0.00	1	33,33		0.00		0.00
Copepodites	I-III	6118	0.2	0.4	20	1333.33	8	266.67		0.00		0.00
			0.4	0.6	36	2400.00	26	866.67	4	133.33	1	33.33
			0.6	0.8	5	333,33	4	133.33	3	100.00	2	66.67
Epi labidocera sp	I	61182701	0.5	0.8		0.00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0.00		0.00		0.00
Epi labidocera long ipedata	VIm	6118270102	2.7	3.1		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00		0.00		0.00
	IV		0.8	1.1		0.00		0.00		0.00		0,00
	v		1.0	1.7		0.00		0.00		0.00		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER (O. 25 mesh)

SAMPLE NUMBER					465		466		467		468	
Tortanus discaudatus	VIf	6118300101	1.8	2,3		0.00		0.00		0.00		0.00
	VIm		1.6	2.2		0,00	1	33.33		0.00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	1	66.67		0.00		0.00		0.00
	Vf		1.1	1.3	10	666.67	12	400.00	10	333.33	44	1466.67
	Vm		1.0	1.3	9	600.00	6	200.00	10	333.33	34	1133,33
	VIf		1.1	2.0	7	466.67	18	600.00	18	600,00	49	1633,33
	VIm		1.1	1.5	7	466.67	6	200.00	3	100,00	4	133.33
Microcalanus pygmeus pusillus	V	61180504	0.6	0.7		0,00		0.00		0.00		0,00
Metridia sp	I-III	61181602	0,5	1,1		0.00		0.00		0,00		0.00
Centropages abdominalis	IV	6118170101	0,9	1.1		0.00		0.00		0.00		0,00
	v		1.1	1,3		0.00		0.00		0.00		0,00
	VIf		1.6	2.1		0,.00		0.00		0.00		0.00
	VIm		1.4	1.5		0.00		0.00		0,00		0,00
Eurytemora herdmanii	v	6118200203	0.9	1.2		0.00		0.00		0.00		0.00
	VIf		1.1	1,4	7	466.67	1	33.33		0.00		0.00
	VIm		1.1	1.4	2	133.33	1	33.33		0.00		0,00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0,00		0,00		0,00		0.00
	VIm		1.4	1.4		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	8	533.33	8	266.67		0.00		0,00
Acartia longiremis	v	6118290103	0.7	1.0		0.00		0.00		0.00		0.00
	VIf		1,0	1.3		0.00	1	33.33		0.00		0,00
	VIm		0.9	1.1		0.00	1	33.33		0.00		0,00
Acartia clausi i	v	6118290101	0.6	0.8	2	133.33		0.00		0.00		0.00
	VIf		0.9	1.3		0.00	1	33.33		0.00		0.00
	VIm		0,8	1.2		0.00		0,00		0.00		0,00
Harpacticoida	v	6119	0.6	0.8		0.00		0.00		0.00		0.00
	VIf		0.7	1.0		0.00		0.00		0.00		0,00
Microsetella	VIf	61190901	0.5	0.9		0.00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00		0,00		0.00
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0.00
	VIf		0,7	1.0		0.00		0.00		0.00		0,00
	VIm		0.5	0.7		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0.00		0.00
CHELICERATA						0,00		0.00		0.00		0.00
Halacaridae		58	0.2	0.3		0.00		0,00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED ~ PORT MOLLER (0.25 mesh)

SAMPLE NUMBER				465	466	467	468
PYCNOGONIDA				0.00	0.00	0.00	0.00
Protonymphon	60	0.2	0.4	0.00	0.00	0.00	0.00
CUMACEA				0.00	0.00	0.00	0.00
Cumacean	6154	1.2	1.2	0.00	0.00	0.00	0.00
ISOPODA				0.00	0.00	0.00	0.00
Isopod	6158	0.8	2.2	0.00	0.00	0.00	0.00
AMPHIPODA				0.00	0.00	0.00	0.00
Hyperiid juveniles	6170	1.5	2.0	0.	0.	0.	0.
Gammarid	6169	1.2	2.5	0.00	0.00	0.00	0.00
EUPHAUSIACEA				0.00	0.00	0.00	0.00
Thysanoessa sp	61740209	5.5	8.0	0.00	0.00	0.00	0.00
Euphausiid nauplii	6174	0.5	0.6	0.00	0.00	0.00	0.00
Euphausiid protozoea	6174	0.0	0.5	0.00	0.00	0.00	0.00
		0.5	1.0	0.00	0.00	0.00	0.00
		1.0	1.5	0.00	0.00	0.00	0.00
Euphausiid zoea	6174	2.0	2.5	0.	0.	0.	0.
		2.5	3.0	0.00	0.00	0.00	0.00
		3.5	4.0	0.00	0.00	0.00	0.00
Euphausiid juveniles	6174	4.5	6.0	0.00	0.00	0.00	0.00
DECAPODA				0.00	0.00	0.00	0.00
Caridea zoea	6179	1.5	4.0	0.00	0.00	0.00	0.00
Crangon mysis	617922	3.0	3.0	0.00	0.00	0.00	0.00
Pandalus sp	617918	11.0	25.0	0.00	0.00	0.00	0.00
Brachyuran zoea	6184	1.5	3.0	0.00	0.00	0.00	0.
Pagurid zoea	6183	1.5	6.0	0.00	0.00	0.00	0.00
ECHINODERMATA				0.00	0.00	0.00	0.00
Bipinnaria larvae	81	0.6	0.8	66.67	0.00	0.00	0.00
Echinopluteus larvae	81	0.6	1.5	0.00	0.00	0.00	0.00
Auricularia larvae	81	0.4	1.0	5 333.33	0.00	0.00	0.00
Brachiolaria larvae	81	1.5	2.5	0.00	0.00	0.00	0.00
TUNICATA				0.00	0.00	0.00	0.00
Fritillaria	841302	1.5	3.0	0.00	0.00	0.00	0.
VERTEBRATA				0.00	0.00	0.00	0.00
Fish eggs	8735	0.8	3.0	0.00	4 33.33	33.33	0.00
Fish larvae	8735	7.0	10.0	66.67	0.00	0.00	0.00

Sy-Tech Research Ltd.

DENSITY OF ZCOPLANKTON CAPTURED IN PORT MOLLER (O. 25 mesh)

SAMPLE NUMBER		465		466		467		468	
Herring 1 arvae	874701 6.0 9,0		0.00		0.00		0.00		0.00
MISCELLANEOUS			0.00		0.00		0.00		0.00
Smal 1 eggs	0.2 0,4	16	1066.67	13	433.33	3	100.00	4	133.33
TOTALS FOR SAMPLE		381	25400.00	225	7500.00	132	4400.00	155	5166.67

SAMPLE NUMBER	497	498	499	500
Date	140790	140790	140790	140790
Site	39	39	39	39
Time	1635	1700	1705	1 7 1 0
Mesh (urn)	25	25	25	25
Depth of tow (m)	.5	10	15	20
Volume filtered (m3)	0,03	0.03	0.03	0,03
Fraction enumerated	0.5	0.5	0,5	0.5

SPECIES	TAXONOMIC STAGE COOE	LENGTH n-in MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA											
Tintinid	3540	0.1	0.3		0.00		0.00		0.00		0.00
Forami ni fera	3448	0.1	0.3		0.00		0.00		0.00		0.00
CTENOPHORA					0.00		0.00		0,00		0.00
Pleurobrachia	38020101	1.0	2.5		0.00		0.00		0.00		0.00
CNIDARIA					0.00		0.00		0.00		0.00
Medusa juveniles	3701	0.7	2.1		0.00		0,00		0.00		0.00
Aglantha	37110411	1,0	3,0		0.00		0.00		0.00		0.00
		5.0	7.0		0.00		0.00		0.00		0.00
Euphysa	37030312	1.5	2.0		0.00		0,00		0.00		0.00
Aurelia juvenile	37340302	1.8	3.5		0.00		0,00		0.00		0.00
Obelia	37040102	0.6	1,0	10	666.67	1	66.67	2	133.33	6	400.00
		1.1	2.0		0.00		0.00		0.00		0.00
		2.1	4.0		0.00		0.00		0.00		0.00
Rathkea	37031902	1.5	2.0		0.00		0.00		0.00		0.00
Sarsia	37030609	1.5	3.0		0.00		0.00		0.00		0.00
Proboscidactyl a	37050602	3.0	7.0		0.00		0.00	1	66,67		0.00
TREMATODA					0.00		0.00		0.00		0.00
F l atworms	3901	0.6	1.5		0.00		0.00	1	66.67		0.00
NEMATODA					0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5		0.00		0.00		0.00		0.00
ROTIFERA					0.00		0.00		0,00		0.00
Rot i fers	45	0.2	0.6	4	266.67	6	400,00	2	133.33	1	66,67
CHAETOGNATHA					0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00		0.00		0.00
Chaetognath juveniles	83	2.0	7.0		0.00		0.00		0.00		0.00
BRYOZOA					0.00		0.00		0.00		0.00
Cyphonautes larvae	78	0.4	0.8	1	66.67		0.00		0.00		0.00
PHORONI OA					0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER (0,25 mesh)

SAMPLE NUMBER					497		498		499		500	
Acti notrocha 1 arvae		77	0.8	1,0		0.00		0.00		0.00		0.00
MOLLUSCA						0,00		0.00		0.00		0.00
Limacina		51130101	0.6	2,0		0,00		0.00		0.00		0.00
Nud 1 branch 1 arvae		5127	0.7	0.8		0.00		0.00		0.00		0.00
Bivalve veliger		55	0.0	0.2		0.00		0.00		0.00		0.00
			0.2	0.4		0.00		0.00		0.00		0.00
Gastropod vel iger		51	0.0	0.2	1	66.67	1	66.67		0.00		0,00
			0.2	0.4	6	400,00	8	533.33	4	266.67	5	333.33
			0.4	0.6		0,00		0.00	1	66.67		0.00
POLYCHAETA						0.00		0,00		0.00		0.00
Spionid larvae		500143	0.8	4,0		0.00	1	66.67		0.00		0.00
Polynoid larvae		50012015	0.5	1.5		0.00		0.00		0.00		0.00
Pol ychaete 1 awae		5001	0.6	1,5	3	200.00	1	66.67	1	66.67	1	66.67
Trochophore l arvae		5001	0.2	0.6	4	266.67	3	200.00		0.00	2	133.33
Autolytus sp		50012301	3	3..5		0.00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0.00
CIRRIPEDIA						0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	39	2600.00	14	933,33	9	600,00	12	800.00
Cypris 1 awae		6130	0.8	1.2	3	200.00		0.00		0,00	3	200.00
CLADOCERA						0,00		0.00		0.00		0.00
Podon		61090502	0.6	1.0	12	800.00	7	466.67	2	133,33	1	66.67
COPEPODA						0,00		0.00		0.00		0.00
Copepod nauplii		6118	0,0	0,2	4	266.67	2	133.33	2	133.33	1	66.67
			0.2	0.4	48	3200.00	31	2066.67	25	1666,67	20	1333.33
			0.4	0.6		0,00		0.00	2	133.33		0.00
Copepod i tes	I-III	6118	0.2	0.4	15	1000.00	12	800.00	10	666,67	8	533.33
			0.4	0.6	35	2333.33	30	2000.00	18	1200.00	19	1266.67
			0,6	0.8	33	2200.00	17	1133.33	15	1000.00	24	1600.00
Epi labidocera sp	I	61182701	0,5	0.8		0.00		0.00		0.00		0.00
	II		0.8	1.0		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0,00		0.00	1	66,67
Epi 1 abidocera long i pedata	VIm	6118270102	2.7	3.1		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0,9		0.00		0.00		0.00		0.00
	IV		0.8	1.1		0.00		0.00		0.00		0,00
	v		1.0	1.7		0.00		0.00	1	66.67		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER (O. 25 mesh)

SAMPLE NUMBER					497		498		499		500	
Tortanus di scaudatus	VIf	6118300101	1.8	2,3		0.00		0.00		0.00		0.00
	VIm		1.6	2.2		0.00		0.00		0.00		0.00
Pseudocal anus sp. complex	IV	61180505	0.9	1.1		0.00		0.00		0,00		0.00
	Vf		1.1	1.3		0.00	2	133.33		0.00	2	133.33
	Vm		1.0	1.3		0.00		0.00	1	66.67	4	266.67
	VIf		1.1	2.0		0.00		0.00	1	66.67	3	200.00
	VIm		1.1	1.5		0.00		0.00		0.00	2	133.33
Microcalanuspygmeus PUS I 1 lus	V	61180504	0.6	0.7		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0.00		0.00		0.00		0.00
Centropages abdominally	IV	6118170101	0,9	1.1	13	866.67	3	200.00	5	333.33	8	533,33
	v		1.1	1.3	13	866.67	8	533.33	6	400.00	9	600.00
	VIf		1.6	2.1		0.00	1	66.67	1	66.67		0.00
	VIm		1.4	1.5	1	66.67		0.00	1	66.67	1	66.67
Eurytemora herdmanii	v	6118200203	0.9	1.2	7	466,67	10	666,67	10	666.67	13	866.67
	VIf		1.1	1.4	6	400.00	5	333.33	3	200.00	4	266.67
	VIm		1.1	1.4	10	666.67	11	733.33	14	933.33	9	600,00
Eurytemora pacifica	VIf	6118200206	1.4	1.5		0.00		0.00		0.00		0.00
	VIm		1.4	1.4		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	97	6466.67	63	4200.00	54	3600.00	44	2933.33
Acartia longiremis	v	6118290103	0.7	1.0	5	333.33	2	133.33		0.00		0.00
	VIf		1.0	1.3	1	66.67	1	66.67		0.00	1	66.67
	VIm		0.9	1.1	4	266.67	1	66.67		0.00	2	133.33
Acartia clausii	v	6118290101	0.6	0.8	17	1133.33	26	1733.33	17	1133.33	11	733.33
	VIf		0.9	1.3	8	533.33	10	666.67	8	533.33	16	1066.67
	VIm		0.8	1.2	14	933,33	11	733.33	6	400.00	24	1600.00
Harpacticoida	v	6119	0.6	0.8	1	66.67	2	133.33		0.00		0.00
	VIf		0.7	1.0		0,00		0.00		0.00		0.00
Microsetel la	VIf	61190901	0.5	0.9		0.00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0,00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8	1	66.67		0.00		0.00		0.00
	VIf		0.7	1.0	2	133.33	1	66.67	1	66,67		0,00
	VIm		0.5	0.7		0.00	2	133.33	1	66.67		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00
Halacaridae		58	0.2	0.3		0.00		0.00		0.00		0.00

SAMPLE NUMBER	513	514	530	531
Date	210790	210790	220790	220790
Site	39	39	36	36
Time	1953	1957	2042	2055
Mesh (urn)	25	25	25	25
Depth of tow (m)	15	20	10	20
Volume filtered (m3)	0.03	0.03	0.03	0.03
Fracti on enumerated	0,5	1	1	1

SPECIES	TAXONOMIC STAGE	COOE	LENGTH mm MIN	MAX	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA													
Tintinid		3540	0,1	0.3	0.00		0.00		0.00		0.00		0.00
Forami ni fera		3448	0.1	0.3	0.00	1	66.67		0.00		0.00		0.00
CTENOPHORA					0.00		0.00		0.00		0.00		0,00
Pleurobrachia		38020101	1.0	2,5	0.00		0.00		0,00	1	33.33	2	66.67
CNIDARIA					0.00		0.00		0.00		0,00		0.00
Medusa juveniles		3701	0.7	2.1	0.00		0.00		0.00	4	133.33	7	233.33
Aglantha		37110411	1.0	3.0	0.00		0,00		0.00	14	466.67	7	233.33
			5.0	7.0	0.00		0.00		0.00		0,00		0.00
Euphysa		37030312	1.5	2.0	0,00		0.00		0.00		0.00		0,00
Aurelia juveniles		37340302	1.8	3.5	0.00		0.00		0.00	3	100.00		0.00
Obelia		37040102	0.6	1.0	0,00		0,00		0.00	5	166.67	2	66,67
			1.1	2.0	0,00		0.00		0.00	1	33.33		0.00
			2.1	4.0	0.00		0.00		0,00		0,00		0.00
Rathkea		37031902	1.5	2.0	0.00		0,00		0.00	5	166.67	1	33.33
Sarsia		37030609	1.5	3,0	0,00		0,00		0.00		0.00		0,00
Probosci dactyl a		37050602	3.0	7.0	0.00		0.00		0.00	1	33,33		0,00
TREMATODA					0.00		0.00		0.00		0.00		0.00
F 1 atworms		3901	0,6	1.5	133.33	1	66.67		0,00	4	133.33	4	133,33
NEMATOOA					0.00		0.00		0.00		0.00		0.00
Nematodes		47	0.8	1.5	0.00		0.00	1	33.33		0.00		0.00
ROTIFERA					0.00		0.00		0,00		0.00		0.00
Rotifers		45	0.2	0.6	266.67	4	266.67	2	66.67	2	66.67	11	366.67
CHAETOGNATHA					0.00		0.00		0.00		0.00		0.00
Sag itta elegans		8300000303	15.0	27.0	0,00		0.00		0,00	3	100.00		0,00
Chaetognath juveniles		83	2.0	7.0	0.00		0.00		0,00	1	33,33	1	33.33
BRYOZOA					0.00		0.00		0.00		0,00		0,00
Cyphonautes 1 arvae		78	0.4	0.8	0.00		0.00		0.00	2	66.67	4	133.33
PHORONI DA					0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER						513		514		530		531	
Acti notrocha 1 arvae		77	0.8	1.0	0.00		0,00		0.00		0.00		0,00
MOLLUSCA					0.00		0.00		0.00		0.00		0.00
Limacina		51130101	0.6	2.0	0,00		0,00		0,00		0.00		0.00
Nudi branch 1 arvae		5127	0,7	0.8	0.00		0,00		0.00		0,00		0.00
Bivalve vel iger		55	0.0	0,2	0.00		0,00		0.00	1	33.33		0.00
			0.2	0.4	66.67		0.00		0.00	5	166.67		0.00
Gastropod vel iger		51	0.0	0.2	0.00		0.00		0.00		0.00		0,00
			0.2	0.4	400,00	10	666,67	4	133.33	8	266.67	11	366.67
			0.4	0.6	0.00		0.00		0.00		0.00	1	33.33
POLYCHAETA					0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8	4.0	0.00		0.00		0.00		0.00		0,00
Polynoid larvae		50012015	0.5	1.5	0.00		0.00		0.00		0.00		0.00
Polychaete larvae		5001	0.6	1,5	66.67		0.00	2	66.67	3	100.00	4	133.33
Trochophore larvae		5001	0.2	0.6	66.67	3	200.00	3	100,00	7	233.33	4	133.33
Autolytus Sp		50012301	3	3.5	0.00		0.00		0,00		0.00		0.00
CRUSTACEA					0.00		0.00		0.00		0,00		0.00
CIRRIPEDIA					0.00		0,00		0.00		0.00		0,00
Nauplii larvae		6130	0.2	0.8	133.33	4	266.67	4	133.33	13	433.33		0,00
Cypris larvae		6130	0.8	1.2	0,00		0,00	2	66.67	3	100.00	1	33.33
CLADOCERA					0.00		0.00		0.00		0.00		0.00
Podon		61090502	0,6	1,0	133.33	2	133.33	6	200.00	4	133.33		0.00
COPEPODA					0.00		0.00		0.00		0.00		0.00
Copepod nauplii		6118	0.0	0,2	733.33	8	533,33	5	166.67	37	1233.33	8	266.67
			0.2	0,4	3066.67	42	2800,00	28	933.33	260	0666.67	58	1933,33
			0,4	0.6	66.67	1	66.67		0.00		0.00		0.00
Copepod i tes	I-III	6118	0.2	0.4	0.00	2	133.33	2	66.67	6	200.00		0.00
			0.4	0.6	266.67	6	400.00	4	133.33	9	300,00	6	200.00
			0.6	0.8	600.00	3	200.00	9	300.00	8	266.67	5	166.67
Epilabidocera sp	I	61182701	0,5	0.8	0.00		0.00		0.00		0.00		0.00
	II		0.8	1.0	0.00		0.00		0.00		0.00		0.00
	III		1.1	1.5	0.00		0.00		0.00		0,00		0,00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1	0.00		0.00		0,00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9	0.00		0,00		0,00	1	33.33		0.00
	IV		0.8	1.1	0.00		0,00		0,00		0.00		0.00
	v		1.0	1.7	0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER						513		514		530		531	
Tortanus d i scaudatus	VIf	6118300101	1.8	2,3	0,00		0.00		0.00		0,00		0,00
	VIm		1.6	2.2	0.00		0.00		0.00		0.00		0.00
PseudoCal anus sp. complex	IV	61180505	0,9	1,1	0.00		0.00		0.00		0.00		0.00
	Vf		1.1	1.3	0.00		0.00	2	66.67	5	166.67	2	66,67
	Vm		1.0	1.3	66.67		0.00		0.00	10	333.33	13	433.33
	VIf		1.1	2.0	133,33	2	133.33	2	66.67	4	133.33	22	733.33
	VIm		1.1	1.5	66,67		0.00		0,00	1	33.33	8	266.67
Microcalanus pygmeus pusi 1 lus	V	61180504	0.6	0,7	0,00		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1	0.00		0,00		0.00		0.00		0.00
Centropages abdomi nal is	IV	6118170101	0,9	1.1	0.00		0.00		0.00		0.00		0,00
	V		1.1	1.3	0.00		0.00		0,00		0.00		0.00
	VIf		1.6	2,1	66.67		0.00		0.00		0.00		0.00
	VIm		1.4	1.5	0.00		0,00		0,00		0.00		0.00
Eurytemora herdmani i	v	6118200203	0.9	1.2	1133.33	25	1666.67	20	666.67		0.00		0.00
	VIf		1.1	1.4	533,33	15	1000.00	12	400,00	1	33.33		0.00
	VIm		1.1	1.4	800.00	10	666.67	17	566.67		0.00		0.00
Eurytemora paci f ica	VIf	6118200206	1,4	1.5	0.00		0.00		0.00		0.00		0,00
	VIm		1.4	1.4	0.00		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0,5	0.7	4666.67	61	4066.67	46	1533.33	91	3033.33	12	400,00
Acartia longiremis	v	6118290103	0.7	1.0	0.00		0,00		0.00		0.00		0.00
	VIf		1.0	1.3	0.00		0.00		0.00		0.00		0.00
	VIm		0.9	1.1	0,00		0,00		0,00	2	66.67	1	33.33
Acartia clausii	v	6118290101	0.6	0.8	933.33	14	933.33	33	1100.00	2	66.67	1	33,33
	VIf		0.9	1.3	1866.67	15	1000.00	48	1600.00	1	33,33		0.00
	VIm		0,8	1.2	1466.67	17	1133,33	54	1800.00		0.00		0.00
Monstri11 a	VIm	6122	1.2	1.4	0.00		0.00		0.00		0.00		0.00
Harpacticoida	v	6119	0.6	0.8	66.67	3	200.00	5	166.67		0.00		0,00
	VIf		0.7	1.0	0.00		0.00		0.00		0.00		0.00
Mi crosetel 1 a	VIf	61190901	0.5	0.9	0,00	1	66.67	1	33.33		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7	0.00		0.00		0.00		0.00		0,00
Oithona similis	v	6120090103	0.6	0.8	66.67		0.00		0.00		0.00		0.00
	VIf		0.7	1.0	66,67	1	66.67		0.00	1	33.33		0.00
	VIm		0.5	0.7	0.00		0.00		0.00		0.00		0,00
Oncaea sp	v	61200103	0.5	0.7	0.00		0.00		0.00		0.00		0.00
CHELICERATA					0.00		0.00		0,00		0.00		0.00

DENSIN OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER				513		514		530		531	
Hal acari dae	58	0,2 0.3	0.00		0.00		0,00		0.00		0,00
PYCNOGONIDA			0.00		0.00		0,00		0.00		0.00
Protonymphon	60	0,2 0.4	0.00		0.00	1	33,33		0.00		0.00
CUMACEA			0.00		0.00		0.00		0.00		0.00
Cumacean	6154	1.2 1.2	66.67		0.00		0.00		0.00		0.00
ISOPODA			0.00		0.00		0.00		0.00		0.00
Isopod	6158	0,8 2,2	0.00		0.00		0.00		0.00		0.00
AMPHIPODA			0.00		0.00		0.00		0.00		0.00
Hyperi id juveni les	6170	1.5 2.0	0,00		0.00		0.00		0,00		0.00
Gammarid	6169	1,2 2.5	0.00		0.00		0.00		0.00		0.00
EUPHAUSIACEA			0.00		0.00		0.00		0.00		0.00
Thysanoessa sp	61740209	5.5 8.0	0.00		0.00		0.00		0.00		0.00
Euphausi id nauplii	6174	0.5 0.6	0.00		0,00		0.00	1	33.33		0.00
Euphausii d protozoea	6174	0.0 0.5	0,00		0.00		0.00		0.00		0.00
		0.5 1.0	0.00		0.00		0,00		0.00		0.00
		1.0 1.5	0.00		0.00		0.00		0.00		0.00
Euphausi id zoea	6174	2.0 2.5	0.00		0.00		0.00		0,00		0.00
		2.5 3.0	0.00		0.00		0,00		0.00		0.00
		3.5 4,0	0.00		0.00		0.00		0.00		0.00
Euphausi id juveniles	6174	4.5 6.0	0.00		0.00		0.00		0.00		0,00
DECAPODA			0,00		0.00		0.00		0,00		0.00
Cari dea zoea	6179	1.5 4.0	66.67	1	66.67		0.00		0.00		0.00
Crangon mysis	617922	3,0 3,0	0.00		0.00		0.00		0.00		0.00
Pandalus sp	617918	11.0 25.0	0.00		0.00		0,00		0.00		0.00
Brachyuran zoea	6184	1.5 3.0	0.00		0.00		0.00		0.00		0.00
Pagurid zoea	6183	1.5 6.0	0.00		0.00	1	33.33		0.00	1	33.33
ECHINODERMATA			0.00		0.00		0.00		0.00		0.00
Bipinnaria larvae	81	0.6 0.8	0.00		0.00	1	33.33	29	966.67	9	300.00
Echinopluteus larvae	81	0.6 1.5	0.00		0.00		0.00	2	66.67	1	33.33
Auricularia larvae	81	0.4 1,0	0.00		0.00		0.00		0.00		0.00
Brachiolaria larvae	81	1.5 2.5	0.00		0.00	1	33.33	3	100,00	2	66,67
TUNICATA			0.00		0,00		0.00		0.00		0.00
Fritillaria	841302	1.5 3.0	0.00		0.00		0,00		0,00		0.00
VERTEBRATA			0.00		0.00		0.00		0.00		0.00
Fish eggs	8735	0.8 3.0	0.00		0.00		0.00	3	100.00	2	66,67

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER				513		514		530		531	
Fish 1 arvae	8735	7.0	10.0	0.00	0.00		0.00		0.00		0.00
Herri ng 1 arvae	874701	6.0	9.0	0,00	0.00		0.00		0.00		0.00
MISCELLANEOUS				0,00	0,00		0.00		0.00		0.00
Smal 1 eggs		0.2	0.4	0 . 0	0	0,00		0.00	4	133.33	4 133,33
TOTALS FOR SAMPLE				18066.67	252	16800.00	316	10533,33	571	19033.33	215 7166.67

SAMPLE NUMBER	532	533	575	576	577	578
Date	220790	220790	260790	260790	260790	260790
Site	36	36	36	3 6 ,	3 6	36
Time	2100	2105	1317	1320	1324	1330
Mesh (urn)	25	25	25	25	25	25
Depth of tow (m)	30	40	10	20	30	40
Volume filtered (m-3)	0.03	0.03	0.03	0.03	0.03	0.03
Fraction enumerated	1	1	1	1	1	1

SPECIES	STAGE	TAXONOMIC CODE	LENGTH mm MIN	MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA																
Tintinid		3540	0.1	0.3		0.00		0.00		0.00		0.00		0.00		0.00
Forami ni fera		3448	0,1	0,3		0.00		0.00		0.00		0.00		0.00		0.00
CTENOPHORA						0.00		0.00		0,00		0.00		0,00		0.00
Pleurobrachia		38020101	1.0	2.5	3	100,00	1	33.33	6	200.00		0.00	2	66.67		0.00
CNIDARIA						0.00		0.00		0.00		0.00		0.00		0.00
Medusa juveni les		3701	0.7	2.1	7	233.33	12	400,00	8	266.67		0,00	2	66.67	1	33.33
Aglantha		37110411	1,0	3.0	14	466.67	1	33.33	7	233,33	18	600.00	5	166,67		0.00
			5.0	7.0		0.00		0,00		0.00		0.00	1	33,33		0.00
Euphysa		37030312	1.5	2.0		0.00		0,00		0.00		0.00		0,00		0.00
Aurelia juveniles		37340302	1.8	3,5		0.00		0.00		0,00		0.00		0.00		0.00
Obelia		37040102	0.6	1.0		0,00		0,00	8	266.67	4	133.33	2	66.67		0.00
			1.1	2.0	1	33.33		0.00	3	100,00	2	66.67		0.00		0.00
			2.1	4.0		0.00		0.00		0,00		0.00		0.00		0.00
Rathkea		37031902	1.5	2.0		0.00		0.00		0.00	2	66,67		0.00		0.00
Sars i a		37030609	1.5	3.0		0.00		0,00		0.00		0.00		0.00		0.00
Proboscidactyl a		37050602	3.0	7.0	1	33.33		0.00		0.00	1	33.33		0.00		0,00
TREMATODA						0.00		0.00		0.00		0.00		0.00		0.00
F 1 atworms		3901	0.6	1.5	3	100.00	1	33.33	2	66.67	3	100.00		0.00		0.00
NEMATODA						0.00		0.00		0.00		0.00		0.00		0.00
Nematodes		47	0.8	1,5		0.00		0.00		0.00		0.00		0.00		0.00
ROTIFERA						0.00		0.00		0,00		0.00		0.00		0,00
Roti fers		45	0.2	0.6	31	1033.33	7	233.33	4	133.33	29	966.67	1	33.33		0.00
CHAETOGNATHA						0.00		0.00		0.00		0,00		0.00		0.00
Sagitta elegans		8300000303	15.0	27.0		0.00		0.00		0.00		0,00	1	33,33		0,00
Chaetognath Juveniles		83	2.0	7.0	1	33.33		0.00	1	33.33		0.00		0.00		0.00
BRYOZOA						0.00		0.00		0.00		0,00		0.00		0.00
Cyphonautes 1 arvae		78	0,4	0.8	1	33.33	4	133.33	1	33.33	3	100,00	1	33.33	2	66.67
PHORONI DA						0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER				532		533		575		576		577		578	
Actinotrocha 1 arvae		77	0.8 1.0		0,00		0.00		0.00		0.00		0,00		0.00
MOLLUSCA					0.00		0.00		0.00		0.00		0.00		0.00
Limacina		51130101	0,6 2,0		0.00		0.00		0.00		0.00		0.00		0.00
Nud i branch 1 arvae		5127	0.7 0.8		0.00		0.00		0.00		0.00		0.00		0.00
Bivalve veliger		55	0.0 0.2		0,00		0.00		0.00		0.00		0,00		0.00
			0.2 0.4	4	133.33		0.00	5	166,67	3	100.00		0.00		0.00
Gastropod vel iger		51	0.0 0.2		0.00		0.00		0.00		0.00		0.00		0,00
			0.2 0,4	21	700,00	41	1366.67	8	266.67	18	600,00	27	900,00	19	633.33
			0,4 0,6	2	66.67	2	66,67		0.00		0.00		0.00		0,00
POLYCHAETA					0.00		0.00		0.00		0.00		0.00		0.00
Spionid larvae		500143	0.8 4.0	1	33.33		0.00		0.00		0.00	1	33.33		0.00
Polynoid larvae		50012015	0.5 1,5		0.00		0,00		0.00		0,00		0.00		0.00
Polychaete larvae		5001	0.6 1.5	1	33.33		0,00	7	233.33	3	100.00		0,00		0.00
Trochophore larvae		5001	0.2 0,6	5	166,67	2	66.67		0.00	2	66.67		0.00		0.00
Autolytus Sp		50012301	3 3.5		0.00		0.00		0,00		0.00		0.00		0.00
CRUSTACEA					0.00		0,00		0.00		0.00		0.00		0.00
CIRRIPEDIA					0,00		0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2 0.8	7	233.33		0.00		0.00		0.00	1	33.33		0.00
Cypris larvae		6130	0.8 1.2	2	66.67		0.00	4	133.33		0.00		0.00	1	33.33
CLADOCERA					0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0,6 1,0	6	200.00		0.00	6	200.00		0.00		0,00		0.00
COPEPODA					0.00		0.00		0.00		0.00		0.00		0.00
Copepod nauplii		6118	0.0 0.2	43	1433,33	5	166,67	7	233.33	7	233.33	2	66.67		0.00
			0,2 0.4	120	4000,00	8	266.67	70	2333.33	77	2566.67	4	133.33		0,00
			0.4 0.6	2	66.67		0.00		0,00		0.00		0.00		0.00
Copepodites	I-III	6118	0.2 0.4	1	33.33		0.00		0,00	1	33.33		0.00		0.00
			0.4 0.6	10	333.33	1	33.33	17	566.67	4	133.33	3	100.00	2	66467
			0.6 0.8	2	66.67	1	33.33	4	133.33	1	33.33		0.00		0.00
Epilabidocera sp	I	61182701	0.5 0,8		0.00		0.00		0.00		0.00		0.00		0,00
	II		0.8 1.0		D.00		0,00		0.00		0.00		0.00		0.00
	III		1.1 1.5		0.00		0.00		0.00		0.00		0.00		0.00
Epilabidocera longipedata	VIm	6118270102	2.7 3.1		0.00		0.00		0.00		0,00		0.00		0,00
Tortanus sp	III	61183001	0.7 0.9		0.00		0.00		0.00		0.00		0.00		0.00
	I	V	0.8 1.1		0.00		0,00		0.00		0.00		0.00		0.00
	v		1.0 1.7		0.00		0.00		0.00		0.00		0,00		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER					532		533		575		576		577		578	
Tortanus di scaudatus	VIf	6118300101	1.8	2.3		0.00		0,00		0.00		0.00		0,00		0.00
	VIm		1.6	2.2		0.00		0.00		0.00		0.00		0.00		0.00
Pseudocalanus sp. complex	I V	61180505	0.9	1.1		0.00		0.00		0.00		0.00	1	33.33	1	33.33
	Vf		1.1	1.3	16	533.33	25	833.33	10	333.33	31	1033.33	7	233.33	13	433,33
	Vm		1.0	1.3	13	433.33	37	1233,33	4	133,33	14	466.67	7	233,33	16	533.33
	VIf		l.l	2.0	23	766.67	27	900.00	4	133.33	38	1266.67	38	1266,67	34	1133.33
	VIm		1.1	1.5	5	166.67	4	133.33	2	66.67	16	533.33	6	200.00	6	200.00
Microcalanuspygmeus PUS I 1 lus	V	61180504	0.6	0.7		0.00		0,00		0.00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0,5	1.1		0.00		0.00		0,00		0,00		0,00		0,00
Centropages abdominal 1s	IV	6118170101	0.9	1.1		0.00		0,00		0,00		0,00		0.00		0.00
	v		1.1	1.3		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		1.6	2.1		0.00		0,00		0,00		0.00		0.00		0,00
	VIm		1,4	1.5		0.00		0.00		0.00		0.00		0.00		0.00
Eurytemora herdmani i	v	6118200203	0.9	1.2		0.00		0.00		0.00		0.00		0.00		0,00
	VIf		1.1	1.4	3	100,00		0,00	1	33.33		0.00		0,00		0.00
	VIm		1.1	1.4		0.00	2	66.67		0.00		0.00		0.00		0.00
Eurytemora pacif 1 ca	VIf	6118200206	1.4	1.5		0.00		0,00		0.00		0.00		0.00		0.00
	VIm		1.4	1.4		0.00		0,00		0,00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	35	1166,67	4	133.33	61	2033.33	10	333.33	9	300.00	1	33.33
Acartia longiremis	v	6118290103	0,7	1.0		0.00		0,00		0,00		0,00		0.00		0.00
	VIf		1,0	1.3		0.00		0.00	2	66,67		0.00		0.00		0,00
	VIm		0.9	1.1	2	66.67		0.00		0,00		0.00		0.00		0,00
Acartia clausii	v	6118290101	0.6	0.8	2	66.67		0.00		0.00	2	66.67	2	66.67		0.00
	VIf		0,9	1.3	1	33.33		0.00		0.00		0.00		0.00		0.00
	VIm		0.8	1,2	2	66,67		0,00		0,00		0.00		0.00		0.00
Monstri11 a	VIm	6122	1.2	1.4		0.00		0.00		0,00		0.00		0,00		0.00
Harpacticoida	v	6119	0,6	0.8		0,00		0.00	1	33.33	2	66,67		0.00		0,00
	VIf		0.7	1.0		0.00		0.00		0.00		0.00		0.00		0.00
Mi crosetel l a	VIf	61190901	0.5	0.9	1	33.33	1	33,33		0,00		0.00		0.00		0.00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00		0.00		0.00		0.00		0,00
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		0,7	1,0	1	33,33		0.00	1	33.33		0.00		0.00		0.00
	VIm		0.5	0.7		0.00		0.00		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00	1	33.33		0.00		0.00		0.00		0.00
CHELICERATA						0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER				532		533		575		576		577		578	
Hal acari dae	58	0,2	0,3		0.00		0.00		0.00		0,00		0.00		0.00
PYCNOGONI DA					0.00		0,00		0.00		0,00		0.00		0.00
Protonymphon	60	0.2	0,4		0,00		0,00		0.00		0.00		0.00		0.00
CUMACEA					0.00		0.00		0.00		0.00		0.00		0.00
Cumacean	6154	1.2	1.2		0.00	1	33,33		0.00		0.00		0.00		0.00
ISOPODA					0,00		0.00		0.00		0.00		0.00		0.00
Isopod	6158	0.8	2,2		0.00		0.00		0,00		0.00	1	33.33		0.00
AMPHIPODA					0,00		0,00		0,00		0.00		0.00		0.00
Hyperi id juveni les	6170	1,5	2,0		0,00		0.00		0.00		0.00		0.00		0.00
Gammarid	6169	1.2	2.5		0,00		0.00		0.00		0,00		0.00		0.00
EUPHAUSIACEA					0,00		0.00		0,00		0,00		0,00		0,00
Thysanoessa sp	61740209	5.5	8.0		0.00		0.00		0,00		0,00		0.00	5	166.67
Euphausiid naupl I I	6174	0.5	0.6	1	33.33		0,00		0,00		0.00		0,00		0,00
Euphausi Id protozoea	6174	0.0	0.5		0,00		0.00		0.00		0.00		0,00		0.00
		0.5	1.0		0.00		0,00		0.00		0.00		0.00		0.00
		1.0	1.5		0,00		0.00		0.00		0.00		0,00		0.00
Euphausi Id zoea	6174	2,0	2.5		0,00		0,00		0.00		0.00		0.00		0.00
		2.5	3,0		0,00		0.00		0.00		0.00		0.00		0.00
		3.5	4.0		0.00		0.00		0.00		0.00		0.00		0.00
Euphausi id juveniles	6174	4.5	6.0		0.00		0.00		0.00		0.00		0.00		0.00
DECAPODA					0.00		0,00		0.00		0.00		0.00		0.00
CarIdea zoea	6179	1.5	4,0		0.00		0,00		0.00		0.00		0,00		0.00
Crangon mys is	617922	3.0	3,0		0.00		0.00		0.00		0,00		0.00		0.00
Pandalus sp	617918	11.0	25.0		0.00		0,00		0.00		0,00		0.00		0.00
Brachyuran zoea	6184	1.5	3.0		0.00		0.00		0.00		0.00		0.00		0.00
Pagurid zoea	6183	1.5	6.0		0.00		0.00		0.00		0.00		0,00		0.00
ECHINODERMATA					0.00		0.00		0.00		0,00		0.00		0.00
Bi pi nnaria larvae	81	0,6	0,8	10	333.33	1	33,33	20	666.67	10	333,33	4	133.33	1	33.33
Echi nopluteus larvae	81	0.6	1.5	2	66.67		0.00	1	33,33		0.00		0.00		0.00
Auricularia larvae	81	0.4	1.0		0.00		0.00		0,00		0.00		0,00		0.00
Brachiolaria larvae	81	1.5	2.5	4	133.33	1	33.33	3	100.00	2	66.67		0.00		0.00
TUNICATA					0,00		0.00		0.00		0,00		0,00		0.00
Fritillaria	841302	1.5	3.0		0.00		0.00		0,00		0.00		0.00		0.00
VERTEBRATE					0,00		0.00		0.00		0.00		0.00		0,00
Fish eggs	8735	0.8	3.0		0.00		0.00	6	200.00		0.00	2	66,67		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0, 25mm mesh)

SAMPLE NUMBER		532		533		575		576		577		578	
Fish larvae	8735 7.0 10.0		0.00		0,00		0.00		0.00		0.00		0.00
Herr-l ng 1 arvae	874701 6.0 9,0		0.00		0.00		0.00		0,00		0.00		0.00
MISCELLANEOUS			0.00		0.00		0.00		0.00		0,00		0.00
Small eggs	0.2 0,4	6	200,00	1	33.33	9	300.00	9	300.00	1	33.33		0.00
TOTALS FOR SAMPLE		416	13866.67	191	6366.67	293	9766.67	312	10400,00	131	4366,67	102	3400.00

SAMPLE NUMBER	585	586	587	58a
Date	270790	270790	270790	270790
Site	39	39	39	39
Time	1003	1006	1o1o	1015
Mesh (urn)	25	25	25	25
Depth of tow (m)	5	10	15	20
Volume filtered (m3)	0,03	0,03	0.03	0.03
Fraction enumerated	1	1	0,5	0.5

SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	LENGTH mm MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
PROTOZOA											
Tintinid	3540	0.1	0.3		0.00		0.00		0.00	1	66.67
Foramini fera	3448	0.1	0,3		0.00		0,00		0.00		0.00
CTENOPHORA					0.00		0.00		0.00		0.00
Pleurobrachia	38020101	1.0	2.5		0.00		0,00		0.00		0.00
CNIOARIA					0.00		0.00		0.00		0,00
Medusa juveniles	3701	0,7	2.1		0.00		0.00		0.00		0.00
Aglantha	37110411	1.0	3.0	1	33.33		0.00		0.00		0.00
		5.0	7.0		0.00		0.00		0,00		0.00
Euphysa	37030312	1.5	2,0		0.00		0.00		0.00		0.00
Aurelia juveniles	37340302	1.8	3.5		0.00		0.00		0.00		0.00
Obelia	37040102	0.6	1,0		0.00	1	33.33		0.00		0.00
		1.1	2.0		0.00		0.00		0.00		0.00
		2.1	4.0		0.00		0,00		0.00		0,00
Rathkea	37031902	1,5	2.0		0.00		0,00		0.00		0.00
Sarsia	37030609	1.5	3.0		0.00		0.00		0,00		0.00
Proboscidactyla	37050602	3.0	7,0		0.00		0.00		0,00		0.00
TREMATODA					0,00		0.00		0.00		0.00
Flatworms	3901	0.6	1.S		0.00		0.00	3	200.00	1	66.67
NEMATOOA					0.00		0.00		0.00		0.00
Nematodes	47	0.8	1.5		0.00		0.00		0.00		0.00
ROTIFERA					0.00		0.00		0.00		0.00
Rotifers	45	0,2	0.6	2	66,67	1	33.33	1	66,67	1	66.67
CHAETOGNATHA					0.00		0.00		0.00		0.00
Sagitta elegans	8300000303	15.0	27.0		0.00		0.00		0,00		0.00
Chaetognath juveniles	83	2.0	7.0		0.00		0.00		0.00		0,00
BRYOZOA					0.00		0.00		0,00		0.00
Cyphonautes larvae	78	0.4	0.8		0.00		0.00		0.00		0.00
PHORONIDA					0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER					585		586		587		588	
Acti notrocha 1 arvae		77	0.8	1.0		0.00		0.00		0.00		0.00
MOLLUSCA						D.00		0.00		0.00		0.00
Limacina		51130101	0,6	2.0		0.00		0.00		0.00		0.00
Nud i branch 1 arvae		5127	0.7	0.8		0.00		0.00		0.00		0.00
Bivalve veliger		55	0.0	0.2		0.00		0.00		0.00		0.00
			0.2	0.4		0.00		0.00		0.00		0.00
Gastropod vel iger		51	0,0	0.2		0.00		0.00		0.00		0.00
			0,2	0.4	4	133.33	11	366,67	5	333.33	13	866,67
			0.4	0,6		0.00		0.00		0.00		0.00
POLYCHAETA						0,00		0.00		0.00		0,00
Spionid larvae		500143	0.8	4.0		0.00		0.00		0.00		0.00
Polynoid larvae		50012015	0,5	1.5		0.00		0.00		0.00		0.00
Polychaete larvae		5001	0.6	1.5		0,00	1	33,33		0.00		0.00
Trochophore larvae		5001	0,2	0.6	2	66.67		0.00		0,00	1	66.67
Autolytus sp		50012301	3	3.5		0,00		0.00		0.00		0.00
CRUSTACEA						0.00		0.00		0.00		0,00
CIRRIPEDIA						0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	12	400.00	1	33,33		0.00	1	66.67
Cypris larvae		6130	0.8	1,2		0.00		0.00	1	66,67		0.00
CLADOCERA						0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0	1	33.33	1	33.33		0.00		0.00
COPEPODA						0,00		0.00		0.00		0.00
Copepod naupl ii		6118	0.0	0.2	2	66.67	4	133,33		0,00	1	66.67
			0.2	0,4	11	366,67	19	633.33	9	600.00	3	200.00
			0.4	0.6		0,00		0.00		0.00		0.00
Copepod i tes	I-III	6118	0.2	0.4	2	66.67		0.00		0.00		0.00
			0.4	0.6	5	166.67	2	66.67	2	133.33		0.00
			0,6	0.8	4	133.33	2	66.67	2	133.33	1	66.67
Epilabidocera sp	I	61182701	0.5	0.8		0.00		0,00		0.00		0.00
	II		0.8	1.0		0.00		0.00		0.00		0.00
	III		1.1	1.5		0.00		0,00	1	66,67		0.00
Epilabidocera longipedata	VIm	6118270102	2.7	3.1		0.00		0.00		0.00		0.00
Tortanus sp	III	61183001	0.7	0.9		0.00		0.00		0,00		0,00
	IV		0.8	1.1		0,00		0.00		0.00		0,00
	V		1.0	1.7		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0. 25mm mesh)

SAMPLE NUMBER					585		586		587		588	
Tortanus d i scaudatus	VIf	6118300101	1.8	2,3		0.00		0.00		0.00		0.00
	VIm		1.6	2.2		0.00		0.00		0.00		0.00
PseudoCal anus sp. complex	IV	61180505	0.9	1.1		0,00		0.00		0.00		0.00
	Vf		1.1	1.3	2	66.67	1	33.33	4	266.67	2	133.33
	Vm		1.0	1.3	3	100.00	2	66.67	1	66.67	5	333.33
	VIf		1.1	2.0	2	66.67	2	66,67	2	133.33	1	66.67
	VIm		1.1	1.5		0.00	3	100.00	1	66.67	1	66.67
Microcalanus pygmeus pusi 1 lus	V	61180504	0.6	0.7		0,00		0.00		0.00		0.00
Metridia sp	I-III	61181602	0.5	1.1		0,00		0.00		0.00		0.00
Centropages abdomi nal 1s	IV	6118170101	0.9	1.1		0.00		0.00		0.00		0.00
	v		1.1	1.3		0,00	1	33.33		0.00	1	66.67
	VIf		1.6	2.1		0.00		0.00		0,00		0.00
	VIm		1.4	1.5		0.00		0.00	1	66.67	2	133.33
Eurytemora herdmani i	v	6118200203	0.9	1.2	5	166.67	13	433.33	4	266.67	9	600,00
	VIf		1.1	1.4	8	266.67	4	133.33	6	400.00	4	266.67
	VIm		1.1	1.4	4	133.33	7	233.33	7	466.67	6	400.00
Eurytemora paci f i ca	VIf	6118200206	1.4	1.5		0.00		0.00	1	66.67	1	66.67
	VIm		1.4	1.4		0.00		0.00		0.00	1	66.67
Acartia sp	I-IV	61182901	0.5	0.7	9	300.00	60	2000.00	35	2333.33	33	2200,00
Acartia longiremis	V	6118290103	0.7	1.0	3	100.00	2	66.67		0.00	1	66.67
	VIf		1.0	1.3		0.00		0.00	1	66.67	1	66.67
	VIm		0.9	1.1	1	33.33	1	33,33	2	133.33		0,00
Acartia clausii	v	6118290101	0,6	0.8	6	200.00	42	1400.00	67	4466.67	58	3866.67
	VIf		0.9	1.3	7	233.33	41	1366,67	44	2933,33	61	4066.67
	VIm		0.8	1.2	5	166.67	43	1433.33	45	3000.00	49	3266.67
Monstrl11 a	VIm	6122	1.2	1.4		0.00		0.00		0.00		0.00
Harpacticoida	v	6119	0.6	0.8	1	33.33	1'	33.33		0.00		0,00
	VIf		0.7	1.0		0.00		0.00		0.00		0.00
Microsetel1 a	VIf	61190901	0.5	0.9		0.00		0.00	1	66.67		0,00
Oithona sp	I-IV	61200901	0.4	0.7		0.00		0.00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8		0.00		0.00		0.00		0.00
	VIf		0,7	1.0		0,00		0.00		0.00		0.00
	VIm		0.5	0.7		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7		0.00		0.00		0,00		0.00
CHELICERATA						0.00		0,00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (0.25mm mesh)

SAMPLE NUMBER		585		586		587		588	
Halacaridae	58 0.2 0,3		0.00		0.00		0.00		0.00
PYCNOGONIDA			0.00		0.00		0.00		0.00
Protonymphon	60 0.2 0,4		0,00		0,00		0.00		0.00
CUMACEA			0.00		0.00		0.00		0.00
Cumacean	6154 1.2 1.2		0.00		0.00		0.00		0.00
ISOPODA			0.00		0.00		0.00		0.00
Isopod	6158 0,8 2,2		0,00	1	33.33	1	66.67	1	66.67
AMPHIPODA			0.00		0.00		0.00		0.00
Hyperi id juveniles	6170 1,5 2.0		0.00		0.00		0.00		0.00
Gammarid	6169 1,2 2,5		0,00		0.00	1	66.67		0.00
EUPHAUSIACEA			0.00		0.00		0.00		0.00
Thysanoessa sp	61740209 5.5 8.0		0.00		0,00		0.00		0.00
Euphausiid naupl ii	6174 0.5 0.6		0.00		0.00		0.00		0.00
Euphausi id protozoea	6174 0.0 0.5		0.00		0.00		0.00		0,00
	0.5 1.0		0.00		0.00		0.00		0.00
	1.0 1.5		0.00		0.00		0.00		0,00
Euphausi id zoea	6174 2.0 2,5		0,00		0.00		0.00		0.00
	2.5 3.0		0.00		0.00		0.00		0.00
	3.5 4.0		0.00		0.00		0.00		0,00
Euphausi id juveniles	6174 4,5 6.0		0.00		0.00		0,00		0.00
DECAPODA			0.00		0.00		0.00		0,00
Car Idea zoea	6179 1.5 4.0		0.00		0,00		0.00		0.00
Crangon mysis	617922 3.0 3.0		0.00		0.00		0.00		0.00
Pandalus sp	617918 11.0 25.0		0.00		0.00		0.00		0,00
Brachyuran zoea	6184 1,5 3.0		0.00		0,00		0.00		0.00
Pagurid zoea	6183 1.5 6.0	1	33.33		0,00		0.00		0.00
ECHINODERMATA			0.00		0.00		0.00		0.00
Bipinnaria larvae	81 0.6 0.8		0.00		0,00		0.00		0.00
Echinopluteus larvae	81 0.6 1.5		0.00		0,00		0.00		0,00
Auricularia larvae	81 0.4 1.0		0.00		0,00		0.00		0.00
Brachiolaria larvae	81 1.5 2.5		0,00		0,00		0.00		0.00
TUNICATA			0.00		0.00		0.00		0.00
Fritillaria	841302 1.5 3.0		0.00		0.00		0,00		0,00
VERTEBRATA			0.00		0.00		0.00		0,00
Fish eggs	8735 0.8 3.0		0.00		0.00		0.00		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT HOLLER 1990 (O. 25mm mesh)

SAMPLE NUMBER	585	586	587	588
Fish 1 arvae	8735 7,0 10,0	0.00	0.00	0.00	0.00
Herring 1 arvae	.974701 6.0 9.0	0,00	0.00	0,00	0.00
MISCELLANEOUS		0.00	0,00	0.00	0.00
Small eggs	0.2 0.4	0,00	0.00	0.00	0.00
TOTALS FOR SAMPLE	103 3433.33	267 8900,00	248 16533,33	259 17266.67

ZOOPLANKTON FROM PORT MOLLER 1990

MOIRA GALBRAITH
SY–TECH RESEARCH LTD.
2035 MILLS ROAD
SIDNEY, B.C. V8L 3S1

SAMPLE NUMBER							3			17			44			55			70					
Date							010590			020590			120590			130590			190590					
Site							36			39			36			39			36					
Time							1437			1128			1635			1146			1300					
Mesh (urn)							165			165			165			165			165					
Depth (m)							60			25			50			25			45					
Volume filtered (m^3)							31.41			33,64			40.47			32,02			28.42					
Fraction enumerated							0.00391			0.00781			0.00195			0,00391			0.00391					
SPECIES	STAGE	TAXONOMIC CODE	LENGTH mm MI	N	MAX	WI mm MAX	OTH NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
CNIDARIA								0.00		0.00		0.00		0.00		0.00		0.00		0.00				
Medusa juvenile		3730	0.1	0.3	0.3			0.00		0,00		0.00		0.00		0.00								
Aglantha		37110411	1.0	3.0	1.5			0,00		0,00		0,00		0.00			1	9.00						
			5.0	8.6	6.5			0.00		0.00		1	12.65			0.00			1	9.00				
Aurelia juvenile		37340302	1.8	3,2	0.6		1	8.14	3	11,41		0.00				0.00				0.00				
Obelia		37040102	0.3	3.5	0.3		27	219.85		0.00		18	227.73		2	15.97			25	224.98				
Euphysa		37030312	0.8	3.6	3.6			0.00		0.00			0.00			0.00				0.00				
Rathkea		37031902	3.0	3.0	2.5			D.00		0.00			0.00			0.00			2	18.00				
Proboscidactyla		37050602	1.2	3.5	2.1			0,00		0.00			0.00			0.00				0.00				
Bougainvillea		37030107	7.9	8.3	7.3			0.00		0.00			0,00			0.00				0.00				
TREMATODA								0.00		0,00			0.00			0.00				0.00				
Flatworms		3901	0.4	0.8	0,2		1	8.14		0,00		1	12.65		1	7.99				0.00				
ROTIFERA								0.00		0.00			0.00			0.00				0.00				
Rotifers		45	0.2	0,4	0,2			0.00		0.00			0.00			0.00				0.00				
CHAETOGNATHA								0.00		0.00			0.00			0.00				0.00				
Sagitta elegans		8300000303	10,0	22,2	0.7		1	8.14		0.00		1	12.65			0.00			1	9.00				
Chaetognath Juveniles		83	1.8	7.0	0,4		1	8.14	3	11.41		1	12.65		5	39.94			4	36.00				
BRYOZOA								0.00		0.00			0.00			0,00				0.00				
Cyphonautes larvae		78	0.4	0.8	0.1			0.00		0.00			0.00			0.00				0.00				
PHORONIDA								0.00		0.00			0.00			0.00				0.00				
Actinotrocha larvae		77	0.8	1.0	0.2			0.00		0.00		1	12.65			0.00				0.00				
MOLLUSCA								0.00		0.00			0,00			0.00				0.00				
Bivalve veliger		55	0.2	0.4	0.1			0.00		0.00		1	12,65			0.00			1	9.00				
Gastropod veliger		51	0.3	0.6	0,2		11	89.57	7	26,63		9	113.86		4	31,95			10	89.99				
POLYCHAETA								0.00		0.00			0.00			0,00				0.00				
Spionid larvae		500143	0.5	4.0	0.3		34	276.84	58	220.69		5	63,26		14	111.82			1	9.00				
Polynoid larvae		500102	0,6	1.5	0.8			0.00		0.00		2	25.30		1	7.99				0.00				
Polychaete larvae		5001	0.4	3.5	0.2		4	32..57	5	19.02		8	101.21		22	175.72			19	170,98				
Nerieid larvae		500124	0.4	1.1	0.4		7	57,00	1	3.80			0.00			0.00			1	9.00				

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER							3		17		44		55		70	
Autolytus Sp		50012301	7,5	8,1	1.3			0.00		0.00		0.00	1	7.99		0.00
Glycerid		500127		15.1	0.8			0.00		0.00		0.00		0.00		0.00
Trochophore larvae		5001	0.2	0.8	0.2		101	822,39	20	76.10	48	607.27	50	399.37	46	413.96
CRUSTACEA								0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA								0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0.8	0.2		7	57.00	55	209.27	4	50.61	16	127.80		0,00
Cypris larvae		6130	0,8	1.2	0,4		16	130.28	1	3.80		0.00	2	15.97		0.00
CLADOCERA								0.00		0.00		0,00		0.00		0.00
Podon		61090502	0,6	1.0	0.6			0,00		0.00		0.00		0.00		0.00
COPEPODA								0.00		0.00		0.00		0,00		0.00
Copepod nauplii		6118	0.2	0.4	0.2		8	65.14	12	45.66	7	88.56		0.00	13	116.99
			0.4	0.6	0.3			0.00	8	30.44		0.00	4	31,95		0.00
Copepod i tes	I-III	6118	0.2	0.4	0.3		5	40.71	12	45,66		0.00		0.00	8	71.99
			0.4	0.6	0.4		43	350,13	23	87.51	14	177.12	13	103.84	13	116.99
			0.6	0.8	0,4		22	179,13	18	68.49	37	468.11	23	183.71	7	62.99
Calanus sp	I	61180102	0,5	1.1	0.3			0.00		0.00		0.00		0.00		0.00
	II		1.2	1.5	0.4			0.00		0.00		0,00		0.00	1	9.00
Calanus marshallae	VIf	6118010204	3.7	4.2	1.1			0.00		0.00		0,00		0.00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	0,3		8	65.14	8	30,44	4	50,61		0.00	3	27.00
	Vf		1.1	1,3	0.4		40	325,70	8	30.44	45	569.32	1	7.99	5	45.00
	Vm		1.0	1.3	0,4		27	219.85	6	22.83	35	442.80	1	7.99	3	27.00
	VIf		1.1	2.0	0.5		36	293.13	11	41.85	52	657.88	1	7.99	41	368,96
	VIm		1.1	1.5	0.4		22	179.13	8	30.44	25	316,29		0.00	7	62.99
Centropages abdominalis	IV	6118170101	0.9	1.1	0.3			0.00		0,00		0.00	1	7.99		0.00
	v		1.1	1.3	0,4			0.00		0.00		0.00		0,00		0.00
	VIf		1.6	2.1	0.7			0.00		0.00		0.00		0.00		0.00
	VIm		1.4	1.5	0.4			0.00		0.00		0.00		0.00		0,00
Eurytemora herdmani	v	6118200203	1.1	1,2	0.3		1	8.14	17	64,68	3	37.95	18	143.77	13	116.99
	VIf		1.1	1.5	0.4		4	32.57	6	22.83	1	12.65	5	39.94	2	18.00
	VIm		1.2	1.5	0.3		1	8.14	16	60.88	4	50.61	9	71.89	11	98.99
Epi long ipedata	I-IV	61182701	1.4	2.1	0,7			0.00		0.00		0.00		0,00		0.00
Acartia sp	I-IV	61182901	0.5	0,7	0.2		24	195.42	27	102,73	30	379.55	46	367.42	31	278.97
Acartia longiremis	v	6118290103	0.7	1.0	0,3			0.00		0.00	1	12.65	3	23.96	6	53.99
	VIf		1.0	1.3	0.3			0.00	2	7.61	4	50.61	1	7.99	1	9.00
	VIm		0.9	1.1	0.3			0.00	3	11.41		0.00	3	23.96	2	18.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER						3		17		44		55		70	
Acartia clausi	v	6118290101	0.6	0.9	0.4	2	16.28	7	26,63	3	37.95	19	151.76	19	170,98
	VIf		0.9	1,2	0,6	1	8.14	1	3.80	1	12.65	14	111.82	6	53.99
	VIm		0.9	1.2	0.5		0.00	1	3.80		0.00	10	79,87	8	71.99
Tortanus sp	I-IV	61183001	0.6	1.4	0,4		0.00		0.00		0.00	1	7.99	1	9.00
Tortanus discaudatus	VIf	6118300101	2.2	2.3	0.7		0,00		0.00		0.00		0,00		0.00
	VIm		1.9	2.2	0.4		0.00		0.00		0,00		0,00		0.00
Harpacticoida	v	6119	0.6	0,8	0,2		0.00	7	26.63		0,00	4	31.95		0.00
	VIf		0.7	1.0	0.3		0.00		0,00		0.00	1	7.99		0.00
Oithona similis	v	6120090103	0,6	0.8	0.2		0.00		0.00		0.00		0.00		0,00
	VIf		0,7	1,0	0.2		0.00		0.00		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7	0.2		0.00	1	3.80		0.00		0.00		0.00
CUMACEAN							0.00		0.00		0.00		0.00		0.00
Cumacea		6154	0.5	1.9	0.3		0,00		0.00		0.00	1	7.99		0,00
MYSID							0.00		0.00		0,00		0.00		0.00
Xenacanthomysis pseudomacropsis	f	6153010106	14.3	16.5	1.4	1	8.14		0,00		0.00		0.00	1	9,00
AMPHIPODA							0,00		0.00		0.00		0.00		0.00
Gammarid		6169	0.8	2.6	0,4		0.00	1	3.80		0,00	1	7.99		0.00
EUPHAUSIACEA							0.00		0.00		0.00		0.00		0.00
Thysanoessa raschii	f	61740209	17.3	19,0	3.3	1	8,14		0.00		0.00		0.00	1	9,00
	m		19.3	19.8	2.3		0.00		0.00		0.00		0.00		0,00
Euphausiid nauplii		6174	0.5	0.6	0,4		0,00		0,00		0.00		0.00		0.00
Euphausiid protozoea		6174	1,0	2.5	0.6		0.00		0.00		0.00		0,00		0.00
Euphausiid zoea		6174	2.5	5.0	1.2		0,00		0.00		0.00		0.00		0.00
Euphausiid juveniles		6174	4.5	6.0	1,5		0.00		0.00		0.00		0.00		0.00
DECAPODA							0,00		0.00		0.00		0.00		0.00
Caridea zoea		6179	1,3	3.3	0,3	1	8.14		0.00	1	12,65		0.00		0.00
Crangon mysis		617922	3.0	4.3	0.8		0,00		0.00		0.00		0.00		0.00
Pandalus sp		617918	11.0	25.0	3.2		0.00		0.00		0.00		0,00		0.00
Brachyuran zoea		6184	1.5	2.3	0,8	1	8,14		0.00	1	12.65		0.00		0.00
Pagurid zoea		618306	1.5	6.0	1.2		0.00		0.00		0.00		0.00		0.00
ECHINODERMATA							0,00		0.00		0.00		0.00		0,00
Bipinnaria larvae		81	0.6	0.7	0,4		0.00		0.00		0.00		0.00		0.00
Echinopluteus larvae		81	0.6	1,5	1,0	1	8.14		0.00		0.00		0.00		0.00
TUNICATA							0.00		0,00		0.00		0.00		0.00
Fritillaria		841307.	1.5	2.0	0.5		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER					3		17		44		55		70	
VERTEBRATA						0.00		0.00		0.00		0.00		0,00
Fish eggs	8735	0.9	3.0	3.0		0.00	1	3.80		0.00		0.00		0.00
Fish larvae	8765	7.0	33,0	1.9		0,00		0.00		0.00	1	7.99		0.00
Herring larvae	874701	6.0	9.0	1.0	1	8.14	38	144.59		0.00	1	7,99		0.00
MISCELLANEOUS						0.00		0.00		0.00		0.00		0.00
Small eggs		0.3	0.4	0.4	14	113,99		0.00	2	25.30		0.00	5	45,00
TOTAL FOR SAMPLE					475	3867,67	395	1502,97	370	4681.06	300	2396,20	320	2879.71

[illegible]	85	101	116	128	143
Date	200590	270590	280590	010690	020690
Site	39	39	36	36	39
Time	1300	0835	1210	1320	1145
Mesh (urn)	165	165	165	165	165
Depth (m)	25	20	40	40	20
Volume fi ltered (m^3)	34.72	25,094	20.07	11.08	38.55
Fract Ion enumerated	0,00195	0.00391	0.00391	0,00391	0.00195

SPECIES	TAXONOMIC STAGE CODE	LENGTH mm MIN	LENGTH mm MAX	WIDTH mm MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3
CNIDARIA						0.00		0.00		0,00		0.00		0.00
Medusa juveni le	3730	0.1	0.3	0.3		0.00	3	30.58		0.00		0.00	1	13.30
AAglantha	37110411	1.0	3,0	1,5		0,00		0.00		0,00		0.00		0.00
		5.0	8.6	6.5		0.00		0.00	3	38,23	3	69.25		0,00
Aurelia juvenile	37340302	1.8	3.2	0.6		0.00		0.00		0.00		0.00		0.00
Obelia	37040102	0.3	3.5	0.3	5	73.85	1	10.19	70	892.02	43	992.55	1	13,30
Euphysa	37030312	0.8	3.6	3,6		0,00	5	50,96		0,00		0.00	3	39.91
Rathkea	37031902	3,0	3.0	2,5		0.00	1	10.19	4	50.97	7	161.58	1	13,30
Proboscidactyla	37050602	1.2	3,5	2,1		0.00		0.00		0,00		0.00		0.00
Bougainvillia	37030107	7.9	8.3	7.3		0.00		0.00		0,00		0.00		0.00
TREMATODA						0,00		0.00		0.00		0.00		0.00
Fl atworms	3901	0.4	0.8	0.2	1	14.77	2	20.38	2	25.49	1	23.08	2	26,61
ROTIFERA						0.00		0.00		0.00		0.00		0.00
Rotifers	45	0,2	0.4	0,2		0.00	2	20.38	8	101.94	3	69.25	1	13,30
CHAETCGNATHA						0.00		0.00		0.00		0.00		0,00
Sagitta elegans	8300000303	10.0	22,2	0.7		0.00		0.00	1	12,74	1	23.08		0.00
Chaetognath juveni les	83	1,8	7.0	0.4	1	14.77	1	10.19	4	50,97	2	46.17	2	26.61
BRYOZOA						0.00		0.00		0.00		0.00		0.00
Cyphonautes l arvae	78	0.4	0,8	0.1		0,00		0.00		0.00		0.00		0.00
PHORONIDA						0.00		0.00		0.00		0.00		0.00
Acti notrocha 1 arvae	77	0.8	1.0	0.2		0.00		0.00		0.00		0,00		0.00
MOLLUSCA						0.00		0.00		0.00		0.00		0.00
Bivalve vel iger	55	0.2	0,4	0.1		0.00		0.00	3	38.23	18	415.49		0.00
Gastropod vel iger	51	0,3	0.6	0.2	12	177.24	17	173,26	4	50,97	4	92,33	14	186.24
POLYCHAETA						0.00		0.00		0,00		0.00		0.00
Spionid larvae	500143	0,5	4.0	0,3	9	132.93	7	71.34	6	76,46	2	46.17	3	39.91
Polynoid larvae	500102	0.6	1.5	0,8		0.00		0.00		0.00		0.00		0.00
Pol ychaete 1 arvae	5001	0.4	3.5	0.2	23	339.71	69	703.24	28	356.81	30	692.48	30	399.08
Neried l arvae	500124	0.4	1.1	0.4		0.00		0.00		0.00		0.00	2	26.61

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER						85		101		116		128		143	
Autolytus sp		50012301	7.5	8,1	1.3		0.00		0.00		0.00		0.00		0,00
Glycerid		500127		15.1	0.8		0.00		0.00		0.00		0.00		0.00
Trochophore 1 arvae		5001	0.2	0.8	0.2	22	324.94	40	407.67	13	165.66	8	184,66	12	159.63
CRUSTACEA							0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA							0.00		0.00		0.00		0.00		0.00
Naupl i i l arvae		6130	0.2	0.8	0.2	102	1506.56	93	947.84	1	12.74	4	92.33	154	2048.62
Cypris 1 arvae		6130	0.8	1.2	0.4	2	29.54	1	10,19		0.00		0.00		0.00
CLAOCCERA							0.00		0.00		0,00		0.00		0,00
Podon		61090502	0.6	1.0	0.6		0.00		0.00		0.00		0,00		0.00
COPEPODA							0.00		0.00		0.00		0.00		0.00
Copepod naupl i i		6118	0,2	0,4	0.2		0.00	1	10.19	3	38,23	10	230.83	2	26,61
			0.4	0.6	0.3		0.00	3	30.58	7	89.20	9	207.74		0.00
Copepodites	I-III	6118	0,2	0,4	0.3	4	59.08	2	20,38	19	242.12	3	69,25	3	39.91
			0.4	0.6	0.4	8	118.16	10	101.92	29	369.55	40	923.30	11	146.33
			0,6	0.8	0.4	4	59.08	9	91.73	19	242.12	32	738.64	5	66."51
Calanus sp	I	61180102	0.5	1.1	0,3		0.00	1	10.19		0.00		0.00		0.00
	II		1.2	1.5	0.4		0,00		0.00		0.00		0,00		0.00
Cal anus marshal l ae	VIf	6118010204	3.7	4.2	1,1		0,00		0.00		0.00		0,00		0.00
Pseudocalanus sp. compl ex	IV	61180505	0.9	1.1	0,3		0.00		0.00	4	50,97		0,00		0,00
	Vf		1.1	1.3	0.4	1	14.77	1	10,19	24	305.83	12	276.99	2	26,61
	Vm		1.0	1.3	0.4		0.00	1	10.19	18	229.38	17	392.40	2	26.61
	VIf		1.1	2.0	0.5	2	29.54		0.00	62	790.07	47	1084.88	1	13,30
	VIm		1.1	1.5	0.4	2	29,54	1	10.19	13	165,66	8	184.66	1	13.30
Centropages abdomi nal Is	IV	6118170101	0.9	1.1	0.3	2	29,54		0.00		0.00		0,00		0,00
	v		1.1	1.3	0.4	1	14.77	1	10.19		0.00		0.00	1	13.30
	VIf		1.6	2.1	0.7	1	14.77		0.00		0.00		0,00		0.00
	VIm		1.4	1.5	0.4	1	14.77	1	10.19		0.00		0.00		0.00
Eurytemora herdmani	v	6118200203	1.1	1.2	0.3	5	73,85	3	30.58	4	50.97	7	161.58	8	106.42
	VIf		1.1	1.5	0,4	4	59.08	6	61.15	6	76.46		0.00	3	39.91
	VIm		1.2	1.5	0.3	9	132.93	8	81.53	6	76.46	4	92,33	8	106.42
Epi longi pedata	I-IV	61182701	1.4	2.1	0.7		0,00		0.00		0.00		0,00		0.00
Acartia sp	I-IV	61182901	0,5	0,7	0.2	15	221,55	6	61.15	14	178.40	7	161.58	13	172.94
Acartia longiremis	v	6118290103	0.7	1.0	0.3	1	14.77	1	10.19		0,00		0.00		0,00
	VIf		1.0	1.3	0.3	1	14.77	3	30.58		0.00	2	46.17		0.00
	VIm		0,9	1.1	0,3	3	44.31	1	10.19		0.00		0,00		0,00

DENSITY OF ZOOPLANKTON CAPTURED IN FORT MOLLER 1990 (165um)

SAMPLE NUMBER						85		101		116		128		143	
Acartia clausi	v	6118290101	0,6	0.9	0.4	12	177.24	8	81,53	8	101.94	3	69.25	4	53.21
	VIf		0.9	1,2	0.6	112	1654.26	67	682.85	26	331.32	11	253.91	3a	505.50
	VIm		0.9	1.2	0.5	70	1033.91	28	285.37	22	280.35	9	207s 74	33	43a. 99
Tortanus sp	I-IV	61183001	0.6	1,4	0.4	1	14.77		0.00		0.00	4	92.33	3	39.91
Tortanus discaudatus	VIf	6118300101	2.2	2.3	0.7		0,00		0.00		0.00		0.00		0.00
	VIm		1.9	2.2	0.4		0.00		0,00		0.00		0,00		0.00
Harpacticoida	v	6119	0,6	0,8	0,2	67	989,60	52	529,98		0.00		0.00	33	438.99
	VIf		0.7	1.0	0,3		0,00		0.00		0.00		0,00		0.00
Oithona similis	v	6120090103	0.6	0.8	0,2		0.00		0.00		0.00		0.00	1	13,30
	VIf		0.7	1.0	0.2		0.00		0.00		0,00		0,00		0.00
Oncaea sp	v	61200103	0.5	0,7	0.2		0.00		0.00		0.00		0.00		0,00
CUMACEAN							0.00		0,00		0.00		0.00		0.00
Cumacea		6154	0.5	1,9	0.3		0.00		10.19		0.00	1	23.08		0.00
MYSID							0,00		0.00		0.00		0.00		0.00
Xenacanthomysis pseudomacropsis	f	6153010106	14.3	16.5	1,4		0.00	1	10.19		0.00		0,00		0.00
AMPHIPODA							0.00		0.00		0.00		0.00		0.00
Gammarid		6169	0.8	2,6	0.4	1	14.77	2	20,38		0.00		0.00	2	26.61
EUPHAUSIACEA							0.00		0.00		0.00		0.00		0.00
Thysanoessa raschi i	f	61740209	17,3	19.0	3,3		0.00		0.00		0.00		0.00		0.00
	m		19.3	19,8	2.3		0.00		0.00	1	12.74	1	23.08		0,00
Euphausiid naupl i i		6174	0,5	0,6	0.4		0.00		0.00		0.00		0.00		0.00
Euphausi 1 d protozoea		6174	1,0	2,5	0.6		0.00		0.00		0.00		0.00	2	26.61
Euphausiid zoea		6174	2.5	5.0	1.2		0.00		0.00		0,00		0.00		0.00
Euphausiid juveniles		6174	4.5	6.0	1.5		0.00		0.00		0.00		0.00		0.00
DECAPODA							0.00		0.00		0.00		0.00		0.00
Caridea zoea		6179	1,3	3.3	0,3	9	132.93	5	50.96	1	12.74		0.00	2	26.61
Crangon mysls		617922	3.0	4.3	0.8	1	14.77		0,00		0,00		0.00		0.00
Pandalus sp		617918	11.0	25.0	3.2		0.00		0.00		0.00		0.00		0.00
Brachyuran zoea		6184	1.5	2.3	0.8		0.00		0.00		0.00		0,00		0.00
Pagurid zoea		618306	1.5	6.0	1,2		0,00		0,00		0.00		0.00		0.00
ECHINODERMATA							0,00		0.00		0.00		0,00		0.00
Bipinnaria larvae		81	0.6	0.7	0,4		0,00		0.00		0.00		0,00		0.00
Echi nopluteus l arvae		81	0,6	1,5	1,0		0.00		0,00		0,00		0.00		0.00
TUNICATA							0.00		0.00		0.00		0,00		0,00
Fritillaria		841302	1.5	2.0	0,5	1	14.77	17	173.26		0.00		0.00	24	319.27

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER		85		101		116		128		143	
VERTEBRATA			0.00		0.00		0.00		0,00		0.00
Fish eggs	8735 0.9 3.0 3,0		0,00		0.00		0.00		0.00	1	13.30
Fish larvae	8765 7,0 33.0 1,9		0.00		0.00		0.00		0.00		0.00
Herring larvae	874701 6,0 9.0 1.0	2	29.54	2	20.38		0.00		0.00		0.00
MISCELLANEOUS			0.00		0.00		0.00		0.00		0.00
Small eggs	0.3 0.4 0,4		0.00		0.00	5	63.72	8	184.66		0.00
TOTAL FOR SAMPLE		517	7636.18	484	4932,86	438	5581.49	361	8332.79	429	5706.87

SAMPLE NUMBER							158		186		191		210					
Date							080690		100690		170690		180690					
Site							36		39		36		39					
Time							1155		1330		0935		0940					
Mesh (urn)							165		165		165		165					
Depth (m)							40		20		40		20					
Volume filtered (m^3)							17.58		27,03		15.16		29.26					
Fraction enumerated							0,00391		0.00391		0.00391		0.00195					
SPECIES	STAGE	TAXONOMIC CODE	LENGTH mm MI N	LENGTH mm MAX	WI mm MAX	OTH	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3				
CNIDARIA								0,00		0.00		0.00		0,00				
Medusa juveni le		3730	0,1	0.3	0.3			0.00		0.00		0.00		0.00				
Ag 1 antha		37110411	1.0	3.0	1.5			0.00		0.00		0.00		0.00				
			5.0	8,6	6,5		2	29.10		0.00	2	33,74		0.00				
Aurelia juveni le		37340302	148	3.2	0.6			0.00		0,00		0.00		0,00				
Obelia		37040102	0.3	3.5	0,3		30	436.44	12	113.54	13	219.31	1	17.53				
Euphysa		37030312	0.8	3.6	3.6			0,00	2	18,92		0.00		0.00				
Rathkea		37031902	3,0	3.0	2,5		1	14,55	8	75,69	3	50.61		0.00				
Proboscidactyl a		37050602	1.2	3.5	2.1			0.00	5	47.31	1	16.87	4	70.11				
Bougainvillia		37030107	7.9	8.3	7.3			0,00	1	9.46		0.00		0.00				
TREMATODA								0.00		0.00		0.00		0.00				
F 1 atworms		3901	0.4	0,8	0.2			0.00		0,00	2	33.74		0.00				
ROTIFERA								0.00		0.00		0.00		0.00				
Rot if ers		45	0.2	0.4	0.2		5	72.74		0.00	6	101.22	8	140.21				
CHAETOGNATHA								0.00		0.00		0.00		0.00				
Sagitta elegans		8300000303	10.0	22.2	0.7		1	14.55		0.00	1	16,87		0,00				
Chaetognath juveni 1 es		83	1.8	7.0	0.4		1	14.55	1	9.46	4	67.48	1	17.53				
BRYOZOA								0,00		0.00		0,00		0,00				
Cyphonautes 1 arvae		78	0.4	0.8	0.1			0.00		0.00	1	16.87		0.00				
PHORONIDA								0.00		0.00		0.00		0.00				
Actl notrocha 1 arvae		77	0.8	1.0	0.2			0.00		0.00		0.00		0,00				
MOLLUSCA								0.00		0.00		0.00		0.00				
Bivalve veliger		55	0.2	0.4	0.1		7	101.84	2	18.92	13	219.31	1	17.53				
Gastropod vel iger		51	0.3	0.6	0.2		5	72.74	5	47.31	13	219.31	13	227.84				
POLYCHAETA								0.00		0.00		0.00		0.00				
Spionid larvae		500143	0.5	4.0	0.3		4	58.19		0.00	1	16.87		0,00				
Polynoid larvae		500102	0.6	1.5	0.8			0.00		0.00		0.00		0.00				
Pol ychaete 1 arvae		5001	0.4	3.5	0.2		5	72.74	15	141.93	6	101.22	3	52.58				
Neried 1 arvae		500124	0.4	1.1	0.4		3	43.64		0.00		0.00		0.00				

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER							158		186		191		210	
Autolytus sp		50012301	7,5	8.1	1,3			0.00		0.00		0.00		0.00
Glycerid		500127		15.1	0,8		1	14.55		0.00		0.00		0,00
Trochophore 1 arvae		5001	0.2	0.8	0.2		2	29.10	1	9.46	5	84,35	2	35.05
CRUSTACEA								0.00		0.00		0.00		0.00
CIRRIPEDIA								0.00		0.00		0.00		0.00
Nauplii larvae		6130	0.2	0,8	0.2		10	145.48	134	1267.89	10	168,70	82	1437.16
Cypris larvae		6130	0.8	1.2	0.4		1	14.55		0.00	1	16.87	8	140.21
CLADOCERA								0.00		0.00		0,00		0.00
Podon		61090502	0.6	1.0	0,6			0.00	1	9,46	1	16.87	2	35.05
COPEPODA								0.00		0.00		0.00		0.00
Copepod nauplii		6118	0.2	0,4	0.2		7	101.84	1	9.46	11	185.57		0.00
			0.4	0.6	0.3		1	14.55	5	47.31	6	101.22	1	17.53
pod	I-III	6118	0,2	0.4	0.3		4	58.19	3	28.39	9	151.83	2	35.05
			0.4	0.6	0.4		47	683.76	62	586.64	33	556.72	18	315.47
			0.6	0.8	0,4		26	378.25	36	340.63	8	134.96	9	157.74
Calanus sp	I	61180102	0,5	1.1	0,3		1	14.55	1	9.46		0.00		0,00
	II		1,2	1,5	0.4			0,00		0.00		0.00		0.00
Calanus marshallae	VIf	6118010204	3.7	4.2	1,1			0.00		0.00		0.00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	0.3		2	29.10		0.00	4	67.48		0.00
	Vf		1.1	1.3	0.4		21	305.51		0.00	27	455,50	1	17.53
	Vm		1.0	1,3	0,4		22	320.06		0.00	24	404,89		0.00
	VIf		1.1	2,0	0.5		19	276.41	1	9.46	42	708.55		0.00
	VIm		1.1	1.5	0.4		7	101.84		0.00	11	185,57	2	35.05
Centropages abdominalis	IV	6118170101	0.9	1.1	0,3			0.00		0.00		0,00		0.00
	v		1.1	1,3	0.4			0.00		0.00	1	16.87	1	17.53
	VIf		1,6	2,1	0.7		1	14.55	1	9.46	1	16.87	1	17,53
	VIm		1.4	1.5	0.4			0.00		0.00		0.00	1	17.53
Eurytemora herdmani	v	6118200203	1.1	1.2	0.3		5	72.74	21	198.70	17	286.80	42	736,11
	VIf		1.1	1.5	0.4		2	29.10	1	9.46	12	202,44	18	315.47
	VIm		1.2	1.5	0.3		4	58.19	11	104.08	8	134.96	34	595.90
Epilongipedata	I-IV	61182701	1.4	2.1	0.7			0.00		0.00		0.00	3	52.58
Acartia sp	I-IV	61182901	0.5	0.7	0.2		11	160,03	55	520.40	51	860.39	61	1069,11
Acartia longiremis	v	6118290103	0.7	1.0	0.3			0.00	1	9.46	1	16.87		0,00
	VIf		1.0	1.3	0.3			0.00	4	37.85	2	33.74	2	35.05
	VIm		0,9	1.1	0,3			0.00	3	28.39		0.00		0.00

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER						158		186		191		210	
Acartia clausi	v	6118290101	0,6	0.9	0.4	4	58.19	9	85.16	4	67.48	13	227.84
	VIf		0.9	1.2	0.6	2	29.10	21	198.70	19	320.54	32	560. 84
	VIm		0.9	1.2	0.5	2	29.10	7	66,23	4	67.48	22	385. 58
Tortanus sp	I-IV	61183001	0.6	1.4	0.4		0.00	2	18.92	2	33.74	1	17.53
Tortanus discaudatus	VIf	6118300101	2.2	2.3	0,7		0,00		0.00		0.00		0.00
	VIm		1.9	2.2	0,4	1	14,55		0.00		0.00		0.00
Harpacti coida	v	6119	0.6	0.8	0,2		0.00	2	18,92		0.00		0.00
	VIf		0.7	1,0	0.3		0.00		0,00		0.00		0.00
Oithona similis	v	6120090103	0.6	0.8	0.2		0.00		0.00		0.00		0.00
	VIf		0.7	1.0	0.2		0.00		0.00		0,00		0.00
Oncaea sp	v	61200103	0.5	0.7	0.2		0.00		0.00		0,00		0.00
CUMACEAN							0.00		0.00		0.00		0.00
Cumacea		6154	0.5	1.9	0.3		0.00		0.00		0,00		0.00
MYSID							0.00		0.00		0,00		0.00
Xenacanthomysis pseudomacropsis	f	6153010106	14.3	16.5	1.4		0.00		0.00		0.00		0.00
AMPHIPODA							0.00		0.00		0.00		0.00
Gammarid		6169	0.8	2,6	0.4		0.00		0.00		0.00	1	17.53
EUPHAUSIACEA							0.00		0.00		0.00		0.00
Thysanoessa raschii	f	61740209	17.3	19.0	3,3		0.00		0,00		0.00		0.00
	m		19.3	19,8	2,3	1	14.55		0.00	1	16,87		0,00
Euphausiid nauplii		6174	0,5	0,6	0.4		0,00		0.00		0.00		0.00
Euphausiid protozoea		6174	1.0	2.5	0.6		0.00		0,00		0.00		0.00
Euphausiid zoea		6174	2.5	5.0	1.2	1	14.55		0.00		0.00		0,00
Euphausiid juveniles		6174	4.5	6.0	1.5		0.00		0,00		0.00		0,00
OECAPODA							0.00		0.00		0,00		0,00
Caridea zoea		6179	1.3	3.3	0.3		0.00	3	28.39		0.00	2	35.05
Crangon mysis		617922	3,0	4.3	0.8		0.00		0.00		0,00	1	17.53
Pandalus sp		617918	11.0	25.0	3.2		0.00		0.00		0.00		0.00
Brachyuran zoea		6184	1.5	2.3	0.8		0.00		0.00		0.00		0.00
Pagurid zoea		618306	1.5	6.0	1.2		0,00		0.00	1	16.87		0.00
ECHINODERMATA							0.00		0,00		0.00		0.00
Bipinnaria larvae		81	0.6	0,7	0.4		0,00		0.00	1	16,87		0.00
Echinopluteus larvae		81	0.6	1.5	1.0		0.00		0,00		0.00		0.00
TUNICATA							0,00		0.00		0.00		0,00
Fritil l aria		841302	1.5	2,0	0.5		0,00	50	473.09		0.00	4	70.11

Sy-Tech Research Ltd.

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER '1 990 (165um)

SAMPLE NUMBER					158		186		191		210	
VERTEBRATA						0,00		0.00		0.00		0.00
F1 sh eggs	8735	0.9	3.0	3,0		0.00		0.00	2	33.74		0.00
Fish larvae	8765	7.0	33.0	1.9		0.00		0.00	1	16.87		0.00
Herring larvae	874701	6.0	9.0	1,0		0.00		0.00		0.00		0.00
MISCELLANEOUS						0,00		0.00		0.00		0,00
Small eggs		0.3	0,4	0,4	4	58,19		0.00		0.00		0,00
TOTAL FOR SAMPLE					273	3971.61	487	4607,93	386	6511.95	397	6957.95

SAMPLE NUMBER						224		290		370		3$39		425		448		
Date						220690		230690		290690		300690		060790		070790		
Site						36		39		36		3 9		36		39		
Time						1037		1650		1330		1305		1145		1255		
Mesh (urn)						165		165		165		165		165		165		
Depth (m)						40		25		40		25		40		25		
Volume fi ltered (m^3)						26.29		23.4		15.03		20,89		50,38		36.24		
Fraction enumerated						0.00098		0,00195		0.00391		0.00195		0.00195		0.00391		
SPECIES	TAXONOMIC STAGE COOE	LENGTH mm MIN	LENGTH mm MAX	WIDTH mm MAX	NO PER STN	NO PER M3	No PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3		
CNIDARIA						0.00		0.00		0.00		0.00		0.00		0.00		
Medusa juvenile	3730	0.1	0,3	0.3		0,00		0.00		0.00		0.00		0,00		0,00		
Ag 1 antha	37110411	1.0	3.0	1.5		0.00		0.00		0,00		0.00		0,00		0.00		
		5.0	8.6	6.5		0.00		0.00	1	17.02		0.00	1	10.18		0.00		
Aurelia juvenile	37340302	1.8	3.2	0.6		0.00		0,00		0.00		0.00		0.00		0.00		
Obelia	37040102	0.3	3.5	0.3	2	77.95		0.00	33	561.54		0.00	6	61.07	1	7.06		
Euphysa	37030312	0.8	3.6	3,6		0.00		D.00		0.00		0,00		0.00		0.00		
Rathkea	37031902	3.0	3.0	2.5	17	662.53		0.00	12	204.20		0.00	5	50,90		0.00		
Proboscidactyl a	37050602	1.2	3.5	2.1	2	77.95		0.00	1	17,02		0.00		0.00	3	21.17		
Bougainvillea	37030107	7.9	8.3	7,3		0.00		0.00		0.00		0.00		0.00		0,00		
TREMATODA						0.00		0.00		0,00		0.00		0.00		0,00		
Fl atworms	3901	0.4	0.8	0.2	3	116.92		0.00		0.00		0.00	5	50.90	1	7.06		
ROTIFERA						0.00		0.00		0.00		0,00		0.00		0,00		
Rot if ers	45	0.2	0.4	0.2	2	77.95		0.00	1	17.02		0,00		0.00		0.00		
CHAETOGNATHA						0.00		0.00		0.00		0.00		0.00		0.00		
Sagitta elegans	8300000303	10.0	22.2	0.7		0.00		0.00	4	68.07		0.00	2	20.36		0.00		
Chaetognath juveniles	83	1.8	7.0	0.4	1	38.97		0.00	1	17.02	1	24.55	3	30,54		0.00		
BRYOZOA						0.00		0.00		0.00		0,00		0.00		0.00		
Cyphonautes larvae	78	0.4	0.8	0.1	9	350.75		0.00		0.00		0.00	1	10.18		0.00		
PHORONIOA						0.00		0.00		0.00		0.00		0.00		0.00		
Actinotrocha larvae	77	0.8	1.0	0.2		0.00		0,00		0.00		0.00		0.00		0.00		
MOLLUSCA						0.00		0.00		0.00		0.00		0.00		0.00		
Bivalve veliger	55	0.2	0.4	0.1	61	2377.33		0.00	51	867.83		0,00	78	793.97	2	14.11		
Gastropod veliger	51	0.3	0.6	0.2	24	935.34	5	109.58	14	238.23	6	147,29	39	396.98	5	35.29		
POLYCHAETA						0.00		0.00		0.00		0.00		0.00		0.00		
Spionid larvae	500143	0.5	4,0	0.3		0.00		0,00		0.00		0.00		0.00		0.00		
Polynoid larvae	500102	0.6	1.5	0.8		0.00		0.00		0,00		0.00		0,00		0.00		
Polychaete larvae	5001	0.4	3.5	0.2	3	116.92		0.00	2	34.03	1	24.55	1	10.18		0.00		
Neried larvae	500124	0.4	1.1	0.4		0.00		0.00		0.00		0.00		0.00		0.00		

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER						224		290		370		389		425		448	
Autolytus sp		50012301	7.5	8.1	1.3		0.00		0.00		0.00		0,00		0.00		0.00
Glycerid		50012701		15.1	0,8		0.00		0.00		0.00		0.00		0.00		0.00
Trochophore 1 arvae		5001	0.2	0.8	0.2		0.00	1	21.92	3	51,05		0.00		0.00		0.00
CRUSTACEA							0.00		0,00		0.00		0.00		0.00		0.00
CIRRIPEDIA							0.00		0.00		0.00		0.00		0,00		0.00
Naupl i i larvae		6130	0.2	0.8	0.2	5	194.86	74	1621.74	2	34.03	39	'957.40	4	40.72	78	550.46
Cypris 1 arvae		6130	0.8	1.2	0.4	1	38,97	1	21.92	1	17,02	1	24.55	1	10.18		0.00
CLADOCERA							0.00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0	0.6	1	38,97	1	21.92	1	17.02		0.00	2	20.36	4	28.23
COPEPODA							0.00		0.00		0.00		0.00		0.00		0.00
Copepod naupl11		6118	0.2	0,4	0.2	2	77.95	1	21.92	4	68.07	3	73.65	6	61.07	1	7.06
			0.4	0,6	0.3	1	38.97		0.00		0.00		0.00		0,00	1	7.06
Copepodi tes	I-III	6118	0.2	0.4	0.3	5	194.86		0,00	6	102.10		0.00	5	50.90	1	7,06
			0.4	0.6	0.4	11	428.70	6	131.49	21	357.34	4	98.19	8	81,43	76	536.35
			0.6	0.8	0,4	7	272.81	5	109.58	4	68.07	13	319,13	4	40.72	56	395.21
Calanus sp	I	61180102	0.5	1.1	0.3		0.00		0,00		0.00		0.00		0.00		0.00
	II		1.2	1.5	0.4		0.00		0.00		0,00		0.00		0.00		0.00
Cal anus marshal 1 ae	VIf	6118010204	3.7	4.2	1.1		0.00		0.00		0,00		0.00		0.00		0.00
Pseudocal anus sp. compl ex	IV	61180505	0.9	1.1	0,3	8	311.78		0.00	3	51.05		0,00	3	30.54		0.00
	Vf		1.1	1.3	0.4	18	701.51		0.00	46	782.75		0.00	32	325.73	3	21.17
	Vm		1.0	1.3	0.4	28	1091,23		0.00	33	561.54		0.00	26	264.66	5	35.29
	VIf		1.1	2.0	0,5	22	857.40		0.00	79	1344.29		0.00	46	468.24	2	14.11
	VIm		1.1	1.5	0.4	2	77.95		0,00	13	221.21		0.00	5	50.90	7	49.40
Centropages abdomi nal is	IV	6118170101	0.9	1.1	0,3		0,00		0,00		0.00		0.00		0.00	1	7.06
	v		1.1	1.3	0.4		0.00		0.00		0,00		0.00		0.00	4	28.23
	VIf		1.6	2.1	0.7	1	38.97		0.00		0.00		0.00	1	10.1B	1	7.06
	VIm		1.4	1.5	0.4		0.00		0,00		0.00		0,00	1	10.18		0.00
Eurytemora herdmani	v	6118200203	1.1	1.2	0.3	5	194.86	17	372.56	4	68.07	21	515.52	4	40.72	22	155,26
	VIf		1.1	1.5	0.4	8	311.78	6	131.49	6	102.10	16	392.78	1	10.18	10	70.57
	VIm		1.2	1.5	0.3	18	701.51	8	175.32	6	102.10	15	368.23	2	20.36	14	98,80
Epi labidocera sp	I-IV	61182701	1.4	2.1	0.7		0.00		0,00		0.00		0.00		0.00		0.00
Acarti a sp	I-IV	61182901	0.5	0.7	0.2	32	1247.12	82	1797.06	5	85.08	56	1374.72	14	142.51	48	338,75
Acartia longiremis	v	6118290103	0.7	1.0	0.3	1	38.97		0,00	1	17.02	2	49.10		0.00	5	35.29
	VIf		1.0	1.3	0.3	1	38.97		0.00	4	68.07	1	24.55	2	20,36	1	7.06
	VIm		0.9	1.1	0.3	1	38.97	1	21.92	2	34.03	1	24.55	1	10.18	4	28.23

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER						224		290		370		389		425		448	
Acartia clausi	v	6118290101	0.6	0.9	0.4	28	1091.23	53	1161.52	1	17.02	61	1497.47	1	10.18	11	77.63
	VIf		0.9	1.2	0.6	17	662.53	59	1293.01	4	68,07	116	2847,64	9	91.61	38	268.18
	VIm		0.9	1,2	0.5	11	428,70	59	1293.01	1	17,02	83	2037,53	4	40.72	24	169.37
Tortanus sp	I-IV	61183001	0.6	1.4	0.4		0,00	1	21.92		0.00		0.00		0.00	1	7.06
Tortanus discaudatus	VIf	6118300101	2.2	2.3	0.7		0.00		0.00	1	17.02		0.00	1	10.18		0.00
	VIm		1.9	2,2	0,4	1	38,97	1	21.92	1	17,02		0.00		0.00		0.00
Harpacticoida	v	6119	0.6	0.8	0.2		0.00	1	21.92		0,00	8	196.39		0.00		0.00
	VIf		0.7	1.0	0.3	1	38,97		0,00		0.00		0.00		0.00		0.00
Oithona similis	v	6120090103	0,6	0.8	0.2		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		0.7	1.0	0.2	1	38.97		0.00		0.00		0.00		0.00	2	14.11
Oncaea sp	v	61200103	0.5	0,7	0.2		0.00		0.00		0.00		0.00		0.00		0.00
CUMACEAN							0,00		0.00		0.00		0,00		0.00		0.00
Cumacea		6157	0.5	1.9	0.3		0.00		0.00		0.00		0.00		0.00		0.00
MYSID							0,00		0,00		0.00		0.00		0,00		0.00
Xenacanthomysis pseudomacropsis	f	6153010106	14.3	16,5	1,.4	1	38.97		0.00		0.00		0,00		0.00		0.00
AMPHIPODA							0.00		0,00		0.00		0.00		0.00		0.00
Gammari d		6169	0.8	2,6	0,4		0,00		0.00		0.00		0.00		0.00	1	7,06
EUPHAUSIACEA							0.00		0.00		0.00		0.00		0.00		0.00
Thysanoessa raschi i	f	61740209	17.3	19,0	3.3		0.00		0.00		0.00		0.00		0.00		0.00
	m		19.3	19.8	2.3		0,00		0.00		0.00		0,00		0.00		0.00
Euphausiid naupl i i		6174	0.5	0,6	0.4		0.00		0,00		0.00		0.00		0.00		0.00
Euphausi id protozoea		6174	1.0	2.5	0,6		0.00		0.00		0.00		0.00		0.00		0,00
Euphausi id zoea		6174	2.5	5.0	1.2		0.00		0.00		0,00		0.00		0,00		0.00
Euphausi id juveniles		6174	4.5	6.0	1.5	2	77,95		0,00	1	17,02		0.00	3	30,54		0.00
DECAPODA							0.00		0.00		0.00		0.00		0.00		0.00
Caridea zoea		6179	1.3	3.3	0.3	2	77,95		0.00	1	17,02		0,00		0.00	3	21.17
Crangon mysis		617922	3.0	4.3	0.8	1	38.97		0.00		0,00		0.00	1	10.18		0.00
Pandalus sp		617918	11.0	25.0	3.2		0.00		0.00		0,00		0.00		0.00		0.00
Brachyuran zoea		6184	1.5	2.3	0.8		0.00		0.00		0.00		0.00		0,00		0.00
Pagurid zoea		6183	1.5	6.0	1,2		0.00		0.00		0,00	1	24.55	1	10.18		0.00
ECHINODERMATA							0,00		0,00		0.00		0.00		0.00		0.00
Bipinnaria larvae		81	0.6	0,7	0.4	4	155.89		0.00	3	51,05		0.00	3	30.54		0.00
Echi nopluteus 1 arvae		81	0.6	1.5	1.0		0.00		0.00		0.00		0.00		0,00		0.00
TUNICATA							0,00		0.00		0,00		0.00		0.00		0.00
Fritillaria		841302	1.5	2.0	0.5		0.00		0.00		0.00		0.00		0.00	5	35.29

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER		224	290	370	3a9	425	448
VERTEBRATA		0.00	0.00	0.00	0.00	0.00	**0.00**
Fish eggs	8735 0.9 3.0 3.0	1 38.97	0,00	1 17.02	0.00	2 20.36	0.00
Fish larvae	8765 7.0 33.0 1.9	0.00	0.00	0.00	1 24.55	0.00	1 7.06
Herring 1 arvae	B74701 6.0 9.0 1.0	0.00	1 21.92	0.00	0.00	0,00	0.00
MISCELLANEOUS		0.00	0,00	0.00	0.00	0,00	0.00
Smal 1 eggs	0.3 0.4 0,4	3 116.92	0.00	8 136.13	0.00	6 61.07	0.00
TOTAL FOR SAMPLE		375 14614.73	383 8393.60	386 6568.28	450 11046. 88	340 3460,88	442 3119.30

SAMPLE NUMBER						464		496		510		529		579		584								
Oate						130790		140790		210790		220790		260790		270790								
Site						36		39		39		36		36		39								
Time						1225		1625		1928		2030		1337		0950								
Mesh (urn)						165		165		165		165		165		165								
Depth (m)						40		25		20		89		93		30								
Volume filtered (m^3)						55,41		42.67		29.68		28.36		14.61		36.37								
Fraction enumerated						0.00098		0.00098		0,00098		0,00391		0.00391		0.00195								
SPECIES	TAXONOMIC STAGE	CODE	LENGTH mm MIN	MAX	WIDTH mm MAX	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	NO PER M3	NO PER STN	No PER M3	NO PER STN	NO PER M3							
CNIDARIA							0.00		0.00		0.00		0.00		0.00		0.00							
Medusa juvenile		3730	0.1	0.3	0.3		0,00		0.00		0.00		0.00		0.00		0.00							
Aglantha		37110411	1.0	3.0	1.5		0.00		0.00		0.00	32	288. %	17	297.59		0.00							
			5.0	8.6	6.5		0.00		0,00		0.00		0.00	1	17,51		0,00							
Aurelia juvenile		37340302	1.8	3.2	0.6		0.00		0.00		0.00	1	9.02	2	35.01		0.00							
Obelia		37040102	0,3	3.5	0.3	19	351.15	1	24.00		0.00	2	18,04	6	105.03		0.00							
Euphysa		37030312	0.8	3.6	3,6		0.00		0.00		0,00		0.00		0.00		0.00							
Rathkea		37031902	3.0	3.0	2.5	4	73.93	1	24.00		0,00	1	9.02		0.00		0.00							
Proboscidactyla		37050602	1.2	3.5	2.1		0.00		0,00		0.00	1	9,02	1	17.51		0.00							
Bougainvillia		37030107	7.9	8.3	7.3		0.00		0.00		0.00		0.00		0.00		0.00							
TREMATODA							0.00		0.00		0.00		0.00		0.00		0.00							
F 1 atworms		3901	0.4	0.8	0.2		0,00		0.00		0,00		0.00		0.00		0,00							
ROTIFERA							0.00		0.00		0.00		0.00		0.00		0.00							
Rotifers		45	0.2	0.4	0.2		0.00		0.00	3	103.51		0.00		0.00		0.00							
CHAETOGNATHA							0,00		0.00		0.00		0.00		0.00		0.00							
Sagitta elegans		8300000303	10.0	22.2	0.7	3	55. 44		0.00		0.00	6	54.11	4	70.02		0.00							
Chaetognath juveniles		83	1,8	7.0	0.4	4	73.93		0.00	1	34,50	4	36.07	3	52.52		0.00							
BRYOZOA							0.00		0.00		0.00		0.00		0.00		0,00							
Cyphonautes larvae		78	0.4	0.8	0.1		0.00		0.00		.0.00		0.00	1	17.51		0.00							
PHORONIDA							0.00		0,00		0.00		0.00		0.00		0.00							
Actinotrocha larvae		77	0.8	1.0	0.2		0.00		0.00		0.00		0.00		0.00		0,00							
MOLLUSCA							0,00		0.00		0.00		0.00		0,00		0.00							
Bivalve veliger		55	0.2	0.4	0.1	51	942.56	4	96.00		0.00		0.00		0.00		0.00							
Gastropod veliger		51	0.3	0.6	0.2	63	1164.34	11	264,00	15	517.55	75	676.36	31	542.67	12	169.20							
POLYCHAETA							0.00		0.00		0.00		0.00		0,00		0.00							
Spionid larvae		500143	0.5	4.0	0,3		0.00		0.00		0.00		0.00		0.00		0.00							
Polynoid larvae		500102	0.6	1.5	0.8		0.00		0.00		0.00		0.00		0,00		0.00							
Polychaete larvae		5001	0.4	3.5	0.2	2	36.96		0.00		0.00		0.00	2	35.01	1	14.10							
Neried larvae		500124	0.4	1.1	0.4		0.00		0.00		0,00		0.00		0.00		0.00							

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER							464		496		510		529		579		584	
Autolytus sp		50012301	7.5	8.1	1.3			0.00		0.00		0.00		0.00		0.00		0.00
Glycerid		50012701		15.1	0,8			0.00		0.00		0.00		0.00		0.00		0.00
Trochophore larvae		5001	0.2	0.8	0.2			0.00		0.00		0.00		0,00		0.00		0.00
CRUSTACEA								0.00		0.00		0.00		0.00		0.00		0.00
CIRRIPEDIA								0.00		0.00		0.00		0.00		0.00		0.00
Nauplii larvae		6130	0,2	0.8	0.2		5	92.41	22	527.99	11	379.54	3	27.05	4	70.02	8	112,80
Cypris larvae		6130	0.8	1.2	0,4		1	18.48	3	72.00	1	34.50	8	72.15	5	87.53		0.00
CLADOCERA								0,00		0.00		0.00		0.00		0.00		0.00
Podon		61090502	0.6	1.0	0.6		29	535.97	10	240.00	2	69,01	3	27.05	7	122.54	1	14.10
COPEPODA								0.00		0.00		0,00		0.00		0.00		0.00
Copepod nauplii		6118	0.2	0.4	0,2		3	55,44	2	48.00	1	34.50	1	9.02	8	140.04		0,00
			0.4	0,6	0,3			0.00		0.00		0.00		0.00		0,00		0.00
Copepodi tes	I-III	6118	0,2	0.4	0,3			0.00	3	72.00	2	69.01	2	18.04	5	87.53	1	14.10
			0.4	0.6	0.4		6	110.89	18	431.99	7	241.52	7	63.13	4	70.02	4	56.40
			0.6	0.8	0,4		12	221,78	46	1103,98	8	276.03	13	117.24	1	17.51	6	84.60
Calanus sp	I	61180102	0,5	1.1	0,3			0.00		0.00		0.00		0.00		0.00		0.00
	II		1.2	1.5	0.4			0.00		0.00		0.00		0.00		0.00		0.00
Calanus marshallae	VIf	6118010204	3,7	4.2	1,1		1	18.48		0.00		0,00		0.00		0.00		0.00
Pseudocalanus sp. complex	IV	61180505	0.9	1.1	0.3		4	73.93		0.00		0,00	2	18.04	3	52.52		0.00
	Vf		1.1	1.3	0.4		21	388,11		0.00	1	34.50	22	198.40	19	332.60	1	14.10
	Vm		1.0	1.3	0,4		24	443,56	1	24.00	2	69.01	34	306.62	26	455.14		0.00
	VIf		1.1	2.0	0,5		38	702.30		0.00	2	69.01	46	414.83	40	700,22	4	56.40
	VIm		1.1	1.5	0,4		10	184.82	1	24.00	2	69,01	14	126.25	17	297.59		0.00
Centropages abdominalis	IV	6118170101	0.9	1,1	0.3		1	18.48		0,00		0,00		0.00	1	17.51		0.00
	v		1.1	1.3	0.4		2	36.96	1	24.00		0.00	1	9.02		0.00	1	14.10
	VIf		1.6	2.1	0.7			0.00		0.00	3	103,51		0.00		0,00		0,00
	VIm		1.4	1.5	0.4			0.00		0.00	1	34,50		0.00		0.00	1	14.10
Eurytemora herdmani	v	6118200203	1.1	1.2	0.3		3	55.44	35	839.99	31	1069.61	2	18.04		0,00	15	211.50
	VIf		1.1	1.5	0.4		8	147.85	12	288.00	19	655.57	8	72.15	2	35.01	18	253.80
	VIm		1.2	1.5	0.3		4	73.93	18	431.99	26	897,09	1	9.02		0.00	19	267.90
Epilabidocera sp	I-IV	61182701	1.4	2.1	0.7			0.00		0.00		0.00		0.00		0.00		0.00
Acartia sp	I-IV	61182901	0.5	0.7	0.2		41	757.75	92	2207,97	82	2829.29	56	505.02	3a	665,21	34	479.40
Acartia longiremis	v	6118290103	0.7	1.0	0.3			0.00	9	216.00	2	69.01		0.00	1	17.51	3	42,30
	VIf		1.0	1,3	0,3		1	18,48	1	24.00	2	69,01	1	9,02		0.00		0.00
	VIm		0.9	1.1	0.3			0.00	3	72.00	1	34.50	3	27.05		0.00		0.00

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DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER						464		496		510		529		579		584	
Acartia clausi	V	6118290101	0.6	0.9	0.4	3	55.44	22	527.99	25	862.59	7	63.13	2	35.01	65	916,51
	VIf		0,9	1,2	0.6	8	147,85	21	503.99	51	1759,68	7	63.13	1	17.51	86	1212.61
	VIm		0.9	1.2	0.5		0.00	17	407.99	52	1794.18	10	90.18	1	17,51	102	1438.21
Tortanus sp	I-IV	61183001	0.6	1,4	0,4		0.00		0.00		0,00		0.00		0.00		0.00
Tortanus d i scaudatus	VIf	6118300101	2.2	2.3	0.7		0.00		0.00		0.00		0.00		0.00		0.00
	VIm		1.9	2.2	0.4	1	18.48		0.00		0.00		0.00		0,00		0.00
Harpacticoida	v	6119	0.6	0.8	0.2	52	961,04		0.00	2	69.01	1	9.02		0.00	1	14,10
	VIf		0.7	1.0	0.3		0.00		0.00		0.00		0.00		0.00		0.00
Oithona similis	v	6120090103	0,6	0,8	0,2		0.00		0.00		0.00		0.00		0.00		0.00
	VIf		0.7	1.0	0.2	1	18.48	4	96.00	1	34,50		0.00		0.00		0.00
Oncaea sp	v	61200103	0.5	0.7	0.2		0.00		0.00		0.00		0,00		0,00		0,00
CUMACEAN							0.00		0,00		0.00		0. DO		0.00		0.00
Cumacea		6157	0.5	1.9	0,3		0.00		0.00		0,00	1	9,02		0.00		0.00
MYSID							0.00		0,00		0,00		0.00		0.00		0.00
Xenacanthomysis pseudomacropsis	f	6153010106	14.3	16.5	1.4	1	18.48		0.00		0.00		0.00		0.00		0.00
AMPHIPODA							0,00		0.00		0.00		0.00		0.00		0.00
Gammarid		6169	0.8	2,6	0.4		0.00	1	24.00	1	34,50	1	9.02		0.00		0.00
EUPHAUSIACEA							0,00		0.00		0.00		0.00		0.00		0.00
Thysanoessa raschi i	f	61740209	17,3	19.0	3,3		0,00		0.00		0.00		0.00	1	17.51		0.00
	m		19.3	19.8	2.3		0.00		0.00		0.00		0.00		0.00		0.00
Euphausiid naupl i i		6174	0.5	0,6	0.4		0,00		0.00		0,00		0.00	1	17.51		0.00
Euphausi id protozoea		6174	1.0	2.5	0.6		0.00		0.00		0.00	2	18.04		0.00		0.00
Euphausi id zoea		6174	2,5	5.0	1.2		0.00		0.00		0.00		0.00		0.00		0.00
Euphausiid juveniles		6174	4,5	6.0	1.5		0.00		0.00		0.00	2	18,04		0.00		0.00
DECAPODA							0.00		0.00		0.00		0.00		0.00		0.00
Caridea zoea		6179	1.3	3,3	0.3		0,00	1	24.00	1	34,50		0,00		0.00	1	14.10
Crangon mysis		617922	3.0	4.3	0.8		0.00		0.00		0,00	1	9,02	1	17,51		0.00
Pandalus sp		617918	11,0	25.0	3.2	1	18,48		0.00		0.00		0.00		0,00		0.00
Brachyuran zoea		6184	1.5	2.3	0.8		0.00		0.00		0.00		0.00		0.00		0.00
Pagurid zoea		6183	1.5	6.0	1.2	1	18.48		0.00		0,00	3	27.05	1	17.51		0.00
ECHINODERMATA							0,00		0.00		0,00		0400		0.00		0.00
Bipinnaria larvae		81	0.6	0.7	0.4	2	36.96		0.00		0.00	6	54,11	16	280,09		0.00
Echi nopluteus l arvae		81	0.6	1.5	1.0		0.00		0.00		0.00		0.00	1	17.51		0.00
TUNICATA							0.00		0.00		0.00		0.00		0.00		0.00
Fritillaria		841302	1.5	2.0	0.5		0.00		0.00		0.00		0.00		0.00		0.00

DENSITY OF ZOOPLANKTON CAPTURED IN PORT MOLLER 1990 (165um)

SAMPLE NUMBER					464		496		510		529		579		584	
VERTEBRATE						0.00		0.00		0.00		0,00		0.00		0.00
Fish eggs	8735	0.9	3.0	3,0	7	129.37		0,00		0.00	5	45.09	1	17.51		0.00
Fish larvae	8765	7.0	33.0	1.9	2	36,96		0.00		0.00	1	9.02		0.00		0.00
Herring larvae	874701	6.0	9,0	1,0	1	18.48		0,00		0.00		0.00		0.00		0,00
MISCELLANEOUS						0,00		0.00		0.00		0.00		0.00		0.00
Small eggs		0.3	0,4	0.4	10	184,82		0.00		0,00	14	126.25	7	122.54		0,00
TOTAL FOR SAMPLE					450	8316,72	360	8639.88	358	12352,27	410	3697,44	282	4936.53	384	5414.44

Appendix G. Prey and predators of herring larvae in Port Moller in 1990.

Appendix G. Prey and predators of herring larvae in Port Moller in 1990.

G.1 Prey of herring larvae

In this appendix, we describe the prey available to herring larvae in Port Moller estuary using methods that were developed in the Auke Bay pilot study (McGurk 1989b), and used in the 1989 survey of herring larvae in Prince William Sound (McGurk et al. 1990). These methods were based on studies of the diet of Pacific herring larvae that were captured in southern British Columbia (Wailes 1935; Barraclough 1967a, 1967b, 1967c; Barraclough and Fulton 1967, 1968; Barraclough et al. 1968; Robinson 1969; Robinson et al. 1968a, 1968b; Robinson 1988). They described a diet dominated by the eggs, nauplii, copepodites and adult stages of calanoid copepods and cladocerans, a diet similar to that of Atlantic herring, *Clupea harengus harengus*, larvae (Checkley 1982; Cohen and Lough 1983; Fortier and Gagne 1990). Herring larvae of the Port Moller estuary are assumed to have a similar diet.

Microzooplankton prey

A total of 103 casts of the 30 L bottle were taken between April 28 and July 27, 1990. Approximately 75% of the cumulative density (number-m^{-3}) of microzooplankton captured by the bottle was prey for herring larvae. This prey ranged in dry weight from 0.1 to 20.1 μg. Over 50% of the cumulative concentration (μg dry weight·m^{-3}) of microzooplankton prey consisted of small and mid-size copepod nauplii (Table Gl).

A two-way ANOVA of In-transformed microzooplankton prey concentration (mg dry weight·m^{-3}) on station and depth with day of year and time of day as covariates showed that concentration varied significantly with station ($P < 0.001$), depth ($P < 0.001$), and time of day ($P = 0.023$), but not with day of year ($P = 0.562$). In order to plot the data we had to correct prey concentration for the effect of time of day. This was done by calculating a regression of ln-transformed prey concentration on time of day (h), depth of water (m), a dummy variable for station ($x_1 = 1$ for station 36 and $x_1 = O$ for station 39), and the interactions of the three variables. The model that explained the most variance in In(prey concentration) ($r^2 = 0.57$, $n = 103$, $P < 0.0001$) was

Table G1. Taxonomic composition of microzooplankton prey of herring captured by the open-closing 30 L water bottle.

Taxon	Dry weight (μg)	Percent of cumulative concentration
small copepod nauplii	0.7	0.42
large copepod nauplii	20.1	50.96
small copepodites	20.1	5.28
trochophore larvae	6.7	25.76
small bivalve veligers	0.1	0.25
large bivalve veligers	6.9	9.03
small gastropod veligers	0.1	0.03
large gastropod veligers	6.9	7.63
small eggs	6.7	0.82
euphausiid protozooea	11.4	0.02

(G1)	variable	coefficient	SE	P
	intercept	3.1614	0.2553	<0.0001
	depth	-4.088 .10-2	1.915 ”10-^{2}	0.0352
	depth·x_1	-7.167.10-2	2.020”10-^{2}	0.0006
	time·x_1	0.1475	0.0242	<0.0001

This regression shows that the concentration of microzooplankton prey decreased exponentially with depth at both stations, but that ln(concentration) at station 36 was significantly greater at depths of 10 m (t-test: $P < 0.001$) and 20 m (t-test: $0.02 < P < 0.05$) than ln(concentration) at station 39 (Fig. G 1). The model also indicates that concentration increased with time of day, but only at station 36 (Fig. G2). This was due primarily to a number of very low concentrations measured at station 36 within one hour of noon. The regression shows that the average concentration of microzooplankton prey did not change with day of the year over the May-July period (Fig. G3).

Macrozooplankton prey

From May 2 to July 27, 1990, a total of 26 samples of macrozooplankton were taken at stations 36 and 39 with the 165 μm mesh bongo net. After excluding taxa which have never or rarely ever been seen in the guts of herring larvae, or which are too large to be eaten by herring larvae, or which are too small to be sampled accurately by 165 μm mesh nets, or which are predators of herring larvae, a macrozooplankton prey field was created that contained 2.43’% cladocerans, 60.88% copepods, 0.03% euphausiid nauplii and 36.66% small fish eggs (Table G2). These organisms ranged in dry weight from 7 to 533 μg, so their analysis required the creation of seven weight classes with equal size on a logarithmic scale:

weight class (μg)
6.40-12.79
12.80-25.59
25.60-51.19
51.20-102.39
102.40-204.79
204.80-409.69

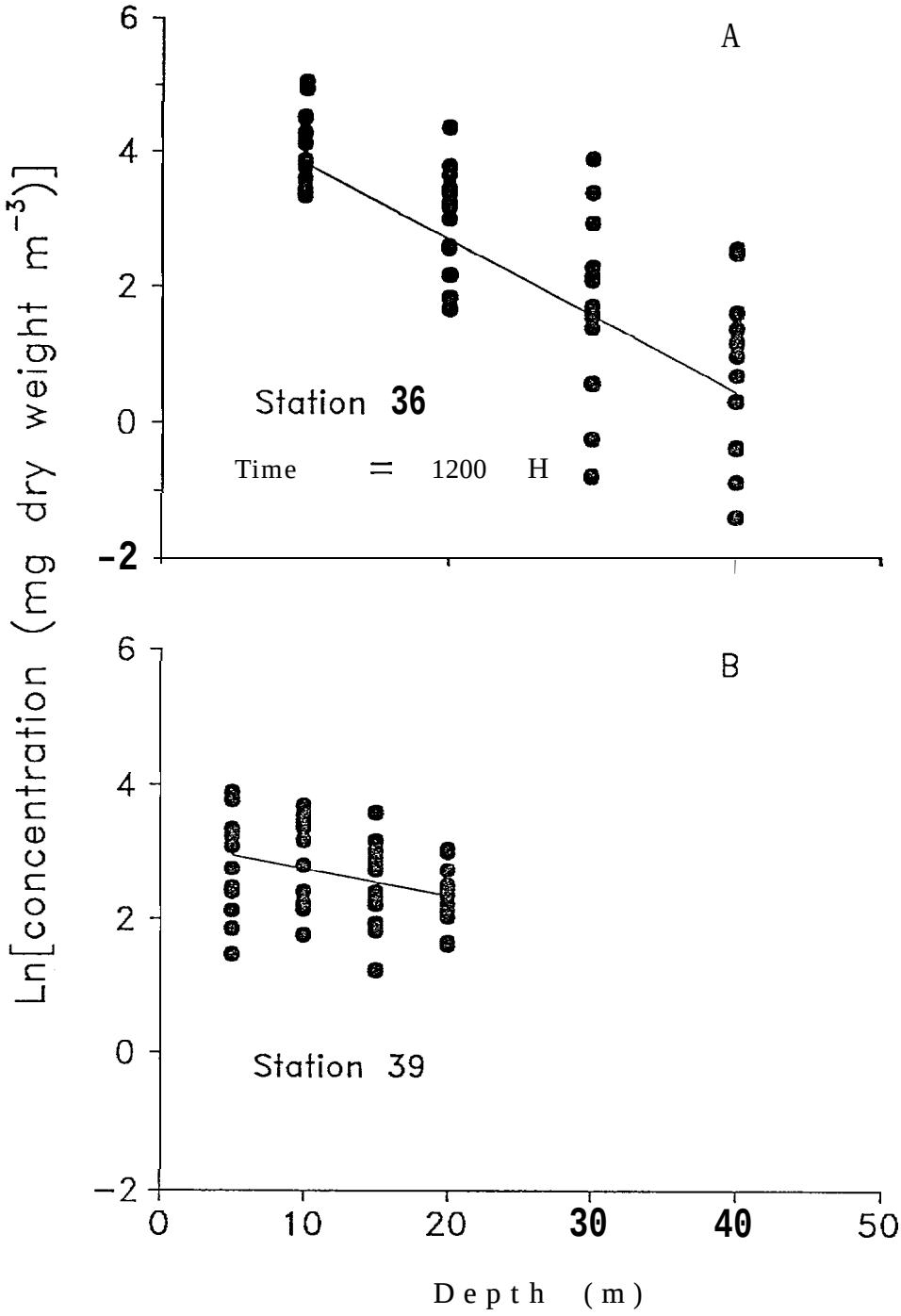

Fig. G1. Regression of concentration of microzooplankton prey for herring larvae on depth of water for plankton station 36 in Herendeen Bay and station 39 in Moller Bay [equation (G 1)]. Concentrations at station 36 were adjusted to a time of day of 12.0 h.

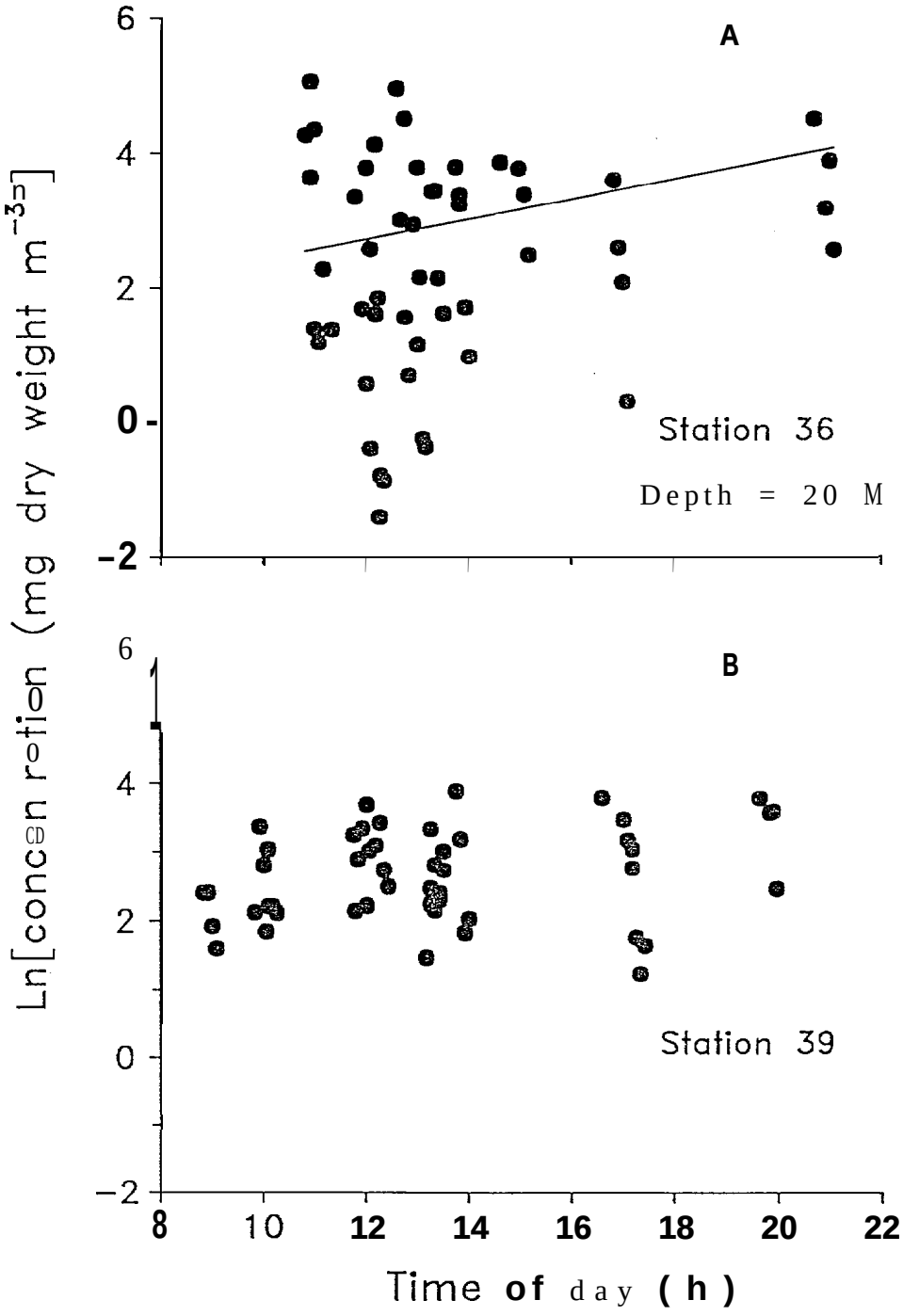

Fig. G2. Regression of concentration of microzooplankton prey for herring larvae on time of day for plankton station 36 in Herendeen Bay and station 39 in Moller Bay [equation (G1)]. Concentrations at station 36 were adjusted to a depth of 20 m.

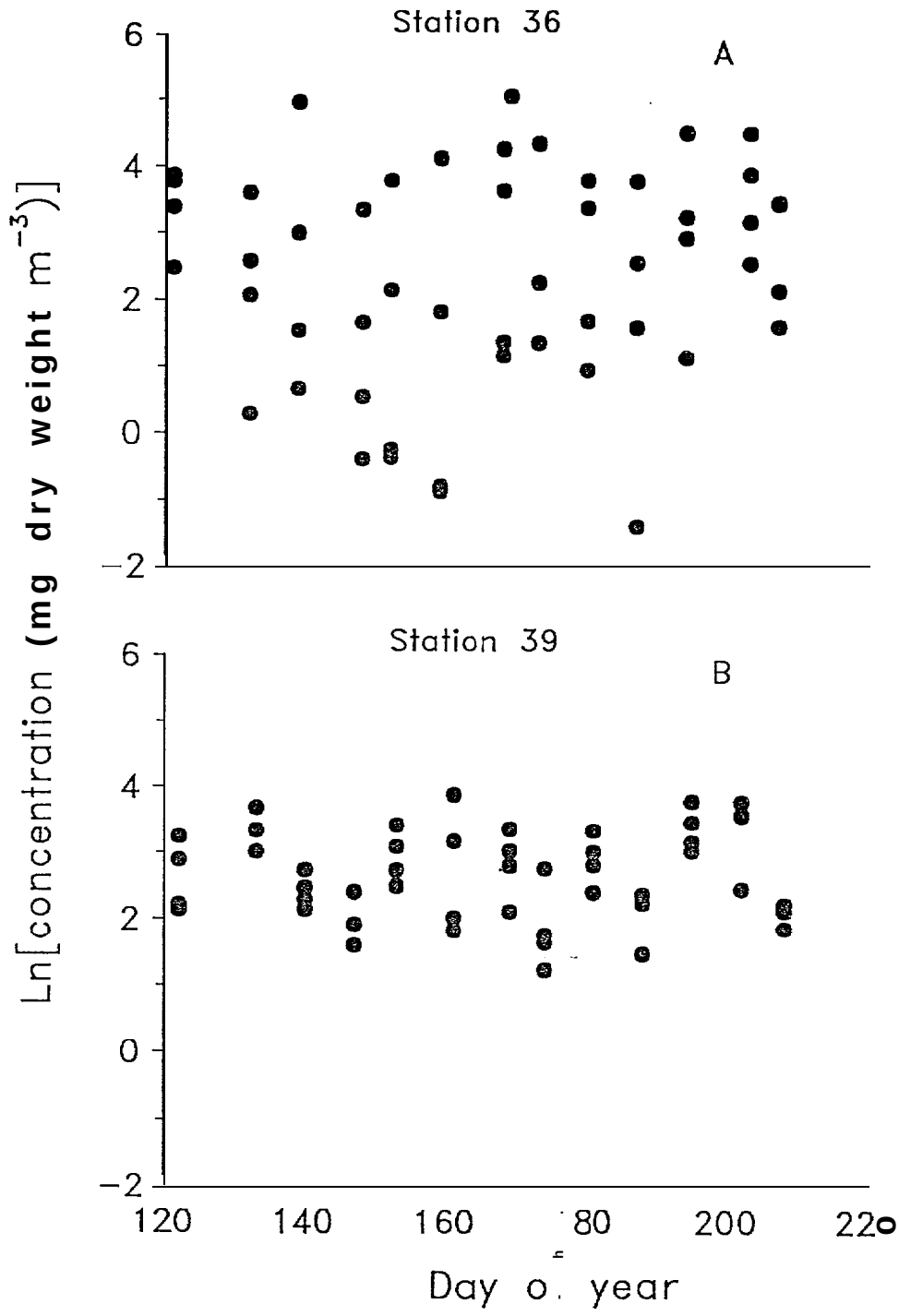

Fig. G3. Concentration of microzooplankton prey against day of the year at plankton station 36 in Herendeen Bay and station 39 in Moller Bay.

Table G2. Taxonomic composition of macrozooplankton prey of herring larvae captured by a 165 μm bongo net.

Taxon	Stage	Dry weight (μg)	Percent of cumulative concentration
Cladocera			
Podon		184	2.43
Copepoda			
large nauplii		22	0.15
copepodites	I-III	52	7.28
Calanus spp.	I	23	0.01
Calanus spp.	II	61	0.01
Pseudocalanus spp. complex	Iv	24	0.24
Pseudocalanus spp. complex	Vf	59	3.36
Pseudocalanus spp. complex	Vm	59	3.59
Pseudocalanus spp. complex	VIf	122	10.73
Pseudocalanus spp. complex	VIm	60	1.64
Centropages abdominalis	IV	24	0.02
Centropages abdominalis	v	59	0.08
Centropages abdominalis	VIf	345	0.42
Centropages abdominalis	VIm	62	0.03
Eurytemora herdmani	v	25	0.88
Eurytemora herdmani	VIf	60	1.39
Eurytemora herdmani	VIm	26	0.77
Epilongipedata	I-IV	341	0.07
Acartia spp.	I-IV	24	1.11
Acartia longiremis	V-VI	24	0.31
Acartia clausi	v	54	3.34
Acartia clausi	VIf	193	17.21
Acartia clausi	VIm	112	7.79
Tortanus spp.	I-IV	57	0.12
harpacticoida	v	7	0.18
harpacticoida	VIf	24	0.01
Oithona similis	V-VIf	7	0.01

409.70-819.49

Plankton biomass data is commonly ranked on a logarithmic scale for reasons of convenience in analysing the data (Sprules and Munawar 1986). Unlike the analysis of microzooplankton, macrozooplankton concentration is expressed as mg dry weight·m^{-2} because we have no information on the depth distribution of macrozooplankton, and because the plankton tows at station 36 went much deeper than the tows at station 39.

A two-way ANOVA of in-transformed macrozooplankton prey concentration (mg dry weight·m^{-2}) with station and weight class, with day of the year as a covariate, showed that concentration varied significantly with weight class ($P < 0.001$), station ($P = 0.003$), the interaction of station and weight class ($P = 0.013$), and day of year ($P < 0.001$). Ln(concentration) increased with increasing weight class, and with increasing date, and it was greater at station 36 than at 39, but only in the fourth and the seventh weight classes (Fig. G4). There were no organisms in the third weight class.

In summary, for organisms with a dry weight between 12.8 and 204.8 μg, which included 63% of the cumulative concentration of all macrozooplankton prey, station 36 had an initially higher concentration of prey than station 39. This difference decreased with day of year as concentration at station 39 increased with day in all weight classes of prey.

Combined prey field of herring larvae

The prey field of herring larvae was the sum of the microzooplankton and macrozooplankton prey concentrations for each 1 mm interval of herring length. It was expressed as mg dry weight·m^{-2} because we did not know the depth distribution of macrozooplankton, and because of the depth differences between stations 36 and 39. As expected from the analysis of micro- and macrozooplankton prey concentrations, the combined prey concentration was greater at station 36 in Herendeen Bay than at station 39 in Moller Bay at almost all dates and herring length ranges (Fig. G5).

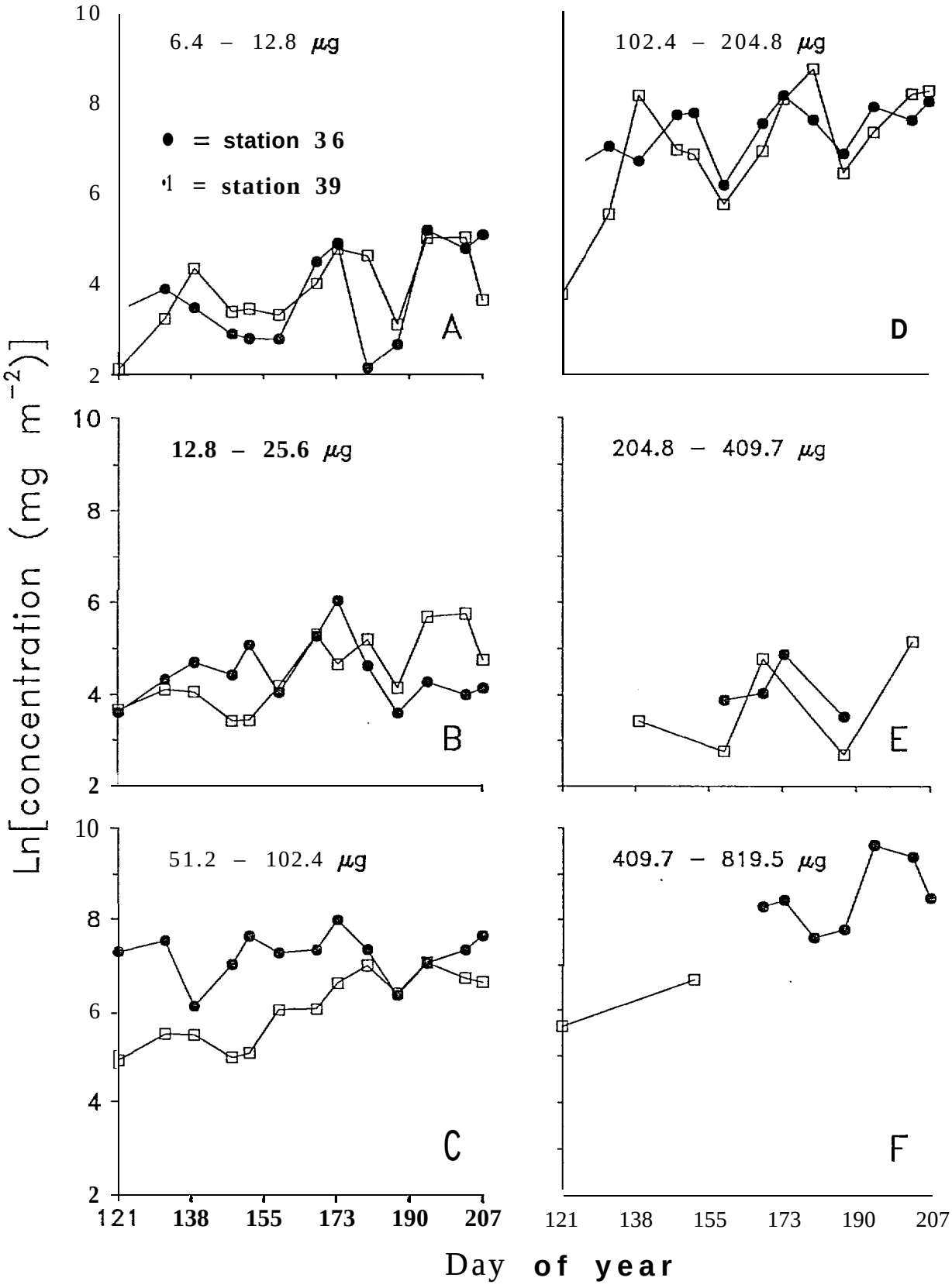

Fig. G4. Concentration of six weight classes of macrozooplankton prey of herring larvae at station 36 in Herendeen Bay and station 39 in Moller Bay.

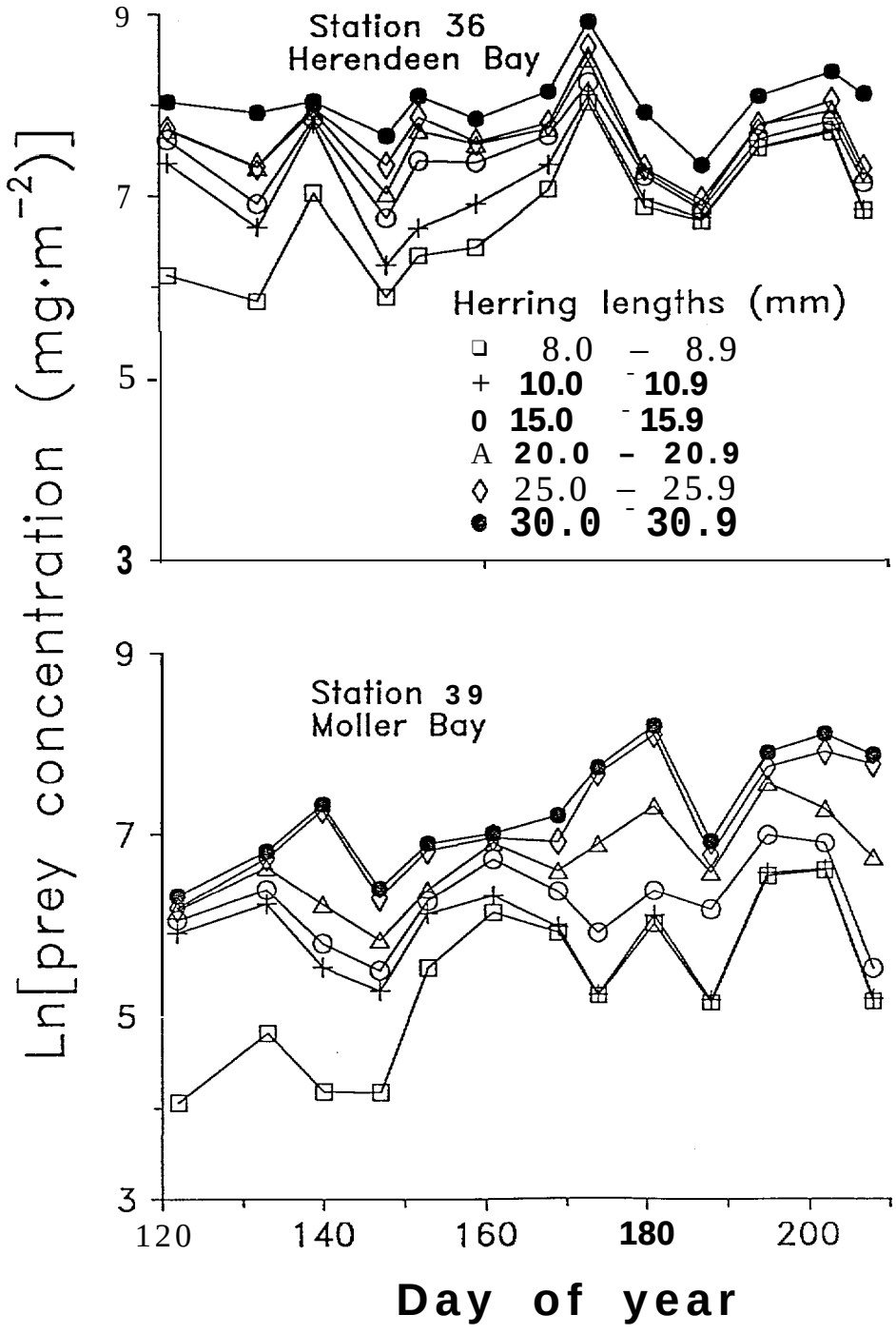

Fig. G5. Prey field of herring larvae at (A) station 36 in Herendeen Bay and (B) station 39 in Moller Bay.

The difference in prey concentration between the two plankton stations was due to differences in water depth and tidal velocity between the stations. Station 36 was four times deeper than station 39 and it had much lower average tidal velocities. Thus, the mixing energy in the water column at station 36 was sufficiently low to allow zooplankton to form a layer. The layer was sometimes dense enough to appear as a false bottom on the sonar at a depth of about 30 m during the day. In contrast, the high tidal velocities of station 39 mixed zooplankton throughout its shallow water column.

Two maxima at apparent in the time-series of prey concentrations for both stations, one at June 22 (day = 173) in Herendeen Bay and at June 28 (day = 179) in Moller Bay, and another at July 22 (day = 203) in Herendeen and Moller Bays.

G.2 Predators of herring larvae

Seven genus of jellyfish: Aglantha, Aurelia, Obelia, Euphysa, Rathkea, Proboscidactyla, Bougainvilllia, and one species of chaetognath, *Sagitta elegans*, were found in the macroplankton samples. Station 36 in Herendeen Bay had 5-10 times greater densities and concentrations of both classes of predators than station 39 in Moller Bay throughout the May-July period (Fig. G6). In fact, not a single *S. elegans* was ever found at station 39. These differences in predator density between the two stations are undoubtedly due to the same physical factors responsible for differences in concentration of prey for herring larvae - greater depth and lower tidal flushing at station 36 compared to station 39.

We cannot assume that herring larvae experienced a 5-10 times higher rate of encounter with predators at station 36 than at station 39 because herring may have avoided predators by staying above the thermocline, which was at about 30 m, and by migrating vertically. All herring larvae were found above 40 m. The vertical distribution of *Sagitta elegans is* not known quantitatively, but they were only caught in tows that went deeper than 40 m, so their center of distribution was probably below the thermocline and below the center of distribution of herring larvae.

At station 36, the densities and concentrations of jellyfish were maximal on May 30 and June 24 and appeared to be approaching a third maxima on or after July 27. At station 39, there were two clear maxima on June 10 and July 15.

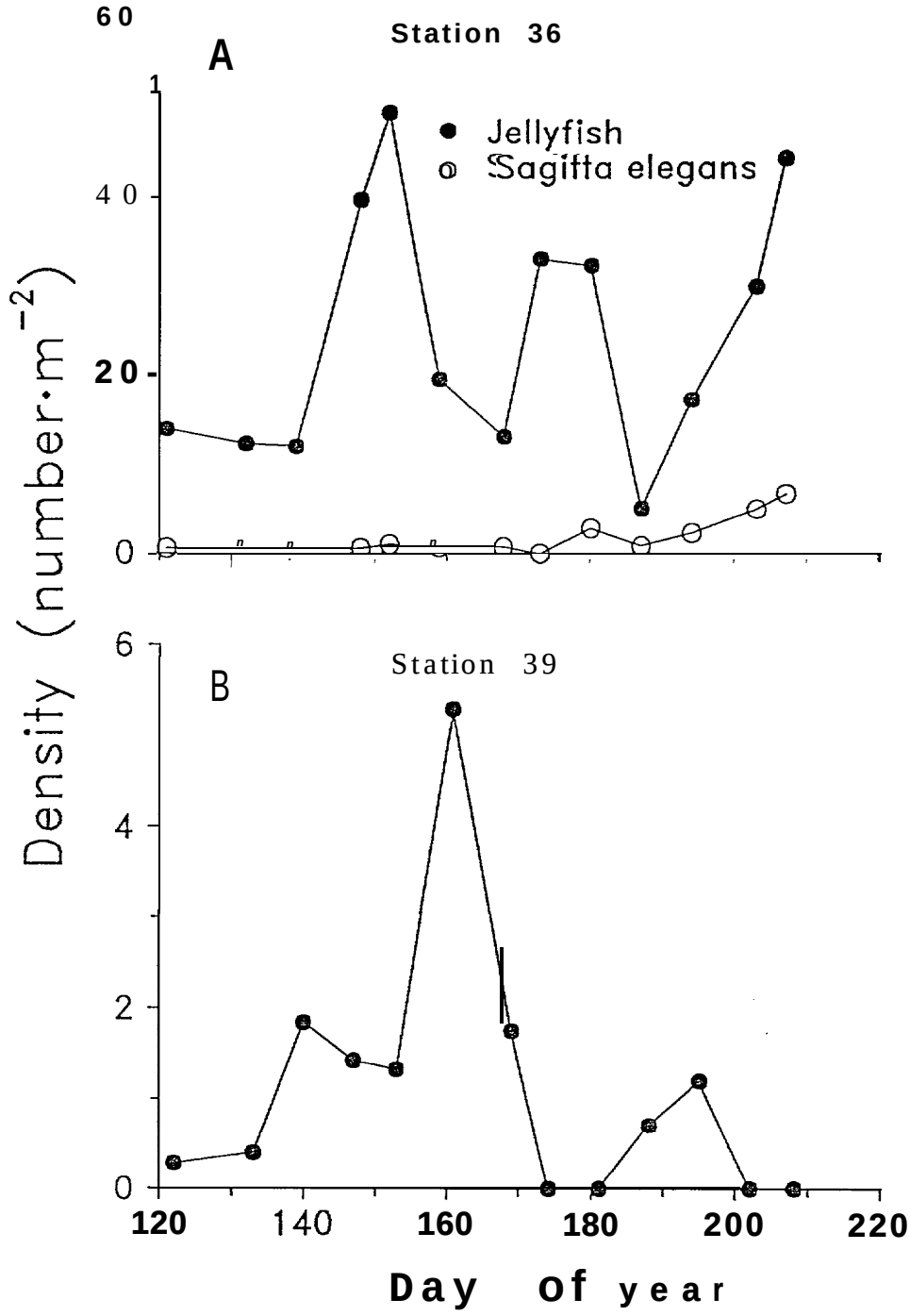

Fig. G6. Density of two classes of invertebrate predators of herring larvae at station 36 in Herendeen Bay and station 39 in Moller Bay.

Densities and concentrations of S. *elegans* at station **36** were constant until about June 25, after which they began to increase.

1"

Appendix H. Extrusion and avoidance of towed plankton nets by herring larvae.

Appendix H. Extrusion and avoidance of towed plankton nets by herring larvae.

In this section, we examine two factors that bias the estimation of density of herring larvae: loss of small larvae due to their extrusion through 505 and 1000pm meshes of plankton nets, and loss of mid-size and large larvae due to their avoidance of plankton nets.

H1.0 Extrusion

Extrusion was assessed by comparing the length frequencies of catches made with 333 and 505 μm mesh nets. Twenty four tows of a 60 cm diameter bongo net in which one side of the frame was rigged with a 333 μm mesh net and the other side with a 505pm mesh net were made over June 22-24, 1990. A total of 2,947 herring larvae were caught and the lengths of 1,575 were measured. Mean density measured by the 333pm net, 16.617 m^{-2} (SD = 37.789, range = 1.441-126.728 m^{-2}) was not significantly different from mean density measured by the 505 μm net, 16.976 m^{-2} (SD = 48.010, range = 1.091-168.046 m^{-2}).

The distribution of density with length was similar for both meshes - larvae were first captured at a length of 6-7 mm, but were not fully recruited to either mesh until they were at least 9-10 mm long (Fig. HIA, B). Density decreased exponentially with length greater than 10 mm. Covariance analysis showed no significant differences between the intercepts or the slopes of the descending right-hand limbs of the two catch curves. The maximum variance (r^2 = 0.89, n = 20, P< 0.001) in ln(mean density) was explained by

(Hi) $$\ln(Y) = \underset{(SE)}{5.6683} - \underset{(0.4049)}{0.4248}\underset{(0.0349)}{L}$$

where Y = mean density (number·m^{-2}) at length L (mm).

There was no significant variation of the in-transformed ratio of 333 μm densities to 505 μm densities with length over the length range of 8.0-17.9 mm (P = 0.46), but the ratio for the length interval of 7.0-7.9 mm was significantly higher than the mean of the other 10 ratios (0.02< P < 0.05) (Fig. H1C). This indicates that no

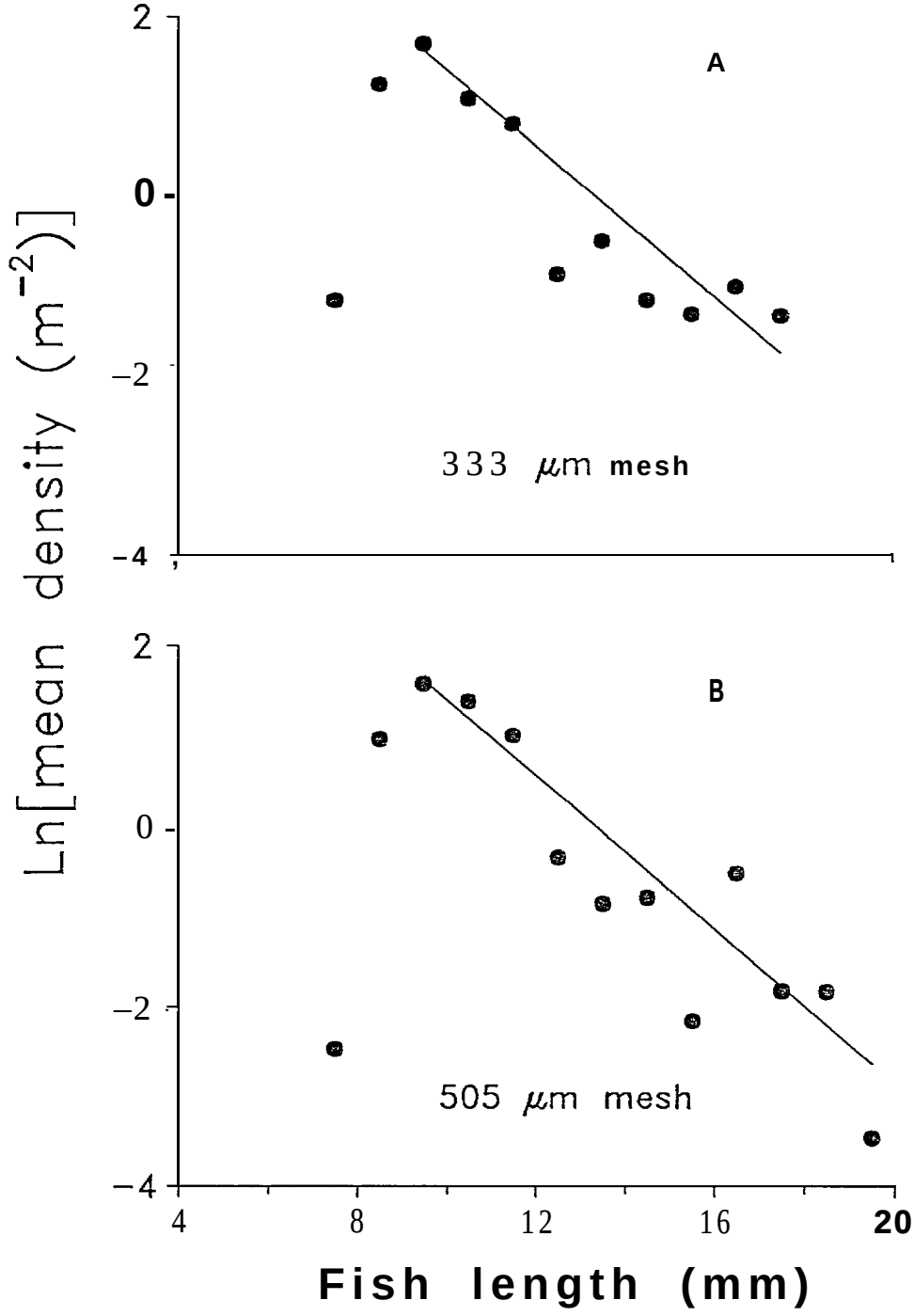

Fig. H1. Mean densities of herring larvae captured by (A) a 333pm mesh plankton net, and (B) a 505pm mesh net, plotted against the midpoint of 1 mm larval length intervals. Solid lines are a regression of ln(density) on length [equation (HI)]. (C) is the ratio of 333 to 505 catches for each length interval.

extrusion occurred over the 8.0-17.9 mm length range, but that 7.0-7.9 mm long herring larvae were partially extruded through the 505 μm mesh net.

This result for the 7.0-7.9 mm length interval was examined in closer detail because its relatively low level of significance suggested that it may have been the result of low sample size. Eleven 333pm mesh samples (46%) and 7505 μm mesh samples (29%) contained 7.0-7.9 mm long larvae for a total of 18 samples out of a possible 48 samples (29%). We believe that this sample size was sufficiently large to accept the results as significant.

This conclusion is supported by experiments reported by Colton et al. (1980). They compared the mean densities of Atlantic herring larvae caught by paired 333 and 505 μm mesh bongo nets and found that 7-12 mm long larvae were more fully retained by the 333 μm mesh than the 505 μm mesh, and that the retention of larvae longer than 12 mm was the same for both mesh sizes. A comparison of larval skull widths with maximum mesh widths indicated that the minimum lengths for complete retention in the 505 and 333 μm mesh nets are 12.0 and 7.5 mm, respectively.

Therefore, in all population analyses, the density of herring larvae <7.9 mm long that were captured in 505pm mesh nets was multiplied by 3.656 in order to correct for extrusion. Densities for all 333 μm mesh catches, and densities of 505pm mesh catches of larvae ≥ 7.9 mm long were unchanged.

H2.0 Avoidance of towed nets by herring larvae

Herring larvae, like most fish larvae, actively avoid towed plankton nets. Their ability to avoid nets increases with their size, and can cause serious underestimation of length and density of herring larvae longer than about 10 mm (Brander and Thompson 1989). This leads to underestimation of growth and overestimation of mortality in mid- and late-stage larvae, which is a significant obstacle to understanding the population dynamics of herring larvae.

There are three methods of estimating the magnitude of net avoidance by fish larvae: (1) mathematical models of avoidance (Clutter and Anraku 1968; Ware and Lambert 1985); (2) comparisons of towed plankton nets with “ideal” samplers (Murphy and Clutter 1972); and (3) ratios of catches of larvae made at night with

catches made during the day. Night catches are almost always larger than day catches either because fish larvae have less time to react to a net at night than during the day due to reduced light intensity, or because larvae are less active at night than during the day. This approach has been used to standardize night and day catches for many species of non-herring fish larvae (Ahlstrom 1954; Murphy and Clutter 1972; Lenarz 1973; Houde 1977a, b, c; Zweifel and Smith 1981). It was used by McGurk (1989a) for Pacific herring larvae and by Heath et al. (1987) and Morse (1989) for Atlantic herring, *Clupea harengus harengus*, larvae.

This section of Appendix H describes three approaches to correcting larval density for their avoidance of towed plankton nets. The first part of this section describes the avoidance of a Tucker trawl by herring larvae in Port Moller. We used night-day differences in larval density to generate a regression model that standardized day and night Tucker trawl densities so that they could be pooled during the analysis of vertical distribution of herring larvae in section 4.4.3 of this report.

Night-day ratios underestimate net avoidance because fish larvae avoid nets during the day as well as at night. The second part of this appendix describes an experiment that was designed to measure net avoidance of herring larvae in Port Moller using methods independent of night-day catch ratios. We compared the catches of Pacific herring larvae from a 60 cm diameter bongo net with catches from an "ideal" sampler - a Methot mid-water trawl (Methot 1986).

We did not possess any night-day catch data for the bongo nets, and the Methot trawl could not be used as an ideal sampler, so we were forced to use a general model of net avoidance to correct day bongo net catches. The third part of this section describes this general model of net avoidance. It was based on a review of the literature of night-day catch ratios of herring larvae.

H2.1 Night-day catches of herring larvae by Tucker trawls

Three series of Tucker trawl catches were made during June-July, 1990: two at station 36 at the bottom of Herendeen Bay, on June 25-26 and July 24-25, and one at station 39 in Moller Bay on July 2. A total of 96 Tucker trawls were performed, 72 in Herendeen Bay and 24 in Moller Bay. These tows captured 6,908

herring larvae of which 5,728 (82.92$%) were caught in Moller Bay and 1,180 (17.08%) were caught in Herendeen Bay. The lengths of 1,964 larvae were measured.

Following Heath et al. (1988), day was initially defined as occurring between 0800-1600 h, night was defined as occurring between 2000-0400 h, and twilight was defined as occurring between 0400-0800 h and 1600-2000 h.

Night-day differences in larval length

Night samples contained larger larvae than day samples for the two series of samples taken at station 36 in Herendeen Bay (Fig. H2A, C). In contrast, the length distributions were almost identical for samples taken at station 39 in Moller Bay (Fig. H2B). Two-way ANOVAs for the data from each station showed that mean length varied significantly ($0.001 < P < 0.01$) with depth and time of day and with a depth-time interaction, but only at station 36 in Herendeen Bay. Mean length of larvae captured at night was more than 2 mm longer than mean length of larvae captured during the day (Table Hi). These results suggest that herring larvae avoided the Tucker trawl at station 36, but not at station 39.

Night-day differences in larval density

Depth-integrated density (number·m^{-3}) of herring larvae was calculated as the total number of herring larvae captured in one complete set of vertical tows divided by the total volume of water filtered by those tows. Mean depth-integrated density was much higher in Moller Bay, 0.792 m^{-3} (SD = 0.103, n = 4, range = 0.703-0.895 m^{-3}), than in Herendeen Bay, 0.065 m^{-3} (SD = 0.025, n = 9, range = 0.041-0.113 m^{-3}) because a recent hatch of herring larvae occurred in Moller Bay just before July 2.

Depth-integrated density was distributed into larval length intervals using the length frequency of the pooled samples for that station and date. There were clear differences in density at length between stations, dates and times (Fig. H3). Catches in Moller Bay were dominated by 8-10.9 mm long larvae, but catches from Herendeen Bay were dominated by 10.0-16.9 mm long larvae. Growth of larvae in Herendeen Bay between June 25-26 and July 24-25 shifted the length at full

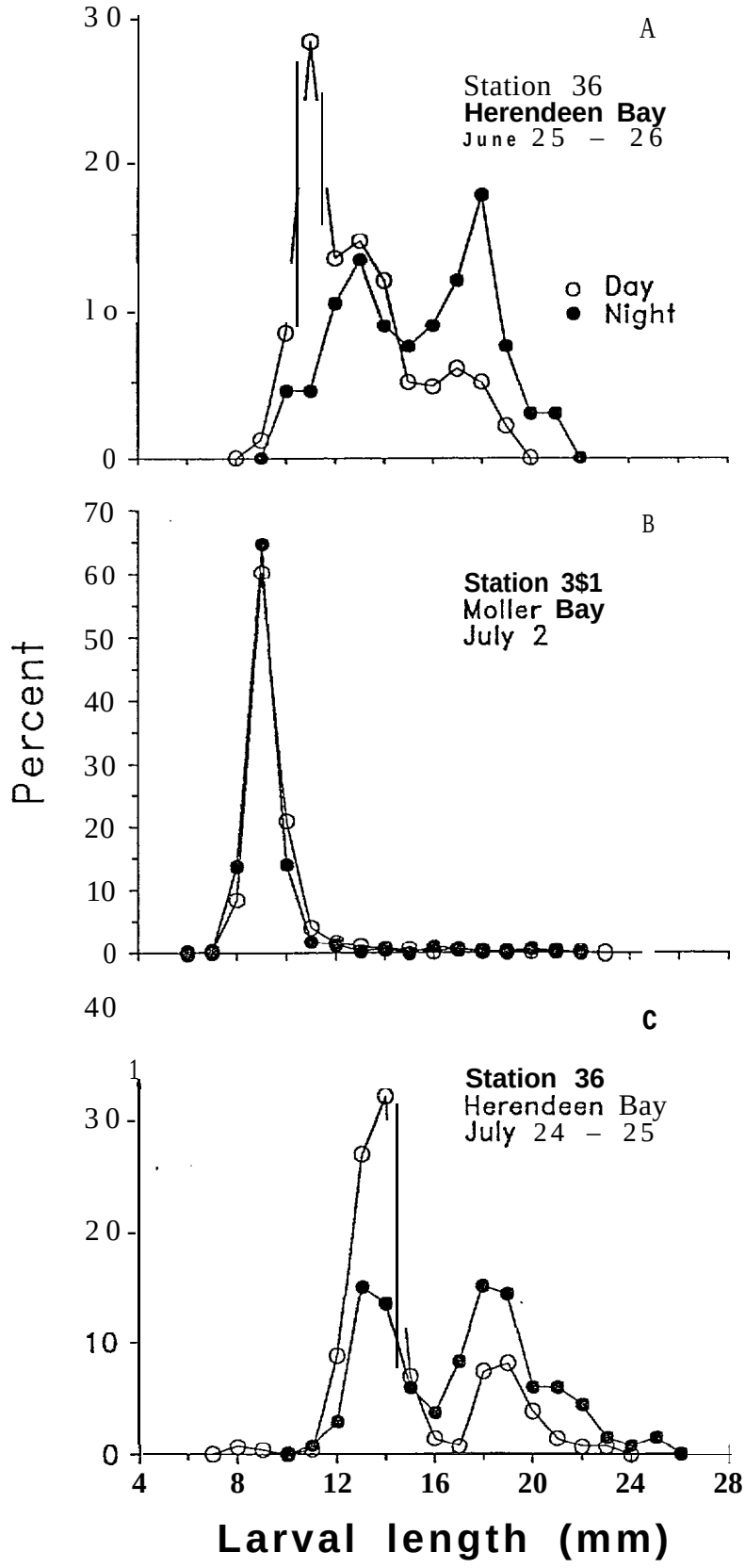

Fig. H2. Length frequencies of herring larvae captured at night and during the day at two sites in Port Moller estuary with an open-closing Tucker trawl.

Table HI. Mean lengths of herring larvae captured in open-closing Tucker trawls.

Depth “ (m)	Day mean	SD	n	Night mean	SD	n	Pooled mean	SD	n
				June 25-26; station 36					
o-1o	12.0	2.1	191	14.5	2.8	50	12.5	2.2	241
10-20	13.2	2.6	146	16.6	2.6	16	13.5	2.6	162
20-30	13.1	5.1	2	9.5	-	1	11.9	5.1	3
30-40	11.3	-	1	-	-	-	11.3	-	1
pooled	12.6	2.4	340	14.9	2.9	68			
				July 2; station 39					
o-1o	9.0	0.9	300	8.6	1.2	100	8.9	1.0	400
10-20	9.1	1.8	300	9.3	2.4	100	9.1	1.9	400
20-30	9.2	2.2	300	8.8	1.6	100	9.1	2.1	400
pooled	9.1	1.8	900	8.9	1.8	300			
				July 24-25; station 36					
o-1o	13.1	1.8	66	16.2	2.8	50	14.4	2,7	116
10-20	13.1	1.5	96	16.8	3.2	50	14.4	2.8	146
20-30	14.5	2.5	72	16.7	3.9	28	15.1	3.1	100
30-40	17.6	2.6	51	14.7	3.1	5	17.5	2.7	56
pooled	14.3	2.6	285	16.5	3.2	133			

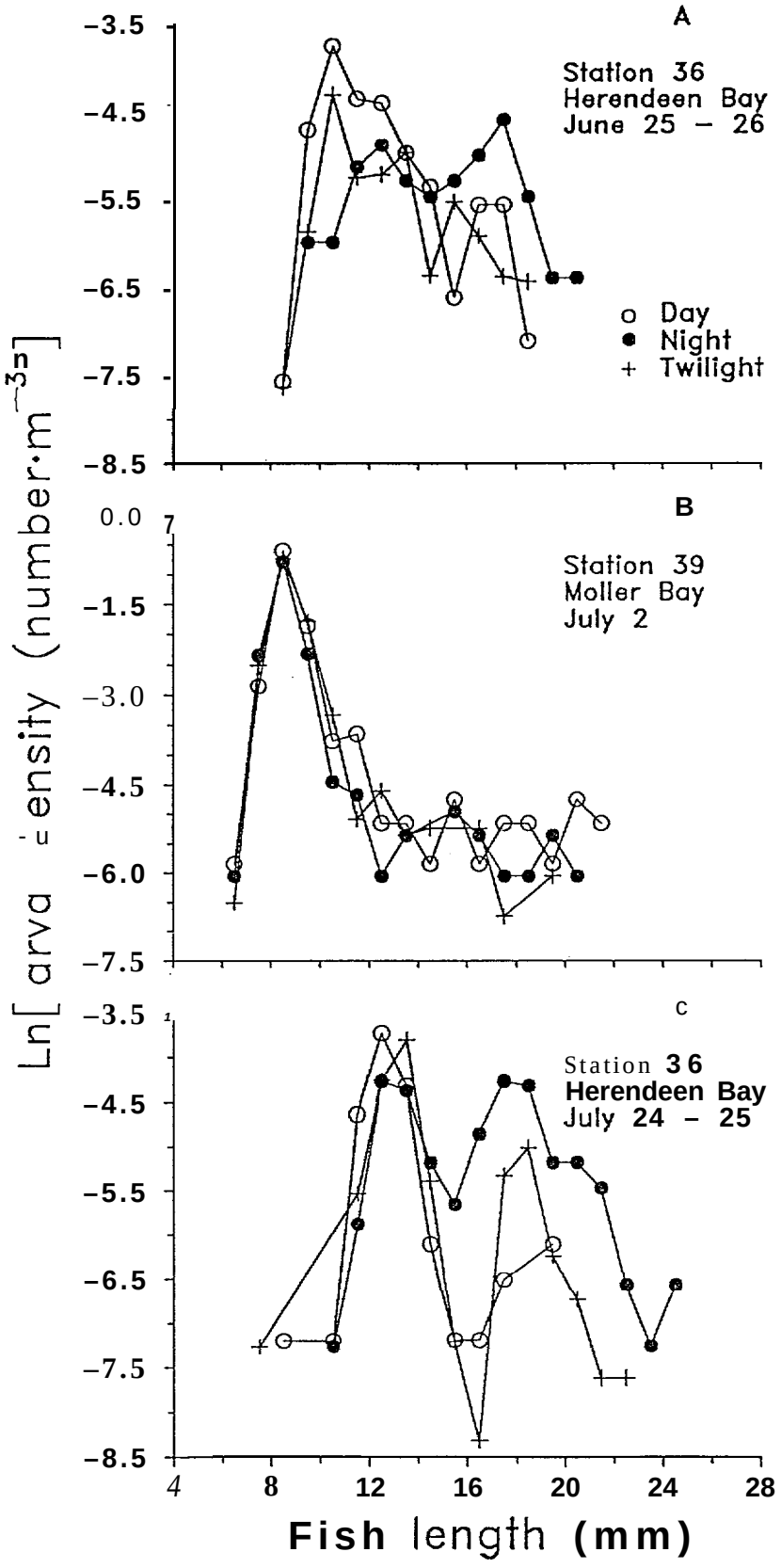

Fig. H3. Distribution of depth-integrated densities of herring larvae with length measured with an open-closing Tucker trawl.

recruitment to the Tucker trawl from about 10.5 mm for day and twilight tows on June 25-26 to 12.5 -13.5 mm for day and twilight tows on July 24-25. Day and twilight densities were similar to each other at all lengths and at all sites and dates. Night densities were usually higher than day or twilight densities at the same length at the Herendeen Bay station, but there were no night-day differences in density at length at the Moller Bay station.

An ANOVA of ln(twilight-day ratio) on station with length as a covariate showed that neither station or length was significant ($P > 0.05$), so twilight densities were combined with day densities at length for each station and date and the ratio of night to day depth-integrated densities was calculated. Covariance analysis showed that the new night-day ratios were highly significantly different ($P < 0.001$) between stations. There was a significant positive correlation of ln(night-day ratio) with length at the Herendeen Bay station, but no significant correlation for the Moller Bay station (Fig. H4).

These results indicate that a factor other than larval length abolished night-day differences in the ability of herring larvae to avoid the Tucker trawl at station 39. There were two possible environmental factors: water temperature and turbidity. Average temperature of the upper 40 m was not significantly ($P > 0.05$) correlated with In(night-day ratio), so turbidity was the most likely factor. Turbidity had previously been invoked by Fortier and Leggett (1982) to account for night-day ratios close to 1.0 for Atlantic herring larvae captured by bongo nets in the St. Lawrence estuary. Weinstein et al. (1980) also suggested that turbidity was the cause for low night-day ratios of three taxa of fish larvae in an intensively flushed estuary in North Carolina. In the absence of any direct measure of turbidity, we assumed that it was directly proportional to the amount of mixing energy in the water column which was, in turn, directly proportional to root mean square water velocity over a tidal cycle, U_{rms}. U_{rms} at station 39 in Moller Bay was 85 $m \cdot s^{-1/2}$, over 40 times higher than U_{rms} at station 36 in Herendeen Bay, 2 $m \cdot s^{-1/2}$. We assumed that sediment remained in suspension over time scales of days, rather than hours, so that there was no significant weekly or monthly variation in the concentration of suspended sediment at a plankton station.

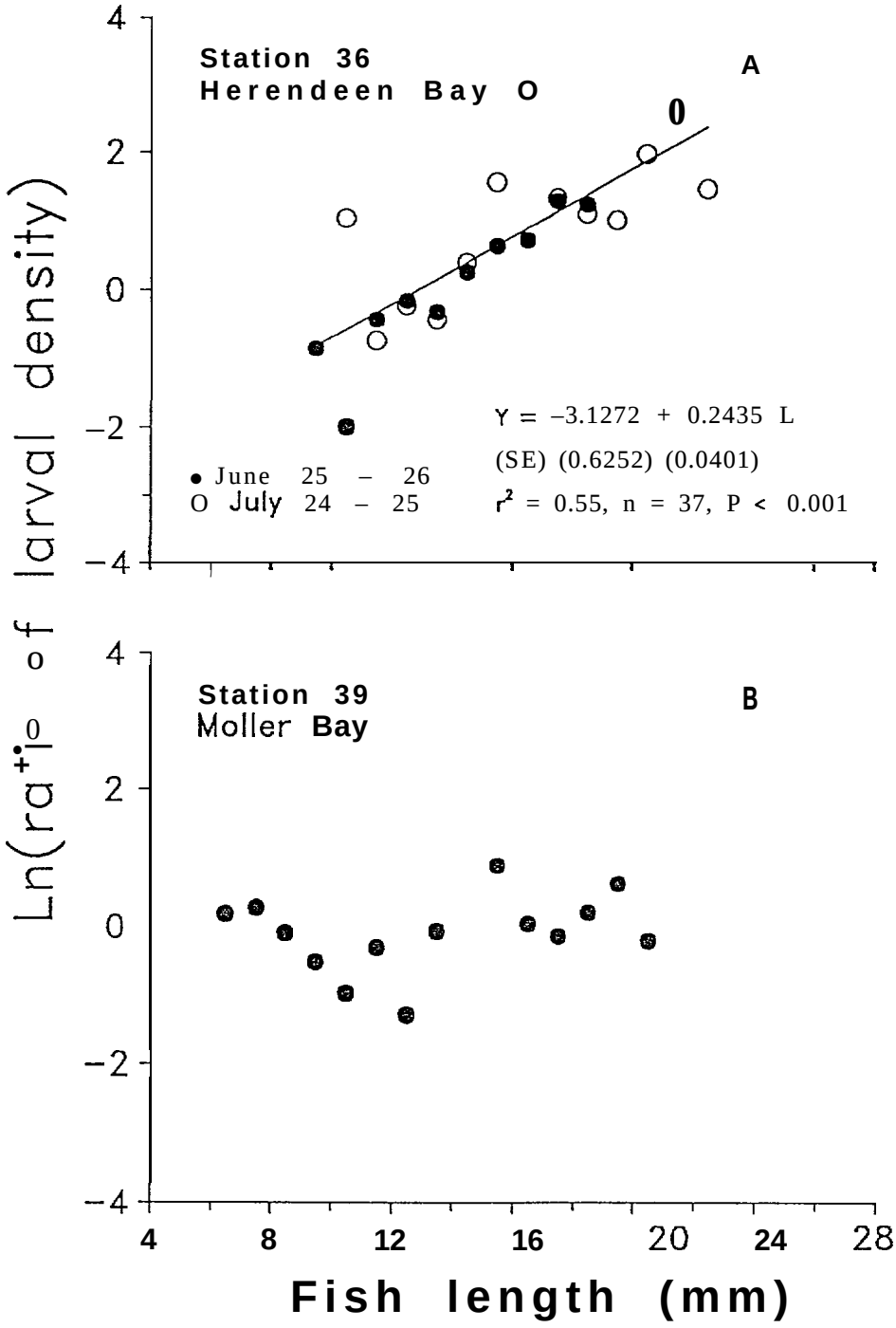

Fig. H4. (A) Regression of In(night-day density ratio) on larval length for station 36 in Herendeen Bay. (B) Plot of In(night-day ratio) on length for station 39 in Moller Bay.

Multiple regression of ln(night-day ratio) on larval length, U_{rms} and the interaction of length and U_{rms} explained 55% (n = 37) of the variance in ln(night-day ratio)

(H2)	variable	coefficient	SE	P
	intercept	-3.1897	0.6507	<0.0001
	length	0.2486	0.0411	<0.0001
	u_{rms}	3.124×10^{-2}	1.043×10^{-2}	0.0052
	length·U_{rms}	-2.547×10^{-3}	6.964 .20-4	0.0009

This equation shows that the slope of the regression of ln(night-day ratio) on larval length was 0.2486 mm^{-1} for station 36 and 0.0321 mm^{-1} for station 39 and, therefore, that the slope decreased by 2.608 .10-3 mm^{-1} for every 1 $m \cdot s^{-1/2}$ increase in U_{rms}. The intercept of the regression of ln(ratio) on length increased from -3.1272 at station 36 to -0.5343 at station 39, which is an increase of 3.124 .10-2 for every 1 $m \cdot s^{-1/2}$ increase in U_{rms}.

H2.2 Test of an ideal sampler - the Methot trawl

Thirty paired tows of a 60 cm diameter bongo net and a 1 m^2 Methot mid-water trawl were conducted at the same sites and depths from June 22 to July 14. The Methot trawls were made to the same depth as the bongo nets and within 10 min of bongo net tows. The bongo nets were equipped with either paired 333 and 505 μm mesh nets or two 505 μm mesh nets. Densities of 7.0-7.9 mm long herring larvae that were captured by the 505 μm mesh net were corrected for extrusion before being combined with the 333 μm mesh densities.

A total of 4,687 herring larvae were caught by the bongo net and 1,033 by the Methot trawl. The lengths of 1,650 fish caught by the bongo nets and 636 fish caught by the Methot trawl were measured. Mean density measured by the 333-505pm mesh nets, 45.828 m^{-2} (SD = 92.553, range = 0.110-446.083 m^{-2}) was significantly greater than mean density measured by the Methot trawl, 0.930 m^{-2} (SD = 1.586, range = 0.010-8.432 m^{-2}).

The catch curve of the Methot trawl was very different from the catch curve of the bongo net (Fig. H5A, B). Whereas herring larvae were fully recruited to the

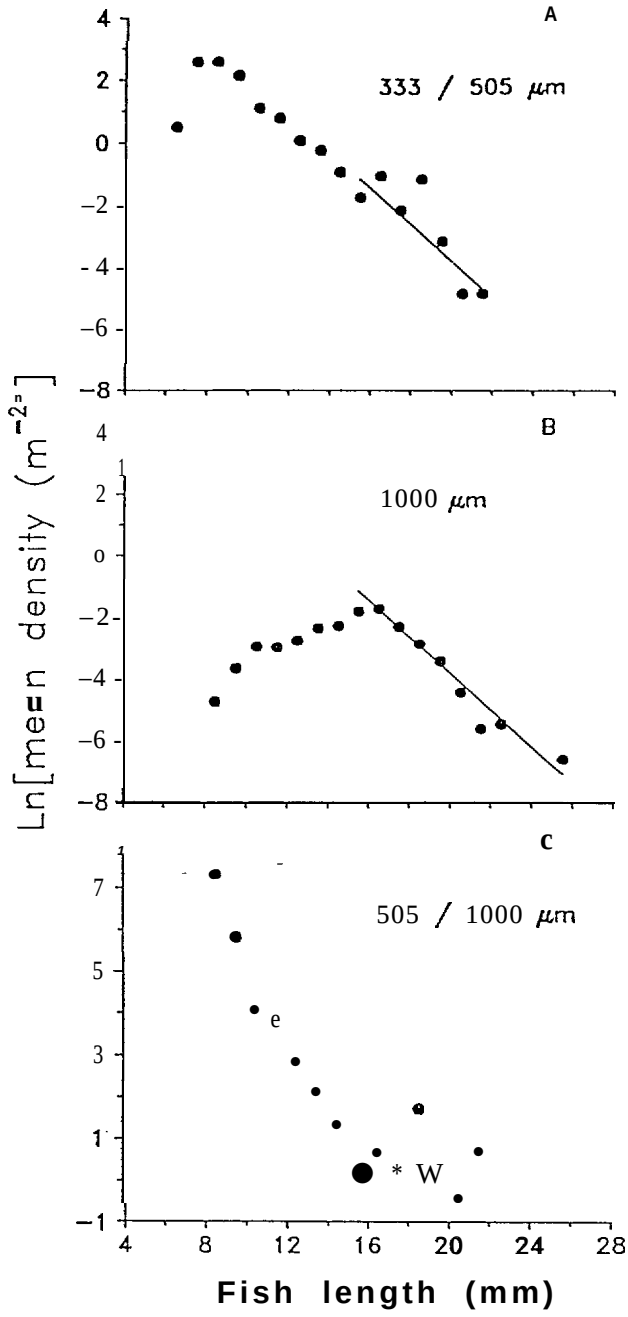

Fig. H5. Mean densities of herring larvae captured by (A) a bongo net equipped with either two 505 μm mesh nets or a pair of 333 and 505 μm mesh nets; and by (B) a Methot trawl equipped with a 1000 μm mesh net, plotted against the midpoint of 1 mm larval length intervals. Solid lines are densities predicted by regression equation (H3). (C) ratio of 333/505 to 1000pm catches for each length.

333 and 505 μm meshes at a length of about 7.0-8.9 mm, they were not fully recruited to the 1000pm mesh of the trawl until they were about 15.0-17.9 mm long, due to extrusion of shorter herring larvae through the larger mesh of the trawl. This is shown clearly as an almost linear decline in in-transformed ratio of mean density of the 333(505 to 1000pm mesh catches over the larval length range of 8.0-15.9 mm (Fig. H5C).

In order to test for differences in the shape of the right-hand limbs of the two catch curves, it was necessary to exclude all data associated with larval lengths shorter than the length of full recruitment to the trawl. A length of recruitment of 15.5 mm was chosen. The regression equation that explained the maximum variance ($r^2 = 0.852$, n = 16, $P < 0.0001$) in mean density was

(H3) $$\text{in}(Y) = 7.9897 - 0.5907L$$
$$(SE)\ (1.2243)\ (0.0632)$$

where Y = mean density (number·m^{-2}) at larval length 'L (mm).

This equation shows that both the 333/505 and 1000 μm mesh sizes had the same elevation and slope, which meant that the Methot trawl caught herring larvae with the same efficiency as a bongo net. This result was surprising because the Methot trawl was expected to capture greater densities of large larvae than the bongo nets because of the larger mouth diameter and greater mesh width of the Methot trawl. The most likely explanation is that increases in net diameter and mesh width are less important for matchability than increases in tow speed. This explanation is supported by an analysis of night-day catch ratios of herring larvae reported in the scientific literature (section H2.3 below).

H2.3 A model of night-day catch ratios based on larval length, net speed, and mesh width

In this part of Appendix H, we review reports of avoidance of towed plankton nets by Pacific and Atlantic herring larvae, and from them derive a regression model describing net avoidance for the two sub-species. The model was to correct densities of herring larvae captured by bongo nets in Port Moller (section 4.4.4 of this report).

This portion of Appendix **H is** based on the assumption that night-day catch ratios are the best available estimates of daytime net avoidance by herring larvae. At present, there are no mathematical models that were specifically developed for any sub-species of herring, and comparisons with ideal samplers have not been successful, e.g. section H2.2, but there is substantial data on diel variation in catches of herring larvae in the scientific literature. Theoretical models of net avoidance, and regression models of avoidance based on comparisons with ideal samplers, that were developed from species other than herring may not be appropriate for herring. There may be too many differences in size at hatch, larval morphometry, and the ontogenetic schedule of behavior between fish species for one model of avoidance behavior to work equally well for all species of fish. However, this assumption remains to be tested.

An extensive search of the scientific literature found 20 reports of diel variation in density of Pacific and Atlantic herring larvae. Only 10 reports containing 12 sets of night-day catch ratios were suitable for comparison (Table H2). Five reports were rejected because they did not sample the entire water column, so their night-day differences in density may have been biased by diel vertical migration of herring larvae (Tibbo et al. 1958; Colton et al. 1961; Stevenson 1962; Eldridge 1977; McGurk 1989a); Graham and Sampson (1982) was rejected because it did not include catches made during the night; Sameoto (1984) was rejected because it did not report larval lengths; two studies were rejected because the data was not reported in a useful form (Seliverstov 1971; Munk et al. 1989); and Fortier and Leggett (1982) was rejected because it reported night-day ratios for a highly turbid estuary. I added one more data set based on catches of Pacific herring taken in Port Moller in May-July, 1990, with an open-closing Tucker trawl. This gave a total of 11 reports with 13 data sets. These data were collected from large areas in the northern hemisphere over a period of three decades.

From each of the 13 data sets, the mean night-day catch ratio was calculated for each 1 mm interval of herring standard length. Total length was converted to standard length using the equation shown in Tibbo et al. (1958). Following Morse **(1989), we** included in each data set only those lengths that were fully retained by the mesh. The relationship between mesh width and standard length of Atlantic herring larvae shown in Colton et al. (1980) was used to truncate length ranges. Following Heath et al. (1987), day was defined as 8:00-16:00 local time, night as

Table H2. Specifications of towed plankton nets used to capture herring larvae.

Gear	Mesh width (mm)	Net radius (mm)	Tow speed ($mm \cdot s^{-1}$)	Author
ring net	0.424 650	500		Bridger (1956)
Gulf III	0.424 100	2,600		Bridger (1958)
Gulf III	0.400 100	2,600		Schnack and Hempel (1971)
HSTN[a]	0.333 225	2,600		Wood (1971)
C-B[b]	0.233 63	1,000		Pearcy and Myers (1974)
drum net	0.250 500	1,200		Heath et al. (1987)
Gulf III	0.270 100	2,600		Heath et al. (1988)
bongo net	0.333 305	1,800		Stephenson and Power (1988)
HSTN[a]	0.270 100	2,600		Brander and Thompson (1989)
LHPR[c]	0.270 178	2,300		Brander and Thompson (1989)
MOCNESS[d]	0.270 564	1,300		Brander and Thompson (1989)
bongo net	0.505 305	1,000		Morse (1989)
Tucker trawl	0.505 564	1,000		This study

[a]High speed tow net

[b]Clarke-Bumpus net

[c]Longhurst-Hardy plankton recorder

[d]Multiple open and closing nets

20:00-4:00 local time, and twilight as two 4 h periods between night and day, 4:00-8:00 and 16:00-20:00. Night-day catch ratios were transformed with natural logarithms because they ranged over two orders of magnitude, and because the escape speed of herring larvae increases exponentially with their length (Yin and Blaxter 1987). We assume that escape behavior simulated in laboratory experiments by touching fish larvae with a probe reproduces the escape behavior stimulated in the sea by an approaching plankton net.

Ten different types of towed plankton sampling gear were used in the 13 data sets, ranging in complexity from simple ring nets to multiple open-and-closing nets (Table H2). The radii of the nets ranged from 62 to 650 mm, mesh widths ranged from 0.233 to 0.505 mm, and tow speeds ranged from 500 to 2,600 mm-s-l. The only significant correlation between these three variables was an inverse relationship between net radius and tow speed (Fig. H6). Although this well-known correlation has no biological meaning in itself, it is shown here because it explains how night-day catch ratios can be more highly correlated with tow speed than net radius. This is an important point because the theoretical model of larval fish net evasion described by Clutter and Anraku (1968) and Ware and Lambert (1985) assumes that, all other factors being equal, avoidance will decrease with increasing net radius. This assumption is also part of the rational for increasing the radius of nets used to capture juvenile fish, e.g. the Methot trawl (Methot 1986).

A plot of In(night-day catch ratio) against larval length for the 13 data sets shows that ln(ratio) increases linearly with larval length over the length range of 6 to 24 mm (Fig. H7). A linear regression of ln(ratio) on length only explained 28% of the variance in ln(ratio) (Table H3). Stepwise multiple regression of In(ratio) on larval length, mesh width, net radius, tow speed, and their first-order interactions showed that 7570 of the variance in In(ratio) was described by an equation with three variables: larval length, the product of tow speed and larval length, and mesh width. A plot of predicted In(ratio) against measured ln(ratio) shows that this model provides a good description of the central tendency of the data (Fig. H8).

The intercept of the regression model is only barely significantly larger than zero, which means that night-day catch ratios are close to 1.0 for larvae ≤ 8 mm long. The night-day catch ratios increase with larval length, but the rate of increase decreases with increasing tow speed. The intercept decreases with increasing mesh

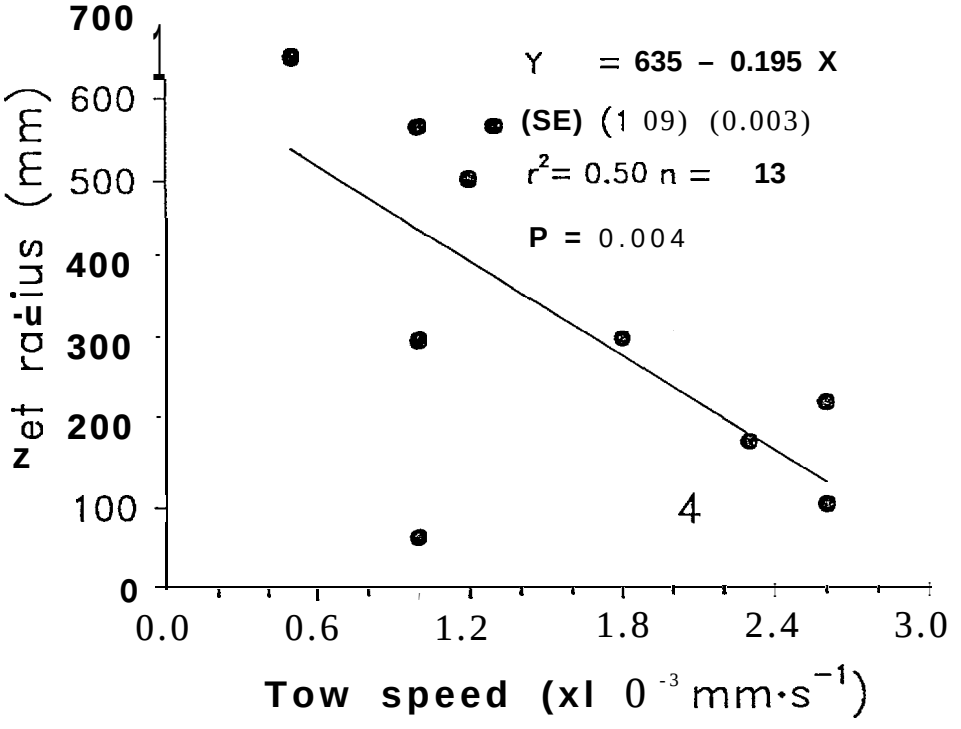

Fig. H6. Regression of the radius of a towed plankton net on its average towing speed. Data from Table H2. Numbers beside circles indicate sample size.

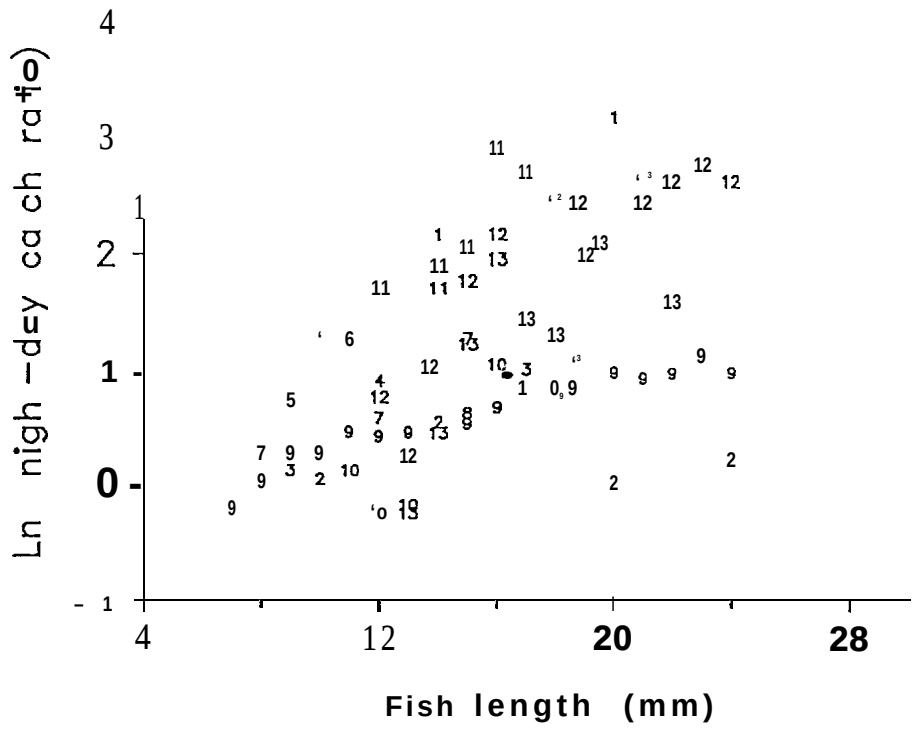

Fig. H7.. Plot of In(night-day catch ratio) against larval length for Atlantic and Pacific herring larvae.

Table H3. Multiple regression of ln(night-day catch ratio) of Pacific and Atlantic herring larvae on larval length, L (mm), width of the plankton mesh, W (mm), and towing speed of the net, v ($mm \cdot s^{-1}$). SE is standard error of coefficient, and P is the probability that the coefficient has a true value of zero. All coefficients of determination, r^2, are adjusted for the number of degrees of freedom. Sample size was 71.

variable	coefficient	SE	P	r^2
intercept	0.5673	0.2781	0.0453	
L	0.2408	0.0183	<0.0001	0.27
v·L	$-6.664.10^{-5}$	6.012 .10-6	<0.0001	0.37
w	-4.097	0.7335	<0.0001	0.11
			sum	0.75

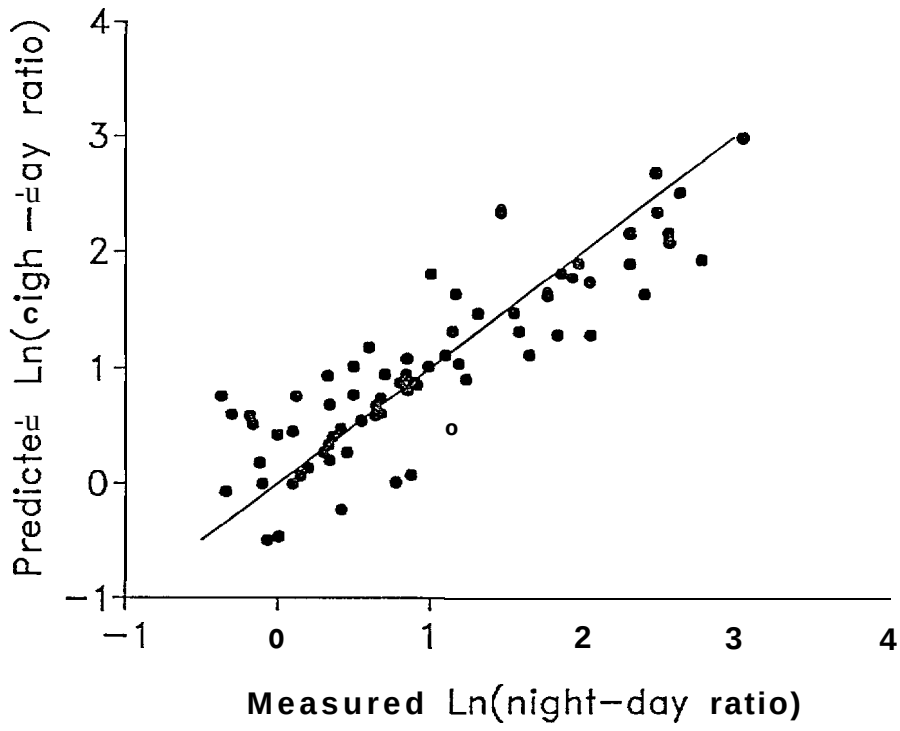

Fig. H8. Plot of predicted ln(night-day ratio) against measured In(night-day ratio) for Atlantic and Pacific herring larvae. The line shows a 1:1 correspondence between predicted and measured.

width, an effect which may be due to the exclusion of small fish due to incomplete retention, or perhaps nets with wide meshes produce less of a pressure wave than nets with narrow meshes because there is a lower probability of clogging with larger meshes.

The regression model predicts that the night-day catch ratio will never rise above 2.5 over the length range of 6-25 mm for high-speed nets, but that it will rise to 17-37 for low-speed nets (Fig. H9). For a plankton net with a mesh width of 0.505 mm towed at a speed of 1000 $mm \cdot s^{-1}$, the model predicts that the percent of herring larvae captured by the net will fall from 90?% at a length of 10 mm to 33% at a length of 15 mm, 13% at a length of 20 mm and 6% at a length of 25 mm.

The residuals of the regression model were not correlated with net radius or with the interaction of radius and length because much of the variance in radius is accounted for by tow speed. None of the mean residuals for the 13 data sets were significantly ($P > 0.05$) different from zero, but several data sets were significantly different from each other. The mean residual of our Tucker trawl data was significantly lower than that of Morse's (1989) bongo net data, Brander and Thompson's (1989) MOCNESS data, and Schnack and Hempel's (197 1) Gulf III data. Brander and Thompson's (1989) Longhurst-Hardy plankton recorder data also had a lower mean residual than that calculated for Schnack and Hempel (1971). There are no obvious gear-specific reasons for these differences, so they maybe related to environmental factors such as light intensity, water clarity, and water temperature. In the absence of information on these factors their error is assumed to be described by the normally-distributed error term of the regression model. This assumption is reasonable because variation in In(ratio) due to seasonal and areal differences in environmental factors should approach normality with the use of large time and space scales.

A secondary cause of variation in ln(ratio) at length is the variable shrinkage of larval length with variable tow duration and preservative solution. Lengths were not corrected for pre-preservation shrinkage in any study. This was unlikely to have caused more than a 1 mm variation in mean larval length.

The model can only be used to study the dynamics of herring larvae. We assume that differences in size at hatch, morphometry, and behavior between larvae

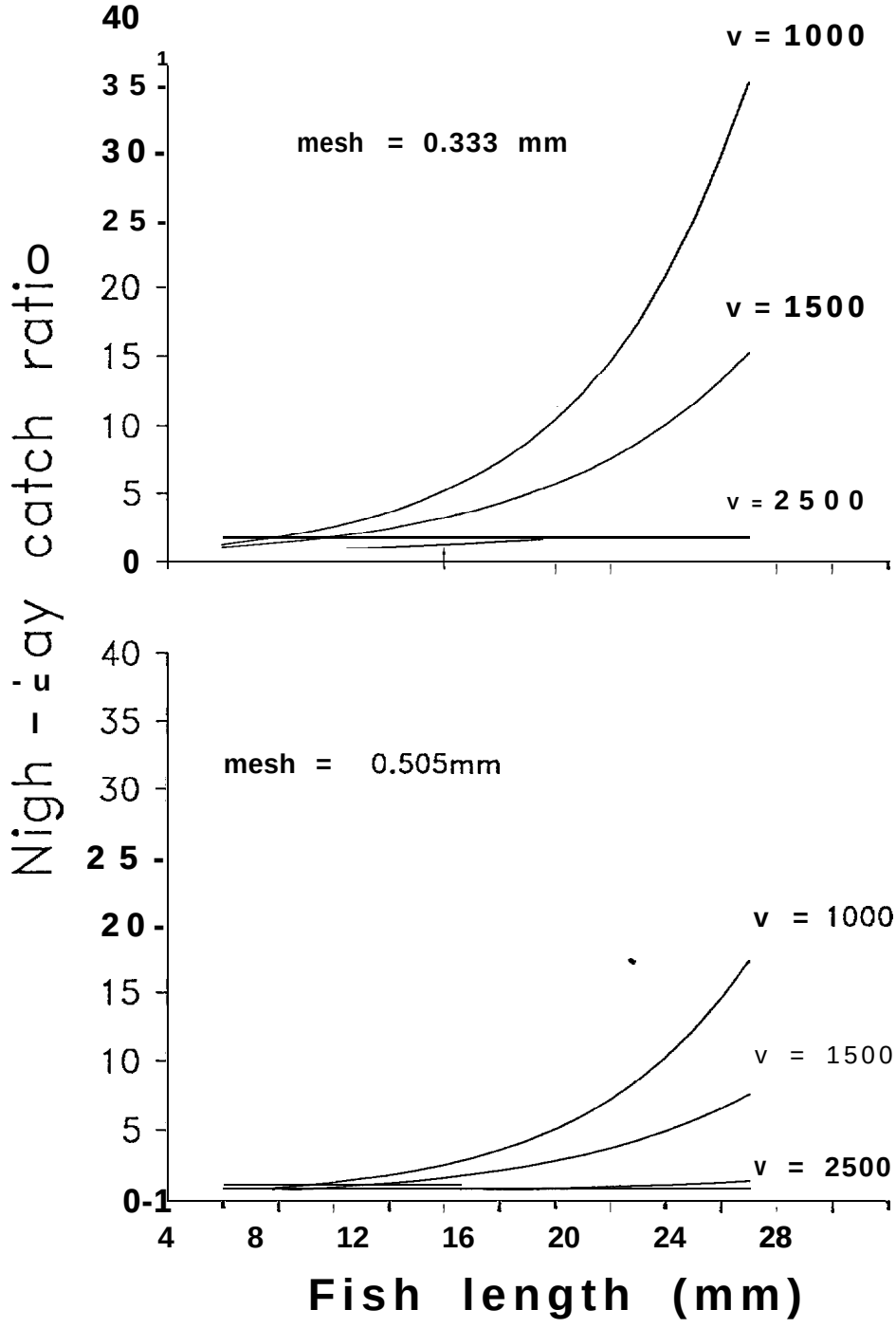

Fig. H9. Predicted change in night-day catch ratios of herring larvae with larval length and tow speed, v ($mm \cdot s^{-1}$) for mesh widths of 0.333 and 0.505 mm.

of different species of fish are reflected in their ability to evade towed plankton nets. In support of this hypothesis, we note that the intercepts and slopes of regressions of ln(night-day catch ratio) on larval length for non-herring fish species are significantly different between each other (Table H4). Part of these differences may be due to differences in net speeds and mesh widths between studies, but part may be due to behavioral factors that are independent of net speed and mesh width.

Finally, we note that although there is clear evidence for differences in length between herring larvae captured at night and during the day, e.g. Brander and Thompson (1989), there is at present insufficient data available in the literature to conduct a regression analysis of night-day differences in larval length.

Table H4. Regressions of ln(night-day catch ratio) on larval length for eight species of fish reported in the literature. a is the intercept of the regression, b is its slope, and n is the sample size. The statistical significance of a regression is indicated by asterisks: * = $0.01 < P < 0.05$, ** = < 0.01.

Author	Species	a	b	n	r^2
Ahlstrom (1954)	*Sardinops sagax*	0.156	0.126	15	0.85**
Murphy and Clutter (1972)	*Stolephorus purpureus*	-3.533	0.655	12	0.92**
Lenarz (1973)	*Sardinops sagax*	-0.532	0.138	17	0.79**
Lenarz (1973)	*Merluccius productus*	0.297	0.021	26	0.03
Lenarz (1973)	*Trachurus symmetricus*	-0.610	0.189	8	0.76**
Lenarz (1973)	*Engraulis mordax*	-1.836	0.353	8	0.97”*
Houde (1977a)	*Etrumeus teres*	-0.503	0.138	6	0.87**
Houde (1977b)	*Opisthonema oglinum*	-1.089	0.251	16	0.77**
Houde (1977c)	*Harengula jaguana*	-0.216	0.055	9	0.30

Appendix I. RNA-DNA analysis of Pacific herring larvae from Port Moller, Alaska.

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The first step in analysis of ln[RNA], In[DNA] and ln(RNA-DNA ratio) was a three-way ANOVA of fixed factors: station, day of year, and **time of day,** with three covariates: larval length, average temperature of the upper 30 m, and ln(prey concentration). Both concentrations of nucleic acids and their ratio varied significantly ($P < 0.001$) with larval length, but not with temperature, prey concentration, station, or day of year. However, In[RNA] varied significantly ($P = 0.005$) with time of day, as did ln[DNA] ($P = 0.030$). Ln(ratio) did not vary with time of day.

Ln[RNA] was best described by a linear regression on larval length (Fig. I1A), but ln[DNA] was best described by a Gompertz function of larval length (Fig. I1B). Consequently, ln(RNA-DNA ratio) **was also best** described by a Gompertz function of length (Fig. I1C). The decline in the rate of increase of RNA-DNA ratio with lengths greater than 13-17 mm may have been due to the avoidance of the bongo nets by large fast-growing larvae.

RNA and DNA concentrations were highest in larvae captured between 12:00 and 2:00 pm, and lowest in larvae catured at 10:00 am (Fig. 12). We have no explanation for this pattern.

In summary, herring larvae had similar instantaneous growth rates in Moller and Herendeen Bays despite large differences in the concentration of available prey between the two bays, and small differences in mean water temperature between the two bays. This suggests that there was little or no food-limitation of herring larval growth in this estuary.

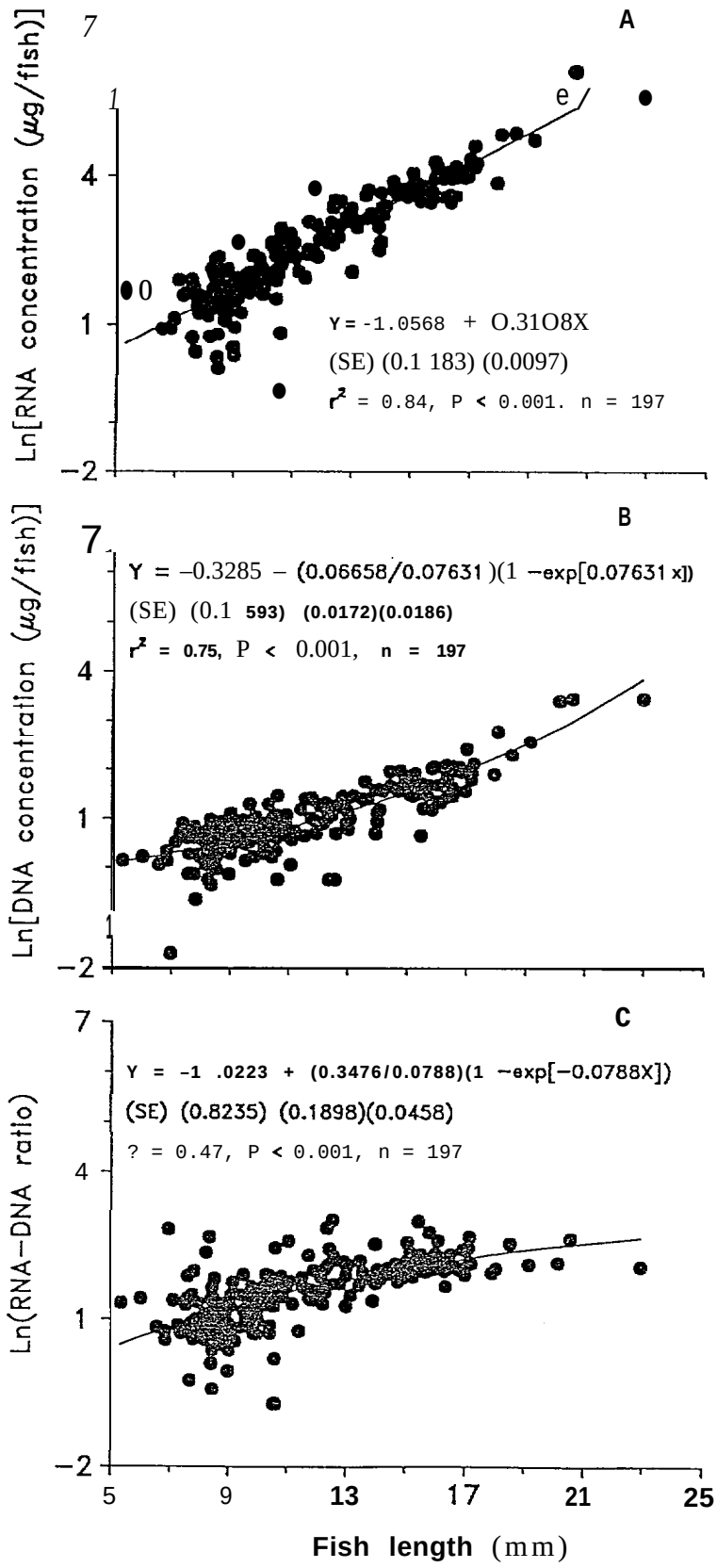

Fig. Il. Regressions of nucleic acid concentration of herring larvae on length of herring larvae.

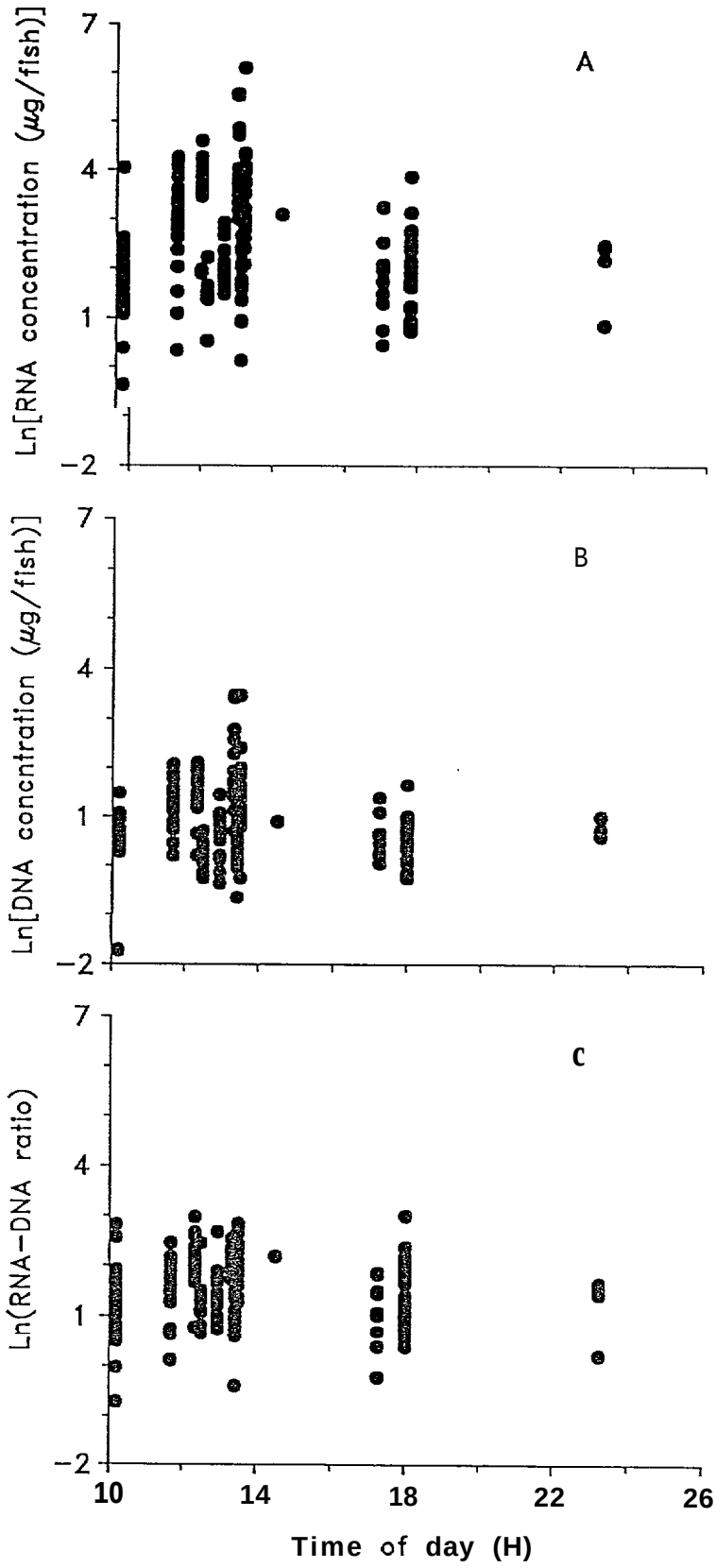

Fig. 12. RNA and DNA concentrations of herring larvae plotted against time of day.

RNA/DNA analysis of Pacific herring larvae from Port Moller, Alaska 1990

Technical Report

Prepared for

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by

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Materials and Methods

304 larvae individually frozen in vials were obtained on dry ice at Microtek R & D. The larvae were immediately transferred to -750C. 55 sandlance larvae were received with the same shipment and are stored at -75oC for future reference. RNA-DNA analysis on 200 herring larvae was performed as outlined in reference 2058.01. The remaining herring larvae are stored at -75oC for future reference.

As a first step standard curves for DNA and RNA were generated. The RNA used for the standard curves was free of contaminating DNA . A set of three standard curves was determined. Each set was determined twice. The standard solutions used for the determination were extracted identically to the samples and the procedure is outlined in the section "Generation of Standard Curves". The set of standard curves chosen for the determination of the RNA and DNA content of 200 individual herring larvae as determined in this study is shown in the Appendix to this report. Each standard curve represents the average of at least two independent determinations.

Identification and measurements

Vials containing one larva each were chosen at random, thawed on ice and the following measurements were performed immediately after thawing of the larva. :

- recorded ID number
- identified as herring
- removed debris, if any
- recorded presence or absence of yolk sac
- measured length and height of yolk sac to the nearest 0.01 mm
- measured length of the larva to the nearest 0.01 mm from the tip of the snout to the tip of the notochord

The measurements of length were performed using an inverted Olympus CK 2 microscope equipped with a Zeiss Micrometer.

After the measurements the larvae were processed for RNA/DNA analysis as described by Clemmesen (Meeresforsch. 32: 134-143) .

The calculations of DNA content were performed using the fluorescence units obtained from the measurements using bisbenzimidazole (Hoechst # 33528) as fluorophor. 'The values of RNA were calculated from the values obtained from the measurements with ethidium bromide as fluorophor (total nucleic acid content) . To account for the value for DNA contained in the value for total nucleic acids, the fluorescence corresponding to DNA was calculated using the value obtained by the bisbenzimidazole method and subtracted from the total nucleic acid. The standard curve for DNA based on ethidium bromide (see Appendix) was used for this purpose. The remaining fluorescence units were used to calculate the RNA content of the sample. This method is identical to the one used by Clemmesen in Meeresforsch. 32:134, 1988.

Measurements of fluorescence were performed on a Perkin Elmer MPF 66 Spectrofluorometer equipped with a Perkin Elmer model 7300 computer.
Settings for sample measurements:
Ethidium bromide: excitation 365 nm, slit width 15 nm, emission 590 nm, slit width 15 nm.
Bisbenzirnidazole: excitation 352 nm, slit width 10 nm, emission 448 nm, slit width 5 nm.

The results for the 200 larvae analyzed in the course of this project are compiled in the following sections.

Also given are the values obtained for total RNA content (per larva) and total DNA content (per larva) .

Standard solutions: (i) RNA: 100 ug/ml (ii) DNA: 50 ug/ml

The following standards were prepared in homogenization buffer (buffer H) and extracted identical to the homogenized herring larvae material:

vial#	ul DNA standard solution	ug DNA	ug DNA measured = 1/20	ul RNA standard solution	ug RNA	ug RNA measured = 1/20
1	20	1	0.05	50	5	0.25
2	40	2	0.10	100	10	0.50
3	80	4	0.20	150	15	0.75
4	120	6	0.30	200	20	1.00
5	160	8	0.40	200	40	2.00
6	200	10	0.50	600	60	3.00
7	400	20	1.00	800	80	4.00
8	800	40	2.00	1000	100	5.00

Buffer H was added to all standards to a final volume of 1.2 ml. 4 x 0.3 ml of standard was extracted, and 0.2 ml of buffer H was added to each vial after the extraction. A total of 2.6 ml of aqueous extract was obtained for each standard after the extraction procedure (the extra 0.6 ml were contributed by the aqueous phenol solution) . 0.13 ml of each standard was analyzed (1/20 of the total) .

Several sample numbers of herring larvae could not be retrieved from the shipment (probably lost during transfer). Two sample numbers were lost during the extraction procedure for RNA/DNA analysis.

The five missing samples were compensated for by selecting samples from sampling groups with an excess number of larvae. The following numbers of larvae were analyzed form each group:

Sampling date	Number of herring	Number to be analyzed	Number actually analyzed
2-Jun-90	10	, 10	9
10-Jun-90	20	20	19
16-Jun-90	4	4	4
18-Jun-90	6	6	6
18-Jun-90	24	21	22
22-Jun-90	30	"21	21
23-Jun-90	30	21	22
29-Jun-90	1	1	1
30-Jun-90	30	22	23
6-Jul-90	34	22	23
7-Jul-90	30	22	23
13-Jul-90	17	17	17
14-Jul-90	13	13	10
Totals :	249	200	200

	A	B	C	D	E	F	G	H		K	M
1	Table 1. Frozen fish larvae taken for RNA-DNA analysis from Port Moller, 1990										
2	by Triton Ltd.										
3											
4											Number of
5								Number of		Total	herring
6				Depth		Mesh	Sample			no. of	analysed
7	Date	Site	Time	(m)	Gear	(um)	nos.	herring	sandlance	fish larvae	for RNA-DN
8											
9	2-Jun-90	39	1230	20	60 cm bongo	333	1-10	10		10	10
10	2-Jun-90	39	1230	20	60 cm bongo	333	11-20		10	10	
11	8-Jun-90	36	1100	40	60 cm bongo	333	21-40		20	20	
12	10-Jun-90	39	1257	20	60 cm bongo	333	41-60	20		20	20
13	10-Jun-90	39	1257	20	60 cm bongo	333	61-70		10	10	
14	16-Jun-90	36	2315	40	60 cm bongo	333	71-74	4		4	4
15	16-Jun-90	36	2315	40	60 cm bongo	333	81-90		10	10	
16	18-Jun-90	39	1010	20	60 cm bongo	333	75-80	6		6	6
17	18-Jun-90	39	1010	20	60 cm bongo	333	9[illegible]-114	24		24	21
18	22-Jun-90	36	1140	40	60 cm bongo	505	130-[illegible]5	30		30	2[illegible]
19	23-Jun-90	39	1800	20	60 cm bongo	505	160-18[illegible]	30		30	21
20	29-Jun-90	36	1430	40	60 cm bongo	505	190	1			1
21	29-Jun-90	36	1430	40	60 cm bongo	505	191-19[illegible]		5	5	
22	30-Jun-90	39	1330	20	60 cm bongo	505	196-22[illegible]	30		30	22
23	6-Jul-90	36	1220	20	60 cm bongo	505	226-25[illegible]	34		34	22
24	7-Jul-90	39	1325	20	60 cm bongo	505	260-28[illegible]	30		30	22
25	13-Jul-90	36	1320	30	60 cm bongo	505	290-30	7		7	17
26	14-Jul-90	39	17[illegible]5	20	60 cm bongo	505	307-31[illegible]	13		13	13
27											
28							Total	249	55	304	[illegible]
29											
30	Notes:										
31	1. Sandlance = Ammodytes hexapterus; herring = Clupea harengus pallasi										

RESULTS OF 'THE RNA DNA ANALYSIS

Morphometrics

Whole body RNA and DNA content

and

RNA/DNA RATIOS OF 200 LARVAE

SAMPLE#	NO.	I.D.	YS length	YS heigth	LENGTH	ug DNA	ug RNA	RNA/DNA ratio	
1	1	+	0.14	0.76	9.13	2.03	4,57	2.25	
2	2	+	N/P	N/P	8.43	1.06	4.35	4,10	
3	3	+	N/P	N/P	7.98	1.24	4.77	3.85	
5	4	+	0.22	0.78	8.29	1.59	4.85	3.05	
6	5	+	N/P	N/P	8,60	1.5	4.45	2.97	
7	6	+	0.48	1.06	8,96	0.88	1.7	1.93	
8	7	+	0.53	0.95	10.61	0.79	9.15	11.58	
9	8	+	N/P	N/P	8.76	1.41	5.18	3,67	
10	9	+	N/P	N/P	7.78	.088	3.94	4.4	
41	10	+	NIP	N/P	9.16	2.47	14.39	5.83	
42	11	+	NIP	NIP	8.37	0.71	10.26	14.45	
43	12	+	N/P	N/P	10.92	2.91	16.74	5.75	
44	13	+	N/P	N/P	7.14	1.68	6.74	4.01	
45	14	+	N/P	N/P	8.46	2.03	10.55	5.20	
46	15	+	N/P	N/P	5,35	1.15	4.37	3.80	
47	16	+	N/P	NIP	8.79	2.21	8,35	3,78	
48	17	+	N/P	NIP	10.60	4.33	18.55	4.28	
49	18	+	N/P	NIP	7.39	2.47	5.12	2.07	
50	19	+	N/P	N/P	7.78	2.3	5.01	2.18	
---	---	+	0,39	0.81	7.56	1.85	6.78	3.66	
---	---	+	0.56	0.9	6.02	1.24	5.14	4.15	
53	22	+	NIP	N/P	8.54	2.38	8.02	3.37	
54	23	+	NIP	N/P	8,57	2.3	5.75	2.50	
55	24	+	NIP	NIP	8.54	2.3	6,13	2,67	
56	25	+	N/P	N/P	7.73	1.94	4.93	2.54	
58	26	+	NIP	NIP	9.04	2.83	7	2.47	
59	27	+	N/P	NIP	7.64	0.88	5.81	6.60	
60	28	+	N/P	N/P	8.34	2.65	7.33	2.77	

SAMPLE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
71	29	+	N/P	N/P	10.58	1.85	2.29	1.24
72	30	+	N/P	N/P	∞	2.[illegible]2	0.95	5.17
73	31	+	N/P	N/P	1[illegible].76	2.74	11.46	4.[illegible]
74	32	+	N/P	N/P	9.84	8[illegible]	[illegible]65	4.88
75	33	+	N/P	N/P	8.71	1.41	2.94	2.09
76	34	+	N/P	N/P	15.09	4.41	57.09	12.95
77	35	+	N/P	N/P	10.11	1.32	6.66	5.05
78	36	+	N/P	N/P	FD - B	1.77	4.89	2.76
79	37	+	0.39	0.78	10.56	1.41	0.69	0.49
80	38	+	N/P	N/P	11.51	1.94	11.28	5.81
91	39	+	N/P	N/P	0.[illegible]6	2.91	13.75	4.73
93	40	+	N/P	N/P	8.82	2.[illegible]2	[illegible]47	[illegible]4
94	41	+	N/P	N/P	8.68	2.56	8.06	3.15
95	42	+	N/P	N/P	8.04	.77	[illegible] 4	2.34
96	43	+	N/P	N/P	8.20	2.12	3.84	1.81
97	44	+	N/P	N/P	10.56	2.65	9.57	3.61
	45	+	N/P	N/P	9.[illegible]7	2.56	7.68	3.00
100	46	+	N/P	N/P	FD - B	0.16	3.03	16.83
101	47	+	N/P	N/P	8.43	1.68	3.74	2.23
102	48	+	N/P	N/P	7.81	1.85	3.41	1.84
103	49	+	N/P	N/P	9.07	1.68	5.99	3.57
104	50	+	N/P	N/P	10.30	1.94	13.15	6.78
105	51	+	N/P	N/P	9.04	1.5	5.57	3.71
106	52	+	N/P	N/P	FD - B	1.67	7.48	4.48
107	53	+	N/P	N/P	9.94	2.03	7.56	3.72
108	54	+	N/P	N/P	8.99	5	1.46	0.97
109	55	+	N/P	N/P	10.61	2.[illegible]2	7.58	3.58
110	56	+	N/P	N/P	11.20	2.[illegible]2	7.96	3.75

SAMPLE#	NO.	I.D.	YS length	YS heigth	LENGTH	ug DNA	ug RNA	RNA/DNA ratio
111	57	+	N/P	N/P	8.90	1.94	6.05	3.12
112	58	+	NIP	N/P	9.61	2.03	5.69	2,80
113	59	+	N/P	NIP	8,48	1.5	5.95	3,97
114	60	+	N/P	N/P	9.44	2.65	6.21	2.34
130	61	+	N/P	N/P	8.43	1.24	1.4	1.13
136	62	+	NIP	NIP	10.81	2.21	14,33	6.48
137	63	+	NIP	NIP	16.32	4,24	36.85	8.69
138	64	+	N/P	N/P	12.99	3,18	27.27	8.58
139	65	+	N/P	N/P	12.32	3.09	14.53	4.70
140	66 6	+	N/P	N/P	12.07	3.53	16.88	4.78
141	67	+	N/P	N/P	16.30	8,03	58.65	7.30
142	68	+	N/P	NIP	10.16	2.12	7.58	3.58
143	69	+	N/P	N/P	17.92	6,71	47.13	7,02
144	70	+	N/P	N/P	14.17	4.77	29.87	6.26
145	71	+	N/P	N/P	14.03	4.94	28.41	5.75
146	72	+	N/P	N/P	12.24	3,71	13.93 1	3,75
150	73	+	N/P	N/P	17.14	6	69.41	11.57
151	74	+	N/P	N/P	16.74	7.77	60.09	7,73
153	75	+	N/P	N/P	13.19	4.33	19,3	4,46
154	76	+	N/P	N/P	10.89	2.47	10.65	4.31
155	77	+	N/P	N/P	10.42	2.21	4.61	2.09
156	78	+	N/P	N/P	13.47	4.15	22.63	5.45
157	79	+	NIP	NIP	12.60	3.53	19.87	5.63
158	80	+	N/P	N/P	8.68	1.59	2.98	1,87
159	81	+	N/P	N/P	16.52	4.33	35.75	8.26
161	82		N/P	N/P	15.20	5.3	46.82	8.83
166	83	+	N/P	N/P	9.72	2.21	5.73	2.59
167	84	+	N/P	N/P	9.02	1.41	2.56	1.82
168	85	+	N/P	N/P	8.26	0.79	8.41	10.65
169	86	+	N/P	N/P	10.42	2.74	6.6	2.41
170	87	+	N/P	N/P	12.57	0.79	15.88	20.10
			N/P	N/P	11.93	2.03	15.04	7.41
			N/P	N/P	13.08	2.74	22.68	8.28

---%--I*

SAMPLE#	NO.	I.D.	YS length	YS heigth	LENGTH	ug DNA	ug RNA	RNA/DNA ratio
173	90	+	N/P	N/P	10.16	1.5	7.82	5.01
174	91	+	N/P	N/P	10.70	1.94	11.28	5.81
176	92	+	N/P	N/P	8.99	1.5	5.2	3.47
177	93	+	N/P	N/P	6.58	[illegible]	2.4	2.34
178	94	+	N/P	N/P	11.65	2.65	10.69	
180	95	+	N/P	N/P	13.94	2.03	12.42	
181	96	+	N/P	N/P	9.52	5	7.74	
182	97	+	N/P	N/P	1[illegible]9	77	[illegible].49	[illegible]
183	98	+	N/P	N/P	9.52	1.59	5.22	3.28
185	99	+	N/P	N/P	8.46	1.5	2.21	1.47
186	100	+	N/P	N/P	7.59	0.88	2.07	2.35
187	101	+	N/P	N/P	9.24	1.94	3.43	1.77
188	02	+	N/P	N/P	[illegible]	[illegible]	5.05	2.04
189	[illegible]3	+	[illegible] 4	0.84	8. 2	1.15	3.25	2.83
190	104	+	N/P	N/P	2.94	2.47	2 .87	8.85
196	105	+	N/P	N/P	[illegible]	[illegible]	[illegible]	[illegible]
199	106	+	N/P	N/P	13.02	2.21	7.98	3.61
203	107	+	N/P	N/P	16.52	5.[illegible]2	5[illegible].38	0.23
204	108	+	N/P	N/P	20.59	31.61	440.89	13.95
207	109	+	N/P	N/P	12.32	2.74	20.8	7.[illegible]9
208	110	+	N/P	N/P	1[illegible].76	4.[illegible]5	4[illegible].32	9.96
209	111	+	N/P	N/P	[illegible]8	3.27	24.67	7.[illegible]4
210	112	+	N/P	N/P	15.82	3.27	51.69	15.81
211	113	+	N/P	N/P	16.94	4.77	53.43	11.20
212	114	+	N/P	N/P	3.[illegible]2	4.86	.42	4.[illegible]
213	115	+	N/P	N/P	15.54	3.36	34.41	10.24
214	116	+	N/P	N/P	15.82	7.51	71.62	9.54
215	117	+	N/P	N/P	17.00	11.21	75.44	6.73
216		+	N/P	N/P	11.82	3.97	[illegible].97	[illegible]

SAMPLE#	NO.	I.D.	YS length	YS helgth	LENGTH	ug DNA	ug RNA	RNA/DNA ratio
217	119	+	N/P	N/P	15.04	6,44	4 4 , 0 8	6.84
218	120	+	N/P	N/P	10.60	2.91	17,86	6,14
-%---]%		+	N/P	NIP	11.56	4.06	21.11	5.20
		+	NIP	N/P	12.46	2.91	33.19	11:41
221	123	+	NIP	N/P	14.42	5.3	40.83	7.70
222	124	+	NIP	N/P	12.38	0.79	13.64	17.27
223	125	+	NIP	N/P	10.42	2.21	10.97	4.96
224	126	+	N/P	N/P	16.80	6.98	52.06	7.46
225	127	+	N/P	NIP	12.18	2.47	15.89	6.43
226	128	+	NIP	NIP	17.16	6.8	97.63	14.36
227	129	+	N/P	N/P	16.30	6.09	58.21	9.56
228	130	+	N/P	N/P	15.26	6.8	44.54	6,55
229	131	+	NIP	N/P	16,02	3.89	35,28	9.07
230	132	+	NIP	N/P	15.90	7.68	57.82	7.53
231	133	+	N/P	NIP	12.66	3.53	32.21	9.12
232	134	+	N/P	N/P	16.10	3.8	50.96	13.41
233	1135	+	NIP	NIP	15.18	4.33	45.85	10.59
234	136	+	NIP	N/P	17.22	8.3	69.93	8.43
235	137	+	NIP	N/P	15.74	5,39	39.36	7,30
236	138	+	N/P	NIP	11.42	3.27	7.1	2.17
237	139	+	NIP	N/P	15.46	1.94	38.2	19.69
238	140	+	N/P	N/P	16.35	5.92	31.62	5.34
241	141	+	N/P	NIP	14.90	5.56	35.28	6.35
244	142	+	N/P	N/P	14.98	5.74	38.69	6.74
245	143	+	N/P	N/P	15.06	4.59	40.67	8,86
249	144	+	N/P	N/P	9,80	1.24	6.64	5,35
251	145	+	NIP	N/P	17,16	7.33	64.1	8.74
252	146	+	NIP	N/P	16.52	7.86	64,97	8.27
253	147	+	N/P	NIP	15.90	7.77	65.7	8.46
254	148	+	N/P	N/P	15.68	4.41	31.66	7.18

SAMPLE#	NO.	I.D.	YS length	Ys heigth	LENGTH	ug DNA	ug RNA	RNA/DNA ratio
255	149	+	N/P	N/P	14.76	7.15	42	5.87
256	150	+	N/P	N/P	16.38	6.71	50.87	7.58
26	151	+	N/P	N/P	06	06	4.07	13.27
262	152	+	N/P	N/P	9.00	32	5. 6	3.9
263	153	+	N/P	N/P	10.02	2.12	5.7	2.69
264	54	+	[illegible]	N/P	8.48	88	. 3	0 67
265	155	+	[illegible]	N/P	8.54	0.97	3.96	4.08
266	156	+	N/P	N/P	10.58	2.56	14.04	5.48
267	157	+	N/P	N/P	2.40	3.53	28.84	8. 7
268	158	+	N/P	N/P	10.30	3.62	14.28	3.94
269	159	+	N/P	N/P	4.00	2.58	4.4	5.63
270	60	+	N/P	N/P	.90	1.85	4.91	2.65
271	16	+	N/P	N/P	8.20	.59	4.85	3.05
273	62	+	N/P	N/P	7.62	1.32	5.53	4 9
274	63	+	N/P	N/P	6.86	1.41	2.56	1.82
276	64	+	N/P	N/P	7.30	2.03	4.95	2.44
277	165	+	N/P	N/P	6.88	5	2.5	2. 7
280	166	+	N/P	N/P	7.84	0.53	3.86	7.28
281	167	+	N/P	N/P	9.86	2.3	0.24	4.45
282	68	+	N/P	N/P	9.66	.68	7.48	7.45
283	89	+	N/P	N/P	3.50	4.06	36.44	8.98
284	170	+	N/P	N/P	1.42	1.24	8. 3	6.56
285	171	+	N/P	N/P	9.86	2.83	87	2.07
286	72	+	N/P	N/P	0.62	2. 2	32	5.34
289	173	+	N/P	N/P	9.46	3.62	09	0
290	74	+	N/P	N/P	22.96	3 .6	253.56	8.02
291	175	+	N/P	N/P	20.16	30.29	261.11	8.62
292	76	+	N/P	N/P	5.34	4.5	32.43	7.21
293	177	+	N/P	N/P	14.70	4.77	4034	8.46

SAMPLE#	NO.	I.D.	Y S length	YS helgth	LENGTH	ug DNA	ug RNA	RNA/DNA ratio	
294	178	+	N/P	N/P	16.02	5.39	55.44	10.29	
295	179	+	N/P	N/P	12.82	4.24	23.77	5.61	
296	180	+	N/P	N/P	19.18	13.24	110.31	8.33	
297	181	+	N/P	N/P	18.06	16.07	122.54	7.63	
298	182	+	N/P	N/P	14.42	7.06	48.34	6.85	
299	183	+	N/P	N/P	14.56	5.12	36.68	7.16	
300	184	+	N/P	N/P	18.54	9.98	126.39	12.66	
301	185	+	N/P	N/P	14.00	3.09	38.84	12.57	
302	186	+	N/P	N/P	13.02	4.15	27.86	6.71	
303	187	+	N/P	N/P	15.48	5.56	44.26	7.96	
304	188	+	NIP	NIP	13,58	5,74	40,93	7,13	
305	189	+	NIP	N/P	12.60	2.03	19,9	9,80	
306	190	+	NIP	N/P	14.84	5,2	38.97	7.40	
307	191	+	NIP	NIP	8.3+	1.1	3,67	2.92	
308	192	+	NIP	NIP	13.66	4,06	25,22	6.21	
310	193	+	NIP	N/P	8.18	1.06	2.11	1.99	
311	194	+	NIP	N/P	9.66	1.85	7.9	4,2?	
312	195	+	N/P	N/P	11.54	1.94	12.4	6.39	
314	196	+	N/P	N/P	7.70	1.94	1.56	0.80	
315	197	+	N/P	NIP	8.54	1,24	7,76	6.26	
316	198	+	N/P	N/P	9.10	1,59	7,09	4.46	
318	199	+	NIP	N/P	9.02	3	4.42	1.47	
319	200	+	NIP	N/P	7.90	1.32	3,66.	2.77	

Legend to Table:

Sample #: number of samples as defined by table accompanying shipment

NO. : continuous numbering 1 -200 of samples measured

I.D. : identification as herring larvae

YS length: length of yolksac, **N/P:** yolk sac not present

YS height: height of yolk sac, **N/P:** yolk sac not present

ug DNA: ug of DNA found in larva analyzed

ug RNA: ug of RNA found in larva analyzed

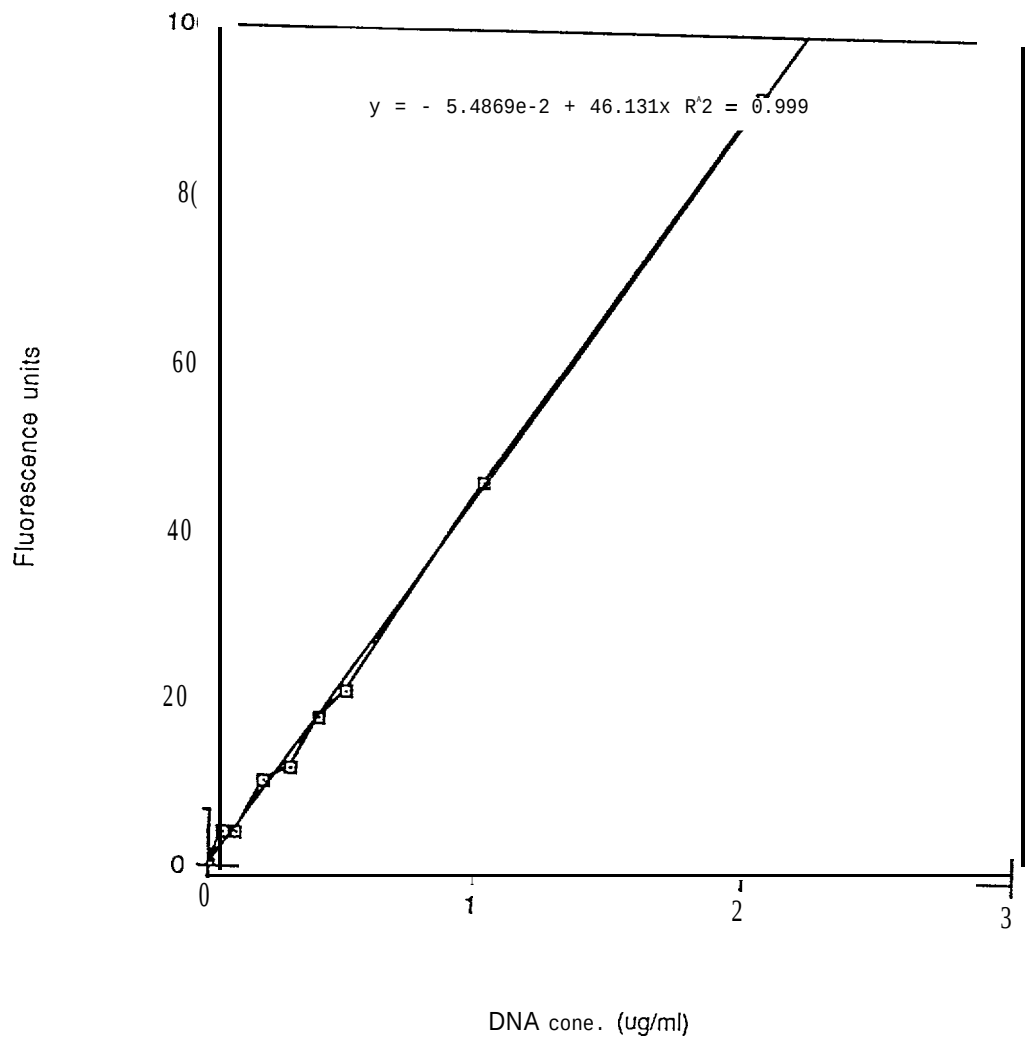
RNA/DNA ratio: amount RNA per larva divided per amount DNA per larva

APPENDIX

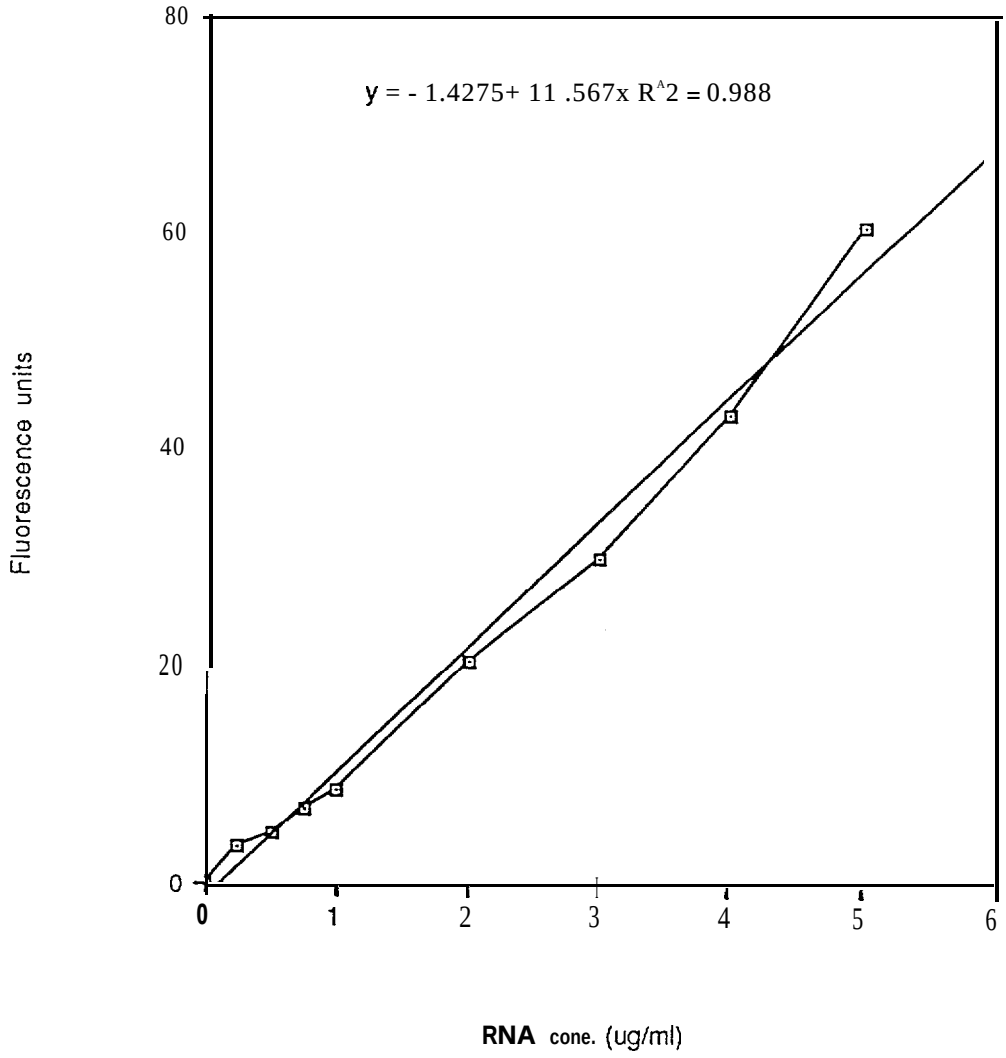
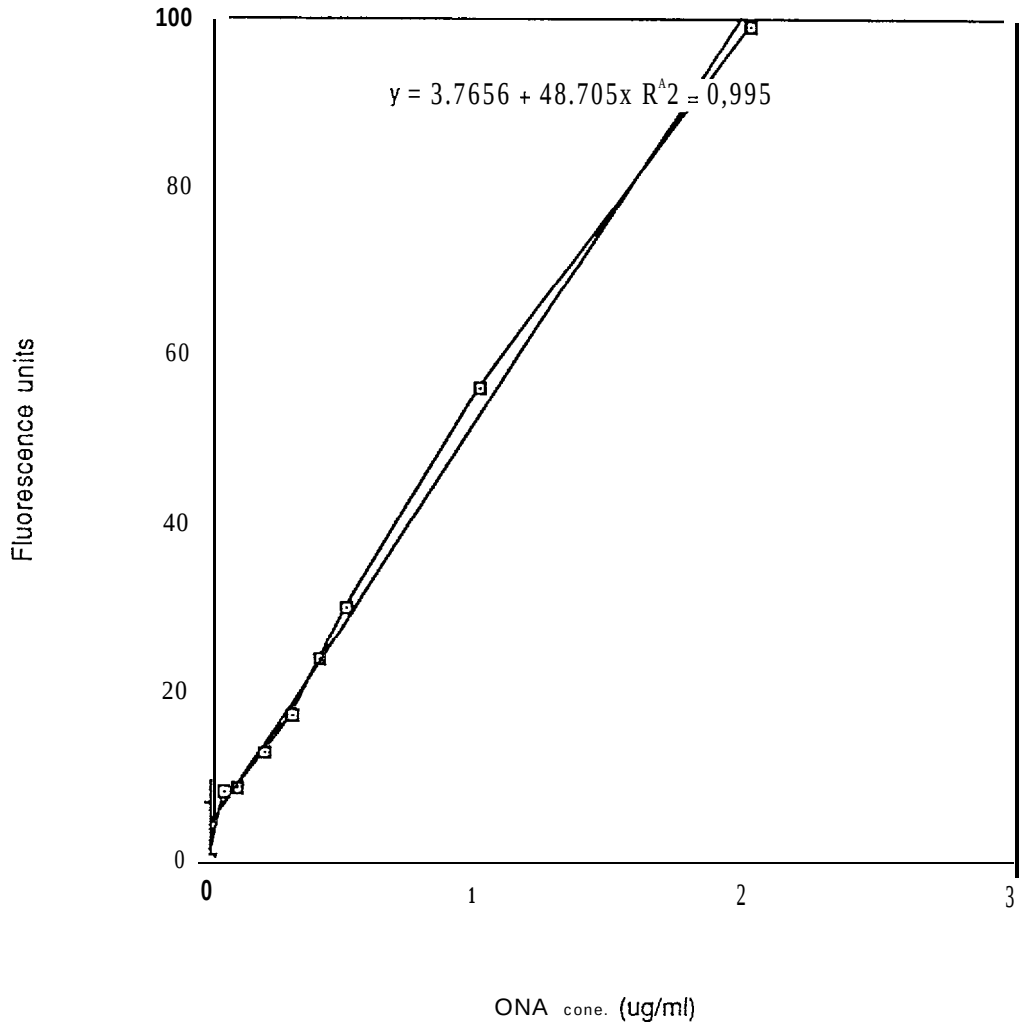
STANDARD CURVES

1. DNA/Bisbenzimidazole
2. DNA/Ethidium bromide
3. RNA/Ethidium bromide

DNA-Ethidium Bromide Standard Curve



RNA-Ethidium Bromide Standard Curve



DNA-8 isbenzimidazole Standard Curve