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**THE VENTS 1989 CLEFT SEGMENT PLUME MONITORING EXPERIMENT:
PHYSICAL AND CHEMICAL DATA, NOAA SHIP *DISCOVERER*,
AUGUST 1989**

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The VENTS 1989 Cleft Segment Plume Monitoring Experiment: Physical and Chemical Data, NOAA Ship *Discoverer*, August 1989

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Abstract. This report summarizes salinity, temperature, nutrient, and total suspended matter data collected during the NOAA VENTS cruise in August 1989. These data were collected from July 29 to August 24, 1989 over the Juan de Fuca Ridge covering an area from 44°39'N to 48°02'N and 128°12'W to 132°46'W.

1.0 INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) VENTS Program was established in 1984 to study the oceanic effects of hydrothermal activity along seafloor spreading centers. VENTS Program scientists from the Pacific Marine Environmental Laboratory (PMEL) have conducted intensive oceanographic research on the Cleft Segment of the Juan de Fuca Ridge spreading center located in the northeast Pacific Ocean basin.

The Juan de Fuca Ridge is a medium rate spreading center, consisting of the Cleft, Vance, Axial, Cobb, Endeavour, and West Valley segments. The ridge is bounded on the south by the Blanco Fracture Zone and on the north by the Sovanco Fracture Zone.

As part of the continuing VENTS Program research effort, a chemical oceanography cruise was conducted in August 1989 aboard the NOAA Ship *Discoverer* with scientists from NOAA, the University of Washington, the Lamont-Doherty Geological Observatory, and the Florida Institute of Technology. This cruise concentrated on physical oceanography and geochemical studies of the neutrally buoyant hydrothermal plumes over the Cleft segment (Fig. 1) in order to quantitatively assess the impact of hydrothermal emissions on the seawater chemistry of the northeast Pacific Ocean. This report includes the complete set of hydrographic, nutrient, and total suspended matter data collected on the cruise (Appendix A) and a description of the sampling and analytical methods employed.

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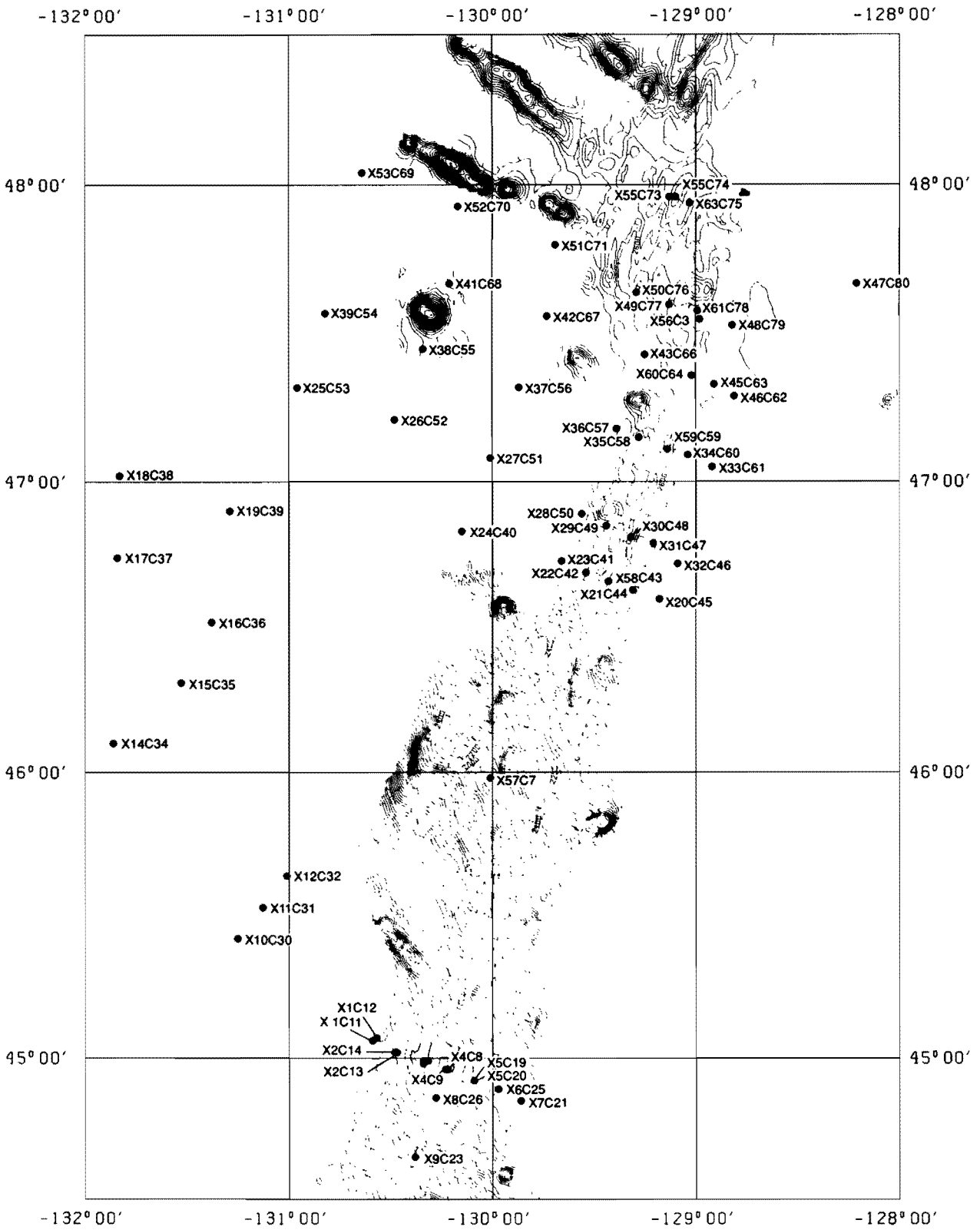


Fig. 1. Vertical casts occupied during the August 1989 VENTS cruise.

2.0 SAMPLING METHODS

2.1 Sample and Data Collection

2.1.1 Seawater Samples

Seawater samples were collected in standard 30-liter Niskin™ bottles fixed to a 12-position General Oceanics™ sampling rosette. The Niskin™ bottles were internally coated with Teflon and modified with Teflon stopcocks. The sampling rosette was also equipped with a CTD-transmissometer, altimeter, and pinger locator. It was lowered into the water using 0.322" diameter electromechanical cable. The bottles were electronically tripped at pre-determined depths via a signal from the shipboard deck unit and closed by use of silastic tubing. Upon retrieval the Niskin™ bottles were removed from the rosette and placed in a non-contaminating pressure filtration rack for sub-sampling (Feely *et al.*, 1991).

Salinity samples were collected from the Niskin™ bottle in 250 ml citrate bottles.

Nutrient samples were collected from the Niskin™ bottle in HDPE 60 ml bottles prepared using 10% HCL and rinsed with deionized water. Unfiltered nutrient samples were taken directly from the Niskin™ bottle. Filtered nutrient samples were taken downline of the 0.4 µm pore size Nuclepore polycarbonate filter during the total suspended matter pressure filtration of the seawater. All nutrients were analyzed at sea within 12 hours after collection.

Total suspended matter samples were collected by 12 psi nitrogen pressure filtration of the seawater in the Niskin™ bottle through 37 mm diameter, 0.4 µm pore size Nuclepore polycarbonate filters. As described in detail in Feely *et al.* (1991), an air filter was placed in the tygon line connecting the nitrogen gas and the Niskin™ bottle to prevent contamination of the seawater sample from particulates in the gas. To ensure that all particulates were filtered out of the seawater, the filtration racks were designed to tilt the Niskin™ bottle at a 45° angle and during filtration the bottle was gently agitated to keep particles in suspension. The seawater filtrate was directed into pre-calibrated 20 L plastic jerricans and volumes were measured to the nearest 100 mL. Depending upon the sample's proximity to the ridge crest, it took from 2 to 8 hours to filter 20 L of seawater. All filters were loaded and unloaded from the teflon holders inside a laminar flow hood. After filtration the particulate samples were rinsed with pH 8.0 deionized water then dried in a desiccator under vacuum.

2.1.2. Conductivity-Temperature-Depth-Transmissometer Data

CTD-transmissometer data was collected using a Sea-Bird conductivity-temperature-depth (CTD) sensor and a Sea Tech 0.25 m path length beam transmissometer secured to the frame of a General Oceanics™ sampling rosette. CTD information at the sampling depths was recorded shipboard on a MicroVax data acquisition system at trip time by taking a 10-second average of the continuously collected 1-second average data.

2.2 Sample Analysis

2.2.1. Bottle Salinity

Bottle salinity analysis was conducted by NOAA Ship *Discoverer* personnel on a shipboard Guildline Autosol™. Samples were equilibrated to room temperature, 18°C, before analysis. Final salinity was determined by averaging three measurements from each citrate bottle.

2.2.2. Nutrients

Silicic acid and phosphate analysis were conducted by Kathy Krogslund of the University of Washington, employing a Technicon Autoanalyzer and the techniques described by Whitley (1981). In the analysis of silicic acid, the average precision of the replicate analyses was ± 0.5 $\mu\text{mol/l}$. Alpha Inorganics™ reagent grade Na_2SiF_6 was the standard used for this analysis. The phosphate analysis had an average precision of replicate analyses of ± 20.0 nmol/l . Fisher™ certified primary standard KH_2PO_4 was used for standardization.

2.2.3 Total Suspended Matter

Total suspended matter filters were weighed after desiccation on a Cahn 26™ Automatic Electrobalance which has an accuracy of $\pm 0.005\%$ of the true sample mass. Corrections for changes in filter weight were determined by reweighing reference filters, resulting in a net weight of particulate suspended matter. Given the net weight and volume of water filtered, total suspended matter concentrations were determined.

2.2.4 Conductivity-Temperature-Depth-Transmissometer Data

Measured conductivity was converted to salinity using standard UNESCO algorithms (Fofonoff and Millard, 1983). The conductivity data was corrected by direct comparison of bottle salinity and CTD salinity values. An average salinity offset was determined for each cast.

Potential temperature was calculated using standard UNESCO algorithms (Fofonoff and Millard, 1983) and the CTD measured values of in situ temperature and salinity.

In situ density was calculated using standard UNESCO algorithms (Fofonoff and Millard, 1983) and the CTD measured values of in situ temperature and salinity.

Potential density was determined using standard UNESCO algorithms (Fofonoff and Millard, 1983) and the CTD measured salinity values.

Attenuation was measured and final values calculated as described in detail in Bartz *et al.* (1978).

The attenuation anomaly was calculated by determining the background value associated with each cast and subtracting that value from each discrete value.

The temperature anomaly ($\Delta\theta$) of each cast was calculated relative to ambient water of the same potential density using the method of Lupton *et al.* (1985) with the equation

$$\Delta\theta = \theta - k\sigma_{\theta} - b$$

where θ and σ_{θ} are the potential temperature and potential density, respectively, and k and b are the slope and intercept, respectively, of the trend of θ as a function of σ_{θ} in water immediately above the hydrothermal plume where the hydrographic effect of the hydrothermal emissions is negligible. The equation used for calculating the temperature anomaly for each individual cast is listed in the bottom left-hand portion of each station table.

3.0 STATION DATA

3.1 Station Locations

The data presented in Appendix A were collected from July 29 to August 24, 1989 over the Juan de Fuca Ridge covering an area from 44°39'N to 48°02'N and 128°12'W to 132°46'W. LORAN-C was used for shipboard navigation and a listing of each station's latitude, longitude, and date of occupation is given in Table 1.

Vertical CTD profiles were taken at the majority of stations. Additionally, given the dynamic nature of hydrothermal plumes, a limited number of lengthy, horizontal tows, called "tow-yos," were also conducted. Tow-yos were conducted by regularly cycling the CTD rosette package between the top and bottom layers of the hydrothermal plume. The ship's towing speed varied from 2–3 km/hr, and a listing of each Niskin™ bottle trip position and date of occupation is given in Table 2.

3.2 Individual Station Data

The header on the data tables in Appendix A contains the station identification and consecutive cast number, the date the station was occupied, and the latitude and longitude of the station. The data is listed in rows by Niskin™ bottle number and in 21 columns as follows:

- Column 1: Niskin™ bottle number
- Column 2: Depth in meters
- Column 3: Depth in decibars
- Column 4: In situ temperature (°C)
- Column 5: Potential temperature (°C)
- Column 6: Temperature anomaly (°C)
- Column 7: Salinity-CTD
- Column 8: Salinity-Bottle
- Column 9: Attenuation (1/m)
- Column 10: Attenuation anomaly
- Column 11: In situ density (CTD salinity)

TABLE 1
VENTS 1989 – LEG I
(AUGUST 1989)
STATION LOCATIONS

STATION	LATITUDE	LONGITUDE	MEASUREMENTS
X56C3	47° 33.04'	128° 58.67'	NUT 1,2,3/TSM
X57C7	45° 58.88'	130° 00.75'	NUT 1,2,3/TSM
X4C8	44° 57.70'	130° 13.40'	NUT 1,2,3/TSM
X4C9	44° 57.50'	130° 13.50'	NUT 1,2,3
X1C11	45° 03.70'	130° 35.30'	NUT 1,2,3
X1C12	45° 04.40'	130° 34.40'	NUT 1,2,3/TSM
X2C13	45° 00.90'	130° 28.45'	NUT 1,2,3/TSM
X2C14	45° 01.23'	130° 28.59'	NUT 1,2,3/TSM
X3C15	44° 59.15'	130° 19.36'	NUT 1,2,3
X3C17	44° 58.65'	130° 20.34'	NUT 1,2,3
X3C18	44° 59.25'	130° 20.42'	NUT 1,2,3/TSM
X5C19	44° 55.21'	130° 05.20'	NUT 1,2,3
X5C20	44° 55.45'	130° 05.35'	NUT 1,2,3/TSM
X7C21	44° 51.23'	129° 51.54'	NUT 1,2,3/TSM
X9C23	44° 39.15'	130° 22.70'	NUT 1,2,3/TSM
X9C24	44° 39.10'	130° 22.55'	NUT 1,2,3/TSM
X6C25	44° 53.15'	129° 58.25'	NUT 1,2,3/TSM
X8C26	44° 51.65'	130° 16.70'	NUT 1,2,3
X10C30	45° 25.25'	131° 15.25'	NUT 1,2
X11C31	45° 31.95'	131° 07.99'	NUT 1,2,3
X12C32	45° 38.20'	131° 00.85'	NUT 1,2
X13C33	45° 53.80'	132° 45.70'	NUT 1,2
X14C34	46° 06.17'	131° 51.87'	NUT 1,2,3
X15C35	46° 18.80'	131° 31.85'	NUT 1,2,3
X16C36	46° 31.08'	131° 23.08'	NUT 1,2,3
X17C37	46° 44.20'	131° 50.25'	NUT 1,2,3
X18C38	47° 01.15'	131° 50.00'	NUT 1,2,3
X19C39	46° 53.67'	131° 17.67'	NUT 1,2,3/TSM
X24C40	46° 50.05'	130° 08.81'	NUT 1,2/TSM
X23C41	46° 43.75'	129° 39.83'	NUT 1,2/TSM
X22C42	46° 41.65'	129° 32.35'	NUT 1,2,3/TSM
X58C43	46° 39.50'	129° 25.50'	NUT 1,2/TSM
X21C44	46° 37.88'	129° 18.31'	NUT 1,2,3/TSM
X20C45	46° 35.81'	129° 10.93'	NUT 1,2,3/TSM
X32C46	46° 43.40'	129° 05.30'	NUT 1,2,3
X31C47	46° 47.23'	129° 12.71'	NUT 1,2/TSM
X30C48	46° 48.83'	129° 19.50'	NUT 1,2,3/TSM
X29C49	46° 51.00'	129° 26.28'	NUT 1,2,3/TSM
X28C50	46° 53.43'	129° 33.63'	NUT 1,2,3/TSM

TABLE 1 (continued)
VENTS 1989 – LEG I
(AUGUST 1989)
STATION LOCATIONS

STATION	LATITUDE	LONGITUDE	MEASUREMENTS
X27C51	47° 04.80'	130° 00.63'	NUT 1,2,3/TSM
X26C52	47° 12.28'	130° 28.90'	NUT 1,2,3/TSM
X25C53	47° 19.46'	130° 57.76'	NUT 1,2,3/TSM
X39C54	47° 34.00'	130° 49.50'	NUT 1,2,3/TSM
X38C55	47° 26.68'	130° 20.69'	NUT 1,2,3/TSM
X37C56	47° 19.43'	129° 51.90'	NUT 1,2,3/TSM
X36C57	47° 10.50'	129° 23.35'	NUT 1,2,3/TSM
X35C58	47° 09.03'	129° 16.68'	NUT 1,2,3/TSM
X59C59	47° 06.86'	129° 08.39'	NUT 1,2,3/TSM
X34C60	47° 05.10'	129° 02.17'	NUT 1,2,3/TSM
X33C61	47° 03.02'	128° 54.94'	NUT 1,2,3/TSM
X46C62	47° 17.50'	128° 48.83'	NUT 1,2,3/TSM
X45C63	47° 19.60'	128° 54.50'	NUT 1,2,3/TSM
X60C64	47° 21.65'	129° 00.95'	NUT 1,2,3/TSM
X43C66	47° 25.79'	129° 15.11'	NUT 1,2,3/TSM
X42C67	47° 33.40'	129° 43.96'	NUT 1,2,3/TSM
X41C68	47° 40.45'	130° 12.68'	NUT 1,2,3/TSM
X53C69	48° 02.15'	130° 38.55'	NUT 1,2,3/TSM
X52C70	47° 55.74'	130° 10.25'	NUT 1,2,3/TSM
X51C71	47° 47.95'	129° 41.28'	NUT 1,2,3/TSM
X55C73	47° 57.50'	129° 06.30'	NUT 1,2,3/TSM
X55C74	47° 57.57'	129° 07.77'	NUT 1,2/TSM
X63C75	47° 56.67'	129° 01.64'	NUT 1,2,3/TSM
X50C76	47° 38.56'	129° 17.46'	NUT 1,2,3/TSM
X49C77	47° 36.02'	129° 07.99'	NUT 1,2,3/TSM
X61C78	47° 34.50'	128° 59.72'	NUT 1,2,3/TSM
X48C79	47° 31.90'	128° 49.40'	NUT 1,2,3/TSM
X47C80	47° 40.31'	128° 12.46'	NUT 1,2,3/TSM

Measurements: CTD at each station
NUT 1 – Phosphate
NUT 2 – Silicate
NUT 3 – Nitrate
TSM – Total Suspended Matter

TABLE 2
VENTS 1989 – LEG I
(AUGUST 1989)
TOW NISKIN™ TRIP LOCATIONS

STATION NAME	DATE OCCUPIED	NISKIN NO.	LATITUDE (N)	LONGITUDE (W)
XT1C01	29-JUL-89	18	129° 17.20'	47° 33.82'
XT1C01	29-JUL-89	19	129° 17.06'	47° 36.56'
XT1C01	29-JUL-89	20	129° 17.43'	47° 37.16'
XT1C01	29-JUL-89	21	129° 17.52'	47° 37.35'
XT1C01	29-JUL-89	22	129° 17.70'	47° 37.74'
XT1C01	29-JUL-89	23	129° 15.51'	47° 42.48'
XT1C01	29-JUL-89	24	129° 13.10'	47° 45.70'
XT1C01	29-JUL-89	25	129° 12.05'	47° 47.57'
XT1C01	29-JUL-89	26	129° 10.74'	47° 49.62'
XT1C01	29-JUL-89	27	129° 10.61'	47° 49.84'
XT1C01	29-JUL-89	16	129° 10.41'	47° 50.15'
XT1C01	29-JUL-89	29	129° 10.37'	47° 50.20'
XT2C02	30-JUL-89	1	129° 06.63'	47° 56.78'
XT2C02	30-JUL-89	2	129° 06.34'	47° 57.59'
XT2C02	30-JUL-89	3	129° 06.34'	47° 57.61'
XT2C02	30-JUL-89	4	129° 06.19'	47° 57.67'
XT2C02	30-JUL-89	5	129° 05.98'	47° 57.83'
XT2C02	30-JUL-89	6	129° 05.97'	47° 57.83'
XT2C02	30-JUL-89	7	129° 03.94'	48° 00.16'
XT2C02	30-JUL-89	8	128° 57.92'	48° 15.02'
XT2C02	30-JUL-89	9	128° 57.71'	48° 15.22'
XT2C02	30-JUL-89	10	128° 57.47'	48° 15.46'
XT3C04	31-JUL-89	11	128° 59.93'	47° 45.03'
XT3C04	31-JUL-89	12	128° 58.79'	47° 41.30'
XT3C04	31-JUL-89	13	128° 58.99'	47° 35.22'
XT3C04	31-JUL-89	14	128° 59.08'	47° 34.28'
XT3C04	31-JUL-89	15	128° 59.07'	47° 34.16'
XT3C04	31-JUL-89	6	128° 58.54'	47° 30.88'
XT3C04	31-JUL-89	17	128° 58.72'	47° 28.90'
XT3C04	31-JUL-89	1	128° 59.02'	47° 27.19'
XT3C04	31-JUL-89	8	129° 03.73'	47° 16.00'
XT3C04	31-JUL-89	31	129° 03.88'	47° 15.87'
XT4C05	01-AUG-89	3	128° 51.31'	47° 43.17'
XT4C05	01-AUG-89	4	128° 59.68'	47° 43.31'
XT4C05	01-AUG-89	5	128° 59.86'	47° 43.31'
XT4C05	01-AUG-89	7	129° 07.01'	47° 43.44'

TABLE 2 (Continued)
VENTS 1989 – LEG I
(AUGUST 1989)
TOW NISKIN™ TRIP LOCATIONS

STATION NAME	DATE OCCUPIED	NISKIN NO.	LATITUDE (N)	LONGITUDE (W)
XT4C05	01-AUG-89	9	129° 08.75'	47° 43.63'
XT4C05	01-AUG-89	10	129° 21.05'	47° 43.29'
XT4C05	01-AUG-89	16	129° 21.65'	47° 43.28'
XT4C05	01-AUG-89	18	129° 22.00'	47° 43.29'
XT4C05	01-AUG-89	19	129° 20.81'	47° 41.54'
XT4C05	01-AUG-89	20	129° 18.79'	47° 40.07'
XT4C05	01-AUG-89	21	129° 18.68'	47° 40.01'
XT4C05	01-AUG-89	30	129° 17.35'	47° 39.14'
XT5C06	03-AUG-89	2	129° 13.13'	46° 59.73'
XT5C06	03-AUG-89	14	129° 13.19'	46° 59.65'
XT5C06	03-AUG-89	13	129° 19.12'	46° 49.96'
XT5C06	03-AUG-89	22	129° 19.27'	46° 49.25'
XT5C06	03-AUG-89	6	129° 19.90'	46° 48.13'
XT5C06	03-AUG-89	1	129° 20.21'	46° 47.35'
XT5C06	03-AUG-89	17	129° 20.38'	46° 47.13'
XT5C06	03-AUG-89	28	129° 23.96'	46° 40.63'
XT5C06	03-AUG-89	26	129° 25.57'	46° 38.63'
XT5C06	03-AUG-89	8	129° 27.41'	46° 36.97'
XT5C06	03-AUG-89	15	129° 28.04'	46° 36.37'
XT5C06	03-AUG-89	23	129° 29.62'	46° 35.31'
XT6C010	05-AUG-89	11	130° 18.19'	44° 48.96'
XT6C010	05-AUG-89	31	130° 17.20'	44° 50.65'
XT6C010	05-AUG-89	1	130° 16.52'	44° 51.95'
XT6C010	05-AUG-89	30	130° 12.82'	44° 59.19'
XT6C010	05-AUG-89	18	130° 12.57'	44° 59.90'
XT6C010	05-AUG-89	23	130° 11.71'	45° 00.43'
XT6C010	09° AUG-89	17	130° 13.66'	45° 05.13'
XT6C010	09° AUG-89	6	130° 13.69'	45° 04.97'
XT6C010	09° AUG-89	27	130° 14.74'	45° 01.94'
XT6C010	09° AUG-89	2	130° 14.44'	44° 59.67'
XT6C010	05-AUG-89	5	130° 12.32'	44° 55.88'
XT6C010	05-AUG-89	26	130° 11.74'	44° 54.26'
XT7C016	08-AUG-89	27	130° 10.86'	44° 58.17'
XT7C016	08-AUG-89	18	130° 12.09'	44° 57.97'
XT7C016	08-AUG-89	22	130° 18.32'	44° 56.65'
XT7C016	08-AUG-89	12	130° 17.56'	44° 53.30'
XT7C016	08-AUG-89	21	130° 16.54'	44° 52.60'

TABLE 2 (Continued)
VENTS 1989 – LEG I
(AUGUST 1989)
TOW NISKIN™ TRIP LOCATIONS

STATION NAME	DATE OCCUPIED	NISKIN NO.	LATITUDE (N)	LONGITUDE (W)
XT7C016	08-AUG-89	17	130° 15.78'	44° 52.21'
XT7C016	08-AUG-89	23	130° 14.66'	44° 51.43'
XT7C016	08-AUG-89	3	130° 14.34'	44° 47.39'
XT7C016	08-AUG-89	1	130° 19.37'	44° 45.92'
XT7C016	08-AUG-89	24	130° 20.09'	44° 45.77'
XT7C016	08-AUG-89	14	130° 20.62'	44° 45.68'
XT7C016	08-AUG-89	19	130° 23.38'	44° 45.03'
XT8C016	08-AUG-89	27	130° 20.97'	44° 43.52'
XT8C016	08-AUG-89	18	130° 22.40'	44° 40.75'
XT8C016	08-AUG-89	22	130° 22.55'	44° 40.48'
XT8C016	08-AUG-89	12	130° 22.68'	44° 39.96'
XT8C016	08-AUG-89	21	130° 22.77'	44° 39.75'
XT8C016	08-AUG-89	17	130° 22.99'	44° 39.28'
XT8C016	08-AUG-89	23	130° 22.97'	44° 39.19'
XT8C016	08-AUG-89	3	130° 23.04'	44° 39.06'
XT8C016	08-AUG-89	1	130° 23.27'	44° 38.66'
XT8C016	08-AUG-89	24	130° 23.36'	44° 38.46'
XT8C016	08-AUG-89	14	130° 23.42'	44° 38.23'
XT8C016	08-AUG-89	19	130° 23.84'	44° 37.29'
XT10C029	13-Aug-89	23	130° 16.80'	44° 51.60'
XT10C029	13-Aug-89	3	130° 16.80'	44° 51.54'
XT10C029	13-Aug-89	13	130° 16.80'	44° 51.54'
XT10C029	13-Aug-89	18	130° 16.80'	44° 51.48'
XT10C029	13-Aug-89	16	130° 16.80'	44° 51.42'
XT10C029	13-Aug-89	2	130° 16.80'	44° 51.42'
XT10C029	13-Aug-89	1	130° 16.80'	44° 51.36'
XT10C029	13-Aug-89	21	130° 17.40'	44° 51.30'
XT10C029	13-Aug-89	12	130° 17.40'	44° 51.30'
XT10C029	13-Aug-89	26	130° 17.40'	44° 51.24'
XT11C072	22-AUG-89	31	129° 13.54'	47° 58.86'
XT11C072	22-AUG-89	24	129° 13.56'	47° 58.85'
XT11C072	22-AUG-89	18	129° 13.58'	47° 58.85'
XT11C072	22-AUG-89	6	129° 13.61'	47° 58.85'
XT11C072	22-AUG-89	20	129° 13.65'	47° 58.85'
XT11C072	22-AUG-89	15	129° 13.67'	47° 58.85'
XT11C072	22-AUG-89	12	129° 13.70'	47° 58.88'
XT11C072	22-AUG-89	9	129° 13.75'	47° 58.99'
XT11C072	22-AUG-89	14	129° 13.81'	47° 59.05'
XT11C072	22-AUG-89	29	129° 13.84'	47° 59.09'

Column 12: In situ density (bottle salinity)
Column 13: Potential density (CTD salinity)
Column 14: Potential density (bottle salinity)
Column 15: Unfiltered PO₄
Column 16: Filtered PO₄
Column 17: Unfiltered SiO₄
Column 18: Filtered SiO₄
Column 19: Unfiltered NO₃
Column 20: Filtered NO₃
Column 21: Total suspended matter

The lower left portion of each table displays the equation used to calculate the station's temperature anomaly and attenuation anomaly.

4.0 ACKNOWLEDGMENTS

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APPENDIX A:

Station Data Tables

VENTS 1989 - LEG I
 Station XT-1 Cast 1 29 JUL 1989
 LAT: 47 32.2N LONG: 129 16.2W

0	1	2	3	4	5	6	7	8	9	10	Atten.
	Niskin #	Depth (m)	Depth (db)	Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Salinity (Bottle)	Atten. (1/m)	Anom
1	19	1964	1990	1.927	1.793	0.001026	34.592	34.592	34.592	0.385	0.003
2	29	2000	2027	1.903	1.766	0.010120	34.599	34.599	34.597	0.385	0.003
3	22	2018	2045	1.900	1.761	0.010994	34.600	34.600	34.600	0.385	0.003
4	16	2025	2052	1.888	1.749	0.006727	34.601	34.601	34.600	0.385	0.003
5	27	2168	2198	1.834	1.683	0.005665	34.612	34.612	34.529	0.383	0.001
6	23	2336	2369	1.788	1.623	0.011656	34.624	34.624	34.626	0.384	0.002
7	18	2365	2399	1.793	1.626	0.013124	34.624	34.624	34.621	0.385	0.003
8	21	2413	2447	1.784	1.613	0.012072	34.626	34.626		0.384	0.002
9	25	2438	2473	1.783	1.609	0.017431	34.628	34.628		0.387	0.005
10	24	2442	2477	1.779	1.605	0.014651	34.628	34.628	34.629	0.387	0.005
11	26	2443	2478	1.783	1.609	0.017151	34.628	34.628	34.615	0.388	0.006
12	20	2726	2767	1.747	1.547	-0.000752	34.634	34.632	34.632	0.388	0.006

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t (CTD)	Sigma-Theta (Bottle)	PO4-UNE (uM/L)	PO4-UNE (uM/L)	SIO4-FIL (uM/L)	SIO4-UNE (uM/L)	NO3-UNE (uM/L)
1	27.651	27.651	27.661	27.661	2.81	2.81	182.44	182.44	40.44
2	27.658	27.656	27.669	27.667	2.83	2.83	185.69	185.69	40.20
3	27.659	27.659	27.670	27.670	2.82	2.82	183.28	183.28	39.97
4	27.661	27.660	27.671	27.671	2.83	2.83	188.63	188.63	39.91
5	27.674	27.607	27.685	27.619	2.77	2.77	182.34	182.34	37.20
6	27.687	27.689	27.689	27.701	2.80	2.80	191.89	191.89	38.69
7	27.687	27.684	27.699	27.697	2.75	2.75	188.21	188.21	43.92
8	27.689		27.702						
9	27.691		27.704						
10	27.691	27.692	27.704	27.705	2.78	2.78	191.93	191.93	37.60
11	27.691	27.680	27.704	27.693	2.77	2.77	191.97	191.97	38.17
12	27.698	27.697	27.713	27.711	2.72	2.72	187.12	187.12	38.17

D-Theta = (ptemp + (4.6807 * pden)) - 131.2642
 Atten-Anom = Atten - 0.382

VENTS 1989 - LEG I
Station XT-1 Cast 1 29 JUL 1989
LAT: 47 32.2N LONG: 129 16.2W

0	20 NO3-FIL	21 TSM
	(uM/L)	(ug/l)
1		18.16
2		
3		14.92
4		20.65
5		
6		15.66
7		17.71
8		
9		
10		19.85
11		17.54
12		

D-Theta = (ptemp + (4.6807 * pden)) - 131.2642
Atten-Anom = Atten - 0.382

VENTS 1989 - LEG I
 Station XT-2 Cast 2 30 JUL 1989
 LAT: 47 51.9N LONG: 129 08.8W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten: (1/m)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)
1	3	1974	2000	1.917	1.917	1.782	34.603	34.604	0.395	0.012	0.012	27.660
2	2	1975	2001	1.917	1.917	1.782	34.603		0.394	0.011	0.011	27.660
3	7	1992	2019	1.924	1.924	1.787	34.601	34.603	0.393	0.010	0.010	27.658
4	6	2005	2032	1.924	1.924	1.786	34.606	34.608	0.402	0.019	0.019	27.662
5	5	2006	2032	1.924	1.924	1.786	34.606	34.607	0.398	0.015	0.015	27.662
6	4	2022	2050	1.918	1.918	1.779	34.606	34.607	0.397	0.014	0.014	27.662
7	1	2208	2238	1.831	1.831	1.677	34.618	34.618	0.387	0.004	0.004	27.679
8	10	2303	2335	1.788	1.788	1.626	34.625	34.626	0.385	0.002	0.002	27.688
9	9	2500	2537	1.778	1.778	1.599	34.632	34.636	0.391	0.008	0.008	27.694
10	8	2670	2710	1.796	1.796	1.600	34.633	34.636	0.395	0.012	0.012	27.694

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SIO4-UNF (uM/L)	SIO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.661	27.671	27.671	2.723	2.723	178.09	178.09	43.13	43.13
2		27.671	27.671						
3	27.660	27.669	27.669	2.691	2.691	179.86	179.86	42.92	42.92
4	27.664	27.673	27.673	2.732	2.732	184.49	184.49	43.81	43.81
5	27.663	27.673	27.673	2.700	2.700	180.91	180.91	43.55	43.55
6	27.663	27.673	27.673	2.726	2.726	182.88	182.88	43.65	43.65
7	27.679	27.691	27.691	2.689	2.689	183.07	183.07	43.05	43.05
8	27.689	27.700	27.700	2.676	2.676	183.01	183.01	42.91	42.91
9	27.697	27.708	27.708	2.689	2.689	187.81	187.81	43.03	43.03
10	27.696	27.708	27.708	2.727	2.727	191.39	191.39	42.76	42.76

0	21
	TSM (ug/l)
1	39.58
2	32.73
3	23.43
4	27.79
5	
6	27.97
7	19.12
8	23.31
9	24.67
10	27.20

D-Theta = (ptemp + (4.6778 * pden)) - 131.19463
 Atten-Anom = Atten - 0.383

VENTS 1989 - LEG I
 Station X56 Cast 3 31 JUL 1989
 LAT: 47 33.0N LONG: 128 58.7W

0	1	2	3	4	5	6	7	8	9	10	11	12
	Niskin #	Depth (m)	Depth (db)	In situ Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.	Sigma-t (CTD)	Sigma-t (Bottle)
1	29	1500	1519	2.407	2.305	0.042250	34.521	34.521	0.382	0.001	27.555	27.555
2	28	1700	1721	2.165	2.049	0.015561	34.556	34.555	0.382	0.001	27.603	27.603
3	16	1901	1926	1.965	1.835	0.000396	34.588	34.588	0.381	0.000	27.644	27.644
4	27	1999	2026	1.908	1.771	0.000442	34.599	34.601	0.381	0.000	27.658	27.658
5	25	2100	2128	1.858	1.713	0.000765	34.609	34.608	0.382	0.001	27.670	27.670
6	24	2198	2229	1.815	1.662	0.005437	34.619	34.620	0.382	0.001	27.681	27.681
7	22	2299	2331	1.789	1.628	0.009359	34.626	34.626	0.381	0.000	27.688	27.688
8	21	2361	2395	1.783	1.616	0.013178	34.629	34.629	0.382	0.001	27.691	27.691
9	20	2441	2476	1.778	1.604	0.016559	34.632	34.630	0.382	0.001	27.694	27.694
10	19	2499	2535	1.774	1.595	0.014289	34.633	34.634	0.383	0.002	27.695	27.695
11	18	2628	2667	1.768	1.577	0.010136	34.635	34.635	0.386	0.005	27.697	27.697
12	23	2644	2683	1.769	1.576	0.009800	34.635	34.637	0.387	0.006	27.697	27.697

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.555	27.563	27.563	2.949	2.800	168.19	169.20	43.95	44.45
2	27.602	27.612	27.611	2.800	2.795	169.20	174.26	44.45	43.97
3	27.644	27.654	27.654	2.795	2.755	174.26	176.25	43.97	43.28
4	27.659	27.668	27.668	2.755	2.755	176.25	178.49	43.28	42.84
5	27.669	27.681	27.680	2.755	2.725	178.49	180.48	42.84	43.37
6	27.682	27.692	27.693	2.725	2.749	180.48	181.68	43.37	42.29
7	27.688	27.701	27.701	2.749	2.754	181.68	184.71	42.29	42.79
8	27.691	27.704	27.704	2.754	2.724	184.71	182.76	42.79	42.71
9	27.693	27.707	27.706	2.724	2.714	182.76	183.17	42.71	42.11
10	27.696	27.709	27.710	2.714	2.703	183.17	182.87	42.11	42.10
11	27.697	27.712	27.712	2.703	2.693	182.87	182.68	42.10	42.10
12	27.699	27.712	27.713	2.693		182.68		42.10	

D-Theta = (ptemp + (4.6903 * pden)) - 131.5427
 Atten-Anom = Atten - 0.381

VENTS 1989 - LEG I
Station X56 Cast 3 31 JUL 1989
LAT: 47 33.0N LONG: 128 58.7W

0	21 TSM (ug/l)
1	12.74
2	41.44
3	10.33
4	11.63
5	17.64
6	13.77
7	10.61
8	11.96
9	13.32
10	13.88
11	17.07
12	15.58

D-Theta = (ptemp + (4.6903 * pden)) - 131.5427
Atten-Anom = Atten - 0.381

VENTS 1989 - LEG I
 Station XT-3 Cast 4 31 JUL 1989
 LAT: 47 44.8N LONG: 128 59.9W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (L/m)	Atten. Anom		(CTD)
1	12	2305	2337	1.812	1.812	1.650	34.623	34.589	0.392	0.003		27.684
2	31	2417	2452	1.779	1.779	1.607	34.633	34.632	0.390	0.001		27.695
3	14	2439	2474	1.780	1.780	1.606	34.632	34.633	0.391	0.002		27.694
4	11	2459	2494	1.782	1.782	1.606	34.631	34.630	0.393	0.004		27.693
5	6	2539	2577	1.775	1.775	1.592	34.635	34.635	0.392	0.003		27.697
6	8	2585	2624	1.763	1.763	1.576	34.636	34.636	0.393	0.004		27.698
7	17	2603	2641	1.770	1.770	1.581	34.636	34.635	0.393	0.004		27.698
8	13	2603	2642	1.775	1.775	1.586	34.639	34.639	0.398	0.009		27.700
9	15	2634	2673	1.779	1.779	1.587	34.639	34.638	0.396	0.007		27.700
10	1	2669	2709	1.778	1.778	1.583	34.641	34.641	0.403	0.014		27.701

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-UNF	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	Atten. (uM/L)	Atten. (uM/L)			(uM/L)
1	27.657	27.697	27.669									
2	27.694	27.708	27.707	2.697	2.697	184.70	184.70	46.43	46.43			
3	27.695	27.707	27.708	2.697	2.697	184.52	184.52	41.65	41.65			
4	27.692	27.706	27.705	2.695	2.695	183.33	183.33	42.11	42.11			
5	27.697	27.711	27.711	2.704	2.704	185.65	185.65	42.50	42.50			
6	27.698	27.713	27.713	2.668	2.668	181.74	181.74	42.40	42.40			
7	27.697	27.712	27.711	2.698	2.698	184.26	184.26	40.88	40.88			
8	27.700	27.714	27.714	2.744	2.744	189.57	189.57	41.32	41.32			
9	27.699	27.714	27.713	2.704	2.704	188.32	188.32	41.32	41.32			
10	27.701	27.716	27.716	2.698	2.698	187.48	187.48	41.28	41.28			

0	21	TSM (ug/l)
1		
2		
3		25.06
4		26.07
5		
6		19.58
7		56.31
8		20.04
9		21.26
10		22.62

D-Theta = (ptemp + (4.690284 * pden)) - 131.54268
 Atten-Anom = Atten - 0.389

VENTS 1989 - LEG I
 Station XT-4 Cast 5 01 AUG 1989
 LAT: 47 43.3N LONG: 128 52.1W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	10	2016	2043	1.905	1.767	0.011627	34.602	34.603	0.396	0.007
2	30	2091	2120	1.860	1.716	0.001447	34.608	34.604	0.392	0.003
3	18	2434	2469	1.780	1.607	0.005880	34.628	34.629	0.393	0.004
4	9	2442	2477	1.775	1.601	0.013513	34.631	34.632	0.395	0.006
5	5	2451	2487	1.783	1.608	0.014326	34.630	34.629	0.393	0.004
6	19	2551	2589	1.756	1.572	-0.001468	34.632	34.632	0.394	0.005
7	3	2610	2649	1.766	1.577	0.035197	34.641	34.637	0.404	0.015
8	16	2675	2715	1.758	1.563	-0.004028	34.633	34.631	0.395	0.006
9	21	2701	2742	1.751	1.553	-0.006367	34.634	34.635	0.395	0.006
10	20	2855	2899	1.760	1.547	-0.006576	34.635	34.630	0.395	0.006

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.660	27.661	27.671	27.672	2.748	2.748	165.470	165.470	44.140
2	27.669	27.665	27.680	27.676	2.761	2.761	179.870	179.870	42.345
3	27.691	27.692	27.704	27.705	2.682	2.682	169.965	169.965	43.110
4	27.694	27.694	27.707	27.707	2.693	2.693	171.830	171.830	43.080
5	27.692	27.691	27.705	27.705	2.694	2.694	169.800	169.800	43.110
6	27.696	27.696	27.710	27.710	2.679	2.679	171.275	171.275	42.605
7	27.702	27.699	27.716	27.713	2.719	2.719	175.715	175.715	43.130
8	27.696	27.695	27.711	27.709	2.662	2.662	168.660	168.660	42.980
9	27.698	27.699	27.713	27.713	2.668	2.668	181.595	181.595	41.770
10	27.698	27.694	27.714	27.710	2.707	2.707	190.200	190.200	41.020

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1		18.47
2		18.68
3		16.80
4		17.86
5		19.62
6		18.26
7		35.80
8		16.55
9		19.73
10		17.99

D-Theta = (ptemp + (4.6903 * pden)) - 131.54
 Atten-Anom = Atten - 0.389

VENTS 1989 - LEG I
 Station XT-5 Cast 6 03 AUG 1989
 LAT: 47 11.1N LONG: 129 06.8W

0	1	2	3	4	5	6	7	8	9	10	Atten.	
	Niskin #	Depth (m)	Depth (db)	In situ Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Salinity (1/m)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	2	2054	2081	1.867	1.726	0.001241	34.607	34.610	0.389	171.83	174.64	42.23
2	15	2165	2195	1.844	1.694	0.006755	34.614	34.614	0.389	98.00	96.59	32.64
3	22	2221	2251	1.826	1.671	0.014702	34.620	34.620	0.390	180.64	180.23	42.29
4	1	2222	2253	1.827	1.672	0.019013	34.621	34.622	0.392	176.79	171.62	42.10
5	13	2227	2258	1.827	1.671	0.018756	34.621	34.622	0.390	177.97	180.18	43.53
6	6	2230	2261	1.826	1.670	0.021680	34.622	34.622	0.391	169.34	169.60	42.11
7	28	2236	2267	1.822	1.666	0.022591	34.623	34.622	0.396	171.14	169.88	42.43
8	26	2359	2392	1.813	1.646	0.013488	34.624	34.625	0.390	169.92	170.39	41.60
9	17	2389	2423	1.827	1.657	0.016892	34.623	34.622	0.390	177.69	177.72	42.96
10	14	2409	2443	1.778	1.607	-0.000527	34.627	34.627	0.391	169.92	171.46	42.62
11	8	2410	2444	1.804	1.632	0.008502	34.625	34.826	0.390	168.12	168.15	42.62
12	23	2535	2572	1.803	1.620	0.011675	34.628	34.627	0.390			

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.667	27.670	27.678	27.680	2.705	2.701	171.83	174.64	42.23
2	27.675	27.675	27.686	27.686	2.060	2.059	98.00	96.59	32.64
3	27.681		27.693		2.751	2.759	180.64	180.23	42.29
4	27.682	27.682	27.693	27.694	2.751	2.750	176.79	171.62	42.10
5	27.682	27.682	27.693	27.694	2.716	2.740	177.97	180.18	43.53
6	27.682	27.682	27.694	27.694	2.660	2.660	169.34	169.60	42.11
7	27.684	27.683	27.695	27.695	2.675	2.704	171.14	169.88	42.43
8	27.685	27.686	27.698	27.698	2.677	2.697	169.92	170.39	41.60
9	27.683	27.682	27.696	27.695	2.794	2.793	177.69	177.72	42.96
10	27.690	27.690	27.703	27.703	2.703	2.707	169.92	171.46	42.62
11	27.687	27.848	27.700	27.861	2.706	2.707	169.92	171.46	42.62
12	27.689	27.688	27.703	27.702	2.706	2.714	168.12	168.15	42.62

D-Theta = (ptemp + (4.694 * pden)) - 131.6454
 Atten-Anom = Atten - 0.388

VENTS 1989 - LEG I
 Station XT-5 Cast 6 03 AUG 1989
 LAT: 47 11.1N LONG: 129 06.8W

0	20 NO3-FIL (uM/L)	21 TSM (ug/l)
1	42.49	24.59
2	32.50	44.90
3	42.66	10.25
4	42.86	10.08
5	42.29	
6		
7	42.17	19.74
8	42.49	11.00
9	41.73	11.32
10	42.47	11.86
11	42.74	8.78
12	42.74	10.63

D-Theta = (ptemp + (4.694 * pden)) - 131.6454
 Atten-Anom = Atten - 0.388

VENTS 1989 - LEG I
 Station X57 Cast 7 04 AUG 1989
 LAT: 45 58.9N LONG: 130 00.8W

0	1	2	Depth (m)	Depth (db)	4	Insitu Temp.	5	Pottemp Anom.	6	Temp. Anom.	7	Salinity (CTD)	8	Salinity (Bottle)	9	Atten. (1/m)	10	Atten. Anom	11	Sigma-t (CTD)
1	11	999	1009	1009	3.155	3.085	34.386	34.387	0.390	0.0025	27.381									
2	21	1100	1112	1112	2.982	2.906	34.423	34.423	0.390	0.0025	27.426									
3	12	1200	1213	1213	2.781	2.699	34.457	34.456	0.390	0.0025	27.471									
4	10	1299	1314	1314	2.553	2.465	34.491	34.492	0.389	0.0015	27.518									
5	9	1401	1417	1417	2.404	2.310	34.516	34.516	0.391	0.0035	27.551									
6	31	1449	1466	1466	2.396	2.298	34.518	34.517	0.391	0.0035	27.553									
7	20	1501	1519	1519	2.397	2.295	34.519	34.517	0.392	0.0045	27.554									
8	27	1509	1527	1527	2.397	2.294	34.520	34.511	0.392	0.0045	27.555									
9	25	1515	1533	1533	2.402	2.299	34.521	34.520	0.393	0.0055	27.555									
10	16	1520	1538	1538	2.404	2.300	34.521	34.522	0.395	0.0075	27.555									
11	24	1525	1544	1544	2.405	2.301	34.521	34.519	0.393	0.0055	27.555									
12	5	1532	1550	1550	2.408	2.303	34.520	34.520	0.393	0.0055	27.554									

0	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)	20	NO3-FIL (uM/L)
1	27.382	27.387	27.388	27.388	3.056	160.435	44.935											
2	27.426	27.433	27.433	27.433	3.048	166.135	45.185											
3	27.471	27.479	27.478	27.478	3.017	174.856	45.295											
4	27.519	27.526	27.527	27.527	2.931	170.150	46.070											
5	27.551	27.559	27.559	27.559	2.930	171.120	45.330											
6	27.553	27.561	27.561	27.561	2.942	176.950	44.470											
7	27.552	27.563	27.563	27.563	2.918	184.585	44.490											
8	27.548	27.563	27.563	27.563	2.922	183.140	45.525											
9	27.554	27.564	27.564	27.564	2.912	185.695	44.310											
10	27.556	27.564	27.564	27.564	2.912	186.670	44.415											
11	27.553	27.564	27.564	27.564	2.915	188.255	44.710											
12	27.554	27.563	27.563	27.563	2.929	187.175	44.830											

0	21	TSM (ug/l)
1	13.96	
2	12.91	
3	11.18	
4	11.65	
5	14.56	
6	16.46	
7	15.21	
8		
9	17.75	
10	15.21	
11	17.28	
12	14.77	

Atten-Anom = Atten - 0.3875

VENTS 1989 - LEG I
 Station X4 Cast 8 05 AUG 1989
 LAT: 44 57.7N LONG: 130 13.4W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	In situ Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	11	1502	1520	2.352	2.250	0.000000	34.529	34.530	0.390	0.004		27.566
2	29	1750	1772	2.068	1.949	0.007248	34.574	34.574	0.388	0.002		27.625
3	22	1899	1923	1.935	1.806	0.003208	34.596	34.597	0.433	0.047		27.653
4	24	1951	1976	1.911	1.778	0.005000	34.601	34.602	0.566	0.180		27.659
5	16	1999	2025	1.887	1.750	0.014749	34.608	34.608	0.395	0.009		27.667
6	12	2050	2077	1.884	1.743	0.033476	34.614	34.614	0.403	0.017		27.672
7	20	2125	2153	1.897	1.749	0.049120	34.617	34.616	0.406	0.020		27.673
8	30	2151	2180	1.894	1.744	0.045806	34.617	34.618	0.406	0.020		27.673
9	1	2202	2231	1.891	1.737	0.041141	34.617	34.618	0.406	0.020		27.673
10	31	2261	2292	1.873	1.714	0.030494	34.618	34.617	0.399	0.013		27.676

0	12	13	14	15	16	17	18	19	20	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	
1	27.567	27.574	27.575	3.162	3.1630	165.980	165.495	44.565	47.025	
2	27.625	27.634	27.634	3.082	3.0830	173.495	174.055	44.735	44.040	
3	27.654	27.663	27.664	3.033	3.0280	180.210	179.035	43.470	43.500	
4	27.660	27.669	27.670	3.026	3.0300	178.510	179.060	43.880	43.860	
5	27.667	27.677	27.677	3.034	3.0350	180.960	181.395	43.640	43.850	
6	27.672	27.682	27.682	2.992	2.9940	182.490	182.465	39.910	36.680	
7	27.672	27.684	27.683	2.950	2.9510	182.975	179.270	40.290	41.495	
8	27.674	27.685	27.686	2.989	2.9780	185.425	185.520	42.090	43.805	
9	27.674	27.685	27.686	2.962	2.9620	184.805	185.520	42.095	42.680	
10	27.675	27.688	27.687	3.090	2.9455	182.600	179.235	42.865	42.770	

0	21	TSM (ug/l)
1	13.29	
2	12.27	
3	11.78	
4	16.67	
5	19.95	
6	34.49	
7	57.16	
8	45.38	
9	46.34	
10	20.71	

D-Theta = (ptemp + (4.85 * pden)) - 135.969
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X4 Cast 9 05 AUG 1989
 LAT: 44 57.5N LONG: 130 13.5W

0	1	2	3	4	5	6	7	8	9	10	11	
	Miskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	6 Temp. Anom.	7 Salinity (CTD)	8 Salinity (Bottle)	9 Atten. (1/m)	10 Atten. Anom	11	Sigma-t (CTD)
1	26	1811	1833	2.015	1.892	0.006637	34.583	34.584	0.855	0.469		27.636
2	5	1901	1925	1.949	1.820	0.000120	34.593	34.586	0.388	0.002		27.650
3	2	1999	2026	1.899	1.762	0.018291	34.607	34.608	0.438	0.052		27.665
4	27	2051	2078	1.898	1.757	0.038210	34.613	34.615	0.425	0.039		27.670
5	6	2099	2127	1.904	1.758	0.043228	34.614	34.616	0.417	0.031		27.670
6	14	2144	2173	1.900	1.751	0.038268	34.614	34.619	0.437	0.051		27.670
7	25	2144	2173	1.900	1.751	0.038268	34.614	34.622	0.437	0.051		27.670
8	9	2144	2173	1.900	1.751	0.038268	34.614	34.620	0.437	0.051		27.670
9	8	2144	2173	1.900	1.751	0.038268	34.614	34.622	0.437	0.051		27.670
10	17	2150	2179	1.904	1.754	0.044294	34.615	34.616	0.423	0.037		27.671
11	23	2203	2233	1.894	1.739	0.039031	34.616	34.617	0.413	0.027		27.672
12	18	2255	2286	1.862	1.703	0.023958	34.618	34.619	0.394	0.008		27.676

0	12	13	14	15	16	17	18	19	20	
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	
1	27.637	27.646	27.647	3.076	3.079	173.060	172.990	41.930	41.930	
2	27.644	27.660	27.654	3.062	3.061	172.840	173.850	42.570	42.570	
3	27.666	27.675	27.676	2.980	2.978	179.020	177.020	41.440	41.230	
4	27.671	27.681	27.682	2.932	2.965	179.880	180.190	40.960	40.810	
5	27.672	27.681	27.683	2.963	2.966	181.670	182.440	41.460	40.810	
6	27.674	27.682	27.686	2.950	2.945	183.953	183.427	41.487	41.783	
7	27.677	27.682	27.688	2.944	2.947	184.593	184.303	41.883	42.150	
8	27.675	27.682	27.687	2.946	2.948	184.463	184.323	41.637	41.437	
9	27.677	27.682	27.688	2.944	2.945	183.630	183.337	42.633	41.357	
10	27.672	27.682	27.683	2.969	2.953	184.140	183.070	40.810	40.280	
11	27.673	27.684	27.685	2.956	2.939	180.840	180.930	40.780	40.830	
12	27.677	27.689	27.689	2.938	2.951	180.780	180.630	40.720	40.710	

D-Theta = (ptemp + (4.85 * pden)) - 135.969
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
Station X4 Cast 9 05 AUG 1989
LAT: 44 57.5N LONG: 130 13.5W

0 21 TSM

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D-Theta = (ptemp + (4.85 * pden)) - 135.969
Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station XT-6 Cast 10 05 AUG 1989
 LAT: 44 49.1N LONG: 130 18.4W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	7 salinity (CTD)	Salinity (Bottle)	9 Atten. (1/m)	10 Atten. Anom	11	(CTD)
1	1	1984	2009	1.931	1.931	1.795	34.616	34.615	0.491	0.1035		27.669
2	11	2020	2047	1.903	1.903	1.764	34.614	34.614	0.438	0.0505		27.670
3	31	2046	2073	1.921	1.921	1.780	34.615	34.615	0.461	0.0735		27.669
4	6	2066	2093	1.879	1.879	1.737	34.609	34.609	0.391	0.0035		27.668
5	5	2076	2103	1.889	1.889	1.746	34.614	34.614	0.421	0.0335		27.671
6	26	2078	2106	1.879	1.879	1.736	34.615	34.616	0.407	0.0195		27.673
7	2	2090	2118	1.892	1.892	1.747	34.613	34.614	0.416	0.0285		27.670
8	27	2102	2130	1.878	1.878	1.733	34.614	34.613	0.400	0.0125		27.672
9	23	2113	2141	1.886	1.886	1.739	34.617	34.616	0.408	0.0205		27.674
10	30	2134	2163	1.883	1.883	1.735	34.616	34.616	0.417	0.0295		27.673
11	18	2151	2179	1.885	1.885	1.735	34.617	34.618	0.406	0.0185		27.674
12	17	2393	2427	1.853	1.853	1.682	34.620	34.620	0.393	0.0055		27.679

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	15 PO4-UNF (uM/L)	16 PO4-FIL (uM/L)	17 SIO4-UNF (uM/L)	18 SIO4-FIL (uM/L)	19 NO3-UNF (uM/L)	20 NO3-FIL (uM/L)
1	27.669	27.680	27.679	2.923	2.911	183.92	183.70	39.62	39.31
2	27.670	27.681	27.681	2.933	2.950	181.38	181.62	39.01	38.95
3	27.669	27.680	27.680	2.928	2.935	182.07	181.84	39.00	38.89
4	27.668	27.679	27.679	2.939	2.979	182.46	182.24	39.07	39.60
5	27.671	27.682	27.682	2.937	2.935	181.50	184.77	40.17	40.17
6	27.674	27.684	27.685	2.950	2.944	176.82	181.02		40.22
7	27.671	27.681	27.682	2.933	2.931	185.47	185.01	39.19	39.43
8	27.671	27.683	27.682	2.938	2.941	185.02	184.56	39.19	39.13
9	27.673	27.685	27.684	2.926	2.924	185.75	183.89	38.46	39.01
10	27.673	27.685	27.685	2.955	2.953	179.95	181.35	39.74	39.80
11	27.675	27.685	27.686	2.964	2.934	176.90	174.11	40.23	39.06
12	27.679	27.692	27.692	2.925	2.932	185.74	185.75	39.31	38.89

D-Theta = (ptemp + (4.85 * pden)) - 135.969
 Atten-Anom = Atten - 0.3875

VENTS 1989 - LEG I
Station XT-6 Cast 10 05 AUG 1989
LAT: 44 49.1N LONG: 130 18.4W

0	21 TSM
	(ug/l)
1	85.42
2	51.76
3	63.80
4	14.85
5	42.15
6	33.57
7	42.64
8	26.79
9	42.75
10	35.58
11	36.79
12	16.15

D-Theta = (ptemp + (4.85 * pden)) - 135.969
Atten-Anom = Atten - 0.3875

VENTS 1989 - LEG I
 Station X1 Cast 11 07 AUG 1989
 LAT: 45 03.7N LONG: 130 35.3W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	16	1801	1824	2.051	1.929	1.929	34.579	34.579	0.388	0.002		27.630
2	14	1951	1976	1.954	1.820	1.820	34.596	34.596	0.388	0.002		27.652
3	13	2052	2079	1.898	1.757	1.757	34.607	34.607	0.388	0.002		27.665
4	24	2052	2080	1.898	1.757	1.757	34.607	34.607	0.388	0.002		27.665
5	3	2101	2129	1.879	1.734	1.734	34.611	34.610	0.388	0.002		27.670
6	25	2101	2129	1.879	1.734	1.734	34.611	34.613	0.388	0.002		27.669
7	19	2151	2179	1.858	1.709	1.709	34.614	34.608	0.388	0.002		27.674
8	21	2151	2180	1.858	1.709	1.709	34.614	34.614	0.389	0.003		27.674
9	10	2198	2228	1.842	1.689	1.689	34.618	34.618	0.389	0.003		27.678
10	8	2199	2228	1.842	1.689	1.689	34.618	34.618	0.390	0.004		27.678
11	9	2399	2433	1.787	1.617	1.617	34.629	34.629	0.389	0.003		27.691
12	29	2598	2636	1.743	1.555	1.555	34.637	34.637	0.391	0.005		27.701

0	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)	20	NO3-FIL (uM/L)
1	27.630	27.640	27.640	27.640	27.640	27.640	3.199	3.208	180.25	178.89	43.16	42.66						
2	27.652	27.662	27.662	27.662	27.662	27.662	3.160	3.137	182.59	182.84	42.08	42.51						
3	27.665	27.676	27.676	27.676	27.676	27.676	3.137	3.135	184.74	184.76	41.52	41.53						
4	27.665	27.676	27.676	27.676	27.676	27.676	3.141	3.154	184.70	185.18	41.50	41.51						
5	27.669	27.681	27.681	27.681	27.680	27.680	3.094	3.123	180.90	176.08	40.90	40.67						
6	27.671	27.680	27.680	27.680	27.682	27.682	3.144	3.096	185.47	187.33	41.36	40.54						
7	27.669	27.685	27.685	27.685	27.680	27.680	3.092	3.075	184.43	184.22	40.81	40.93						
8	27.674	27.685	27.685	27.685	27.685	27.685	3.080	3.073	183.24	185.33	40.62	40.88						
9	27.678	27.690	27.690	27.690	27.690	27.690	3.095	3.063	184.73	185.21	40.36	40.36						
10	27.678	27.690	27.690	27.690	27.690	27.690	3.073	3.102	185.62	185.41	40.58	40.41						
11	27.691	27.704	27.704	27.704	27.704	27.704	3.056	3.065	185.46	185.48	40.01	40.32						
12	27.701	27.715	27.715	27.715	27.715	27.715	3.007	3.005	185.50	185.98	39.91	39.85						

0 21 TSM (ug/l)

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Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X1 Cast 12 07 AUG 89
 LAT: 45 04.4N LONG: 130 34.4W

0	1	2	3	4	5	6	7	8	9	10	Atten.
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Salinity (1/m)	NO3-UNF (uM/L)	NO3-UNF (uM/L)
1	20	999	1009	3.276	3.205	0.029175	34.394	34.391	0.392	138.51	140.25
2	27	1249	1263	2.770	2.684	0.023131	34.468	34.467	0.390	157.02	157.07
3	24	1500	1545	2.337	2.233	0.017298	34.535	34.533	0.391	172.35	172.13
4	18	1750	1772	2.066	1.948	0.005697	34.577	34.584	0.389	182.79	182.32
5	22	1900	1924	1.955	1.826	-0.000331	34.595	34.596	0.389	185.90	187.09
6	3	1999	2025	1.900	1.763	0.003052	34.606	34.606	0.389	188.54	188.05
7	21	2050	2076	1.876	1.735	0.000948	34.610	34.611	0.389	189.02	188.78
8	1	2100	2128	1.867	1.722	0.004246	34.613	34.611	0.389	191.20	189.75
9	8	2148	2176	1.851	1.702	0.003361	34.616	34.616	0.388	192.17	191.44
10	15	2198	2228	1.838	1.685	0.000154	34.618	34.617	0.388	192.42	192.17
11	12	2411	2443	1.769	1.598	-0.000678	34.632	34.629	0.391	193.14	193.39
12	28	2602	2639	1.731	1.543	-0.008763	34.639	34.639	0.392	194.36	193.63

0	11	12	13	14	15	16	17	18	19	NO3-UNF
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SIO4-UNF (uM/L)	SIO4-FIL (uM/L)	SIO4-FIL (uM/L)	(uM/L)
1	27.376	27.373	27.382	27.380	3.280	3.310	138.51	140.25	140.25	45.54
2	27.481	27.480	27.489	27.488	3.269	3.265	157.02	157.07	157.07	44.98
3	27.572	27.570	27.580	27.579	3.171	3.200	172.35	172.13	172.13	44.17
4	27.628	27.633	27.637	27.643	3.106	3.112	182.79	182.32	182.32	43.41
5	27.651	27.652	27.661	27.662	3.052	3.043	185.90	187.09	187.09	43.18
6	27.664	27.664	27.674	27.674	3.017	3.022	188.54	188.05	188.05	45.55
7	27.669	27.670	27.680	27.681	3.020	3.002	189.02	188.78	188.78	42.06
8	27.672	27.670	27.683	27.682	3.014	3.015	191.20	189.75	189.75	42.53
9	27.676	27.676	27.687	27.687	3.008	3.009	192.17	191.44	191.44	38.83
10	27.678	27.678	27.678	27.689	2.992	3.008	192.42	192.17	192.17	38.20
11	27.695	27.692	27.708	27.705	2.928	2.919	193.14	193.39	193.39	37.78
12	27.703	27.703	27.717	27.717	2.908	2.913	194.36	193.63	193.63	41.20

0	20	NO3-FIL	21	TSM
	(uM/L)	(uM/L)	(uM/L)	(ug/l)
1	45.63			10.38
2	45.45			10.15
3	44.19			10.51
4	43.57			8.32
5	43.33			7.70
6	42.13			9.17
7	42.02			10.26
8	42.10			10.17
9	42.37			7.97
10	38.44			10.19
11	37.86			11.74
12	41.09			19.95

D-Theta = (ptemp + (4.85 * pden)) - 135.981
 Atten-Anom = Atten - 0.388

VENTS 1989 - LEG I
 Station X2 Cast 13 07 AUG 1989
 LAT: 45 00.9N LONG: 130 28.5W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	In situ Temp.	Pottemp Anom.	Temp. (CTD)	Salinity (Bottle)	Salinity (CTD)	Atten. (l/m)	Atten. Anom	(CTD)
1	30	800	808	3.708	3.708	3.650	34.280	34.281	0.391	0.006	0.006	27.243
2	27	1200	1214	2.861	2.861	2.778	34.457	34.456	0.390	0.005	0.005	27.464
3	25	1599	1618	2.242	2.242	2.134	34.552	34.551	0.389	0.004	0.004	27.593
4	2	1929	1954	1.946	1.946	1.814	34.598	34.597	0.388	0.003	0.003	27.654
5	13	1930	1954	1.947	1.947	1.815	34.598	34.597	0.388	0.003	0.003	27.654
6	17	2100	2128	1.867	1.867	1.722	34.613	34.612	0.388	0.003	0.003	27.672
7	6	2100	2128	1.868	1.868	1.723	34.613	34.612	0.388	0.003	0.003	27.672
8	19	2150	2179	1.847	1.847	1.698	34.617	34.616	0.387	0.002	0.002	27.677
9	10	2150	2179	1.847	1.847	1.698	34.617	34.616	0.387	0.002	0.002	27.677
10	29	2200	2230	1.831	1.831	1.678	34.620	34.619	0.387	0.002	0.002	27.680
11	9	2200	2230	1.832	1.832	1.679	34.620	34.614	0.387	0.002	0.002	27.680
12	23	2500	2535	1.725	1.725	1.547	34.638	34.637	0.387	0.002	0.002	27.703

0	12	13	14	15	16	17	18	19	20	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	(uM/L)
1	27.244	27.249	27.471	3.314	3.314	118.20	118.35	44.15	44.68	
2	27.463	27.472	27.601	3.313	3.313	150.30	149.08	45.01	45.27	
3	27.593	27.602	27.663	3.180	3.194	164.45	163.00	44.69	44.69	
4	27.653	27.664	27.663	3.065	3.070	176.63	179.79	43.20	41.84	
5	27.653	27.664	27.663	3.091	3.071	175.15	176.70	43.91	43.46	
6	27.671	27.683	27.682	3.030	3.030	182.60	182.76	41.60	41.74	
7	27.671	27.683	27.682	3.035	3.070	182.27	182.43	41.65	40.69	
8	27.676	27.688	27.687	3.024	3.039	182.92	182.86	42.13	42.00	
9	27.677	27.688	27.688	3.053	3.019	183.25	183.19	42.01	41.95	
10	27.680	27.692	27.691	3.018	3.018	172.81	175.05	41.96	41.90	
11	27.676	27.692	27.687	3.018	3.053	181.27	178.20	41.89	41.83	
12	27.702	27.716	27.715	2.968	2.963	180.08	180.70	41.65	41.65	

0 21 TSM (ug/l) -----

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Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X2 Cast 14 07 AUG 89
 LAT: 45 01.2N LONG: 130 28.6W

0	1	Niskin #	2	Depth (m)	3	Depth (db)	4	Insitu Temp.	5	Pottemp	6	Temp. Anom.	7	Salinity (CTD)	8	Salinity (Bottle)	9	Atten. (1/m)	10	Atten. Anom
1	15			1250		1271		2.743		2.656		0.029254		34.475		34.640		0.389		0.004
2	8			1498		1523		2.379		2.277		0.034465		34.534		34.533		0.389		0.004
3	26			1745		1775		2.080		1.961		-0.006439		34.573		34.574		0.388		0.003
4	13			1897		1929		1.959		1.829		-0.010911		34.593		34.594		0.388		0.003
5	2			1998		2031		1.904		1.767		-0.011436		34.603		34.605		0.388		0.003
6	6			2050		2083		1.883		1.741		-0.007815		34.608		34.609		0.388		0.003
7	16			2100		2135		1.862		1.716		-0.008134		34.612		34.614		0.388		0.003
8	19			2149		2184		1.854		1.704		-0.008009		34.614		34.614		0.387		0.002
9	14			2199		2236		1.842		1.688		-0.006639		34.617		34.618		0.387		0.002
10	9			2399		2439		1.776		1.605		-0.012706		34.629		34.627		0.386		0.001
11	5			2604		2648		1.707		1.519		-0.025568		34.640		34.641		0.388		0.003
12	29			2604		2648		1.709		1.521		-0.028206		34.639		34.641		0.388		0.003

0	11	Sigma-t (CTD)	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)
1	27.489		27.621	27.621		27.497		27.629		2.894		2.895		178.82		178.26		40.30
2	27.568		27.567	27.567		27.576		27.575		3.175		3.180		161.46		161.35		43.91
3	27.623		27.624	27.624		27.633		27.633		3.101		3.101		170.46		171.97		42.71
4	27.649		27.650	27.650		27.659		27.660		3.047		3.047		174.35		174.48		42.38
5	27.661		27.663	27.663		27.672		27.673		2.992		3.036		175.94		176.30		42.27
6	27.667		27.668	27.668		27.678		27.678		3.020		3.011		177.06		177.42		42.45
7	27.672		27.673	27.673		27.683		27.684		2.990		2.996		177.48		178.07		42.27
8	27.674		27.674	27.674		27.685		27.685		2.989		2.990		182.26		178.27		41.43
9	27.677		27.678	27.678		27.689		27.690		2.983		2.989		183.82		183.96		41.97
10	27.692		27.690	27.690		27.705		27.703		2.949		2.949		185.15		185.06		44.07
11	27.706		27.707	27.707		27.720		27.721		2.883		2.884		183.92		184.74		41.29
12	27.705		27.707	27.707		27.719		27.721		2.889		2.861		185.34		185.02		41.54

0	20	NO3-FIL (uM/L)	21	TSM (ug/l)
1	40.19			9.92
2	43.82			11.47
3	42.83			8.43
4	42.66			9.13
5	42.62			8.41
6	42.36			9.04
7	42.25			10.13
8	42.50			7.20
9	44.81			10.43
10	41.77			11.77
11	41.34			
12	41.30			

D-Theta = (ptemp + (4.85 * pden)) - 135.986
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X3 Cast 15 08 AUG 1989
 LAT: 44 59.2N LONG: 130 19.4W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin	Depth	Depth	Depth	Insitu	Pottemp	Temp.	Salinity	Salinity	Atten.	Atten.	(CTD)
	#	(m)	(db)	(db)	Temp.	Anom.	(CTD)	(Bottle)	(1/m)	Anom		(CTD)
1	12	999	1010	3.366	3.295	34.399	34.398	0.390	0.004	0.004	27.371	
2	28	1251	1266	2.842	2.755	34.473	34.472	0.390	0.004	0.004	27.479	
3	24	1499	1517	2.370	2.268	34.535	34.536	0.388	0.002	0.002	27.569	
4	1	1750	1772	2.054	1.936	34.577	34.579	0.389	0.003	0.003	27.629	
5	3	1899	1923	1.919	1.790	34.598	34.441	0.388	0.002	0.002	27.656	
6	23	1999	2025	1.886	1.749	34.606	34.608	0.392	0.006	0.006	27.665	
7	17	2049	2076	1.875	1.734	34.610	34.611	0.393	0.007	0.007	27.669	
8	21	2100	2128	1.865	1.720	34.612	34.611	0.392	0.006	0.006	27.671	
9	25	2150	2179	1.849	1.700	34.616	34.617	0.393	0.007	0.007	27.676	
10	22	2200	2230	1.841	1.688	34.618	34.619	0.392	0.006	0.006	27.678	
11	18	2301	2333	1.832	1.670	34.620	34.621	0.391	0.005	0.005	27.680	
12	27	2380	2414	1.813	1.644	34.624	34.622	0.390	0.004	0.004	27.685	

0	12	13	14	15	16	17	18	19	20	NO3-FIL
	Sigma-t	Sigma-Theta	Sigma-Theta	P04-UNF	P04-UNF	P04-FIL	SIO4-UNF	SIO4-FIL	NO3-UNF	(uM/L)
	(Bottle)	(CTD)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
1	27.370	27.378	27.377	2.954	2.954	2.954	184.45	184.02	39.39	39.91
2	27.478	27.486	27.486	2.959	2.959	2.963	175.29	178.01	40.36	40.68
3	27.570	27.578	27.578	2.968	2.968	2.958	179.83	180.30	40.23	40.11
4	27.630	27.638	27.639	2.963	2.963	2.962	179.87	179.90	40.30	40.18
5	27.530	27.666	27.540	3.001	3.001	3.006	179.92	173.44	41.66	40.68
6	27.667	27.675	27.677	3.015	3.015	3.049	178.84	179.31	40.88	41.00
7	27.670	27.680	27.681	2.995	2.995	3.014	179.34	186.98	40.61	40.17
8	27.671	27.683	27.682	2.941	2.941	2.940	153.84	153.19	39.53	39.54
9	27.677	27.687	27.688	3.102	3.102	3.106	173.38	173.63	41.02	41.17
10	27.679	27.690	27.691	3.185	3.185	3.189	164.47	164.50	42.79	42.38
11	27.681	27.693	27.694	3.302	3.302	3.282	150.64	151.34	42.89	42.77
12	27.683	27.698	27.696	3.287	3.287	3.306	133.69	129.47	43.03	43.42

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Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station XT-7 Cast 16 08 AUG 1989
 LAT: 44 58.6N LONG: 130 08.0W

0	1	2	3	4	5	6	7	8	9	10	Atten.
	Niskin #	Depth (m)	Depth (db)	In situ Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	17	2017	2043	1.918	1.779	-0.939507	34.613	34.613	34.613	0.454	0.068
2	14	2017	2044	1.889	1.751	-0.961443	34.612	34.611	34.611	0.418	0.032
3	23	2055	2083	1.901	1.759	-0.952160	34.613	34.613	34.613	0.426	0.040
4	18	2055	2093	1.903	1.760	-0.943687	34.615	34.615	34.615	0.427	0.041
5	21	2068	2095	1.919	1.776	-0.941669	34.613	34.613	34.613	0.451	0.065
6	1	2070	2097	1.889	1.746	-0.960404	34.613	34.613	34.613	0.413	0.027
7	24	2094	2122	1.889	1.744	-0.961721	34.613	34.614	34.614	0.409	0.023
8	12	2097	2125	1.906	1.761	-0.947423	34.614	34.614	34.614	0.431	0.045
9	22	2111	2139	1.887	1.741	-0.963884	34.613	34.613	34.613	0.405	0.019
10	19	2151	2180	1.865	1.715	-0.979818	34.613	34.614	34.614	0.392	0.006
11	27	2201	2231	1.845	1.691	-0.975611	34.618	34.619	34.619	0.392	0.006
12	3	2216	2246	1.826	1.671	-0.980543	34.620	34.621	34.621	0.393	0.007

0	11	12	13	14	15	16	17	18	19	
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNE (uM/L)	PO4-FIL (uM/L)	SiO4-UNE (uM/L)	SiO4-FIL (uM/L)	NO3-UNE (uM/L)
1	27.668	27.668	27.668	27.679	27.679	2.949	2.967	185.72	185.62	41.91
2	27.670	27.669	27.669	27.670	27.679	2.978	2.982	182.01	181.69	42.49
3	27.669	27.669	27.669	27.680	27.680	2.978	2.976	185.24	185.15	41.71
4	27.671	27.671	27.671	27.682	27.682	2.904	2.907	178.28	181.07	42.04
5	27.668	27.668	27.668	27.679	27.679	2.931	2.914	185.52	184.98	41.85
6	27.670	27.670	27.670	27.681	27.681	2.986	2.979	184.08	183.98	41.20
7	27.670	27.671	27.671	27.681	27.682	2.980	2.983	184.27	185.07	42.98
8	27.670	27.670	27.670	27.681	27.681	2.883	2.881	183.99	183.23	41.09
9	27.671	27.671	27.671	27.682	27.682	2.942	2.940	180.03	176.38	41.98
10	27.672	27.673	27.673	27.684	27.684	2.929	2.927	181.54	180.10	41.29
11	27.678	27.679	27.679	27.689	27.689	2.949	2.932	180.08	182.20	42.43
12	27.681	27.682	27.682	27.693	27.693	2.957	2.975	184.11	184.45	40.70

D-Theta = (ptemp + (4.85 * pden)) - 136.961
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station XT-7 Cast 16 08 AUG 1989
 LAT: 44 58.6N LONG: 130 08.0W

0	20	NO3-FIL (uM/L)	21	TSM (ug/l)
1	41.84		57.29	
2	42.56		46.73	
3	41.90		40.13	
4	41.98		58.16	
5	41.72		47.07	
6	44.15		24.75	
7	41.87		31.48	
8	41.16		42.43	
9	42.55		26.15	
10	42.43		13.92	
11	41.23		17.10	
12	41.13		14.61	

D-Theta = (ptemp + (4.85 * pden)) - 136.961
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X3 Cast 18 09 AUG 89
 LAT: 44 59.3N LONG: 130 20.4W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Potttemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	27	1003	1014	3.287	3.216	0.083599	34.404	34.405	0.389	0.003
2	22	1249	1264	2.792	2.706	0.080465	34.477	34.477	0.388	0.002
3	21	1503	1522	2.410	2.307	0.060108	34.532	34.533	0.388	0.002
4	9	1753	1777	2.080	1.961	0.012338	34.574	34.576	0.385	-0.001
5	8	1902	1926	1.968	1.838	0.005916	34.592	34.593	0.389	0.003
6	17	2003	2030	1.910	1.773	0.011238	34.604	34.605	0.385	-0.001
7	6	2052	2079	1.889	1.748	0.011126	34.608	34.609	0.389	0.003
8	5	2101	2130	1.872	1.727	0.013349	34.612	34.611	0.388	0.002
9	14	2154	2182	1.859	1.709	0.010236	34.614	34.614	0.388	0.002
10	3	2197	2228	1.845	1.692	0.010640	34.617	34.618	0.388	0.002
11	23	2303	2338	1.820	1.658	0.012258	34.623	34.624	0.389	0.003
12	1	2400	2435	1.796	1.625	0.007299	34.627	34.629	0.387	0.001

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.383	27.384	27.389	27.390	3.358	3.367	135.59	135.60	42.26
2	27.486	27.486	27.494	27.494	3.317	3.306	152.96	152.98	45.37
3	27.563	27.564	27.572	27.573	3.236	3.230	164.11	164.12	44.70
4	27.624	27.626	27.633	27.635	3.126	3.124	173.25	174.60	42.87
5	27.647	27.648	27.657	27.658	3.089	3.098	175.50	178.18	42.26
6	27.662	27.662	27.672	27.673	3.077	3.076	179.97	179.76	42.26
7	27.666	27.667	27.677	27.678	3.065	3.069	180.43	180.00	42.32
8	27.671	27.670	27.682	27.681	3.018	3.017	180.01	180.24	42.20
9	27.673	27.673	27.685	27.685	3.016	3.050	180.26	180.49	41.89
10	27.677	27.678	27.689	27.689	3.049	3.028	182.06	182.07	42.14
11	27.684	27.685	27.696	27.697	3.022	3.016	183.64	182.98	41.83
12	27.689	27.690	27.702	27.703	2.970	2.999	182.99	182.11	41.59

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1	45.12	14.43
2	45.37	12.54
3	44.34	15.40
4	43.24	10.18
5	42.81	12.30
6	42.26	11.14
7	42.63	21.62
8	42.14	13.10
9	41.89	14.45
10	42.63	12.19
11	41.77	13.07
12	41.59	11.28

D-Theta = (ptemp + (4.85 * pden)) - 135.971
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X3 Cast 17 09 AUG 1989
 LAT: 44 58.7N LONG: 130 20.3W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t (CTD)
1	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	20	NO3-FIL (uM/L)
1	5	1948	1974	1.939	1.806	1.806	34.599	34.599	0.388	0.0015	11	27.655
2	28	2005	2031	1.904	1.767	1.767	34.603	34.603	0.390	0.0035	10	27.661
3	16	2033	2060	1.897	1.757	1.757	34.605	34.605	0.393	0.0065	9	27.663
4	13	2102	2130	1.868	1.723	1.723	34.612	34.612	0.392	0.0055	8	27.671
5	26	2131	2160	1.859	1.711	1.711	34.614	34.614	0.392	0.0055	7	27.673
6	10	2204	2234	1.839	1.685	1.685	34.618	34.618	0.390	0.0035	6	27.678
7	25	2242	2273	1.836	1.679	1.679	34.620	34.620	0.393	0.0065	5	27.680
8	8	2242	2273	1.836	1.679	1.679	34.620	34.620	0.393	0.0065	4	27.680
9	9	2242	2273	1.836	1.679	1.679	34.620	34.620	0.393	0.0065	3	27.680
10	20	2242	2273	1.836	1.679	1.679	34.620	34.620	0.393	0.0065	2	27.680
11	15	2242	2273	1.836	1.679	1.679	34.620	34.620	0.393	0.0065	1	27.680
12	31	2456	2491	1.775	1.600	1.600	34.631	34.629	0.392	0.0055	0	27.694

0	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)	20	NO3-FIL (uM/L)
1	27.655	27.666	27.666	27.666	27.666	27.666	3.054	3.058	178.36	178.67	42.54	42.53						
2	27.661	27.672	27.672	27.672	27.672	27.672	3.017	3.016	178.86	178.72	42.06	42.48						
3	27.663	27.674	27.674	27.674	27.674	27.674	3.004	3.018	178.91	179.00	41.34	42.01						
4	27.671	27.682	27.682	27.682	27.682	27.682	3.020	2.981	180.08	180.39	42.40	42.45						
5	27.673	27.685	27.685	27.685	27.685	27.685	3.003	3.016	181.91	180.88	42.47	42.47						
6	27.678	27.690	27.690	27.690	27.690	27.690	3.004	2.984	181.96	182.05	41.94	41.93						
7	27.674	27.692	27.692	27.692	27.692	27.692	3.018	2.992	179.32	180.74	41.46	41.82						
8	27.680	27.692	27.692	27.692	27.692	27.692	3.026	3.030	184.84	184.93	40.95	41.31						
9	27.681	27.692	27.692	27.692	27.692	27.692	3.039	3.013	179.66	181.76	42.04	42.03						
10	27.674	27.692	27.692	27.692	27.692	27.692	3.022	3.026	181.84	179.92	41.78	41.96						
11	27.664	27.692	27.692	27.692	27.692	27.692	3.006	3.005	178.00	177.86	41.95	41.33						
12	27.692	27.707	27.707	27.707	27.705	27.705	2.985	2.989	179.15	178.56	41.47	41.10						

0 21 TSM (ug/l)

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Atten-Anom = Atten - 0.3865

VENTS 1989 - LEG I
 Station X5 Cast 19 10 AUG 1989
 LAT: 44 55.2N LONG: 130 05.2W

0	1	Niskin #	Depth (m)	Depth (db)	4	Insitu Temp.	5	Pottemp	6	Temp. Anom.	7	Salinity (CTD)	8	Salinity (Bottle)	9	Atten. (1/m)	10	Atten. Anom	11	Sigma-t (CTD)
1		2	1501	1519		2.446		2.343				34.530		34.527		0.386		0.0005		27.559
2		26	1999	2025		1.877		1.740				34.605		34.606		0.385		-0.0005		27.665
3		16	2047	2074		1.850		1.710				34.611		34.610		0.385		-0.0005		27.672
4		13	2048	2075		1.850		1.710				34.615		34.612		0.385		-0.0005		27.672
5		31	2099	2127		1.834		1.689				34.615		34.614		0.386		0.0005		27.676
6		10	2100	2128		1.834		1.689				34.615		34.615		0.385		0.0005		27.676
7		30	2100	2128		1.835		1.690				34.615		34.612		0.385		-0.0005		27.676
8		25	2149	2178		1.818		1.669				34.619		34.616		0.386		0.0005		27.681
9		19	2150	2179		1.818		1.669				34.619		34.619		0.386		0.0005		27.681
10		24	2203	2233		1.815		1.662				34.621		34.622		0.387		0.0015		27.682
11		12	2203	2233		1.815		1.662				34.621		34.619		0.387		0.0015		27.682
12		28	2398	2432		1.795		1.625				34.628		34.627		0.389		0.0035		27.690

0	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)	20	NO3-FIL (uM/L)
1		27.556		27.567		27.565		3.280		3.238		164.28		164.82		43.06		42.93
2		27.666		27.675		27.676		3.096		3.071		180.27		179.56		41.34		41.78
3		27.671		27.682		27.682		3.087		3.083		181.09		180.15		41.27		41.26
4		27.673		27.682		27.683		3.061		3.054		181.84		181.70		41.19		41.18
5		27.675		27.687		27.686		3.053		3.054		178.98		178.71		41.02		40.88
6		27.676		27.687		27.687		3.051		3.049		181.33		182.10		41.28		41.34
7		27.674		27.687		27.685		3.066		3.066		179.14		179.54		40.79		40.79
8		27.678		27.692		27.690		3.075		3.050		182.68		177.30		40.94		41.24
9		27.681		27.692		27.692		3.046		3.092		179.48		180.78		40.80		41.17
10		27.683		27.694		27.695		3.092		3.073		186.74		185.58		41.03		41.15
11		27.681		27.694		27.692		3.017		3.035		183.76		182.72		41.58		41.20
12		27.689		27.702		27.702		2.988		2.981		186.64		187.17		40.50		40.93

0 21 TSM (ug/l)

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Atten-Anom = Atten - 0.3855

VENTIS 1989 - LEG I
 Station X5 Cast 20 10 AUG 89
 LAT: 44 55.5N LONG: 130 05.4W

0	1	2	3	4	5	6	7	8	9	10	Atten.
	Niskin #	Depth (m)	Depth (db)	Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Salinity (l/m)	Anom.	Anom.
1	23	999	1010	3.313	3.242	0.153343	34.415	34.414	0.388	0.002	0.002
2	28	1252	1266	2.818	2.731	0.131424	34.483	34.482	0.387	0.001	0.001
3	8	1498	1516	2.374	2.272	0.059839	34.534	34.533	0.387	0.001	0.001
4	25	1750	1771	2.052	1.934	0.008523	34.574	34.570	0.385	-0.001	-0.001
5	5	1899	1923	1.937	1.808	0.007692	34.594	34.595	0.386	0.000	0.000
6	24	1999	2025	1.887	1.750	0.010190	34.604	34.603	0.385	-0.001	-0.001
7	14	2049	2076	1.861	1.720	0.014648	34.610	34.608	0.386	0.000	0.000
8	3	2101	2128	1.840	1.695	0.014288	34.614	34.614	0.386	0.000	0.000
9	1	2149	2178	1.825	1.676	0.013883	34.617	34.617	0.386	0.000	0.000
10	17	2200	2230	1.814	1.661	0.019704	34.621	34.612	0.388	0.002	0.002
11	15	2299	2331	1.805	1.643	0.020161	34.624	34.609	0.389	0.003	0.003
12	30	2399	2432	1.791	1.621	0.025136	34.629	34.629	0.388	0.002	0.002

0	11	12	13	14	15	16	17	18	19	20	21
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	P04-UNF (uM/L)	P04-FIL (uM/L)	S104-UNF (uM/L)	S104-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.389	27.388	27.396	27.396	27.395	3.269	3.230	133.56	131.34	43.83	43.83
2	27.489	27.488	27.497	27.497	27.496	3.187	3.201	152.55	151.67	45.13	45.13
3	27.568	27.567	27.576	27.576	27.576	3.129	3.128	165.66	166.81	44.61	44.61
4	27.626	27.623	27.636	27.636	27.632	3.033	3.032	175.39	176.09	43.13	43.13
5	27.651	27.652	27.661	27.661	27.662	2.989	3.022	180.17	179.96	42.97	42.97
6	27.663	27.663	27.674	27.674	27.673	3.007	2.997	180.44	183.83	42.81	42.81
7	27.670	27.669	27.681	27.681	27.679	2.982	3.024	182.06	182.30	42.44	42.44
8	27.675	27.675	27.686	27.686	27.686	3.033	3.033	182.77	182.57	42.97	42.97
9	27.679	27.679	27.690	27.690	27.690	2.994	3.003	182.82	183.52	42.94	42.94
10	27.683	27.675	27.694	27.694	27.687	2.983	2.945	184.66	183.11	42.92	42.92
11	27.686	27.674	27.698	27.698	27.686	2.944	2.939	182.23	182.26	42.90	42.90
12	27.691	27.691	27.704	27.704	27.704	2.929	2.924	186.77	186.34	42.94	42.94

0	20	NO3-FIL (uM/L)	21	TSM (ug/l)
1	45.22	10.44		
2	45.19	19.47		
3	44.47	13.67		
4	43.20	13.58		
5	42.54	11.71		
6	42.51	9.29		
7	42.77	13.43		
8	42.96	10.23		
9	42.92	8.83		
10	42.92	12.17		
11	42.89	13.81		
12	42.94	12.39		

D-Theta = (ptemp + (4.85 * pden)) - 135.958
 Atten-Anom = Atten - 0.386

VENIS 1989 - LEG I
 Station X7 Cast 21 10 AUG 89
 LAT: 44 51.2N LONG: 129 51.5W

0	1	2	3	4	5	6	7	8	9	10	Atten.	
	Niskin #	Depth (m)	Depth (db)	In situ Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Salinity (l/m)	NO3-UNF (uM/L)	NO3-UNF (uM/L)	Anom
1	13	1899	1925	1.941	1.812	0.001933	34.595	34.595	0.386	179.94	179.94	0.001
2	29	1993	2020	1.888	1.752	0.002993	34.605	34.605	0.385	182.28	182.28	0.000
3	12	2050	2077	1.867	1.726	0.002407	34.609	34.609	0.386	182.67	182.67	0.001
4	19	2050	2077	1.867	1.726	0.002407	34.609	34.610	0.385	183.04	183.04	0.000
5	13	2097	2125	1.849	1.704	0.004162	34.613	34.613	0.385	183.21	183.21	0.000
6	16	2098	2126	1.849	1.704	0.002224	34.612	34.615	0.385	182.84	182.84	0.000
7	2	2148	2178	1.819	1.670	0.002010	34.618	34.618	0.386	176.70	176.70	0.001
8	26	2149	2178	1.819	1.670	0.002005	34.618	34.618	0.384	184.96	184.96	0.001
9	21	2199	2230	1.809	1.656	0.004587	34.621	34.621	0.387	183.14	183.14	0.002
10	9	2199	2229	1.809	1.656	0.000718	34.620	34.621	0.384	181.83	181.83	-0.001
11	18	2300	2332	1.788	1.627	0.012968	34.628	34.627	0.385	182.20	182.20	0.000
12	27	2407	2442	1.775	1.604	0.014149	34.632	34.631	0.386	185.30	185.30	0.001

0	11	12	13	14	15	16	17	18	19	20	21
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-UNF (uM/L)	SI04-FIL (uM/L)	SI04-UNF (uM/L)	SI04-FIL (uM/L)	NO3-UNF (uM/L)	TSM (ug/l)
1	27.652	27.652	27.662	27.662	3.023	3.022	177.64	177.64	179.94	41.32	9.60
2	27.664	27.664	27.674	27.674	2.974	2.973	177.73	177.73	182.28	42.18	10.36
3	27.669	27.669	27.680	27.680	2.976	2.970	180.15	180.15	182.67	42.17	8.85
4	27.669	27.670	27.680	27.680	2.972	2.976	182.54	182.54	183.04	41.97	9.46
5	27.673	27.673	27.684	27.684	2.960	2.964	182.49	182.49	183.21	42.16	10.13
6	27.673	27.675	27.684	27.684	2.958	2.943	181.00	181.00	182.84	42.23	9.77
7	27.680	27.680	27.691	27.691	2.964	2.925	186.80	186.80	176.70	42.21	8.70
8	27.680	27.680	27.691	27.691	2.942	2.941	184.01	184.01	184.96	42.15	11.45
9	27.683	27.683	27.695	27.695	2.918	2.917	183.14	183.14	181.83	42.14	
10	27.682	27.683	27.694	27.695	2.939	2.938	176.29	176.29	182.20	42.76	
11	27.690	27.689	27.702	27.702	2.917	2.911	185.48	185.48	185.30	42.20	
12	27.694	27.694	27.707	27.706	2.901	2.909	187.37	187.37	187.63	41.92	

0 20 NO3-FIL 21 TSM (uM/L) (ug/l)

1	41.91	9.60
2	42.04	10.36
3	42.03	8.85
4	42.10	9.46
5	42.02	10.13
6	42.16	9.77
7	42.69	8.70
8	42.42	11.45
9	42.27	
10	42.69	
11	42.06	
12	41.92	

D-Theta = (ptemp + (4.85 * pden)) - 135.97
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station XT-8 Cast 22 10 AUG 1989
 LAT: 44 47.5N LONG: 130 19.2W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	In situ Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (l/m)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)
1	5	2036	2063	1.901	1.761	0.043785	34.614	34.615	0.416	0.0295	181.41	39.73
2	28	2042	2068	1.887	1.747	0.019223	34.610	34.613	0.399	0.0125	180.19	40.28
3	25	2053	2080	1.896	1.754	0.035860	34.613	34.612	0.419	0.0325	181.81	40.01
4	17	2079	2107	1.897	1.753	0.035057	34.613	34.614	0.415	0.0285	185.10	38.58
5	15	2080	2107	1.898	1.754	0.039534	34.614	34.572	0.414	0.0275	172.33	38.69
6	14	2080	2108	1.905	1.761	0.043872	34.614	34.614	0.418	0.0315	183.68	38.66
7	3	2081	2108	1.903	1.759	0.038721	34.613	34.614	0.419	0.0325	182.19	38.17
8	30	2084	2112	1.895	1.751	0.033541	34.613	34.613	0.416	0.0295	179.97	38.19
9	1	2085	2112	1.903	1.759	0.042373	34.614	34.614	0.420	0.0335	180.49	38.29
10	23	2089	2117	1.898	1.753	0.035143	34.613	34.613	0.412	0.0255	182.34	38.16
11	24	2182	2212	1.905	1.752	0.038245	34.614	34.613	0.407	0.0205	180.37	39.95
12	8	2188	2217	1.889	1.736	0.028015	34.614	34.615	0.402	0.0155	181.77	38.59
												40.01

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.671	27.681	27.682	2.949	2.950	184.01	181.41	39.61	39.73
2	27.671	27.679	27.681	2.999	2.991	181.70	180.19	40.02	40.28
3	27.669	27.681	27.680	2.956	2.948	180.69	181.81	39.88	40.01
4	27.671	27.681	27.682	2.977	2.983	179.86	185.10	38.47	38.58
5	27.637	27.682	27.648	2.975	2.976	173.60	172.33	38.57	38.69
6	27.670	27.681	27.681	2.964	2.932	182.13	183.68	38.55	38.66
7	27.670	27.680	27.681	2.962	2.968	181.08	182.19	38.17	38.17
8	27.670	27.681	27.681	2.939	2.935	179.73	179.97	38.19	38.19
9	27.670	27.681	27.681	2.936	2.942	181.99	180.49	38.16	38.29
10	27.670	27.681	27.681	2.987	2.988	179.91	182.34	39.14	38.29
11	27.669	27.682	27.681	2.971	2.977	181.65	180.37	39.14	38.59
12	27.672	27.683	27.684	2.997	2.964	181.74	181.77	40.40	40.01

D-Theta = (ptemp + (4.85 * pden)) - 135.97
 Atten-Anom = Atten - 0.3865

VENTS 1989 - LEG I
Station XT-8 Cast 22 10 AUG 1989
LAT: 44 47.5N LONG: 130 19.2W

0	21 TSM (ug/l)
1	45.77
2	30.71
3	50.49
4	31.77
5	39.66
6	45.06
7	36.55
8	50.60
9	41.47
10	50.40
11	35.55
12	20.35

D-Theta = (ptemp + (4.85 * pden)) - 135.97
Atten-Anom = Atten - 0.3865

VENTS 1989 - LEG I
 Station X9 Cast 23 11 AUG 1989
 LAT: 44 39.2N LONG: 130 22.7W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.
1	10	1749	1770	2.071	1.953	0.012063	34.575	34.577	0.387	0.002
2	27	1850	1874	1.960	1.835	0.000779	34.591	34.594	0.386	0.001
3	16	1951	1977	1.902	1.769	0.013950	34.605	34.605	0.395	0.010
4	2	2002	2029	1.900	1.763	0.029417	34.610	34.611	0.413	0.028
5	21	2028	2054	1.901	1.762	0.044235	34.614	34.614	0.413	0.028
6	18	2052	2079	1.902	1.761	0.043556	34.614	34.613	0.414	0.029
7	20	2071	2098	1.901	1.758	0.041879	34.614	34.611	0.414	0.029
8	19	2101	2129	1.902	1.756	0.036974	34.613	34.614	0.413	0.028
9	9	2125	2153	1.900	1.752	0.034424	34.613	34.614	0.414	0.029
10	13	2151	2179	1.901	1.751	0.033639	34.613	34.614	0.415	0.030
11	6	2174	2203	1.903	1.751	0.037460	34.614	34.614	0.417	0.032
12	26	2199	2229	1.902	1.748	0.035442	34.614	34.611	0.409	0.024

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.626	27.627	27.635	27.637	3.068	3.079	173.27	173.56	43.91
2	27.647	27.650	27.657	27.659	3.040	3.045	177.93	178.65	43.97
3	27.663	27.663	27.673	27.673	3.021	3.031	180.88	180.96	43.33
4	27.667	27.668	27.678	27.678	2.997	2.998	181.46	181.76	42.37
5	27.670	27.670	27.681	27.681	2.993	2.989	182.48	182.34	41.60
6	27.670	27.669	27.681	27.680	2.989	3.024	181.77	183.57	43.71
7	27.670	27.668	27.681	27.679	2.990	2.990	182.36	183.73	41.78
8	27.669	27.670	27.681	27.681	2.956	2.976	182.08	182.16	41.71
9	27.670	27.670	27.681	27.682	2.943	2.948	183.10	182.96	41.70
10	27.669	27.670	27.681	27.681	2.987	2.997	182.39	183.98	41.95
11	27.670	27.670	27.682	27.682	2.983	3.003	182.55	183.06	42.02
12	27.670	27.668	27.682	27.680	2.955	2.950	182.05	180.61	41.30

D-Theta = (ptemp + (4.85 * pden)) - 135.97
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X9 Cast 23 11 AUG 1989
 LAT: 44 39.2N LONG: 130 22.7W

0	20	NO3-FIL	21	TSM
	(uM/L)			(ug/l)
1	44.00			8.66
2	44.00			8.44
3	42.85			16.88
4	42.02			57.36
5	41.57			46.08
6	41.69			44.29
7	41.68			44.32
8	41.68			44.20
9	41.79			43.20
10	41.79			43.00
11	41.46			41.93
12	41.07			35.00

D-Theta = (ptemp + (4.85 * pden)) - 135.97
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X9 Cast 24 11 AUG 1989
 LAT: 44 39.1N LONG: 130 22.6W

0	1	2	3	4	5	6	7	8	9	10	11	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.	10	11	(CTD)
1	30	1893	1917	1.929	1.929	1.801	34.598	34.597	0.388	0.001	0.001	0.001	27.655
2	24	1946	1971	1.906	1.906	1.774	34.603	34.504	0.393	0.006	0.006	0.006	27.661
3	25	2026	2053	1.904	1.904	1.765	34.613	34.612	0.427	0.040	0.040	0.040	27.669
4	28	2026	2053	1.904	1.904	1.765	34.613	34.614	0.427	0.040	0.040	0.040	27.669
5	8	2026	2053	1.904	1.904	1.765	34.613	34.611	0.427	0.040	0.040	0.040	27.669
6	5	2026	2053	1.904	1.904	1.765	34.613	34.612	0.427	0.040	0.040	0.040	27.669
7	17	2176	2206	1.906	1.906	1.754	34.613	34.613	0.416	0.029	0.029	0.029	27.669
8	23	2177	2206	1.906	1.906	1.754	34.613	34.614	0.419	0.032	0.032	0.032	27.669
9	15	2197	2226	1.908	1.908	1.754	34.613	34.611	0.417	0.030	0.030	0.030	27.669
10	29	2197	2226	1.908	1.908	1.754	34.613	34.614	0.417	0.030	0.030	0.030	27.669

0	12	13	14	15	16	17	18	19	20	20	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	Sigma-Theta (Bottle)	P04-UNF (uM/L)	P04-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	(uM/L)
1	27.654	27.665	27.664	27.664	3.114	3.108	177.82	178.68	39.43	39.43	41.02
2	27.582	27.671	27.592	27.592	2.946	2.954	165.33	165.09	40.23	40.23	40.48
3	27.668	27.680	27.679	27.679	3.007	2.997	180.71	180.91	44.56	44.56	44.64
4	27.670	27.680	27.681	27.681	3.019	3.004	182.49	180.95	43.87	43.87	44.04
5	27.668	27.680	27.678	27.678	3.040	3.020	181.22	181.20	43.01	43.01	43.79
6	27.668	27.680	27.679	27.679	3.029	3.032	183.00	183.42	41.88	41.88	42.49
7	27.669	27.681	27.681	27.681	2.993	3.010	181.08	181.93	45.32	45.32	45.49
8	27.670	27.681	27.682	27.682	2.995	3.022	182.42	180.22	44.72	44.72	44.89
9	27.667	27.681	27.679	27.679	2.993	2.987	179.27	180.34	46.26	46.26	46.34
10	27.670	27.681	27.682	27.682	3.004	2.998	183.22	180.37	45.75	45.75	46.27

0 21 TSM (ug/l)

1	
2	
3	
4	
5	
6	42.94
7	
8	
9	40.55
10	

D-Theta = (ptemp + (4.85 * pden)) - 135.97
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X6 Cast 25 12 AUG 89
 LAT: 44 53.2N LONG: 129 58.3W

0	1	2	3	4	5	6	7	8	9	10
	Miskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	9	1494	1513	2.385	2.283	0.059843	34.531	34.533	0.535	0.149
2	6	1750	1772	2.065	1.947	0.029195	34.576	34.575	1.371	0.985
3	13	2000	2026	1.869	1.732	0.007817	34.605	34.606	0.385	-0.001
4	3	2049	2078	1.847	1.706	0.010799	34.610	34.610	0.387	0.001
5	1	2049	2077	1.847	1.706	0.010815	34.610	34.608	0.387	0.001
6	16	2102	2131	1.835	1.690	0.012118	34.613	34.613	0.385	-0.001
7	19	2103	2131	1.835	1.690	0.012113	34.613	34.613	0.385	-0.001
8	26	2149	2178	1.824	1.675	0.014342	34.616	34.616	0.385	-0.001
9	23	2150	2178	1.824	1.675	0.010460	34.615	34.612	0.387	0.001
10	14	2200	2231	1.809	1.656	0.009841	34.618	34.619	0.386	0.000
11	17	2201	2232	1.809	1.656	0.009841	34.618	34.619	0.386	-0.001
12	27	2406	2440	1.784	1.613	0.021357	34.628	34.625	0.388	0.002

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.565	27.566	27.573	27.575	3.182	3.181	163.84	162.88	42.56
2	27.627	27.626	27.636	27.635	3.103	3.102	173.19	172.02	42.75
3	27.665	27.666	27.676	27.677	3.013	3.017	176.23	176.58	41.67
4	27.671	27.671	27.682	27.682	3.019	3.018	176.34	176.47	40.93
5	27.671	27.670	27.682	27.680	3.021	3.005	176.30	176.43	41.27
6	27.675	27.675	27.686	27.686	3.041	3.060	182.46	176.73	41.13
7	27.675	27.675	27.686	27.686	3.059	3.024	178.60	179.60	40.78
8	27.678	27.678	27.689	27.689	3.016	3.001	177.16	177.29	40.40
9	27.677	27.675	27.688	27.686	3.013	3.017	178.58	176.81	40.56
10	27.681	27.681	27.692	27.693	3.022	2.958	180.73	180.86	40.35
11	27.681	27.681	27.692	27.693	3.004	3.018	178.29	179.72	40.17
12	27.690	27.688	27.703	27.701	2.971	2.961	180.99	182.42	40.18

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1	43.44	10.17
2	42.43	9.86
3	41.76	9.75
4	41.01	11.23
5	40.87	
6	41.27	
7	40.84	10.07
8	40.26	11.96
9	40.48	
10	40.12	11.73
11	40.58	
12	40.23	12.23

D-Theta = (ptemp + (4.85 * pden)) - 135.953
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X8 Cast 26 12 AUG 1989
 LAT: 44 51.7N LONG: 130 16.7W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	22	1894	1918	1.919	1.791	0.017093	34.600	34.601	0.404	0.0165
2	28	1941	1966	1.925	1.793	0.068883	34.613	34.613	0.478	0.0905
3	12	1942	1967	1.925	1.792	0.076569	34.615	34.610	0.480	0.0925
4	1	1988	2014	1.931	1.795	0.081756	34.616	34.613	0.487	0.0995
5	31	1988	2014	1.931	1.794	0.073961	34.614	34.612	0.490	0.1025
6	25	1988	2014	1.931	1.794	0.073955	34.614	34.614	0.486	0.0985
7	24	1988	2014	1.931	1.794	0.077832	34.615	34.615	0.492	0.1045
8	16	1988	2014	1.931	1.794	0.077827	34.615	34.615	0.490	0.1025
9	8	2051	2078	1.930	1.788	0.073834	34.615	34.614	0.479	0.0915
10	23	2051	2078	1.930	1.788	0.069936	34.614	34.615	0.481	0.0935
11	17	2100	2128	1.923	1.777	0.066819	34.615	34.614	0.459	0.0715
12	30	2203	2233	1.914	1.759	0.055584	34.615	34.613	0.427	0.0395

0	11	12	13	14	15	16	17	18	19	
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	P04-UNF (uM/L)	P04-FIL (uM/L)	S104-UNF (uM/L)	S104-FIL (uM/L)	NO3-UNF (uM/L)
1	27.658	27.658	27.668	27.668	27.668	2.999	2.979	181.17	179.85	39.52
2	27.668	27.668	27.678	27.678	27.678	2.939	2.904	182.05	182.05	40.27
3	27.669	27.665	27.679	27.679	27.675	2.922	2.935	184.25	183.59	40.38
4	27.669	27.667	27.680	27.680	27.678	2.886	2.890	182.05	181.83	40.22
5	27.668	27.666	27.678	27.678	27.677	2.874	2.883	183.35	182.91	40.37
6	27.668	27.668	27.678	27.678	27.678	2.903	2.892	183.14	183.14	39.83
7	27.669	27.669	27.679	27.679	27.679	2.944	2.928	185.79	185.56	40.49
8	27.669	27.669	27.679	27.679	27.679	2.896	2.919	183.14	183.14	39.95
9	27.669	27.668	27.680	27.680	27.679	2.833	2.832	183.78	183.34	39.86
10	27.668	27.669	27.679	27.679	27.680	2.903	2.873	183.34	185.74	40.09
11	27.669	27.669	27.681	27.681	27.680	2.898	2.911	182.03	183.99	40.20
12	27.670	27.668	27.682	27.682	27.680	2.915	2.918	183.33	179.62	40.31

D-Theta = (ptemp + (4.85 * pden)) - 135.961
 Atten-Anom = Atten - 0.3875

VENTS 1989 - LEG I
Station X8 Cast 26 12 AUG 1989
LAT: 44 51.7N LONG: 130 16.7W

0	20	NO3-FIL	21	TSM
		(uM/L)		(ug/l)
1		40.41		
2		40.36		
3		40.47		
4		39.82		
5		39.98		
6		39.93		
7		42.03		
8		40.12		
9		39.89		
10		40.10		
11		40.55		
12		40.40		

D-Theta = (ptemp + (4.85 * pden)) - 135.961
Atten-Anom = Atten - 0.3875

VENTS 1989 - LEG I
 Station XT-10 Cast 29 13 AUG 89
 LAT: 44 54.4N LONG: 130 10.8W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	26	1776	1798	1.988	1.869	0.002870	34.583	34.583	0.385	-0.001
2	12	1883	1904	1.909	1.782	0.016734	34.602	34.603	0.408	0.022
3	21	1909	1937	1.920	1.790	0.051500	34.610	34.607	0.457	0.071
4	1	1970	1997	1.929	1.794	0.065028	34.613	34.613	0.484	0.098
5	2	2004	2035	1.931	1.793	0.064241	34.613	34.615	0.484	0.098
6	16	2038	2065	1.932	1.791	0.063275	34.613	34.613	0.481	0.095
7	18	2085	2112	1.928	1.783	0.058101	34.613	34.616	0.465	0.079
8	13	2131	2157	1.915	1.767	0.043605	34.612	34.614	0.437	0.051
9	3	2197	2226	1.913	1.759	0.038484	34.612	34.611	0.422	0.036
10	23	2243	2274	1.912	1.754	0.035156	34.612	34.611	0.413	0.027

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.639	27.639	27.648	27.648	3.121	3.112	175.040	175.190	41.050
2	27.660	27.661	27.670	27.671	3.073	3.070	181.283	179.653	40.863
3	27.666	27.663	27.676	27.673					
4	27.667	27.667	27.678	27.678	3.039	3.026	183.960	184.180	40.150
5	27.667	27.669	27.678	27.679	3.008	3.002	183.283	185.000	39.910
6	27.667	27.667	27.678	27.678	3.004	3.005	183.537	183.687	39.620
7	27.667	27.670	27.679	27.681	3.007	3.005	183.217	182.800	39.647
8	27.668	27.669	27.679	27.681	3.033	3.022	182.263	182.980	39.700
9	27.668	27.667	27.680	27.679	3.027	3.035	182.020	181.460	38.800
10	27.668	27.667	27.680	27.679	3.022	3.020	181.207	181.090	39.583

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1	41.423	8.98
2	40.867	30.06
3		
4	40.187	84.29
5	39.790	87.83
6	39.740	80.99
7	39.667	66.76
8	39.657	52.47
9	39.157	40.16
10	39.673	33.64

D-Theta = (ptemp + (4.5906 * pden)) - 128.7861
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X10 Cast 30 14 AUG 1989
 LAT: 45 25.3N LONG: 131 15.3W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t (CTD)
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		
1	27	1015	1026	3.239	3.167	34.396	34.395	0.389	0.002			27.381
2	5	1252	1266	2.805	2.718	34.472	34.471	0.389	0.002			27.481
3	15	1501	1519	2.377	2.275	34.524	34.523	0.388	0.001			27.560
4	19	1749	1771	2.091	1.972	34.569	34.571	0.387	0.000			27.619
5	14	1901	1925	1.980	1.850	34.587	34.588	0.387	0.000			27.642
6	24	2000	2026	1.935	1.797	34.597	34.598	0.387	0.000			27.654
7	22	2041	2068	1.915	1.774	34.602	34.603	0.387	0.000			27.660
8	9	2099	2127	1.890	1.745	34.606	34.606	0.387	0.000			27.665
9	6	2149	2178	1.875	1.726	34.609	34.611	0.387	0.000			27.668
10	10	2201	2231	1.855	1.701	34.614	34.613	0.387	0.000			27.674
11	29	2418	2453	1.790	1.618	34.625	34.627	0.386	-0.001			27.688
12	17	2601	2639	1.711	1.524	34.638	34.634	0.385	-0.002			27.704

0	12	13	14	15	16	17	18	19	20	
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.380	27.388	27.387	3.380	3.380	3.393	137.89	136.66		
2	27.480	27.489	27.488	3.332	3.332	3.310	151.62	151.67		
3	27.559	27.568	27.567	3.269	3.269	3.232	164.50	164.55		
4	27.621	27.629	27.630	3.161	3.161	3.174	172.91	173.17		
5	27.643	27.653	27.653	3.117	3.117	3.116	175.57	175.62		
6	27.655	27.665	27.665	3.109	3.109	3.103	177.80	177.43		
7	27.660	27.670	27.671	3.061	3.061	3.089	177.70	180.10		
8	27.665	27.676	27.676	3.078	3.078	3.056	179.09	178.50		
9	27.670	27.680	27.681	3.069	3.069	3.053	179.62	179.04		
10	27.673	27.686	27.685	3.056	3.056	3.049	177.17	182.34		
11	27.689	27.701	27.702	2.998	2.998	3.001	180.26	180.32		
12	27.701	27.718	27.715	2.960	2.960	2.943	180.37	180.43		

0 21 TSM
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Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station XII Cast 31 14 AUG 1989
 LAT: 45 32.0N LONG: 131 08.0W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27	994	1005	3.181	3.111	3.111	34.384	34.383	0.390	0.0045	44.17	45.50
2	5	1249	1264	2.746	2.660	2.660	34.469	34.470	0.388	0.0025	45.49	45.47
3	15	1501	1519	2.360	2.258	2.258	34.529	34.529	0.387	0.0015	44.70	44.68
4	19	1751	1773	2.074	1.955	1.955	34.573	34.573	0.386	0.0005	43.76	43.74
5	14	1896	1921	1.965	1.836	1.836	34.590	34.589	0.385	-0.0005	43.19	43.17
6	24	2001	2027	1.916	1.779	1.779	34.601	34.601	0.386	0.0005	42.93	42.53
7	22	2050	2078	1.898	1.757	1.757	34.605	34.604	0.387	0.0015	42.29	42.35
8	9	2102	2130	1.885	1.739	1.739	34.608		0.386	0.0005		
9	6	2147	2176	1.873	1.724	1.724	34.611	34.611	0.387	0.0015	42.25	42.31
10	10	2200	2230	1.862	1.708	1.708	34.614	34.610	0.387	0.0015	42.22	42.27
11	29	2398	2432	1.811	1.640	1.640	34.624	34.625	0.386	0.0005	42.10	42.09
12	17	2602	2640	1.738	1.550	1.550	34.635	34.636	0.384	-0.0015	41.31	41.30

0	12	13	14	15	16	17	18	19	20	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	
1	27.376	27.383	27.382	3.49	3.49	136.59	138.36	44.17	44.17	45.50
2	27.485	27.492	27.492	3.34	3.39	153.10	151.88	45.49	45.49	45.47
3	27.565	27.574	27.574	3.29	3.24	164.07	164.13	44.70	44.70	44.68
4	27.624	27.633	27.633	3.16	3.19	172.70	172.76	43.76	43.76	43.74
5	27.645	27.656	27.655	3.10	3.12	175.38	175.23	43.19	43.19	43.17
6	27.659	27.669	27.669	3.14	3.10	177.20	177.26	42.93	42.93	42.53
7	27.662	27.674	27.673	3.10	3.11	177.33	178.03	42.29	42.29	42.35
8		27.678								
9	27.670	27.681	27.681	3.11	3.10	179.37	179.21	42.25	42.25	42.31
10	27.670	27.685	27.682	3.11	3.11	179.49	179.34	42.22	42.22	42.27
11	27.686	27.698	27.699	3.04	3.07	180.04	182.23	42.10	42.10	42.09
12	27.700	27.714	27.714	3.04	3.02	179.95	180.01	41.31	41.31	41.30

0 21 TSM (ug/l)

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Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X12 Cast 32 14 AUG 1989
 LAT: 45 38.2N LONG: 131 00.9W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)
1	27	999	1010	3.241	3.171		34.391	34.389	0.717	0.329		27.377
2	5	1250	1264	2.797	2.711		34.471	34.469	0.665	0.277		27.481
3	15	1499	1517	2.359	2.257		34.529	34.503	0.387	-0.001		27.565
4	19	1747	1769	2.058	1.940		34.575	34.576	0.387	-0.001		27.627
5	14	1900	1925	1.964	1.834		34.592	34.592	0.387	-0.001		27.648
6	24	2001	2027	1.917	1.780		34.602	34.594	0.386	-0.002		27.659
7	31	2049	2076	1.896	1.755		34.606	34.606	0.386	-0.002		27.664
8	9	2102	2130	1.877	1.732		34.609	34.610	0.388	0.000		27.668
9	6	2150	2179	1.864	1.715		34.613	34.610	0.387	-0.001		27.672
10	10	2201	2231	1.850	1.696		34.616	34.616	0.386	-0.002		27.676
11	29	2400	2434	1.793	1.623		34.625	34.625	0.387	-0.001		27.687
12	12	2601	2639	1.746	1.558		34.634	34.634	0.388	0.000		27.698

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SIO4-UNF (uM/L)	SIO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.375	27.383	27.382	3.348	3.352	136.93	138.49		
2	27.480	27.489	27.487	3.310	3.293	151.23	148.07		
3	27.544	27.574	27.553	3.192	3.191	161.45	161.08		
4	27.627	27.636	27.637	3.114	3.098	172.96	169.80		
5	27.648	27.658	27.658	3.081	3.069	176.09	176.15		
6	27.653	27.670	27.664	3.033	3.031	178.58	176.70		
7	27.664	27.675	27.675	3.030	3.028	177.84	180.91		
8	27.669	27.679	27.680	3.026	3.020	178.60	178.88		
9	27.670	27.684	27.681	3.018	2.981	180.87	179.00		
10	27.676	27.687	27.687	3.009	3.013	179.27	179.00		
11	27.687	27.700	27.700	2.962	2.955	179.82	179.67		
12	27.698	27.712	27.712	2.924	2.912	183.38	179.57		

0 21 TSM (ug/l)

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Atten-Anom = Atten - 0.388

VENTS 1989 - LEG I
 Station X13 Cast 33 15 AUG 1989
 LAT: 45 53.8N LONG: 132 45.7W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t (CTD)
Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (l/m)	Atten. Anom	Atten. Anom	Atten. Anom	Sigma-t (CTD)	
1003	1014	3.244	3.173	3.244	34.376	34.375	0.388	0.0025	0.388	0.0025	27.364	
1250	1264	2.728	2.642	2.728	34.461	34.656	0.387	0.0015	0.387	0.0015	27.479	
1499	1517	2.356	2.254	2.356	34.525	34.518	0.386	0.0005	0.386	0.0005	27.562	
1748	1769	2.083	1.965	2.083	34.572	34.573	0.386	0.0005	0.386	0.0005	27.622	
1899	1924	1.973	1.843	1.973	34.591	34.593	0.385	-0.0005	0.385	-0.0005	27.646	
2001	2027	1.930	1.792	1.930	34.600	34.601	0.385	-0.0005	0.385	-0.0005	27.657	
2049	2077	1.914	1.773	1.914	34.603	34.605	0.385	-0.0005	0.385	-0.0005	27.666	
2102	2130	1.889	1.743	1.889	34.608	34.609	0.385	-0.0005	0.385	-0.0005	27.666	
2149	2178	1.870	1.721	1.870	34.612	34.613	0.386	0.0005	0.386	0.0005	27.671	
2198	2228	1.855	1.702	1.855	34.614	34.615	0.386	0.0005	0.386	0.0005	27.674	
2403	2437	1.790	1.619	1.790	34.626	34.627	0.384	-0.0015	0.384	-0.0015	27.688	
2600	2637	1.719	1.532	1.719	34.637	34.635	0.384	-0.0015	0.384	-0.0015	27.703	

0	12	13	14	15	16	17	18	19	20
Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)
27.364	27.371	27.370	3.242	3.231	132.59	133.87	175.13	172.78	172.78
27.635	27.487	27.643	2.739	2.729	175.13	172.78	163.55	163.34	163.34
27.557	27.571	27.565	3.094	3.050	163.55	163.34	170.64	166.18	166.18
27.623	27.632	27.632	3.046	3.035	170.64	166.18	173.81	170.84	170.84
27.648	27.656	27.658	2.987	2.991	173.81	170.84	178.04	179.30	179.30
27.658	27.667	27.668	3.032	2.984	178.04	179.30	180.99	179.92	179.92
27.662	27.671	27.671	2.954	2.986	180.99	179.92	179.07	180.54	180.54
27.667	27.678	27.678	2.938	2.941	179.07	180.54	179.05	174.39	174.39
27.672	27.682	27.682	2.935	2.925	179.05	174.39	176.92	175.64	175.64
27.675	27.686	27.686	2.928	2.923	176.92	175.64	176.69	178.16	178.16
27.689	27.701	27.702	2.898	2.882	176.69	178.16	174.98	174.76	174.76
27.701	27.717	27.715	2.829	2.824	174.98	174.76			

0 21 TSM
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Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X14 Cast 34 15 AUG 1989
 LAT: 46 06.2N LONG: 131 51.9W

0	1	2	3	4	5	6	7	8	9	10	11	12				
Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (I/m)	Atten. Anom	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SI04-UNF (uM/L)	SI04-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27	999	1009	3.240	3.170	34.377	0.388	27.366	27.372	27.371	3.271	3.266	133.40	131.91	42.72	44.55
2	5	1249	1263	2.793	2.707	34.467	0.388	27.478	27.486	27.485	3.245	3.249	146.61	147.89	44.62	45.03
3	21	1501	1519	2.379	2.277	34.519	0.387	27.556	27.564	27.566	3.167	3.190	160.68	159.19	44.56	44.42
4	19	1748	1770	2.090	1.971	34.566	0.387	27.619	27.626	27.629	3.103	3.092	165.15	164.94	44.15	43.81
5	14	1898	1923	1.981	1.851	34.586	0.386	27.642	27.652	27.652	3.039	3.038	166.00	166.00	42.93	42.80
6	24	2000	2026	1.922	1.785	34.597	0.386	27.656	27.666	27.666	3.018	3.016	168.14	168.56	42.73	42.66
7	31	2050	2078	1.889	1.748	34.605	0.387	27.670	27.675	27.674	2.996	3.000	169.41	169.63	42.53	42.59
8	9	2100	2128	1.868	1.723	34.611	0.385	27.686	27.686	27.681	2.999	2.955	171.55	170.69	42.59	42.53
9	10	2150	2179	1.849	1.700	34.614	0.385	27.696	27.690	27.686	2.944	2.952	168.99	168.99	42.39	42.19
10	6	2200	2230	1.830	1.677	34.617	0.385	27.707	27.708	27.690	2.937	2.940	169.63	169.41	41.98	41.98
11	29	2398	2432	1.750	1.581	34.631	0.385	27.696	27.708	27.709	2.896	2.895	169.84	169.84	41.85	41.78
12	12	2601	2639	1.686	1.499	34.640	0.384	27.707	27.721	27.721	2.823	2.845	177.92	174.30	41.37	41.37

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Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X15 Cast 35 15 AUG 1989
 LAT: 46 18.8N LONG: 131 31.9W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Miskin	Depth	Depth	Depth	In situ	Pottemp	Temp.	Salinity	Salinity	Atten.	Atten.	(CTD)
	#	(m)	(db)	(db)	Temp.	Anom.	(CTD)	(Bottle)	(l/m)	Anom		(CTD)
1	28	1011	1022	1022	3.236	3.165	34.391	34.388	0.388	0.002	0.002	27.377
2	18	1246	1261	1261	2.786	2.700	34.462	34.463	0.387	0.001	0.001	27.475
3	21	1501	1519	1519	2.369	2.267	34.526	34.526	0.386	0.000	0.000	27.562
4	19	1749	1771	1771	2.086	1.967	34.572	34.572	0.385	-0.001	-0.001	27.622
5	14	1899	1924	1924	1.985	1.855	34.590	34.590	0.385	-0.001	-0.001	27.644
6	24	1997	2024	2024	1.939	1.802	34.599	34.579	0.386	0.000	0.000	27.655
7	13	2050	2077	2077	1.917	1.775	34.604	34.604	0.386	0.000	0.000	27.661
8	9	2101	2130	2130	1.894	1.748	34.608	34.608	0.386	0.000	0.000	27.666
9	10	2148	2177	2177	1.876	1.727	34.611	34.612	0.385	-0.001	-0.001	27.670
10	6	2202	2232	2232	1.862	1.708	34.614	34.612	0.385	-0.001	-0.001	27.673
11	29	2398	2432	2432	1.815	1.644	34.624	34.623	0.385	-0.001	-0.001	27.685
12	12	2600	2638	2638	1.741	1.553	34.634	34.629	0.386	0.000	0.000	27.699

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-UNF	NO3-FIL
	Sigma-t	Sigma-Theta	Sigma-Theta	Sigma-Theta	PO4-UNF	PO4-FIL	SiO4-UNF	SiO4-FIL	SiO4-FIL	(uM/L)	(uM/L)	(uM/L)
	(Bottle)	(CTD)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)			
1	27.375	27.384	27.381	27.381	3.279	3.271	136.34	136.45	136.45	43.27	43.27	44.38
2	27.476	27.482	27.483	27.483	3.263	3.265	151.33	151.66	151.66	44.63	44.63	44.59
3	27.562	27.570	27.570	27.570	3.156	3.153	164.41	164.75	164.75	43.89	43.89	43.72
4	27.622	27.631	27.631	27.631	3.098	3.094	171.51	171.42	171.42	43.20	43.20	43.24
5	27.644	27.655	27.655	27.655	3.043	3.016	173.48	173.82	173.82	42.66	42.66	42.50
6	27.639	27.666	27.666	27.666	2.998	2.995	175.87	175.78	175.78	41.98	41.98	41.88
7	27.661	27.672	27.672	27.672	2.983	2.985	178.27	180.33	180.33	41.51	41.51	41.46
8	27.666	27.677	27.677	27.677	2.978	2.978	174.44	180.59	180.59	42.25	42.25	42.14
9	27.671	27.681	27.681	27.682	2.975	2.968	178.57	176.97	176.97	42.17	42.17	42.13
10	27.672	27.685	27.685	27.683	2.945	2.933	175.81	177.22	177.22	41.68	41.68	41.72
11	27.684	27.698	27.698	27.697	2.944	2.893	179.72	179.63	179.63	42.30	42.30	41.98
12	27.695	27.713	27.713	27.709	2.852	2.853	179.33	179.89	179.89	41.27	41.27	41.57

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Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X16 Cast 36 15 AUG 1989
 LAT: 46 31.1N LONG: 131 23.1W

0	1	Niskin #	2	Depth (m)	3	Depth (db)	4	Insitu Temp.	5	Pottemp	6	Temp. Anom.	7	Salinity (CTD)	8	Salinity (Bottle)	9	Atten. (1/m)	10	Atten. Anom
1		28		1000		1011		3.213		3.143		-0.050937		34.377		34.376		0.388		0.0025
2		18		1249		1264		2.752		2.666		0.017299		34.464		34.462		0.388		0.0025
3		21		1500		1518		2.345		2.243		0.012331		34.527		34.528		0.390		0.0045
4		19		1757		1779		2.086		1.967		0.088047		34.590		34.567		0.385		-0.0005
5		14		1905		1930		1.995		1.865		0.009049		34.586		34.588		0.387		0.0015
6		2		1999		2025		1.955		1.817		0.010481		34.594		34.594		0.387		0.0015
7		13		2043		2071		1.939		1.798		0.009846		34.597		34.598		0.387		0.0015
8		9		2097		2125		1.919		1.773		0.010095		34.601		34.599		0.388		0.0025
9		10		2148		2177		1.903		1.753		0.012896		34.605		34.605		0.387		0.0015
10		6		2205		2235		1.890		1.735		0.013316		34.608		34.608		0.389		0.0035
11		29		2403		2437		1.814		1.643		0.005171		34.621		34.622		0.387		0.0015
12		12		2594		2632		1.754		1.566		-0.008844		34.630		34.629		0.387		0.0015

0	11	Sigma-t (CTD)	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SIO4-UNF (uM/L)	18	SIO4-FIL (uM/L)	19	NO3-UNF (uM/L)
1		27.368		27.367		27.375		27.374		3.301		3.293		136.87		136.87		42.52
2		27.480		27.478		27.487		27.485		3.247		3.229		152.57		152.56		43.94
3		27.565		27.566		27.573		27.574		3.144		3.136		165.12		165.12		43.20
4		27.636		27.618		27.646		27.627		3.042		3.039		173.28		173.06		42.73
5		27.640		27.642		27.651		27.652		2.998		3.023		175.57		175.56		42.33
6		27.650		27.650		27.661		27.661		3.025		2.984		177.44		177.65		42.95
7		27.654		27.654		27.665		27.665		2.976		2.977		177.64		177.43		42.54
8		27.658		27.657		27.670		27.668		2.969		2.962		177.63		177.63		42.15
9		27.663		27.663		27.674		27.674		2.963		2.962		177.62		177.83		42.11
10		27.666		27.683		27.678		27.678		2.805		2.807		180.13		180.12		41.34
11		27.683		27.683		27.696		27.696		2.908		2.905		179.70		178.65		42.14
12		27.694		27.694		27.708		27.708		2.873		2.842		179.69		179.68		41.16

D-Theta = (ptemp + (4.85 * pden)) - 135.961
 Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
Station X16 Cast 36 15 AUG 1989
LAT: 46 31.1N LONG: 131 23.1W

0	20 NO3-FIL	21 TSM
	(uM/L)	(ug/L)
1	43.91	
2	43.91	
3	43.17	
4	42.76	
5	42.34	
6	42.94	
7	42.54	
8	42.14	
9	42.16	
10	41.30	
11	41.91	
12	41.28	

D-Theta = (ptemp + (4.85 * pden)) - 135.961
Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X17 Cast 37 15 AUG 1989
 LAT: 46 44.2N LONG: 131 50.3W

0	1	2	3	4	5	6	7	8	9	10	11	
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Temp. (CTD)	Salinity (Bottle)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	Sigma-t (CTD)
1	28	999	1010	3.162	3.162	3.092	34.362	34.363	0.388	0.003	27.361	
2	18	1248	1262	2.796	2.796	2.710	34.455	34.456	1.251	0.866	27.468	
3	21	1500	1518	2.410	2.410	2.308	34.518	34.518	0.386	0.001	27.552	
4	19	1751	1773	2.124	2.124	2.005	34.559	34.561	0.385	0.000	27.609	
5	14	1872	1896	2.020	2.020	1.892	34.581	34.582	0.385	0.000	27.634	
6	2	2002	2028	1.935	1.935	1.797	34.597	34.598	0.385	0.000	27.654	
7	13	2050	2077	1.908	1.908	1.767	34.603	34.604	0.385	0.000	27.661	
8	9	2100	2128	1.884	1.884	1.739	34.606	34.606	0.384	-0.001	27.665	
9	10	2152	2181	1.876	1.876	1.726	34.609	34.610	0.385	0.000	27.668	
10	6	2204	2234	1.852	1.852	1.698	34.614	34.615	0.384	-0.001	27.674	
11	29	2400	2435	1.792	1.792	1.622	34.625	34.627	0.385	0.000	27.687	
12	12	2602	2640	1.720	1.720	1.532	34.635	34.631	0.384	-0.001	27.701	

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SIO4-UNF (uM/L)	SIO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.362	27.367	27.368	3.209	3.231	139.08	138.88	46.45	46.79
2	27.469	27.476	27.477	3.230	3.214	151.55	153.01	45.29	45.86
3	27.552	27.561	27.561	3.128	3.131	162.57	162.58	44.74	45.33
4	27.610	27.618	27.620	3.064	3.062	171.31	172.98	44.00	44.81
5	27.635	27.644	27.645	3.023	3.036	174.23	174.44	43.45	43.94
6	27.655	27.665	27.665	2.987	2.991	176.53	175.29	43.17	43.34
7	27.662	27.672	27.673	2.951	2.964	176.75	176.76	42.97	43.21
8	27.669	27.676	27.676	2.960	2.971	178.63	178.64	42.88	42.93
9	27.669	27.680	27.680	2.990	3.001	178.65	178.65	42.64	43.42
10	27.675	27.686	27.687	3.026	2.998	178.87	178.66	42.64	42.64
11	27.689	27.700	27.702	3.026	3.024	179.92	180.55	41.98	42.10
12	27.698	27.715	27.712	2.971	2.964	180.14	178.07	41.98	41.74

0 21 TSM (ug/l)

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Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X18 Cast 38 16 AUG 1989
 LAT: 47 01.2N LONG: 131 50.0W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	In situ Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.		(CTD)
1	28	3	3	16.523	16.523	16.523	32.558	32.559	0.633	0.248		23.752
2	18	24	24	13.216	13.213	13.213	32.566	32.569	0.550	0.165		24.466
3	21	51	52	8.474	8.469	8.469	32.622	32.620	0.491	0.106		25.337
4	19	102	103	6.321	6.312	6.312	32.750	32.746	1.603	1.218		25.735
5	14	251	253	5.879	5.858	5.858	33.885	33.883	0.397	0.012		26.687
6	2	500	504	4.297	4.260	4.260	34.044	34.042	0.387	0.002		26.995
7	13	1000	1010	3.117	3.048	3.048	34.367	34.366	0.387	0.002		27.369
8	9	1498	1516	2.377	2.275	2.275	34.516	34.516	0.387	0.002		27.553
9	10	2001	2028	1.927	1.789	1.789	34.597	34.597	0.385	0.000		27.655
10	6	2501	2537	1.735	1.556	1.556	34.632	34.630	0.384	-0.001		27.697
11	29	3005	3052	1.614	1.390	1.390	34.656	34.655	0.386	0.001		27.726
12	1	3236	3289	1.613	1.365	1.365	34.659	34.658	0.391	0.006		27.728

0	12	Sigma-t	13	Sigma-Theta	14	Sigma-Theta	15	PO4-UNF	16	PO4-FIL	17	SiO4-UNF	18	SiO4-FIL	19	NO3-UNF	20	NO3-FIL
		(Bottle)	(CTD)	(Bottle)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
1	23.753	23.752	23.752	23.753	23.753	23.753	0.616	0.618	0.616	0.616	0.616	1.96	1.96	2.01	3.74	3.74	3.74	
2	24.468	24.467	24.467	24.469	24.469	24.469	0.766	0.758	0.766	0.766	0.766	2.07	2.07	2.12	5.19	5.19	5.52	
3	25.336	25.338	25.338	25.336	25.336	25.336	0.992	0.956	0.992	0.992	0.992	2.59	2.59	2.65	8.41	8.41	9.01	
4	25.732	25.736	25.736	25.733	25.733	25.733	1.233	1.283	1.233	1.233	1.233	8.78	8.78	8.62	13.95	13.95	14.91	
5	26.685	26.689	26.689	26.688	26.688	26.688	2.131	2.133	2.131	2.131	43.90	43.90	43.90	42.90	28.60	30.86	30.86	
6	26.993	26.999	26.999	26.997	26.997	26.997	3.005	3.007	3.005	3.005	88.44	88.44	87.85	87.85	41.24	42.80	42.80	
7	27.368	27.375	27.375	27.375	27.375	27.375	3.337	3.325	3.337	3.337	141.54	141.54	143.46	143.46	46.11	46.40	46.40	
8	27.553	27.562	27.562	27.562	27.562	27.562	3.251	3.249	3.251	3.251	166.13	166.13	166.16	166.16	45.82	45.77	45.77	
9	27.655	27.665	27.665	27.665	27.665	27.665	3.123	3.105	3.123	3.123	177.50	177.50	177.32	177.32	44.30	43.36	43.36	
10	27.696	27.711	27.711	27.709	27.709	27.709	2.989	2.991	2.989	2.989	181.54	181.54	179.69	179.69	42.15	42.09	42.09	
11	27.725	27.742	27.742	27.741	27.741	27.741	2.874	2.881	2.874	2.874	181.81	181.81	179.33	179.33	40.87	40.81	40.81	
12	27.727	27.746	27.746	27.745	27.745	27.745	2.832	2.844	2.832	2.832	179.99	179.99	181.07	181.07	40.82	40.82	40.82	

0 21 TSM (ug/l)

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Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X19 Cast 39 16 AUG 1989
 LAT: 46 53.7N LONG: 131 17.7W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.	(CTD)
1	22	993	1004	3.193	3.124	3.124	3.124	34.368	34.367	0.387	0.0015	27.363
2	23	1250	1264	2.765	2.679	2.679	2.679	34.451	34.451	0.387	0.0015	27.468
3	5	1501	1519	2.355	2.253	2.253	2.253	34.514	34.515	0.386	0.0005	27.554
4	25	1748	1771	2.097	1.978	1.978	1.978	34.563	34.563	0.386	0.0005	27.614
5	11	1901	1926	1.962	1.832	1.832	1.832	34.588	34.586	0.385	-0.0005	27.645
6	3	2001	2027	1.899	1.762	1.762	1.762	34.599	34.600	0.384	-0.0015	27.658
7	24	2051	2078	1.872	1.731	1.731	1.731	34.605	34.605	0.385	-0.0005	27.665
8	15	2102	2130	1.852	1.707	1.707	1.707	34.609	34.609	0.385	-0.0005	27.670
9	8	2152	2181	1.846	1.697	1.697	1.697	34.613	34.614	0.385	-0.0005	27.674
10	30	2203	2234	1.831	1.677	1.677	1.677	34.617	34.607	0.385	-0.0005	27.678
11	16	2401	2435	1.764	1.594	1.594	1.594	34.628	34.627	0.384	-0.0015	27.692
12	27	2598	2637	1.693	1.506	1.506	1.506	34.638	34.636	0.385	-0.0005	27.705

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-UNF	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	(uM/L)	(uM/L)	(uM/L)
1	27.362	27.369	27.368	3.243	3.238	134.820	136.520	134.820	136.520	43.160	43.160	43.825
2	27.468	27.476	27.476	3.234	3.211	149.490	149.910	149.490	149.910	43.640	43.640	43.850
3	27.554	27.562	27.563	3.132	3.144	165.085	164.970	165.085	164.970	43.300	43.300	42.875
4	27.614	27.623	27.623	3.052	3.057	172.895	170.760	172.895	170.760	42.120	42.120	42.300
5	27.643	27.655	27.653	3.016	2.975	173.275	169.975	173.275	169.975	42.790	42.790	43.815
6	27.659	27.669	27.670	2.955	2.953	171.110	170.565	171.110	170.565	43.580	43.580	43.515
7	27.665	27.676	27.676	2.916	2.935	177.840	178.565	177.840	178.565	42.845	42.845	43.345
8	27.670	27.681	27.681	2.922	2.917	176.725	176.610	176.725	176.610	42.450	42.450	42.855
9	27.674	27.685	27.685	2.930	2.965	179.740	179.725	179.740	179.725	42.585	42.585	42.915
10	27.670	27.690	27.690	2.896	2.889	179.580	179.355	179.580	179.355	42.690	42.690	42.905
11	27.691	27.705	27.704	2.861	2.868	175.520	173.925	175.520	173.925	42.515	42.515	42.535
12	27.704	27.719	27.718	2.813	2.836	175.045	175.240	175.045	175.240	41.757	41.757	41.535

0 21 TSM (ug/l)

1	11.89
2	9.92
3	8.76
4	13.23
5	10.00
6	9.42
7	9.50
8	9.84
9	9.10
10	10.04
11	9.42
12	14.20

Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X24 Cast 40 16 AUG 1989
 LAT: 46 50.1N LONG: 130 08.8W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (l/m)	Atten. Ancm	Atten. (uM/L)	Atten. (uM/L)	(CTD)
1	5	1502	1520	2.390	-0.002610	34.512	34.626	0.386	0.000	181.410	0.000	27.549
2	25	1750	1772	2.100	0.006005	34.565	34.563	0.385	-0.001	174.060	-0.001	27.615
3	3	2002	2028	1.939	0.004545	34.595	34.595	0.386	0.000	179.345	0.000	27.652
4	24	2101	2129	1.891	0.010087	34.606	34.606	0.385	-0.001	179.365	-0.001	27.665
5	15	2203	2233	1.845	-0.002270	34.612	34.610	0.385	-0.001	179.485	-0.001	27.673
6	8	2250	2281	1.820	-0.005855	34.616	34.617	0.385	-0.001	180.335	-0.001	27.678
7	30	2302	2334	1.796	-0.005329	34.621	34.622	0.384	-0.002	179.830	-0.002	27.684
8	16	2399	2433	1.754	-0.015305	34.627	34.628	0.384	-0.002	177.970	-0.002	27.692
9	27	2437	2472	1.746	-0.015187	34.629	34.624	0.386	0.000	175.165	0.000	27.694

0	12	Sigma-t	13	Sigma-Theta	14	Sigma-Theta	15	PO4-UNF	16	PO4-FIL	17	SiO4-UNF	18	SiO4-FIL	19	NO3-UNF	20	NO3-FIL
		(Bottle)	(CTD)	(Bottle)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
1	27.640	27.558	27.649	27.623	27.623	27.623	2.844	2.856	182.015	181.410	181.410	182.015	173.705	174.060	174.060	173.705	173.705	173.705
2	27.614	27.625	27.623	27.623	27.623	27.623	3.013	3.017	173.705	174.060	174.060	173.705	173.705	174.060	174.060	173.705	173.705	173.705
3	27.652	27.663	27.663	27.663	27.663	27.663	2.944	2.934	178.890	179.345	179.345	178.890	178.890	179.345	179.345	178.890	178.890	178.890
4	27.665	27.676	27.676	27.676	27.676	27.676	2.918	2.917	179.440	179.365	179.365	179.440	179.440	179.365	179.365	179.440	179.440	179.440
5	27.671	27.685	27.685	27.685	27.685	27.685	2.892	2.908	179.350	179.485	179.485	179.350	179.350	179.485	179.485	179.350	179.350	179.350
6	27.679	27.690	27.690	27.690	27.690	27.690	2.878	2.889	179.995	180.335	180.335	179.995	179.995	180.335	180.335	179.995	179.995	179.995
7	27.685	27.696	27.696	27.696	27.696	27.696	2.863	2.874	180.020	179.830	179.830	180.020	180.020	179.830	179.830	180.020	180.020	180.020
8	27.693	27.705	27.705	27.705	27.705	27.705	2.858	2.860	177.930	177.970	177.970	177.930	177.930	177.970	177.970	177.930	177.930	177.930
9	27.690	27.707	27.707	27.707	27.707	27.707	2.839	2.846	175.980	175.165	175.165	175.980	175.980	175.165	175.165	175.980	175.980	175.980

0	21	TSM
		(ug/l)
1	11.42	
2	12.60	
3	8.54	
4	11.63	
5	8.46	
6	9.48	
7	8.84	
8	13.18	
9	11.55	

D-Theta = (ptemp + (4.694 * pden)) - 131.6454
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X23 Cast 41 17 AUG 1989
 LAT: 46 43.8N LONG: 129 39.8W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Depth	Depth	Depth	Insitu	Temp.	Pottemp	Temp.	Salinity	Salinity	Atten.	Atten.	(CTD)
	(m)	(m)	(db)	Temp.	Anom.	Anom.	(CTD)	(Bottle)	(1/m)	Anom		(CTD)
1	18	1505	1523	2.351	0.014891	2.249	34.523	34.521	0.386	0.0005	27.561	
2	19	1750	1772	2.077	-0.000794	1.958	34.567	34.565	0.385	-0.0005	27.619	
3	17	2002	2028	1.924	0.002577	1.786	34.597	34.597	0.385	-0.0005	27.655	
4	12	2108	2137	1.884	0.005239	1.738	34.606	34.602	0.384	-0.0015	27.665	
5	1	2205	2235	1.835	-0.001210	1.681	34.614	34.613	0.384	-0.0015	27.675	
6	20	2245	2276	1.817	0.000073	1.660	34.618	34.616	0.384	-0.0015	27.680	
7	14	2301	2333	1.792	0.003445	1.630	34.624	34.621	0.383	-0.0025	27.687	
8	6	2395	2429	1.762	-0.006191	1.593	34.628	34.625	0.384	-0.0015	27.692	
9	31	2606	2644	1.749	-0.004619	1.560	34.634	34.633	0.388	0.0025	27.698	

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-UNF	NO3-FIL
	Sigma-t	Sigma-Theta	Sigma-Theta	PO4-UNF	PO4-FIL	SIO4-UNF	SIO4-FIL	NO3-FIL	NO3-UNF	(uM/L)	(uM/L)	(uM/L)
	(Bottle)	(CTD)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)			
1	27.559	27.570	27.568	3.146	2.134	165.225	164.825	171.500	171.500			
2	27.617	27.628	27.626	3.061	3.063	172.105	171.500	174.935	174.935			
3	27.655	27.665	27.665	3.007	3.009	175.225	174.935	176.905	176.905			
4	27.662	27.676	27.673	2.981	2.967	175.940	175.960	176.905	176.905			
5	27.675	27.687	27.686	2.943	2.950	176.140	175.960	176.985	176.985			
6	27.678	27.692	27.690	2.949	2.939	176.020	176.985	176.240	176.240			
7	27.684	27.699	27.696	2.907	2.909	176.110	176.985	176.855	176.855			
8	27.690	27.705	27.702	2.905	2.899	176.420	176.985	179.035	179.035			
9	27.697	27.712	27.711	2.886	2.884	178.070	179.035					

0	21	TSM
		(ug/l)
1	8.86	
2	9.40	
3	7.54	
4	9.19	
5	10.27	
6	9.92	
7	9.59	
8	8.92	
9	14.69	

D-Theta = (ptemp + (4.694 * pden)) - 131.6454
 Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X22 Cast 42 17 AUG 1989
 LAT: 46 41.7N LONG: 129 32.4W

0	1	2	3	4	5	6	7	8	9	10	11	
Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)
1500	1519	2.349	2.247	0.010372	34.521	34.521	0.386	-0.001	168.455	175.330	175.330	35.81
1752	1774	2.065	1.946	-0.004388	34.567	34.568	0.386	-0.001	175.315	178.000	178.000	34.72
2002	2028	1.916	1.779	0.005283	34.598	34.599	0.386	-0.001	178.775	180.120	180.120	33.92
2103	2131	1.879	1.733	0.010132	34.607	34.607	0.385	-0.002	181.160	180.460	180.460	34.01
2202	2232	1.839	1.685	0.001713	34.613	34.614	0.385	-0.002	180.590	177.655	177.655	33.02
2252	2284	1.822	1.664	0.003060	34.617	34.619	0.386	-0.001	179.610	180.410	180.410	33.10
2289	2321	1.805	1.644	0.001389	34.620	34.619	0.385	-0.002	180.510	183.200	183.200	32.81
2349	2382	1.792	1.626	-0.002845	34.622	34.624	0.385	-0.002	182.030			33.40
2408	2442	1.784	1.613	-0.000168	34.625	34.627	0.387	-0.000				32.80

0	12	13	14	15	16	17	18	19	20
Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	Atten. (1/m)	Atten. Anom	NO3-FIL (uM/L)
27.560	27.568	27.568	3.212	3.219	168.225	168.455	0.386	-0.001	35.81
27.620	27.629	27.630	3.119	3.136	175.315	175.330	0.386	-0.001	34.72
27.657	27.667	27.668	3.060	3.044	178.775	178.000	0.386	-0.001	33.92
27.666	27.677	27.677	3.061	3.038	181.160	180.120	0.385	-0.002	34.01
27.675	27.686	27.687	3.013	2.999	180.460	180.590	0.385	-0.002	33.02
27.680	27.691	27.692	2.982	2.988	177.655	179.680	0.386	-0.001	33.10
27.682	27.695	27.694	2.993	2.992	179.610	180.410	0.385	-0.002	32.81
27.687	27.698	27.699	2.973	2.993	180.510	180.410	0.385	-0.002	33.40
27.690	27.701	27.703	2.964	2.968	182.030	183.200	0.387	-0.000	32.80

0 21 TSM (ug/l)
 1 15.44
 2 9.93
 3 9.23
 4 7.85
 5 8.27
 6 8.90
 7 14.13
 8 10.42
 9 11.70

D-Theta = (ptemp + (4.694 * pden)) - 131.6414
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X58 Cast 43 17 AUG 1989
 LAT: 46 39.5N LONG: 129 25.5W

0	1	2	3	4	5	6	7	8	9	10	11	
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	Sigma-t (CTD)	
1	26	1495	1513	2.313	2.212	0.003503	34.526	34.527	0.387	0.001	27.567	
2	5	1753	1775	2.070	1.951	0.005964	34.570	34.571	0.385	-0.001	27.622	
3	25	1833	1856	2.007	1.883	0.003739	34.581	34.574	0.385	-0.001	27.635	
4	3	2005	2031	1.884	1.747	0.007198	34.605	34.606	0.385	-0.001	27.664	
5	24	2049	2076	1.861	1.720	0.005238	34.609	34.609	0.385	-0.001	27.669	
6	15	2148	2177	1.828	1.679	0.008824	34.617	34.619	0.385	-0.001	27.678	
7	8	2247	2278	1.823	1.666	0.018807	34.622	34.622	0.386	0.000	27.683	
8	30	2297	2329	1.815	1.653	0.014586	34.623	34.619	0.386	0.000	27.684	
9	16	2349	2382	1.815	1.649	0.015338	34.624	34.619	0.386	0.000	27.685	
10	27	2390	2424	1.821	1.651	0.016738	34.624	34.621	0.386	0.000	27.684	

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.567	27.575	27.576	3.106	3.108	165.53	165.18		
2	27.622	27.631	27.632	3.043	3.037	171.34	172.03		
3	27.630	27.645	27.640	3.005	2.994	174.95	173.23		
4	27.665	27.675	27.676	2.948	2.954	175.42	177.58		
5	27.669	27.680	27.680	2.945	2.921	175.89	176.05		
6	27.680	27.690	27.691	2.870	2.904	178.98	179.15		
7	27.683	27.695	27.695	2.901	2.900	179.56	179.84		
8	27.681	27.696	27.693	2.893	2.882	179.33	181.92		
9		27.697							
10	27.682	27.697	27.695	2.890	2.889	179.63	179.81		

0	21 TSM (ug/l)
1	10.32
2	8.85
3	10.49
4	10.35
5	9.16
6	12.03
7	11.63
8	
9	
10	13.79

D-Theta = (ptemp + (4.694 * pden)) - 131.6454
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X21 Cast 44 17 AUG 1989
 LAT: 46 37.9N LONG: 129 18.3W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	(CTD)
1	1	1491	1509	2.346	2.346	2.245	34.524	34.616	0.385	179.58	179.58	27.562
2	20	1751	1773	2.054	2.054	1.936	34.571	34.572	0.385	173.33	173.33	27.624
3	14	1998	2024	1.907	1.907	1.770	34.600	34.601	0.385	177.01	177.01	27.659
4	6	2100	2128	1.865	1.865	1.720	34.609	34.610	0.385	177.94	177.94	27.669
5	31	2199	2229	1.821	1.821	1.668	34.617	34.617	0.385	178.79	178.79	27.679
6	18	2251	2282	1.797	1.797	1.640	34.622	34.623	0.385	179.19	179.19	27.685
7	19	2298	2330	1.789	1.789	1.628	34.625	34.626	0.387	180.13	180.13	27.688
8	17	2397	2431	1.779	1.779	1.609	34.630	34.631	0.387	181.47	181.47	27.692
9	12	2600	2638	1.793	1.793	1.604	34.632	34.633	0.392	183.89	183.89	27.693
										185.23	184.91	

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.636	27.571	27.644	2.998	2.983	179.59	179.58	42.11	42.00
2	27.625	27.633	27.634	3.122	3.120	173.44	173.33	43.34	43.38
3	27.659	27.669	27.670	3.058	3.062	177.97	177.01	42.39	42.21
4	27.670	27.680	27.681	3.056	3.061	178.79	177.94	42.03	41.74
5	27.679	27.690	27.690	3.028	3.021	179.19	178.98	41.20	41.26
6	27.685	27.697	27.697	3.002	2.998	180.13	179.70	41.15	40.65
7	27.688	27.700	27.701	3.001	3.006	181.59	181.47	41.05	40.83
8	27.693	27.705	27.706	2.995	3.010	183.89	183.98	40.60	40.92
9	27.694	27.707	27.708	3.056	3.007	185.23	184.91	40.50	40.53

0	21
	TSM (ug/l)
1	10.42
2	11.01
3	9.61
4	10.43
5	11.95
6	10.75
7	11.52
8	13.43
9	18.92

D-Theta = (ptemp + (4.694 * pden)) - 131.6404
 Atten-Anom = Atten - 0.386

VENTS 1989 -- LEG I
 Station X20 Cast 45 17 AUG 1989
 LAT: 46 35.8N LONG: 129 10.9W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	21	2307	2339	1.796	1.634	0.005914	34.623	34.617	0.384	-0.002
2	9	2399	2433	1.784	1.614	0.015403	34.629	34.628	0.383	-0.003
3	29	2600	2638	1.766	1.578	0.033207	34.640	34.640	0.390	0.004

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.686	27.681	27.698	27.693	2.997	3.011	180.58	179.84	40.88
2	27.691	27.690	27.704	27.703	2.964	2.980	183.51	181.29	40.79
3	27.701	27.701	27.716	27.716	2.940	2.936	186.01	187.06	40.17

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1	40.93	10.31
2	40.47	9.18
3	40.03	15.62

D-Theta = (ptemp + (4.694 * pden)) - 131.6414
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X32 Cast 46 18 AUG 1989
 LAT: 46 43.4N LONG: 129 05.3W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	23	1502	1520	2.381	2.279	0.046521	34.526	34.635	0.385	-0.0005
2	10	1752	1774	2.086	1.967	0.014199	34.569	34.598	0.384	-0.0015
3	13	2002	2028	1.905	1.768	0.007617	34.601	34.611	0.385	-0.0005
4	2	2103	2131	1.862	1.717	0.008651	34.610	34.613	0.384	-0.0015
5	22	2196	2226	1.824	1.671	0.009314	34.618	34.620	0.383	-0.0025
6	11	2293	2284	1.807	1.649	0.010262	34.622	34.621	0.383	-0.0025
7	25	2298	2330	1.796	1.635	0.011953	34.625	34.625	0.383	-0.0025
8	3	2398	2432	1.783	1.613	0.012833	34.629	34.636	0.383	-0.0025
9	26	2586	2624	1.768	1.581	0.025804	34.638	34.522	0.389	0.0035

0	11	12	13	14	15	16	17	18	19	20
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.561	27.648	27.569	27.657	3.136	3.057	186.175	186.320	39.91	39.91
2	27.620	27.643	27.629	27.652	3.113	3.130	353.440	178.430	41.15	41.15
3	27.659	27.668	27.670	27.678	3.137	3.134	178.340	178.370	41.36	41.36
4	27.672	27.672	27.681	27.684	3.069	3.074	181.200	180.510	41.59	41.59
5	27.679	27.681	27.691	27.693	3.062	3.069	180.935	181.705	41.49	41.49
6	27.684	27.683	27.696	27.695	3.064	3.064	182.550	183.005	41.18	41.18
7	27.687	27.687	27.699	27.699	3.057	3.024	182.285	182.530	37.07	37.07
8	27.691	27.697	27.704	27.710	2.721	2.798	187.660	187.800	37.08	37.08
9	27.700	27.607	27.714	27.621	2.992	3.037	164.410	164.345	40.86	40.86

0	20	NO3-FIL (uM/L)	21	TSM (ug/l)
1		39.52		
2		41.15		
3		41.10		
4		42.01		
5		41.56		
6		40.94		
7		38.19		
8		36.94		
9		40.78		

D-Theta = (ptemp + (4.694 * pden)) - 131.6434
 Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X31 Cast 47 18 AUG 1989
 LAT: 46 47.2N LONG: 129 12.7W

0	1	2	3	4	5	6	7	8	9	10
Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
14	1502	1520	2.349	2.247	2.247	0.031850	34.527	34.527	0.385	-0.001
6	1754	1776	2.087	1.968	1.968	0.011950	34.568	34.567	0.384	-0.002
20	2005	2031	1.897	1.760	1.760	0.003402	34.601	34.600	0.385	-0.001
31	2100	2128	1.863	1.718	1.718	0.002908	34.608	34.607	0.385	-0.001
18	2204	2234	1.813	1.660	1.660	0.006599	34.619	34.617	0.384	-0.002
19	2242	2273	1.800	1.644	1.644	0.003658	34.621	34.621	0.385	-0.001
12	2396	2430	1.778	1.608	1.608	0.006973	34.628	34.631	0.386	0.000
27	2482	2518	1.780	1.602	1.602	0.010695	34.630	34.629	0.388	0.002

0	11	12	13	14	15	16	17	18	19
Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SI04-UNF (uM/L)	SI04-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
27.564	27.564	27.573	27.573	3.142	3.117	165.82	165.32		
27.619	27.618	27.628	27.627	3.055	3.063	172.51	171.60		
27.660	27.659	27.671	27.670	3.003	3.000	177.22	177.13		
27.668	27.668	27.679	27.679	2.968	2.955	177.94	177.97		
27.681	27.679	27.693	27.693	2.955	2.955	181.17	179.22		
27.684	27.684	27.695	27.695	2.948	2.943	180.33	180.04		
27.691	27.693	27.704	27.704	2.902	2.904	182.19	181.49		
27.692	27.692	27.706	27.706	2.906	2.919	182.81	182.84		

0	20	21
NO3-FIL (uM/L)	TSM (ug/l)	
11.15		
11.46		
10.49		
12.53		
19.76		
9.63		
11.68		
15.89		

D-Theta = (ptemp + (4.694 * pden) - 131.6424)
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X30 Cast 48 18 AUG 1989
 LAT: 46 48.8N LONG: 129 19.5W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (l/m)	Atten. Anom		(CTD)
1	5	1499	1517	2.332	2.332	2.231	34.525	34.525	0.386	0.000		27.564
2	30	1757	1779	2.054	2.054	1.935	34.573	34.567	0.385	-0.001		27.625
3	16	1822	1845	1.996	1.996	1.873	34.584	34.583	0.385	-0.001		27.639
4	15	2000	2026	1.903	1.903	1.766	34.603	34.602	0.385	-0.001		27.661
5	24	2046	2073	1.886	1.886	1.745	34.606	34.600	0.385	-0.001		27.665
6	1	2100	2128	1.867	1.867	1.722	34.610	34.612	0.385	-0.001		27.670
7	8	2162	2192	1.827	1.827	1.677	34.618	34.618	0.385	-0.001		27.679
8	21	2260	2291	1.816	1.816	1.658	34.624	34.625	0.387	0.001		27.685
9	9	2288	2320	1.815	1.815	1.654	34.624	34.624	0.386	0.000		27.685
10	29	2361	2394	1.825	1.825	1.657	34.624	34.623	0.387	0.001		27.684

0	12	13	14	15	16	17	18	19	20	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	
1	27.564	27.573	27.573	3.186	3.157	163.39	165.26			
2	27.621	27.635	27.630	3.063	3.056	170.11	170.38			
3	27.638	27.648	27.648	3.035	3.033	172.81	172.70			
4	27.660	27.672	27.671	3.003	3.006	176.67	176.85			
5	27.660	27.676	27.671	3.007	3.000	175.78	176.38			
6	27.671	27.681	27.682	2.951	2.938	177.22	177.39			
7	27.679	27.691	27.691	2.907	2.907	178.12	178.08			
8	27.686	27.697	27.698	2.905	2.881	179.66	179.31			
9	27.685	27.697	27.697	2.894	2.884	179.51	178.63			
10	27.683	27.697	27.696	2.904	2.907	178.83	178.80			

0	21	TSM (ug/l)
1		10.56
2		11.13
3		9.64
4		9.70
5		13.92
6		12.07
7		10.83
8		11.79
9		12.45
10		11.21

D-Theta = (ptemp + (4.694 * pden)) - 131.6484
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X29 Cast 49 18 AUG 1989
 LAT: 46 51.0N LONG: 129 26.3W

0	1	2	3	4	5	6	7	8	9	10	11	
	Niskin #	Depth (m)	Depth (db)	In situ Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	Sigma-t (CTD)	
1	23	1499	1517	2.319	2.218	0.006958	34.526	34.525	0.386	0.000	27.566	
2	10	1748	1770	2.050	1.932	0.001227	34.572	34.571	0.385	-0.001	27.625	
3	13	2002	2028	1.911	1.774	0.009407	34.601	33.125	0.385	-0.001	27.659	
4	2	2101	2130	1.872	1.727	0.009298	34.609	34.606	0.385	-0.001	27.668	
5	22	2203	2233	1.824	1.671	0.003177	34.617	34.614	0.384	-0.002	27.679	
6	11	2252	2283	1.809	1.652	0.005826	34.621	34.616	0.385	-0.001	27.683	
7	25	2301	2333	1.799	1.637	0.004149	34.623	34.620	0.385	-0.001	27.685	
8	3	2401	2435	1.776	1.606	-0.001344	34.627	34.627	0.385	-0.001	27.690	
9	26	2538	2575	1.751	1.569	-0.002956	34.633	34.629	0.388	0.002	27.697	

0	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)	20	NO3-FIL (uM/L)
1		27.565		27.574		27.574		3.094		3.090		164.69		165.57				
2		27.624		27.634		27.633		2.996		2.988		172.05		172.61				
3		26.476		27.670		26.486												
4		27.666		27.680		27.677		2.915		2.922		176.79		176.52				
5		27.676		27.690		27.688		2.902		2.902		177.83		178.18				
6		27.679		27.695		27.691		2.890		2.882		177.88		178.13				
7		27.683		27.698		27.695		2.917		2.914		180.03		177.97				
8		27.690		27.703		27.703		2.902		2.889		177.78		177.19				
9		27.694		27.711		27.707		2.872		2.871		177.20		178.49				

0	21	TSM (ug/l)
1		10.75
2		10.89
3		61.04
4		11.63
5		11.29
6		13.77
7		13.27
8		9.65
9		14.14

D-Theta = (ptemp + (4.694 * pden)) - 131.6454
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X28 Cast 50 18 AUG 1989
 LAT: 46 53.4N LONG: 129 33.6W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
Depth	Depth	Depth	Depth	Insitu	Pottemp	Temp.	Salinity	Salinity	Salinity	Atten.	Atten.	(CTD)
(m)	(m)	(db)	(db)	Temp.	Anom.	(CTD)	(Bottle)	(Bottle)	(l/m)	Anom	(CTD)	
1	27	1496	1514	2.366	2.265	0.015663	34.518	34.513	0.387	0.0015	27.556	
2	18	1751	1773	2.077	1.958	0.001600	34.565	34.566	0.387	0.0015	27.617	
3	19	1999	2025	1.902	1.765	0.006354	34.599	34.599	0.385	-0.0005	27.658	
4	17	2100	2129	1.856	1.711	0.009206	34.609	34.609	0.384	-0.0015	27.670	
5	12	2203	2234	1.815	1.662	0.007398	34.617	34.615	0.385	-0.0005	27.679	
6	20	2245	2276	1.797	1.640	0.004809	34.620	34.620	0.384	-0.0015	27.683	
7	6	2300	2332	1.780	1.619	0.002090	34.623	34.622	0.384	-0.0015	27.687	
8	14	2400	2434	1.758	1.588	0.000944	34.628	34.629	0.385	-0.0005	27.692	
9	31	2600	2638	1.755	1.567	0.002068	34.632	34.628	0.390	0.0045	27.696	

0	12	13	14	15	16	17	18	19	20
Sigma-t	Sigma-t	Sigma-Theta	Sigma-Theta	PO4-UNF	PO4-FIL	SiO4-UNF	SiO4-FIL	NO3-UNF	NO3-FIL
(Bottle)	(CTD)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
1	27.552	27.564	27.560	3.194	3.192	164.58	163.67	163.67	163.67
2	27.618	27.626	27.627	3.117	3.117	172.20	172.41	172.41	172.41
3	27.658	27.669	27.669	3.081	3.089	177.89	178.00	178.00	178.00
4	27.670	27.681	27.681	3.041	3.046	179.48	180.63	180.63	180.63
5	27.678	27.691	27.689	3.053	3.057	179.75	179.04	179.04	179.04
6	27.683	27.695	27.695	3.062	3.066	179.60	179.92	179.92	179.92
7	27.686	27.699	27.698	3.053	3.050	182.44	180.50	180.50	180.50
8	27.693	27.705	27.706	3.032	3.012	181.36	181.17	181.17	181.17
9	27.693	27.710	27.707	2.889	2.904	179.56	179.67	179.67	179.67

0	21
TSM	(ug/l)
1	25.60
2	10.91
3	10.72
4	10.74
5	10.86
6	10.70
7	10.71
8	12.43
9	14.86

D-Theta = (ptemp + (4.694 * pden)) - 131.6354
 Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X27 Cast 51 18 AUG 1989
 LAT: 47 04.8N LONG: 130 00.6W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	16	1495	1513	2.318	2.217		34.524	34.524	0.386	0.0005		27.565
2	30	1754	1776	2.053	1.934		34.570	34.565	0.386	0.0005		27.623
3	5	2002	2028	1.921	1.783		34.601	34.599	0.384	-0.0015		27.658
4	8	2105	2133	1.889	1.743		34.606	34.605	0.384	-0.0015		27.665
5	1	2196	2226	1.852	1.699		34.612	34.608	0.384	-0.0015		27.672
6	15	2249	2280	1.835	1.677		34.615	34.613	0.383	-0.0025		27.676
7	21	2303	2335	1.814	1.652		34.618	34.618	0.384	-0.0015		27.680
8	9	2401	2436	1.772	1.602		34.625	34.624	0.383	-0.0025		27.689
9	29	2603	2642	1.725	1.537		34.634	34.638	0.388	0.0025		27.700

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SI04-UNF (uM/L)	SI04-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.565	27.573	27.573	3.295	3.282	163.98	162.56		
2	27.619	27.632	27.628	3.175	3.193	169.32	172.28		
3	27.657	27.669	27.667	3.130	3.128	178.11	177.94		
4	27.664	27.676	27.675	3.098	3.093	178.26	177.77		
5	27.669	27.684	27.681	3.066	3.067	176.21	175.21		
6	27.675	27.688	27.687	3.050	3.060	173.44	174.73		
7	27.680	27.692	27.692	3.036	3.018	178.81	177.38		
8	27.688	27.702	27.701	3.001	2.986	180.31	180.66		
9	27.703	27.714	27.717	2.951	2.951	178.89	178.62		

0	21
	TSM (ug/l)
1	9.83
2	9.68
3	8.35
4	10.68
5	9.06
6	8.95
7	8.42
8	9.88
9	15.04

Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X26 Cast 52 19 AUG 1989
 LAT: 47 12.3N LONG: 130 28.9W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	23	1501	1519	2.333	2.231	0.003086	34.519	34.517	0.386	0.001		27.559
2	19	1749	1771	2.080	1.961	0.007597	34.565	34.564	0.385	0.000		27.617
3	17	2004	2030	1.902	1.765	0.002556	34.597	34.596	0.385	0.000		27.657
4	2	2101	2129	1.853	1.708	0.011277	34.609	34.609	0.384	-0.001		27.670
5	10	2199	2230	1.824	1.671	0.013598	34.616	34.614	0.383	-0.002		27.678
6	3	2247	2279	1.807	1.650	0.007534	34.618	34.619	0.383	-0.002		27.681
7	24	2300	2332	1.786	1.625	0.009912	34.623	34.621	0.384	-0.001		27.686
8	22	2398	2432	1.733	1.564	0.000285	34.631	34.631	0.384	-0.001		27.697
9	26	2600	2639	1.706	1.519	-0.006659	34.637	34.632	0.389	0.004		27.704

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SI04-UNF (uM/L)	SI04-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)		
1	27.558	27.568	27.566	3.241	3.221	165.08	164.97				
2	27.616	27.626	27.625	3.169	3.143	171.53	171.63				
3	27.656	27.667	27.666	3.031	3.025	175.48	174.96				
4	27.670	27.681	27.681	3.025	3.024	176.31	175.38				
5	27.676	27.689	27.688	3.014	2.998	176.11	175.80				
6	27.682	27.693	27.693	2.977	3.002	174.65	174.34				
7	27.685	27.698	27.697	2.950	2.960	174.66	174.55				
8	27.697	27.709	27.709	2.960	2.959	174.45	172.69				
9	27.700	27.718	27.714	2.923	2.907	181.10	179.12				

0	21	TSM (ug/l)
1	11.40	
2	8.40	
3	11.22	
4	8.35	
5	9.59	
6	9.15	
7	10.73	
8	10.23	
9	15.91	

D-Theta = (ptemp + (4.694 * pden)) - 131.6314
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X25 Cast 53 19 AUG 1989
 LAT: 47 19.5N LONG: 130 57.8W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t	
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)	Sigma-t (CTD)
1	14	1500	1518	2.377	2.377	2.275	34.518	34.518	0.386	0.001	0.001	27.555	
2	6	1753	1775	2.106	2.106	1.987	34.562	34.562	0.386	0.001	0.001	27.612	
3	20	1999	2026	1.911	1.911	1.774	34.595	34.596	0.385	0.000	0.000	27.654	
4	12	2100	2129	1.864	1.864	1.719	34.605	34.606	0.385	0.000	0.000	27.666	
5	18	2201	2232	1.822	1.822	1.669	34.614	34.615	0.384	-0.001	-0.001	27.676	
6	11	2246	2277	1.811	1.811	1.654	34.615	34.616	0.384	-0.001	-0.001	27.678	
7	31	2298	2330	1.784	1.784	1.623	34.621	34.621	0.384	-0.001	-0.001	27.685	
8	25	2395	2429	1.750	1.750	1.581	34.628	34.617	0.383	-0.002	-0.002	27.693	
9	27	2605	2644	1.694	1.694	1.507	34.638	34.635	0.386	0.001	0.001	27.705	

0	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)	20	NO3-FIL (uM/L)
1		27.555		27.563		27.563		3.252		3.281		162.96		163.07				
2		27.612		27.622		27.622		3.165		3.169		170.05		167.66				
3		27.655		27.665		27.666		3.105		3.087		169.43		169.74				
4		27.667		27.677		27.678		3.065		3.058		174.02		178.08				
5		27.677		27.688		27.689		3.045		3.033		176.94		176.84				
6		27.679		27.690		27.691		3.021		3.029		176.11		172.47				
7		27.685		27.697		27.697		3.048		3.046		174.66		178.30				
8		27.684		27.706		27.697		3.018		3.032		173.00		178.52				
9		27.703		27.719		27.717		2.897		2.925		174.88		177.69				

0	21	TSM (ug/l)
1		11.54
2		11.75
3		10.46
4		10.65
5		9.26
6		9.22
7		9.15
8		12.21
9		14.54

D-Theta = (ptemp + (4.694 * pden)) - 131.6294
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X39 Cast 54 19 AUG 89
 LAT: 47 34.0N LONG: 130 49.5W

0	1	Niskin #	2	Depth (m)	3	Depth (db)	4	Insitu Temp.	5	Pottemp	6	Temp. Anom.	7	Salinity (CTD)	8	Salinity (Bottle)	9	Atten. (1/m)	10	Atten. Anom.
1	13		20	15		16.721		16.719		-4.909538		32.205		32.245		0.618		0.231		
2	16		1500	1519		2.448		2.345		0.061966		34.518		34.517		0.386		-0.001		
3	30		1749	1773		2.104		1.985		0.011689		34.564		34.563		0.385		-0.002		
4	5		1998	2025		1.909		1.772		0.007800		34.599		34.599		0.400		0.013		
5	8		2103	2133		1.863		1.718		0.006629		34.608		34.608		0.385		-0.002		
6	1		2202	2233		1.822		1.669		0.012679		34.618		34.617		0.386		-0.001		
7	21		2305	2337		1.787		1.625		0.010779		34.625		34.625		0.385		-0.002		
8	9		2400	2436		1.766		1.596		0.010480		34.630		34.632		0.386		-0.001		
9	29		2595	2632		1.702		1.515		-0.008311		34.639		34.639		0.386		-0.001		

0	11	Sigma-t (CTD)	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-UNF (uM/L)	17	SiO4-FIL (uM/L)	18	SiO4-UNF (uM/L)	19	NO3-UNF (uM/L)
1	23.436		23.466		23.436		23.467		3.071		3.112		161.41		161.63			
2	27.549		27.548		27.558		27.557		3.022		3.019		170.44		170.66			
3	27.614		27.613		27.624		27.623		2.958		2.956		177.37		177.60			
4	27.658		27.658		27.668		27.668		2.919		2.946		179.08		178.67			
5	27.668		27.668		27.679		27.679		2.900		2.892		181.41		180.37			
6	27.680		27.679		27.691		27.690		2.885		2.848		185.41		182.49			
7	27.688		27.688		27.700		27.700		2.880		2.882		179.16		179.59			
8	27.693		27.695		27.706		27.708		2.845		2.838		181.07		181.50			
9	27.706		27.706		27.719		27.719		2.816		2.799		183.19		184.25			

0	20	NO3-FIL (uM/L)	21	TSM (ug/l)
1		441.37		
2		10.28		
3		8.25		
4		10.31		
5		12.43		
6		13.14		
7		10.65		
8		10.44		
9		11.59		

D-Theta = (ptemp + (4.694 * pden)) - 131.6384
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X38 Cast 55 19 AUG 1989
 LAT: 47 26.7N LONG: 130 20.7W

0	1	2	3	4	5	6	7	8	9	10	11
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.	Sigma-t (CTD)
1	26	1500	1518	2.330	2.229	-0.001394	34.522	34.521	0.385	0.000	27.562
2	11	1750	1772	2.064	1.946	-0.001385	34.569	34.582	0.384	-0.001	27.621
3	22	2002	2029	1.896	1.759	-0.007644	34.599	34.599	0.384	-0.001	27.659
4	3	2096	2125	1.849	1.704	-0.008800	34.608	34.608	0.385	0.000	27.669
5	10	2207	2237	1.805	1.652	-0.012966	34.616	34.638	0.384	-0.001	27.679
6	2	2247	2278	1.792	1.635	-0.016033	34.618	34.640	0.384	-0.001	27.682
7	17	2296	2329	1.764	1.603	-0.017982	34.623	34.622	0.384	-0.001	27.688
8	19	2402	2436	1.738	1.568	-0.014464	34.630	34.630	0.384	-0.001	27.696
9	23	2603	2642	1.689	1.502	-0.020513	34.640	34.636	0.387	0.002	27.707

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
1	27.561	27.570	27.570	3.236	3.238	165.77	166.02		
2	27.632	27.631	27.641	3.114	3.106	173.78	173.41		
3	27.659	27.669	27.669	3.068	3.066	174.92	176.22		
4	27.669	27.680	27.680	3.038	3.050	176.27	176.73		
5	27.697	27.691	27.709	2.936	2.918	178.03	178.91		
6	27.699	27.694	27.711	2.926	2.923	179.17	179.01		
7	27.687	27.700	27.699	2.972	2.974	178.85	177.65		
8	27.696	27.708	27.708	2.967	2.929	180.82	178.37		
9	27.704	27.721	27.718	2.911	2.909	180.92	178.68		

0	21
	TSM (ug/l)
1	12.53
2	11.72
3	10.27
4	11.78
5	9.92
6	10.16
7	18.83
8	13.17
9	13.68

D-Theta = (ptemp + (4.694 * pden)) - 131.6454
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X37 Cast 56 19 AUG 1989
 LAT: 47 19.4N LONG: 129 51.9W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.
1	31	1746	1768	2.065	1.947	-0.001852	34.566	34.625	0.548	
2	20	2002	2028	1.901	1.764	0.005571	34.599	34.635	0.548	
3	12	2102	2130	1.862	1.717	0.005389	34.607	34.601	0.547	
4	9	2199	2230	1.814	1.661	0.003220	34.616	34.615	0.547	
5	6	2258	2290	1.793	1.635	0.005256	34.621	34.619	0.547	
6	14	2303	2335	1.776	1.615	0.003089	34.624	34.623	0.546	
7	18	2398	2432	1.751	1.581	0.004086	34.630	34.622	0.546	
8	27	2583	2621	1.712	1.526	-0.005710	34.637	34.631	0.548	

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.619	27.666	27.628	27.675	2.907	2.873	179.41	177.85	
2	27.658	27.687	27.669	27.698	2.859	2.861	177.95	179.51	
3	27.668	27.663	27.679	27.674	2.969	2.975	177.75	178.06	
4	27.679	27.678	27.690	27.689	2.962	2.938	177.33	177.44	
5	27.684	27.683	27.696	27.694	2.939	2.971	178.37	178.89	
6	27.688	27.687	27.700	27.699	2.927	2.934	178.58	179.31	
7	27.695	27.688	27.707	27.701	2.925	2.927	179.20	178.89	
8	27.703	27.698	27.717	27.712	2.883	2.869	178.58	177.24	

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1		11.82
2		12.73
3		10.04
4		8.95
5		16.29
6		9.68
7		9.59
8		13.94

D-Theta = (ptemp + (4.694 * pden)) - 131.6354

VENTS 1989 - LEG I
 Station X36 Cast 57 20 AUG 1989
 LAT: 47 105N LONG: 129 23.4W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
Depth	Depth	Depth	Depth	Insitu	Pottemp	Temp.	Salinity	Salinity	Salinity	Atten.	Atten.	(CTD)
(m)	(m)	(db)	(db)	Temp.	Anom.	(CTD)	(Bottle)	(l/m)	(uM/L)	(uM/L)	Anom	(CTD)
1500	1518	2.359	2.257	0.013980	34.519	34.517	0.388	0.001	27.557			
1748	1770	2.103	1.984	0.001924	34.561	34.560	0.386	-0.001	27.612			
2000	2027	1.921	1.784	0.002243	34.595	34.593	0.387	0.000	27.653			
2098	2126	1.878	1.733	0.003484	34.604	34.604	0.386	-0.001	27.664			
2200	2231	1.832	1.679	0.002350	34.613	34.612	0.386	-0.001	27.675			
2250	2281	1.818	1.661	0.001875	34.616	34.616	0.385	-0.002	27.678			
2301	2333	1.798	1.636	0.001242	34.620	34.617	0.385	-0.002	27.683			
2400	2434	1.779	1.609	0.002095	34.625	34.624	0.386	-0.001	27.688			
2603	2641	1.753	1.565	-0.007942	34.630	34.627	0.387	0.000	27.694			

0	12	13	14	15	16	17	18	19	20
Sigma-t	Sigma-Theta	Sigma-Theta	Sigma-Theta	PO4-UNF	PO4-FIL	SiO4-UNF	SiO4-FIL	NO3-UNF	NO3-FIL
(Bottle)	(CTD)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
27.556	27.566	27.564	3.233	3.204	164.98	163.63	171.98	171.66	171.98
27.611	27.621	27.620	3.136	3.122	171.66	171.66	175.34	176.48	175.34
27.652	27.664	27.662	3.043	3.045	176.48	177.34	178.08	177.34	178.08
27.664	27.675	27.675	3.001	3.002	177.34	178.19	178.52	178.19	178.52
27.674	27.686	27.686	2.998	2.999	178.19	178.84	178.95	178.84	178.95
27.678	27.690	27.690	3.006	3.007	178.84	179.50	177.93	179.50	177.93
27.681	27.695	27.693	2.998	2.964	179.50	180.47	180.47	178.26	180.47
27.688	27.701	27.700	2.965	2.956	178.26	179.12	178.81	179.12	178.81
27.692	27.709	27.706	2.917	2.943	179.12				

0	21
TSM	(ug/l)
11.94	
10.53	
11.57	
11.30	
10.62	
11.48	
11.57	
14.24	
17.05	

D-Theta = (ptemp + (4.694 * pden)) - 131.6364
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X35 Cast 58 20 AUG 1989
 LAT: 47 09.0N LONG: 129 16.7W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	13	1489	1507	2.375	2.274	0.020693	34.517	34.491	0.387	0.001		27.554
2	3	1747	1769	2.086	1.968	0.002922	34.563	34.561	0.384	-0.002		27.615
3	22	2000	2027	1.916	1.779	0.003077	34.595	34.595	0.385	-0.001		27.654
4	26	2104	2133	1.867	1.722	0.003914	34.605	34.630	0.385	-0.001		27.666
5	10	2198	2228	1.831	1.678	0.005858	34.613	34.613	0.385	-0.001		27.675
6	19	2249	2280	1.823	1.666	0.005373	34.615	34.615	0.386	0.000		27.677
7	17	2304	2336	1.801	1.639	0.003202	34.619	34.620	0.384	-0.002		27.682
8	2	2398	2432	1.769	1.599	0.003594	34.626	34.625	0.385	-0.001		27.690
9	23	2509	2545	1.764	1.584	0.001294	34.628	34.527	0.388	0.002		27.692

0	12	Sigma-t	13	Sigma-Theta	14	Sigma-Theta	15	PO4-UNF	16	PO4-FIL	17	SiO4-UNF	18	SiO4-FIL	19	NO3-UNF	20	NO3-FIL
		(Bottle)	(CTD)	(Bottle)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
1	27.533		27.563	27.542	27.623	3.218	3.211	156.92	159.06									
2	27.613		27.624	27.623	27.623	3.113	3.096	167.26	166.89									
3	27.654		27.664	27.664	27.664	2.988	2.976	174.25	174.08									
4	27.686		27.677	27.677	27.697	2.858	2.856	180.18	179.81									
5	27.675		27.686	27.686	27.686	2.895	2.888	179.02	177.39									
6	27.677		27.689	27.689	27.689	2.902	2.854	177.44	177.48									
7	27.683		27.694	27.694	27.695	2.837	2.836	178.15	178.20									
8	27.689		27.703	27.702	27.702	2.844	2.817	178.66	180.58									
9	27.611		27.705	27.705	27.624	3.075	3.104	164.17	163.17									

0	21	TSM
		(ug/l)
1	13.49	
2	10.79	
3	10.04	
4	10.53	
5	10.72	
6	10.36	
7	12.69	
8	12.04	
9	11.69	

D-Theta = (ptemp + (4.694 * pden)) - 131.6324
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X59 Cast 59 20 AUG 1989
 LAT: 47 06.9N LONG: 129 08.4W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin	Depth	Depth	Insitu	Pottemp	Temp.	Salinity	Salinity	Salinity	Atten.	Atten.	(CTD)
	#	(m)	(db)	Temp.	Anom.	(CTD)	(Bottle)	(Bottle)	(1/m)	Anom.	(CTD)	
1	20	1502	1520	2.355	2.253	0.037448	34.523	34.520	0.388	0.0005	27.561	
2	15	1755	1777	2.071	1.952	0.007660	34.565	34.565	0.387	-0.0005	27.618	
3	6	2018	2045	1.898	1.759	0.005232	34.597	34.597	0.387	-0.0005	27.657	
4	31	2108	2136	1.854	1.708	0.008219	34.606	34.607	0.386	-0.0015	27.667	
5	12	2208	2239	1.817	1.663	0.007093	34.614	34.615	0.386	-0.0015	27.677	
6	9	2232	2263	1.814	1.658	0.007582	34.615	34.616	0.386	-0.0015	27.678	
7	14	2286	2318	1.799	1.639	0.009968	34.619	34.620	0.386	-0.0015	27.682	
8	18	2402	2436	1.759	1.589	0.011475	34.628	34.628	0.388	0.0005	27.692	
9	27	2503	2539	1.767	1.588	0.010594	34.628	34.626	0.391	0.0035	27.692	

0	12	13	14	15	16	17	18	19	20
	Sigma-t	Sigma-Theta	Sigma-Theta	PO4-UNF	PO4-FIL	SiO4-UNF	SiO4-FIL	NO3-UNF	NO3-FIL
	(Bottle)	(CTD)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
1	27.558	27.569	27.567	3.189	3.182	162.82	162.75	170.43	170.15
2	27.618	27.627	27.627	3.125	3.128	170.43	170.15	174.40	175.37
3	27.657	27.667	27.667	3.051	3.051	174.40	175.29	175.15	175.29
4	27.668	27.679	27.679	2.974	2.982	175.15	176.56	176.43	176.56
5	27.678	27.688	27.688	2.937	2.938	176.43	176.07	176.03	176.07
6	27.679	27.690	27.690	2.910	2.928	176.03	177.85	177.93	177.85
7	27.683	27.694	27.694	2.912	2.914	177.93	179.02	178.89	179.02
8	27.692	27.705	27.705	2.873	2.871	178.89	178.73	178.70	178.73
9	27.690	27.705	27.704	2.884	2.884	178.70			

0	21
	TSM
	(ug/l)
1	11.12
2	10.93
3	11.84
4	10.93
5	10.26
6	10.17
7	11.49
8	12.83
9	15.58

D-Theta = (ptemp + (4.694 * pden)) - 131.6254
 Atten-Anom = Atten - 0.3875

VENTS 1989 - LEG I
 Station X34 Cast 60 20 AUG 1989
 LAT: 47 05.1N LONG: 129 02.2W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	24	1749	1771	2.060	1.942	0.003635	34.567	34.566	0.386	0.000		27.620
2	5	2002	2029	1.899	1.762	0.001732	34.597	34.597	0.385	-0.001		27.657
3	16	2099	2127	1.850	1.705	0.002942	34.607	34.607	0.385	-0.001		27.669
4	11	2200	2230	1.804	1.651	0.001792	34.616	34.616	0.384	-0.002		27.679
5	8	2254	2285	1.789	1.632	0.004199	34.620	34.618	0.385	-0.001		27.684
6	1	2302	2334	1.782	1.621	0.004453	34.622	34.622	0.384	-0.002		27.686
7	21	2398	2432	1.758	1.588	0.009812	34.629	34.629	0.384	-0.002		27.693
8	29	2595	2633	1.776	1.588	0.005755	34.628	34.626	0.388	0.002		27.691

0	12	Sigma-t	13	Sigma-Theta	14	Sigma-Theta	15	PO4-UNF	16	PO4-FIL	17	SiO4-UNF	18	SiO4-FIL	19	NO3-UNF	20	NO3-FIL
	(Bottle)	(CTD)	(Bottle)	(Bottle)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
1	27.619	27.629	27.629	27.629	27.629	27.629	3.029	2.994	171.59	171.47	171.59	171.59	171.59	171.47	171.59	171.59	171.59	171.59
2	27.657	27.667	27.667	27.667	27.667	27.667	2.930	2.935	175.64	175.92	175.64	175.64	175.64	175.92	175.64	175.64	175.64	175.64
3	27.669	27.680	27.680	27.680	27.680	27.680	2.905	2.900	177.23	177.52	177.23	177.23	177.23	177.52	177.23	177.23	177.23	177.23
4	27.679	27.691	27.691	27.691	27.691	27.691	2.880	2.880	178.42	178.66	178.42	178.42	178.42	178.66	178.42	178.42	178.42	178.42
5	27.682	27.696	27.696	27.696	27.696	27.696	2.875	2.865	180.42	179.07	180.42	180.42	180.42	179.07	180.42	180.42	180.42	180.42
6	27.686	27.698	27.698	27.698	27.698	27.698	2.899	2.879	180.38	179.85	180.38	180.38	180.38	179.85	180.38	180.38	180.38	180.38
7	27.693	27.706	27.706	27.706	27.706	27.706	2.830	2.829	180.75	180.63	180.75	180.75	180.75	180.63	180.75	180.75	180.75	180.75
8	27.689	27.705	27.705	27.705	27.705	27.705	2.834	2.829	180.91	180.58	180.91	180.91	180.91	180.58	180.91	180.91	180.91	180.91

0	21	TSM
		(ug/l)
1	9.04	
2	9.02	
3	10.43	
4	9.49	
5	8.94	
6	9.65	
7	12.96	
8	11.95	

D-Theta = (ptemp + (4.694 * pden)) - 131.6304
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X33 Cast 61 20 AUG 1989
 LAT: 47 03.0N LONG: 128 54.9W

0	1	2	3	4	5	6	7	8	9	10	11
Depth #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	Sigma-t (CTD)	
23	1497	1515	2.391	2.289	0.026246	34.516	34.514	0.385	-0.001	27.552	
22	1739	1761	2.096	1.978	0.009564	34.563	34.561	0.384	-0.002	27.614	
3	1998	2025	1.909	1.772	0.006281	34.597	34.596	0.385	-0.001	27.656	
19	2107	2136	1.857	1.711	0.004922	34.607	34.609	0.384	-0.002	27.668	
2	2191	2221	1.820	1.668	0.006735	34.615	34.613	0.384	-0.002	27.677	
17	2256	2288	1.802	1.644	0.006586	34.619	34.621	0.384	-0.002	27.682	
10	2296	2328	1.791	1.630	0.004809	34.621	34.623	0.384	-0.002	27.684	
13	2397	2431	1.778	1.608	0.009387	34.626	34.627	0.385	-0.001	27.689	
26	2486	2521	1.768	1.590	0.009029	34.629	34.631	0.387	0.001	27.693	

0	12	13	14	15	16	17	18	19	20
Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SI04-UNF (uM/L)	SI04-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)
27.551	27.561	27.559	3.173	3.172	163.70	163.42	170.33	170.33	170.33
27.612	27.623	27.622	3.090	3.089	169.98	170.00	175.03	175.03	175.03
27.655	27.667	27.666	3.012	3.011	175.03	176.14	176.14	176.14	176.14
27.670	27.679	27.681	2.959	2.958	176.14	177.04	177.04	177.04	177.04
27.676	27.689	27.687	2.966	2.966	177.04	177.32	177.32	177.32	177.32
27.683	27.694	27.695	2.948	2.948	177.32	179.26	179.26	179.26	179.26
27.686	27.696	27.698	2.941	2.941	179.26	180.10	180.10	180.10	180.10
27.690	27.702	27.703	2.938	2.938	179.96	180.10	180.10	180.10	180.10
27.694	27.706	27.707	2.895	2.895	182.11	182.11	182.11	182.11	182.11

0	21
TSM (ug/l)	TSM (ug/l)
10.30	10.30
11.12	11.12
9.59	9.59
9.24	9.24
10.66	10.66
10.08	10.08
10.90	10.90
10.15	10.15
13.62	13.62

D-Theta = (ptemp + (4.694 * pden)) - 131.6324
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X46 Cast 62 20 AUG 1989
 LAT: 47 17.5N LONG: 128 48.8W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
Depth	Niskin	Depth	Depth	Insitu	Pottemp	Temp.	Salinity	Salinity	Salinity	Atten.	Atten.	(CTD)
(m)	#	(m)	(db)	Temp.	Anom.	(CTD)	(Bottle)	(Bottle)	(1/m)	Anom	(CTD)	
1502	31	1502	1520	2.429	2.326	0.041467	34.514	34.514	0.387	0.001	27.547	
1751	6	1751	1774	2.104	1.985	0.002598	34.560	34.558	0.387	0.001	27.611	
2028	20	2001	2028	1.921	1.784	0.002422	34.594	34.629	0.386	0.000	27.653	
2136	15	2107	2136	1.868	1.722	0.004390	34.605	34.604	0.386	0.000	27.666	
2222	12	2192	2222	1.831	1.678	0.009956	34.614	34.616	0.387	0.001	27.676	
2282	9	2251	2282	1.812	1.655	0.009506	34.618	34.616	0.386	0.000	27.680	
2335	14	2303	2335	1.802	1.640	0.011436	34.621	34.623	0.386	0.000	27.683	
2435	18	2401	2435	1.782	1.612	0.011739	34.626	34.627	0.384	-0.002	27.689	
2623	27	2623	2661	1.770	1.579	0.013288	34.632	34.629	0.392	0.006	27.695	

0	12	13	14	15	16	17	18	19	20
Sigma-t	Sigma-Theta	Sigma-Theta	Sigma-Theta	PO4-UNF	PO4-FIL	SiO4-UNF	SiO4-FIL	NO3-UNF	NO3-FIL
(Bottle)	(CTD)	(Bottle)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
27.547	27.556	27.556	27.556	3.185	3.189	158.95	158.87	158.95	158.87
27.609	27.620	27.619	27.619	3.182	3.181	167.34	169.57	167.34	169.57
27.681	27.663	27.691	27.691	3.114	3.073	174.71	174.43	174.71	174.43
27.665	27.677	27.676	27.676	2.906	2.910	176.86	176.80	176.86	176.80
27.677	27.687	27.687	27.687	2.978	2.972	178.60	178.54	178.60	178.54
27.679	27.692	27.691	27.691	2.950	2.919	179.09	179.03	179.09	179.03
27.685	27.696	27.697	27.697	2.928	2.956	180.42	179.93	180.42	179.93
27.690	27.702	27.703	27.703	2.945	2.933	179.87	180.01	179.87	180.01
27.692	27.709	27.707	27.707	2.907	2.905	180.36	180.29	180.36	180.29

0	21
TSM	(ug/l)
8.97	8.97
9.16	9.16
8.56	8.56
14.27	14.27
17.23	17.23
11.26	11.26
10.29	10.29
11.14	11.14
18.65	18.65

D-Theta = (ptemp + (4.694 * pden)) - 131.6324
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X45 Cast 63 21 AUG 1989
 LAT: 47 19.6N LONG: 128 54.5W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	29	1495	1513	2.388	2.286	0.042064	34.522	34.522	0.387	0.001		27.557
2	24	1750	1772	2.070	1.952	0.010352	34.569	34.562	0.387	0.001		27.621
3	5	2002	2028	1.893	1.756	0.006013	34.601	34.600	0.387	0.001		27.660
4	16	2102	2130	1.855	1.710	0.006467	34.609	34.589	0.386	0.000		27.670
5	11	2199	2230	1.820	1.667	0.005042	34.616	34.616	0.387	0.001		27.678
6	8	2247	2278	1.807	1.650	0.005326	34.619	34.620	0.386	0.000		27.682
7	1	2298	2330	1.794	1.633	0.005361	34.622		0.386	0.000		27.685
8	21	2399	2434	1.773	1.603	0.004816	34.627	34.628	0.387	0.001		27.691
9	30	2555	2592	1.758	1.574	0.004720	34.632	34.627	0.388	0.002		27.696

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-UNF	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	Atten. (uM/L)	Atten. (uM/L)			(uM/L)
1	27.557	27.566	27.566	3.139	3.159	163.16	162.96					
2	27.615	27.630	27.625	3.056	3.037	172.44	170.80					
3	27.660	27.671	27.670	2.963	3.081	179.25	178.85					
4	27.654	27.681	27.665	3.043	3.048	178.85	177.00					
5	27.678	27.690	27.690	3.029	3.004	181.34	187.11					
6	27.682	27.693	27.694	3.010	3.015	181.14	180.94					
7		27.697	27.697									
8	27.691	27.703	27.704	2.981	2.956	181.15	181.57					
9	27.692	27.709	27.705	2.913	2.908	181.58	181.38					

0	21	TSM (ug/l)
1	9.03	
2	10.62	
3	10.28	
4	10.81	
5	12.06	
6	9.10	
7		
8	10.90	
9	11.73	

D-Theta = (ptemp + (4.694 * pden)) - 131.6374
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X60 Cast 64 21 AUG 1989
 LAT: 47 21.7N LONG: 129 01.1W

0	1	2	3	4	5	6	7	8	9	10	11	
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. (CTD)	Salinity (Bottle)	Salinity (CTD)	Atten. (1/m)	Atten. Anom.	Sigma-t (CTD)	
1	23	1501	1519	2.394	2.292	0.037655	34.521	34.521	0.388	0.002	27.556	
2	19	1758	1780	2.080	1.961	0.000881	34.566	34.566	0.389	0.003	27.618	
3	22	2004	2030	1.914	1.776	0.007689	34.599	34.599	0.388	0.002	27.657	
4	2	2102	2130	1.874	1.729	0.007020	34.607	34.608	0.387	0.001	27.667	
5	17	2201	2231	1.836	1.683	0.007408	34.615	34.615	0.387	0.001	27.676	
6	10	2298	2330	1.805	1.643	0.008389	34.622	34.633	0.388	0.002	27.684	
7	13	2398	2432	1.784	1.614	0.011714	34.628	34.627	0.387	0.001	27.690	
8	26	2560	2597	1.768	1.583	0.010611	34.633	34.632	0.392	0.006	27.696	

0	12	13	14	15	16	17	18	19	20
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	P04-DNF (uM/L)	P04-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-DNF (uM/L)	NO3-FIL (uM/L)
1	27.555	27.564	27.564	3.256	3.246	163.44	163.23		
2	27.618	27.627	27.627	3.181	3.169	172.27	172.47		
3	27.657	27.668	27.668	3.090	3.081	177.19	177.29		
4	27.668	27.678	27.678	3.051	3.031	178.32	178.93		
5	27.676	27.688	27.688	3.028	3.013	179.44	179.44		
6	27.693	27.696	27.696	2.961	2.956	181.69	181.69		
7	27.690	27.703	27.702	2.990	2.993	182.20	183.32		
8	27.695	27.710	27.709	2.970	2.985	181.89	181.89		

0	21
	TSM (ug/l)
1	12.57
2	13.18
3	11.07
4	9.70
5	12.31
6	12.93
7	16.39
8	15.60

D-Theta = (ptemp + (4.694 * pden)) - 131.6414
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X43 Cast 66 21 AUG 1989
 LAT: 47 25.8N LONG: 129 15.1W

0	1	2	3	4	5	6	7	8	9	10	11	
Depth (m)	Depth (db)	In situ Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	NO3-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	Sigma-t (CTD)
1502	1520	2.356	2.254	34.520	34.521	0.387	3.057	164.91	164.91	0.000	0.000	27.558
1748	1770	2.077	1.959	34.565	34.566	0.387	2.969	172.34	172.34	0.000	0.000	27.617
2001	2027	1.906	1.769	34.599	34.598	0.386	2.901	176.89	176.89	-0.001	-0.001	27.658
2100	2129	1.863	1.718	34.607	34.608	0.387	2.901	177.31	177.31	0.000	0.000	27.668
2201	2231	1.821	1.668	34.615	34.615	0.386	2.862	177.94	177.94	-0.001	-0.001	27.677
2250	2281	1.798	1.641	34.619	34.621	0.387	2.858	178.56	178.56	0.000	0.000	27.682
2300	2332	1.778	1.617	34.623	34.624	0.386	2.859	179.20	179.20	-0.001	-0.001	27.687
2400	2434	1.760	1.590	34.627	34.629	0.387	2.873	181.06	181.06	0.000	0.000	27.692
2600	2639	1.734	1.546	34.635	34.634	0.390	2.815	180.66	180.66	0.003	0.003	27.700

0	12	13	14	15	16	17	18	19	20
Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SI04-UNF (uM/L)	SI04-FIL (uM/L)	Atten. (1/m)	NO3-UNF (uM/L)	NO3-FIL (uM/L)
27.559	27.567	27.567	3.066	3.057	164.91	164.91	0.387	3.057	164.91
27.618	27.626	27.627	2.964	2.969	172.34	172.34	0.387	2.969	172.34
27.657	27.668	27.668	2.905	2.901	177.09	177.09	0.386	2.901	176.89
27.668	27.679	27.679	2.901	2.901	177.31	177.31	0.387	2.901	177.31
27.677	27.689	27.689	2.857	2.862	178.56	178.56	0.386	2.862	177.94
27.684	27.694	27.696	2.858	2.858	178.98	178.98	0.387	2.858	178.78
27.688	27.699	27.700	2.873	2.859	179.40	179.40	0.386	2.859	179.20
27.693	27.704	27.706	2.814	2.820	181.06	181.06	0.387	2.820	183.13
27.699	27.714	27.713	2.810	2.815	180.66	180.66	0.390	2.815	180.88

0	21
TSM (ug/l)	
9.76	
9.02	
10.60	
8.71	
9.07	
8.59	
10.62	
10.58	
12.78	

D-Theta = (ptemp + (4.694 * pden)) - 131.6304
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X42 Cast 67 21 AUG 1989
 LAT: 47 33.4N LONG: 129 44.0W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Anom.	Atten. Anom.	(CTD)
1	29	1499	1517	2.326	2.326	-0.003569	34.517	34.511	0.388	0.002	0.002	27.558
2	16	1751	1773	2.075	2.075	-0.001931	34.562	34.561	0.387	0.001	0.001	27.615
3	25	1998	2024	1.903	1.903	0.012290	34.598	34.598	0.387	0.001	0.001	27.657
4	13	2100	2128	1.851	1.851	0.011297	34.608	34.609	0.387	0.001	0.001	27.669
5	2	2203	2233	1.814	1.814	0.019557	34.618	34.618	0.388	0.002	0.002	27.680
6	10	2251	2282	1.804	1.804	0.021707	34.621	34.622	0.388	0.002	0.002	27.683
7	22	2298	2331	1.794	1.794	0.020102	34.623	34.622	0.388	0.002	0.002	27.686
8	17	2401	2436	1.781	1.781	0.017064	34.626	34.626	0.387	0.001	0.001	27.689
9	27	2600	2638	1.725	1.725	0.006852	34.636	34.624	0.390	0.004	0.004	27.701

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-UNF	NO3-FIL
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	Atten. (uM/L)	Anom.	(uM/L)	(uM/L)	(uM/L)
1	27.554	27.567	27.562	3.231	3.228	165.81	165.81	165.43	0.002	165.43	165.43	165.43
2	27.614	27.624	27.623	3.142	3.135	172.00	172.00	170.59	0.001	170.59	170.59	170.59
3	27.657	27.668	27.668	3.071	3.057	175.67	175.67	175.70	0.001	175.70	175.70	175.70
4	27.670	27.680	27.681	3.044	3.052	177.57	177.57	177.59	0.001	177.59	177.59	177.59
5	27.680	27.692	27.692	3.013	3.010	181.51	181.51	181.54	0.001	181.54	181.54	181.54
6	27.684	27.695	27.696	3.023	2.995	182.18	182.18	182.20	0.001	182.20	182.20	182.20
7	27.685	27.698	27.697	2.987	3.005	181.82	181.82	182.05	0.001	182.05	182.05	182.05
8	27.689	27.702	27.702	2.966	2.963	182.08	182.08	182.31	0.001	182.31	182.31	182.31
9	27.692	27.715	27.706	2.924	2.932	180.29	180.29	180.31	0.004	180.31	180.31	180.31

0	21	TSM (ug/l)
1	8.89	
2	7.90	
3	13.64	
4	9.31	
5	11.41	
6	13.18	
7	11.52	
8	11.03	
9	14.70	

D-Theta = (ptemp + (4.694 * pden)) - 131.6264
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X41 Cast 68 21 AUG 1989
 LAT: 47 40.5N LONG: 130 12.7W

0	1	2	3	4	5	6	7	8	9	10	11	
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	Sigma-t (CTD)	
1	3	1507	1525	2.319	2.217	0.012823	34.525	34.524	0.388	0.0025	27.565	
2	23	1716	1737	2.112	1.996	0.013931	34.562	34.555	0.387	0.0015	27.612	
3	24	1999	2025	1.899	1.762	0.000693	34.598	34.598	0.386	0.0005	27.658	
4	5	2101	2130	1.854	1.709	0.000338	34.607	34.604	0.386	0.0005	27.668	
5	19	2200	2231	1.816	1.663	0.000677	34.615	34.615	0.386	0.0005	27.678	
6	11	2252	2283	1.800	1.643	-0.001190	34.618	34.617	0.386	0.0005	27.681	
7	8	2303	2336	1.773	1.612	-0.002624	34.623	34.623	0.386	0.0005	27.687	
8	21	2405	2439	1.750	1.580	-0.004478	34.628	34.628	0.386	0.0005	27.693	
9	30	2587	2625	1.700	1.514	-0.013712	34.637	34.637	0.388	0.0025	27.704	

0	12	13	14	15	16	17	18	19	20	
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	
1	27.565	27.574	27.573	3.165	3.131	165.17	164.83			
2	27.606	27.621	27.616	3.091	3.096	171.22	171.69			
3	27.658	27.668	27.668	3.032	3.017	175.83	176.09			
4	27.666	27.679	27.677	3.017	3.016	177.79	178.05			
5	27.678	27.689	27.689							
6	27.680	27.693	27.692	2.967	2.972	178.32	178.79			
7	27.687	27.699	27.699	2.971	3.005	182.12	180.14			
8	27.693	27.706	27.706	2.880	2.929	178.94	179.00			
9	27.704	27.718	27.718	2.909	2.904	178.45	178.10			

0	21
	TSM (ug/l)
1	14.27
2	10.88
3	9.54
4	9.83
5	11.30
6	11.35
7	11.24
8	11.28
9	12.53

D-Theta = (ptemp + (4.694 * pden)) - 131.6354
 Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X49 Cast 77 23 AUG 1989
 LAT: 47 36.0N LONG: 129 08.0W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	In situ Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom.
1	26	1503	1521	2.381	2.279	0.015134	34.518	34.513	0.388	0.002
2	10	1752	1774	2.089	1.970	-0.000497	34.565	34.560	0.584	0.198
3	22	2003	2030	1.911	1.774	0.002136	34.599	34.594	0.387	0.001
4	17	2103	2132	1.867	1.722	0.002555	34.608	34.605	0.387	0.001
5	16	2198	2228	1.823	1.670	-0.000724	34.616	34.614	0.387	0.001
6	2	2250	2281	1.808	1.651	0.001779	34.620	34.616	0.387	0.001
7	19	2299	2331	1.799	1.638	0.008266	34.624	34.622	0.388	0.002
8	1	2401	2435	1.782	1.612	0.006458	34.628	34.622	0.388	0.002
9	27	2493	2529	1.768	1.589	0.003269	34.631	34.626	0.390	0.004

0	11	12	13	14	15	16	17	18	19	
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.555	27.551	27.563	27.563	27.559	3.185	3.206	162.55	163.15	
2	27.616	27.612	27.626	27.626	27.622	3.100	3.111	169.87	170.06	
3	27.657	27.653	27.668	27.668	27.664	3.055	3.056	174.94	174.93	
4	27.668	27.666	27.676	27.676	27.677	3.016	3.017	176.34	175.93	
5	27.678	27.676	27.689	27.689	27.688	3.013	2.977	176.93	176.92	
6	27.682	27.679	27.694	27.694	27.691	2.983	2.979	176.71	176.29	
7	27.686	27.685	27.698	27.698	27.697	2.970	2.991	176.89	178.71	
8	27.691		27.703	27.703						
9	27.694	27.690	27.708	27.708	27.703	2.997	2.967	178.90	181.13	

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1		8.93
2		8.57
3		8.89
4		9.00
5		8.83
6		10.00
7		11.63
8		
9		15.69

D-Theta = (ptemp + (4.6903 * pden)) - 131.5427
 Atten-Anom = Atten - 0.386

VENTS 1989 - LEG I
 Station X48 Cast 79 24 AUG 1989
 LAT: 47 31.9N LONG: 128 49.4W

0	1	2	3	4	5	6	7	8	9	10
Atten.	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (l/m)	Anom
0.0025	22	1500	1518	2.383	2.281	0.036493	34.522	34.522	0.388	0.0025
0.0015	9	1749	1772	2.100	1.981	0.011499	34.565	34.555	0.387	0.0015
0.0015	23	2001	2027	1.915	1.778	0.002283	34.597	34.588	0.387	0.0015
0.0005	8	2100	2129	1.865	1.720	0.002689	34.607	34.600	0.386	0.0005
0.0005	14	2197	2227	1.826	1.673	0.002490	34.615	34.607	0.386	0.0005
0.0005	5	2250	2281	1.811	1.654	0.004957	34.619	34.611	0.386	0.0005
0.0005	13	2301	2333	1.800	1.638	0.006253	34.622	34.615	0.386	0.0005
0.0005	30	2399	2433	1.783	1.613	0.012220	34.628	34.618	0.386	0.0005
0.0035	17	2601	2640	1.767	1.578	0.016128	34.635	34.626	0.389	0.0035

0	11	12	13	14	15	16	17	18	19
NO3-FIL	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
12.66	27.558	27.558	27.566	27.566	3.205	3.241	162.76	162.78	171.00
11.56	27.615	27.607	27.625	27.617	3.134	3.134	170.56	171.00	175.94
12.04	27.656	27.648	27.666	27.659	3.041	3.087	175.51	175.94	178.03
13.50	27.667	27.662	27.679	27.673	3.046	3.041	177.59	178.03	184.19
13.35	27.677	27.670	27.688	27.682	3.036	2.995	177.23	184.19	179.34
11.98	27.681	27.675	27.693	27.687	3.031	3.010	179.93	179.34	179.79
11.98	27.684	27.679	27.697	27.691	2.989	3.015	179.77	179.79	182.49
11.66	27.691	27.683	27.703	27.695	3.000	2.994	182.06	182.49	184.17
17.12	27.697	27.690	27.712	27.704	2.989	2.984	183.94	184.17	

0	20	21
NO3-FIL (uM/L)	NO3-FIL (uM/L)	TSM (ug/l)
12.66	12.66	12.66
11.56	11.56	11.56
12.04	12.04	12.04
13.50	13.50	13.50
13.35	13.35	13.35
11.98	11.98	11.98
11.66	11.66	11.66
17.12	17.12	17.12

D-Theta = (ptemp + (4.6903 * pden)) - 131.5377
 Atten-Anom = Atten - 0.3855

VENTS 1989 - LEG I
 Station X47 Cast 80 24 AUG 1989
 LAT: 47 40.3N LONG: 128 12.5W

0	1	2	3	4	5	6	7	8	9	10	Atten.
	Niskin #	Depth (m)	Depth (db)	Temp.	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (l/m)	Anom
1	5	1502	1520	2.474	2.371	0.078827	34.520	34.514	34.514	0.391	0.006
2	27	1752	1774	2.117	1.998	0.005655	34.562	34.560	34.560	0.388	0.003
3	19	1998	2024	1.918	1.781	-0.000658	34.597	34.598	34.598	0.387	0.002
4	3	2098	2126	1.858	1.713	0.000874	34.609	34.608	34.608	0.441	0.056
5	2	2200	2231	1.816	1.663	0.002197	34.618	34.617	34.617	0.386	0.001
6	16	2247	2279	1.801	1.644	0.004975	34.622	34.622	34.622	0.386	0.001
7	10	2298	2330	1.791	1.630	0.006957	34.625	34.625	34.625	0.386	0.001
8	15	2400	2434	1.779	1.609	0.008339	34.629	34.632	34.632	0.384	-0.001
9	12	2599	2637	1.774	1.586	0.034577	34.640	34.641	34.641	0.387	0.002

0	11	12	13	14	15	16	17	18	19	NO3-UNF
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	(uM/L)
1	27.548	27.544	27.557	27.557	27.552	3.220	3.246	157.88	158.88	
2	27.611	27.610	27.621	27.621	27.619	3.138	3.140	166.17	170.67	
3	27.655	27.656	27.666	27.666	27.667	3.089	3.052	180.30	181.32	
4	27.670	27.669	27.681	27.681	27.680	3.030	2.994	183.51	174.50	
5	27.680	27.679	27.692	27.692	27.691	2.938	2.935	175.52	173.04	
6	27.684	27.684	27.696	27.696	27.696	2.927	2.963	174.29	183.04	
7	27.688	27.688	27.700	27.700	27.700	2.970	2.972	184.07	185.10	
8	27.692	27.694	27.704	27.704	27.707	2.950	2.942	182.14	179.89	
9	27.701	27.702	27.715	27.715	27.716	2.925	2.908	186.08	181.71	

0	20	NO3-FIL	21	TSM
	(uM/L)	(uM/L)	(ug/L)	
1			9.92	
2			12.09	
3			11.07	
4			11.28	
5			12.78	
6			10.68	
7			14.24	
8			10.82	
9			12.42	

D-Theta = (ptemp + (4.6903 * pden)) - 131.5427
 Atten-Anom = Atten - 0.385

VENTS 1989 - LEG I
 Station X53 Cast 69 22 AUG 1989
 LAT: 48 02.2N LONG: 130 38.6W

0	1	2	3	4	5	6	7	8	9	10	19
	Niskin #	Depth (m)	Depth (db)	Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	NO3-UNF (uM/L)
1	1	1500	1519	2.387	2.285	0.016893	34.515	34.517	0.387	2282.619665	
2	6	1745	1768	2.111	1.992	0.004244	34.560	34.560	0.387	1990.326288	
3	20	1999	2026	1.920	1.783	0.002670	34.595	34.594	0.387	1780.952417	
4	15	2099	2127	1.879	1.734	-0.002456	34.602	34.602	0.387	1732.073757	
5	12	2201	2231	1.833	1.680	0.000202	34.612	34.611	0.387	1677.986224	
6	9	2249	2280	1.813	1.656	-0.004028	34.615	34.616	0.386	1654.070584	
7	14	2299	2331	1.792	1.631	0.002250	34.621	34.620	0.386	1628.991598	
8	18	2402	2437	1.762	1.592	-0.004165	34.626	34.617	0.387	1590.301679	
9	31	2602	2640	1.696	1.509	-0.013431	34.638	34.637	0.389	1507.277932	

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)
1	27.552	27.553	27.560	27.562	27.562	3.212	3.251	163.18	163.04
2	27.610	27.610	27.620	27.620	27.620	3.143	3.157	171.06	171.12
3	27.654	27.653	27.664	27.663	27.663	3.054	3.063	176.29	175.94
4	27.662	27.662	27.673	27.673	27.673	3.053	3.018	175.59	175.86
5	27.674	27.673	27.686	27.685	27.685	3.018	3.067	179.80	178.02
6	27.678	27.679	27.690	27.691	27.691	2.954	2.939	176.50	176.97
7	27.684	27.683	27.696	27.696	27.696	2.997	2.977	177.80	177.66
8	27.691	27.683	27.703	27.696	27.696	2.942	2.952	176.29	176.35
9	27.705	27.704	27.719	27.718	27.718	2.883	2.912	177.84	178.11

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1		10.60
2		9.81
3		11.74
4		8.50
5		9.48
6		9.18
7		9.14
8		12.56
9		11.75

D-Theta = (ptemp + (4.694 * pden)) - 131.6354
 Atten-Anom = Atten - (0.386 + -999*Theta)

VENTS 1989 - LEG I
 Station X52 Cast 70 22 AUG 1989
 LAT: 47 55.7 N LONG: 130 10.3W

0	1	2	3	4	5	6	7	8	9	10	11	
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom	Sigma-t (CTD)	
1	2	1500	1519	2.345	2.243	0.010935	34.521	34.520	0.388	0.001	27.560	
2	29	1750	1772	2.121	2.002	0.003460	34.559	34.560	0.389	0.002	27.609	
3	10	2001	2028	1.946	1.808	0.000924	34.591	34.590	0.388	0.001	27.648	
4	22	2100	2129	1.892	1.746	0.002693	34.602	34.601	0.388	0.001	27.661	
5	17	2200	2231	1.849	1.695	0.003634	34.611	34.612	0.388	0.001	27.672	
6	27	2251	2282	1.832	1.674	0.001216	34.614	34.613	0.388	0.001	27.676	
7	16	2301	2333	1.811	1.649	0.003769	34.619	34.621	0.387	0.000	27.681	
8	13	2401	2435	1.776	1.606	-0.001895	34.625	34.621	0.388	0.001	27.689	
9	26	2603	2641	1.733	1.545	-0.011501	34.633	34.632	0.388	0.001	27.698	

0	12	13	14	15	16	17	18	19	20	
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)	NO3-FIL (uM/L)	
1	27.559	27.568	27.568	3.130	3.120	165.04	164.69			
2	27.610	27.618	27.619	3.052	3.071	171.53	171.18			
3	27.647	27.659	27.658	3.017	3.017	177.00	176.65			
4	27.661	27.672	27.672	2.973	2.973	178.35	180.26			
5	27.673	27.684	27.684	2.978	2.968	180.33	180.18			
6	27.675	27.688	27.687	2.972	2.992	180.65	180.71			
7	27.683	27.693	27.695	3.016	3.046	181.39	182.89			
8		27.701								
9	27.698	27.712	27.712	3.021	3.099	183.77	181.37			

0	21	TSM (ug/l)
1		12.47
2		12.05
3		11.81
4		12.78
5		13.19
6		11.58
7		10.07
8		
9		12.72

D-Theta = (ptemp + (4.694 * pden)) - 131.6384
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X51 Cast 71 22 AUG 1989
 LAT: 47 48.0N LONG: 129 41.3W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp Anom.	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	30	1501	1519	2.373	2.271	0.036428	34.523	34.505	0.388	0.001		27.559
2	25	1748	1770	2.080	1.962	0.005413	34.566	34.545	0.389	0.002		27.618
3	11	2000	2027	1.912	1.775	0.003066	34.597	34.578	0.388	0.001		27.656
4	8	2102	2130	1.874	1.729	0.007257	34.606	34.593	0.389	0.002		27.666
5	21	2200	2230	1.817	1.664	0.006875	34.617	34.601	0.388	0.001		27.679
6	5	2250	2281	1.804	1.647	0.006994	34.620	34.557	0.389	0.002		27.683
7	3	2300	2333	1.794	1.632	0.005224	34.622	34.606	0.388	0.001		27.685
8	13	2400	2434	1.781	1.611	0.006151	34.626	34.611	0.388	0.001		27.689
9	23	2539	2576	1.776	1.593	0.005950	34.629	34.605	0.388	0.001		27.692

0	12	13	14	15	16	17	18	19	20	NO3-FIL	NO3-UNF	NO3-FIL	NO3-UNF
	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	Atten. (uM/L)	Atten. (uM/L)				
1	27.545	27.568	27.553	3.188	3.178	164.79	165.67	165.67	165.67				
2	27.601	27.627	27.610	3.055	3.031	171.90	171.34	171.34	171.34				
3	27.641	27.666	27.651	2.977	2.976	175.72	175.99	175.99	175.99				
4	27.655	27.677	27.667	2.962	2.932	177.90	177.96	177.96	177.96				
5	27.666	27.691	27.678	2.917	2.917	179.66	183.83	183.83	183.83				
6	27.632	27.694	27.644	3.015	3.005	171.98	171.83	171.83	171.83				
7	27.672	27.697	27.684	2.917	2.917	180.11	180.17	180.17	180.17				
8	27.677	27.702	27.690	2.912	2.897	182.29	182.71	182.71	182.71				
9	27.673	27.706	27.686	2.868	2.877	180.56	182.27	182.27	182.27				

0	21	TSM (ug/l)
1	11.13	
2	19.96	
3	17.22	
4	13.85	
5	14.70	
6	32.53	
7	13.37	
8	14.57	
9	13.79	

D-Theta = (ptemp + (4.694 * pden)) - 131.6374
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station XT-11 Cast 72 22 AUG 1989
 LAT: 47 59.8N LONG: 129 13.0W

0	1	2	3	4	5	6	7	8	9	10	11	Sigma-t
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom		(CTD)
1	12	2402	2436	1.789	1.618	0.010732	34.626	34.626	0.392	0.0045		27.688
2	15	2424	2458	1.787	1.614	0.011906	34.627	34.625	0.393	0.0055		27.689
3	20	2449	2485	1.789	1.614	0.011648	34.627	34.626	0.393	0.0055		27.689
4	29	2453	2488	1.796	1.621	0.012182	34.626	34.619	0.392	0.0045		27.688
5	6	2474	2510	1.789	1.612	0.013940	34.628	34.621	0.395	0.0075		27.690
6	18	2486	2522	1.789	1.611	0.013194	34.628	34.627	0.394	0.0065		27.690
7	24	2491	2527	1.788	1.609	0.012271	34.628	34.602	0.394	0.0065		27.690
8	9	2497	2534	1.787	1.608	0.011253	34.628	34.505	0.394	0.0065		27.690
9	31	2500	2536	1.780	1.601	0.010375	34.629	34.601	0.395	0.0075		27.692
10	14	2507	2544	1.786	1.606	0.010010	34.628	34.623	0.394	0.0065		27.690

0	12	Sigma-t (Bottle)	13	Sigma-Theta (CTD)	14	Sigma-Theta (Bottle)	15	PO4-UNF (uM/L)	16	PO4-FIL (uM/L)	17	SiO4-UNF (uM/L)	18	SiO4-FIL (uM/L)	19	NO3-UNF (uM/L)	20	NO3-FIL (uM/L)
1	27.688		27.701		27.701		2.831		2.852		181.83		181.83		181.62			
2	27.688		27.702		27.701		2.850		2.835		182.04		182.04		181.83			
3	27.688		27.702		27.702		2.818		2.813		181.83		182.24		179.97			
4	27.682		27.701		27.696		2.876		2.866		179.77		182.24		181.83			
5	27.684		27.703		27.698		2.816		2.807		181.83		182.24		181.62			
6	27.689		27.704		27.703		2.805		2.790		181.62		182.45		157.92			
7	27.689		27.704		27.683		2.773		2.814		182.04		182.45		181.83			
8	27.592		27.704		27.605		3.012		2.972		157.48		182.04		179.97			
9	27.669		27.705		27.683		2.787		2.777		181.83		182.04					
10	27.686		27.704		27.700		2.849		2.855		179.97							

0	21	TSM (ug/l)
1	18.43	
2	16.57	
3	20.00	
4	18.54	
5	21.57	
6	20.41	
7	29.94	
8		
9	22.02	
10	19.17	

D-Theta = (ptemp + (4.678 * pden)) - 131.1946
 Atten-Anom = Atten - 0.3875

VENTS 1989 - LEG I
 Station X55 Cast 73 23 AUG 89
 LAT: 47 57.5N LONG: 129 06.3W

0	1	2	3	4	5	6	7	8	9	10	
Niskin #	Depth (m)	Depth (db)	Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Salinity (uM/L)	Salinity (uM/L)	Atten. (1/m)	Atten. Anom.
13	1702	1723	2.102	1.987	0.000000	34.564	34.553	170.46	170.90	0.388	0.001
27	1771	1793	1.994	1.875	0.033050	34.590	34.574	175.15	174.98	0.388	0.001
1	1848	1872	2.000	1.874	0.092690	34.606	34.593	179.63	180.27	0.388	0.001
14	1898	1923	2.004	1.874	0.092538	34.606	34.596	183.41	183.02	0.388	0.001
2	1952	1977	2.001	1.867	0.087782	34.606	34.598	182.57	182.49	0.388	0.001
16	1993	2019	1.999	1.861	0.103020	34.611	34.601	181.84	182.06	0.387	0.000
17	2002	2028	1.998	1.859	0.083168	34.606	34.600	180.76	180.21	0.387	0.000
22	2026	2053	1.986	1.845	0.078022	34.607	34.599	179.35	179.47	0.386	-0.001
8	2048	2075	1.980	1.838	0.076786	34.608	34.601	180.65	182.10	0.388	0.001
10	2071	2098	1.965	1.821	0.066091	34.608	34.600	180.74	180.86	0.388	0.001

0	11	12	13	14	15	16	17	18	19
Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
27.614	27.605	27.623	27.615	27.615	2.966	2.956	170.46	170.90	
27.644	27.631	27.653	27.640	27.640	2.903	2.917	175.15	174.98	
27.656	27.646	27.666	27.655	27.655	2.857	2.858	179.63	180.27	
27.656	27.648	27.666	27.658	27.658	2.865	2.880	183.41	183.02	
27.656	27.650	27.666	27.660	27.660	2.892	2.896	182.57	182.49	
27.660	27.652	27.671	27.663	27.663	2.908	2.928	181.84	182.06	
27.656	27.651	27.667	27.662	27.662	2.894	2.871	180.76	180.21	
27.658	27.652	27.669	27.663	27.663	2.880	2.889	179.35	179.47	
27.659	27.654	27.670	27.665	27.665	2.905	2.916	180.65	182.10	
27.660	27.654	27.672	27.665	27.665	2.930	2.922	180.74	180.86	

0	20	21
NO3-FIL (uM/L)	TSM (ug/l)	
11.40		
19.43		
43.52		
43.11		
46.53		
43.46		
42.79		
43.75		
37.85		
35.42		

D-Theta = (ptemp + (4.678 * pden)) - 131.2026
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X55 Cast 74 23 AUG 1989
 LAT: 47 57.6N LONG: 129 07.8W

0	1	2	3	4	5	6	7	8	9	10
Niskin #	Depth (m)	Depth (db)	Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. (1/m)	Atten. Anom
3	1849	1873	1.999	1.873	0.080765	34.603	34.591	0.422	0.422	0.035
5	1849	1973	1.999	1.865	0.075493	34.603	34.590	0.422	0.422	0.035
21	1910	1935	1.994	1.863	0.081856	34.605	34.595	0.444	0.444	0.057
23	1910	1935	1.994	1.863	0.081861	34.605	34.595	0.444	0.444	0.057
25	1947	1973	1.994	1.860	0.083611	34.606	34.594	0.467	0.467	0.080
30	1947	1973	1.994	1.860	0.083595	34.606	34.594	0.467	0.467	0.080
11	1947	1973	1.994	1.860	0.083595	34.606	34.590	0.467	0.467	0.080
8	1947	1973	1.994	1.860	0.083595	34.606	34.596	0.467	0.467	0.080
12	1997	2024	1.992	1.854	0.083364	34.607	34.595	0.472	0.472	0.085
14	1997	2024	1.992	1.854	0.083358	34.607	34.594	0.472	0.472	0.085

0	11	12	13	14	15	16	17	18	19
sigma-t (CTD)	sigma-t (Bottle)	sigma-t (Bottle)	sigma-Theta (CTD)	sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
27.654	27.644	27.664	27.664	27.654	2.872	2.862	182.21	182.54	
27.654	27.643	27.664	27.664	27.654	2.832	2.837	181.56	181.68	
27.656	27.648	27.666	27.666	27.658	2.819	2.829	182.47	182.80	
27.656	27.648	27.666	27.666	27.658	2.857	2.858	182.45	182.56	
27.657	27.647	27.667	27.667	27.657	2.845	2.855	185.70	185.61	
27.657	27.647	27.667	27.667	27.657	2.864	2.854	185.67	185.37	
27.657	27.644	27.667	27.667	27.654	2.795	2.820	181.27	179.30	
27.657	27.649	27.667	27.667	27.659	2.834	2.834	182.70	182.82	
27.657	27.648	27.668	27.668	27.659	2.850	2.880	188.04	188.37	
27.657	27.647	27.668	27.668	27.658	2.855	2.850	186.14	187.92	

0	20	21
NO3-FIL (uM/L)	NO3-FIL (uM/L)	TSM (ug/l)

D-Theta = (ptemp + (4.678 * pden)) - 131.2026
 Atten-Anom = Atten - 0.387

VENTS 1989 - LEG I
 Station X50 Cast 76 23 AUG 1989
 LAT: 47 38.6N LONG: 129 17.5W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	9	1498	1516	2.325	2.224	0.009384	34.523	34.507	0.389	0.000
2	15	1751	1773	2.083	1.964	0.005369	34.565	34.550	0.389	0.000
3	5	2004	2031	1.903	1.766	0.002940	34.598	34.580	0.390	0.001
4	23	2098	2127	1.870	1.725	0.003153	34.605	34.592	0.390	0.001
5	8	2200	2231	1.824	1.671	0.005767	34.615	34.603	0.390	0.001
6	14	2244	2276	1.806	1.649	0.006817	34.619	34.611	0.390	0.001
7	25	2299	2331	1.794	1.633	0.007332	34.622	34.614	0.389	0.000
8	13	2396	2430	1.775	1.605	0.004529	34.626	34.618	0.390	0.001
9	30	2604	2642	1.743	1.555	-0.005887	34.632	34.620	0.391	0.002

0	11	12	13	14	15	16	17	18	19	
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-t	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.563	27.550	27.572	27.572	27.559	3.206	3.201	165.00	164.40	
2	27.617	27.605	27.626	27.626	27.614	3.144	3.144	171.43	171.45	
3	27.657	27.643	27.668	27.668	27.653	3.031	3.057	177.23	176.22	
4	27.665	27.655	27.677	27.677	27.666	3.031	3.026	178.50	177.90	
5	27.677	27.667	27.689	27.689	27.679	3.011	3.016	179.98	180.00	
6	27.682	27.675	27.693	27.693	27.687	3.001	3.006	182.07	181.68	
7	27.685	27.678	27.697	27.697	27.691	3.006	2.991	181.28	181.09	
8	27.690	27.683	27.702	27.702	27.696	2.975	2.986	181.73	181.74	
9	27.697	27.687	27.711	27.711	27.701	2.960	2.960	181.35	179.72	

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1	11.43	
2	10.04	
3	11.41	
4	11.63	
5	12.05	
6	10.70	
7	15.26	
8	12.02	
9	13.02	

D-Theta = (ptemp + (4.694 * pden)) - 131.6354
 Atten-Anom = Atten - 0.389

VENTS 1989 - LEG I
 Station X63 Cast 75 23 AUG 1989
 LAT: 47 56.7N LONG: 129 01.7W

0	1	2	3	4	5	6	7	8	9	10
	Niskin #	Depth (m)	Depth (db)	Insitu Temp.	Pottemp	Temp. Anom.	Salinity (CTD)	Salinity (Bottle)	Atten. (1/m)	Atten. Anom
1	29	1901	1926	1.946	1.817		34.591	34.581	0.390	0.002
2	3	2002	2029	1.934	1.796		34.606	34.596	0.405	0.017
3	20	2251	2282	1.849	1.691		34.617	34.604	0.392	0.004
4	21	2264	2296	1.850	1.691		34.617	34.607	0.392	0.004
5	18	2273	2304	1.848	1.688		34.617	34.606	0.392	0.004
6	11	2280	2312	1.847	1.686		34.617	34.607	0.392	0.004
7	6	2287	2319	1.836	1.675		34.619	34.609	0.392	0.004
8	12	2294	2327	1.836	1.674		34.618	34.609	0.392	0.004
9	31	2307	2339	1.840	1.677		34.618	34.610	0.391	0.003

0	11	12	13	14	15	16	17	18	19
	Sigma-t (CTD)	Sigma-t (Bottle)	Sigma-Theta (CTD)	Sigma-Theta (Bottle)	PO4-UNF (uM/L)	PO4-FIL (uM/L)	SiO4-UNF (uM/L)	SiO4-FIL (uM/L)	NO3-UNF (uM/L)
1	27.648	27.640	27.658	27.650	2.882	2.877	174.15	176.44	
2	27.661	27.653	27.672	27.664	2.793	2.834	181.00	181.02	
3	27.677	27.666	27.689	27.678	2.806	2.791	180.41	180.63	
4	27.677	27.669	27.689	27.681	2.805	2.827	180.85	180.86	
5	27.677	27.668	27.689	27.680	2.808	2.799	180.46	181.09	
6	27.677	27.669	27.689	27.681	2.821	2.802	179.25	178.23	
7	27.679	27.671	27.692	27.683	2.821	2.820	177.01	177.22	
8	27.678	27.671	27.691	27.684	2.834	2.786	179.09	181.16	
9	27.678	27.672	27.691	27.684	2.786	2.786	180.55		

0	20	21
	NO3-FIL (uM/L)	TSM (ug/l)
1		12.95
2		26.60
3		15.53
4		14.69
5		15.82
6		17.31
7		15.32
8		16.26
9		

NOTE: CTD data corrected using NRCC salinity calibrations
 Atten-Anom = Atten - 0.388

VENTS 1989 - LEG I
 Station X61 Cast 78 23 AUG 1989
 LAT: 47 34.5N LONG: 128 59.7W

0	1	2	3	4	5	6	7	8	9	10
Atten.	Atten.	Atten.	Atten.	Atten.	Atten.	Atten.	Atten.	Atten.	Atten.	Atten.
(1/m)	(1/m)	(1/m)	(1/m)	(1/m)	(1/m)	(1/m)	(1/m)	(1/m)	(1/m)	(1/m)
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009

0	11	12	13	14	15	16	17	18	19
NO3-FIL	Sigma-t	Sigma-t	Sigma-Theta	Sigma-Theta	PO4-UNF	PO4-FIL	SiO4-UNF	SiO4-FIL	NO3-UNF
(uM/L)	(Bottle)	(Bottle)	(CTD)	(Bottle)	(uM/L)	(uM/L)	(uM/L)	(uM/L)	(uM/L)
12.52	27.552	27.566	27.566	27.560	3.133	3.126	3.041	3.041	3.126
10.00	27.611	27.626	27.626	27.620	3.041	3.041	2.946	2.949	3.041
9.77	27.653	27.667	27.667	27.663	2.892	2.891	2.892	2.891	2.891
10.27	27.674	27.691	27.691	27.686	2.885	2.851	2.851	2.851	2.851
10.16	27.682	27.698	27.698	27.694	2.850	2.844	2.844	2.844	2.844
11.38	27.687	27.703	27.703	27.700	2.831	2.831	2.831	2.831	2.831
13.03	27.695	27.708	27.708	27.692	2.867	2.867	2.867	2.867	2.867
16.15	27.697	27.711	27.711	27.709					
19.22	27.699	27.714	27.714	27.711					

0	20	21
NO3-FIL	TSM	TSM
(uM/L)	(ug/l)	(ug/l)
12.52	12.52	12.52
10.00	10.00	10.00
9.77	9.77	9.77
10.27	10.27	10.27
10.16	10.16	10.16
11.38	11.38	11.38
13.03	13.03	13.03
16.15	16.15	16.15
19.22	19.22	19.22

D-Theta = (ptemp + (4.6903 * pden)) - 131.5357
 Atten-Anom = Atten - 0.387