PROCESSING OCEANOGRAPHIC DATA

H. O. PUB. NO. 614

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FOREWORD

Under the general direction of Dr. H. U. Sverdrup of the Norsk Polarinstitutt, Oslo, Norway, and the sponsorship of the International Association of Physical Oceanography, a group of specialists in various fields of oceanography are preparing a comprehensive laboratory manual of oceanographic methods. Section D, *Processing Ashore,* prepared by Mr. E. C. LaFond, head of the Oceanography Section of the U.S. Navy Electronics Laboratory, is being issued as a separate Hydrographic Office publication in advance of the rest of the series, in order to meet the growing need for standarized procedures in working up oceanographic data.

Drawing on his wide experience at the Scripps Institution of Oceanography, La Jolla, Calif., and more recently at the Navy Electronics Laboratory, San Diego, Mr. LaFond has devised tables and procedures of his own for simplifying the reduction of the data of physical oceanography and has assembled these together with the most expeditious methods now in use at other laboratories.

The widespread adoption of the standard procedures described in this volume will contribute materially to the advancement of oceanography.

A. HOBBS,
Captain, U. S. Navy (Ret.),
Hydrographer.

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Part I.—PROCESSING PROCEDURES

INTRODUCTION

Physical oceanographic measurements taken at sea require careful examination, correction, and conversion before they can be put in a form suitable for analysis. Such processing of oceanographic data involves a considerable amount of practical experience to judge the reliability of the records from instruments which operate blindly below the sea surface. Corrections for instrumental errors and for errors inherent in the methods of obtaining data are necessary in order to determine the basic values of temperature and salinity for different depths in the sea. Conversion of sea observations to standard units is desirable for comparison with other oceanographic data. Also, certain calculations are required to derive dependent quantities, such as specific volume, density, and currents.

Processing of data is a time-consuming operation, and many short cuts have been devised. The choice of method depends upon the amount of data to be processed and upon individual preference. For these reasons the following section gives the fundamental formulae and outlines a choice of procedures for correcting and converting field data in order to obtain the desired results.

Although this section deals with processing ashore, much of the processing could be accomplished aboard ship. Processing aboard ship has the advantage that the results provide an immediate guide for future observations. On the other hand more space and more time are usually available on shore, as well as more stable conditions, resulting in more accurate work. Regardless of where the work is carried on, the following procedures, examples, and tables should prove useful for the processing of physical oceanographic data.

D.1.—PROCESSING OF CONTINUOUS TEMPERATURE AND SALINITY DATA

BATHYTHERMOGRAMS

Several instruments are in use which produce a continuous record of temperature and salinity with depth or time. The continuous recording instrument most widely used at present is the bathythermograph, or "BT," which records temperature against depth on a smoked glass slide (Spilhaus, 1938) (*1*).*

A standardized method has been developed for processing bathythermograph slides to convert the data into a form convenient for analysis and filing. Briefly, a transparent temperature-depth grid is superimposed on a slide, the relative positioning of the slide and grid is adjusted to correct for any instrumental error, and the superimposed combination is used as a negative in making photographic prints. Pertinent meteorological and other data are then entered on the back of each print.

As received for processing, the smoked slides show the temperature-depth trace made by the instrument, together with the following written information: Slide number, time (G. c. t.), date, and serial number of the BT instrument (fig. 1A). The trace and written data are preserved by a coat of lacquer which has been applied on shipboard. Accompanying each set of slides is a log sheet listing the data given on each slide, and in addition giving the position of each observation, the temperature of the sea surface as determined by bucket thermometer, and the meteorological conditions at the time of the observation.

For each BT instrument there is an individual grid (fig. 1B) calibrated for use with slides from that particular instrument. The grid consists of lines for temperature and depth which have been marked on a glass slide of the same size as the bathythermogram (1 by 1.75 inches).

Upon receipt, the BT slides and log sheets are recorded and checked for errors and discrepancies in the data. Each slide is then placed with the appropriate grid in a small magnifying viewer in order to determine temperature and depth corrections. A form similar to that shown in figure 2 is used for tabulation and calculation.

Surface temperature — that is, the temperature at top of trace or temperature at which the

*Italic numbers in parentheses refer to References, p. 28.

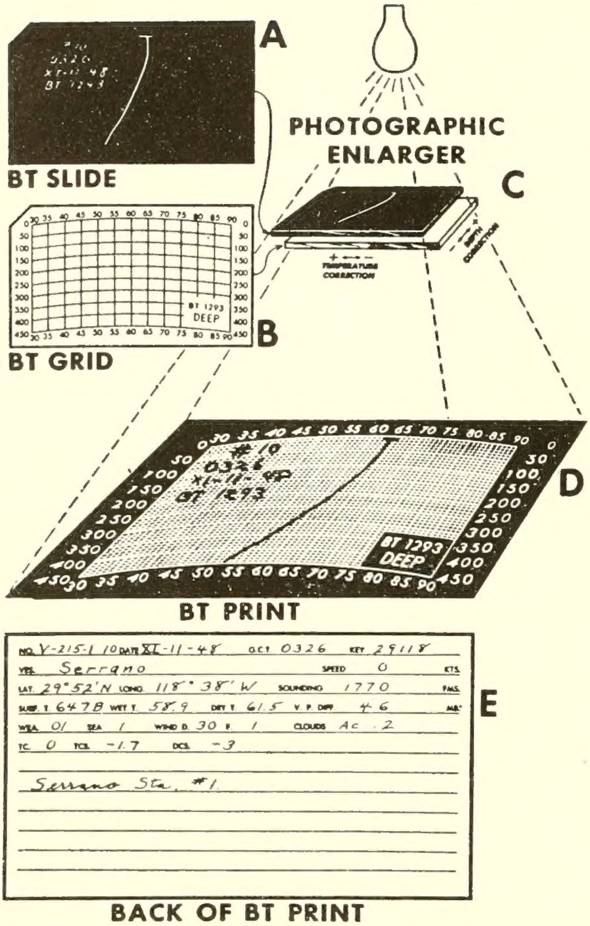

Figure 1.—Processing of bathythermograph data: A, BT slide; B, BT grid; C, arrangement of slide and grid in photographic enlarger; D, bathythermogram print; and E, supplementary data on back of print.

BATHYTHERMOGRAPH INSTRUMENT NUMBER: 1293

SLIDE NO.	SURFACE TEMPERATURE BT	SURFACE TEMPERATURE BUCKET	SURFACE TEMPERATURE DIFFERENCE	50' TEMP. BT	SET-UP TEMP.	DEPTH DIFFERENCE
1	66.5	64.9	-1.6	66.4	64.7	-3
2	66.7	66.9	+0.2	66.7	65.0	-3
3	66.6	65.0	-1.5	66.6	64.9	-3
59	66.2	64.3	-1.9	66.0	64.3	-2
60	65.8	64.2	-1.6	65.7	64.0	-3
			Av = -1.7			Av = -3
			TEMP. CORRECTION			DEPTH CORRECTION

Figure 2.—Form for calculating temperature and depth corrections in processing bathythermograph data.

trace crosses zero depth on the grid — is first read and recorded for comparison with the surface temperature as obtained separately by bucket thermometer which is listed on the log sheet. Temperature is also read at the 50-foot level, or at any selected level where the trace is clear and nearly isothermal, for use in correcting and setting up the slide for printing. Depth difference between the top of the trace and zero depth on the grid is then read and recorded for use in determining the instrumental depth correction. The depth correction is taken as positive when the trace extends above the surface line on the grid; negative when it terminates below the surface line.

After all readings have been recorded, the differences between the two surface temperatures (bucket minus BT) are entered for each slide, and the average difference is found for all of the slides in the series. This is the instrumental *temperature correction.* This correction is then applied to each reading at the 50-foot level to give the *set-up temperature* for each slide. Finally, the depth differences in the last column are averaged to give the instrumental *depth correction.*

These corrections are applied in the process of printing, and are thus incorporated in the print. The slide and grid are placed in an adjustable holder in a photographic enlarger. The grid is moved horizontally relative to the slide until the trace crosses the 50-foot level at the corrected "set-up temperature"; it is then moved vertically the amount of the average depth correction. This double adjustment corrects the entire trace for calibration errors in the instrument (fig. 1C). With the combined slide and grid used as a negative, prints are made on 3 by 5-inch, double weight, low contrast paper (fig. 1D). Three prints are usually made.

When dry, the prints are checked for accuracy of applied correction in printing. The backs of the prints are then stamped with a data stamp, and supplementary data are transcribed from the log sheet. Standard abbreviations and codes are used in the entries, and necessary filing keys are given.

In the example of figure 1E, the number in the upper left corner is the cruise file number, "V" indicating that the observation was made from a vessel, "215" denoting that this was the two hundred and fifteenth vessel to submit data, and "1" showing that it was the first set of data to be received from that ship. The number "10" on the same line is the number of the slide.

In the upper right corner (key) is the position file number, "29118," denoting the quadrangle 29° to 30° North and 118° to 119° West. Transcribed from the log sheet are the date, time (G. c. t.), name of vessel, speed, latitude, longitude, sounding depth, sea surface temperature taken by bucket, wet-bulb temperature, dry-bulb temperature, present weather, state of sea, wind direction, wind force, and type and amount of clouds. Any discrepancy between temperature at the "set-up level" as read from the print and the "set-up temperature" listed in figure 2 is entered as a temperature correction (TC) to the print. Instrumental corrections which were applied in printing for temperature (TCS) and depth (DCS) are shown. Vapor pressure difference (V. P. Diff.) is calculated from wet- and dry-bulb temperatures, and entered. Additional space is provided for any other information which may be useful in analysis.

Of the three copies of each bathythermogram print usually made, one is filed by position, one by ship or cruise, and the third is filed in a central agency by position. When large quantities of data are available, punch-card systems may be used to advantage. The items to be punched will depend upon the use to be made of the bathythermograph data.

OTHER CONTINUOUS RECORDS

In addition to the bathythermograph, several other recording instruments are being used for the continuous measurement of temperature and salinity with time or depth. The Mosby "thermo sound" (Mosby, 1943) (*2*) records of temperature and depth are on round glass slides 2½ inches in diameter. The temperature-depth trace on the smoked side is read by means of a microscope. Readings are scaled off at standard depths and at inflection points in the temperature-depth curve. Usually 50 to 100 readings are necessary for a detailed tabular record. Both temperature and depth calibration corrections must be determined and applied to the readings of individual instruments. The glass slide may be lacquered and filed for a permanent record, or cleaned and resmoked for use again.

The records of a Salinity-Temperature-Depth (STD) recorder (Jacobson, A. W., 1948) (*3*), or the similar Conductivity-Temperature-Depth (CTD) recorder, are in the form of paper tapes 6 inches and 12 inches wide, respectively. The three similarly recorded traces (salinity or conductivity, temperature, and depth) have individual scales on the tapes. Salinity and temperature are read at selected depths and at inflection points in the continuous traces, the number of readings varying with the detail required. Corrections for instrumental error must be applied to the readings of all three variables. Values of conductivity and temperature may be converted to salinity by means of table XV, page 103. The tape records are filed "accordion fashion" to permit easy access to any observation on the tape.

D.2.—DETERMINATION OF FINAL VALUES OF SERIAL TEMPERATURE AND SALINITY DATA

INTRODUCTION

Serial temperature and salinity data are those obtained from a subsurface cast of water bottles arranged in series on a wire, to each of which is attached from one to three deep-sea reversing thermometers. The object of processing these data is to obtain temperature, salinity, and depth at the individual points of reversal of the bottles, and thence by interpolation to find temperature and salinity at standard depths. Because the slightest variations in properties are significant in the sea, great accuracy is required, both in the instruments and in the methods of processing.

Temperature *in situ* is obtained from the reading of a protected reversing thermometer by applying corrections for instrumental error and for thermal expansion subsequent to reversal. Depth of reversal is found by comparing the corrected reading of a protected thermometer with the corrected reading of an unprotected thermometer (unprotected against pressure), which is always paired with a protected thermometer. The depths computed from the difference of the protected and unprotected thermometers are subject to instrumental error and must be adjusted by making use of the wire length and wire angle. Salinity is directly proportional to chlorinity, which is determined by titration of the water sample with silver nitrate in presence of a suitable indicator. When corresponding depths, temperatures, and salinities have been found for a cast, the relationship between each pair of variables is plotted on graph paper, and the three curves drawn. The curves are cross-checked until mutually consistent, and values of temperature and salinity at standard depths are read from the curves.

THERMOMETER CORRECTIONS

Two types of correction to the readings of protected and unprotected reversing thermometers are necessary. One is an index correction for errors in the thermometer scale. Such errors are caused by variations in the cross section of the capillary or by irregularities in the scale etching. The correction at various readings is determined by calibration, and is listed on the calibration certificate for the individual thermometer.

Since the temperature at which the thermometer is read may be quite different from that at which it was reversed in the sea, a second correction for relative expansion of mercury and glass subsequent to reversal is necessary. The two formulae commonly used for this correction were developed by Schumacher (1923) (*4*) and Sverdrup (1947) (*5*), respectively. Both start from the expression

$$C=\frac{(T_w-t)\,(T_w+V_o)}{K},$$

where the symbols in this and the following formulae have the meanings listed below:

T' = reading of the protected reversing thermometer.

t = temperature at which protected reversing thermometer is read, i. e., reading of the auxiliary thermometer which accompanies each protected reversing thermometer, corrected for index errors.

T_w = water temperature *in situ*, the corrected reading of the protected reversing thermometer. $T_w=T'+\Delta T=T'+C+I$.

T'_u = reading of the unprotected reversing thermometer.

t_u = temperature at which unprotected thermometer is read, i. e., reading of the auxiliary thermometer which accompanied each unprotected reversing thermometer, corrected for index errors.

T_u = corrected reading of the unprotected reversing thermometer, a function of both temperature and pressure. $T_u=T'_u+\Delta T=T'_u+C+I$.

C = correction for thermal expansion of the thermometer system subsequent to reversal.

I = index correction for errors in the thermometer scale.

ΔT = total correction to be applied to the reading of the reversing thermometer. $\Delta T=C+I$.

V_o = volume of mercury below the 0° C. mark, at 0° C. temperature, in the reversed thermometer, expressed in degrees centigrade of scale. This is a constant for each thermometer, and is given on the calibration certificate.

K = reciprocal thermal coefficient of expansion of the thermometer system. This is a constant which depends upon the type of glass of which the thermometer is made. For Jena 59^{III} glass, $K=6100$° C. For Jena 16^{III} glass and for Corning Normal glass, $K=6300$° C. The value of K is given on the thermometer calibration certificate.

Schumacher replaces the unknown T_w with T' to find a first approximation to the correction. Then, adding this correction to T' and substituting again for T_w in the formula, he finds a second approximation to the correction C. His complete expansion correction formula is:

$$C=\frac{(T'+V_o)(T'-t)}{K}\left[1+\frac{(T'+V_o)+(T'-t)}{K}\right]+\frac{(T'+V_o)^2(T'-t)^2}{K^3}.$$

Since the correction is usually desired to two decimals, the last term, which never exceeds 0.00015, may be neglected. When the index correction is added to this expansion correction Schumacher's formula for the total correction to protected thermometer readings is:

$$\Delta T=\frac{(T'+V_o)(T'-t)}{K}\left[1+\frac{(T'+V_o)+(T'-t)}{K}\right]+I.$$

Sverdrup has developed a slightly more accurate formula by substituting $T'+C$ for T_w. Making this substitution in the exact expression given above:

$$C=\frac{(T'+V_o+C)(T'-t+C)}{K}$$
$$=\frac{(T'+V_o)(T'-t)}{K}+C\left[\frac{(T'+V_o)+(T'-t)}{K}\right]+\frac{C^2}{K}.$$

The last term is never greater than 0.00015, and may be neglected. Solving for C:

$$C=\frac{(T'+V_o)(T'-t)}{K}\div\left[1-\frac{(T'+V_o)+(T'-t)}{K}\right]$$
$$=\frac{(T'+V_o)(T'-t)}{K-(T'+V_o)-(T'-t)}.$$

When the index correction is added, Sverdrup's formula for the total correction to protected thermometer reading is:

$$\Delta T = \frac{(T'+V_o)(T'-t)}{K-(T'+V_o)-(T'-t)}+I.$$

The above formula may be simplified if used for computing the correction directly. In the denominator of the fraction shown above, K is usually 6100 or 6300, and the sum of the other terms is roughly 100. Since most reversing thermometers are read to hundredths of a degree centigrade, the correction is desired to the same accuracy. This accuracy can be obtained when the denominator of the fraction is taken to be $K-100$. Thus, an approximate formula for the correction to be applied to the protected thermometer reading to obtain water temperature *in situ* is:

$$\Delta T = \frac{(T'+V_o)(T'-t)}{K-100}+I.$$

The correction of unprotected thermometers is more direct than the correction of protected thermometers because the value of T_w has already been determined. The expression for thermal expansion is:

$$C = \frac{(T_u+V_o)(T_w-t_u)}{K},$$

where the only unknown on the right is T_u. In a development parallel to that given above for the Sverdrup formula, letting $T_u = T'_u + C$, it is found that:

$$C = \frac{(T'_u+V_o)(T_w-t_u)}{K-(T_w-t_u)}.$$

T_w-t_u will not exceed 30° C., and may be neglected in the denominator in comparison with K. Including the index correction, the practical formula for the correction to be applied to the unprotected thermometer reading is:

$$\Delta T = \frac{(T'_u+V_o)(T_w-t_u)}{K}+I.$$

Slide rule, graphs, or tables may be used as aids in solving quickly the formulae for correction of both protected and unprotected thermometer readings. A special slide rule has been designed by D. L. Cole, utilizing the approximate formula, with $K-100$ and K as divisors for protected and unprotected thermometers, respectively, to obtain the thermometer correction, C. Figure 3 shows the design of the rule for $K=6100$. The logarithmic scales of the rule give respectively, $T'+V_o$, K or $K-100$, $T'-t$ or T_w-t_u, and C. For example, if $T'+V_o$ equals 112.1° C. for a protected thermometer and $T'-t$ equals −10.6° C., the thermometer correction may be found by use of the rule as follows: Against $T'+V_o$ (112.1) on the upper fixed scale is placed the appropriate index mark (PROTECTED THERMOMETER) on the upper edge of the slide, and opposite $T'-t$ (−10.6) on the lower edge of the slide is read C (−0.20° C.) on the lower fixed scale. Sign of C is the same as $T'-t$ or T_w-t_u.

For unprotected thermometers the "UNPROTECTED THERMOMETER" mark on the upper edge and T_w-t_u on the lower edge of the slide are used.

Graphs and tables may be constructed for general use in finding the expansion correction, C, for any protected or unprotected thermometer. A general table (table I) is given in part II to find C for values of V_o+T' from 70° to 200° C. and $T'-t$ from 0° to 25° C., using $K=6100$. With this table or with the slide rule the index correction, I, must be added separately to get the total thermometer correction, ΔT.

When processing a large quantity of data it is advantageous to prepare individual graphs or tables which incorporate the constant, V_o, and include the index corrections, I, in the thermometer scale. Such individual thermometer correction tables or graphs are easier to use

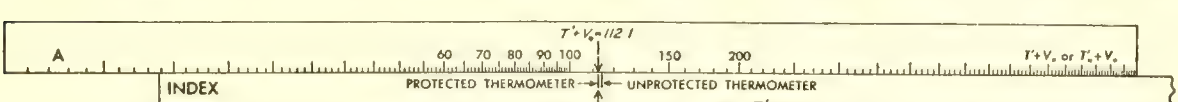

Figure 3.—Special slide rule for computing the expansion correction C for reversing thermometers ($K=6100$).

and may be designed to read directly the total correction, $\Delta T = C + I$.

A good method for constructing graphs for reversing thermometer corrections has been outlined by Theisen (1947) (*6*). It consists of preparing a large master graph of a series of curves of t, using $T' + V_o$ as the abscissa and C as the ordinate. Sections of this graph for the required V_o may be reproduced photographically. By substituting the appropriate T' for $T' + V_o$ (i. e., by subtracting V_o from the abscissa scale) correction graphs for individual thermometers (such as shown in fig. 4) may be prepared.

The master graph may be constructed by substituting directly in one of the formulae for

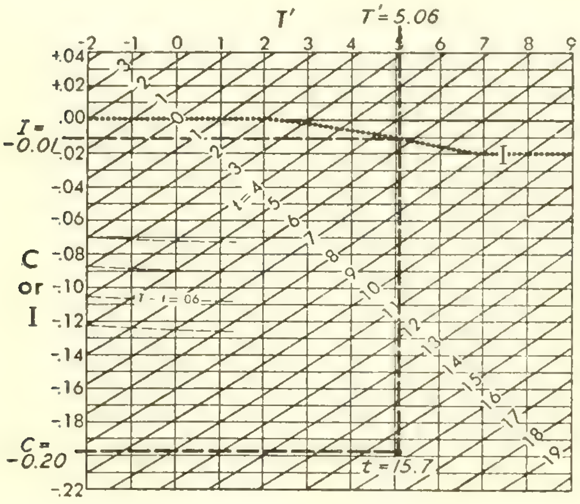

Figure 4.—Portion of individual protected thermometer correction graph giving C and I for values of T' and t.

values of t and $T' + V_o$, or by plotting light construction lines of $T' - t$ and $T' + V_o$. Permanent lines of t can then be drawn through the intersections of $T' - t$ and $T' + V_o$ and all scales, (C, T', and t), appropriately labeled. Shading or coloring the strips makes reading easier.

For use, only that portion of the master graph is utilized that corresponds to the proper V_o (e. g., 102) for an individual thermometer. On each individual correction graph an index correction curve is added corresponding to T' and C, as shown in figure 4.

In this form only the observed values of T' and t are necessary to obtain C and I. In the example $T' = 5.06°$ C. and $t = 15.7°$ C., which from the graph gives $C = -0.20°$ C. and $I = -0.01°$C. By means of a pair of dividers the sum $C + I$ may be scaled off in one operation.

The graph recommended for the correction of individual protected reversing thermometers (Sverdrup et al., 1944) (*7*) is shown in figure 5. It, like the previous graph, requires only the observed values T' and t to obtain the corrections. To facilitate the construction of this type of graph, table II, page 34, has been compiled, which gives $T' - t$ for values of $T' + V_o$ and C (Soule, 1933) (*8*).

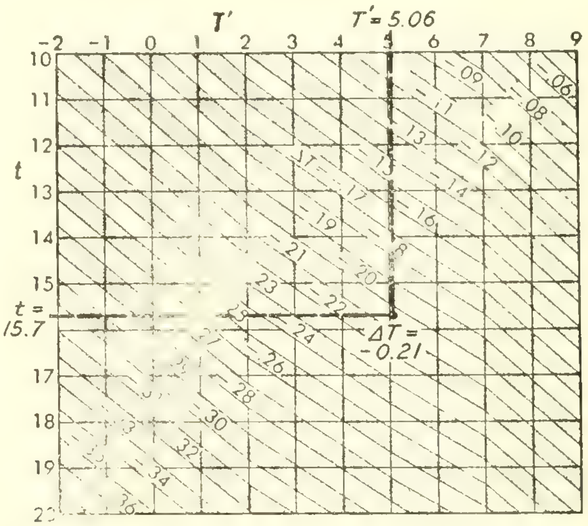

Figure 5.—Portion of individual protected thermometer correction graph giving ΔT for values of T' and t.

In constructing individual correction graphs the proper V_o must be subtracted from $V_o + T'$, and T' subtracted from $T' - t$ of table II, so that the coordinates will be T' and t, respectively. Before the temperature correction lines are finally drawn they are adjusted vertically by the amount I along the calibration points of T'.

In this form the total ΔT for individual thermometers may be obtained in one step. The same example, where $V_o = 102°$ C., $T' = 5.06°$ C., and $t = 15.7°$ C., giving ΔT equal to $-0.21°$ C., is shown in figure 5.

Similar tables and graphs may be prepared to correct unprotected thermometer readings. Table III, page 36, gives the expansion correction, C, for values of $T'_u + V_o$ from 70° to 200° C. and $T_w - t_u$ from 0° to 25° C. A master plot or individual graph may be made up directly from the equation

$$T_w - t_u = \frac{KC}{T_u' + V_o}.$$

In the illustration, figure 6, T_u' is plotted along the abscissa and C along the ordinate. By substituting various values of T_u' and $T_w - t_u$ in the above equation, C may be evaluated. Since the lines of $T_w - t_u$ are straight, only one value at either side of the graph need be calculated. The constants in the example are $V_o = 115$ and $K = 6100$. The index correction, I, at calibrated values of T_u', is plotted using the C scale along the ordinate.

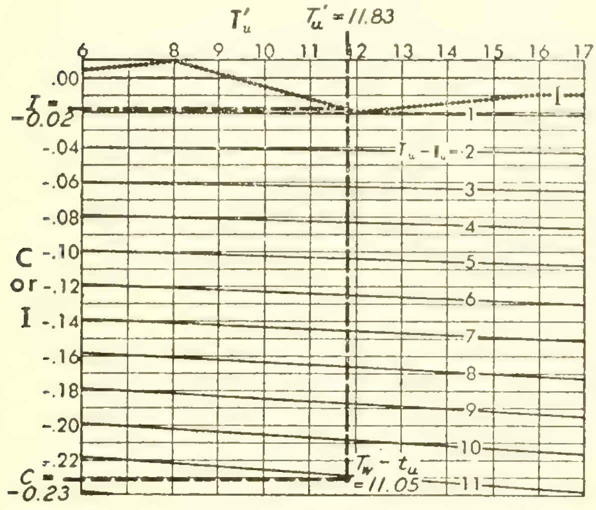

Figure 6.—Portion of individual unprotected thermometer correction graph giving C and I for values of T_u' and $T_w - t_u$.

To use the graph the values of C and I may be read directly. For example, when $T_u' = 11.83°$ C. and $T_w - t_u = 11.05°$ C., C is found to be $-0.23°$ C. and $I = -0.02°$ C., or $\Delta T_u = -0.25°$ C.

The other recommended individual unprotected thermometer correction graph is shown in figure 7. Here T_u' and $T_u - t_u$ are the abscissa and ordinate of the graph. The values of C are calculated for combinations of T_u' and $T_w - t_u$ from the unprotected thermometer correction formula. In preparing the graph, values of I are added to C at points of calibration of T_u'. A correction graph constructed in this fashion gives ΔT directly but requires an individual graph for each unprotected thermometer.

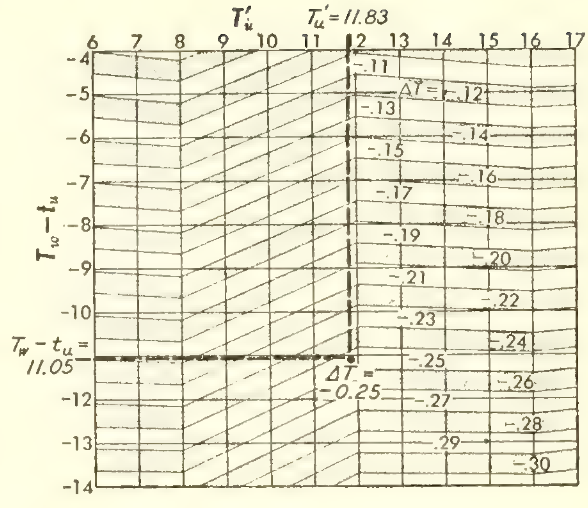

Figure 7.—Portion of individual unprotected thermometer correction graph giving ΔT for values of T_u', $T_w - t_u$.

The example shows that when $V_o = 115°$ C., $K = 6100$, $T_u' = 11.83°$ C., and $T_w - t_u = 11.05°$ C., then ΔT is $-0.25°$ C.

DEPTH

A rough estimate of the depths at which the water bottles of a cast are reversed in the sea may be obtained from wire angle (the angle the wire makes with the vertical) at the sea surface, and the length of wire to each bottle. However, this method assumes that the curvature of the wire below the surface is known, an assumption which is not valid to great depths. The method is satisfactory only for depths of less than 100 meters with large wire angles, and to several hundred meters with angles less than 5°.

The customary method of determining depth of sampling when the wire angle is greater than 5° is by comparing the corrected readings of the protected and unprotected deep-sea reversing thermometers. Depth is determined from the difference between the corrected readings in accordance with a formula by G. Wüst (1933) (*9*):

$$D = \frac{T_u - T_w}{\rho_m Q},$$

where,

D = depth in meters,
T_u = corrected reading of the unprotected thermometer, a function of both temperature and pressure,
T_w = corrected reading of the protected thermometer, a function of temperature only,

ρ_m=mean density of the water column above the level of reversal,

Q=pressure coefficient of the unprotected thermometer, expressed in degrees centigrade increase in the reading per 0.1 kg./cm.^{2} increase in pressure. As so defined, Q has a magnitude of roughly 0.01. Q is given on the thermometer calibration certificate,

ΔD=meters depth by which D differs from 100 (T_u-T_w).

In evaluating the equation for depth, all quantities have been determined except the mean density of the water column, ρ_m. This may be obtained by plotting the density *in situ*, $\rho_{s,t,p}$, against depth and averaging the curve by numerical integration from the surface to each required depth. Density *in situ* determination is given in section D. 3, page 15.

For work in a limited area it is sufficient to establish a mean density, ρ_m, for use at each level. In the mid-latitude area near 30° N. and 120° W., ρ_m has the following values:

Depth, meters	Mean density of water column above indicated depth, ρ_m
200	1. 0255
400	1. 0267
600	1. 0276
800	1. 0283
1,000	1. 0289
1,500	1. 0304
2,000	1. 0318
2,500	1. 0331
3,000	1. 0356
4,000	1. 0369

Figure 8.—Mean density of water columns above indicated depths in the sea (30° N., 120° W.).

Depth of reversal of the thermometers may be found by substituting directly in the formula

$$D=\frac{T_u-T_w}{\rho_m Q},$$

or by prepared tables or graphs for use with each unprotected thermometer in limited areas where ρ_m remains relatively constant for the same depths throughout the area. To calculate such a table, as shown in figure 9, Q is constant for an individual thermometer (e. g., 0.00920) and T_u-T_w varies by 0.01° C. steps; however, ρ_m must be increased with increasing depth (or T_u-T_w), depending on the established vertical density of the area. Depth is obtained directly; for example, when T_u-T_w=6.73 the depth is 711 meters.

T_u-T_w	.00	.01	.02	.03	.04	.05	.06
6. 50	687	688	689	690	691	692	----
6. 60	698	699	700	701	702	703	----
6. 70	708	709	710	*711*	712	713	----
6. 80	719	720	721	722	723	724	----
6. 90	729	730	731	732	733	735	----

Figure 9.—Portion of table for determining thermometric depths from corrected thermometer readings T_u-T_w for an individual unprotected thermometer.

A graph corresponding to figure 9 is sometimes used; however, both table and graph must be large to obtain the necessary accuracy. For this reason a graph of depth anomalies is recommended.

The depth anomaly graph used to facilitate the calculations of depth achieves accuracy by giving only the deviations from an easily determined standard. Since ρ_m is nearly unity and Q is roughly 0.01, depth of reversal is approximately $100(T_u-T_w)$. Any deviation is expressed by an anomaly, $D=100(T_u-T_w)+\Delta D$. As shown in figure 10 for a thermometer of Q = 0.00920, the anomaly is plotted against values of T_u-T_w. To find depth of reversal of the thermometers, ΔD is read from the graph and added algebraically to $100(T_u-T_w)$ corresponding to the given T_u-T_w. To prepare the graph, D, $D\rho_m Q$, and $D-100$ $(D\rho_m Q)$ are tabulated as follows:

D	$D\rho_m Q$	$D-100(D\rho_m Q)$
	T_u-T_w	ΔD
500	4.73	27
1,000	9.47	53
1,500	14.23	77
2,000	18.99	101

The last two columns, which may equally well be labeled T_u-T_w and ΔD, are plotted in figure 10.

Recent investigations indicate that Q may not be constant, but instead may decrease very

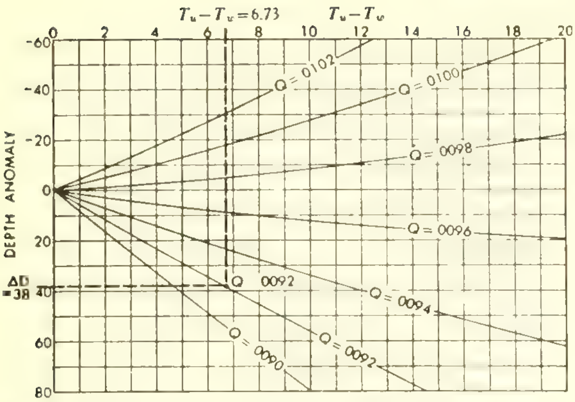

Figure 10.—Graph for determining thermometric depth anomalies from corrected thermometer readings, $T_u - T_w$, and thermometer constant, Q.

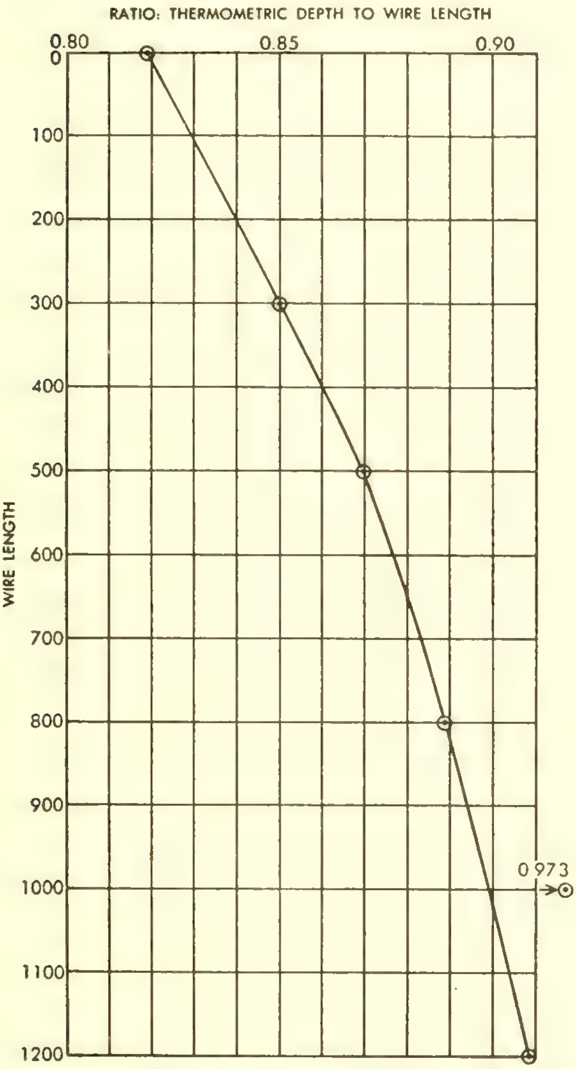

Figure 11.—Graphs for determining depths of observations between calculated thermometric depths by the ratio method (thermometric depth divided by wire length).

slightly with depth at a rate comparable to the rate of increase with depth of ρ_m. Thus $\rho_m Q$ would be nearly constant, and depth would be almost directly proportional to the difference in corrected thermometer readings. If this is true the curves of figure 10 will be nearly straight lines.

When depth of reversal has been determined for each water bottle to which an unprotected thermometer was attached, depths of reversal of the intervening water bottles in the series are found. One method is to calculate the ratio of depth to wire length for each water bottle of known depth, the meter wheel readings of wire length having first been corrected for calibration. Next the ratio is plotted against wire length as shown in figure 11, and a smooth curve drawn through the points. Values of the ratio are read from the curve for the wire length to each bottle and multiplied by the wire length to obtain the depth of reversal of each bottle. This depth is frequently called the *accepted depth*. An example of the calculation is shown below in figure 12. The data used for illustration are from the sample station to be discussed in detail later in section D.4, page 19. The figure entered in the ratio column at zero wire length and plotted at the top of the graph is the cosine of the wire angle at the surface, and thus represents the ratio of depth to wire length at the surface. If the wire angle is small the ratio is nearly constant and approaches unity. However, if the angle is large the ratio usually

Wire length, meters	Thermometric depths, meters	Ratio of thermometric depth to wire length	*Ratio* at each wire length (from plot fig. 11)	Accepted depth (ratio multiplied by wire length), meters
0			*0.819	0
100			.829	83
200			.840	168
300	255	0.850	.850	255
400			.860	344
500	435	.870	.870	435
600			.876	526
800	711	.889	.889	711
1,000	(973)	(.973)	.898	898
1,200	1,090	.908	.908	1,090

*Cosine of wire angle 35°.

Figure 12.—Example of calculating depths of observations by ratio method.

increases with depth, indicating that the wire becomes more vertical with depth.

If the ratio plot is not a reasonably smooth curve the data should be studied for errors. Occasionally bottles reverse prematurely, thermometers stick, meter wheels operate improperly, readings are made incorrectly, and other instrumental and human errors occur. Handling these types of data requires considerable experience, knowledge of individual pieces of equipment, and familiarity with the area to detect, and in some cases correct, errors in the data. If, for any reason, the equipment fails to give correct thermometric depths the results must not be used. In figure 12, for example, the calculated depth for the 1,000-meter wire depth appears to be in error and must be discarded.

A modification of the above method (Reid, 1949, and Pollak, 1950) (*10*) of calculating interpolated depths from the thermometric depths is by plotting the difference between wire length and the thermometric depth against wire length, as shown in figure 13.

The smooth curve drawn will be tangent at the surface to a line determined by wire angle from the ship. This line will show a difference between the wire length and the depth of "1 − cosine wire angle" per unit of wire length. A quarter sunburst of lines for different wire angles radiating from the surface may be printed on the graph in advance, eliminating calculation. From the smooth curve, values of wire length minus depth are read corresponding to the wire length to each water bottle. By subtracting each of these values from wire length the accepted depth of each water bottle is found. This curve, like the former ones to obtain interpolated depths, must be studied for errors. From the nature of this graph certain errors are apparent; for example, no value of wire length minus depth can be negative, nor can the curve have a negative slope, since this would indicate stretching of wire. Other theoretical criteria are that the curvature normally increases with depth and the wire angle becomes practically zero at the end. Since the curve is roughly similar to the actual shape of the wire in the water, inflection points may, however, indicate depths of current gradients. An example of the calculation of accepted depths by this method is given in figure 14.

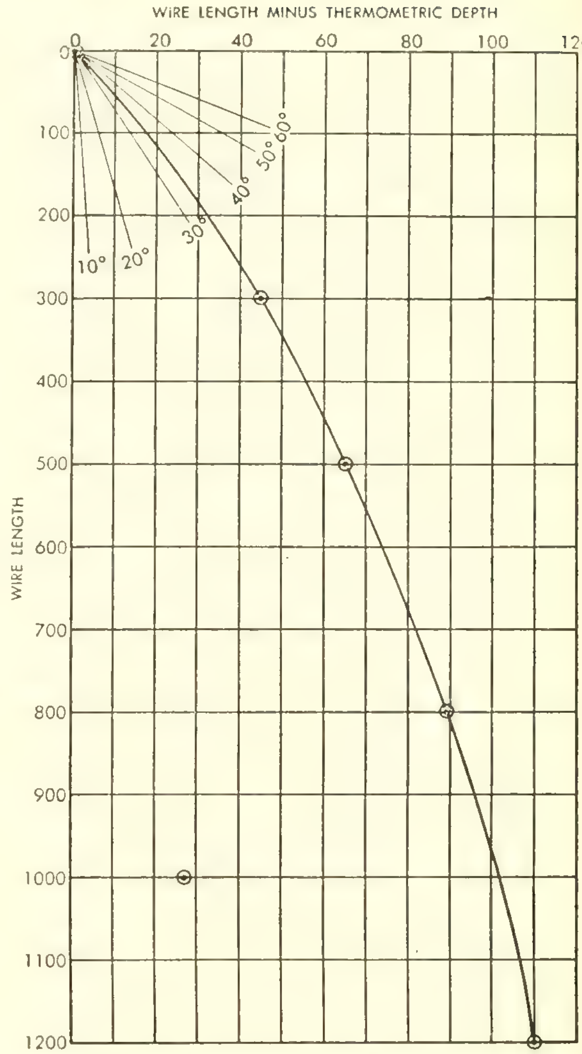

Figure 13.—Graph for determining depths of observation between calculated thermometric depths by the difference method (wire length minus thermometric depth).

VALUES AT STANDARD DEPTHS

When the accepted depths have been established the next step in the processing of serial observations is to prepare plots of the vertical distribution of the variables. All variables may be plotted by station, as in figure 15, or by property. Such plots of temperature, salinity, etc., as a function of depth are useful to detect incorrect values resulting from faulty operation of thermometers and water bottles. Another

Wire length, meters	Thermometric depths, meters	*Difference* of wire length minus thermometric depths, meters	*Difference* of accepted depth at all wire lengths, meters	Accepted depth (wire length minus differences), meters
0			0	0
100			17	83
200			32	168
300	255	45	45	255
400			50	344
500	435	65	65	435
600			74	526
800	711	89	89	711
1, 000	(973)	(27)	102	898
1, 200	1, 090	110	110	1, 090

(Wire angle=35°)

Figure 14.—Examples of calculating depths of observations by difference method.

use of these plots is to scale off depths of desired values of the variable. These are necessary for construction of horizontal sections. The main purpose of the plots, however, is to provide a means for obtaining interpolated values of temperature, salinity, etc., at standard depths for comparative purposes. Standard depths according to the International Association of Physical Oceanography are: Surface, 10, 20, 30, 50, 75, 100, 150, 200, (250), 300, 400, 500, 600, (700), 800, 1,000, 1,200, 1,500, 2,000, 2,500, 3,000, and 4,000 meters, and intervals of 1,000 meters thereafter to the greatest depth of sampling. A data summary form is presented in section D. 4 which shows a common practice of presenting both observed and interpolated data.

In addition to vertical distribution curves, a plot is made of the temperature-salinity (T-S) relationship to detect error and to bring out water mass characteristics of the data. In figure 16 the corresponding observed values of temperature and salinity are plotted for a single station. After the T-S curve has been drawn from observed data, corresponding interpolated values of temperature and salinity read from the vertical curves are also plotted. If these do not fall on the T-S curve certain adjustments must be made in the construction of the vertical distribution curves.

D. 3.—COMPUTATION OF DEPENDENT QUANTITIES

INTRODUCTION

When values of depth, temperature, and salinity have been determined in accordance with the methods described in the preceding section, certain calculations are necessary to derive various dependent variables commonly used to describe the field of mass in the sea. These variables include: Specific volume, anomaly of specific volume from a standard value, density *in situ*, and σ_t, which represents density at surface pressure. In addition, certain calculations are required to determine relative currents pertaining to the distribution of mass in the sea. Such relative currents are deduced from a consideration of the balance of forces in the sea. The forces considered are those which act along an isobaric surface. If the isobaric surface is not level, a component of the force of gravity acts downward along it, and must be balanced by an equal and opposite force if the slope of the surface is to be maintained. The balancing force is assumed to be the deflecting force of the earth's rotation (Coriolis force), which acts in the presence of motion and indicates both the speed and direction of the current.

By an isobaric layer is understood the layer between two isobaric surfaces. The thickness of an isobaric layer depends upon the average specific volume of the layer. Therefore, the slope of one isobaric surface relative to another, which is assumed to be level, may be found. Since dynamic height is a measure of the work performed against gravity in moving unit mass from one level to another, the component of the force of gravity acting down the sloping isobaric surface between two stations is the difference in dynamic height of the surface at the two stations divided by the distance between stations. Equating this expression to the expression for the Coriolis force and solving for the velocity, one obtains the component of current normal to a line joining the two stations. The current is that at the upper isobaric surface relative to any current which may be present at the lower reference surface.

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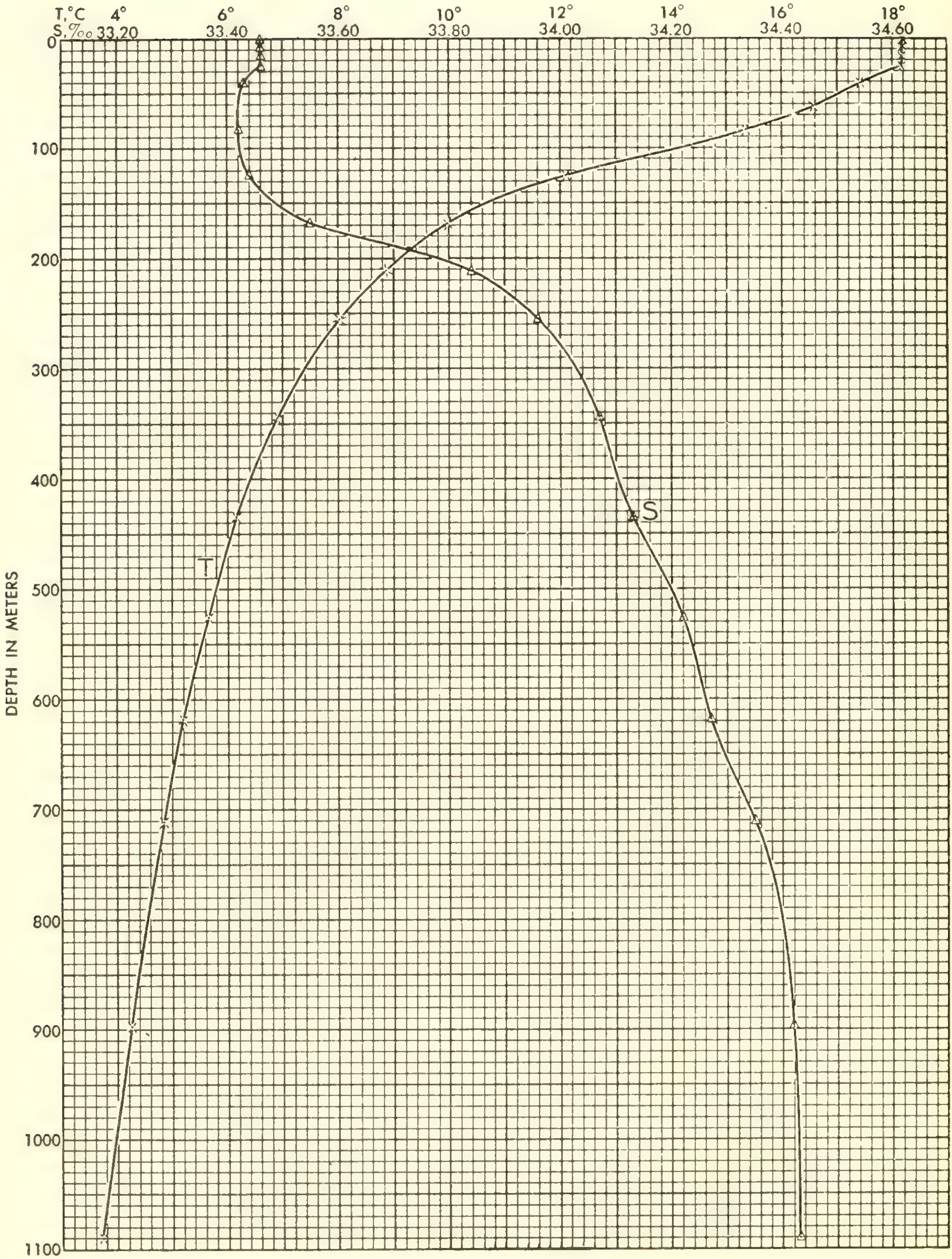

Figure 15.—Vertical distribution curves of temperature and salinity.

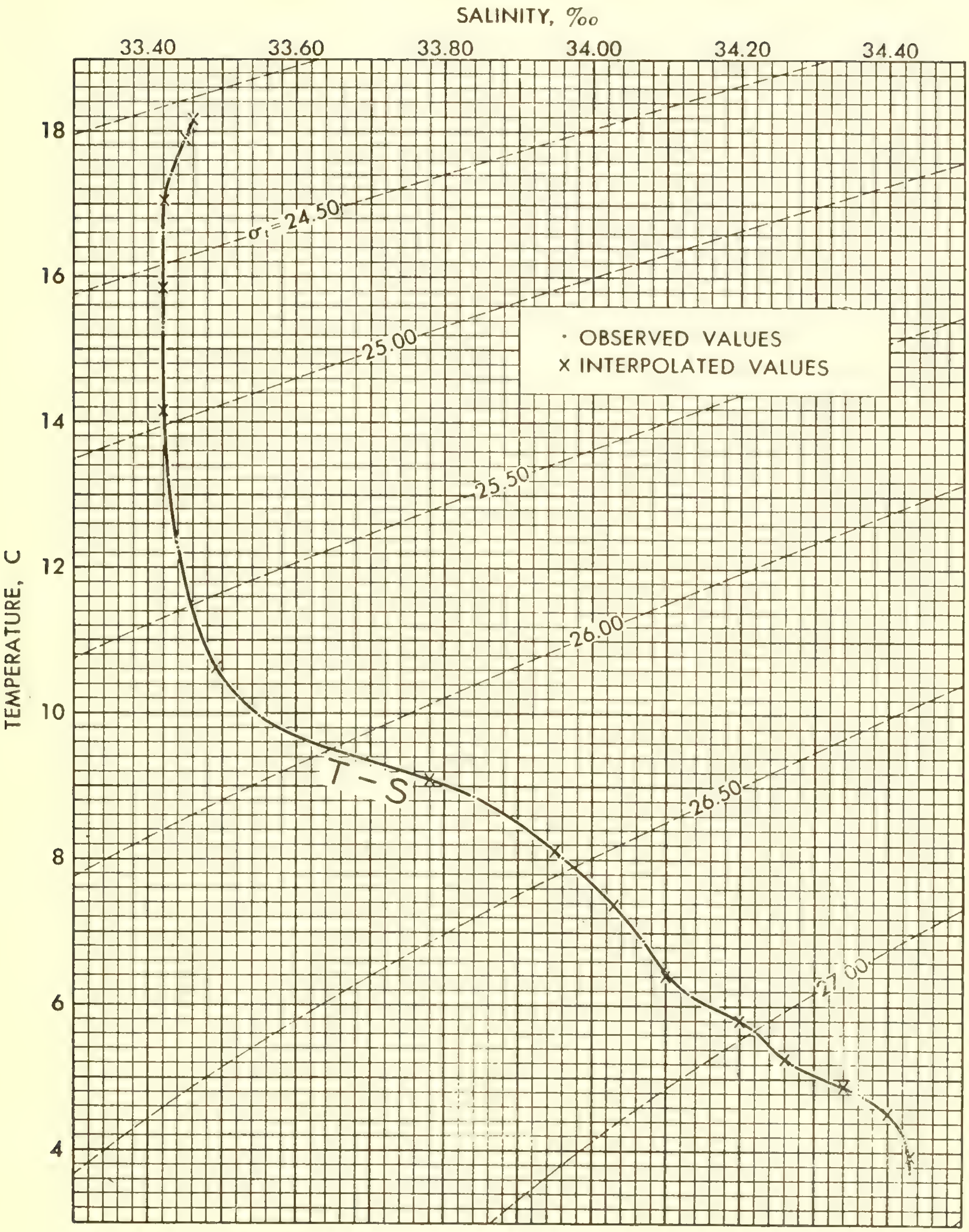

Figure 16.—Temperature-salinity (*T-S*) curve.

Methods for computing the dependent quantities used for describing the field of mass are presented below, and methods for determining relative currents are discussed at the end of the section.

SPECIFIC VOLUME AND SPECIFIC VOLUME ANOMALY

Specific volume (or volume per unit mass) *in situ* in the sea is expressed by the symbol $\alpha_{s,t,p}$, where the subscripts indicate the salinity, temperature, and pressure of the sample.

Specific volume *in situ* can be computed directly by the following equations developed by V. W. Ekman (1908) (30).

$$\alpha_{s,t,p}=\alpha_{s,t,o}-p\alpha_{s,t,o}\,10^{-9}\Big\{\frac{4886}{1+0.0000183\,p}-[227+28.33\,t-0.551\,t^2+0.004\,t^3]+p\,10^{-4}\,[105.5+9.50\,t-0.158\,t^2]-1.5\,p^2t\,10^{-8}-\frac{\sigma_o-28}{10}[147.3-2.72t+0.04t^2-p\,10^{-4}(32.4-0.87t+0.02t^2)]+\left(\frac{\sigma_o-28}{10}\right)^2[4.5-0.1t-p\,10^{-4}(1.8-0.06\,t)]\Big\}.$$

The above equation can be evaluated from values of temperature, t (° C.); salinity, s (°/₀₀), or chlorinity, Cl (°/₀₀); and pressure, p (decibars), by means of the following expressions (Knudsen, 1901) (*12*):

$$s=0.030+1.8050\,Cl$$

$$\sigma_o=-0.069+1.4708\,Cl-0.001570\,Cl^2+0.0000398\,Cl^3$$

$$\sigma_{s,t,o}=\Sigma_t+(\sigma_o+0.1324)[1-A_t+B_t(\sigma_o-0.1324)],$$

where,

$$\Sigma_t=-\left[\frac{(t-3.98)^2}{503.570}\right]\left[\frac{t+283}{t+67.26}\right]$$

$$A_t=t(4.7867-0.098185\,t+0.0010843\,t^2)10^{-3}$$

$$B_t=t(18.030-0.8164t+0.01667\,t^2)\,10^{-6}$$

and

$$\alpha_{s,t,o}=\frac{1}{\rho_{s,t,o}}=\frac{1}{1+10^{-3}\sigma_{s,t,o}}.$$

The error in the specific volume calculated from the above expressions is believed to be ±0.00001 for pressures of 1,000 decibars, and ±0.0001 for 10,000 decibars.

The more practical method of computing specific volume is by expressing it as a known specific volume under given conditions, plus a series of correction terms for the dependent variables of temperature, salinity, and pressure. These terms may be grouped, computed, and added as follows to give specific volume *in situ:*

$$\alpha_{s,t,p}=(\alpha_{35,0,0}+\delta_p)+(\delta_s+\delta_t+\delta_{s,t})+\delta_{s,p}+\delta_{t,p}+(\delta_{s,t,p}).$$

In the first two terms, $\alpha_{35,0,0}$ is a constant (0.97264) and δ_p represents the effect of pressure at standard salinity and temperature (35°/₀₀ and 0° C.). The sum of the two terms gives a standard specific volume:

$$\alpha_{35,0,0}+\delta_p=\alpha_{35,0,p}.$$

The values of the standard term $\alpha_{35,0,p}$ are given in table IV, page 40.

The next three terms of the expansion depend only upon salinity and temperature, and are combined to form the single term $\Delta_{s,t}$; that is, $\delta_s+\delta_t+\delta_{s,t}=\Delta_{s,t}$. This temperature-salinity term of the anomaly of specific volume (discussed below) is found from values of temperature and salinity by means of tables or graphs, as will be illustrated presently (Sverdrup, 1933) (*13*). If σ_t (see p. 16 of this section) has already been computed, $\Delta_{s,t}$ may be found from the formula, $\Delta_{s,t}=0.02736-\frac{10^{-3}\sigma_t}{1+10^{-3}\sigma_t}$, or by the table IX, page 88.

The salinity-pressure term, $\delta_{s,p}$, and temperature-pressure term, $\delta_{t,p}$, of the anomaly of specific volume are found from tables or graphs. The final term, $\delta_{s,t,p}$, is so small that it may be neglected.

The sum of the terms $\Delta_{s,t}$, $\delta_{s,p}$, and $\delta_{t,p}$, constitute the *anomaly of specific volume* from the standard, $\alpha_{35,0,p}$, and are designated by the single symbol δ. Thus,

$$\delta_s+\delta_t+\delta_{s,t}+\delta_{s,p}+\delta_{t,p}=\Delta_{s,t}+\delta_{s,p}+\delta_{t,p}=\delta.$$

For current calculations, the variation in specific volume along an isobaric surface is required. Since pressure is constant along any given isobaric surface, the term δ_p is a constant as well as $\alpha_{35,0,0}$. It is sufficient, therefore, to calculate the specific volume anomaly, δ, since the standard term contributes nothing to variation in specific volume along an isobaric surface.

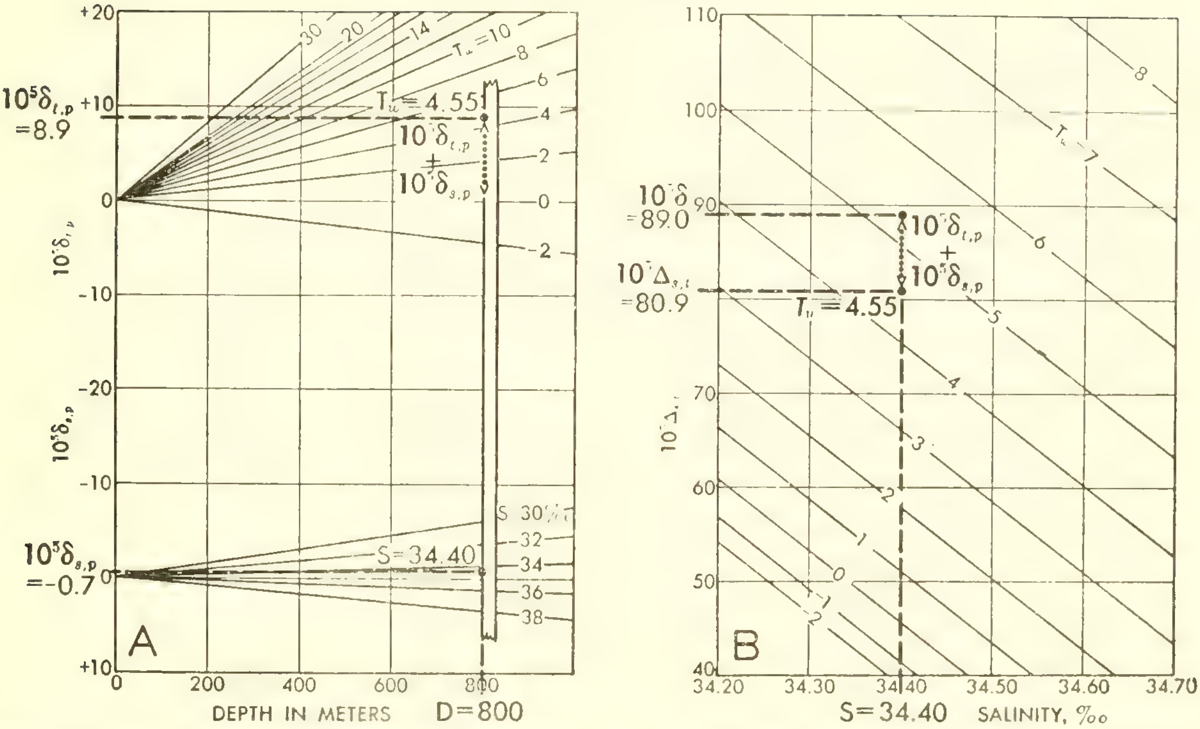

Figure 17.—Portion of graphs for determining $10^5\,\delta$ from temperature, salinity, and depth. A. Lower part—graph for $10^5\,\delta_{s,\,p}$; upper part—graph for $10^5\,\delta_{t,\,p}$. B. Graph for $10^5\,\Delta_{s,\,t}$.

However, if the total specific volume *in situ* is desired, it is obtained by adding the standard term and the anomaly, $\alpha_{s,t,p}=\alpha_{35,\,0,\,p}+\delta$.

For calculating the anomaly, graphs or tables may be used, as mentioned above. The term $10^5\Delta_{s,t}$ is given in table V, page 41 for values of temperature and salinity (LaFond, 1940) (*14*). The other terms $10^5\delta_{t,p}$ and $10^5\delta_{s,p}$ are given in tables VI and VII, respectively. The use of these tables with example is described in section D. 4. Such tables have also been put in graphical form (Sund, 1926) (*15*); (Callaway, 1950) (*16*). Figures 17A and 17B show portions of two graphs which are to be used together, one giving $10^5\delta_{s,p}$ and $10^5\delta_{t,p}$, the other giving $10^5\Delta_{s,t}$.

To obtain sufficient accuracy the graphs should be of such a size that 1 inch along the coordinate axes represents 0.0001 of each of the terms of the anomaly or 0.1 ‰ of salinity. A number of large charts are required to cover the normal range of the variables. To use the graph of figure 17A, a scale is laid along the line of given depth (e. g., 800 meters), and the distance between the given salinity (34.40‰) and temperature (4.55° C.) lines is marked. This length is measured against the ordinate scale by placing one mark at one zero point and reading the sum of $\delta_{s,p}$ and $\delta_{t,p}$ on the other scale, or by marking the other zero point on the paper, thus measuring the sum by a length. Then by means of the graph of figure 17B the point corresponding to the same given salinity (34.40‰) and temperature (4.55° C.) is found. The length corresponding to $\delta_{s,p}+\delta_{t,p}$ is laid off from this point along the line of constant salinity, from which is read the total specific volume anomaly, $\delta=\delta_{s,p}+\delta_{t,p}+\Delta_{s,t}$, along the ordinate. If, in the example of figure 17, temperature=4.55° C., salinity=34.40‰, and depth=800 meters, then $\delta_{t,p}=8.8$, $\delta_{s,p}=-0.7$, $\Delta_{s,t}=80.9$, and $\delta=89.0$.

DENSITY AND "SIGMA-T"

Density (or mass per unit volume) *in situ* is the reciprocal of the specific volume *in situ*, $\rho_{s,t,p}=\frac{1}{\alpha_{s,t,p}}$. The density *in situ*, $\rho_{s,t,p}$, may be determined by first calculating the specific volume *in situ* from the equations and tables of the preceding pages and then taking the reciprocal. For example, if at a given salinity, temperature, and pressure the specific volume is 0.96996, the density $\rho_{s,t,p} = \frac{1}{0.96996} = 1.03097$.

Another way to express the density is by the symbol $\sigma_{s,t,p}$. By definition, $\sigma_{s,t,p} = 10^3 (\rho_{s,t,p} - 1)$. Thus, if $\rho_{s,t,p} = 1.03097$, $\sigma_{s,t,p} = 30.97$. This expression has the advantage that the numerical value contains fewer digits and consequently is easier to handle.

It is common practice to abbreviate the expression $\sigma_{s,t,o}$ to only σ_t, which represents the density of water of given salinity and temperature at surface pressure. "Sigma-T" is widely used to describe the sea and has the significance that motion along σ_t surfaces involves little change in energy, and therefore mixing of water masses tends to take place along these surfaces. By definition,

$$\sigma_t = 10^3 (\rho_{s,t,o} - 1).$$

Thus, if $\rho_{s,t,o} = 1.02727$, $\sigma_t = 27.27$. In like manner, $\sigma_o = 10^3 (\rho_{s,o,o} - 1)$.

σ_t depends only upon salinity and temperature, and may be found directly from values of these variables, either graphically or by means of tables. If $\Delta_{s,t}$ has been calculated, σ_t may be read directly from table VIII, page 86. Other aids in the determination of σ_t are graphs such as shown in figure 18*, and nomograms as shown in figure 19.

If the temperature is 4.55° C. and salinity is 34.40°/oo, σ_t will equal 27.27.

Several tables for σ_t, in addition to table X, page 91, have been compiled by various people including McEwen (1929) (*17*), Matthews (1932) (*18*), Fleming (1939) (*19*), Ennis (1944) (*20*), and Bumpus and Martineau (1948) (*21*). These tables are based on Knudsen's equations given on the preceding pages.

RELATIVE CURRENTS

As indicated previously, the current along an isobaric surface is essentially a function of the geopotential (or dynamic) slope of the isobaric surface. If, at some depth, motion may be assumed negligible and an isobaric surface essentially level, the dynamic slope of an upper

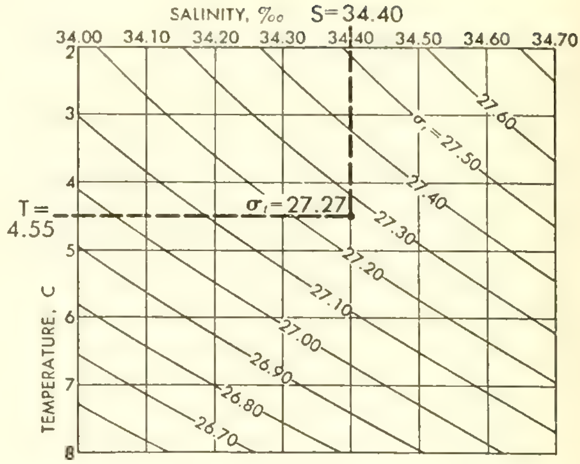

Figure 18.—Portion of a graph for determining "Sigma-T," σ_t, from temperature and salinity.

isobaric surface may be found from the variation of specific volume along the isobaric layer. Thus the current at the upper surface *relative* to any possible current at the lower surface is determined.

For each oceanographic station of a network of stations, the dynamic thickness of the isobaric layer may be calculated by means of the hydrostatic equation, $D_2 - D_1 = \int_{p_1}^{p_2} \alpha \, dp$, where,

$D_2 - D_1$ = dynamic thickness of the isobaric layer,
α = specific volume,
dp = pressure interval.

Since $\alpha = \alpha_{35,0,p} + \delta$, the total dynamic thickness of the layer may be considered composed of the dynamic thickness of the layer of standard specific volume plus the increment in dynamic thickness due to the anomaly of specific volume from standard. Thus,

$$D_2 - D_1 = \int_{p_1}^{p_2} \alpha_{35,0,p} dp + \int_{p_1}^{p_2} \delta \, dp$$
$$= (D_2 - D_1)_{\text{standard}} + \Delta D.$$

The dynamic thickness of the standard layer is the same at every station. Therefore the differences in dynamic height between stations are completely given by the differences in the increments, ΔD, and it is only necessary to calculate ΔD at each station, using the formula $\Delta D = \int_{p_1}^{p_2} \delta \, dp$.

In practice, meters of depth are substituted for decibars of pressure in the equation. The

*Such σ_t charts have been published by the Hydrographic Department, British Admiralty, under the title "Density (Sigma-T) from Salinity and Temperature," Misc. 354, 354A, and 354B, 1942.

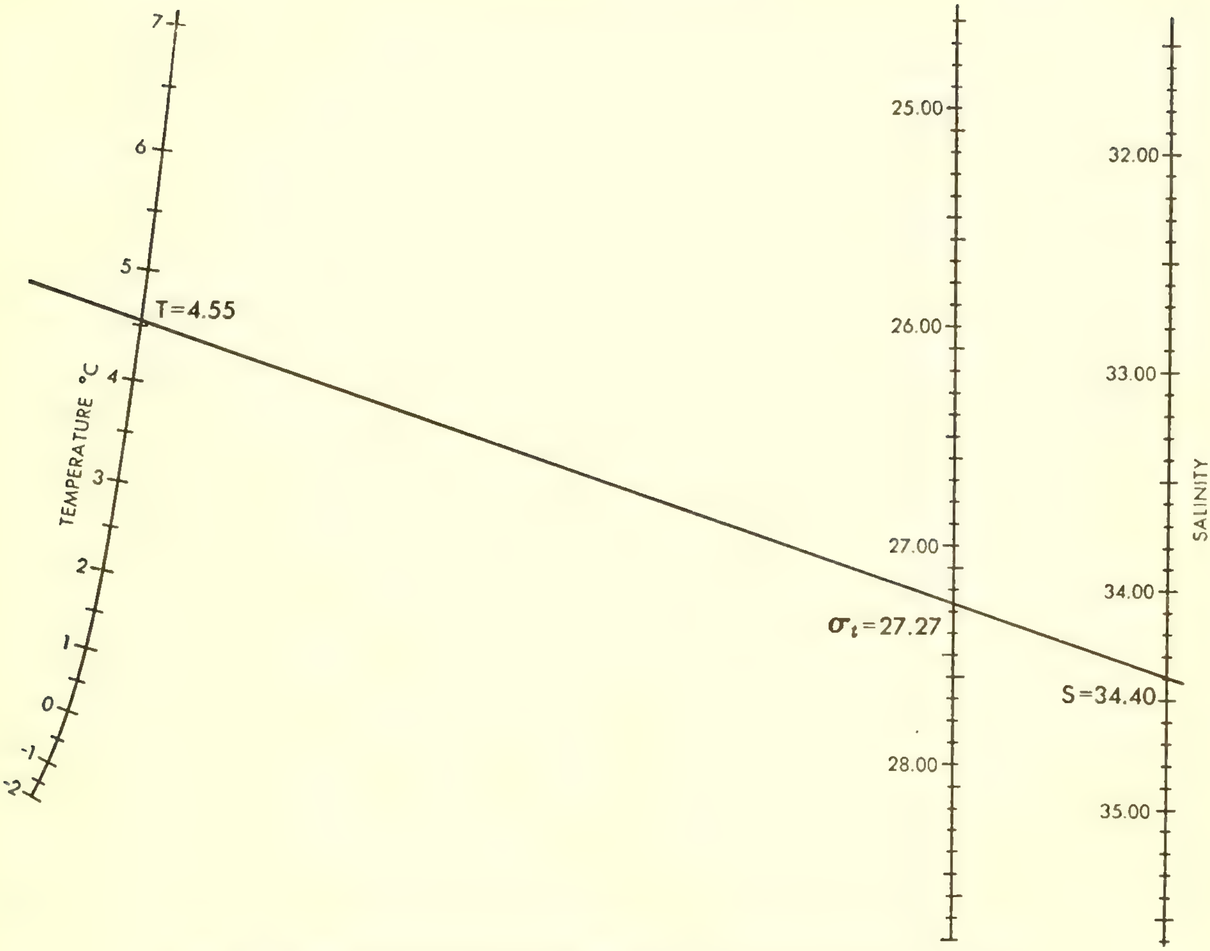

Figure 19.—Nomogram for determining "Sigma-T," σ_t, from temperature and salinity.

insignificant error in ΔD introduced by this substitution is negligible, amounting to 1 percent or less.

Procedure in computing ΔD at each station is as follows. The specific volume anomaly, δ, at each depth is calculated by one of the methods previously outlined. The mean specific volume anomaly, $\bar{\delta}$, for each depth interval may be determined by averaging the two bounding values. Multiplying this mean value, $\bar{\delta}$, by the depth interval (which corresponds essentially to the pressure interval between depths) gives the anomaly of dynamic height, ΔD, for each small depth (or pressure) layer. The required total ΔD for each station is obtained by adding the anomalies of dynamic height, ΔD, from the selected reference level of no motion to the level at which relative currents are to be computed.

The final step in computing the current passing between two stations is to equate the forces acting along the sloping isobaric surface between stations, and solve for the velocity. The force of gravity acting downslope is expressed by the difference in the anomalies of dynamic height at the two stations divided by the distance between stations. Since the computation of ΔD was based upon pressure in decibars, rather than the standard unit centibars, a factor of 10 is necessary to convert the expression to meter-ton-second units. Equating this force to the expression for the Coriolis force acting upslope gives $\frac{10(\Delta D_A - \Delta D_B)}{L} = V\,2\omega \sin\phi$ (Sandström and Helland-Hansen, 1903) (*22*) where,

$\Delta D_A - \Delta D_B$ = difference in the anomalies of dynamic height at stations A and B, in dynamic meters,

L=distance between stations in meters,

V=relative current velocity normal to a line joining the two stations, in meters per second,

ω=angular velocity of the earth, equal to 0.729×10^{-4} radians per second,

ϕ=mean latitude between stations.

Solve the equation for the velocity:

$$V=\frac{10(\Delta D_A-\Delta D_B)}{L\,2\,\omega\sin\phi}.$$

To simplify the computation of velocity in meters per second, the factor $\frac{10}{L2\omega\sin\phi}$ is given in table XII for unit values of L and for each degree of latitude. Conversion factors are also given in table XII for various units of V and L.

A graphical aid in the calculation of current velocity from dynamic height differences is the nomogram illustrated in figure 20. If we use the two scales on the left, the point where a straight line through the appropriate dynamic height difference, $\Delta D_A-\Delta D_B$, and distance between stations, L, crosses the center line is marked on the diagram as P. On the right side of the diagram, a straight line through the established center line mark, P, and the appropriate latitude crosses the velocity scale at the desired value of the velocity component normal to the line joining the two stations. As an example, given a dynamic height difference of 0.0525 dynamic meter and a distance between stations of 27.8 kilometers at a mean latitude of 29°56′, a current velocity between stations of 0.5 knot is found from the nomogram.

The usual graphical way not only of measuring, but presenting, current data for analysis is by the construction of charts showing the dynamic topography of one or more isobaric surfaces relative to a reference surface, which is assumed to be level. The anomaly of dynamic height, ΔD, between the reference surface and the selected isobaric surface above is plotted on a base chart at each oceanographic station, and contours of equal values of dynamic height anomaly are drawn. Such a chart is illustrated in figure 21, which shows the dynamic topography of the 0-decibar surface (sea level) relative to the 500-decibar surface. Each contour represents the line along which a level surface cuts the selected isobaric surface (sea level in the illustration), if we assume the lower reference surface to be level. Since the force of gravity acts downslope normal to the contours, and the balancing Coriolis force is always normal to the velocity, it follows that the current flows along the contours of dynamic topography. The surface slopes upward to the right of the current in the Northern Hemisphere, to the left of the current in the Southern Hemisphere.

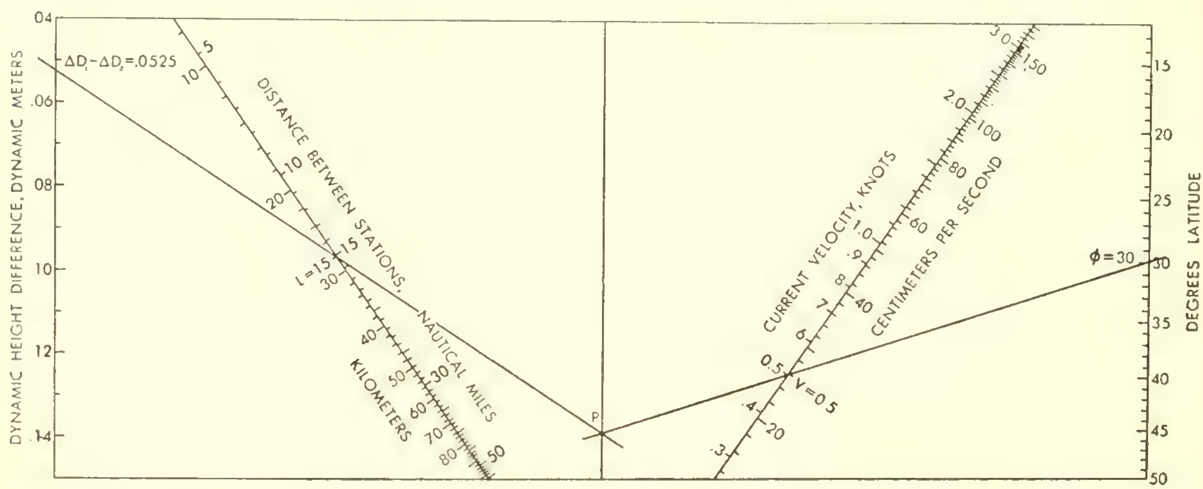

Figure 20.—Nomogram for determining current velocity from dynamic height anomaly difference, distance between stations, and latitude.

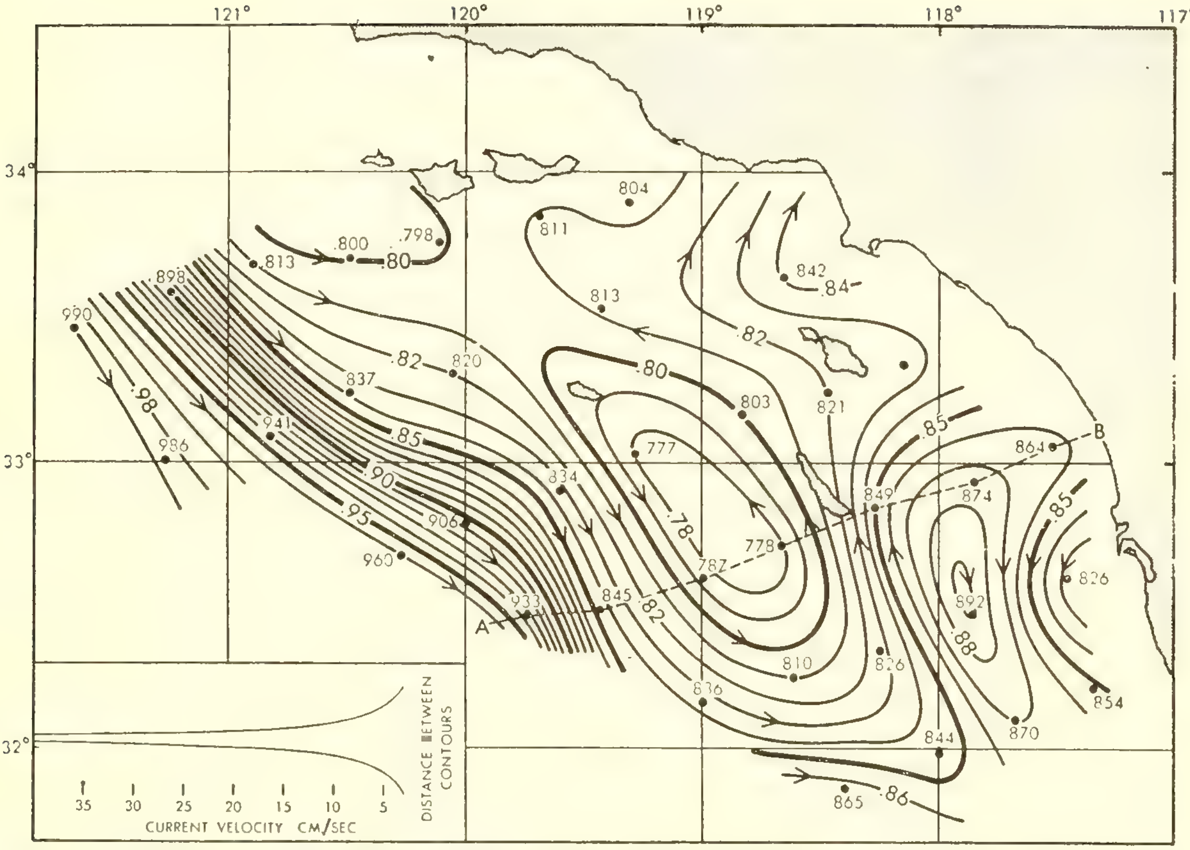

Figure 21.—Contours of dynamic height anomalies (dynamic meters) for surface over 500 decibars. Current direction is indicated by arrows on contours, velocity by contour spacing using scale at lower left.

When the contours are drawn at equal intervals of dynamic height anomaly, the velocity of the current is inversely proportional to the distance between contours. An insert graph is normally given on the chart to relate dynamic height contour spacing to current speed. Charts showing the dynamic topography of an isobaric surface relative to a lower isobaric surface thus not only present a complete picture of motion at the upper surface relative to any motion at the lower surface, but eliminate the need for numerical calculation of the components of currents between stations from dynamic height differences.

Certain limitations to the accuracy of the current calculations outlined above should be borne in mind: (1) Currents deduced are relative to any unknown current at the reference level rather than absolute values. (2) Accelerations have been neglected; if currents are changing, the results of the calculations are less valid. (3) Frictional forces have been neglected. (4) Observations taken at different times at the different stations have been assumed simultaneous. In some areas the influence of internal waves (LaFond, 1949) (*23*) and tidal influence on dynamic height are taken into account. These limitations may, however, be largely offset by the familiarity with a region which comes with repeated observations (provided conditions are quasi-permanent).

D.4—EXAMPLES OF PROCESSED SERIAL TEMPERATURE AND SALINITY DATA

The observed data collected at sea, the computed values determined during processing, and the final tabulated summary of results are usually all recorded on specially printed forms. The printed columns and spaces on these forms have appropriate designations for the specific information required by the groups concerned with taking and processing data. In the case of processing forms, the selection of column headings will depend somewhat on the type of processing tables or aids used. If, for instance, the total temperature correction, ΔT, is computed directly, the form does not require space for I and C. Some space is always left for items to be added in the ever changing parameters.

Some forms are designed so that sea observations and their processing are combined on one or two sheets. This makes it possible to use the original data during processing, thus eliminating the necessity for transcribing columns of data from other sheets, with consequent increased chances for error. Such combination forms are, however, necessarily large and awkward to handle, especially at sea. A more customary practice is to use separate forms for recording sea data. Such forms are generally not over 8 by 10 inches, and are made up on transparent paper for duplication by contact printing.

In the following section, several sample forms of various types are presented, together with explanations of their respective column headings. These forms apply chiefly to repeated measurements of temperature and salinity. At the end of the section is a discussion of the preparation of horizontal and vertical sections as an effective means of presenting processed data in graphical form.

OBSERVED SEA DATA

The first form, "Observed Sea Data," illustrates the serial data as received for processing. It normally contains, in addition to the serial data, other information pertinent to a particular oceanographic station. An example of this form, together with entries and units used, is given in figure 22.

OBSERVED SEA DATA

CRUISE	STATION	LATITUDE	LONGITUDE		WIRE ANGLE	START	DOWN	MESSENGER	UP	IN
S-1	1	29° 52' N	118° 38' W	FIRST CAST:	35°	0245	0326	0336	0346	0423

VESSEL	DATE	TIME ZONE		WIRE ANGLE	START	DOWN	MESSENGER	UP	IN
Serrano	11 Nov. '48	+8	SECOND CAST:						

BT. NO	SLIDE NO.	SONIC DEPTH	WIND DIR.	WIND FORCE	SEA	SWELL	WEATHER	CLOUDS	WET BULB	DRY BULB	OBSERVERS
1293	136	1770	30	1	1		01	Ac. 2	58.9	61.5	J. E. S.

CAST	SERIAL NO.	METER WHEEL	WIRE LENGTH	WATER BTL. NO.	LEFT THERMOMETER NO.	LEFT THERMOMETER MAIN (T')	LEFT THERMOMETER AUX. (t)	RIGHT THERMOMETER NO.	RIGHT THERMOMETER MAIN (T'; T'u)	RIGHT THERMOMETER AUX. (t, tu)	BOTTLE NUMBERS Cl	BOTTLE NUMBERS O2			REMARKS
	6171	(1203) 1200	0	BKT.	A68	18.27					271	A22			
	6172	1190	10	7	4818	18.05	16.2	4821	18.13	16.3	416	A21			
	6173	1180	20	8	48189	18.07	16.0	4859	18.03	16.2	273	A24			
	6174	1170	30	9	4814	18.10	16.3	4811	18.18	16.2	544	A15			
I	6175	1150	50	10	41229	17.42	16.0	3522	17.35	16.1	545	A30			
	6176	1125	75	11	3429	16.55	16.0	4828	16.52	15.9	562	A26			
	6177	1100	100	12	46263	15.41	16.3	46266	15.39	16.0	275	A25			
	6178	1050	150	13	9A-38	12.25	15.9	34 52	12.19	16.0	277	A20			
	6179	1000	200	14	3396	10.10	16.3	46019	10.16	16.1	270	A28			
	6180	950	250	15	4508	9.02	16.1	46133	8.90	15.9	268	A33			
	6181	900	300	23	3394	8.13	15.8	4874 u	10.71	16.0	555	A41			
	6182	800	400	16	3501	7.05	16.1	3497	7.10	15.9	543	A35			
	6183	700	500	19	3673	6.32	16.0	4869 u	9.78	16.1	556	A32			
	6184	600	600	17	3500	5.88	16.1	3679	5.82	15.8	547	A17			
	6185	500	700	18	4510	5.40	16.2	3499	5.38	16.2	546	A29			
	6186	400	800	20	3667	5.06	15.7	4870 u	12.01	15.9	550	A31			
	6187	200	1000	21	3669	3.72	15.9	4873 u	13.04	16.0	274	A38			Left therm. stuck.
	6188	0	1200	22	3668	3.90	16.0	4525 u	14.39	15.7	280	A23			

FORM 1.

Figure 22.—Form 1 with example for "OBSERVED SEA DATA."

Explanation of Entries in Heading

CRUISE: Designation of the particular cruise.

STATION: Number by which station is identified. Stations occupied on a cruise are numbered consecutively or by numbers assigned by position.

LATITUDE: Given in degrees and minutes.

LONGITUDE: Given in degrees and minutes.

VESSEL: Name of the vessel.

DATE: Day, month, year.

TIME ZONE: Number of hours to be added to local civil time used in the observations to give Greenwich civil time.

BT NUMBER: Serial number of the bathythermograph instrument.

SLIDE NUMBER: Number of the bathythermograph slide or observation.

SONIC DEPTH: Depth of water in fathoms.

WIND DIRECTION: Direction from which the wind is blowing, given in degrees counted clockwise from north.

WIND FORCE: Given according to the Beaufort scale.

SEA: Given according to the Douglas sea and swell scale.

WEATHER: Given according to the United States Weather Bureau "Instructions for Recording and Coding Marine Meteorological Observations in the New International Code," 1948.

CLOUDS: Types of clouds, and amount of sky covered.

WET BULB: Wet-bulb temperature given in degrees Fahrenheit.

DRY BULB: Air temperature given in degrees Fahrenheit.

Upper right section of heading: In this section are entered for each water bottle cast the following information, where time is given in local civil time:

WIRE ANGLE: Angle from the vertical at which the wire enters the water when all water bottles are down and measured at the time the messenger is dropped.

START: Time of placing the first bottle on the wire.

DOWN: Time when all water bottles are on the wire and lowered to proper wire depth.

MESSENGER: Time messenger is placed on the wire.

UP: Time cast of water bottles is started up.

IN: Time when all water bottles are in.

Explanation of Entries in Columns

CAST: Frequently only one water bottle cast is made at each station. If two or more are made, the point of change is indicated in this column.

SERIAL NUMBER: The serial numbers run consecutively, one for all observations at each depth of each cast.

METER WHEEL: Reading of the meter wheel at time when each water bottle is placed on the wire (read from bottom of column). The number in parentheses at the top of the column is the final reading of the meter wheel after lowering of all bottles. It differs from the reading at zero wire length by the distance from the sea surface to the height at which bottles are placed on the wire.

WIRE LENGTH: Wire length from the sea surface to each water bottle when the cast is down.

WATER BOTTLE NUMBER: Serial number of each water bottle. The surface water sample is usually taken by bucket instead of water bottle. If so, it is indicated by writing "BKT" at the top of the column opposite zero wire length.

LEFT THERMOMETER AND RIGHT THERMOMETER: Usually two deep sea reversing thermometers, each consisting of a main and auxiliary thermometer, are attached to each water bottle. The reversing thermometer on the left is a protected one, that on the right may be either protected or unprotected against the effect of pressure. Under each thermometer the columns indicate as follows:

NUMBER: Serial number of the thermometer. Unprotected thermometers are distinguished by a small "u" placed after the thermometer number.

MAIN (T', T_u'): Temperature reading of the main thermometer, designated by T' (or T_u').

AUX. (t, t_u): Temperature reading of the auxiliary thermometer, designated by t (or t_u).

BOTTLE NUMBERS: Samples of the sea water at each depth are stored in numbered glass bottles for chemical analysis at a later time. A separate set of bottles is used for determination of the amount of each desired chemical, as indicated.

Cl: Numbers of the bottles in which water samples are stored for determination of chloride content, and hence salinity.

O_2: Numbers of the bottles in which water samples are stored for determination of oxygen content.

REMARKS: Any comment that may be useful in analysis of the data.

TEMPERATURE AND DEPTH CALCULATIONS

The second type of form, "Temperature and Depth Calculations," shown in figure 23, is devised for the processing of temperature and depth data. Headings and column entries in this form correspond to those of Form 1. The equations involved and the construction of processing aids are discussed in section D.2.

Explanation of Entries in Columns

SERIAL NUMBER AND WIRE LENGTH: See the corresponding column headings on "Form 1—Observed Sea Data." Entries in these columns and other headings are copied directly from Form 1 and serve as a reference for the data on the two forms.

LEFT THERMOMETER AND RIGHT THERMOMETER: The first three columns under each thermometer, Number, T' or T_u', and t or t_u, are copied directly from the appropriate columns of Form 1.

C: Correction for thermal changes subsequent to reversal, to be added algebraically to T' or T_u'. C is found by formula, slide rule, tables, or graphs. (See sec, D. 2.)

TEMPERATURE AND DEPTH CALCULATIONS

CRUISE		VESSEL	DATE	COMPUTED BY
S-1	1	Serrano	11 Nov. 48	• MJC

SERIAL NO.	WIRE LENGTH	LEFT THERMOMETER						RIGHT THERMOMETER						AVERAGE T_w	$T_u - T_w$	DEPTH	WIRE L. MINUS DEPTH	DEPTH
		NO.	T'	t	C	I	T_w	NO.	T'	t	C	I	T_w or T_u					
6171	0	A68	18.27			-.10	18.17							18.17			0	0
6172	10	4818	18.05	16.2	+.05	+.06	18.16	4821	18.13	16.3	+.05	-.01	18.17	18.17			2	8
6173	20	48189	18.07	16.0	+.04	+.06	18.17	4859	18.03	16.2	+.05	+.08	18.16	18.17			4	16
6174	30	4814	18.10	16.3	+.04	+.01	18.15	4811	18.18	16.2	+.04	-.05	18.17	18.16			5	25
6175	50	41229	17.42	16.0	+.03	-.03	17.42	3522	17.35	16.1	+.03	+.01	17.39	17.41			9	41
6176	75	3429	16.55	16.0	+.01	+.01	16.57	4828	16.52	15.9	+.01	+.02	16.55	16.56			13	62
6177	100	46263	15.41	16.3	-.03	-.05	15.33	46266	15.39	16.0	-.02	-.03	15.34	15.34			17	83
6178	150	94-38	12.25	15.9	-.06	-.09	12.10	3432	12.19	16.0	-.08	-.01	12.10	12.10			25	125
6179	200	3396	10.10	16.3	-.11	-.03	9.96	46019	10.16	16.1	-.19	+.01	9.98	9.97			32	168
6180	250	4508	9.02	16.1	-.13	-.03	8.86	46133	8.90	15.9	-.15	+.10	8.85	8.86			39	211
6181	300	3394	8.13	15.8	-.14	+.03	8.02	4874u	10.71	16.0	-.17	-.04	10.50u	8.02	2.48	255	45	255
6182	400	3501	7.05	16.1	-.15	-.01	6.89	3497	7.10	15.9	-.17	-.02	6.91	6.90			56	344
6183	500	3673	6.32	16.0	-.17	+.01	6.16	4869u	10.30 ~~9.30~~	16.1	-.21	+.06	10.15 ~~9.15~~	6.16	3.99 ~~2.99~~	435 ~~327~~	65 ~~173~~	435
6184	600	3500	5.88	16.1	-.17	-.04	5.67	3679	5.82	15.8	-.18	.00	5.64	5.66			74	526
6185	700	4510	5.40	16.2	-.19	-.02	5.19	3499	5.38	16.2	-.19	+.01	5.20	5.20			82	618
6186	800	3667	5.06	15.7	-.20	-.01	4.85	4870u	11.83	15.9	-.23	-.02	11.58u	4.85	6.73	711	89	711
6187	1000	3669	3.72	15.9	-.22	+.02	3.52	4873u	13.04	16.0	-.28	-.06	12.70u	4.24 ~~3.52~~	9.18	~~973~~	104 ~~27~~	896
6188	1200	3668	3.90	16.0	-.21	+.03	3.72	4525u	14.39	15.7	-.32	.00	14.07u	3.72	10.35	1090	110	1090

FORM 2

Figure 23.—Form 2 with example for "TEMPERATURE AND DEPTH CALCULATIONS".

I: The index correction, (I), is found from the calibration sheet for each thermometer at the appropriate temperature. It is also added algebraically to T' or T'_u. (Note: Frequently C and I are found simultaneously.)

T_w and T_w or T_u: Entries in these columns are the sum of the terms $T'+C+I$ (or T'_u+C+I). T_w is the water temperature *in situ*, the corrected reading of a protected thermometer. T_u is the corrected reading of an unprotected thermometer.

AVERAGE T_w: If both left and right thermometers are protected, the entry in this column is the average of the two corrected readings, T_w. If only the left thermometer is protected, the corrected reading of that thermometer, T_w, is copied in this column. Entries represent the best obtainable values of the temperature *in situ*.

$T_u - T_w$: Entries are made in this and the following column only at levels where an unprotected thermometer was used. At these levels, $T_u - T_w$ is the difference between the entries in the preceding two columns.

THERMOMETRIC DEPTH: Thermometric or calculated depth of reversal of each unprotected thermometer as found by graph or tables. (See sec. D. 2.)

WIRE LENGTH MINUS DEPTH: The difference between wire length and thermometric depth is determined from the appropriate columns, and entered for each thermometric depth. These differences are plotted against wire length, and a smooth curve drawn. Additional entries for this column may be read from the curve at the appropriate wire lengths. (See sec. D. 2.)

ACCEPTED DEPTH: Accepted depth of each water bottle is obtained by subtracting the entry in the preceding column from the wire length.

DYNAMIC CALCULATIONS

The third form, "Dynamic Calculations," shown in figure 24, is designed for the calculation of dynamic height anomalies used in the determination of currents. The equations and processing aids are discussed in section D. 3.

DYNAMIC CALCULATIONS

CRUISE	STATION	VESSEL	DATE	COMPUTED BY
S-1	1	Serrano	11 Nov. '48	MFC

DEPTH (METERS)	TEMP. (°C)	SALINITY (‰)	APPROX. $10^5\Delta_{s,t}$	DIFFERENCES	CORRECTIONS TEMP.	CORRECTIONS SAL.	$10^5\Delta_{s,t}$	$10^5\delta_{s,p}$	$10^5\delta_{t,p}$	$10^5\delta$	MEAN δ	PRESSURE INTERVAL	ΔD	ΣΔD
0	18.17	33.46	416.9	2.3 -72.8	1.6	-33.5	385.0	0	0	385.0	.003852	10	.0385	.0000
10	18.17	33.46	416.9	2.3 -72.8	1.6	-33.5	385.0	0.3	0	385.3	.003855	10	.0386	.0385
20	18.17	33.46	416.9	2.3 -72.8	1.6	-33.5	385.0	0.7	0	385.7	.003833	10	.0383	.0771
30	17.92	33.45	412.2	2.3 -72.8	0.5	-32.7	380.0	1.0	-0.1	380.9	.003724	20	.0745	.1154
50	17.06	33.42	391.7	2.3 -72.9	1.4	-30.6	362.5	1.6	-0.1	364.0	.003510	25	.0878	.1899
75	15.85	33.42	365.6	2.1 -73.1	1.0	-30.7	335.9	2.3	-0.2	338.0	.003209	25	.0802	.2777
100	14.17	33.42	330.6	2.0 -73.3	1.4	-30.8	301.2	2.8	-0.2	303.8	.002690	50	.1345	.3579
150	10.62	33.49	267.1	1.6 -73.9	0.3	-36.2	231.2	3.4	-0.3	234.3	.002117	50	.1058	.4924
200	9.10	33.78	243.5	1.5 -74.2	0	-57.9	185.6	3.9	-0.4	189.1	.001758	50	.0879	.5982
250	8.10	33.95	229.0	1.4 -74.4	0	-70.7	158.3	4.5	-0.4	162.4	.001548	50	.0774	.6861
300	7.39	34.03	143.5	1.4 -74.5	1.3	-2.2	142.6	5.0	-0.5	147.1	.001386	100	.1386	.7635
400	6.40	34.10	132.0	1.2 -74.7	0	-7.4	124.6	6.0	-0.5	130.1	.001230	100	.1230	.9021
500	5.80	34.20	124.7	1.2 -74.8	0	-15.0	109.7	6.9	-0.6	116.0	.001110	100	.1110	1.0251
600	5.27	34.26	117.9	1.1 -75.0	0.8	-19.5	99.2	7.6	-0.7	106.1	.001013	100	.1013	1.1361
700	4.90	34.34	114.6	1.1 -75.0	0	-25.5	89.1	8.2	-0.8	96.5	.000928	100	.0928	1.2374
800	4.55	34.40	110.4	1.0 -75.1	0.5	-30.0	80.9	8.8	-0.7	89.0	.000852	200	.1704	1.3302
1000	3.95	34.43	104.4	1.0 -75.2	0.5	-32.3	72.6	9.7	-0.8	81.5				1.5006

FORM 3.

Figure 24.—Form 3 with example for "DYNAMIC CALCULATIONS."

Normally, values at standard depths are used to simplify the computation. These are found by plotting the observed values of temperature and salinity at observed depths, drawing a smooth curve, and reading the interpolated values at standard depths as shown in section D. 2.

Explanations of Entries in Columns

DEPTH (METERS): Standard depths, at which values of all other quantities are desired. (See sec. D. 2.)

TEMPERATURE (°C.): Temperature at each standard depth.

SALINITY (‰): Salinity at each standard depth.

APPROXIMATE $10^5\ \Delta_{s,t}$ AND DIFFERENCES: The quantity $\Delta_{s,t}$ is temperature-salinity term of the specific volume anomaly, δ. To streamline the calculation when much data are to be processed, approximate values are read from a simplified table, V–A, page 41, and entered without interpolation; then interpolation corrections for temperature, table V–B, page 76, and salinity, table V–C, page 77, are found separately and added. If only the integral part of the salinity reading (in ‰) and temperature to tenths of a degree centigrade are used, three numbers are found in table V–A, page 41. The first is entered in the column "APPROXIMATE $10^5\Delta_{s,t}$." The second and third numbers are entered one above the other in the column "DIFFERENCES." The upper number of these two is the difference between values of $10^5\ \Delta_{s,t}$ for a temperature increase of one-tenth of a degree centigrade. The lower number is the difference between values of $10^5\Delta_{s,t}$ for a salinity increase of one part per thousand.

CORRECTIONS—TEMPERATURE and SALINITY: Temperature corrections are found from table V–B, page 76, by using the hundredths place of the temperature reading and the upper number under "DIFFERENCES." Salinity corrections are found from table V–C, page 77, by using the decimal part of the salinity reading and the lower number under "DIFFERENCES."

$10^5\Delta_{s,t}$: Entries in this column are found by adding the three terms "APPROXIMATE $10^5\Delta_{s,t}$," "TEMPERATURE CORRECTION," and "SALINITY CORRECTION."

$10^5\delta_{t,p}$: Entries are found from table VI, page 80, at appropriate values of temperature and depth. The quantity $\delta_{t,p}$ represents the part of the specific volume anomaly, δ, which is due to simultaneous variation of temperature and pressure from standard values.

$10^5\delta_{s,p}$: Entries are found from table VII, page 84, at appropriate values of salinity and depth. The quantity $\delta_{s,p}$ represents the part of the specific volume anomaly, δ, which is due to simultaneous variation of salinity and pressure from standard values.

$10^5\delta$: Entries are obtained by adding the three terms "$10^5\Delta_{s,t}$," "$10^5\delta_{s,p}$," and "$10^5\delta_{t,p}$." The quantity δ is the difference between the actual specific volume at each level and a standard value at that level, the standard being the specific volume of water of standard salinity and temperature (35°/₀₀ and 0° C.) at the appropriate pressure. In accordance with the formula given in section D. 3,

$$\alpha_{s,t,p}-\alpha_{35,0,p}=\Delta_{s,t}+\delta_{s,p}+\delta_{t,p}=\delta.$$

MEAN δ: By eliminating the factor 10^5, the mean value of the anomaly between each two successive levels is found and entered in this column.

PRESSURE INTERVAL: Since the pressure interval in decibars between two levels is very nearly equal to the depth interval in meters, entries for this column are the intervals between successive depths, taken from the first column of the form.

ΔD: The anomaly of dynamic height for each layer in dynamic meters. Each entry is the product of the mean specific volume anomaly for the layer and the pressure interval, that is, the product of the entries in the preceding two columns.

$\Sigma\Delta D$: The anomaly of dynamic height from the surface to each level in dynamic meters. Each entry is the cumulative sum of the anomalies of dynamic depth of the layers above, as given in the preceding column. These values are used to determine relative current as discussed in section D. 3.

OCEANOGRAPHIC DATA SUMMARY

To summarize the processed data for plotting, analysis, or publication, a fourth form, "Oceanographic Data Summary," is presented as figure 25. This form gives the corrected observed, interpolated, and most common computed values.

Explanation of Entries in Columns

OBSERVED DATA:

DEPTH (M): Entries are copied from the last column of Form 2, "ACCEPTED DEPTH," and represent the best determination of depth.

TEMPERATURE (°C): Entries are copied from the column on Form 2 labeled "AVERAGE T_w" and represent the best determination of temperature.

SALINITY (°/₀₀): Entries are taken from results of the chemical analysis of the water sample for salinity.

σ_t: Entries represent, in abbreviated notation, density of the water at salinity and temperature *in situ* and at atmospheric pressure. $\sigma_t=10^3\ (\rho_{s,t,o}-1)$. Column entries are found by graph, nomogram, special slide rule, or by tables, by using the temperature and salinity given in the preceding two columns. (See sec. D. 3.)

O_2 (ml/L): Oxygen content of the water at each observed level. Entries are taken from the results of the chemical analysis of the water sample for dissolved oxygen.

INTERPOLATED DATA:

DEPTH (M), TEMPERATURE (°C), AND SALINITY (°/₀₀): Entries in these three columns are copied from the first three columns of Form 3.

σ_t: An abbreviated notation for water density at the salinity and temperature of each standard depth and at surface pressure. Entries may be found, as indicated above, by the use of graph, nomogram, special slide rule, or tables. However, if $10^5\Delta_{s,t}$ has been determined for standard depths on Form 3, σ_t may be found most easily from table VIII.

O_2 (ml/L): Oxygen content of the water at each standard depth. Entries are found by plotting observed values against observed depths, drawing a smooth curve, and reading from the curve the oxygen content at standard depths.

CALCULATED QUANTITIES (at standard depths):

δ: The specific volume anomaly, obtained from the column "$10^5\delta$" on Form 3 by multiplying by 10^{-5}.

$\sigma_{s,t,p}$: An abbreviated notation for water density *in situ*, $\sigma_{s,t,p}$, obtained as follows: Add the specific volume anomaly in the preceding column to the standard specific volume at the appropriate pressure, found in table IV, to obtain the specific volume *in situ*. Invert this value to obtain density *in situ*. Abbreviate this figure by subtracting one and moving the decimal to obtain the value to be entered in this column.

$$\delta+\alpha_{35,0,p}=\alpha_{s,t,p}$$

$$\frac{1}{\alpha_{s,t,p}}=\rho_{s,t,p}$$

$$(\rho_{s,t,p}-1)\,10^3=\sigma_{s,t,p}.$$

$\Sigma\Delta D$: The anomaly of dynamic depth from the surface to each level, copied directly from the last column of Form 3.

Blank columns are left under the general headings OBSERVED, INTERPOLATED, and COMPUTED for additional data as desired.

HORIZONTAL CHARTS AND VERTICAL SECTIONS

The presentation of processed physical oceanographic data in graphical form for analysis and publication is most useful, since the oceano-

OCEANOGRAPHIC DATA SUMMARY

CRUISE	STATION	LATITUDE	LONGITUDE	WIND DIR.	WIND FORCE	SEA	SWELL
S - 1	1	29°52'N	118°38'W	335°	3 knots	1	
VESSEL	**DATE**	**LOCAL CIVIL TIME**	**SONIC DEPTH**	**WEATHER**	**CLOUDS**	**WET BULB**	**DRY BULB**
Serrano	11 Nov. 48	0336	1770 F	01	Ac. 2		

OBSERVED						INTERPOLATED						CALCULATED			
DEPTH (M.)	TEMP. (°C)	SAL. (°/₀₀)	σ_t	O_2 (ml/L)		DEPTH (M.)	TEMP. (°C)	SAL. (°/₀₀)	σ_t	O_2 (ml/L)		δ	$a_{t,s}$	$\Sigma\Delta D$	
0	18.17	33.46	24.07			0	18.17	33.46	24.07			.00385	24.08	.0000	
8	18.17	33.46	24.07			10	18.17	33.46	24.07			.00385	24.12	.0385	
16	18.17	33.46	24.07			20	18.17	33.46	24.07			.00386	24.16	.0771	
25	18.16	33.46	24.08			30	17.92	33.45	24.12			.00381	24.26	.1154	
41	17.41	33.43	24.23			50	17.06	33.42	24.31			.00364	24.53	.1899	
62	16.56	33.42	24.43			75	15.85	33.42	24.59			.00338	24.93	.2777	
83	15.34	33.42	24.70			100	14.17	33.42	24.95			.00304	25.40	.3579	
125	12.10	33.44	25.38			150	10.62	33.49	25.69			.00234	26.38	.4924	
168	9.97	33.55	25.85			200	9.10	33.78	26.17			.00189	27.08	.5982	
211	8.86	33.84	26.25			250	8.10	33.95	26.46			.00162	27.60	.6861	
255	8.02	33.96	26.47			300	7.39	34.03	26.62			.00147	28.00	.7635	
344	6.90	34.07	26.72			400	6.40	34.10	26.81			.00130	28.66	.9021	
435	6.16	34.13	26.87			500	5.80	34.20	26.97			.00116	29.27	1.0251	
526	5.66	34.22	27.00			600	5.27	34.26	27.08			.00106	29.86	1.1361	
618	5.20	34.27	27.09			700	4.90	34.34	27.18			.00096	30.43	1.2374	
711	4.85	34.35	27.20			800	4.55	34.40	27.27			.00089	30.97	1.3302	
896	4.24	34.42	27.32			1000	3.95	34.43	27.36			.00082	31.98	1.5006	
1090	3.72	34.43	27.38												

FORM 4

Figure 25.—Form 4 with example for "OCEANOGRAPHIC DATA SUMMARY."

graphically important time and space variables can be used as one of the coordinates. The construction of horizontal and vertical sections requires proper selection of units and spacing of values to bring out the desired oceanographic variables. Another precaution is to maintain the consistency between graphs and quantities of different types.

Points on vertical plots are usually required to be small to establish accurate curves. In order to find small points, when connecting them by lines, they are adorned by larger symbols. These symbols may be specific of any given variable; for example, temperature frequently is designated by ⋊, salinity by △, oxygen by ⊙, and σ_t by ▽.

One means of checking consistency of graphs was brought out in section D. 2 where interpolated temperature and salinity values are plotted on a *T-S* curve constructed from observed values of the two variables. To be consistent and correct, the interpolated points must fall on the curve as in figure 16.

Another way to check the construction of vertical curves is by plotting the interpolation values with depth. A smooth curve through these points should also pass through the observed values.

Horizontal Charts

Horizontal charts are used to show the geographical variation in oceanographic quantities by contours of equal values.

A standard contour interval cannot be established to meet all requirements. In mid-latitudes the open sea temperature sections are usually plotted by whole degrees, salinity by 0.5°/₀₀, oxygen by 0.5 ml/L, and σ_t by 0.5 intervals. In extreme latitudes, different seasons, and inshore areas these intervals must be modified to bring out the desired features.

In any one study the contour interval should be consistent throughout. The contour spacing should normally be equal but if a particular feature requires intermediate contours they must contrast with the standard contours by different weight or style of line.

When a section is made up of a large number of lines it is desirable to make every fifth line heavier than the others. In this way individual contours may be followed more easily by reference to the heavier line.

Charts showing the dynamic topography of one isobaric surface relative to another, as described in section D. 3 and shown in figure 21, are typical of one method of presenting scalar oceanographic data. A three-dimensional picture of relative currents may be obtained from a series of such charts, each showing the dynamic topography of a different isobaric surface relative to the same reference surface.

A similar three-dimensional picture would also be obtained from a series of level charts, on each of which are plotted the intersections of isobaric surfaces. The methods are entirely comparable, and either may be used to depict the fields of any scalar quantity. This latter method of showing isopleths of constant temperature, salinity, etc., on equilevel surfaces is most popular because of its ease of construction.

Vertical Sections

In vertical sections the horizontal scale is frequently distance or time. In either case the scale should be continuous, regardless of the spacing of plotted values. The vertical scale, which represents a depth in the sea, should normally be continuous. In rare instances, if the surface features are to be emphasized or in cases where variables become nearly constant at great depths, the vertical scale may change at some depth such as 1,000 meters and the deeper scale compressed. The break in scale should be conspicuously marked.

Vertical sections usually depict variables along a straight line of stations. If the stations are not arranged along a straight line the direction of the section should be made clear. This may be accomplished by an inset horizontal chart with reference (station) numbers on both inset and horizontal chart. Another means of representing a change in direction of vertical sections is by changing the direction of the plotted section on the page and utilizing projection techniques. This procedure, however, gets involved if the section changes direction several times. In illustration of the vertical section, figure 26 shows isopleths of constant specific volume anomaly, δ, plotted along the section marked A—B on the chart of dynamic topography, figure 21. Figure 27 shows isotherms in the same section.

Both sections in figures 26 and 27, as well as figure 21, are based upon the same group of serial observations, and therefore must be drawn in such a way as to be consistent. This fact is obvious where the distribution of a single variable, such as pressure, is illustrated in more than one way. It is less obvious where the distributions of different variables from the same data are illustrated, and it is therefore important to bear in mind the relations between variables. As has been shown above, the slopes of isobaric surfaces are closely related to the distribution of mass.

Surfaces of constant value of all the mass variables slope in the same direction in the sea, and, except for σ_t which represents density reduced to a common pressure, form a single family of surfaces. However, specific volume and specific volume anomaly increase upward, density and σ_t increase downward. Since the mass field is largely dependent upon temperature, isothermal surfaces tend to slope in a similar manner, and currents may usually be deduced from charts of isotherms.

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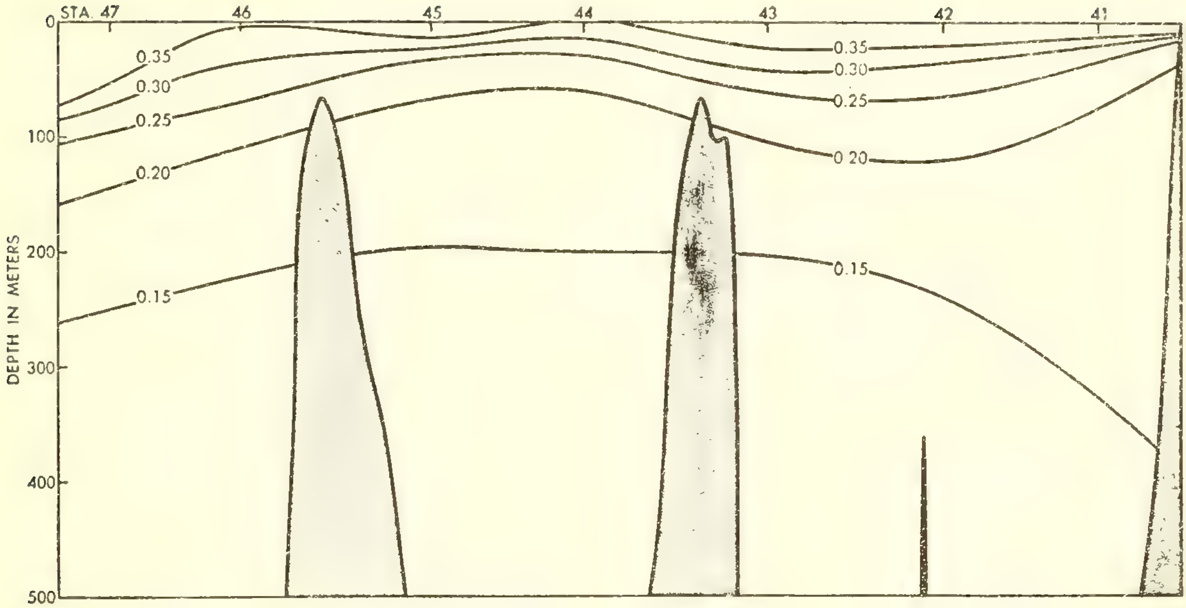

Figure 26.—Vertical section of $10^5\delta$.

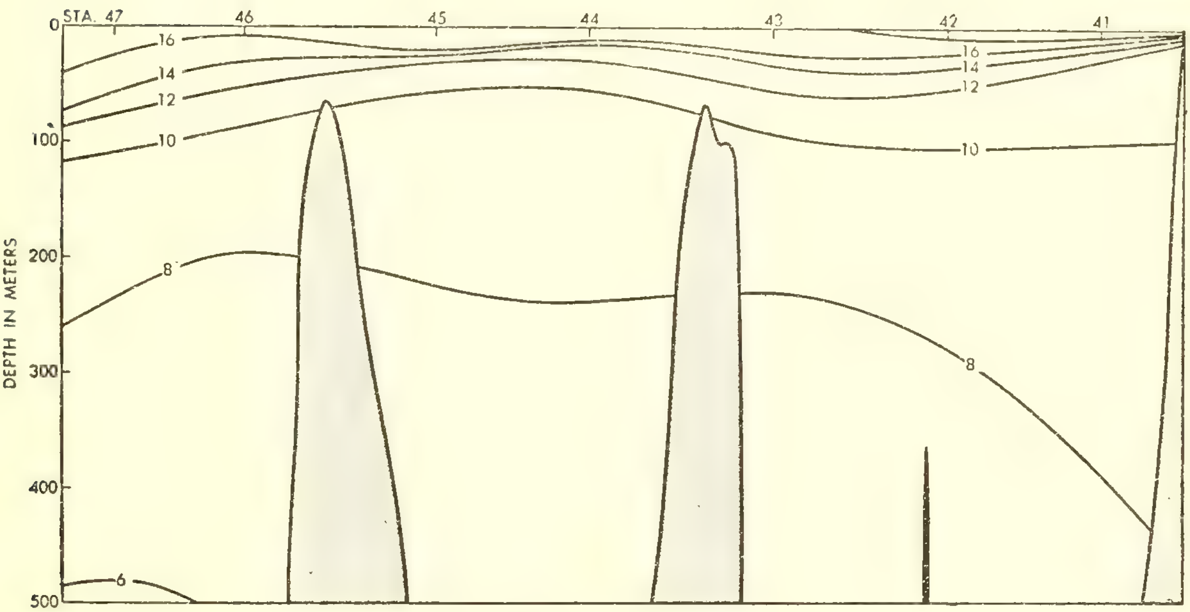

Figure 27.—Vertical section of temperature.

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Part II.—OCEANOGRAPHIC TABLES

TABLE I.—EXPANSION CORRECTION, C, FOR PROTECTED THERMOMETERS OF $K=6{,}100$ FOR VALUES OF $T'+V_o$ AND $T'-t$.

(From Schumacher, 1923) (4)

$$C=\left[\frac{(T'+V_o)(T'-t)}{K}\right]\left[1+\frac{(T'+V_o)+(T'-t)}{K}\right]$$

where,

T'=reading of the protected reversing thermometer,
t=corrected reading of the auxiliary thermometer,
V_o=volume of mercury below the 0° C. mark in the reversing thermometer, expressed in degree units,
K=reciprocal thermal coefficient of expansion, taken equal to 6,100.

Example:

Given, $T'=4.09°$ C., $t=14.1°$ C. and $V_o=80°$ C.
Then, $T'-t=-10.01°$ C. and $T'+V_o=84.09°$ C.
From table I, $C=-.14°$ C. (expansion correction, C, will have the same sign as $T'-t$).
C is to be added with the index correction to T' to give the corrected reading of the protected thermometer.

TABLE I.—EXPANSION CORRECTION, C, FOR PROTECTED THERMOMETERS

$(T'-t)$

$(T'+V_o)$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
70	0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.13	0.14	0.15	0.16	0.17	0.19	0.20	0.21	0.22	0.23	0.24	0.26	0.27	0.28	0.29
71	.01	.02	.04	.05	.06	.07	.08	.09	.11	.12	.13	.14	.15	.16	.18	.19	.20	.21	.22	.24	.25	.26	.27	.28	.29
72	.01	.02	.04	.05	.06	.07	.08	.10	.11	.12	.13	.14	.16	.17	.18	.19	.20	.22	.23	.24	.25	.26	.27	.29	.30
73	.01	.02	.04	.05	.06	.07	.09	.10	.11	.12	.13	.15	.16	.17	.18	.19	.21	.22	.23	.24	.25	.27	.28	.29	.30
74	.01	.03	.04	.05	.06	.07	.09	.10	.11	.12	.14	.15	.16	.17	.18	.20	.21	.22	.23	.25	.26	.27	.28	.29	.31
75	.01	.03	.04	.05	.06	.08	.09	.10	.11	.12	.14	.15	.16	.17	.19	.20	.21	.22	.24	.25	.26	.27	.29	.30	.31
76	.01	.03	.04	.05	.06	.08	.09	.10	.11	.13	.14	.15	.16	.18	.19	.20	.21	.23	.24	.25	.27	.28	.29	.30	.32
77	.01	.03	.04	.05	.06	.08	.09	.10	.12	.13	.14	.15	.17	.18	.19	.20	.22	.23	.24	.26	.27	.28	.29	.31	.32
78	.01	.03	.04	.05	.06	.08	.09	.10	.12	.13	.14	.16	.17	.18	.19	.21	.22	.23	.25	.26	.27	.29	.30	.31	.32
79	.01	.03	.04	.05	.07	.08	.09	.11	.12	.13	.15	.16	.17	.18	.20	.21	.22	.24	.25	.26	.28	.29	.30	.31	.33
80	.01	.03	.04	.05	.07	.08	.09	.11	.12	.13	.15	.16	.17	.19	.20	.21	.23	.24	.25	.27	.28	.29	.31	.32	.33
81	.01	.03	.04	.05	.07	.08	.09	.11	.12	.14	.15	.16	.18	.19	.20	.22	.23	.24	.26	.27	.28	.30	.31	.32	.34
82	.01	.03	.04	.05	.07	.08	.10	.11	.12	.14	.15	.16	.18	.19	.20	.22	.23	.25	.26	.27	.29	.30	.31	.33	.34
83	.01	.03	.04	.06	.07	.08	.10	.11	.12	.14	.15	.17	.18	.19	.21	.22	.23	.25	.26	.28	.29	.30	.32	.33	.35
84	.01	.03	.04	.06	.07	.08	.10	.11	.13	.14	.15	.17	.18	.20	.21	.22	.24	.25	.27	.28	.29	.31	.32	.33	.35
85	.01	.03	.04	.06	.07	.09	.10	.11	.13	.14	.16	.17	.18	.20	.21	.23	.24	.25	.27	.28	.30	.31	.32	.34	.35
86	.01	.03	.04	.06	.07	.09	.10	.11	.13	.14	.16	.17	.19	.20	.21	.23	.24	.26	.27	.29	.30	.31	.33	.34	.36
87	.01	.03	.04	.06	.07	.09	.10	.12	.13	.15	.16	.17	.19	.20	.21	.23	.25	.26	.27	.29	.30	.32	.33	.35	.36
88	.02	.03	.04	.06	.07	.09	.10	.12	.13	.15	.16	.18	.19	.20	.22	.23	.25	.26	.28	.29	.31	.32	.34	.35	.37
89	.02	.03	.04	.06	.07	.09	.10	.12	.13	.15	.16	.18	.19	.21	.22	.24	.25	.27	.28	.30	.31	.33	.34	.36	.37
90	.02	.03	.05	.06	.08	.09	.11	.12	.14	.15	.17	.18	.19	.21	.22	.24	.25	.27	.28	.30	.31	.33	.34	.36	.37
91	.02	.03	.05	.06	.08	.09	.11	.12	.14	.15	.17	.18	.20	.21	.23	.24	.26	.27	.29	.30	.32	.33	.35	.36	.38
92	.02	.03	.05	.06	.08	.09	.11	.12	.14	.15	.17	.18	.20	.21	.23	.24	.26	.28	.29	.31	.32	.34	.35	.37	.38
93	.02	.03	.05	.06	.08	.09	.11	.12	.14	.16	.17	.19	.20	.22	.23	.25	.27	.28	.29	.31	.32	.34	.36	.37	.39
94	.02	.03	.05	.06	.08	.09	.11	.13	.14	.16	.17	.19	.20	.22	.23	.25	.27	.28	.30	.31	.33	.34	.36	.38	.39
95	.02	.03	.05	.06	.08	.10	.11	.13	.14	.16	.17	.19	.21	.22	.24	.25	.27	.28	.30	.32	.33	.35	.36	.38	.40
96	.02	.03	.05	.06	.08	.10	.11	.13	.14	.16	.18	.19	.21	.22	.24	.26	.27	.29	.30	.32	.34	.35	.37	.38	.40
97	.02	.03	.05	.07	.08	.10	.11	.13	.15	.16	.18	.19	.21	.23	.24	.26	.27	.29	.31	.32	.34	.36	.37	.39	.40
98	.02	.03	.05	.07	.08	.10	.12	.13	.15	.16	.18	.20	.21	.23	.25	.26	.28	.29	.31	.33	.34	.36	.38	.39	.41
99	.02	.03	.05	.07	.08	.10	.12	.13	.15	.17	.18	.20	.21	.23	.25	.26	.28	.30	.31	.33	.35	.36	.38	.40	.41
100	.02	.03	.05	.07	.08	.10	.12	.13	.15	.17	.18	.20	.22	.23	.25	.27	.28	.30	.32	.33	.35	.37	.38	.40	.42
101	.02	.03	.05	.07	.08	.10	.12	.13	.15	.17	.19	.20	.22	.24	.25	.27	.29	.30	.32	.34	.35	.37	.39	.40	.42
102	.02	.03	.05	.07	.09	.10	.12	.14	.15	.17	.19	.20	.22	.24	.26	.27	.29	.31	.32	.34	.36	.37	.39	.41	.42
103	.02	.03	.05	.07	.09	.10	.12	.14	.15	.17	.19	.21	.22	.24	.26	.27	.29	.31	.33	.34	.36	.38	.40	.41	.43
104	.02	.04	.05	.07	.09	.10	.12	.14	.16	.17	.19	.21	.23	.24	.26	.28	.30	.31	.33	.35	.36	.38	.40	.42	.43
105	.02	.04	.05	.07	.09	.11	.12	.14	.16	.18	.19	.21	.23	.25	.26	.28	.30	.32	.33	.35	.37	.38	.40	.42	.44
106	.02	.04	.05	.07	.09	.11	.12	.14	.16	.18	.19	.21	.23	.25	.27	.28	.30	.32	.34	.35	.37	.39	.41	.42	.44
107	.02	.04	.05	.07	.09	.11	.13	.14	.16	.18	.20	.21	.23	.25	.27	.28	.30	.32	.34	.36	.37	.39	.41	.43	.45
108	.02	.04	.05	.07	.09	.11	.13	.14	.16	.18	.20	.22	.23	.25	.27	.29	.31	.32	.34	.36	.38	.40	.41	.43	.45
109	.02	.04	.05	.07	.09	.11	.13	.15	.16	.18	.20	.22	.24	.26	.28	.29	.31	.33	.35	.36	.38	.40	.42	.44	.45

110	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28	.29	.31	.33	.35	.37	.39	.40	.42	.44	.46
111	.02	.04	.06	.07	.09	.11	.13	.15	.17	.19	.20	.22	.24	.26	.28	.30	.32	.33	.35	.37	.39	.41	.43	.44	.46
112	.02	.04	.06	.07	.09	.11	.13	.15	.17	.19	.21	.22	.24	.26	.28	.30	.32	.34	.36	.37	.39	.41	.43	.45	.47
113	.02	.04	.06	.08	.09	.11	.13	.15	.17	.19	.21	.23	.25	.26	.28	.30	.32	.34	.36	.38	.40	.41	.43	.45	.47
114	.02	.04	.06	.08	.10	.11	.13	.15	.17	.19	.21	.23	.25	.27	.29	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48
115	.02	.04	.06	.08	.10	.12	.13	.16	.17	.19	.21	.23	.25	.27	.29	.31	.33	.35	.36	.38	.40	.42	.44	.46	.48
116	.02	.04	.06	.08	.10	.12	.14	.16	.17	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.48
117	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.25	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.49
118	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.37	.39	.41	.43	.45	.47	.49
119	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50
120	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50
121	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.45	.47	.49	.51
122	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.23	.25	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.49	.51
123	.02	.04	.06	.08	.10	.12	.14	.16	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.49	.51
124	.02	.04	.06	.08	.10	.12	.15	.17	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.39	.42	.44	.46	.48	.50	.52
125	.02	.04	.06	.08	.10	.13	.15	.17	.19	.21	.23	.25	.27	.29	.31	.33	.36	.38	.40	.42	.44	.46	.48	.50	.52
126	.02	.04	.06	.08	.11	.13	.15	.17	.19	.21	.23	.25	.27	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.51	.53
127	.02	.04	.06	.09	.11	.13	.15	.17	.19	.21	.24	.26	.28	.30	.32	.34	.36	.38	.40	.43	.45	.47	.49	.51	.53
128	.02	.04	.06	.09	.11	.13	.15	.17	.19	.22	.24	.26	.28	.30	.32	.34	.36	.39	.41	.43	.45	.47	.49	.51	.54
129	.02	.04	.06	.09	.11	.13	.15	.17	.19	.22	.24	.26	.28	.30	.32	.35	.37	.39	.41	.43	.45	.47	.50	.52	.54
130	.02	.04	.07	.09	.11	.13	.15	.17	.20	.22	.24	.26	.28	.31	.33	.35	.37	.39	.41	.44	.46	.48	.50	.52	.54
131	.02	.04	.07	.09	.11	.13	.15	.18	.20	.22	.24	.26	.29	.31	.33	.35	.37	.39	.42	.44	.46	.48	.50	.53	.55
132	.02	.05	.07	.09	.11	.13	.15	.18	.20	.22	.24	.27	.29	.31	.33	.35	.38	.40	.42	.44	.46	.49	.51	.53	.55
133	.02	.05	.07	.09	.11	.13	.16	.18	.20	.22	.25	.27	.29	.31	.33	.36	.38	.40	.42	.45	.47	.49	.51	.53	.56
134	.02	.05	.07	.09	.11	.14	.16	.18	.20	.23	.25	.27	.29	.31	.34	.36	.38	.40	.43	.45	.47	.49	.52	.54	.56
135	.02	.05	.07	.09	.11	.14	.16	.18	.20	.23	.25	.27	.29	.32	.34	.36	.38	.41	.43	.45	.47	.50	.52	.54	.56
136	.02	.05	.07	.09	.11	.14	.16	.18	.21	.23	.25	.27	.30	.32	.34	.36	.39	.41	.43	.46	.48	.50	.52	.55	.57
137	.02	.05	.07	.09	.12	.14	.16	.18	.21	.23	.25	.28	.30	.32	.34	.37	.39	.41	.44	.46	.48	.51	.53	.55	.57
138	.02	.05	.07	.09	.12	.14	.16	.19	.21	.23	.25	.28	.30	.32	.35	.37	.39	.42	.44	.46	.49	.51	.53	.56	.58
139	.02	.05	.07	.09	.12	.14	.16	.19	.21	.23	.26	.28	.30	.33	.35	.37	.40	.42	.44	.47	.49	.51	.54	.56	.58
140	.02	.05	.07	.09	.12	.14	.16	.19	.21	.24	.26	.28	.31	.33	.35	.38	.40	.42	.45	.47	.49	.52	.54	.56	.59
141	.02	.05	.07	.10	.12	.14	.17	.19	.21	.24	.26	.28	.31	.33	.35	.38	.40	.43	.45	.47	.50	.52	.54	.57	.59
142	.02	.05	.07	.10	.12	.14	.17	.19	.21	.24	.26	.29	.31	.33	.36	.38	.41	.43	.45	.48	.50	.52	.55	.57	.60
143	.02	.05	.07	.10	.12	.14	.17	.19	.22	.24	.26	.29	.31	.34	.36	.38	.41	.43	.46	.48	.50	.53	.55	.58	.60
144	.02	.05	.07	.10	.12	.15	.17	.19	.22	.24	.27	.29	.31	.34	.36	.39	.41	.43	.46	.48	.51	.53	.56	.58	.60
145	.02	.05	.07	.10	.12	.15	.17	.20	.22	.24	.27	.29	.32	.34	.37	.39	.41	.44	.46	.49	.51	.54	.56	.58	.61
146	.02	.05	.07	.10	.12	.15	.17	.20	.22	.25	.27	.29	.32	.34	.37	.39	.42	.44	.47	.49	.51	.54	.56	.59	.61
147	.02	.05	.07	.10	.12	.15	.17	.20	.22	.25	.27	.30	.32	.35	.37	.40	.42	.44	.47	.49	.52	.54	.57	.59	.62
148	.03	.05	.08	.10	.12	.15	.17	.20	.22	.25	.27	.30	.32	.35	.37	.40	.42	.45	.47	.50	.52	.55	.57	.60	.62
149	.03	.05	.08	.10	.13	.15	.18	.20	.23	.25	.28	.30	.33	.35	.38	.40	.43	.45	.48	.50	.52	.55	.58	.60	.63
150	.03	.05	.08	.10	.13	.15	.18	.20	.23	.25	.28	.30	.33	.35	.38	.40	.43	.45	.48	.50	.53	.55	.58	.60	.63
151	.03	.05	.08	.10	.13	.15	.18	.20	.23	.25	.28	.30	.33	.36	.38	.41	.43	.46	.48	.51	.53	.56	.58	.61	.63
152	.03	.05	.08	.10	.13	.15	.18	.21	.23	.26	.28	.31	.33	.36	.38	.41	.43	.46	.49	.51	.54	.56	.59	.61	.64
153	.03	.05	.08	.10	.13	.15	.18	.21	.23	.26	.28	.31	.33	.36	.39	.41	.44	.46	.49	.51	.54	.57	.59	.62	.64
154	.03	.95	.08	.10	.13	.16	.18	.21	.23	.26	.29	.31	.34	.36	.39	.41	.44	.47	.49	.52	.54	.57	.60	.62	.65

TABLE I.—EXPANSION CORRECTION, C, FOR PROTECTED THERMOMETERS—Continued

$(T'-t)$

$(T'+V_o)$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
155	0. 03	0. 05	0. 08	0. 10	0. 13	0. 16	0. 18	0. 21	0. 23	0. 26	0. 29	0. 31	0. 34	0. 37	0. 39	0. 42	0. 44	0. 47	0. 49	0. 52	0. 55	0. 57	0. 60	0. 62	0. 65
156	. 03	. 05	. 08	. 11	. 13	. 16	. 18	. 21	. 24	. 26	. 29	. 32	. 34	. 37	. 39	. 42	. 45	. 47	. 50	. 52	. 55	. 58	. 60	. 63	. 66
157	. 03	. 05	. 08	. 11	. 13	. 16	. 18	. 21	. 24	. 26	. 29	. 32	. 34	. 37	. 40	. 42	. 45	. 48	. 50	. 53	. 55	. 58	. 61	. 63	. 66
158	. 03	. 05	. 08	. 11	. 13	. 16	. 19	. 21	. 24	. 27	. 29	. 32	. 35	. 37	. 40	. 43	. 45	. 48	. 50	. 53	. 56	. 58	. 61	. 64	. 66
159	. 03	. 05	. 08	. 11	. 13	. 16	. 19	. 21	. 24	. 27	. 29	. 32	. 35	. 38	. 40	. 43	. 45	. 48	. 51	. 53	. 56	. 59	. 61	. 64	. 67
160	. 03	. 05	. 08	. 11	. 14	. 16	. 19	. 22	. 24	. 27	. 30	. 32	. 35	. 38	. 40	. 43	. 46	. 48	. 51	. 54	. 57	. 59	. 62	. 65	. 67
161	. 03	. 05	. 08	. 11	. 14	. 16	. 19	. 22	. 24	. 27	. 30	. 33	. 35	. 38	. 41	. 43	. 46	. 49	. 51	. 54	. 57	. 60	. 62	. 65	. 68
162	. 03	. 06	. 08	. 11	. 14	. 16	. 19	. 22	. 25	. 27	. 30	. 33	. 35	. 38	. 41	. 44	. 46	. 49	. 52	. 55	. 57	. 60	. 63	. 65	. 68
163	. 03	. 06	. 08	. 11	. 14	. 17	. 19	. 22	. 25	. 27	. 30	. 33	. 36	. 38	. 41	. 44	. 47	. 49	. 52	. 55	. 58	. 60	. 63	. 66	. 69
164	. 03	. 06	. 08	. 11	. 14	. 17	. 19	. 22	. 25	. 28	. 30	. 33	. 36	. 39	. 41	. 44	. 47	. 50	. 52	. 55	. 58	. 61	. 63	. 66	. 69
165	. 03	. 06	. 08	. 11	. 14	. 17	. 19	. 22	. 25	. 28	. 31	. 33	. 36	. 39	. 42	. 44	. 47	. 50	. 53	. 56	. 58	. 61	. 64	. 67	. 6
166	. 03	. 06	. 08	. 11	. 14	. 17	. 20	. 22	. 25	. 28	. 31	. 34	. 36	. 39	. 42	. 45	. 48	. 50	. 53	. 56	. 59	. 61	. 64	. 67	. 70
167	. 03	. 06	. 08	. 11	. 14	. 17	. 20	. 23	. 25	. 28	. 31	. 34	. 37	. 39	. 42	. 45	. 48	. 51	. 53	. 56	. 59	. 62	. 65	. 67	. 70
168	. 03	. 06	. 09	. 11	. 14	. 17	. 20	. 23	. 26	. 28	. 31	. 34	. 37	. 40	. 42	. 45	. 48	. 51	. 54	. 57	. 59	. 62	. 65	. 68	. 71
169	. 03	. 06	. 09	. 11	. 14	. 17	. 20	. 23	. 26	. 28	. 31	. 34	. 37	. 40	. 43	. 46	. 48	. 51	. 54	. 57	. 60	. 63	. 65	. 68	. 71
170	. 03	. 06	. 09	. 12	. 14	. 17	. 20	. 23	. 26	. 29	. 32	. 34	. 37	. 40	. 43	. 46	. 49	. 52	. 54	. 57	. 60	. 63	. 66	. 69	. 72
171	. 03	. 06	. 09	. 12	. 14	. 17	. 20	. 23	. 26	. 29	. 32	. 35	. 37	. 40	. 43	. 46	. 49	. 52	. 55	. 58	. 60	. 63	. 66	. 69	. 72
172	. 03	. 06	. 09	. 12	. 15	. 17	. 20	. 23	. 26	. 29	. 32	. 35	. 38	. 41	. 43	. 46	. 49	. 52	. 55	. 58	. 61	. 64	. 67	. 70	. 72
173	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 23	. 26	. 29	. 32	. 35	. 38	. 41	. 44	. 47	. 50	. 52	. 55	. 58	. 61	. 64	. 67	. 70	. 73
174	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 26	. 29	. 32	. 35	. 38	. 41	. 44	. 47	. 50	. 53	. 56	. 59	. 62	. 65	. 67	. 70	. 73
175	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 27	. 30	. 32	. 35	. 38	. 41	. 44	. 47	. 50	. 53	. 56	. 59	. 62	. 65	. 68	. 71	. 74
176	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 27	. 30	. 33	. 36	. 39	. 42	. 45	. 48	. 50	. 53	. 56	. 59	. 62	. 65	. 68	. 71	. 74
177	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 27	. 30	. 33	. 36	. 39	. 42	. 45	. 48	. 51	. 54	. 57	. 60	. 63	. 66	. 69	. 72	. 75
178	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 27	. 30	. 33	. 36	. 39	. 42	. 45	. 48	. 51	. 54	. 57	. 60	. 63	. 66	. 69	. 72	. 75
179	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 27	. 30	. 33	. 36	. 39	. 42	. 45	. 48	. 51	. 54	. 57	. 60	. 63	. 66	. 69	. 72	. 76
180	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 27	. 30	. 33	. 36	. 40	. 43	. 46	. 49	. 52	. 55	. 58	. 61	. 64	. 67	. 70	. 73	. 76
181	. 03	. 06	. 09	. 12	. 15	. 18	. 21	. 24	. 28	. 31	. 34	. 37	. 40	. 43	. 46	. 49	. 52	. 55	. 58	. 61	. 64	. 67	. 70	. 73	. 76
182	. 03	. 06	. 09	. 12	. 15	. 18	. 22	. 25	. 28	. 31	. 34	. 37	. 40	. 43	. 46	. 49	. 52	. 55	. 58	. 61	. 64	. 68	. 71	. 74	. 77
183	. 03	. 06	. 09	. 12	. 16	. 19	. 22	. 25	. 28	. 31	. 34	. 37	. 40	. 43	. 46	. 49	. 53	. 56	. 59	. 62	. 65	. 68	. 71	. 74	. 77
184	. 03	. 06	. 09	. 13	. 16	. 19	. 22	. 25	. 28	. 31	. 34	. 37	. 40	. 44	. 47	. 50	. 53	. 56	. 59	. 62	. 65	. 68	. 71	. 75	. 78
185	. 03	. 06	. 09	. 13	. 16	. 19	. 22	. 25	. 28	. 31	. 34	. 37	. 41	. 44	. 47	. 50	. 53	. 56	. 59	. 62	. 66	. 69	. 72	. 75	. 78
186	. 03	. 06	. 09	. 13	. 16	. 19	. 22	. 25	. 28	. 32	. 35	. 38	. 41	. 44	. 47	. 50	. 53	. 57	. 60	. 63	. 66	. 69	. 72	. 75	. 79
187	. 03	. 06	. 09	. 13	. 16	. 19	. 22	. 25	. 28	. 32	. 35	. 38	. 41	. 44	. 47	. 51	. 54	. 57	. 60	. 63	. 66	. 70	. 73	. 76	. 79
188	. 03	. 06	. 10	. 13	. 16	. 19	. 22	. 25	. 29	. 32	. 35	. 38	. 41	. 45	. 48	. 51	. 54	. 57	. 60	. 64	. 67	. 70	. 73	. 76	. 79
189	. 03	. 06	. 10	. 13	. 16	. 19	. 22	. 26	. 29	. 32	. 35	. 38	. 42	. 45	. 48	. 51	. 54	. 58	. 61	. 64	. 67	. 70	. 73	. 77	. 80
190	. 03	. 06	. 10	. 13	. 16	. 19	. 23	. 26	. 29	. 32	. 35	. 39	. 42	. 45	. 48	. 51	. 55	. 58	. 61	. 64	. 67	. 71	. 74	. 77	. 80
191	. 03	. 06	. 10	. 13	. 16	. 19	. 23	. 26	. 29	. 32	. 36	. 39	. 42	. 45	. 49	. 52	. 55	. 58	. 61	. 65	. 68	. 71	. 74	. 77	. 81
192	. 03	. 07	. 10	. 13	. 16	. 20	. 23	. 26	. 29	. 33	. 36	. 39	. 42	. 46	. 49	. 52	. 55	. 58	. 62	. 65	. 68	. 71	. 75	. 78	. 81
193	. 03	. 07	. 10	. 13	. 16	. 20	. 23	. 26	. 29	. 33	. 36	. 39	. 42	. 46	. 49	. 52	. 56	. 59	. 62	. 65	. 69	. 72	. 75	. 78	. 82
194	. 03	. 07	. 10	. 13	. 16	. 20	. 23	. 26	. 30	. 33	. 36	. 39	. 43	. 46	. 49	. 53	. 56	. 59	. 62	. 66	. 69	. 72	. 75	. 79	. 82

195	.03	.07	.10	.13	.17	.20	.23	.26	.30	.33	.36	.40	.43	.46	.50	.53	.56	.59	.63	.66	.69	.73	.76	.79	.82
196	.03	.07	.10	.13	.17	.20	.23	.27	.30	.33	.37	.40	.43	.46	.50	.53	.56	.60	.63	.66	.70	.73	.76	.80	.83
197	.03	.07	.10	.13	.17	.20	.23	.27	.30	.33	.37	.40	.43	.47	.50	.53	.57	.60	.63	.67	.70	.73	.77	.80	.83
198	.03	.07	.10	.14	.17	.20	.24	.27	.30	.34	.37	.40	.44	.47	.50	.54	.57	.60	.64	.67	.70	.74	.77	.80	.84
199	.03	.07	.10	.14	.17	.20	.24	.27	.30	.34	.37	.40	.44	.47	.51	.54	.57	.61	.64	.67	.71	.74	.77	.81	.84
200	.03	.07	.10	.14	.17	.20	.24	.27	.31	.34	.37	.41	.44	.47	.51	.54	.58	.61	.64	.68	.71	.74	.78	.81	.85

TABLE II.—TEMPERATURE DIFFERENCE, $T'-t$, FOR PROTECTED THERMOMETERS OF K=6,100 FOR VALUES OF $T'+V_o$ AND C.

(Adapted from Soule, 1933)(8)

$$T'-t=\frac{C(K-T'-V_o)}{C+T'+V_o}$$

where,

T', t, V_o, C, and K have the same meaning as in table I.

Example:

Given, $T'+V_o$=85° C. and C=−.055° C.

From table II, $T'-t$=−3.89° C. ($T'-t$ will have the same sign as C.)

TABLE II.—TEMPERATURE DIFFERENCE, $T'-t$, FOR PROTECTED THERMOMETERS

($T'+V_o$)

C	70	75	80	85	90	95	100	105	110	115	120	125	130	135
0.005	0.43	0.40	0.38	0.35	0.33	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.23	0.22
0.015	1.29	1.21	1.13	1.06	1.00	.95	.90	.86	.82	.78	.75	.72	.69	.66
0.025	2.15	2.01	1.88	1.77	1.67	1.58	1.50	1.43	1.36	1.30	1.25	1.20	1.15	1.10
0.035	3.02	2.81	2.63	2.48	2.34	2.21	2.10	2.00	1.91	1.82	1.74	1.67	1.61	1.55
0.045	3.88	3.62	3.39	3.19	3.01	2.85	2.70	2.57	2.45	2.34	2.24	2.15	2.07	1.99
0.055	4.74	4.42	4.14	3.89	3.68	3.48	3.30	3.14	3.00	2.86	2.74	2.63	2.53	2.43
0.065	5.60	5.23	4.90	4.55	4.34	4.11	3.90	3.71	3.54	3.38	3.24	3.11	2.99	2.87
0.075	6.47	6.03	5.65	5.31	5.01	4.74	4.50	4.29	4.09	3.91	3.74	3.59	3.45	3.32
0.085	7.33	6.84	6.40	6.02	5.68	5.38	5.10	4.86	4.63	4.43	4.24	4.07	3.91	3.76
0.095	8.19	7.64	7.16	6.73	6.35	6.01	5.71	5.43	5.18	4.95	4.74	4.54	4.37	4.20
0.105	9.06	8.45	7.91	7.44	7.02	6.64	6.31	6.00	5.72	5.47	5.24	5.02	4.83	4.64
0.115	9.92	9.25	8.67	8.15	7.69	7.28	6.91	6.57	6.27	5.99	5.74	5.50	5.29	5.09
0.125	10.79	10.06	9.42	8.86	8.36	7.91	7.51	7.15	6.81	6.51	6.24	5.98	5.75	5.53
0.135	11.65	10.86	10.18	9.57	9.03	8.55	8.11	7.72	7.36	7.03	6.74	6.46	6.21	5.97
0.145	12.52	11.67	10.93	10.28	9.70	9.18	8.71	8.29	7.91	7.56	7.24	6.94	6.67	6.41
0.155	13.38	12.48	11.69	10.99	10.37	9.81	9.31	8.86	8.45	8.08	7.73	7.42	7.13	6.86
0.165	14.25	13.28	12.44	11.70	11.04	10.45	9.92	9.44	9.00	8.60	8.23	7.90	7.59	7.30
0.175	15.11	14.09	13.20	12.41	11.71	11.08	10.52	10.01	9.54	9.12	8.73	8.38	8.05	7.74
0.185	15.98	14.90	13.95	13.12	12.38	11.72	11.12	10.58	10.09	9.64	9.23	8.86	8.51	8.19
0.195	16.84	15.71	14.71	13.83	13.05	12.35	11.72	11.15	10.64	10.17	9.73	9.34	8.97	8.63
0.205	17.71	16.51	15.47	14.54	13.72	12.99	12.33	11.73	11.18	10.69	10.23	9.82	9.43	9.07
0.215	18.58	17.32	16.22	15.25	14.39	13.62	12.93	12.30	11.73	11.21	10.73	10.29	9.89	9.51
0.225	19.44	18.13	16.98	15.97	15.06	14.26	13.53	12.87	12.28	11.73	11.23	10.77	10.35	9.96
0.235	20.31	18.94	17.74	16.68	15.73	14.89	14.13	13.45	12.82	12.26	11.73	11.25	10.81	10.40
0.245	21.18	19.75	18.49	17.39	16.41	15.53	14.74	14.02	13.37	12.78	12.23	11.73	11.27	10.85
0.255	22.05	20.55	19.25	18.10	17.08	16.16	15.34	14.59	13.92	13.30	12.73	12.21	11.73	11.29
0.265	22.91	21.36	20.01	18.81	17.75	16.80	15.94	15.17	14.47	13.82	13.24	12.69	12.19	11.73
0.275	23.78	22.17	20.77	19.53	18.42	17.43	16.55	15.74	15.01	14.35	13.74	13.17	12.66	12.18
0.285	24.65	22.98	21.52	20.24	19.09	18.07	17.15	16.32	15.56	14.87	14.24	13.65	13.12	12.62
0.295	25.52	23.79	22.28	20.95	19.76	18.71	17.75	16.89	16.11	15.39	14.74	14.13	13.58	13.06
0.305	26.39	24.60	23.04	21.66	20.44	19.34	18.36	17.46	16.65	15.92	15.24	14.61	14.04	13.51
0.315	27.26	25.41	23.80	22.38	21.11	19.98	18.96	18.04	17.20	16.44	15.74	15.10	14.50	13.95
0.325	28.13	26.22	24.56	23.09	21.78	20.61	19.56	18.61	17.75	16.96	16.24	15.58	14.96	14.39
0.335	29.00	27.03	25.31	23.80	22.45	21.25	20.17	19.19	18.30	17.49	16.74	16.06	15.42	14.84
0.345	29.87	27.84	26.07	24.52	23.13	21.89	20.77	19.76	18.85	18.01	17.24	16.54	15.89	15.28
0.355	30.74	28.65	26.83	25.23	23.80	22.52	21.38	20.34	19.39	18.53	17.74	17.02	16.35	15.73
0.365	31.61	29.47	27.59	25.94	24.47	23.16	21.98	20.91	19.94	19.06	18.24	17.50	16.81	16.17
0.375	32.48	30.28	28.35	26.66	25.15	23.80	22.58	21.49	20.49	19.58	18.75	17.98	17.27	16.62
0.385	33.35	31.09	29.11	27.37	25.82	24.44	23.19	22.06	21.04	20.10	19.25	18.46	17.73	17.06
0.395	34.22	31.90	29.87	28.09	26.49	25.07	23.79	22.64	21.59	20.63	19.75	18.94	18.19	17.50
0.405	35.09	32.71	30.63	28.80	27.17	25.71	24.40	23.21	22.14	21.15	20.25	19.42	18.66	17.95
0.415	35.96	33.52	31.39	29.51	27.84	26.35	25.00	23.79	22.68	21.68	20.75	19.90	19.12	18.39
0.425	36.83	34.34	32.15	30.23	28.52	26.99	25.61	24.36	23.23	22.20	21.25	20.38	19.58	18.84
0.435	37.71	35.15	32.91	30.94	29.19	27.62	26.21	24.94	23.78	22.72	21.76	20.87	20.04	19.28
0.445	38.58	35.96	33.67	31.66	29.86	28.26	26.82	25.52	24.33	23.25	22.26	21.36	20.51	19.73
0.455	39.45	36.77	34.43	32.37	30.54	28.90	27.42	26.09	24.88	23.77	22.76	21.83	20.97	20.17
0.465	40.32	37.59	35.20	33.09	31.21	29.53	28.03	26.67	25.43	24.30	23.26	22.31	21.43	20.62
0.475	41.20	38.40	35.96	33.80	31.89	30.18	28.64	27.24	25.98	24.82	23.76	22.79	21.91	21.06
0.485	42.07	39.22	36.72	34.52	32.56	30.81	29.24	27.82	26.53	25.35	24.27	23.27	22.36	21.51
0.495	42.94	40.03	37.48	35.23	33.24	31.45	29.85	28.40	27.08	25.87	24.77	23.76	22.82	21.95
0.505	43.82	40.84	38.24	35.95	33.91	32.09	30.45	28.97	27.63	26.40	25.27	24.24	23.28	22.40

$(T' + V_o)$

C	140	145	150	155	160	165	170	175	180	185	190	195	200
0.005	0.21	0.21	0.20	0.19	0.19	0.18	0.17	0.17	0.16	0.16	0.16	0.15	0.15
0.015	.64	.62	.60	.58	.56	.54	.52	.51	.49	.48	.47	.45	.44
0.025	1.06	1.03	.99	.96	.93	.90	.87	.85	.82	.80	.78	.76	.74
0.035	1.49	1.44	1.39	1.34	1.30	1.26	1.22	1.19	1.15	1.12	1.09	1.06	1.03
0.045	1.92	1.85	1.79	1.73	1.67	1.62	1.57	1.52	1.48	1.44	1.40	1.36	1.33
0.055	2.34	2.26	2.18	2.11	2.04	1.98	1.92	1.86	1.81	1.76	1.71	1.67	1.62
0.065	2.77	2.67	2.58	2.49	2.41	2.34	2.27	2.20	2.14	2.08	2.02	1.97	1.92
0.075	3.19	3.08	2.98	2.88	2.79	2.70	2.62	2.54	2.47	2.40	2.33	2.27	2.21
0.085	3.62	3.49	3.37	3.26	3.16	3.06	2.97	2.88	2.80	2.72	2.65	2.58	2.51
0.095	4.05	3.90	3.77	3.65	3.53	3.42	3.32	3.22	3.13	3.04	2.96	2.88	2.80
0.105	4.47	4.32	4.17	4.03	3.90	3.78	3.66	3.56	3.46	3.36	3.27	3.18	3.10
0.115	4.90	4.73	4.57	4.41	4.27	4.14	4.01	3.90	3.78	3.68	3.58	3.48	3.39
0.125	5.33	5.14	4.96	4.80	4.64	4.50	4.36	4.24	4.11	4.00	3.89	3.79	3.69
0.135	5.75	5.55	5.36	5.18	5.02	4.86	4.71	4.57	4.44	4.32	4.20	4.09	3.99
0.145	6.18	5.96	5.76	5.57	5.39	5.22	5.06	4.91	4.77	4.64	4.51	4.39	4.28
0.155	6.61	6.37	6.15	5.95	5.76	5.58	5.41	5.25	5.10	4.96	4.83	4.70	4.58
0.165	7.03	6.78	6.55	6.34	6.13	5.94	5.76	5.59	5.43	5.28	5.14	5.00	4.87
0.175	7.46	7.20	6.95	6.72	6.50	6.30	6.11	5.93	5.76	5.60	5.45	5.30	5.17
0.185	7.89	7.61	7.35	7.10	6.88	6.66	6.46	6.27	6.09	5.92	5.76	5.61	5.46
0.195	8.31	8.02	7.75	7.49	7.25	7.02	6.81	6.61	6.42	6.24	6.07	5.91	5.76
0.205	8.74	8.43	8.14	7.87	7.62	7.38	7.16	6.95	6.75	6.56	6.38	6.21	6.05
0.215	9.17	8.84	8.54	8.26	7.99	7.74	7.51	7.29	7.08	6.88	6.70	6.52	6.35
0.225	9.59	9.25	8.94	8.64	8.36	8.10	7.86	7.63	7.41	7.20	7.01	6.82	6.64
0.235	10.02	9.67	9.34	9.03	8.74	8.46	8.21	7.97	7.74	7.52	7.32	7.12	6.94
0.245	10.45	10.08	9.73	9.41	9.11	8.83	8.56	8.31	8.07	7.84	7.63	7.43	7.24
0.255	10.88	10.49	10.13	9.80	9.48	9.19	8.91	8.65	8.40	8.16	7.94	7.73	7.53
0.265	11.30	10.90	10.53	10.18	9.85	9.55	9.26	8.99	8.73	8.48	8.25	8.04	7.83
0.275	11.73	11.32	10.93	10.57	10.23	9.91	9.61	9.33	9.06	8.81	8.57	8.34	8.12
0.285	12.16	11.73	11.33	10.95	10.60	10.27	9.96	9.67	9.39	9.13	8.88	8.64	8.42
0.295	12.59	12.14	11.72	11.34	10.97	10.63	10.31	10.00	9.72	9.45	9.19	8.95	8.72
0.305	13.01	12.55	12.12	11.72	11.34	10.99	10.66	10.34	10.05	9.77	9.50	9.25	9.01
0.315	13.44	12.96	12.52	12.11	11.72	11.35	11.01	10.68	10.38	10.09	9.81	9.55	9.31
0.325	13.87	13.38	12.92	12.49	12.09	11.71	11.36	11.02	10.71	10.41	10.13	9.86	9.60
0.335	14.30	13.79	13.32	12.88	12.46	12.07	11.71	11.36	11.04	10.73	10.44	10.16	9.90
0.345	14.72	14.20	13.72	13.26	12.84	12.44	12.06	11.70	11.37	11.05	10.75	10.47	10.20
0.355	15.15	14.62	14.12	13.65	13.21	12.80	12.41	12.04	11.70	11.37	11.06	10.77	10.49
0.365	15.58	15.03	14.51	14.03	13.58	13.16	12.76	12.38	12.03	11.69	11.38	11.07	10.79
0.375	16.01	15.44	14.91	14.42	13.95	13.52	13.11	12.72	12.36	12.01	11.69	11.38	11.08
0.385	16.44	15.85	15.31	14.80	14.33	13.88	13.46	13.06	12.69	12.34	12.00	11.68	11.38
0.395	16.86	16.27	15.71	15.19	14.70	14.24	13.81	13.40	13.02	12.66	12.31	11.99	11.68
0.405	17.29	16.68	16.11	15.57	15.07	14.60	14.16	13.74	13.35	12.98	12.62	12.29	11.97
0.415	17.72	17.09	16.51	15.96	15.45	14.97	14.51	14.08	13.68	13.30	12.94	12.59	12.27
0.425	18.15	17.51	16.91	16.35	15.82	15.33	14.86	14.42	14.01	13.62	13.25	12.90	12.56
0.435	18.58	17.92	17.31	16.73	16.19	15.69	15.21	14.76	14.34	13.94	13.56	13.20	12.86
0.445	19.00	18.33	17.70	17.12	16.57	16.05	15.56	15.10	14.67	14.26	13.87	13.51	13.16
0.455	19.43	18.75	18.10	17.50	16.94	16.41	15.91	15.45	15.00	14.58	14.19	13.81	13.45
0.465	19.86	19.16	18.50	17.89	17.31	16.77	16.26	15.79	15.33	14.90	14.50	14.11	13.75
0.475	20.29	19.57	18.90	18.27	17.69	17.13	16.62	16.13	15.66	15.23	14.81	14.42	14.05
0.485	20.72	19.99	19.30	18.66	18.06	17.50	16.97	16.47	15.99	15.55	15.12	14.72	14.34
0.495	21.15	20.40	19.70	19.05	18.43	17.86	17.32	16.81	16.32	15.87	15.44	15.03	14.64
0.505	21.58	20.81	20.10	19.43	18.81	18.22	17.67	17.15	16.66	16.19	15.75	15.33	14.94

TABLE III.—EXPANSION CORRECTION, C, FOR UNPROTECTED THERMOMETERS OF $K=6{,}100$ FOR VALUES OF T'_u+V_o AND T'_w-t_u

(From Schumacher, 1923) (4)

$$C=\frac{(T'_u+V_o)(T_w-t_u)}{K}$$

where,

T'_u = reading of the unprotected reversing thermometer,
t_u = corrected reading of the auxiliary thermometer,
V_o = volume of mercury below 0° C. mark in the reversing thermometer, expressed in degree units,
T_w = corrected reading of the protected reversing thermometer,
K = reciprocal thermal coefficient of expansion, taken equal to 6,100.

Example:

Given, $T'_u=5.94°$ C., $V_o=82°$ C., $T_w=3.70°$ C., and $t_u=14.8°$ C.
Then, $T'_u+V_o=87.94°$ C. and $T_w-t_u=-11.1°$ C.
From table III, $C=-.16°$ C. (Expansion correction, C, will have the same sign as T_w-t_u.)

TABLE III.—EXPANSION CORRECTION, C, FOR UNPROTECTED THERMOMETERS

$(T_w - t_u)$

$(T'_u + V_o)$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
70	0.01	0.02	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.28	0.29
71	.01	.02	.03	.05	.06	.07	.08	.09	.10	.12	.13	.14	.15	.16	.17	.19	.20	.21	.22	.23	.24	.26	.27	.28	.29
72	.01	.02	.04	.05	.06	.07	.08	.09	.11	.12	.13	.14	.15	.16	.18	.19	.20	.21	.22	.23	.25	.26	.27	.28	.29
73	.01	.02	.04	.05	.06	.07	.08	.10	.11	.12	.13	.14	.15	.17	.18	.19	.20	.21	.23	.24	.25	.26	.27	.29	.30
74	.01	.02	.04	.05	.06	.07	.08	.10	.11	.12	.13	.14	.16	.17	.18	.19	.20	.22	.23	.24	.25	.26	.28	.29	.30
75	.01	.02	.04	.05	.06	.07	.09	.10	.11	.12	.13	.15	.16	.17	.18	.20	.21	.22	.23	.24	.26	.27	.28	.29	.31
76	.01	.02	.04	.05	.06	.07	.09	.10	.11	.12	.14	.15	.16	.17	.19	.20	.21	.22	.24	.25	.26	.27	.29	.30	.31
77	.01	.03	.04	.05	.06	.08	.09	.10	.11	.13	.14	.15	.16	.18	.19	.20	.21	.23	.24	.25	.26	.28	.29	.30	.32
78	.01	.03	.04	.05	.06	.08	.09	.10	.11	.13	.14	.15	.17	.18	.19	.20	.22	.23	.24	.25	.27	.28	.29	.30	.32
79	.01	.03	.04	.05	.06	.08	.09	.10	.12	.13	.14	.15	.17	.18	.19	.21	.22	.23	.25	.26	.27	.28	.30	.31	.32
80	.01	.03	.04	.05	.07	.08	.09	.10	.12	.13	.14	.16	.17	.18	.20	.21	.22	.23	.25	.26	.27	.29	.30	.31	.33
81	.01	.03	.04	.05	.07	.08	.09	.11	.12	.13	.15	.16	.17	.18	.20	.21	.22	.24	.25	.26	.28	.29	.30	.32	.33
82	.01	.03	.04	.05	.07	.08	.09	.11	.12	.13	.15	.16	.17	.19	.20	.21	.23	.24	.25	.27	.28	.29	.31	.32	.34
83	.01	.03	.04	.05	.07	.08	.10	.11	.12	.14	.15	.16	.18	.19	.20	.22	.23	.24	.26	.27	.29	.30	.31	.33	.34
84	.01	.03	.04	.05	.07	.08	.10	.11	.12	.14	.15	.16	.18	.19	.21	.22	.23	.25	.26	.27	.29	.30	.32	.33	.34
85	.01	.03	.04	.06	.07	.08	.10	.11	.12	.14	.15	.17	.18	.19	.21	.22	.23	.25	.26	.28	.29	.30	.32	.33	.35
86	.01	.03	.04	.06	.07	.08	.10	.11	.13	.14	.15	.17	.18	.20	.21	.22	.24	.25	.27	.28	.29	.31	.32	.34	.35
87	.01	.03	.04	.06	.07	.09	.10	.11	.13	.14	.16	.17	.18	.20	.21	.23	.24	.26	.27	.28	.30	.31	.33	.34	.36
88	.01	.03	.04	.06	.07	.09	.10	.12	.13	.14	.16	.17	.19	.20	.22	.23	.24	.26	.27	.29	.30	.32	.33	.35	.36
89	.01	.03	.04	.06	.07	.09	.10	.12	.13	.15	.16	.17	.19	.20	.22	.23	.25	.26	.28	.29	.30	.32	.33	.35	.36
90	.01	.03	.04	.06	.07	.09	.10	.12	.13	.15	.16	.18	.19	.21	.22	.24	.25	.26	.28	.29	.31	.32	.34	.35	.37
91	.01	.03	.04	.06	.07	.09	.10	.12	.13	.15	.16	.18	.19	.21	.22	.24	.25	.27	.28	.30	.31	.33	.34	.36	.37
92	.02	.03	.05	.06	.08	.09	.11	.12	.14	.15	.17	.18	.20	.21	.23	.24	.26	.27	.29	.30	.32	.33	.35	.36	.38
93	.02	.03	.05	.06	.08	.09	.11	.12	.14	.15	.17	.18	.20	.21	.23	.24	.26	.27	.29	.30	.32	.33	.35	.36	.38
94	.02	.03	.05	.06	.08	.09	.11	.12	.14	.15	.17	.18	.20	.22	.23	.25	.26	.28	.29	.31	.32	.34	.35	.37	.39
95	.02	.03	.05	.06	.08	.09	.11	.12	.14	.16	.17	.19	.20	.22	.23	.25	.26	.28	.29	.31	.33	.34	.36	.37	.39
96	.02	.03	.05	.06	.08	.09	.11	.13	.14	.16	.17	.19	.20	.22	.24	.25	.27	.28	.30	.31	.33	.35	.36	.38	.39
97	.02	.03	.05	.06	.08	.10	.11	.13	.14	.16	.17	.19	.21	.22	.24	.25	.27	.29	.30	.32	.33	.35	.37	.38	.40
98	.02	.03	.05	.06	.08	.10	.11	.13	.14	.16	.18	.19	.21	.22	.24	.26	.27	.29	.30	.32	.34	.35	.37	.38	.40
99	.02	.03	.05	.06	.08	.10	.11	.13	.15	.16	.18	.19	.21	.23	.24	.26	.28	.29	.31	.32	.34	.36	.37	.39	.41
100	.02	.03	.05	.07	.08	.10	.11	.13	.15	.16	.18	.20	.21	.23	.24	.26	.28	.29	.31	.33	.34	.36	.37	.39	.41
101	.02	.03	.05	.07	.08	.10	.12	.13	.15	.17	.18	.20	.21	.23	.25	.26	.28	.30	.31	.33	.35	.36	.38	.40	.41
102	.02	.03	.05	.07	.08	.10	.12	.13	.15	.17	.18	.20	.22	.23	.25	.27	.28	.30	.32	.33	.35	.37	.38	.40	.42
103	.02	.03	.05	.07	.08	.10	.12	.13	.15	.17	.18	.20	.22	.24	.25	.27	.29	.30	.32	.34	.35	.37	.39	.40	.42
104	.02	.03	.05	.07	.09	.10	.12	.14	.15	.17	.19	.20	.22	.24	.26	.27	.29	.31	.32	.34	.36	.37	.39	.41	.43
105	.02	.03	.05	.07	.09	.10	.12	.14	.15	.17	.19	.20	.22	.24	.26	.28	.29	.31	.33	.34	.36	.38	.40	.41	.43
106	.02	.03	.05	.07	.09	.10	.12	.14	.16	.17	.19	.21	.22	.24	.26	.28	.29	.31	.33	.35	.36	.38	.40	.42	.43
107	.02	.04	.05	.07	.09	.11	.12	.14	.16	.18	.19	.21	.23	.25	.26	.28	.30	.32	.33	.35	.37	.39	.40	.42	.44
108	.02	.04	.05	.07	.09	.11	.12	.14	.16	.18	.19	.21	.23	.25	.27	.28	.30	.32	.34	.35	.37	.39	.41	.42	.44
109	.02	.04	.05	.07	.09	.11	.12	.14	.16	.18	.20	.21	.23	.25	.27	.28	.30	.32	.34	.36	.37	.39	.41	.43	.45

TABLE III.—EXPANSION CORRECTION, C, FOR UNPROTECTED THERMOMETERS—Continued

$(T_w - t_u)$

$(T'_u + V_o)$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
110	0.02	0.04	0.05	0.07	0.09	0.11	0.13	0.14	0.16	0.18	0.20	0.22	0.23	0.25	0.27	0.29	0.31	0.32	0.34	0.36	0.38	0.40	0.41	0.43	0.45
111	.02	.04	.05	.07	.09	.11	.13	.14	.16	.18	.20	.22	.24	.25	.27	.29	.31	.33	.34	.36	.38	.40	.42	.43	.45
112	.02	.04	.05	.07	.09	.11	.13	.15	.16	.18	.20	.22	.24	.26	.27	.29	.31	.33	.35	.37	.38	.40	.42	.44	.46
113	.02	.04	.06	.07	.09	.11	.13	.15	.17	.19	.20	.22	.24	.26	.28	.30	.31	.33	.35	.37	.39	.41	.43	.44	.46
114	.02	.04	.06	.07	.09	.11	.13	.15	.17	.19	.20	.22	.24	.26	.28	.30	.32	.33	.35	.37	.39	.41	.43	.45	.47
115	.02	.04	.06	.08	.09	.11	.13	.15	.17	.19	.21	.23	.24	.26	.28	.30	.32	.34	.36	.38	.39	.41	.43	.45	.47
116	.02	.04	.06	.08	.10	.11	.13	.15	.17	.19	.21	.23	.25	.27	.29	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48
117	.02	.04	.06	.08	.10	.11	.13	.15	.17	.19	.21	.23	.25	.27	.29	.31	.32	.34	.36	.38	.40	.42	.44	.46	.48
118	.02	.04	.06	.08	.10	.12	.14	.15	.17	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.39	.41	.42	.44	.46	.48
119	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.21	.23	.25	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.49
120	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.25	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.49
121	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.40
122	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50
123	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50
124	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.35	.37	.39	.41	.43	.45	.47	.49	.51
125	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.49	.51
126	.02	.04	.06	.08	.10	.12	.14	.16	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47	.49	.52
127	.02	.04	.06	.08	.10	.12	.15	.17	.19	.21	.23	.25	.27	.29	.31	.33	.35	.37	.40	.42	.44	.46	.48	.50	.52
128	.02	.04	.06	.08	.10	.13	.15	.17	.19	.21	.23	.25	.27	.29	.31	.33	.36	.38	.40	.42	.44	.46	.48	.50	.52
129	.02	.04	.06	.08	.11	.13	.15	.17	.19	.21	.23	.25	.27	.30	.32	.34	.36	.38	.40	.42	.44	.46	.49	.51	.53
130	.02	.04	.06	.09	.11	.13	.15	.17	.19	.21	.23	.26	.28	.30	.32	.34	.36	.38	.40	.43	.45	.47	.49	.51	.53
131	.02	.04	.06	.09	.11	.13	.15	.17	.19	.21	.24	.26	.28	.30	.32	.34	.36	.39	.41	.43	.45	.47	.49	.51	.54
132	.02	.04	.06	.09	.11	.13	.15	.17	.19	.22	.24	.26	.28	.30	.32	.35	.37	.39	.41	.43	.45	.48	.50	.52	.54
133	.02	.04	.07	.09	.11	.13	.15	.17	.20	.22	.24	.26	.28	.31	.33	.35	.37	.39	.41	.44	.46	.48	.50	.52	.55
134	.02	.04	.07	.09	.11	.13	.15	.18	.20	.22	.24	.26	.28	.31	.33	.35	.37	.39	.42	.44	.46	.48	.50	.53	.55
135	.02	.04	.07	.09	.11	.13	.15	.18	.20	.22	.24	.27	.29	.31	.33	.35	.38	.40	.42	.44	.46	.49	.51	.53	.55
136	.02	.04	.07	.09	.11	.13	.16	.18	.20	.22	.24	.27	.29	.31	.33	.36	.38	.40	.42	.44	.47	.49	.51	.53	.56
137	.02	.04	.07	.09	.11	.13	.16	.18	.20	.22	.25	.27	.29	.31	.34	.36	.38	.40	.43	.45	.47	.49	.52	.54	.56
138	.02	.05	.07	.09	.11	.14	.16	.18	.20	.23	.25	.27	.29	.32	.34	.36	.38	.41	.43	.45	.47	.50	.52	.54	.57
139	.02	.05	.07	.09	.11	.14	.16	.18	.20	.23	.25	.27	.30	.32	.34	.36	.39	.41	.43	.45	.48	.50	.52	.54	.57
140	.02	.05	.07	.09	.11	.14	.16	.18	.21	.23	.25	.27	.30	.32	.34	.37	.39	.41	.44	.46	.48	.50	.53	.55	.57
141	.02	.05	.07	.09	.12	.14	.16	.18	.21	.23	.25	.28	.30	.32	.35	.37	.39	.42	.44	.46	.49	.51	.53	.55	.58
142	.02	.05	.07	.09	.12	.14	.16	.19	.21	.23	.26	.28	.30	.32	.35	.37	.39	.42	.44	.46	.49	.51	.53	.56	.58
143	.02	.05	.07	.09	.12	.14	.16	.19	.21	.23	.26	.28	.30	.33	.35	.37	.40	.42	.44	.47	.49	.51	.54	.56	.59
144	.02	.05	.07	.09	.12	.14	.17	.19	.21	.24	.26	.28	.31	.33	.35	.38	.40	.42	.45	.47	.50	.52	.54	.57	.59
145	.02	.05	.07	.09	.12	.14	.17	.19	.21	.24	.26	.28	.31	.33	.36	.38	.40	.43	.45	.47	.50	.52	.55	.57	.59
146	.02	.05	.07	.10	.12	.14	.17	.19	.22	.24	.26	.29	.31	.33	.36	.38	.41	.43	.45	.48	.50	.53	.55	.57	.60
147	.02	.05	.07	.10	.12	.14	.17	.19	.22	.24	.26	.29	.31	.34	.36	.38	.41	.43	.46	.48	.50	.53	.55	.58	.60
148	.02	.05	.07	.10	.12	.15	.17	.19	.22	.24	.27	.29	.31	.34	.36	.39	.41	.44	.46	.48	.51	.53	.56	.58	.61
149	.02	.05	.07	.10	.12	.15	.17	.20	.22	.24	.27	.29	.32	.34	.37	.39	.41	.44	.46	.49	.51	.54	.56	.59	.61
150	.03	.05	.07	.10	.12	.15	.17	.20	.22	.25	.27	.29	.32	.34	.37	.39	.42	.44	.47	.49	.51	.54	.56	.59	.61
151	.03	.05	.07	.10	.12	.15	.17	.20	.22	.25	.27	.30	.32	.35	.37	.40	.42	.44	.47	.49	.52	.54	.57	.59	.62

152	.03	.05	.07	.10	.12	.15	.17	.20	.22	.25	.27	.30	.32	.35	.37	.40	.42	.45	.47	.50	.52	.55	.57	.60	.62
153	.03	.05	.08	.10	.13	.15	.18	.20	.23	.25	.28	.30	.33	.35	.38	.40	.43	.45	.48	.50	.53	.55	.58	.60	.63
154	.03	.05	.08	.10	.13	.15	.18	.20	.23	.25	.28	.30	.33	.35	.38	.40	.43	.45	.48	.50	.53	.55	.58	.60	.63
155	.03	.05	.08	.10	.13	.15	.18	.20	.23	.25	.28	.30	.33	.36	.38	.41	.43	.46	.48	.51	.53	.56	.58	.61	.64
156	.03	.05	.08	.10	.13	.15	.18	.20	.23	.26	.28	.31	.33	.36	.38	.41	.43	.46	.48	.51	.54	.56	.59	.61	.64
157	.03	.05	.08	.10	.13	.15	.18	.21	.23	.26	.28	.31	.33	.36	.39	.41	.44	.46	.49	.51	.54	.57	.59	.62	.64
158	.03	.05	.08	.10	.13	.16	.18	.21	.23	.26	.28	.31	.34	.36	.39	.41	.44	.47	.49	.52	.54	.57	.60	.62	.65
159	.03	.05	.08	.10	.13	.16	.18	.21	.23	.26	.29	.31	.34	.36	.39	.42	.44	.47	.49	.52	.55	.57	.60	.62	.65
160	.03	.05	.08	.10	.13	.16	.18	.21	.24	.26	.29	.31	.34	.37	.39	.42	.45	.47	.50	.52	.55	.58	.60	.63	.66
161	.03	.05	.08	.11	.13	.16	.18	.21	.24	.26	.29	.32	.34	.37	.39	.42	.45	.47	.50	.53	.55	.58	.60	.63	.66
162	.03	.05	.08	.11	.13	.16	.19	.21	.24	.27	.29	.32	.34	.37	.40	.42	.45	.48	.50	.53	.56	.58	.61	.64	.66
163	.03	.05	.08	.11	.13	.16	.19	.21	.24	.27	.29	.32	.35	.37	.40	.43	.45	.48	.51	.53	.56	.59	.61	.64	.67
164	.03	.05	.08	.11	.13	.16	.19	.21	.24	.27	.29	.32	.35	.38	.40	.43	.46	.48	.51	.54	.56	.59	.62	.64	.67
165	.03	.05	.08	.11	.14	.16	.19	.22	.24	.27	.30	.32	.35	.38	.41	.43	.46	.49	.51	.54	.57	.59	.62	.65	.68
166	.03	.05	.08	.11	.14	.16	.19	.22	.24	.27	.30	.33	.35	.38	.41	.44	.46	.49	.52	.54	.57	.60	.63	.65	.68
167	.03	.05	.08	.11	.14	.16	.19	.22	.25	.27	.30	.33	.35	.38	.41	.44	.46	.49	.52	.55	.57	.60	.63	.66	.68
168	.03	.06	.08	.11	.14	.17	.19	.22	.25	.28	.30	.33	.36	.39	.41	.44	.47	.50	.52	.55	.58	.61	.63	.66	.69
169	.03	.06	.08	.11	.14	.17	.19	.22	.25	.28	.30	.33	.36	.39	.42	.44	.47	.50	.53	.55	.58	.61	.64	.66	.69
170	.03	.06	.08	.11	.14	.17	.19	.22	.25	.28	.31	.33	.36	.39	.42	.44	.47	.50	.53	.56	.58	.61	.64	.67	.70
171	.03	.06	.08	.11	.14	.17	.20	.22	.25	.28	.31	.34	.36	.39	.42	.45	.48	.50	.53	.56	.59	.62	.64	.67	.70
172	.03	.06	.08	.11	.14	.17	.20	.22	.25	.28	.31	.34	.37	.39	.42	.45	.48	.51	.53	.56	.59	.62	.65	.67	.70
173	.03	.06	.08	.11	.14	.17	.20	.23	.25	.28	.31	.34	.37	.40	.42	.45	.48	.51	.54	.57	.59	.62	.65	.68	.71
174	.03	.06	.09	.11	.14	.17	.20	.23	.26	.29	.31	.34	.37	.40	.43	.46	.48	.51	.54	.57	.60	.63	.66	.68	.71
175	.03	.06	.09	.11	.14	.17	.20	.23	.26	.29	.31	.34	.37	.40	.43	.46	.49	.51	.54	.57	.60	.63	.66	.69	.72
176	.03	.06	.09	.12	.14	.17	.20	.23	.26	.29	.32	.35	.37	.40	.43	.46	.49	.52	.55	.58	.60	.63	.66	.69	.72
177	.03	.06	.09	.12	.15	.17	.20	.23	.25	.29	.32	.35	.38	.41	.44	.46	.49	.52	.55	.58	.61	.64	.67	.70	.73
178	.03	.06	.09	.12	.15	.17	.20	.23	.26	.29	.32	.35	.38	.41	.44	.47	.49	.52	.55	.58	.61	.64	.67	.70	.73
179	.03	.06	.09	.12	.15	.18	.21	.23	.26	.29	.32	.35	.38	.41	.44	.47	.50	.53	.56	.59	.62	.64	.67	.70	.73
180	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.32	.35	.38	.41	.44	.47	.50	.53	.56	.59	.62	.65	.68	.71	.74
181	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36	.38	.41	.44	.47	.50	.53	.56	.59	.62	.65	.68	.71	.74
182	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36	.38	.42	.45	.48	.51	.54	.57	.60	.63	.66	.69	.72	.75
183	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36	.39	.42	.45	.48	.51	.54	.57	.60	.63	.66	.69	.72	.75
184	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36	.39	.42	.45	.48	.51	.54	.57	.60	.63	.66	.69	.72	.75
185	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36	.39	.42	.45	.48	.52	.55	.58	.61	.64	.67	.70	.73	.76
186	.03	.06	.09	.12	.15	.18	.21	.24	.28	.31	.34	.37	.40	.43	.46	.49	.52	.55	.58	.61	.64	.67	.70	.73	.76
187	.03	.06	.09	.12	.15	.18	.21	.24	.28	.31	.34	.37	.40	.43	.46	.49	.52	.55	.59	.61	.64	.67	.70	.73	.77
188	.03	.06	.09	.12	.15	.18	.22	.25	.28	.31	.34	.37	.40	.43	.46	.49	.52	.55	.59	.62	.65	.68	.71	.74	.77
189	.03	.06	.09	.12	.15	.19	.22	.25	.28	.31	.34	.37	.40	.43	.46	.49	.53	.56	.59	.62	.65	.68	.71	.74	.77
190	.03	.06	.09	.12	.16	.19	.22	.25	.28	.31	.34	.37	.40	.44	.47	.50	.53	.56	.59	.62	.65	.68	.72	.75	.78
191	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.41	.44	.47	.50	.53	.56	.59	.63	.66	.69	.72	.75	.78
192	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.35	.38	.41	.44	.47	.50	.53	.57	.60	.63	.66	.69	.72	.75	.79
193	.03	.06	.09	.13	.16	.19	.22	.25	.28	.32	.35	.38	.41	.44	.47	.51	.54	.57	.60	.63	.66	.70	.73	.76	.79
194	.03	.06	.10	.13	.16	.19	.22	.25	.29	.32	.35	.38	.41	.45	.48	.51	.54	.57	.60	.64	.67	.70	.73	.76	.80
195	.03	.06	.10	.13	.16	.19	.22	.26	.29	.32	.35	.38	.41	.45	.48	.51	.54	.57	.61	.64	.67	.70	.73	.77	.80
196	.03	.06	.10	.13	.16	.19	.22	.26	.29	.32	.35	.39	.42	.45	.48	.51	.55	.58	.61	.64	.67	.71	.74	.77	.80
197	.03	.06	.10	.13	.16	.19	.23	.26	.29	.32	.35	.39	.42	.45	.48	.52	.55	.58	.61	.64	.68	.71	.74	.77	.81
198	.03	.06	.10	.13	.16	.19	.23	.26	.29	.32	.36	.39	.42	.45	.49	.52	.55	.58	.62	.65	.68	.71	.75	.78	.81
199	.03	.07	.10	.13	.16	.20	.23	.26	.29	.33	.36	.39	.42	.46	.49	.52	.55	.59	.62	.65	.68	.72	.75	.78	.81

TABLE IV.—SPECIFIC VOLUME OF SEA WATER, $\alpha_{35,0,p}$ FOR SALINITY 35°/₀₀, TEMPERATURE 0° C., AND STATED VALUES OF PRESSURE

(From Bjerknes and Sandström, 1910) (*11*)

$$\alpha_{35,0,p}=\alpha_{35,0,0}-p\,\alpha_{35,0,0}\left[\frac{4886}{1+0.0000183p}-227+0.01055p-(\sigma_{35,0,0}-28)(1473-0.000324p)\right]10^{-9}$$

where,

$\alpha_{35,0,0}$ = specific volume of sea water at salinity of 35°/₀₀, temperature 0° C., and atmospheric pressure, equal to 0.972643,

p = pressure,

$\sigma_{35,0,0}$ = Sigma-zero, which is $10^3\,(\rho_{35,0,0}-1)$ equal to 28.126.

Example:

Given, p = 4,000 decibars.

From table IV, $\alpha_{35,0,p}$ = 0.95566.

TABLE IV.—SPECIFIC VOLUME OF SEA WATER, $\alpha_{35,0,p}$

Pressure (decibars)	0	100	200	300	400	500	600	700	800	900
0	0. 97264	0. 97219	0. 97174	0. 97129	0. 97084	0. 97040	0. 96995	0. 96951	0. 96907	0. 96863
1,000	. 96819	. 96775	. 96732	. 96688	. 96645	. 96602	. 96559	. 96516	. 96473	. 96430
2,000	. 96388	. 96345	. 96303	. 96261	. 96219	. 96177	. 96136	. 96094	. 96053	. 96011
3,000	. 95970	. 95929	. 95888	. 95848	. 95807	. 95766	. 95726	. 95686	. 95646	. 95606
4,000	. 95566	. 95526	. 95486	. 95447	. 95407	. 95368	. 95329	. 95289	. 95251	. 95212
5,000	. 95173	. 95134	. 95096	. 95057	. 95019	. 94981	. 94943	. 94905	. 94867	. 94829
6,000	. 94791	. 94754	. 94717	. 94679	. 94642	. 94605	. 94568	. 94531	. 94494	. 94457
7,000	. 94421	. 94384	. 94348	. 94312	. 94275	. 94239	. 94203	. 94167	. 94132	. 94096
8,000	. 94060	. 94025	. 93989	. 93954	. 93919	. 93883	. 93848	. 93813	. 93778	. 93744
9,000	. 93709	. 93674	. 93640	. 93605	. 93571	. 93537	. 93503	. 93469	. 93434	. 93401

TABLES V, A–C.—TEMPERATURE-SALINITY TERM, $10^5\Delta_{s,t}$, OF THE ANOMALY OF SPECIFIC VOLUME FOR VALUES OF TEMPERATURE AND SALINITY

(Adapted from Sverdrup, 1933) (*13*)

TABLE V A.—Temperature-Salinity Term, $10^5\Delta_{s,t}$, of the Anomaly of Specific Volume for Each Unit of Salinity and Each Tenth of a Degree Temperature

TABLE V B.—Temperature Interpolation for Table V A

TABLE V C.—Salinity Interpolation for Table V A

$$\Delta_{s,t}=0.0273569-\frac{10^{-3}\sigma_t}{1+10^{-3}\sigma_t}$$

where,

σ_t=Sigma-T, related to temperature (T) and salinity (S) as shown in table X.

Example:

Given, $T=4.55°$ C. and $S=34.40‰$.

From table V A (under $S=34.00$ and $T=4.5$)

Approximate $10^5\Delta_{s,t}$	110. 4
Temperature difference=1.0.	
Salinity difference=−75.1.	
From table V B (under T=.05 at difference of 1.0)	
Temperature interpolation correction	0. 5
From table V C (under difference of −75.1 at S=0.40)	
Salinity interpolation correction (same sign as total salinity difference)	−30. 0
$10^5\Delta_{s,t}$=(sum of above)	80. 9

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 21.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	1076.7 0.1 −78.0	1076.8 0.1 −78.0	1076.9 0.1 −78.1	1077.0 0.1 −78.1	1077.1 0.2 −78.1	1077.3 0.1 −78.2	1077.4 0.2 −78.2	1077.6 0.2 −78.2	1077.8 0.2 −78.3	1078.0 0.2 −78.3
−0	1076.8 −0.1 −77.7	1076.7 −0.1 −77.7	1076.6 0.0 −77.7	1076.6 0.0 −77.8	1076.6 0.0 −77.9	1076.6 0.0 −77.9	1076.6 0.0 −77.9	1076.6 0.0 −77.9	1076.6 0.0 −77.9	1076.6 0.1 −77.9
+0	1076.8 0.0 −77.7	1076.8 0.1 −77.6	1076.9 0.2 −77.6	1077.1 0.1 −77.6	1077.2 0.2 −77.5	1077.4 0.1 −77.5	1077.5 0.2 −77.4	1077.7 0.2 −77.4	1077.9 0.2 −77.4	1078.1 0.2 −77.4
1	1078.3 0.2 −77.3	1078.5 0.3 −77.3	1078.8 0.2 −77.3	1079.0 0.3 −77.2	1079.3 0.3 −77.2	1079.6 0.3 −77.2	1079.9 0.3 −77.2	1080.2 0.4 −77.1	1080.6 0.3 −77.1	1080.9 0.3 −77.0
2	1081.2 0.4 −77.0	1081.6 0.4 −77.0	1082.0 0.4 −77.0	1082.4 0.4 −76.9	1082.8 0.5 −76.9	1083.3 0.5 −76.9	1083.8 0.4 −76.9	1084.2 0.5 −76.9	1084.7 0.4 −76.9	1085.1 0.5 −76.8
3	1885.6 0.5 −76.7	1086.1 0.6 −76.7	1086.7 0.5 −76.7	1087.2 0.5 −76.7	1087.7 0.6 −76.6	1088.3 0.6 −76.6	1088.9 0.6 −76.6	1089.5 0.6 −76.6	1090.1 0.6 −76.5	1090.7 0.6 −76.5
4	1091.3 0.7 −76.5	1092.0 0.6 −76.5	1092.6 0.7 −76.4	1093.3 0.7 −76.4	1094.0 0.7 −76.4	1094.7 0.7 −76.4	1095.4 0.7 −76.3	1096.1 0.7 −76.3	1096.8 0.8 −76.3	1097.6 0.7 −76.3
5	1098.3 0.8 −76.2	1099.1 0.8 −76.2	1099.9 0.8 −76.2	1100.7 0.8 −76.2	1101.5 0.8 −76.1	1102.3 0.8 −76.1	1103.1 0.9 −76.0	1104.0 0.8 −76.0	1104.8 0.9 −76.0	1105.7 0.9 −76.0
6	1106.6 0.9 −76.0	1107.5 0.9 −75.9	1108.4 0.9 −75.9	1109.3 1.0 −75.9	1110.3 0.9 −75.9	1111.2 0.9 −75.9	1112.1 1.0 −75.8	1113.1 1.0 −75.8	1114.1 1.0 −75.8	1115.1 1.0 −75.8
7	1116.1 1.0 −75.8	1117.1 1.0 −75.7	1118.1 1.1 −75.7	1119.2 1.0 −75.7	1120.2 1.1 −75.6	1121.3 1.0 −75.6	1122.3 1.1 −75.5	1123.4 1.1 −75.5	1124.5 1.2 −75.5	1125.7 1.1 −75.5
8	1126.8 1.1 −75.5	1127.9 1.1 −75.5	1129.0 1.2 −75.4	1130.2 1.1 −75.4	1131.3 1.2 −75.3	1132.5 1.2 −75.3	1133.7 1.2 −75.3	1134.9 1.3 −75.3	1136.2 1.2 −75.3	1137.4 1.2 −75.3
9	1138.6 1.3 −75.3	1139.9 1.2 −75.3	1141.1 1.3 −75.2	1142.4 1.3 −75.2	1143.7 1.3 −75.2	1145.0 1.3 −75.2	1146.3 1.3 −75.2	1147.6 1.3 −75.2	1148.9 1.3 −75.1	1150.2 1.4 −75.1
10	1151.6 1.3 −75.1	1152.9 1.4 −75.0	1154.3 1.4 −75.0	1155.7 1.4 −75.0	1157.1 1.4 −75.0	1158.5 1.4 −75.0	1159.9 1.4 −74.9	1161.3 1.4 −74.9	1162.7 1.5 −74.9	1164.2 1.5 −74.9
11	1165.7 1.4 −74.9	1167.1 1.5 −74.8	1168.6 1.5 −74.8	1170.1 1.5 −74.8	1171.6 1.5 −74.8	1173.1 1.5 −74.8	1174.6 1.5 −74.7	1176.1 1.6 −74.7	1177.7 1.5 −74.7	1179.2 1.5 −74.7
12	1180.7 1.6 −74.6	1182.3 1.7 −74.6	1184.0 1.6 −74.6	1185.6 1.6 −74.6	1187.2 1.6 −74.6	1188.8 1.6 −74.6	1190.4 1.7 −74.6	1192.1 1.6 −74.6	1193.7 1.7 −74.5	1195.4 1.7 −74.5
13	1197.1 1.6 −74.5	1198.7 1.7 −74.5	1200.4 1.7 −74.5	1202.1 1.7 −74.4	1203.8 1.7 −74.4	1205.5 1.7 −74.4	1207.2 1.8 −74.4	1209.0 1.7 −74.4	1210.7 1.8 −74.3	1212.5 1.8 −74.3

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 21.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14....	1214.3 1.7 −74.3	1216.0 1.8 −74.2	1217.8 1.8 −74.2	1219.6 1.8 −74.2	1221.4 1.9 −74.2	1223.3 1.8 −74.2	1225.1 1.8 −74.2	1226.9 1.9 −74.2	1228.8 1.8 −74.2	1230.6 1.9 −74.1
15....	1232.5 1.9 −74.1	1234.4 1.9 −74.1	1236.3 1.9 −74.1	1238.2 1.9 −74.1	1240.1 1.9 −74.1	1242.0 1.9 −74.1	1243.9 2.0 −74.0	1245.9 1.9 −74.0	1247.8 2.0 −74.0	1249.8 1.9 −74.0
16....	1251.7 2.0 −73.9	1253.7 2.0 −73.9	1255.7 2.0 −73.9	1257.7 2.0 −73.9	1259.7 2.0 −73.9	1261.7 2.1 −73.9	1263.8 2.0 −73.9	1265.8 2.1 −73.9	1267.9 2.0 −73.9	1269.9 2.1 −73.9
17....	1272.0 2.0 −73.9	1274.0 2.1 −73.8	1276.1 2.1 −73.8	1278.2 2.1 −73.8	1280.3 2.1 −73.8	1282.4 2.1 −73.7	1284.5 2.1 −73.7	1286.6 2.2 −73.7	1288.8 2.2 −73.7	1291.0 2.1 −73.7
18....	1293.1 2.2 −73.7	1295.3 2.2 −73.7	1297.5 2.2 −73.7	1299.7 2.2 −73.7	1301.9 2.2 −73.7	1304.1 2.2 −73.7	1306.3 2.2 −73.6	1308.5 2.2 −73.6	1310.7 2.3 −73.6	1313.0 2.2 −73.6
19....	1315.2 2.3 −73.6	1317.5 2.3 −73.6	1319.8 2.3 −73.6	1322.1 2.3 −73.6	1324.4 2.3 −73.6	1326.7 2.3 −73.6	1329.0 2.3 −73.5	1331.3 2.3 −73.5	1333.6 2.4 −73.5	1336.0 2.3 −73.5
20....	1338.3 2.3 −73.5	1340.6 2.4 −73.4	1343.0 2.4 −73.4	1345.4 2.3 −73.4	1347.7 2.4 −73.3	1350.1 2.4 −73.3	1352.5 2.4 −73.3	1354.9 2.4 −73.3	1357.3 2.4 −73.3	1359.7 2.5 −73.3
21....	1362.2 2.5 −73.3	1364.7 2.5 −73.3	1367.2 2.4 −73.3	1369.6 2.5 −73.3	1372.1 2.5 −73.3	1374.6 2.5 −73.3	1377.1 2.4 −73.3	1379.5 2.5 −73.2	1382.0 2.5 −73.2	1384.5 2.5 −73.2
22....	1387.0 2.6 −73.2	1389.6 2.6 −73.2	1392.2 2.5 −73.2	1394.7 2.6 −73.2	1397.3 2.6 −73.2	1399.9 2.6 −73.2	1402.5 2.5 −73.2	1405.0 2.6 −73.1	1407.6 2.6 −73.1	1410.2 2.7 −73.1
23....	1412.9 2.6 −73.1	1415.5 2.6 −73.1	1418.1 2.7 −73.1	1420.8 2.6 −73.1	1423.4 2.6 −73.1	1426.0 2.7 −73.1	1428.7 2.7 −73.1	1431.4 2.7 −73.1	1434.1 2.7 −73.1	1436.8 2.7 −73.1
24....	1439.5 2.7 −73.0	1442.2 2.7 −73.0	1444.9 2.8 −73.0	1447.7 2.7 −73.0	1450.4 2.8 −73.0	1453.2 2.7 −73.0	1455.9 2.7 −73.0	1458.6 2.8 −73.0	1461.4 2.8 −73.0	1464.2 2.8 −73.0
25....	1467.0 2.8 −73.0	1469.8 2.8 −73.0	1472.6 2.8 −72.9	1475.4 2.8 −72.9	1478.2 2.8 −72.9	1481.0 2.9 −72.9	1483.9 2.8 −72.9	1486.7 2.9 −72.9	1489.6 2.9 −72.9	1492.5 2.8 −72.9
26....	1495.3 2.9 −72.9	1498.2 2.9 −72.9	1501.1 2.9 −72.9	1504.0 2.9 −72.8	1506.9 2.9 −72.8	1509.8 3.0 −72.8	1512.8 2.9 −72.8	1515.7 2.9 −72.8	1518.6 3.0 −72.8	1521.6 3.0 −72.8
27....	1524.6 2.9 −72.8	1527.5 3.0 −72.8	1530.5 3.0 −72.8	1533.5 3.0 −72.8	1536.5 3.0 −72.8	1539.5 3.0 −72.8	1542.5 3.0 −72.8	1545.5 3.0 −72.8	1548.5 3.1 −72.7	1551.6 3.0 −72.7
28....	1554.6 3.1 −72.7	1557.7 3.1 −72.7	1560.8 3.0 −72.7	1563.8 3.1 −72.7	1566.9 3.1 −72.7	1570.0 3.1 −72.7	1573.1 3.1 −72.7	1576.2 3.1 −72.7	1579.3 3.2 −72.7	1582.5 3.1 −72.7
29....	1585.6 3.1 −72.7	1588.7 3.2 −72.7	1591.9 3.2 −72.7	1595.1 3.2 −72.7	1598.3 3.1 −72.7	1601.4 3.2 −72.7	1604.6 3.1 −72.7	1607.7 3.2 −72.7	1610.9 3.2 −72.7	1614.1 3.2 −72.6

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TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 22.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	998.7 0.1 −77.8	998.8 0.0 −77.9	998.8 0.1 −77.9	998.9 0.1 −77.9	999.0 0.1 −78.0	999.1 0.1 −78.0	999.2 0.2 −78.0	999.4 0.1 −78.1	999.5 0.2 −78.1	999.7 0.2 −78.1
−0	999.1 −0.1 −77.5	999.0 −0.1 −77.5	998.9 −0.1 −77.6	998.8 −0.1 −77.6	998.7 0.0 −77.6	998.7 0.0 −77.6	998.7 0.0 −77.7	998.7 0.0 −77.8	998.7 0.0 −77.8	998.7 0.0 −77.8
+0	999.1 0.1 −77.5	999.2 0.1 −77.4	999.3 0.2 −77.4	999.5 0.2 −77.4	999.7 0.2 −77.4	999.9 0.2 −77.4	1000.1 0.2 −77.6	1000.3 0.2 −77.4	1000.5 0.2 −77.3	1000.7 0.3 −77.2
1	1001.0 0.2 −77.2	1001.2 0.3 −77.2	1001.5 0.3 −77.2	1001.8 0.3 −77.1	1002.1 0.3 −77.1	1002.4 0.3 −77.1	1002.7 0.4 −77.0	1003.1 0.4 −77.0	1003.5 0.4 −77.0	1003.9 0.3 −77.0
2	1004.2 0.4 −76.9	1004.6 0.4 −76.8	1005.0 0.5 −76.8	1005.5 0.4 −76.8	1005.9 0.5 −76.7	1006.4 0.5 −76.7	1006.9 0.4 −76.7	1007.3 0.5 −76.6	1007.8 0.5 −76.6	1008.3 0.6 −76.6
3	1008.9 0.5 −76.6	1009.4 0.6 −76.6	1010.0 0.5 −76.6	1010.5 0.6 −76.5	1011.1 0.6 −76.5	1011.7 0.6 −76.5	1012.3 0.6 −76.5	1012.9 0.7 −76.4	1013.6 0.6 −76.4	1014.2 0.6 −76.4
4	1014.8 0.7 −76.3	1015.5 0.7 −76.3	1016.2 0.7 −76.3	1016.9 0.7 −76.3	1017.6 0.7 −76.2	1018.3 0.8 −76.2	1019.1 0.7 −76.2	1019.8 0.7 −76.1	1020.5 0.8 −76.1	1021.3 0.8 −76.1
5	1022.1 0.8 −76.1	1022.9 0.8 −76.0	1023.7 0.8 −76.0	1024.5 0.9 −75.9	1025.4 0.8 −75.9	1026.2 0.9 −75.9	1027.1 0.9 −75.9	1028.0 0.8 −75.9	1028.8 0.9 −75.8	1029.7 0.9 −75.8
6	1030.6 1.0 −75.8	1031.6 0.9 −75.8	1032.5 0.9 −75.8	1033.4 1.0 −75.7	1034.4 0.9 −75.7	1035.3 1.0 −75.6	1036.3 1.0 −75.6	1037.3 1.0 −75.6	1038.3 1.0 −75.6	1039.3 1.0 −75.5
7	1040.3 1.1 −75.5	1041.4 1.0 −75.5	1042.4 1.1 −75.5	1043.5 1.1 −75.5	1044.6 1.1 −75.5	1045.7 1.1 −75.5	1046.8 1.1 −75.5	1047.9 1.1 −75.4	1049.0 1.2 −75.4	1050.2 1.1 −75.4
8	1051.3 1.1 −75.3	1052.4 1.2 −75.3	1053.6 1.2 −75.3	1054.8 1.2 −75.3	1056.0 1.2 −75.3	1057.2 1.2 −75.3	1058.4 1.2 −75.2	1059.6 1.3 −75.2	1060.9 1.2 −75.2	1062.1 1.2 −75.1
9	1063.3 1.3 −75.1	1064.6 1.3 −75.1	1065.9 1.3 −75.1	1067.2 1.3 −75.0	1068.5 1.3 −75.0	1069.8 1.3 −75.0	1071.1 1.3 −75.0	1072.4 1.4 −74.9	1073.8 1.3 −74.9	1075.1 1.4 −74.9
10	1076.5 1.4 −74.9	1077.9 1.4 −74.9	1079.3 1.4 −74.8	1080.7 1.4 −74.8	1082.1 1.4 −74.8	1083.5 1.5 −74.8	1085.0 1.4 −74.8	1086.4 1.4 −74.7	1087.8 1.5 −74.7	1089.3 1.5 −74.7
11	1090.8 1.5 −74.7	1092.3 1.5 −74.7	1093.8 1.5 −74.7	1095.3 1.5 −74.6	1096.8 1.5 −74.6	1098.3 1.6 −74.6	1099.9 1.5 −74.6	1101.4 1.6 −74.6	1103.0 1.5 −74.6	1104.5 1.6 −74.5
12	1106.1 1.6 −74.5	1107.7 1.7 −74.5	1109.4 1.6 −74.5	1111.0 1.6 −74.5	1112.6 1.6 −74.4	1114.2 1.6 −74.4	1115.8 1.7 −74.4	1117.5 1.7 −74.4	1119.2 1.7 −74.4	1120.9 1.7 −74.4
13	1122.6 1.6 −74.4	1124.2 1.7 −74.3	1125.9 1.8 −74.3	1127.7 1.7 −74.3	1129.4 1.7 −74.3	1131.1 1.7 −74.2	1132.8 1.8 −74.2	1134.6 1.8 −74.2	1136.4 1.8 −74.2	1138.2 1.8 −74.2

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 22.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	1140.0 1.8 −74.2	1141.8 1.8 −74.2	1143.6 1.8 −74.2	1145.4 1.8 −74.1	1147.2 1.9 −74.1	1149.1 1.8 −74.1	1150.9 1.8 −74.1	1152.7 1.9 −74.0	1154.6 1.9 −74.0	1156.5 1.9 −74.0
15	1158.4 1.9 −74.0	1160.3 1.9 −74.0	1162.2 1.9 −74.0	1164.1 1.9 −74.0	1166.0 1.9 −73.9	1167.9 2.0 −73.9	1169.9 2.0 −73.9	1171.9 1.9 −73.9	1173.8 2.0 −73.9	1175.8 2.0 −73.9
16	1177.8 2.0 −73.9	1179.8 2.0 −73.9	1181.8 2.0 −73.9	1183.8 2.0 −73.8	1185.8 2.0 −73.8	1187.8 2.1 −73.8	1189.9 2.0 −73.8	1191.9 2.1 −73.7	1194.0 2.0 −73.7	1196.0 2.1 −73.7
17	1198.1 2.1 −73.7	1200.2 2.1 −73.7	1202.3 2.1 −73.7	1204.4 2.1 −73.6	1206.5 2.2 −73.6	1208.7 2.1 −73.6	1210.8 2.1 −73.6	1213.9 2.2 −73.6	1215.1 2.2 −73.6	1217.3 2.1 −73.6
18	1219.4 2.2 −73.5	1221.6 2.2 −73.5	1223.8 2.2 −73.5	1226.0 2.2 −73.5	1228.2 2.2 −73.5	1230.4 2.3 −73.5	1232.7 2.2 −73.5	1234.9 2.2 −73.5	1237.1 2.3 −73.4	1239.4 2.2 −73.4
19	1241.6 2.3 −73.4	1243.9 2.3 −73.4	1246.2 2.3 −73.4	1248.5 2.3 −73.4	1250.8 2.3 −73.4	1253.1 2.4 −73.4	1255.5 2.3 −73.4	1257.8 2.3 −73.3	1260.1 2.4 −73.3	1262.5 2.3 −73.3
20	1264.8 2.4 −73.3	1267.2 2.4 −73.3	1269.6 2.4 −73.3	1272.0 2.4 −73.3	1274.4 2.4 −73.3	1276.8 2.4 −73.3	1279.2 2.4 −73.3	1281.6 2.4 −73.3	1284.0 2.4 −73.3	1286.4 2.5 −73.2
21	1288.9 2.5 −73.2	1291.4 2.5 −73.2	1293.9 2.4 −73.2	1296.3 2.5 −73.2	1298.8 2.5 −73.2	1301.3 2.5 −73.2	1303.8 2.5 −73.2	1306.3 2.5 −73.1	1308.8 2.5 −73.1	1311.3 2.5 −73.1
22	1313.8 2.6 −73.1	1316.4 2.6 −73.1	1319.0 2.5 −73.1	1321.5 2.6 −73.1	1324.1 2.6 −73.1	1326.7 2.6 −73.1	1329.3 2.6 −73.1	1331.9 2.6 −73.1	1334.5 2.6 −73.0	1377.1 2.7 −73.0
23	1339.8 2.6 −73.0	1342.4 2.6 −73.0	1345.0 2.7 −73.0	1347.7 2.6 −73.0	1350.3 2.6 −73.0	1353.9 2.7 −72.9	1355.6 2.7 −72.9	1358.3 2.7 −72.9	1361.0 2.7 −72.9	1363.7 2.8 −72.9
24	1366.5 2.7 −72.9	1369.2 2.7 −72.9	1371.9 2.8 −72.9	1374.7 2.7 −72.9	1377.4 2.8 −72.9	1380.2 2.7 −72.9	1382.9 2.7 −72.8	1385.6 2.8 −72.8	1388.4 2.8 −72.8	1391.2 2.8 −72.8
25	1394.0 2.8 −72.8	1396.8 2.9 −72.8	1399.7 2.8 −72.8	1402.5 2.8 −72.8	1405.3 2.8 −72.8	1408.1 2.9 −72.8	1411.0 2.8 −72.8	1413.8 2.9 −72.7	1416.7 2.9 −72.7	1419.6 2.8 −72.7
26	1422.4 2.9 −72.7	1425.3 2.9 −72.7	1428.2 3.0 −72.7	1431.2 2.9 −72.7	1434.1 2.9 −72.7	1437.0 3.0 −72.7	1440.0 2.9 −72.7	1442.9 2.9 −72.7	1445.8 3.0 −72.7	1448.8 3.0 −72.7
27	1451.8 2.9 −72.7	1454.7 3.0 −72.6	1457.7 3.0 −72.6	1460.7 3.0 −72.6	1463.7 3.0 −72.6	1466.7 3.0 −72.6	1469.7 3.0 −72.6	1472.7 3.1 −72.6	1475.8 3.1 −72.6	1478.9 3.0 −72.6
28	1481.9 3.1 −72.6	1485.0 3.1 −72.6	1488.1 3.0 −72.6	1491.1 3.1 −72.6	1494.2 3.1 −72.6	1497.3 3.1 −72.6	1500.4 3.1 −72.6	1503.5 3.1 −72.6	1506.6 3.2 −72.5	1509.8 3.1 −72.5
29	1512.9 3.1 −72.5	1516.0 3.2 −72.5	1519.2 3.2 −72.5	1522.4 3.2 −72.5	1525.6 3.1 −72.5	1528.7 3.2 −72.5	1531.9 3.1 −72.5	1535.0 3.2 −72.5	1538.2 3.3 −72.5	1541.5 3.2 −72.5

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 23.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	920.9 0.0 −77.7	920.9 0.0 −77.7	920.9 0.1 −77.7	921.0 0.0 −77.8	921.0 0.1 −77.8	921.1 0.1 −77.9	921.2 0.1 −77.9	921.3 0.1 −77.9	921.4 0.2 −77.9	921.6 0.1 −78.0
−0	921.6 −0.1 −77.4	921.5 −0.2 −77.4	921.3 −0.1 −77.4	921.2 −0.1 −77.4	921.1 0.0 −77.5	921.1 −0.1 −77.6	921.0 −0.1 −77.6	920.9 0.0 −77.6	920.9 0.0 −77.6	920.9 0.0 −77.7
+0	921.6 0.2 −77.4	921.8 0.1 −77.4	921.9 0.2 −77.3	922.1 0.2 −77.3	922.3 0.2 −77.3	922.5 0.2 −77.2	922.7 0.2 −77.2	922.9 0.3 −77.1	923.2 0.3 −77.1	923.5 0.3 −77.1
1	923.8 0.2 −77.1	924.0 0.3 −77.0	924.3 0.4 −77.0	924.7 0.3 −77.0	925.0 0.3 −76.9	925.3 0.4 −76.9	925.7 0.4 −76.9	926.1 0.4 −76.8	926.5 0.4 −76.8	926.9 0.4 −76.8
2	927.3 0.5 −76.7	927.8 0.4 −76.7	928.2 0.5 −76.7	928.7 0.5 −76.7	929.2 0.5 −76.7	929.7 0.5 −76.7	930.2 0.5 −76.7	930.7 0.5 −76.6	931.2 0.5 −76.6	931.7 0.6 −76.5
3	932.3 0.5 −76.5	932.8 0.6 −76.4	933.4 0.6 −76.4	934.0 0.6 −76.4	934.6 0.6 −76.4	935.2 0.6 −76.3	935.8 0.7 −76.3	936.5 0.7 −76.3	937.2 0.6 −76.3	937.8 0.7 −76.2
4	938.5 0.7 −76.2	939.2 0.7 −76.2	939.9 0.7 −76.1	940.6 0.8 −76.1	941.4 0.7 −76.1	942.1 0.8 −76.1	942.9 0.8 −76.1	943.7 0.7 −76.1	944.4 0.8 −76.0	945.2 0.8 −76.0
5	946.0 0.9 −76.0	946.9 0.8 −76.0	947.7 0.9 −75.9	948.6 0.9 −75.9	949.5 0.8 −75.9	950.3 0.9 −75.9	951.2 0.9 −75.8	952.1 0.9 −75.8	953.0 0.9 −75.8	953.9 0.9 −75.7
6	954.8 1.0 −75.7	955.8 0.9 −75.7	956.7 1.0 −75.7	957.7 1.0 −75.7	958.7 1.0 −76.6	959.7 1.0 −75.6	960.7 1.0 −75.6	961.7 1.0 −75.6	962.7 1.1 −75.5	963.8 1.0 −75.5
7	964.8 1.1 −75.5	965.9 1.0 −75.5	966.9 1.1 −75.4	968.0 1.1 −75.4	969.1 1.1 −75.4	970.2 1.1 −75.3	971.3 1.2 −75.3	972.5 1.1 −75.3	973.6 1.2 −75.3	974.8 1.2 −75.3
8	976.0 1.1 −75.3	977.1 1.2 −75.2	978.3 1.2 −75.2	979.5 1.2 −75.1	980.7 1.2 −75.1	981.9 1.3 −75.1	983.2 1.2 −75.1	984.4 1.3 −75.1	985.7 1.3 −75.1	987.0 1.2 −75.1
9	988.2 1.3 −75.0	989.5 1.3 −75.0	990.8 1.4 −75.0	992.2 1.3 −75.0	993.5 1.3 −75.0	994.8 1.3 −74.9	996.1 1.4 −74.9	997.5 1.4 −74.9	998.9 1.3 −74.9	1000.2 1.4 −74.8
10	1001.6 1.4 −74.8	1003.0 1.5 −74.8	1004.5 1.4 −74.8	1005.9 1.4 −74.8	1007.3 1.4 −74.8	1008.7 1.5 −74.7	1010.2 1.5 −74.7	1011.7 1.4 −74.7	1013.1 1.5 −74.6	1014.6 1.5 −74.6
11	1016.1 1.5 −74.6	1017.6 1.5 −74.6	1019.1 1.6 −74.6	1020.7 1.5 −74.6	1022.2 1.5 −74.5	1023.7 1.6 −74.5	1025.3 1.5 −74.5	1026.8 1.6 −74.4	1028.4 1.6 −74.4	1030.0 1.6 −74.4
12	1031.6 1.6 −74.4	1033.2 1.7 −74.4	1034.9 1.6 −74.4	1036.5 1.7 −74.4	1038.2 1.6 −74.4	1039.8 1.6 −74.3	1041.4 1.7 −75.3	1043.1 1.7 −74.3	1044.8 1.7 −74.3	1046.5 1.7 −74.3
13	1048.2 1.7 −74.2	1049.9 1.7 −74.2	1051.6 1.8 −74.2	1053.4 1.7 −74.2	1055.1 1.8 −74.2	1056.9 1.7 −74.2	1058.6 1.8 −74.1	1060.4 1.8 −74.1	1062.2 1.8 −74.1	1064.0 1.8 −74.1

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 23.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	1065.8 1.8 −74.1	1067.6 1.8 −74.0	1069.4 1.9 −74.0	1071.3 1.8 −74.0	1073.1 1.9 −74.0	1075.0 1.8 −74.0	1076.8 1.9 −74.0	1078.7 1.9 −74.0	1080.6 1.9 −74.0	1082.5 1.9 −74.0
15----	1084.4 1.9 −74.0	1086.3 1.9 −73.9	1088.2 1.9 −73.9	1090.1 2.0 −73.9	1092.1 1.9 −73.9	1094.0 2.0 −73.8	1096.0 2.0 −73.8	1098.0 1.9 −73.8	1099.9 2.0 −73.8	1101.9 2.0 −73.8
16----	1103.9 2.0 −73.8	1105.9 2.0 −73.7	1107.9 2.1 −73.7	1110.0 2.0 −73.7	1112.0 2.0 −73.7	1114.0 2.1 −73.7	1116.1 2.1 −73.7	1118.2 2.1 −73.7	1120.3 2.0 −73.7	1122.3 2.1 −73.6
17----	1124.4 2.1 −73.6	1126.5 2.1 −73.6	1128.6 2.2 −73.6	1130.8 2.1 −73.6	1132.9 2.2 −73.6	1135.1 2.1 −73.6	1137.2 2.1 −73.5	1139.3 2.2 −73.5	1141.5 2.2 −73.5	1143.7 2.2 −73.5
18----	1145.9 2.2 −73.5	1148.1 2.2 −73.5	1150.3 2.2 −73.5	1152.5 2.2 −73.5	1154.7 2.2 −73.4	1156.9 2.3 −73.4	1159.2 2.2 −73.4	1161.4 2.3 −73.4	1163.7 2.3 −73.4	1166.0 2.2 −73.4
19----	1168.2 2.3 −73.3	1170.5 2.3 −73.3	1172.8 2.3 −73.3	1175.1 2.3 −73.3	1177.4 2.3 −73.3	1179.7 2.4 −73.3	1182.1 2.4 −73.3	1184.5 2.3 −73.3	1186.8 2.4 −73.3	1189.2 2.3 −73.3
20----	1191.5 2.4 −73.2	1193.9 2.4 −73.2	1196.3 2.4 −73.2	1198.7 2.4 −73.2	1201.1 2.4 −73.2	1203.5 2.4 −73.2	1205.9 2.4 −73.2	1208.3 2.4 −73.1	1210.7 2.5 −73.1	1213.2 2.5 −73.1
21----	1215.7 2.5 −73.1	1218.2 2.5 −73.1	1220.7 2.4 −73.1	1223.1 2.5 −73.1	1225.6 2.5 −73.1	1228.1 2.5 −73.0	1230.6 2.6 −73.0	1233.2 2.5 −73.0	1235.7 2.5 −73.0	1238.2 2.5 −73.0
22----	1240.7 2.6 −73.0	1243.3 2.6 −73.0	1245.9 2.5 −73.0	1248.4 2.6 −73.0	1251.0 2.6 −73.0	1253.6 2.6 −73.0	1256.2 2.6 −73.0	1258.8 2.7 −72.9	1261.5 2.6 −72.9	1264.1 2.7 −72.9
23----	1266.8 2.6 −72.9	1269.4 2.6 −72.9	1272.0 2.7 −72.9	1274.7 2.6 −72.9	1277.3 2.7 −72.8	1280.0 2.7 −72.8	1282.7 2.7 −72.8	1285.4 2.7 −72.8	1288.1 2.7 −72.8	1290.8 2.8 −72.8
24----	1293.6 2.7 −72.8	1296.3 2.7 −72.8	1299.0 2.8 −72.8	1301.8 2.7 −72.8	1304.5 2.8 −72.8	1307.3 2.8 −72.8	1310.1 2.7 −72.8	1312.8 2.8 −72.8	1315.6 2.8 −72.8	1318.4 2.8 −72.8
25----	1321.2 2.8 −72.7	1324.0 2.9 −72.7	1326.9 2.8 −72.7	1329.7 2.8 −72.7	1332.5 2.8 −72.7	1335.3 2.9 −72.7	1338.2 2.9 −72.7	1341.1 2.9 −72.7	1344.0 2.9 −72.7	1346.9 2.8 −72.7
26----	1349.7 2.9 −72.6	1352.6 2.9 −72.6	1355.5 3.0 −72.6	1358.5 2.9 −72.6	1361.4 2.9 −72.6	1364.3 3.0 −72.6	1367.3 2.9 −72.6	1370.2 2.9 −72.6	1373.1 3.0 −72.6	1376.1 3.0 −72.6
27----	1379.1 3.0 −72.6	1382.1 3.0 −72.6	1385.1 3.0 −72.6	1388.1 3.0 −72.6	1391.1 3.0 −72.6	1394.1 3.0 −72.6	1397.1 3.0 −72.6	1400.1 3.1 −72.6	1403.2 3.1 −72.6	1406.3 3.0 −72.6
28----	1409.3 3.1 −72.5	1412.4 3.1 −72.5	1415.5 3.0 −72.5	1418.5 3.1 −72.5	1421.6 3.1 −72.5	1424.7 3.1 −72.5	1427.8 3.1 −72.5	1430.9 3.2 −72.5	1434.1 3.2 −72.5	1437.3 3.1 −72.5
29----	1440.4 3.1 −72.5	1443.5 3.2 −72.5	1446.7 3.2 −72.5	1449.9 3.2 −72.5	1453.1 3.1 −72.5	1456.2 3.2 −72.5	1459.4 3.1 −72.5	1462.5 3.2 −72.4	1465.7 3.3 −72.4	1469.0 3.2 −72.4

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 24.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	843.2 0.0 −77.6	843.2 0.0 −77.6	843.2 0.0 −77.7	843.2 0.0 −77.7	843.2 0.0 −77.7	843.2 0.1 −77.7	843.3 0.1 −77.8	843.4 0.1 −77.9	843.5 0.1 −77.9	843.6 0.1 −77.9
−0	844.2 −0.1 −77.2	844.1 −0.2 −77.3	843.9 −0.1 −77.3	843.8 −0.2 −77.4	843.6 −0.1 −77.4	843.5 −0.1 −77.4	843.4 −0.1 −77.4	843.3 0.0 −77.5	843.3 −0.1 −77.5	843.2 0.0 −77.5
+0	844.2 0.2 −77.2	844.4 0.2 −77.2	844.6 0.2 −77.2	844.8 0.2 −77.2	845.0 0.3 −77.2	845.3 0.2 −77.2	845.5 0.3 −77.1	845.8 0.3 −77.1	846.1 0.3 −77.1	846.4 0.3 −77.0
1	846.7 0.3 −77.0	847.0 0.3 −77.0	847.3 0.4 −76.9	847.7 0.4 −76.9	848.1 0.3 −76.9	848.4 0.4 −76.8	848.8 0.5 −76.8	849.3 0.4 −76.8	849.7 0.4 −76.8	850.1 0.4 −76.7
2	850.6 0.5 −76.7	851.1 0.4 −76.7	851.5 0.5 −76.6	852.0 0.5 −76.6	852.5 0.5 −76.5	853.0 0.5 −76.5	853.5 0.6 −76.5	854.1 0.5 −76.5	854.6 0.6 −76.4	855.2 0.6 −76.4
3	855.8 0.6 −76.4	856.4 0.6 −76.4	857.0 0.6 −76.4	857.6 0.6 −76.3	858.2 0.7 −76.3	858.9 0.6 −76.3	859.5 0.7 −76.2	860.2 0.7 −76.2	860.9 0.7 −76.2	861.6 0.7 −76.2
4	862.3 0.7 −76.1	863.0 0.8 −76.1	863.8 0.7 −76.1	864.5 0.8 −76.0	865.3 0.7 −76.0	866.0 0.8 −75.9	866.8 0.8 −75.9	867.6 0.8 −75.9	868.4 0.8 −75.9	869.2 0.8 −75.8
5	870.0 0.9 −75.8	870.9 0.9 −75.8	871.8 0.9 −75.8	872.7 0.9 −75.8	873.6 0.9 −75.8	874.5 0.9 −75.8	875.4 0.9 −75.8	876.3 0.9 −75.7	877.2 1.0 −75.7	878.2 0.9 −75.7
6	879.1 1.0 −75.6	880.1 0.9 −75.6	881.0 1.0 −75.6	882.0 1.1 −75.6	883.1 1.0 −75.6	884.1 1.0 −75.5	885.1 1.0 −75.5	886.1 1.1 −75.4	887.2 1.1 −75.4	888.3 1.0 −75.4
7	889.3 1.1 −75.3	890.4 1.1 −75.3	891.5 1.1 −75.3	892.6 1.1 −75.3	893.7 1.2 −75.3	894.9 1.1 −75.3	896.0 1.2 −75.3	897.2 1.1 −75.3	898.3 1.2 −75.2	899.5 1.2 −75.2
8	900.7 1.2 −75.1	901.9 1.2 −75.1	903.1 1.3 −75.1	904.4 1.2 −75.1	905.6 1.2 −75.1	906.8 1.3 −75.0	908.1 1.2 −75.0	909.3 1.3 −75.0	910.6 1.3 −75.0	911.9 1.3 −74.9
9	913.2 1.3 −74.9	914.5 1.3 −74.9	915.8 1.4 −74.9	917.2 1.3 −74.9	918.5 1.4 −74.8	919.9 1.3 −74.8	921.2 1.4 −74.8	922.6 1.4 −74.8	924.0 1.4 −74.7	925.4 1.4 −74.7
10	926.8 1.4 −74.7	928.2 1.5 −74.7	929.7 1.4 −74.7	931.1 1.4 −74.7	932.5 1.5 −74.6	934.0 1.5 −74.6	935.5 1.5 −74.6	937.0 1.5 −74.6	938.5 1.5 −74.6	940.0 1.5 −74.6
11	941.5 1.5 −74.5	943.0 1.5 −74.5	944.5 1.6 −74.5	946.1 1.6 −74.5	947.7 1.5 −74.5	949.2 1.6 −74.4	950.8 1.6 −74.4	952.4 1.6 −74.4	954.0 1.6 −74.4	955.6 1.6 −74.3
12	957.2 1.6 −74.3	958.8 1.7 −74.3	960.5 1.6 −74.3	962.1 1.7 −74.3	963.8 1.7 −74.3	965.5 1.6 −74.3	967.1 1.7 −74.2	968.8 1.7 −73.2	970.5 1.7 −74.2	972.2 1.8 −74.2
13	974.0 1.7 −74.2	975.7 1.7 −74.2	977.4 1.8 −74.1	979.2 1.7 −74.1	980.9 1.8 −74.1	982.7 1.8 −74.1	984.5 1.8 −74.1	986.3 1.8 −74.1	988.1 1.8 −74.1	989.9 1.8 −74.0

Table V A.—$10^5\Delta_{s,t}$ FOR SALINITY 24.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	991.7 1.9 −74.0	993.6 1.8 −74.0	995.4 1.9 −74.0	997.3 1.8 −74.0	999.1 1.9 −74.0	1001.0 1.8 −74.0	1002.8 1.9 −73.9	1004.7 1.9 −73.9	1006.6 1.9 −73.8	1008.5 1.9 −73.8
15	1010.4 2.0 −74.8	1012.4 1.9 −74.8	1014.3 1.9 −74.8	1016.2 2.0 −74.8	1018.2 2.0 −74.8	1020.2 2.0 −74.8	1022.2 2.0 −74.8	1024.2 1.9 −74.8	1026.1 2.0 −74.7	1028.1 2.0 −74.7
16	1030.1 2.1 −73.7	1032.2 2.0 −73.7	1034.2 2.1 −73.6	1036.3 2.0 −73.6	1038.3 2.0 −73.6	1040.3 2.1 −73.6	1042.4 2.1 −73.6	1044.5 2.1 −73.6	1046.6 2.1 −73.6	1048.7 2.1 −73.6
17	1050.8 2.1 −73.5	1052.9 2.1 −73.5	1055.0 2.2 −73.5	1057.2 2.1 −73.5	1059.3 2.2 −73.5	1061.5 2.2 −73.5	1063.7 2.1 −73.5	1065.8 2.2 −73.4	1068.0 2.2 −73.4	1070.2 2.2 −73.4
18	1072.4 2.2 −73.4	1074.6 2.2 −73.4	1076.8 2.2 −73.4	1079.0 2.3 −73.3	1081.3 2.2 −73.3	1083.5 2.3 −73.3	1085.8 2.2 −73.3	1088.0 2.3 −73.3	1090.3 2.3 −73.3	1092.6 2.3 −73.3
19	1094.9 2.3 −73.3	1097.2 2.3 −73.3	1099.5 2.3 −73.3	1101.8 2.3 −73.3	1104.1 2.3 −73.2	1106.4 2.4 −73.2	1108.8 2.4 −73.2	1111.2 2.3 −73.2	1113.5 2.4 −73.2	1115.9 2.4 −73.2
20	1118.3 2.4 −73.2	1120.7 2.4 −73.2	1123.1 2.4 −73.2	1125.5 2.4 −73.2	1127.9 2.4 −73.2	1130.3 2.4 −73.1	1132.7 2.5 −73.1	1135.2 2.4 −73.1	1137.6 2.5 −73.1	1140.1 2.5 −73.1
21	1142.6 2.5 −73.1	1145.1 2.5 −73.1	1147.6 2.4 −73.1	1150.0 2.5 −73.0	1152.5 2.6 −73.0	1155.1 2.5 −73.0	1157.6 2.6 −73.0	1160.2 2.5 −73.0	1162.7 2.5 −73.0	1165.2 2.5 −73.0
22	1167.7 2.6 −72.9	1170.3 2.6 −72.9	1172.9 2.5 −72.9	1175.4 2.6 −72.9	1178.0 2.6 −72.9	1180.6 2.6 −72.9	1183.2 2.7 −72.9	1185.9 2.7 −72.9	1188.6 2.6 −72.9	1191.2 2.7 −72.9
23	1193.9 2.6 −72.9	1196.5 2.6 −72.8	1199.1 2.7 −72.8	1201.8 2.7 −72.8	1204.5 2.7 −72.8	1207.2 2.7 −72.8	1209.9 2.7 −72.8	1212.6 2.7 −72.8	1215.3 2.7 −72.8	1218.0 2.8 −72.8
24	1220.8 2.7 −72.8	1223.5 2.7 −72.8	1226.2 2.8 −72.7	1229.0 2.7 −72.7	1231.7 2.8 −72.7	1234.5 2.8 −72.7	1237.3 2.7 −72.7	1240.0 2.8 −72.7	1242.8 2.8 −72.7	1245.6 2.9 −72.7
25	1248.5 2.8 −72.7	1251.3 2.9 −72.7	1254.2 2.8 −72.7	1257.0 2.8 −72.7	1259.8 2.8 −72.6	1262.6 2.9 −72.6	1265.5 2.9 −72.6	1268.4 2.9 −72.6	1271.3 2.9 −72.6	1274.2 2.9 −72.6
26	1277.1 2.9 −72.6	1280.0 2.9 −72.6	1282.9 3.0 −72.6	1285.9 2.9 −72.6	1288.8 2.9 −72.6	1291.7 3.0 −72.6	1294.7 2.9 −72.6	1297.6 2.9 −72.5	1300.5 3.0 −72.5	1303.5 3.0 −72.5
27	1306.5 3.0 −72.5	1309.5 3.0 −72.5	1312.5 3.0 −72.5	1315.5 3.0 −72.5	1318.5 3.0 −72.5	1321.5 3.0 −72.5	1324.5 3.0 −72.4	1327.5 3.1 −72.4	1330.6 3.1 −72.4	1333.7 3.1 −72.4
28	1336.8 3.1 −72.4	1339.9 3.1 −72.4	1343.0 3.0 −72.4	1346.0 3.1 −72.4	1349.1 3.1 −72.4	1352.2 3.1 −72.4	1355.3 3.1 −72.4	1358.4 3.2 −72.4	1361.6 3.2 −72.4	1364.8 3.1 −72.4
29	1367.9 3.1 −72.4	1371.0 3.2 −72.4	1374.2 3.2 −72.4	1377.4 3.2 −72.4	1380.6 3.1 −72.4	1383.7 3.2 −72.4	1386.9 3.2 −72.4	1390.1 3.2 −72.4	1393.3 3.3 −72.4	1396.6 3.2 −72.4

TABLE V A.—$10^5\Delta_{s,\,t}$ FOR SALINITY 25.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	765.6 0.0 −77.5	765.6 −0.1 −77.5	765.5 0.0 −77.5	765.5 0.0 −77.6	765.5 0.0 −77.6	765.5 0.0 −77.6	765.5 0.0 −77.6	765.5 0.1 −77.6	765.6 0.1 −77.7	765.7 0.1 −77.8
−0	767.0 −0.2 −77.2	766.8 −0.2 −77.2	766.6 −0.2 −77.3	766.4 −0.2 −77.3	766.2 −0.2 −77.3	766.1 −0.1 −77.3	766.0 −0.1 −77.4	765.9 −0.1 −77.4	765.9 −0.1 −77.4	765.7 −0.1 −77.5
+0	767.0 0.2 −77.2	767.2 0.2 −77.2	767.4 0.2 −77.1	767.6 0.2 −77.0	767.8 0.3 −77.0	768.1 0.3 −77.0	768.4 0.3 −76.9	768.7 0.3 −76.9	769.0 0.4 −76.9	769.4 0.3 −76.9
1	769.7 0.3 −76.8	770.0 0.4 −76.8	770.4 0.4 −76.8	770.8 0.4 −76.7	771.2 0.4 −76.7	771.6 0.4 −76.7	772.0 0.5 −76.7	772.5 0.4 −76.7	772.9 0.5 −76.6	773.4 0.5 −76.6
2	773.9 0.5 −76.6	774.4 0.5 −76.6	774.9 0.5 −76.5	775.4 0.6 −76.5	776.0 0.5 −76.5	776.5 0.5 −76.5	777.0 0.6 −76.4	777.6 0.6 −76.4	778.2 0.6 −76.4	778.8 0.6 −76.4
3	779.4 0.6 −76.3	780.0 0.6 −76.3	780.6 0.7 −76.2	781.3 0.6 −76.2	781.9 0.7 −76.1	782.6 0.7 −76.1	783.3 0.7 −76.1	784.0 0.7 −76.1	784.7 0.7 −76.1	785.4 0.8 −76.0
4	786.2 0.7 −76.0	786.9 0.8 −76.0	787.7 0.8 −76.0	788.5 0.8 −76.0	789.3 0.8 −76.0	790.1 0.8 −75.9	790.9 0.8 −75.9	791.7 0.8 −75.9	792.5 0.9 −75.8	793.4 0.8 −75.8
5	794.2 0.9 −75.7	795.1 0.9 −75.7	796.0 0.9 −75.7	796.9 0.9 −75.7	797.8 0.9 −75.7	798.7 0.9 −75.6	799.6 1.0 −75.6	800.6 0.9 −75.6	801.5 1.0 −75.5	802.5 1.0 −75.5
6	803.5 1.0 −75.5	804.5 0.9 −75.5	805.4 1.0 −75.4	806.4 1.1 −75.4	807.5 1.1 −75.4	808.6 1.0 −75.4	809.6 1.1 −75.3	810.7 1.1 −75.3	811.8 1.1 −75.3	812.9 1.1 −75.3
7	814.0 1.1 −75.3	815.1 1.1 −75.2	816.2 1.1 −75.2	817.3 1.1 −75.2	818.4 1.2 −75.2	819.6 1.1 −75.2	820.7 1.2 −75.1	821.9 1.2 −75.1	823.1 1.2 −75.1	824.3 1.3 −75.1
8	825.6 1.2 −75.1	826.8 1.2 −75.1	828.0 1.3 −75.0	829.3 1.2 −75.0	830.5 1.3 −75.0	831.8 1.3 −75.0	833.1 1.2 −75.0	834.3 1.3 −74.9	835.6 1.4 −74.9	837.0 1.3 −74.9
9	838.3 1.3 −74.9	839.6 1.3 −74.8	840.9 1.4 −74.8	842.3 1.4 −74.8	843.7 1.4 −74.8	845.1 1.3 −74.8	846.4 1.4 −74.7	847.8 1.5 −74.7	849.3 1.4 −74.7	850.7 1.4 −74.7
10	852.1 1.4 −74.7	853.5 1.5 −74.6	855.0 1.4 −74.6	856.4 1.5 −74.6	857.9 1.5 −74.6	859.4 1.5 −74.6	860.9 1.5 −74.5	862.4 1.5 −74.5	863.9 1.5 −74.5	865.4 1.6 −74.5
11	867.0 1.5 −74.5	868.5 1.5 −74.5	870.0 1.6 −74.4	871.6 1.6 −74.4	873.2 1.6 −74.4	874.8 1.6 −74.4	876.4 1.6 −74.3	878.0 1.6 −74.3	879.6 1.7 −74.3	881.3 1.6 −74.3
12	882.9 1.6 −74.3	884.5 1.7 −74.2	886.2 1.6 −74.2	887.8 1.7 −74.2	889.5 1.7 −74.2	891.2 1.7 −74.1	892.9 1.7 −74.1	894.6 1.7 −74.1	896.3 1.7 −74.1	898.0 1.8 −74.1
13	899.8 1.7 −74.1	901.5 1.8 −74.0	903.3 1.8 −74.0	905.1 1.7 −74.0	906.8 1.8 −74.0	908.6 1.8 −74.0	910.4 1.8 −73.9	912.2 1.8 −73.9	914.0 1.9 −73.9	915.9 1.8 −73.9

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 25.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	917.7 1.9 −73.9	919.6 1.8 −73.9	921.4 1.9 −73.9	923.3 1.8 −73.9	925.1 1.9 −73.8	927.0 1.9 −73.8	928.9 1.9 −73.8	930.8 2.0 −73.8	932.8 1.9 −73.8	934.7 1.9 −73.8
15	936.6 2.0 −73.8	938.6 1.9 −73.8	940.5 1.9 −73.7	942.4 2.0 −73.7	944.4 2.0 −73.7	946.4 2.0 −73.6	948.4 2.0 −73.6	950.4 2.0 −73.6	952.4 2.0 −73.6	954.4 2.0 −73.6
16	956.4 2.1 −73.6	958.5 2.1 −73.6	960.6 2.1 −73.6	962.7 2.0 −73.6	964.7 2.0 −73.6	966.7 2.1 −73.5	968.8 2.1 −73.5	970.9 2.1 −73.5	973.0 2.1 −73.5	975.1 2.2 −73.5
17	977.3 2.1 −73.5	979.4 2.1 −73.4	981.5 2.2 −73.4	983.7 2.1 −73.4	985.8 2.2 −73.4	988.0 2.2 −73.4	990.2 2.2 −73.4	992.4 2.2 −73.4	994.6 2.2 −73.4	996.8 2.2 −73.4
18	999.0 2.2 −73.3	1001.2 2.2 −73.3	1003.4 2.3 −73.3	1005.7 2.3 −73.3	1008.0 2.2 −73.3	1010.2 2.3 −73.3	1012.5 2.2 −73.3	1014.7 2.3 −73.2	1017.0 2.3 −73.2	1019.3 2.3 −73.2
19	1021.6 2.3 −73.2	1023.9 2.3 −73.2	1026.2 2.3 −73.1	1028.5 2.4 −73.1	1030.9 2.3 −73.1	1033.2 2.4 −73.1	1035.6 2.4 −73.1	1038.0 2.3 −73.1	1040.3 2.4 −73.1	1042.7 2.4 −73.1
20	1045.1 2.4 −73.1	1047.5 2.4 −73.0	1049.9 2.4 −73.0	1052.3 2.4 −73.0	1054.7 2.5 −73.0	1057.2 2.4 −73.0	1059.6 2.5 −73.0	1062.1 2.4 −73.0	1064.5 2.5 −72.9	1067.0 2.5 −72.9
21	1069.5 2.5 −72.9	1072.0 2.5 −72.9	1074.5 2.5 −72.9	1077.0 2.5 −72.9	1079.5 2.6 −72.9	1082.1 2.5 −72.9	1084.6 2.6 −72.9	1087.2 2.5 −72.9	1089.7 2.5 −72.9	1092.2 2.6 −72.8
22	1094.8 2.6 −72.8	1097.4 2.6 −72.8	1100.0 2.5 −72.8	1102.5 2.6 −72.8	1105.1 2.6 −72.8	1107.7 2.6 −72.8	1110.3 2.7 −72.8	1113.0 2.7 −72.8	1115.7 2.6 −72.8	1118.3 2.7 −72.8
23	1121.0 2.7 −72.8	1123.7 2.6 −72.8	1126.3 2.7 −72.8	1129.0 2.7 −72.8	1131.7 2.7 −72.8	1134.4 2.7 −72.8	1137.1 2.7 −72.7	1139.8 2.7 −72.7	1142.5 2.7 −72.7	1145.2 2.8 −72.7
24	1148.0 2.7 −72.7	1150.7 2.8 −72.7	1153.5 2.8 −72.7	1156.3 2.7 −72.7	1159.0 2.8 −72.7	1161.8 2.8 −72.7	1164.6 2.7 −72.7	1167.3 2.8 −72.6	1170.1 2.8 −72.6	1172.9 2.9 −72.6
25	1175.8 2.8 −72.6	1178.6 2.9 −72.6	1181.5 2.8 −72.6	1184.3 2.9 −72.6	1187.2 2.8 −72.6	1190.0 2.9 −72.5	1192.9 2.9 −72.5	1195.8 2.9 −72.5	1198.7 2.9 −72.5	1201.6 2.9 −72.5
26	1204.5 2.9 −72.5	1207.4 2.9 −72.5	1210.3 3.0 −72.5	1213.3 2.9 −72.5	1216.2 2.9 −72.5	1219.1 3.0 −72.5	1222.1 3.0 −72.5	1225.1 2.9 −72.5	1228.0 3.0 −72.4	1231.0 3.0 −72.4
27	1234.0 3.0 −72.4	1237.0 3.0 −72.4	1240.0 3.0 −72.4	1243.0 3.0 −72.4	1246.0 3.0 −72.4	1249.0 3.1 −72.4	1252.1 3.0 −72.4	1255.1 3.1 −72.4	1258.2 3.1 −72.4	1261.3 3.1 −72.4
28	1264.4 3.1 −72.4	1267.5 3.1 −72.4	1270.6 3.0 −72.4	1273.6 3.1 −72.4	1276.7 3.1 −72.4	1279.8 3.1 −72.3	1282.9 3.1 −72.3	1286.0 3.2 −72.3	1289.2 3.2 −72.3	1292.4 3.1 −72.3
29	1295.5 3.1 −72.3	1298.6 3.2 −72.3	1301.8 3.2 −72.3	1305.0 3.2 −72.3	1308.2 3.1 −72.3	1311.3 3.2 −72.3	1314.5 3.2 −72.3	1317.7 3.2 −72.3	1320.9 3.3 −72.3	1324.2 3.3 −72.3

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 26.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	688.1 0.0 −77.3	688.1 −0.1 −77.4	688.0 −0.1 −77.4	687.9 0.0 −77.4	687.9 0.0 −77.5	687.9 0.0 −77.5	687.9 0.0 −77.6	687.9 0.0 −77.6	687.9 0.0 −77.6	687.9 0.0 −77.6
−0	689.8 −0.2 −77.1	689.6 −0.3 −77.1	689.3 −0.2 −77.1	689.1 −0.2 −77.1	688.9 −0.1 −77.1	688.8 −0.2 −77.2	688.6 −0.1 −77.2	688.5 −0.1 −77.3	688.4 −0.2 −77.3	688.2 −0.1 −77.3
+0	689.8 0.2 −77.1	690.0 0.3 −77.0	690.3 0.3 −77.0	690.6 0.2 −77.0	690.8 0.3 −76.9	691.1 0.4 −76.9	691.5 0.3 −76.9	691.8 0.3 −76.8	692.1 0.4 −76.8	692.5 0.4 −76.8
1	692.9 0.3 −76.8	693.2 0.4 −76.7	693.6 0.5 −76.7	694.1 0.4 −76.7	694.5 0.4 −76.7	694.9 0.4 −76.6	695.3 0.5 −76.5	695.8 0.5 −76.5	696.3 0.5 −76.5	696.8 0.5 −76.5
2	697.3 0.5 −76.5	697.8 0.6 −76.4	698.4 0.5 −76.4	698.9 0.6 −76.4	699.5 0.5 −76.4	700.0 0.6 −76.3	700.6 0.6 −76.3	701.2 0.6 −76.3	701.8 0.6 −76.2	702.4 0.7 −76.2
3	703.1 0.6 −76.2	703.7 0.7 −76.1	704.4 0.7 −76.1	705.1 0.7 −76.1	705.8 0.7 −76.1	706.5 0.7 −76.1	707.2 0.7 −76.0	707.9 0.7 −76.0	708.6 0.8 −75.9	709.4 0.8 −75.9
4	710.2 0.7 −75.9	710.9 0.8 −75.8	711.7 0.8 −75.8	712.5 0.8 −75.8	713.3 0.9 −75.8	714.2 0.8 −75.8	715.0 0.8 −75.7	715.8 0.9 −75.7	716.7 0.9 −75.7	717.6 0.9 −75.7
5	718.5 0.9 −75.7	719.4 0.9 −75.7	720.3 0.9 −75 7	721.2 0.9 −75.6	722.1 1.0 −75.6	723.1 0.9 −75.6	724.0 1.0 −75.5	725.0 1.0 −75.5	726.0 1.0 −75.5	727.0 1.0 −75 5
6	728.0 1.0 −75.4	729.0 1.0 −75.4	730.0 1.0 −75.4	731.0 1.1 −75.3	732.1 1.1 −75.3	733.2 1.1 −75.3	734.3 1.1 −75.3	735.4 1.1 −75.3	736.5 1.1 −75.3	737.6 1.1 −75.3
7	738.7 1.2 −75.2	739.9 1.1 −75.2	741.0 1.1 −75.1	742.1 1.1 −75.1	743.2 1.2 −75.0	744.4 1.2 −75.0	745.6 1.2 −75.0	746.8 1.2 −75.0	748.0 1.2 −75.0	749.2 1.3 −75.0
8	750.5 1.2 −75.0	751.7 1.3 −74.9	753.0 1.3 −74.9	754.3 1.2 −74.9	755.5 1.3 −74.8	756.8 1.3 −74.8	758.1 1.3 −74.8	759.4 1.3 −74.8	760.7 1.4 −74.8	762.1 1.3 −74.8
9	763.4 1.4 −74.7	764.8 1.3 −74.7	766.1 1.4 −74.7	767.5 1.4 −74.7	768.9 1.4 −74.7	770.3 1.4 −74.6	771.7 1.4 −74.6	773.1 1.5 −74.6	774.6 1.4 −74.6	776.0 1.4 −74.5
10	777.4 1.5 −74.5	778.9 1.5 −74.5	780.4 1.4 −74.5	781.8 1.5 −74 4	783.3 1.5 −74.4	784.8 1.6 74.4	786.4 1.5 −74.4	787.9 1.5 −74.4	789.4 1.5 −74.4	790.9 1.6 −74.3
11	792.5 1.5 −74.3	794.0 1.6 −74.3	795.6 1.6 −74.3	797.2 1.6 −74.3	798.8 1.6 −74.2	800.4 1.7 −74.2	802.1 1.6 −74.2	803.7 1.6 −74.2	805.3 1.7 −74.2	807.0 1.6 −74.2
12	808.6 1.7 −74.2	810.3 1.7 −74.2	812.0 1.6 −74.2	813.6 1.7 −74.1	815.3 1.8 −74.1	817.1 1.7 −74.1	818.8 1.7 −74.1	820.5 1.7 −74.1	822.2 1.7 −74.0	823.9 1.8 −74.0
13	825.7 1.8 −74.0	827.5 1.8 −74.0	829.3 1.8 −74.0	831.1 1.7 −73.9	832.8 1.8 −73.9	834.6 1.9 −73.9	836.5 1.8 −73.9	838.3 1.8 −73.9	840.1 1.9 −73.8	842.0 1.8 −73.8

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 26.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	843.8 1.9 −73.8	845.7 1.8 −73.8	847.5 1.9 −73.8	849.4 1.9 −73.8	851.3 1.9 −73.7	853.2 1.9 −73.7	855.1 1.9 −73.7	857.0 2.0 −73.7	859.0 1.9 −73.7	860.9 1.9 −73.7
15----	862.8 2.0 −73.6	864.8 2.0 −73.6	866.8 1.9 −73.6	868.7 2.0 −73.6	870.7 2.1 −73.6	872.8 2.0 −73.6	874.8 2.0 −73.6	876.8 2.0 −73.6	878.8 2.0 −73.6	880.8 2.0 −73.5
16----	882.8 2.1 −73.5	884.9 2.1 −73.5	887.0 2.1 −73.5	889.1 2.0 −73.5	891.1 2.1 −73.4	893.2 2.1 −73.4	895.3 2.1 −73.4	897.4 2.1 −73.4	899.5 2.1 −73.4	901.6 2.2 −73.4
17----	903.8 2.2 −73.4	906.0 2.1 −73.4	908.1 2.2 −73.4	910.3 2.1 −73.4	912.4 2.2 −73.3	914.6 2.2 −73.3	916.8 2.2 −73.3	919.0 2.2 −73.3	921.2 2.2 −73.3	923.4 2.3 −73.3
18----	925.7 2.2 −73.3	927.9 2.2 −73.2	930.1 2.3 −73.2	932.4 2.3 −73.2	934.7 2.2 −73.2	936.9 2.3 −73.2	939.2 2.3 −73.2	941.5 2.3 −73.1	943.8 2.3 −73.1	946.1 2.3 −73.1
19----	948.4 2.3 −73.1	950.7 2.4 −73.1	953.1 2.3 −73.1	955.4 2.4 −73.1	957.8 2.3 −73.1	960.1 2.4 −73.1	962.5 2.4 −73.1	964.9 2.3 −73.1	967.2 2.4 −73.0	969.6 2.4 −73.0
20----	972.0 2.5 −73.0	974.5 2.4 −73.0	976.9 2.4 −73.0	979.3 2.4 −73.0	981.7 2.5 −72.9	984.2 2.4 −72.9	986.6 2.5 −72.9	989.1 2.5 −73.9	991.6 2.5 −72.9	994.1 2.5 −72.9
21----	996.6 2.5 −72.9	999.1 2.5 −72.9	1001.6 2.5 −72.9	1004.1 2.5 −72.9	1006.6 2.6 −72.9	1009.2 2.5 −72.9	1011.7 2.6 −72.8	1014.3 2.5 −72.8	1016.8 2.6 −72.8	1019.4 2.6 −72.8
22----	1022.0 2.6 −72.8	1024.6 2.6 −72.8	1027.2 2.5 −72.8	1029.7 2.6 −72.7	1032.3 2.6 −72.7	1034.9 2.6 −72.7	1037.5 2.7 −72.7	1040.2 2.7 −72.7	1042.9 2.6 −72.7	1045.5 2.7 −72.7
23----	1048.2 2.7 −72.7	1050.9 2.6 −72.7	1053.5 2.7 −72.6	1056.2 2.7 −72.6	1058.9 2.7 −72.6	1061.6 2.8 −72.6	1064.4 2.7 −72.6	1067.1 2.7 −72.6	1069.8 2.7 −72.6	1072.5 2.8 −72.6
24----	1075.3 2.7 −72.6	1078.0 2.8 −72.6	1080.8 2.8 −72.6	1083.6 2.7 −72.6	1086.3 2.8 −72.5	1089.1 2.8 −72.5	1091.9 2.8 −72.5	1094.7 2.8 −72.5	1097.5 2.8 −72.5	1100.3 2.9 −72.5
25----	1103.2 2.8 −72.5	1106.0 2.9 −72.5	1108.9 2.8 −72.5	1111.7 2.9 −72.5	1114.6 2.9 −72.5	1117.5 2.9 −72.5	1120.4 2.9 −72.5	1123.3 2.9 −72.5	1126.2 2.9 −72.5	1129.1 2.9 −72.5
26----	1132.0 2.9 −72.5	1134.9 2.9 −72.4	1137.8 3.0 −72.4	1140.8 2.9 −72.4	1143.7 2.9 −72.4	1146.6 3.0 −72.4	1149.6 3.0 −72.4	1152.6 3.0 −72.4	1155.6 3.0 −72.4	1158.6 3.0 −72.4
27----	1161.6 3.0 −72.4	1164.6 3.0 −72.4	1167.6 3.0 −72.4	1170.6 3.0 −72.4	1173.6 3.0 −72.4	1176.6 3.1 −72.3	1179.7 3.0 −72.3	1182.7 3.1 −72.3	1185.8 3.1 −72.3	1188.9 3.1 −72.3
28----	1192.0 3.1 −72.3	1195.1 3.1 −72.3	1198.2 3.0 −72.3	1201.2 3.1 −72.3	1204.3 3.2 −72.3	1207.5 3.1 −72.3	1210.6 3.1 −72.3	1213.7 3.2 −72.3	1216.9 3.2 −72.3	1221.1 3.1 −72.3
29----	1223.2 3.1 −72.2	1226.3 3.2 −72.2	1229.5 3.2 −72.2	1232.7 3.2 −72.2	1235.9 3.1 −72.2	1239.0 3.2 −72.2	1242.2 3.2 −72.2	1245.4 3.2 −72.2	1248.6 3.3 −72.2	1251.9 3.3 −72.2

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 27.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	610.8 −0.1 −77.2	610.7 −0.1 −77.3	610.6 −0.1 −77.3	610.5 −0.1 −77.4	610.4 0.0 −77.4	610.4 −0.1 −77.4	610.3 0.0 −77.4	610.3 0.0 −77.5	610.3 0.0 −77.5	610.3 0.0 −77.6
−0	612.7 −0.2 −76.9	612.5 −0.3 −77.0	612.2 −0.2 −77.0	612.0 −0.2 −77.1	611.8 −0.2 −77.1	611.6 −0.2 −77.1	611.4 −0.2 −77.1	611.2 −0.1 −77.1	611.1 −0.2 −77.2	610.9 −0.1 −77.2
+0	612.7 0.3 −76.9	613.0 0.3 −76.9	613.3 0.3 −76.9	613.6 0.3 −76.8	613.9 0.3 −76.8	614.2 0.4 −76.7	614.6 0.4 −76.7	615.0 0.3 −76.7	615.3 0.4 −76.6	615.7 0.4 −76.6
1	616.1 0.4 −76.6	616.5 0.4 −76.6	616.9 0.5 −76.6	617.4 0.4 −76.6	617.8 0.5 −76.5	618.3 0.5 −76.5	618.8 0.5 −76.5	619.3 0.5 −76.4	619.8 0.5 −76.4	620.3 0.5 −76.3
2	620.8 0.6 −76.3	621.4 0.6 −76.3	622.0 0.5 −76.3	622.5 0.6 −76.2	623.1 0.6 −76.2	623.7 0.6 −76.2	624.3 0.6 −76.1	624.9 0.7 −76.1	625.6 0.6 −76.1	626.2 0.7 −76.0
3	626.9 0.7 −76.0	627.6 0.7 −76.0	628.3 0.7 −76.0	629.0 0.7 −76.0	629.7 0.7 −76.0	630.4 0.8 −75.9	631.2 0.7 −75.9	631.9 0.8 −75.9	632.7 0.8 −75.9	633.5 0.8 −75.9
4	634.3 0.8 −75.8	635.1 0.8 −75.8	635.9 0.8 −75.8	636.7 0.8 −75.7	637.5 0.9 −75.7	638.4 0.9 −75.7	639.3 0.8 −75.7	640.1 0.9 −75.6	641.0 0.9 −75.6	641.9 0.9 −75.6
5	642.8 0.9 −75.5	643.7 0.9 −75.5	644.6 1.0 −75.5	645.6 0.9 −75.5	646.5 1.0 −75.4	647.5 1.0 −75.4	648.5 1.0 −75.4	649.5 1.0 −75.4	650.5 1.0 −75.3	651.5 1.1 −75.3
6	652.6 1.0 −75.3	653.6 1.0 −75.3	654.6 1.1 −75.2	655.7 1.1 −75.2	656.8 1.1 −75.2	657.9 1.1 −75.2	659.0 1.1 −75.2	660.1 1.1 −75.1	661.2 1.1 −75.1	662.3 1.2 −75.1
7	663.5 1.2 −75.1	664.7 1.2 −75.0	665.9 1.1 −75.0	667.0 1.2 −75.0	668.2 1.2 −75.0	669.4 1.2 −75.0	670.6 1.2 −74.9	671.8 1.2 −74.9	673.0 1.2 −74.9	674.2 1.3 −74.8
8	675.5 1.3 −74.8	676.8 1.3 −74.8	678.1 1.3 −74.8	679.4 1.3 −74.3	680.7 1.3 −74.8	682.0 1.3 −74.7	683.3 1.3 −74.7	684.6 1.3 −74.7	685.9 1.4 −74.7	687.3 1.4 −74.7
9	688.7 1.4 −74.7	690.1 1.3 −74.7	691.4 1.4 −74.6	692.8 1.4 −74.6	694.2 1.5 −74.6	695.7 1.4 −74.6	697.1 1.4 −74.5	698.5 1.5 −74.5	700.0 1.5 −74.5	701.5 1.4 −74.5
10	702.9 1.5 −74.4	704.4 1.5 −74.4	705.9 1.5 −74.4	707.4 1.5 −74.4	708.9 1.5 −74.4	710.4 1.6 −74.3	712.0 1.5 −74.3	713.5 1.5 −74.3	715.0 1.6 −74.3	716.6 1.6 −74.3
11	718.2 1.5 −74.3	719.7 1.6 −74.2	721.3 1.6 −74.2	722.9 1.7 −74.2	724.6 1.6 −74.2	726.2 1.7 −74.2	727.9 1.6 −74.2	729.5 1.6 −74.2	731.1 1.7 −74.1	732.8 1.6 −74.1
12	734.4 1.7 −74.0	736.1 1.7 −74.0	737.8 1.7 −74.0	739.5 1.7 −74.0	741.2 1.8 −74.0	743.0 1.7 −74.0	744.7 1.7 −74.0	746.4 1.8 −73.9	748.2 1.7 −73.9	749.9 1.8 −73.9
13	751.7 1.8 −73.9	753.5 1.8 −73.9	755.3 1.8 −73.8	757.1 1.8 −73.8	758.9 1.8 −73.8	760.7 1.9 −73.8	762.6 1.8 −73.8	764.4 1.9 −73.8	766.3 1.9 −73.8	768.2 1.8 −73.8

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 27.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	770.0 1.9 −73.7	771.9 1.8 −73.7	773.7 1.9 −73.7	775.6 2.0 −73.7	777.6 1.9 −73.7	779.5 1.9 −73.7	781.4 1.9 −73.6	783.3 2.0 −73.6	785.3 1.9 −73.6	787.2 2.0 −73.6
15	789.2 2.0 −73.6	791.2 2.0 −73.6	793.2 1.9 −73.6	795.1 2.0 −73.5	797.1 2.1 −73.5	799.2 2.0 −73.5	801.2 2.0 −73.5	803.2 2.0 −73.5	805.2 2.1 −73.4	807.3 2.0 −73.4
16	809.3 2.1 −73.4	811.4 2.1 −73.4	813.5 2.1 −73.4	815.6 2.1 −73.4	817.7 2.1 −73.4	819.8 2.1 −73.4	821.9 2.1 −73.3	824.0 2.1 −73.3	826.1 2.1 −73.3	828.2 2.2 −73.3
17	830.4 2.2 −73.3	832.6 2.1 −73.3	834.7 2.2 −73.2	836.9 2.2 −73.2	839.1 2.2 −73.2	841.3 2.2 −73.2	843.5 2.2 −73.2	845.7 2.2 −73.2	847.9 2.2 −73.2	850.1 2.3 −73.1
18	852.4 2.3 −73.1	854.7 2.2 −73.1	856.9 2.3 −73.1	859.2 2.3 −73.1	861.5 2.2 −73.1	863.7 2.3 −73.1	866.0 2.4 −73.1	868.4 2.3 −73.1	870.7 2.3 −73.1	873.0 2.3 −73.1
19	875.3 2.3 −73.0	877.6 2.4 −73.0	880.0 2.3 −73.0	882.3 2.4 −73.0	884.7 2.3 −73.0	887.0 2.4 −72.9	889.4 2.4 −72.9	891.8 2.4 −72.9	894.2 2.4 −72.9	896.6 2.4 −72.9
20	899.0 2.5 −72.9	901.5 2.4 −72.9	903.9 2.4 −72.9	906.3 2.5 −72.9	908.8 2.5 −72.9	911.3 2.4 −72.9	913.7 2.5 −72.8	916.2 2.5 −72.8	918.7 2.5 −72.8	921.2 2.5 −72.8
21	923.7 2.5 −72.8	926.2 2.5 −72.8	928.7 2.5 −72.8	931.2 2.5 −72.8	933.7 2.6 −72.7	936.3 2.6 −72.7	938.9 2.6 −72.7	941.5 2.5 −72.7	944.0 2.6 −72.7	946.6 2.6 −72.7
22	949.2 2.6 −72.7	951.8 2.6 −72.7	954.4 2.6 −72.7	957.0 2.6 −72.7	959.6 2.6 −72.7	962.2 2.6 −72.6	964.8 2.7 −72.6	967.5 2.7 −72.6	970.2 2.6 −72.6	972.8 2.7 −72.6
23	975.5 2.7 −72.6	978.2 2.7 −72.6	980.9 2.7 −72.6	983.6 2.7 −72.6	986.3 2.7 −72.6	989.0 2.8 −72.6	991.8 2.7 −72.6	994.5 2.7 −72.6	997.2 2.7 −72.5	999.9 2.8 −72.5
24	1002.7 2.7 −72.5	1005.4 2.8 −72.5	1008.2 2.8 −72.5	1011.0 2.8 −72.5	1013.8 2.8 −72.5	1016.6 2.8 −72.5	1019.4 2.8 −72.5	1022.2 2.8 −72.5	1025.0 2.8 −72.4	1027.8 2.9 −72.4
25	1030.7 2.8 −72.4	1033.5 2.9 −72.4	1036.4 2.8 −72.4	1039.2 2.9 −72.4	1042.1 2.9 −72.4	1045.0 2.9 −72.4	1047.9 2.9 −72.4	1050.8 2.9 −72.4	1053.7 2.9 −72.4	1056.6 2.9 −72.4
26	1059.5 3.0 −72.4	1062.5 2.9 −72.4	1065.4 3.0 −72.4	1068.4 2.9 −72.4	1071.3 2.9 −72.3	1074.2 3.0 −72.3	1077.2 3.0 −72.3	1080.2 3.0 −72.3	1083.2 3.0 −72.3	1086.2 3.0 −72.3
27	1089.2 3.0 −72.3	1092.2 3.0 −72.3	1095.2 3.0 −72.3	1098.2 3.0 −72.3	1101.2 3.1 −72.3	1104.3 3.1 −72.3	1107.4 3.0 −72.3	1110.4 3.1 −72.3	1113.5 3.1 −72.3	1116.6 3.1 −72.3
28	1119.7 3.1 −72.2	1122.8 3.1 −72.2	1125.9 3.0 −72.2	1128.9 3.1 −72.2	1132.0 3.2 −72.2	1135.2 3.1 −72.2	1138.3 3.1 −72.2	1141.4 3.2 −72.2	1144.6 3.2 −72.2	1147.8 3.2 −72.2
29	1151.0 3.1 −72.2	1154.1 3.2 −72.2	1157.3 3.2 −72.2	1160.5 3.2 −72.2	1163.7 3.1 −72.2	1166.8 3.2 −72.1	1170.0 3.2 −72.1	1173.2 3.2 −72.1	1176.4 3.3 −72.1	1179.7 3.3 −72.1

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 28.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	533.6 −0.2 −77.2	533.4 −0.1 −77.2	533.3 −0.2 −77.3	533.1 −0.1 −77.3	533.0 0.0 −77.3	533.0 −0.1 −77.4	532.9 −0.1 −77.5	532.8 0.0 −77.5	532.8 −0.1 −77.5	532.7 −0.1 −77.5
−0	535.8 −0.3 −76.8	535.5 −0.3 −76.9	535.2 −0.3 −76.9	534.9 −0.2 −76.9	534.7 −0.2 −76.9	534.5 −0.2 −77.0	534.3 −0.2 −77.1	534.1 −0.2 −77.1	533.9 −0.2 −77.1	533.7 −0.1 −77.1
+0	535.8 0.3 −76.8	536.1 0.3 −76.8	536.4 0.4 −76.8	536.8 0.3 −76.8	537.1 0.4 −76.7	537.5 0.4 −76.7	537.9 0.4 −76.7	538.3 0.4 −76.7	538.7 0.4 −76.7	539.1 0.4 −76.6
1	539.5 0.4 −76.5	539.9 0.4 −76.5	540.3 0.5 −76.4	540.8 0.5 −76.4	541.3 0.5 −76.4	541.8 0.5 −76.4	542.3 0.6 −76.4	542.9 0.5 −76.4	543.4 0.6 −76.3	544.0 0.5 −76.3
2	544.5 0.6 −76.2	545.1 0.6 −76.2	545.7 0.6 −76.2	546.3 0.6 −76.2	546.9 0.6 −76.2	547.5 0.7 −76.1	548.2 0.6 −76.1	548.8 0.7 −76.0	549.5 0.7 −76.0	550.2 0.7 −76.0
3	550.9 0.7 −76.0	551.6 0.7 −76.0	552.3 0.7 −76.0	553.0 0.8 −75.9	553.8 0.7 −75.9	554.5 0.8 −75.9	555.3 0.7 −75.9	556.0 0.8 −75.8	556.8 0.8 −75.7	557.6 0.9 −75.7
4	558.5 0.8 −75.7	559.3 0.8 −75.7	560.1 0.9 −75.7	561.0 0.8 −75.7	561.8 0.9 −75.6	562.7 0.9 −75.6	563.6 0.9 −75.6	564.5 0.9 −75.6	565.4 0.9 −75.5	566.3 1.0 −75.5
5	567.3 0.9 −75.5	568.2 0.9 −75.4	569.1 1.0 −75.4	570.1 1.0 −75.4	571.1 1.0 −75.3	572.1 1.0 −75.3	573.1 1.0 −75.3	574.1 1.1 −75.3	575.2 1.0 −75.3	576.2 1.1 −75.3
6	577.3 1.0 −75.3	578.3 1.1 −75.2	579.4 1.1 −75.2	580.5 1.1 −75.2	581.6 1.1 −75.2	582.7 1.1 −75.1	583.8 1.2 −75.1	585.0 1.1 −75.1	586.1 1.1 −75.1	587.2 1.2 −75.0
7	588.4 1.2 −75.0	589.6 1.2 −75.0	590.8 1.2 −75.0	592.0 1.2 −75.0	593.2 1.2 −75.0	594.4 1.3 −74.9	595.7 1.2 −74.9	596.9 1.2 −74.9	598.1 1.3 −74.8	599.4 1.3 −74.8
8	600.7 1.3 −74.8	602.0 1.3 −74.8	603.3 1.3 −74.8	604.6 1.3 −74.8	605.9 1.4 −74.7	607.3 1.3 −74.7	608.6 1.3 −74.7	609.9 1.3 −74.6	611.2 1.4 −74.5	612.6 1.4 −74.5
9	614.0 1.4 −74.5	615.4 1.4 −74.5	616.8 1.4 −74.5	618.2 1.4 −74.5	619.6 1.5 −74.4	621.1 1.5 −74.4	622.6 1.4 −74.4	624.0 1.5 −74.4	625.5 1.5 −74.4	627.0 1.5 −74.4
10	628.5 1.5 −74.4	630.0 1.5 −74.4	631.5 1.5 −74.3	633.0 1.5 −74.3	634.5 1.6 −74.3	636.1 1.6 −74.3	637.7 1.5 −74.3	639.2 1.5 −74.3	640.7 1.6 −74.2	642.3 1.6 −74.2
11	643.9 1.6 −74.2	645.5 1.6 −74.2	647.1 1.6 −74.1	648.7 1.7 −74.1	650.4 1.6 −74.1	652.0 1.7 −74.1	653.7 1.6 −74.1	655.3 1.7 −74.0	657.0 1.7 −74.0	658.7 1.7 −74.0
12	660.4 1.7 −74.0	662.1 1.7 −74.0	663.8 1.7 −73.9	665.5 1.7 −73.9	667.2 1.8 −73.9	669.0 1.7 −73.9	670.7 1.8 −73.9	672.5 1.8 −73.9	674.3 1.7 −73.9	676.0 1.8 −73.8
13	677.8 1.8 −73.8	679.6 1.8 −73.8	681.4 1.9 −73.8	683.3 1.8 −73.8	685.1 1.8 −73.8	686.9 1.9 −73.8	688.8 1.8 −73.8	690.6 1.9 −73.7	692.5 1.9 −73.7	694.4 1.9 −73.7

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 28.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	696.3 1.9 −73.7	698.2 1.8 −73.7	700.0 1.9 −73.6	701.9 2.0 −73.6	703.9 1.9 −73.6	705.8 2.0 −73.6	707.8 1.9 −73.6	709.7 2.0 −73.6	711.7 1.9 −73.6	713.6 2.0 −73.5
15	715.6 2.0 −73.5	717.6 2.0 −73.5	719.6 2.0 −73.5	721.6 2.0 −73.4	723.6 2.1 −73.4	725.7 2.0 −73.4	727.7 2.0 −73.4	729.7 2.1 −73.4	731.8 2.1 −73.4	733.9 2.0 −73.4
16	735.9 2.1 −73.3	738.0 2.1 −73.3	740.1 2.1 −73.3	742.2 2.1 −73.3	744.3 2.1 −73.3	746.4 2.2 −73.3	748.6 2.1 −73.3	750.7 2.1 −73.3	752.8 2.1 −73.2	755.9 2.2 −73.2
17	757.1 2.2 −73.2	759.3 2.2 −73.2	761.5 2.2 −73.2	763.7 2.2 −73.2	765.9 2.2 −73.2	768.1 2.2 −73.2	770.3 2.2 −73.2	772.5 2.2 −73.1	774.7 2.3 −73.1	777.0 2.3 −73.1
18	779.3 2.3 −73.1	781.6 2.2 −73.1	783.8 2.3 −73.1	786.1 2.3 −73.1	788.4 2.2 −73.1	790.6 2.3 −73.0	792.9 2.4 −73.0	795.3 2.3 −73.0	797.6 2.3 −73.0	799.9 2.4 −73.0
19	802.3 2.3 −73.0	804.6 2.4 −73.0	807.0 2.3 −73.0	809.3 2.4 −72.9	811.7 2.4 −72.9	814.1 2.4 −72.9	816.5 2.4 −72.9	818.9 2.4 −72.9	821.3 2.4 −72.9	823.7 2.4 −72.8
20	826.1 2.5 −72.8	828.6 2.4 −72.8	831.0 2.4 −72.8	833.4 2.5 −72.8	835.9 2.5 −72.8	838.4 2.5 −72.8	840.9 2.5 −72.8	843.4 2.5 −72.8	845.9 2.5 −72.8	848.4 2.5 −72.8
21	850.9 2.5 −72.8	853.4 2.5 −72.8	855.9 2.5 −72.7	858.4 2.6 −72.7	861.0 2.6 −72.7	863.6 2.6 −72.7	866.2 2.6 −72.7	868.8 2.5 −72.7	871.3 2.6 −72.7	873.9 2.6 −72.7
22	876.5 2.6 −72.7	879.1 2.6 −72.7	881.7 2.6 −72.7	884.3 2.6 −72.6	886.9 2.7 −72.6	889.6 2.6 −72.6	892.2 2.7 −72.6	894.9 2.7 −72.6	897.6 2.6 −72.6	900.2 2.7 −72.5
23	902.9 2.7 −72.5	905.6 2.7 −72.5	908.3 2.7 −72.5	911.0 2.7 −72.5	913.7 2.7 −72.5	916.4 2.8 −72.5	919.2 2.7 −72.5	921.9 2.8 −72.5	924.7 2.7 −72.5	927.4 2.8 −72.5
24	930.2 2.7 −72.5	932.9 2.8 −72.4	935.7 2.8 −72.4	938.5 2.8 −72.4	941.3 2.8 −72.4	944.1 2.8 −72.4	946.9 2.8 −72.4	949.7 2.9 −72.4	952.6 2.8 −72.4	955.4 2.9 −72.4
25	958.3 2.8 −72.4	961.1 2.9 −72.4	964.0 2.8 −72.4	966.8 2.9 −72.3	969.7 2.9 −72.3	972.6 2.9 −72.3	975.5 2.9 −72.3	978.4 2.9 −72.3	981.3 2.9 −72.3	984.2 2.9 −72.3
26	987.1 3.0 −72.3	990.1 2.9 −72.3	993.0 3.0 −72.3	996.0 3.0 −72.3	999.0 2.9 −72.3	1001.9 3.0 −72.3	1004.9 3.0 −72.3	1007.9 3.0 −72.3	1010.9 3.0 −72.3	1013.9 3.0 −72.3
27	1016.9 3.0 −72.3	1019.9 3.0 −72.2	1022.9 3.0 −72.2	1025.9 3.0 −72.2	1028.9 3.1 −72.2	1032.0 3.1 −72.2	1035.1 3.0 −72.2	1038.1 3.1 −72.2	1041.2 3.1 −72.2	1044.3 3.2 −72.2
28	1047.5 3.1 −72.2	1050.6 3.1 −72.2	1053.7 3.0 −72.2	1056.7 3.1 −72.1	1059.8 3.2 −72.1	1063.0 3.1 −72.1	1066.1 3.1 −72.1	1069.2 3.2 −72.1	1072.4 3.2 −72.1	1075.6 3.2 −72.1
29	1078.8 3.1 −72.1	1081.9 3.2 −72.1	1085.1 3.2 −72.1	1088.3 3.2 −72.1	1091.5 3.2 −72.1	1094.7 3.2 −72.1	1097.9 3.2 −72.1	1101.1 3.2 −72.1	1104.3 3.3 −72.1	1107.6 3.3 −72.1

Table V A.—$10^5\Delta_{s,t}$ FOR SALINITY 29.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	456.4 −0.2 −77.0	456.2 −0.2 −77.0	456.0 −0.2 −77.0	455.8 −0.1 −77.0	455.7 −0.1 −77.0	455.6 −0.2 −77.1	455.4 −0.1 −77.1	455.3 0.0 −77.1	455.3 −0.1 −77.2	455.2 0.0 −77.2
−0	459.0 −0.4 −76.7	458.6 −0.3 −76.7	458.3 −0.3 −76.7	458.0 −0.2 −76.7	457.8 −0.3 −76.8	457.5 −0.3 −76.8	457.2 −0.2 −76.8	457.0 −0.2 −76.9	456.8 −0.2 −76.9	456.6 −0.2 −77.0
+0	459.0 0.3 −76.7	459.3 0.3 −76.7	459.6 0.4 −76.6	460.0 0.4 −76.6	460.4 0.4 −76.6	460.8 0.4 −76.6	461.2 0.4 −76.5	461.6 0.4 −76.5	462.0 0.5 −76.4	462.5 0.5 −76.4
1	463.0 0.4 −76.4	463.4 0.5 −76.4	463.9 0.5 −76.4	464.4 0.5 −76.3	464.9 0.5 −76.3	465.4 0.5 −76.2	465.9 0.6 −76.2	466.5 0.6 −76.2	467.1 0.6 −76.2	467.7 0.6 −76.2
2	468.3 0.6 −76.2	468.9 0.6 −76.2	469.5 0.6 −76.1	470.1 0.6 −76.1	470.7 0.7 −76.0	471.4 0.7 −76.0	472.1 0.7 −76.0	472.8 0.7 −76.0	473.5 0.7 −76.0	474.2 0.7 −76.0
3	474.9 0.7 −75.9	475.6 0.7 −75.9	476.3 0.8 −75.8	477.1 0.8 −75.8	477.9 0.7 −75.8	478.6 0.8 −75.7	479.4 0.8 −75.7	480.2 0.9 −75.7	481.1 0.8 −75.7	481.9 0.9 −75.7
4	482.8 0.8 −75.7	483.6 0.8 −75.6	484.4 0.9 −75.5	485.3 0.9 −75.5	486.2 0.9 −75.5	487.1 0.9 −75.5	488.0 0.9 −75.5	488.9 1.0 −75.4	489.9 0.9 −75.4	490.8 1.0 −75.4
5	491.8 1.0 −75.4	492.8 0.9 −75.4	493.7 1.0 −75.3	494.7 1.1 −75.3	495.8 1.0 −75.3	496.8 1.0 −75.3	497.8 1.0 −75.2	498.8 1.1 −75.2	499.9 1.0 −75.2	500.9 1.1 −75.1
6	502.0 1.1 −75.1	503.1 1.1 −75.1	504.2 1.1 −75.1	505.3 1.1 −75.1	506.4 1.2 −75.0	507.6 1.1 −75.0	508.7 1.2 −75.0	509.9 1.1 −75.0	511.0 1.2 −74.9	512.2 1.2 −74.9
7	513.4 1.2 −74.9	514.6 1.2 −74.9	515.8 1.2 −74.8	517.0 1.2 −74.8	518.2 1.3 −74.8	519.5 1.3 −74.8	520.8 1.2 −74.8	522.0 1.3 −74.7	523.3 1.3 −74.7	524.6 1.3 −74.7
8	525.9 1.3 −74.7	527.2 1.3 −74.7	528.5 1.3 −74.6	529.8 1.4 −74.6	531.2 1.4 −74.6	532.6 1.3 −74.6	533.9 1.4 −74.5	535.3 1.4 −74.5	536.7 1.4 −74.5	538.1 1.4 −74.5
9	539.5 1.4 −74.5	540.9 1.4 −74.5	542.3 1.4 −74.4	543.7 1.5 −74.4	545.2 1.5 −74.4	546.7 1.5 −74.4	548.2 1.4 −74.4	549.6 1.5 −74.3	551.1 1.5 −74.3	552.6 1.5 −74.3
10	554.1 1.5 −74.3	555.6 1.6 −74.3	557.2 1.5 −74.3	558.7 1.5 −74.3	560.2 1.6 −74.2	561.8 1.6 −74.2	563.4 1.5 −74.2	564.9 1.6 −74.1	566.5 1.6 −74.1	568.1 1.6 −74.1
11	569.7 1.6 −74.1	571.3 1.7 −74.1	573.0 1.6 −74.1	574.6 1.7 −74.0	576.3 1.6 −74.0	577.9 1.7 −74.0	579.6 1.7 −74.0	481.3 1.7 −74.0	583.0 1.7 −74.0	584.7 1.7 −74.0
12	586.4 1.7 −74.0	588.1 1.8 −73.9	589.9 1.7 −73.9	591.6 1.7 −73.9	593.3 1.8 −73.8	595.1 1.7 −73.8	596.8 1.8 −73.8	598.6 1.8 −73.8	600.4 1.8 −73.8	602.2 1.8 −73.7
13	604.0 1.8 −73.7	605.8 1.8 −73.7	607.6 1.9 −73.7	609.5 1.8 −73.7	611.3 1.8 −73.6	613.1 1.9 −73.6	615.0 1.9 −73.6	616.9 1.9 −73.6	618.8 1.9 −73.6	620.7 1.9 −73.6

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 29.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	622.6 1.9 −73.6	624.5 1.9 −73.6	626.4 1.9 −73.5	628.3 2.0 −73.5	630.3 1.9 −73.5	632.2 2.0 −73.5	634.2 1.9 −73.5	636.1 2.0 −73.4	638.1 2.0 −73.4	640.1 2.0 −73.4
15	642.1 2.0 −73.4	644.1 2.0 −73.4	646.1 2.1 −73.4	648.2 2.0 −73.4	650.2 2.1 −73.4	652.3 2.0 −73.4	654.3 2.0 −73.4	656.3 2.1 −73.3	658.4 2.1 −73.3	660.5 2.1 −73.3
16	662.6 2.1 −73.3	664.7 2.1 −73.3	666.8 2.1 −73.3	668.9 2.1 −73.2	671.0 2.1 −73.2	673.1 2.2 −73.2	675.3 2.1 −73.2	677.4 2.2 −73.2	679.6 2.1 −73.2	681.7 2.2 −73.1
17	683.9 2.2 −73.1	686.1 2.2 −73.1	688.3 2.2 −73.1	690.5 2.2 −73.1	692.7 2.2 −73.1	694.9 2.2 −73.0	697.1 2.3 −73.0	699.4 2.2 −73.0	701.6 2.3 −73.0	703.9 2.3 −73.0
18	706.2 2.3 −73.0	708.5 2.2 −73.0	710.7 2.3 −72.9	713.0 2.3 −72.9	715.3 2.3 −72.9	717.6 2.3 −72.9	719.9 2.4 −72.9	722.3 2.3 −72.9	724.6 2.3 −72.9	726.9 2.4 −72.9
19	729.3 2.3 −72.9	731.6 2.4 −72.8	734.0 2.4 −72.8	736.4 2.4 −72.8	738.8 2.4 −72.8	741.2 2.4 −72.8	743.6 2.4 −72.8	746.0 2.4 −72.8	748.4 2.5 −72.8	750.9 2.4 −72.8
20	753.3 2.5 −72.8	755.8 2.4 −72.8	758.2 2.4 −72.8	760.6 2.5 −72.7	763.1 2.5 −72.7	765.6 2.5 −72.7	768.1 2.5 −72.7	770.6 2.5 −72.7	773.1 2.5 −72.7	775.6 2.5 −72.6
21	778.1 2.5 −72.6	780.6 2.6 −72.6	783.2 2.5 −72.6	785.7 2.6 −72.6	788.3 2.6 −72.6	790.9 2.6 −72.6	793.5 2.6 −72.6	796.1 2.5 −72.6	798.6 2.6 −72.5	801.2 2.6 −72.5
22	803.8 2.6 −72.5	806.4 2.6 −72.5	809.0 2.7 −72.5	811.7 2.6 −72.5	814.3 2.7 −72.5	817.0 2.6 −72.5	819.6 2.7 −72.5	822.3 2.7 −72.5	825.0 2.7 −72.5	827.7 2.7 −72.5
23	830.4 2.7 −72.5	833.1 2.7 −72.5	835.8 2.7 −72.5	838.5 2.7 −72.5	841.2 2.7 −72.4	843.9 2.8 −72.4	846.7 2.7 −72.4	849.4 2.8 −72.4	852.2 2.7 −72.4	854.9 2.8 −72.4
24	857.7 2.8 −72.4	860.5 2.8 −72.4	863.3 2.8 −72.4	866.1 2.8 −72.4	868.9 2.8 −72.4	871.7 2.8 −72.4	874.5 2.8 −72.3	877.3 2.9 −72.3	880.2 2.8 −72.3	883.0 2.9 −72.3
25	885.9 2.8 −72.3	888.7 2.9 −72.3	891.6 2.9 −72.3	894.5 2.9 −72.3	897.4 2.9 −72.3	900.3 2.9 −72.3	903.2 2.9 −72.3	906.1 2.9 −72.3	909.0 2.9 −72.2	911.9 2.9 −72.2
26	914.8 3.0 −72.2	917.8 2.9 −72.2	920.7 3.0 −72.2	923.7 3.0 −72.2	926.7 2.9 −72.2	929.6 3.0 −72.2	932.6 3.0 −72.2	935.6 3.0 −72.2	938.6 3.0 −72.2	941.6 3.0 −72.2
27	944.6 3.1 −72.2	947.7 3.0 −72.2	950.7 3.0 −72.1	953.7 3.0 −72.1	956.7 3.1 −72.1	959.8 3.1 −72.1	962.9 3.0 −72.1	965.9 3.1 −72.1	969.0 3.1 −72.1	972.1 3.2 −72.1
28	975.3 3.1 −72.1	978.4 3.1 −72.1	981.5 3.1 −72.1	984.6 3.1 −72.1	987.7 3.2 −72.1	990.9 3.1 −72.1	994.0 3.1 −72.1	997.1 3.2 −72.1	1000.3 3.2 −72.1	1003.5 3.2 −72.1
29	1006.7 3.1 −72.1	1009.8 3.2 −72.1	1013.0 3.2 −72.1	1016.0 3.2 −72.1	1019.4 3.2 −72.1	1022.6 3.2 −72.1	1025.8 3.2 −72.0	1029.0 3.2 −72.0	1032.2 3.3 −72.0	1035.5 3.3 −72.0

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TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 30.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	379.4 −0.2 −77.0	379.2 −0.2 −77.0	379.0 −0.2 −77.0	378.8 −0.1 −77.0	378.7 −0.2 −77.1	378.5 −0.2 −77.1	378.3 −0.1 −77.1	378.2 −0.1 −77.1	378.1 −0.1 −77.2	378.0 −0.1 −77.2
−0	382.3 −0.4 −76.7	381.9 −0.3 −76.7	381.6 −0.3 −76.7	381.3 −0.3 −76.7	381.0 −0.3 −76.8	380.7 −0.3 −76.8	380.4 −0.3 −76.8	380.1 −0.2 −76.8	379.9 −0.3 −76.9	379.6 −0.2 −76.9
+0	382.3 0.3 −76.7	382.6 0.4 −76.6	383.0 0.4 −76.6	383.4 0.4 −76.5	383.8 0.4 −76.5	384.2 0.5 −76.5	384.7 0.4 −76.5	385.1 0.5 −76.4	385.6 0.5 −76.4	386.1 0.5 −76.4
1	386.6 0.4 −76.4	387.0 0.5 −76.3	387.5 0.6 −76.3	388.1 0.5 −76.3	388.6 0.6 −76.2	389.2 0.5 −76.2	389.7 0.6 −76.1	390.3 0.6 −76.1	390.9 0.6 −76.1	391.5 0.6 −76.1
2	392.1 0.6 −76.0	392.7 0.7 −76.0	393.4 0.6 −76.0	394.0 0.7 −75.9	394.7 0.7 −75.9	395.4 0.7 −75.9	396.1 0.7 −75.9	396.8 0.7 −75.9	397.5 0.7 −75.8	398.2 0.8 −75.8
3	399.0 0.7 −75.8	399.7 0.8 −75.7	400.5 0.8 −75.7	401.3 0.8 −75.7	402.1 0.8 −75.7	402.9 0.8 −75.7	403.7 0.8 −75.6	404.5 0.9 −75.6	405.4 0.8 −75.6	406.2 0.9 −75.6
4	407.1 0.9 −75.5	408.0 0.9 −75.5	408.9 0.9 −75.5	409.8 0.9 −75.5	410.7 0.9 −75.4	411.6 0.9 −75.4	412.5 1.0 −75.4	413.5 1.0 −75.4	414.5 0.9 −75.4	415.4 1.0 −75.3
5	416.4 1.0 −75.3	417.4 1.0 −75.3	418.4 1.0 −75.2	419.4 1.1 −75.2	420.5 1.0 −75.2	421.5 1.1 −75.2	422.6 1.0 −75.2	423.6 1.1 −75.1	424.7 1.1 −75.1	425.8 1.1 −75.1
6	426.9 1.1 −75.1	428.0 1.1 −75.0	429.1 1.1 −75.0	430.2 1.2 −75.0	431.4 1.2 −75.0	432.6 1.1 −75.0	433.7 1.2 −74.9	434.9 1.2 −74.9	436.1 1.2 −74.9	437.3 1.2 −74.9
7	438.5 1.2 −74.8	439.7 1.3 −74.8	441.0 1.2 −74.8	442.2 1.2 −74.8	443.4 1.3 −74.7	444.7 1.3 −74.7	446.0 1.3 −74.7	447.3 1.3 −74.7	448.6 1.3 [illegible]	449.9 [illegible] −74.6
8	451.2 1.3 −74.6	452.5 1.4 −74.6	453.9 1.3 −74.6	455.2 1.4 −74.5	456.6 1.4 −74.5	458.0 1.4 −74.5	459.4 1.4 −74.5	460.8 1.4 −74.5	462.2 1.4 −74.5	463.6 1.4 −74.5
9	465.0 1.4 −74.4	466.4 1.5 −74.4	467.9 1.4 −74.4	469.3 1.5 −74.3	470.8 1.5 −74.3	472.3 1.5 −74.3	473.8 1.5 −74.3	475.3 1.5 −74.3	476.8 1.5 −74.3	478.3 1.5 −74.2
10	479.8 1.5 −74.2	481.3 1.6 −74.2	482.9 1.5 −74.2	484.4 1.6 −74.1	486.0 1.6 −74.1	487.6 1.6 −74.1	489.2 1.6 −74.1	490.8 1.6 −74.1	492.4 1.6 −74.1	494.0 1.6 −74.0
11	495.6 1.6 −74.0	497.2 1.7 −74.0	498.9 1.7 −74.0	500.6 1.7 −74.0	502.3 1.6 −74.0	503.9 1.7 −73.9	505.6 1.7 −73.9	507.3 1.7 −73.9	509.0 1.7 −73.9	510.7 1.7 −73.8
12	512.4 1.8 −73.8	514.2 1.8 −73.8	516.0 1.7 −73.8	517.7 1.8 −73.8	519.5 1.8 −73.8	521.3 1.7 −73.8	523.0 1.8 −73.7	524.8 1.8 −73.7	526.6 1.9 −73.7	528.5 1.8 −73.7
13	530.3 1.8 −73.7	532.1 1.8 −73.6	533.9 1.9 −73.6	535.8 1.9 −73.6	537.7 1.8 −73.6	539.5 1.9 −73.6	541.4 1.9 −73.6	543.3 1.9 −73.6	545.2 1.9 −73.6	547.1 1.9 −73.6

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 30.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	549.0 1.9 −73.5	550.9 2.0 −73.5	552.9 1.9 −73.5	554.8 2.0 −73.5	556.8 1.9 −73.5	558.7 2.0 −73.4	560.7 2.0 −73.4	562.7 2.0 −73.4	564.7 2.0 −73.4	566.7 2.0 −73.4
15	568.7 2.0 −73.4	570.7 2.0 −73.3	572.7 2.1 −73.3	574.8 2.0 −73.3	576.8 2.1 −73.3	578.9 2.0 −73.3	580.9 2.1 −73.2	583.0 2.1 −73.2	585.1 2.1 −73.2	587.2 2.1 −73.2
16	589.3 2.1 −73.2	591.4 2.1 −73.2	593.5 2.2 −73.2	595.7 2.1 −73.2	597.8 2.1 −73.2	599.9 2.2 −73.1	602.1 2.1 −73.1	604.2 2.2 −73.1	606.4 2.2 −73.1	608.6 2.2 −73.1
17	610.8 2.2 −73.1	613.0 2.2 −73.1	615.2 2.2 −73.1	617.4 2.2 −73.0	619.6 2.3 −73.0	621.9 2.2 −73.0	624.1 2.3 −73.0	626.4 2.2 −73.0	628.6 2.3 −73.0	630.9 2.3 −73.0
18	633.2 2.3 −73.0	635.5 2.3 −73.0	637.8 2.3 −73.0	640.1 2.3 −73.0	642.4 2.3 −73.0	644.7 2.3 −72.9	647.0 2.4 −72.9	649.4 2.3 −72.9	651.7 2.3 −72.9	654.0 2.4 −72.8
19	656.4 2.4 −72.8	658.8 2.4 −72.8	661.2 2.4 −72.8	663.6 2.4 −72.8	666.0 2.4 −72.8	668.4 2.4 −72.8	670.8 2.4 −72.8	673.2 2.4 −72.7	675.6 2.5 −72.7	678.1 2.4 −72.7
20	680.5 2.5 −72.7	683.0 2.4 −72.7	685.4 2.5 −72.7	687.9 2.5 −72.7	690.4 2.5 −72.7	692.9 2.5 −72.7	695.4 2.5 −72.7	697.9 2.5 −72.6	700.4 2.6 −72.6	703.0 2.5 −72.6
21	705.5 2.5 −72.6	708.0 2.6 −72.6	710.6 2.5 −72.6	713.1 2.6 −72.6	715.7 2.6 −72.6	718.3 2.6 −72.6	720.9 2.6 −72.6	723.5 2.6 −72.6	726.1 2.6 −72.6	728.7 2.6 −72.6
22	731.3 2.6 −72.6	733.9 2.6 −72.5	736.5 2.7 −72.5	739.2 2.6 −72.5	741.8 2.7 −72.5	744.5 2.6 −72.5	747.1 2.7 −72.4	749.8 2.7 −72.4	752.5 2.7 −72.4	755.2 2.7 −72.4
23	757.9 2.7 −72.4	760.6 2.7 −72.4	763.3 2.7 −72.4	766.0 2.8 −72.4	768.8 2.7 −72.4	771.5 2.8 −72.4	774.3 2.7 −72.4	777.0 2.8 −72.4	779.8 2.7 −72.4	782.5 2.8 −72.3
24	785.3 2.8 −72.3	788.1 2.8 −72.3	790.9 2.8 −72.3	793.7 2.8 −72.3	796.5 2.8 −72.3	799.3 2.9 −72.3	802.2 2.8 −72.3	805.0 2.9 −72.3	807.9 2.8 −72.3	810.7 2.9 −72.3
25	813.6 2.8 −72.3	816.4 2.9 −72.2	819.3 2.9 −72.2	822.2 2.9 −72.2	825.1 2.9 −72.2	828.0 2.9 −72.2	830.9 2.9 −72.2	833.8 3.0 −72.2	836.8 2.9 −72.2	839.7 2.9 −72.2
26	842.6 3.0 −72.2	845.6 2.9 −72.2	848.5 3.0 −72.2	851.5 3.0 −72.2	854.5 2.9 −72.2	857.4 3.0 −72.1	860.4 3.0 −72.1	863.4 3.0 −72.1	866.4 3.0 −72.1	869.4 3.0 −72.1
27	872.4 3.1 −72.1	875.5 3.1 −72.1	878.6 3.0 −72.1	881.6 3.0 −72.1	884.6 3.1 −72.1	887.7 3.1 −72.1	890.8 3.0 −72.1	893.8 3.1 −72.1	896.9 3.1 −72.1	900.0 3.2 −72.1
28	903.2 3.1 −72.1	906.3 3.1 −72.1	909.4 3.1 −72.1	912.5 3.1 −72.1	915.6 3.2 −72.1	918.8 3.1 −72.1	921.9 3.1 −72.1	925.0 3.2 −72.0	928.2 3.2 −72.0	931.4 3.2 −72.0
29	934.6 3.1 −72.0	937.7 3.2 −72.0	940.9 3.2 −72.0	944.1 3.2 −72.0	947.3 3.2 −72.0	950.5 3.3 −72.0	953.8 3.2 −72.0	957.0 3.2 −72.0	960.2 3.3 −72.0	963.5 3.3 −72.0

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 31.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	302.4 −0.2 −76.8	302.2 −0.2 −76.9	302.0 −0.2 −76.9	301.8 −0.2 −77.0	301.6 −0.2 −77.0	301.4 −0.2 −77.0	301.2 −0.1 −77.0	301.1 −0.2 −77.1	300.9 −0.1 −77.1	300.8 −0.1 −77.1
−0	305.6 −0.4 −76.5	305.2 −0.3 −76.5	304.9 −0.3 −76.6	304.6 −0.4 −76.7	304.2 −0.3 −76.7	303.9 −0.3 −76.7	303.6 −0.3 −76.8	303.3 −0.3 −76.8	303.0 −0.3 −76.8	302.7 −0.3 −76.8
+0	305.6 0.4 −76.5	306.0 0.4 −76.5	306.4 0.5 −76.5	306.9 0.4 −76.5	307.3 0.4 −76.4	307.7 0.5 −76.3	308.2 0.5 −76.3	308.7 0.5 −76.3	309.2 0.5 −76.3	309.7 0.5 −76.3
1	310.2 0.5 −76.3	310.7 0.5 −76.2	311.2 0.6 −76.2	311.8 0.6 −76.2	312.4 0.6 −76.2	313.0 0.6 −76.2	313.6 0.6 −76.1	314.2 0.6 −76.1	314.8 0.6 −76.1	315.4 0.7 −76.0
2	316.1 0.6 −76.0	316.7 0.7 −75.9	317.4 0.7 −75.9	318.1 0.7 −75.9	318.8 0.7 −75.9	319.5 0.7 −75.9	320.2 0.7 −75.9	320.9 0.8 −75.8	321.7 0.7 −75.8	322.4 0.8 −75.7
3	323.2 0.8 −75.7	324.0 0.8 −75.7	324.8 0.8 −75.7	325.6 0.8 −75.7	326.4 0.8 −75.6	327.2 0.9 −75.6	328.1 0.8 −75.6	328.9 0.9 −75.5	329.8 0.9 −75.5	330.7 0.9 −75.5
4	331.6 0.9 −75.5	332.5 0.9 −75.5	333.4 0.9 −75.5	334.3 1.0 −75.4	335.3 0.9 −75.4	336.2 0.9 −75.4	337.1 1.0 −75.3	338.1 1.0 −75.3	339.1 1.0 −75.3	340.1 1.0 −75.2
5	341.1 1.0 −75.2	342.1 1.1 −75.2	343.2 1.0 −75.2	344.2 1.1 −75.2	345.3 1.0 −75.2	346.3 1.1 −75.1	347.4 1.1 −75.1	348.5 1.1 −75.1	349.6 1.1 −75.1	350.7 1.1 −75.0
6	351.8 1.2 −75.0	353.0 1.1 −75.0	354.1 1.1 −74.9	355.2 1.2 −74.9	356.4 1.2 −74.9	357.6 1.2 −74.9	358.8 1.2 −74.8	360.0 1.2 −74.8	361.2 1.2 −74.8	362.4 1.3 −74.8
7	363.7 1.2 −74.8	364.9 1.3 −74.7	366.2 1.2 −74.7	367.4 1.3 −74.7	368.7 1.3 −74.7	370.0 1.3 −74.7	371.3 1.3 −74.6	372.6 1.3 −74.6	373.9 1.4 −74.6	375.3 1.3 −74.6
8	376.6 1.3 −74.6	377.9 1.4 −74.5	379.3 1.4 −74.5	380.7 1.4 −74.5	382.1 1.4 −74.5	383.5 1.4 −74.5	384.9 1.4 −74.5	386.3 1.4 −74.4	387.7 1.4 −74.4	389.1 1.5 −74.3
9	390.6 1.4 −74.3	392.0 1.5 −74.3	393.5 1.5 −74.3	395.0 1.5 −74.3	396.5 1.5 −74.3	398.0 1.5 −74.3	399.5 1.5 −74.3	401.0 1.5 −74.2	402.5 1.6 −74.2	404.1 1.5 −74.2
10	405.6 1.5 −74.2	407.1 1.6 −74.1	408.7 1.6 −74.1	410.3 1.6 −74.1	411.9 1.6 −74.1	413.5 1.6 −74.1	415.1 1.6 −74.0	416.7 1.6 −74.0	418.3 1.7 −74.0	420.0 1.6 −74.0
11	421.6 1.6 −73.9	423.2 1.7 −73.9	424.9 1.7 −73.9	426.6 1.7 −73.9	428.3 1.7 −73.9	430.0 1.7 −73.9	431.7 1.7 −73.8	433.4 1.7 −73.8	435.1 1.8 −73.8	436.9 1.7 −73.8
12	438.6 1.8 −73.8	440.4 1.8 −73.8	442.2 1.7 −73.8	443.9 1.8 −73.7	445.7 1.8 −73.7	447.5 1.8 −73.7	449.3 1.8 −73.7	451.1 1.8 −73.7	452.9 1.9 −73.6	454.8 1.8 −73.6
13	456.6 1.8 −73.6	458.4 1.9 −73.6	460.3 1.9 −73.6	462.2 1.9 −73.6	464.1 1.8 −73.6	465.9 1.9 −73.5	467.8 1.9 −73.5	469.7 1.9 −73.5	471.6 1.9 −73.4	473.5 2.0 −73.4

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 31.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	475.5 1.9 −73.4	477.4 2.0 −73.4	479.4 1.9 −73.4	481.3 2.0 −73.4	483.3 2.0 −73.4	485.3 2.0 −73.4	487.3 2.0 −73.4	489.3 2.0 −73.3	491.8 2.0 −73.3	493.3 2.0 −73.3
15	495.3 2.1 −73.3	497.4 2.0 −73.3	499.4 2.1 −73.3	501.5 2.0 −73.3	503.5 2.1 −73.2	505.6 2.1 −73.2	507.7 2.1 −73.2	509.8 2.1 −73.2	511.9 2.1 −73.2	514.0 2.1 −73.2
16	516.1 2.1 −73.2	518.2 2.1 −73.1	520.3 2.2 −73.1	522.5 2.1 −73.1	524.6 2.2 −73.1	526.8 2.2 −73.1	529.0 2.2 −73.1	531.1 2.2 −73.0	533.3 2.2 −73.0	535.5 2.2 −73.0
17	537.7 2.2 −73.0	539.9 2.2 −73.0	542.1 2.3 −73.0	544.4 2.2 −73.0	546.6 2.3 −73.0	548.9 2.2 −73.0	551.1 2.3 −72.9	553.4 2.2 −72.9	555.6 2.3 −72.9	557.9 2.3 −72.9
18	560.2 2.3 −72.9	562.5 2.3 −72.8	564.8 2.3 −72.8	567.1 2.3 −72.8	569.4 2.4 −72.8	571.8 2.3 −72.8	574.1 2.4 −72.8	576.5 2.3 −72.8	578.8 2.4 −72.8	581.2 2.4 −72.8
19	583.6 2.4 −72.8	586.0 2.4 −72.8	588.4 2.4 −72.8	590.8 2.4 −72.7	593.2 2.4 −72.7	595.6 2.4 −72.7	598.0 2.5 −72.7	600.5 2.4 −72.7	602.9 2.5 −72.7	605.4 2.4 −72.7
20	607.8 2.5 −72.7	610.3 2.4 −72.7	612.7 2.5 −72.6	615.2 2.5 −72.6	617.7 2.5 −72.6	620.2 2.5 −72.6	622.7 2.6 −72.6	625.3 2.5 −72.6	627.8 2.6 −72.6	630.4 2.5 −72.6
21	632.9 2.5 −72.6	635.4 2.6 −72.5	638.0 2.5 −72.5	640.5 2.6 −72.5	643.1 2.6 −72.5	645.7 2.6 −72.5	648.3 2.6 −72.5	650.9 2.6 −72.5	653.5 2.6 −72.4	656.1 2.6 −72.4
22	658.7 2.7 −72.4	661.4 2.6 −72.4	664.0 2.7 −72.4	666.7 2.6 −72.4	669.3 2.7 −72.4	672.0 2.7 −72.4	674.7 2.7 −72.4	677.4 2.7 −72.4	680.1 2.7 −72.4	682.8 2.7 −72.4
23	685.5 2.7 −72.4	688.2 2.7 −72.3	690.9 2.7 −72.3	693.6 2.8 −72.3	696.4 2.7 −72.3	699.1 2.8 −72.3	701.9 2.7 −72.3	704.6 2.8 −72.3	707.4 2.8 −72.3	710.2 2.8 −72.3
24	713.0 2.8 −72.3	715.8 2.8 −72.3	718.6 2.8 −72.3	721.4 2.8 −72.2	724.2 2.8 −72.2	727.0 2.9 −72.2	729.9 2.8 −72.2	732.7 2.9 −72.2	735.6 2.8 −72.2	738.4 2.9 −72.2
25	741.3 2.9 −72.2	744.2 2.9 −72.2	747.1 2.9 −72.2	750.0 2.9 −72.2	752.9 2.9 −72.2	755.8 2.9 −72.2	758.7 2.9 −72.2	761.6 3.0 −72.2	764.6 2.9 −72.2	767.5 2.9 −72.2
26	770.4 3.0 −72.1	773.4 2.9 −72.1	776.3 3.0 −72.1	779.3 3.0 −72.1	782.3 3.0 −72.1	785.3 3.0 −72.1	788.3 3.0 −72.1	791.3 3.0 −72.1	794.3 3.0 −72.1	797.3 3.0 −72.1
27	800.3 3.1 −72.1	803.4 3.1 −72.1	806.5 3.0 −72.1	809.5 3.0 −72.1	812.5 3.1 −72.0	815.6 3.1 −72.0	818.7 3.0 −72.0	821.7 3.1 −72.0	824.8 3.1 −72.0	827.9 3.2 −72.0
28	831.1 3.1 −72.0	834.2 3.1 −72.0	837.3 3.1 −72.0	840.4 3.1 −72.0	843.5 3.2 −72.0	846.7 3.1 −72.0	849.8 3.2 −72.0	853.0 3.2 −72.0	856.2 3.2 −72.0	859.4 3.2 −72.0
29	862.6 3.1 −72.0	865.7 3.2 −71.9	868.9 3.2 −71.9	872.1 3.2 −71.9	875.3 3.2 −71.9	878.5 3.3 −71.9	881.8 3.2 −71.9	885.0 3.2 −71.9	888.2 3.3 −71.9	891.5 3.3 −71.9

TABLE V A.—$10^5 \Delta_{s,t}$ FOR SALINITY 32.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	225.6 −0.3 −76.7	225.3 −0.2 −76.7	225.1 −0.3 −76.8	224.8 −0.2 −76.8	224.6 −0.2 −76.8	224.4 −0.2 −76.9	224.2 −0.2 −76.9	224.0 −0.2 −76.9	223.8 −0.1 −76.9	223.7 −0.1 −77.0
−0	229.1 −0.4 −76.5	228.7 −0.4 −76.5	228.3 −0.4 −76.5	227.9 −0.4 −76.5	227.5 −0.3 −76.5	227.2 −0.4 −76.6	226.8 −0.3 −76.6	226.5 −0.3 −76.6	226.2 −0.3 −76.7	225.9 −0.3 −76.7
+0	229.1 0.4 −76.5	229.5 0.4 −76.4	229.9 0.5 −76.3	230.4 0.5 −76.3	230.9 0.5 −76.3	231.4 0.5 −76.3	231.9 0.5 −76.3	232.4 0.5 −76.3	232.9 0.5 −76.3	233.4 0.5 −76.2
1	233.9 0.6 −76.1	234.5 0.5 −76.1	235.0 0.6 −76.1	235.6 0.6 −76.1	236.2 0.6 −76.0	236.8 0.7 −76.0	237.5 0.6 −76.0	238.1 0.6 −76.0	238.7 0.7 −75.9	239.4 0.7 −75.9
2	240.1 0.7 −75.9	240.8 0.7 −75.9	241.5 0.7 −75.9	242.2 0.7 −75.9	242.9 0.7 −75.8	243.6 0.7 −75.7	244.3 0.8 −75.7	245.1 0.8 −75.7	245.9 0.8 −75.7	246.7 0.8 −75.7
3	247.5 0.8 −75.7	248.3 0.8 −75.6	249.1 0.8 −75.6	249.9 0.9 −75.5	250.8 0.8 −75.5	251.6 0.9 −75.5	252.5 0.9 −75.5	253.4 0.9 −75.5	254.3 0.9 −75.4	255.2 0.9 −75.4
4	256.1 0.9 −75.4	257.0 0.9 −75.3	257.9 1.0 −75.3	258.9 1.0 −75.3	259.9 0.9 −75.3	260.8 1.0 −75.2	261.8 1.0 −75.2	262.8 1.0 −75.2	263.8 1.1 −75.2	264.9 1.0 −75.2
5	265.9 1.0 −75.1	266.9 1.1 −75.1	268.0 1.0 −75.1	269.0 1.1 −75.0	270.1 1.1 −75.0	271.2 1.1 −75.0	272.3 1.1 −75.0	273.4 1.1 −74.9	274.5 1.2 −74.9	275.7 1.1 −74.9
6	276.8 1.2 −74.9	278.0 1.2 −74.9	279.2 1.1 −74.9	280.3 1.2 −74.8	281.5 1.2 −74.8	282.7 1.3 −74.8	284.0 1.2 −74.8	285.2 1.2 −74.8	286.4 1.2 −74.7	287.6 1.3 −74.7
7	288.9 1.3 −74.7	290.2 1.3 −74.7	291.5 1.2 −74.7	292.7 1.3 −74.6	294.0 1.3 −74.6	295.3 1.4 −74.6	296.7 1.3 −74.6	298.0 1.3 −74.5	299.3 1.4 −74.5	300.7 1.3 −74.5
8	302.0 1.4 −74.4	303.4 1.4 −74.4	304.8 1.4 −74.4	306.2 1.4 −74.4	307.6 1.4 −74.4	309.0 1.4 −74.4	310.4 1.5 −74.3	311.9 1.4 −74.3	313.3 1.5 −74.3	314.8 1.5 −74.3
9	316.3 1.4 −74.3	317.7 1.5 −74.2	319.2 1.5 −74.2	320.7 1.5 −74.2	322.2 1.5 −74.2	323.7 1.5 −74.2	325.2 1.6 −74.1	326.8 1.5 −74.1	328.3 1.6 −74.1	329.9 1.5 −74.1
10	331.4 1.6 −74.0	333.0 1.6 −74.0	334.6 1.6 −74.0	336.2 1.6 −74.0	337.8 1.6 −74.0	339.4 1.7 −74.0	341.1 1.6 −74.0	342.7 1.6 −74.0	344.3 1.7 −73.9	346.0 1.7 −73.9
11	347.7 1.6 −73.9	349.3 1.7 −73.8	351.0 1.7 −73.8	352.7 1.7 −73.8	354.4 1.7 −73.8	356.1 1.8 −73.8	357.9 1.7 −73.8	359.6 1.7 −73.8	361.3 1.8 −73.7	363.1 1.7 −73.7
12	364.8 1.8 −73.7	366.6 1.8 −73.7	368.4 1.8 −73.7	370.2 1.8 −73.7	372.0 1.8 −73.7	373.8 1.8 −73.6	375.6 1.8 −73.6	377.4 1.9 −73.6	379.3 1.9 −73.6	381.2 1.8 −73.6
13	383.0 1.8 −73.6	384.8 1.9 −73.5	386.7 1.9 −73.5	388.6 1.9 −73.5	390.5 1.9 −73.5	392.4 1.9 −73.5	394.3 1.9 −73.4	396.2 2.0 −73.4	398.2 1.9 −73.4	400.1 2.0 −73.4

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 32.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	402.1 1.9 −73.4	404.0 2.0 −73.4	406.0 1.9 −73.4	407.9 2.0 −73.3	409.9 2.0 −73.3	411.9 2.0 −73.3	413.9 2.1 −73.3	416.0 2.0 −73.3	418.0 2.0 −73.3	420.0 2.0 −73.2
15----	422.0 2.1 −73.2	424.1 2.0 −73.2	426.1 2.1 −73.2	428.2 2.1 −73.2	430.3 2.1 −73.2	432.4 2.1 −73.2	434.5 2.1 −73.2	436.6 2.1 −73.1	438.7 2.1 −73.1	440.8 2.1 −73.1
16----	442.9 2.2 −73.1	445.1 2.1 −73.1	447.2 2.2 −73.1	449.4 2.1 −73.1	451.5 2.2 −73.0	453.7 2.2 −73.0	455.9 2.2 −73.0	458.1 2.2 −73.0	460.3 2.2 −73.0	462.5 2.2 −73.0
17----	464.7 2.2 −73.0	466.9 2.2 −72.9	469.1 2.3 −72.9	471.4 2.2 −72.9	473.6 2.3 −72.9	475.9 2.3 −72.9	478.2 2.3 −72.9	480.5 2.2 −72.9	482.7 2.3 −72.8	485.0 2.3 −72.8
18----	487.3 2.4 −72.8	489.7 2.3 −72.8	492.0 2.3 −72.8	494.3 2.3 −72.8	496.6 2.4 −72.8	499.0 2.3 −72.8	501.3 2.4 −72.7	503.7 2.3 −72.7	506.0 2.4 −72.7	508.4 2.4 −72.7
19----	510.8 2.4 −72.7	513.2 2.4 −72.7	515.6 2.5 −72.7	518.1 2.4 −72.7	520.5 2.4 −72.7	522.9 2.4 −72.6	525.3 2.5 −72.6	527.8 2.4 −72.6	530.2 2.5 −72.6	532.7 2.4 −72.6
20----	535.1 2.5 −72.5	537.6 2.5 −72.5	540.1 2.5 −72.5	542.6 2.5 −72.5	545.1 2.5 −72.5	547.6 2.5 −72.5	550.1 2.6 −72.5	552.7 2.5 −72.5	555.2 2.6 −72.5	557.8 2.5 −72.5
21----	560.3 2.6 −72.5	562.9 2.6 −72.5	565.5 2.5 −72.5	568.0 2.6 −72.4	570.6 2.6 −72.4	573.2 2.6 −72.4	575.8 2.6 −72.4	578.4 2.7 −72.4	581.1 2.6 −72.4	583.7 2.6 −72.4
22----	586.3 2.7 −72.4	589.0 2.6 −72.4	591.6 2.7 −72.4	594.3 2.6 −72.4	596.9 2.7 −72.3	599.6 2.7 −72.3	602.3 2.7 −72.3	605.0 2.7 −72.3	607.7 2.7 −72.3	610.4 2.7 −72.3
23----	613.1 2.8 −72.3	615.9 2.7 −72.3	618.6 2.7 −72.3	621.3 2.8 −72.3	624.1 2.7 −72.3	626.8 2.8 −72.3	629.6 2.7 −72.3	632.3 2.8 −72.2	635.1 2.8 −72.2	637.9 2.8 −72.2
24----	640.7 2.8 −72.2	643.5 2.8 −72.2	646.3 2.9 −72.2	649.2 2.8 −72.2	652.0 2.8 −72.2	654.8 2.9 −72.2	657.7 2.8 −72.2	660.5 2.9 −72.2	663.4 2.8 −72.2	666.2 2.9 −72.1
25----	669.1 2.9 −72.1	672.0 2.9 −72.1	674.9 2.9 −72.1	677.8 2.9 −72.1	680.7 2.9 −72.1	683.6 2.9 −72.1	686.5 2.9 −72.1	689.4 3.0 −72.1	692.4 2.9 −72.1	695.3 3.0 −72.1
26----	698.3 3.0 −72.1	701.3 2.9 −72.1	704.2 3.0 −72.0	707.2 3.0 −72.0	710.2 3.0 −72.0	713.2 3.0 −72.0	716.2 3.0 −72.0	719.2 3.0 −72.0	722.2 3.0 −72.0	725.2 3.0 −72.0
27----	728.2 3.1 −72.0	731.3 3.1 −72.0	734.4 3.0 −72.0	737.4 3.1 −72.0	740.5 3.1 −72.0	743.6 3.1 −72.0	746.7 3.0 −72.0	749.7 3.1 −72.0	752.8 3.1 −72.0	755.9 3.2 −72.0
28----	759.1 3.1 −72.0	762.2 3.1 −72.0	765.3 3.1 −72.0	768.4 3.1 −72.0	771.5 3.2 −71.9	774.7 3.1 −71.9	777.8 3.2 −71.9	781.0 3.2 −71.9	784.2 3.2 −71.9	787.4 3.2 −71.9
29----	790.6 3.2 −71.9	793.8 3.2 −71.9	797.0 3.2 −71.9	800.2 3.2 −71.9	803.4 3.2 −71.9	806.6 3.3 −71.9	809.9 3.2 −71.9	813.1 3.2 −71.9	816.3 3.3 −71.9	819.6 3.3 −71.9

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 33.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1---	148.9 −0.3 −76.7	148.6 −0.3 −76.7	148.3 −0.3 −76.7	148.0 −0.2 −76.7	147.8 −0.3 −76.8	147.5 −0.2 −76.8	147.3 −0.2 −76.8	147.1 −0.2 −76.9	146.9 −0.2 −76.9	146.7 −0.2 −76.9
−0---	152.6 −0.4 −76.3	152.2 −0.4 −76.4	151.8 −0.4 −76.4	151.4 −0.4 −76.5	151.0 −0.4 −76.5	150.6 −0.4 −76.5	150.2 −0.3 −76.5	149.9 −0.4 −76.6	149.5 −0.3 −76.6	149.2 −0.3 −76.6
+0---	152.6 0.5 −76.3	153.1 0.5 −76.3	153.6 0.5 −76.3	154.1 0.5 −76.3	154.6 0.5 −76.3	155.1 0.5 −76.3	155.6 0.5 −76.2	156.1 0.5 −76.2	156.6 0.6 −76.1	157.2 0.6 −76.1
1----	157.8 0.6 −76.1	158.4 0.5 −76.1	158.9 0.6 −76.0	159.5 0.7 −76.0	160.2 0.6 −76.0	160.8 0.7 −76.0	161.5 0.6 −76.0	162.1 0.7 −75.9	162.8 0.7 −75.9	163.5 0.7 −75.9
2----	164.2 0.7 −75.9	164.9 0.7 −75.8	165.6 0.7 −75.8	166.3 0.8 −75.7	167.1 0.8 −75.7	167.9 0.7 −75.7	168.6 0.8 −75.6	169.4 0.8 −75.6	170.2 0.8 −75.6	171.0 0.8 −75.6
3----	171.8 0.9 −75.5	172.7 0.8 −75.5	173.5 0.9 −75.5	174.4 0.9 −75.5	175.3 0.8 −75.5	176.1 0.9 −75.4	177.0 0.9 −75.4	177.9 1.0 −75.4	178.9 0.9 −75.4	179.8 0.9 −75.4
4----	180.7 1.0 −75.3	181.7 0.9 −75.3	182.6 1.0 −75.2	183.6 1.0 −75.2	184.6 1.0 −75.2	185.6 1.0 −75.2	186.6 1.0 −75.2	187.6 1.0 −75.1	188.6 1.1 −75.1	189.7 1.1 −75.1
5----	190.8 1.0 −75.1	191.8 1.1 −75.0	192.9 1.1 −75.0	194.0 1.1 −75.0	195.1 1.1 −75.0	196.2 1.1 −75.0	197.3 1.2 −74.9	198.5 1.1 −74.9	199.6 1.2 −74.9	200.8 1.1 −74.9
6----	201.9 1.2 −74.8	203.1 1.2 −74.8	204.3 1.2 −74.8	205.5 1.2 −74.8	206.7 1.2 −74.7	207.9 1.3 −74.7	209.2 1.2 −74.7	210.4 1.3 −74.7	211.7 1.2 −74.7	212.9 1.3 −74.6
7----	214.2 1.3 −74.6	215.5 1.3 −74.6	216.8 1.3 −74.6	218.1 1.3 −74.6	219.4 1.3 −74.5	220.7 1.4 −74.5	222.1 1.4 −74.5	223.5 1.3 −74.5	224.8 1.4 −74.4	226.2 1.4 −74.4
8----	227.6 1.4 −74.4	229.0 1.4 −74.4	230.4 1.4 −74.4	231.8 1.4 −74.4	233.2 1.4 −74.4	234.6 1.5 −74.3	236.1 1.5 −74.3	237.6 1.4 −74.3	239.0 1.5 −74.2	240.5 1.5 −74.2
9----	242.0 1.5 −74.2	243.5 1.5 −74.2	245.0 1.5 −74.2	246.5 1.5 −74.2	248.0 1.5 −74.1	249.5 1.6 −74.1	251.1 1.6 −74.1	252.7 1.5 −74.1	254.2 1.6 −74.0	255.8 1.6 −74.0
10----	257.4 1.6 −74.0	259.0 1.6 −74.0	260.6 1.6 −74.0	262.2 1.6 −74.0	263.8 1.6 −73.9	265.4 1.7 −73.9	267.1 1.6 −73.9	268.7 1.7 −73.9	270.4 1.7 −73.9	272.1 1.7 −73.9
11----	273.8 1.7 −73.9	275.5 1.7 −73.9	277.2 1.7 −73.8	278.9 1.7 −73.8	280.6 1.7 −73.8	282.3 1.8 −73.7	284.1 1.7 −73.7	285.8 1.8 −73.7	287.6 1.8 −73.7	289.4 1.7 −73.7
12----	291.1 1.8 −73.6	292.9 1.8 −73.6	294.7 1.8 −73.6	296.5 1.8 −73.6	298.3 1.9 −73.6	300.2 1.8 −73.6	302.0 1.8 −73.5	303.8 1.9 −73.5	305.7 1.9 −73.5	307.6 1.8 −73.5
13----	309.4 1.9 −73.5	311.3 1.9 −73.5	313.2 1.9 −73.5	315.1 1.9 −73.4	317.0 1.9 −73.4	318.9 2.0 −73.4	320.9 1.9 −73.4	322.8 2.0 −73.4	324.8 1.9 −73.4	326.7 2.0 −73.3

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 33.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	328.7 1.9 −73.3	330.6 2.0 −73.3	332.6 2.0 −73.3	334.6 2.0 −73.3	336.6 2.0 −73.2	338.6 2.0 −73.2	340.6 2.1 −73.2	342.7 2.0 −73.2	344.7 2.1 −73.2	346.8 2.0 −73.2
15	348.8 2.1 −73.2	350.9 2.0 −73.2	352.9 2.1 −73.1	355.0 2.1 −73.1	357.1 2.1 −73.1	359.2 2.1 −73.1	361.3 2.2 −73.1	363.5 2.1 −73.1	365.6 2.1 −73.1	367.7 2.1 −73.0
16	369.8 2.2 −73.0	372.0 2.1 −73.0	374.1 2.2 −73.0	376.3 2.2 −73.0	378.5 2.2 −73.0	380.7 2.2 −73.0	382.9 2.2 −73.0	385.1 2.2 −73.0	387.3 2.2 −72.9	389.5 2.2 −72.9
17	391.7 2.3 −72.9	394.0 2.2 −72.9	396.2 2.3 −72.9	398.5 2.2 −72.9	400.7 2.3 −72.8	403.0 2.3 −72.8	405.3 2.3 −72.8	407.6 2.3 −72.8	409.9 2.3 −72.8	412.2 2.3 −72.8
18	414.5 2.4 −72.8	416.9 2.3 −72.8	419.2 2.3 −72.8	421.5 2.3 −72.7	423.8 2.4 −72.7	426.2 2.4 −72.7	428.6 2.4 −72.7	431.0 2.3 −72.7	433.3 2.4 −72.6	435.7 2.4 −72.6
19	438.1 2.4 −72.6	440.5 2.4 −72.6	442.9 2.5 −72.6	445.4 2.4 −72.6	447.8 2.5 −72.6	450.3 2.4 −72.6	452.7 2.5 −72.6	455.2 2.4 −72.6	457.6 2.5 −72.6	460.1 2.5 −72.6
20	462.6 2.5 −72.6	465.1 2.5 −72.6	467.6 2.5 −72.6	470.1 2.5 −72.5	472.6 2.5 −72.5	475.1 2.5 −72.5	477.6 2.6 −72.5	480.2 2.5 −72.5	482.7 2.6 −72.5	485.3 2.5 −72.5
21	487.8 2.6 −72.4	490.4 2.6 −72.4	493.0 2.6 −72.4	495.6 2.6 −72.4	498.2 2.6 −72.4	500.8 2.6 −72.4	503.4 2.6 −72.4	506.0 2.7 −72.4	508.7 2.6 −72.4	511.3 2.6 −72.4
22	513.9 2.7 −72.3	516.6 2.6 −72.3	519.2 2.7 −72.3	521.9 2.7 −72.3	524.6 2.7 −72.3	527.3 2.7 −72.3	530.0 2.7 −72.3	532.7 2.7 −72.3	535.4 2.7 −72.3	538.1 2.7 −72.3
23	540.8 2.8 −72.3	543.6 2.7 −72.3	546.3 2.7 −72.3	549.0 2.8 −72.2	551.8 2.7 −72.2	554.5 2.8 −72.2	557.3 2.8 −72.2	560.1 2.8 −72.2	562.9 2.8 −72.2	565.7 2.8 −72.2
24	568.5 2.8 −72.2	571.3 2.8 −72.2	574.1 2.9 −72.2	577.0 2.8 −72.2	579.8 2.8 −72.2	582.6 2.9 −72.1	585.5 2.8 −72.1	588.3 2.9 −72.1	591.2 2.9 −72.1	594.1 2.9 −72.1
25	597.0 2.9 −72.1	599.9 2.9 −72.1	602.8 2.9 −72.1	605.7 2.9 −72.1	608.6 2.9 −72.1	611.5 2.9 −72.1	614.4 2.9 −72.0	617.3 3.0 −72.0	620.3 2.9 −72.0	623.2 3.0 −72.0
26	626.2 3.0 −72.0	629.2 3.0 −72.0	632.2 3.0 −72.0	635.2 3.0 −72.0	638.2 3.0 −72.0	641.2 3.0 −72.0	644.2 3.0 −72.0	647.2 3.0 −72.0	650.2 3.0 −72.0	653.2 3.0 −72.0
27	656.2 3.1 −72.0	659.3 3.1 −72.0	662.4 3.0 −72.0	665.4 3.1 −72.0	668.5 3.1 −72.0	671.6 3.1 −72.0	674.7 3.0 −72.0	677.7 3.1 −71.9	680.8 3.1 −71.9	683.9 3.2 −71.9
28	687.1 3.1 −71.9	690.2 3.1 −71.9	693.3 3.1 −71.9	696.4 3.2 −71.9	699.6 3.2 −71.9	702.8 3.1 −71.9	705.9 3.2 −71.9	709.1 3.2 −71.9	712.3 3.2 −71.9	715.5 3.2 −71.9
29	718.7 3.2 −71.9	721.9 3.2 −71.9	725.1 3.2 −71.9	728.3 3.2 −71.9	731.5 3.2 −71.9	734.7 3.3 −71.9	738.0 3.2 −71.9	741.2 3.2 −71.9	744.4 3.3 −71.8	747.7 3.3 −71.8

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 34.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	72.2 −0.3 −76.6	71.9 −0.3 −76.6	71.6 −0.3 −76.7	71.3 −0.3 −76.7	71.0 −0.3 −76.7	70.7 −0.2 −76.7	70.5 −0.3 −76.8	70.2 −0.2 −76.8	70.0 −0.2 −76.8	69.8 −0.2 −76.9
−0	76.3 −0.5 −76.3	75.8 −0.4 −76.3	75.4 −0.5 −76.4	74.9 −0.4 −76.4	74.5 −0.4 −76.4	74.1 −0.4 −76.4	73.7 −0.4 −76.5	73.3 −0.4 −76.5	72.9 −0.3 −76.5	72.6 −0.4 −76.6
+0	76.3 0.5 −76.3	76.8 0.5 −76.3	77.3 0.5 −76.3	77.8 0.5 −76.3	78.3 0.5 −76.2	78.8 0.6 −76.1	79.4 0.5 −76.1	79.9 0.6 −76.1	80.5 0.6 −76.1	81.1 0.6 −76.0
1	81.7 0.6 −76.0	82.3 0.6 −76.0	82.9 0.6 −76.0	83.5 0.7 −75.9	84.2 0.6 −75.9	84.8 0.7 −75.8	85.5 0.7 −75.8	86.2 0.7 −75.8	86.9 0.7 −75.8	87.6 0.7 −75.7
2	88.3 0.8 −75.7	89.1 0.7 −75.7	89.8 0.8 −75.7	90.6 0.8 −75.7	91.4 0.8 −75.7	92.2 0.8 −75.7	93.0 0.8 −75.6	93.8 0.8 −75.6	94.6 0.8 −75.5	95.4 0.9 −75.5
3	96.3 0.9 −75.5	97.2 0.8 −75.5	98.0 0.9 −75.4	98.9 0.9 −75.4	99.8 0.9 −75.4	100.7 0.9 −75.4	101.6 0.9 −75.3	102.5 1.0 −75.3	103.5 0.9 −75.3	104.4 1.0 −75.2
4	105.4 1.0 −75.2	106.4 1.0 −75.2	107.4 1.0 −75.2	108.4 1.0 −75.2	109.4 1.0 −75.2	110.4 1.0 −75.1	111.4 1.1 −75.1	112.5 1.0 −75.1	113.5 1.1 −75.0	114.6 1.1 −75.0
5	115.7 1.1 −75.0	116.8 1.1 −75.0	117.9 1.1 −75.0	119.0 1.1 −74.9	120.1 1.1 −74.9	121.2 1.2 −74.9	122.4 1.2 −74.9	123.6 1.1 −74.9	124.7 1.2 −74.8	125.9 1.2 −74.8
6	127.1 1.2 −74.8	128.3 1.2 −74.8	129.5 1.2 −74.7	130.7 1.3 −74.7	132.0 1.2 −74.7	133.2 1.3 −74.7	134.5 1.2 −74.7	135.7 1.3 −74.6	137.0 1.3 −74.6	138.3 1.3 −74.6
7	139.6 1.3 −74.6	140.9 1.3 −74.5	142.2 1.3 −74.5	143.5 1.4 −74.5	144.9 1.3 −74.5	146.2 1.4 −74.4	147.6 1.4 −74.4	149.0 1.4 −74.4	150.4 1.4 −74.4	151.8 1.4 −74.4
8	153.2 1.4 −74.4	154.6 1.4 −74.3	156.0 1.4 −74.3	157.4 1.4 −74.3	158.8 1.5 −74.2	160.3 1.5 −74.2	161.8 1.5 −74.2	163.3 1.5 −74.2	164.8 1.5 −74.2	166.3 1.5 −74.2
9	167.8 1.5 −74.2	169.3 1.5 −74.1	170.8 1.5 −74.1	172.3 1.6 −74.1	173.9 1.5 −74.1	175.4 1.6 −74.0	177.0 1.6 −74.0	178.6 1.6 −74.0	180.2 1.6 −74.0	181.8 1.6 −74.0
10	183.4 1.6 74.0	185.0 1.6 74.0	186.6 1.6 −73.9	188.2 1.7 −73.9	189.9 1.6 −73.9	191.5 1.7 −73.8	193.2 1.6 −73.8	194.8 1.7 −73.8	196.5 1.7 −73.8	198.2 1.7 −73.8
11	199.9 1.7 −73.7	201.6 1.8 −73.7	203.4 1.7 −73.7	205.1 1.7 −73.7	206.8 1.8 −73.7	208.6 1.8 −73.7	210.4 1.7 −73.7	212.1 1.8 −73.6	213.9 1.8 −73.6	215.7 1.8 −73.6
12	217.5 1.8 −73.6	219.3 1.8 −73.6	221.1 1.8 −73.6	222.9 1.8 −73.5	224.7 1.9 −73.5	226.6 1.9 −73.5	228.5 1.8 −73.5	230.3 1.9 −73.5	232.2 1.9 −73.5	234.1 1.8 −73.5
13	235.9 1.9 −73.4	237.8 1.9 −73.4	239.7 2.0 −73.4	241.7 1.9 −73.4	243.6 1.9 −73.4	245.5 2.0 −73.3	247.5 1.9 −73.3	249.4 2.0 −73.3	251.4 2.0 −73.3	253.4 2.0 −73.3

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 34.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	255.4 1.9 −73.3	257.3 2.0 −73.2	259.3 2.0 −73.2	261.3 2.1 −73.2	263.4 2.0 −73.2	265.4 2.0 −73.2	267.4 2.1 −73.2	269.5 2.0 −73.2	271.5 2.1 −73.2	273.6 2.0 −73.2
15	275.6 2.1 −73.1	277.7 2.1 −73.1	279.8 2.1 −73.1	281.9 2.1 −73.1	284.0 2.1 −73.1	286.1 2.1 −73.0	288.2 2.2 −73.0	290.4 2.1 −73.0	292.5 2.2 −73.0	294.7 2.1 −73.0
16	296.8 2.2 −73.0	299.0 2.1 −73.0	301.1 2.2 −72.9	303.3 2.2 −72.9	305.5 2.2 −72.9	307.7 2.2 −72.9	309.9 2.2 −72.9	312.1 2.3 −72.9	314.4 2.2 −72.9	316.6 2.2 −72.9
17	318.8 2.3 −72.8	321.1 2.2 −72.8	323.3 2.3 −72.8	325.6 2.3 −72.8	327.9 2.3 −72.8	330.2 2.3 −72.8	332.5 2.3 −72.8	334.8 2.3 −72.8	337.1 2.3 −72.7	339.4 2.3 −72.7
18	341.7 2.4 −72.7	344.1 2.3 −72.7	346.4 2.4 −72.7	348.8 2.3 −72.7	351.1 2.4 −72.7	353.5 2.4 −72.7	355.9 2.4 −72.7	358.3 2.4 −72.7	360.7 2.4 −72.7	363.1 2.4 −72.7
19	365.5 2.4 −72.6	367.9 2.4 −72.6	370.3 2.5 −72.6	372.8 2.4 −72.6	375.2 2.5 −72.6	377.7 2.4 −72.6	380.1 2.5 −72.6	382.6 2.4 −72.6	385.0 2.5 −72.6	387.5 2.5 −72.6
20	390.0 2.5 −72.5	392.5 2.5 −72.5	395.0 2.6 −72.5	397.6 2.5 −72.5	400.1 2.5 −72.5	402.6 2.5 −72.4	405.1 2.6 −72.4	407.7 2.5 −72.4	410.2 2.6 −72.4	412.8 2.6 −72.4
21	415.4 2.6 −72.4	418.0 2.6 −72.4	420.6 2.6 −72.4	423.2 2.6 −72.4	425.8 2.6 −72.4	428.4 2.6 −72.4	431.0 2.6 −72.3	433.6 2.7 −72.3	436.3 2.6 −72.3	438.9 2.7 −72.3
22	441.6 2.7 −72.3	444.3 2.6 −72.3	446.9 2.7 −72.3	449.6 2.7 −72.3	452.3 2.7 −72.3	455.0 2.7 −72.3	457.7 2.7 −72.3	460.4 2.7 −72.2	463.1 2.7 −72.2	465.8 2.7 −72.2
23	468.5 2.8 −72.2	471.3 2.7 −72.2	474.0 2.8 −72.2	476.8 2.8 −72.2	479.6 2.7 −72.2	482.3 2.8 −72.2	485.1 2.8 −72.2	487.9 2.8 −72.2	490.7 2.8 −72.2	493.5 2.8 −72.1
24	496.3 2.8 −72.1	499.1 2.8 −72.1	501.9 2.9 −72.1	504.8 2.8 −72.1	507.6 2.9 −72.1	510.5 2.9 −72.1	513.4 2.8 −72.1	516.2 2.9 −72.1	519.1 2.9 −72.1	522.0 2.9 −72.1
25	524.9 2.9 −72.1	527.8 2.9 −72.1	530.7 2.9 −72.1	533.6 2.9 −72.1	536.5 2.9 −72.0	539.4 3.0 −72.0	542.4 2.9 −72.0	545.3 3.0 −72.0	548.3 2.9 −72.0	551.2 3.0 −72.0
26	554.2 3.0 −72.0	557.2 3.0 −72.0	560.2 3.0 −72.0	563.2 3.0 −72.0	566.2 3.0 −72.0	569.2 3.0 −72.0	572.2 3.0 −72.0	575.2 3.0 −72.0	578.2 3.0 −71.9	581.2 3.0 −71.9
27	584.2 3.1 −71.9	587.3 3.1 −71.9	590.4 3.0 −71.9	593.4 3.1 −71.9	596.5 3.1 −71.9	599.6 3.1 −71.9	602.7 3.1 −71.9	605.8 3.1 −71.9	608.9 3.1 −71.9	612.0 3.2 −71.9
28	615.2 3.1 −71.9	618.3 3.1 −71.9	621.4 3.1 −71.9	624.5 3.2 −71.9	627.7 3.2 −71.9	630.9 3.1 −71.9	634.0 3.2 −71.9	637.2 3.2 −71.9	640.4 3.2 −71.9	643.6 3.2 −71.9
29	646.8 3.2 −71.9	650.0 3.2 −71.9	653.2 3.2 −71.9	656.4 3.2 −71.8	659.6 3.2 −71.8	662.8 3.3 −71.8	666.1 3.2 −71.8	669.3 3.3 −71.8	672.6 3.3 −71.8	675.9 3.2 −71.8

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 35.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	−4.4 −0.3 −76.4	−4.7 −0.4 −76.5	−5.1 −0.3 −76.5	−5.4 −0.3 −76.6	−5.7 −0.3 −76.6	−6.0 −0.3 −76.7	−6.3 −0.3 −76.7	−6.6 −0.2 −76.7	−6.8 −0.3 −76.7	−7.1 −0.3 −76.7
−0	0.0 −0.5 −76.2	−0.5 −0.5 −76.2	−1.0 −0.5 −76.3	−1.5 −0.4 −76.3	−1.9 −0.4 −76.3	−2.3 −0.5 −76.4	−2.8 −0.4 −76.4	−3.2 −0.4 −76.4	−3.6 −0.4 −76.4	−4.0 −0.4 −76.4
+0	0.0 0.5 −76.2	0.5 0.5 −76.2	1.0 0.5 −76.1	1.5 0.6 −76.1	2.1 0.6 −76.1	2.7 0.6 −76.1	3.3 0.5 −76.1	3.8 0.6 −76.0	4.4 0.7 −76.0	5.1 0.6 −76.0
1	5.7 0.6 −76.0	6.3 0.6 −75.9	6.9 0.7 −75.8	7.6 0.7 −75.8	8.3 0.7 −75.8	9.0 0.7 −75.8	9.7 0.7 −75.8	10.4 0.7 −75.8	11.1 0.8 −75.7	11.9 0.7 −75.7
2	12.6 0.8 −75.7	13.4 0.7 −75.7	14.1 0.8 −75.6	14.9 0.8 −75.6	15.7 0.8 −75.5	16.5 0.9 −75.5	17.4 0.8 −75.5	18.2 0.9 −75.5	19.1 0.8 −75.5	19.9 0.9 −75.4
3	20.8 0.9 −75.4	21.7 0.9 −75.4	22.6 0.9 −75.4	23.5 0.9 −75.4	24.4 0.9 −75.3	25.3 1.0 −75.3	26.3 0.9 −75.3	27.2 1.0 −75.2	28.2 1.0 −75.2	29.2 1.0 −75.2
4	30.2 1.0 −75.2	31.2 1.0 −75.2	32.2 1.0 −75.2	33.2 1.0 −75.1	34.2 1.1 −75.1	35.3 1.0 −75.1	36.3 1.1 −75.0	37.4 1.1 −75.0	38.5 1.1 −75.0	39.6 1.1 −75.0
5	40.7 1.1 −75.0	41.8 1.1 −74.9	42.9 1.2 −74.9	44.1 1.1 −74.9	45.2 1.1 −74.8	46.3 1.2 −74.8	47.5 1.2 −74.8	48.7 1.2 −74.8	49.9 1.2 −74.8	51.1 1.2 −74.7
6	52.3 1.2 −74.7	53.5 1.3 −74.7	54.8 1.2 −74.7	56.0 1.3 −74.6	57.3 1.2 −74.6	58.5 1.3 −74.6	59.8 1.3 −74.6	61.1 1.3 −74.6	62.4 1.3 −74.5	63.7 1.3 −74.5
7	65.0 1.4 −74.5	66.4 1.3 −74.5	67.7 1.3 −74.4	69.0 1.4 −74.4	70.4 1.4 −74.4	71.8 1.4 −74.4	73.2 1.4 −74.4	74.6 1.4 −74.4	76.0 1.4 −74.3	77.4 1.4 −74.3
8	78.8 1.5 −74.3	80.3 1.4 −74.3	81.7 1.4 −74.3	83.1 1.5 −74.2	84.6 1.5 −74.2	86.1 1.5 −74.2	87.6 1.5 −74.2	89.1 1.5 −74.2	90.6 1.5 −74.1	92.1 1.5 −74.1
9	93.6 1.6 −74.1	95.2 1.5 −74.1	96.7 1.5 −74.1	98.2 1.6 −74.0	99.8 1.6 −74.0	101.4 1.6 −74.0	103.0 1.6 −74.0	104.6 1.6 −74.0	106.2 1.6 −74.0	107.8 1.6 −73.9
10	109.4 1.6 −73.9	111.0 1.7 −73.9	112.7 1.6 −73.9	114.3 1.7 −73.8	116.0 1.7 −73.8	117.7 1.7 −73.8	119.4 1.6 −73.8	121.0 1.7 −73.7	122.7 1.7 −73.7	124.4 1.8 −73.7
11	126.2 1.7 −73.7	127.9 1.8 −73.7	129.7 1.7 −73.7	131.4 1.7 −73.7	133.1 1.8 −73.6	134.9 1.8 −73.6	136.7 1.8 −73.6	138.5 1.8 −73.6	140.3 1.8 −73.6	142.1 1.8 −73.6
12	143.9 1.8 −73.6	145.7 1.8 −73.5	147.5 1.9 −73.5	149.4 1.8 −73.5	151.2 1.9 −73.5	153.1 1.9 −73.5	155.0 1.8 −73.5	156.8 1.9 −73.4	158.7 1.9 −73.4	160.6 1.9 −73.4
13	162.5 1.9 −73.4	164.4 1.9 −73.3	166.3 2.0 −73.3	168.3 1.9 −73.3	170.2 2.0 −73.3	172.2 2.0 −73.3	174.2 1.9 −73.3	176.1 2.0 −73.2	178.1 2.0 −73.2	180.1 2.0 −73.2

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 35.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	182.1 2.0 −73.2	184.1 2.0 −73.2	186.1 2.0 −73.2	188.1 2.1 −73.2	190.2 2.0 −73.2	192.2 2.0 −73.1	194.2 2.1 −73.1	196.3 2.0 −73.1	198.3 2.1 −73.1	200.4 2.1 −73.1
15	202.5 2.1 −73.1	204.6 2.1 −73.1	206.7 2.1 −73.0	208.8 2.1 −73.0	210.9 2.2 −73.0	213.1 2.1 −73.0	215.2 2.2 −73.0	217.4 2.1 −73.0	219.5 2.2 −73.0	221.7 2.1 −73.0
16	223.8 2.2 −72.9	226.0 2.2 −72.9	228.2 2.2 −72.9	230.4 2.2 −72.9	232.6 2.2 −72.9	234.8 2.2 −72.9	237.0 2.2 −72.8	239.2 2.3 −72.8	241.5 2.2 −72.8	243.7 2.3 −72.8
17	246.0 2.3 −72.8	248.3 2.2 −72.8	250.5 2.3 −72.7	252.8 2.3 −72.7	255.1 2.3 −72.7	257.4 2.3 −72.7	259.7 2.3 −72.7	262.0 2.4 −72.7	264.4 2.3 −72.7	266.7 2.3 −72.7
18	269.0 2.4 −72.7	271.4 2.3 −72.7	273.7 2.4 −72.6	276.1 2.3 −72.6	278.4 2.4 −72.6	280.8 2.4 −72.6	283.2 2.4 −72.6	285.6 2.4 −72.6	288.0 2.4 −72.6	290.4 2.5 −72.6
19	292.9 2.4 −72.6	295.3 2.4 −72.6	297.7 2.5 −72.5	300.2 2.4 −72.5	302.6 2.5 −72.5	305.1 2.4 −72.5	307.5 2.5 −72.4	310.0 2.5 −72.4	312.5 2.5 −72.4	315.0 2.5 −72.4
20	317.5 2.5 −72.4	320.0 2.5 −72.4	322.5 2.6 −72.4	325.1 2.5 −72.4	327.6 2.6 −72.4	330.2 2.5 −72.4	332.7 2.6 −72.4	335.3 2.5 −72.4	337.8 2.6 −72.3	340.4 2.6 −72.3
21	343.0 2.6 −72.3	345.6 2.6 −72.3	348.2 2.6 −72.3	350.8 2.6 −72.3	353.4 2.6 −72.3	356.0 2.7 −72.3	358.7 2.6 −72.3	361.3 2.7 −72.3	364.0 2.6 −72.3	366.6 2.7 −72.3
22	369.3 2.7 −72.3	372.0 2.6 −72.3	374.6 2.7 −72.2	377.3 2.7 −72.2	380.0 2.7 −72.2	382.7 2.7 −72.2	385.4 2.8 −72.2	388.2 2.7 −72.2	390.9 2.7 −72.2	393.6 2.7 −72.2
23	396.3 2.8 −72.2	399.1 2.7 −72.2	401.8 2.8 −72.1	404.6 2.8 −72.1	407.4 2.7 −72.1	410.1 2.8 −72.1	412.9 2.8 −72.1	415.7 2.8 −72.1	418.5 2.9 −72.1	421.4 2.8 −72.1
24	424.2 2.8 −72.1	427.0 2.8 −72.1	429.8 2.9 −72.1	432.7 2.8 −72.1	435.5 2.9 −72.1	438.4 2.9 −72.1	441.3 2.8 −72.1	444.1 2.9 −72.0	447.0 2.9 −72.0	449.9 2.9 −72.0
25	452.8 2.9 −72.0	455.7 2.9 −72.0	458.6 2.9 −72.0	461.5 3.0 −72.0	464.5 2.9 −72.0	467.4 3.0 −72.0	470.4 2.9 −72.0	473.3 3.0 −72.0	476.3 2.9 −72.0	479.2 3.0 −72.0
26	482.2 3.0 −72.0	485.2 3.0 −72.0	488.2 3.0 −72.0	491.2 3.0 −72.0	494.2 3.0 −72.0	497.2 3.0 −71.9	500.2 3.0 −71.9	503.2 3.1 −71.9	506.3 3.0 −71.9	509.3 3.0 −71.9
27	512.3 3.1 −71.9	515.4 3.1 −71.9	518.5 3.0 −71.9	521.5 3.1 −71.9	524.6 3.1 −71.9	527.7 3.1 −71.9	530.8 3.1 −71.9	533.9 3.1 −71.9	537.0 3.1 −71.9	540.1 3.2 −71.9
28	543.3 3.1 −71.9	546.4 3.1 −71.9	549.5 3.1 −71.8	552.6 3.2 −71.8	555.8 3.2 −71.8	559.0 3.1 −71.8	562.1 3.2 −71.8	565.3 3.2 −71.8	568.5 3.2 −71.8	571.7 3.2 −71.8
29	574.9 3.2 −71.8	578.1 3.2 −71.8	581.3 3.3 −71.8	584.6 3.2 −71.8	587.8 3.2 −71.8	591.0 3.3 −71.8	594.3 3.2 −71.8	597.5 3.3 −71.8	600.8 3.3 −71.8	604.1 3.2 −71.8

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 36.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	−80.8 −0.4 −76.4	−81.2 −0.4 −76.5	−81.6 −0.4 −76.5	−82.0 −0.3 −76.5	−82.3 −0.4 −76.5	−82.7 −0.3 −76.5	−83.0 −0.3 −76.6	−83.3 −0.2 −76.6	−83.5 −0.3 −76.7	83.8 −0.3 −76.7
−0	−76.2 −0.5 −76.2	−76.7 −0.6 −76.2	−77.3 −0.5 −76.2	−77.8 −0.4 −76.2	−78.2 −0.5 −76.3	−78.7 −0.5 −76.3	−79.2 −0.4 −76.3	−79.6 −0.4 −76.4	−80.0 −0.4 −76.4	80.4 −0.4 −76.4
+0	−76.2 0.5 −76.1	−75.7 0.6 −76.1	−75.1 0.5 −76.1	−74.6 0.6 −76.0	−74.0 0.6 −76.0	−73.4 0.6 −76.0	−72.8 0.6 −76.0	−72.2 0.6 −75.9	−71.6 0.7 −75.9	−70.9 0.6 −75.9
1	−70.3 0.7 −75.8	−69.6 0.7 −75.8	−68.9 0.7 −75.8	−68.2 0.7 −75.8	−67.5 0.7 −75.8	−66.8 0.7 −75.8	−66.1 0.7 −75.7	−65.4 0.8 −75.7	−64.6 0.8 −75.7	−63.8 0.7 −75.7
2	−63.1 0.8 −75.6	−62.3 0.8 −75.6	−61.5 0.8 −75.5	−60.7 0.9 −75.5	−59.8 0.8 −75.5	−59.0 0.9 −75.5	−58.1 0.8 −75.5	−57.3 0.9 −75.4	−56.4 0.9 −75.4	−55.5 0.9 −75.4
3	−54.6 0.9 −75.4	−53.7 0.9 −75.3	−52.8 0.9 −75.3	−51.9 1.0 −75.3	−50.9 0.9 −75.3	−50.0 1.0 −75.2	−49.0 1.0 −75.2	−48.0 1.0 −75.2	−47.0 1.0 −75.2	−46.0 1.0 −75.2
4	−45.0 1.0 −75.2	−44.0 1.0 −75.1	−43.0 1.1 −75.0	−41.9 1.0 −75.0	−40.9 1.1 −75.0	−39.8 1.1 −75.0	−38.7 1.1 −75.0	−37.6 1.1 −74.9	−36.5 1.1 −74.9	−35.4 1.1 −74.9
5	−34.3 1.2 −74.9	−33.1 1.1 −74.9	−32.0 1.2 −74.8	−30.8 1.2 −74.8	−29.6 1.1 −74.8	−28.5 1.2 −74.7	−27.3 1.2 −74.7	−26.1 1.2 −74.7	−24.9 1.3 −74.7	−23.6 1.2 −74.7
6	−22.4 1.2 −74.6	−21.2 1.3 −74.6	−19.9 1.3 −74.6	−18.6 1.3 −74.6	−17.3 1.2 −74.6	−16.1 1.3 −74.5	−14.8 1.3 −74.5	−13.5 1.4 −74.5	−12.1 1.3 −74.5	−10.8 1.3 −74.5
7	−9.5 1.4 −74.4	−8.1 1.4 −74.4	−6.7 1.3 −74.4	−5.4 1.4 −74.4	−4.0 1.4 −74.4	−2.6 1.4 −74.3	−1.2 1.4 −74.3	0.2 1.5 −74.3	1.7 1.4 −74.3	3.1 1.4 −74.3
8	4.5 1.5 −74.2	6.0 1.4 −74.2	7.4 1.5 −74.2	8.9 1.5 −74.2	10.4 1.5 −74.2	11.9 1.5 −74.1	13.4 1.5 −74.1	14.9 1.6 −74.1	16.5 1.5 −74.1	18.0 1.5 −74.1
9	19.5 1.6 −74.0	21.1 1.5 −74.0	22.6 1.6 −74.0	24.2 1.6 −74.0	25.8 1.6 −74.0	27.4 1.6 −73.9	29.0 1.6 −73.9	30.6 1.6 −73.9	32.2 1.7 −73.9	33.9 1.6 −73.9
10	35.5 1.6 −73.8	37.1 1.7 −73.8	38.8 1.7 −73.8	40.5 1.7 −73.8	42.2 1.7 −73.8	43.9 1.7 −73.8	45.6 1.7 −73.8	47.3 1.7 −73.8	49.0 1.7 −73.7	50.7 1.8 −73.7
11	52.5 1.7 −73.7	54.2 1.8 −73.7	56.0 1.7 −73.7	57.7 1.8 −73.6	59.5 1.8 −73.6	61.3 1.8 −73.6	63.1 1.8 −73.6	64.9 1.8 −73.6	66.7 1.8 −73.5	68.5 1.8 −73.5
12	70.3 1.9 −73.5	72.2 1.8 −73.5	74.0 1.9 −73.4	75.9 1.8 −73.4	77.7 1.9 −73.4	79.6 1.9 −73.4	81.5 1.9 −73.4	83.4 1.9 −73.4	85.3 1.9 −73.3	87.2 1.9 −73.3
13	89.1 2.0 −73.3	91.1 1.9 −73.3	93.0 2.0 −73.3	95.0 1.9 −73.3	96.9 2.0 −73.2	98.9 2.0 −73.2	100.9 2.0 −73.2	102.9 2.0 −73.2	104.9 2.0 −73.2	106.9 2.0 −73.2

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 36.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14....	108.9 2.0 −73.2	110.9 2.0 −73.2	112.9 2.0 −73.1	114.9 2.1 −73.1	117.0 2.1 −73.1	119.1 2.0 −73.1	121.1 2.1 −73.1	123.2 2.0 −73.1	125.2 2.1 −73.0	127.3 2.1 −73.0
15....	129.4 2.1 −73.0	131.5 2.2 −73.0	133.7 2.1 −73.0	135.8 2.1 −73.0	137.9 2.2 −73.0	140.1 2.1 −73.0	142.2 2.2 −72.9	144.4 2.1 −72.9	146.5 2.2 −72.9	148.7 2.2 −72.9
16....	150.9 2.2 −72.9	153.1 2.2 −72.9	155.3 2.2 −72.9	157.5 2.2 −72.8	159.7 2.2 −72.8	161.9 2.3 −72.8	164.2 2.2 −72.8	166.4 2.3 −72.8	168.7 2.2 −72.8	170.9 2.3 −72.8
17....	173.2 2.3 −72.8	175.5 2.3 −72.8	177.8 2.3 −72.7	180.1 2.3 −72.7	182.4 2.3 −72.7	184.7 2.3 −72.7	187.0 2.3 −72.7	189.3 2.4 −72.7	191.7 2.3 −72.7	194.0 2.3 −72.7
18....	196.3 2.4 −72.6	198.7 2.4 −72.6	201.1 2.4 −72.6	203.5 2.3 −72.6	205.8 2.4 −72.6	208.2 2.4 −72.6	210.6 2.4 −72.5	213.0 2.4 −72.5	215.4 2.4 −72.5	217.8 2.5 −72.5
19....	220.3 2.4 −72.5	222.7 2.5 −72.5	225.2 2.5 −72.5	227.7 2.4 −72.5	230.1 2.5 −72.5	232.6 2.5 −72.5	235.1 2.5 −72.5	237.6 2.5 −72.5	240.1 2.5 −72.5	242.6 2.5 −72.4
20....	245.1 2.5 −72.4	247.6 2.5 −72.4	250.1 2.6 −72.4	252.7 2.5 −72.4	255.2 2.6 −72.4	257.8 2.5 −72.4	260.3 2.6 −72.3	262.9 2.6 −72.3	265.5 2.6 −72.3	268.1 2.6 −72.3
21....	270.7 2.6 −72.3	273.3 2.6 −72.3	275.9 2.6 −72.3	278.5 2.6 −72.3	281.1 2.6 −72.3	283.7 2.7 −72.3	286.4 2.7 −72.3	289.0 2.7 −72.2	291.7 2.6 −72.2	294.3 2.7 −72.2
22....	297.0 2.7 −72.2	299.7 2.7 −72.2	302.4 2.7 −72.2	305.1 2.7 −72.2	307.8 2.7 −72.2	310.5 2.7 −72.2	313.2 2.8 −72.2	316.0 2.7 −72.2	318.7 2.7 −72.2	321.4 2.7 −72.1
23....	324.1 2.8 −72.1	326.9 2.8 −72.1	329.7 2.8 −72.1	332.5 2.8 −72.1	335.3 2.7 −72.1	338.0 2.8 −72.1	340.8 2.8 −72.1	343.6 2.8 −72.1	346.4 2.9 −72.1	349.3 2.8 −72.1
24....	352.1 2.8 −72.1	354.9 2.8 −72.0	357.7 2.9 −72.0	360.6 2.8 −72.0	363.4 2.9 −72.0	366.3 2.9 −72.0	369.2 2.9 −72.0	372.1 2.9 −72.0	375.0 2.9 −72.0	377.9 2.9 −72.0
25....	380.8 2.9 −72.0	383.7 2.9 −72.0	386.6 2.9 −72.0	389.5 3.0 −72.0	392.5 2.9 −72.0	395.4 3.0 −72.0	398.4 2.9 −72.0	401.3 3.0 −71.9	404.3 2.9 −71.9	407.2 3.0 −71.9
26....	410.2 3.0 −71.9	413.2 3.0 −71.9	416.2 3.0 −71.9	419.2 3.0 −71.9	422.2 3.1 −71.9	425.3 3.0 −71.9	428.3 3.0 −71.9	431.3 3.1 −71.9	434.4 3.0 −71.9	437.4 3.0 −71.9
27....	440.4 3.1 −71.9	443.5 3.0 −71.9	446.6 3.1 −71.9	449.6 3.1 −71.8	452.7 3.1 −71.8	455.8 3.1 −71.8	458.9 3.1 −71.8	462.0 3.1 −71.8	465.1 3.1 −71.8	468.2 3.2 −71.8
28....	471.4 3.1 −71.8	474.5 3.2 −71.8	477.7 3.1 −71.8	480.8 3.2 −71.8	484.0 3.2 −71.8	487.2 3.1 −71.8	490.3 3.2 −71.8	493.5 3.2 −71.8	496.7 3.2 −71.8	499.9 3.2 −71.8
29....	503.1 3.2 −71.8	506.3 3.2 −71.8	509.5 3.3 −71.8	512.8 3.2 −71.8	516.0 3.2 −71.8	519.2 3.3 −71.8	522.5 3.3 −71.8	525.7 3.2 −71.8	529.0 3.3 −71.8	532.3 3.3 −71.8

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 37.00

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	−157.2 −0.4 −76.3	−157.7 −0.4 −76.4	−158.1 −0.4 −76.4	−158.5 −0.3 −76.4	−158.8 −0.4 −76.5	−159.2 −0.4 −76.5	−159.6 −0.3 −76.5	−159.9 −0.3 −76.5	−160.2 −0.3 −76.6	−160.5 −0.3 −76.6
−0	−152.3 −0.6 −76.1	−152.9 −0.6 −76.1	−153.5 −0.5 −76.1	−154.0 −0.5 −76.1	−154.5 −0.5 −76.2	−155.0 −0.5 −76.2	−155.5 −0.5 −76.2	−156.0 −0.4 −76.2	−156.4 −0.4 −76.3	−156.8 −0.5 −76.3
+0	−152.3 0.5 −76.1	−151.8 0.6 −76.0	−151.2 0.6 −76.0	−150.6 0.6 −76.0	−150.0 0.6 −76.0	−149.4 0.6 −75.9	−148.8 0.7 −75.9	−148.1 0.6 −75.9	−147.5 0.7 −75.8	−146.8 0.7 −75.8
1	−146.1 0.7 −75.8	−145.4 0.7 −75.8	−144.7 0.7 −75.8	−144.0 0.7 −75.7	−143.3 0.7 −75.7	−142.6 0.8 −75.6	−141.8 0.7 −75.6	−141.1 0.8 −75.6	−140.3 0.8 −75.6	−139.5 0.8 −75.5
2	−138.7 0.8 −75.5	−137.9 0.9 −75.5	−137.0 0.8 −75.5	−136.2 0.9 −75.5	−135.3 0.8 −75.5	−134.5 0.9 −75.4	−133.6 0.9 −75.4	−132.7 0.9 −75.4	−131.8 0.9 −75.4	−130.9 0.9 −75.3
3	−130.0 1.0 −75.3	−129.0 0.9 −75.3	−128.1 0.9 −75.3	−127.2 1.0 −75.2	−126.2 1.0 −75.2	−125.2 1.0 −75.2	−124.2 1.0 −75.2	−123.2 1.0 −75.1	−122.2 1.0 −75.1	−121.2 1.0 −75.0
4	−120.2 1.1 −75.0	−119.1 1.1 −75.0	−118.0 1.1 −75.0	−116.9 1.0 −75.0	−115.9 1.1 −74.9	−114.8 1.1 −74.9	−113.7 1.2 −74.9	−112.5 1.1 −74.9	−111.4 1.1 −74.9	−110.3 1.1 −74.8
5	−109.2 1.2 −74.8	−108.0 1.2 −74.8	−106.8 1.2 −74.8	−105.6 1.2 −74.8	−104.4 1.2 −74.8	−103.2 1.2 −74.7	−102.0 1.2 −74.7	−100.8 1.2 −74.7	−99.6 1.3 −74.6	−98.3 1.3 −74.6
6	−97.0 1.2 −74.6	−95.8 1.3 −74.6	−94.5 1.3 −74.6	−93.2 1.3 −74.6	−91.9 1.3 −74.5	−90.6 1.3 −74.5	−89.3 1.3 −74.5	−88.0 1.4 −74.4	−86.6 1.3 −74.4	−85.3 1.4 −74.4
7	−83.9 1.4 −74.4	−82.5 1.4 −74.4	−81.1 1.3 −74.4	−79.8 1.4 −74.3	−78.4 1.4 −74.3	−76.9 1.4 −74.3	−75.5 1.4 −74.3	−74.1 1.5 −74.2	−72.6 1.4 −74.2	−71.2 1.5 −74.2
8	−69.7 1.5 −74.2	−68.2 1.4 −74.2	−66.8 1.5 −74.1	−65.3 1.5 −74.1	−63.8 1.6 −74.1	−62.2 1.5 −74.1	−60.7 1.5 −74.1	−59.2 1.6 −74.0	−57.6 1.5 −74.0	−56.1 1.6 −74.0
9	−54.5 1.6 −74.0	−52.9 1.5 −74.0	−51.4 1.6 −73.9	−49.8 1.6 −73.9	−48.2 1.7 −73.9	−46.5 1.6 −73.9	−44.9 1.6 −73.9	−43.3 1.6 −73.8	−41.7 1.7 −73.8	−40.0 1.7 −73.8
10	−38.3 1.6 −73.8	−36.7 1.7 −73.7	−35.0 1.7 −73.7	−33.3 1.7 −73.7	−31.6 1.7 −73.7	−29.9 1.7 −73.7	−28.2 1.7 −73.6	−26.5 1.8 −73.6	−24.7 1.7 −73.6	−23.0 1.8 −73.6
11	−21.2 1.7 −73.6	−19.5 1.8 −73.5	−17.7 1.8 −73.5	−15.9 1.8 −73.5	−14.1 1.8 −73.5	−12.3 1.8 −73.5	−10.5 1.8 −73.5	−8.7 1.9 −73.5	−6.8 1.8 −73.5	−5.0 1.8 −73.5
12	−3.2 1.9 −73.4	−1.3 1.9 −73.4	0.6 1.9 −73.4	2.5 1.8 −73.4	4.3 1.9 −73.3	6.2 1.9 −73.3	8.1 1.9 −73.3	10.0 2.0 −73.3	12.0 1.9 −73.3	13.9 1.9 −73.3
13	15.8 2.0 −73.3	17.8 1.9 −73.3	19.7 2.0 −73.3	21.7 2.0 −73.3	23.7 2.0 −73.2	25.7 2.0 −73.2	27.7 2.0 −73.2	29.7 2.0 −73.2	31.7 2.0 −73.2	33.7 2.0 −73.2

TABLE V A.—$10^5\Delta_{s,t}$ FOR SALINITY 37.00—Continued

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	35.7 2.0 −73.1	37.7 2.1 −73.1	39.8 2.0 −73.1	41.8 2.1 −73.1	43.9 2.1 −73.1	46.0 2.0 −73.1	48.0 2.1 −73.0	50.1 2.1 −73.0	52.2 2.1 −73.0	54.3 2.1 −73.0
15----	56.4 2.1 −73.0	58.5 2.2 −72.9	60.7 2.1 −72.9	62.8 2.1 −72.9	64.9 2.2 −72.9	67.1 2.2 −72.9	69.3 2.2 −72.9	71.5 2.1 −72.9	73.6 2.2 −72.8	75.8 2.2 −72.8
16----	78.0 2.2 −72.8	80.2 2.2 −72.8	82.4 2.3 −72.8	84.7 2.2 =72.8	86.9 2.2 −72.8	89.1 2.3 −72.8	91.4 2.2 −72.8	93.6 2.3 −72.7	95.9 2.2 −72.7	98.1 2.3 −72.7
17----	100.4 2.3 −72.7	102.7 2.4 −72.7	105.1 2.3 −72.7	107.4 2.8 −72.7	109.7 2.3 −72.7	112.0 2.3 −72.7	114.3 2.3 −72.6	116.6 2.4 −72.6	119.0 2.3 −72.6	121.3 2.4 −72.6
18----	123.7 2.4 −72.6	126.1 2.4 −72.6	128.5 2.4 −72.6	130.9 2.3 −72.6	133.2 2.4 −72.5	135.6 2.5 −72.5	138.1 2.4 −72.5	140.5 2.4 −72.5	142.9 2.4 −72.5	145.3 2.5 −72.5
19----	147.8 2.4 −72.5	150.2 2.5 −72.4	152.7 2.5 −72.4	155.2 2.4 −72.4	157.6 2.5 −72.4	160.1 2.5 −72.4	162.6 2.5 −72.4	165.1 2.5 −72.4	167.6 2.4 −72.4	170.2 2.5 −72.4
20----	172.7 2.5 −72.4	175.2 2.5 −72.4	177.7 2.6 −72.3	180.3 2.5 −72.3	182.8 2.6 −72.3	185.4 2.6 −72.3	188.0 2.6 −72.3	190.6 2.6 −72.3	193.2 2.6 −72.3	195.8 2.6 −72.3
21----	198.4 2.6 −72.3	201.0 2.6 −72.3	203.6 2.6 −72.3	206.2 2.6 −72.2	208.8 2.6 −72.2	211.4 2.7 −72.2	214.1 2.7 −72.2	216.8 2.7 −72.2	219.5 2.6 −72.2	222.1 2.7 −72.2
22----	224.8 2.7 −72.2	227.5 2.7 −72.2	230.2 2.7 −72.2	232.9 2.7 −72.2	235.6 2.7 −72.1	238.3 2.7 −72.1	241.0 2.8 −72.1	243.8 2.7 −72.1	246.5 2.8 −72.1	249.3 2.7 −72.1
23----	252.0 2.8 −72.1	254.8 2.8 −72.1	257.6 2.8 −72.1	260.4 2.8 −72.1	263.2 2.7 −72.1	265.9 2.8 −72.0	268.7 2.8 −72.0	271.5 2.8 −72.0	274.3 2.9 −72.0	277.2 2.8 −72.0
24----	280.0 2.9 −72.0	282.9 2.8 −72.0	285.7 2.9 −72.0	288.6 2.8 −72.0	291.4 2.9 −72.0	294.3 2.9 −72.0	297.2 2.9 −72.0	300.1 2.9 −72.0	303.0 2.9 −72.0	305.9 2.9 −72.0
25----	308.8 2.9 −72.0	311.7 2.9 −71.9	314.6 2.9 −71.9	317.5 3.0 −71.9	320.5 2.9 −71.9	323.4 3.0 −71.9	326.4 3.0 −71.9	329.4 3.0 −71.9	332.4 3.0 −71.9	335.3 3.0 −71.9
26----	338.3 3.0 −71.9	341.3 3.0 −71.9	344.3 3.0 −71.9	347.3 3.0 −71.9	350.3 3.1 −71.9	353.4 3.0 −71.9	356.4 3.0 −71.9	359.4 3.1 −71.9	362.5 3.0 −71.9	365.5 3.0 −71.8
27----	368.5 3.1 −71.8	371.6 3.1 −71.8	374.7 3.1 −71.8	377.8 3.1 −71.8	380.9 3.1 −71.8	384.0 3.1 −71.8	387.1 3.1 −71.8	390.2 3.1 −71.8	393.3 3.1 −71.8	396.4 3.2 −71.8
28----	399.6 3.1 −71.8	402.7 3.2 −71.8	405.9 3.1 −71.8	409.0 3.2 −71.8	412.2 3.2 −71.8	415.4 3.1 −71.8	418.5 3.2 −71.7	421.7 3.2 −71.7	424.9 3.2 −71.7	428.1 3.2 −71.7
29----	431.3 3.2 −71.7	434.5 3.2 −71.7	437.7 3.3 −71.7	441.0 3.2 −71.7	444.2 3.2 −71.7	447.4 3.3 −71.7	450.7 3.2 −71.7	453.9 3.3 −71.7	457.2 3.3 −71.7	460.5 3.3 −71.7

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TABLE V B.—TEMPERATURE INTERPOLATION FOR TABLE V A

T Difference	T 0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
0.2	.0	.0	.1	.1	.1	.1	.1	.2	.2
0.3	.0	.1	.1	.1	.2	.2	.2	.2	.3
0.4	.0	.1	.1	.2	.2	.2	.3	.3	.4
0.5	.0	.1	.2	.2	.2	.3	.4	.4	.4
0.6	.1	.1	.2	.2	.3	.4	.4	.5	.5
0.7	.1	.1	.2	.3	.4	.4	.5	.6	.6
0.8	.1	.2	.2	.3	.4	.5	.6	.6	.7
0.9	.1	.2	.3	.4	.4	.5	.6	.7	.8
1.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.1	.1	.2	.3	.4	.6	.7	.8	.9	1.0
1.2	.1	.2	.4	.5	.6	.7	.8	1.0	1.1
1.3	.1	.3	.4	.5	.6	.8	.9	1.0	1.2
1.4	.1	.3	.4	.6	.7	.8	1.0	1.1	1.3
1.5	.2	.3	.4	.6	.8	.9	1.0	1.2	1.4
1.6	.2	.3	.5	.6	.8	1.0	1.1	1.3	1.4
1.7	.2	.3	.5	.7	.8	1.0	1.2	1.4	1.5
1.8	.2	.4	.5	.7	.9	1.1	1.3	1.4	1.6
1.9	.2	.4	.6	.8	1.0	1.1	1.3	1.5	1.7
2.0	.2	.4	.6	.8	1.0	1.2	1.4	1.6	1.8
2.1	.2	.4	.6	.8	1.0	1.3	1.5	1.7	1.9
2.2	.2	.4	.7	.9	1.1	1.3	1.5	1.8	2.0
2.3	.2	.5	.7	.9	1.2	1.4	1.6	1.8	2.1
2.4	.2	.5	.7	1.0	1.2	1.4	1.7	1.9	2.2
2.5	.2	.5	.8	1.0	1.2	1.5	1.8	2.0	2.2
2.6	.3	.5	.8	1.0	1.3	1.6	1.8	2.1	2.3
2.7	.3	.5	.8	1.1	1.4	1.6	1.9	2.2	2.4
2.8	.3	.6	.8	1.1	1.4	1.7	2.0	2.2	2.5
2.9	.3	.6	.9	1.2	1.4	1.7	2.0	2.3	2.6
3.0	.3	.6	.9	1.2	1.5	1.8	2.1	2.4	2.7
3.1	.3	.6	.9	1.2	1.6	1.9	2.2	2.5	2.8
3.2	.3	.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9
3.3	.3	.7	1.0	1.3	1.7	2.0	2.3	2.6	3.0

TABLE V C.—SALINITY INTERPOLATION FOR TABLE V A

S	S Difference														
	−71.5	−72.0	−72.5	−73.0	−73.5	−74.0	−74.5	−75.0	−75.5	−76.0	−76.5	−77.0	−77.5	−78.0	−78.5
0.00	0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0
0.01	−.7	−.7	−.7	−.7	−.7	−.7	−.7	−.7	−.8	−.8	−.8	−.8	−.8	−.8	−.8
0.02	−1.4	−1.4	−1.4	−1.5	−1.5	−1.5	−1.5	−1.5	−1.5	−1.5	−1.5	−1.5	−1.5	−1.6	−1.6
0.03	−2.1	−2.2	−2.2	−2.2	−2.2	−2.2	−2.2	−2.2	−2.3	−2.3	−2.3	−2.3	−2.3	−2.3	−2.3
0.04	−2.9	−2.9	−2.9	−2.9	−2.9	−3.0	−3.0	−3.0	−3.0	−3.0	−3.1	−3.1	−3.1	−3.1	−3.1
0.05	−3.6	−3.6	−3.6	−3.6	−3.7	−3.7	−3.7	−3.7	−3.8	−3.8	−3.8	−3.9	−3.9	−3.9	−3.9
0.06	−4.3	−4.3	−4.3	−4.4	−4.4	−4.4	−4.5	−4.5	−4.5	−4.6	−4.6	−4.6	−4.6	−4.7	−4.7
0.07	−5.0	−5.0	−5.0	−5.1	−5.1	−5.2	−5.2	−5.2	−5.3	−5.3	−5.3	−5.4	−5.4	−5.5	−5.5
0.08	−5.7	−5.8	−5.8	−5.8	−5.9	−5.9	−6.0	−6.0	−6.0	−6.1	−6.1	−6.2	−6.2	−6.2	−6.3
0.09	−6.4	−6.5	−6.5	−6.6	−6.6	−6.7	−6.7	−6.7	−6.8	−6.8	−6.9	−6.9	−7.0	−7.0	−7.1
0.10	−7.2	−7.2	−7.2	−7.3	−7.3	−7.4	−7.4	−7.5	−7.5	−7.6	−7.6	−7.7	−7.7	−7.8	−7.8
0.11	−7.9	−7.9	−8.0	−8.0	−8.1	−8.1	−8.2	−8.2	−8.3	−8.4	−8.4	−8.5	−8.5	−8.6	−8.6
0.12	−8.6	−8.6	−8.7	−8.8	−8.8	−8.9	−8.9	−9.0	−9.1	−9.1	−9.2	−9.2	−9.3	−9.4	−9.4
0.13	−9.3	−9.4	−9.4	−9.5	−9.5	−9.6	−9.7	−9.7	−9.8	−9.9	−9.9	−10.0	−10.1	−10.1	−10.2
0.14	−10.0	−10.1	−10.2	−10.3	−10.4	−10.4	−10.4	−10.5	−10.6	−10.6	−10.7	−10.8	−10.8	−10.9	−11.0
0.15	−10.7	−10.8	−10.9	−10.9	−11.0	−11.1	−11.2	−11.2	−11.3	−11.4	−11.5	−11.6	−11.6	−11.7	−11.8
0.16	−11.4	−11.5	−11.6	−11.7	−11.8	−11.8	−11.9	−12.0	−12.1	−12.2	−12.2	−12.3	−12.4	−12.5	−12.6
0.17	−12.2	−12.2	−12.3	−12.5	−12.5	−12.6	−12.7	−12.7	−12.8	−12.9	−13.0	−13.1	−13.2	−13.3	−13.3
0.18	−12.9	−13.0	−13.1	−13.1	−13.2	−13.3	−13.4	−13.5	−13.6	−13.7	−13.8	−13.9	−14.0	−14.0	−14.1
0.19	−13.6	−13.7	−13.8	−13.9	−14.0	−14.1	−14.1	−14.2	−14.3	−14.4	−14.5	−14.6	−14.7	−14.8	−14.9
0.20	−14.3	−14.4	−14.5	−14.6	−14.7	−14.8	−14.9	−15.0	−15.1	−15.2	−15.3	−15.4	−15.5	−15.6	−15.7
0.21	−15.0	−15.1	−15.2	−15.3	−15.4	−15.5	−15.6	−15.7	−15.8	−16.0	−16.1	−16.2	−16.3	−16.4	−16.5
0.22	−15.7	−15.8	−15.9	−16.1	−16.2	−16.3	−16.4	−16.5	−16.6	−16.7	−16.8	−16.9	−17.1	−17.2	−17.3
0.23	−16.4	−16.6	−16.7	−16.8	−16.9	−17.0	−17.1	−17.2	−17.4	−17.5	−17.6	−17.7	−17.8	−17.9	−18.1
0.24	−17.2	−17.3	−17.4	−17.5	−17.6	−17.8	−17.9	−18.0	−18.1	−18.2	−18.4	−18.5	−18.6	−18.7	−18.8
0.25	−17.9	−18.0	−18.1	−18.2	−18.4	−18.5	−18.6	−18.7	−18.9	−19.0	−19.1	−19.3	−19.4	−19.5	−19.6
0.26	−18.6	−18.7	−18.8	−19.0	−19.1	−19.2	−19.4	−19.5	−19.6	−19.8	−19.9	−20.0	−20.2	−20.3	−20.4
0.27	−19.3	−19.4	−19.6	−19.7	−19.8	−20.0	−20.1	−20.2	−20.4	−20.5	−20.6	−20.8	−20.9	−21.1	−21.2
0.28	−20.0	−20.2	−20.3	−20.4	−20.6	−20.7	−20.9	−21.0	−21.1	−21.3	−21.4	−21.6	−21.7	−21.8	−22.0
0.29	−20.7	−20.9	−21.0	−21.1	−21.3	−21.5	−21.6	−21.7	−21.9	−22.0	−22.2	−22.3	−22.5	−22.6	−22.8
0.30	−21.5	−21.6	−21.7	−21.9	−22.0	−22.2	−22.3	−22.5	−22.6	−22.8	−22.9	−23.1	−23.3	−23.4	−23.6
0.31	−22.2	−22.3	−22.5	−22.6	−22.8	−22.9	−23.1	−23.2	−23.4	−23.6	−23.7	−23.9	−24.0	−24.2	−24.3
0.32	−22.9	−23.0	−23.2	−23.4	−23.5	−23.7	−23.8	−24.0	−24.2	−24.3	−24.5	−24.6	−24.8	−25.0	−25.1
0.33	−23.6	−23.8	−23.9	−24.1	−24.2	−24.4	−24.6	−24.7	−24.9	−25.1	−25.2	−25.4	−25.6	−25.7	−25.9
0.34	−24.3	−24.5	−24.6	−24.8	−25.0	−25.2	−25.3	−25.5	−25.7	−25.8	−26.0	−26.2	−26.4	−26.5	−26.7
0.35	−25.0	−25.2	−25.4	−25.5	−25.7	−25.9	−26.1	−26.2	−26.4	−26.6	−26.8	−27.0	−27.1	−27.3	−27.5
0.36	−25.7	−25.9	−26.1	−26.3	−26.5	−26.6	−26.8	−27.0	−27.2	−27.4	−27.5	−27.7	−27.9	−28.1	−28.3
0.37	−26.5	−26.6	−26.8	−27.0	−27.2	−27.4	−27.6	−27.7	−27.9	−28.1	−28.3	−28.5	−28.7	−28.9	−29.0
0.38	−27.2	−27.4	−27.6	−27.7	−27.9	−28.1	−28.3	−28.5	−28.7	−28.9	−29.1	−29.3	−29.5	−29.6	−29.8
0.39	−27.9	−28.1	−28.3	−28.5	−28.7	−28.9	−29.0	−29.2	−29.4	−29.6	−29.8	−30.0	−30.2	−30.4	−30.6

TABLE V C.—SALINITY INTERPOLATION FOR TABLE V A—Continued

S	S Difference														
	−71.5	−72.0	−72.5	−73.0	−73.5	−74.0	−74.5	−75.0	−75.5	−76.0	−76.5	−77.0	−77.5	−78.0	−78.5
0.40	−28.6	−28.8	−29.0	−29.2	−29.4	−29.6	−29.8	−30.0	−30.2	−30.4	−30.6	−30.8	−31.0	−31.2	−31.4
0.41	−29.3	−29.5	−29.7	−29.9	−30.1	−30.3	−30.5	−30.7	−30.9	−31.2	−31.4	−31.6	−31.8	−32.0	−32.2
0.42	−30.0	−30.2	−30.4	−30.7	−30.9	−31.1	−31.3	−31.5	−31.7	−31.9	−32.1	−32.3	−32.6	−32.8	−33.0
0.43	−30.8	−31.0	−31.2	−31.4	−31.6	−31.8	−32.0	−32.2	−32.5	−32.7	−32.9	−33.1	−33.3	−33.5	−33.7
0.44	−31.5	−31.7	−31.9	−32.1	−32.3	−32.6	−32.8	−33.0	−33.2	−33.4	−33.7	−33.9	−34.1	−34.3	−34.5
0.45	−32.2	−32.4	−32.6	−32.8	−33.1	−33.3	−33.5	−33.7	−34.0	−34.2	−34.4	−34.7	−34.9	−35.1	−35.3
0.46	−32.9	−33.1	−33.3	−33.6	−33.8	−34.0	−34.3	−34.5	−34.7	−35.0	−35.2	−35.4	−35.7	−35.9	−36.1
0.47	−33.6	−33.8	−34.1	−34.3	−34.5	−34.8	−35.0	−35.2	−35.5	−35.7	−35.9	−36.2	−36.4	−36.7	−36.9
0.48	−34.3	−34.6	−34.8	−35.0	−35.3	−35.5	−35.8	−36.0	−36.2	−36.5	−36.7	−37.0	−37.2	−37.4	−37.7
0.49	−35.0	−35.3	−35.5	−35.8	−36.0	−36.3	−36.5	−36.7	−37.0	−37.2	−37.5	−37.7	−38.0	−38.2	−38.5
0.50	−35.8	−36.0	−36.2	−36.5	−36.7	−37.0	−37.2	−37.5	−37.7	−38.0	−38.2	−38.5	−38.8	−39.0	−39.2
0.51	−36.5	−36.7	−37.0	−37.2	−37.5	−37.7	−38.0	−38.2	−38.5	−38.8	−39.0	−39.3	−39.5	−39.8	−40.0
0.52	−37.2	−37.4	−37.7	−38.0	−38.2	−38.5	−38.7	−39.0	−39.3	−39.5	−39.8	−40.0	−40.3	−40.6	−40.8
0.53	−37.9	−38.2	−38.4	−38.7	−38.9	−39.2	−39.5	−39.7	−40.0	−40.3	−40.5	−40.8	−41.1	−41.3	−41.6
0.54	−38.6	−38.9	−39.1	−39.4	−39.7	−40.0	−40.2	−40.5	−40.8	−41.0	−41.3	−41.6	−41.9	−42.1	−42.4
0.55	−39.3	−39.6	−39.9	−40.1	−40.4	−40.7	−41.0	−41.2	−41.5	−41.8	−42.1	−42.4	−42.6	−42.9	−43.2
0.56	−40.0	−40.3	−40.6	−40.9	−41.2	−41.4	−41.7	−42.0	−42.3	−42.6	−42.8	−43.1	−43.4	−43.7	−44.0
0.57	−40.8	−41.0	−41.3	−41.6	−41.9	−42.2	−42.5	−42.7	−43.0	−43.3	−43.6	−43.9	−44.2	−44.5	−44.7
0.58	−41.5	−41.8	−42.0	−42.3	−42.6	−42.9	−43.2	−43.5	−43.8	−44.1	−44.4	−44.7	−45.0	−45.2	−45.5
0.59	−42.2	−42.5	−42.8	−43.1	−43.4	−43.7	−43.9	−44.2	−44.5	−44.8	−45.1	−45.4	−45.7	−46.0	−46.3
0.60	−42.9	−43.2	−43.5	−43.8	−44.1	−44.4	−44.7	−45.0	−45.3	−45.6	−45.9	−46.2	−46.5	−46.8	−47.1
0.61	−43.6	−43.9	−44.2	−44.5	−44.8	−45.1	−45.4	−45.7	−46.0	−46.4	−46.7	−47.0	−47.3	−47.6	−47.9
0.62	−44.3	−44.6	−44.9	−45.3	−45.6	−45.9	−46.2	−46.5	−46.8	−47.1	−47.4	−47.7	−48.1	−48.4	−48.7
0.63	−45.0	−45.4	−45.7	−46.0	−46.3	−46.6	−46.9	−47.2	−47.6	−47.9	−48.2	−48.5	−48.8	−49.1	−49.5
0.64	−45.8	−46.1	−46.4	−46.7	−47.0	−47.4	−47.7	−48.0	−48.3	−48.6	−49.0	−49.3	−49.6	−49.9	−50.2
0.65	−46.5	−46.8	−47.1	−47.4	−47.8	−48.1	−48.4	−48.7	−49.1	−49.4	−49.7	−50.1	−50.4	−50.7	−51.0
0.66	−47.2	−47.5	−47.8	−48.2	−48.5	−48.8	−49.2	−49.5	−49.8	−50.2	−50.5	−50.8	−51.2	−51.5	−51.8
0.67	−47.9	−48.2	−48.6	−48.9	−49.2	−49.6	−50.0	−50.2	−50.6	−50.9	−51.2	−51.6	−51.9	−52.3	−52.6
0.68	−48.6	−49.0	−49.3	−49.6	−50.0	−50.3	−50.7	−51.0	−51.3	−51.7	−52.0	−52.4	−52.7	−53.0	−53.4
0.69	−49.3	−49.7	−50.0	−50.4	−50.7	−51.1	−51.4	−51.7	−52.1	−52.4	−52.8	−53.1	−53.5	−53.8	−54.2
0.70	−50.1	−50.4	−50.7	−51.1	−51.4	−51.8	−52.1	−52.5	−52.8	−53.2	−53.6	−53.9	−54.3	−54.6	−55.0
0.71	−50.8	−51.1	−51.5	−51.8	−52.2	−52.5	−52.9	−53.2	−53.6	−54.0	−54.3	−54.7	−55.0	−55.4	−55.7
0.72	−51.5	−51.8	−52.2	−52.6	−52.9	−53.3	−53.6	−54.0	−54.4	−54.7	−55.1	−55.4	−55.8	−56.2	−56.5
0.73	−52.2	−52.6	−53.0	−53.3	−53.6	−54.0	−54.4	−54.7	−55.1	−55.5	−55.8	−56.2	−56.6	−56.9	−57.3
0.74	−52.9	−53.3	−53.6	−54.0	−54.4	−54.8	−55.1	−55.5	−55.9	−56.2	−56.6	−57.0	−57.4	−57.7	−58.1
0.75	−53.6	−54.0	−54.4	−54.7	−55.1	−55.5	−55.8	−56.2	−56.6	−57.0	−57.4	−57.8	−58.1	−58.5	−58.9
0.76	−54.3	−54.7	−55.1	−55.5	−55.9	−56.2	−56.6	−57.0	−57.4	−57.8	−58.1	−58.5	−58.9	−59.3	−59.7
0.77	−55.1	−55.4	−55.8	−56.2	−56.6	−57.0	−57.4	−57.7	−58.1	−58.5	−58.9	−59.3	−59.7	−60.1	−60.4
0.78	−55.8	−56.2	−56.5	−56.9	−57.3	−57.7	−58.1	−58.5	−58.9	−59.3	−59.7	−60.1	−60.5	−60.8	−61.2
0.79	−56.5	−56.9	−57.2	−57.7	−58.1	−58.5	−58.8	−59.2	−59.6	−60.0	−60.4	−60.8	−61.2	−61.6	−62.0

0.80	−57.2	−57.6	−58.0	−58.4	−58.8	−59.2	−59.6	−60.0	−60.4	−60.8	−61.2	−61.6	−62.0	−62.4	−62.8
0.81	−57.9	−58.3	−58.7	−59.1	−59.5	−59.9	−60.3	−60.7	−61.1	−61.6	−62.0	−62.4	−62.8	−63.2	−63.6
0.82	−58.6	−59.0	−59.4	−59.9	−60.3	−60.7	−61.1	−61.5	−61.9	−62.3	−62.7	−63.1	−63.6	−64.0	−64.4
0.83	−59.3	−59.8	−60.2	−60.6	−61.0	−61.4	−61.8	−62.2	−62.7	−63.1	−63.5	−63.9	−64.3	−64.7	−65.1
0.84	−60.1	−60.5	−60.9	−61.3	−61.7	−62.2	−62.6	−63.0	−63.4	−63.8	−64.3	−64.7	−65.1	−65.5	−65.9
0.85	−60.8	−61.2	−61.6	−62.0	−62.5	−62.9	−63.3	−63.7	−64.2	−64.6	−65.0	−65.5	−65.9	−66.3	−66.7
0.86	−61.5	−61.9	−62.3	−62.8	−63.2	−63.6	−64.1	−64.5	−64.9	−65.4	−65.8	−66.2	−66.7	−67.1	−67.5
0.87	−62.2	−62.6	−63.1	−63.5	−64.0	−64.4	−64.8	−65.2	−65.7	−66.1	−66.5	−67.0	−67.4	−67.9	−68.3
0.88	−62.9	−63.4	−63.8	−64.2	−64.7	−65.1	−65.6	−66.0	−66.4	−66.9	−67.3	−67.8	−68.2	−68.6	−69.1
0.89	−63.6	−64.1	−64.5	−65.0	−65.4	−65.9	−66.3	−66.7	−67.2	−67.6	−68.1	−68.5	−69.0	−69.4	−69.9
0.90	−64.4	−64.8	−65.2	−65.7	−66.1	−66.6	−67.0	−67.5	−67.9	−68.4	−68.8	−69.3	−69.8	−70.2	−70.6
0.91	−65.1	−65.5	−66.0	−66.4	−66.9	−67.3	−67.8	−68.2	−68.7	−69.2	−69.6	−70.1	−70.5	−71.0	−71.4
0.92	−65.8	−66.2	−66.7	−67.2	−67.6	−68.0	−68.5	−69.0	−69.5	−69.9	−70.4	−70.8	−71.3	−71.8	−72.2
0.93	−66.5	−67.0	−67.4	−67.9	−68.3	−68.8	−69.3	−69.7	−70.2	−70.7	−71.1	−71.6	−72.1	−72.5	−73.0
0.94	−67.2	−67.7	−68.1	−68.6	−69.1	−69.6	−70.0	−70.5	−71.0	−71.4	−71.9	−72.4	−72.9	−73.3	−73.8
0.95	−67.9	−68.4	−68.9	−69.3	−69.8	−70.3	−70.8	−71.2	−71.7	−72.2	−72.7	−73.2	−73.6	−74.1	−74.6
0.96	−68.6	−69.1	−69.6	−70.0	−70.5	−71.0	−71.5	−72.0	−72.5	−73.0	−73.4	−73.9	−74.4	−74.9	−75.4
0.97	−69.4	−69.8	−70.3	−70.8	−71.3	−71.8	−72.3	−72.7	−73.2	−73.7	−74.2	−74.7	−75.2	−75.7	−76.1
0.98	−70.1	−70.6	−71.0	−71.5	−72.0	−72.5	−73.0	−73.5	−74.0	−74.5	−75.0	−75.5	−76.0	−76.4	−76.9
0.99	−70.8	−71.3	−71.8	−72.3	−72.8	−73.3	−73.7	−74.2	−74.7	−75.2	−75.7	−76.2	−76.7	−77.2	−77.7

Table VI.—Temperature-depth term, $10^5\delta_{t,D}$, of the anomaly of specific volume for values of temperature and depth

(From Sverdrup, 1933) (*13*)

Example:
Given, depth=800 m. and temperature 4.55° C.
From table VI, $10^5\delta_{t,D}$=8.8.

Table VI.—$10^5\delta_{t,D}$ for values of temperature and depth

Depth	Temperature															
	−2	−1	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	−.1	.0	.0	.0	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.3	.3
20	−.1	.0	.0	.0	.1	.1	.2	.2	.3	.3	.4	.4	.4	.5	.5	.5
25	−.1	−.1	.0	.1	.1	.2	.3	.3	.4	.4	.5	.5	.6	.6	.6	.7
30	−.2	−.1	.0	.1	.2	.2	.3	.4	.4	.5	.6	.6	.7	.7	.8	.8
50	−.3	−.1	.0	.1	.3	.4	.5	.6	.7	.8	.9	1.0	1.1	1.2	1.3	1.3
75	−.4	−.2	.0	.2	.4	.6	.7	.9	1.1	1.2	1.4	1.5	1.7	1.8	1.9	2.0
100	−.6	−.3	.0	.3	.5	.7	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.5	2.7
150	−.9	−.4	.0	.4	.8	1.1	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.5	3.7	4.0
200	−1.1	−.6	.0	.6	1.1	1.5	1.9	2.4	2.8	3.2	3.5	3.9	4.3	4.6	4.9	5.2

Depth	Temperature																					
	−2.0	−1.5	−1.0	−0.5	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
250	−1.4	−1.1	−0.7	−0.4	0.0	0.4	0.7	1.0	1.3	1.7	1.9	2.2	2.5	2.8	3.1	3.3	3.6	3.8	4.0	4.3	4.5	4.7
300	−1.7	−1.3	−.9	−.5	.0	.5	.9	1.3	1.6	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.3	4.6	4.8	5.1	5.4	5.7
400	−2.2	−1.6	−1.1	−.6	.0	.6	1.1	1.6	2.1	2.6	3.0	3.5	4.0	4.5	4.9	5.3	5.7	6.1	6.4	6.8	7.2	7.6
500	−2.8	−2.1	−1.4	−.7	.0	.7	1.4	2.0	2.6	3.3	3.8	4.4	5.0	5.6	6.1	6.6	7.1	7.6	8.0	8.5	9.0	9.5
600	−3.3	−2.4	−1.6	−.8	.0	.8	1.6	2.4	3.1	3.9	4.6	5.3	6.0	6.7	7.3	7.9	8.5	9.1	9.7	10.3	10.8	11.4

Depth	Temperature																					
	−2.0	−1.0	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8
700	−3.9	−2.0	0.0	0.4	0.8	1.1	1.5	1.9	2.2	2.6	3.0	3.3	3.7	4.0	4.3	4.7	5.0	5.3	5.6	6.0	6.3	6.6
800	−4.4	−2.2	.0	.5	.9	1.3	1.7	2.1	2.5	3.0	3.4	3.8	4.2	4.5	4.9	5.3	5.7	6.1	6.4	6.8	7.2	7.5
1,000	−5.5	−2.8	.0	.6	1.1	1.6	2.1	2.7	3.2	3.8	4.3	4.8	5.3	5.8	6.2	6.7	7.1	7.6	8.1	8.5	9.0	9.4
1,200	−6.5	−3.3	.0	.7	1.3	2.0	2.6	3.2	3.8	4.5	5.1	5.7	6.3	6.9	7.5	8.0	8.6	9.1	9.6	10.1	10.6	11.1
1,500	−8.1	−4.1	.0	.8	1.6	2.4	3.2	4.0	4.8	5.6	6.3	7.1	7.8	8.5	9.2	9.9	10.6	11.3	11.9	12.6	13.2	13.8

TABLE VI.—$10^5\delta_{t,D}$ FOR VALUES OF TEMPERATURE AND DEPTH—Continued

Depth	Temperature 14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
20	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.8
25	.7	.7	.8	.8	.8	.9	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1
30	.8	.9	.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3
50	1.4	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1
75	2.1	2.2	2.3	2.4	2.5	2.6	2.6	2.7	2.8	2.8	2.9	2.9	3.0	3.0	3.1	3.1	3.2
100	2.8	2.9	3.0	3.2	3.3	3.4	3.5	3.6	3.7	3.7	3.8	3.9	4.0	4.0	4.1	4.1	4.2
150	4.2	4.4	4.6	4.7	4.9	5.1	5.2	5.4	5.5	5.6	5.7	5.9	6.0	6.0	6.1	6.2	6.3
200	5.5	5.8	6.1	6.3	6.6	6.8	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.0	8.2	8.3	8.4

Depth	Temperature 9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	19.0	20.0	25.0	30.0
250	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.3	7.5	7.6	7.7	7.9	8.0	8.2	8.5	8.7	9.7	10.5
300	5.9	6.2	6.5	6.7	7.0	7.2	7.5	7.7	8.0	8.2	8.4	8.6	8.8	9.0	9.1	9.3	9.5	9.6	9.8	10.1	10.4	11.6	12.5
400	7.9	8.3	8.6	8.9	9.3	9.6	9.9	10.2	10.5	10.8	11.0	11.4	11.7	12.0	12.2	12.4	12.7	12.9	13.1	13.5	13.9	15.5	16.7
500	9.9	10.4	10.8	11.2	11.6	12.0	12.4	12.8	13.2	13.6	13.9	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.4	16.9	17.4	19.4	20.9
600	11.9	12.4	12.9	13.4	13.9	14.4	14.9	15.3	15.8	16.2	16.6	17.0	17.4	17.8	18.2	18.6	18.9	19.2	19.6	20.2	20.8	23.2	24.9

Depth	Temperature 4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	8.0	9.0	10.0	11.0	15.0	20.0	25.0
700	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.8	10.1	10.4	10.7	11.0	11.2	12.5	13.8	15.0	16.2	20.2	24.1	27.0
800	7.9	8.2	8.6	8.9	9.3	9.6	10.0	10.3	10.6	10.9	11.2	11.6	11.9	12.2	12.5	12.8	14.3	15.7	17.1	18.5	23.1	27.5	30.7
1,000	9.8	10.2	10.7	11.1	11.5	11.9	12.4	12.8	13.2	13.6	14.0	14.4	14.8	15.2	15.6	15.9	17.7	19.5	21.3	22.9	28.7	34.2	38.3
1,200	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.1	16.6	17.1	17.5	18.0	18.5	18.9	21.1	23.3	25.4	27.4	34.1	40.7	-----
1,500	14.4	15.1	15.7	16.3	16.9	17.5	18.1	18.7	19.3	19.9	20.5	21.1	21.7	22.3	22.9	23.4	26.2	28.9	31.5	34.0	42.3	50.5	-----

TABLE VI.—$10^5\delta_{t,D}$ FOR VALUES OF TEMPERATURE AND DEPTH—Continued

Depth	Temperature																				
	−2.0	−1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
2,000	−10. 6	−5. 3	0.0	0. 6	1. 1	1. 6	2. 1	2. 7	3. 2	3. 7	4. 2	4. 7	5. 2	5. 7	6. 2	6. 7	7. 2	7. 7	8. 2	8. 7	9. 2	9. 6
2,500	−13. 1	−6. 5	.0	. 7	1. 3	1. 9	2. 6	3. 2	3. 8	4. 4	5. 1	5. 7	6. 3	6. 9	7. 5	8. 1	8. 7	9. 3	9. 9	10. 5	11. 1	11. 7
3,000	−15. 4	−7. 6	.0	. 8	1. 5	2. 2	2. 9	3. 7	4. 4	5. 2	5. 9	6. 7	7. 4	8. 1	8. 8	9. 5	10. 2	11. 0	11. 7	12. 4	13. 0	13. 7
4,000	−19. 9	−9. 9	.0	1. 0	1. 9	2. 9	3. 8	4. 8	5. 7	6. 6	7. 6	8. 5	9. 5	10. 4	11. 3	12. 2	13. 1	14. 0	14. 9	15. 8	16. 6	17. 5
5,000	------	−12. 0	.0	1. 1	2. 2	3. 4	4. 5	5. 7	6. 7	7. 8	9. 0	10. 1	11. 2	12. 3	13. 4	14. 5	15. 6	16. 7	17. 8	18. 9	19. 9	21. 0
10,000	------	−20. 3	.0	2. 0	3. 9	5. 9	7. 8	9. 8	11. 7	13. 6	15. 5	17. 5	19. 4	21. 2	23. 0	24. 9	26. 7	28. 6	30. 4	32. 1	33. 9	35. 7

TABLE VI.—$10^5\delta_{t,D}$ FOR VALUES OF TEMPERATURE AND DEPTH—Continued

Depth	Temperature 2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1
2,000	10.1	10.6	11.1	11.5	12.0	12.5	12.9	13.4	13.8	14.3	14.7	15.1
2,500	12.3	12.9	13.4	14.0	14.6	15.2	15.7	16.3	16.9	17.5	18.1	18.6
3,000	14.4	15.1	15.7	16.4	17.1	17.8	18.5	19.2	19.8	20.5	21.2	21.9
4,000	18.4	19.3	20.1	20.9	21.8	22.7	23.5	24.4	25.3	26.1	27.0	27.9
5,000	22.1											
10,000												

Depth	Temperature 3.2	3.3	3.4	3.5	4.0	5.0	6.0	7.0	8.0	9.0	10.0
2,000	15.5	16.0	16.4	16.9	19.0	23.0	26.9	30.7	34.4	37.9	41.3
2,500	19.2	19.7	20.2	20.8	23.4	28.3	33.1	37.7	42.2	46.6	50.7
3,000	22.5	23.2	23.8	24.5	27.6	33.4	39.1	44.6	49.9	55.0	59.8
4,000	28.7	29.6	30.5	31.3	35.6	43.0	50.5	57.6	64.4	70.9	77.1
5,000											
10,000											

TABLE VII.—SALINITY-DEPTH TERM, $10^5\ \delta_{s,p}$, OF THE ANOMALY OF SPECIFIC VOLUME FOR VALUES OF SALINITY AND DEPTH

(From Sverdrup, 1933) (*13*)

Example:

Given, depth = 800 m. and salinity = 34.40°/₀₀.

From table VII, $10^5\ \delta_{s,p} = -0.7$.

TABLE VII.—$10^5\delta_{s,p}$ FOR VALUES OF SALINITY AND DEPTH

Depth	Salinity 21	22	23	24	25	26	27	28	29	30 .00	30 .25	30 .50	30 .75	31 .00	31 .25	31 .50	31 .75	32 .00	32 .25	32 .50	32 .75
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	−.2	−.2	−.2	−.2	−.2	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1	0.0	0.0	0.0	0.0	0.0
20	−.4	−.4	−.4	−.3	−.3	−.3	−.2	−.2	−.2	−.2	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1	−.1
25	−.5	−.5	−.5	−.4	−.4	−.3	−.3	−.3	−.2	−.2	−.2	−.2	−.2	−.2	−.1	−.1	−.1	−.1	−.1	−.1	−.1
30	−.6	−.6	−.6	−.5	−.5	−.4	−.4	−.3	−.3	−.2	−.2	−.2	−.2	−.2	−.2	−.2	−.1	−.1	−.1	−.1	−.1
50	−1.1	−1.0	−.9	−.8	−.8	−.7	−.6	−.5	−.5	−.4	−.4	−.3	−.3	−.3	−.3	−.3	−.2	−.2	−.2	−.2	−.2
75	−1.6	−1.5	−1.3	−1.3	−1.2	−1.0	−.9	−.8	−.7	−.6	−.5	−.5	−.5	−.5	−.4	−.4	−.4	−.3	−.3	−.3	−.3
100	−2.2	−2.0	−1.9	−1.7	−1.5	−1.4	−1.2	−1.1	−.9	−.8	−.7	−.7	−.7	−.6	−.6	−.5	−.5	−.5	−.4	−.4	−.4
150	−3.2	−3.0	−2.8	−2.5	−2.3	−2.1	−1.8	−1.6	−1.4	−1.1	−1.1	−1.0	−1.0	−.9	−.8	−.8	−.7	−.7	−.6	−.6	−.5
200	−4.3	−4.0	−3.7	−3.4	−3.1	−2.8	−2.5	−2.2	−1.8	−1.5	−1.4	−1.4	−1.3	−1.2	−1.1	−1.0	−1.0	−.9	−.8	−.7	−.7
250	−5.4	−5.0	−4.6	−4.2	−3.8	−3.5	−3.1	−2.7	−2.3	−1.9	−1.8	−1.7	−1.6	−1.5	−1.4	−1.3	−1.2	−1.1	−1.0	−.9	−.9
300	−6.5	−6.0	−5.6	−5.1	−4.6	−4.2	−3.7	−3.3	−2.8	−2.3	−2.2	−2.1	−2.0	−1.8	−1.7	−1.6	−1.5	−1.4	−1.3	−1.1	−1.0
400	−8.7	−8.0	−7.4	−6.8	−6.2	−5.5	−4.9	−4.4	−3.7	−3.0	−2.9	−2.7	−2.6	−2.4	−2.3	−2.1	−2.0	−1.8	−1.7	−1.5	−1.4
500	−10.8	−10.0	−9.3	−8.5	−7.7	−6.9	−6.1	−5.5	−4.6	−3.8	−3.6	−3.4	−3.2	−3.0	−2.9	−2.7	−2.5	−2.3	−2.1	−1.9	−1.7
600	-----	-----	-----	-----	-----	-----	-----	-----	-----	−4.5	−4.3	−4.1	−3.8	−3.6	−3.4	−3.1	−2.9	−2.7	−2.5	−2.2	−2.0
700	-----	-----	-----	-----	-----	-----	-----	-----	-----	−5.3	−5.0	−4.8	−4.5	−4.2	−3.9	−3.7	−3.4	−3.2	−2.9	−2.6	−2.4
800	-----	-----	-----	-----	-----	-----	-----	-----	-----	−6.0	−5.7	−5.4	−5.1	−4.8	−4.5	−4.2	−3.9	−3.6	−3.3	−3.0	−2.7

Depth	Salinity 33 .0	33 .1	33 .2	33 .3	33 .4	33 .5	33 .6	33 .7	33 .8	33 .9	34 .0	34 .1	34 .2	34 .3	34 .4	34 .5	34 .6	34 .7	34 .8	34 .9
1,000	−3.0	−2.8	−2.7	−2.5	−2.4	−2.2	−2.1	−1.9	−1.8	−1.6	−1.5	−1.3	−1.2	−1.0	−0.9	−0.7	−0.6	−0.4	−0.3	−0.2
1,200	−3.6	−3.4	−3.2	−3.0	−2.9	−2.7	−2.5	−2.3	−2.2	−2.0	−1.8	−1.6	−1.4	−1.3	−1.1	−.9	−.7	−.6	−.4	−.2
1,500	−4.4	−4.2	−4.0	−3.8	−3.6	−3.3	−3.1	−2.9	−2.7	−2.4	−2.2	−2.0	−1.8	−1.6	−1.3	−1.1	−.9	−.7	−.4	−.2
2,000	−5.8	−5.6	−5.3	−5.0	−4.7	−4.4	−4.1	−3.8	−3.5	−3.2	−2.9	−2.6	−2.3	−2.1	−1.7	−1.5	−1.2	−.9	−.6	−.3
2,500	−7.2	−6.9	−6.5	−6.1	−5.8	−5.4	−5.1	−4.7	−4.3	−4.0	−3.6	−3.2	−2.9	−2.5	−2.2	−1.8	−1.4	−1.1	−.7	−.3
3,000	−8.5	−8.1	−7.7	−7.3	−6.9	−6.5	−6.0	−5.6	−5.2	−4.7	−4.3	−3.9	−3.4	−3.0	−2.6	−2.2	−1.7	−1.3	−.9	−.4
4,000	−11.1	−10.6	−10.1	−9.5	−9.0	−8.4	−7.9	−7.3	−6.8	−6.2	−5.6	−5.0	−4.5	−3.9	−3.4	−2.8	−2.2	−1.7	−1.1	−.6
5,000	−13.8	−13.1	−12.4	−11.7	−11.0	−10.3	−9.6	−9.0	−8.3	−7.6	−6.9	−6.2	−5.5	−4.9	−4.1	−3.4	−2.7	−2.1	−1.4	−.7
10,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	−7.7	−8.5	−7.3	−6.0	−4.8	−3.6	−2.4	−1.2

TABLE VII. $10^5\delta_{s,p}$ FOR VALUES OF SALINITY AND DEPTH—Continued

Depth	Salinity																				
	33				34				35				36				37				38
	.00	.25	.50	.75	.00	.25	.50	.75	.00	.25	.50	.75	.00	.25	.50	.75	.00	.25	.50	.75	.00
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	-.1	-.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.1	.1	.1	.1	.1
25	-.1	-.1	-.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.1	.1	.1	.1	.1	.1	.1
30	-.1	-.1	-.1	-.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.1	.1	.1	.1	.1	.1	.1	.1
50	-.2	-.1	-.1	-.1	-.1	-.1	0.0	0.0	0.0	0.0	0.0	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2
75	-.2	-.2	-.2	-.1	-.1	-.1	-.1	0.0	0.0	0.0	.1	.1	.1	.1	.2	.2	.2	.2	.3	.3	.3
100	-.3	-.3	-.2	-.2	-.2	-.1	-.1	0.0	0.0	0.0	.1	.1	.1	.2	.2	.2	.3	.3	.4	.4	.4
150	-.5	-.4	-.3	-.3	-.2	-.2	-.1	-.1	0.0	.1	.1	.2	.2	.3	.3	.4	.4	.5	.6	.6	.7
200	-.6	-.5	-.4	-.4	-.3	-.2	-.1	-.1	0.0	.1	.1	.2	.3	.4	.4	.5	.6	.7	.7	.8	.9
250	-.8	-.7	-.6	-.5	-.4	-.3	-.2	-.1	0.0	.1	.2	.3	.4	.5	.6	.6	.7	.8	.9	1.0	1.1
300	-.9	-.8	-.7	-.6	-.5	-.3	-.2	-.1	0.0	.1	.2	.3	.4	.5	.7	.8	.9	1.0	1.1	1.2	1.3
400	-1.2	-1.1	-.9	-.8	-.6	-.4	-.3	-.2	0.0	.2	.3	.4	.6	.7	.9	1.0	1.2	1.3	1.5	1.6	1.8
500	-1.5	-1.3	-1.1	-1.0	-.8	-.6	-.4	-.2	0.0	.2	.4	.6	.8	.9	1.1	1.3	1.5	1.7	1.9	2.0	2.2
600	-1.8	-1.6	-1.3	-1.1	-.9	-.7	-.4	-.2	0.0	.2	.4	.7	.9	1.1	1.3	1.5	1.8	2.0	2.2	2.4	2.6
700	-2.1	-1.8	-1.6	-1.3	-1.1	-.9	-.6	-.3	0.0	.3	.5	.8	1.1	1.3	1.5	1.8	2.1	2.3	2.6	2.8	3.1
800	-2.4	-2.1	-1.8	-1.5	-1.2	-.9	-.6	-.3	0.0	.3	.6	.9	1.2	1.5	1.8	2.1	2.3	2.6	2.9	3.2	3.5

Depth	Salinity												
	35										36	37	38
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	.0	.0	.0
1,000	0.0	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.5	2.9	4.4
1,200	0.0	.2	.3	.5	.7	.9	1.0	1.2	1.4	1.6	1.8	3.5	5.2
1,500	0.0	.2	.4	.7	.9	1.1	1.3	1.5	1.7	1.9	2.2	4.4	6.5
2,000	0.0	.3	.6	.8	1.1	1.4	1.7	2.0	2.3	2.6	2.9	5.8	8.6
2,500	0.0	.3	.7	1.0	1.4	1.7	2.1	2.5	2.8	3.2	3.6	7.1	10.7
3,000	0.0	.4	.8	1.3	1.7	2.1	2.5	2.9	3.4	3.8	4.2	8.5	12.7
4,000	0.0	.6	1.1	1.6	2.2	2.7	3.3	3.8	4.4	4.9	5.5	11.0	16.5
5,000	0.0	.7	1.4	2.1	2.8	3.5	4.2	4.9	5.7	6.4	7.0	-----	-----
10,000	0.0	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

TABLE VIII.—SIGMA—T, σ_t, FOR VALUES OF TEMPERATURE-SALINITY TERM, $10^5\Delta_{s,t}$, OF THE ANOMALY OF SPECIFIC VOLUME

(From Sverdrup, 1933) (*13*)

$$\sigma_t = \frac{27.3569 - 10^3\,\Delta_{s,t}}{0.9726431 + \Delta_{s,t}}$$

Example:

Given, $10^5\,\Delta_{s,t} = 80.9$.
From table VIII, $\sigma_t = 27.272$.

TABLE VIII.—SIGMA-T FOR VALUES OF $10^5\Delta_{s,t}$

$10^5\Delta_{s,t}$	0	1	2	3	4	5	6	7	8	9
−190	30. 139	30. 149	30. 160	30. 171	30. 181	30. 192	30. 202	30. 213	30. 224	30. 234
−180	. 033	. 043	. 054	. 064	. 075	. 086	. 096	. 107	. 117	. 128
−170	29. 926	29. 937	29. 948	29. 958	29. 969	29. 980	29. 990	. 001	. 011	. 022
−160	. 820	. 831	. 842	. 852	. 863	. 873	. 884	29. 895	29. 905	29. 916
−150	. 714	. 725	. 736	. 746	. 757	. 767	. 778	. 789	. 799	. 810
−140	. 608	. 619	. 630	. 640	. 651	. 661	. 672	. 683	. 693	. 704
−130	. 502	. 513	. 524	. 534	. 545	. 555	. 566	. 577	. 587	. 598
−120	. 396	. 407	. 418	. 428	. 439	. 449	. 460	. 471	. 481	. 492
−110	. 290	. 301	. 312	. 322	. 333	. 343	. 354	. 365	. 375	. 386
−100	. 184	. 195	. 206	. 216	. 227	. 237	. 248	. 259	. 269	. 280
−90	. 079	. 089	. 100	. 110	. 121	. 132	. 142	. 153	. 163	. 174
−80	28. 973	28. 983	28. 994	. 004	. 015	. 026	. 036	. 047	. 057	. 068
−70	. 867	. 877	. 888	28. 899	28. 909	28. 920	28. 930	28. 941	28. 952	28. 962
−60	. 761	. 772	. 782	. 793	. 803	. 814	. 824	. 835	. 846	. 856
−50	. 655	. 666	. 676	. 687	. 697	. 708	. 719	. 729	. 740	. 750
−40	. 549	. 560	. 570	. 581	. 592	. 602	. 613	. 623	. 634	. 645
−30	. 444	. 454	. 465	. 475	. 486	. 496	. 507	. 518	. 528	. 539
−20	. 338	. 348	. 359	. 370	. 380	. 391	. 401	. 412	. 422	. 433
−10	. 232	. 243	. 253	. 264	. 274	. 285	. 296	. 306	. 317	. 327
−0	. 126	. 137	. 148	. 158	. 169	. 179	. 190	. 200	. 211	. 222
0	. 126	. 116	. 105	. 095	. 084	. 074	. 063	. 052	. 042	. 031
10	. 021	. 010	. 000	27. 989	27. 978	27. 968	27. 957	27. 947	27. 936	27. 926
20	27. 915	27. 904	27. 894	. 883	. 873	. 862	. 852	. 841	. 831	. 820
30	. 809	. 799	. 788	. 778	. 767	. 757	. 746	. 735	. 725	. 714
40	. 704	. 693	. 683	. 672	. 661	. 651	. 640	. 630	. 619	. 609
50	. 598	. 588	. 577	. 566	. 556	. 545	. 535	. 524	. 514	. 503
60	. 493	. 482	. 471	. 461	. 450	. 440	. 429	. 419	. 408	. 398
70	. 387	. 376	. 366	. 355	. 345	. 334	. 324	. 313	. 303	. 292
80	. 281	. 271	. 260	. 250	. 239	. 229	. 218	. 208	. 197	. 186
90	. 176	. 165	. 155	. 144	. 134	. 123	. 113	. 102	. 091	. 081
100	. 070	. 060	. 049	. 039	. 028	. 018	. 007	26. 997	26. 986	26. 976
110	26. 965	26. 954	26. 944	26. 933	26. 923	26. 912	26. 902	. 891	. 881	. 870
120	. 860	. 849	. 838	. 828	. 817	. 807	. 796	. 786	. 775	. 765
130	. 754	. 744	. 733	. 722	. 712	. 701	. 691	. 680	. 670	. 659
140	. 649	. 638	. 628	. 617	. 606	. 596	. 585	. 575	. 564	. 554
150	. 543	. 533	. 522	. 512	. 501	. 491	. 480	. 470	. 459	. 448
160	. 438	. 427	. 417	. 406	. 396	. 385	. 375	. 364	. 354	. 343
170	. 333	. 322	. 312	. 301	. 290	. 280	. 269	. 259	. 248	. 238
180	. 227	. 217	. 206	. 196	. 185	. 175	. 164	. 154	. 143	. 132
190	. 122	. 111	. 101	. 090	. 080	. 069	. 059	. 048	. 038	. 027
200	. 017	. 006	25. 996	25. 985	25. 975	25. 964	25. 953	25. 943	25. 932	25. 922
210	25. 911	25. 901	. 890	. 880	. 869	. 859	. 848	. 838	. 827	. 817
220	. 806	. 796	. 785	. 775	. 764	. 754	. 743	. 733	. 722	. 711
230	. 701	. 690	. 680	. 669	. 659	. 648	. 638	. 627	. 617	. 606
240	. 596	. 585	. 575	. 564	. 554	. 543	. 533	. 522	. 512	. 501
250	. 491	. 480	. 469	. 459	. 448	. 438	. 427	. 417	. 406	. 396
260	. 385	. 375	. 364	. 354	. 343	. 333	. 322	. 312	. 301	. 291
270	. 280	. 270	. 259	. 249	. 238	. 228	. 217	. 207	. 196	. 186
280	. 175	. 165	. 154	. 144	. 133	. 123	. 112	. 102	. 091	. 081
290	. 070	. 060	. 049	. 039	. 028	. 018	. 007	24. 997	24. 986	24. 975

TABLE VIII.—SIGMA-T FOR VALUES OF $10^5\Delta_{s,t}$—Continued

$10^5\Delta_{s,t}$	0	1	2	3	4	5	6	7	8	9
300	24.965	24.954	24.944	24.933	24.923	24.912	24.902	24.891	24.881	24.870
310	.860	.849	.839	.828	.818	.807	.797	.786	.776	.765
320	.755	.744	.734	.723	.713	.702	.692	.681	.671	.660
330	.650	.639	.629	.618	.608	.597	.587	.576	.566	.555
340	.545	.534	.524	.513	.503	.492	.482	.471	.461	.450
350	.440	.429	.419	.408	.398	.388	.377	.367	.356	.346
360	.335	.325	.314	.304	.293	.283	.272	.262	.251	.241
370	.230	.220	.209	.199	.188	.178	.167	.157	.146	.136
380	.125	.115	.104	.094	.083	.073	.062	.052	.041	.031
390	.020	.010	23.999	23.989	23.978	23.968	23.957	23.947	23.936	23.926
400	23.915	23.905	.895	.884	.874	.863	.853	.842	.832	.821
410	.811	.800	.790	.779	.769	.758	.748	.737	.727	.716
420	.706	.695	.685	.674	.664	.654	.643	.633	.622	.612
430	.601	.591	.580	.570	.559	.549	.538	.528	.517	.507
440	.496	.486	.475	.465	.454	.444	.433	.423	.413	.402
450	.392	.381	.371	.360	.350	.339	.329	.318	.308	.297
460	.287	.276	.266	.255	.245	.235	.224	.214	.203	.193
470	.182	.172	.161	.151	.140	.130	.119	.109	.098	.088
480	.078	.067	.057	.046	.036	.025	.015	.004	22.994	22.983
490	22.973	22.962	22.952	22.941	22.931	22.921	22.910	22.900	.889	.879
500	.868	.858	.847	.837	.826	.816	.805	.795	.785	.774
510	.764	.753	.743	.732	.722	.711	.701	.690	.680	.669
520	.659	.649	.638	.628	.617	.607	.596	.586	.575	.565
530	.554	.544	.534	.523	.513	.502	.492	.481	.471	.460
540	.450	.439	.429	.419	.408	.398	.387	.377	.366	.356
550	.345	.335	.324	.314	.304	.293	.283	.272	.262	.251
560	.241	.230	.220	.209	.199	.189	.178	.168	.157	.147
570	.136	.126	.115	.105	.095	.084	.074	.063	.053	.042
580	.032	.021	.011	.001	21.990	21.980	21.969	21.959	21.948	21.938
590	21.927	21.917	21.907	21.896	.886	.875	.865	.854	.844	.833
600	.823	.813	.802	.792	.781	.771	.760	.750	.739	.729
610	.719	.708	.698	.687	.677	.666	.656	.646	.635	.625
620	.614	.604	.593	.583	.573	.562	.552	.541	.531	.520
630	.510	.499	.489	.479	.468	.458	.447	.437	.426	.416
640	.406	.395	.385	.374	.364	.353	.343	.332	.322	.312
650	.301	.291	.280	.270	.259	.249	.239	.228	.218	.207
660	.197	.187	.176	.166	.155	.145	.134	.124	.114	.103
670	.093	.082	.072	.061	.051	.041	.030	.020	.009	20.999
680	20.988	20.978	20.968	20.957	20.947	20.936	20.926	20.915	20.905	.895
690	.884	.847	.863	.853	.842	.832	.822	.811	.801	.790
700	.780	.770	.759	.749	.738	.728	.717	.707	.697	.686
710	.676	.665	.655	.645	.634	.624	.613	.603	.592	.582
720	.572	.561	.551	.540	.530	.520	.509	.499	.488	.478
730	.467	.457	.447	.436	.426	.415	.405	.395	.384	.374
740	.363	.353	.342	.332	.322	.311	.301	.290	.280	.270
750	.259	.249	.238	.228	.218	.207	.197	.186	.176	.166
760	.155	.145	.134	.124	.114	.103	.093	.082	.072	.062
770	.051	.041	.030	.020	.009	19.999	19.989	19.978	19.968	19.957
780	19.947	19.937	19.926	19.916	19.905	.895	.885	.874	.864	.853
790	.843	.833	.822	.812	.801	.791	.781	.770	.760	.749
800	.739	.729	.718	.708	.697	.687	.677	.666	.656	.645
810	.635	.625	.614	.604	.593	.583	.573	.562	.552	.542
820	.531	.521	.510	.500	.490	.479	.469	.458	.448	.438
830	.427	.417	.406	.396	.386	.375	.365	.354	.344	.334
840	.323	.313	.302	.292	.282	.271	.261	.251	.240	.230
850	.219	.209	.199	.188	.178	.167	.157	.147	.136	.126
860	.115	.105	.095	.084	.074	.064	.053	.043	.032	.022
870	.012	.001	18.991	18.981	18.970	18.960	18.949	18.939	18.929	18.918
880	18.908	18.897	.887	.877	.866	.856	.846	.835	.825	.814
890	.804	.794	.783	.773	.762	.752	.742	.731	.721	.711
900	.700	.690	.679	.669	.659	.648	.638	.628	.617	.607

TABLE IX.—TEMPERATURE-SALINITY TERM, $10^5\Delta_{s,t}$, OF THE ANOMALY OF SPECIFIC VOLUME FOR VALUES OF SIGMA—T, σ_t

(From Sverdrup, 1933) (*13*)

$$\Delta_{s,t}=0.0273569-\frac{10^{-3}\sigma_t}{1+10^{-3}\sigma_t}$$

Example:

Given, $\sigma_t=26.32$.

From table IX, $10^5\Delta_{s,t}=171.2$.

TABLE IX.—TEMPERATURE-SALINITY TERM, $10^5\Delta_{s,t}$, OF ANOMALY OF SPECIFIC VOLUME FOR VALUES OF SIGMA-T, σ_t

σ_t	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
16.0	1160. 9	1159. 9	1158. 9	1158. 0	1157. 0	1156. 0	1155. 1	1154. 1	1153. 1	1152. 2
16.1	1151. 2	1150. 2	1149. 3	1148. 3	1147. 3	1146. 4	1145. 4	1144. 4	1143. 5	1142. 5
16.2	1141. 5	1140. 5	1139. 6	1138. 6	1137. 6	1136. 7	1135. 7	1134. 7	1133. 8	1132. 8
16.3	1131. 8	1130. 9	1129. 9	1128. 9	1128. 0	1127. 0	1126. 0	1125. 1	1124. 1	1123. 1
16.4	1122. 1	1121. 2	1120. 2	1119. 2	1118. 3	1117. 3	1116. 3	1115. 4	1114. 4	1113. 4
16.5	1112. 5	1111. 5	1110. 5	1109. 6	1108. 6	1107. 6	1106. 7	1105. 7	1104. 7	1103. 8
16.6	1102. 8	1101. 8	1100. 9	1099. 9	1098. 9	1098. 0	1097. 0	1096. 0	1095. 1	1094. 1
16.7	1093. 1	1092. 1	1091. 2	1090. 2	1089. 2	1088. 3	1087. 3	1086. 3	1085. 4	1084. 4
16.8	1083. 4	1082. 5	1081. 5	1080. 5	1079. 6	1078. 6	1077. 6	1076. 7	1075. 7	1074. 7
16.9	1073. 8	1072. 8	1071. 8	1070. 9	1069. 9	1068. 9	1068. 0	1067. 0	1066. 0	1065. 1
17.0	1064. 1	1063. 1	1062. 2	1061. 2	1060. 2	1059. 3	1058. 3	1057. 3	1056. 4	1055. 4
17.1	1054. 4	1053. 5	1052. 5	1051. 5	1050. 6	1049. 6	1048. 6	1047. 7	1046. 7	1045. 7
17.2	1044. 8	1043. 8	1042. 8	1041. 9	1040. 9	1039. 9	1039. 0	1038. 0	1037. 0	1036. 1
17.3	1035. 1	1034. 1	1033. 2	1032. 2	1031. 2	1030. 3	1029. 3	1028. 3	1027. 4	1026. 4
17.4	1025. 4	1024. 5	1023. 5	1022. 5	1021. 6	1020. 6	1019. 6	1018. 7	1017. 7	1016. 7
17.5	1015. 8	1014. 8	1013. 9	1012. 9	1011. 9	1011. 0	1010. 0	1009. 0	1008. 1	1007. 1
17.6	1006. 1	1005. 2	1004. 2	1003. 2	1002. 3	1001. 3	1000. 3	999. 4	998. 4	997. 4
17.7	996. 5	995. 5	994. 5	993. 6	992. 6	991. 6	990. 7	989. 7	988. 7	987. 8
17.8	986. 8	985. 8	984. 9	983. 9	983. 0	982. 0	981. 0	980. 1	979. 1	978. 1
17.9	977. 2	976. 2	975. 2	974. 3	973. 3	972. 3	971. 4	970. 4	969. 4	968. 5
18.0	967. 5	966. 6	965. 6	964. 6	963. 7	962. 7	961. 7	960. 8	959. 8	958. 8
18.1	957. 9	956. 9	955. 9	955. 0	954. 0	953. 1	952. 1	951. 1	950. 2	949. 2
18.2	948. 2	947. 3	946. 3	945. 3	944. 4	943. 4	942. 4	941. 5	940. 5	939. 5
18.3	938. 6	937. 6	936. 7	935. 7	934. 7	933. 8	932. 8	931. 8	930. 9	929. 9
18.4	928. 9	928. 0	927. 0	926. 0	925. 1	924. 1	923. 2	922. 2	921. 2	920. 3
18.5	919. 3	918. 3	917. 4	916. 4	915. 4	914. 5	913. 5	912. 6	911. 6	910. 6
18.6	909. 7	908. 7	907. 7	906. 8	905. 8	904. 8	903. 9	902. 9	902. 0	901. 0
18.7	900. 0	899. 1	898. 1	897. 1	896. 2	895. 2	894. 2	893. 3	892. 3	891. 4
18.8	890. 4	889. 4	888. 5	887. 5	886. 5	885. 6	884. 6	883. 6	882. 7	881. 7
18.9	880. 8	879. 8	878. 8	877. 9	876. 9	875. 9	875. 0	874. 0	873. 0	872. 1
19.0	871. 1	870. 2	869. 2	868. 2	867. 3	866. 3	865. 3	864. 4	863. 4	862. 5
19.1	861. 5	860. 5	859. 6	858. 6	857. 6	856. 7	855. 7	854. 8	853. 8	852. 8
19.2	851. 9	850. 9	849. 9	849. 0	848. 0	847. 0	846. 1	845. 1	844. 2	843. 2
19.3	842. 2	841. 3	840. 3	839. 4	838. 4	837. 4	836. 5	835. 5	834. 5	833. 6
19.4	832. 6	831. 7	830. 7	829. 7	828. 8	827. 8	826. 8	825. 9	824. 9	824. 0
19.5	823. 0	822. 0	821. 1	820. 1	819. 1	818. 2	817. 2	816. 3	815. 3	814. 3
19.6	813. 4	812. 4	811. 5	810. 5	809. 5	808. 6	807. 6	806. 6	805. 7	804. 7
19.7	803. 8	802. 8	801. 8	800. 9	799. 9	798. 9	798. 0	797. 0	796. 1	795. 1
19.8	794. 1	793. 2	792. 2	791. 3	790. 3	789. 3	788. 4	787. 4	786. 4	785. 5
19.9	784. 5	783. 6	782. 6	781. 6	780. 7	779. 7	778. 8	777. 8	776. 8	775. 9
20.0	774. 9	773. 9	773. 0	772. 0	771. 1	770. 1	769. 1	768. 2	767. 2	766. 3
20.1	765. 3	764. 3	763. 4	762. 4	761. 5	760. 5	759. 5	758. 6	757. 6	756. 7
20.2	755. 7	754. 7	753. 8	752. 8	751. 8	750. 9	749. 9	749. 0	748. 0	747. 0
20.3	746. 1	745. 1	744. 2	743. 2	742. 2	741. 3	740. 3	739. 4	738. 4	737. 4
20.4	736. 5	735. 5	734. 6	733. 6	732. 6	731. 7	730. 7	729. 8	728. 8	727. 8

TABLE IX.—TEMPERATURE-SALINITY TERM, $10^5\Delta_{s,t}$, OF ANOMALY OF SPECIFIC VOLUME FOR VALUES OF SIGMA-T, σ_t—Continued

σ_t	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
20.5	726. 9	725. 9	725. 0	724. 0	723. 0	722. 1	721. 1	720. 2	719. 2	718. 2
20.6	717. 3	716. 3	715. 4	714. 4	713. 4	712. 5	711. 5	710. 6	709. 6	708. 6
20.7	707. 7	706. 7	705. 8	704. 8	703. 8	702. 9	701. 9	701. 0	700. 0	699. 0
20.8	698. 1	697. 1	696. 2	695. 2	694. 2	693. 3	692. 3	691. 4	690. 4	689. 4
20.9	688. 5	687. 5	686. 6	685. 6	684. 6	683. 7	682. 7	681. 8	680. 8	679. 8
21.0	678. 9	677. 9	677. 0	676. 0	675. 1	674. 1	673. 1	672. 2	671. 2	670. 3
21.1	669. 3	668. 3	667. 4	666. 4	665. 4	664. 5	663. 5	662. 6	661. 6	660. 7
21.2	659. 7	658. 7	657. 8	656. 8	655. 9	654. 9	654. 0	653. 0	652. 0	651. 1
21.3	650. 1	649. 2	648. 2	647. 2	646. 3	645. 3	644. 4	643. 4	642. 5	641. 5
21.4	640. 5	639. 6	638. 6	637. 7	636. 7	635. 7	634. 8	633. 8	632. 9	631. 9
21.5	630. 9	630. 0	629. 0	628. 1	627. 1	626. 2	625. 2	624. 2	623. 3	622. 3
21.6	621. 4	620. 4	619. 5	618. 5	617. 5	616. 6	615. 6	614. 7	613. 7	612. 7
21.7	611. 8	610. 8	609. 9	608. 9	608. 0	607. 0	606. 0	605. 1	604. 1	603. 2
21.8	602. 2	601. 2	600. 3	599. 3	598. 4	597. 4	596. 5	595. 5	594. 5	593. 6
21.9	592. 6	591. 7	590. 7	589. 8	588. 8	587. 8	586. 9	585. 9	585. 0	584. 0
22.0	583. 1	582. 1	581. 1	580. 2	579. 2	578. 3	577. 3	576. 4	575. 4	574. 4
22.1	573. 5	572. 5	571. 6	570. 6	569. 7	568. 7	567. 7	566. 8	565. 8	564. 9
22.2	563. 9	563. 0	562. 0	561. 0	560. 1	559. 1	558. 2	557. 2	556. 3	555. 3
22.3	554. 3	553. 4	552. 4	551. 5	550. 5	549. 6	548. 6	547. 6	546. 7	545. 7
22.4	544. 8	543. 8	542. 9	541. 9	540. 9	540. 0	539. 0	538. 1	537. 1	536. 2
22.5	535. 2	534. 3	533. 3	532. 3	531. 4	530. 4	529. 5	528. 5	527. 6	526. 6
22.6	525. 6	524. 7	523. 7	522. 8	521. 8	520. 9	519. 9	519. 0	518. 0	517. 0
22.7	516. 1	515. 1	514. 2	513. 3	512. 3	511. 3	510. 3	509. 4	508. 4	507. 5
22.8	506. 5	505. 6	504. 6	503. 7	502. 7	501. 7	500. 8	499. 8	498. 9	497. 9
22.9	497. 0	496. 0	495. 1	494. 1	493. 1	492. 2	491. 2	490. 3	489. 3	488. 4
23.0	487. 4	486. 5	485. 5	484. 5	483. 6	482. 6	481. 7	480. 7	479. 8	478. 8
23.1	477. 9	476. 9	475. 9	475. 0	474. 0	473. 1	472. 1	471. 2	470. 2	469. 3
23.2	468. 3	467. 3	466. 4	465. 4	464. 5	463. 5	462. 6	461. 6	460. 7	459. 7
23.3	458. 7	457. 8	456. 8	455. 9	454. 9	454. 0	453. 0	452. 1	451. 1	450. 2
23.4	449. 2	448. 2	447. 3	446. 3	445. 4	444. 4	443. 5	442. 5	441. 6	440. 6
23.5	439. 7	438. 7	437. 7	436. 8	435. 8	434. 9	433. 9	433. 0	432. 0	431. 1
23.6	430. 1	429. 2	428. 2	427. 2	426. 3	425. 3	424. 4	423. 4	422. 5	421. 5
23.7	420. 6	419. 6	418. 7	417. 7	416. 7	415. 8	414. 8	413. 9	412. 9	412. 0
23.8	411. 0	410. 1	409. 1	408. 2	407. 2	406. 3	405. 3	404. 3	403. 4	402. 4
23.9	401. 5	400. 5	399. 6	398. 6	397. 7	396. 7	395. 8	394. 8	393. 9	392. 9
24.0	391. 9	391. 0	390. 0	389. 1	388. 1	387. 2	386. 2	385. 3	384. 3	383. 4
24.1	382. 4	381. 5	380. 5	379. 6	378. 6	377. 6	376. 7	375. 7	374. 8	373. 8
24.2	372. 9	371. 9	371. 0	370. 0	369. 1	368. 1	367. 2	366. 2	365. 3	364. 3
24.3	363. 3	362. 4	361. 4	360. 5	359. 5	358. 6	357. 6	356. 7	355. 7	354. 8
24.4	353. 8	352. 9	351. 9	351. 0	350. 0	349. 0	348. 1	347. 1	346. 2	345. 2
24.5	344. 3	343. 3	342. 4	341. 4	340. 5	339. 5	338. 6	337. 6	336. 7	335. 7
24.6	334. 8	333. 8	332. 9	331. 9	330. 9	330. 0	329. 0	328. 1	327. 1	326. 2
24.7	325. 2	324. 3	323. 3	322. 4	321. 4	320. 5	319. 5	318. 6	317. 6	316. 7
24.8	315. 7	314. 8	313. 8	312. 9	311. 9	311. 0	310. 0	309. 0	308. 1	307. 1
24.9	306. 2	305. 2	304. 3	303. 3	302. 4	301. 4	300. 5	299. 5	298. 6	297. 6
25.0	296. 7	295. 7	294. 8	293. 8	292. 9	291. 9	291. 0	290. 0	289. 1	288. 1
25.1	287. 2	286. 2	285. 3	284. 3	283. 3	282. 4	281. 4	280. 5	279. 5	278. 6
25.2	277. 6	276. 7	275. 7	274. 8	273. 8	272. 9	271. 9	271. 0	270. 0	269. 1
25.3	268. 1	267. 2	266. 2	265. 3	264. 3	263. 4	262. 4	261. 5	260. 5	259. 6
25.4	258. 6	257. 7	256. 7	255. 8	254. 8	253. 9	252. 9	252. 0	251. 0	250. 1
25.5	249. 1	248. 2	247. 2	246. 3	245. 3	244. 3	243. 4	242. 4	241. 5	240. 5
25.6	239. 6	238. 6	237. 7	236. 7	235. 8	234. 8	233. 9	232. 9	232. 0	231. 0
25.7	230. 1	229. 1	228. 2	227. 2	226. 3	225. 3	224. 4	223. 4	222. 5	221. 5
25.8	220. 6	219. 6	218. 7	217. 7	216. 8	215. 8	214. 9	213. 9	213. 0	212. 0
25.9	211. 1	210. 1	209. 2	208. 2	207. 3	206. 3	205. 4	204. 4	203. 5	202. 5

TABLE IX.—TEMPERATURE-SALINITY TERM, $10^5\Delta_{s,t}$, OF ANOMALY OF SPECIFIC VOLUME FOR VALUES OF SIGMA=T, σ_t—Continued

σ_t	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
26.0	201. 6	200. 6	199. 7	198. 7	197. 8	196. 8	195. 9	194. 9	194. 0	193. 0
26.1	192. 1	191. 1	190. 2	189. 2	188. 3	187. 3	186. 4	185. 4	184. 5	183. 5
26.2	182. 6	181. 6	180. 7	179. 7	178. 8	177. 8	176. 9	175. 9	175. 0	174. 0
26.3	173. 1	172. 1	171. 2	170. 2	169. 3	168. 3	167. 4	166. 4	165. 5	164. 5
26.4	163. 6	162. 7	161. 7	160. 8	159. 8	158. 9	157. 9	157. 0	156. 0	155. 1
26.5	154. 1	153. 2	152. 2	151. 3	150. 3	149. 4	148. 4	147. 5	146. 5	145. 6
26.6	144. 6	143. 7	142. 7	141. 8	140. 8	139. 9	138. 9	138. 0	137. 0	136. 1
26.7	135. 1	134. 2	133. 2	132. 3	131. 3	130. 4	129. 4	128. 5	127. 5	126. 6
26.8	125. 6	124. 7	123. 7	122. 8	121. 9	120. 9	120. 0	119. 0	118. 1	117. 1
26.9	116. 2	115. 2	114. 3	113. 3	112. 4	111. 4	110. 5	109. 5	108. 6	107. 6
27.0	106. 7	105. 7	104. 8	103. 8	102. 9	101. 9	101. 0	100. 0	99. 1	98. 1
27.1	97. 2	96. 3	95. 3	94. 4	93. 4	92. 5	91. 5	90. 6	89. 6	88. 7
27.2	87. 7	86. 8	85. 8	84. 9	83. 9	83. 0	82. 0	81. 1	80. 1	79. 2
27.3	78. 2	77. 3	76. 3	75. 4	74. 5	73. 5	72. 6	71. 6	70. 7	69. 7
27.4	68. 8	67. 8	66. 9	65. 9	65. 0	64. 0	63. 1	62. 1	61. 2	60. 2
27.5	59. 3	58. 3	57. 4	56. 5	55. 5	54. 6	53. 6	52. 7	51. 7	50. 8
27.6	49. 8	48. 9	47. 9	47. 0	46. 0	45. 1	44. 1	43. 2	42. 3	41. 3
27.7	40. 4	39. 4	38. 5	37. 5	36. 6	35. 6	34. 7	33. 7	32. 8	31. 8
27.8	30. 9	29. 9	29. 0	28. 1	27. 1	26. 2	25. 2	24. 3	23. 3	22. 4
27.9	21. 4	20. 5	19. 5	18. 6	17. 6	16. 7	15. 7	14. 8	13. 9	12. 9
28.0	12. 0	11. 0	10. 1	9. 1	8. 2	7. 2	6. 3	5. 3	4. 4	3. 4
28.1	2. 5	1. 6	0. 6	−0. 3	−1. 3	−2. 2	−3. 2	−4. 1	−5. 1	−6. 0
28.2	−7. 0	−7. 9	−8. 9	−9. 8	−10. 8	−11. 7	−12. 6	−13. 6	−14. 5	−15. 5
28.3	−16. 4	−17. 4	−18. 3	−19. 3	−20. 2	−21. 2	−22. 1	−23. 0	−24. 0	−24. 9
28.4	−25. 9	−26. 8	−27. 8	−28. 7	−29. 7	−30. 6	−31. 6	−32. 5	−33. 4	−34. 4
28.5	−35. 3	−36. 3	−37. 2	−38. 2	−39. 1	−40. 1	−41. 0	−42. 0	−42. 9	−43. 8
28.6	−44. 8	−45. 7	−46. 7	−47. 6	−48. 6	−49. 5	−50. 5	−51. 4	−52. 4	−53. 3
28.7	−54. 2	−55. 2	−56. 1	−57. 1	−58. 0	−59. 0	−59. 9	−60. 9	−61. 8	−62. 7
28.8	−63. 7	−64. 6	−65. 6	−66. 5	−67. 5	−68. 4	−69. 4	−70. 3	−71. 2	−72. 2
28.9	−73. 1	−74. 1	−75. 0	−76. 0	−76. 9	−77. 9	−78. 8	−79. 8	−80. 7	−81. 6
29.0	−82. 6	−83. 5	−84. 5	−85. 4	−86. 4	−87. 3	−88. 3	−89. 2	−90. 1	−91. 1
29.1	−92. 0	−93. 0	−93. 9	−94. 9	−95. 8	−96. 7	−97. 7	−98. 6	−99. 6	−100. 5
29.2	−101. 5	−102. 4	−103. 4	−104. 3	−105. 2	−106. 2	−107. 1	−108. 1	−109. 0	−110. 0
29.3	−110. 9	−111. 9	−112. 8	−113. 7	−114. 7	−115. 6	−116. 6	−117. 5	−118. 5	−119. 4
29.4	−120. 3	−121. 3	−122. 2	−123. 2	−124. 1	−125. 1	−126. 0	−127. 0	−127. 9	−128. 8
29.5	−129. 8	−130. 7	−131. 7	−132. 6	−133. 6	−134. 5	−135. 4	−136. 4	−137. 3	−138. 3
29.6	−139. 2	−140. 2	−141. 1	−142. 0	−143. 0	−143. 9	−144. 9	−145. 8	−146. 8	−147. 7
29.7	−148. 6	−149. 6	−150. 5	−151. 5	−152. 4	−153. 4	−154. 3	−155. 3	−156. 2	−157. 1
29.8	−158. 1	−159. 0	−160. 0	−160. 9	−161. 9	−162. 8	−163. 7	−164. 7	−165. 6	−166. 6
29.9	−167. 5	−168. 5	−169. 4	−170. 3	−171. 3	−172. 2	−173. 2	−174. 1	−175. 1	−176. 0
30.0	−176. 9	−177. 9	−178. 8	−179. 8	−180. 7	−181. 6	−182. 6	−183. 5	−184. 5	−185. 4
30.1	−186. 4	−187. 3	−188. 2	−189. 2	−190. 1	−191. 1	−192. 0	−193. 0	−193. 9	−194. 8
30.2	−195. 8	−196. 7	−197. 7	−198. 6	−199. 6	−200. 5	−201. 4	−202. 4	−203. 3	−204. 3
30.3	−205. 2	−206. 1	−207. 1	−208. 0	−209. 0	−209. 9	−210. 9	−211. 8	−212. 7	−213. 7
30.4	−214. 6	−215. 6	−216. 5	−217. 4	−218. 4	−219. 3	−220. 3	−221. 2	−222. 2	−223. 1
30.5	−224. 0	−225. 0	−225. 9	−226. 9	−227. 8	−228. 7	−229. 7	−230. 6	−231. 6	−232. 5

TABLE X.—SIGMA—T, σ_t, FOR VALUES OF TEMPERATURE AND SALINITY

(From Knudsen, 1901) (*12*)

$$\sigma_t=\Sigma_t+[(\sigma_o+0.1324)][1-A_t+B_t(\sigma_o-0.1324)]$$

where

$$\Sigma_t=-\left[\frac{(t-3.98)^2}{503.570}\right]\left[\frac{t+283}{t+67.26}\right],$$

$$\sigma_o=-0.069+1.4708\,Cl-0.001570\,Cl^2+0.0000398\,Cl^3,$$

$$A_t=t(4.7867-0.098185\,t+0.0010843\,t^2)10^{-3},$$

$$B_t=t(18.030-0.8164\,t+0.01667\,t^2)10^{-6},$$

$$Cl=\frac{S-0.030}{1.8050},$$

S=salinity of water in °/₀₀,

t=temperature of water in ° C.

Example:

Given, S=34°/₀₀ and t=1.0 ° C.

From table X, σ_t=27.264.

TABLE X.—SIGMA-T FOR VALUES OF TEMPERATURE AND SALINITY

Temperature, ° C.	Salinity, °/₀₀								
	30	31	32	33	34	35	36	37	38
−2.0	24. 147	24. 958	25. 769	26. 580	27. 392	28. 204	29. 016	29. 829	30. 642
−1.9	24. 146	24. 956	25. 767	26. 578	27. 390	28. 201	29. 013	29. 826	30. 639
−1.8	24. 145	24. 955	25. 766	26. 576	27. 387	28. 199	29. 010	29. 823	30. 635
−1.7	24. 144	24. 954	25. 764	26. 574	27. 385	28. 196	29. 007	29. 819	30. 632
−1.6	24. 143	24. 952	25. 762	26. 572	27. 382	28. 193	29. 004	29. 816	30. 628
−1.5	24. 141	24. 950	25. 760	26. 569	27. 379	28. 190	29. 001	29. 812	30. 624
−1.4	24. 140	24. 948	25. 757	26. 567	27. 377	28. 187	28. 997	29. 808	30. 620
−1.3	24. 138	24. 946	25. 755	26. 564	27. 374	28. 183	28. 994	29. 804	30. 615
−1.2	24. 136	24. 944	25. 753	26. 561	27. 370	28. 180	28. 990	29. 800	30. 611
−1.1	24. 134	24. 942	25. 750	26. 558	27. 367	28. 176	28. 986	29. 796	30. 606
−1.0	24. 132	24. 939	25. 747	26. 555	27. 364	28. 172	28. 982	29. 791	30. 602
−0.9	24. 129	24. 936	25. 744	26. 552	27. 360	28. 168	28. 977	29. 787	30. 597
−0.8	24. 127	24. 934	25. 741	26. 548	27. 356	28. 164	28. 973	29. 782	30. 592
−0.7	24. 124	24. 931	25. 738	26. 545	27. 352	28. 160	28. 968	29. 777	30. 587
−0.6	24. 121	24. 928	25. 734	26. 541	27. 348	28. 156	28. 964	29. 772	30. 581
−0.5	24. 118	24. 924	25. 731	26. 537	27. 344	28. 151	28. 959	29. 767	30. 576
−0.4	24. 115	24. 921	25. 727	26. 533	27. 340	28. 147	28. 954	29. 762	30. 570
−0.3	24. 112	24. 917	25. 723	26. 529	27. 335	28. 142	28. 949	29. 756	30. 565
−0.2	24. 109	24. 914	25. 719	26. 524	27. 330	28. 137	28. 944	29. 751	30. 559
−0.1	24. 105	24. 910	25. 715	26. 520	27. 326	28. 132	28. 938	29. 745	30. 553
0.0	24. 101	24. 906	25. 710	26. 515	27. 321	28. 126	28. 933	29. 739	30. 547
0.1	24. 098	24. 902	25. 706	26. 511	27. 316	28. 121	28. 927	29. 733	30. 540
0.2	24. 094	24. 897	25. 701	26. 506	27. 310	28. 116	28. 921	29. 727	30. 534
0.3	24. 090	24. 893	25. 697	26. 501	27. 305	28. 110	28. 915	29. 721	30. 527
0.4	24. 085	24. 888	25. 692	26. 496	27. 300	28. 104	28. 909	29. 715	30. 521
0.5	24. 081	24. 884	25. 687	26. 490	27. 294	28. 098	28. 903	29. 708	30. 514
0.6	24. 076	24. 879	25. 682	26. 485	27. 288	28. 092	28. 897	29. 702	30. 507
0.7	24. 072	24. 874	25. 676	26. 479	27. 282	28. 086	28. 890	29. 695	30. 500
0.8	24. 067	24. 869	25. 671	26. 473	27. 276	28. 080	28. 883	29. 688	30. 493
0.9	24. 062	24. 863	25. 665	26. 468	27. 270	28. 073	28. 877	29. 681	30. 485
1.0	24. 057	24. 858	25. 660	26. 462	27. 264	28. 067	28. 870	29. 674	30. 478
1.1	24. 052	24. 852	25. 654	26. 455	27. 257	28. 060	28. 863	29. 666	30. 470
1.2	24. 046	24. 847	25. 648	26. 449	27. 251	28. 053	28. 856	29. 659	30. 462
1.3	24. 041	24. 841	25. 642	26. 443	27. 244	28. 046	28. 848	29. 651	30. 455
1.4	24. 035	24. 835	25. 635	26. 436	27. 237	28. 039	28. 841	29. 643	30. 447

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Table X.—SIGMA-T FOR VALUES OF TEMPERATURE AND SALINITY—Continued

Temperature, ° C.	Salinity, °/oo								
	30	31	32	33	34	35	36	37	38
1.5	24. 029	24. 829	25. 629	26. 429	27. 230	28. 032	28. 833	29. 636	30. 438
1.6	24. 023	24. 823	25. 622	26. 423	27. 223	28. 024	28. 826	29. 628	30. 430
1.7	24. 017	24. 816	25. 616	26. 416	27. 216	28. 017	28. 818	29. 619	30. 422
1.8	24. 011	24. 810	25. 609	26. 409	27. 209	28. 009	28. 810	29. 611	30. 413
1.9	24. 005	24. 803	25. 602	26. 401	27. 201	28. 001	28. 802	29. 603	30. 405
2.0	23. 998	24. 796	25. 595	26. 394	27. 193	27. 993	28. 793	29. 594	30. 396
2.1	23. 992	24. 790	25. 588	26. 386	27. 186	27. 985	28. 785	29. 586	30. 387
2.2	23. 985	24. 782	25. 580	26. 379	27. 178	27. 977	28. 777	29. 577	30. 378
2.3	23. 978	24. 775	25. 573	26. 371	27. 170	27. 969	28. 768	29. 568	30. 369
2.4	23. 971	24. 768	25. 565	26. 363	27. 161	27. 960	28. 759	29. 559	30. 359
2.5	23. 964	24. 761	25. 558	26. 355	27. 153	27. 952	28. 750	29. 550	30. 350
2.6	23. 957	24. 753	25. 550	26. 347	27. 145	27. 943	28. 741	29. 541	30. 340
2.7	23. 949	24. 745	25. 542	26. 339	27. 136	27. 934	28. 732	29. 531	30. 331
2.8	23. 942	24. 738	25. 534	26. 330	27. 128	27. 925	28. 723	29. 522	30. 321
2.9	23. 934	24. 730	25. 526	26. 322	27. 119	27. 916	28. 714	29. 512	30. 311
3.0	23. 926	24. 721	25. 517	26. 313	27. 110	27. 907	28. 704	29. 502	30. 301
3.1	23. 918	24. 713	25. 509	26. 304	27. 101	27. 897	28. 695	29. 492	30. 291
3.2	23. 910	24. 705	25. 500	26. 296	27. 092	27. 888	28. 685	29. 482	30. 280
3.3	23. 902	24. 696	25. 491	26. 287	27. 082	27. 878	28. 675	29. 472	30. 270
3.4	23. 894	24. 688	25. 482	26. 277	27. 073	27. 869	28. 665	29. 462	30. 260
3.5	23. 885	24. 679	25. 473	26. 268	27. 063	27. 859	28. 655	29. 452	30. 249
3.6	23. 877	24. 670	25. 464	26. 259	27. 054	27. 849	28. 645	29. 441	30. 238
3.7	23. 868	24. 661	25. 455	26. 249	27. 044	27. 839	28. 634	29. 430	30. 227
3.8	23. 859	24. 652	25. 446	26. 239	27. 034	27. 829	28. 624	29. 420	30. 216
3.9	23. 850	24. 643	25. 436	26. 230	27. 024	27. 818	28. 613	29. 409	30. 205
4.0	23. 841	24. 634	25. 427	26. 220	27. 014	27. 808	28. 603	29. 398	30. 194
4.1	23. 832	24. 624	25. 417	26. 210	27. 003	27. 797	28. 592	29. 387	30. 182
4.2	23. 823	24. 615	25. 407	26. 200	26. 993	27. 786	28. 581	29. 375	30. 171
4.3	23. 813	24. 605	25. 397	26. 189	26. 982	27. 776	28. 570	29. 364	30. 159
4.4	23. 804	24. 595	25. 387	26. 179	26. 972	27. 765	28. 558	29. 353	30. 148
4.5	23. 794	24. 585	25. 376	26. 168	26. 961	27. 754	28. 547	29. 341	30. 136
4.6	23. 784	24. 575	25. 366	26. 158	26. 950	27. 743	28. 536	29. 329	30. 124
4.7	23. 774	24. 565	25. 356	26. 147	26. 939	27. 731	28. 524	29. 318	30. 112
4.8	23. 764	24. 554	25. 345	26. 136	26. 928	27. 720	28. 512	29. 306	30. 099
4.9	23. 754	24. 544	25. 334	26. 125	26. 916	27. 708	28. 501	29. 294	30. 087
5.0	23. 743	24. 533	25. 323	26. 114	26. 905	27. 697	28. 489	29. 281	30. 075
5.1	23. 733	24. 523	25. 312	26. 103	26. 894	27. 685	28. 477	29. 269	30. 062
5.2	23. 722	24. 512	25. 301	26. 091	26. 882	27. 673	28. 465	29. 257	30. 049
5.3	23. 712	24. 501	25. 290	26. 080	26. 870	27. 661	28. 452	29. 244	30. 037
5.4	23. 701	24. 490	25. 279	26. 068	26. 858	27. 649	28. 440	29. 232	30. 024
5.5	23. 690	24. 479	25. 267	26. 057	26. 846	27. 637	28. 427	29. 219	30. 011
5.6	23. 679	24. 467	25. 256	26. 045	26. 834	27. 624	28. 415	29. 206	29. 998
5.7	23. 668	24. 456	25. 244	26. 033	26. 822	27. 612	28. 402	29. 193	29. 984
5.8	23. 657	24. 444	25. 232	26. 021	26. 810	27. 599	28. 389	29. 180	29. 971
5.9	23. 645	24. 433	25. 220	26. 009	26. 797	27. 587	28. 376	29. 167	29. 958
6.0	23. 634	24. 421	25. 208	25. 996	26. 785	27. 574	28. 363	29. 153	29. 944
6.1	23. 622	24. 409	25. 196	25. 984	26. 772	27. 561	28. 350	29. 140	29. 930
6.2	23. 610	24. 397	25. 184	25. 971	26. 759	27. 548	28. 337	29. 126	29. 917
6.3	23. 598	24. 385	25. 172	25. 959	26. 746	27. 535	28. 323	29. 113	29. 903
6.4	23. 586	24. 373	25. 159	25. 946	26. 733	27. 521	28. 310	29. 099	29. 889
6.5	23. 574	24. 360	25. 146	25. 933	26. 720	27. 508	28. 296	29. 085	29. 875
6.6	23. 562	24. 348	25. 134	25. 920	26. 707	27. 494	28. 282	29. 071	29. 860
6.7	23. 550	24. 335	25. 121	25. 907	26. 694	27. 481	28. 269	29. 057	29. 846
6.8	23. 537	24. 322	25. 108	25. 894	26. 680	27. 467	28. 255	29. 043	29. 832
6.9	23. 525	24. 310	25. 095	25. 880	26. 667	27. 453	28. 241	29. 028	29. 817

Table X.—SIGMA-T FOR VALUES OF TEMPERATURE AND SALINITY—Continued

Temperature, ° C.	Salinity, °/oo								
	30	31	32	33	34	35	36	37	38
7.0	23. 512	24. 297	25. 082	25. 867	26. 653	27. 439	28. 226	29. 014	29. 802
7.1	23. 499	24. 284	25. 068	25. 853	26. 639	27. 425	28. 212	28. 999	29. 788
7.2	23. 486	24. 270	25. 055	25. 840	26. 625	27. 411	28. 198	28. 985	29. 773
7.3	23. 473	24. 257	25. 041	25. 826	26. 611	27. 397	28. 183	28. 970	29. 758
7.4	23. 460	24. 244	25. 028	25. 812	26. 597	27. 383	28. 169	28. 955	29. 743
7.5	23. 447	24. 230	25. 014	25. 798	26. 583	27. 368	28. 154	28. 940	29. 727
7.6	23. 434	24. 217	25. 000	25. 784	26. 569	27. 353	28. 139	28. 925	29. 712
7.7	23. 420	24. 203	24. 986	25. 770	26. 554	27. 339	28. 124	28. 910	29. 697
7.8	23. 406	24. 189	24. 972	25. 756	26. 539	27. 324	28. 109	28. 895	29. 681
7.9	23. 393	24. 175	24. 958	25. 741	26. 525	27. 309	28. 094	28. 879	29. 665
8.0	23. 379	24. 161	24. 944	25. 727	26. 510	27. 294	28. 079	28. 864	29. 650
8.1	23. 365	24. 147	24. 929	25. 712	26. 495	27. 279	28. 063	28. 848	29. 634
8.2	23. 351	24. 133	24. 915	25. 697	26. 480	27. 264	28. 048	28. 832	29. 618
8.3	23. 337	24. 118	24. 900	25. 682	26. 465	27. 248	28. 032	28. 817	29. 602
8.4	23. 323	24. 104	24. 885	25. 667	26. 450	27. 233	28. 016	28. 801	29. 586
8.5	23. 308	24. 089	24. 870	25. 652	26. 434	27. 217	28. 001	28. 785	29. 569
8.6	23. 294	24. 074	24. 855	25. 637	26. 419	27. 202	27. 985	28. 769	29. 553
8.7	23. 279	24. 060	24. 840	25. 622	26. 403	27. 186	27. 969	28. 752	29. 537
8.8	23. 264	24. 045	24. 825	25. 606	26. 388	27. 170	27. 953	28. 736	29. 520
8.9	23. 250	24. 030	24. 810	25. 591	26. 372	27. 154	27. 936	28. 720	29. 503
9.0	23. 235	24. 014	24. 795	25. 575	26. 356	27. 138	27. 920	28. 703	29. 487
9.1	23. 220	23. 999	24. 779	25. 559	26. 340	27. 122	27. 904	28. 686	29. 470
9.2	23. 204	23. 984	24. 763	25. 544	26. 324	27. 105	27. 887	28. 670	29. 453
9.3	23. 189	23. 968	24. 748	25. 528	26. 308	27. 089	27. 871	28. 653	29. 436
9.4	23. 174	23. 953	24. 732	25. 512	26. 292	27. 072	27. 854	28. 636	29. 418
9.5	23. 158	23. 937	24. 716	25. 495	26. 275	27. 056	27. 837	28. 619	29. 401
9.6	23. 143	23. 921	24. 700	25. 479	26. 259	27. 039	27. 820	28. 602	29. 384
9.7	23. 127	23. 905	24. 684	25. 463	26. 242	27. 022	27. 803	28. 584	29. 366
9.8	23. 111	23. 889	24. 668	25. 446	26. 226	27. 005	27. 786	28. 567	29. 349
9.9	23. 096	23. 873	24. 651	25. 430	26. 209	26. 988	27. 769	28. 549	29. 331
10.0	23. 080	23. 857	24. 635	25. 413	26. 192	26. 971	27. 751	28. 532	29. 313
10.1	23. 063	23. 841	24. 618	25. 396	26. 175	26. 954	27. 734	28. 514	29. 295
10.2	23. 047	23. 824	24. 602	25. 379	26. 158	26. 937	27. 716	28. 496	29. 277
10.3	23. 031	23. 808	24. 585	25. 362	26. 141	26. 919	27. 699	28. 479	29. 259
10.4	23. 014	23. 791	24. 568	25. 345	26. 123	26. 902	27. 681	28. 461	29. 241
10.5	22. 998	23. 774	24. 551	25. 328	26. 106	26. 884	27. 663	28. 443	29. 223
10.6	22. 981	23. 757	24. 534	25. 311	26. 088	26. 866	27. 645	28. 424	29. 204
10.7	22. 965	23. 740	24. 517	25. 293	26. 071	26. 849	27. 627	28. 406	29. 186
10.8	22. 948	23. 723	24. 499	25. 276	26. 053	26. 831	27. 609	28. 388	29. 167
10.9	22. 931	23. 706	24. 482	25. 258	26. 035	26. 813	27. 591	28. 369	29. 149
11.0	22. 914	23. 689	24. 465	25. 241	26. 017	26. 795	27. 572	28. 351	29. 130
11.1	22. 897	23. 672	24. 447	25. 223	25. 999	26. 776	27. 554	28. 332	29. 111
11.2	22. 879	23. 654	24. 429	25. 205	25. 981	26. 758	27. 535	28. 313	29. 092
11.3	22. 862	23. 637	24. 412	25. 187	25. 963	26. 740	27. 517	28. 294	29. 073
11.4	22. 845	23. 619	24. 394	25. 169	25. 945	26. 721	27. 498	28. 275	29. 054
11.5	22. 827	23. 601	24. 376	25. 151	25. 926	26. 702	27. 479	28. 256	29. 034
11.6	22. 809	23. 583	24. 358	25. 132	25. 908	26. 684	27. 460	28. 237	29. 015
11.7	22. 792	23. 565	24. 339	25. 114	25. 889	26. 665	27. 441	28. 218	28. 996
11.8	22. 774	23. 547	24. 321	25. 096	25. 870	26. 646	27. 422	28. 199	28. 976
11.9	22. 756	23. 529	24. 303	25. 077	25. 852	26. 627	27. 403	28. 179	28. 956
12.0	22. 738	23. 511	24. 284	25. 058	25. 833	26. 608	27. 383	28. 160	28. 937
12.1	22. 720	23. 492	24. 266	25. 039	25. 814	26. 589	27. 364	28. 140	28. 917
12.2	22. 701	23. 474	24. 247	25. 021	25. 795	26. 569	27. 345	28. 120	28. 897
12.3	22. 683	23. 455	24. 228	25. 002	25. 775	26. 550	27. 325	28. 101	28. 877
12.4	22. 664	23. 437	24. 209	21. 982	25. 756	26. 530	27. 305	28. 081	28. 857

TABLE X.—SIGMA-T FOR VALUES OF TEMPERATURE AND SALINITY—Continued

Temperature, ° C.	Salinity, °/oo								
	30	31	32	33	34	35	36	37	38
12.5	22. 646	23. 418	24. 190	24. 963	25. 737	26. 511	27. 285	28. 061	28. 837
12.6	22. 627	23. 399	24. 171	24. 944	25. 717	26. 491	27. 266	28. 041	28. 816
12.7	22. 608	23. 380	24. 152	24. 925	25. 698	26. 471	27. 246	28. 020	28. 796
12.8	22. 590	23. 361	24. 133	24. 905	25. 678	26. 451	27. 225	28. 000	28. 775
12.9	22. 571	23. 342	24. 113	24. 886	25. 658	26. 431	27. 205	27. 980	28. 755
13.0	22. 552	23. 323	24. 094	24. 866	25. 638	26. 411	27. 185	27. 959	28. 734
13.1	22. 532	23. 303	24. 074	24. 846	25. 618	26. 391	27. 165	27. 939	28. 713
13.2	22. 513	23. 284	24. 055	24. 826	25. 598	26. 371	27. 144	27. 918	28. 693
13.3	22. 494	23. 264	24. 035	24. 806	25. 578	26. 351	27. 124	27. 897	28. 672
13.4	22. 474	23. 245	24. 015	24. 786	25. 558	26. 330	27. 103	27. 876	28. 651
13.5	22. 455	23. 225	23. 995	24. 766	25. 538	26. 310	27. 082	27. 855	28. 629
13.6	22. 435	23. 205	23. 975	24. 746	25. 517	26. 289	27. 061	27. 834	28. 608
13.7	22. 415	23. 185	23. 955	24. 726	25. 497	26. 268	27. 040	27. 813	28. 587
13.8	22. 396	23. 165	23. 935	24. 705	25. 476	26. 247	27. 019	27. 792	28. 565
13.9	22. 376	23. 145	23. 914	24. 685	25. 455	26. 226	26. 998	27. 771	28. 544
14.0	22. 356	28. 125	23. 894	24. 664	25. 434	26. 205	26. 977	27. 749	28. 522
14.1	22. 335	23. 104	23. 873	24. 643	25. 413	26. 184	26. 956	27. 728	28. 501
14.2	22. 315	23. 084	23. 853	24. 622	25. 392	26. 163	26. 934	27. 706	28. 479
14.3	22. 295	23. 063	23. 832	24. 601	25. 371	26. 142	26. 913	27. 685	28. 457
14.4	22. 274	23. 043	23. 811	24. 580	25. 350	26. 120	26. 891	27. 663	28. 435
14.5	22. 254	23. 022	23. 790	24. 559	25. 329	26. 099	26. 870	27. 641	28. 413
14.6	22. 233	23. 001	23. 769	24. 538	25. 308	26. 077	26. 848	27. 619	28. 391
14.7	22. 213	22. 980	23. 748	24. 517	25. 286	26. 056	26. 826	27. 597	28. 369
14.8	22. 192	22. 959	23. 727	24. 496	25. 264	26. 034	26. 804	27. 575	28. 346
14.9	22. 171	22. 938	23. 706	24. 474	25. 243	26. 012	26. 782	27. 553	28. 324
15.0	22. 150	22. 917	23. 684	24. 452	25. 221	25. 990	26. 760	27. 530	28. 302
15.1	22. 129	22. 896	23. 663	24. 431	25. 199	25. 968	26. 738	27. 508	28. 279
15.2	22. 108	22. 874	23. 641	24. 409	25. 177	25. 946	26. 715	27. 486	28. 256
15.3	22. 086	22. 853	23. 620	24. 387	25. 155	25. 924	26. 693	27. 463	28. 234
15.4	22. 065	22. 831	23. 598	24. 365	25. 133	25. 902	26. 671	27. 440	28. 211
15.5	22. 044	22. 810	23. 576	24. 343	25. 111	25. 879	26. 648	27. 418	28. 188
15.6	22. 022	22. 788	23. 554	24. 321	25. 089	25. 857	26. 625	27. 395	28. 165
15.7	22. 000	22. 766	23. 532	24. 299	25. 066	25. 834	26. 603	27. 372	28. 142
15.8	21. 979	22. 744	23. 510	24. 277	25. 044	25. 811	26. 580	27. 349	28. 118
15.9	21. 957	22. 722	23. 488	24. 254	25. 021	25. 789	26. 557	27. 326	28. 095
16.0	21. 935	22. 700	23. 466	24. 232	24. 999	25. 766	26. 534	27. 302	28. 072
16.1	21. 913	22. 678	23. 443	24. 209	24. 976	25. 743	26. 511	27. 279	28. 048
16.2	21. 891	22. 655	23. 421	24. 187	24. 953	25. 720	26. 488	27. 256	28. 025
16.3	21. 868	22. 633	23. 398	24. 164	24. 930	25. 697	26. 464	27. 232	28. 001
16.4	21. 846	22. 611	23. 376	24. 141	24. 907	25. 674	26. 441	27. 209	27. 977
16.5	21. 824	22. 588	23. 353	24. 118	24. 884	25. 650	26. 417	27. 185	27. 954
16.6	21. 801	22. 565	23. 330	24. 095	24. 861	25. 627	26. 394	27. 161	27. 930
16,7	21. 779	22. 543	23. 307	24. 072	24. 837	25. 604	26. 370	27. 138	27. 906
16.8	21. 756	22. 520	23. 284	24. 049	24. 814	25. 580	26. 347	27. 114	27. 882
16.9	21. 733	22. 497	23. 261	24. 025	24. 791	25. 556	26. 323	27. 090	27. 857
17.0	21. 710	22. 474	23. 238	24. 002	24. 767	25. 533	26. 299	27. 066	27. 833
17.1	21. 687	22. 451	23. 214	23. 979	24. 743	25. 509	26. 275	27. 042	27. 809
17.2	21. 664	22. 427	23. 191	23. 955	24. 720	25. 485	26. 251	27. 017	27. 785
17.3	21. 641	22. 404	23. 168	23. 931	24. 696	25. 461	26. 227	26. 993	27. 760
17.4	21. 618	22. 381	23. 144	23. 908	24. 672	25. 437	26. 202	26. 969	27. 736
17.5	21. 595	22. 357	23. 120	23. 884	24. 648	25. 413	26. 178	26. 944	27. 711
17.6	21. 571	22. 334	23. 097	23. 860	24. 624	25. 389	26. 154	26. 920	27. 686
17.7	21. 548	22. 310	23. 073	23. 836	24. 600	25. 364	26. 129	26. 895	27. 661
17.8	21. 524	22. 286	23. 049	23. 812	24. 576	25. 340	26. 105	26. 870	27. 636
17.9	21. 501	22. 262	23. 025	23. 788	24. 551	25. 315	26. 080	26. 845	27. 611

TABLE X.—SIGMA-T FOR VALUES OF TEMPERATURE AND SALINITY—Continued

Temperature, ° C.	Salinity, °/₀₀								
	30	31	32	33	34	35	36	37	38
18.0	21. 477	22. 239	23. 001	23. 763	24. 527	25. 291	26. 055	26. 820	27. 586
18.1	21. 453	22. 215	22. 977	23. 739	24. 502	25. 266	26. 030	26. 795	27. 561
18.2	21. 429	22. 190	22. 952	23. 715	24. 478	25. 241	26. 005	26. 770	27. 536
18.3	21. 405	22. 166	22. 928	23. 690	24. 453	25. 216	25. 980	26. 745	27. 511
18.4	21. 381	22. 142	22. 903	23. 666	24. 428	25. 191	25. 955	26. 720	27. 485
18.5	21. 357	22. 118	22. 879	23. 641	24. 403	25. 166	25. 930	26. 695	27. 460
18.6	21. 332	22. 093	22. 854	23. 616	24. 378	25. 141	25. 905	26. 669	27. 434
18.7	21. 308	22. 069	22. 830	23. 591	24. 353	25. 116	25. 880	26. 644	27. 408
18.8	21. 283	22. 044	22. 805	23. 566	24. 328	25. 091	25. 854	26. 618	27. 383
18.9	21. 259	22. 019	22. 780	23. 541	24. 303	25. 066	25. 829	26. 592	27. 357
19.0	21. 234	21. 994	22. 755	23. 516	24. 278	25. 040	25. 803	26. 567	27. 331
19.1	21. 210	21. 969	22. 730	23. 491	24. 252	25. 015	25. 777	26. 541	27. 305
19.2	21. 185	21. 944	22. 705	23. 466	24. 227	24. 989	25. 752	26. 515	27. 279
19.3	21. 160	21. 919	22. 680	23. 440	24. 201	24. 963	25. 726	26. 489	27. 253
19.4	21. 135	21. 894	22. 654	23. 415	24. 176	24. 937	25. 700	26. 463	27. 226
19.5	21. 110	21. 869	22. 629	23. 389	24. 150	24. 912	25. 674	26. 437	27. 200
19.6	21. 084	21. 844	22. 603	23. 363	24. 124	24. 886	25. 648	26. 410	27. 174
19.7	21. 059	21. 818	22. 578	23. 338	24. 098	24. 860	25. 621	26. 384	27. 147
19.8	21. 034	21. 793	22. 552	23. 312	24. 072	24. 833	25. 595	26. 358	27. 121
19.9	21. 008	21. 767	22. 526	23. 286	24. 046	24. 807	25. 569	26. 331	27. 094
20.0	20. 983	21. 741	22. 500	23. 260	24. 020	24. 781	25. 542	26. 304	27. 067
20.1	20. 957	21. 716	22. 475	23. 234	23. 994	24. 755	25. 516	26. 278	27. 040
20.2	20. 932	21. 690	22. 449	23. 208	23. 968	24. 728	25. 489	26. 251	27. 014
20.3	20. 906	21. 664	22. 422	23. 182	23. 941	24. 702	25. 463	26. 224	26. 987
20.4	20. 880	21. 638	22. 396	23. 155	23. 915	24. 675	25. 436	26. 197	26. 960
20.5	20. 854	21. 612	22. 370	23. 129	23. 888	24. 648	25. 409	26. 170	26. 932
20.6	20. 828	21. 586	22. 344	23. 102	23. 862	24. 621	25. 382	26. 143	26. 905
20.7	20. 802	21. 559	22. 317	23. 076	23. 835	24. 595	25. 355	26. 116	26. 878
20.8	20. 776	21. 533	22. 291	23. 049	23. 808	24. 568	25. 328	26. 089	26. 850
20.9	20. 749	21. 506	22. 264	23. 022	23. 781	24. 541	25. 301	26. 062	26. 823
21.0	20. 723	21. 480	22. 237	22. 996	23. 754	24. 514	25. 273	26. 034	26. 795
21.1	20. 696	21. 453	22. 211	22. 969	23. 727	24. 486	25. 246	26. 007	26. 768
21.2	20. 670	21. 427	22. 184	22. 942	23. 700	24. 459	25. 219	25. 979	26. 740
21.3	20. 643	21. 400	22. 157	22. 915	23. 673	24. 432	25. 191	25. 951	26. 712
21.4	20. 616	21. 373	22. 130	22. 887	23. 646	24. 404	25. 164	25. 924	26. 685
21.5	20. 590	21. 346	22. 103	22. 860	23. 618	24. 377	25. 136	25. 896	26. 657
21.6	20. 563	21. 319	22. 076	22. 833	23. 591	24. 349	25. 108	25. 868	26. 629
21.7	20. 536	21. 292	22. 048	22. 805	23. 563	24. 321	25. 080	25. 840	26. 600
21.8	20. 509	21. 265	22. 021	22. 778	23. 535	24. 294	25. 052	25. 812	26. 572
21.9	20. 481	21. 237	21. 994	22. 750	23. 508	24. 266	25. 024	25. 784	26. 544
22.0	20. 454	21. 210	21. 966	22. 723	23. 480	24. 238	24. 996	25. 756	26. 515
22.1	20. 427	21. 182	21. 938	22. 695	23. 452	24. 210	24. 968	25. 727	26. 487
22.2	20. 399	21. 155	21. 911	22. 667	23. 424	24. 182	24. 940	25. 699	26. 459
22.3	20. 372	21. 127	21. 883	22. 639	23. 396	24. 154	24. 912	25. 671	26. 430
22.4	20. 344	21. 099	21. 855	22. 611	23. 368	24. 125	24. 883	25. 642	26. 401
22.5	20. 317	21. 072	21. 827	22. 583	23. 340	24. 097	24. 855	25. 613	26. 373
22.6	20. 289	21. 044	21. 799	22. 555	23. 311	24. 069	24. 826	25. 585	26. 344
22.7	20. 261	21. 016	21. 771	22. 527	23. 283	24. 040	24. 798	25. 556	26. 315
22.8	20. 233	20. 988	21. 743	22. 498	23. 255	24. 011	24. 769	25. 527	26. 286
22.9	20. 205	20. 960	21. 715	22. 470	23. 226	23. 983	24. 740	25. 498	26. 257
23.0	20. 177	20. 931	21. 686	22. 442	23. 197	23. 954	24. 711	25. 469	26. 228
23.1	20. 149	20. 903	21. 658	22. 413	23. 169	23. 925	24. 682	25. 440	26. 199
23.2	20. 121	20. 875	21. 629	22. 384	23. 140	23. 896	24. 653	25. 411	26. 169
23.3	20. 092	20. 846	21. 601	22. 356	23. 111	23. 867	24. 624	25. 382	26. 140
23.4	20. 064	20. 818	21. 572	22. 327	23. 082	23. 838	24. 595	25. 352	26. 111

TABLE X.—SIGMA-T FOR VALUES OF TEMPERATURE AND SALINITY—Continued

Temperature, ° C.	Salinity, °/₀₀								
	30	31	32	33	34	35	36	37	38
23.5	20. 035	20. 789	21. 543	22. 298	23. 053	23. 809	24. 566	25. 323	26. 081
23.6	20. 007	20. 760	21. 514	22. 269	23. 024	23. 780	24. 536	25. 294	26. 051
23.7	19. 978	20. 732	21. 485	22. 240	22. 995	23. 751	24. 507	25. 264	26. 022
23.8	19. 949	20. 703	21. 456	22. 211	22. 966	23. 721	24. 477	25. 234	25. 992
23.9	19. 921	20. 674	21. 427	22. 181	22. 936	23. 692	24. 448	25. 205	25. 962
24.0	19. 892	20. 645	21. 398	22. 152	22. 907	23. 662	24. 418	25. 175	25. 932
24.1	19. 863	20. 615	21. 369	22. 123	22. 877	23. 633	24. 388	25. 145	25. 902
24.2	19. 834	20. 586	21. 340	22. 093	22. 848	23. 603	24. 359	25. 115	25. 872
24.3	19. 804	20. 557	21. 310	22. 064	22. 818	23. 573	24. 329	25. 085	25. 842
24.4	19. 775	20. 528	21. 281	22. 034	22. 788	23. 543	24. 299	25. 055	25. 812
24.5	19. 746	20. 498	21. 251	22. 004	22. 759	23. 513	24. 269	25. 025	25. 782
24.6	19. 716	20. 469	21. 221	21. 975	22. 729	23. 483	24. 238	24. 994	25. 751
24.7	19. 687	20. 439	21. 192	21. 945	22. 699	23. 453	24. 208	24. 964	25. 721
24.8	19. 657	20. 409	21. 162	21. 915	22. 669	23. 423	24. 178	24. 934	25. 690
24.9	19. 628	20. 380	21. 132	21. 885	22. 638	23. 393	24. 148	24. 903	25. 660
25.0	19. 598	20. 350	21. 102	21. 855	22. 608	23. 362	24. 117	24. 873	25. 629
25.1	19. 568	20. 320	21. 072	21. 825	22. 578	23. 332	24. 087	24. 842	25. 598
25.2	19. 538	20. 290	21. 042	21. 794	22. 548	23. 301	24. 056	24. 811	25. 567
25.3	19. 508	20. 260	21. 011	21. 764	22. 517	23. 271	24. 025	24. 781	25. 536
25.4	19. 478	20. 229	20. 981	21. 734	22. 487	23. 240	23. 995	24. 750	25. 505
25.5	19. 448	20. 199	20. 951	21. 703	22. 456	23. 209	23. 964	24. 719	25. 474
25.6	19. 418	20. 169	20. 920	21. 672	22. 425	23. 179	23. 933	24. 688	25. 443
25.7	19. 387	20. 138	20. 890	21. 642	22. 394	23. 148	23. 902	24. 657	25. 412
25.8	19. 357	20. 108	20. 859	21. 611	22. 364	23. 117	23. 871	24. 625	25. 381
25.9	19. 327	20. 077	20. 828	21. 580	22. 333	23. 086	23. 840	24. 594	25. 349
26.0	19. 296	20. 047	20. 798	21. 549	22. 302	23. 055	23. 808	24. 563	25. 318
26.1	19. 265	20. 016	20. 767	21. 518	22. 271	23. 023	23. 777	24. 531	25. 286
26.2	19. 235	19. 985	20. 736	21. 487	22. 239	22. 992	23. 746	24. 500	25. 255
26.3	19. 204	19. 954	20. 705	21. 456	22. 208	22. 961	23. 714	24. 468	25. 223
26.4	19. 173	19. 923	20. 674	21. 425	22. 177	22. 929	23. 683	24. 437	25. 191
26.5	19. 142	19. 892	20. 643	21. 394	22. 145	22. 898	23. 651	24. 405	25. 160
26.6	19. 111	19. 861	20. 611	21. 362	22. 114	22. 866	23. 619	24. 373	25. 128
26.7	19. 080	19. 830	20. 580	21. 331	22. 082	22. 835	23. 588	24. 341	25. 096
26.8	19. 049	19. 798	20. 549	21. 299	22. 051	22. 803	23. 556	24. 309	25. 064
26.9	19. 017	19. 767	20. 517	21. 268	22. 019	22. 771	23. 524	24. 277	25. 032
27.0	18. 986	19. 735	20. 485	21. 236	21. 987	22. 739	23. 492	24. 245	24. 999
27.1	18. 955	19. 704	20. 454	21. 204	21. 955	22. 707	23. 460	24. 213	24. 967
27.2	18. 923	19. 672	20. 422	21. 172	21. 923	22. 675	23. 428	24. 181	24. 935
27.3	18. 891	19. 641	20. 390	21. 140	21. 891	22. 643	23. 395	24. 148	24. 902
27.4	18. 860	19. 609	20. 358	21. 108	21. 859	22. 611	23. 363	24. 116	24. 870
27.5	18. 828	19. 577	20. 326	21. 076	21. 827	22. 579	23. 331	24. 084	24. 837
27.6	18. 796	19. 545	20. 294	21. 044	21. 795	22. 546	23. 298	24. 051	24. 805
27.7	18. 764	19. 513	20. 262	21. 012	21. 763	22. 514	23. 266	24. 018	24. 772
27.8	18. 732	19. 481	20. 230	20. 980	21. 730	22. 481	23. 233	23. 986	24. 739
27.9	18. 700	19. 449	20. 198	20. 947	21. 698	22. 449	23. 200	23. 953	24. 706
28.0	18. 668	19. 416	20. 165	20. 915	21. 665	22. 416	23. 168	23. 920	24. 673
28.1	18. 636	19. 384	20. 133	20. 882	21. 632	22. 383	23. 135	23. 887	24. 640
28.2	18. 603	19. 351	20. 100	20. 850	21. 600	22. 350	23. 102	23. 854	24. 607
28.3	18. 571	19. 319	20. 068	20. 817	21. 567	22. 318	23. 069	23. 821	24. 574
28.4	18. 538	19. 286	20. 035	20. 784	21. 534	22. 285	23. 036	23. 788	24. 541
28.5	18. 506	19. 254	20. 002	20. 751	21. 501	22. 251	23. 003	23. 755	24. 507
28.6	18. 473	19. 221	19. 969	20. 718	21. 468	22. 218	22. 969	23. 721	24. 474
28.7	18. 440	19. 188	19. 936	20. 685	21. 435	22. 185	22. 936	23. 688	24. 441
28.8	18. 408	19. 155	19. 903	20. 652	21. 402	22. 152	22. 903	23. 654	24. 407
28.9	18. 375	19. 122	19. 870	20. 619	21. 368	22. 119	22. 869	23. 621	24. 373

TABLE X.—SIGMA-T FOR VALUES OF TEMPERATURE AND SALINITY—Continued

Temperature, ° C.	Salinity, °/₀₀								
	30	31	32	33	34	35	36	37	38
29.0	18. 342	19. 089	19. 837	20. 586	21. 335	22. 085	22. 836	23. 587	24. 340
29.1	18. 309	19. 056	19. 804	20. 553	21. 302	22. 052	22. 802	23. 554	24. 306
29.2	18. 276	19. 023	19. 771	20. 519	21. 268	22. 018	22. 769	23. 520	24. 272
29.3	18. 242	18. 990	19. 737	20. 486	21. 235	21. 984	22. 735	23. 486	24. 238
29.4	18. 209	18. 956	19. 704	20. 452	21. 201	21. 951	22. 701	23. 452	24. 204
29.5	18. 176	18. 923	19. 670	20. 418	21. 167	21. 917	22. 667	23. 418	24. 170
29.6	18. 142	18. 889	19. 637	20. 385	21. 133	21. 883	22. 633	23. 384	24. 136
29.7	18. 109	18. 856	19. 603	20. 351	21. 100	21. 849	22. 599	23. 350	24. 102
29.8	18. 075	18. 822	19. 569	20. 317	21. 066	21. 815	22. 565	23. 316	24. 067
29.9	18. 042	18. 788	19. 535	20. 283	21. 032	21. 781	22. 531	23. 281	24. 033
30.0	18. 008	18. 754	19. 501	20. 249	20. 997*	21. 747	22. 496	23. 247	23. 999

TABLE XI.—GEOPOTENTIAL DISTANCES, $D_{35,0,p}$, FROM THE SEA SURFACE TO STATED ISOBARIC SURFACES IN SEA WATER OF SALINITY 35°/₀₀ AND TEMPERATURE 0° C.

(From Bjerknes and Sandström, expanded by ms. data) (*11*)

$$dD_{35,0,p}=\int_0^p \alpha_{35,0,p}\,dp$$

where

p=pressure in decibars.

$\alpha_{35,0,p}$=specific volume of sea water at salinity 35°/₀₀, temperature 0° C, and pressure p. (See table IV.)

Example:

Given, p=1,000 decibars.

From table XI, $D_{35,0,p}$=970.4032 dynamic meters.

TABLE XI.—GEOPOTENTIAL DISTANCES, $D_{35,0,p}$, FROM THE SEA SURFACE TO STATED ISOBARIC SURFACES IN SEA WATER OF SALINITY 35°/₀₀ AND TEMPERATURE 0° C.

p (decibars)	$D_{35,0,p}$ (dynamic meters)	p (decibars)	$D_{35,0,p}$ (dynamic meters)	p (decibars)	$D_{35,0,p}$ (dynamic meters)
10	9. 7262	400	388. 6965	2500	2417. 8360
20	19. 4520	500	485. 7584	3000	2898. 2041
30	29. 1773	600	582. 7759	3500	3377. 5445
40	38. 9021	800	776. 6777	4000	3855. 8733
50	48. 6265	1000	970. 4032	4500	4333. 2053
75	72. 9356	1200	1163. 9534	5000	4809. 5559
100	97. 2417	1400	1357. 3295	6000	5759. 3685
150	145. 8457	1600	1550. 5327	8000	7647. 8173
200	194. 4382	1800	1743. 5639	10000	9522. 0255
300	291. 5898	2000	1936. 4246		

Table XII.—CURRENT FACTOR, c, FOR VALUES OF LATITUDE

$$c=\frac{1}{2\omega \sin \phi 10^5}$$

where

ω=angular velocity of earth's rotation, equal to 0.729×10^{-4} radians per second,

ϕ=latitude in degrees.

Example:

Given, latitude of 30° N.

From table XII, c=0.1371.

Current factor, c, is used in the following equation to obtain current velocity.

$$V=\frac{c(D_A-D_B)(n)}{L}$$

where

V=average current velocity normal to a line between stations A and B,

D_A-D_B=dynamic height difference between stations A and B,

L=distance between stations A and B,

n=unit conversion factor, dependent upon the units of the other variables. If units of V, D_A-D_B, and L are as shown, then n will have the indicated values.

V	D_A-D_B	L	n
m/sec	dyn. m	meters	10^6
cm/sec	dyn. m	kilometers	10^5
cm/sec	dyn. m	nautical miles	53959
knots	dyn. m	kilometers	1942. 6
knots	dyn. m	nautical miles	1048. 2

Table XII.—CURRENT FACTOR, c

Latitude (degrees)	0	1	2	3	4	5	6	7	8	9
0	--------	--------	1. 9646	1. 3101	0. 9829	0. 7867	0. 6560	0. 5626	0. 4927	0. 4383
10	0. 3949	0. 3594	. 3298	. 3048	. 2834	. 2649	. 2488	. 2345	. 2219	. 2106
20	. 2005	. 1913	. 1830	. 1755	. 1686	. 1622	. 1564	. 1510	. 1461	. 1414
30	. 1371	. 1331	. 1294	. 1259	. 1226	. 1195	. 1167	. 1139	. 1114	. 1090
40	. 1067	. 1045	. 1025	. 1005	. 0987	. 0970	. 0953	. 0938	. 0923	. 0909
50	. 0895	. 0882	. 0870	. 0859	. 0848	. 0837	. 0827	. 0817	. 0809	. 0800
60	. 0792	. 0784	. 0777	. 0770	. 0763	. 0757	. 0751	. 0745	. 0740	. 0735
70	. 0730	. 0725	. 0721	. 0717	. 0713	. 0710	. 0707	. 0704	. 0701	. 0699
80	. 0696	. 0694	. 0692	. 0691	. 0690	. 0688	. 0687	. 0687	. 0686	. 0686

TABLE XIII.—LENGTH OF 1 DEGREE OF LATITUDE AND LONGITUDE AND RATIO LATITUDE TO LONGITUDE FOR EACH DEGREE LATITUDE

(From Bowditch, 1939) (*24*)

Example:

Given, latitude=30°.

From table XIII, 1 degree longitude=96.49 kilometers, 1 degree latitude=110.85 kilometers, and the ratio latitude to longitude=1.1488.

TABLE XIII.—LENGTH OF ONE DEGREE OF LATITUDE AND LONGITUDE AND RATIO LATITUDE TO LONGITUDE FOR EACH DEGREE LATITUDE

Latitude (degrees)	Longitude (kilometers)	Latitude (kilometers)	Ratio latitude to longitude	Latitude (degrees)	Longitude (kilometers)	Latitude (kilometers)	Ratio latitude to longitude
0	111. 32	110. 57	0. 9933	45	78. 85	111. 13	1. 4094
1	111. 30	110. 57	. 9934	46	77. 47	111. 15	1. 4347
2	111. 25	110. 57	. 9939	47	76. 06	111. 17	1. 4616
3	111. 17	110. 57	. 9946	48	74. 63	111. 19	1. 4899
4	111. 05	110. 57	. 9957	49	73. 17	111. 21	1. 5199
5	110. 90	110. 58	. 9971	50	71. 70	111. 23	1. 5513
6	110. 72	110. 58	. 9987	51	70. 20	111. 25	1. 5848
7	110. 50	110. 58	1. 0007	52	68. 68	111. 27	1. 6201
8	110. 24	110. 59	1. 0032	53	67. 14	111. 29	1. 6576
9	109. 96	110. 60	1. 0058	54	65. 58	111. 31	1. 6973
10	109. 64	110. 60	1. 0088	55	64. 00	111. 32	1. 7394
11	109. 29	110. 61	1. 0121	56	62. 40	111. 34	1. 7843
12	108. 90	110. 62	1. 0158	57	60. 77	111. 36	1. 8325
13	108. 49	110. 62	1. 0196	58	59. 14	111. 38	1. 8833
14	108. 04	110. 63	1. 0240	59	57. 48	111. 40	1. 9381
15	107. 55	110. 64	1. 0287	60	55. 80	111. 42	1. 9968
16	107. 04	110. 65	1. 0337	61	54. 11	111. 43	2. 0593
17	106. 49	110. 66	1. 0392	62	52. 40	111. 45	2. 1269
18	105. 91	110. 68	1. 0450	63	50. 68	111. 46	2. 1993
19	105. 29	110. 69	1. 0513	64	48. 93	111. 48	2. 2784
20	104. 65	110. 70	1. 0578	65	47. 18	111. 50	2. 3633
21	103. 97	110. 71	1. 0648	66	45. 41	111. 51	2. 4556
22	103. 26	110. 72	1. 0722	67	43. 62	111. 52	2. 5566
23	102. 52	110. 74	1. 0802	68	41. 82	111. 54	2. 6671
24	101. 75	110. 75	1. 0884	69	40. 01	111. 55	2. 7881
25	100. 95	110. 77	1. 0973	70	38. 19	111. 57	2. 9214
26	100. 12	110. 78	1. 1065	71	36. 35	111. 58	3. 0696
27	99. 26	110. 80	1. 1163	72	34. 51	111. 59	3. 2336
28	98. 36	110. 82	1. 1267	73	32. 65	111. 60	3. 4181
29	97. 44	110. 83	1. 1374	74	30. 78	111. 61	3. 6260
30	96. 49	110. 85	1. 1488	75	28. 90	111. 62	3. 8623
31	95. 51	110. 87	1. 1608	76	27. 02	111. 63	4. 1314
32	94. 50	110. 88	1. 1733	77	25. 12	111. 64	4. 4443
33	93. 46	110. 90	1. 1866	78	23. 22	111. 65	4. 8084
34	92. 39	110. 92	1. 2006	79	21. 31	111. 66	5. 2398
35	91. 29	110. 94	1. 2152	80	19. 39	111. 66	5. 7586
36	90. 17	110. 96	1. 2306	81	17. 47	111. 67	6. 3921
37	89. 01	110. 98	1. 2468	82	15. 54	111. 68	7. 1866
38	87. 84	110. 99	1. 2635	83	13. 61	111. 68	8. 2057
39	86. 63	111. 01	1. 2814	84	11. 68	111. 69	9. 5625
40	85. 40	111. 03	1. 3001	85	9. 74	111. 69	11. 4671
41	84. 14	111. 05	1. 3198	86	7. 79	111. 69	14. 3376
42	82. 85	111. 07	1. 3406	87	5. 85	111. 70	19. 0940
43	81. 54	111. 09	1. 3624	88	3. 90	111. 70	28. 6410
44	80. 21	111. 11	1. 3852	89	1. 95	111. 70	57. 2820

TABLES XIV, A–F.—SOUND VELOCITY IN THE SEA, $V_{s,t,p}$, FOR VALUES OF LATITUDE, TEMPERATURE, SALINITY, AND PRESSURE

(From Kuwahara, 1939) (*25*)

TABLE XIV A.—Pressure in the Sea at Salinity 35°/oo, Temperature 0° C., and Stated Depths

TABLE XIV B.—Sound Velocity in the Sea at Salinity 35°/oo, Temperature 0° C., and Stated Pressures $V_{35,0,p}$

TABLE XIV C.—Correction to Sound Velocity, $V_{35,0,p}$, for Latitude, ΔV_ϕ

TABLE XIV D.—Correction to Sound Velocity, $V_{35,0,p}$, for Temperature, ΔV_t

TABLE XIV E.—Correction to Sound Velocity, $V_{35,0,p}$, for Salinity, ΔV_s

TABLE XIV F.—Correction to Sound Velocity, $V_{35,0,p}$, for Simultaneous Changes in Salinity, Temperature, and Pressure, $\Delta V_{s,t,p}$

$$V_{s,t,p}=V_{35,0,p}+\Delta V_\phi+\Delta V_t+\Delta V_s+\Delta V_{s,t,p}$$

Example:

Given, latitude=30°, depth=800 meters, temperature=4.55° C., salinity=34.40°/oo.
From table XIV A, under 800 meters, p=808 decibars
From table XIV B, under 808 decibars, $V_{35,0,p}$ ---------- 1, 460. 0 m./sec.
From table XIV C, under 30°, ΔV_ϕ ---------- 0. 0 m./sec.
From table XIV D, under 4.55° C., ΔV_t ---------- 19. 9 m./sec.
From table XIV E, under 34.40°/oo, ΔV_s ---------- −0. 8 m./sec.
From table XIV F, under 808 *db.*, 4.55° C., and 34.40°/oo, $\Delta V_{s,t,p}$ ---------- 0. 0 m./sec.

Sound velocity, $V_{s,t,p}$=(sum of above) ---------- 1, 479. 1 m./sec.

TABLE XIV A.—PRESSURE IN THE SEA AT SALINITY 35°/oo, TEMPERATURE 0° C., AND STATED DEPTHS

Meters	0	100	200	300	400	500	600	700	800	900
0	0	101	202	302	403	504	605	706	808	909
1,000	1, 010	1, 111	1, 212	1, 314	1, 415	1, 517	1, 618	1, 720	1, 821	1, 922
2,000	2, 023	2, 125	2, 228	2, 330	2, 432	2, 533	2, 635	2, 737	2, 839	2, 941
3,000	3, 044	3, 146	3, 249	3, 350	3, 453	3, 555	3, 657	3, 761	3, 863	3, 966
4,000	4, 068	4, 171	4, 273	4, 376	4, 479	4, 582	4, 684	4, 787	4, 891	4, 994
5,000	5, 097	5, 200	5, 303	5, 406	5, 510	5, 613	5, 715	5, 819	5, 923	6, 026
6,000	6, 129	6, 233	6, 336	6, 440	6, 545	6, 648	6, 752	6, 856	6, 959	7, 063
7,000	7, 167	7, 272	7, 376	7, 480	7, 584	7, 688	7, 792	7, 897	8, 001	8, 105
8,000	8, 210	8, 314	8, 418	8, 524	8, 628	8, 733	8, 837	8, 942	9, 047	9, 153
9,000	9, 257	9, 361	9, 466	9, 571	9, 675	9, 781	9, 885	9, 990	10, 096	10, 201

TABLE XIV B.—SOUND VELOCITY IN THE SEA AT SALINITY 35°/₀₀, TEMPERATURE 0° C., AND STATED PRESSURES, $V_{35,\,0,\,p}$

p (db.)	0	100	200	300	400	500	600	700	800	900
0	1, 445. 5	1, 447. 3	1, 449. 1	1, 450. 9	1, 452. 7	1, 454. 5	1, 456. 3	1, 458. 1	1, 459. 9	1, 461. 7
1,000	63. 4	65. 2	67. 0	68. 8	70. 6	72. 4	74. 2	76. 0	77. 8	79. 5
2,000	81. 3	83. 1	84. 9	86. 6	88. 4	90. 2	92. 0	93. 7	95. 5	97. 3
3,000	99. 0	1, 500. 8	1, 502. 6	1, 504. 3	1, 506. 1	1, 507. 8	1, 509. 6	1, 511. 3	1, 513. 1	1, 514. 8
4,000	1, 516. 6	18. 3	20. 1	21. 8	23. 6	25. 3	27. 0	28. 8	30. 5	32. 2
5,000	33. 9	35. 7	37. 4	39. 1	40. 8	42. 5	44. 2	46. 0	47. 7	49. 4
6,000	51. 1	52. 8	54. 5	56. 2	57. 9	59. 5	61. 2	62. 9	64. 6	66. 3
7,000	68. 0	69. 6	71. 3	73. 0	74. 6	76. 3	78. 0	79. 6	81. 3	82. 9
8,000	84. 6	86. 2	87. 9	89. 5	91. 1	92. 8	94. 4	96. 0	97. 6	99. 3
9,000	1, 600. 9	1, 602. 5	1, 604. 1	1, 605. 7	1, 607. 3	1, 608. 9	1, 610. 5	1, 612. 1	1, 613. 7	1, 615. 3
10,000	16. 9	18. 5	20. 1	21. 6	23. 2	24. 8	26. 3	27. 9	29. 5	31. 0

SOUND VELOCITY INTERPOLATION FOR XIV B

Δp (db.)	0	10	20	30	40	50	60	70	80	90
1.5	0. 00	0. 15	0. 30	0. 45	0. 60	0. 75	0. 90	1. 05	1. 20	1. 35
1.6	. 00	. 16	. 32	. 48	. 64	. 80	. 96	1. 12	1. 28	1. 44
1.7	. 00	. 17	. 34	. 51	. 68	. 85	1. 02	1. 19	1. 36	1. 53
1.8	. 00	. 18	. 36	. 54	. 72	. 90	1. 08	1. 26	1. 44	1. 62

TABLE XIV C.—CORRECTION TO SOUND VELOCITY, $V_{35,\,0,\,p}$, FOR LATITUDE, ΔV_{ϕ}

Decibars	Latitude									
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0. 0	0, 0	0. 0
1,000	—. 1	0. 0	0. 0	0. 0	0, 0	0. 0	0. 0	. 1	. 1	. 1
2,000	—. 1	—. 1	—. 1	0. 0	0. 0	. 1	. 1	. 1	. 1	. 1
3,000	—. 1	—. 1	—. 1	0. 0	0. 0	. 1	. 1	. 2	. 2	. 2
4,000	—. 1	—: 1	—. 1	0. 0	0. 0	. 1	. 2	. 2	. 2	. 3
5,000	—. 2	—. 1	—. 1	0. 0	0. 0	. 1	. 2	. 2	. 3	. 3
6,000	—. 2	—. 2	—. 1	0. 0	. 1	. 1	. 2	. 3	. 4	. 4
7,000	—. 2	—. 2	—. 1	—. 1	. 1	. 2	. 3	. 3	. 4	. 4
8,000	—. 2	—. 2	—. 1	—. 1	. 1	. 2	. 3	. 4	. 4	. 5
9,000	—. 3	—. 2	—. 2	—. 1	. 1	. 2	. 3	. 4	. 5	. 5
10,000	—. 3	—. 3	—. 2	—. 1	. 1	. 2	. 4	. 5	. 6	. 6

TABLE XIV D.—CORRECTION TO SOUND VELOCITY, $V_{35,0,p}$, FOR TEMPERATURE, ΔV_t

Temperature (° C.)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	−4. 6	−5. 1	−5. 6	−6. 0	−6. 5	−7. 0	−7. 4	−7. 9	−8. 4	−8. 9
−0	0. 0	−0. 5	−0. 9	−1. 4	−1. 8	−2. 3	−2. 8	−3. 2	−3. 7	−4. 2
0	0. 0	0. 5	0. 9	1. 4	1. 8	2. 3	2. 7	3. 2	3. 6	4. 1
1	4. 5	5. 0	5. 4	5. 9	6. 3	6. 8	7. 2	7. 7	8. 1	8. 6
2	9. 0	9. 4	9. 9	10. 3	10. 8	11. 2	11. 6	12. 1	12. 5	12. 9
3	13. 4	13. 8	14. 2	14. 6	15. 1	15. 5	15. 9	16. 4	16. 8	17. 2
4	17. 6	18. 0	18. 5	18. 9	19. 3	19. 7	20. 1	20. 6	21. 0	21. 4
5	21. 8	22. 2	22. 6	23. 0	23. 4	23. 9	24. 3	24. 7	25. 1	25. 5
6	25. 9	26. 3	26. 7	27. 1	27. 5	27. 9	28. 3	28. 7	29. 1	29. 5
7	29. 9	30. 3	30. 7	31. 1	31. 4	31. 8	32. 2	32. 6	33. 0	33. 4
8	33. 8	34. 1	34. 5	34. 9	35. 3	35. 7	36. 1	36. 4	36. 8	37. 2
9	37. 6	37. 9	38. 3	38. 7	39. 1	39. 4	39. 8	40. 2	40. 5	40. 9
10	41. 3	41. 6	42. 0	42. 4	42. 7	43. 1	43. 4	43. 8	44. 2	44. 5
11	44. 9	45. 2	45. 6	45. 9	46. 3	46. 6	47. 0	47. 3	47. 7	48. 0
12	48. 4	48. 7	49. 1	49. 4	49. 8	50. 1	50. 4	50. 8	51. 1	51. 5
13	51. 8	52. 1	52. 5	52. 8	53. 1	53. 5	53. 8	54. 1	54. 5	54. 8
14	55. 1	55. 5	55. 8	56. 1	56. 4	56. 8	57. 1	57. 4	57. 7	58. 0
15	58. 4	58. 7	59. 0	59. 3	59. 6	59. 9	60. 2	60. 6	60. 9	61. 2
16	61. 5	61. 8	62. 1	62. 4	62. 7	63. 0	63. 3	63. 6	63. 9	64. 3
17	64. 6	64. 9	65. 2	65. 5	65. 8	66. 1	66. 4	66. 6	66. 9	67. 2
18	67. 5	67. 8	68. 1	68. 4	68. 7	69. 0	69. 3	69. 6	69. 9	70. 1
19	70. 4	70. 7	71. 0	71. 3	71. 6	71. 8	72. 1	72. 4	72. 7	73. 0
20	73. 2	73. 5	73. 8	74. 1	74. 3	74. 6	74. 9	75. 2	75. 4	75. 7
21	76. 0	76. 2	76. 5	76. 8	77. 0	77. 3	77. 6	77. 8	78. 1	78. 4
22	78. 6	78. 9	79. 1	79. 4	79. 7	79. 9	80. 2	80. 4	80. 7	81. 0
23	81. 2	81. 5	81. 7	82. 0	82. 2	82. 5	82. 7	83. 0	83. 2	83. 5
24	83. 7	84. 0	84. 2	84. 5	84. 7	85. 0	85. 2	85. 5	85. 7	86. 0
25	86. 2	86. 4	86. 7	86. 9	87. 2	87. 4	87. 6	87. 9	88. 1	88. 4
26	88. 6	88. 8	89. 1	89. 3	89. 5	89. 8	90. 0	90. 2	90. 5	90. 7
27	90. 9	91. 2	91. 4	91. 6	91. 9	92. 1	92. 3	92. 5	92. 8	93. 0
28	93. 2	93. 5	93. 7	93. 9	94. 1	94. 4	94. 6	94. 8	95. 0	95. 3
29	95. 5	95. 7	95. 9	96. 1	96. 4	96. 6	96. 8	97. 0	97. 2	97. 5

TABLE XIV E.—CORRECTION TO SOUND VELOCITY, $V_{35,0,p}$, FOR SALINITY, ΔV_s

Salinity (°/₀₀)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
21	−18. 3	−18. 2	−18. 0	−17. 9	−17. 8	−17. 7	−17. 5	−17. 4	−17. 3	−17. 1
22	−17. 0	−16. 9	−16. 7	−16. 6	−16. 5	−16. 3	−16. 2	−16. 1	−16. 0	−15. 8
23	−15. 7	−15. 6	−15. 4	−15. 3	−15. 2	−15. 0	−14. 9	−14. 8	−14. 6	−14. 5
24	−14. 4	−14. 3	−14. 1	−14. 0	−13. 9	−13. 7	−13. 6	−13. 5	−13. 3	−13. 2
25	−13. 1	−12. 9	−12. 8	−12. 7	−12. 6	−12. 4	−12. 3	−12. 2	−12. 0	−11. 9
26	−11. 8	−11. 6	−11. 5	−11. 4	−11. 2	−11. 1	−11. 0	−10. 9	−10. 7	−10. 6
27	−10. 5	−10. 3	−10. 2	−10. 1	−9. 9	−9. 8	−9. 7	−9. 5	−9. 4	−9. 3
28	−9. 2	−9. 0	−8. 9	−8. 8	−8. 6	−8. 5	−8. 4	−8. 2	−8. 1	−8. 0
29	−7. 8	−7. 7	−7. 6	−7. 5	−7. 3	−7. 2	−7. 1	−6. 9	−6. 8	−6. 7
30	−6. 5	−6. 4	−6. 3	−6. 1	−6. 0	−5. 9	−5. 8	−5. 6	−5. 5	−5. 4
31	−5. 2	−5. 1	−5. 0	−4. 8	−4. 7	−4. 6	−4. 4	−4. 3	−4. 2	−4. 1
32	−3. 9	−3. 8	−3. 7	−3. 5	−3. 4	−3. 3	−3. 1	−3. 0	−2. 9	−2. 7
33	−2. 6	−2. 5	−2. 4	−2. 2	−2. 1	−2. 0	−1. 8	−1. 7	−1. 6	−1. 4
34	−1. 3	−1. 2	−1. 0	−. 9	−. 8	−. 7	−. 5	−. 4	−. 3	−. 1
35	0. 0	. 1	. 3	. 4	. 5	. 7	. 8	. 9	1. 0	1. 2
36	1. 3	1. 4	1. 6	1. 7	1. 8	2. 0	2. 1	2. 2	2. 4	2. 5
37	2. 6	2. 7	2. 9	3. 0	3. 1	3. 3	3. 4	3. 5	3. 7	3. 8
38	3. 9	4. 1	4. 2	4. 3	4. 4	4. 6	4. 7	4. 8	5. 0	5. 1
39	5. 2	5. 4	5. 5	5. 6	5. 7	5. 9	6. 0	6. 1	6. 3	6. 4
40	6. 5	6. 7	6. 8	6. 9	7. 1	7. 2	7. 3	7. 4	7. 6	7. 7

Table XIV F.—CORRECTION TO SOUND VELOCITY, $V_{35,0,p}$, FOR SIMULTANEOUS CHANGES IN SALINITY, TEMPERATURE, AND PRESSURE, $\Delta V_{s,t,p}$

p (db.)	Salinity (°/oo)	Temperature (C.)												
		−2°	−1°	0°	1°	2°	3°	4°	5°	10°	15°	20°	25°	30°
0	30	−0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.5	0.8	1.0	1.2	1.4
	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	40	0.1	0.0	0.0	0.0	−.1	−.1	−.2	−.2	−.5	−.8	−1.0	−1.2	−1.3
1,000	30	−.3	−.2	−.1	−.1	0.0	0.0	.1	.1	.4	.6	.8	1.2	1.6
	35	−.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	−.1	−.1	−.2	−.1	.2
	40	.2	.2	.1	.1	.1	0.0	0.0	−.1	−.5	−.8	−1.1	−1.3	−1.1
2,000	30	−.4	−.3	−.2	−.2	−.1	−.1	0.0	0.0	.1	.3	.5	1.0	- - -
	35	−.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	−.2	−.4	−.5	−.2	- - -
	40	.3	.3	.2	.2	.2	.1	0.0	−.1	−.6	−1.1	−1.4	−1.4	- - -
3,000	30	−.5	−.4	−.3	−.2	−.2	−.2	−.2	−.2	−.2	−.2	.1	- - -	- - -
	35	0.0	0.0	0.0	0.0	0.0	−.1	−.1	−.2	−.6	−.8	−.9	- - -	- - -
	40	.4	.3	.3	.2	.2	.1	0.0	−.2	−.9	−1.5	−1.8	- - -	- - -
4,000	30	−.4	−.4	−.3	−.3	−.3	−.3	−.3	−.4	−.6	−.7	- - -	- - -	- - -
	35	0.0	0.0	0.0	0.0	−.1	−.2	−.2	−.4	−1.0	−1.4	- - -	- - -	- - -
	40	.4	.4	.3	.2	.1	0.0	−.2	−.4	−1.3	−2.1	- - -	- - -	- - -
5,000	30	−.3	−.3	−.3	−.3	−.4	−.4	−.5	−.6	- - -	- - -	- - -	- - -	- - -
	35	.1	.1	0.0	−.1	−.2	−.3	−.4	−.6	- - -	- - -	- - -	- - -	- - -
	40	.5	.4	.3	.1	0.0	−.2	−.4	−.7	- - -	- - -	- - -	- - -	- - -
6,000	33	.1	0.0	−.1	−.2	−.4	−.5	−.7	- - -	- - -	- - -	- - -	- - -	- - -
	35	.2	.1	0.0	−.2	−.3	−.5	−.7	- - -	- - -	- - -	- - -	- - -	- - -
	37	.3	.2	.1	−.1	−.3	−.5	−.7	- - -	- - -	- - -	- - -	- - -	- - -
7,000	33	.3	.1	0.0	−.2	−.5	−.7	−.9	- - -	- - -	- - -	- - -	- - -	- - -
	35	.4	.2	0.0	−.2	−.5	−.7	−.9	- - -	- - -	- - -	- - -	- - -	- - -
	37	.4	.3	0.0	−.2	−.5	−.7	−1.0	- - -	- - -	- - -	- - -	- - -	- - -
8,000	33	.5	.3	0.0	−.3	−.5	−.8	−1.1	- - -	- - -	- - -	- - -	- - -	- - -
	35	.5	.3	0.0	−.3	−.6	−.9	−1.2	- - -	- - -	- - -	- - -	- - -	- - -
	37	.5	.3	0.0	−.4	−.7	−1.0	−1.4	- - -	- - -	- - -	- - -	- - -	- - -
9,000	33	.8	.5	.1	−.2	−.6	−1.0	−1.3	- - -	- - -	- - -	- - -	- - -	- - -
	35	.7	.4	0.0	−.4	−.8	−1.2	−1.6	- - -	- - -	- - -	- - -	- - -	- - -
	37	.6	.3	−.1	−.5	−1.0	−1.4	−1.8	- - -	- - -	- - -	- - -	- - -	- - -
10,000	33	1.1	.7	.2	−.2	−.7	−1.2	−1.6	- - -	- - -	- - -	- - -	- - -	- - -
	35	.9	.5	0.0	−.5	−1.0	−1.5	−1.9	- - -	- - -	- - -	- - -	- - -	- - -
	37	.7	.2	−.2	−.8	−1.3	−1.8	−2.2	- - -	- - -	- - -	- - -	- - -	- - -

Table XV.—CONDUCTIVITY OF SEA WATER, L, FOR VALUES OF TEMPERATURE AND SALINITY

(From Thomas, Thompson, and Utterback, 1934) (*26*)

$L=1.7875\times10^{-3}Cl-2.9596\times10^{-5}Cl^2+1.127\times10^{-6}Cl^3-1.902\times10^{-8}Cl^4$, at 0° C.

$L=2.0818\times10^{-3}Cl-3.6859\times10^{-5}Cl^2+1.449\times10^{-6}Cl^3-2.520\times10^{-8}Cl^4$, at 5° C.

$L=2.3749\times10^{-3}Cl-4.1334\times10^{-5}Cl^2+1.554\times10^{-6}Cl^3-2.643\times10^{-8}Cl^4$, at 10° C

$L=2.7009\times10^{-3}Cl-5.1390\times10^{-5}Cl^2+2.097\times10^{-6}Cl^3-3.829\times10^{-8}Cl^4$, at 15° C.

$L=3.0191\times10^{-3}Cl-5.6253\times10^{-5}Cl^2+2.181\times10^{-6}Cl^3-3.804\times10^{-8}Cl^4$, at 20° C.

$L=3.3524\times10^{-3}Cl-6.2481\times10^{-5}Cl^2+2.371\times10^{-6}Cl^3-4.049\times10^{-8}Cl^4$ at 25° C

where

Cl= Chlorinity of sea water.

Example:

Given, temperature = 5° C. and salinity = 32°/oo.

From table XV, conductivity = 0.030881 mhos per cm².

Table XV.—CONDUCTIVITY OF SEA WATER, *L*, FOR VALUES OF TEMPERATURE AND SALINITY

Salinity, °/oo	Temperature, C.					
	0°	5°	10°	15°	20°	25°
20	0.017395	0.020105	0.022924	0.025858	0.028900	0.032046
21	.018193	.021024	.023967	.027033	.030209	.033494
22	.018987	.021938	.025005	.028202	.031512	.034935
23	.019778	.022849	.026038	.029366	.032808	.036368
24	.020566	.023755	.027066	.030525	.034097	.037794
25	.021351	.024659	.028090	.031678	.035381	.039213
26	.022133	.025558	.029109	.032827	.036659	.040626
27	.022912	.026454	.030124	.033970	.037931	.042033
28	.023689	.027347	.031134	.035108	.039198	.043433
29	.024463	.028236	.032140	.036240	.040458	.044826
30	.025233	.029122	.033142	.037367	.041713	.046213
31	.026001	.030004	.034139	.038487	.042961	.047593
32	.026766	.030881	.035131	.039600	.044202	.048966
33	.027527	.031754	.036117	.040706	.045435	.050330
34	.028284	.032622	.037098	.041804	.046661	.051687
35	.029038	.033484	.038074	.042893	.047878	.053034
36	.029787	.034341	.039042	.043972	.049086	.054372
37	.030532	.035192	.040004	.045041	.050284	.055700
38	.031272	.036036	.040958	.046098	.051470	.057015
39	.032006	.036872	.041903	.047142	.052645	.058318

Tables XVI, A–B.—VELOCITY CONVERSIONS—KNOTS TO CENTIMETERS PER SECOND—CENTIMETERS PER SECOND TO KNOTS

Table XVI A.—Knots to Centimeters Per Second

1 knot = 51.479 cm./sec.

Example:
Given, velocity = 1.5 knots.
From table XVI A, velocity = 77.2 cm./sec.

Table XVI B.—Centimeters Per Second to Knots

1 cm./sec. = 0.019425 knots

Example:
Given, velocity = 84 cm./sec.
From table XVI B, velocity = 1.63 knots.

Table XVI A.—VELOCITY CONVERSION—KNOTS TO CENTIMETERS PER SECOND

Knots	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	0.0	5.1	10.3	15.4	20.6	25.7	30.9	36.0	41.2	46.3
1	51.5	56.6	61.8	66.9	72.1	77.2	82.4	87.5	92.7	97.8
2	103.0	108.1	113.3	118.4	123.5	128.7	133.8	139.0	144.1	149.3
3	154.4	159.6	164.7	169.9	175.0	180.2	185.3	190.5	195.6	200.8
4	205.9	211.1	216.2	221.4	226.5	231.7	236.8	242.0	247.1	252.2
5	257.4	262.5	267.7	272.8	278.0	283.1	288.3	293.4	298.6	303.7
6	308.9	314.0	319.2	324.3	329.5	334.6	339.8	344.9	350.1	355.2
7	360.4	365.5	370.6	375.8	380.9	386.1	391.2	396.4	401.5	406.7
8	411.8	417.0	422.1	427.3	432.4	437.6	442.7	447.9	453.0	458.2
9	463.3	468.5	473.6	478.8	483.9	489.1	494.2	499.3	504.5	509.6

TABLE XVI B.—VELOCITY CONVERSION—CENTIMETERS PER SECOND TO KNOTS

cm./sec.	0	1	2	3	4	5	6	7	8	9
0	0. 0	0. 02	0. 04	0. 06	0. 08	0. 10	0. 12	0. 14	0. 16	0. 17
10	. 19	. 21	. 23	. 25	. 27	. 29	. 31	. 33	. 35	. 37
20	. 39	. 41	. 43	. 45	. 47	. 49	. 51	. 52	. 54	. 56
30	. 58	. 60	. 62	. 64	. 66	. 68	. 70	. 72	. 74	. 76
40	. 78	. 80	. 82	. 84	. 85	. 87	. 89	. 91	. 93	. 95
50	. 97	. 99	1. 01	1. 03	1. 05	1. 07	1. 09	1. 11	1. 13	1. 15
60	1. 17	1. 18	1. 20	1. 22	1. 24	1. 26	1. 28	1. 30	1. 32	1. 34
70	1. 36	1. 38	1. 40	1. 42	1. 44	1. 46	1. 48	1. 50	1. 52	1. 53
80	1. 55	1. 57	1. 59	1. 61	1. 63	1. 65	1. 67	1. 69	1. 71	1. 73
90	1. 75	1. 77	1. 79	1. 81	1. 83	1. 85	1. 86	1. 88	1. 90	1. 92
100	1. 94	1. 96	1. 98	2. 00	2. 02	2. 04	2. 06	2. 08	2. 10	2. 12
110	2. 14	2. 16	2. 18	2. 20	2. 21	2. 23	2. 25	2. 27	2. 29	2. 31
120	2. 33	2. 35	2. 37	2. 39	2. 41	2. 43	2. 45	2. 47	2. 49	2. 51
130	2. 53	2. 54	2. 56	2. 58	2. 60	2. 62	2. 64	2. 66	2. 68	2. 70
140	2. 72	2. 74	2. 76	2. 78	2. 80	2. 82	2. 84	2. 86	2. 87	2. 89
150	2. 91	2. 93	2. 95	2. 97	2. 99	3. 01	3. 03	3. 05	3. 07	3. 09
160	3. 11	3. 13	3. 15	3. 17	3. 19	3. 21	3. 22	3. 24	3. 26	3. 28
170	3. 30	3. 32	3. 34	3. 36	3. 38	3. 40	3. 42	3. 44	3. 46	3. 48
180	3. 50	3. 52	3. 54	3. 55	3. 57	3. 59	3. 61	3. 63	3. 65	3. 67
190	3. 69	3. 71	3. 73	3. 75	3. 77	3. 79	3. 81	3. 83	3. 85	3. 87
200	3. 89	3. 90	3. 92	3. 94	3. 96	3. 98	4. 00	4. 02	4. 04	4. 06
210	4. 08	4. 10	4. 12	4. 14	4. 16	4. 18	4. 20	4. 22	4. 23	4. 25
220	4. 27	4. 29	4. 31	4. 33	4. 35	4. 37	4. 39	4. 41	4. 43	4. 45
230	4. 47	4. 49	4. 51	4. 53	4. 55	4. 56	4. 58	4. 60	4. 62	4. 64
240	4. 66	4. 68	4. 70	4. 72	4. 74	4. 76	4. 78	4. 80	4. 82	4. 84
250	4. 86	4. 88	4. 90	4. 91	4. 93	4. 95	4. 97	4. 99	5. 01	5. 03
260	5. 05	5. 07	5. 09	5. 11	5. 13	5. 15	5. 17	5. 19	5. 21	5. 23
270	5. 24	5. 26	5. 28	5. 30	5. 32	5. 34	5. 36	5. 38	5. 40	5. 42
280	5. 44	5. 46	5. 48	5. 50	5. 52	5. 54	5. 56	5. 58	5. 59	5. 61
290	5. 63	5. 65	5. 67	5. 69	5. 71	5. 73	5. 75	5. 77	5. 79	5. 81

TABLES XVII A–D.—DEPTH CONVERSIONS—FATHOMS TO METERS—METERS TO FATHOMS—FEET TO METERS—METERS TO FEET

TABLE XVII A.—Fathoms to Meters

1 fathom = 1.8285 meters

Example:

Given, depth = 195 fathoms.
From table XVII A, depth = 356.6 meters.

TABLE XVII B.—Meters to Fathoms

1 meter = 0.54681 fathoms

Example:

Given, depth = 800 meters.
From table XVII B, depth = 437 fathoms.

TABLE XVII C.—Feet to Meters

1 foot = 0.30480 meters

Example:

Given, depth = 144 feet.
From table XVII C, depth = 43.9 meters.

TABLE XVII D.—Meters to Feet

1 meter = 3.28083 feet

Example:

Given, depth = 94 meters.
From table XVII D, depth = 308.4 feet.

TABLE XVII A.—DEPTH CONVERSION—FATHOMS TO METERS

Fathoms	0	1	2	3	4	5	6	7	8	9
0	0. 0	1. 8	3. 7	5. 5	7. 3	9. 1	11. 0	12. 8	14. 6	16. 5
10	18. 3	20. 1	21. 9	23. 8	25. 6	27. 4	29. 3	31. 1	32. 9	34. 7
20	36. 6	38. 4	40. 2	42. 1	43. 9	45. 7	47. 5	49. 4	51. 2	53. 0
30	54. 9	56. 7	58. 5	60. 3	62. 2	64. 0	65. 8	67. 7	69. 5	71. 3
40	73. 2	75. 0	76. 8	78. 6	80. 5	82. 3	84. 1	86. 0	87. 8	89. 6
50	91. 4	93. 3	95. 1	96. 9	98. 8	100. 6	102. 4	104. 2	106. 1	107. 9
60	109. 7	111. 6	113. 4	115. 2	117. 0	118. 9	120. 7	122. 5	124. 4	126. 2
70	128. 0	129. 8	131. 7	133. 5	135. 3	137. 2	139. 0	140. 8	142. 6	144. 5
80	146. 3	148. 1	150. 0	151. 8	153. 6	155. 4	157. 3	159. 1	160. 9	162. 8
90	164. 6	166. 4	168. 2	170. 1	171. 9	173. 7	175. 6	177. 4	179. 2	181. 0
100	182. 9	184. 7	186. 5	188. 4	190. 2	192. 0	193. 8	195. 7	197. 5	199. 3
110	201. 2	203. 0	204. 8	206. 7	208. 5	210. 3	212. 1	214. 0	215. 8	217. 6
120	219. 5	221. 3	223. 1	224. 9	226. 8	228. 6	230. 4	232. 3	234. 1	235. 9
130	237. 7	239. 6	241. 4	243. 2	245. 1	246. 9	248. 7	250. 5	252. 4	254. 2
140	256. 0	257. 9	259. 7	261. 5	263. 3	265. 2	267. 0	268. 8	270. 7	272. 5
150	274. 3	276. 1	278. 0	279. 8	281. 6	283. 5	285. 3	287. 1	288. 9	290. 8
160	292. 6	294. 4	296. 3	298. 1	299. 9	301. 7	303. 6	305. 4	307. 2	309. 1
170	310. 9	312. 7	314. 5	316. 4	318. 2	320. 0	321. 9	323. 7	325. 5	327. 3
180	329. 2	331. 0	332. 8	334. 7	336. 5	338. 3	340. 2	342. 0	343. 8	345. 6
190	347. 5	349. 3	351. 1	353. 0	354. 8	356. 6	358. 4	360. 3	362. 1	363. 9
200	365. 8	367. 6	369. 4	371. 2	373. 1	374. 9	376. 7	378. 6	380. 4	382. 2
210	384. 0	385. 9	387. 7	389. 5	391. 4	393. 2	395. 0	396. 8	398. 7	400. 5
220	402. 3	404. 2	406. 0	407. 8	409. 6	411. 5	413. 3	415. 1	417. 0	418. 8
230	420. 6	422. 4	424. 3	426. 1	427. 9	429. 8	431. 6	433. 4	435. 2	437. 1
240	438. 9	440. 7	442. 6	444. 4	446. 2	448. 0	449. 9	451. 7	453. 5	455. 4
250	457. 2	459. 0	460. 1	462. 7	464. 5	466. 3	468. 2	470. 0	471. 8	473. 7
260	475. 5	477. 3	479. 1	481. 0	482. 7	484. 6	486. 5	488. 3	490. 1	491. 9
270	493. 8	495. 6	497. 4	499. 3	501. 1	502. 9	504. 7	506. 6	508. 4	510. 2
280	512. 1	513. 9	515. 7	517. 5	519. 4	521. 2	523. 0	524. 9	526. 7	528. 5
290	530. 3	532. 2	534. 0	535. 8	537. 7	539. 5	541. 3	543. 1	545. 0	546. 8

Fathoms	0	10	20	30	40	50	60	70	80	90
300	549	567	585	603	622	640	658	677	695	713
400	732	750	768	786	805	823	841	860	878	896
500	914	933	951	969	988	1, 006	1, 024	1, 042	1, 061	1, 079
600	1, 097	1, 116	1, 134	1, 152	1, 170	1, 189	1, 207	1, 225	1, 244	1, 262
700	1, 280	1, 298	1, 317	1, 335	1, 353	1, 372	1, 390	1, 408	1, 426	1, 445
800	1, 463	1, 481	1, 500	1, 518	1, 536	1, 554	1, 573	1, 591	1, 609	1, 628
900	1, 646	1, 664	1, 682	1, 701	1, 719	1, 737	1, 756	1, 774	1, 792	1, 810

Fathoms	0	100	200	300	400	500	600	700	800	900
1,000	1, 829	2, 012	2, 195	2, 377	2, 560	2, 743	2, 926	3, 109	3, 292	3, 475
2,000	3, 658	3, 840	4, 023	4, 206	4, 389	4, 572	4, 755	4, 938	5, 121	5, 303
3,000	5, 486	5, 669	5, 852	6, 035	6, 218	6, 401	6, 584	6, 766	6, 949	7, 132
4,000	7, 315	7, 498	7, 681	7, 864	8, 047	8, 229	8, 412	8, 595	8, 778	8, 961
5,000	9, 144	9, 327	9, 510	9, 692	9, 875	10, 058	10, 241	10, 424	10, 607	10, 790
6,000	10, 973	11, 155	11, 338	11, 521	11, 704	11, 887	12, 070	12, 253	12, 436	12, 618
7,000	12, 801	12, 984	13, 167	13, 350	13, 533	13, 716	13, 899	14, 082	14, 264	14, 447
8,000	14, 630	14, 813	14, 996	15, 179	15, 362	15, 545	15, 727	15, 910	16, 093	16, 276
9,000	16, 459	16, 642	16, 825	17, 008	17, 190	17, 373	17, 556	17, 739	17, 922	18, 105

Table XVII B.—DEPTH CONVERSION—METERS TO FATHOMS

Meters	0	1	2	3	4	5	6	7	8	9
0	0. 0	0. 5	1. 1	1. 6	2. 2	2. 7	3. 3	3. 8	4. 4	4. 9
10	5. 5	6. 0	6. 6	7. 1	7. 7	8. 2	8. 7	9. 3	9. 8	10. 4
20	10. 9	11. 5	12. 0	12. 6	13. 1	13. 7	14. 2	14. 8	15. 3	15. 9
30	16. 4	17. 0	17. 5	18. 0	18. 6	19. 1	19. 7	20. 2	20. 8	21. 3
40	21. 9	22. 4	23. 0	23. 5	24. 1	24. 6	25. 2	25. 7	26. 2	26. 8
50	27. 3	27. 9	28. 4	29. 0	29. 5	30. 1	30. 6	31. 2	31. 7	32. 3
60	32. 8	33. 4	33. 9	34. 4	35. 0	35. 5	36. 1	36. 6	37. 2	37. 7
70	38. 3	38. 8	39. 4	39. 9	40. 5	41. 0	41. 6	42. 1	42. 7	43. 2
80	43. 7	44. 3	44. 8	45. 4	45. 9	46. 5	47. 0	47. 6	48. 1	48. 7
90	49. 2	49. 8	50. 3	50. 9	51. 4	51. 9	52. 5	53. 0	53. 6	54. 1
100	54. 7	55. 2	55. 8	56. 3	56. 9	57. 4	58. 0	58. 5	59. 1	59. 6
110	60. 1	60. 7	61. 2	61. 8	62. 3	62. 9	63. 4	64. 0	64. 5	65. 1
120	65. 6	66. 2	66. 7	67. 3	67. 8	68. 4	68. 9	69. 4	70. 0	70. 5
130	71. 1	71. 6	72. 2	72. 7	73. 3	73. 8	74. 4	74. 9	75. 5	76. 0
140	76. 6	77. 1	77. 6	78. 2	78. 7	79. 3	79. 8	80. 4	80. 9	81. 5
150	82. 0	82. 6	83. 1	83. 7	84. 2	84. 8	85. 3	85. 9	86. 4	86. 9
160	87. 5	88. 0	88. 6	89. 1	89. 7	90. 2	90. 8	91. 3	91. 9	92. 4
170	93. 0	93. 5	94. 1	94. 6	95. 1	95. 7	96. 2	96. 8	97. 3	97. 9
180	98. 4	99. 0	99. 5	100. 1	100. 6	101. 2	101. 7	102. 3	102. 8	103. 3
190	103. 9	104. 4	105. 0	105. 5	106. 1	106. 6	107. 2	107. 7	108. 3	108. 8
200	109. 4	109. 9	110. 5	111. 0	111. 6	112. 1	112. 6	113. 2	113. 7	114. 3
210	114. 8	115. 4	115. 9	116. 5	117. 0	117. 6	118. 1	118. 7	119. 2	119. 8
220	120. 3	120. 8	121. 4	121. 9	122. 5	123. 0	123. 6	124. 1	124. 7	125. 2
230	125. 8	126. 3	126. 9	127. 4	128. 0	128. 5	129. 0	129. 6	130. 1	130. 7
240	131. 2	131. 8	132. 3	132. 9	133. 4	134. 0	134. 5	135. 1	135. 6	136. 2
250	136. 7	137. 3	137. 8	138. 3	138. 9	139. 4	140. 0	140. 5	141. 1	141. 6
260	142. 2	142. 7	143. 3	143. 8	144. 4	144. 9	145. 5	146. 0	146. 5	147. 1
270	147. 6	148. 2	148. 7	149. 3	149. 8	150. 4	150. 9	151. 5	152. 0	152. 6
280	153. 1	153. 7	154. 2	154. 7	155. 3	155. 8	156. 4	156. 9	157. 5	158. 0
290	158. 6	159. 1	159. 7	160. 2	160. 8	161. 3	161. 9	162. 4	163. 0	163. 5

Meters	0	10	20	30	40	50	60	70	80	90
300	164	170	175	180	186	191	197	202	208	213
400	219	224	230	235	241	246	252	257	262	268
500	273	279	284	290	295	301	306	312	317	323
600	328	334	339	344	350	355	361	366	372	377
700	383	388	394	399	405	410	416	421	427	432
800	437	443	448	454	459	465	470	476	481	487
900	492	498	503	509	514	519	525	530	536	541

Meters	0	100	200	300	400	500	600	700	800	900
1,000	547	601	656	711	766	820	875	930	984	1, 039
2,000	1, 094	1, 148	1, 203	1, 258	1, 312	1, 367	1, 422	1, 476	1, 531	1, 586
3,000	1, 640	1, 695	1, 750	1, 804	1, 859	1, 914	1, 969	2, 023	2, 078	2, 133
4,000	2, 187	2, 242	2, 297	2, 351	2, 406	2, 461	2, 515	2, 570	2, 625	2, 679
5,000	2, 734	2, 789	2, 843	2, 898	2, 953	3, 007	3, 062	3, 117	3, 172	3, 226
6,000	3, 281	3, 336	3, 390	3, 445	3, 500	3, 554	3, 609	3, 664	3, 718	3, 773
7,000	3, 828	3, 882	3, 937	3, 992	4, 046	4, 101	4, 156	4, 210	4, 265	4, 320
8,000	4, 375	4, 429	4, 484	4, 539	4, 593	4, 648	4, 703	4, 757	4, 812	4, 867
9,000	4, 921	4, 976	5, 031	5, 085	5, 140	5, 195	5, 249	5, 304	5, 359	5, 413

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Table XVII C.—DEPTH CONVERSION—FEET TO METERS

Feet	0	1	2	3	4	5	6	7	8	9
0	0. 0	0. 3	0. 6	0. 9	1. 2	1. 5	1. 8	2. 1	2. 4	2. 7
10	3. 0	3. 4	3. 7	4. 0	4. 3	4. 6	4. 9	5. 2	5. 5	5. 8
20	6. 1	6. 4	6. 7	7. 0	7. 3	7. 6	7. 9	8. 2	8. 5	8. 8
30	9. 1	9. 4	9. 8	10. 1	10. 4	10. 7	11. 0	11. 3	11. 6	11. 9
40	12. 2	12. 5	12. 8	13. 1	13. 4	13. 7	14. 0	14. 3	14. 6	14. 9
50	15. 2	15. 5	15. 8	16. 1	16. 5	16. 8	17. 1	17. 4	17. 7	18. 0
60	18. 3	18. 6	18. 9	19. 2	19. 5	19. 8	20. 1	20. 4	20. 7	21. 0
70	21. 3	21. 6	21. 9	22. 3	22. 6	22. 9	23. 2	23. 5	23. 8	24. 1
80	24. 4	24. 7	25. 0	25. 3	25. 6	25. 9	26. 2	26. 5	26. 8	27. 1
90	27. 4	27. 7	28. 0	28. 3	28. 7	29. 0	29. 3	29. 6	29. 9	30. 2
100	30. 5	30. 8	31. 1	31. 4	31. 7	32. 0	32. 3	32. 6	32. 9	33. 2
110	33. 5	33. 8	34. 1	34. 4	34. 7	35. 1	35. 4	35. 7	36. 0	36. 3
120	36. 6	36. 9	37. 2	37. 5	37. 8	38. 1	38. 4	38. 7	39. 0	39. 3
130	39. 6	39. 9	40. 2	40. 5	40. 8	41. 1	41. 5	41. 8	42. 1	42. 4
140	42. 7	43. 0	43. 3	43. 6	43. 9	44. 2	44. 5	44. 8	45. 1	45. 4
150	45. 7	46. 0	46. 3	46. 6	46. 9	47. 2	47. 5	47. 9	48. 2	48. 5
160	48. 8	49. 1	49. 4	49. 7	50. 0	50. 3	50. 6	50. 9	51. 2	51. 5
170	51. 8	52. 1	52. 4	52. 7	53. 0	53. 3	53. 6	53. 9	54. 3	54. 6
180	54. 9	55. 2	55. 5	55. 8	56. 1	56. 4	56. 7	57. 0	57. 3	57. 6
190	57. 9	58. 2	58. 5	58. 8	59. 1	59. 4	59. 7	60. 0	60. 4	60. 7
200	61. 0	61. 3	61. 6	61. 9	62. 2	62. 5	62. 8	63. 1	63. 4	63. 7
210	64. 0	64. 3	64. 6	64. 9	65. 2	65. 5	65. 8	66. 1	66. 4	66. 8
220	67. 1	67. 4	67. 7	68. 0	68. 3	68. 6	68. 9	69. 2	69. 5	69. 8
230	70. 1	70. 4	70. 7	71. 0	71. 3	71. 6	71. 9	72. 2	72. 5	72. 8
240	73. 2	73. 5	73. 8	74. 1	74. 4	74. 7	75. 0	75. 3	75. 6	75. 9
250	76. 2	76. 5	76. 8	77. 1	77. 4	77. 7	78. 0	78. 3	78. 6	78. 9
260	79. 2	79. 6	79. 9	80. 2	80. 5	80. 8	81. 1	81. 4	81. 7	82. 0
270	82. 3	82. 6	82. 9	83. 2	83. 5	83. 8	84. 1	84. 4	84. 7	85. 0
280	85. 3	85. 6	86. 0	86. 3	86. 6	86. 9	87. 2	87. 5	87. 8	88. 1
290	88. 4	88. 7	89. 0	89. 3	89. 6	89. 9	90. 2	90. 5	90. 8	91. 1

Feet	00	10	20	30	40	50	60	70	80	90
300	91. 4	94. 5	97. 5	100. 6	103. 6	106. 7	109. 7	112. 8	115. 8	118. 9
400	121. 9	125. 0	128. 0	131. 1	134. 1	137. 2	140. 2	143. 3	146. 3	149. 4
500	152. 4	155. 4	158. 5	161. 5	164. 6	167. 6	170. 7	173. 7	176. 8	179. 8
600	182. 9	185. 9	189. 0	192. 0	195. 1	198. 1	201. 2	204. 2	207. 3	210. 3
700	213. 4	216. 4	219. 5	222. 5	225. 6	228. 6	231. 6	234. 7	237. 7	240. 8
800	243. 8	246. 9	249. 9	253. 0	256. 0	259. 1	262. 1	265. 2	268. 2	271. 3
900	274. 3	277. 4	280. 4	283. 5	286. 5	289. 6	292. 6	295. 7	298. 7	301. 8

Feet	000	100	200	300	400	500	600	700	800	900
1,000	305	335	366	396	427	457	488	518	549	579
2,000	610	640	671	701	732	762	792	823	853	884
3,000	914	945	975	1, 006	1, 036	1, 067	1, 097	1, 128	1, 158	1, 189
4,000	1, 219	1, 250	1, 280	1, 311	1, 341	1, 372	1, 402	1, 433	1, 463	1, 494
5,000	1, 524	1, 554	1, 585	1, 615	1, 646	1, 676	1, 707	1, 737	1, 768	1, 798
6,000	1, 829	1, 859	1, 890	1, 920	1, 951	1, 981	2, 012	2, 042	2, 073	2, 103
7,000	2, 134	2, 164	2, 195	2, 225	2, 256	2, 286	2, 316	2, 347	2, 377	2, 408
8,000	2, 438	2, 469	2, 499	2, 530	2, 560	2, 591	2, 621	2, 652	2, 682	2, 713
9,000	2, 743	2, 774	2, 804	2, 835	2, 865	2, 896	2, 926	2, 957	2, 987	3, 018

Table XVII D.—DEPTH CONVERSION—METERS TO FEET

Meters	0	1	2	3	4	5	6	7	8	9
0	0. 0	3. 3	6. 6	9. 8	13. 1	16. 4	19. 7	23. 0	26. 2	29. 5
10	32. 8	36. 1	39. 4	42. 7	45. 9	49. 2	52. 5	55. 8	59. 1	62. 3
20	65. 6	68. 9	72. 2	75. 5	78. 7	82. 0	85. 3	88. 6	91. 9	95. 1
30	98. 4	101. 7	105. 0	108. 3	111. 5	114. 8	118. 1	121. 4	124. 7	128. 0
40	131. 2	134. 5	137. 8	141. 1	144. 4	147. 6	150. 9	154. 2	157. 5	160. 8
50	164. 0	167. 3	170. 6	173. 9	177. 2	180. 4	183. 7	187. 0	190. 3	193. 6
60	196. 8	200. 1	203. 4	206. 7	210. 0	213. 3	216. 5	219. 8	223. 1	226. 4
70	229. 7	232. 9	236. 2	239. 5	242. 8	246. 1	249. 3	252. 6	255. 9	259. 2
80	262. 5	265. 7	269. 0	272. 3	275. 6	278. 9	282. 2	285. 4	288. 7	292. 0
90	295. 3	298. 6	301. 8	305. 1	308. 4	311. 7	315. 0	318. 2	321. 5	324. 8
100	328. 1	331. 4	334. 6	337. 9	341. 2	344. 5	347. 8	351. 0	354. 3	357. 6
110	360. 9	364. 2	367. 5	370. 7	374. 0	377. 3	380. 6	383. 9	387. 1	390. 4
120	393. 7	397. 0	400. 3	403. 5	406. 8	410. 1	413. 4	416. 7	419. 9	423. 2
130	426. 5	429. 8	433. 1	436. 4	439. 6	442. 9	446. 2	449. 5	452. 8	456. 0
140	459. 3	462. 6	465. 9	469. 2	472. 4	475. 7	479. 0	482. 3	485. 6	488. 8
150	492. 1	495. 4	498. 7	502. 0	505. 2	508. 5	511. 8	515. 1	518. 4	521. 7
160	524. 9	528. 2	531. 5	534. 8	538. 1	541. 3	544. 6	547. 9	551. 2	554. 5
170	557. 7	561. 0	564. 3	567. 6	570. 9	574. 1	577. 4	580. 7	584. 0	587. 3
180	590. 5	593. 8	597. 1	600. 4	603. 7	607. 0	610. 2	613. 5	616. 8	620. 1
190	623. 4	626. 6	629. 9	633. 2	636. 5	639. 8	643. 0	646. 3	649. 6	652. 9
200	656. 2	659. 4	662. 7	666. 0	669. 3	672. 6	675. 9	679. 1	682. 4	685. 7
210	689. 0	692. 3	695. 5	698. 8	702. 1	705. 4	708. 7	711. 9	715. 2	718. 5
220	721. 8	725. 1	728. 3	731. 6	734. 9	738. 2	741. 5	744. 7	748. 0	751. 3
230	754. 6	757. 9	761. 2	764. 4	767. 7	771. 0	774. 3	777. 6	780. 8	784. 1
240	787. 4	790. 7	794. 0	797. 2	800. 5	803. 8	807. 1	810. 4	813. 6	816. 9
250	820. 2	823. 5	826. 8	830. 1	833. 3	836. 6	839. 9	843. 2	846. 5	849. 7
260	853. 0	856. 3	859. 6	862. 9	866. 1	869. 4	872. 7	876. 0	879. 3	882. 5
270	885. 8	889. 1	892. 4	895. 7	898. 9	902. 2	905. 5	908. 8	912. 1	915. 4
280	918. 6	921. 9	925. 2	928. 5	931. 8	935. 0	938. 3	941. 6	944. 9	948. 2
290	951. 4	954. 7	958. 0	961. 3	964. 6	967. 8	971. 1	974. 4	977. 7	981. 0

Meters	00	10	20	30	40	50	60	70	80	90
300	984. 2	1, 017. 1	1, 049. 9	1, 082. 7	1, 115. 5	1, 148. 3	1, 181. 1	1, 213. 9	1, 246. 7	1, 279. 5
400	1, 312. 3	1, 345. 1	1, 377. 9	1, 410. 8	1, 443. 6	1, 476. 4	1, 509. 2	1, 542. 0	1, 574. 8	1, 607. 6
500	1, 640. 4	1, 673. 2	1, 706. 0	1, 738. 8	1, 771. 6	1, 804. 5	1, 837. 3	1, 870. 1	1, 902. 9	1, 935. 7
600	1, 968. 5	2, 001. 3	2, 034. 1	2, 066. 9	2, 099. 7	2, 132. 5	2, 165. 3	2, 198. 2	2, 231. 0	2, 263. 8
700	2, 296. 6	2, 329. 4	2, 362. 2	2, 395. 0	2, 427. 8	2, 460. 6	2, 493. 4	2, 526. 2	2, 559. 0	2, 591. 9
800	2, 624. 7	2, 657. 5	2, 690. 3	2, 723. 1	2, 755. 9	2, 788. 7	2, 821. 5	2, 854. 3	2, 887. 1	2, 919. 9
900	2, 952. 7	2, 985. 6	3, 018. 4	3, 051. 2	3, 084. 0	3, 116. 8	3, 149. 6	3, 182. 4	3, 215. 2	3, 248. 0

Meters	000	100	200	300	400	500	600	700	800	900
1,000	3, 281	3, 609	3, 937	4, 265	4, 593	4, 921	5, 249	5, 577	5, 905	6, 234
2,000	6, 562	6, 890	7, 218	7, 546	7, 874	8, 202	8, 530	8, 858	9, 186	9, 514
3,000	9, 842	10, 171	10, 499	10, 827	11, 155	11, 483	11, 811	12, 139	12, 467	12, 795
4,000	13, 123	13, 451	13, 779	14, 108	14, 436	14, 764	15, 092	15, 420	15, 748	16, 076
5,000	16, 404	16, 732	17, 060	17, 388	17, 716	18, 045	18, 373	18, 701	19, 028	19, 357
6,000	19, 685	20, 013	20, 341	20, 669	20, 997	21, 325	21, 653	21, 982	22, 310	22, 638
7,000	22, 966	23, 294	23, 622	23, 950	24, 278	24, 606	24, 934	25, 262	25, 590	25, 919
8,000	26, 247	26, 575	26, 903	27, 231	27, 559	27, 887	28, 215	28, 543	28, 871	29, 199
9,000	29, 527	29, 856	30, 184	30, 512	30, 840	31, 168	31, 496	31, 824	32, 152	32, 480

Tables XVIII, A–B.—TEMPERATURE CONVERSION—CENTIGRADE TO FAHRENHEIT—FAHRENHEIT TO CENTIGRADE

Table XVIII A.—Centigrade to Fahrenheit

$y°C = 5/9\ (x°F - 32°)$

Example:
Given, temperature = 4.55° C.
From table XVIII A, temperature = 40.19° F.

Table XVIII B.—Fahrenheit to Centigrade

$x°F = 9/5\ y°C + 32°$

Example:
Given, temperature = 44.4° F.
From table XVIII B, temperature = 6.89° C.

Table XVIII A.—TEMPERATURE CONVERSION—CENTIGRADE TO FAHRENHEIT

°C.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−2	28. 40	28. 22	28. 04	27. 86	27. 68	27. 50	27. 32	27. 14	26. 96	26. 78
−1	30. 20	30. 02	29. 84	29. 66	29. 48	29. 30	29. 12	28. 94	28. 76	28. 58
−0	32. 00	31. 82	31. 64	31. 46	31. 28	31. 10	30. 92	30. 74	30. 56	30. 38
0	32. 00	32. 18	32. 36	32. 54	32. 72	32. 90	33. 08	33. 26	33. 44	33. 62
1	33. 80	33. 98	34. 16	34. 34	34. 52	34. 70	34. 88	35. 06	35. 24	35. 42
2	35. 60	35. 78	35. 96	36. 14	36. 32	36. 50	36. 68	36. 86	37. 04	37. 22
3	37. 40	37. 58	37. 76	37. 94	38. 12	38. 30	38. 48	38. 66	38. 84	39. 02
4	39. 20	39. 38	39. 56	39. 74	39. 92	40. 10	40. 28	40. 46	40. 64	40. 82
5	41. 00	41. 18	41. 36	41. 54	41. 72	41. 90	42. 08	42. 26	42. 44	42. 62
6	42. 80	42. 98	43. 16	43. 34	43. 52	43. 70	43. 88	44. 06	44. 24	44. 42
7	44. 60	44. 78	44. 96	45. 14	45. 32	45. 50	45. 68	45. 86	46. 04	46. 22
8	46. 40	46. 58	46. 76	46. 94	47. 12	47. 30	47. 48	47. 66	47. 84	48. 02
9	48. 20	48. 38	48. 56	48. 74	48. 92	49. 10	49. 28	49. 46	49. 64	49. 82
10	50. 00	50. 18	50. 36	50. 54	50. 72	50. 90	51. 08	51. 26	51. 44	51. 62
11	51. 80	51. 98	52. 16	52. 34	52. 52	52. 70	52. 88	53. 06	53. 24	53. 42
12	53. 60	53. 78	53. 96	54. 14	54. 32	54. 50	54. 68	54. 86	55. 04	55. 22
13	55. 40	55. 58	55. 76	55. 94	56. 12	56. 30	56. 48	56. 66	56. 84	57. 02
14	57. 20	57. 38	57. 56	57. 74	57. 92	58. 10	58. 28	58. 46	58. 64	58. 82
15	59. 00	59. 18	59. 36	59. 54	59. 72	59. 90	60. 08	60. 26	60. 44	60. 62
16	60. 80	60. 98	61. 16	61. 34	61. 52	61. 70	61. 88	62. 06	62. 24	62. 42
17	62. 60	62. 78	62. 96	63. 14	63. 32	63. 50	63. 68	63. 86	64. 04	64. 22
18	64. 40	64. 58	64. 76	64. 94	65. 12	65. 30	65. 48	65. 66	65. 84	66. 02
19	66. 20	66. 38	66. 56	66. 74	66. 92	67. 10	67. 28	67. 46	67. 64	67. 82
20	68. 00	68. 18	68. 36	68. 54	68. 72	68. 90	69. 08	69. 26	69. 44	69. 62
21	69. 80	69. 98	70. 16	70. 34	70. 52	70. 70	70. 88	71. 06	71. 24	71. 42
22	71. 60	71. 78	71. 96	72. 14	72. 32	72. 50	72. 68	72. 86	73. 04	73. 22
23	73. 40	73. 58	73. 76	73. 94	74. 12	74. 30	74. 48	74. 66	74. 84	75. 02
24	75. 20	75. 38	75. 56	75. 74	75. 92	76. 10	76. 28	76. 46	76. 64	76. 82
25	77. 00	77. 18	77. 36	77. 54	77. 72	77. 90	78. 08	78. 26	78. 44	78. 62
26	78. 80	78. 98	79. 16	79. 34	79. 52	79. 70	79. 88	80. 06	80. 24	80. 42
27	80. 60	80. 78	80. 96	81. 14	81. 32	81. 50	81. 68	81. 86	82. 04	82. 22
28	82. 40	82. 58	82. 76	82. 94	83. 12	83. 30	83. 48	83. 66	83. 84	84. 02
29	84. 20	84. 38	84. 56	84. 74	84. 92	85. 10	85. 28	85. 46	85. 64	85. 82
30	86. 00	86. 18	86. 36	86. 54	86. 72	86. 90	87. 08	87. 26	87. 44	87. 62
31	87. 80	87. 98	88. 16	88. 34	88. 52	88. 70	88. 88	89. 06	89. 24	89. 42
32	89. 60	89. 78	89. 96	90. 14	90. 32	90. 50	90. 68	90. 86	91. 04	91. 22
33	91. 40	91. 58	91. 76	91. 94	92. 12	92. 30	92. 48	92. 66	92. 84	93. 02
34	93. 20	93. 38	93. 56	93. 74	93. 92	94. 10	94. 28	94. 46	94. 64	94. 82
35	95. 00	95. 18	95. 36	95. 54	95. 72	95. 90	96. 08	96. 26	96. 44	96. 62
36	96. 80	96. 98	97. 16	97. 34	97. 52	97. 70	97. 88	98. 06	98. 24	98. 42
37	98. 60	98. 78	98. 96	99. 14	99. 32	99. 50	99. 68	99. 86	100. 04	100. 22
38	100. 40	100. 58	100. 76	100. 94	101. 12	101. 30	101. 48	101. 66	101. 84	102. 02
39	102. 20	102. 38	102. 56	102. 74	102. 92	103. 10	103. 28	103. 46	103. 64	103. 82
40	104. 00	104. 18	104. 36	104. 54	104. 72	104. 90	105. 08	105. 26	105. 44	105. 62
41	105. 80	105. 98	106. 16	106. 34	106. 52	106. 70	106. 88	107. 06	107. 24	107. 42
42	107. 60	107. 78	107. 96	108. 14	108. 32	108. 50	108. 68	108. 86	109. 04	109. 22
43	109. 40	109. 58	109. 76	109. 94	110. 12	110. 30	110. 48	110. 66	110. 84	111. 02
44	111. 20	111. 38	111. 56	111. 74	111. 92	112. 10	112. 28	112. 46	112. 64	112. 82
45	113. 00	113. 18	113. 36	113. 54	113. 72	113. 90	114. 08	114. 26	114. 44	114. 62
46	114. 80	114. 98	115. 16	115. 34	115. 52	115. 70	115. 88	116. 06	116. 24	116. 42
47	116. 60	116. 78	116. 96	117. 14	117. 32	117. 50	117. 68	117. 86	118. 04	118. 22
48	118. 40	118. 58	118. 76	118. 94	119. 12	119. 30	119. 48	119. 66	119. 84	120. 02
49	120. 20	120. 38	120. 56	120. 74	120. 92	121. 10	121. 28	121. 46	121. 64	121. 82

TABLE XVIII B.—TEMPERATURE CONVERSION—FAHRENHEIT TO CENTIGRADE

°F.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
30	−1. 11	−1. 06	−1. 00	−0. 94	−0. 89	−0. 83	−0. 78	−0. 72	−0. 67	−0. 61
31	−. 56	−. 50	−. 44	−. 39	−. 33	−. 28	−. 22	−. 17	−. 11	−. 06
32	. 00	. 06	. 11	. 17	. 22	. 28	. 33	. 39	. 44	. 50
33	. 56	. 61	. 67	. 72	. 78	. 83	. 89	. 94	1. 00	1. 06
34	1. 11	1. 17	1. 22	1. 28	1. 33	1. 39	1. 44	1. 50	1. 56	1. 61
35	1. 67	1. 72	1. 78	1. 83	1. 89	1. 94	2. 00	2. 06	2. 11	2. 17
36	2. 22	2. 28	2. 33	2. 39	2. 44	2. 50	2. 56	2. 61	2. 67	2. 72
37	2. 78	2. 83	2. 89	2. 94	3. 00	3. 06	3. 11	3. 17	3. 22	3. 28
38	3. 33	3. 39	3. 44	3. 50	3. 56	3. 61	3. 67	3. 72	3. 78	3. 83
39	3. 89	3. 94	4. 00	4. 06	4. 11	4. 17	4. 22	4. 28	4. 33	4. 39
40	4. 44	4. 50	4. 56	4. 61	4. 67	4. 72	4. 78	4. 83	4. 89	4. 94
41	5. 00	5. 06	5. 11	5. 17	5. 22	5. 28	5. 33	5. 39	5. 44	5. 50
42	5. 56	5. 61	5. 67	5. 72	5. 78	5. 83	5. 89	5. 94	6. 00	6. 06
43	6. 11	6. 17	6. 22	6. 28	6. 33	6. 39	6. 44	6. 50	6. 56	6. 61
44	6. 67	6. 72	6. 78	6. 83	6. 89	6. 94	7. 00	7. 06	7. 11	7. 17
45	7. 22	7. 28	7. 33	7. 39	7. 44	7. 50	7. 56	7. 61	7. 67	7. 72
46	7. 78	7. 83	7. 89	7. 94	8. 00	8. 06	8. 11	8. 17	8. 22	8. 28
47	8. 33	8. 39	8. 44	8. 50	8. 56	8. 61	8. 67	8. 72	8. 78	8. 83
48	8. 89	8. 94	9. 00	9. 06	9. 11	9. 17	9. 22	9. 28	9. 33	9. 39
49	9. 44	9. 50	9. 56	9. 61	9. 67	9. 72	9. 78	9. 83	9. 89	9. 94
50	10. 00	10. 06	10. 11	10. 17	10. 22	10. 28	10. 33	10. 39	10. 44	10. 50
51	10. 56	10. 61	10. 67	10. 72	10. 78	10. 83	10. 89	10. 94	11. 00	11. 06
52	11. 11	11. 17	11. 22	11. 28	11. 33	11. 39	11. 44	11. 50	11. 56	11. 61
53	11. 67	11. 72	11. 78	11. 83	11. 89	11. 94	12. 00	12. 06	12. 11	12. 17
54	12. 22	12. 28	12. 33	12. 39	12. 44	12. 50	12. 56	12. 61	12. 67	12. 72
55	12. 78	12. 83	12. 89	12. 94	13. 00	13. 06	13. 11	13. 17	13. 22	13. 28
56	13. 33	13. 39	13. 44	13. 50	13. 56	13. 61	13. 67	13. 72	13. 78	13. 83
57	13. 89	13. 94	14. 00	14. 06	14. 11	14. 17	14. 22	14. 28	14. 33	14. 39
58	14. 44	14. 50	14. 56	14. 61	14. 67	14. 72	14. 78	14. 83	14. 89	14. 94
59	15. 00	15. 06	15. 11	15. 17	15. 22	15. 28	15. 33	15. 39	15. 44	15. 50
60	15. 56	15. 61	15. 67	15. 72	15. 78	15. 83	15. 89	15. 94	16. 00	16. 06
61	16. 11	16. 17	16. 22	16. 28	16. 33	16. 39	16. 44	16. 50	16. 56	16. 61
62	16. 67	16. 72	16. 78	16. 83	16. 89	16. 94	17. 00	17. 06	17. 11	17. 17
63	17. 22	17. 28	17. 33	17. 39	17. 44	17. 50	17. 56	17. 61	17. 67	17. 72
64	17. 78	17. 83	17. 89	17. 94	18. 00	18. 06	18. 11	18. 17	18. 22	18. 28
65	18. 33	18. 39	18. 44	18. 50	18. 56	18. 61	18. 67	18. 72	18. 78	18. 83
66	18. 89	18. 94	19. 00	19. 06	19. 11	19. 17	19. 22	19. 28	19. 33	19. 39
67	19. 44	19. 50	19. 56	19. 61	19. 67	19. 72	19. 78	19. 83	19. 89	19. 94
68	20. 00	20. 06	20. 11	20. 17	20. 22	20. 28	20. 33	20. 39	20. 44	20. 50
69	20. 56	20. 61	20. 67	20. 72	20. 78	20. 83	20. 89	20. 94	21. 00	21. 06
70	21. 11	21. 17	21. 22	21. 28	21. 33	21. 39	21. 44	21. 50	21. 56	21. 61
71	21. 67	21. 72	21. 78	21. 83	21. 89	21. 94	22. 00	22. 06	22. 11	22. 17
72	22. 22	22. 28	22. 33	22. 39	22. 44	22. 50	22. 56	22. 61	22. 67	22. 72
73	22. 78	22. 83	22. 89	22. 94	23. 00	23. 06	23. 11	23. 17	23. 22	23. 28
74	23. 33	23. 39	23. 44	23. 50	23. 56	23. 61	23. 67	23. 72	23. 78	23. 83
75	23. 89	23. 94	24. 00	24. 06	24. 11	24. 17	24. 22	24. 28	24. 33	24. 39
76	24. 44	24. 50	24. 56	24. 61	24. 67	24. 72	24. 78	24. 83	24. 89	24. 94
77	25. 00	25. 06	25. 11	25. 17	25. 22	25. 28	25. 33	25. 39	25. 44	25. 50
78	25. 56	25. 61	25. 67	25. 72	25. 78	25. 83	25. 89	25. 94	26. 00	26. 06
79	26. 11	26. 17	26. 22	26. 28	26. 33	26. 39	26. 44	26. 50	26. 56	26. 61
80	26. 67	26. 72	26. 78	26. 83	26. 89	26. 94	27. 00	27. 06	27. 11	27. 17
81	27. 22	27. 28	27. 33	27. 39	27. 44	27. 50	27. 56	27. 61	27. 67	27. 72
82	27. 78	27. 83	27. 89	27. 94	28. 00	28. 06	28. 11	28. 17	28. 22	28. 28
83	28. 33	28. 39	28. 44	28. 50	28. 56	28. 61	28. 67	28. 72	28. 78	28. 83
84	28. 89	28. 94	29. 00	29. 06	29. 11	29. 17	29. 22	29. 28	29. 33	29. 39

TABLE XVIII B.—TEMPERATURE CONVERSION—FAHRENHEIT TO CENTIGRADE—Continued

°F.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
85	29. 44	29. 50	29. 56	29. 61	29. 67	29. 72	29. 78	29. 83	29. 89	29. 94
86	30. 00	30. 06	30. 11	30. 17	30. 22	30. 28	30. 33	30. 39	30. 44	30. 50
87	30. 56	30. 61	30. 67	30. 72	30. 78	30. 83	30. 89	30. 94	31. 00	31. 06
88	31. 11	31. 17	31. 22	31. 28	31. 33	31. 39	31. 44	31. 50	31. 56	31. 61
89	31. 67	31. 72	31. 78	31. 83	31. 89	31. 94	32. 00	32. 06	32. 11	32. 17
90	32. 22	32. 28	32. 33	32. 39	32. 44	32. 50	32. 56	32. 61	32. 67	32. 72
91	32. 78	32. 83	32. 89	32. 94	33. 00	33. 06	33. 11	33. 17	33. 22	33. 28
92	33. 33	33. 39	33. 44	33. 50	33. 56	33. 61	33. 67	33. 72	33. 78	33. 83
93	33. 89	33. 94	34. 00	34. 06	34. 11	34. 17	34. 22	34. 28	34. 33	34. 39
94	34. 44	34. 50	34. 56	34. 61	34. 67	34. 72	34. 78	34. 83	34. 89	34. 94
95	35. 00	35. 06	35. 11	35. 17	35. 22	35. 28	35. 33	35. 39	35. 44	35. 50
96	35. 56	35. 61	35. 67	35. 72	35. 78	35. 83	35. 89	35. 94	36. 00	36. 06
97	36. 11	36. 17	36. 22	36. 28	36. 33	36. 39	36. 44	36. 50	36. 56	36. 61
98	36. 67	36. 72	36. 78	36. 83	36. 89	36. 94	37. 00	37. 06	37. 11	37. 17
99	37. 22	37. 28	37. 33	37. 39	37. 44	37. 50	37. 56	37. 61	37. 67	37. 72
100	37. 78	37. 83	37. 89	37. 94	38. 00	38. 06	38. 11	38. 17	38. 22	38. 28
101	38. 33	38. 39	38. 44	38. 50	38. 56	38. 61	38. 67	38. 72	38. 78	38. 83
102	38. 89	38. 94	39. 00	39. 06	39. 11	39. 17	39. 22	39. 28	39. 33	39. 39
103	39. 44	39. 50	39. 56	39. 61	39. 67	39. 72	39. 78	39. 83	39. 89	39. 94
104	40. 00	40. 06	40. 11	40. 17	40. 22	40. 28	40. 33	40. 39	40. 44	40. 50
105	40. 56	40. 61	40. 67	40. 72	40. 78	40. 83	40. 89	40. 94	41. 00	41. 06
106	41. 11	41. 17	41. 22	41. 28	41. 33	41. 39	41. 44	41. 50	41. 56	41. 61
107	41. 67	41. 72	41. 78	41. 83	41. 89	41. 94	42. 00	42. 06	42. 11	42. 17
108	42. 22	42. 28	42. 33	42. 39	42. 44	42. 50	42. 56	42. 61	42. 67	42. 72
109	42. 78	42. 83	42. 89	42. 94	43. 00	43. 06	43. 11	43. 17	43. 22	43. 28
110	43. 33	43. 39	43. 44	43. 50	43. 56	43. 61	43. 67	43. 72	43. 78	43. 83
111	43. 89	43. 94	44. 00	44. 06	44. 11	44. 17	44. 22	44. 28	44. 33	44. 39
112	44. 44	44. 50	44. 56	44. 61	44. 67	44. 72	44. 78	44. 83	44. 89	44. 94
113	45. 00	45. 06	45. 11	45. 17	45. 22	45. 28	45. 33	45. 39	45. 44	45. 50
114	45. 56	45. 61	45. 67	45. 72	45. 78	45. 83	45. 89	45. 94	46. 00	46. 06
115	46. 11	46. 17	46. 22	46. 28	46. 33	46. 39	46. 44	46. 50	46. 56	46. 61
116	46. 67	46. 72	46. 78	46. 83	46. 89	46. 94	47. 00	47. 06	47. 11	47. 17
117	47. 22	47. 28	47. 33	47. 39	47. 44	47. 50	47. 56	47. 61	47. 67	47. 72
118	47. 78	47. 83	47. 89	47. 94	48. 00	48. 06	48. 11	48. 17	48. 22	48. 28
119	48. 33	48. 39	48. 44	48. 50	48. 56	48. 61	48. 67	48. 72	48. 78	48. 83
120	48. 89	48. 94	49. 00	49. 06	49. 11	49. 17	49. 22	49. 28	49. 33	49. 39
121	49. 44	49. 50	49. 56	49. 61	49. 67	49. 72	49. 78	49. 83	49. 89	49. 94
122	50. 00	50. 06	50. 11	50. 17	50. 22	50. 28	50. 33	50. 39	50. 44	50. 50
123	50. 56	50. 61	50. 67	50. 72	50. 78	50. 83	50. 89	50. 94	51. 00	51. 06
124	51. 11	51. 17	51. 22	51. 28	51. 33	51. 39	51. 44	51. 50	51. 56	51. 61
125	51. 67	51. 72	51. 78	51. 83	51. 89	51. 94	52. 00	52. 06	52. 11	52. 17
126	52. 22	52. 28	52. 33	52. 39	52. 44	52. 50	52. 56	52. 61	52. 67	52. 72
127	52. 78	52. 83	52. 89	52. 94	53. 00	53. 06	53. 11	53. 17	53. 22	53. 28
128	53. 33	53. 39	53. 44	53. 50	53. 56	53. 61	53. 67	53. 72	53. 78	53. 83
129	53. 89	53. 94	54. 00	54. 06	54. 11	54. 17	54. 22	54. 28	54. 33	54. 39

TABLES XIX A–B.—DISTANCE CONVERSION—NAUTICAL MILES TO KILOMETERS—KILOMETERS TO NAUTICAL MILES

TABLE XIX A.—Nautical Miles to Kilometers

1 nautical mile = 1.8532 kilometers

Example:

Given, distance = 34 nautical miles.

From table XIX A, distance = 63.0 kilometers.

TABLE XIX B.—Kilometers to Nautical Miles

1 kilometer = 0.53959 nautical mile

Example:

Given, distance = 105 kilometers.

From table XIX B, distance = 56.7 nautical miles.

TABLE XIX A.—DISTANCE CONVERSION—NAUTICAL MILES TO KILOMETERS

Nautical miles	0	1	2	3	4	5	6	7	8	9
0	0. 0	1. 8	3. 7	5. 6	7. 4	9. 3	11. 1	13. 0	14. 8	16. 7
10	18. 5	20. 4	22. 2	24. 1	25. 9	27. 8	29. 7	31. 5	33. 4	35. 2
20	37. 1	38. 9	40. 8	42. 6	44. 5	46. 3	48. 2	50. 0	51. 9	53. 7
30	55. 6	57. 5	59. 3	61. 2	63. 0	64. 9	66. 7	68. 6	70. 4	72. 3
40	74. 1	76. 0	77. 8	79. 7	81. 5	83. 4	85. 2	87. 1	89. 0	90. 8
50	92. 7	94. 5	96. 4	98. 2	100. 1	101. 9	103. 8	105. 6	107. 5	109. 3
60	111. 2	113. 0	114. 9	116. 8	118. 6	120. 5	122. 3	124. 2	126. 0	127. 9
70	129. 7	131. 6	133. 4	135. 3	137. 1	139. 0	140. 8	142. 7	144. 6	146. 4
80	148. 3	150. 1	152. 0	153. 8	155. 7	157. 5	159. 4	161. 2	163. 1	164. 9
90	166. 8	168. 6	170. 5	172. 4	174. 2	176. 1	177. 9	179. 8	181. 6	183. 5

TABLE XIX B.—DISTANCE CONVERSION—KILOMETERS TO NAUTICAL MILES

Kilometers	0	1	2	3	4	5	6	7	8	9
0	0. 0	0. 5	1. 1	1. 6	2. 2	2. 7	3. 2	3. 8	4. 3	4. 9
10	5. 4	5. 9	6. 5	7. 0	7. 6	8. 1	8. 6	9. 2	9. 7	10. 3
20	10. 8	11. 3	11. 9	12. 4	13. 0	13. 5	14. 0	14. 6	15. 1	15. 6
30	16. 2	16. 7	17. 3	17. 8	18. 3	18. 9	19. 4	20. 0	20. 5	21. 0
40	21. 6	22. 1	22. 7	23. 2	23. 7	24. 3	24. 8	25. 4	25. 9	26. 4
50	27. 0	27. 5	28. 1	28. 6	29. 1	29. 7	30. 2	30. 8	31. 3	31. 8
60	32. 4	32. 9	33. 5	34. 0	34. 5	35. 1	35. 6	36. 2	36. 7	37. 2
70	37. 8	38. 3	38. 9	39. 4	39. 9	40. 5	41. 0	41. 5	42. 1	42. 6
80	43. 2	43. 7	44. 2	44. 8	45. 3	45. 9	46. 4	46. 9	47. 5	48. 0
90	48. 6	49. 1	49. 6	50. 2	50. 7	51. 3	51. 8	52. 3	52. 9	53. 4
100	54. 0	54. 5	55. 0	55. 6	56. 1	56. 7	57. 2	57. 7	58. 3	58. 8
110	59. 4	59. 9	60. 4	61. 0	61. 5	62. 1	62. 6	63. 1	63. 7	64. 2
120	64. 8	65. 3	65. 8	66. 4	66. 9	67. 4	68. 0	68. 5	69. 1	69. 6
130	70. 1	70. 7	71. 2	71. 8	72. 3	72. 8	73. 4	73. 9	74. 5	75. 0
140	75. 5	76. 1	76. 6	77. 2	77. 7	78. 2	78. 8	79. 3	79. 9	80. 4
150	80. 9	81. 5	82. 0	82. 6	83. 1	83. 6	84. 2	84. 7	85. 3	85. 8
160	86. 3	86. 9	87. 4	88. 0	88. 5	89. 0	89. 6	90. 1	90. 7	91. 2
170	91. 7	92. 3	92. 8	93. 3	93. 9	94. 4	95. 0	95. 5	96. 0	96. 6
180	97. 1	97. 7	98. 2	98. 7	99. 3	99. 8	100. 4	100. 9	101. 4	102. 0
190	102. 5	103. 1	103. 6	104. 1	104. 7	105. 2	105. 8	106. 3	106. 8	107. 4
200	107. 9	108. 5	109. 0	109. 5	110. 1	110. 6	111. 2	111. 7	112. 2	112. 8

TABLE XX.—FREEZING POINT OF SEA WATER, T_f, FOR VALUES OF SALINITY

(From Thompson, 1932) (*27*)

$$T_f = -0.0966\, Cl - 0.0000052\, Cl^3$$

where

$$Cl = \frac{S - 0.030}{1.8050}.$$

Example:

Given, $S = 33°/_{oo}$.

From table XX, $T_f = -1.796°$ C. (initial freezing point).

TABLE XX.—FREEZING POINT OF SEA WATER, T_f, FOR VALUES OF SALINITY

Salinity, °/oo	Freezing point, ° C.	Salinity, °/oo	Freezing point, ° C.	Salinity, °/oo	Freezing point, ° C.
20	−1. 076	27	−1. 461	34	−1. 853
21	−1. 130	28	−1. 516	35	−1. 909
22	−1. 185	29	−1. 572	36	−1. 966
23	−1. 240	30	−1. 628	37	−2. 023
24	−1. 295	31	−1. 684	38	−2. 080
25	−1. 350	32	−1. 740	39	−2. 138
26	−1. 405	33	−1. 796		

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