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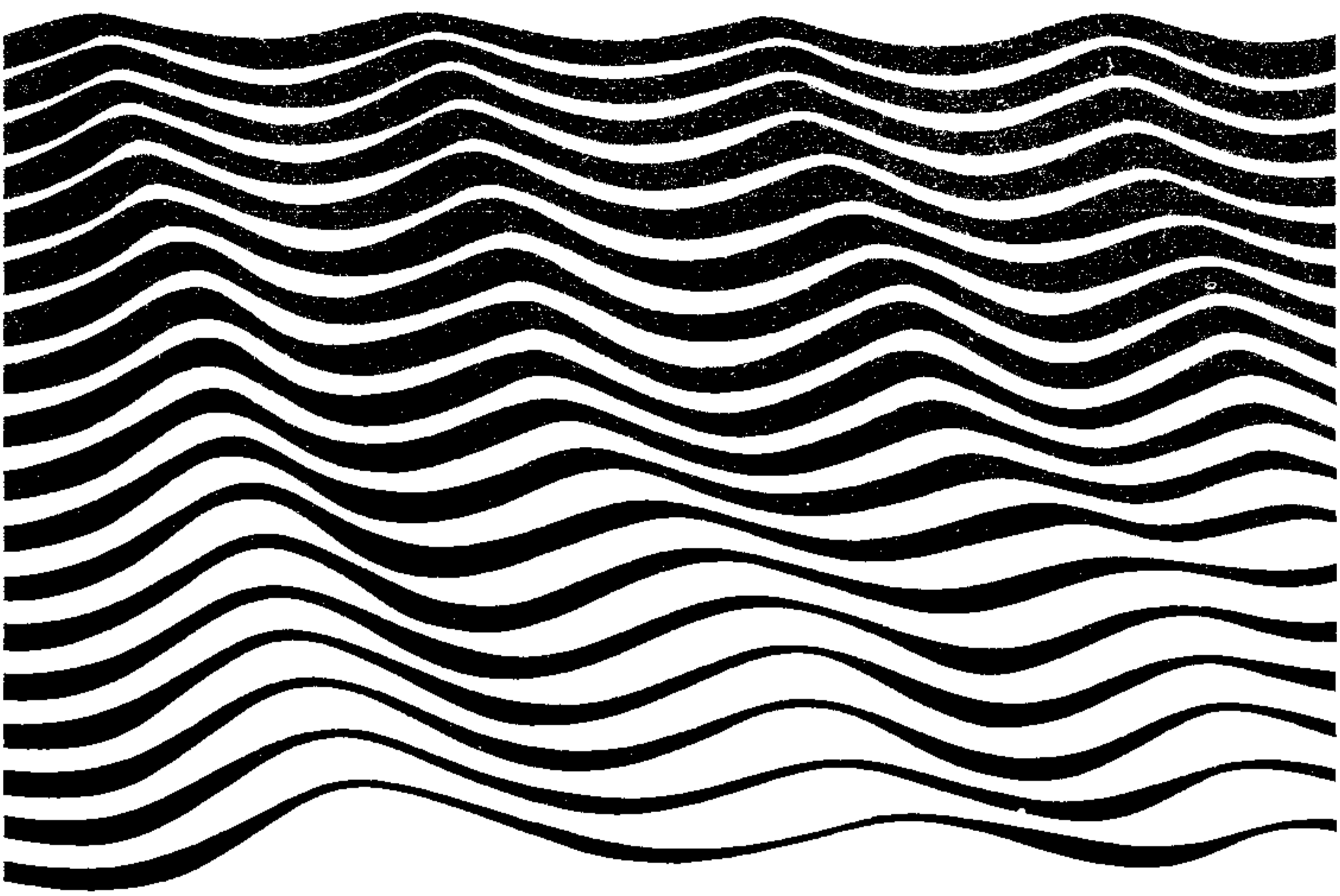
الجداول الأقيانوغرافية الدولية
国际海洋学常用表

Volume 4



Unesco, 1987

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No.		Year	SCOR WG
19	Marine Science Teaching at the University Level. Report of the Unesco Workshop on University Curricula-*Available in Spanish and Arabic*	1974	—
25	Marine science programme for the Red Sea: Recommendations of the workshop held in Bremerhaven, FRG, 22-23 October 1974; sponsored by the Deutsche Forschungsgemeinschaft and Unesco	1976	—
26	Marine science in the Gulf area-Report of a consultative meeting, Paris, 11-14 November 1975	1976	—
31	Coastal lagoon survey (1976-1978)	1980	—
32	Coastal lagoon research, present and future, Report and guidelines of a seminar, Duke University Marine Laboratory, Beaufort, NC, U.S.A. August 1978. (Unesco, IABO).	1981	—
33	Coastal lagoon research, present and future. Proceedings of a seminar, Duke University, August 1978, (Unesco, IABO).	1981	—
34	The carbon budget of the oceans. Report of a meeting, Paris, 12-13 November 1979	1980	WG 62
35	Determination of chlorophyll in seawater. Report of intercalibration tests sponsored by SCOR and carried out by C.J. Lorenzen and S.W. Jeffrey, CSIRO Cronulla, N.S.W., Australia, September-October 1978	1980	—
36	The practical salinity scale 1978 and the international equation of state of seawater 1980. Tenth report of the Joint Panel on Oceanographic Tables and Standards, (JPOTS). Sidney, B.C., Canada, 1-5 September 1980. Sponsored by Unesco, ICES, SCOR, IAPSO. Available in Ar, Ch, F, R, S	1981	WG 10
	(*Примечание:* Этот доклад (текст идентичен) был первоначально издан только на английском языке под заголовком *Tenth report of the Joint Panel on Oceanographic Tables and Standards* (Десятый доклад Объединенной группы по океанографическим таблицам и стандартам)). Имеется на арабском, испанском, китайском, русском и французском языках.		
37	Background papers and supporting data on the Pratical Salinity Scale 1978.	1981	WG 10
38	Background papers and supporting data on the International Equation of State of Seawater 1980.	1981	WH 10
39	International Oceanographic Tables, Vol. 3	1981	WG 10

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International oceanographic tables

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Tables océanographiques internationales

Dressées sous la direction du Groupe mixte d'experts sur les tables et normes océanographiques et publiées par l'Organisation des Nations Unies pour l'éducation, la science et la culture.

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الجداول الأقيانوغرافية الدولية

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在海洋学常用表和标准联合专家小组的指导下编制，由联合国教育、科学及文化组织出版

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PREFACE

This series, the *Unesco Technical Papers in Marine Science*, is produced by the Unesco Division of Marine Sciences as a means of informing the scientific community of recent advances in oceanographic research and on recommended research programmes and methods.

The texts in this series are prepared in co-operation with non-governmental scientific organizations. Many of the texts result from research activities of the Scientific Committee on Oceanic Research (SCOR) and are submitted to Unesco for printing following final approval by SCOR of the relevant working group report.

Unesco Technical Papers in Marine Science are distributed free of charge to various institutions and governmental authorities. Requests for copies of individual titles or additions to the mailing list should be addressed, on letterhead stationery if possible, to:

Division of Marine Sciences
Unesco
Place de Fontenoy
75700 Paris, France.

ABSTRACT

Tables for obtaining values of fundamental properties of seawater based on the Practical Salinity Scale (PSS-78) and the International Equation of State for Seawater (EOS-80), are compiled in this report.

The calculations presented in the tables are produced using standardized computer programs described in Unesco Technical Papers in Marine Science No. 44. The tables cover the following: Density anomaly and specific volume anomaly at atmospheric pressure together with high pressure corrections to the latter; thermal expansion coefficient, salinity contraction coefficient, isothermal compressibility coefficient, isopycnal derivative, specific heat of seawater, adiabatic lapse rate at atmospheric and elevated pressure; potential temperature with corrections, freezing point, speed of sound, pressure to depth conversion, and tables to create lines of constant density and specific volume anomaly for T-S diagrams. An alternate definition of specific volume anomaly used primarily in Soviet literature also appears.

RESUME

Le présent rapport rassemble les tables qui permettent d'obtenir les valeurs des propriétés fondamentales de l'eau de mer à partir de l'échelle de salinité pratique (PSS-78) et de l'équation internationale d'état de l'eau de mer (EOS-80).

Les calculs présentés dans les tables ont été obtenus grâce à des programmes informatiques standards décrits dans le No. 44 des Documents techniques de l'Unesco sur les sciences de la mer. Ces tables comportent les données suivantes: anomalie de densité et anomalie de volume spécifique à la pression atmosphérique avec, pour cette dernière, les corrections de pressions élevées; coefficient de dilatation thermique, coefficient de contraction haline, coefficient de compressibilité isotherme, dérivée isopycnale, chaleur spécifique de l'eau de mer, taux de décroissance adiabatique à la pression atmosphérique et aux pressions élevées; température potentielle avec les corrections, point de congélation, vitesse du son, conversion de la pression en profondeur et tables permettant de tracer les isolignes d'anomalie de densité et de volume specifique pour l'établissement des diagrammes T-S. Une autre définition de l'anomalie de volume spécifique utilisée principalement dans la bibliographie soviétique figure également dans le présent rapport.

RESUMEN

Este informe presenta una recopilación de las tablas que se usan para obtener los valores de las propiedades fundamentales de las aguas del mar, sobre la base de la Escala Práctica de Salinidad (PSS-78) y de la Ecuación Internacional de 1980 de Estado del Agua del Mar (EOS-80).

Los cálculos que aparecen en las tablas se obtienen mediante el uso de programas de computación estandarizados descritos en el No. 44 de los Documentos Técnicos de la Unesco sobre Ciencias del Mar. Las tablas abarcan los siguientes temas: anomalía de densidad y anomalía del volumen específico a presión atmosférica, junto con correcciones de la anomalía del volumen específico a alta presión; coeficiente de expansión térmica, coeficiente de "contracción" salina, coeficiente de compresibilidad isotérmica, derivada isopicnal, calor específico del agua del mar, tasa de cambio adiabático a presión atmosférica y a alta presión; temperatura potencial con correcciones, punto de congelación, velocidad del sonido, conversión de presión a profundidad, y tablas para crear líneas de densidad constante y anomalía del volumen específico para diagramas T-S. También se incluye una definición opcional de la anomalía del volumen específico que se usa principalmente en la literatura soviética.

Резюме

В настоящем издании представлены таблицы фундаментальных свойств морской воды, основанные на Шкале практической солености (ШПС-78) и Международном уравнении состояния морской воды (УС-80).

Содержащиеся в таблицах результаты получены путем расчетов с использованием стандартных компьютерных программ, описанных в Технических документах ЮНЕСКО № 44. В таблицах содержатся следующие данные: аномалия плотности и аномалия удельного объема при атмосферном давлении вместе с соответствующими поправками на давление; коэффициент термического расширения, коэффициент солености сжатия, коэффициент изотермической сжимаемости, изопикническая производная, удельная теплоемкость морской воды, адиабатический градиент температуры при атмосферном и повышенных давлениях; потенциальная температура вместе с поправками, точка замерзания, скорость звука, перевод давления в глубину, а также таблицы для построения линий равной плотности и равной аномалии удельного объема на T-S диаграммах. Приводится также альтернативное определение аномалии удельного объема, преимущественно используемой в советской литературе.

الخلاصة

يتضمن هذا التقرير جداول تستعمل للحصول على قيم الخصائص الأساسية لماء البحر مبنية على مقياس الملوحة العملية (PSS - 78) وعلى المعادلة الدولية لحالة ماء البحر (EOS 80) ·

وقد بنيت الحسابات المقدمة فى هذه الجداول على البرامج القياسية للحاسب الآلى المشروحة فى تقرير اليونسكو الفنى رقم ٤٤ · وتشتمل الجداول على الآتى : حيود الكثافة ، حيود الحجم النوعى عند الضغط الجوى ، بالاضافة الى التصحيحات فى حيود الحجم النوعى نتيجة للضغط العالى، معامل التمدد الحرارى ، معامل تقلص الملوحة ، معامل الانضغاط عند ثبوت الحرارة ، مشتقة ثبات الكثافة ، الحرارة النوعية لماء البحر ، معدل التغير الذاتى للحرارة ، درجة الحرارة الكامنة مع تصحيحاتها ، نقطة التجمد ، سرعة الصوت ، تحويل الضغط الى العمق ، وجداول لرسم الخطوط التى تتساوى على امتدادها الكثافة وحيود الحجم النوعى المستخدمة فى الرسومات البيانية للحرارة/الملوحة · ويحتوى التقرير أيضا على تعريف بديل لحيود الحجم النوعى يستخدم بصفة أساسية فى المراجع السوفييتية ·

摘　要

本报告所编录的常用表，可供根据实用盐度标（PSS—78）和国际海水状态方程（EOS 80）以求海水基本特性数值之用。

常用表中所列出的各项计算是利用（联合国教科文组织技术论文第44号）所介绍的标准计算机程序来求得的。这些常用表包括：密度异常和比容异常（在大气压下和高压下的修正）；热膨胀系数，盐度收缩系数，等温收缩系数，等密度导数，海水的比热，绝热减温率（在大气压下及在高压下），修正后的位温，冰点，声速，压力到深度的变换，以及为T－S图解而作出等密度和比容异常的曲线的常用表。也包括了主要在苏联文献中用的另一种比容异常的定义。

Unesco technical papers in marine science 40

International oceanographic tables

Prepared under the supervision of the Joint Panel on Oceanographic Tables and Standards, and published by the United Nations Educational, Scientific and Cultural Organization.

Volume 4

Properties derived from the International Equation of State of Seawater, 1980

International Oceanographic Tables, Volume 4, were prepared by R.C. Millard Jr. according to a proposed plan by O.I. Mamayev and under the supervision of an *Ad Hoc* Sub-Panel on Oceanographic Tables and Standards composed of:

N.P. Fofonoff
J.M. Gieskes
E. Lafond
E.L. Lewis
O. Mamayev
R.C. Millard Jr.
F.J. Millero
S. Morcos
R. Perkin
A. Poisson
J.L. Reid

CONTENTS

GENERAL INTRODUCTION

In 1966, the first volume of the International Oceanographic Tables (Unesco, 1966) connecting conductivity and salinity of seawater, was prepared by the Joint Panel on Oceanographic Tables and Standards (JPOTS) which has worked since 1962 under the auspices of the United Nations Educational, Scientific and Cultural Organization (Unesco), the International Council for the Exploration of the Sea (ICES), the Scientific Committee on Oceanic Research (SCOR) and the International Association for the Physical Sciences of the Ocean (IAPSO).

Following considerable discussion, the JPOTS established the new Practical Salinity Scale, 1978 and the International Equation of State of Seawater, 1980. They were adopted by JPOTS in its meeting in Sidney, B.C., Canada, in September 1980 and endorsed by IAPSO in December 1979, by ICES in October 1979, by SCOR in September 1980 and by the Intergovernmental Oceanographic Commission (IOC) of Unesco in June 1981. It was recommended that the Practical Salinity Scale, 1978, be used starting January 1982. The recommendations of JPOTS as well as the background papers and supporting data are presented in Unesco Technical Papers in Marine Science, Nos. 36, 37 and 38 (Unesco, 1981a, b, c).

Volume 3 of the International Oceanographic Tables (Unesco, 1981d) gives practical salinities from conductivity ratios measured by salinometers. It was published by Unesco to replace Volume 1 of the International Oceanographic Tables, first published in 1966, and reprinted in 1971.

Volume 4 (the present volume) of the International Oceanographic Tables: Properties derived from the International Equation of State of Seawater, 1980, was prepared by JPOTS and is published by Unesco as a follow-up of a recommendation by the Joint Panel in its meeting in 1980. The tables in Volume 4 are intended to give an easy reference and demonstration of those physical parameters associated with the international equation of state of seawater, 1980. In addition, the tables are useful for "hand" calculation of those parameters.

The effort and time required to produce these tables exceeded that which was anticipated when the tables were first recommended by JPOTS in its meeting in Sidney, B.C., Canada, in September 1980. A study prepared by Unesco on the design and contents of the tables was discussed in an *Ad Hoc* Sub-Panel meeting in La Jolla, California, USA, in July 1983. The first examples of the computed tables were examined by the Sub-Panel in La Jolla, in December 1984. Following this, the tables were computed, under a contract with Unesco, using the facilities of Woods Hole Oceanographic Institution, Mass., USA. The tables then went through several revisions as a result of comments made by the members of the Joint Panel, before being produced in their present form.

The planning, computation and compilation of the present tables were supported by Unesco under contracts Nos. SC/RP561.632 (February 1983), SC/RP206.004.4 (March 1984) and SC/RP206.040.4 (December 1984) and its Amendment (June 1985).

The introductory part of the present volume appears in the six official languages of Unesco. Because of the highly specialized nature of the terminology and nomenclature used in the tables and in the text, several marine scientists were approached and requested to make precise translations from English into the other five languages. These translations were then revised by the specialized language sections of the Translation and Records Division of Unesco. The voluntary efforts and co-operation of the following marine scientists are acknowledged and greatly appreciated: Drs. Clocchiatti, Revault d'Allonnes, Saint Guily and Gamberoni (French translation); Dr. T. R. Fonseca (Spanish translation); Dr. O. Mamayev (Russian translation); Dr. A. Meshal and Dr. S. Morcos (Arabic translation); and Prof. Ye Longfei (Chinese translation).

JOINT PANEL ON OCEANOGRAPHIC TABLES AND STANDARDS

The Practical Salinity Scale, 1978 and the International Equation of State for Seawater, 1980 were formulated and adopted by the Joint Panel on Oceanographic Tables and Standards at its eleventh meeting, which was held in Sidney, B.C., Canada, from 1 to 5 September 1980, with the participation of the following :

Members of the Joint Panel		Nominated by
Dr. J. M. Gieskes (Chairman since 13 September 1978)	Scripps Institution of Oceanography, A-015, La Jolla, CA 92093, U. S. A.	SCOR
Dr. F. Culkin	Institute of Oceanographic Sciences, Wormley, Godalming, Surrey GU8 5UB, U. K.	ICES
Dr. N. P. Fofonoff (Chairman from May 77 to Sept. 78)	Woods Hole Oceanographic Institution, Woods Hole, MA 02543, U. S. A.	IAPSO
Prof. W. Kroebel	Institut für Angewandte Physik, Olshausenstrasse 40-60, D-2300 Kiel, F. R. GERMANY.	IAPSO
Dr. E. L. Lewis	Frozen Sea Research Group, Institute of Ocean Sciences, P.O. Box 6000, 9860 W. Saanich Road, Sidney, B.C. V8L 4B2, CANADA.	SCOR
Dr. O. I. Mamayev	Department of Oceanology, Moscow State University, 117234 Moscow, U. S. S. R.	UNESCO
Mr. M. Ménaché (Deceased 9.IX.1986)	7, rue de Reims, 75013 Paris, FRANCE.	UNESCO
Prof. F. Millero	Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, 4600 Rickenbacker Causeway, Miami, FL 33149, U. S. A.	UNESCO

Members of the Joint Panel (Continued) Nominated by

Dr. A. Poisson	Laboratoire d'Oceanographie Physique, Universite P. et M. Curie, Tour 24, 4 Place Jussieu, 75230 Paris Cedex 05, FRANCE.	ICES
Mr. C. K. Ross	Atlantic Oceanographic Laboratory, Bedford Institute of Oceanography, P. O. Box 1006, Dartmouth, N.S. B2Y 4A2, CANADA.	ICES

Invited Experts

Mr. J. Crease,
Institute of Oceanographic Sciences,
Wormley, Godalming,
Surrey GU8 5UB,
U. K.

Dr. T. M. Dauphinee,
National Research Council,
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Ottawa 7, Ontario KIA OR6,
CANADA.

Dr. F. Fisher,
Scripps Institution of Oceanography,
La Jolla, CA 92093,
U. S. A.

Dr. Selim Morcos,
Division of Marine Sciences,
Unesco,
7 Place de Fontenoy,
75700 Paris,
FRANCE.

Mr. R. Perkin,
Institute of Ocean Sciences,
P.O. Box 6000,
9860 W. Saanich Road,
Sidney, B.C. V8L 4B2,
CANADA.

Former Members

The late Professor Dr. G. Dietrich	2.X.1972
(Chairman 1962 - 1964)	
The late Dr. R. A. Cox	19.III.1967
(Chairman 1964 - 1967)	
The late Mr. F. Hermann	21.II.1977
(Chairman 1967 - 1969)	
The late Professor Dr. K. Grasshoff	11.III.1981
(Chairman 1969 - 1977)	
The late Mr. M. Menaché	9.IX.1986

Professor D. E. Carritt	Department of Geology and Geophysics, Massachusetts Institute of Technology, Cambridge, MA 02139 U. S. A.
Dr. Frederick H. Fisher	Scripps Institution of Oceanography, San Diego, California 92152, U. S. A.
Dr. G. N. Ivanov-Franzkevich	Institute of Oceanology, 1 Letniaya, Zh-387 Moscow 109387, U. S. S. R.
Dr. Y. Miyake	Meteorological Research Institute, Mabashi, Suginami-Ku, Tokyo, JAPAN.
Professor O. Saelen	Universitet i Oslo, Oceanografisk Institut, Blindern, Oslo, NORWAY.

LIST OF MEETINGS AND MEETING REPORTS OF THE JOINT UNESCO-ICES-SCOR-IAPSO PANEL ON OCEANOGRAPHIC TABLES AND STANDARDS

(SCOR Working Group 10)

	Unesco Technical Papers in Marine Science No.*
1st meeting, Paris, 1962**- report appeared as Unesco document NS/9/114B of 4.12.1962	- (24)
2nd meeting, Berkeley, 1963**- report appeared as Unesco document NS/9/114B of 19.8.1963	(24)
3rd meeting, Copenhagen, 1964 - first report	1 (27)
4th meeting, Rome, 1965 - second report	4 (27)
5th meeting, Berne, 1967 - third report	8 (27)
Ad Hoc meeting, Fort Lauderdale, February 1969 -	(fourth report, not available)
6th meeting, Kiel, December 1969 - fifth report	14***(27)
7th meeting, Kiel, January 1973 - sixth report	16
8th meeting, Grenoble, September 1975 - seventh report	24
9th meeting, Woods Hole, May 1977 - eighth report	28
10th meeting, Paris, September 1978 - ninth report	30
11th meeting, Sidney, September 1980 - tenth report	36

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* Numbers in brackets represent reprints of previous reports.

** Former Joint Panel on the Equation of State of Seawater.

*** This report also appears in SCOR Proceedings Volume 6, No. 1 (of 24 July 1970) as Annex IV.

SUBSIDIARY BODIES OF JPOTS

Following the 11th meeting of JPOTS, Sidney, September 1980, the Panel continued its activities through correspondence and meetings of sub-panels and specialized groups, as follows:

	Unesco Technical Papers in Marine Science No.
Sub-Panel on Thermodynamics of the Carbon Dioxide System in Seawater	
1st meeting, Miami, USA, 21-23 September 1981	42
2nd meeting, Kiel, FRG, 26-27 August 1983	50
3rd meeting, La Jolla, USA, 11-12 December 1984	50
Sub-Panel on International Oceanographic Tables, Vol. 4 - Properties derived from the Equation of State of Seawater, 1980	
1st meeting, La Jolla, USA, 5-8 July 1983	50
2nd meeting, La Jolla, USA, 10 December 1984	50
Joint Editorial Panel on Oceanographic Manual	
1st meeting, Moscow, USSR, 30 June - 4 July 1986 - First report	50

PRACTICAL SALINITY, 1978

DEFINITION

The practical salinity, symbol S, of a sample of seawater, is defined in terms of the ratio K_{15} of the electrical conductivity of the seawater sample at the temperature of 15°C and the pressure of one standard atmosphere, to that of a potassium chloride (KCl) solution, in which the mass fraction of KCl is 32.4356×10^{-3}, at the same temperature and pressure. The K_{15} value exactly equal to 1 corresponds, by definition, to a practical salinity exactly equal to 35. The practical salinity is defined in terms of the ratio K_{15} by the following equation

$$S = 0.0080 - 0.1692\, K_{15}^{1/2} + 25.3851\, K_{15} + 14.0941\, K_{15}^{3/2} - 7.0261\, K_{15}^{2} + 2.7081\, K_{15}^{5/2}$$

formulated and adopted by the Unesco/ICES/SCOR/IAPSO Joint Panel on Oceanographic Tables and Standards, Sidney, B.C., Canada, 1 to 5 September 1980 and endorsed by the International Association for the Physical Sciences of the Ocean (IAPSO) in December 1979, the International Council for the Exploration of the Sea (ICES) in October 1979, the Scientific Committee on Oceanic Research (SCOR) in September 1980 and the Intergovernmental Oceanographic Commission (IOC) of Unesco in June 1981. This equation is valid for a practical salinity S from 2 to 42.

N.B. For further details, please refer to Unesco Technical Papers in Marine Science Nos. 36 and 37.

INTRODUCTION TO VOLUME 4

The International Oceanographic Tables, Volume 4, presents tables of physical properties of seawater. The tables are based on the new International Equation of State of Seawater, 1980. Therefore, the text describing this equation is reproduced from Unesco Technical Papers in Marine Science No. 36 (Unesco, 1981, pp. 17-19).

Another outcome of the new equation of state of seawater was the Algorithms for Computation of Fundamental Properties of Seawater by N. P. Fofonoff and R. C. Millard, Jr. which was published likewise as Unesco Technical Papers in Marine Science No. 44 (Unesco, 1983). This publication is also regarded as the basic secondary reference source for the tables, as it describes the FORTRAN computational algorithms used to generate most of the tables. Results of calculations using the tables are compared with direct calculations using these FORTRAN algorithms on a DEC VAX-11/780 computer.

The economic (for hand computations) and compact Bjerknes'-Sverdrup's scheme based on the expansion of oceanographic functions of three variables - temperature, salinity and pressure - into an expansion with subsequent presentation in finite differences is used for the specific volume anomaly in keeping with previous published tables (LaFond, 1951).

The partial derivatives of density with respect to temperature, salinity, and pressure at various pressure levels (Tables VIII-XIII) are given as these parameters are useful in oceanographic computations of vertical stability. The derivatives of specific volume are perhaps equally important, but they are not presented here since they may be obtained from density derivatives rather simply as shown in equation 40 of the text. Tables XXV through XXVII and table XXX, are intended for plotting lines of equal density or equal specific volume on the T-S diagram on a large scale. Appendix I describes an alternate definition of specific volume anomaly found primarily in the Soviet literature. This definition is provided for comparison and conversion purposes.

Documents techniques de l'Unesco
sur les sciences de la mer 40

Tables océanographiques internationales

Dressées sous la direction du Groupe mixte d'experts sur les tables et normes océanographiques et publiées par l'Organisation des Nations Unies pour l'éducation, la science et la culture.

Volume 4

Propriétés dérivées
de l'équation internationale
d'état de l'eau de mer de 1980

Les tables océanographiques internationales (Volume 4) ont été dressées par R.C. Millard Jr. selon un plan proposé par O.I. Mamayev et sous la direction d'un sous-groupe d'experts *ad hoc* sur les tables et normes océanographiques composé comme suit :

N.P. Fofonoff
J.M. Gieskes
E. Lafond
E.L. Lewis
O. Mamayev
R.C. Millard Jr.
F.J. Millero
S. Morcos
R. Perkin
A. Poisson
J.L. Reid

TABLE DES MATIERES

INTRODUCTION GENERALE

En 1966, le premier volume des tables océanographiques internationales (Unesco, 1966) reliant la conductivité et la salinité de l'eau de mer était établi par le Groupe mixte d'experts sur les tables et normes océanographiques qui, depuis 1962, travaille sous les auspices de l'Organisation des Nations Unies pour l'éducation, la science et la culture (Unesco), le Conseil international pour l'exploration de la mer (CIEM), le Comité scientifique de la recherche océanique (SCOR) et l'Association internationale des sciences physiques de l'océan (AISPO).

Après de multiples discussions, le Groupe d'experts a établi la nouvelle échelle de salinité pratique en 1978, et l'équation internationale d'état de l'eau de mer en 1980. Elles ont été adoptées par le Groupe d'experts lors de sa réunion de Sidney, Colombie britannique, (Canada), en septembre 1980 et approuvées par l'AISPO en décembre 1979, par le CIEM en octobre 1979, par le SCOR en septembre 1980 et par la Commission océanographique intergouvernementale (COI) de l'Unesco en juin 1981. Il a été recommandé que l'échelle de salinité pratique de 1978 soit utilisée à partir de janvier 1982. Les recommandations du Groupe d'experts aussi bien que les documents et données de base ont été publiés dans les Documents techniques de l'Unesco sur les sciences de la mer, n° 36, 37 et 38 (Unesco, 1981a,b,c).

Le volume 3 des tables océanographiques internationales (Unesco, 1981) donne les salinités pratiques en fonction des rapports de conductivité mesurée par salinométrie. Il a été publié par l'Unesco pour remplacer le volume 1 des tables océanographiques internationales, paru en 1966 et réimprimé en 1971.

Le présent volume (volume 4) des tables océanographiques internationales : Propriétés dérivées de l'équation internationale d'état de l'eau de mer, de 1980, a été établi par le Groupe d'experts et est publié par l'Unesco à la suite de la recommandation du Groupe à sa réunion de 1980. Ces tables ont pour but de donner des renseignements et des exemples simples, concernant les paramètres physiques associés à l'équation internationale d'état de l'eau de mer de 1980. Elles sont, de plus, utiles pour le calcul "manuel" de ces paramètres.

Les efforts et le temps nécessaires pour produire ces tables ont dépassé ce qui était prévu lorsque leur établissement a été pour la première fois recommandé par le Groupe d'experts lors de sa réunion de Sidney, Colombie britannique (Canada) en septembre 1980. Une étude effectuée par l'Unesco sur la conception et le contenu des tables a été examinée au cours d'une réunion du Sous-Groupe d'experts ad hoc à La Jolla, Californie (Etats-Unis) en juillet 1983. Les premiers exemples des tables calculées ont été examinés par le Sous-Groupe d'experts à La Jolla en décembre 1984. A la suite de quoi, le calcul des tables a été effectué, dans le cadre d'un contrat avec l'Unesco, à l'aide des services de la loods Hole Oceanographic Institution, Massachusetts (Etats-Unis). Les tables ont ensuite fait l'objet de plusieurs révisions eu égard aux observations formulées par les membres du Groupe mixte d'experts, avant d'être produites sous leur forme actuelle.

Les tables ici présentées ont été préparées, calculées et rassemblées aux frais de l'Unesco en vertu des contrats n° SC/RP561.632 (février 1983), n° SC/RP206.004.4 (mars 1984) et n° SC/RP206.040.4 (décembre 1984) et de son amendement (juin 1985).

L'introduction au présent volume paraît dans les six langues officielles de l'Unesco. En raison de la nature hautement spécialisée de la terminologie et de la nomenclature utilisée dans les tables et dans le texte, des contacts ont été pris avec plusieurs océanographes qui ont été invités à faire des traductions précises de l'anglais dans les cinq autres langues. Ces traductions ont ensuite été revues par les sections linguistiques spécialisées de la Division des traductions et comptes rendus de l'Unesco. Nous exprimons toute notre gratitude pour leurs efforts et leur coopération bénévoles aux spécialistes des sciences de la mer dont les noms suivent : Mme M. Clocchiatti, MM. M. Revault d'Allonnes, B. Saint Guily et L. Gamberoni (traduction en français) ; M. T.R. Fonseca (traduction en espagnol) ; M. O. Mamayev (traduction en russe) ; MM. A. Meshal et S. Morcos (traduction en arabe) ; et M. Y. Longfei (traduction en chinois).

GROUPE MIXTE D'EXPERTS SUR LES TABLES ET NORMES OCEANOGRAPHIQUES

L'Echelle de salinité pratique de 1978 et l'Equation internationale d'état de l'eau de mer de 1980 ont été formulées et adoptées par le Groupe mixte d'experts sur les tables et normes océanographiques à sa onzième réunion qui a eu lieu à Sidney, Colombie britannique, (Canada), du 1er au 5 septembre 1980, avec la participation des membres suivants :

Composition du Groupe mixte d'experts		Désigné par
M. J.M. Gieskes (Président depuis le 13 septembre 1978)	Scripps Institution of Oceanography A-015, La Jolla, CA 92093 ETATS-UNIS D'AMERIQUE	SCOR
M. F. Culkin	Institute of Oceanographic Sciences Wormlay, Godalming Surrey, GU8 5UB ROYAUME-UNI	CIEM
M. N.P. Fofonoff (Président de mai 77 à septembre 78)	Woods Hole Oceanographic Institution Woods Hole, MA 02543 ETATS-UNIS D'AMERIQUE	AISPO
M. W. Kroebel	Institut für Angewandte Physik Olshausenstrasse 40-60 D-2300 Kiel REPUBLIQUE FEDERALE D'ALLEMAGNE	AISPO
M. E.L. Lewis	Frozen Sea Research Group Institute of Ocean Sciences P.O. Box 6000 9860 W. Saanich Road Sidney, B.C. V8L 4B2 CANADA	SCOR
M. O.I. Mamayev	Department of Oceanology Moscow State University 117234 Moscou URSS	Unesco
M. M. Menaché (Décédé 9.9.86)	7, rue de Reims 75013 Paris FRANCE	Unesco
M. F. Millero	Rosenstiel School of Marine and Atmospheric Sciences University of Miami 4600 Rickenbacker Causeway Miami, FL 33149 ETATS-UNIS D'AMERIQUE	Unesco

Composition du Groupe mixte d'experts (suite) — Désigné par

		Désigné par
M. A. Poisson	Laboratoire d'océanographie physique Université Pierre et Marie Curie Tour 24, 4 place Jussieu 75230 Paris Cedex 05 FRANCE	CIEM
M. C.K. Rose	Atlantic Oceanographic Laboratory Bedford Institute of Oceanography P.O. Box 1006 Dartmouth, N.S. B2Y 4A2 CANADA	CIEM

Experts invités

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ROYAUME-UNI

M. T.M. Dauphinee
National Research Council
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Ottawa 7, Ontario K1A OR6
CANADA

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Scripps Institution of Oceanography
La Jolla, CA 92093
ETATS-UNIS D'AMERIQUE

M. Selim Morcos
Division des sciences de la mer
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M. R. Perkin
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CANADA

Anciens membres

M. G. Dietrich Décédé (Président 1962-1964)	2.10.1972
M. R.A. Cox Décédé (Président 1964-1967)	19.3.1967
M. F. Hermann Décédé (Président 1967-1969)	21.2.1977
M. K. Grasshoff Décédé (Président 1969-1977)	11.3.1981
M. M. Menaché Décédé	9.9.1986
M. D.E. Carritt	Department of Geology and Geophysics Massachusetts Institute of Technology Cambridge 39, Massachusetts ETATS-UNIS D'AMERIQUE
M. Frederick Fisher	Scripps Institution of Oceanography San Diego, Californie 92152 ETATS-UNIS D'AMERIQUE
M. G.N. Ivanov-Franzkevich	Institute of Oceanology 1 Letniaya Zh-387 Moscou 109387 URSS
M. Y. Miyake	Meteorological Research Institute Mabashi, Suginami-Ku Tokyo JAPON
M. O. Saelen	Universitet i Oslo Oceanografisk Institut, Blindern Oslo NORVEGE

LISTE DES REUNIONS ET DES RAPPORTS CORRESPONDANTS DU GROUPE MIXTE D'EXPERTS UNESCO-CIEM-SCOR-AISPO SUR LES TABLES ET NORMES OCEANOGRAPHIQUES

(Groupe de travail n° 10 du SCOR)

	Documents techniques de l'Unesco sur les sciences de la mer n°*	
1re réunion, Paris, 1962**- rapport paru en tant que document de l'Unesco NS/9/114B du 4.12.1962	-	(24)
2e réunion, Berkeley, 1963**- rapport paru en tant que document de l'Unesco NS/9/114B du 19.8.1963	-	(24)
3e réunion, Copenhague, 1964 - premier rapport	1	(27)
4e réunion, Rome, 1965 - deuxième rapport	4	(27)
5e réunion, Berne, 1967 - troisième rapport	8	(27)
Réunion spéciale, Fort Lauderdale, février 1969 - (quatrième rapport non disponible)		
6e réunion, Kiel, décembre 1969 - cinquième rapport	14***	(27)
7e réunion, Kiel, janvier 1973 - sixième rapport	16	
8e réunion, Grenoble, septembre 1975 - septième rapport	24	
9e réunion, Woods Hole, mai 1977 - huitième rapport	28	
10e réunion, Paris, septembre 1978 - neuvième rapport	30	
11e réunion, Sidney, septembre 1980 - dixième rapport	36	

* Les numéros entre parenthèses représentent les réimpressions des anciens rapports.

** Le groupe s'appelait alors "Groupe mixte d'experts sur l'équation d'état de l'eau de mer".

*** Ce rapport figure aussi dans les Actes du SCOR, Vol. 6, n° 1 (du 24 juillet 1970), à l'Annexe IV.

ORGANES SUBSIDIAIRES DU GROUPE MIXTE D'EXPERTS SUR LES TABLES ET NORMES OCEANOGRAPHIQUES

A la suite de la onzième réunion du Groupe mixte d'experts sur les tables et normes océanographiques, Sidney, septembre 1980, celui-ci a poursuivi ses activités par correspondance et dans le cadre des réunions de ses sous-groupes d'experts et groupes spécialisés, indiquées ci-dessous :

	Documents techniques de l'Unesco sur les sciences de la mer n°
Sous-groupe d'experts sur la thermodynamique du système du gaz carbonique dans l'eau de mer	
1re réunion, Miami, Etats-Unis d'Amérique, 21-23 septembre 1981	42
2e réunion, Kiel, République fédérale d'Allemagne, 26-27 août 1983	50
3e réunion, La Jolla, Etats-Unis d'Amérique, 11-12 décembre 1984	50
Sous-groupe d'experts sur les tables océanographiques internationales, Vol. 4 - Propriétés dérivées de l'équation d'état de l'eau de mer de 1980	
1re réunion, La Jolla, Etats-Unis d'Amérique, 5-8 juillet 1983	50
2e réunion, La Jolla, Etats-Unis d'Amérique, 10 décembre 1984	50
Groupe de rédaction mixte sur le Manuel océanographique	
1re réunion, Moscou, URSS, 30 juin - 4 juillet 1986 - Premier rapport	50

LA SALINITE PRATIQUE, 1978

DEFINITION

La salinité pratique, symbole S, d'une eau de mer est définie à l'aide du rapport K_{15} de la conductivité électrique de cette eau de mer à la température de 15°C et sous une pression d'une atmosphère normale, sur celle d'une solution de chlorure de potassium (KCl) dont la masse de KCl par kilogramme de solution est 32.4356 g, aux mêmes température et pression. La valeur de K_{15} exactement égale à 1 correspond, par définition, à une salinité pratique exactement égale à 35. La salinité pratique est définie en fonction du rapport K_{15} par l'équation suivante :

$$S - 0.0080 - 0.1692\, K_{15}^{1/2} + 25.3851\, K_{15}$$

$$+ 14.0941\, K_{15}^{3/2} - 7.0261\, K_{15}^{2} + 2.7081\, K_{15}^{5/2}$$

formulée et adoptée par le Groupe mixte d'experts Unesco/CIEM/SCOR/AISPO sur les tables et normes océanographiques lors de sa réunion du 1er au 5 septembre 1980 à Sidney, Colombie britannique, (Canada), et approuvée par l'Association internationale pour les sciences physiques de l'océan (AISPO) en décembre 1979, par le Conseil international pour l'exploration de la mer (CIEM) en octobre 1979, par le Comité scientifique de la recherche océanique (SCOR) en septembre 1980 et par la Commission océanographique intergouvernementale (COI) de l'Unesco en juin 1981. Cette équation est valable pour une salinité pratique S, comprise entre 2 et 42.

N.B. Pour de plus amples informations, se rapporter aux Documents techniques de l'Unesco sur les sciences de la mer numéros 36 et 37.

INTRODUCTION AU VOLUME 4

Le Volume 4 des tables océanographiques internationales contient les tables des propriétés physiques de l'eau de mer. Ces tables sont fondées sur la nouvelle équation internationale d'état de l'eau de mer de 1980. Le texte décrivant cette équation est publié dans les Documents techniques de l'Unesco sur les sciences de la mer, n° 36 (Unesco, 1981, p. 17-19).

La nouvelle équation d'état de l'eau de mer a également permis d'établir les algorithmes pour le calcul des propriétés fondamentales de l'eau de mer par N.P. Fofonoff et R.C. Millard, Jr., publiés aussi dans les Documents techniques de l'Unesco sur les sciences de la mer n° 44 (Unesco, 1983). Cette publication est considérée comme la source de références secondaires de base pour les tables, dans la mesure où elle décrit les algorithmes de calcul FORTRAN utilisés pour l'établissement de la plupart de ces tables. Les résultats des calculs effectués à partir des tables sont comparés avec les calculs directs utilisant ces algorithmes réalisés sur un ordinateur DEC/VAX-11/780.

On utilise pour l'anomalie de volume spécifique conformément aux tables publiées auparavant (La Fond, 1951), la méthode pratique (pour les calculs manuels) et concise, de Bjerknes-Sverdrup, fondée sur le développement des fonctions océanographiques de trois variables - température, salinité et pression - qui aboutit à un développement présenté sous forme de différences finies.

Les dérivées partielles de densité par rapport à la température, la salinité et différents niveaux de pression (tables VIII-XIII) sont données dans la mesure où ces paramètres sont utiles pour les calculs océanographiques de stabilité verticale. Les dérivées de volume spécifique sont peut-être tout aussi importantes, mais elles ne sont pas présentées ici car elles peuvent être obtenues relativement simplement à partir des dérivées de densité comme cela est montré dans l'équation 40 du texte. Les tables XXV à XXVII et la table XXX sont destinées au tracé des lignes d'égale densité ou d'égal volume spécifique sur les diagrammes T-S à grande échelle. L'appendice I présente une autre définition de l'anomalie de volume spécifique principalement utilisée dans la bibliographie soviétique. Cette définition est reproduite afin de permettre des comparaisons et des conversions.

Documentos técnicos de la Unesco
sobre Ciencias del Mar 40

Tablas oceanográficas internacionales

Elaboradas bajo la supervisión de la Comisión Conjunta de Normas y Tablas Oceanográficas y publicadas por la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.

Volumen 4

Propiedades derivadas
de la Ecuación Internacional de 1980
de Estado del Agua del Mar

El Volumen 4 de las Tablas Oceanográficas Internacionales fue elaborado por R.C. Millard hijo, de acuerdo con un plan propuesto por O.I. Mamayev y bajo la supervisión de una subcomisión especial de expertos en normas y tablas oceanográficas, compuesto así:

N.P. Fofonoff	O. Mamayev	S. Morcos
J.M. Gieskes	R.C. Millard Jr.	R. Perkin
E. Lafond	F.J. Millero	A. Poisson
E.L. Lewis		J.L. Reid

CONTENIDO

En 1966 se preparó el primer volumen de Tablas Oceanográficas Internacionales (Unesco, 1966), que relacionaban la conductividad y la salinidad de las aguas del mar; este trabajo estuvo a cargo de la Comisión Conjunta de Normas y Tablas Oceanográficas (JPOTS), la cual ha funcionado desde 1962 bajo el auspicio de la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (Unesco), del Consejo Internacional para la Exploración del Mar (ICES), del Comité Científico para la Investigación Oceánica (SCOR) y de la Asociación Internacional para las Ciencias Físicas de los Océanos (IAPSO).

Después de numerosos debates, la JPOTS estableció en 1978 la nueva Escala Práctica de Salinidad y posteriormente en 1980 la Ecuación Internacional de Estado del Agua del Mar. Las dos fueron adoptadas por la JPOTS en su reunión de Sidney, B.C., Canadá, en septiembre de 1980. La IAPSO las avaló en diciembre de 1979, el ICES lo había hecho en octubre del mismo año, y el SCOR en septiembre de 1980. La Comisión Oceanográfica Intergubernamental (COI) de la Unesco las adoptó en junio de 1981. Se aconsejó que la Escala de Salinidad se comenzara a usar desde enero de 1982. Las recomendaciones de la JPOTS, artículos de referencia y datos de apoyo se presentan en los Documentos Técnicos de Ciencias del Mar de la Unesco N° 36, N°37 y N° 38 (Unesco, 1981, a,b,c).

El Volumen 3 de las Tablas Oceanográficas Internacionales (Unesco, 1981) presenta las salinidades prácticas a partir de las proporciones de conductividad medidas con salinómetros. Este volumen fue publicado por la Unesco para reemplazar el Volumen 1 de las Tablas Oceanográficas Internacionales publicadas por primera vez en 1966 y reeditadas en 1971.

El presente Volumen 4 de Tablas Oceanográficas Internacionales, cuyo título es: Propiedades derivadas de la Ecuación Internacional de 1980 de Estado del Agua del Mar, lo elaboró la JPOTS y lo publica la Unesco como consecuencia de una recomendación formulada por la JPOTS en su reunión de 1980. Las tablas del Volumen 4 tienen por objeto facilitar la referencia y la demostración de los parámetros físicos que se asociaron con la ecuación internacional de 1980 de estado del agua del mar. Además, son útiles para realizar cálculos "manuales" de dichos parámetros.

El esfuerzo y el tiempo que se necesitaron para elaborar esas tablas sobrepasaron los que se habían previsto cuando la JPOTS recomendó por primera vez su elaboración, en la reunión de Sidney, B.C., Canadá, en septiembre de 1980. En julio de 1983, fue discutido por una reunión de una subcomisión especial en La Jolla, California, EE.UU., un estudio preparado por la Unesco sobre la concepción y el contenido de las tablas. Los primeros ejemplos de tablas computadas fueron examinados por la Subcomisión en La Jolla, en diciembre de 1984. Acto seguido, las tablas fueron computadas por contrato con la Unesco utilizando las instalaciones de la Woods Hole Oceanographic Institution, Mass., EE.UU. Las tablas fueron sometidas a varias revisiones como resultado de los comentarios hechos por los miembros de la Comisión Conjunta antes de adoptar la forma en que aquí se presentan.

El planeamiento, la computación y la recopilación de esas tablas se financiaron mediante los contratos de la Unesco N° SC/RP561.632 (de febrero de 1983), N° SC/RP206.004.4 (marzo de 1984) y N° SC/RP206.040.4 (diciembre de 1984) y su enmienda (junio de 1985).

La parte introductoria de este volumen se publica en los seis idiomas oficiales de la Unesco. Como la terminología y la nomenclatura usadas en las tablas y en el texto son tan especializadas, se recurrió a varios especialistas de las ciencias marinas para que hicieran la traducción del inglés a los otros cinco idiomas. Luego estas traducciones fueron revisadas por las respectivas secciones lingüísticas de la División de Conferencias, Lenguas y Documentos de la Unesco. Agradecemos aquí los amables esfuerzos y la entusiasta cooperación de los siguientes especialistas de ciencias marinas: Dr. M. Clocchiatti, Dr. M. Revault d'Allonnes, Dr. B. Saint Guily y Dr. L. Gamberoni (traducción francesa); Dr. T.R. Fonseca (traducción española); Dr. O. Mamayev (traducción rusa); Dr. A. Meshal y Dr. S. Morcos (traducción árabe); y Prof. Y. Longfei (traducción china).

COMISION CONJUNTA DE NORMAS Y TABLAS OCEANOGRAFICAS
(septiembre de 1980)

La Comisión Conjunta de Normas y Tablas Oceanográficas elaboró y aprobó la Escala de Salinidades Prácticas de 1978 y la Ecuación Internacional de 1980 de Estado del Agua del Mar, en su decimoprimera reunión, celebrada en Sidney, Columbia Británica, Canadá, del 1° al 5 de septiembre de 1980, con asistencia de los siguientes participantes:

Miembros de la Comisión Conjunta		Designados por
Dr. J.M. Gieskes (Presidente desde el 13 de sept. de 1978)	Scripps Institution of Oceanography A-015, La Jolla, CA 92093 Estados Unidos	SCOR
Dr. F. Culkin	Institute of Oceanographic Sciences Wormley, Godalming Surrey GU8 5UB Reino Unido	ICES
Dr. N.P. Fofonoff (Presidente desde mayo de 1977 a septiembre de 1978)	Woods Hole Oceanographic Institution Woods Hole, MA 02543 Estados Unidos	IAPSO
Prof. W. Kroebel	Institut für Angewandte Physik Olshausenstrasse 40-60 D-2300 Kiel República Federal de Alemania	IAPSO
Dr. E.L. Lewis	Frozen Sea Research Group Institute of Ocean Sciences P.O. Box 6000 9860 W. Saanich Road, Sidney, B.C. V8L 4B2, Canadá	SCOR
Dr. O.I. Mamayev	Departament of Oceanology Moscow State University 117234 Moscow URSS	Unesco
Sr. M. Ménaché (fallecido el 9.09.86)	7, rue de Reims 75013 Paris Francia	Unesco
Prof. F. Millero	Rosenstiel School of Marine and Atmospheric Sciences University of Miami 4600 Rickenbacker Causeway Miami, FL 33149 Estados Unidos	Unesco

Miembros de la Comisión Conjunta (cont.)		Designados por
Dr. A. Poisson	Laboratoire d'Océanographie Physique Université P. et M. Curie Tour 24, 4 Place Jussieu 75230 Paris Cedex 05 Francia	ICES
Sr. C.K. Ross	Atlantic Oceanographic Laboratory Bedford Institute of Oceanography P.O. Box 1006 Dartmouth, N.S. B2Y 4A2 Canadá	ICES

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Canadá

Ex miembros

Profesor Dr. G. Dietrich (fallecido 2.10.72)	Presidente 1962-1964
Dr. R.A. Cox (fallecido 19.03.67)	Presidente 1964-1967
Sr. F. Hermann (fallecido 21.02.77)	Presidente 1967-1969
Profesor Dr. K. Grasshoff (fallecido 11.03.81)	Presidente 1969-1977
Sr. M. Ménaché (fallecido 9.09.86)	
Profesor D.E. Carritt	Department of Geology and Geophysics Massachusetts Institute of Technology Cambridge, MA 02139 Estados Unidos
Dr. Frederick H. Fisher	Scripps Institution of Oceanography San Diego, California 92152 Estados Unidos
Dr. G.N. Ivanov-Franzkevich	Institute of Oceanology 1 Letniaya Zh-387 Moscow 109387 URSS
Dr. Y. Miyake	Meteorological Research Institute Mabashi, Suginami-Ku Tokio Japón
Profesor O. Saelen	Universidad de Oslo Oceanografisk Institut Blindern, Oslo Noruega

LISTA DE REUNIONES Y DE INFORMES DE REUNIONES DE LA COMISION CONJUNTA UNESCO-ICES-SCOR-IAPSO DE NORMAS Y TABLAS OCEANOGRAFICAS

(Grupo de Trabajo 10 del SCOR)

	Documentos técnicos de la Unesco sobre Ciencias del Mar N° *	
Primera reunión, París, 1962** - Informe publicado como documento de la Unesco NS/9/114B, del 4 de diciembre de 1962	-	(24)
Segunda reunión, Berkeley, 1963** - Informe publicado como documento de la Unesco NS/9/144B, del 19 de agosto de 1963	-	(24)
Tercera reunión, Copenhague, 1964 - Primer informe	1	(27)
Cuarta reunión, Roma, 1965 - Segundo informe	4	(27)
Quinta reunión, Berna 1967 - Tercer informe	8	(27)
Reunión Ad-Hoc, Fort Lauderdale, febrero de 1969	(Cuarto informe, no disponible)	
Sexta reunión, Kiel, diciembre de 1969 - Quinto informe	14***	(27)
Séptima reunión, Kiel, enero de 1973 - Sexto informe	16	
Octava reunión, Grenoble, septiembre de 1975 - Séptimo informe	24	
Novena reunión, Woods Hole, mayo de 1977 - Octavo informe	28	
Décima reunión, París, septiembre de 1978 - Noveno informe	30	
Decimoprimera reunión, Sidney, septiembre de 1980 - Décimo informe	36	

* Los números entre paréntesis representan reimpresiones de los informes anteriores.

** Ex Comisión Conjunta sobre la Ecuación de Estado del Agua del Mar.

*** Este informe aparece también en las actas del SCOR, Vol. 6, N° 1 (del 24 de julio de 1970) como Anexo IV.

ORGANOS SUBSIDIARIOS DE LA JPOTS

Después de la 11a. reunión de septiembre de 1980 en Sidney de la JPOTS, la Comisión prosiguió sus actividades por correspondencia y mediante las reuniones de los subcomités y grupos especializados, procediendo como sigue:

	Documentos técnicos de la Unesco sobre Ciencias del Mar N°
Subcomisión de Termodinámica del Sistema del Dióxido de Carbono en el Agua Marina	
Primera reunión, Miami, EE.UU. 21-23 de septiembre de 1981	42
Segunda reunión, Kiel, Rep. Fed. de Alemania 26-27 de agosto de 1983	50
Tercera reunión, La Jolla, EE.UU. 11-12 de diciembre de 1984	50
Subcomisión de Expertos en Tablas Oceanográficas Internacionales, Vol. 4 - Propiedades derivadas de la Ecuación Internacional de 1980 de Estado del Agua del Mar	
Primera reunión, La Jolla, EE.UU. 5-8 de julio de 1983	50
Segunda reunión, La Jolla, EE.UU. 10 de diciembre de 1984	50
Grupo Mixto de Redacción del Manual Oceanográfico	
Primera reunión, Moscú, URSS 30 de junio - 4 de julio de 1986 - Primer informe	50

SALINIDAD PRACTICA, 1978

DEFINICION

La salinidad práctica, símbolo S, de una muestra de agua de mar, se define como la razón K_{15} entre la conductividad eléctrica de la muestra de agua de mar a una temperatura de 15°C y a una presión normal de una atmósfera, y la conductividad eléctrica de una solución de cloruro de potasio (KCl), en la que la fracción en masa de KCl es de $32,4356 \times 10^{-3}$, a la misma temperatura y presión. El valor K_{15} exactamente igual a 1 corresponde, por definición, a una salinidad práctica exactamente igual a 35. La salinidad práctica se define en términos de la razón K_{15} mediante la siguiente ecuación:

$$S = 0{,}0080 - 0{,}1692\ K_{15}^{1/2} + 25{,}3851\ K_{15} + 14{,}0941\ K_{15}^{3/2} - 7{,}0261\ K_{15}^{2} + 2{,}7081\ K_{15}^{5/2}$$

formulada y adoptada por la Comisión Conjunta de Normas y Tablas Oceanográficas Unesco-ICES-SCOR-IAPSO en Sidney, Columbia Británica (Canadá), reunido del 1° al 5 de septiembre de 1980, y refrendada por la Asociación Internacional de Ciencias Físicas del Océano (IAPSO) en diciembre de 1979, el Consejo Internacional para la Exploración del Mar (ICES) en octubre de 1979, el Comité Científico de Investigaciones Oceánicas (SCOR) en septiembre de 1980 y la Comisión Oceanográfica Intergubernamental (COI) de la Unesco en junio de 1981. Esta ecuación es válida para una salinidad práctica S de 2 a 42.

N.B. Para mayores detalles, consúltese la colección de Documentos Técnicos de la Unesco sobre Ciencias del Mar, Nos. 36 y 37.

INTRODUCCION AL VOLUMEN 4

El Volumen 4 de Tablas Oceanográficas Internacionales, expone tablas de las propiedades físicas del agua del mar. Estas se basan en la nueva Ecuación Internacional de 1980 de Estado del Agua del Mar. Por lo tanto, el texto que describe esta ecuación es una reproducción del Documento Técnico N° 36 de Ciencias del Mar, de la Unesco (Unesco, 1981, págs. 17-19).

Otro resultado de la nueva ecuación de estado del agua del mar son los algoritmos para calcular las propiedades fundamentales del agua del mar, cuyos autores son N.P. Fofonoff y R.C. Millard, hijo. Estos algoritmos se publican en el Documento Técnico N° 44 de Ciencias del Mar, de la Unesco (Unesco, 1983). Esta publicación, también se considera como la fuente básica de referencia secundaria para las tablas, debido a que describe los algoritmos FORTRAN utilizados para elaborar la mayoría de las tablas. Los resultados de los cálculos obtenidos mediante el uso de las tablas se comparan con los cálculos directos obtenidos de estos algoritmos FORTRAN en un computador DEC VAX-11/780.

Para calcular la anomalía del volumen específico en concordancia con tablas publicadas previamente (La Fond, 1951), puede usarse el esquema "económico" (para cálculos manuales) y compacto de Bjerkness y Sverdrup. Este esquema parte de la base de la expansión de las funciones oceanográficas de tres variables -temperatura, salinidad y presión- para llegar a una expansión y posterior presentación en diferencias finitas.

Se dan las derivadas parciales de densidad con respecto a la temperatura, la salinidad, y la presión a diversos niveles de presión (Tablas VIII-XIII), debido a que estos parámetros son útiles en los cálculos oceanográficos de la estabilidad vertical. Es probable que las derivadas del volumen específico sean igualmente importantes, pero no se las incluye aquí para no aumentar innecesariamente el tamaño de esta publicación. Las derivadas del volumen específico se pueden obtener de las derivadas de densidad de una manera bastante simple como lo indica la ecuación 40 del texto. Las Tablas XXV hasta la XXVII inclusive y la Tabla XXX tienen por finalidad trazar líneas de igual densidad o igual volumen específico en un diagrama T-S a gran escala. El Apéndice I describe una definición opcional de la anomalía del volumen específico que se encuentra principalmente en la literatura soviética. Se incluye esta definición para los efectos de comparación y conversión.

Технические документы ЮНЕСКО
по морским наукам 40

Международные океанографические таблицы

Подготовлены под наблюдением Объединенной группы по океанографическим таблицам и стандартам и опубликованы Организацией Объединенных Наций по вопросам образования, науки и культуры.

том 4

Свойства, основанные
на Международном уравнении
состояния морской воды, 1980 г.

Том Международных океанографических таблиц подготовлен д-ром Р.К. Миллардом мл. в соответствии с предложенным проф. И.О. Мамаевым макетом и под наблюдением Специальной группы по океанографическим таблицам и стандартам в составе:

Н.П. Фофонофф	О.И. Мамаев	С. Моркос
Ю.М. Гискес	Р.К. Миллард мл.	Р. Перкин
Ю. Лафон	Ф. Дж. Миллеро	Э. Пуассон
Е.Л. Льюис		Дж. Л. Рейд

СОДЕРЖАНИЕ

Общее введение

В 1966 году первый том Международных океанографических таблиц (Unesco, 1966 г.), связывающий электропроводность и соленость морской воды, был подготовлен Объединенной группой по океанографическим таблицам и стандартам (ОГОТС), которая работала с 1962 г. под эгидой Организации Объединенных Наций по вопросам образования, науки и культуры (ЮНЕСКО), Международного совета по изучению морей (МСИМ), Научного комитета по океаническим исследованиям (СКОР) и Международной ассоциации физических наук об океане (МАФНО).

В результате значительной дискуссии ОГОТС основала новую Шкалу практической солености, 1978 г., и Международное уравнение состояния морской воды, 1980 г. Они были приняты ОГОТС на ее совещании в Сиднее, Британская Колумбия, Канада, в сентябре 1980 г., и одобрены МАФНО в декабре 1979 г., МСИМ - в октябре 1979 г., СКОР - в сентябре 1980 г. и Межправительственной океанографической комиссией (МОК) ЮНЕСКО в июне 1981 г. Было рекомендовано, чтобы Шкала практической солености, 1978 г., применялась,начиная с января 1982 г. Рекомендации ОГОТС, равно как и основополагающие документы и вспомогательные данные содержатся в Технических документах ЮНЕСКО по морским наукам, №№ 36, 37 и 38 (Unesco, 1981 г., a, b, c).

Том 3 Международных океанографических таблиц (Unesco, 1981 г.) дает практическую соленость как функцию относительной электропроводности, измеряемой солемерами. Он был опубликован ЮНЕСКО взамен Тома I Международных океанографических таблиц, впервые изданного в 1966 г. и переизданного в 1971 г.

Том 4 (настоящий том) Международных океанографических таблиц: Свойства, основанные на международном уравнении состояния морской воды, 1980 г., подгтовлен и опубликован ЮНЕСКО на основании рекомендации ОГОТС, принятой на ее совещании в 1980 г. Цель таблиц тома 4 - дать быструю справку и представление о физических параметрах, связанных с Международным уравнением состояния морской воды, 1980 г. Кроме того, таблицы полезны для расчета этих параметров "вручную".

Для подготовки этих таблиц потребовалось больше усилий и времени, чем это предполагалось в тот момент, когда эти таблицы впервые были рекомендованы ОГОТС на ее совещании в Сиднее, Британская Колумбия, Канада, в сентябре 1980 г. Подготовленное ЮНЕСКО предложение относительно формы и содержания этих таблиц было обсуждено на совещании Специальной подгруппы в Ла-Хойя, Калифорния, США, в июле 1983 г. Первые образцы рассчитанных таблиц были изучены подгруппой в Ла-Хойя в декабре 1984 г. Вслед за этим таблицы были рассчитаны на базе Океанографического института в Вудс-Холе, Массачуветс, США. Прежде чем приобрести нынешнюю форму таблицы подверглись нескольким пересмотрам на основе замечаний, высказанных членами Объединенной группы.

Планирование, расчет и составление настоящих таблиц было осуществлено при поддержке ЮНЕСКО на основе контрактов № SC/RP 561.632 (февраль 1983 г.), № SC/RP 206.004.4 (март 1984 г.) и № SC/RP 206.040.4 (декабрь 1984 г.) и изменение к нему (июнь 1985 г.).

Вводная часть настоящего тома представлена на шести официальных языках ЮНЕСКО. Ввиду весьма специфического характера терминологии и наименований, используемых в таблицах и тексте, нескольким ученым в области морских наук было предложено сделать точные переводы с английского на пять других языков. Эти переводы затем были отредактированы специализированными лингвистическими секциями Отдела переводов и протоколов ЮНЕСКО. Следует выразить признательность и большую благодарность за добровольные усилия и сотрудничество со стороны следующих ученых в области морских наук: д-ра М. Клокчиатти, М. Рево д'Аллон, Б. Сен-Гийи и Л. Гамберони (французский перевод); д-р Т.Р. Фонсека (испанский перевод), д-р О.И.Мамаев (русский перевод); д-р А. Мешал и д-р С. Моркос (арабский перевод) и проф. Ю. Лунфэй (китайский перевод).

ОБЪЕДИНЕННАЯ ГРУППА ПО ОКЕАНОГРАФИЧЕСКИМ ТАБЛИЦАМ И СТАНДАРТАМ

Шкала практической солености 1978 г. и Международное уравнение состояния морской воды 1980 г. были разработаны и одобрены Объединенной группой по океанографическим таблицам и стандартам на ее 11-й сессии, состоявшейся в Сиднее, Б.К., Канада, с 1 по 5 сентября 1980 г. В сессии участвовали:

Члены Объединенной группы		Назначенные
Dr. J. M. Gieskes (Председатель с 13 сентября 1978 г.)	Scripps Institution of Oceanography, A-015, La Jolla, CA 92093, U. S. A.	СКОР
Dr. F. Culkin	Institute of Oceanographic Sciences, Wormley, Godalming, Surrey GU8 5UB, U. K.	МСИМ
Dr. N. P. Fofonoff (Председатель с мая 1977 г. по сентябрь 1978 г.)	Woods Hole Oceanographic Institution, Woods Hole, MA 02543, U. S. A.	МАФНО
Prof. W. Kroebel	Institut für Angewandte Physik, Olshausenstrasse 40-60, D-2300 Kiel, F. R. GERMANY.	МАФНО
Dr. E. L. Lewis	Frozen Sea Research Group, Institute of Ocean Sciences, P.O. Box 6000, 9860 W. Saanich Road, Sidney, B.C. V8L 4B2, CANADA.	СКОР
Проф. О.И.Мамаев	Кафедра океанологии Московский Государственный университет 117234 Москва СССР	ЮНЕСКО
Mr. M. Ménaché (скончался 9 сентября 1986 г.)	7, rue de Reims, 75013 Paris, FRANCE.	ЮНЕСКО
Prof. F. Millero	Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, 4600 Rickenbacker Causeway, Miami, FL 33149, U. S. A.	ЮНЕСКО

Члены Объединенной группы (продолж.) | Назначенные

Dr. A. Poisson	Laboratoire d'Oceanographie Physique, Universite P. et M. Curie, Tour 24, 4 Place Jussieu, 75230 Paris Cedex 05, FRANCE.	МСИМ
Mr. C. K. Ross	Atlantic Oceanographic Laboratory, Bedford Institute of Oceanography, P. O. Box 1006, Dartmouth, N.S. B2Y 4A2, CANADA.	МСИМ

Приглашенные члены

Mr. J. Crease,
Institute of Oceanographic Sciences,
Wormley, Godalming,
Surrey GU8 5UB,
U.K.

Dr. T. M. Dauphinee,
National Research Council,
Montreal Road,
Ottawa 7, Ontario KIA OR6,
CANADA.

Dr. F. Fisher,
Scripps Institution of Oceanography,
La Jolla, CA 92093,
U. S. A.

Dr. Selim Morcos,
Division of Marine Sciences,
Unesco,
7 Place de Fontenoy,
75700 Paris,
FRANCE.

Mr. R. Perkin,
Institute of Ocean Sciences,
P.O. Box 6000,
9860 W. Saanich Road,
Sidney, B.C. V8L 4B2,
CANADA.

Бывшие члены Объединенной группы

Покойный
Professor Dr. G. Dietrich 2.X.1972

(Председатель, 1962-1964 гг.)

Покойный
Dr. R. A. Cox 19.III.1967

(Председатель, 1964-1967 гг.)

Покойный
Mr. F. Hermann 21.II.1977

(Председатель, 1967-1969 гг.)

Покойный
Professor Dr. K. Grasshoff 11.III.1981

(Председатель, 1969-1977 гг.)

Покойный
Mr. M. Menaché 9.IX.1986

Professor D. E. Carritt	**Department of Geology and Geophysics, Massachusetts Institute of Technology, Cambridge, MA 02139 U. S. A.**
Dr. Frederick H. Fisher	**Scripps Institution of Oceanography, San Diego, California 92152, U. S. A.**
Д-р Г.Н. Иванов-Францкевич	Институт океанологии, 1-я Летняя, Ж-387 Москва 109387, СССР

Dr. Y. Miyake	Meteorological Research Institute, Mabashi, Suginami-Ku, Tokyo, JAPAN.
Professor O. Saelen	Universitet i Oslo, Oceanografisk Institut, Blindern, Oslo, NORWAY.

ПЕРЕЧЕНЬ СОВЕЩАНИЙ И ДОКЛАДОВ СОВЕЩАНИЙ ОБЪЕДИНЕННОЙ ГРУППЫ ЮНЕСКО/МСИМ/СКОР/МАФНО ПО ОКЕАНОГРАФИЧЕСКИМ ТАБЛИЦАМ И СТАНДАРТАМ

(Рабочая группа СКОР № 10)

	Технические документы ЮНЕСКО по морским наукам*	
1-е совещание, Париж, 1962 г.** - доклад, вышедший документом ЮНЕСКО NS/9/114B от 4 декабря 1962 г.	-	(24)
2-е совещание, Беркли, 1963 г.** - доклад, вышедший документом ЮНЕСКО NS/9/114B от 19 августа 1963 г.	-	(24)
3-е совещание, Копенгаген, 1964 г. - первый доклад	1	(27)
4-е совещание, Рим, 1965 г. - второй доклад	4	(27)
5-е совещание, Берн, 1967 г. - третий доклад	8	(27)
Специальное совещание, Форт-Лодердейл, февраль 1969 г. (четвертый доклад, не имеется)		
6-е совещание, Киль, декабрь 1969 г. - пятый доклад	14***	(27)
7-е совещание, Киль, январь 1973 г. - шестой доклад	16	
8-е совещание, Гренобль, сентябрь 1975 г. - седьмой доклад	24	
9-е совещание, Вудс-Хол, май 1977 г. - восьмой доклад	28	
10-е совещание, Париж, сентябрь 1978 г. - девятый доклад	30	
11-е совещание, Сидней, сентябрь 1980 г. - десятый доклад	36	

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* Цифры в круглых скобках указывают на издание предыдущих докладов.

** Бывшая объединенная группа по уравнению состояния морской воды.

*** Этот доклад опубликован также а протоколах СКОР, том 6, № 1 (от 24 июля 1970 г.), в качестве Приложения IV.

ВСПОМОГАТЕЛЬНЫЕ ОРГАНЫ ОГОТС

После одиннадцатого совещания ОГОТС, Сидней, сентябрь 1980 г., группа продолжала свою деятельность посредством переписки и совещаний подгрупп и специализированных групп, перечисленных ниже:

	Технические документы ЮНЕСКО в области морских наук №
Подгруппа по термодинамике углекислых систем в морской воде	
1-е совещание, Майами, 21-23 сентября	42
2-е совещание, Киль, ФРГ, 26-27 сентября 1983 г.	50
3-е совещание, Ла-Холья, США, 11-12 декабря 1984 г.	50
Подгруппа по международным океанографическим таблицам, том 4 - Свойства, основанные на Международном уравнении состояния морской воды, 1980 г.	
1-е совещание, Ла-Холья, США, 5-8 июля 1983 г.	50
2-е совещание, Ла-Холья, США, 10 декабря 1984 г.	50
Объединенная редакционная группа по "Руководству по обработке данных океанографических станций"	
1-е совещание, Москва, СССР, 30 июня - 4 июля 1986 г. - Первый доклад	50

ПРАКТИЧЕСКАЯ СОЛЕНОСТЬ, 1978 Г.

ОПРЕДЕЛЕНИЕ

Практическая соленость, условно обозначаемая S, пробы морской воды определяется как отношение K_{15} электропроводности данной пробы морской воды при температуре 15 °C и нормальном атмосферном давлении в одну атмосферу к электропроводности раствора хлористого калия (KCl), в котором концентрация KCl по массе составляет 32,4356 x 10^{-3} при той же температуре и давлении. Значение K_{15}, равное 1, в силу определения соответствует практической солености, равной 35. Практическая соленость с использованием отношения K_{15} определяется следующим уравнением

$$S = 0{,}0080 - 0{,}1692\ K_{15}^{1/2} + 25{,}3851\ K_{15}$$

$$+ 14{,}0941\ K_{15}^{3/2} - 7{,}0261\ K_{15}^{2} + 2{,}7081\ K_{15}^{5/2},$$

которое было сформулировано и принято на совещании Объединенной группы ЮНЕСКО/МСИМ/СКОР/МАФНО по океанографическим таблицам и стандартам, проходившем в Сиднее, Б.К., Канада, с 1 по 5 сентября 1980 г. Уравнение было одобрено Международной ассоциацией физических наук об океане (МАФНО) в декабре 1979 г., Международным советом по исследованию моря (МСИМ) в октябре 1979 г., Научным комитетом по океаническим исследованиям (СКОР) в сентябре 1980 г. и Межправительственной океанографической комиссией (МОК) ЮНЕСКО в июне 1981 г. Это уравнение приемлемо для определения практической солености от 2 до 42.

Примечание: Более подробную информацию см. в Технических документах ЮНЕСКО по морской науке №№ 36 и 37.

Введение к тому 4

В томе 4 Международных океанографических таблиц представлены таблицы физических свойств морской воды. Таблицы основаны на новом Международном уравнении состояния морской воды, 1980 г. Поэтому текст, описывающий это уравнение, воспроизводится из Технических докладов ЮНЕСКО по морским наукам, № 36 (Unesco, 1981 г., стр. 17-19).

Еще один результат введения нового уравнения состояния морской воды - это "Алгоритмы для вычисления фундаментальных свойств морской воды" Н.П.Фофоноффа и Р.К. Милларда, младш., параллельно опубликованные в Технических документах ЮНЕСКО по морским наукам, № 44 (Unesco, 1983 г.). Эту публикацию можно рассматривать как второй основной источник таблиц, так как в ней приводятся вычислительные алгоритмы на Фортране, использованные для расчета большинства таблиц. Результаты вычислений при помощи таблиц сравниваются с прямыми расчетами при помощи этих алгоритмов на Фортране на компьютере DEC VAX-II/780.

Экономическая (для ручных вычислений) и компактная схема Бьеркнеса-Свердрупа, основанная на разложении океанографических функций трех переменных - температуры, солености и давления в ряд с последующим представлением в конечных разностях применяется к аномалии удельного объема, в соответствии с ранее опубликованными таблицами (La Fond, 1951 г.).

Представлены частные производные плотности по отношению к температуре, солености и давлению для различных уровней давления (Таблицы VIII-XIII), так как эти параметры применяются для океанографических вычислений вертикальной устойчивости. Производные от удельного объема, вероятно, столь же важны, но они здесь не представлены, так как могут быть легко получены из производных от плотности, как это следует из формулы 40 текста. Таблицы XXV-XXVII предназначены для нанесения изолиний равной плотности или равного удельного объема на T-S диаграмме большого масштаба. В Приложении I описывается альтернативное определение аномалии удельного объема, встречающееся в основном в советской литературе. Это определение приводится в целях сравнения и перевода данных.

دراسـات اليـونسكـو الفنيـة
في علوم البحار ٤٠ – 40

الجداول الأقيانوغرافية الدولية

أعـدت باشـراف الفريق المشتـرك المختص بالجـداول والمعايـير الأقيانوغرافية، وأصدرتها منـظمة الأمم المتحـدة للتربيـة والعلم والثقافة.

المجلد الرابع

خصائص ماء البحر
المشتقة من المعادلة الدولية
لحالة ماء البحر، ١٩٨٠

أعد المجلد الرابع من الجداول الأوقيانوغرافية الدولية ر.ك. ميـلارد الابن وفقا لمخـطط اقترحـه ا.ا. مامابيف، وتحت اشراف فريق فرعي مختص بالجداول والمعايير الأقيانوغرافية ومؤلف من :

ن.ب. فوفونوف — ا.ا. مامابيف — س. مرقس
ج.م. جيسكس — ر.ك. ميلارد الابن — ر. بيركن
ا. لافوند — ف.ج. ميلرو — ا. بواسون
ا.ل. لويس — ج.ل. ريد

المحتويات

صفحة

الجدول XVIII

180 درجة الحرارة الكامنة $\theta(35,t,p,0.0)$ (التبريد الذاتى لماء البحر عند رفعه الى السطح) عند ملوحة تعادل ٣٥٫٠ وعند ضغط قياس يعادل صفر كدالة لدرجة الحرارة °م و الضغط بالديسى بار .

الجدول XIX

181 تصحيحات $\Delta\theta_1(S,0,p,0)$ لجداول درجة الحرارة الكامنة رقم XVIII, XXI عند درجة الحرارة وعند ضغط قياس يعادل صفر كدالة لقيم ملوحة تختلف عن ٣٥ و الضغط بالديسى بار . ويلاحظ أن التصويبات $\Delta\theta_1$ (الجدول XIX) يجب تطبيقها باشارة معكوسة فى الجدول XVIII .

الجدول XX

182 تصحيحات $\Delta\theta_2(S,t,10000,0)$ لجداول درجة الحرارة الكامنة رقمى XVIII, XXI عند ضغط ١٠٠٠ ديسى بار و الضغط القياسى يعادل صفر كدالة لدرجة الحرارة °م والملوحة . وتدرج هذه التصحيحات بواحدات ١/٠٠٠ p حيث p = الضغط بالديسى بار . ويلاحظ أن التصويبات $\Delta\theta_2$ (الجدول XX) يجب تطبيقها باشارة معكوسة فى الجدول XVIII .

الجدول XXI

183 درجة الحرارة الكامنة $\theta(35,t,p,10000)$ (التسخين الذاتى لماء البحر عند انزاله من السطح) لملوحة تعادل ٣٥٫٠ وضغط قياس يعادل ١٠ ٠٠٠ كدالة لدرجة الحرارة °م والضغط بالديسى بار .

الجدول XXII

184 نقطة التجمد لماء البحر°م $t_f(S,t,p)$ كدالة للملوحة و الضغط

صفحة

<u>الجدول XXX</u>

الملوحة كدالة لحيود الحجم النوعى $v(S,t,0) = V(S,t,0)\ 10^6-900$ 195
ودرجة الحرارة °م عند الضغط الجوى ·

مقدمة عامة

فى عام ١٩٦٦ أعد الفريق المشترك المختص بالجداول والمعايير الأقيانوغرافية المجلد الأول من الجداول الأقيانوغرافية الدولية (اليونسكو ، ١٩٦٦) التى تربط بين الموصلية الكهربائية لماء البحر وملوحته • وقد عمل هذا الفريق منذ ١٩٦٢ تحت رعاية منظمة الأمم المتحدة للتربية والعلم والثقافة (اليونسكو) ، والمجلس الدولى لاستكشاف البحر (ايكس) ، واللجنة العلمية لبحوث المحيطات (سكور) ، والرابطة الدولية للعلوم الفيزيائية للمحيطات (يابسو) •

وبعد مناقشات مستفيضة توصل الفريق المشترك الى مقياس الملوحة العملية الجديد ، ١٩٧٨ ، والى المعادلة الدولية لحالة ماء البحر ، ١٩٨٠ • واعتمدها الفريق فى اجتماعه بمدينة سيدنى ـ كولومبيا البريطانية ـ كندا فى سبتمبر/أيلول ١٩٨٠ ، وأقرتهما يابسو فى ديسمبر/كانون الأول ١٩٧٩ • واعتمدهما أيضا المجلس الدولى لاستكشاف البحر فى أكتوبر/تشرين الأول ١٩٧٩ ، واللجنة العلمية لبحوث المحيطات فى سبتمبر/أيلول ١٩٨٠ ، واللجنة الدولية الحكومية لعلوم المحيطات التابعة لليونسكو فى يونيو/حزيران ١٩٨١ • وقد تمت التوصية بأن يستعمل مقياس الملوحة العملية ، ١٩٧٨ اعتبارا من يناير/كانون الثانى ١٩٨٢ • وتضمنت دراسات اليونسكو الفنية فى علوم البحار أرقام ٣٦ و ٣٧ و ٣٨ توصيات الفريق المشترك المختص بالجداول والمعايير الأقيانوغرافية وكذلك الدراسات والخلفيات العلمية والبيانات المتعلقة بهذا الموضوع (اليونسكو ، ١٩٨١ أ ، ب ، ج)•

وترد بالمجلد الثالث من الجداول الأقيانوغرافية الدولية (اليونسكو ، ١٩٨١) قيم الملوحة العملية من معدلات الموصلية المقاسة بمقاييس الملوحة وطبعت اليونسكو هذا المجلد ليحل محل المجلد الأول من الجداول الأقيانوغرافية الدولية الذى نشر لأول مرة عام ١٩٦٦ وأعيد نشره عام ١٩٧١ •

أما المجلد الرابع (الحالى) من الجداول الأقيانوغرافية الدولية : خصائص ماء البحر المشتقة من المعادلة الدولية لحالة ماء البحر ، ١٩٨٠ ، فقد أعده الفريق المشترك وطبعته اليونسكو ، متابعة لتوصيات الفريق المشترك المختص بالجداول والمعايير الأقيانوغرافية فى اجتماعه عام ١٩٨٠ • وروعى فى جداول الجزء الرابع أن تكون مرجعا ميسرا يعرض البارمترات الفيزيائية المقترنة بالمعادلة الدولية لحالة ماء البحر ، ١٩٨٠ • وفضلا عن ذلك فان هذه الجداول مفيدة فى حساب هذه البارمترات باستخدام الآلات الحاسبة "اليدوية" •

وان الجهد والوقت اللذين اقتضاهما اعداد هذه الجداول قد تجاوزا ما كان متوقعا عندما أوصى الفريق المشترك لأول مرة باعدادها ، وذلك فى اجتماعه الذى عقده فى سيدنى ، كولومبيا البريطانية ، كندا ، فى سبتمبر/أيلول ١٩٨٠ • ونوقشت دراسة أعدتها اليونسكو عن تصميم الجداول ومضامينها فى اجتماع لفريق فرعى مختص عقد فى لاجولا ، كاليفورنيا ،

الولايات المتحدة ، في يوليو/تموز ١٩٨٣ • وبحثت النماذج الأولى لنجداول التي جرى حسابها ، بواسطة الفريق الفرعي في لاجولا ، في ديسمبر/كانون الأول ١٩٨٤ • وعلى أثر ذلك ، حسبت الجداول ، بموجب عقد مع اليونسكو ، في مرافق مؤسسة وودز هول الأقيانوغرافية ، في ماساشوستس ، بالولايات المتحدة • ثم نقحت الجداول مرارا على ضوء تعليقات أعضاء الفريق المشترك ، قبل استنساخها في صورتها الراهنة •

ودعمت اليونسكو عمليات تخطيط الجداول الحالية وحسابها وجمعها ، بواسطة العقود رقم SC/RP561.632 (فبراير/شباط ١٩٨٣) ، ورقم SC/RP206.004.4 (مارس/آذار ١٩٨٤) ورقم SC/RP206.040.4 (ديسمبر/كانون الأول ١٩٨٤) والتعديل المتعلق به (يونيو/حزيران ١٩٨٥) •

ويصدر القسم الاستهلالي للمجلد الحالي باللغات الرسمية الست لليونسكو • ونظرا للطابع الشديد التخصص للمصطلحات والتسميات المستخدمة في الجداول ومتن الوثيقة ، فقد طلب من عدة أخصائيين في علوم البحار ترجمة النص بدقة من الانجليزية الى اللغات الخمس الأخرى ثم اضطلعت شعب اللغات بقسم الترجمة والمحاضر باليونسكو بمراجعة هذه الترجمات • ونود الاقرار بأهمية الجهود الطوعية التي بذلها علماء البحار التالية أسماؤهم وبتقديرنا الكبير لهم : الدكاترة م• كلوشياتي ، و م• ريفو دالون ، و ب• سان جيلي ، و ل• جامبروني (الترجمة الفرنسية) ، الدكتور ت •ر• فونسيكا (الترجمة الاسبانية) ، الدكتور أ• مامايف (الترجمة الروسية) ، الدكتور أ• مشعل والدكتور س • مرقس (الترجمة العربية) ، والاستاذ ى• لونجفي (الترجمة الصينية) •

الفريق المشترك المختص بالجداول والمعايير الأقيانوغرافية

(سبتمبر/أيلول ١٩٨٠)

أعد جدول الملوحة العملية ، ١٩٧٨ ، والمعادلة الدولية لحالة مياه البحر ، ١٩٨٠ ، بمعرفة الفريق المشترك المختص بالجداول والمعايير الأقيانوغرافية وأقرهما الفريق في اجتماعه الحادى عشر الذى عقد فى سيدنى ، كولومبيا البريطانية ، كندا ! ، من ١ الى ٥ سبتمبر/أيلول ١٩٨٠ ، وحضره :

الهيئة التى رشحته		عضو الفريق المشترك
سكور	Scripps Institution of Oceanography, A-015, La Jolla, CA 92093, U. S. A.	Dr. J. M. Gieskes (رئيس الفريق منذ ١٩٧٨/٩/١٣)
ايكس	Institute of Oceanographic Sciences, Wormley, Godalming, Surrey GU8 5UB, U. K.	Dr. F. Culkin
يابسو	Woods Hole Oceanographic Institution, Woods Hole, MA 02543, U. S. A.	Dr. N. P. Fofonoff (رئيس الفريق من مايو ١٩٧٧ الى سبتمبر ١٩٧٨)
يابسو	Institut für Angewandte Physik, Olshausenstrasse 40-60, D-2300 Kiel, F. R. GERMANY.	Prof. W. Kroebel
سكور	Frozen Sea Research Group, Institute of Ocean Sciences, P.O. Box 6000, 9860 W. Saanich Road, Sidney, B.C. V8L 4B2, CANADA.	Dr. E. L. Lewis
اليونسكو	Department of Oceanology, Moscow State University, 117234 Moscow, U. S. S. R.	Dr. O. I. Mamayev
اليونسكو	7, rue de Reims, 75013 Paris, FRANCE.	Mr. M. Ménaché (توفى فى ١٩٨٦/٩/٩)

عضو الفريق المشترك		الهيئة التى رشحته
Prof. F. Millero	Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, 4600 Rickenbacker Causeway, Miami, FL 33149, U. S. A.	اليونسكو
Dr. A. Poisson	Laboratoire d'Océanographie Physique, Université P. et M. Curie, Tour 24, 4 Place Jussieu, 75230 Paris Cedex 05, FRANCE.	ايكس
Mr. C. K. Ross	Atlantic Oceanographic Laboratory, Bedford Institute of Oceanography, P. O. Box 1006, Dartmouth, N.S. B2Y 4A2, CANADA.	ايكس

خبراء مدعوون

Mr. J. Crease,
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Surrey GU8 5UB,
U. K.

Dr. T. M. Dauphinee,
National Research Council,
Montreal Road,
Ottawa 7, Ontario K1A OR6,
CANADA.

Dr. F. Fisher,
Scripps Institution of Oceanography,
La Jolla, CA 92093,
U. S. A.

Dr. Selim Morcos,
Division of Marine Sciences,
Unesco,
7 Place de Fontenoy,
75700 Paris,
FRANCE.

Mr. R. Perkin,
Institute of Ocean Sciences,
P.O. Box 6000, 9860 W. Saanich Road,
Sidney, B.C. V8L 4B2,
CANADA.

قائمة بأعضاء اللجنة السابقين

The late Professor Dr. G. Dietrich	المغفور له الأستاذ الدكتور ج. ديتريش 2.X.1972
(رئيس اللجنة ، ١٩٦٢-١٩٦٤)	
The late Dr. R. A. Cox	المغفور له الدكتور ر. أ. كوكس 19.III.1967
(رئيس اللجنة ، ١٩٦٤-١٩٦٧)	
The late Mr. F. Hermann	المغفور له السيد ف . هرمان 21.II.1977
(رئيس اللجنة ، ١٩٦٧-١٩٦٩)	
The late Professor Dr. K. Grasshoff	المغفور له الأستاذ الدكتور ك. جراسهوف 11.III.1981
(رئيس اللجنة ، ١٩٦٩-١٩٧٧)	
The late Mr. M. Menaché	المغفور له الأستاذ م. مناشيه 9.IX.1986

Professor D. E. Carritt	Department of Geology and Geophysics, Massachusetts Institute of Technology, Cambridge 39, Mass. U. S. A.
Dr. Frederick H. Fisher	Scripps Institution of Oceanography, San Diego, California 92152, U. S. A.
Dr. G. N. Ivanov-Franzkevich	Institute of Oceanology, 1 Letniaya, Zh-387 Moscow 109387, U. S. S. R.
Dr. Y. Miyake	Meteorological Research Institute, Mabashi, Suginami-Ku, Tokyo, JAPAN.
Professor O. Saelen	Universitet i Oslo, Oceanografisk Institut, Blindern, Oslo, NORWAY.

قائمة اجتماعات وتقارير الفريق المختص بالجداول و المعايير الأقيانوغرافية و المشترك بين اليونسكو / ايكس / سكور / يابســـو

(فريق عمل سكور رقم ١٠)

	دراسات اليونسكو الفنية فى علوم البحار، دراسة رقم*
الاجتماع الأول ، باريس ١٩٦٢* – صدر التقرير فى وثيقة لليونسكو تحمل رقم NS/9/114B بتاريخ ١٩٦٢/١٢/٤	– (٢٤)
الاجتماع الثانى ، بيركلى ١٩٦٣**– صدر التقرير فى وثيقة لليونسكو تحمل رقم NS/9/114B بتاريخ ١٩٦٣/٨/١٩	– (٢٤)
الاجتماع الثالث ، كوبنهاجن ١٩٦٤ – التقرير الأول	١ (٢٧)
الاجتماع الرابع ، روما ١٩٦٥ – التقرير الثانى	٤ (٢٧)
الاجتماع الخامس ، برن ١٩٦٧ – التقرير الثالث	٨ (٢٧)
اجتماع خاص ، فورت لوديرديل ، فبراير ١٩٦٩ – (التقرير الرابع – لم ينشر)	
الاجتماع السادس ، كيل ، ديسمبر ١٩٦٩– التقرير الخامس	١٤***(٢٧)
الاجتماع السابع ، كيل ، يناير ١٩٧٣ – التقرير السادس	١٦
الاجتماع الثامن ،جرينوبل ، سبتمبر ١٩٧٥– التقرير السابع	٢٤
الاجتماع التاسع ، وودز هول ، مايو ١٩٧٧– التقرير الثامن	٢٨
الاجتماع العاشر ، باريس ، سبتمبر ١٩٧٨ – التقرير التاسع	٣٠
الاجتماع الحادى عشر، سدنى،سبتمبر ١٩٨٠ – التقرير العاشر	٣٦

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* الأرقام الواردة بين هلالين هى أرقام طبعات معادة من تقارير سابقة .

** اجتماعا الفريق المشترك السابق المختص بمعادلة حالة مياه البحر .

*** يرد هذا التقرير كذلك فى سجلات أعمال سكور ، المجلد السادس ، العدد ١ (٢٤ يوليو/تموز ١٩٧٠) الملحق الرابع .

الهيئات الفرعية التابعة للفريق المشترك المختص بالجداول والمعايير الأقيانوغرافية

واصل الفريق المشترك ، على أثر اجتماعه الحادى عشر فى سيدنى ، سبتمبر/أيلول ١٩٨٠، أنشطته بالمراسلة وبعقد اجتماعات لأفرقة فرعية ومتخصصة ، على النحو التالى :

دراسات اليونسكو الفنية فى علوم البحار ، دراسة رقم

الفريق الفرعى المختص بالحراريات الدينامية لنظام ثانى أوكسيد الكربون فى مياه البحر

* الاجتماع الأول ، ميامى ، الولايات المتحدة ، ٢١ - ٢٣ سبتمبر/أيلول ١٩٨١ ٤٢

* الاجتماع الثانى ، كييل ، جمهورية ألمانيا الاتحادية ، ٢٦ - ٢٧ أغسطس /آب ١٩٨٣ ٥٠

* الاجتماع الثالث ، لاجولا ، الولايات المتحدة ، ١١ - ١٢ ديسمبر/كانون الأول ١٩٨٤ ٥٠

الفريق الفرعى المختص بالجداول الأقيانوغرافية الدولية ،

المجلد الرابع - خصائص ماء البحر المشتقة من المعادلة الدولية لحالة ماء البحر ، ١٩٨٠

* الاجتماع الأول ، لاجولا ، الولايات المتحدة ، ٥ - ٨ يوليو/تموز ١٩٨٣ ٥٠

* الاجتماع الثانى ، لاجولا ، الولايات المتحدة ، ١٠ ديسمبر/ كانون الثانى ١٩٨٤ ٥٠

فريق التحرير المشترك المختص بالمرجع الأقيانوغرافى

* الاجتماع الأول ، موسكو ، الاتحاد السوفييتى ، ٣٠ يونيو/ حزيران - ٤ يوليو/تموز ١٩٨٦ - التقرير الأول ٥٠

الملوحة العملية، ١٩٧٨

تعريف

تعرّف الملوحة العملية لعينة من ماء البحر ، ويرمز لها بالرمز "ح" بدلالة النسبة "$ك_{١٥}$" للموصلية الكهربائية لهذه العينة فى درجة حرارة تساوى ١٥°م وتحت ضغط يعادل الضغط الجوى القياسى الى موصلية محلول من كلوريد البوتاسيوم (بو كل) ذى درجة تركيز وزنية تعادل ٤٣٥٦ر٣٢ × $١٠^{-٣}$ فى نفس درجة الحرارة و الضغط ٠ وعندما تكون قيمة هذه النسبة "$ك_{١٥}$" مساوية للواحد الصحيح فان ذلك يقابل ملوحة عملية تساوى بالضبط ٣٥ ٠ ويمكن التعبير عن تعريف الملوحة العملية بدلالة النسبة $ك_{١٥}$ بالمعادلة التالية :

$$ح = ٠٠٨٠ر٠ - ١٦٩٢ر٠\ ك_{١٥}^{\frac{١}{٢}} + ٣٨٥١ر٢٥\ ك_{١٥} + ٠٩٤١ر١٤\ ك_{١٥}^{\frac{٣}{٢}}$$

$$- ٠٢٦١ر٧\ ك_{١٥}^{٢} + ٧٠٨١ر٢\ ك_{١٥}^{\frac{٥}{٢}}$$

وهى المعادلة التى صاغها وأقرها الفريق المشترك بين اليونسكو و ايكس وسكور ويابسو و المختص بالجداول و المعايير الأقيانوغرافية ، سدنى ، كولومبيا البريطانية، كندا، فى الفترة من ١ – ٥ سبتمبر/أيلول ١٩٨٠ وأقرتها الرابطة الدولية للعلوم الفيزيائية المتعلقة بالمحيطات (يابسو) فى ديسمبر/كانون الأول ١٩٧٩، و المجلس الدولى لاستكشاف البحار (ايكس) فى أكتوبر/تشرين الأول ١٩٨٠، و اللجنة العلمية لبحوث المحيطات (سكور) فى سبتمبر/أيلول ١٩٨٠، و اللجنة الدولية الحكومية لعلوم المحيطات (كوى) التابعة لليونسكو فى يونيو/حزيران ١٩٨١ ، و الجدير بالذكر أن هذه المعادلة صحيحة لملوحة عملية تتراوح بين ٢ و ٤٢ ٠

ملاحظة : للمزيد من التفاصيل ، المرجو الرجوع الى دراسات اليونسكو الفنية فى علوم البحار، العددين ٣٦ ، ٣٧ ٠

مقدمة المجلد الرابع

تحتوى الجداول الدولية لعلوم البحار ـ المجلد ٤ ـ على جداول للخصائص الفيزيائية لمياه البحر • وترتكز الجداول على المعادلة الدولية الجديدة لحالة ماء البحر ـ ١٩٨٠ ولذلك فقد أعدنا ايراد النص الذى يشرح هذه المعادلة كما ظهر فى "دراسات اليونسكو الفنية فى علوم البحار ـ رقم ٣٦ Unesco Technical Papers in Marine Science, (اليونسكو ، ١٩٨١ ، ص ١٧ ـ ١٩) •

وكان من النواتج الأخرى للمعادلة الجديدة لحالة ماء البحر " خطوات وطرق الحساب الأقيانوغرافية " التى وضعها فوفونوف وميلارد والتى طبعت أيضا فى "دراسات اليونسكو الفنية فى علوم البحار" رقم ٤٤ (اليونسكو ، ١٩٨٣)• كما أنها تعتبر المصدر الأساسى الثانوى للجداول ، حيث أنها تشرح الخطوات الحسابية للغة فورتران التى استخدمت لوضع معظم هذه الجداول • وقد قورنت نتائج الحسابات التى تستخدم تلك الجداول ، بالحسابات المباشرة التى استخدمت هذه الخطوات الحسابية للغة فورتران على حاسب آلى من طراز DEC VAX-11/780 ٠

ان النظام الذى وضعه بيركنز وسغردرب يعتبر طريقة اقتصادية مختصرة للحسابات اليدوية ، وتبنى هذه الطريقة على تمديد الدالات الأقيانوغرافية لمتغيرات ثلاث ـ درجة الحرارة والملوحة والضغط ـ بحيث يظهر هذا التمديد على هيئة اختلافات محددة تستعمل في حيود الحجم النوعى بحيث تتمشى مع الجداول السابق نشرها (لافوند ، ١٩٥١) •

وتحتوى الجداول على المشتقات الجزئية للكثافة بالنسبة للحرارة والملوحة والضغط عند مستويات مختلفة من الضغط (الجداول VIII الى XIII) وذلك نظرا لأهمية هذه البارمترات فى الحسابات الأقيانوغرافية للاستقرار الرأسى فى البحر • وقد تكون لمشتقات الحجم النوعى نفس الأهمية ولكنها لم تقدم هنا نظرا لسهولة حسابها من مشتقات الكثافة كما هو مبين فى المعادلة ٤٠ من النص • والغرض من الجداول أرقام XXV الى XXVII والجدول رقم XXX هو رسم خطوط تساوى الكثافة أو خطوط تساوى الحجم النوعى فى الرسوم البيانية للحرارة والملوحة بمقياس رسم كبير • ويحتوى الملحق I على تعريف بديل لحيود الحجم النوعى مأخوذ أساسا من المراجع السوفييتية ، وقد أورد هذا التعريف بغرض المقارنة والتحويل •

教科文组织

海洋科学技术论文 40

国际海洋学常用表

在海洋学常用表和标准联合专家小组的指导下编制，由联合国教育、科学及文化组织出版

第四卷

由1980年国际海水状态方程推导的特性

国际海洋学常用表第四卷，系小R．C．米勒德根据O．I．马马耶夫建议的一项方案和在海洋学常用表和标准特设专家小组的指导下编制的，该小组成员有：

N．P．弗弗诺夫	F．J．米勒罗
J．M．杰斯克斯	S．摩科斯
E．拉封德	R．珀金
E．L．刘易斯	A．波伊森
O．I．马马耶夫	J．L．里德
小R．C．米勒德	

目　录

总的导言

1966年，海洋学常用表和标准联合专家小组（JPOTS）编制了国际海洋学常用表的第一卷（Unesco 1966），将海水的盐度值与电导率联系起来。该小组自1962年起一直在联合国教科文组织（Unesco），国际海洋考察理事会（ICES），海洋研究科学委员会（SCOR）和国际海洋物理科学协会（IAPSO）的主持下开展工作。

经过大量的讨论，JPOTS 建立了新的1978年实用盐度标和1980年国际海水状态方程。这两项已被JPOTS 1980年9月加拿大哥伦比亚省西德尼会议采纳，并得到ICES（1979年10月），SCOR（1980年9月）以及Unesco 政府间海洋学委员会（IOC）（1981年6月）的批准。曾经提出建议，自1982年1月起开始使用1978年实用盐度标。JPOTS 的建议以及一些背景文章和支持的资料数据已在Unesco海洋科学技术文件第36号，第37号和第38号（Unesco 1981 a, b, c）中发表。

国际海洋学常用表的第三卷（Unesco 1981）根据盐度计测量的电导率比值给出实用盐度。这一卷系由Unesco出版以代替国际海洋学常用表的第一卷,(1966年初版，1971年重印）。

国际海洋学常用表的第四卷（本卷）：（由1980年海水状态方程推导的特性）是JPOTS 制订，并由教科文组织出版，作为JPOTS 1980年会议的建议的后续行动。该卷图表旨在提供那些与1980年国际海水状态方程有关的物理参数的简便的参考和演示。此外，常用表还可用来“手算”这些参数。

为制订这些图表而需花费的精力和时间，超出海洋学常用表和标准联合专家小组于1980年9月在加拿大不列颠哥伦比亚省西德尼会议上最先推荐上述图表时所预计的。特设专家小组1983年7月在美利坚合众国加里福尼亚州拉霍亚的会议上，对教科文组织制订的一份关于常用表的设计与内容的研究报告进行了讨论。1984年12月专家小组在拉霍亚对计算出来的常用表的头一批样张进行了审查。随后，即与教科文组织签订了合同，利用美国马萨诸塞州伍兹霍尔海洋研究所的设备，进行常用表的计算工作。听取了联合专家小组各位成员的意见，常用表又几经修改，然后才以目前的形式问世。

根据合同第SC/RP 561.632号（1983年2月）、第SC/RP 206.004.4

号（1983年2月）、第SC/RP 206.004.4号（1984年3月），以及第SC/RP 206.040.4号（1984年12月）及修正（1985年6月），目前的常用表之规划、计算及编集工作都得到了教科文组织的资助。

本卷序言部分用教科文组织六种正式语言出版。由于常用表和正文中所用术语和名称的高度专业性，曾向几位海洋科学家请教，并请他们把英文本准确地译成其他五种文字。这些译文后经教科文组织翻译记录处的各个专门语言单位校阅。谨向各位海洋科学家的鼎力相助和惠予合作，表示深切感谢，他们是：

M．克洛希亚蒂博士 (Dr.M.Clocchiatti)

M．雷沃尔特·戴隆纳博士 (Dr.M.Revault d'Allonnes)

B．圣·吉伊博士 (Dr.B.Saint Guily)

L．冈贝罗尼博士 (Dr.L.Gamberoni) （法译本）

T．R．丰塞卡博士 (Dr.T.R.Fonseca) （西译本）

O．马马耶夫博士 (Dr.O.Mamayev) （俄译本）

A．米歇尔博士 (Dr.A.Meshal)

S．摩科斯博士 (Dr.S.Morcos) （阿译本）

叶龙飞教授 (Prof. Ye Longfei) （中译本）

海洋学常用表
和标准联合专家小组

78年实用盐标和80年国际海水状态方程是在1980年9月1日至5日在加拿大不列颠哥伦比亚省西德尼举行的第十一次会议上由海洋学常用表和标准联合专家小组制订和采纳的，有下列人员参加：

联合专家小组成员		提名组织
J. M. 杰斯克斯博士 (Dr. J.M.Gieskes) (78年9月13日以后担任主席)	Scripps Institution of Oceanography, A-015, La Jolla, CA 92093, U. S. A.	SCOR
F. 柯尔金博士 (Dr. F.Culkin)	Institute of Oceanographic Sciences, Wormley, Godalming, Surrey GU8 5UB, U. K.	ICES
N. P. 弗弗诺夫博士 (Dr.N.P.Fofonoff) (77年5月到78年9月担任主席)	Woods Hole Oceanographic Institution, Woods Hole, MA 02543, U. S. A.	IAPSO
W. 克洛贝尔教授 (Prof.W.Kroebel)	Institut für Angewandte Physik, Olshausenstrasse 40-60, D-2300 Kiel, F. R. GERMANY.	IAPSO
E. L. 刘易斯博士 (Dr.E.L.Lewis)	Frozen Sea Research Group, Institute of Ocean Sciences, P.O. Box 6000, 9860 W. Saanich Road, Sidney, B.C. V8L 4B2, CANADA.	SCOR
O. I. 马马耶夫博士 (Dr.O.I.Mamayev)	Department of Oceanology, Moscow State University, 117234 Moscow, U. S. S. R.	UNESCO

M．梅纳谢博士 (Dr.M.Menache 1986年9月19日逝世)	7, rue de Reims, 75013 Paris, FRANCE.	UNESCO
F．米勒罗教授 (Prof.F.Millero)	Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, 4600 Rickenbacker Causeway, Miami, FL 33149, U. S. A.	UNESCO
A．波伊森博士 (Dr.A.Poisson)	Laboratoire d'Oceanographie Physique, Universite P. et M. Curie, Tour 24, 4 Place Jussieu, 75230 Paris Cedex 05, FRANCE.	ICES
C．K．罗斯先生 (Mr.C.K.Ross)	Atlantic Oceanographic Laboratory, Bedford Institute of Oceanography, P. O. Box 1006, Dartmouth, N.S. B2Y 4A2, CANADA.	ICES

特邀专家

J．克里斯先生 (Mr.J.Crease)	Institute of Oceanographic Sciences, Wormley, Godalming, Surrey GU8 5UB, U. K.
T．M．多菲尼博士 (Dr.T.M.Dauphinee)	National Research Council, Montreal Road, Ottawa 7, Ontario KIA OR6, CANADA.
F．费舍博士 (Dr.F.Fisher)	Scripps Institution of Oceanography, La Jolla, CA 92093, U. S. A.
赛里姆·摩科斯博士 (Dr.Selim Morcos)	Division of Marine Sciences, Unesco, 7 Place de Fontenoy, 75700 Paris, FRANCE.
R．珀金先生 (Mr.R.Perkin)	Institute of Ocean Sciences, P.O. Box 6000, 9860 W. Saanich Road, Sidney, B.C. V8L 4B2, CANADA.

以前的成员：

G. 狄特利希博士(Dr.G.Dietrich)	1962年——1964年主席	1972年10月2日逝世
R. A.科克斯博士(Dr.R.A.Cox)	1964年——1967年主席	1967年3月19日逝世
E. 赫尔曼先生(Mr.F.Hermann)	1967——1969年主席	1977年2月21日逝世
K. 搭拉斯霍夫博士(Dr.K.Grasshoff)	1969年——1977年主席	1981年3月11日逝世
M. 梅纳谢先生(Mr.M.Menaché)		1986年9月19日逝世

D. E. 卡利特教授
(Prof.D.E.Carritt)

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弗雷德里克H. 费舍博士
(Dr.Frederick H.Fisher)

Scripps Institution of Oceanography,
San Diego, California 92152,
U. S. A.

G. N. 伊凡诺夫—弗兰兹凯维奇博士
(Dr.G.N.Ivanov-Franzkevich)

Institute of Oceanology,
1 Letniaya,
Zh-387 Moscow 109387,
U. S. S. R.

三宅博士
(Dr.Y.Miyake)

Meteorological Research Institute,
Mabashi, Suginami-Ku,
Tokyo, JAPAN.

O. 赛伦教授
(Prof.O.Saelen)

Universitet i Oslo,
Oceanografisk Institut,
Blindern, Oslo,
NORWAY.

UNESCO—ICES—SCOR—IAPSO

联合专家小组会议及会议报告一览表（SCOR工作组10）

			Unesco海洋科学技术论文编号[1]
第一次会议	巴黎，1962年[2]	报告见Unesco文献1962年12月4日Ns/9/114B，	—(24)
第二次会议	伯克利，1963年[2]	报告见联合国教科文组织文件1963年8月19日Ns/9/114B	—(24)
第三次会议	哥本哈根，1964年，第一次报告		1(27)
第四次会议	罗马，1965年，第二次报告		4(27)
第五次会议	伯尔尼，1967年，第三次报告		8(27)
专门会议	劳德达尔堡，1969年2月，第四次报告未被利用		
第六次会议	基尔，1969年12月，第五次报告		14(27)[3]
第七次会议	基尔，1973年1月，第六次报告		16
第八次会议	格勒诺布尔，1975年9月，第七次报告		24
第九次会议	伍兹霍尔，1977年5月，第八次报告		28
第十次会议	巴黎，1978年9月，第九次报告		30
第十一次会议	西德尼，1980年9月，第十次报告		36

(1) 括号内的数字表示再版过去的报告。

(2) 海水状态方程的老专家小组。

(3) 这份报告也发表在SCOR科研报告集，卷6№1（1970.7.24）附录Ⅳ中。

海洋学常用表和标准联合专家小组的附属机构

海洋学常用表和标准联合专家小组，于1980年9月西德尼第十一次会议后，继续通过通信、各专家小组与专门小组会议，开展了如下的活动：

	教科文组织 海洋科学技术论文 编　号
海水二氧化碳系统热力学专家小组	
第一次会议，美国迈阿密，1981年9月21－23日	42
第二次会议，联邦德国基尔市，1983年8月26－27日	50
第三次会议，美国拉霍亚，1984年12月11－12日	50
国际海洋学常用表专家小组	
第4卷——由1980年国际海水状态方程推导的特性	
第一次会议，美国拉霍亚，1983年7月5－8日	50
第二次会议，美国拉霍亚，1984年12月10日	50
海洋学指南联合编辑小组	
第一次会议，苏联莫斯科，1986年6月30日－7月4日　第一次报告	50

一九七八年实用盐度

定义

海水样品的实用盐度（符号为S）是根据电导率比值K_{15}来确定的，而K_{15}是海水样品在温度为15 ℃、压力为一个标准大气压下的电导率与质量比为32.4356×10^{-3}的KCl溶液在相同的温度和压力下的电导率的比值。根据定义，当K_{15}值正好等于1时，实用盐度恰好等于35。实用盐度根据比值K_{15}由下述方程式来确定：

$$S = 0.0080 - 0.1692K_{15}^{1/2} + 25.3851K_{15} + 14.0941K_{15}^{3/2} - 7.0261K_{15}^{2} + 2.7081K_{15}^{5/2}$$

该公式由Unesco/ICES/SCOR/IAPSO的海洋学常用表和标准联合专家小组于1980年9月1日至5日在加拿大不列颠哥伦比亚省西德尼正式提出和采用，并已得到国际海洋物理科学协会（IAPSO）（1979年12月）、国际海洋考察理事会（ICES）（1979年10月）、海洋研究科学委员会（SCOR）（1980年9月）以及教科文组织政府间海洋学委员会（IOC）（1981年6月）的批准。该方程在实用盐度S从2到42范围内是适用的。

注意：详细情况，请参见教科文组织海洋科学技术论文第36和37期

第四卷的导言

国际海洋学常用表第四卷提供了海水的物理参数的各项常用表。这些常用表的根据是新的1980年国际海水状态方程。所以，从Unesco海洋科学技术论文第36号(Unesco，1981第17至19页)引用了描述这方程的原文。

另一个新的海水状态方程的成果是N，P，Fofonoff 和R，C，Millard，jr 的海水基本特性的计算规则系统，也同样发表在Unesco出版的海洋科学技术论文中，为第44号(Unesco1983)，这一出版物也可以看作是这些常用表的次要基本参考来源，因为它描述了用以产生大部分这些常用表的FORTRAN 计算规则系统。利用这些表格计算出来的结果是与在一台 DECVAX—11/780 型计算机中用这些FORTRAN 规则系统直接计算的结果比较过的。

俭约(手算的)和紧凑的Bjerknes'—Sverdrup's 体制，建立在三个变数(温度，盐度和压力)基础上的海洋学函数的展开，转到有限差分顺序表现法的展开，仍用于比容异常方面，以与以前出版的用表(La Fond 1951)保持一致。

在不同压力水平上，密度对于温度，盐度和压力的偏导数(表格Ⅷ至XⅢ)也已给出，因为这些参数对于海洋学计算垂直稳定度是有用的。比容的这些偏导数也许是同样重要的，但不在这里给出，因为，如同文中方程40所示，比容的偏导数可以从密度的偏导数中相当容易地求得。表XXV到XXⅧ和XXX是为了在TS 图解上大尺度地画出等密度线或等比容线。附录I描述了主要在苏联文献中表示的一种不同的比容异常的定义。提供这一定义为了便于比较和转换。

THE INTERNATIONAL EQUATION OF STATE FOR SEAWATER, 1980†

A new equation of state of seawater diluted with pure water or concentrated by evaporation has been determined to be used with the practical salinity scale* (Millero, Chen, Bradshaw and Schleicher, 1980; Millero and Poisson, 1981a). This equation is more precise than the currently used equations (Knudsen, Forsch and Sorensen, 1902; Ekman, 1908; Cox et al., 1970) and covers a wider range of temperature and pressure. Data reports describing the details of the fitting procedure are available (Millero, Chen, Bradshaw and Schleicher, 1981; Millero and Poisson, 1981b; Unesco, 1981b).

The density (ρ,kg/m^3) of seawater as a function of practical salinity (S), temperature (t,°C) and applied or gauge pressure (p,bars+) is given by

$$\rho(S,t,p) = \rho(S,t,0)/[1-p/K(S,t,p)] \qquad (1)$$

where K(S,t,p) is the secant bulk modulus. The specific volume (V = 1/ρ m^3/kg) of seawater can be obtained from

$$V(S,t,p) = V(S,t,0)\cdot[1-p/K(S,t,p)] \qquad (2)$$

The density of seawater at one standard atmosphere (p = 0) can be determined from

$$\rho(S,t,0) = \rho_w + (b_0 + b_1 t + b_2 t^2 + b_3 t^3 + b_4 t^4)S + (c_0 + c_1 t + c_2 t^2)S^{3/2} + d_0 S^2 \qquad (3)$$

b_0 = + 8.24493E-1 c_0 = - 5.72466E-3

b_1 = - 4.0899 E-3 c_1 = + 1.0227 E-4

†From Unesco, 1981a, page 17-19.

*In accordance with the recommendation of JPOTS (Unesco, 1981c) practical salinity is given as a dimensionless quantity.

+ 1 bar = 10^5 Pascals.

b_2 = + 7.6438 E-5 c_2 = - 1.6546 E-6

b_3 = - 8.2467 E-7

b_4 = + 5.3875 E-9 d_0 = + 4.8314 E-4

The density of the reference pure water (SMOW, Craig, 1961) is given by (IUPAC, 1976)

$$\rho_w = a_0 + a_1 t + a_2 t^2 + a_3 t^3 + a_4 t^4 + a_5 t^5 \qquad (4)$$

where

a_0 = + 999.842594

a_1 = + 6.793952 E-2

a_2 = - 9.095290 E-3

a_3 = + 1.001685 E-4

a_4 = - 1.120083 E-6

a_5 = + 6.536332 E-9

Should more reliable data for pure water become available in the future, this equation can be easily modified. The secant bulk modulus (K) of seawater is given by

$$K(S,t,p) = K(S,t,0) + Ap + Bp^2 \qquad (5)$$

where

$$K(S,t,0) = K_w + (f_0 + f_1 t + f_2 t^2 + f_3 t^3)S + (g_0 + g_1 t + g_2 t^2)S^{3/2} \qquad (6)$$

f_0 = + 54.6746 g_0 = + 7.944 E-2

f_1 = - 0.603459 g_1 = + 1.6483 E-2

$$f_2 = +1.09987 \text{ E-2} \qquad g_2 = -5.3009 \text{ E-4}$$

$$f_3 = -6.1670 \text{ E-5}$$

$$A = A_w + (i_0 + i_1 t + i_2 t^2)S + j_0 S^{3/2} \tag{7}$$

$$i_0 = +2.2838 \text{ E-3} \qquad j_0 = +1.91075\text{E-4}$$

$$i_1 = -1.0981 \text{ E-5}$$

$$i_2 = -1.6078 \text{ E-6}$$

$$B = B_w + (m_0 + m_1 t + m_2 t^2)S \tag{8}$$

$$m_0 = -9.9348 \text{ E-7}$$

$$m_1 = +2.0816 \text{ E-8}$$

$$m_2 = +9.1697 \text{ E-10}$$

The pure water terms of the secant bulk modulus are given by

$$K_w = e_0 + e_1 t + e_2 t^2 + e_3 t^3 + e_4 t^4 \tag{9}$$

$$e_0 = +19652.21 \qquad e_2 = -2.327105$$

$$e_1 = +148.4206 \qquad e_3 = +1.360477 \text{ E-2}$$

$$e_4 = -5.155288 \text{ E-5}$$

$$A_w = h_0 + h_1 t + h_2 t^2 + h_3 t^3$$

$$h_0 = +3.239908$$

$$h_1 = +1.43713 \text{ E-3}$$

$h_2 = + 1.16092 \quad E-4$

$h_3 = - 5.77905 \quad E-7$

$B_w = k_0 + k_1 t + k_2 t^2$

$k_0 = + 8.50935 \quad E-5$

$k_1 = - 6.12293 \quad E-6$

$k_2 = + 5.2787 \quad E-8$

The EOS80 is valid for S = 0 to 42 ; t = −2 to 40°C; p = 0 to 1000 bars.

The following values are provided for checking the correct use of the above equation. (Units of ρ are kg m^{-3} and V m^3/kg.)

S	t(°C)	p(dbars)	$\rho(S,t,p)$	$V(S,t,p) 10^{-3} m^3/kg$
0	5	0	999.96675	1.000033251
		10000	1044.12802	.957736964
	25	0	997.04796	1.00296078
		10000	1037.90204	.963482064
35	5	0	1027.67547	.973069835
		10000	1069.48914	.935025857
	25	0	1023.34306	.977189409
		10000	1062.53817	.941142660

Description of Tables

Density Anomaly

The density anomaly γ is defined as

$$\gamma(S,t,p) = \frac{1}{V(S,t,p)} - 1000 \text{ kg/m}^3 \quad . \tag{10}$$

As pointed out by Fofonoff (1985), a departure from historical usage is taken in the definition of density anomaly γ. Previously, a specific gravity anomaly $\sigma(S,t,0)$ (Knudsen, 1901), defined as

$$\sigma(S,t,0) = 1000\ [\rho(S,t,0)/\rho(0,t_{max},0) - 1]$$

was used, where t_{max} is the temperature of the density maximum of pure water at atmospheric pressure. The density anomaly γ, corresponding to $\sigma(S,t,0)$, is

$$\gamma(S,t,0) = \rho(0,t_{max},0)(1 + \sigma(S,t,0)/1000) - 1000.0 \text{ kg/m}^3 \ .$$

Using the accepted value of $\rho(0,t_{max},0) = 999.975 \text{ kg/m}^3$ (Unesco, 1974), the previous equation becomes

$$\gamma(S,t,0) = 0.999975 \cdot \sigma(S,t,0) - 0.025 \text{ kg/m}^3 \quad .$$

The new definition of density anomaly yields values of γ that are numerically lower (the dimensions are different) than $\sigma(S,t,0)$ by a nearly constant amount. Table I gives the density anomaly as a function of temperature and salinity at atmospheric pressure ($p = 0.0$ decibars). Where the expression for $\rho(S,t,0)$ is given by Equations (9) and (10).

The specific volume anomaly $\delta(S,t,p)$ is defined as:

$$\delta(S,t,p) = V(S,t,p) - V(35,0,p) \tag{11}$$

and reported in units of $10^{-8}\ \text{m}^3/\text{kg}$.

For computational convenience, $V(35,0,p)$ has been obtained from the EOS80 by evaluating the coefficients for a salinity of 35 (PSS-78) and temperature of 0°C (IPTS-68) in the form

$$V(35,0,p) = V(35,0,0)\ [1 - p/K(35,0,p)] \qquad (12)$$

$$K(35,0,p) = K_o + A_o p + B_o p^2$$

$$V(35,0,0) = 9.7266204\ E{-4}\ \ m^3/kg$$

$$K_o = +\ 21582.27$$

$$A_o = +\ 3.35940552$$

$$B_o = +\ 5.03217\quad E{-5}$$

Specific Volume Anomaly - Density Anomaly

Table II gives the specific volume anomaly $\delta(S,t\ 0)$ as a function of density anomaly $\gamma(S,t,0)$ at atmospheric pressure obtained by combining Equations (10) and (11) at p = 0.0: to yield

$$\delta(S,t,0) = \frac{1}{\gamma(S,t,0) + 1000} - 9.7266204\ E{-4}\ m^3/kg$$

Specific Volume Anomaly

Values of specific volume anomaly at atmospheric pressure $\delta(S,t,0)$ are given in Table III. These values are obtained from the form of EOS80 presented by Fofonoff and Millard (Unesco, 1983). Each specific volume anomaly value of Table III has interpolation data for changes of temperature and salinity immediately beneath. The temperature change interpolation value is first followed by the salinity change. Interpolation values associated with the current specific volume anomaly are computed by forward differencing the next greater (temperature/salinity) value of specific volume anomaly minus the current value. Tables III A & B are interpolation tables for changes in specific volume anomaly with temperature and salinity, respectively used as shown in the following example.

Example of the Use of Table III:

Given, T = 4.55°C and S = 34.4.

From Table III (under S = 34.00 and T = 4.5)

Approximate $\delta(S,t,0)$	110.6
Temperature difference = 1.0.	
Salinity difference = −75.3.	
From Table IIIA (under T = .05 at difference of 1.0)	
Temperature interpolation correction	0.5
From Table IIIB (under difference of −75.3 at S = 0.40)	
Salinity interpolation correction (same sign as total salinity difference)	−30.0
$\delta(S,t,0)$ = (sum of above)	81.1

The table derived $\delta(S,t,0) = 81.1$ compares with a value of 80.05 by direct calculation.

The three tables beginning with Table IV provide corrections to Table III at higher pressures. Table IV contains a salinity of 35 and temperature equals 0°C specific volume V(35,0,p) referred to as a standard ocean which is used in equation 15 to calculate in situ specific volume.

The temperature-pressure correction to specific volume anomaly $\delta(35,t,p)$ minus $\delta(35,t,0)$ given in Table V is defined as:

$$\delta(35,t,p) - \delta(35,t,0) = [V(35,t,p) - V(35,0,p)] - [V(35,t,0) - V(35,0,0)] \qquad (13)$$

where the specific volume anomaly is obtained from the 1980 Equation of State using the modified coefficients of Fofonoff/Millard (Unesco, 1983). These modifications are for computational efficiency and accuracy and do not give results different from the numerical values obtained by using the full equations.

Similarly the salinity-pressure correction to specific volume anomaly $\delta(S,0,p)$ minus $\delta(S,0,0)$ given in Table VI is defined as

$$\delta(S,0,p) - \delta(S,0,0) = [V(S,0,p) - V(35,0,p)] - [V(S,0,0) - V(35,0,0)] \tag{14}$$

These corrections can be combined to estimate $V(S,t,p)$ and $\delta(S,t,p)$ according to the following equations

$$V(S,t,p) \approx \underset{\text{Table IV}}{V(35,0,p)} + \underset{\text{Table III}}{\delta(S,t,0)} + \underset{\text{Table V}}{\delta(35,t,p)} + \underset{\text{Table VI}}{\delta(S,0,p)} - \delta(35,t,0) - \delta(S,0,0) \quad m^3/kg \tag{15}$$

$$\delta(S,t,p) \approx \delta(S,t,0) + \delta(35,t,p) + \delta(S,0,p) - \delta(35,t,0) - \delta(S,0,0) \quad m^3/kg \tag{16}$$

This method of computation is generally attributed to Bjerknes and Sverdrup.

Derivative of Density with Temperature

Tables VII, and VIII a,b,c,d,e,f,g, and h give values of α, thermal expansion coefficient, for various pressures computed from the following explicit differentiation of the 1980 equation of state with respect to temperature. Alpha (α) is defined as the negative of the temperature derivative of density divided by density. The table values are given as $\alpha \cdot 10^7$ to avoid having to report a decimal point. The constants that follow are modified from the constants given in Millero and Poisson (1981a) to permit the computation of the temperature derivative of density ($\partial\rho/\partial t$) as a function of temperature, salinity and pressure.

$$\alpha = -\frac{\partial\rho}{\rho\partial t} \tag{17}$$

$$\frac{\partial\rho(S,t,0)}{\partial t} = \frac{\partial\rho_w}{\partial t} + (b_1 + b_2t + b_3t^2 + b_4t^3)\ S + (c_1^1 + c_2^2t)\ S^{3/2} \tag{18}$$

b_1 = − 4.0899 E−3 b_3 = − 2.47401 E−6

b_2 = + 1.52876 E−4 b_4 = + 2.155 E−8

c_1 = + 1.0227 E−4 c_2 = − 3.3092 E−6

The derivative with temperature of the density of reference pure water is (SMOW, Craig, 1961) following (IUPAC, 1976)

$$\frac{\partial \rho_w}{\partial t} = a_1 + a_2 t + a_3 t^2 + a_4 t^3 + a_5 t^4 \qquad (19)$$

where

a_1 = + 6.793952 E−2 a_3 = + 3.005055 E−4

a_2 = − 1.819058 E−2 a_4 = − 4.480332 E−6

a_5 = + 3.268166 E−8

$$\frac{\partial K(S,t,p)}{\partial t} = \frac{\partial K(S,t,0)}{\partial t} + \frac{\partial A}{\partial t} p + \frac{\partial B}{\partial t} p^2 \qquad (20)$$

where

$$\frac{\partial K(S,t,0)}{\partial t} = \frac{\partial K_w}{\partial t} + (f_1 + f_2 t + f_3 t^2)S + (g_1 + g_2 t)S^{3/2} \qquad (21)$$

f_1 = − 0.603459 g_1 = + 1.6483 E−2

f_2 = + 2.19974 E−2 g_2 = − 1.06018 E−3

f_3 = − 1.8501 E−4

and

$$\frac{\partial A}{\partial t} = \frac{\partial A_w}{\partial t} + (i_1 + i_2 t)S \qquad (22)$$

$i_1 = -1.0981 \text{ E-5}$

$i_2 = -3.2156 \text{ E-6}$

$$\frac{\partial B}{\partial t} = \frac{\partial B_w}{\partial t} + (m_1 + m_2 t)S \tag{23}$$

$m_1 = +2.0816 \text{ E-8}$

$m_2 = +1.83394 \text{ E-9}$

The temperature derivative of the pure water terms of the secant bulk modulus are given by

$$\frac{\partial K_w}{\partial t} = e_1 + e_2 t + e_3 t^2 + e_4 t^3 \tag{24}$$

$e_1 = +148.4206$ $e_3 = +4.081431 \text{ E-2}$

$e_2 = -4.65421$ $e_4 = -2.0621152 \text{ E-4}$

$$\frac{\partial A_w}{\partial t} = h_1 + h_2 t + h_3 t^2$$

$h_1 = +1.43713 \text{ E-3}$

$h_2 = +2.32184 \text{ E-4}$

$h_3 = -1.733715 \text{ E-6}$

$$\frac{\partial B_w}{\partial t} = k_1 + k_2 t$$

$k_1 = -6.12293 \text{ E-6}$

$k_2 = +1.05574 \text{ E-7}$

Example of interpolation of the derivative of density with temperature, using Tables VII-VIII. The interpolation technique also follows for Tables IX through XVII less Table XV.

$10^7 \cdot \alpha$ Interpolation

$p = 5500$	$p_1 = 5000$	$p_2 = 6000$	$\Delta p = p - p_1 = 500$
$t = 1.6$	$t_1 = 1.0$	$t_2 = 2.0$	$\Delta t = t - t_1 = .6$
$S = 34.8$	$S_1 = 34.0$	$S_2 = 35.0$	$\Delta S = S - S_1 = .8$

The following subscript notation is used:

$$\alpha(S_1, t_1, p_1) = \alpha_{111}$$

From Table VIII

$$\alpha_{111} = \alpha(34.0, 1.0, 5000) = 1810$$
$$\alpha_{211} = \alpha(35.0, 1.0, 5000) = 1830$$
$$\alpha_{221} = \alpha(35.0, 2.0, 5000) = 1907$$
$$\alpha_{112} = \alpha(34.0, 1.0, 6000) = 2007$$
$$\alpha_{212} = \alpha(35.0, 1.0, 6000) = 2025$$
$$\alpha_{222} = \alpha(35.0, 2.0, 6000) = 2094$$

$$\alpha(S,t,5000) = \alpha_{111} + \frac{(\alpha_{211} - \alpha_{111})}{(S_2 - S_1)} * \Delta S + \frac{(\alpha_{221} - \alpha_{211})}{(t_2 - t_1)} * \Delta t$$

$$= 1830 + \overbrace{20 * .8}^{16} + \overbrace{77 * .6}^{46.2}$$

$= 1872.2$ table vs. 1872.5 [direct computation]

$$\alpha(S,t,6000) = \alpha_{112} + \frac{(\alpha_{212} - \alpha_{112})}{(S_2 - S_1)} * \Delta S + \frac{(\alpha_{222} - \alpha_{212})}{(t_2 - t_1)} * \Delta t$$

$$= 2007 + \overbrace{(2025-2007)}^{18} *.8 + \overbrace{(2094-2025)}^{69} *.6$$

$$2007 + 14.4 + 41.4$$

$$= 2062.8 \quad \text{table} \quad [2063.4 \text{ by direct computation}]$$

Note: $t_2-t_1 = 1°C$ and $S_2-S_1 = 1$ for this example, but S_2-S_1 will equal 5 for S less than 30.0 in all tables.

$$\alpha(S,t,p) = \alpha(S,t,p_1) + \frac{\alpha(S,t,p_2) - \alpha(S,t,p_1)}{p_2 - p_1} * \Delta p$$

$$= 1872.2 + \frac{\overbrace{(2062.8 - 1872.2)}^{190.6}}{\underbrace{(6000 - 5000)}_{1000}} * 500$$

$$= 1872.2 + 95.3$$

$$= 1967.5 \quad \text{table} \quad [1969.5 \text{ by direct computation}]$$

Derivative of Density with Salinity

Tables IX and X a,b,c,d,e,f,g, and h give β values, the salinity contraction coefficient, as a function of temperature and salinity for various pressures. Beta (β) is defined as the derivative of density with salinity ($\partial\rho/\partial S$) divided by density. The values given in Tables IX and X are reported as $10^7 \cdot \beta$. The constants that follow are modified from the constants given in Millero and Poisson (1981a) to permit the computation of ($\partial\rho/\partial S$) as a function of temperature, salinity, and pressure.

$$\beta = \frac{1}{\rho}\frac{\partial\rho}{\partial S} \tag{25}$$

$$\frac{\partial\rho(S,t,0)}{\partial S} = (b_0 + b_1 t + b_2 t^2 + b_3 t^3 + b_4 t^4) + 1.5\,(c_0 + c_1 t + c_2 t^2) S^{1/2} + d_0 S \tag{26}$$

$b_0 = + 8.24493E-1$ $c_0 = - 5.72466E-3$

$b_1 = - 4.0899\ E-3$ $c_1 = + 1.0227\ E-4$

$b_2 = + 7.6438\ E-5$ $c_2 = - 1.6546\ E-6$

$b_3 = - 8.2467\ E-7$

$b_4 = + 5.3875\ E-9$ $d_0 = + 9.6628\ E-4$

$$\frac{\partial K(S,t,p)}{\partial S} = \frac{\partial K(S,t,0)}{\partial S} + Ap + Bp^2 \quad (27)$$

where

$$\frac{\partial K(S,t,0)}{\partial S} = (f_0 + f_1 t + f_2 t^2 + f_2 t^3) + 1.5\ (g_0 + g_1 t + g_2 t^2) S^{1/2} \quad (28)$$

$f_0 = + 54.6746$ $g_0 = + 7.944\ E-2$

$f_1 = - 0.603459$ $g_1 = + 1.6483\ E-2$

$f_2 = + 1.09987\ E-2$ $g_2 = - 5.3009\ E-4$

$f_3 = - 6.1670\ E-5$

$$\frac{\partial A}{\partial S} = (i_0 + i_1 t + i_2 t^2) + j_0\ S^{1/2} \quad (29)$$

$i_0 = + 2.2838\ E-3$ $j_0 = + 2.866125\ E-4$

$i_1 = - 1.0981\ E-5$

$i_2 = - 1.6078\ E-6$

and

$$\frac{\partial B}{\partial S} = (m_0 + m_1 t + m_2 t^2) \quad (30)$$

$m_0 = - 9.9348\ E-7$

$$m_1 = + 2.0816\ E{-}8$$

$$m_2 = + 9.1697\ E{-}10$$

Density Derivative with Pressure

Tables XI and XIIa and b contain values of the isothermal compressibility coefficient (k), which is defined as the derivative of density with pressure divided by density reported in the tables as $k \cdot 10^7$. The isothermal compressibility derivative $\partial\rho/\partial p$ is derived as follows from the specific volume Equation 2.

$$k = \frac{1}{\rho}\frac{\partial\rho}{\partial p} = -\frac{1}{V}\frac{\partial V}{\partial p} \tag{31}$$

$$\frac{\partial}{\partial p} V(S,t,p) = \frac{\partial}{\partial p}\left[V(S,t,0)\cdot\left[1 - \frac{p}{K(S,t,p)}\right]\right]$$

$$= V(S,t,0)\cdot\left[-\frac{1}{K(S,t,p)} + \frac{p}{K^2(S,t,p)}\frac{\partial K(S,t,p)}{\partial p}\right]$$

$$= -\frac{V(S,t,0)}{K(S,t,p)}\cdot\left[1 - \frac{p}{K(S,t,p)}\frac{\partial K(S,t,p)}{\partial p}\right] \tag{32}$$

where the derivative of the secant bulk modulus K(S,t,p) is obtained by differentiating Equation (5) with respect to pressure to yield:

$$\frac{\partial K(S,t,p)}{\partial p} = A + 2B\cdot p \tag{33}$$

The density derivative is obtained from specific volume as follows:

$$\rho(S,t,p) = 1/V(S,t,p)$$

$$\frac{\partial\rho(S,t,p)}{\partial p} = -\frac{1}{V^2(S,t,p)}\frac{\partial V(S,t,p)}{\partial p} \tag{34}$$

Thus

$$\frac{\partial\rho(S,t,p)}{\partial p} = \frac{V(S,t,0)}{k(S,t,p)V(S,t,p)^2}\left[1 - \frac{p}{k(S,t,p)}\frac{\partial K(S,t,p)}{\partial p}\right] \tag{35}$$

Isopycnal Derivative

Values of the isopycnal derivative at various temperatures, salinities and pressures are given in Tables XIII and XIV a, b, c, d, e, f, g, and h. The isopycnal derivative $(\partial S/\partial t)_\rho$ is obtained by dividing the negative of the thermal derivative of density by the salinity derivative of density where both quantities are as derived previously for Tables VII through X.

$$\left(\frac{\partial S}{\partial t}\right)_\rho = - \frac{\partial \rho/\partial t}{\partial \rho/\partial S} \tag{36}$$

Specific Heat of Seawater

Specific heat of seawater C_p (J/(kg°C)), defined to be the heat in Joules required to raise the temperature of one kilogram of seawater one degree Celsius at constant pressure, is a function of salinity S, temperature t and pressure p. For seawater of oceanic salinities, the specific heat increases with temperature and decreases with salinity and pressure.

Table XV was computed using the specific heat C_p formula described by Fofonoff and Millard (Unesco, 1983) which is based on the empirical formula given by Millero et al. (Unesco, 1981c). The choice is guided by the better agreement between Millero and Bromley's results at low temperature and by their use of Standard Seawater for the measurements.

Direct measurements of the pressure dependence of the specific heat of seawater are not available. The pressure dependence is computed from the thermodynamic equation

$$\frac{\partial C_p}{\partial p} = -T \frac{\partial^2 V}{\partial t^2} \tag{37}$$

where V is specific volume (m^3/kg), T absolute temperature (K) and p pressure (P_a). For pressure in bars, the equation can be integrated to yield

$$C_p(S,t,p) = C_p(S,t,0) - 10^5 \int_o^p (t + 273.15) \frac{\partial^2 V}{\partial t^2} dp . \tag{38}$$

An explicit least squares fit approximation to the integral is given in Fofonoff and Millard (Unesco, 1983). Table XV lists the specific heat for a number of values of salinity, temperature and pressure of oceanographic interest.

Adiabatic Lapse Rate

The adiabatic lapse rate $\Gamma(S,t,p)$ (°C/decibar) is defined as the change of temperature per unit pressure for an adiabatic change of pressure of an element of seawater. It is assumed that no heat or salt is exchanged with the surroundings so that the pressure change is both adiabatic and isentropic. From thermodynamic considerations, the adiabatic lapse rate Γ, a function of pressure, temperature and salinity can be expressed as

$$\Gamma(S,t,p) = \frac{T \partial V/\partial t}{C_p} \tag{39}$$

where $T = t + 273.15$ is the absolute temperature (Kelvin), $\partial V/\partial t$ (m^3/(kg °C)) is the thermal expansion and C_p (J/(kg °C)) is the specific heat of seawater at constant pressure.

Tables XVI and XVII use the adiabatic lapse rate formulation described in equation 39. The derivative of specific volume is obtained from the 1980 EOS and outlined in the earlier section titled Derivative of Density with Temperature on page 104. The conversion of the density derivative to the specific volume derivative is

$$\frac{1}{\rho} \frac{\partial \rho(S,t,p)}{\partial t} = -\frac{1}{v} \frac{\partial v}{\partial t} \tag{40}$$

The specific heat C_p used in the adiabatic lapse rate calculation is the explicit formulation developed in Fofonoff and Millard (1983). The primitive equation formulation is adapted to permit calculations consistent with EOS80 as the Bryden (1973) adiabatic lapse rate produces significant departures from EOS80 at salinities below 30.

Potential Temperature

Potential temperature has been defined classically as the temperature an element of seawater would have if raised adiabatically with no change of salinity to atmospheric pressure. More generally, the potential temperature can be defined as the temperature resulting from an adiabatic displacement to a reference pressure p_r that may be greater or less than the initial pressure p. The potential temperature θ can be computed from the adiabatic lapse rate Γ,

$$\theta(S,t,p,p_r) = t + \int_p^{p_r} \Gamma(S,t,p')\, dp' \qquad (41)$$

as described by Fofonoff and Millard (Unesco, 1983). Tables XVIII, XIX, XX, and XXI allow the adiabatic adjustment of temperature between pressure surfaces as shown in the example which follows.

Table XVIII gives the potential temperature for a parcel of water of salinity equal 35 raised adiabatically to the sea surface. The values of potential temperature $\theta(35,t,p,0)$ are tabulated with temperature in °C and pressure in decibars.

Table XIX gives a correction to potential temperature at 0°C for salinities different than 35. The Table XIX values are defined:

$$\Delta\theta_1(S,0,p,0) = \theta(S,0,p,0) - \theta(35,0,p,0) \qquad (42)$$

This table yields exact results for temperature equal 0°C but is progressively more erroneous at temperatures other than zero.

Table XX further corrects potential temperature at temperatures other than 0°C,

$$\begin{aligned}\Delta\theta_2(S,t,10000,0) = {} & \theta(S,t,10000,0) - \theta(35,t,10000,0) \\ & - [\theta(S,0,10000,0) - \theta(35,0,10000,0)] \;. \end{aligned} \qquad (43)$$

This correction must be scaled by pressure as shown in equation 44 before applying.

The complete correction formula for the potential temperature raised adiabatically from pressure (p) to the surface is:

$$\theta(S,t,p,0) = \theta(35,t,p,0) + \Delta\theta_1(S,0,p,0) + \frac{p}{10000} \cdot \Delta\theta_2(S,t,10000,0) \quad (44)$$

Table XXI gives the potential temperature for a water parcel of salinity equal 35 lowered adiabatically from the surface to pressure level p. The values of potential temperature $\theta(35,t,0,p)$ are tabulated for temperature (t) °C and pressure (p) in decibars.

$$\theta(S,t,0,p) = \theta(35,t,0,p) - \Delta\theta_1(S,0,p,0) - \frac{p}{10000} \cdot \Delta\theta_2(S,t,10000,0) \quad (45)$$

Note the change of sign for both $\Delta\theta$ corrections from equation (44).

Example:

$S = 38, \quad t = 13, \quad p = 4000 \quad p_r = 0.0$

$\theta(35,13,4000,0) = 12.377$	Table XVIII
$\Delta\theta_1(38,0,4000,0) = -.020$	Table XIX
$\Delta\theta_2(38,13,10000,0) = +.010$	Table XX

Substituting in equation (44)

$$\theta(38,13,4000,0) = 12.377 - .020 + \frac{4000}{10000} \quad .010$$

$$\theta(38,13,4000,0) = 12.361 \text{ °C} \quad [12.363 \text{ direct calculation}]$$

The potential temperature tables can be used to adiabatically adjust the temperature t between pressure p and final pressure p_f. If pressure is increasing, use the adiabatic warming Table XXI.

$$\theta(S,t,p,p_f) = t - [\theta(35,t,0,p) - \theta(35,t,0,p_f)] \quad (46)$$

For the adiabatic cooling case, use the potential temperature $\theta(35,t,p,0)$ values of Table XVIII in equation (45). The general adiabatic adjustment formula between two pressure surfaces for the adiabatic warming is:

$$\theta(S,t,p,p_f) = t - [\theta(S,t,0,p) - \theta(S,t,0,p_f)] \quad (47)$$

Example: adiabatic warming from pressure level p to p_f.

$S = 33$, $t = 3°C$, $p = 3000$ dbars, $p_f = 6000$ dbars

$\theta(35,3,0,3000) = 3.257$; $\theta(35,3,0,6000) = 3.647$

$\Delta\theta_1(33,0,3000,0) = + 0.01$; $\theta(33,0,6000,0) = + 0.18$

$\Delta\theta_2(33,3.0,10000,0) = - 0.002$

Using equation (46)

$$\theta(33,3,0,3000) = 3.257 - .01 + .002 \left(\frac{3000}{10000}\right)$$

$$= 3.2476 \text{ °C} \quad [3.2469]$$

$$\theta(33,3,0,6000) = 3.647 - 0.18 + .002 * \frac{6000}{10000}$$

$$= 3.630 \text{ °C} \quad [3.6296 \text{ direct calculation}]$$

Using equation (47)

$$\theta(33,3,3000,6000) = 3 - (3.248 - 3.630)$$

$$= 3.382 \text{ °C} \quad [3.3784 \text{ °C direct calculation}]$$

Freezing Point Temperature of Seawater

A formula for computing freezing point temperatures of seawater was proposed by Millero (Millero and Leung, 1976) based on measurements by Doherty and Kester (1974) and Fujino, Lewis and Perkin (1974) for the pressure effect and adopted by the Joint Panel on Oceanographic Tables and Standards (Annex 6 in Unesco, 1978). Table XXII gives freezing point temperatures as a function of salinity and pressure.

Sound Speed in Seawater

Sound speed has been measured for samples of standard seawater, diluted with pure water or concentrated by evaporation, by Chen and Millero (1977). The formula developed from these measurements is consistent with the new salinity scale and is in better agreement with values computed from EOS80 than the formulas given by Wilson (1960) and Del Grosso and Mader (1972). Table XXIII gives the speed of sound in seawater as a function of temperature and salinity at various pressure levels.

Pressure to Depth Conversion

Saunders and Fofonoff (1976) developed an accurate formula for pressure to depth conversion using the hydrostatic equation and the Knudsen-Ekman equation of state. The formula included variation of gravity with latitude and depth. Depths estimated using the Saunders-Fofonoff formula deviate by only 0.08 m at 5000 decibars and by 0.44 m at 10000 decibars from estimates based on EOS80. However, for consistency, a new formula based on EOS80 is used to compute values in Table XXIV. The formulation described by Fofonoff and Millard (Unesco, 1983) is accurate to 0.1 m over the pressure range 0 - 10000 decibars. Table XXIV contains depth values in meters as a function of pressure in decibars and latitude in degrees.

Density to Salinity Conversion

If the salinity is required, the density algorithm can be inverted numerically by an iterative computation. Given density ρ, pressure, and temperature t, the salinity S is found by inverting formula (48).

$$\rho = \rho(S,t,p) \quad . \tag{48}$$

If a value S_n is known, the corresponding value of ρ_n is found from (48). As ρ_n will differ from ρ, a better approximation S_{n+1} is obtained from the Taylor expansion of (48),

$$\rho - \rho_n = \frac{\partial \rho}{\partial S} (S_{n+1} - S_n)$$

i.e.,

$$S_{n+1} = S_n + (\rho - \rho_n)/\partial\rho/\partial S \quad . \tag{49}$$

This procedure is the standard Newton-Raphson iteration if the derivative $\partial\rho/\partial S$ is evaluated directly by differentiating the formula for ρ, as discussed for Tables IX and X. The numerical evaluation procedure is carried out iteratively until the absolute value of S_{n+1} differs from S_n within a specified tolerance. A similar formula can be used to obtain salinity from specific volume anomaly. Tables XXV-XXVII were derived using this method with a tolerance of S = .0001 used as a convergence criterion. Tables XXV through XXVIII gives values of salinity with temperature for various specific volume anomaly values (XXV) and density anomaly values (XVI to XVIII) values in the oceanographic range. These tables are meant to be used to create lines of constant density on T-S diagrams.

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APPENDIX I

Another definition of a specific volume anomaly in addition to δ is

$$v(S,t,p) = (10^3 V(S,t,p) - 0.9)\ 10^3,\ m^3/kg$$

or

$$v(S,t,p) = 10^6 V(S,t,p) - 900$$

where V(S,t,p) is the 1980 equation of state definition of specific volume as given in equation (2). It is simply the specific volume times 10^6 minus 900 (in units of m^3/kg). This anomaly is referred to as the anomaly of specific volume in this text to distinquish it from δ and is used simply to reduce the number of digits. It originates from O. Sund, was introduced into the practice of dynamical computations by N. N. Zubov and is exclusively used in the Soviet oceanographic practice (reported in scientific publications, data banks, etc.).

The anomalies γ, v and δ are interrelated by the following formulas

$$v(S,t,p) = \frac{10^6}{\gamma(S,t,p) + 10^3} - 900$$ given in Table XXVII for p = 0.0

$$\gamma(S,t,p) = \frac{10^6}{v(S,t,p) + 900} - 10^3$$ given in Table XXVIII for p = 0.0

$$v(S,t,p) = (\delta(S,t,p) + 0.7266204)10^3$$

The conversion of γ into δ (at atmospheric pressure) is given by Table II; Tables XXVIII and XXIX convert γ into v and vice-versa; Table XXX is similar to Tables XXIV and XXVI and is intended for plotting isosteres on the T-S diagram.

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Table I

Density anomaly $\gamma(S,t,0)$ [kg/m^3] at atmospheric pressure

Temp. °C	Salinity 30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	24.119	24.932	25.745	26.559	27.373	28.187	29.001	29.815	30.630	31.445	32.260
−1.9	24.118	24.931	25.744	26.557	27.370	28.184	28.998	29.812	30.626	31.441	32.256
−1.8	24.116	24.929	25.742	26.555	27.368	28.181	28.995	29.809	30.623	31.437	32.251
−1.7	24.115	24.927	25.740	26.552	27.365	28.178	28.991	29.805	30.619	31.433	32.247
−1.6	24.114	24.926	25.738	26.550	27.363	28.175	28.988	29.801	30.614	31.428	32.242
−1.5	24.112	24.924	25.736	26.547	27.360	28.172	28.984	29.797	30.610	31.423	32.237
−1.4	24.111	24.922	25.733	26.545	27.357	28.169	28.981	29.793	30.606	31.419	32.232
−1.3	24.109	24.920	25.731	26.542	27.353	28.165	28.977	29.789	30.601	31.414	32.227
−1.2	24.107	24.917	25.728	26.539	27.350	28.161	28.973	29.785	30.597	31.409	32.221
−1.1	24.105	24.915	25.725	26.536	27.347	28.157	28.969	29.780	30.592	31.404	32.216
−1.0	24.102	24.912	25.722	26.532	27.343	28.154	28.964	29.776	30.587	31.398	32.210
−0.9	24.100	24.909	25.719	26.529	27.339	28.149	28.960	29.771	30.582	31.393	32.205
−0.8	24.097	24.907	25.716	26.525	27.335	28.145	28.955	29.766	30.577	31.388	32.199
−0.7	24.095	24.903	25.712	26.522	27.331	28.141	28.951	29.761	30.571	31.382	32.193
−0.6	24.092	24.900	25.709	26.518	27.327	28.136	28.946	29.756	30.566	31.376	32.187
−0.5	24.089	24.897	25.705	26.514	27.323	28.132	28.941	29.750	30.560	31.370	32.180
−0.4	24.086	24.893	25.701	26.510	27.318	28.127	28.936	29.745	30.554	31.364	32.174
−0.3	24.082	24.890	25.698	26.505	27.314	28.122	28.931	29.739	30.548	31.358	32.167
−0.2	24.079	24.886	25.693	26.501	27.309	28.117	28.925	29.734	30.542	31.351	32.161
−0.1	24.075	24.882	25.689	26.496	27.304	28.112	28.920	29.728	30.536	31.345	32.154
0.0	24.072	24.878	25.685	26.492	27.299	28.106	28.914	29.722	30.530	31.338	32.147
0.1	24.068	24.874	25.680	26.487	27.294	28.101	28.908	29.716	30.524	31.332	32.140
0.2	24.064	24.870	25.676	26.482	27.288	28.095	28.902	29.710	30.517	31.325	32.133
0.3	24.060	24.865	25.671	26.477	27.283	28.090	28.896	29.703	30.510	31.318	32.126
0.4	24.055	24.860	25.666	26.472	27.278	28.084	28.890	29.697	30.504	31.311	32.118
0.5	24.051	24.856	25.661	26.466	27.272	28.078	28.884	29.690	30.497	31.303	32.111
0.6	24.046	24.851	25.656	26.461	27.266	28.071	28.877	29.683	30.490	31.296	32.103
0.7	24.042	24.846	25.650	26.455	27.260	28.065	28.871	29.676	30.482	31.289	32.095
0.8	24.037	24.841	25.645	26.449	27.254	28.059	28.864	29.669	30.475	31.281	32.087
0.9	24.032	24.835	25.639	26.443	27.248	28.052	28.857	29.662	30.468	31.273	32.079
1.0	24.027	24.830	25.634	26.437	27.241	28.046	28.850	29.655	30.460	31.265	32.071
1.1	24.021	24.824	25.628	26.431	27.235	28.039	28.843	29.648	30.452	31.257	32.063
1.2	24.016	24.819	25.622	26.425	27.228	28.032	28.836	29.640	30.444	31.249	32.054
1.3	24.010	24.813	25.615	26.418	27.221	28.025	28.828	29.632	30.436	31.241	32.046
1.4	24.005	24.807	25.609	26.412	27.215	28.018	28.821	29.625	30.428	31.232	32.037
1.5	23.999	24.801	25.603	26.405	27.208	28.010	28.813	29.617	30.420	31.224	32.028
1.6	23.993	24.795	25.596	26.398	27.200	28.003	28.806	29.609	30.412	31.215	32.019
1.7	23.987	24.788	25.590	26.391	27.193	27.995	28.798	29.600	30.403	31.207	32.010
1.8	23.981	24.782	25.583	26.384	27.186	27.988	28.790	29.592	30.395	31.198	32.001
1.9	23.974	24.775	25.576	26.377	27.178	27.980	28.782	29.584	30.386	31.189	31.992
2.0	23.968	24.768	25.569	26.370	27.171	27.972	28.773	29.575	30.377	31.180	31.982
2.1	23.961	24.761	25.562	26.362	27.163	27.964	28.765	29.566	30.368	31.170	31.973
2.2	23.955	24.754	25.554	26.354	27.155	27.955	28.756	29.558	30.359	31.161	31.963
2.3	23.948	24.747	25.547	26.347	27.147	27.947	28.748	29.549	30.350	31.151	31.953
2.4	23.941	24.740	25.539	26.339	27.139	27.939	28.739	29.540	30.341	31.142	31.943
2.5	23.934	24.732	25.531	26.331	27.130	27.930	28.730	29.530	30.331	31.132	31.933
2.6	23.926	24.725	25.524	26.323	27.122	27.921	28.721	29.521	30.322	31.122	31.923
2.7	23.919	24.717	25.516	26.314	27.113	27.913	28.712	29.512	30.312	31.112	31.913
2.8	23.911	24.709	25.508	26.306	27.105	27.904	28.703	29.502	30.302	31.102	31.903
2.9	23.904	24.701	25.499	26.297	27.096	27.894	28.693	29.493	30.292	31.092	31.892
3.0	23.896	24.693	25.491	26.289	27.087	27.885	28.684	29.483	30.282	31.082	31.881
3.1	23.888	24.685	25.482	26.280	27.078	27.876	28.674	29.473	30.272	31.071	31.871
3.2	23.880	24.677	25.474	26.271	27.069	27.866	28.665	29.463	30.262	31.061	31.860
3.3	23.872	24.668	25.465	26.262	27.059	27.857	28.655	29.453	30.251	31.050	31.849
3.4	23.864	24.660	25.456	26.253	27.050	27.847	28.645	29.442	30.241	31.039	31.838

Table I (cont.)

Density anomaly $\gamma(S,t,0)$ [kg/m³] at atmospheric pressure

Temp. °C	Salinity 30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
3.5----	23.855	24.651	25.447	26.244	27.040	27.837	28.635	29.432	30.230	31.028	31.827
3.6----	23.847	24.642	25.438	26.234	27.031	27.827	28.624	29.422	30.219	31.017	31.815
3.7----	23.838	24.633	25.429	26.225	27.021	27.817	28.614	29.411	30.208	31.006	31.804
3.8----	23.829	24.624	25.420	26.215	27.011	27.807	28.604	29.400	30.197	30.995	31.792
3.9----	23.820	24.615	25.410	26.205	27.001	27.797	28.593	29.389	30.186	30.983	31.781
4.0----	23.811	24.606	25.400	26.195	26.991	27.786	28.582	29.378	30.175	30.972	31.769
4.1----	23.802	24.596	25.391	26.185	26.980	27.776	28.571	29.367	30.163	30.960	31.757
4.2----	23.793	24.587	25.381	26.175	26.970	27.765	28.560	29.356	30.152	30.948	31.745
4.3----	23.783	24.577	25.371	26.165	26.960	27.754	28.549	29.345	30.140	30.936	31.733
4.4----	23.774	24.567	25.361	26.155	26.949	27.743	28.538	29.333	30.129	30.924	31.720
4.5----	23.764	24.557	25.351	26.144	26.938	27.732	28.527	29.322	30.117	30.912	31.708
4.6----	23.754	24.547	25.340	26.134	26.927	27.721	28.515	29.310	30.105	30.900	31.696
4.7----	23.744	24.537	25.330	26.123	26.916	27.710	28.504	29.298	30.093	30.888	31.683
4.8----	23.734	24.527	25.319	26.112	26.905	27.699	28.492	29.286	30.081	30.875	31.670
4.9----	23.724	24.516	25.308	26.101	26.894	27.687	28.481	29.274	30.068	30.863	31.658
5.0----	23.714	24.506	25.298	26.090	26.883	27.675	28.469	29.262	30.056	30.850	31.645
5.1----	23.703	24.495	25.287	26.079	26.871	27.664	28.457	29.250	30.043	30.837	31.632
5.2----	23.693	24.484	25.276	26.067	26.860	27.652	28.445	29.238	30.031	30.824	31.618
5.3----	23.682	24.473	25.264	26.056	26.848	27.640	28.432	29.225	30.018	30.811	31.605
5.4----	23.671	24.462	25.253	26.044	26.836	27.628	28.420	29.212	30.005	30.798	31.592
5.5----	23.661	24.451	25.242	26.033	26.824	27.616	28.408	29.200	29.992	30.785	31.578
5.6----	23.650	24.440	25.230	26.021	26.812	27.603	28.395	29.187	29.979	30.772	31.565
5.7----	23.638	24.428	25.219	26.009	26.800	27.591	28.382	29.174	29.966	30.758	31.551
5.8----	23.627	24.417	25.207	25.997	26.788	27.578	28.369	29.161	29.953	30.745	31.537
5.9----	23.616	24.405	25.195	25.985	26.775	27.566	28.357	29.148	29.939	30.731	31.523
6.0----	23.604	24.393	25.183	25.973	26.763	27.553	28.344	29.135	29.926	30.717	31.509
6.1----	23.593	24.382	25.171	25.960	26.750	27.540	28.330	29.121	29.912	30.704	31.495
6.2----	23.581	24.370	25.159	25.948	26.737	27.527	28.317	29.108	29.898	30.690	31.481
6.3----	23.569	24.358	25.146	25.935	26.724	27.514	28.304	29.094	29.885	30.675	31.467
6.4----	23.557	24.345	25.134	25.922	26.711	27.501	28.290	29.080	29.871	30.661	31.452
6.5----	23.545	24.333	25.121	25.910	26.698	27.487	28.277	29.066	29.857	30.647	31.438
6.6----	23.533	24.321	25.108	25.897	26.685	27.474	28.263	29.053	29.842	30.632	31.423
6.7----	23.521	24.308	25.096	25.884	26.672	27.460	28.249	29.039	29.828	30.618	31.408
6.8----	23.508	24.295	25.083	25.870	26.658	27.447	28.235	29.024	29.814	30.603	31.393
6.9----	23.496	24.282	25.070	25.857	26.645	27.433	28.221	29.010	29.799	30.589	31.378
7.0----	23.483	24.270	25.057	25.844	26.631	27.419	28.207	28.996	29.785	30.574	31.363
7.1----	23.470	24.257	25.043	25.830	26.617	27.405	28.193	28.981	29.770	30.559	31.348
7.2----	23.457	24.243	25.030	25.817	26.604	27.391	28.179	28.967	29.755	30.544	31.333
7.3----	23.444	24.230	25.016	25.803	26.590	27.377	28.164	28.952	29.740	30.529	31.317
7.4----	23.431	24.217	25.003	25.789	26.576	27.362	28.150	28.937	29.725	30.513	31.302
7.5----	23.418	24.203	24.989	25.775	26.561	27.348	28.135	28.922	29.710	30.498	31.286
7.6----	23.405	24.190	24.975	25.761	26.547	27.333	28.120	28.907	29.695	30.482	31.270
7.7----	23.391	24.176	24.961	25.747	26.533	27.319	28.105	28.892	29.679	30.467	31.255
7.8----	23.378	24.162	24.947	25.733	26.518	27.304	28.090	28.877	29.664	30.451	31.239
7.9----	23.364	24.148	24.933	25.718	26.503	27.289	28.075	28.862	29.648	30.435	31.223
8.0----	23.350	24.134	24.919	25.704	26.489	27.274	28.060	28.846	29.633	30.419	31.207
8.1----	23.336	24.120	24.904	25.689	26.474	27.259	28.045	28.831	29.617	30.403	31.190
8.2----	23.322	24.106	24.890	25.674	26.459	27.244	28.029	28.815	29.601	30.387	31.174
8.3----	23.308	24.092	24.875	25.659	26.444	27.229	28.014	28.799	29.585	30.371	31.157
8.4----	23.294	24.077	24.861	25.645	26.429	27.213	27.998	28.783	29.569	30.355	31.141
8.5----	23.279	24.062	24.846	25.629	26.413	27.198	27.982	28.767	29.553	30.338	31.124
8.6----	23.265	24.048	24.831	25.614	26.398	27.182	27.966	28.751	29.536	30.322	31.108
8.7----	23.250	24.033	24.816	25.599	26.383	27.166	27.951	28.735	29.520	30.305	31.091
8.8----	23.236	24.018	24.801	25.584	26.367	27.151	27.934	28.719	29.503	30.288	31.074
8.9----	23.221	24.003	24.785	25.568	26.351	27.135	27.918	28.702	29.487	30.272	31.057

Table I (cont.)

Density anomaly $\gamma(S,t,0)$ [kg/m^3] at atmospheric pressure

	Salinity										
Temp. °C	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
9.0----	23.206	23.988	24.770	25.553	26.335	27.119	27.902	28.686	29.470	30.255	31.040
9.1----	23.191	23.973	24.755	25.537	26.319	27.102	27.886	28.669	29.453	30.238	31.022
9.2----	23.176	23.957	24.739	25.521	26.303	27.086	27.869	28.653	29.436	30.220	31.005
9.3----	23.161	23.942	24.723	25.505	26.287	27.070	27.853	28.636	29.419	30.203	30.987
9.4----	23.145	23.926	24.708	25.489	26.271	27.053	27.836	28.619	29.402	30.186	30.970
9.5----	23.130	23.911	24.692	25.473	26.255	27.037	27.819	28.602	29.385	30.168	30.952
9.6----	23.114	23.895	24.676	25.457	26.238	27.020	27.802	28.585	29.368	30.151	30.934
9.7----	23.099	23.879	24.660	25.441	26.222	27.003	27.785	28.568	29.350	30.133	30.917
9.8----	23.083	23.863	24.643	25.424	26.205	26.986	27.768	28.550	29.333	30.115	30.899
9.9----	23.067	23.847	24.627	25.408	26.188	26.969	27.751	28.533	29.315	30.098	30.881
10.0----	23.051	23.831	24.611	25.391	26.171	26.952	27.734	28.515	29.297	30.080	30.862
10.1----	23.035	23.814	24.594	25.374	26.155	26.935	27.716	28.498	29.279	30.062	30.844
10.2----	23.019	23.798	24.578	25.357	26.137	26.918	27.699	28.480	29.262	30.043	30.826
10.3----	23.003	23.782	24.561	25.340	26.120	26.901	27.681	28.462	29.244	30.025	30.807
10.4----	22.986	23.765	24.544	25.323	26.103	26.883	27.663	28.444	29.225	30.007	30.789
10.5----	22.970	23.748	24.527	25.306	26.086	26.865	27.646	28.426	29.207	29.988	30.770
10.6----	22.953	23.731	24.510	25.289	26.068	26.848	27.628	28.408	29.189	29.970	30.751
10.7----	22.936	23.714	24.493	25.272	26.051	26.830	27.610	28.390	29.170	29.951	30.733
10.8----	22.919	23.697	24.476	25.254	26.033	26.812	27.592	28.372	29.152	29.933	30.714
10.9----	22.903	23.680	24.458	25.236	26.015	26.794	27.573	28.353	29.133	29.914	30.695
11.0----	22.886	23.663	24.441	25.219	25.997	26.776	27.555	28.335	29.115	29.895	30.675
11.1----	22.868	23.646	24.423	25.201	25.979	26.758	27.537	28.316	29.096	29.876	30.656
11.2----	22.851	23.628	24.406	25.183	25.961	26.740	27.518	28.297	29.077	29.857	30.637
11.3----	22.834	23.611	24.388	25.165	25.943	26.721	27.500	28.279	29.058	29.837	30.618
11.4----	22.816	23.593	24.370	25.147	25.925	26.703	27.481	28.260	29.039	29.818	30.598
11.5----	22.799	23.575	24.352	25.129	25.906	26.684	27.462	28.241	29.020	29.799	30.578
11.6----	22.781	23.557	24.334	25.111	25.888	26.665	27.443	28.222	29.000	29.779	30.559
11.7----	22.763	23.539	24.316	25.092	25.869	26.647	27.424	28.202	28.981	29.760	30.539
11.8----	22.746	23.521	24.297	25.074	25.851	26.628	27.405	28.183	28.961	29.740	30.519
11.9----	22.728	23.503	24.279	25.055	25.832	26.609	27.386	28.164	28.942	29.720	30.499
12.0----	22.710	23.485	24.261	25.037	25.813	26.590	27.367	28.144	28.922	29.700	30.479
12.1----	22.691	23.467	24.242	25.018	25.794	26.571	27.347	28.125	28.902	29.680	30.459
12.2----	22.673	23.448	24.223	24.999	25.775	26.551	27.328	28.105	28.882	29.660	30.438
12.3----	22.655	23.430	24.205	24.980	25.756	26.532	27.308	28.085	28.862	29.640	30.418
12.4----	22.636	23.411	24.186	24.961	25.736	26.512	27.289	28.065	28.842	29.620	30.398
12.5----	22.618	23.392	24.167	24.942	25.717	26.493	27.269	28.045	28.822	29.599	30.377
12.6----	22.599	23.373	24.148	24.922	25.698	26.473	27.249	28.025	28.802	29.579	30.356
12.7----	22.580	23.354	24.129	24.903	25.678	26.453	27.229	28.005	28.782	29.558	30.336
12.8----	22.561	23.335	24.109	24.884	25.658	26.434	27.209	27.985	28.761	29.538	30.315
12.9----	22.542	23.316	24.090	24.864	25.639	26.414	27.189	27.965	28.741	29.517	30.294
13.0----	22.523	23.297	24.070	24.844	25.619	26.394	27.169	27.944	28.720	29.496	30.273
13.1----	22.504	23.277	24.051	24.825	25.599	26.373	27.148	27.924	28.699	29.475	30.252
13.2----	22.485	23.258	24.031	24.805	25.579	26.353	27.128	27.903	28.678	29.454	30.231
13.3----	22.466	23.238	24.011	24.785	25.559	26.333	27.107	27.882	28.658	29.433	30.209
13.4----	22.446	23.219	23.992	24.765	25.538	26.312	27.087	27.861	28.637	29.412	30.188
13.5----	22.427	23.199	23.972	24.745	25.518	26.292	27.066	27.841	28.615	29.391	30.167
13.6----	22.407	23.179	23.952	24.724	25.498	26.271	27.045	27.820	28.594	29.369	30.145
13.7----	22.387	23.159	23.931	24.704	25.477	26.251	27.024	27.798	28.573	29.348	30.123
13.8----	22.367	23.139	23.911	24.684	25.457	26.230	27.003	27.777	28.552	29.326	30.102
13.9----	22.347	23.119	23.891	24.663	25.436	26.209	26.982	27.756	28.530	29.305	30.080
14.0----	22.327	23.099	23.870	24.643	25.415	26.188	26.961	27.735	28.509	29.283	30.058
14.1----	22.307	23.078	23.850	24.622	25.394	26.167	26.940	27.713	28.487	29.261	30.036
14.2----	22.287	23.058	23.829	24.601	25.373	26.146	26.918	27.692	28.465	29.239	30.014
14.3----	22.267	23.037	23.809	24.580	25.352	26.124	26.897	27.670	28.443	29.217	29.991
14.4----	22.246	23.017	23.788	24.559	25.331	26.103	26.875	27.648	28.421	29.195	29.969

Table I (cont.)

Density anomaly $\gamma(S,t,0)$ [kg/m^3] at atmospheric pressure

	Salinity										
Temp. °C	**30.0**	**31.0**	**32.0**	**33.0**	**34.0**	**35.0**	**36.0**	**37.0**	**38.0**	**39.0**	**40.0**
14.5----	22.226	22.996	23.767	24.538	25.310	26.081	26.854	27.626	28.399	29.173	29.947
14.6----	22.205	22.975	23.746	24.517	25.288	26.060	26.832	27.604	28.377	29.151	29.924
14.7----	22.184	22.954	23.725	24.496	25.267	26.038	26.810	27.582	28.355	29.128	29.902
14.8----	22.164	22.933	23.704	24.474	25.245	26.017	26.788	27.560	28.333	29.106	29.879
14.9----	22.143	22.912	23.682	24.453	25.224	25.995	26.766	27.538	28.310	29.083	29.856
15.0----	22.122	22.891	23.661	24.431	25.202	25.973	26.744	27.516	28.288	29.061	29.834
15.1----	22.101	22.870	23.640	24.410	25.180	25.951	26.722	27.493	28.265	29.038	29.811
15.2----	22.079	22.848	23.618	24.388	25.158	25.929	26.700	27.471	28.243	29.015	29.788
15.3----	22.058	22.827	23.596	24.366	25.136	25.906	26.677	27.448	28.220	28.992	29.765
15.4----	22.037	22.805	23.575	24.344	25.114	25.884	26.655	27.426	28.197	28.969	29.741
15.5----	22.015	22.784	23.553	24.322	25.092	25.862	26.632	27.403	28.174	28.946	29.718
15.6----	21.994	22.762	23.531	24.300	25.069	25.839	26.610	27.380	28.151	28.923	29.695
15.7----	21.972	22.740	23.509	24.278	25.047	25.817	26.587	27.357	28.128	28.900	29.671
15.8----	21.950	22.718	23.487	24.255	25.025	25.794	26.564	27.334	28.105	28.876	29.648
15.9----	21.928	22.696	23.464	24.233	25.002	25.771	26.541	27.311	28.082	28.853	29.624
16.0----	21.906	22.674	23.442	24.211	24.979	25.748	26.518	27.288	28.058	28.829	29.600
16.1----	21.884	22.652	23.420	24.188	24.957	25.726	26.495	27.265	28.035	28.806	29.577
16.2----	21.862	22.630	23.397	24.165	24.934	25.703	26.472	27.241	28.011	28.782	29.553
16.3----	21.840	22.607	23.375	24.143	24.911	25.679	26.449	27.218	27.988	28.758	29.529
16.4----	21.818	22.585	23.352	24.120	24.888	25.656	26.425	27.194	27.964	28.734	29.505
16.5----	21.795	22.562	23.329	24.097	24.865	25.633	26.402	27.171	27.940	28.710	29.481
16.6----	21.773	22.539	23.306	24.074	24.841	25.610	26.378	27.147	27.916	28.686	29.456
16.7----	21.750	22.517	23.283	24.051	24.818	25.586	26.355	27.123	27.892	28.662	29.432
16.8----	21.727	22.494	23.260	24.027	24.795	25.563	26.331	27.099	27.868	28.638	29.408
16.9----	21.705	22.471	23.237	24.004	24.771	25.539	26.307	27.075	27.844	28.614	29.383
17.0----	21.682	22.448	23.214	23.981	24.748	25.515	26.283	27.051	27.820	28.589	29.359
17.1----	21.659	22.425	23.191	23.957	24.724	25.491	26.259	27.027	27.796	28.565	29.334
17.2----	21.636	22.401	23.167	23.934	24.700	25.468	26.235	27.003	27.771	28.540	29.309
17.3----	21.613	22.378	23.144	23.910	24.677	25.444	26.211	26.979	27.747	28.515	29.284
17.4----	21.589	22.355	23.120	23.886	24.653	25.419	26.187	26.954	27.722	28.491	29.260
17.5----	21.566	22.331	23.097	23.862	24.629	25.395	26.162	26.930	27.698	28.466	29.235
17.6----	21.543	22.308	23.073	23.839	24.605	25.371	26.138	26.905	27.673	28.441	29.209
17.7----	21.519	22.284	23.049	23.814	24.580	25.347	26.113	26.880	27.648	28.416	29.184
17.8----	21.496	22.260	23.025	23.790	24.556	25.322	26.089	26.856	27.623	28.391	29.159
17.9----	21.472	22.236	23.001	23.766	24.532	25.298	26.064	26.831	27.598	28.366	29.134
18.0----	21.448	22.212	22.977	23.742	24.507	25.273	26.039	26.806	27.573	28.340	29.108
18.1----	21.424	22.188	22.953	23.718	24.483	25.248	26.014	26.781	27.548	28.315	29.083
18.2----	21.400	22.164	22.928	23.693	24.458	25.224	25.990	26.756	27.523	28.290	29.057
18.3----	21.376	22.140	22.904	23.669	24.433	25.199	25.964	26.731	27.497	28.264	29.032
18.4----	21.352	22.116	22.880	23.644	24.409	25.174	25.939	26.705	27.472	28.239	29.006
18.5----	21.328	22.091	22.855	23.619	24.384	25.149	25.914	26.680	27.446	28.213	28.980
18.6----	21.303	22.067	22.830	23.594	24.359	25.124	25.889	26.655	27.421	28.187	28.954
18.7----	21.279	22.042	22.806	23.570	24.334	25.098	25.864	26.629	27.395	28.161	28.928
18.8----	21.255	22.018	22.781	23.545	24.309	25.073	25.838	26.603	27.369	28.135	28.902
18.9----	21.230	21.993	22.756	23.520	24.283	25.048	25.813	26.578	27.343	28.109	28.876
19.0----	21.205	21.968	22.731	23.494	24.258	25.022	25.787	26.552	27.317	28.083	28.850
19.1----	21.181	21.943	22.706	23.469	24.233	24.997	25.761	26.526	27.291	28.057	28.823
19.2----	21.156	21.918	22.681	23.444	24.207	24.971	25.735	26.500	27.265	28.031	28.797
19.3----	21.131	21.893	22.655	23.418	24.182	24.945	25.710	26.474	27.239	28.004	28.770
19.4----	21.106	21.868	22.630	23.393	24.156	24.920	25.684	26.448	27.213	27.978	28.744
19.5----	21.081	21.843	22.605	23.367	24.130	24.894	25.658	26.422	27.186	27.952	28.717
19.6----	21.056	21.817	22.579	23.342	24.104	24.868	25.631	26.395	27.160	27.925	28.690
19.7----	21.030	21.792	22.554	23.316	24.079	24.842	25.605	26.369	27.133	27.898	28.663
19.8----	21.005	21.766	22.528	23.290	24.053	24.816	25.579	26.343	27.107	27.871	28.637
19.9----	20.979	21.741	22.502	23.264	24.027	24.789	25.552	26.316	27.080	27.845	28.610

Table I (cont.)

Density anomaly $\gamma(S,t,0)$ [kg/m^3] at atmospheric pressure

Temp. °C	Salinity 30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
20.0----	20.954	21.715	22.476	23.238	24.000	24.763	25.526	26.290	27.053	27.818	28.583
20 1----	20.928	21.689	22.450	23.212	23.974	24.737	25.499	26 263	27.027	27.791	28.555
20.2----	20.903	21.663	22.424	23.186	23.948	24.710	25.473	26.236	27.000	27.764	28.528
20.3----	20.877	21.637	22 398	23.160	23 921	24.684	25.446	26.209	26.973	27.736	28.501
20 4----	20.851	21.611	22.372	23.133	23.895	24.657	25.419	26.182	26.945	27.709	28.473
20.5----	20 825	21 585	22.346	23.107	23.868	24.630	25.392	26.155	26.918	27.682	28.446
20.6----	20.799	21.559	22.319	23.080	23.842	24.603	25.365	26.128	26.891	27.654	28.418
20.7----	20.773	21.533	22.293	23.054	23.815	24.576	25.338	26.101	26.864	27.627	28.391
20.8----	20.746	21.506	22.266	23.027	23.788	24.549	25.311	26.074	26.836	27.599	28.363
20.9----	20.720	21.480	22.240	23.000	23.761	24.522	25.284	26.046	26.809	27.572	28.335
21.0----	20.694	21.453	22.213	22.973	23.734	24.495	25.257	26.019	26.781	27.544	28.307
21.1----	20.667	21.427	22.186	22.947	23.707	24.468	25.229	25.991	26.754	27.516	28.279
21 2----	20.641	21.400	22.159	22.920	23.680	24.441	25.202	25.964	26.726	27.488	28.251
21.3----	20.614	21.373	22.133	22.892	23.653	24.413	25.174	25.936	26.698	27.460	28.223
21.4----	20.587	21.346	22.106	22 865	23.625	24.386	25.147	25.908	26.670	27.432	28.195
21.5----	20.560	21.319	22.078	22.838	23.598	24.358	25.119	25.880	26.642	27.404	28.167
21.6----	20.534	21.292	22.051	22.811	23.570	24.331	25.091	25.852	26.614	27.376	28.138
21.7----	20.507	21.265	22.024	22.783	23.543	24.303	25.063	25.824	26.586	27.348	28.110
21.8----	20.479	21.238	21.997	22.756	23.515	24.275	25.036	25.796	26.558	27.319	28.081
21.9----	20.452	21.211	21.969	22.728	23.487	24.247	25.007	25.768	26.529	27.291	28.053
22.0----	20.425	21.183	21.942	22.700	23.460	24.219	24.979	25.740	26.501	27.262	28.024
22.1----	20.398	21.156	21.914	22.673	23.432	24.191	24.951	25.712	26.472	27.234	27.995
22.2----	20.370	21.128	21.886	22.645	23.404	24.163	24.923	25.683	26.444	27.205	27.967
22.3----	20.343	21.100	21.858	22.617	23.376	24.135	24.895	25.655	26.415	27.176	27.938
22.4----	20.315	21.073	21.831	22.589	23.348	24.107	24.866	25.626	26.386	27.147	27.909
22.5----	20.288	21.045	21.803	22.561	23.319	24.078	24.838	25.597	26.358	27.118	27.880
22.6----	20.260	21.017	21.775	22.533	23.291	24.050	24.809	25.569	26.329	27.089	27.850
22.7----	20.232	20.989	21.747	22.504	23.263	24.021	24.780	25.540	26.300	27.060	27.821
22.8----	20.204	20.961	21.718	22.476	23.234	23.993	24.752	25.511	26.271	27.031	27.792
22.9----	20.176	20.933	21.690	22.448	23.206	23.964	24.723	25.482	26.242	27.002	27.762
23.0----	20.148	20.905	21.662	22.419	23.177	23.935	24.694	25.453	26.213	26.973	27.733
23.1----	20 120	20.876	21.633	22.391	23.148	23.906	24.665	25.424	26.183	26.943	27.703
23.2----	20.092	20.848	21.605	22.362	23.119	23.877	24.636	25.395	26.154	26.914	27.674
23.3----	20.063	20.820	21.576	22.333	23.091	23.848	24.607	25.365	26.124	26.884	27.644
23.4----	20.035	20.791	21.547	22.304	23.062	23.819	24.577	25.336	26.095	26.854	27.614
23.5----	20.006	20.762	21.519	22.275	23.033	23.790	24.548	25.307	26.065	26.825	27.584
23.6----	19.978	20.734	21.490	22.246	23.003	23.761	24.519	25.277	26.036	26.795	27.555
23.7----	19.949	20.705	21.461	22.217	22.974	23.732	24.489	25.247	26.006	26.765	27.525
23.8----	19.921	20.676	21.432	22.188	22.945	23.702	24.460	25.218	25.976	26.735	27.494
23.9----	19.892	20.647	21.403	22.159	22.916	23.673	24.430	25.188	25.946	26.705	27.464
24.0----	19.863	20.618	21.374	22.130	22.886	23.643	24.400	25.158	25.916	26.675	27.434
24.1----	19.834	20.589	21.344	22.100	22.857	23.613	24.371	25.128	25.886	26.645	27.404
24.2----	19.805	20.560	21.315	22.071	22.827	23.584	24.341	25.098	25.856	26.615	27.373
24.3----	19.776	20.530	21.286	22.041	22.797	23.554	24.311	25.068	25.826	26.584	27.343
24.4----	19.746	20.501	21.256	22.012	22.768	23.524	24.281	25.038	25.796	26.554	27.312
24.5----	19.717	20.472	21.227	21.982	22.738	23.494	24.251	25.008	25.765	26.523	27.282
24.6----	19.688	20.442	21.197	21.952	22.708	23.464	24.220	24.977	25.735	26.493	27.251
24.7----	19.658	20.413	21.167	21.922	22.678	23.434	24.190	24.947	25.704	26.462	27.220
24.8----	19.629	20.383	21.137	21.892	22.648	23.404	24.160	24.917	25.674	26.431	27.189
24.9----	19.599	20.353	21.108	21.862	22.618	23.373	24.130	24.886	25.643	26.401	27.158
25 0----	19.569	20.323	21.078	21.832	22.587	23.343	24.099	24.855	25.612	26.370	27.127
25.1----	19.540	20.293	21.048	21.802	22.557	23.313	24.068	24.825	25.582	26.339	27.096
25.2----	19.510	20.263	21 017	21.772	22.527	23.282	24.038	24.794	25.551	26.308	27.065
25 3----	19.480	20.233	20.987	21.742	22.496	23.252	24.007	24.763	25.520	26.277	27.034
25.4----	19.450	20.203	20.957	21.711	22.466	23.221	23.976	24.732	25.489	26.245	27.003

Table I (cont.)

Density anomaly $\gamma(S,t,0)$ [kg/m^3] at atmospheric pressure

	Salinity										
Temp. °C	**30.0**	**31.0**	**32.0**	**33.0**	**34.0**	**35.0**	**36.0**	**37.0**	**38.0**	**39.0**	**40.0**
25.5----	19.420	20.173	20.927	21.681	22.435	23.190	23.945	24.701	25.457	26.214	26.971
25.6----	19.390	20.143	20.896	21.650	22.405	23.159	23.915	24.670	25.426	26.183	26.940
25.7----	19.359	20.112	20.866	21.620	22.374	23.128	23.883	24.639	25.395	26.151	26.908
25.8----	19.329	20.082	20.835	21.589	22.343	23.097	23.852	24.608	25.364	26.120	26.877
25.9----	19.299	20.051	20.804	21.558	22.312	23.066	23.821	24.576	25.332	26.088	26.845
26.0----	19.268	20.021	20.774	21.527	22.281	23.035	23.790	24.545	25.301	26.057	26.813
26.1----	19.238	19.990	20.743	21.496	22.250	23.004	23.759	24.514	25.269	26.025	26.781
26.2----	19.207	19.959	20.712	21.465	22.219	22.973	23.727	24.482	25.237	25.993	26.750
26.3----	19.176	19.928	20.681	21.434	22.188	22.941	23.696	24.451	25.206	25.961	26.718
26.4----	19.145	19.897	20.650	21.403	22.156	22.910	23.664	24.419	25.174	25.929	26.686
26.5----	19.114	19.866	20.619	21.372	22.125	22.878	23.633	24.387	25.142	25.897	26.653
26.6----	19.084	19.835	20.588	21.340	22.093	22.847	23.601	24.355	25.110	25.865	26.621
26.7----	19.052	19.804	20.556	21.309	22.062	22.815	23.569	24.323	25.078	25.833	26.589
26.8----	19.021	19.773	20.525	21.277	22.030	22.784	23.537	24.291	25.046	25.801	26.557
26.9----	18.990	19.742	20.494	21.246	21.999	22.752	23.505	24.259	25.014	25.769	26.524
27.0----	18.959	19.710	20.462	21.214	21.967	22.720	23.473	24.227	24.982	25.736	26.492
27.1----	18.928	19.679	20.430	21.182	21.935	22.688	23.441	24.195	24.949	25.704	26.459
27.2----	18.896	19.647	20.399	21.151	21.903	22.656	23.409	24.163	24.917	25.671	26.426
27.3----	18.865	19.616	20.367	21.119	21.871	22.624	23.377	24.130	24.884	25.639	26.394
27.4----	18.833	19.584	20.335	21.087	21.839	22.592	23.344	24.098	24.852	25.606	26.361
27.5----	18.801	19.552	20.303	21.055	21.807	22.559	23.312	24.065	24.819	25.573	26.328
27.6----	18.770	19.520	20.271	21.023	21.775	22.527	23.280	24.033	24.786	25.541	26.295
27.7----	18.738	19.488	20.239	20.991	21.742	22.494	23.247	24.000	24.754	25.508	26.262
27.8----	18.706	19.456	20.207	20.958	21.710	22.462	23.215	23.967	24.721	25.475	26.229
27.9----	18.674	19.424	20.175	20.926	21.678	22.429	23.182	23.935	24.688	25.442	26.196
28.0----	18.642	19.392	20.143	20.894	21.645	22.397	23.149	23.902	24.655	25.409	26.163
28.1----	18.610	19.360	20.110	20.861	21.612	22.364	23.116	23.869	24.622	25.375	26.129
28.2----	18.578	19.328	20.078	20.829	21.580	22.331	23.083	23.836	24.589	25.342	26.096
28.3----	18.545	19.295	20.045	20.796	21.547	22.298	23.050	23.803	24.555	25.309	26.062
28.4----	18.513	19.263	20.013	20.763	21.514	22.266	23.017	23.770	24.522	25.275	26.029
28.5----	18.481	19.230	19.980	20.731	21.481	22.233	22.984	23.736	24.489	25.242	25.995
28.6----	18.448	19.198	19.947	20.698	21.448	22.199	22.951	23.703	24.455	25.208	25.962
28.7----	18.416	19.165	19.915	20.665	21.415	22.166	22.918	23.670	24.422	25.175	25.928
28.8----	18.383	19.132	19.882	20.632	21.382	22.133	22.884	23.636	24.388	25.141	25.894
28.9----	18.350	19.099	19.849	20.599	21.349	22.100	22.851	23.603	24.355	25.107	25.860
29.0----	18.317	19.066	19.816	20.566	21.316	22.066	22.817	23.569	24.321	25.073	25.826
29.1----	18.285	19.033	19.783	20.532	21.282	22.033	22.784	23.535	24.287	25.039	25.792
29.2----	18.252	19.000	19.749	20.499	21.249	21.999	22.750	23.502	24.253	25.006	25.758
29.3----	18.219	18.967	19.716	20.466	21.216	21.966	22.717	23.468	24.219	24.971	25.724
29.4----	18.185	18.934	19.683	20.432	21.182	21.932	22.683	23.434	24.185	24.937	25.690
29.5----	18.152	18.901	19.650	20.399	21.148	21.898	22.649	23.400	24.151	24.903	25.655
29.6----	18.119	18.867	19.616	20.365	21.115	21.865	22.615	23.366	24.117	24.869	25.621
29.7----	18.086	18.834	19.582	20.331	21.081	21.831	22.581	23.332	24.083	24.835	25.587
29.8----	18.052	18.800	19.549	20.298	21.047	21.797	22.547	23.298	24.049	24.800	25.552
29.9----	18.019	18.767	19.515	20.264	21.013	21.763	22.513	23.263	24.014	24.766	25.518
30.0----	17.985	18.733	19.481	20.230	20.979	21.729	22.479	23.229	23.980	24.731	25.483
30.1----	17.952	18.699	19.448	20.196	20.945	21.694	22.444	23.195	23.945	24.696	25.448
30.2----	17.918	18.666	19.414	20.162	20.911	21.660	22.410	23.160	23.911	24.662	25.413
30.3----	17.884	18.632	19.380	20.128	20.877	21.626	22.375	23.126	23.876	24.627	25.378
30.4----	17.850	18.598	19.346	20.094	20.842	21.591	22.341	23.091	23.841	24.592	25.344
30.5----	17.817	18.564	19.311	20.060	20.808	21.557	22.306	23.056	23.807	24.557	25.308
30.6----	17.783	18.530	19.277	20.025	20.774	21.522	22.272	23.021	23.772	24.522	25.273
30.7----	17.749	18.496	19.243	19.991	20.739	21.488	22.237	22.987	23.737	24.487	25.238
30.8----	17.714	18.461	19.209	19.956	20.705	21.453	22.202	22.952	23.702	24.452	25.203
30.9----	17.680	18.427	19.174	19.922	20.670	21.418	22.167	22.917	23.667	24.417	25.168

Table I (cont.)

Density anomaly $\gamma(S,t,0)$ [kg/m^3] at atmospheric pressure

Temp. °C	Salinity 30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
31.0----	17.646	18.393	19.140	19.887	20.635	21.384	22.132	22.882	23.631	24.382	25.132
31.1----	17.612	18.358	19.105	19.853	20.600	21.349	22.097	22.847	23.596	24.346	25.097
31.2----	17.577	18.324	19.071	19.818	20.566	21.314	22.062	22.811	23.561	24.311	25.061
31.3----	17.543	18.289	19.036	19.783	20.531	21.279	22.027	22.776	23.526	24.275	25.026
31.4----	17.508	18.254	19.001	19.748	20.496	21.244	21.992	22.741	23.490	24.240	24.990
31.5----	17.473	18.220	18.966	19.713	20.461	21.208	21.957	22.705	23.455	24.204	24.954
31.6----	17.439	18.185	18.931	19.678	20.425	21.173	21.921	22.670	23.419	24.169	24.919
31.7----	17.404	18.150	18.896	19.643	20.390	21.138	21.886	22.635	23.383	24.133	24.883
31.8----	17.369	18.115	18.861	19.608	20.355	21.103	21.850	22.599	23.348	24.097	24.847
31.9----	17.334	18.080	18.826	19.573	20.320	21.067	21.815	22.563	23.312	24.061	24.811
32.0----	17.299	18.045	18.791	19.537	20.284	21.032	21.779	22.528	23.276	24.025	24.775
32.1----	17.264	18.010	18.756	19.502	20.249	20.996	21.744	22.492	23.240	23.989	24.739
32.2----	17.229	17.974	18.720	19.466	20.213	20.960	21.708	22.456	23.204	23.953	24.703
32.3----	17.194	17.939	18.685	19.431	20.178	20.925	21.672	22.420	23.168	23.917	24.666
32.4----	17.158	17.904	18.649	19.395	20.142	20.889	21.636	22.384	23.132	23.881	24.630
32.5----	17.123	17.868	18.614	19.360	20.106	20.853	21.600	22.348	23.096	23.845	24.594
32.6----	17.088	17.833	18.578	19.324	20.070	20.817	21.564	22.312	23.060	23.808	24.557
32.7----	17.052	17.797	18.542	19.288	20.034	20.781	21.528	22.275	23.023	23.772	24.521
32.8----	17.017	17.761	18.507	19.252	19.998	20.745	21.492	22.239	22.987	23.735	24.484
32.9----	16.981	17.726	18.471	19.216	19.962	20.709	21.455	22.203	22.950	23.699	24.447
33.0----	16.945	17.690	18.435	19.180	19.926	20.672	21.419	22.166	22.914	23.662	24.411
33.1----	16.910	17.654	18.399	19.144	19.890	20.636	21.383	22.130	22.877	23.625	24.374
33.2----	16.874	17.618	18.363	19.108	19.854	20.600	21.346	22.093	22.841	23.589	24.337
33.3----	16.838	17.582	18.327	19.072	19.817	20.563	21.310	22.057	22.804	23.552	24.300
33.4----	16.802	17.546	18.291	19.036	19.781	20.527	21.273	22.020	22.767	23.515	24.263
33.5----	16.766	17.510	18.254	18.999	19.745	20.490	21.237	21.983	22.730	23.478	24.226
33.6----	16.730	17.474	18.218	18.963	19.708	20.454	21.200	21.946	22.693	23.441	24.189
33.7----	16.693	17.437	18.182	18.926	19.671	20.417	21.163	21.909	22.656	23.404	24.152
33.8----	16.657	17.401	18.145	18.890	19.635	20.380	21.126	21.872	22.619	23.367	24.114
33.9----	16.621	17.364	18.109	18.853	19.598	20.343	21.089	21.835	22.582	23.329	24.077
34.0----	16.584	17.328	18.072	18.816	19.561	20.306	21.052	21.798	22.545	23.292	24.040
34.1----	16.548	17.291	18.035	18.780	19.524	20.270	21.015	21.761	22.508	23.255	24.002
34.2----	16.511	17.255	17.999	18.743	19.487	20.232	20.978	21.724	22.470	23.217	23.965
34.3----	16.475	17.218	17.962	18.706	19.450	20.195	20.941	21.687	22.433	23.180	23.927
34.4----	16.438	17.181	17.925	18.669	19.413	20.158	20.903	21.649	22.395	23.142	23.889
34.5----	16.401	17.144	17.888	18.632	19.376	20.121	20.866	21.612	22.358	23.104	23.852
34.6----	16.364	17.107	17.851	18.595	19.339	20.084	20.829	21.574	22.320	23.067	23.814
34.7----	16.328	17.070	17.814	18.558	19.302	20.046	20.791	21.537	22.283	23.029	23.776
34.8----	16.291	17.033	17.777	18.520	19.264	20.009	20.754	21.499	22.245	22.991	23.738
34.9----	16.254	16.996	17.739	18.483	19.227	19.971	20.716	21.461	22.207	22.953	23.700
35.0----	16.217	16.959	17.702	18.446	19.189	19.934	20.678	21.424	22.169	22.915	23.662
35.1----	16.179	16.922	17.665	18.408	19.152	19.896	20.641	21.386	22.131	22.877	23.624
35.2----	16.142	16.885	17.627	18.371	19.114	19.858	20.603	21.348	22.093	22.839	23.586
35.3----	16.105	16.847	17.590	18.333	19.077	19.821	20.565	21.310	22.055	22.801	23.547
35.4----	16.067	16.810	17.552	18.295	19.039	19.783	20.527	21.272	22.017	22.763	23.509
35.5----	16.030	16.772	17.515	18.258	19.001	19.745	20.489	21.234	21.979	22.725	23.471
35.6----	15.993	16.735	17.477	18.220	18.963	19.707	20.451	21.196	21.941	22.686	23.432
35.7----	15.955	16.697	17.439	18.182	18.925	19.669	20.413	21.157	21.902	22.648	23.394
35.8----	15.917	16.659	17.401	18.144	18.887	19.631	20.375	21.119	21.864	22.609	23.355
35.9----	15.880	16.621	17.364	18.106	18.849	19.593	20.336	21.081	21.826	22.571	23.316
36.0----	15.842	16.584	17.326	18.068	18.811	19.554	20.298	21.042	21.787	22.532	23.278
36.1----	15.804	16.546	17.288	18.030	18.773	19.516	20.260	21.004	21.748	22.493	23.239
36.2----	15.766	16.508	17.250	17.992	18.735	19.478	20.221	20.965	21.710	22.455	23.200
36.3----	15.728	16.470	17.211	17.954	18.696	19.439	20.183	20.927	21.671	22.416	23.161
36.4----	15.690	16.431	17.173	17.915	18.658	19.401	20.144	20.888	21.632	22.377	23.122

Table II

Specific volume anomaly $\delta(S,t,0)$ [10^{-8} m^3/kg] at atmospheric pressure

$\gamma(S,t,0)$	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1.0	2633.9	2623.9	2613.9	2604.0	2594.0	2584.0	2574.1	2564.1	2554.1	2544.1
2.0	2534.2	2524.2	2514.3	2504.3	2494.4	2484.4	2474.5	2464.5	2454.6	2444.6
3.0	2434.7	2424.8	2414.8	2404.9	2394.9	2385.0	2375.1	2365.2	2355.2	2345.3
4.0	2335.4	2325.5	2315.6	2305.6	2295.7	2285.8	2275.9	2266.0	2256.1	2246.2
5.0	2236.3	2226.4	2216.5	2206.6	2196.7	2186.8	2176.9	2167.0	2157.1	2147.3
6.0	2137.4	2127.5	2117.6	2107.7	2097.9	2088.0	2078.1	2068.3	2058.4	2048.5
7.0	2038.7	2028.8	2018.9	2009.1	1999.2	1989.4	1979.5	1969.7	1959.8	1950.0
8.0	1940.1	1930.3	1920.5	1910.6	1900.8	1891.0	1881.1	1871.3	1861.5	1851.6
9.0	1841.8	1832.0	1822.2	1812.4	1802.5	1792.7	1782.9	1773.1	1763.3	1753.5
10.0	1743.7	1733.9	1724.1	1714.3	1704.5	1694.7	1684.9	1675.1	1665.3	1655.5
11.0	1645.8	1636.0	1626.2	1616.4	1606.6	1596.9	1587.1	1577.3	1567.6	1557.8
12.0	1548.0	1538.3	1528.5	1518.7	1509.0	1499.2	1489.5	1479.7	1470.0	1460.2
13.0	1450.5	1440.7	1431.0	1421.3	1411.5	1401.8	1392.0	1382.3	1372.6	1362.8
14.0	1353.1	1343.4	1333.7	1324.0	1314.2	1304.5	1294.8	1285.1	1275.4	1265.7
15.0	1256.0	1246.3	1236.5	1226.8	1217.2	1207.5	1197.8	1188.1	1178.4	1168.7
16.0	1159.0	1149.3	1139.6	1129.9	1120.3	1110.6	1100.9	1091.2	1081.6	1071.9
17.0	1062.2	1052.5	1042.9	1033.2	1023.6	1013.9	1004.2	994.6	984.9	975.3
18.0	965.6	956.0	946.3	936.7	927.0	917.4	907.8	898.1	888.5	878.8
19.0	869.2	859.6	850.0	840.3	830.7	821.1	811.5	801.9	792.2	782.6
20.0	773.0	763.4	753.8	744.2	734.6	725.0	715.4	705.8	696.2	686.6
21.0	677.0	667.4	657.8	648.2	638.6	629.0	619.5	609.9	600.3	590.7
22.0	581.2	571.6	562.0	552.4	542.9	533.3	523.7	514.2	504.6	495.1
23.0	485.5	475.9	466.4	456.8	447.3	437.8	428.2	418.7	409.1	399.6
24.0	390.0	380.5	371.0	361.4	351.9	342.4	332.9	323.3	313.8	304.3
25.0	294.8	285.3	275.7	266.2	256.7	247.2	237.7	228.2	218.7	209.2
26.0	199.7	190.2	180.7	171.2	161.7	152.2	142.7	133.2	123.7	114.3
27.0	104.8	95.3	85.8	76.3	66.9	57.4	47.9	38.5	29.0	19.5
28.0	10.1	0.6	−8.9	−18.3	−27.8	−37.2	−46.7	−56.1	−65.6	−75.0
29.0	−84.5	−93.9	−103.4	−112.8	−122.2	−131.7	−141.1	−150.5	−160.0	−169.4
30.0	−178.8	−188.2	−197.7	−207.1	−216.5	−225.9	−235.4	−244.8	−254.2	−263.6
31.0	−273.0	−282.4	−291.8	−301.2	−310.6	−320.0	−329.4	−338.8	−348.2	−357.6
32.0	−367.0	−376.4	−385.8	−395.1	−404.5	−413.9	−423.3	−432.7	−442.0	−451.4
33.0	−460.8	−470.2	−479.5	−488.9	−498.3	−507.6	−517.0	−526.3	−535.7	−545.1

Table III

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 30.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1----	380.3 *−0.2* *−77.2*	380.1 *−0.2* *−77.2*	379.9 *−0.2* *−77.2*	379.7 *−0.2* *−77.3*	379.5 *−0.2* *−77.3*	379.3 *−0.1* *−77.3*	379.2 *−0.1* *−77.3*	379.1 *−0.1* *−77.4*	378.9 *−0.1* *−77.4*	378.8 *−0.1* *−77.4*
−0----	383.2 *−0.4* *−76.8*	382.9 *−0.3* *−76.9*	382.5 *−0.3* *−76.9*	382.2 *−0.3* *−76.9*	381.9 *−0.3* *−77.0*	381.6 *−0.3* *−77.0*	381.3 *−0.3* *−77.0*	381.0 *−0.3* *−77.1*	380.8 *−0.2* *−77.1*	380.5 *−0.2* *−77.1*
0----	383.2 *0.4* *−76.8*	383.6 *0.4* *−76.8*	384.0 *0.4* *−76.8*	384.4 *0.4* *−76.8*	384.8 *0.4* *−76.7*	385.2 *0.4* *−76.7*	385.6 *0.4* *−76.7*	386.1 *0.5* *−76.6*	386.5 *0.5* *−76.6*	387.0 *0.5* *−76.6*
1----	387.5 *0.5* *−76.6*	388.0 *0.5* *−76.5*	388.5 *0.5* *−76.5*	389.1 *0.5* *−76.5*	389.6 *0.6* *−76.4*	390.1 *0.6* *−76.4*	390.7 *0.6* *−76.4*	391.3 *0.6* *−76.4*	391.9 *0.6* *−76.3*	392.5 *0.6* *−76.3*
2----	393.1 *0.6* *−76.3*	393.7 *0.6* *−76.2*	394.4 *0.7* *−76.2*	395.0 *0.7* *−76.2*	395.7 *0.7* *−76.2*	396.4 *0.7* *−76.1*	397.1 *0.7* *−76.1*	397.8 *0.7* *−76.1*	398.5 *0.7* *−76.1*	399.2 *0.7* *−76.0*
3----	400.0 *0.8* *−76.0*	400.7 *0.8* *−76.0*	401.5 *0.8* *−75.9*	402.3 *0.8* *−75.9*	403.1 *0.8* *−75.9*	403.9 *0.8* *−75.9*	404.7 *0.8* *−75.8*	405.5 *0.8* *−75.8*	406.3 *0.9* *−75.8*	407.2 *0.9* *−75.8*
4----	408.1 *0.9* *−75.7*	408.9 *0.9* *−75.7*	409.8 *0.9* *−75.7*	410.7 *0.9* *−75.7*	411.6 *0.9* *−75.6*	412.6 *0.9* *−75.6*	413.5 *0.9* *−75.6*	414.4 *1.0* *−75.6*	415.4 *1.0* *−75.5*	416.4 *1.0* *−75.5*
5----	417.3 *1.0* *−75.5*	418.3 *1.0* *−75.5*	419.3 *1.0* *−75.4*	420.4 *1.0* *−75.4*	421.4 *1.0* *−75.4*	422.4 *1.1* *−75.4*	423.5 *1.1* *−75.4*	424.5 *1.1* *−75.3*	425.6 *1.1* *−75.3*	426.7 *1.1* *−75.3*
6----	427.8 *1.1* *−75.3*	428.9 *1.1* *−75.2*	430.0 *1.1* *−75.2*	431.2 *1.1* *−75.2*	432.3 *1.2* *−75.2*	433.5 *1.2* *−75.1*	434.6 *1.2* *−75.1*	435.8 *1.2* *−75.1*	437.0 *1.2* *−75.1*	438.2 *1.2* *−75.1*
7----	439.4 *1.2* *−75.0*	440.6 *1.2* *−75.0*	441.8 *1.2* *−75.0*	443.1 *1.3* *−75.0*	444.3 *1.3* *−75.0*	445.6 *1.3* *−74.9*	446.9 *1.3* *−74.9*	448.1 *1.3* *−74.9*	449.4 *1.3* *−74.9*	450.7 *1.3* *−74.8*
8----	452.1 *1.3* *−74.8*	453.4 *1.3* *−74.8*	454.7 *1.3* *−74.8*	456.1 *1.4* *−74.8*	457.4 *1.4* *−74.7*	458.8 *1.4* *−74.7*	460.2 *1.4* *−74.7*	461.6 *1.4* *−74.7*	463.0 *1.4* *−74.7*	464.4 *1.4* *−74.6*
9----	465.8 *1.4* *−74.6*	467.3 *1.4* *−74.6*	468.7 *1.5* *−74.6*	470.2 *1.5* *−74.6*	471.6 *1.5* *−74.5*	473.1 *1.5* *−74.5*	474.6 *1.5* *−74.5*	476.1 *1.5* *−74.5*	477.6 *1.5* *−74.5*	479.1 *1.5* *−74.5*
10----	480.6 *1.5* *−74.4*	482.2 *1.5* *−74.4*	483.7 *1.6* *−74.4*	485.3 *1.6* *−74.4*	486.8 *1.6* *−74.4*	488.4 *1.6* *−74.3*	490.0 *1.6* *−74.3*	491.6 *1.6* *−74.3*	493.2 *1.6* *−74.3*	494.8 *1.6* *−74.3*
11----	496.4 *1.6* *−74.2*	498.1 *1.6* *−74.2*	499.7 *1.7* *−74.2*	501.4 *1.7* *−74.2*	503.1 *1.7* *−74.2*	504.7 *1.7* *−74.2*	506.4 *1.7* *−74.1*	508.1 *1.7* *−74.1*	509.8 *1.7* *−74.1*	511.5 *1.7* *−74.1*
12----	513.3 *1.7* *−74.1*	515.0 *1.7* *−74.1*	516.8 *1.8* *−74.0*	518.5 *1.8* *−74.0*	520.3 *1.8* *−74.0*	522.0 *1.8* *−74.0*	523.8 *1.8* *−74.0*	525.6 *1.8* *−74.0*	527.4 *1.8* *−73.9*	529.2 *1.8* *−73.9*
13----	531.1 *1.8* *−73.9*	532.9 *1.8* *−73.9*	534.7 *1.9* *−73.9*	536.6 *1.9* *−73.9*	538.5 *1.9* *−73.8*	540.3 *1.9* *−73.8*	542.2 *1.9* *−73.8*	544.1 *1.9* *−73.8*	546.0 *1.9* *−73.8*	547.9 *1.9* *−73.8*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 30.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	549.8 1.9 −73.8	551.7 1.9 −73.7	553.7 1.9 −73.7	555.6 2.0 −73.7	557.6 2.0 −73.7	559.6 2.0 −73.7	561.5 2.0 −73.7	563.5 2.0 −73.6	565.5 2.0 −73.6	567.5 2.0 −73.6
15	569.5 2.0 −73.6	571.5 2.0 −73.6	573.6 2.0 −73.6	575.6 2.0 −73.6	577.6 2.1 −73.5	579.7 2.1 −73.5	581.8 2.1 −73.5	583.8 2.1 −73.5	585.9 2.1 −73.5	588.0 2.1 −73.5
16	590.1 2.1 −73.5	592.2 2.1 −73.4	594.4 2.1 −73.4	596.5 2.1 −73.4	598.6 2.1 −73.4	600.8 2.2 −73.4	602.9 2.2 −73.4	605.1 2.2 −73.4	607.3 2.2 −73.3	609.4 2.2 −73.3
17	611.6 2.2 −73.3	613.8 2.2 −73.3	616.0 2.2 −73.3	618.3 2.2 −73.3	620.5 2.2 −73.3	622.7 2.2 −73.3	625.0 2.3 −73.2	627.2 2.3 −73.2	629.5 2.3 −73.2	631.7 2.3 −73.2
18	634.0 2.3 −73.2	636.3 2.3 −73.2	638.6 2.3 −73.2	640.9 2.3 −73.2	643.2 2.3 −73.1	645.6 2.3 −73.1	647.9 2.3 −73.1	650.2 2.3 −73.1	652.6 2.4 −73.1	654.9 2.4 −73.1
19	657.3 2.4 −73.1	659.7 2.4 −73.1	662.0 2.4 −73.0	664.4 2.4 −73.0	666.8 2.4 −73.0	669.2 2.4 −73.0	671.7 2.4 −73.0	674.1 2.4 −73.0	676.5 2.4 −73.0	679.0 2.5 −73.0
20	681.4 2.5 −73.0	683.9 2.5 −72.9	686.3 2.5 −72.9	688.8 2.5 −72.9	691.3 2.5 −72.9	693.8 2.5 −72.9	696.3 2.5 −72.9	698.8 2.5 −72.9	701.3 2.5 −72.9	703.8 2.5 −72.9
21	706.4 2.5 −72.8	708.9 2.6 −72.8	711.5 2.6 −72.8	714.0 2.6 −72.8	716.6 2.6 −72.8	719.2 2.6 −72.8	721.8 2.6 −72.8	724.3 2.6 −72.8	726.9 2.6 −72.8	729.6 2.6 −72.8
22	732.2 2.6 −72.7	734.8 2.6 −72.7	737.4 2.6 −72.7	740.1 2.6 −72.7	742.7 2.7 −72.7	745.4 2.7 −72.7	748.0 2.7 −72.7	750.7 2.7 −72.7	753.4 2.7 −72.7	756.1 2.7 −72.7
23	758.8 2.7 −72.6	761.5 2.7 −72.6	764.2 2.7 −72.6	766.9 2.7 −72.6	769.7 2.7 −72.6	772.4 2.7 −72.6	775.1 2.8 −72.6	777.9 2.8 −72.6	780.7 2.8 −72.6	783.4 2.8 −72.6
24	786.2 2.8 −72.6	789.0 2.8 −72.5	791.8 2.8 −72.5	794.6 2.8 −72.5	797.4 2.8 −72.5	800.2 2.8 −72.5	803.0 2.8 −72.5	805.9 2.8 −72.5	808.7 2.8 −72.5	811.6 2.9 −72.5
25	814.4 2.9 −72.5	817.3 2.9 −72.5	820.1 2.9 −72.5	823.0 2.9 −72.4	825.9 2.9 −72.4	828.8 2.9 −72.4	831.7 2.9 −72.4	834.6 2.9 −72.4	837.5 2.9 −72.4	840.5 2.9 −72.4
26	843.4 2.9 −72.4	846.3 3.0 −72.4	849.3 3.0 −72.4	852.3 3.0 −72.4	855.2 3.0 −72.4	858.2 3.0 −72.3	861.2 3.0 −72.3	864.2 3.0 −72.3	867.2 3.0 −72.3	870.2 3.0 −72.3
27	873.2 3.0 −72.3	876.2 3.0 −72.3	879.2 3.0 −72.3	882.3 3.0 −72.3	885.3 3.0 −72.3	888.3 3.1 −72.3	891.4 3.1 −72.3	894.5 3.1 −72.3	897.5 3.1 −72.3	900.6 3.1 −72.2
28	903.7 3.1 −72.2	906.8 3.1 −72.2	909.9 3.1 −72.2	913.0 3.1 −72.2	916.1 3.1 −72.2	919.3 3.1 −72.2	922.4 3.1 −72.2	925.5 3.1 −72.2	928.7 3.2 −72.2	931.8 3.2 −72.2
29	935.0 3.2 −72.2	938.2 3.2 −72.2	941.3 3.2 −72.2	944.5 3.2 −72.2	947.7 3.2 −72.1	950.9 3.2 −72.1	954.1 3.2 −72.1	957.3 3.2 −72.1	960.6 3.2 −72.1	963.8 3.2 −72.1

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 31.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1----	303.1 *−0.2* *−77.1*	302.9 *−0.2* *−77.1*	302.6 *−0.2* *−77.1*	302.4 *−0.2* *−77.1*	302.2 *−0.2* *−77.2*	302.0 *−0.2* *−77.2*	301.8 *−0.2* *−77.2*	301.7 *−0.2* *−77.3*	301.5 *−0.1* *−77.3*	301.4 *−0.1* *−77.3*
−0----	306.4 *−0.4* *−76.7*	306.0 *−0.4* *−76.8*	305.6 *−0.4* *−76.8*	305.3 *−0.3* *−76.8*	304.9 *−0.3* *−76.9*	304.6 *−0.3* *−76.9*	304.3 *−0.3* *−76.9*	304.0 *−0.3* *−77.0*	303.7 *−0.3* *−77.0*	303.4 *−0.3* *−77.0*
0----	306.4 *0.4* *−76.7*	306.8 *0.4* *−76.7*	307.2 *0.4* *−76.7*	307.6 *0.4* *−76.7*	308.1 *0.5* *−76.6*	308.5 *0.5* *−76.6*	309.0 *0.5* *−76.6*	309.4 *0.5* *−76.5*	309.9 *0.5* *−76.5*	310.4 *0.5* *−76.5*
1----	311.0 *0.5* *−76.5*	311.5 *0.5* *−76.4*	312.0 *0.6* *−76.4*	312.6 *0.6* *−76.4*	313.2 *0.6* *−76.3*	313.7 *0.6* *−76.3*	314.3 *0.6* *−76.3*	314.9 *0.6* *−76.3*	315.6 *0.6* *−76.2*	316.2 *0.6* *−76.2*
2----	316.8 *0.7* *−76.2*	317.5 *0.7* *−76.1*	318.2 *0.7* *−76.1*	318.8 *0.7* *−76.1*	319.5 *0.7* *−76.1*	320.2 *0.7* *−76.0*	321.0 *0.7* *−76.0*	321.7 *0.7* *−76.0*	322.4 *0.8* *−76.0*	323.2 *0.8* *−75.9*
3----	324.0 *0.8* *−75.9*	324.7 *0.8* *−75.9*	325.5 *0.8* *−75.9*	326.3 *0.8* *−75.8*	327.2 *0.8* *−75.8*	328.0 *0.8* *−75.8*	328.8 *0.9* *−75.7*	329.7 *0.9* *−75.7*	330.6 *0.9* *−75.7*	331.4 *0.9* *−75.7*
4----	332.3 *0.9* *−75.6*	333.2 *0.9* *−75.6*	334.1 *0.9* *−75.6*	335.1 *0.9* *−75.6*	336.0 *0.9* *−75.5*	336.9 *1.0* *−75.5*	337.9 *1.0* *−75.5*	338.9 *1.0* *−75.5*	339.9 *1.0* *−75.5*	340.8 *1.0* *−75.4*
5----	341.9 *1.0* *−75.4*	342.9 *1.0* *−75.4*	343.9 *1.0* *−75.4*	344.9 *1.1* *−75.3*	346.0 *1.1* *−75.3*	347.1 *1.1* *−75.3*	348.1 *1.1* *−75.3*	349.2 *1.1* *−75.2*	350.3 *1.1* *−75.2*	351.4 *1.1* *−75.2*
6----	352.5 *1.1* *−75.2*	353.7 *1.1* *−75.1*	354.8 *1.2* *−75.1*	356.0 *1.2* *−75.1*	357.1 *1.2* *−75.1*	358.3 *1.2* *−75.1*	359.5 *1.2* *−75.0*	360.7 *1.2* *−75.0*	361.9 *1.2* *−75.0*	363.1 *1.2* *−75.0*
7----	364.3 *1.2* *−75.0*	365.6 *1.3* *−74.9*	366.8 *1.3* *−74.9*	368.1 *1.3* *−74.9*	369.4 *1.3* *−74.9*	370.7 *1.3* *−74.8*	372.0 *1.3* *−74.8*	373.3 *1.3* *−74.8*	374.6 *1.3* *−74.8*	375.9 *1.3* *−74.8*
8----	377.2 *1.3* *−74.7*	378.6 *1.4* *−74.7*	379.9 *1.4* *−74.7*	381.3 *1.4* *−74.7*	382.7 *1.4* *−74.7*	384.1 *1.4* *−74.6*	385.5 *1.4* *−74.6*	386.9 *1.4* *−74.6*	388.3 *1.4* *−74.6*	389.8 *1.4* *−74.6*
9----	391.2 *1.5* *−74.5*	392.6 *1.5* *−74.5*	394.1 *1.5* *−74.5*	395.6 *1.5* *−74.5*	397.1 *1.5* *−74.5*	398.6 *1.5* *−74.4*	400.1 *1.5* *−74.4*	401.6 *1.5* *−74.4*	403.1 *1.5* *−74.4*	404.6 *1.5* *−74.4*
10----	406.2 *1.6* *−74.3*	407.7 *1.6* *−74.3*	409.3 *1.6* *−74.3*	410.9 *1.6* *−74.3*	412.5 *1.6* *−74.3*	414.1 *1.6* *−74.3*	415.7 *1.6* *−74.2*	417.3 *1.6* *−74.2*	418.9 *1.6* *−74.2*	420.6 *1.6* *−74.2*
11----	422.2 *1.7* *−74.2*	423.9 *1.7* *−74.1*	425.5 *1.7* *−74.1*	427.2 *1.7* *−74.1*	428.9 *1.7* *−74.1*	430.6 *1.7* *−74.1*	432.3 *1.7* *−74.1*	434.0 *1.7* *−74.0*	435.7 *1.7* *−74.0*	437.5 *1.7* *−74.0*
12----	439.2 *1.8* *−74.0*	440.9 *1.8* *−74.0*	442.7 *1.8* *−74.0*	444.5 *1.8* *−73.9*	446.3 *1.8* *−73.9*	448.1 *1.8* *−73.9*	449.9 *1.8* *−73.9*	451.7 *1.8* *−73.9*	453.5 *1.8* *−73.9*	455.3 *1.8* *−73.8*
13----	457.2 *1.8* *−73.8*	459.0 *1.9* *−73.8*	460.9 *1.9* *−73.8*	462.7 *1.9* *−73.8*	464.6 *1.9* *−73.8*	466.5 *1.9* *−73.7*	468.4 *1.9* *−73.7*	470.3 *1.9* *−73.7*	472.2 *1.9* *−73.7*	474.1 *1.9* *−73.7*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 31 .0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	476.1 1.9 −73.7	478.0 2.0 −73.7	480.0 2.0 −73.6	481.9 2.0 −73.6	483.9 2.0 −73.6	485.9 2.0 −73.6	487.9 2.0 −73.6	489.9 2.0 −73.6	491.9 2.0 −73.6	493.9 2.0 −73.5
15----	495.9 2.0 −73.5	497.9 2.0 −73.5	500.0 2.1 −73.5	502.0 2.1 −73.5	504.1 2.1 −73.5	506.2 2.1 −73.5	508.3 2.1 −73.4	510.3 2.1 −73.4	512.4 2.1 −73.4	514.5 2.1 −73.4
16----	516.7 2.1 −73.4	518.8 2.1 −73.4	520.9 2.1 −73.4	523.1 2.2 −73.3	525.2 2.2 −73.3	527.4 2.2 −73.3	529.5 2.2 −73.3	531.7 2.2 −73.3	533.9 2.2 −73.3	536.1 2.2 −73.3
17----	538.3 2.2 −73.2	540.5 2.2 −73.2	542.7 2.2 −73.2	545.0 2.2 −73.2	547.2 2.2 −73.2	549.5 2.3 −73.2	551.7 2.3 −73.2	554.0 2.3 −73.2	556.3 2.3 −73.1	558.5 2.3 −73.1
18----	560.8 2.3 −73.1	563.1 2.3 −73.1	565.4 2.3 −73.1	567.8 2.3 −73.1	570.1 2.3 −73.1	572.4 2.3 −73.1	574.8 2.4 −73.0	577.1 2.4 −73.0	579.5 2.4 −73.0	581.8 2.4 −73.0
19----	584.2 2.4 −73.0	586.6 2.4 −73.0	589.0 2.4 −73.0	591.4 2.4 −73.0	593.8 2.4 −73.0	596.2 2.4 −72.9	598.7 2.4 −72.9	601.1 2.4 −72.9	603.5 2.5 −72.9	606.0 2.5 −72.9
20----	608.5 2.5 −72.9	610.9 2.5 −72.9	613.4 2.5 −72.9	615.9 2.5 −72.9	618.4 2.5 −72.8	620.9 2.5 −72.8	623.4 2.5 −72.8	625.9 2.5 −72.8	628.4 2.5 −72.8	631.0 2.5 −72.8
21----	633.5 2.6 −72.8	636.1 2.6 −72.8	638.6 2.6 −72.8	641.2 2.6 −72.7	643.8 2.6 −72.7	646.4 2.6 −72.7	649.0 2.6 −72.7	651.6 2.6 −72.7	654.2 2.6 −72.7	656.8 2.6 −72.7
22----	659.4 2.6 −72.7	662.1 2.6 −72.7	664.7 2.7 −72.7	667.4 2.7 −72.6	670.0 2.7 −72.6	672.7 2.7 −72.6	675.4 2.7 −72.6	678.0 2.7 −72.6	680.7 2.7 −72.6	683.4 2.7 −72.6
23----	686.1 2.7 −72.6	688.8 2.7 −72.6	691.6 2.7 −72.6	694.3 2.7 −72.6	697.0 2.7 −72.5	699.8 2.8 −72.5	702.5 2.8 −72.5	705.3 2.8 −72.5	708.1 2.8 −72.5	710.9 2.8 −72.5
24----	713.6 2.8 −72.5	716.4 2.8 −72.5	719.2 2.8 −72.5	722.0 2.8 −72.5	724.9 2.8 −72.5	727.7 2.8 −72.4	730.5 2.8 −72.4	733.4 2.8 −72.4	736.2 2.9 −72.4	739.1 2.9 −72.4
25----	741.9 2.9 −72.4	744.8 2.9 −72.4	747.7 2.9 −72.4	750.6 2.9 −72.4	753.5 2.9 −72.4	756.4 2.9 −72.4	759.3 2.9 −72.4	762.2 2.9 −72.3	765.1 2.9 −72.3	768.1 2.9 −72.3
26----	771.0 3.0 −72.3	774.0 3.0 −72.3	776.9 3.0 −72.3	779.9 3.0 −72.3	782.9 3.0 −72.3	785.8 3.0 −72.3	788.8 3.0 −72.3	791.8 3.0 −72.3	794.8 3.0 −72.3	797.8 3.0 −72.3
27----	800.9 3.0 −72.2	803.9 3.0 −72.2	806.9 3.0 −72.2	810.0 3.0 −72.2	813.0 3.1 −72.2	816.1 3.1 −72.2	819.1 3.1 −72.2	822.2 3.1 −72.2	825.3 3.1 −72.2	828.4 3.1 −72.2
28----	831.5 3.1 −72.2	834.6 3.1 −72.2	837.7 3.1 −72.2	840.8 3.1 −72.2	843.9 3.1 −72.1	847.1 3.1 −72.1	850.2 3.1 −72.1	853.3 3.2 −72.1	856.5 3.2 −72.1	859.7 3.2 −72.1
29----	862.8 3.2 −72.1	866.0 3.2 −72.1	869.2 3.2 −72.1	872.4 3.2 −72.1	875.6 3.2 −72.1	878.8 3.2 −72.1	882.0 3.2 −72.1	885.2 3.2 −72.1	888.4 3.2 −72.1	891.7 3.2 −72.0

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 32 .0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1----	226.1 *−0.3* *−76.9*	225.8 *−0.3* *−77.0*	225.5 *−0.3* *−77.0*	225.3 *−0.2* *−77.0*	225.0 *−0.2* *−77.1*	224.8 *−0.2* *−77.1*	224.6 *−0.2* *−77.1*	224.4 *−0.2* *−77.2*	224.2 *−0.2* *−77.2*	224.0 *−0.2* *−77.2*
−0----	229.6 *−0.4* *−76.6*	229.2 *−0.4* *−76.7*	228.8 *−0.4* *−76.7*	228.4 *−0.4* *−76.7*	228.0 *−0.4* *−76.8*	227.7 *−0.3* *−76.8*	227.3 *−0.3* *−76.8*	227.0 *−0.3* *−76.9*	226.7 *−0.3* *−76.9*	226.4 *−0.3* *−76.9*
0----	229.6 *0.4* *−76.6*	230.1 *0.4* *−76.6*	230.5 *0.5* *−76.6*	231.0 *0.5* *−76.6*	231.4 *0.5* *−76.5*	231.9 *0.5* *−76.5*	232.4 *0.5* *−76.5*	232.9 *0.5* *−76.4*	233.4 *0.5* *−76.4*	234.0 *0.5* *−76.4*
1----	234.5 *0.6* *−76.4*	235.1 *0.6* *−76.3*	235.6 *0.6* *−76.3*	236.2 *0.6* *−76.3*	236.8 *0.6* *−76.2*	237.4 *0.6* *−76.2*	238.1 *0.6* *−76.2*	238.7 *0.6* *−76.2*	239.3 *0.7* *−76.1*	240.0 *0.7* *−76.1*
2----	240.7 *0.7* *−76.1*	241.4 *0.7* *−76.0*	242.0 *0.7* *−76.0*	242.8 *0.7* *−76.0*	243.5 *0.7* *−76.0*	244.2 *0.7* *−75.9*	245.0 *0.8* *−75.9*	245.7 *0.8* *−75.9*	246.5 *0.8* *−75.9*	247.3 *0.8* *−75.8*
3----	248.1 *0.8* *−75.8*	248.9 *0.8* *−75.8*	249.7 *0.8* *−75.8*	250.5 *0.8* *−75.7*	251.4 *0.9* *−75.7*	252.2 *0.9* *−75.7*	253.1 *0.9* *−75.7*	254.0 *0.9* *−75.6*	254.9 *0.9* *−75.6*	255.8 *0.9* *−75.6*
4----	256.7 *0.9* *−75.6*	257.6 *0.9* *−75.5*	258.5 *0.9* *−75.5*	259.5 *1.0* *−75.5*	260.4 *1.0* *−75.5*	261.4 *1.0* *−75.4*	262.4 *1.0* *−75.4*	263.4 *1.0* *−75.4*	264.4 *1.0* *−75.4*	265.4 *1.0* *−75.3*
5----	266.5 *1.0* *−75.3*	267.5 *1.1* *−75.3*	268.5 *1.1* *−75.3*	269.6 *1.1* *−75.2*	270.7 *1.1* *−75.2*	271.8 *1.1* *−75.2*	272.9 *1.1* *−75.2*	274.0 *1.1* *−75.2*	275.1 *1.1* *−75.1*	276.2 *1.1* *−75.1*
6----	277.4 *1.2* *−75.1*	278.5 *1.2* *−75.1*	279.7 *1.2* *−75.0*	280.9 *1.2* *−75.0*	282.0 *1.2* *−75.0*	283.2 *1.2* *−75.0*	284.5 *1.2* *−74.9*	285.7 *1.2* *−74.9*	286.9 *1.2* *−74.9*	288.1 *1.3* *−74.9*
7----	289.4 *1.3* *−74.9*	290.7 *1.3* *−74.8*	291.9 *1.3* *−74.8*	293.2 *1.3* *−74.8*	294.5 *1.3* *−74.8*	295.8 *1.3* *−74.8*	297.1 *1.3* *−74.7*	298.5 *1.3* *−74.7*	299.8 *1.3* *−74.7*	301.1 *1.4* *−74.7*
8----	302.5 *1.4* *−74.7*	303.9 *1.4* *−74.6*	305.2 *1.4* *−74.6*	306.6 *1.4* *−74.6*	308.0 *1.4* *−74.6*	309.4 *1.4* *−74.6*	310.9 *1.4* *−74.5*	312.3 *1.4* *−74.5*	313.7 *1.5* *−74.5*	315.2 *1.5* *−74.5*
9----	316.7 *1.5* *−74.5*	318.1 *1.5* *−74.4*	319.6 *1.5* *−74.4*	321.1 *1.5* *−74.4*	322.6 *1.5* *−74.4*	324.1 *1.5* *−74.4*	325.6 *1.5* *−74.3*	327.2 *1.5* *−74.3*	328.7 *1.6* *−74.3*	330.3 *1.6* *−74.3*
10----	331.8 *1.6* *−74.3*	333.4 *1.6* *−74.2*	335.0 *1.6* *−74.2*	336.6 *1.6* *−74.2*	338.2 *1.6* *−74.2*	339.8 *1.6* *−74.2*	341.4 *1.6* *−74.2*	343.1 *1.6* *−74.1*	344.7 *1.7* *−74.1*	346.4 *1.7* *−74.1*
11----	348.0 *1.7* *−74.1*	349.7 *1.7* *−74.1*	351.4 *1.7* *−74.0*	353.1 *1.7* *−74.0*	354.8 *1.7* *−74.0*	356.5 *1.7* *−74.0*	358.2 *1.7* *−74.0*	359.9 *1.7* *−74.0*	361.7 *1.8* *−73.9*	363.4 *1.8* *−73.9*
12----	365.2 *1.8* *−73.9*	367.0 *1.8* *−73.9*	368.8 *1.8* *−73.9*	370.5 *1.8* *−73.9*	372.3 *1.8* *−73.8*	374.1 *1.8* *−73.8*	376.0 *1.8* *−73.8*	377.8 *1.8* *−73.8*	379.6 *1.8* *−73.8*	381.5 *1.9* *−73.8*
13----	383.3 *1.9* *−73.7*	385.2 *1.9* *−73.7*	387.1 *1.9* *−73.7*	389.0 *1.9* *−73.7*	390.8 *1.9* *−73.7*	392.7 *1.9* *−73.7*	394.7 *1.9* *−73.7*	396.6 *1.9* *−73.6*	398.5 *1.9* *−73.6*	400.5 *1.9* *−73.6*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 32 .0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	402.4 2.0 −73.6	404.4 2.0 −73.6	406.3 2.0 −73.6	408.3 2.0 −73.5	410.3 2.0 −73.5	412.3 2.0 −73.5	414.3 2.0 −73.5	416.3 2.0 −73.5	418.3 2.0 −73.5	420.3 2.0 −73.5
15	422.4 2.0 −73.4	424.4 2.1 −73.4	426.5 2.1 −73.4	428.6 2.1 −73.4	430.6 2.1 −73.4	432.7 2.1 −73.4	434.8 2.1 −73.4	436.9 2.1 −73.3	439.0 2.1 −73.3	441.2 2.1 −73.3
16	443.3 2.1 −73.3	445.4 2.1 −73.3	447.6 2.2 −73.3	449.7 2.2 −73.3	451.9 2.2 −73.3	454.1 2.2 −73.2	456.2 2.2 −73.2	458.4 2.2 −73.2	460.6 2.2 −73.2	462.8 2.2 −73.2
17	465.1 2.2 −73.2	467.3 2.2 −73.2	469.5 2.2 −73.1	471.8 2.3 −73.1	474.0 2.3 −73.1	476.3 2.3 −73.1	478.5 2.3 −73.1	480.8 2.3 −73.1	483.1 2.3 −73.1	485.4 2.3 −73.1
18	487.7 2.3 −73.0	490.0 2.3 −73.0	492.3 2.3 −73.0	494.7 2.3 −73.0	497.0 2.3 −73.0	499.4 2.4 −73.0	501.7 2.4 −73.0	504.1 2.4 −73.0	506.4 2.4 −73.0	508.8 2.4 −72.9
19	511.2 2.4 −72.9	513.6 2.4 −72.9	516.0 2.4 −72.9	518.4 2.4 −72.9	520.9 2.4 −72.9	523.3 2.4 −72.9	525.7 2.4 −72.9	528.2 2.5 −72.8	530.6 2.5 −72.8	533.1 2.5 −72.8
20	535.6 2.5 −72.8	538.1 2.5 −72.8	540.5 2.5 −72.8	543.0 2.5 −72.8	545.5 2.5 −72.8	548.1 2.5 −72.8	550.6 2.5 −72.7	553.1 2.5 −72.7	555.6 2.5 −72.7	558.2 2.6 −72.7
21	560.8 2.6 −72.7	563.3 2.6 −72.7	565.9 2.6 −72.7	568.5 2.6 −72.7	571.1 2.6 −72.7	573.6 2.6 −72.7	576.3 2.6 −72.6	578.9 2.6 −72.6	581.5 2.6 −72.6	584.1 2.6 −72.6
22	586.7 2.6 −72.6	589.4 2.7 −72.6	592.0 2.7 −72.6	594.7 2.7 −72.6	597.4 2.7 −72.6	600.1 2.7 −72.6	602.7 2.7 −72.5	605.4 2.7 −72.5	608.1 2.7 −72.5	610.8 2.7 −72.5
23	613.6 2.7 −72.5	616.3 2.7 −72.5	619.0 2.7 −72.5	621.8 2.7 −72.5	624.5 2.8 −72.5	627.3 2.8 −72.5	630.0 2.8 −72.5	632.8 2.8 −72.4	635.6 2.8 −72.4	638.4 2.8 −72.4
24	641.2 2.8 −72.4	644.0 2.8 −72.4	646.8 2.8 −72.4	649.6 2.8 −72.4	652.4 2.8 −72.4	655.2 2.8 −72.4	658.1 2.9 −72.4	660.9 2.9 −72.4	663.8 2.9 −72.4	666.7 2.9 −72.3
25	669.5 2.9 −72.3	672.4 2.9 −72.3	675.3 2.9 −72.3	678.2 2.9 −72.3	681.1 2.9 −72.3	684.0 2.9 −72.3	686.9 2.9 −72.3	689.9 2.9 −72.3	692.8 2.9 −72.3	695.7 3.0 −72.3
26	698.7 3.0 −72.3	701.7 3.0 −72.2	704.6 3.0 −72.2	707.6 3.0 −72.2	710.6 3.0 −72.2	713.6 3.0 −72.2	716.6 3.0 −72.2	719.6 3.0 −72.2	722.6 3.0 −72.2	725.6 3.0 −72.2
27	728.6 3.0 −72.2	731.7 3.0 −72.2	734.7 3.0 −72.2	737.7 3.1 −72.2	740.8 3.1 −72.1	743.9 3.1 −72.1	746.9 3.1 −72.1	750.0 3.1 −72.1	753.1 3.1 −72.1	756.2 3.1 −72.1
28	759.3 3.1 −72.1	762.4 3.1 −72.1	765.5 3.1 −72.1	768.6 3.1 −72.1	771.8 3.1 −72.1	774.9 3.1 −72.1	778.1 3.2 −72.1	781.2 3.2 −72.1	784.4 3.2 −72.1	787.5 3.2 −72.0
29	790.7 3.2 −72.0	793.9 3.2 −72.0	797.1 3.2 −72.0	800.3 3.2 −72.0	803.5 3.2 −72.0	806.7 3.2 −72.0	809.9 3.2 −72.0	813.2 3.2 −72.0	816.4 3.2 −72.0	819.6 3.2 −72.0

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 33.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
-1----	149.1 -0.3 -76.8	148.8 -0.3 -76.9	148.5 -0.3 -76.9	148.2 -0.3 -76.9	148.0 -0.3 -77.0	147.7 -0.2 -77.0	147.5 -0.2 -77.0	147.2 -0.2 -77.1	147.0 -0.2 -77.1	146.8 -0.2 -77.1
-0----	153.0 -0.4 -76.5	152.5 -0.4 -76.6	152.1 -0.4 -76.6	151.7 -0.4 -76.6	151.3 -0.4 -76.7	150.9 -0.4 -76.7	150.5 -0.4 -76.7	150.1 -0.4 -76.8	149.8 -0.3 -76.8	149.5 -0.3 -76.8
0----	153.0 0.5 -76.5	153.4 0.5 -76.5	153.9 0.5 -76.5	154.4 0.5 -76.5	154.9 0.5 -76.4	155.4 0.5 -76.4	155.9 0.5 -76.4	156.5 0.5 -76.3	157.0 0.6 -76.3	157.6 0.6 -76.3
1----	158.2 0.6 -76.3	158.7 0.6 -76.2	159.3 0.6 -76.2	160.0 0.6 -76.2	160.6 0.6 -76.1	161.2 0.6 -76.1	161.9 0.7 -76.1	162.5 0.7 -76.1	163.2 0.7 -76.0	163.9 0.7 -76.0
2----	164.6 0.7 -76.0	165.3 0.7 -76.0	166.0 0.7 -75.9	166.8 0.7 -75.9	167.5 0.8 -75.9	168.3 0.8 -75.8	169.0 0.8 -75.8	169.8 0.8 -75.8	170.6 0.8 -75.8	171.4 0.8 -75.7
3----	172.3 0.8 -75.7	173.1 0.8 -75.7	173.9 0.9 -75.7	174.8 0.9 -75.6	175.7 0.9 -75.6	176.5 0.9 -75.6	177.4 0.9 -75.6	178.3 0.9 -75.5	179.3 0.9 -75.5	180.2 0.9 -75.5
4----	181.1 1.0 -75.5	182.1 1.0 -75.4	183.0 1.0 -75.4	184.0 1.0 -75.4	185.0 1.0 -75.4	186.0 1.0 -75.3	187.0 1.0 -75.3	188.0 1.0 -75.3	189.0 1.0 -75.3	190.1 1.1 -75.2
5----	191.1 1.1 -75.2	192.2 1.1 -75.2	193.3 1.1 -75.2	194.4 1.1 -75.2	195.5 1.1 -75.1	196.6 1.1 -75.1	197.7 1.1 -75.1	198.8 1.1 -75.1	200.0 1.2 -75.0	201.1 1.2 -75.0
6----	202.3 1.2 -75.0	203.5 1.2 -75.0	204.6 1.2 -75.0	205.8 1.2 -74.9	207.1 1.2 -74.9	208.3 1.2 -74.9	209.5 1.2 -74.9	210.7 1.3 -74.8	212.0 1.3 -74.8	213.3 1.3 -74.8
7----	214.5 1.3 -74.8	215.8 1.3 -74.8	217.1 1.3 -74.7	218.4 1.3 -74.7	219.7 1.3 -74.7	221.1 1.3 -74.7	222.4 1.3 -74.7	223.7 1.4 -74.6	225.1 1.4 -74.6	226.5 1.4 -74.6
8----	227.8 1.4 -74.6	229.2 1.4 -74.5	230.6 1.4 -74.5	232.0 1.4 -74.5	233.5 1.4 -74.5	234.9 1.4 -74.5	236.3 1.5 -74.4	237.8 1.5 -74.4	239.2 1.5 -74.4	240.7 1.5 -74.4
9----	242.2 1.5 -74.4	243.7 1.5 -74.4	245.2 1.5 -74.3	246.7 1.5 -74.3	248.2 1.5 -74.3	249.8 1.5 -74.3	251.3 1.6 -74.3	252.9 1.6 -74.2	254.4 1.6 -74.2	256.0 1.6 -74.2
10----	257.6 1.6 -74.2	259.2 1.6 -74.2	260.8 1.6 -74.1	262.4 1.6 -74.1	264.0 1.6 -74.1	265.6 1.6 -74.1	267.3 1.7 -74.1	268.9 1.7 -74.1	270.6 1.7 -74.0	272.3 1.7 -74.0
11----	273.9 1.7 -74.0	275.6 1.7 -74.0	277.3 1.7 -74.0	279.0 1.7 -74.0	280.8 1.7 -73.9	282.5 1.7 -73.9	284.2 1.7 -73.9	286.0 1.8 -73.9	287.7 1.8 -73.9	289.5 1.8 -73.9
12----	291.3 1.8 -73.8	293.1 1.8 -73.8	294.9 1.8 -73.8	296.7 1.8 -73.8	298.5 1.8 -73.8	300.3 1.8 -73.8	302.2 1.8 -73.7	304.0 1.9 -73.7	305.8 1.9 -73.7	307.7 1.9 -73.7
13----	309.6 1.9 -73.7	311.5 1.9 -73.7	313.4 1.9 -73.6	315.3 1.9 -73.6	317.2 1.9 -73.6	319.1 1.9 -73.6	321.0 1.9 -73.6	322.9 1.9 -73.6	324.9 2.0 -73.5	326.8 2.0 -73.5

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 33 .0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	328.8 *2.0* *−73.5*	330.8 *2.0* *−73.5*	332.8 *2.0* *−73.5*	334.8 *2.0* *−73.5*	336.8 *2.0* *−73.5*	338.8 *2.0* *−73.4*	340.8 *2.0* *−73.4*	342.8 *2.0* *−73.4*	344.8 *2.0* *−73.4*	346.9 *2.1* *−73.4*
15----	348.9 *2.1* *−73.4*	351.0 *2.1* *−73.4*	353.1 *2.1* *−73.3*	355.2 *2.1* *−73.3*	357.2 *2.1* *−73.3*	359.3 *2.1* *−73.3*	361.5 *2.1* *−73.3*	363.6 *2.1* *−73.3*	365.7 *2.1* *−73.3*	367.8 *2.1* *−73.2*
16----	370.0 *2.2* *−73.2*	372.1 *2.2* *−73.2*	374.3 *2.2* *−73.2*	376.5 *2.2* *−73.2*	378.6 *2.2* *−73.2*	380.8 *2.2* *−73.2*	383.0 *2.2* *−73.2*	385.2 *2.2* *−73.1*	387.4 *2.2* *−73.1*	389.7 *2.2* *−73.1*
17----	391.9 *2.2* *−73.1*	394.1 *2.2* *−73.1*	396.4 *2.3* *−73.1*	398.6 *2.3* *−73.1*	400.9 *2.3* *−73.1*	403.2 *2.3* *−73.0*	405.4 *2.3* *−73.0*	407.7 *2.3* *−73.0*	410.0 *2.3* *−73.0*	412.3 *2.3* *−73.0*
18----	414.7 *2.3* *−73.0*	417.0 *2.3* *−73.0*	419.3 *2.3* *−73.0*	421.7 *2.4* *−72.9*	424.0 *2.4* *−72.9*	426.4 *2.4* *−72.9*	428.7 *2.4* *−72.9*	431.1 *2.4* *−72.9*	433.5 *2.4* *−72.9*	435.9 *2.4* *−72.9*
19----	438.3 *2.4* *−72.9*	440.7 *2.4* *−72.8*	443.1 *2.4* *−72.8*	445.5 *2.4* *−72.8*	448.0 *2.4* *−72.8*	450.4 *2.5* *−72.8*	452.9 *2.5* *−72.8*	455.3 *2.5* *−72.8*	457.8 *2.5* *−72.8*	460.3 *2.5* *−72.8*
20----	462.8 *2.5* *−72.7*	465.2 *2.5* *−72.7*	467.7 *2.5* *−72.7*	470.3 *2.5* *−72.7*	472.8 *2.5* *−72.7*	475.3 *2.5* *−72.7*	477.8 *2.5* *−72.7*	480.4 *2.5* *−72.7*	482.9 *2.6* *−72.7*	485.5 *2.6* *−72.6*
21----	488.0 *2.6* *−72.6*	490.6 *2.6* *−72.6*	493.2 *2.6* *−72.6*	495.8 *2.6* *−72.6*	498.4 *2.6* *−72.6*	501.0 *2.6* *−72.6*	503.6 *2.6* *−72.6*	506.2 *2.6* *−72.6*	508.9 *2.6* *−72.6*	511.5 *2.6* *−72.5*
22----	514.1 *2.7* *−72.5*	516.8 *2.7* *−72.5*	519.5 *2.7* *−72.5*	522.1 *2.7* *−72.5*	524.8 *2.7* *−72.5*	527.5 *2.7* *−72.5*	530.2 *2.7* *−72.5*	532.9 *2.7* *−72.5*	535.6 *2.7* *−72.5*	538.3 *2.7* *−72.5*
23----	541.0 *2.7* *−72.4*	543.8 *2.7* *−72.4*	546.5 *2.7* *−72.4*	549.3 *2.8* *−72.4*	552.0 *2.8* *−72.4*	554.8 *2.8* *−72.4*	557.6 *2.8* *−72.4*	560.3 *2.8* *−72.4*	563.1 *2.8* *−72.4*	565.9 *2.8* *−72.4*
24----	568.7 *2.8* *−72.4*	571.5 *2.8* *−72.3*	574.4 *2.8* *−72.3*	577.2 *2.8* *−72.3*	580.0 *2.8* *−72.3*	582.9 *2.9* *−72.3*	585.7 *2.9* *−72.3*	588.6 *2.9* *−72.3*	591.4 *2.9* *−72.3*	594.3 *2.9* *−72.3*
25----	597.2 *2.9* *−72.3*	600.1 *2.9* *−72.3*	603.0 *2.9* *−72.3*	605.9 *2.9* *−72.2*	608.8 *2.9* *−72.2*	611.7 *2.9* *−72.2*	614.7 *2.9* *−72.2*	617.6 *2.9* *−72.2*	620.5 *3.0* *−72.2*	623.5 *3.0* *−72.2*
26----	626.4 *3.0* *−72.2*	629.4 *3.0* *−72.2*	632.4 *3.0* *−72.2*	635.4 *3.0* *−72.2*	638.4 *3.0* *−72.2*	641.3 *3.0* *−72.1*	644.4 *3.0* *−72.1*	647.4 *3.0* *−72.1*	650.4 *3.0* *−72.1*	653.4 *3.0* *−72.1*
27----	656.4 *3.0* *−72.1*	659.5 *3.0* *−72.1*	662.5 *3.1* *−72.1*	665.6 *3.1* *−72.1*	668.7 *3.1* *−72.1*	671.7 *3.1* *−72.1*	674.8 *3.1* *−72.1*	677.9 *3.1* *−72.1*	681.0 *3.1* *−72.1*	684.1 *3.1* *−72.0*
28----	687.2 *3.1* *−72.0*	690.3 *3.1* *−72.0*	693.4 *3.1* *−72.0*	696.6 *3.1* *−72.0*	699.7 *3.1* *−72.0*	702.8 *3.2* *−72.0*	706.0 *3.2* *−72.0*	709.2 *3.2* *−72.0*	712.3 *3.2* *−72.0*	715.5 *3.2* *−72.0*
29----	718.7 *3.2* *−72.0*	721.9 *3.2* *−72.0*	725.1 *3.2* *−72.0*	728.3 *3.2* *−72.0*	731.5 *3.2* *−71.9*	734.7 *3.2* *−71.9*	737.9 *3.2* *−71.9*	741.2 *3.2* *−71.9*	744.4 *3.2* *−71.9*	747.6 *3.3* *−71.9*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 34.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1----	72.3 −0.3 −76.7	71.9 −0.3 −76.8	71.6 −0.3 −76.8	71.3 −0.3 −76.8	71.0 −0.3 −76.9	70.7 −0.3 −76.9	70.4 −0.3 −76.9	70.2 −0.2 −77.0	69.9 −0.2 −77.0	69.7 −0.2 −77.0
−0----	76.4 −0.5 −76.4	76.0 −0.5 −76.5	75.5 −0.4 −76.5	75.1 −0.4 −76.5	74.6 −0.4 −76.6	74.2 −0.4 −76.6	73.8 −0.4 −76.6	73.4 −0.4 −76.7	73.0 −0.4 −76.7	72.6 −0.4 −76.7
0----	76.4 0.5 −76.4	76.9 0.5 −76.4	77.4 0.5 −76.4	77.9 0.5 −76.4	78.5 0.5 −76.3	79.0 0.6 −76.3	79.6 0.6 −76.3	80.1 0.6 −76.2	80.7 0.6 −76.2	81.3 0.6 −76.2
1----	81.9 0.6 −76.2	82.5 0.6 −76.1	83.1 0.6 −76.1	83.8 0.7 −76.1	84.4 0.7 −76.0	85.1 0.7 −76.0	85.8 0.7 −76.0	86.5 0.7 −76.0	87.2 0.7 −75.9	87.9 0.7 −75.9
2----	88.6 0.7 −75.9	89.4 0.8 −75.9	90.1 0.8 −75.8	90.9 0.8 −75.8	91.6 0.8 −75.8	92.4 0.8 −75.8	93.2 0.8 −75.7	94.0 0.8 −75.7	94.9 0.8 −75.7	95.7 0.8 −75.6
3----	96.5 0.9 −75.6	97.4 0.9 −75.6	98.3 0.9 −75.6	99.2 0.9 −75.5	100.0 0.9 −75.5	101.0 0.9 −75.5	101.9 0.9 −75.5	102.8 0.9 −75.4	103.7 1.0 −75.4	104.7 1.0 −75.4
4----	105.7 1.0 −75.4	106.6 1.0 −75.3	107.6 1.0 −75.3	108.6 1.0 −75.3	109.6 1.0 −75.3	110.6 1.0 −75.3	111.7 1.0 −75.2	112.7 1.1 −75.2	113.8 1.1 −75.2	114.8 1.1 −75.2
5----	115.9 1.1 −75.1	117.0 1.1 −75.1	118.1 1.1 −75.1	119.2 1.1 −75.1	120.3 1.1 −75.0	121.5 1.1 −75.0	122.6 1.2 −75.0	123.8 1.2 −75.0	124.9 1.2 −75.0	126.1 1.2 −74.9
6----	127.3 1.2 −74.9	128.5 1.2 −74.9	129.7 1.2 −74.9	130.9 1.2 −74.8	132.1 1.2 −74.8	133.4 1.3 −74.8	134.6 1.3 −74.8	135.9 1.3 −74.8	137.2 1.3 −74.7	138.5 1.3 −74.7
7----	139.8 1.3 −74.7	141.1 1.3 −74.7	142.4 1.3 −74.6	143.7 1.3 −74.6	145.0 1.3 −74.6	146.4 1.4 −74.6	147.7 1.4 −74.6	149.1 1.4 −74.5	150.5 1.4 −74.5	151.9 1.4 −74.5
8----	153.3 1.4 −74.5	154.7 1.4 −74.5	156.1 1.4 −74.4	157.5 1.4 −74.4	159.0 1.5 −74.4	160.4 1.5 −74.4	161.9 1.5 −74.4	163.4 1.5 −74.3	164.8 1.5 −74.3	166.3 1.5 −74.3
9----	167.8 1.5 −74.3	169.3 1.5 −74.3	170.9 1.5 −74.3	172.4 1.5 −74.2	173.9 1.6 −74.2	175.5 1.6 −74.2	177.0 1.6 −74.2	178.6 1.6 −74.2	180.2 1.6 −74.1	181.8 1.6 −74.1
10----	183.4 1.6 −74.1	185.0 1.6 −74.1	186.6 1.6 −74.1	188.3 1.6 −74.0	189.9 1.7 −74.0	191.5 1.7 −74.0	193.2 1.7 −74.0	194.9 1.7 −74.0	196.6 1.7 −74.0	198.2 1.7 −73.9
11----	199.9 1.7 −73.9	201.7 1.7 −73.9	203.4 1.7 −73.9	205.1 1.7 −73.9	206.8 1.7 −73.9	208.6 1.8 −73.8	210.3 1.8 −73.8	212.1 1.8 −73.8	213.9 1.8 −73.8	215.7 1.8 −73.8
12----	217.5 1.8 −73.8	219.3 1.8 −73.7	221.1 1.8 −73.7	222.9 1.8 −73.7	224.7 1.8 −73.7	226.6 1.9 −73.7	228.4 1.9 −73.7	230.3 1.9 −73.6	232.1 1.9 −73.6	234.0 1.9 −73.6
13----	235.9 1.9 −73.6	237.8 1.9 −73.6	239.7 1.9 −73.6	241.6 1.9 −73.5	243.5 1.9 −73.5	245.5 1.9 −73.5	247.4 2.0 −73.5	249.4 2.0 −73.5	251.3 2.0 −73.5	253.3 2.0 −73.5

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 34.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14	255.3 *2.0* *−73.4*	257.3 *2.0* *−73.4*	259.3 *2.0* *−73.4*	261.3 *2.0* *−73.4*	263.3 *2.0* *−73.4*	265.3 *2.0* *−73.4*	267.3 *2.0* *−73.4*	269.4 *2.1* *−73.3*	271.4 *2.1* *−73.3*	273.5 *2.1* *−73.3*
15	275.6 *2.1* *−73.3*	277.6 *2.1* *−73.3*	279.7 *2.1* *−73.3*	281.8 *2.1* *−73.3*	283.9 *2.1* *−73.2*	286.0 *2.1* *−73.2*	288.2 *2.1* *−73.2*	290.3 *2.1* *−73.2*	292.4 *2.1* *−73.2*	294.6 *2.2* *−73.2*
16	296.7 *2.2* *−73.2*	298.9 *2.2* *−73.1*	301.1 *2.2* *−73.1*	303.3 *2.2* *−73.1*	305.5 *2.2* *−73.1*	307.7 *2.2* *−73.1*	309.9 *2.2* *−73.1*	312.1 *2.2* *−73.1*	314.3 *2.2* *−73.1*	316.5 *2.2* *−73.0*
17	318.8 *2.3* *−73.0*	321.0 *2.3* *−73.0*	323.3 *2.3* *−73.0*	325.6 *2.3* *−73.0*	327.8 *2.3* *−73.0*	330.1 *2.3* *−73.0*	332.4 *2.3* *−73.0*	334.7 *2.3* *−72.9*	337.0 *2.3* *−72.9*	339.4 *2.3* *−72.9*
18	341.7 *2.3* *−72.9*	344.0 *2.3* *−72.9*	346.4 *2.4* *−72.9*	348.7 *2.4* *−72.9*	351.1 *2.4* *−72.9*	353.5 *2.4* *−72.8*	355.8 *2.4* *−72.8*	358.2 *2.4* *−72.8*	360.6 *2.4* *−72.8*	363.0 *2.4* *−72.8*
19	365.4 *2.4* *−72.8*	367.9 *2.4* *−72.8*	370.3 *2.4* *−72.8*	372.7 *2.4* *−72.8*	375.2 *2.5* *−72.7*	377.6 *2.5* *−72.7*	380.1 *2.5* *−72.7*	382.6 *2.5* *−72.7*	385.0 *2.5* *−72.7*	387.5 *2.5* *−72.7*
20	390.0 *2.5* *−72.7*	392.5 *2.5* *−72.7*	395.0 *2.5* *−72.7*	397.5 *2.5* *−72.6*	400.1 *2.5* *−72.6*	402.6 *2.5* *−72.6*	405.1 *2.6* *−72.6*	407.7 *2.6* *−72.6*	410.3 *2.6* *−72.6*	412.8 *2.6* *−72.6*
21	415.4 *2.6* *−72.6*	418.0 *2.6* *−72.6*	420.6 *2.6* *−72.5*	423.2 *2.6* *−72.5*	425.8 *2.6* *−72.5*	428.4 *2.6* *−72.5*	431.0 *2.6* *−72.5*	433.7 *2.6* *−72.5*	436.3 *2.6* *−72.5*	438.9 *2.7* *−72.5*
22	441.6 *2.7* *−72.5*	444.3 *2.7* *−72.5*	446.9 *2.7* *−72.5*	449.6 *2.7* *−72.4*	452.3 *2.7* *−72.4*	455.0 *2.7* *−72.4*	457.7 *2.7* *−72.4*	460.4 *2.7* *−72.4*	463.1 *2.7* *−72.4*	465.9 *2.7* *−72.4*
23	468.6 *2.7* *−72.4*	471.3 *2.8* *−72.4*	474.1 *2.8* *−72.4*	476.9 *2.8* *−72.3*	479.6 *2.8* *−72.3*	482.4 *2.8* *−72.3*	485.2 *2.8* *−72.3*	488.0 *2.8* *−72.3*	490.8 *2.8* *−72.3*	493.6 *2.8* *−72.3*
24	496.4 *2.8* *−72.3*	499.2 *2.8* *−72.3*	502.0 *2.8* *−72.3*	504.9 *2.8* *−72.3*	507.7 *2.9* *−72.3*	510.6 *2.9* *−72.2*	513.4 *2.9* *−72.2*	516.3 *2.9* *−72.2*	519.2 *2.9* *−72.2*	522.0 *2.9* *−72.2*
25	524.9 *2.9* *−72.2*	527.8 *2.9* *−72.2*	530.7 *2.9* *−72.2*	533.7 *2.9* *−72.2*	536.6 *2.9* *−72.2*	539.5 *2.9* *−72.2*	542.4 *2.9* *−72.2*	545.4 *3.0* *−72.1*	548.3 *3.0* *−72.1*	551.3 *3.0* *−72.1*
26	554.3 *3.0* *−72.1*	557.2 *3.0* *−72.1*	560.2 *3.0* *−72.1*	563.2 *3.0* *−72.1*	566.2 *3.0* *−72.1*	569.2 *3.0* *−72.1*	572.2 *3.0* *−72.1*	575.2 *3.0* *−72.1*	578.3 *3.0* *−72.1*	581.3 *3.0* *−72.1*
27	584.3 *3.0* *−72.0*	587.4 *3.1* *−72.0*	590.4 *3.1* *−72.0*	593.5 *3.1* *−72.0*	596.6 *3.1* *−72.0*	599.6 *3.1* *−72.0*	602.7 *3.1* *−72.0*	605.8 *3.1* *−72.0*	608.9 *3.1* *−72.0*	612.0 *3.1* *−72.0*
28	615.2 *3.1* *−72.0*	618.3 *3.1* *−72.0*	621.4 *3.1* *−72.0*	624.5 *3.1* *−72.0*	627.7 *3.2* *−71.9*	630.8 *3.2* *−71.9*	634.0 *3.2* *−71.9*	637.2 *3.2* *−71.9*	640.3 *3.2* *−71.9*	643.5 *3.2* *−71.9*
29	646.7 *3.2* *−71.9*	649.9 *3.2* *−71.9*	653.1 *3.2* *−71.9*	656.3 *3.2* *−71.9*	659.5 *3.2* *−71.9*	662.8 *3.2* *−71.9*	666.0 *3.2* *−71.9*	669.2 *3.2* *−71.9*	672.5 *3.3* *−71.9*	675.7 *3.3* *−71.9*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 35.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1----	−4.5 −0.4 −76.6	−4.8 −0.4 −76.7	−5.2 −0.3 −76.7	−5.5 −0.3 −76.7	−5.9 −0.3 −76.8	−6.2 −0.3 −76.8	−6.5 −0.3 −76.8	−6.8 −0.3 −76.9	−7.1 −0.3 −76.9	−7.4 −0.3 −76.9
−0----	0.0 −0.5 −76.3	−0.5 −0.5 −76.4	−1.0 −0.5 −76.4	−1.5 −0.5 −76.4	−1.9 −0.5 −76.5	−2.4 −0.4 −76.5	−2.8 −0.4 −76.5	−3.3 −0.4 −76.6	−3.7 −0.4 −76.6	−4.1 −0.4 −76.6
0----	0.0 0.5 −76.3	0.5 0.5 −76.3	1.0 0.5 −76.3	1.6 0.6 −76.3	2.1 0.6 −76.2	2.7 0.6 −76.2	3.3 0.6 −76.2	3.9 0.6 −76.1	4.5 0.6 −76.1	5.1 0.6 −76.1
1----	5.7 0.6 −76.1	6.4 0.7 −76.0	7.0 0.7 −76.0	7.7 0.7 −76.0	8.4 0.7 −76.0	9.1 0.7 −75.9	9.8 0.7 −75.9	10.5 0.7 −75.9	11.2 0.7 −75.8	12.0 0.8 −75.8
2----	12.7 0.8 −75.8	13.5 0.8 −75.8	14.3 0.8 −75.7	15.1 0.8 −75.7	15.9 0.8 −75.7	16.7 0.8 −75.7	17.5 0.8 −75.6	18.3 0.8 −75.6	19.2 0.9 −75.6	20.1 0.9 −75.6
3----	20.9 0.9 −75.5	21.8 0.9 −75.5	22.7 0.9 −75.5	23.6 0.9 −75.5	24.5 0.9 −75.4	25.5 0.9 −75.4	26.4 1.0 −75.4	27.4 1.0 −75.4	28.3 1.0 −75.3	29.3 1.0 −75.3
4----	30.3 1.0 −75.3	31.3 1.0 −75.3	32.3 1.0 −75.2	33.3 1.0 −75.2	34.3 1.0 −75.2	35.4 1.1 −75.2	36.4 1.1 −75.1	37.5 1.1 −75.1	38.6 1.1 −75.1	39.7 1.1 −75.1
5----	40.8 1.1 −75.0	41.9 1.1 −75.0	43.0 1.1 −75.0	44.1 1.1 −75.0	45.3 1.2 −75.0	46.4 1.2 −74.9	47.6 1.2 −74.9	48.8 1.2 −74.9	50.0 1.2 −74.9	51.2 1.2 −74.8
6----	52.4 1.2 −74.8	53.6 1.2 −74.8	54.8 1.2 −74.8	56.1 1.3 −74.8	57.3 1.3 −74.7	58.6 1.3 −74.7	59.9 1.3 −74.7	61.1 1.3 −74.7	62.4 1.3 −74.6	63.7 1.3 −74.6
7----	65.1 1.3 −74.6	66.4 1.3 −74.6	67.7 1.3 −74.6	69.1 1.4 −74.5	70.4 1.4 −74.5	71.8 1.4 −74.5	73.2 1.4 −74.5	74.6 1.4 −74.5	76.0 1.4 −74.4	77.4 1.4 −74.4
8----	78.8 1.4 −74.4	80.2 1.4 −74.4	81.7 1.5 −74.4	83.1 1.5 −74.3	84.6 1.5 −74.3	86.0 1.5 −74.3	87.5 1.5 −74.3	89.0 1.5 −74.3	90.5 1.5 −74.2	92.0 1.5 −74.2
9----	93.5 1.5 −74.2	95.1 1.5 −74.2	96.6 1.6 −74.2	98.2 1.6 −74.2	99.7 1.6 −74.1	101.3 1.6 −74.1	102.9 1.6 −74.1	104.5 1.6 −74.1	106.1 1.6 −74.1	107.7 1.6 −74.0
10----	109.3 1.6 −74.0	110.9 1.6 −74.0	112.6 1.6 −74.0	114.2 1.7 −74.0	115.9 1.7 −74.0	117.5 1.7 −73.9	119.2 1.7 −73.9	120.9 1.7 −73.9	122.6 1.7 −73.9	124.3 1.7 −73.9
11----	126.0 1.7 −73.8	127.7 1.7 −73.8	129.5 1.7 −73.8	131.2 1.8 −73.8	133.0 1.8 −73.8	134.7 1.8 −73.8	136.5 1.8 −73.7	138.3 1.8 −73.7	140.1 1.8 −73.7	141.9 1.8 −73.7
12----	143.7 1.8 −73.7	145.5 1.8 −73.7	147.3 1.8 −73.6	149.2 1.8 −73.6	151.0 1.9 −73.6	152.9 1.9 −73.6	154.8 1.9 −73.6	156.6 1.9 −73.6	158.5 1.9 −73.6	160.4 1.9 −73.5
13----	162.3 1.9 −73.5	164.2 1.9 −73.5	166.1 1.9 −73.5	168.1 1.9 −73.5	170.0 1.9 −73.5	172.0 2.0 −73.4	173.9 2.0 −73.4	175.9 2.0 −73.4	177.9 2.0 −73.4	179.8 2.0 −73.4

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 35.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	181.8 *2.0* *−73.4*	183.8 *2.0* *−73.4*	185.9 *2.0* *−73.3*	187.9 *2.0* *−73.3*	189.9 *2.0* *−73.3*	191.9 *2.0* *−73.3*	194.0 *2.1* *−73.3*	196.0 *2.1* *−73.3*	198.1 *2.1* *−73.3*	200.2 *2.1* *−73.2*
15----	202.3 *2.1* *−73.2*	204.4 *2.1* *−73.2*	206.5 *2.1* *−73.2*	208.6 *2.1* *−73.2*	210.7 *2.1* *−73.2*	212.8 *2.1* *−73.2*	215.0 *2.1* *−73.1*	217.1 *2.2* *−73.1*	219.2 *2.2* *−73.1*	221.4 *2.2* *−73.1*
16----	223.6 *2.2* *−73.1*	225.8 *2.2* *−73.1*	227.9 *2.2* *−73.1*	230.1 *2.2* *−73.0*	232.3 *2.2* *−73.0*	234.6 *2.2* *−73.0*	236.8 *2.2* *−73.0*	239.0 *2.2* *−73.0*	241.3 *2.2* *−73.0*	243.5 *2.3* *−73.0*
17----	245.8 *2.3* *−73.0*	248.0 *2.3* *−72.9*	250.3 *2.3* *−72.9*	252.6 *2.3* *−72.9*	254.9 *2.3* *−72.9*	257.2 *2.3* *−72.9*	259.5 *2.3* *−72.9*	261.8 *2.3* *−72.9*	264.1 *2.3* *−72.9*	266.4 *2.3* *−72.8*
18----	268.8 *2.3* *−72.8*	271.1 *2.4* *−72.8*	273.5 *2.4* *−72.8*	275.9 *2.4* *−72.8*	278.2 *2.4* *−72.8*	280.6 *2.4* *−72.8*	283.0 *2.4* *−72.8*	285.4 *2.4* *−72.8*	287.8 *2.4* *−72.7*	290.2 *2.4* *−72.7*
19----	292.6 *2.4* *−72.7*	295.1 *2.4* *−72.7*	297.5 *2.4* *−72.7*	300.0 *2.5* *−72.7*	302.4 *2.5* *−72.7*	304.9 *2.5* *−72.7*	307.4 *2.5* *−72.7*	309.8 *2.5* *−72.6*	312.3 *2.5* *−72.6*	314.8 *2.5* *−72.6*
20----	317.3 *2.5* *−72.6*	319.8 *2.5* *−72.6*	322.4 *2.5* *−72.6*	324.9 *2.5* *−72.6*	327.4 *2.5* *−72.6*	330.0 *2.6* *−72.6*	332.5 *2.6* *−72.5*	335.1 *2.6* *−72.5*	337.7 *2.6* *−72.5*	340.2 *2.6* *−72.5*
21----	342.8 *2.6* *−72.5*	345.4 *2.6* *−72.5*	348.0 *2.6* *−72.5*	350.6 *2.6* *−72.5*	353.3 *2.6* *−72.5*	355.9 *2.6* *−72.5*	358.5 *2.6* *−72.4*	361.2 *2.7* *−72.4*	363.8 *2.7* *−72.4*	366.5 *2.7* *−72.4*
22----	369.1 *2.7* *−72.4*	371.8 *2.7* *−72.4*	374.5 *2.7* *−72.4*	377.2 *2.7* *−72.4*	379.9 *2.7* *−72.4*	382.6 *2.7* *−72.4*	385.3 *2.7* *−72.3*	388.0 *2.7* *−72.3*	390.7 *2.7* *−72.3*	393.5 *2.7* *−72.3*
23----	396.2 *2.8* *−72.3*	399.0 *2.8* *−72.3*	401.7 *2.8* *−72.3*	404.5 *2.8* *−72.3*	407.3 *2.8* *−72.3*	410.1 *2.8* *−72.3*	412.9 *2.8* *−72.3*	415.7 *2.8* *−72.2*	418.5 *2.8* *−72.2*	421.3 *2.8* *−72.2*
24----	424.1 *2.8* *−72.2*	426.9 *2.8* *−72.2*	429.8 *2.8* *−72.2*	432.6 *2.9* *−72.2*	435.5 *2.9* *−72.2*	438.3 *2.9* *−72.2*	441.2 *2.9* *−72.2*	444.1 *2.9* *−72.2*	446.9 *2.9* *−72.2*	449.8 *2.9* *−72.1*
25----	452.7 *2.9* *−72.1*	455.6 *2.9* *−72.1*	458.6 *2.9* *−72.1*	461.5 *2.9* *−72.1*	464.4 *2.9* *−72.1*	467.3 *2.9* *−72.1*	470.3 *3.0* *−72.1*	473.2 *3.0* *−72.1*	476.2 *3.0* *−72.1*	479.2 *3.0* *−72.1*
26----	482.1 *3.0* *−72.1*	485.1 *3.0* *−72.0*	488.1 *3.0* *−72.0*	491.1 *3.0* *−72.0*	494.1 *3.0* *−72.0*	497.1 *3.0* *−72.0*	500.1 *3.0* *−72.0*	503.2 *3.0* *−72.0*	506.2 *3.0* *−72.0*	509.2 *3.0* *−72.0*
27----	512.3 *3.1* *−72.0*	515.3 *3.1* *−72.0*	518.4 *3.1* *−72.0*	521.5 *3.1* *−72.0*	524.6 *3.1* *−72.0*	527.6 *3.1* *−71.9*	530.7 *3.1* *−71.9*	533.8 *3.1* *−71.9*	536.9 *3.1* *−71.9*	540.1 *3.1* *−71.9*
28----	543.2 *3.1* *−71.9*	546.3 *3.1* *−71.9*	549.4 *3.1* *−71.9*	552.6 *3.2* *−71.9*	555.7 *3.2* *−71.9*	558.9 *3.2* *−71.9*	562.1 *3.2* *−71.9*	565.2 *3.2* *−71.9*	568.4 *3.2* *−71.9*	571.6 *3.2* *−71.9*
29----	574.8 *3.2* *−71.8*	578.0 *3.2* *−71.8*	581.2 *3.2* *−71.8*	584.4 *3.2* *−71.8*	587.6 *3.2* *−71.8*	590.9 *3.2* *−71.8*	594.1 *3.2* *−71.8*	597.4 *3.3* *−71.8*	600.6 *3.3* *−71.8*	603.9 *3.3* *−71.8*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 36.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	−81.1 −0.4 −76.5	−81.5 −0.4 −76.6	−81.9 −0.4 −76.6	−82.3 −0.4 −76.6	−82.7 −0.4 −76.7	−83.0 −0.3 −76.7	−83.3 −0.3 −76.7	−83.7 −0.3 −76.8	−84.0 −0.3 −76.8	−84.3 −0.3 −76.8
−0	−76.3 −0.5 −76.3	−76.9 −0.5 −76.3	−77.4 −0.5 −76.3	−77.9 −0.5 −76.3	−78.4 −0.5 −76.4	−78.9 −0.5 −76.4	−79.4 −0.5 −76.4	−79.8 −0.4 −76.5	−80.3 −0.4 −76.5	−80.7 −0.4 −76.5
0	−76.3 0.5 −76.3	−75.8 0.6 −76.2	−75.2 0.6 −76.2	−74.7 0.6 −76.2	−74.1 0.6 −76.1	−73.5 0.6 −76.1	−72.9 0.6 −76.1	−72.3 0.6 −76.1	−71.6 0.6 −76.0	−71.0 0.7 −76.0
1	−70.3 0.7 −76.0	−69.6 0.7 −75.9	−69.0 0.7 −75.9	−68.3 0.7 −75.9	−67.6 0.7 −75.9	−66.8 0.7 −75.8	−66.1 0.7 −75.8	−65.4 0.8 −75.8	−64.6 0.8 −75.8	−63.8 0.8 −75.7
2	−63.1 0.8 −75.7	−62.3 0.8 −75.7	−61.5 0.8 −75.6	−60.6 0.8 −75.6	−59.8 0.8 −75.6	−59.0 0.9 −75.6	−58.1 0.9 −75.5	−57.3 0.9 −75.5	−56.4 0.9 −75.5	−55.5 0.9 −75.5
3	−54.6 0.9 −75.4	−53.7 0.9 −75.4	−52.8 0.9 −75.4	−51.8 0.9 −75.4	−50.9 1.0 −75.3	−49.9 1.0 −75.3	−49.0 1.0 −75.3	−48.0 1.0 −75.3	−47.0 1.0 −75.2	−46.0 1.0 −75.2
4	−45.0 1.0 −75.2	−44.0 1.0 −75.2	−42.9 1.0 −75.1	−41.9 1.1 −75.1	−40.8 1.1 −75.1	−39.8 1.1 −75.1	−38.7 1.1 −75.1	−37.6 1.1 −75.0	−36.5 1.1 −75.0	−35.4 1.1 −75.0
5	−34.3 1.1 −75.0	−33.1 1.1 −74.9	−32.0 1.2 −74.9	−30.8 1.2 −74.9	−29.7 1.2 −74.9	−28.5 1.2 −74.8	−27.3 1.2 −74.8	−26.1 1.2 −74.8	−24.9 1.2 −74.8	−23.7 1.2 −74.8
6	−22.4 1.2 −74.7	−21.2 1.3 −74.7	−19.9 1.3 −74.7	−18.7 1.3 −74.7	−17.4 1.3 −74.7	−16.1 1.3 −74.6	−14.8 1.3 −74.6	−13.5 1.3 −74.6	−12.2 1.3 −74.6	−10.9 1.3 −74.5
7	−9.5 1.3 −74.5	−8.2 1.4 −74.5	−6.8 1.4 −74.5	−5.5 1.4 −74.5	−4.1 1.4 −74.4	−2.7 1.4 −74.4	−1.3 1.4 −74.4	0.1 1.4 −74.4	1.5 1.4 −74.4	2.9 1.4 −74.3
8	4.4 1.4 −74.3	5.8 1.5 −74.3	7.3 1.5 −74.3	8.8 1.5 −74.3	10.2 1.5 −74.2	11.7 1.5 −74.2	13.2 1.5 −74.2	14.7 1.5 −74.2	16.3 1.5 −74.2	17.8 1.5 −74.1
9	19.3 1.5 −74.1	20.9 1.6 −74.1	22.4 1.6 −74.1	24.0 1.6 −74.1	25.6 1.6 −74.1	27.2 1.6 −74.0	28.8 1.6 −74.0	30.4 1.6 −74.0	32.0 1.6 −74.0	33.6 1.6 −74.0
10	35.3 1.6 −73.9	36.9 1.7 −73.9	38.6 1.7 −73.9	40.2 1.7 −73.9	41.9 1.7 −73.9	43.6 1.7 −73.9	45.3 1.7 −73.8	47.0 1.7 −73.8	48.7 1.7 −73.8	50.4 1.7 −73.8
11	52.2 1.7 −73.8	53.9 1.8 −73.8	55.7 1.8 −73.7	57.4 1.8 −73.7	59.2 1.8 −73.7	61.0 1.8 −73.7	62.8 1.8 −73.7	64.6 1.8 −73.7	66.4 1.8 −73.6	68.2 1.8 −73.6
12	70.0 1.8 −73.6	71.9 1.8 −73.6	73.7 1.9 −73.6	75.6 1.9 −73.6	77.4 1.9 −73.5	79.3 1.9 −73.5	81.2 1.9 −73.5	83.1 1.9 −73.5	85.0 1.9 −73.5	86.9 1.9 −73.5
13	88.8 1.9 −73.4	90.7 1.9 −73.4	92.7 1.9 −73.4	94.6 2.0 −73.4	96.6 2.0 −73.4	98.5 2.0 −73.4	100.5 2.0 −73.4	102.5 2.0 −73.3	104.5 2.0 −73.3	106.5 2.0 −73.3

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 36.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	108.5 *2.0* *−73.3*	110.5 *2.0* *−73.3*	112.5 *2.0* *−73.3*	114.6 *2.0* *−73.3*	116.6 *2.1* *−73.2*	118.7 *2.1* *−73.2*	120.7 *2.1* *−73.2*	122.8 *2.1* *−73.2*	124.9 *2.1* *−73.2*	127.0 *2.1* *−73.2*
15----	129.0 *2.1* *−73.2*	131.2 *2.1* *−73.1*	133.3 *2.1* *−73.1*	135.4 *2.1* *−73.1*	137.5 *2.1* *−73.1*	139.7 *2.1* *−73.1*	141.8 *2.2* *−73.1*	144.0 *2.2* *−73.1*	146.1 *2.2* *−73.0*	148.3 *2.2* *−73.0*
16----	150.5 *2.2* *−73.0*	152.7 *2.2* *−73.0*	154.9 *2.2* *−73.0*	157.1 *2.2* *−73.0*	159.3 *2.2* *−73.0*	161.5 *2.2* *−73.0*	163.8 *2.2* *−72.9*	166.0 *2.3* *−72.9*	168.3 *2.3* *−72.9*	170.5 *2.3* *−72.9*
17----	172.8 *2.3* *−72.9*	175.1 *2.3* *−72.9*	177.4 *2.3* *−72.9*	179.7 *2.3* *−72.9*	182.0 *2.3* *−72.8*	184.3 *2.3* *−72.8*	186.6 *2.3* *−72.8*	188.9 *2.3* *−72.8*	191.3 *2.3* *−72.8*	193.6 *2.4* *−72.8*
18----	195.9 *2.4* *−72.8*	198.3 *2.4* *−72.8*	200.7 *2.4* *−72.7*	203.1 *2.4* *−72.7*	205.4 *2.4* *−72.7*	207.8 *2.4* *−72.7*	210.2 *2.4* *−72.7*	212.6 *2.4* *−72.7*	215.1 *2.4* *−72.7*	217.5 *2.4* *−72.7*
19----	219.9 *2.4* *−72.6*	222.4 *2.5* *−72.6*	224.8 *2.5* *−72.6*	227.3 *2.5* *−72.6*	229.8 *2.5* *−72.6*	232.2 *2.5* *−72.6*	234.7 *2.5* *−72.6*	237.2 *2.5* *−72.6*	239.7 *2.5* *−72.6*	242.2 *2.5* *−72.5*
20----	244.7 *2.5* *−72.5*	247.3 *2.5* *−72.5*	249.8 *2.5* *−72.5*	252.3 *2.5* *−72.5*	254.9 *2.6* *−72.5*	257.4 *2.6* *−72.5*	260.0 *2.6* *−72.5*	262.6 *2.6* *−72.5*	265.1 *2.6* *−72.5*	267.7 *2.6* *−72.4*
21----	270.3 *2.6* *−72.4*	272.9 *2.6* *−72.4*	275.5 *2.6* *−72.4*	278.2 *2.6* *−72.4*	280.8 *2.6* *−72.4*	283.4 *2.6* *−72.4*	286.1 *2.7* *−72.4*	288.7 *2.7* *−72.4*	291.4 *2.7* *−72.4*	294.1 *2.7* *−72.3*
22----	296.7 *2.7* *−72.3*	299.4 *2.7* *−72.3*	302.1 *2.7* *−72.3*	304.8 *2.7* *−72.3*	307.5 *2.7* *−72.3*	310.2 *2.7* *−72.3*	313.0 *2.7* *−72.3*	315.7 *2.7* *−72.3*	318.4 *2.7* *−72.3*	321.2 *2.8* *−72.3*
23----	323.9 *2.8* *−72.2*	326.7 *2.8* *−72.2*	329.4 *2.8* *−72.2*	332.2 *2.8* *−72.2*	335.0 *2.8* *−72.2*	337.8 *2.8* *−72.2*	340.6 *2.8* *−72.2*	343.4 *2.8* *−72.2*	346.2 *2.8* *−72.2*	349.0 *2.8* *−72.2*
24----	351.9 *2.8* *−72.2*	354.7 *2.8* *−72.1*	357.6 *2.9* *−72.1*	360.4 *2.9* *−72.1*	363.3 *2.9* *−72.1*	366.1 *2.9* *−72.1*	369.0 *2.9* *−72.1*	371.9 *2.9* *−72.1*	374.8 *2.9* *−72.1*	377.7 *2.9* *−72.1*
25----	380.6 *2.9* *−72.1*	383.5 *2.9* *−72.1*	386.4 *2.9* *−72.1*	389.4 *2.9* *−72.0*	392.3 *2.9* *−72.0*	395.2 *3.0* *−72.0*	398.2 *3.0* *−72.0*	401.2 *3.0* *−72.0*	404.1 *3.0* *−72.0*	407.1 *3.0* *−72.0*
26----	410.1 *3.0* *−72.0*	413.1 *3.0* *−72.0*	416.1 *3.0* *−72.0*	419.1 *3.0* *−72.0*	422.1 *3.0* *−72.0*	425.1 *3.0* *−72.0*	428.1 *3.0* *−71.9*	431.2 *3.0* *−71.9*	434.2 *3.0* *−71.9*	437.2 *3.1* *−71.9*
27----	440.3 *3.1* *−71.9*	443.4 *3.1* *−71.9*	446.4 *3.1* *−71.9*	449.5 *3.1* *−71.9*	452.6 *3.1* *−71.9*	455.7 *3.1* *−71.9*	458.8 *3.1* *−71.9*	461.9 *3.1* *−71.9*	465.0 *3.1* *−71.9*	468.1 *3.1* *−71.9*
28----	471.3 *3.1* *−71.8*	474.4 *3.1* *−71.8*	477.5 *3.2* *−71.8*	480.7 *3.2* *−71.8*	483.9 *3.2* *−71.8*	487.0 *3.2* *−71.8*	490.2 *3.2* *−71.8*	493.4 *3.2* *−71.8*	496.6 *3.2* *−71.8*	499.7 *3.2* *−71.8*
29----	503.0 *3.2* *−71.8*	506.2 *3.2* *−71.8*	509.4 *3.2* *−71.8*	512.6 *3.2* *−71.8*	515.8 *3.2* *−71.8*	519.1 *3.2* *−71.8*	522.3 *3.3* *−71.7*	525.6 *3.3* *−71.7*	528.8 *3.3* *−71.7*	532.1 *3.3* *−71.7*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ $[10^{-8}\ m^3/kg]$ at atmospheric pressure

S= 37 .0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1----	−157.7 −0.4 −76.5	−158.1 −0.4 −76.5	−158.5 −0.4 −76.5	−158.9 −0.4 −76.5	−159.3 −0.4 −76.6	−159.7 −0.4 −76.6	−160.1 −0.4 −76.6	−160.4 −0.3 −76.7	−160.8 −0.3 −76.7	−161.1 −0.3 −76.7
−0----	−152.6 −0.6 −76.2	−153.2 −0.6 −76.2	−153.7 −0.5 −76.2	−154.3 −0.5 −76.2	−154.8 −0.5 −76.3	−155.3 −0.5 −76.3	−155.8 −0.5 −76.3	−156.3 −0.5 −76.4	−156.8 −0.5 −76.4	−157.2 −0.4 −76.4
0----	−152.6 0.6 −76.2	−152.0 0.6 −76.1	−151.4 0.6 −76.1	−150.8 0.6 −76.1	−150.2 0.6 −76.0	−149.6 0.6 −76.0	−149.0 0.6 −76.0	−148.3 0.7 −76.0	−147.6 0.7 −75.9	−147.0 0.7 −75.9
1----	−146.3 0.7 −75.9	−145.6 0.7 −75.8	−144.9 0.7 −75.8	−144.2 0.7 −75.8	−143.4 0.7 −75.8	−142.7 0.8 −75.7	−141.9 0.8 −75.7	−141.1 0.8 −75.7	−140.4 0.8 −75.7	−139.6 0.8 −75.6
2----	−138.8 0.8 −75.6	−137.9 0.8 −75.6	−137.1 0.8 −75.6	−136.3 0.9 −75.5	−135.4 0.9 −75.5	−134.5 0.9 −75.5	−133.7 0.9 −75.5	−132.8 0.9 −75.4	−131.9 0.9 −75.4	−131.0 0.9 −75.4
3----	−130.0 0.9 −75.4	−129.1 0.9 −75.3	−128.2 1.0 −75.3	−127.2 1.0 −75.3	−126.2 1.0 −75.3	−125.3 1.0 −75.2	−124.3 1.0 −75.2	−123.3 1.0 −75.2	−122.3 1.0 −75.2	−121.2 1.0 −75.1
4----	−120.2 1.0 −75.1	−119.1 1.1 −75.1	−118.1 1.1 −75.1	−117.0 1.1 −75.0	−115.9 1.1 −75.0	−114.8 1.1 −75.0	−113.7 1.1 −75.0	−112.6 1.1 −74.9	−111.5 1.1 −74.9	−110.4 1.1 −74.9
5----	−109.2 1.2 −74.9	−108.1 1.2 −74.9	−106.9 1.2 −74.8	−105.7 1.2 −74.8	−104.5 1.2 −74.8	−103.3 1.2 −74.8	−102.1 1.2 −74.7	−100.9 1.2 −74.7	−99.7 1.2 −74.7	−98.4 1.3 −74.7
6----	−97.2 1.3 −74.7	−95.9 1.3 −74.6	−94.6 1.3 −74.6	−93.4 1.3 −74.6	−92.1 1.3 −74.6	−90.8 1.3 −74.5	−89.4 1.3 −74.5	−88.1 1.3 −74.5	−86.8 1.3 −74.5	−85.4 1.4 −74.5
7----	−84.1 1.4 −74.4	−82.7 1.4 −74.4	−81.3 1.4 −74.4	−79.9 1.4 −74.4	−78.5 1.4 −74.4	−77.1 1.4 −74.3	−75.7 1.4 −74.3	−74.3 1.4 −74.3	−72.8 1.4 −74.3	−71.4 1.5 −74.3
8----	−69.9 1.5 −74.2	−68.5 1.5 −74.2	−67.0 1.5 −74.2	−65.5 1.5 −74.2	−64.0 1.5 −74.2	−62.5 1.5 −74.1	−61.0 1.5 −74.1	−59.4 1.5 −74.1	−57.9 1.5 −74.1	−56.4 1.6 −74.1
9----	−54.8 1.6 −74.0	−53.2 1.6 −74.0	−51.6 1.6 −74.0	−50.1 1.6 −74.0	−48.5 1.6 −74.0	−46.9 1.6 −74.0	−45.2 1.6 −73.9	−43.6 1.6 −73.9	−42.0 1.6 −73.9	−40.3 1.7 −73.9
10----	−38.7 1.7 −73.9	−37.0 1.7 −73.8	−35.3 1.7 −73.8	−33.7 1.7 −73.8	−32.0 1.7 −73.8	−30.3 1.7 −73.8	−28.5 1.7 −73.8	−26.8 1.7 −73.7	−25.1 1.7 −73.7	−23.3 1.8 −73.7
11----	−21.6 1.8 −73.7	−19.8 1.8 −73.7	−18.1 1.8 −73.7	−16.3 1.8 −73.6	−14.5 1.8 −73.6	−12.7 1.8 −73.6	−10.9 1.8 −73.6	−9.1 1.8 −73.6	−7.3 1.8 −73.6	−5.4 1.8 −73.5
12----	−3.6 1.9 −73.5	−1.7 1.9 −73.5	0.1 1.9 −73.5	2.0 1.9 −73.5	3.9 1.9 −73.5	5.8 1.9 −73.4	7.7 1.9 −73.4	9.6 1.9 −73.4	11.5 1.9 −73.4	13.4 1.9 −73.4
13----	15.3 1.9 −73.4	17.3 2.0 −73.4	19.2 2.0 −73.3	21.2 2.0 −73.3	23.2 2.0 −73.3	25.2 2.0 −73.3	27.1 2.0 −73.3	29.1 2.0 −73.3	31.1 2.0 −73.3	33.2 2.0 −73.2

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 37.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	35.2 *2.0* *−73.2*	37.2 *2.0* *−73.2*	39.3 *2.0* *−73.2*	41.3 *2.1* *−73.2*	43.4 *2.1* *−73.2*	45.4 *2.1* *−73.2*	47.5 *2.1* *−73.1*	49.6 *2.1* *−73.1*	51.7 *2.1* *−73.1*	53.8 *2.1* *−73.1*
15----	55.9 *2.1* *−73.1*	58.0 *2.1* *−73.1*	60.1 *2.1* *−73.1*	62.3 *2.1* *−73.0*	64.4 *2.2* *−73.0*	66.6 *2.2* *−73.0*	68.7 *2.2* *−73.0*	70.9 *2.2* *−73.0*	73.1 *2.2* *−73.0*	75.3 *2.2* *−73.0*
16----	77.5 *2.2* *−72.9*	79.7 *2.2* *−72.9*	81.9 *2.2* *−72.9*	84.1 *2.2* *−72.9*	86.3 *2.2* *−72.9*	88.6 *2.2* *−72.9*	90.8 *2.3* *−72.9*	93.1 *2.3* *−72.9*	95.4 *2.3* *−72.8*	97.6 *2.3* *−72.8*
17----	99.9 *2.3* *−72.8*	102.2 *2.3* *−72.8*	104.5 *2.3* *−72.8*	106.8 *2.3* *−72.8*	109.1 *2.3* *−72.8*	111.4 *2.3* *−72.8*	113.8 *2.3* *−72.7*	116.1 *2.3* *−72.7*	118.5 *2.4* *−72.7*	120.8 *2.4* *−72.7*
18----	123.2 *2.4* *−72.7*	125.6 *2.4* *−72.7*	127.9 *2.4* *−72.7*	130.3 *2.4* *−72.7*	132.7 *2.4* *−72.6*	135.1 *2.4* *−72.6*	137.5 *2.4* *−72.6*	140.0 *2.4* *−72.6*	142.4 *2.4* *−72.6*	144.8 *2.4* *−72.6*
19----	147.3 *2.5* *−72.6*	149.7 *2.5* *−72.6*	152.2 *2.5* *−72.6*	154.7 *2.5* *−72.5*	157.1 *2.5* *−72.5*	159.6 *2.5* *−72.5*	162.1 *2.5* *−72.5*	164.6 *2.5* *−72.5*	167.1 *2.5* *−72.5*	169.7 *2.5* *−72.5*
20----	172.2 *2.5* *−72.5*	174.7 *2.5* *−72.5*	177.3 *2.6* *−72.5*	179.8 *2.6* *−72.4*	182.4 *2.6* *−72.4*	184.9 *2.6* *−72.4*	187.5 *2.6* *−72.4*	190.1 *2.6* *−72.4*	192.7 *2.6* *−72.4*	195.3 *2.6* *−72.4*
21----	197.9 *2.6* *−72.4*	200.5 *2.6* *−72.4*	203.1 *2.6* *−72.3*	205.8 *2.6* *−72.3*	208.4 *2.6* *−72.3*	211.1 *2.7* *−72.3*	213.7 *2.7* *−72.3*	216.4 *2.7* *−72.3*	219.0 *2.7* *−72.3*	221.7 *2.7* *−72.3*
22----	224.4 *2.7* *−72.3*	227.1 *2.7* *−72.3*	229.8 *2.7* *−72.3*	232.5 *2.7* *−72.2*	235.2 *2.7* *−72.2*	237.9 *2.7* *−72.2*	240.7 *2.7* *−72.2*	243.4 *2.7* *−72.2*	246.2 *2.8* *−72.2*	248.9 *2.8* *−72.2*
23----	251.7 *2.8* *−72.2*	254.4 *2.8* *−72.2*	257.2 *2.8* *−72.2*	260.0 *2.8* *−72.2*	262.8 *2.8* *−72.1*	265.6 *2.8* *−72.1*	268.4 *2.8* *−72.1*	271.2 *2.8* *−72.1*	274.1 *2.8* *−72.1*	276.9 *2.8* *−72.1*
24----	279.7 *2.8* *−72.1*	282.6 *2.9* *−72.1*	285.4 *2.9* *−72.1*	288.3 *2.9* *−72.1*	291.2 *2.9* *−72.1*	294.0 *2.9* *−72.0*	296.9 *2.9* *−72.0*	299.8 *2.9* *−72.0*	302.7 *2.9* *−72.0*	305.6 *2.9* *−72.0*
25----	308.5 *2.9* *−72.0*	311.5 *2.9* *−72.0*	314.4 *2.9* *−72.0*	317.3 *2.9* *−72.0*	320.3 *3.0* *−72.0*	323.2 *3.0* *−72.0*	326.2 *3.0* *−72.0*	329.1 *3.0* *−72.0*	332.1 *3.0* *−71.9*	335.1 *3.0* *−71.9*
26----	338.1 *3.0* *−71.9*	341.1 *3.0* *−71.9*	344.1 *3.0* *−71.9*	347.1 *3.0* *−71.9*	350.1 *3.0* *−71.9*	353.1 *3.0* *−71.9*	356.2 *3.0* *−71.9*	359.2 *3.0* *−71.9*	362.3 *3.1* *−71.9*	365.3 *3.1* *−71.9*
27----	368.4 *3.1* *−71.9*	371.5 *3.1* *−71.8*	374.5 *3.1* *−71.8*	377.6 *3.1* *−71.8*	380.7 *3.1* *−71.8*	383.8 *3.1* *−71.8*	386.9 *3.1* *−71.8*	390.0 *3.1* *−71.8*	393.1 *3.1* *−71.8*	396.3 *3.1* *−71.8*
28----	399.4 *3.1* *−71.8*	402.6 *3.1* *−71.8*	405.7 *3.2* *−71.8*	408.9 *3.2* *−71.8*	412.0 *3.2* *−71.8*	415.2 *3.2* *−71.8*	418.4 *3.2* *−71.7*	421.6 *3.2* *−71.7*	424.8 *3.2* *−71.7*	428.0 *3.2* *−71.7*
29----	431.2 *3.2* *−71.7*	434.4 *3.2* *−71.7*	437.6 *3.2* *−71.7*	440.8 *3.2* *−71.7*	444.1 *3.2* *−71.7*	447.3 *3.2* *−71.7*	450.6 *3.3* *−71.7*	453.8 *3.3* *−71.7*	457.1 *3.3* *−71.7*	460.4 *3.3* *−71.7*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 38.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	−234.1 −0.5 −76.4	−234.6 −0.5 −76.4	−235.0 −0.4 −76.4	−235.5 −0.4 −76.4	−235.9 −0.4 −76.5	−236.3 −0.4 −76.5	−236.7 −0.4 −76.5	−237.1 −0.4 −76.6	−237.5 −0.4 −76.6	−237.8 −0.3 −76.6
−0	−228.8 −0.6 −76.1	−229.3 −0.6 −76.1	−229.9 −0.6 −76.1	−230.5 −0.6 −76.1	−231.0 −0.5 −76.2	−231.6 −0.5 −76.2	−232.1 −0.5 −76.2	−232.6 −0.5 −76.3	−233.1 −0.5 −76.3	−233.6 −0.5 −76.3
0	−228.8 0.6 −76.1	−228.2 0.6 −76.0	−227.5 0.6 −76.0	−226.9 0.6 −76.0	−226.3 0.7 −75.9	−225.6 0.7 −75.9	−224.9 0.7 −75.9	−224.3 0.7 −75.9	−223.6 0.7 −75.8	−222.9 0.7 −75.8
1	−222.2 0.7 −75.8	−221.4 0.7 −75.8	−220.7 0.7 −75.7	−219.9 0.8 −75.7	−219.2 0.8 −75.7	−218.4 0.8 −75.6	−217.6 0.8 −75.6	−216.8 0.8 −75.6	−216.0 0.8 −75.6	−215.2 0.8 −75.5
2	−214.4 0.8 −75.5	−213.5 0.9 −75.5	−212.7 0.9 −75.5	−211.8 0.9 −75.4	−210.9 0.9 −75.4	−210.0 0.9 −75.4	−209.1 0.9 −75.4	−208.2 0.9 −75.3	−207.3 0.9 −75.3	−206.3 0.9 −75.3
3	−205.4 1.0 −75.3	−204.4 1.0 −75.2	−203.5 1.0 −75.2	−202.5 1.0 −75.2	−201.5 1.0 −75.2	−200.5 1.0 −75.1	−199.5 1.0 −75.1	−198.4 1.0 −75.1	−197.4 1.0 −75.1	−196.4 1.1 −75.0
4	−195.3 1.1 −75.0	−194.2 1.1 −75.0	−193.1 1.1 −75.0	−192.1 1.1 −75.0	−191.0 1.1 −74.9	−189.8 1.1 −74.9	−188.7 1.1 −74.9	−187.6 1.1 −74.9	−186.4 1.2 −74.8	−185.3 1.2 −74.8
5	−184.1 1.2 −74.8	−182.9 1.2 −74.8	−181.7 1.2 −74.7	−180.5 1.2 −74.7	−179.3 1.2 −74.7	−178.1 1.2 −74.7	−176.9 1.2 −74.7	−175.6 1.3 −74.6	−174.4 1.3 −74.6	−173.1 1.3 −74.6
6	−171.8 1.3 −74.6	−170.5 1.3 −74.5	−169.2 1.3 −74.5	−167.9 1.3 −74.5	−166.6 1.3 −74.5	−165.3 1.3 −74.5	−164.0 1.3 −74.4	−162.6 1.4 −74.4	−161.3 1.4 −74.4	−159.9 1.4 −74.4
7	−158.5 1.4 −74.4	−157.1 1.4 −74.3	−155.7 1.4 −74.3	−154.3 1.4 −74.3	−152.9 1.4 −74.3	−151.5 1.4 −74.3	−150.0 1.4 −74.2	−148.6 1.5 −74.2	−147.1 1.5 −74.2	−145.7 1.5 −74.2
8	−144.2 1.5 −74.2	−142.7 1.5 −74.1	−141.2 1.5 −74.1	−139.7 1.5 −74.1	−138.2 1.5 −74.1	−136.6 1.5 −74.1	−135.1 1.5 −74.0	−133.5 1.6 −74.0	−132.0 1.6 −74.0	−130.4 1.6 −74.0
9	−128.8 1.6 −74.0	−127.3 1.6 −74.0	−125.7 1.6 −73.9	−124.1 1.6 −73.9	−122.4 1.6 −73.9	−120.8 1.6 −73.9	−119.2 1.6 −73.9	−117.5 1.7 −73.8	−115.9 1.7 −73.8	−114.2 1.7 −73.8
10	−112.5 1.7 −73.8	−110.9 1.7 −73.8	−109.2 1.7 −73.8	−107.5 1.7 −73.7	−105.8 1.7 −73.7	−104.0 1.7 −73.7	−102.3 1.7 −73.7	−100.6 1.7 −73.7	−98.8 1.8 −73.7	−97.1 1.8 −73.6
11	−95.3 1.8 −73.6	−93.5 1.8 −73.6	−91.7 1.8 −73.6	−89.9 1.8 −73.6	−88.1 1.8 −73.6	−86.3 1.8 −73.5	−84.5 1.8 −73.5	−82.7 1.8 −73.5	−80.8 1.9 −73.5	−79.0 1.9 −73.5
12	−77.1 1.9 −73.5	−75.2 1.9 −73.4	−73.4 1.9 −73.4	−71.5 1.9 −73.4	−69.6 1.9 −73.4	−67.7 1.9 −73.4	−65.8 1.9 −73.4	−63.8 1.9 −73.3	−61.9 1.9 −73.3	−60.0 1.9 −73.3
13	−58.0 2.0 −73.3	−56.1 2.0 −73.3	−54.1 2.0 −73.3	−52.1 2.0 −73.3	−50.1 2.0 −73.2	−48.1 2.0 −73.2	−46.1 2.0 −73.2	−44.1 2.0 −73.2	−42.1 2.0 −73.2	−40.1 2.0 −73.2

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S = 38.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	−38.0 *2.0* *−73.2*	−36.0 *2.1* *−73.1*	−33.9 *2.1* *−73.1*	−31.9 *2.1* *−73.1*	−29.8 *2.1* *−73.1*	−27.7 *2.1* *−73.1*	−25.6 *2.1* *−73.1*	−23.5 *2.1* *−73.1*	−21.4 *2.1* *−73.0*	−19.3 *2.1* *−73.0*
15----	−17.2 *2.1* *−73.0*	−15.1 *2.1* *−73.0*	−12.9 *2.2* *−73.0*	−10.8 *2.2* *−73.0*	−8.6 *2.2* *−73.0*	−6.4 *2.2* *−72.9*	−4.3 *2.2* *−72.9*	−2.1 *2.2* *−72.9*	0.1 *2.2* *−72.9*	2.3 *2.2* *−72.9*
16----	4.5 *2.2* *−72.9*	6.7 *2.2* *−72.9*	9.0 *2.2* *−72.9*	11.2 *2.2* *−72.8*	13.5 *2.3* *−72.8*	15.7 *2.3* *−72.8*	18.0 *2.3* *−72.8*	20.2 *2.3* *−72.8*	22.5 *2.3* *−72.8*	24.8 *2.3* *−72.8*
17----	27.1 *2.3* *−72.7*	29.4 *2.3* *−72.7*	31.7 *2.3* *−72.7*	34.0 *2.3* *−72.7*	36.4 *2.3* *−72.7*	38.7 *2.3* *−72.7*	41.0 *2.4* *−72.7*	43.4 *2.4* *−72.7*	45.7 *2.4* *−72.7*	48.1 *2.4* *−72.6*
18----	50.5 *2.4* *−72.6*	52.9 *2.4* *−72.6*	55.3 *2.4* *−72.6*	57.7 *2.4* *−72.6*	60.1 *2.4* *−72.6*	62.5 *2.4* *−72.6*	64.9 *2.4* *−72.6*	67.3 *2.4* *−72.5*	69.8 *2.4* *−72.5*	72.2 *2.5* *−72.5*
19----	74.7 *2.5* *−72.5*	77.2 *2.5* *−72.5*	79.6 *2.5* *−72.5*	82.1 *2.5* *−72.5*	84.6 *2.5* *−72.5*	87.1 *2.5* *−72.5*	89.6 *2.5* *−72.4*	92.1 *2.5* *−72.4*	94.6 *2.5* *−72.4*	97.2 *2.5* *−72.4*
20----	99.7 *2.5* *−72.4*	102.3 *2.6* *−72.4*	104.8 *2.6* *−72.4*	107.4 *2.6* *−72.4*	109.9 *2.6* *−72.4*	112.5 *2.6* *−72.4*	115.1 *2.6* *−72.3*	117.7 *2.6* *−72.3*	120.3 *2.6* *−72.3*	122.9 *2.6* *−72.3*
21----	125.5 *2.6* *−72.3*	128.2 *2.6* *−72.3*	130.8 *2.6* *−72.3*	133.4 *2.6* *−72.3*	136.1 *2.7* *−72.3*	138.7 *2.7* *−72.3*	141.4 *2.7* *−72.2*	144.1 *2.7* *−72.2*	146.7 *2.7* *−72.2*	149.4 *2.7* *−72.2*
22----	152.1 *2.7* *−72.2*	154.8 *2.7* *−72.2*	157.5 *2.7* *−72.2*	160.3 *2.7* *−72.2*	163.0 *2.7* *−72.2*	165.7 *2.7* *−72.2*	168.5 *2.7* *−72.1*	171.2 *2.8* *−72.1*	174.0 *2.8* *−72.1*	176.7 *2.8* *−72.1*
23----	179.5 *2.8* *−72.1*	182.3 *2.8* *−72.1*	185.1 *2.8* *−72.1*	187.9 *2.8* *−72.1*	190.7 *2.8* *−72.1*	193.5 *2.8* *−72.1*	196.3 *2.8* *−72.1*	199.1 *2.8* *−72.1*	201.9 *2.8* *−72.0*	204.8 *2.8* *−72.0*
24----	207.6 *2.9* *−72.0*	210.5 *2.9* *−72.0*	213.4 *2.9* *−72.0*	216.2 *2.9* *−72.0*	219.1 *2.9* *−72.0*	222.0 *2.9* *−72.0*	224.9 *2.9* *−72.0*	227.8 *2.9* *−72.0*	230.7 *2.9* *−72.0*	233.6 *2.9* *−72.0*
25----	236.5 *2.9* *−71.9*	239.5 *2.9* *−71.9*	242.4 *2.9* *−71.9*	245.3 *3.0* *−71.9*	248.3 *3.0* *−71.9*	251.2 *3.0* *−71.9*	254.2 *3.0* *−71.9*	257.2 *3.0* *−71.9*	260.2 *3.0* *−71.9*	263.2 *3.0* *−71.9*
26----	266.2 *3.0* *−71.9*	269.2 *3.0* *−71.9*	272.2 *3.0* *−71.9*	275.2 *3.0* *−71.8*	278.2 *3.0* *−71.8*	281.3 *3.0* *−71.8*	284.3 *3.0* *−71.8*	287.3 *3.1* *−71.8*	290.4 *3.1* *−71.8*	293.5 *3.1* *−71.8*
27----	296.5 *3.1* *−71.8*	299.6 *3.1* *−71.8*	302.7 *3.1* *−71.8*	305.8 *3.1* *−71.8*	308.9 *3.1* *−71.8*	312.0 *3.1* *−71.8*	315.1 *3.1* *−71.8*	318.2 *3.1* *−71.7*	321.3 *3.1* *−71.7*	324.5 *3.1* *−71.7*
28----	327.6 *3.1* *−71.7*	330.8 *3.2* *−71.7*	333.9 *3.2* *−71.7*	337.1 *3.2* *−71.7*	340.3 *3.2* *−71.7*	343.4 *3.2* *−71.7*	346.6 *3.2* *−71.7*	349.8 *3.2* *−71.7*	353.0 *3.2* *−71.7*	356.2 *3.2* *−71.7*
29----	359.4 *3.2* *−71.7*	362.7 *3.2* *−71.7*	365.9 *3.2* *−71.6*	369.1 *3.2* *−71.6*	372.4 *3.2* *−71.6*	375.6 *3.3* *−71.6*	378.9 *3.3* *−71.6*	382.1 *3.3* *−71.6*	385.4 *3.3* *−71.6*	388.7 *3.3* *−71.6*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 39.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1----	−310.5 *−0.5* *−76.3*	−311.0 *−0.5* *−76.3*	−311.4 *−0.5* *−76.3*	−311.9 *−0.5* *−76.3*	−312.4 *−0.4* *−76.4*	−312.8 *−0.4* *−76.4*	−313.3 *−0.4* *−76.4*	−313.7 *−0.4* *−76.5*	−314.1 *−0.4* *−76.5*	−314.5 *−0.4* *−76.5*
−0----	−304.8 *−0.6* *−76.0*	−305.4 *−0.6* *−76.0*	−306.0 *−0.6* *−76.0*	−306.6 *−0.6* *−76.1*	−307.2 *−0.6* *−76.1*	−307.8 *−0.6* *−76.1*	−308.4 *−0.5* *−76.1*	−308.9 *−0.5* *−76.2*	−309.4 *−0.5* *−76.2*	−310.0 *−0.5* *−76.2*
0----	−304.8 *0.6* *−76.0*	−304.2 *0.6* *−75.9*	−303.5 *0.7* *−75.9*	−302.9 *0.7* *−75.9*	−302.2 *0.7* *−75.9*	−301.5 *0.7* *−75.8*	−300.8 *0.7* *−75.8*	−300.1 *0.7* *−75.8*	−299.4 *0.7* *−75.7*	−298.7 *0.7* *−75.7*
1----	−297.9 *0.8* *−75.7*	−297.2 *0.8* *−75.7*	−296.4 *0.8* *−75.6*	−295.6 *0.8* *−75.6*	−294.9 *0.8* *−75.6*	−294.1 *0.8* *−75.6*	−293.2 *0.8* *−75.5*	−292.4 *0.8* *−75.5*	−291.6 *0.8* *−75.5*	−290.7 *0.9* *−75.5*
2----	−289.9 *0.9* *−75.4*	−289.0 *0.9* *−75.4*	−288.1 *0.9* *−75.4*	−287.2 *0.9* *−75.4*	−286.3 *0.9* *−75.3*	−285.4 *0.9* *−75.3*	−284.5 *0.9* *−75.3*	−283.5 *1.0* *−75.3*	−282.6 *1.0* *−75.2*	−281.6 *1.0* *−75.2*
3----	−280.7 *1.0* *−75.2*	−279.7 *1.0* *−75.2*	−278.7 *1.0* *−75.1*	−277.7 *1.0* *−75.1*	−276.7 *1.0* *−75.1*	−275.6 *1.0* *−75.1*	−274.6 *1.1* *−75.0*	−273.5 *1.1* *−75.0*	−272.5 *1.1* *−75.0*	−271.4 *1.1* *−75.0*
4----	−270.3 *1.1* *−74.9*	−269.2 *1.1* *−74.9*	−268.1 *1.1* *−74.9*	−267.0 *1.1* *−74.9*	−265.9 *1.1* *−74.8*	−264.7 *1.1* *−74.8*	−263.6 *1.2* *−74.8*	−262.4 *1.2* *−74.8*	−261.3 *1.2* *−74.8*	−260.1 *1.2* *−74.7*
5----	−258.9 *1.2* *−74.7*	−257.7 *1.2* *−74.7*	−256.5 *1.2* *−74.7*	−255.3 *1.2* *−74.6*	−254.0 *1.2* *−74.6*	−252.8 *1.3* *−74.6*	−251.5 *1.3* *−74.6*	−250.3 *1.3* *−74.6*	−249.0 *1.3* *−74.5*	−247.7 *1.3* *−74.5*
6----	−246.4 *1.3* *−74.5*	−245.1 *1.3* *−74.5*	−243.8 *1.3* *−74.4*	−242.4 *1.3* *−74.4*	−241.1 *1.3* *−74.4*	−239.8 *1.4* *−74.4*	−238.4 *1.4* *−74.4*	−237.0 *1.4* *−74.3*	−235.7 *1.4* *−74.3*	−234.3 *1.4* *−74.3*
7----	−232.9 *1.4* *−74.3*	−231.5 *1.4* *−74.3*	−230.0 *1.4* *−74.2*	−228.6 *1.4* *−74.2*	−227.2 *1.4* *−74.2*	−225.7 *1.5* *−74.2*	−224.3 *1.5* *−74.2*	−222.8 *1.5* *−74.1*	−221.3 *1.5* *−74.1*	−219.8 *1.5* *−74.1*
8----	−218.3 *1.5* *−74.1*	−216.8 *1.5* *−74.1*	−215.3 *1.5* *−74.0*	−213.8 *1.5* *−74.0*	−212.2 *1.5* *−74.0*	−210.7 *1.6* *−74.0*	−209.1 *1.6* *−74.0*	−207.6 *1.6* *−73.9*	−206.0 *1.6* *−73.9*	−204.4 *1.6* *−73.9*
9----	−202.8 *1.6* *−73.9*	−201.2 *1.6* *−73.9*	−199.6 *1.6* *−73.9*	−198.0 *1.6* *−73.8*	−196.3 *1.6* *−73.8*	−194.7 *1.7* *−73.8*	−193.0 *1.7* *−73.8*	−191.4 *1.7* *−73.8*	−189.7 *1.7* *−73.7*	−188.0 *1.7* *−73.7*
10----	−186.3 *1.7* *−73.7*	−184.6 *1.7* *−73.7*	−182.9 *1.7* *−73.7*	−181.2 *1.7* *−73.7*	−179.5 *1.7* *−73.6*	−177.7 *1.7* *−73.6*	−176.0 *1.8* *−73.6*	−174.2 *1.8* *−73.6*	−172.5 *1.8* *−73.6*	−170.7 *1.8* *−73.6*
11----	−168.9 *1.8* *−73.5*	−167.1 *1.8* *−73.5*	−165.3 *1.8* *−73.5*	−163.5 *1.8* *−73.5*	−161.7 *1.8* *−73.5*	−159.9 *1.8* *−73.5*	−158.0 *1.8* *−73.4*	−156.2 *1.9* *−73.4*	−154.3 *1.9* *−73.4*	−152.4 *1.9* *−73.4*
12----	−150.6 *1.9* *−73.4*	−148.7 *1.9* *−73.4*	−146.8 *1.9* *−73.3*	−144.9 *1.9* *−73.3*	−143.0 *1.9* *−73.3*	−141.1 *1.9* *−73.3*	−139.1 *1.9* *−73.3*	−137.2 *1.9* *−73.3*	−135.2 *2.0* *−73.3*	−133.3 *2.0* *−73.2*
13----	−131.3 *2.0* *−73.2*	−129.3 *2.0* *−73.2*	−127.4 *2.0* *−73.2*	−125.4 *2.0* *−73.2*	−123.4 *2.0* *−73.2*	−121.4 *2.0* *−73.2*	−119.4 *2.0* *−73.1*	−117.3 *2.0* *−73.1*	−115.3 *2.0* *−73.1*	−113.2 *2.1* *−73.1*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 39 .0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	−111.2 *2.1* *−73.1*	−109.1 *2.1* *−73.1*	−107.1 *2.1* *−73.1*	−105.0 *2.1* *−73.0*	−102.9 *2.1* *−73.0*	−100.8 *2.1* *−73.0*	−98.7 *2.1* *−73.0*	−96.6 *2.1* *−73.0*	−94.5 *2.1* *−73.0*	−92.3 *2.1* *−73.0*
15----	−90.2 *2.1* *−72.9*	−88.0 *2.2* *−72.9*	−85.9 *2.2* *−72.9*	−83.7 *2.2* *−72.9*	−81.6 *2.2* *−72.9*	−79.4 *2.2* *−72.9*	−77.2 *2.2* *−72.9*	−75.0 *2.2* *−72.8*	−72.8 *2.2* *−72.8*	−70.6 *2.2* *−72.8*
16----	−68.3 *2.2* *−72.8*	−66.1 *2.2* *−72.8*	−63.9 *2.2* *−72.8*	−61.6 *2.3* *−72.8*	−59.4 *2.3* *−72.8*	−57.1 *2.3* *−72.7*	−54.8 *2.3* *−72.7*	−52.5 *2.3* *−72.7*	−50.3 *2.3* *−72.7*	−48.0 *2.3* *−72.7*
17----	−45.7 *2.3* *−72.7*	−43.3 *2.3* *−72.7*	−41.0 *2.3* *−72.7*	−38.7 *2.3* *−72.6*	−36.3 *2.3* *−72.6*	−34.0 *2.4* *−72.6*	−31.6 *2.4* *−72.6*	−29.3 *2.4* *−72.6*	−26.9 *2.4* *−72.6*	−24.5 *2.4* *−72.6*
18----	−22.1 *2.4* *−72.6*	−19.7 *2.4* *−72.5*	−17.3 *2.4* *−72.5*	−14.9 *2.4* *−72.5*	−12.5 *2.4* *−72.5*	−10.1 *2.4* *−72.5*	−7.6 *2.4* *−72.5*	−5.2 *2.5* *−72.5*	−2.7 *2.5* *−72.5*	−0.3 *2.5* *−72.5*
19----	2.2 *2.5* *−72.4*	4.7 *2.5* *−72.4*	7.1 *2.5* *−72.4*	9.6 *2.5* *−72.4*	12.1 *2.5* *−72.4*	14.6 *2.5* *−72.4*	17.2 *2.5* *−72.4*	19.7 *2.5* *−72.4*	22.2 *2.5* *−72.4*	24.8 *2.5* *−72.4*
20----	27.3 *2.6* *−72.3*	29.9 *2.6* *−72.3*	32.4 *2.6* *−72.3*	35.0 *2.6* *−72.3*	37.6 *2.6* *−72.3*	40.2 *2.6* *−72.3*	42.8 *2.6* *−72.3*	45.4 *2.6* *−72.3*	48.0 *2.6* *−72.3*	50.6 *2.6* *−72.2*
21----	53.2 *2.6* *−72.2*	55.9 *2.6* *−72.2*	58.5 *2.7* *−72.2*	61.2 *2.7* *−72.2*	63.8 *2.7* *−72.2*	66.5 *2.7* *−72.2*	69.2 *2.7* *−72.2*	71.8 *2.7* *−72.2*	74.5 *2.7* *−72.2*	77.2 *2.7* *−72.2*
22----	79.9 *2.7* *−72.1*	82.6 *2.7* *−72.1*	85.4 *2.7* *−72.1*	88.1 *2.7* *−72.1*	90.8 *2.7* *−72.1*	93.6 *2.8* *−72.1*	96.3 *2.8* *−72.1*	99.1 *2.8* *−72.1*	101.8 *2.8* *−72.1*	104.6 *2.8* *−72.1*
23----	107.4 *2.8* *−72.1*	110.2 *2.8* *−72.0*	113.0 *2.8* *−72.0*	115.8 *2.8* *−72.0*	118.6 *2.8* *−72.0*	121.4 *2.8* *−72.0*	124.2 *2.8* *−72.0*	127.1 *2.8* *−72.0*	129.9 *2.8* *−72.0*	132.7 *2.9* *−72.0*
24----	135.6 *2.9* *−72.0*	138.5 *2.9* *−72.0*	141.3 *2.9* *−71.9*	144.2 *2.9* *−71.9*	147.1 *2.9* *−71.9*	150.0 *2.9* *−71.9*	152.9 *2.9* *−71.9*	155.8 *2.9* *−71.9*	158.7 *2.9* *−71.9*	161.6 *2.9* *−71.9*
25----	164.6 *2.9* *−71.9*	167.5 *2.9* *−71.9*	170.5 *3.0* *−71.9*	173.4 *3.0* *−71.9*	176.4 *3.0* *−71.9*	179.3 *3.0* *−71.8*	182.3 *3.0* *−71.8*	185.3 *3.0* *−71.8*	188.3 *3.0* *−71.8*	191.3 *3.0* *−71.8*
26----	194.3 *3.0* *−71.8*	197.3 *3.0* *−71.8*	200.3 *3.0* *−71.8*	203.3 *3.0* *−71.8*	206.4 *3.0* *−71.8*	209.4 *3.0* *−71.8*	212.5 *3.1* *−71.8*	215.5 *3.1* *−71.8*	218.6 *3.1* *−71.7*	221.7 *3.1* *−71.7*
27----	224.7 *3.1* *−71.7*	227.8 *3.1* *−71.7*	230.9 *3.1* *−71.7*	234.0 *3.1* *−71.7*	237.1 *3.1* *−71.7*	240.2 *3.1* *−71.7*	243.3 *3.1* *−71.7*	246.5 *3.1* *−71.7*	249.6 *3.1* *−71.7*	252.8 *3.1* *−71.7*
28----	255.9 *3.2* *−71.7*	259.1 *3.2* *−71.7*	262.2 *3.2* *−71.7*	265.4 *3.2* *−71.6*	268.6 *3.2* *−71.6*	271.8 *3.2* *−71.6*	274.9 *3.2* *−71.6*	278.1 *3.2* *−71.6*	281.3 *3.2* *−71.6*	284.6 *3.2* *−71.6*
29----	287.8 *3.2* *−71.6*	291.0 *3.2* *−71.6*	294.2 *3.2* *−71.6*	297.5 *3.2* *−71.6*	300.7 *3.3* *−71.6*	304.0 *3.3* *−71.6*	307.3 *3.3* *−71.6*	310.5 *3.3* *−71.6*	313.8 *3.3* *−71.6*	317.1 *3.3* *−71.5*

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ [10^{-8} m^3/kg] at atmospheric pressure

S= 40.0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
−1	−386.7 −0.5 −76.2	−387.3 −0.5 −76.2	−387.8 −0.5 −76.2	−388.3 −0.5 −76.3	−388.8 −0.5 −76.3	−389.2 −0.5 −76.3	−389.7 −0.4 −76.3	−390.1 −0.4 −76.4	−390.6 −0.4 −76.4	−391.0 −0.4 −76.4
−0	−380.8 −0.6 −75.9	−381.4 −0.6 −75.9	−382.1 −0.6 −75.9	−382.7 −0.6 −76.0	−383.3 −0.6 −76.0	−383.9 −0.6 −76.0	−384.5 −0.6 −76.0	−385.1 −0.6 −76.1	−385.6 −0.6 −76.1	−386.2 −0.5 −76.1
0	−380.8 0.7 −75.9	−380.1 0.7 −75.8	−379.5 0.7 −75.8	−378.8 0.7 −75.8	−378.1 0.7 −75.8	−377.4 0.7 −75.7	−376.6 0.7 −75.7	−375.9 0.7 −75.7	−375.2 0.8 −75.7	−374.4 0.8 −75.6
1	−373.6 0.8 −75.6	−372.9 0.8 −75.6	−372.1 0.8 −75.5	−371.3 0.8 −75.5	−370.4 0.8 −75.5	−369.6 0.8 −75.5	−368.8 0.9 −75.4	−367.9 0.9 −75.4	−367.1 0.9 −75.4	−366.2 0.9 −75.4
2	−365.3 0.9 −75.3	−364.4 0.9 −75.3	−363.5 0.9 −75.3	−362.6 0.9 −75.3	−361.7 0.9 −75.2	−360.7 1.0 −75.2	−359.8 1.0 −75.2	−358.8 1.0 −75.2	−357.8 1.0 −75.1	−356.8 1.0 −75.1
3	−355.8 1.0 −75.1	−354.8 1.0 −75.1	−353.8 1.0 −75.0	−352.8 1.0 −75.0	−351.7 1.1 −75.0	−350.7 1.1 −75.0	−349.6 1.1 −74.9	−348.5 1.1 −74.9	−347.5 1.1 −74.9	−346.4 1.1 −74.9
4	−345.3 1.1 −74.9	−344.1 1.1 −74.8	−343.0 1.1 −74.8	−341.9 1.1 −74.8	−340.7 1.2 −74.8	−339.6 1.2 −74.7	−338.4 1.2 −74.7	−337.2 1.2 −74.7	−336.0 1.2 −74.7	−334.8 1.2 −74.6
5	−333.6 1.2 −74.6	−332.4 1.2 −74.6	−331.1 1.2 −74.6	−329.9 1.3 −74.6	−328.6 1.3 −74.5	−327.4 1.3 −74.5	−326.1 1.3 −74.5	−324.8 1.3 −74.5	−323.5 1.3 −74.4	−322.2 1.3 −74.4
6	−320.9 1.3 −74.4	−319.6 1.3 −74.4	−318.2 1.3 −74.4	−316.9 1.4 −74.3	−315.5 1.4 −74.3	−314.1 1.4 −74.3	−312.8 1.4 −74.3	−311.4 1.4 −74.3	−310.0 1.4 −74.2	−308.6 1.4 −74.2
7	−307.2 1.4 −74.2	−305.7 1.4 −74.2	−304.3 1.4 −74.2	−302.8 1.5 −74.1	−301.4 1.5 −74.1	−299.9 1.5 −74.1	−298.4 1.5 −74.1	−296.9 1.5 −74.1	−295.4 1.5 −74.0	−293.9 1.5 −74.0
8	−292.4 1.5 −74.0	−290.9 1.5 −74.0	−289.4 1.5 −74.0	−287.8 1.6 −73.9	−286.3 1.6 −73.9	−284.7 1.6 −73.9	−283.1 1.6 −73.9	−281.5 1.6 −73.9	−279.9 1.6 −73.9	−278.3 1.6 −73.8
9	−276.7 1.6 −73.8	−275.1 1.6 −73.8	−273.5 1.6 −73.8	−271.8 1.7 −73.8	−270.2 1.7 −73.7	−268.5 1.7 −73.7	−266.8 1.7 −73.7	−265.1 1.7 −73.7	−263.5 1.7 −73.7	−261.8 1.7 −73.7
10	−260.0 1.7 −73.6	−258.3 1.7 −73.6	−256.6 1.7 −73.6	−254.9 1.7 −73.6	−253.1 1.8 −73.6	−251.4 1.8 −73.6	−249.6 1.8 −73.5	−247.8 1.8 −73.5	−246.0 1.8 −73.5	−244.3 1.8 −73.5
11	−242.5 1.8 −73.5	−240.6 1.8 −73.5	−238.8 1.8 −73.4	−237.0 1.8 −73.4	−235.2 1.8 −73.4	−233.3 1.9 −73.4	−231.5 1.9 −73.4	−229.6 1.9 −73.4	−227.7 1.9 −73.3	−225.8 1.9 −73.3
12	−223.9 1.9 −73.3	−222.0 1.9 −73.3	−220.1 1.9 −73.3	−218.2 1.9 −73.3	−216.3 1.9 −73.2	−214.4 1.9 −73.2	−212.4 2.0 −73.2	−210.5 2.0 −73.2	−208.5 2.0 −73.2	−206.5 2.0 −73.2
13	−204.5 2.0 −73.2	−202.6 2.0 −73.1	−200.6 2.0 −73.1	−198.6 2.0 −73.1	−196.5 2.0 −73.1	−194.5 2.0 −73.1	−192.5 2.0 −73.1	−190.4 2.0 −73.1	−188.4 2.1 −73.0	−186.3 2.1 −73.0

Table III (cont.)

Specific volume anomaly $\delta(S, t, 0)$ $[10^{-8}\ m^3/kg]$ at atmospheric pressure

S = 40 .0

T	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
14----	−184.3 *2.1* *−73.0*	−182.2 *2.1* *−73.0*	−180.1 *2.1* *−73.0*	−178.0 *2.1* *−73.0*	−175.9 *2.1* *−73.0*	−173.8 *2.1* *−72.9*	−171.7 *2.1* *−72.9*	−169.6 *2.1* *−72.9*	−167.4 *2.1* *−72.9*	−165.3 *2.2* *−72.9*
15----	−163.1 *2.2* *−72.9*	−161.0 *2.2* *−72.9*	−158.8 *2.2* *−72.8*	−156.6 *2.2* *−72.8*	−154.4 *2.2* *−72.8*	−152.2 *2.2* *−72.8*	−150.0 *2.2* *−72.8*	−147.8 *2.2* *−72.8*	−145.6 *2.2* *−72.8*	−143.4 *2.2* *−72.8*
16----	−141.2 *2.2* *−72.7*	−138.9 *2.3* *−72.7*	−136.7 *2.3* *−72.7*	−134.4 *2.3* *−72.7*	−132.1 *2.3* *−72.7*	−129.8 *2.3* *−72.7*	−127.6 *2.3* *−72.7*	−125.3 *2.3* *−72.7*	−123.0 *2.3* *−72.6*	−120.7 *2.3* *−72.6*
17----	−118.3 *2.3* *−72.6*	−116.0 *2.3* *−72.6*	−113.7 *2.3* *−72.6*	−111.3 *2.4* *−72.6*	−109.0 *2.4* *−72.6*	−106.6 *2.4* *−72.6*	−104.3 *2.4* *−72.5*	−101.9 *2.4* *−72.5*	−99.5 *2.4* *−72.5*	−97.1 *2.4* *−72.5*
18----	−94.7 *2.4* *−72.5*	−92.3 *2.4* *−72.5*	−89.9 *2.4* *−72.5*	−87.5 *2.4* *−72.5*	−85.0 *2.4* *−72.4*	−82.6 *2.4* *−72.4*	−80.1 *2.5* *−72.4*	−77.7 *2.5* *−72.4*	−75.2 *2.5* *−72.4*	−72.7 *2.5* *−72.4*
19----	−70.3 *2.5* *−72.4*	−67.8 *2.5* *−72.4*	−65.3 *2.5* *−72.4*	−62.8 *2.5* *−72.3*	−60.3 *2.5* *−72.3*	−57.7 *2.5* *−72.3*	−55.2 *2.5* *−72.3*	−52.7 *2.5* *−72.3*	−50.1 *2.6* *−72.3*	−47.6 *2.6* *−72.3*
20----	−45.0 *2.6* *−72.3*	−42.5 *2.6* *−72.3*	−39.9 *2.6* *−72.3*	−37.3 *2.6* *−72.2*	−34.7 *2.6* *−72.2*	−32.1 *2.6* *−72.2*	−29.5 *2.6* *−72.2*	−26.9 *2.6* *−72.2*	−24.3 *2.6* *−72.2*	−21.6 *2.6* *−72.2*
21----	−19.0 *2.6* *−72.2*	−16.4 *2.7* *−72.2*	−13.7 *2.7* *−72.2*	−11.1 *2.7* *−72.1*	−8.4 *2.7* *−72.1*	−5.7 *2.7* *−72.1*	−3.0 *2.7* *−72.1*	−0.3 *2.7* *−72.1*	2.4 *2.7* *−72.1*	5.1 *2.7* *−72.1*
22----	7.8 *2.7* *−72.1*	10.5 *2.7* *−72.1*	13.2 *2.7* *−72.1*	16.0 *2.7* *−72.1*	18.7 *2.8* *−72.0*	21.5 *2.8* *−72.0*	24.2 *2.8* *−72.0*	27.0 *2.8* *−72.0*	29.8 *2.8* *−72.0*	32.5 *2.8* *−72.0*
23----	35.3 *2.8* *−72.0*	38.1 *2.8* *−72.0*	40.9 *2.8* *−72.0*	43.7 *2.8* *−72.0*	46.6 *2.8* *−72.0*	49.4 *2.8* *−71.9*	52.2 *2.8* *−71.9*	55.1 *2.8* *−71.9*	57.9 *2.9* *−71.9*	60.8 *2.9* *−71.9*
24----	63.6 *2.9* *−71.9*	66.5 *2.9* *−71.9*	69.4 *2.9* *−71.9*	72.3 *2.9* *−71.9*	75.2 *2.9* *−71.9*	78.1 *2.9* *−71.9*	81.0 *2.9* *−71.9*	83.9 *2.9* *−71.8*	86.8 *2.9* *−71.8*	89.8 *2.9* *−71.8*
25----	92.7 *2.9* *−71.8*	95.6 *3.0* *−71.8*	98.6 *3.0* *−71.8*	101.6 *3.0* *−71.8*	104.5 *3.0* *−71.8*	107.5 *3.0* *−71.8*	110.5 *3.0* *−71.8*	113.5 *3.0* *−71.8*	116.5 *3.0* *−71.8*	119.5 *3.0* *−71.8*
26----	122.5 *3.0* *−71.7*	125.5 *3.0* *−71.7*	128.5 *3.0* *−71.7*	131.6 *3.0* *−71.7*	134.6 *3.0* *−71.7*	137.7 *3.1* *−71.7*	140.7 *3.1* *−71.7*	143.8 *3.1* *−71.7*	146.8 *3.1* *−71.7*	149.9 *3.1* *−71.7*
27----	153.0 *3.1* *−71.7*	156.1 *3.1* *−71.7*	159.2 *3.1* *−71.7*	162.3 *3.1* *−71.7*	165.4 *3.1* *−71.6*	168.5 *3.1* *−71.6*	171.7 *3.1* *−71.6*	174.8 *3.1* *−71.6*	177.9 *3.1* *−71.6*	181.1 *3.2* *−71.6*
28----	184.2 *3.2* *−71.6*	187.4 *3.2* *−71.6*	190.6 *3.2* *−71.6*	193.7 *3.2* *−71.6*	196.9 *3.2* *−71.6*	200.1 *3.2* *−71.6*	203.3 *3.2* *−71.6*	206.5 *3.2* *−71.6*	209.7 *3.2* *−71.6*	213.0 *3.2* *−71.5*
29----	216.2 *3.2* *−71.5*	219.4 *3.2* *−71.5*	222.7 *3.2* *−71.5*	225.9 *3.3* *−71.5*	229.2 *3.3* *−71.5*	232.4 *3.3* *−71.5*	235.7 *3.3* *−71.5*	239.0 *3.3* *−71.5*	242.2 *3.3* *−71.5*	245.5 *3.3* *−71.5*

Table III (a)

Temperature interpolation for Table III

T. DIFF.	TEMPERATURE								
	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.10----	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.20----	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
0.30----	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
0.40----	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4
0.50----	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.4
0.60----	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5
0.70----	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.6
0.80----	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7
0.90----	0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8
1.00----	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1.10----	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0
1.20----	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1
1.30----	0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.0	1.2
1.40----	0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3
1.50----	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4
1.60----	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4
1.70----	0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4	1.5
1.80----	0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6
1.90----	0.2	0.4	0.6	0.8	1.0	1.1	1.3	1.5	1.7
2.00----	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8
2.10----	0.2	0.4	0.6	0.8	1.1	1.3	1.5	1.7	1.9
2.20----	0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0
2.30----	0.2	0.5	0.7	0.9	1.1	1.4	1.6	1.8	2.1
2.40----	0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2
2.50----	0.2	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.2
2.60----	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3
2.70----	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.2	2.4
2.80----	0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5
2.90----	0.3	0.6	0.9	1.2	1.4	1.7	2.0	2.3	2.6
3.00----	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7
3.10----	0.3	0.6	0.9	1.2	1.5	1.9	2.2	2.5	2.8
3.20----	0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9
3.30----	0.3	0.7	1.0	1.3	1.6	2.0	2.3	2.6	3.0
3.40----	0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1

Table III (b)

Salinity interpolation for Table III

SALINITY	SALINITY 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
0.01	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.7	−0.8	−0.8	−0.8	−0.8	−0.8	−0.8	−0.8	−0.8
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	−2.3	−2.3	−2.3	−2.3	−2.3	−2.3	−2.3	−2.4
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	−3.7	−3.7	−3.7	−3.7	−3.8	−3.8	−3.8	−3.8	−3.9	−3.9	−3.9	−3.9
0.06	−4.3	−4.3	−4.4	−4.4	−4.4	−4.4	−4.5	−4.5	−4.5	−4.6	−4.6	−4.6	−4.7	−4.7	−4.7
0.07	−5.0	−5.0	−5.1	−5.1	−5.1	−5.2	−5.2	−5.3	−5.3	−5.3	−5.4	−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	−7.1	−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	−9.6	−9.6	−9.7	−9.8	−9.8	−9.9	−9.9	−10.0	−10.1	−10.1	−10.2
0.14	−10.0	−10.1	−10.1	−10.2	−10.3	−10.4	−10.4	−10.5	−10.6	−10.6	−10.7	−10.8	−10.9	−10.9	−11.0
0.15	−10.7	−10.8	−10.9	−11.0	−11.0	−11.1	−11.2	−11.3	−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	−12.4	−12.5	−12.6	−12.7	−12.8	−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	−14.2	−14.3	−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	−15.8	−15.9	−16.0	−16.1	−16.2	−16.3	−16.4	−16.5
0.22	−15.7	−15.8	−16.0	−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	−17.3	−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	−18.3	−18.4	−18.5	−18.6	−18.8	−18.9	−19.0	−19.1	−19.3	−19.4	−19.5	−19.6
0.26	−18.6	−18.7	−18.9	−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	−20.3	−20.4	−20.5	−20.7	−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	−21.2	−21.3	−21.5	−21.6	−21.8	−21.9	−22.0	−22.2	−22.3	−22.5	−22.6	−22.8
0.30	−21.5	−21.6	−21.8	−21.9	−22.1	−22.2	−22.4	−22.5	−22.7	−22.8	−23.0	−23.1	−23.3	−23.4	−23.6
0.31	−22.2	−22.3	−22.5	−22.6	−22.8	−22.9	−23.1	−23.3	−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	−24.3	−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	−26.3	−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	−26.9	−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	−27.5	−27.7	−27.9	−28.1	−28.3	−28.5	−28.7	−28.9	−29.1	−29.3	−29.4	−29.6	−29.8
0.39	−27.9	−28.1	−28.3	−28.5	−28.7	−28.9	−29.1	−29.2	−29.4	−29.6	−29.8	−30.0	−30.2	−30.4	−30.6
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	−31.0	−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	−32.5	−32.8	−33.0
0.43	−30.7	−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	−33.8
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	−34.6	−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	−35.6	−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	−36.0	−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	−35.7	−36.0	−36.2	−36.5	−36.7	−37.0	−37.2	−37.5	−37.7	−38.0	−38.2	−38.5	−38.7	−39.0	−39.2

Table III (b)

Salinity interpolation for Table III

SALINITY	SALINITY 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
0.51	−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	−39.0	−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	−41.8	−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	−42.3	−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	−44.9	−45.2	−45.5
0.59	−42.2	−42.5	−42.8	−43.1	−43.4	−43.7	−44.0	−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	−46.1	−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	−48.0	−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	−50.0	−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	−51.1	−51.5	−51.8
0.67	−47.9	−48.2	−48.6	−48.9	−49.2	−49.6	−49.9	−50.2	−50.6	−50.9	−51.3	−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	−50.0	−50.4	−50.7	−51.1	−51.4	−51.8	−52.1	−52.5	−52.8	−53.2	−53.5	−53.9	−54.2	−54.6	−54.9
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	−52.9	−53.3	−53.7	−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	−57.3	−57.7	−58.1
0.75	−53.6	−54.0	−54.4	−54.7	−55.1	−55.5	−55.9	−56.2	−56.6	−57.0	−57.4	−57.7	−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	−60.4	−60.8	−61.2
0.79	−56.5	−56.9	−57.3	−57.7	−58.1	−58.5	−58.9	−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	−61.2	−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	−63.5	−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	−65.2
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	−65.4	−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	−66.6	−67.1	−67.5
0.87	−62.2	−62.6	−63.1	−63.5	−63.9	−64.4	−64.8	−65.2	−65.7	−66.1	−66.6	−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	−64.3	−64.8	−65.2	−65.7	−66.1	−66.6	−67.0	−67.5	−67.9	−68.4	−68.8	−69.3	−69.7	−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	−68.1	−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	−68.4	−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	−72.8	−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	−73.1	−73.6	−74.1	−74.6
0.96	−68.6	−69.1	−69.6	−70.1	−70.6	−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	−75.9	−76.4	−76.9
0.99	−70.8	−71.3	−71.8	−72.3	−72.8	−73.3	−73.8	−74.2	−74.7	−75.2	−75.7	−76.2	−76.7	−77.2	−77.7

Table IV

"Standard Ocean" specific volume V (35,0,p) (10^3 m^3/kg.)

PRESSURE DECIBARS	0	100	200	300	400	500	600	700	800	900
0----	972662	972212	971763	971316	.970870	.970426	969983	.969541	.969101	.968662
1000----	968224	967788	967353	966920	.966487	966056	965627	.965199	964772	964346
2000----	963921	963498	963076	962656	.962237	961819	.961402	.960986	960572	960159
3000----	959748	959337	.958928	.958520	.958113	957707	957303	.956900	.956498	.956097
4000----	955698	955299	.954902	.954506	.954111	953717	953325	.952934	952543	.952154
5000----	951767	951380	950994	950610	.950227	949844	.949463	.949083	.948705	.948327
6000----	947950	947575	947200	946827	.946455	946083	.945713	945344	.944976	.944609
7000----	944244	943879	943515	943153	.942791	.942430	.942071	941712	.941355	.940998
8000----	940643	940288	939935	939583	.939231	938881	.938532	.938183	.937836	.937489
9000----	937144	936800	936456	936114	.935772	935431	.935092	934753	.934416	.934079
10000----	933743	.933408	.933074	932741	.932409	932078	.931748	931419	.931091	.930763

Table V

Temperature-pressure correction $\delta(35,t,p) - \delta(35,t,0)$ [10^{-8} m^3/kg]

ESSURE CIBARS	TEMPERATURE DEGREES CELSIUS																
		−2.0	−1.0	0.0	1.0	2.0	3.0	4.0	5.0	7.0	8.0	9.0	10.0	15.0	20.0	25.0	30.0	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	0.0	0.0	0.0	0.0	0.0	0.0
100----	−0.6	−0.3	0.0	0.3	0.5	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.9	3.5	3.9	4.1	4.3
200----	−1.1	−0.6	0.0	0 5	1.0	1.5	2.0	2.4	2.8	3.2	3 6	4.0	4.3	5.8	6.9	7.7	8.3	8.6
300----	−1.7	−0.8	0 0	0.8	1 5	2.3	2.9	3.6	4.2	4.8	5.4	5.9	6.4	8.6	10.3	11.5	12.4	12.8
400----	−2.2	−1.1	0.0	1.0	2.0	3.0	3.9	4.8	5.6	6.4	7 1	7 9	8.5	11.5	13.7	15.4	16.4	17.1
500----	−2.8	−1.4	0.0	1.3	2.5	3.7	4.9	5.9	7.0	8.0	8.9	9.8	10.7	14.3	17.1	19.1	20.5	21.3
600----	−3.3	−1.6	0.0	1.6	3.0	4.5	5.8	7.1	8.4	9.5	10.7	11 7	12.7	17.1	20.5	22.9	24.5	25.5
700----	−3.9	−1.9	0.0	1.8	3.5	5.2	6.8	8.3	9.7	11.1	12.4	13.6	14.8	19.9	23.8	26.6	28.5	29.6
800----	−4.4	−2.2	0.0	2.1	4.0	5.9	7.7	9.4	11.1	12.6	14 1	15.5	16.9	22.7	27.1	30.4	32.5	33.7
900----	−5.0	−2.4	0.0	2.3	4.5	6.6	8.7	10.6	12.4	14.2	15.8	17.4	18.9	25.5	30.4	34.1	36.5	37.9
1000----	−5.5	−2.7	0.0	2.6	5.0	7.4	9.6	11.7	13.8	15.7	17.5	19.3	21.0	28.2	33.7	37.7	40.4	42.0
1100----	−6.0	−2.9	0.0	2.8	5.5	8.1	10.5	12.9	15.1	17.2	19.2	21.2	23.0	30.9	37.0	41.4	44.4	46.0
1200----	−6 6	−3.2	0.0	3.1	6.0	8.8	11.4	14.0	16.4	18.7	20.9	23.0	25.0	33.7	40.2	45.0	48.3	50.1
1300----	−7.1	−3.5	0.0	3.3	6.5	9.5	12.4	15.1	17.7	20.2	22.6	24.9	27.0	36.4	43.5	48.6	52.1	54.1
1400----	−7.6	−3.7	0.0	3.5	6.9	10.2	13.3	16.2	19.0	21.7	24.3	26.7	29.0	39.0	46.7	52.2	56.0	58.1
1500----	−8.1	−4.0	0.0	3.8	7.4	10.9	14.2	17.3	20.3	23.2	25 9	28.5	31.0	41.7	49.9	55.8	59.8	62.1
1600----	−8.6	−4.2	0.0	4.0	7.9	11.6	15.1	18.4	21.6	24.7	27.6	30.3	33.0	44.4	53.0	59.4	63.6	66.0
1700----	−9.1	−4.5	0.0	4.3	8.3	12.2	16.0	19.5	22.9	26.1	29.2	32.1	34.9	47.0	56.2	62.9	67.4	69.9
1800----	−9 6	−4 7	0 0	4.5	8.8	12.9	16.8	20.6	24.2	27.6	30.8	33.9	36.9	49.6	59.3	66.4	71.2	73.9
1900----	−10.2	−5 0	0.0	4.7	9.3	13.6	17.7	21.7	25.4	29.0	32.4	35.7	38.8	52.2	62.4	69.9	74.9	77.7
2000----	−10.7	−5.2	0.0	5.0	9.7	14.3	18.6	22.7	26.7	30.5	34.0	37.5	40.7	54.8	65.5	73.3	78.6	81.6
2500----	−13.1	−6.4	0.0	6.1	12.0	17.6	22.9	28.0	32.9	37.5	41.9	46.1	50.2	67.5	80.7	90.4	96.9	100.6
3000----	−15.5	−7.6	0.0	7.2	14.1	20.7	27.0	33.1	38.8	44.3	49.5	54.5	59.3	79.8	95.4	106.9	114.6	119.0
3500----	−17.8	−8.7	0.0	8.3	16.2	23.8	31.1	38.0	44.6	50.9	56.9	62.6	68.1	91.7	109.7	122 9	131.8	136.9
4000----	−20.0	−9.8	0.0	9.3	18.3	26.8	34.9	42.7	50.2	57 3	64.0	70.5	76.6	103.2	123.5	138.4	148.4	154.2

PRESSURE DECIBARS	TEMPERATURE DEGREES CELSIUS												
	−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
2000----	−5 2	−2 6	0 0	2 5	5 0	7.4	9 7	12.0	14.3	16 5	18 6	20 7	22.7
2500----	−6.4	−3 2	0 0	3 1	6.1	9 1	12.0	14 8	17 6	20 3	22.9	25 5	28.0
3000----	−7 6	−3.7	0.0	3 7	7.2	10 7	14 1	17.5	20.7	23 9	27.0	30.1	33.1
3500----	−8.7	−4.3	0 0	4 2	8 3	12.3	16 2	20.1	23.8	27 5	31 1	34.6	38.0
4000----	−9 8	−4 8	0 0	4.7	9.3	13.8	18 3	22.6	26 8	30.9	34.9	38.9	42 7
4500----	−10 8	−5 3	0.0	5.2	10.3	15 3	20 2	25 0	29 7	34 2	38.7	43.0	47.3
5000----	−11 8	−5 8	0 0	5.7	11 3	16.8	22 1	27 3	32.4	37 4	42.3	47.1	51.7
5500----	−12 8	−6 3	0 0	6.2	12 2	18.1	23.9	29 6	35 1	40.5	45 8	50 9	56.0
6000----	−13 7	−6 8	0 0	6 6	13.1	19.5	25.7	31 7	37 7	43.5	49.1	54.7	60.1
6500----	−14.6	−7 2	0 0	7 1	14.0	20.7	27 3	33 8	40 1	46.3	52.4	58.3	64.0
7000----	−15 5	−7 6	0 0	7 5	14.8	22.0	29 0	35 8	42 5	49.1	55.5	61.7	67.8
7500----	−16 3	−8 1	0 0	7.9	15.6	23 1	30 5	37 7	44.8	51.7	58 4	65.0	71.5
8000----	−17 1	−8 4	0.0	8 3	16.3	24 3	32 0	39.6	47 0	54.2	61 3	68.2	75.0
8500----	−17 8	−8 8	0.0	8 6	17 1	25 3	33 4	41.3	49 1	56.6	64 0	71.2	78.3
9000----	−18 6	−9 2	0.0	9 0	17 8	26 4	34 8	43.0	51.1	58 9	66 6	74.2	81 5
9500----	−19 2	−9 5	0 0	9 3	18 4	27.3	36 1	44.6	53.0	61 1	69.1	76.9	84 6
10000----	−19.9	−9 8	0 0	9.6	19.1	28 3	37 3	46 1	54 8	63 2	71.5	79.6	87 5

Table VI

Salinity-pressure correction $\delta(S,0,p) - \delta(S,0,0)$ $[10^{-8}\ m^3/kg]$

PRESSURE	SALINITY										
DECIBARS	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
0----	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100----	−0.8	−0.6	−0.5	−0.3	−0.2	0.0	0.2	0.3	0.4	0.6	0.7
200----	−1.5	−1.2	−0.9	−0.6	−0.3	0.0	0.3	0.6	0.9	1.2	1.5
300----	−2.3	−1.8	−1.4	−0.9	−0.5	0.0	0.4	0.9	1.3	1.8	2.2
400----	−3.0	−2.4	−1.8	−1.2	−0.6	0.0	0.6	1.2	1.8	2.4	3.0
500----	−3.8	−3.0	−2.3	−1.5	−0.7	0.0	0.7	1.5	2.2	3.0	3.7
600----	−4.5	−3.6	−2.7	−1.8	−0.9	0.0	0.9	1.8	2.7	3.5	4.4
700----	−5.3	−4.2	−3.1	−2.1	−1.0	0.0	1.0	2.1	3.1	4.1	5.1
800----	−6.0	−4.8	−3.6	−2.4	−1.2	0.0	1.2	2.4	3.5	4.7	5.9
900----	−6.8	−5.4	−4.0	−2.7	−1.3	0.0	1.3	2.7	4.0	5.3	6.6
1000----	−7.5	−6.0	−4.5	−3.0	−1.5	0.0	1.5	2.9	4.4	5.8	7.3
1100----	−8.2	−6.6	−4.9	−3.3	−1.6	0.0	1.6	3.2	4.8	6.4	8.0
1200----	−8.9	−7.1	−5.3	−3.5	−1.8	0.0	1.8	3.5	5.3	7.0	8.7
1300----	−9.7	−7.7	−5.8	−3.8	−1.9	0.0	1.9	3.8	5.7	7.6	9.4
1400----	−10.4	−8.3	−6.2	−4.1	−2.1	0.0	2.0	4.1	6.1	8.1	10.1
1500----	−11.1	−8.9	−6.6	−4.4	−2.2	0.0	2.2	4.4	6.5	8.7	10.8
1600----	−11.8	−9.4	−7.1	−4.7	−2.3	0.0	2.3	4.6	6.9	9.2	11.5
1700----	−12.5	−10.0	−7.5	−5.0	−2.5	0.0	2.5	4.9	7.4	9.8	12.2
1800----	−13.2	−10.6	−7.9	−5.3	−2.6	0.0	2.6	5.2	7.8	10.3	12.9
1900----	−13.9	−11.1	−8.3	−5.5	−2.8	0.0	2.7	5.5	8.2	10.9	13.6
2000----	−14.6	−11.7	−8.7	−5.8	−2.9	0.0	2.9	5.8	8.6	11.4	14.3
2500----	−18.1	−14.4	−10.8	−7.2	−3.6	0.0	3.6	7.1	10.6	14.2	17.6
3000----	−21.5	−17.1	−12.8	−8.5	−4.3	0.0	4.2	8.4	12.6	16.8	20.9
3500----	−24.8	−19.8	−14.8	−9.8	−4.9	0.0	4.9	9.7	14.6	19.4	24.2
4000----	−28.0	−22.4	−16.7	−11.1	−5.5	0.0	5.5	11.0	16.5	21.9	27.3

PRESSURE	SALINITY										
DECIBARS	34.4	34.6	34.8	35.0	35.2		38.3	38.5	38.7	38.9	39.1
2000----	−1.7	−1.2	−0.6	0.0	0.6		9.5	10.0	10.6	11.2	11.7
2500----	−2.1	−1.4	−0.7	0.0	0.7		11.7	12.4	13.1	13.8	14.5
3000----	−2.5	−1.7	−0.8	0.0	0.8		13.9	14.7	15.6	16.4	17.2
3500----	−2.9	−2.0	−1.0	0.0	1.0		16.0	17.0	17.9	18.9	19.9
4000----	−3.3	−2.2	−1.1	0.0	1.1		18.1	19.2	20.3	21.4	22.5
4500----	−3.7	−2.5	−1.2	0.0	1.2		20.2	21.4	22.6	23.8	25.0
5000----	−4.1	−2.7	−1.4	0.0	1.4		22.2	23.5	24.8	26.1	27.5
5500----	−4.4	−2.9	−1.5	0.0	1.5		24.1	25.6	27.0	28.5	29.9
6000----	−4.8	−3.2	−1.6	0.0	1.6		26.0	27.6	29.1	30.7	32.3
6500----	−5.1	−3.4	−1.7	0.0	1.7		27.9	29.6	31.2	32.9	34.6
7000----	−5.5	−3.6	−1.8	0.0	1.8		29.7	31.5	33.3	35.1	36.8
7500----	−5.8	−3.9	−1.9	0.0	1.9		31.5	33.4	35.3	37.2	39.0
8000----	−6.1	−4.1	−2.0	0.0	2.0		33.2	35.2	37.2	39.2	41.2
8500----	−6.4	−4.3	−2.1	0.0	2.1		34.9	37.0	39.1	41.2	43.3
9000----	−6.7	−4.5	−2.2	0.0	2.2		36.6	38.8	41.0	43.2	45.4
9500----	−7.0	−4.7	−2.3	0.0	2.3		38.2	40.5	42.8	45.1	47.4
10000----	−7.3	−4.9	−2.4	0.0	2.4		39.8	42.2	44.6	47.0	49.3

Table VII

Thermal expansibility coefficient $10^7 \alpha = -10^7 (1/\rho) (\partial \rho / \partial t)$ [1/°C]

0 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	−1056	−844	−644	−453	−268	−88	85	119	153	187	220	254	287	320	353	385	418
−1.0	−865	−661	−469	−285	−108	64	230	263	295	328	360	392	424	455	487	518	549
0.0	−680	−484	−300	−124	46	211	371	402	433	464	495	526	556	586	616	646	676
1.0	−500	−313	−137	33	196	354	507	537	567	596	626	655	684	713	742	771	799
2.0	−327	−148	22	184	341	492	638	667	696	724	753	781	809	836	864	892	919
3.0	−160	13	175	331	481	626	766	794	821	849	876	903	929	956	983	1009	1035
4.0	3	168	324	473	617	756	890	917	943	969	995	1021	1047	1072	1098	1123	1148
5.0	160	319	468	611	749	882	1011	1036	1061	1086	1111	1136	1161	1185	1209	1234	1258
6.0	313	465	608	745	877	1005	1128	1152	1177	1201	1224	1248	1272	1295	1318	1341	1364
7.0	461	607	744	875	1002	1124	1242	1265	1289	1312	1334	1357	1380	1402	1424	1446	1469
8.0	605	745	876	1002	1123	1240	1353	1376	1398	1420	1442	1463	1485	1506	1528	1549	1570
9.0	745	878	1004	1125	1241	1353	1461	1483	1504	1525	1546	1567	1588	1608	1629	1649	1669
10.0	881	1009	1129	1244	1356	1463	1567	1587	1608	1628	1648	1668	1688	1707	1727	1747	1766
11.0	1013	1135	1251	1361	1467	1570	1670	1690	1709	1728	1748	1767	1786	1805	1823	1842	1861
12.0	1142	1259	1369	1475	1577	1675	1771	1789	1808	1827	1845	1863	1882	1900	1918	1936	1953
13.0	1267	1379	1485	1586	1683	1778	1869	1887	1905	1923	1940	1958	1975	1993	2010	2027	2044
14.0	1390	1497	1597	1694	1788	1878	1965	1983	2000	2017	2034	2051	2067	2084	2100	2117	2133
15.0	1509	1611	1708	1800	1889	1976	2060	2076	2093	2109	2125	2141	2157	2173	2189	2205	2221
16.0	1626	1723	1815	1904	1989	2072	2152	2168	2184	2200	2215	2230	2246	2261	2276	2291	2306
17.0	1739	1832	1920	2005	2087	2166	2243	2258	2273	2288	2303	2318	2333	2347	2362	2376	2391
18.0	1851	1939	2024	2104	2183	2259	2332	2347	2361	2376	2390	2404	2418	2432	2446	2460	2474
19.0	1960	2044	2125	2202	2277	2349	2420	2434	2448	2461	2475	2489	2502	2516	2529	2542	2556
20.0	2067	2147	2224	2297	2369	2438	2506	2519	2532	2546	2559	2572	2585	2598	2611	2623	2636
21.0	2171	2248	2321	2391	2459	2526	2591	2603	2616	2629	2641	2654	2666	2679	2691	2703	2715
22.0	2274	2346	2416	2483	2548	2612	2674	2686	2698	2710	2722	2734	2746	2758	2770	2782	2794
23.0	2374	2443	2509	2574	2636	2697	2756	2768	2779	2791	2803	2814	2825	2837	2848	2860	2871
24.0	2473	2538	2601	2662	2722	2780	2837	2848	2859	2870	2881	2892	2903	2914	2925	2936	2947
25.0	2570	2632	2692	2750	2807	2862	2917	2927	2938	2949	2959	2970	2980	2991	3001	3012	3022
26.0	2665	2724	2781	2836	2890	2943	2995	3005	3016	3026	3036	3046	3056	3066	3076	3086	3096
27.0	2759	2814	2868	2921	2972	3023	3073	3082	3092	3102	3112	3121	3131	3141	3150	3160	3170
28.0	2851	2903	2954	3004	3053	3101	3149	3158	3168	3177	3186	3196	3205	3214	3224	3233	3242
29.0	2942	2991	3039	3086	3133	3179	3224	3233	3242	3251	3260	3269	3278	3287	3296	3304	3313
30.0	3031	3077	3122	3167	3211	3255	3298	3307	3316	3324	3333	3341	3350	3358	3367	3375	3384
31.0	3119	3162	3205	3247	3289	3330	3372	3380	3388	3396	3404	3413	3421	3429	3437	3445	3453
32.0	3206	3246	3285	3325	3365	3404	3444	3452	3459	3467	3475	3483	3491	3498	3506	3514	3522
33.0	3291	3328	3365	3402	3440	3477	3515	3522	3530	3537	3545	3552	3560	3567	3574	3582	3589
34.0	3375	3409	3443	3478	3514	3549	3585	3592	3599	3606	3613	3620	3627	3634	3642	3649	3656
35.0	3457	3488	3520	3553	3586	3620	3653	3660	3667	3674	3680	3687	3694	3701	3708	3714	3721
36.0	3538	3567	3596	3627	3658	3689	3721	3727	3734	3740	3747	3753	3760	3766	3773	3779	3786
37.0	3618	3644	3671	3699	3728	3757	3787	3793	3799	3806	3812	3818	3824	3830	3836	3842	3849
38.0	3697	3719	3744	3770	3797	3824	3852	3858	3864	3870	3875	3881	3887	3893	3899	3905	3910
39.0	3774	3794	3816	3839	3864	3890	3916	3921	3927	3932	3938	3943	3949	3954	3960	3965	3971
40.0	3849	3866	3886	3907	3930	3954	3978	3983	3988	3994	3999	4004	4009	4014	4019	4025	4030

Table VIII (a-b)

Thermal expansibility coefficient $10^7 \alpha = -10^7 (1/\rho)(\partial \rho / \partial t)$ [1/°C]

1000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	−646	−453	−271	−96	73	237	397	428	459	490	521	552	582	613	643	673	703
−1.0	−473	−288	−113	55	218	375	528	559	588	618	648	677	707	736	765	794	822
0.0	−306	−128	41	202	358	509	656	685	714	742	771	799	827	855	883	911	938
1.0	−143	28	189	344	494	639	780	808	835	863	890	917	944	971	997	1024	1050
2.0	14	178	333	482	626	765	900	927	953	979	1005	1031	1057	1083	1109	1134	1159
3.0	166	324	473	616	754	887	1017	1042	1068	1093	1118	1143	1167	1192	1217	1241	1265
4.0	314	466	609	746	878	1006	1130	1155	1179	1203	1227	1251	1275	1298	1322	1345	1368
5.0	458	603	740	872	999	1121	1240	1264	1287	1310	1333	1356	1379	1402	1424	1446	1469
6.0	597	737	868	994	1116	1234	1348	1370	1393	1415	1437	1459	1480	1502	1524	1545	1566
7.0	733	867	993	1114	1230	1343	1452	1474	1495	1516	1538	1559	1579	1600	1621	1641	1662
8.0	864	993	1114	1230	1341	1449	1554	1575	1595	1616	1636	1656	1676	1696	1716	1735	1755
9.0	992	1115	1231	1342	1450	1553	1654	1673	1693	1712	1732	1751	1770	1789	1808	1827	1846
10.0	1117	1235	1346	1453	1555	1654	1751	1770	1788	1807	1826	1844	1863	1881	1899	1917	1935
11.0	1239	1352	1458	1560	1658	1753	1846	1864	1882	1900	1917	1935	1953	1970	1988	2005	2022
12.0	1357	1465	1567	1665	1759	1850	1938	1956	1973	1990	2007	2024	2041	2058	2074	2091	2108
13.0	1472	1576	1673	1767	1857	1944	2029	2046	2062	2079	2095	2111	2128	2144	2160	2175	2191
14.0	1585	1684	1777	1867	1953	2037	2118	2134	2150	2166	2181	2197	2212	2228	2243	2258	2274
15.0	1695	1790	1879	1965	2048	2128	2205	2221	2236	2251	2266	2281	2296	2310	2325	2340	2354
16.0	1803	1893	1979	2061	2140	2216	2291	2306	2320	2335	2349	2363	2378	2392	2406	2420	2434
17.0	1908	1995	2076	2155	2230	2304	2375	2389	2403	2417	2431	2444	2458	2472	2485	2499	2512
18.0	2011	2094	2172	2247	2319	2389	2458	2471	2484	2498	2511	2524	2537	2550	2563	2576	2589
19.0	2112	2191	2265	2337	2406	2473	2539	2552	2565	2577	2590	2603	2615	2628	2640	2652	2665
20.0	2211	2286	2357	2426	2492	2556	2619	2631	2643	2656	2668	2680	2692	2704	2716	2728	2739
21.0	2308	2380	2447	2513	2576	2638	2698	2709	2721	2733	2745	2756	2768	2779	2791	2802	2813
22.0	2404	2471	2536	2598	2659	2718	2775	2786	2798	2809	2820	2831	2842	2853	2864	2875	2886
23.0	2497	2562	2623	2683	2740	2797	2852	2862	2873	2884	2895	2905	2916	2927	2937	2948	2958
24.0	2589	2650	2709	2765	2821	2874	2927	2937	2948	2958	2968	2978	2989	2999	3009	3019	3029

2000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	−259	−84	81	241	395	545	691	720	749	777	806	834	862	890	918	946	974
−1.0	−103	65	224	378	526	670	811	838	866	893	921	948	975	1002	1028	1055	1082
0.0	48	210	363	510	653	792	927	953	980	1006	1032	1058	1084	1110	1135	1161	1186
1.0	194	350	498	639	776	910	1039	1065	1090	1115	1140	1165	1190	1215	1239	1264	1288
2.0	337	487	628	765	896	1024	1148	1173	1197	1221	1245	1269	1293	1317	1341	1364	1387
3.0	475	619	755	886	1013	1135	1255	1278	1301	1325	1348	1371	1394	1416	1439	1461	1484
4.0	609	748	879	1005	1126	1244	1358	1380	1403	1425	1447	1469	1491	1513	1535	1556	1578
5.0	740	873	999	1119	1236	1349	1459	1480	1502	1523	1544	1565	1586	1607	1628	1649	1669
6.0	867	995	1116	1231	1343	1451	1557	1577	1598	1618	1639	1659	1679	1699	1719	1739	1759
7.0	990	1113	1229	1340	1447	1551	1652	1672	1692	1711	1731	1750	1770	1789	1808	1827	1846
8.0	1111	1229	1340	1446	1549	1649	1746	1765	1783	1802	1821	1840	1858	1876	1895	1913	1931
9.0	1228	1341	1448	1550	1648	1744	1837	1855	1873	1891	1909	1927	1944	1962	1980	1997	2014
10.0	1342	1451	1553	1651	1745	1837	1926	1943	1961	1978	1995	2012	2029	2046	2063	2079	2096
11.0	1453	1558	1656	1749	1840	1928	2013	2030	2046	2063	2079	2096	2112	2128	2144	2160	2176
12.0	1562	1662	1756	1846	1933	2017	2098	2114	2130	2146	2162	2177	2193	2209	2224	2239	2255
13.0	1668	1764	1854	1940	2023	2104	2182	2197	2212	2228	2243	2258	2273	2288	2302	2317	2332
14.0	1772	1863	1950	2032	2112	2189	2264	2279	2293	2308	2322	2337	2351	2365	2379	2393	2408
15.0	1873	1961	2043	2122	2199	2273	2344	2358	2372	2386	2400	2414	2428	2442	2455	2469	2482

Table VIII (c-d)

Thermal expansibility coefficient $10^7 \alpha = -10^7(1/\rho)(\partial \rho / \partial t)$ [1/°C]

3000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	106	264	413	558	699	836	970	996	1022	1048	1075	1101	1126	1152	1178	1203	1229
−1.0	245	398	542	682	817	949	1077	1103	1128	1153	1178	1203	1228	1253	1277	1302	1326
0.0	381	528	667	802	932	1058	1182	1207	1231	1255	1279	1303	1327	1351	1374	1398	1421
1.0	513	655	789	918	1043	1165	1284	1307	1331	1354	1377	1400	1423	1446	1468	1491	1513
2.0	642	778	907	1032	1152	1269	1383	1406	1428	1450	1472	1494	1516	1538	1560	1582	1603
3.0	767	898	1023	1142	1258	1370	1480	1501	1523	1544	1565	1586	1608	1628	1649	1670	1691
4.0	888	1015	1135	1249	1361	1469	1574	1594	1615	1635	1656	1676	1696	1716	1736	1756	1776
5.0	1007	1129	1244	1354	1461	1564	1665	1685	1705	1725	1744	1764	1783	1802	1821	1840	1859
6.0	1122	1239	1350	1456	1558	1658	1755	1774	1793	1811	1830	1849	1867	1886	1904	1923	1941
7.0	1235	1347	1453	1555	1654	1749	1842	1860	1878	1896	1914	1932	1950	1968	1985	2003	2020
8.0	1344	1453	1555	1652	1747	1838	1927	1945	1962	1979	1997	2014	2031	2048	2065	2082	2098
9.0	1451	1555	1653	1747	1837	1925	2011	2027	2044	2061	2077	2094	2110	2126	2142	2158	2174
10.0	1556	1656	1749	1839	1926	2010	2092	2108	2124	2140	2156	2172	2187	2203	2218	2234	2249
11.0	1658	1753	1843	1930	2013	2094	2172	2187	2203	2218	2233	2248	2263	2278	2293	2308	2323
12.0	1757	1849	1935	2018	2098	2175	2250	2265	2280	2294	2309	2323	2338	2352	2366	2381	2395
13.0	1855	1943	2025	2105	2181	2255	2327	2341	2356	2370	2383	2397	2411	2425	2438	2452	2466
14.0	1950	2034	2114	2190	2263	2334	2403	2416	2430	2443	2457	2470	2483	2496	2509	2522	2535
15.0	2043	2124	2200	2273	2343	2411	2477	2490	2503	2516	2529	2541	2554	2567	2579	2592	2604

4000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	447	590	725	856	984	1109	1231	1255	1280	1304	1327	1351	1375	1399	1422	1446	1469
−1.0	572	710	841	967	1090	1211	1328	1352	1375	1398	1421	1444	1467	1489	1512	1535	1557
0.0	694	827	954	1075	1194	1310	1423	1445	1468	1490	1512	1534	1556	1578	1599	1621	1643
1.0	813	942	1063	1181	1295	1406	1515	1536	1558	1579	1600	1622	1643	1664	1684	1705	1726
2.0	929	1053	1170	1283	1393	1500	1605	1625	1646	1666	1687	1707	1727	1747	1767	1787	1807
3.0	1041	1161	1274	1383	1489	1592	1692	1712	1732	1751	1771	1790	1810	1829	1848	1867	1886
4.0	1151	1267	1376	1481	1582	1681	1777	1796	1815	1834	1853	1872	1890	1909	1927	1945	1964
5.0	1259	1370	1475	1576	1673	1768	1861	1879	1897	1915	1933	1951	1969	1987	2004	2022	2039
6.0	1363	1470	1571	1668	1762	1853	1942	1959	1977	1994	2011	2029	2046	2063	2080	2097	2113
7.0	1465	1569	1666	1759	1849	1936	2021	2038	2055	2072	2088	2105	2121	2137	2153	2170	2186
8.0	1565	1664	1758	1847	1934	2018	2099	2115	2131	2147	2163	2179	2195	2210	2226	2241	2257
9.0	1663	1758	1848	1934	2016	2097	2175	2191	2206	2221	2237	2252	2267	2282	2297	2312	2326
10.0	1758	1850	1936	2018	2098	2175	2250	2265	2279	2294	2309	2323	2338	2352	2366	2380	2395
11.0	1851	1939	2022	2101	2177	2251	2323	2337	2351	2365	2379	2393	2407	2421	2435	2448	2462
12.0	1942	2027	2106	2182	2255	2326	2395	2409	2422	2436	2449	2462	2475	2489	2502	2515	2528
13.0	2032	2113	2189	2261	2331	2399	2466	2479	2492	2504	2517	2530	2543	2555	2568	2580	2593
14.0	2119	2197	2270	2339	2406	2472	2535	2547	2560	2572	2584	2597	2609	2621	2633	2645	2657
15.0	2205	2279	2349	2416	2480	2543	2603	2615	2627	2639	2651	2662	2674	2686	2697	2709	2720

Table VIII (e-h)

Thermal expansibility coefficient $10^7 \alpha = -10^7(1/\rho)(\partial \rho / \partial t)$ [1/°C]

5000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	767	895	1017	1136	1252	1365	1477	1499	1521	1543	1565	1587	1608	1630	1652	1673	1695
−1.0	878	1003	1121	1235	1347	1457	1564	1585	1607	1628	1649	1670	1691	1712	1732	1753	1774
0.0	987	1108	1222	1332	1440	1546	1649	1670	1690	1710	1731	1751	1771	1791	1811	1831	1851
1.0	1094	1210	1321	1427	1531	1633	1732	1752	1771	1791	1810	1830	1849	1868	1888	1907	1926
2.0	1198	1310	1417	1520	1620	1717	1813	1832	1851	1870	1888	1907	1925	1944	1962	1981	1999
3.0	1299	1408	1511	1610	1706	1800	1892	1910	1928	1946	1964	1982	2000	2018	2035	2053	2071
4.0	1398	1504	1603	1698	1791	1881	1969	1987	2004	2021	2039	2056	2073	2090	2107	2124	2141
5.0	1495	1597	1692	1784	1873	1960	2045	2062	2078	2095	2111	2128	2144	2160	2177	2193	2209

6000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	1065	1180	1290	1397	1501	1604	1706	1726	1747	1767	1787	1807	1827	1847	1866	1886	1906
−1.0	1164	1276	1382	1486	1587	1686	1785	1804	1823	1843	1862	1881	1900	1920	1939	1958	1977
0.0	1261	1370	1473	1573	1671	1767	1861	1880	1898	1917	1935	1954	1972	1991	2009	2027	2046
1.0	1356	1462	1561	1658	1752	1845	1936	1954	1972	1989	2007	2025	2043	2060	2078	2096	2113
2.0	1449	1551	1648	1741	1832	1921	2009	2026	2043	2060	2077	2094	2111	2128	2145	2162	2179
3.0	1541	1639	1733	1822	1910	1996	2080	2097	2113	2130	2146	2162	2179	2195	2211	2227	2244
4.0	1630	1725	1815	1902	1986	2069	2150	2166	2182	2197	2213	2229	2245	2260	2276	2291	2307
5.0	1717	1810	1896	1980	2061	2140	2218	2233	2249	2264	2279	2294	2309	2324	2339	2354	2369

7000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	1341	1444	1543	1639	1734	1827	1920	1938	1957	1975	1993	2012	2030	2048	2066	2085	2103
−1.0	1429	1530	1625	1719	1810	1901	1990	2008	2025	2043	2061	2078	2096	2114	2131	2149	2166
0.0	1516	1613	1706	1797	1885	1972	2059	2076	2093	2110	2127	2144	2160	2177	2194	2211	2228
1.0	1600	1695	1785	1873	1958	2043	2126	2142	2158	2175	2191	2207	2224	2240	2256	2272	2288
2.0	1684	1776	1863	1948	2030	2111	2191	2207	2223	2238	2254	2270	2285	2301	2316	2332	2347
3.0	1766	1855	1939	2021	2101	2179	2255	2271	2286	2301	2316	2331	2346	2361	2376	2391	2405
4.0	1846	1932	2014	2093	2169	2245	2318	2333	2348	2362	2377	2391	2405	2420	2434	2448	2462
5.0	1925	2008	2087	2163	2237	2309	2380	2394	2408	2422	2436	2450	2464	2477	2491	2505	2518

10000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	2046	2119	2190	2260	2329	2399	2469	2483	2497	2511	2525	2539	2553	2567	2581	2595	2609
−1.0	2107	2179	2248	2316	2384	2451	2519	2532	2546	2559	2573	2587	2600	2614	2627	2641	2654
0.0	2167	2238	2305	2372	2437	2503	2568	2581	2594	2607	2620	2633	2646	2659	2672	2685	2698
1.0	2227	2296	2362	2426	2490	2553	2616	2629	2641	2654	2666	2679	2691	2704	2717	2729	2742
2.0	2286	2354	2418	2480	2542	2603	2664	2676	2688	2700	2712	2724	2736	2748	2760	2772	2784
3.0	2345	2411	2473	2534	2593	2652	2711	2722	2734	2745	2757	2769	2780	2792	2803	2815	2826
4.0	2403	2467	2527	2586	2644	2700	2757	2768	2779	2790	2801	2812	2823	2834	2846	2857	2868
5.0	2460	2523	2581	2638	2693	2748	2802	2813	2824	2834	2845	2856	2866	2877	2887	2898	2908

Table IX

Salinity contraction coefficient, $10^7 \beta = +10^7 (1/\rho)(\partial\rho/\partial S)$

0 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	8333	8148	8081	8034	7997	7966	7941	7936	7931	7927	7922	7918	7914	7910	7906	7902	7898
−1.0	8289	8108	8043	7997	7961	7932	7907	7902	7898	7894	7890	7886	7882	7878	7874	7870	7867
0.0	8246	8070	8006	7962	7927	7899	7875	7871	7866	7862	7858	7854	7851	7847	7843	7840	7836
1.0	8206	8033	7971	7928	7894	7867	7844	7840	7836	7832	7828	7824	7821	7817	7814	7811	7807
2.0	8167	7997	7937	7895	7863	7837	7815	7811	7807	7803	7799	7796	7792	7789	7786	7783	7780
3.0	8129	7963	7905	7864	7833	7808	7786	7783	7779	7775	7772	7768	7765	7762	7759	7756	7753
4.0	8093	7931	7874	7834	7804	7780	7759	7756	7752	7749	7745	7742	7739	7736	7733	7730	7727
5.0	8059	7899	7844	7806	7776	7753	7733	7730	7726	7723	7720	7717	7714	7711	7708	7705	7703
6.0	8026	7869	7815	7778	7750	7727	7708	7705	7702	7699	7696	7693	7690	7687	7684	7682	7679
7.0	7994	7841	7788	7752	7724	7703	7685	7681	7678	7675	7672	7670	7667	7664	7662	7659	7657
8.0	7964	7813	7762	7727	7700	7679	7662	7659	7656	7653	7650	7647	7645	7642	7640	7638	7635
9.0	7935	7787	7737	7703	7677	7657	7640	7637	7634	7631	7629	7626	7624	7621	7619	7617	7615
10.0	7907	7762	7713	7679	7655	7635	7619	7616	7613	7611	7608	7606	7604	7601	7599	7597	7595
11.0	7880	7738	7690	7657	7633	7614	7599	7596	7594	7591	7589	7586	7584	7582	7580	7578	7576
12.0	7855	7714	7667	7636	7613	7594	7580	7577	7575	7572	7570	7568	7566	7564	7562	7560	7558
13.0	7831	7692	7646	7616	7593	7575	7561	7559	7556	7554	7552	7550	7548	7546	7544	7542	7541
14.0	7807	7671	7626	7596	7574	7557	7544	7541	7539	7537	7535	7533	7531	7529	7527	7526	7524
15.0	7785	7651	7607	7578	7556	7540	7527	7525	7522	7520	7518	7516	7515	7513	7511	7510	7508
16.0	7764	7632	7588	7560	7539	7523	7511	7508	7506	7504	7502	7501	7499	7497	7496	7494	7493
17.0	7744	7613	7571	7543	7523	7507	7495	7493	7491	7489	7487	7486	7484	7482	7481	7479	7478
18.0	7725	7596	7554	7527	7507	7492	7480	7478	7476	7475	7473	7471	7470	7468	7467	7465	7464
19.0	7707	7579	7538	7511	7492	7477	7466	7464	7462	7461	7459	7457	7456	7454	7453	7452	7450
20.0	7689	7563	7522	7496	7477	7463	7452	7451	7449	7447	7445	7444	7443	7441	7440	7439	7437
21.0	7673	7548	7508	7482	7464	7450	7439	7438	7436	7434	7433	7431	7430	7429	7427	7426	7425
22.0	7657	7533	7494	7469	7451	7437	7427	7425	7423	7422	7420	7419	7418	7416	7415	7414	7413
23.0	7642	7519	7481	7456	7438	7425	7415	7413	7412	7410	7409	7407	7406	7405	7404	7403	7402
24.0	7628	7506	7468	7443	7426	7413	7403	7402	7400	7399	7397	7396	7395	7394	7393	7392	7391
25.0	7615	7494	7456	7432	7414	7402	7392	7391	7389	7388	7387	7385	7384	7383	7382	7381	7380
26.0	7602	7482	7444	7420	7403	7391	7382	7380	7379	7377	7376	7375	7374	7373	7372	7371	7370
27.0	7591	7471	7433	7410	7393	7381	7372	7370	7369	7367	7366	7365	7364	7363	7362	7361	7360
28.0	7580	7460	7423	7399	7383	7371	7362	7361	7359	7358	7357	7356	7354	7353	7353	7352	7351
29.0	7569	7450	7413	7390	7374	7362	7353	7351	7350	7349	7348	7346	7345	7344	7343	7343	7342
30.0	7560	7441	7404	7381	7365	7353	7344	7343	7341	7340	7339	7338	7337	7336	7335	7334	7333
31.0	7551	7432	7395	7372	7356	7344	7336	7334	7333	7332	7330	7329	7328	7327	7327	7326	7325
32.0	7543	7424	7387	7364	7348	7336	7328	7326	7325	7324	7322	7321	7320	7319	7319	7318	7317
33.0	7535	7416	7379	7356	7340	7328	7320	7319	7317	7316	7315	7314	7313	7312	7311	7310	7309
34.0	7528	7409	7372	7349	7333	7321	7313	7311	7310	7309	7308	7307	7306	7305	7304	7303	7302
35.0	7522	7402	7365	7342	7326	7314	7306	7304	7303	7302	7301	7300	7299	7298	7297	7296	7295
36.0	7516	7396	7359	7336	7319	7308	7299	7298	7296	7295	7294	7293	7292	7291	7290	7289	7289
37.0	7511	7391	7353	7330	7313	7302	7293	7292	7290	7289	7288	7287	7286	7285	7284	7283	7282
38.0	7507	7386	7348	7324	7308	7296	7287	7286	7284	7283	7282	7281	7280	7279	7278	7277	7276
39.0	7503	7381	7343	7319	7303	7290	7282	7280	7279	7277	7276	7275	7274	7273	7272	7271	7270
40.0	7500	7377	7339	7315	7298	7285	7276	7275	7273	7272	7271	7270	7269	7268	7267	7266	7265

Table X (a-b)

Salinity contraction coefficient, $10^7 \beta = +10^7 (1/\rho)(\partial \rho / \partial S)$

1000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	8187	8006	7943	7899	7866	7838	7816	7812	7808	7804	7800	7797	7793	7790	7786	7783	7780
−1.0	8147	7969	7908	7865	7833	7807	7785	7781	7777	7774	7770	7767	7763	7760	7757	7754	7751
0.0	8108	7934	7874	7833	7802	7776	7755	7752	7748	7744	7741	7738	7735	7731	7728	7725	7723
1.0	8071	7901	7842	7802	7772	7747	7727	7723	7720	7717	7713	7710	7707	7704	7701	7698	7696
2.0	8035	7868	7811	7772	7743	7719	7700	7696	7693	7690	7687	7684	7681	7678	7675	7673	7670
3.0	8001	7837	7781	7744	7715	7692	7674	7670	7667	7664	7661	7658	7656	7653	7650	7648	7645
4.0	7968	7807	7753	7716	7688	7667	7649	7646	7643	7640	7637	7634	7631	7629	7626	7624	7622
5.0	7936	7778	7725	7690	7663	7642	7625	7622	7619	7616	7613	7611	7608	7606	7603	7601	7599
6.0	7906	7751	7699	7664	7639	7618	7602	7599	7596	7593	7591	7588	7586	7584	7581	7579	7577
7.0	7877	7725	7674	7640	7615	7596	7580	7577	7574	7572	7569	7567	7565	7562	7560	7558	7556
8.0	7849	7699	7650	7617	7593	7574	7559	7556	7554	7551	7549	7546	7544	7542	7540	7538	7536
9.0	7822	7675	7627	7595	7571	7553	7538	7536	7534	7531	7529	7527	7525	7523	7521	7519	7517
10.0	7796	7652	7605	7573	7551	7533	7519	7517	7514	7512	7510	7508	7506	7504	7502	7501	7499
11.0	7771	7629	7583	7553	7531	7514	7501	7498	7496	7494	7492	7490	7488	7486	7485	7483	7481
12.0	7748	7608	7563	7533	7512	7496	7483	7481	7478	7476	7474	7473	7471	7469	7468	7466	7465
13.0	7725	7588	7543	7515	7494	7478	7466	7464	7462	7460	7458	7456	7454	7453	7451	7450	7449
14.0	7704	7568	7525	7497	7476	7461	7449	7447	7445	7444	7442	7440	7439	7437	7436	7434	7433
15.0	7683	7549	7507	7479	7460	7445	7434	7432	7430	7428	7427	7425	7423	7422	7421	7419	7418
16.0	7663	7532	7490	7463	7444	7430	7419	7417	7415	7413	7412	7410	7409	7408	7406	7405	7404
17.0	7645	7514	7473	7447	7429	7415	7404	7403	7401	7399	7398	7396	7395	7394	7393	7392	7390
18.0	7627	7498	7458	7432	7414	7401	7391	7389	7387	7386	7384	7383	7382	7381	7379	7378	7377
19.0	7610	7483	7443	7418	7400	7387	7377	7376	7374	7373	7371	7370	7369	7368	7367	7366	7365
20.0	7593	7468	7429	7404	7387	7374	7365	7363	7362	7360	7359	7358	7357	7356	7355	7354	7353
21.0	7578	7453	7415	7391	7374	7362	7353	7351	7350	7348	7347	7346	7345	7344	7343	7342	7341
22.0	7563	7440	7402	7378	7362	7350	7341	7340	7338	7337	7336	7335	7334	7333	7332	7331	7330
23.0	7549	7427	7390	7366	7350	7338	7330	7329	7327	7326	7325	7324	7323	7322	7321	7320	7320
24.0	7536	7415	7378	7355	7339	7328	7319	7318	7317	7316	7314	7313	7313	7312	7311	7310	7309

2000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	8048	7870	7810	7770	7740	7716	7696	7693	7689	7686	7683	7680	7677	7674	7671	7669	7666
−1.0	8011	7837	7779	7739	7710	7687	7668	7664	7661	7658	7655	7652	7649	7647	7644	7641	7639
0.0	7976	7805	7748	7710	7681	7659	7641	7637	7634	7631	7628	7626	7623	7620	7618	7615	7613
1.0	7942	7774	7719	7681	7654	7632	7615	7611	7608	7606	7603	7600	7598	7595	7593	7591	7588
2.0	7910	7745	7690	7654	7627	7606	7590	7587	7584	7581	7578	7576	7573	7571	7569	7567	7564
3.0	7878	7716	7663	7628	7602	7582	7565	7563	7560	7557	7555	7552	7550	7548	7546	7544	7542
4.0	7848	7689	7637	7603	7577	7558	7542	7540	7537	7535	7532	7530	7528	7526	7524	7522	7520
5.0	7819	7663	7612	7578	7554	7535	7520	7518	7515	7513	7511	7508	7506	7504	7502	7501	7499
6.0	7791	7638	7588	7555	7532	7513	7499	7497	7494	7492	7490	7488	7486	7484	7482	7480	7479
7.0	7764	7613	7565	7533	7510	7493	7479	7476	7474	7472	7470	7468	7466	7464	7463	7461	7459
8.0	7738	7590	7543	7512	7489	7472	7459	7457	7455	7453	7451	7449	7447	7446	7444	7442	7441
9.0	7714	7568	7521	7491	7470	7453	7441	7439	7437	7435	7433	7431	7429	7428	7426	7425	7423
10.0	7690	7546	7501	7472	7451	7435	7423	7421	7419	7417	7415	7414	7412	7410	7409	7408	7406
11.0	7667	7526	7481	7453	7432	7417	7406	7404	7402	7400	7398	7397	7395	7394	7393	7391	7390
12.0	7645	7506	7463	7435	7415	7400	7389	7387	7386	7384	7382	7381	7379	7378	7377	7376	7375
13.0	7624	7487	7445	7417	7398	7384	7374	7372	7370	7368	7367	7366	7364	7363	7362	7361	7360
14.0	7604	7469	7427	7401	7382	7369	7358	7357	7355	7354	7352	7351	7350	7348	7347	7346	7345
15.0	7585	7452	7411	7385	7367	7354	7344	7342	7341	7339	7338	7337	7336	7335	7334	7333	7332

Table X (c-d)

Salinity contraction coefficient, $10^7 \beta = +10^7 (1/\rho)(\partial\rho/\partial S)$

3000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	7916	7741	7684	7647	7619	7598	7581	7578	7576	7573	7570	7568	7565	7563	7561	7559	7557
−1.0	7883	7711	7655	7619	7592	7572	7555	7553	7550	7547	7545	7542	7540	7538	7536	7534	7532
0.0	7851	7682	7627	7592	7566	7546	7530	7528	7525	7523	7520	7518	7516	7514	7512	7510	7508
1.0	7820	7654	7601	7566	7541	7522	7507	7504	7501	7499	7497	7495	7492	7490	7489	7487	7485
2.0	7790	7627	7575	7541	7517	7498	7484	7481	7479	7476	7474	7472	7470	7468	7466	7465	7463
3.0	7762	7601	7550	7517	7493	7475	7461	7459	7457	7455	7453	7451	7449	7447	7445	7443	7442
4.0	7734	7576	7526	7494	7471	7454	7440	7438	7436	7434	7432	7430	7428	7426	7425	7423	7422
5.0	7707	7552	7503	7472	7449	7433	7420	7418	7416	7414	7412	7410	7408	7407	7405	7404	7402
6.0	7682	7529	7481	7451	7429	7413	7400	7398	7396	7394	7393	7391	7389	7388	7386	7385	7384
7.0	7657	7507	7460	7430	7409	7393	7382	7380	7378	7376	7374	7373	7371	7370	7369	7367	7366
8.0	7633	7485	7440	7411	7390	7375	7364	7362	7360	7358	7357	7355	7354	7353	7351	7350	7349
9.0	7610	7465	7420	7392	7372	7357	7347	7345	7343	7342	7340	7339	7337	7336	7335	7334	7333
10.0	7589	7445	7401	7374	7354	7340	7330	7328	7327	7325	7324	7323	7321	7320	7319	7318	7317
11.0	7567	7426	7383	7356	7338	7324	7314	7313	7311	7310	7308	7307	7306	7305	7304	7303	7302
12.0	7547	7408	7366	7340	7322	7309	7299	7298	7296	7295	7294	7292	7291	7290	7289	7288	7288
13.0	7528	7391	7350	7324	7306	7294	7285	7283	7282	7281	7279	7278	7277	7276	7275	7275	7274
14.0	7509	7374	7334	7309	7292	7279	7271	7269	7268	7267	7266	7265	7264	7263	7262	7261	7261
15.0	7492	7359	7319	7294	7277	7266	7257	7256	7255	7254	7253	7252	7251	7250	7249	7249	7248

4000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	7791	7617	7563	7529	7504	7486	7471	7469	7467	7464	7462	7460	7458	7457	7455	7453	7452
−1.0	7761	7590	7537	7503	7479	7461	7448	7445	7443	7441	7439	7437	7435	7433	7432	7430	7429
0.0	7732	7564	7512	7479	7455	7438	7425	7423	7420	7418	7416	7415	7413	7411	7410	7408	7407
1.0	7704	7539	7488	7455	7433	7416	7403	7401	7399	7397	7395	7393	7391	7390	7388	7387	7386
2.0	7677	7514	7464	7433	7410	7394	7382	7380	7378	7376	7374	7372	7371	7369	7368	7367	7365
3.0	7650	7491	7442	7411	7389	7373	7362	7360	7358	7356	7354	7353	7351	7350	7348	7347	7346
4.0	7625	7468	7420	7390	7369	7353	7342	7340	7338	7337	7335	7334	7332	7331	7330	7329	7327
5.0	7601	7446	7399	7370	7349	7334	7323	7322	7320	7318	7317	7315	7314	7313	7312	7311	7310
6.0	7577	7425	7379	7350	7330	7316	7305	7304	7302	7301	7299	7298	7297	7295	7294	7293	7292
7.0	7555	7405	7360	7331	7312	7298	7288	7287	7285	7284	7282	7281	7280	7279	7278	7277	7276
8.0	7533	7385	7341	7314	7295	7281	7272	7270	7269	7267	7266	7265	7264	7263	7262	7261	7260
9.0	7512	7367	7323	7296	7278	7265	7256	7255	7253	7252	7251	7250	7249	7248	7247	7246	7245
10.0	7492	7349	7306	7280	7262	7250	7241	7239	7238	7237	7236	7235	7234	7233	7232	7232	7231
11.0	7472	7331	7289	7264	7247	7235	7226	7225	7224	7223	7222	7221	7220	7219	7218	7218	7217
12.0	7454	7315	7274	7249	7232	7220	7212	7211	7210	7209	7208	7207	7206	7206	7205	7204	7204
13.0	7436	7299	7259	7234	7218	7207	7199	7198	7197	7196	7195	7194	7193	7193	7192	7192	7191
14.0	7419	7284	7244	7220	7204	7194	7186	7185	7184	7183	7182	7182	7181	7180	7180	7179	7179
15.0	7402	7269	7230	7207	7191	7181	7174	7173	7172	7171	7170	7170	7169	7169	7168	7168	7167

Table X (e-h)

Salinity contraction coefficient, $10^7 \beta = + 10^7 (1/\rho) (\partial \rho / \partial S)$

5000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	7672	7500	7449	7416	7394	7378	7366	7364	7362	7361	7359	7357	7356	7355	7353	7352	7351
−1.0	7645	7476	7425	7393	7372	7356	7345	7343	7341	7339	7338	7336	7335	7333	7332	7331	7330
0.0	7619	7452	7402	7371	7350	7335	7324	7322	7320	7318	7317	7316	7314	7313	7312	7311	7310
1.0	7593	7429	7380	7350	7329	7314	7304	7302	7300	7299	7297	7296	7295	7293	7292	7291	7290
2.0	7569	7407	7359	7329	7309	7295	7284	7283	7281	7279	7278	7277	7276	7275	7274	7273	7272
3.0	7545	7386	7338	7309	7289	7276	7266	7264	7263	7261	7260	7259	7258	7256	7256	7255	7254
4.0	7522	7365	7319	7290	7271	7257	7248	7246	7245	7244	7242	7241	7240	7239	7238	7237	7237
5.0	7499	7345	7299	7272	7253	7240	7231	7229	7228	7227	7225	7224	7223	7223	7222	7221	7220

6000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	7560	7389	7339	7309	7289	7275	7266	7264	7263	7261	7260	7259	7258	7257	7256	7255	7255
−1.0	7535	7367	7318	7289	7269	7255	7246	7244	7243	7242	7241	7239	7238	7238	7237	7236	7235
0.0	7511	7345	7297	7268	7249	7236	7227	7225	7224	7223	7222	7221	7220	7219	7218	7217	7217
1.0	7488	7325	7277	7249	7230	7217	7208	7207	7206	7205	7204	7203	7202	7201	7200	7199	7199
2.0	7466	7305	7258	7230	7212	7199	7191	7189	7188	7187	7186	7185	7184	7184	7183	7182	7182
3.0	7444	7285	7240	7212	7194	7182	7174	7172	7171	7170	7169	7168	7168	7167	7166	7166	7165
4.0	7423	7267	7222	7195	7177	7165	7157	7156	7155	7154	7153	7152	7152	7151	7150	7150	7150
5.0	7403	7249	7204	7178	7161	7149	7142	7141	7140	7139	7138	7137	7136	7136	7135	7135	7134

7000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	7453	7283	7235	7207	7189	7177	7170	7169	7168	7167	7166	7165	7164	7164	7163	7163	7163
−1.0	7431	7263	7216	7189	7171	7159	7152	7150	7149	7149	7148	7147	7146	7146	7145	7145	7145
0.0	7410	7244	7198	7170	7153	7142	7134	7133	7132	7131	7130	7130	7129	7129	7128	7128	7128
1.0	7389	7226	7180	7153	7136	7124	7117	7116	7115	7115	7114	7113	7113	7112	7112	7112	7111
2.0	7369	7208	7162	7136	7119	7108	7101	7100	7099	7099	7098	7097	7097	7096	7096	7096	7096
3.0	7349	7190	7145	7119	7103	7092	7086	7085	7084	7083	7083	7082	7081	7081	7081	7081	7080
4 0	7330	7173	7129	7104	7088	7077	7071	7070	7069	7068	7068	7067	7067	7067	7066	7066	7066
5.0	7311	7157	7113	7088	7073	7063	7056	7056	7055	7054	7054	7053	7053	7052	7052	7052	7052

10000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	7170	6999	6955	6932	6918	6911	6908	6908	6908	6908	6908	6908	6908	6909	6909	6910	6910
−1.0	7154	6985	6941	6918	6904	6897	6894	6894	6894	6894	6894	6894	6895	6895	6895	6896	6896
0.0	7138	6971	6928	6905	6891	6884	6881	6881	6881	6881	6881	6881	6881	6882	6882	6883	6883
1.0	7123	6958	6915	6892	6878	6871	6868	6868	6868	6868	6868	6868	6868	6869	6869	6870	6870
2.0	7107	6944	6902	6879	6866	6859	6856	6856	6856	6856	6856	6856	6856	6857	6857	6858	6858
3.0	7093	6932	6889	6867	6854	6847	6844	6844	6844	6844	6844	6844	6844	6845	6845	6846	6846
4.0	7078	6919	6877	6855	6842	6835	6833	6832	6832	6832	6833	6833	6833	6833	6834	6835	6835
5.0	7064	6907	6866	6844	6831	6824	6822	6821	6821	6821	6822	6822	6822	6823	6823	6824	6824

Table XI

Isothermal compressibility coefficient, $10^7 k = 10^7 (1/\rho)(\partial\rho/\partial p)$ [1/decibar]

0 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	51.7	51.0	50.2	49.5	48.9	48.2	47.5	47.4	47.3	47.2	47.0	46.9	46.8	46.7	46.6	46.4	46.3
−1.0	51.3	50.6	49.9	49.2	48.5	47.9	47.2	47.1	47.0	46.9	46.7	46.6	46.5	46.4	46.3	46.1	46.0
0.0	50.9	50.2	49.5	48.8	48.2	47.6	46.9	46.8	46.7	46.6	46.5	46.3	46.2	46.1	46.0	45.9	45.7
1.0	50.5	49.8	49.2	48.5	47.9	47.3	46.6	46.5	46.4	46.3	46.2	46.1	45.9	45.8	45.7	45.6	45.5
2.0	50.2	49.5	48.8	48.2	47.6	47.0	46.4	46.3	46.1	46.0	45.9	45.8	45.7	45.6	45.5	45.3	45.2
3.0	49.8	49.2	48.5	47.9	47.3	46.7	46.1	46.0	45.9	45.8	45.7	45.5	45.4	45.3	45.2	45.1	45.0
4.0	49.5	48.8	48.2	47.6	47.0	46.4	45.9	45.7	45.6	45.5	45.4	45.3	45.2	45.1	45.0	44.9	44.8
5.0	49.2	48.5	47.9	47.3	46.8	46.2	45.6	45.5	45.4	45.3	45.2	45.1	45.0	44.9	44.8	44.6	44.5
6.0	48.9	48.3	47.7	47.1	46.5	45.9	45.4	45.3	45.2	45.1	45.0	44.9	44.7	44.6	44.5	44.4	44.3
7.0	48.6	48.0	47.4	46.8	46.3	45.7	45.2	45.1	45.0	44.9	44.7	44.6	44.5	44.4	44.3	44.2	44.1
8.0	48.3	47.7	47.2	46.6	46.0	45.5	45.0	44.9	44.8	44.6	44.5	44.4	44.3	44.2	44.1	44.0	43.9
9.0	48.1	47.5	46.9	46.4	45.8	45.3	44.8	44.7	44.6	44.5	44.3	44.2	44.1	44.0	43.9	43.8	43.7
10.0	47.8	47.2	46.7	46.1	45.6	45.1	44.6	44.5	44.4	44.3	44.2	44.1	44.0	43.9	43.8	43.7	43.6
11.0	47.6	47.0	46.5	45.9	45.4	44.9	44.4	44.3	44.2	44.1	44.0	43.9	43.8	43.7	43.6	43.5	43.4
12.0	47.3	46.8	46.3	45.7	45.2	44.7	44.2	44.1	44.0	43.9	43.8	43.7	43.6	43.5	43.4	43.3	43.2
13.0	47.1	46.6	46.1	45.5	45.0	44.5	44.0	43.9	43.8	43.7	43.7	43.6	43.5	43.4	43.3	43.2	43.1
14.0	46.9	46.4	45.9	45.4	44.9	44.4	43.9	43.8	43.7	43.6	43.5	43.4	43.3	43.2	43.1	43.0	42.9
15.0	46.7	46.2	45.7	45.2	44.7	44.2	43.7	43.6	43.5	43.4	43.4	43.3	43.2	43.1	43.0	42.9	42.8
16.0	46.5	46.0	45.5	45.0	44.5	44.1	43.6	43.5	43.4	43.3	43.2	43.1	43.0	42.9	42.8	42.8	42.7
17.0	46.4	45.9	45.4	44.9	44.4	43.9	43.4	43.4	43.3	43.2	43.1	43.0	42.9	42.8	42.7	42.6	42.5
18.0	46.2	45.7	45.2	44.7	44.2	43.8	43.3	43.2	43.1	43.0	43.0	42.9	42.8	42.7	42.6	42.5	42.4
19.0	46.0	45.5	45.1	44.6	44.1	43.6	43.2	43.1	43.0	42.9	42.8	42.7	42.7	42.6	42.5	42.4	42.3
20.0	45.9	45.4	44.9	44.4	44.0	43.5	43.1	43.0	42.9	42.8	42.7	42.6	42.5	42.5	42.4	42.3	42.2
21.0	45.7	45.3	44.8	44.3	43.9	43.4	43.0	42.9	42.8	42.7	42.6	42.5	42.4	42.3	42.3	42.2	42.1
22.0	45.6	45.1	44.7	44.2	43.7	43.3	42.9	42.8	42.7	42.6	42.5	42.4	42.3	42.2	42.2	42.1	42.0
23.0	45.5	45.0	44.5	44.1	43.6	43.2	42.8	42.7	42.6	42.5	42.4	42.3	42.2	42.2	42.1	42.0	41.9
24.0	45.4	44.9	44.4	44.0	43.5	43.1	42.7	42.6	42.5	42.4	42.3	42.2	42.1	42.1	42.0	41.9	41.8
25.0	45.2	44.8	44.3	43.9	43.4	43.0	42.6	42.5	42.4	42.3	42.2	42.1	42.1	42.0	41.9	41.8	41.7
26.0	45.1	44.7	44.2	43.8	43.3	42.9	42.5	42.4	42.3	42.2	42.2	42.1	42.0	41.9	41.8	41.7	41.7
27.0	45.0	44.6	44.1	43.7	43.3	42.8	42.4	42.3	42.2	42.2	42.1	42.0	41.9	41.8	41.7	41.7	41.6
28.0	44.9	44.5	44.0	43.6	43.2	42.7	42.3	42.3	42.2	42.1	42.0	41.9	41.8	41.8	41.7	41.6	41.5
29.0	44.9	44.4	44.0	43.5	43.1	42.7	42.3	42.2	42.1	42.0	41.9	41.9	41.8	41.7	41.6	41.5	41.5
30.0	44.8	44.3	43.9	43.5	43.0	42.6	42.2	42.1	42.0	42.0	41.9	41.8	41.7	41.6	41.6	41.5	41.4
31.0	44.7	44.2	43.8	43.4	43.0	42.5	42.1	42.1	42.0	41.9	41.8	41.7	41.7	41.6	41.5	41.4	41.4
32.0	44.6	44.2	43.7	43.3	42.9	42.5	42.1	42.0	41.9	41.9	41.8	41.7	41.6	41.5	41.5	41.4	41.3
33.0	44.6	44.1	43.7	43.3	42.8	42.4	42.0	42.0	41.9	41.8	41.7	41.6	41.6	41.5	41.4	41.3	41.3
34.0	44.5	44.1	43.6	43.2	42.8	42.4	42.0	41.9	41.8	41.8	41.7	41.6	41.5	41.5	41.4	41.3	41.2
35.0	44.4	44.0	43.6	43.2	42.8	42.4	42.0	41.9	41.8	41.7	41.6	41.6	41.5	41.4	41.3	41.3	41.2
36.0	44.4	44.0	43.5	43.1	42.7	42.3	41.9	41.8	41.8	41.7	41.6	41.5	41.5	41.4	41.3	41.2	41.2
37.0	44.3	43.9	43.5	43.1	42.7	42.3	41.9	41.8	41.7	41.7	41.6	41.5	41.4	41.4	41.3	41.2	41.1
38.0	44.3	43.9	43.5	43.0	42.6	42.2	41.9	41.8	41.7	41.6	41.6	41.5	41.4	41.3	41.3	41.2	41.1
39.0	44.3	43.8	43.4	43.0	42.6	42.2	41.8	41.8	41.7	41.6	41.5	41.5	41.4	41.3	41.2	41.2	41.1
40.0	44.2	43.8	43.4	43.0	42.6	42.2	41.8	41.7	41.7	41.6	41.5	41.4	41.4	41.3	41.2	41.2	41.1

Table XII

Isothermal compressibility coefficient, $10^7\ k = 10^7\ (1/\rho)\ (\partial\rho/\partial p)$ [1/decibar]

5000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	44.9	44.4	43.8	43.2	42.7	42.2	41.6	41.5	41.4	41.3	41.2	41.1	41.0	40.9	40.8	40.7	40.6
−1.0	44.6	44.1	43.5	43.0	42.4	41.9	41.4	41.3	41.2	41.1	41.0	40.9	40.8	40.7	40.6	40.5	40.4
0.0	44.3	43.8	43.2	42.7	42.2	41.7	41.2	41.1	41.0	40.9	40.8	40.7	40.6	40.5	40.4	40.3	40.2
1.0	44.1	43.5	43.0	42.5	42.0	41.5	41.0	40.9	40.8	40.7	40.6	40.5	40.4	40.3	40.2	40.1	40.0
2.0	43.8	43.3	42.7	42.2	41.7	41.2	40.8	40.7	40.6	40.5	40.4	40.3	40.2	40.1	40.0	39.9	39.8
3.0	43.5	43.0	42.5	42.0	41.5	41.0	40.6	40.5	40.4	40.3	40.2	40.1	40.0	39.9	39.8	39.7	39.6
4.0	43.3	42.8	42.3	41.8	41.3	40.8	40.4	40.3	40.2	40.1	40.0	39.9	39.8	39.7	39.6	39.6	39.5
5.0	43.1	42.6	42.1	41.6	41.1	40.6	40.2	40.1	40.0	39.9	39.8	39.7	39.7	39.6	39.5	39.4	39.3
6.0	42.8	42.3	41.9	41.4	40.9	40.5	40.0	39.9	39.8	39.7	39.7	39.6	39.5	39.4	39.3	39.2	39.1
7.0	42.6	42.1	41.7	41.2	40.7	40.3	39.8	39.8	39.7	39.6	39.5	39.4	39.3	39.2	39.2	39.1	39.0
8.0	42.4	41.9	41.5	41.0	40.6	40.1	39.7	39.6	39.5	39.4	39.3	39.3	39.2	39.1	39.0	38.9	38.8
9.0	42.2	41.8	41.3	40.8	40.4	40.0	39.5	39.4	39.4	39.3	39.2	39.1	39.0	38.9	38.9	38.8	38.7
10.0	42.0	41.6	41.1	40.7	40.2	39.8	39.4	39.3	39.2	39.1	39.0	39.0	38.9	38.8	38.7	38.6	38.6
11.0	41.8	41.4	41.0	40.5	40.1	39.7	39.2	39.2	39.1	39.0	38.9	38.8	38.7	38.7	38.6	38.5	38.4
12.0	41.7	41.2	40.8	40.4	39.9	39.5	39.1	39.0	38.9	38.9	38.8	38.7	38.6	38.5	38.5	38.4	38.3
13.0	41.5	41.1	40.6	40.2	39.8	39.4	39.0	38.9	38.8	38.7	38.7	38.6	38.5	38.4	38.3	38.3	38.2
14.0	41.3	40.9	40.5	40.1	39.7	39.3	38.9	38.8	38.7	38.6	38.5	38.5	38.4	38.3	38.2	38.1	38.1
15.0	41.2	40.8	40.4	39.9	39.5	39.1	38.7	38.7	38.6	38.5	38.4	38.3	38.3	38.2	38.1	38.0	38.0
16.0	41.0	40.6	40.2	39.8	39.4	39.0	38.6	38.5	38.5	38.4	38.3	38.2	38.2	38.1	38.0	37.9	37.9
17.0	40.9	40.5	40.1	39.7	39.3	38.9	38.5	38.4	38.4	38.3	38.2	38.1	38.1	38.0	37.9	37.8	37.8
18.0	40.8	40.4	40.0	39.6	39.2	38.8	38.4	38.3	38.3	38.2	38.1	38.0	38.0	37.9	37.8	37.7	37.7
19.0	40.6	40.2	39.9	39.5	39.1	38.7	38.3	38.2	38.2	38.1	38.0	37.9	37.9	37.8	37.7	37.6	37.6
20.0	40.5	40.1	39.7	39.3	39.0	38.6	38.2	38.1	38.1	38.0	37.9	37.8	37.8	37.7	37.6	37.5	37.5
21.0	40.4	40.0	39.6	39.2	38.9	38.5	38.1	38.0	38.0	37.9	37.8	37.8	37.7	37.6	37.5	37.5	37.4
22.0	40.3	39.9	39.5	39.1	38.8	38.4	38.0	38.0	37.9	37.8	37.7	37.7	37.6	37.5	37.5	37.4	37.3
23.0	40.2	39.8	39.4	39.1	38.7	38.3	38.0	37.9	37.8	37.7	37.7	37.6	37.5	37.5	37.4	37.3	37.2
24.0	40.1	39.7	39.3	39.0	38.6	38.2	37.9	37.8	37.7	37.7	37.6	37.5	37.5	37.4	37.3	37.2	37.2

10000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	39.1	38.7	38.3	37.9	37.4	37.0	36.6	36.5	36.4	36.4	36.3	36.2	36.1	36.0	36.0	35.9	35.8
−1.0	38.9	38.5	38.1	37.7	37.3	36.9	36.5	36.4	36.3	36.2	36.1	36.1	36.0	35.9	35.8	35.7	35.7
0.0	38.7	38.3	37.9	37.5	37.1	36.7	36.3	36.2	36.1	36.1	36.0	35.9	35.8	35.8	35.7	35.6	35.5
1.0	38.6	38.2	37.7	37.3	36.9	36.5	36.2	36.1	36.0	35.9	35.8	35.8	35.7	35.6	35.5	35.5	35.4
2.0	38.4	38.0	37.6	37.2	36.8	36.4	36.0	35.9	35.9	35.8	35.7	35.6	35.6	35.5	35.4	35.3	35.3
3.0	38.2	37.8	37.4	37.0	36.6	36.3	35.9	35.8	35.7	35.6	35.6	35.5	35.4	35.4	35.3	35.2	35.1
4.0	38.0	37.7	37.3	36.9	36.5	36.1	35.7	35.7	35.6	35.5	35.4	35.4	35.3	35.2	35.2	35.1	35.0

Table XIII

Isopycnal derivative, $(\partial S/\partial t)_\rho$

0 DECIBARS

	SALINITY																
TEMP. °C	0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	− 1267	− 1036	− 0797	− .0563	− .0335	− 0111	.0107	.0150	.0193	.0236	.0278	.0321	.0363	.0404	0446	.0488	0529
−1 0	− 1043	− 0816	− 0584	− 0357	− 0136	0080	.0291	.0333	0374	.0415	.0456	.0497	0537	0578	.0618	.0658	.0698
0.0	− 0824	− 0600	− 0375	− 0156	.0058	.0267	0471	0511	0551	0590	.0630	.0669	.0708	.0747	.0786	.0824	.0863
1.0	− 0610	− 0390	− 0172	0041	0248	0450	.0646	.0685	0723	.0761	.0799	.0837	.0875	0912	0950	.0987	.1024
2 0	− 0401	− 0185	0027	.0233	.0433	0628	0817	0854	.0891	.0928	.0965	.1001	.1038	.1074	.1110	1146	.1181
3 0	− 0196	0016	0222	0421	0614	.0802	.0984	.1020	.1056	1091	.1127	.1162	.1197	.1232	1266	.1301	.1335
4.0	0004	0212	0411	0604	.0790	.0972	1148	.1182	1217	1251	1285	.1319	.1352	.1386	.1419	1452	1485
5.0	0199	0404	0597	0783	.0963	.1138	.1307	.1341	1374	.1407	1440	1472	.1505	1537	1569	.1601	.1633
6.0	0390	0591	0778	0958	.1132	1300	.1464	1496	1528	.1559	.1591	.1622	.1654	1685	.1716	.1746	1777
7.0	0577	0774	.0955	1129	.1297	1459	1616	1647	.1678	1709	.1739	1769	.1799	.1829	.1859	1889	.1918
8.0	0760	0953	1128	1296	1458	1615	1766	.1796	1826	1855	1884	.1913	1942	.1971	2000	.2028	2056
9.0	0939	1128	1298	1460	.1616	1767	.1913	.1942	1970	.1998	2027	.2055	.2082	.2110	2137	.2165	2192
10.0	1114	1300	1464	1620	1771	.1916	.2057	2084	2112	2139	.2166	2193	.2220	.2246	.2273	.2299	2325
11 0	1286	1467	1626	1777	1923	2062	2198	.2224	2251	2277	.2303	.2329	2355	.2380	.2406	.2431	.2456
12.0	1454	1632	1786	1931	2071	.2206	.2336	.2362	2387	.2412	2437	2462	.2487	.2512	2536	.2560	.2584
13.0	1619	1793	1942	.2082	2217	.2347	2472	2497	.2521	2545	.2569	.2593	.2617	.2641	.2664	2688	2711
14.0	1780	1951	2095	2230	.2360	2485	.2605	.2629	2653	2676	2699	.2722	.2745	.2768	.2790	2813	.2835
15.0	1938	2106	2245	2376	.2501	.2621	.2737	2759	2782	.2804	2827	2849	.2871	2893	.2915	.2936	.2958
16.0	2094	2258	2392	2518	2639	.2754	2866	2888	.2909	.2931	.2952	.2974	2995	.3016	.3037	.3058	3078
17 0	2246	2407	.2537	2658	2774	.2885	2993	3014	3035	.3055	.3076	3097	.3117	.3137	.3157	3177	3197
18.0	2396	2553	2679	.2796	2908	3015	3118	3138	3158	3178	.3198	.3218	.3237	.3257	3276	.3295	.3314
19.0	2543	2697	2818	.2931	.3039	.3142	.3241	3261	.3280	3299	.3318	.3337	.3356	.3375	.3393	.3412	3430
20.0	2688	2839	2956	.3065	3168	.3267	.3363	.3381	3400	3418	3437	.3455	.3473	.3491	3509	3527	.3544
21 0	2830	2978	3091	3196	.3295	3390	3482	3500	3518	3536	3554	3571	3588	.3606	3623	.3640	.3657
22.0	2969	3115	3224	3325	.3420	.3512	3600	3618	3635	.3652	3669	.3686	.3702	3719	.3736	3752	3768
23.0	3107	3249	.3355	3452	3544	.3632	.3717	.3734	3750	.3766	.3783	.3799	.3815	.3831	.3847	3863	3879
24.0	3242	3382	3483	.3577	3666	3750	3832	.3848	3864	3880	3895	.3911	.3926	.3942	.3957	.3972	3987
25.0	3375	3512	3610	3700	.3785	3867	3945	.3961	3976	3991	.4006	.4021	.4036	.4051	4066	4080	.4095
26.0	.3506	3641	3735	.3822	.3904	3982	4057	4072	4087	4101	4116	4130	.4145	.4159	4173	.4187	.4201
27 0	3635	3767	3859	3942	4020	4096	4168	.4182	.4196	4210	.4224	4238	4252	.4266	.4279	4293	.4306
28.0	3762	3892	3980	4060	4135	.4208	.4277	.4291	.4304	.4318	4331	4345	4358	.4371	.4384	4397	4410
29.0	3887	4015	.4099	4176	4249	4318	4385	4398	4411	.4424	4437	.4450	.4463	4475	.4488	.4500	.4513
30.0	4010	4136	4217	.4291	4361	4427	.4491	.4504	.4516	4529	4541	4554	4566	.4578	.4590	4602	4614
31.0	4131	4255	4333	.4404	4471	4535	.4596	.4608	4620	.4632	.4644	4656	4668	.4680	4691	.4703	.4714
32.0	4250	4372	4448	.4516	4579	4641	4700	4711	4723	4734	.4746	4757	4768	.4780	4791	.4802	.4813
33.0	4367	4487	4560	.4625	.4686	4745	4802	.4813	4824	4835	4846	.4857	.4868	.4878	.4889	.4900	.4911
34.0	.4483	.4601	4671	.4733	4792	.4848	4902	.4913	.4923	4934	.4944	4955	.4965	4976	.4986	4996	.5007
35.0	4596	4713	4780	4840	4895	.4949	.5001	.5011	.5021	.5031	.5041	.5051	.5061	.5071	.5081	5091	.5101
36.0	4708	.4822	.4887	4944	.4997	.5048	.5098	.5108	5117	5127	5137	.5146	.5156	.5165	.5175	.5184	.5194
37.0	.4817	4930	.4992	5046	.5097	5146	.5193	.5202	5212	5221	.5230	.5239	.5249	.5258	.5267	.5276	5285
38.0	.4924	5036	5095	5147	.5195	.5242	5287	5296	.5304	.5313	.5322	.5331	.5340	.5348	.5357	.5366	.5374
39.0	.5029	5140	5196	.5246	5291	.5335	5378	5387	5395	5403	5412	5420	.5429	5437	5445	.5453	.5462
40.0	5132	.5241	5295	.5342	5385	.5427	5468	.5476	.5484	.5492	.5500	.5507	.5515	.5523	.5531	.5539	.5547

Table XIV (a-b)

Isopycnal derivative, $(\partial S/\partial t)_\rho$

1000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	−.0789	−.0566	−.0341	−.0122	.0093	.0303	.0507	.0548	.0588	.0628	.0668	.0708	.0747	.0787	.0826	.0865	.0904
−1.0	−.0580	−.0361	−.0143	.0070	.0278	.0481	.0679	.0718	.0757	.0795	.0834	.0872	.0910	.0948	.0986	.1024	.1061
0.0	−.0377	−.0161	.0052	.0258	.0459	.0655	.0846	.0884	.0921	.0958	.0996	.1033	.1069	.1106	.1142	.1179	.1215
1.0	−.0178	.0035	.0241	.0441	.0636	.0825	.1009	.1046	.1082	.1118	.1154	.1189	.1225	.1260	.1295	.1330	.1365
2.0	.0017	.0227	.0427	.0620	.0808	.0991	.1169	.1204	.1239	.1274	.1308	.1342	.1377	.1411	.1444	.1478	.1511
3.0	.0208	.0414	.0608	.0795	.0977	.1153	.1325	.1359	.1392	.1426	.1459	.1492	.1525	.1558	.1590	.1623	.1655
4.0	.0394	.0597	.0785	.0966	.1142	.1312	.1478	.1510	.1543	.1575	.1607	.1639	.1670	.1702	.1733	.1764	.1795
5.0	.0577	.0776	.0958	.1134	.1303	.1467	.1627	.1658	.1689	.1720	.1751	.1782	.1812	.1843	.1873	.1903	.1933
6.0	.0755	.0951	.1128	.1297	.1461	.1619	.1773	.1803	.1833	.1863	.1893	.1922	.1952	.1981	.2010	.2039	.2067
7.0	.0930	.1122	.1294	.1457	.1615	.1768	.1916	.1945	.1974	.2003	.2031	.2060	.2088	.2116	.2144	.2172	.2199
8.0	.1101	.1289	.1456	.1614	.1767	.1914	.2056	.2084	.2112	.2140	.2167	.2194	.2222	.2249	.2275	.2302	.2329
9.0	.1269	.1453	.1615	.1768	.1915	.2056	.2194	.2221	.2247	.2274	.2300	.2327	.2353	.2379	.2404	.2430	.2456
10.0	.1433	.1614	.1770	.1918	.2060	.2196	.2328	.2354	.2380	.2406	.2431	.2456	.2481	.2506	.2531	.2556	.2580
11.0	.1594	.1771	.1923	.2065	.2202	.2333	.2461	.2485	.2510	.2535	.2559	.2584	.2608	.2632	.2656	.2679	.2703
12.0	.1751	.1926	.2072	.2210	.2341	.2468	.2590	.2614	.2638	.2662	.2685	.2709	.2732	.2755	.2778	.2801	.2823
13.0	.1906	.2077	.2218	.2351	.2478	.2600	.2718	.2741	.2764	.2787	.2809	.2832	.2854	.2876	.2898	.2920	.2942
14.0	.2058	.2225	.2362	.2490	.2613	.2730	.2843	.2865	.2887	.2909	.2931	.2953	.2974	.2995	.3017	.3038	.3059
15.0	.2207	.2371	.2503	.2627	.2745	.2858	.2967	.2988	.3009	.3030	.3051	.3072	.3092	.3113	.3133	.3154	.3174
16.0	.2353	.2514	.2642	.2761	.2875	.2983	.3088	.3109	.3129	.3149	.3169	.3189	.3209	.3229	.3248	.3268	.3287
17.0	.2496	.2654	.2778	.2893	.3002	.3107	.3208	.3227	.3247	.3266	.3286	.3305	.3324	.3343	.3362	.3380	.3399
18.0	.2637	.2792	.2912	.3023	.3128	.3229	.3325	.3344	.3363	.3382	.3400	.3419	.3437	.3455	.3473	.3491	.3509
19.0	.2776	.2928	.3044	.3150	.3252	.3348	.3441	.3460	.3478	.3496	.3514	.3531	.3549	.3566	.3584	.3601	.3618
20.0	.2912	.3061	.3173	.3276	.3373	.3466	.3556	.3573	.3591	.3608	.3625	.3642	.3659	.3676	.3693	.3709	.3726
21.0	.3046	.3193	.3300	.3400	.3493	.3583	.3669	.3686	.3702	.3719	.3735	.3752	.3768	.3784	.3800	.3816	.3832
22.0	.3178	.3322	.3426	.3522	.3612	.3698	.3780	.3796	.3813	.3828	.3844	.3860	.3876	.3891	.3907	.3922	.3937
23.0	.3308	.3449	.3550	.3642	.3728	.3811	.3890	.3906	.3921	.3937	.3952	.3967	.3982	.3997	.4012	.4026	.4041
24.0	.3436	.3574	.3671	.3760	.3843	.3923	.3999	.4014	.4029	.4043	.4058	.4073	.4087	.4101	.4116	.4130	.4144
25.0	.3562	.3698	.3791	.3877	.3957	.4033	.4106	.4121	.4135	.4149	.4163	.4177	.4191	.4205	.4218	.4232	.4246

2000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	−.0321	−.0107	.0104	.0310	.0510	.0706	.0898	.0936	.0974	.1012	.1049	.1086	.1123	.1160	.1197	.1233	.1270
−1.0	−.0129	.0083	.0288	.0488	.0682	.0872	.1057	.1094	.1130	.1167	.1203	.1239	.1274	.1310	.1345	.1381	.1416
0.0	.0060	.0269	.0469	.0662	.0850	.1034	.1213	.1248	.1283	.1318	.1353	.1388	.1422	.1456	.1490	.1524	.1558
1.0	.0245	.0451	.0645	.0832	.1015	.1192	.1365	.1399	.1432	.1466	.1500	.1533	.1566	.1599	.1632	.1665	.1698
2.0	.0426	.0629	.0817	.0999	.1175	.1346	.1513	.1546	.1579	.1611	.1643	.1676	.1708	.1739	.1771	.1803	.1834
3.0	.0603	.0803	.0986	.1162	.1332	.1498	.1658	.1690	.1721	.1753	.1784	.1815	.1846	.1876	.1907	.1937	.1967
4.0	.0776	.0973	.1151	.1321	.1486	.1645	.1800	.1831	.1861	.1891	.1921	.1951	.1981	.2010	.2040	.2069	.2098
5.0	.0946	.1140	.1312	.1477	.1636	.1790	.1939	.1969	.1998	.2027	.2056	.2085	.2113	.2142	.2170	.2198	.2226
6.0	.1113	.1303	.1470	.1630	.1783	.1932	.2076	.2104	.2132	.2160	.2188	.2216	.2243	.2270	.2298	.2325	.2351
7.0	.1276	.1462	.1625	.1779	.1927	.2071	.2209	.2236	.2263	.2290	.2317	.2344	.2370	.2396	.2423	.2449	.2474
8.0	.1435	.1619	.1776	.1926	.2069	.2207	.2340	.2366	.2392	.2418	.2444	.2469	.2495	.2520	.2545	.2570	.2595
9.0	.1592	.1772	.1925	.2069	.2207	.2340	.2468	.2494	.2519	.2544	.2568	.2593	.2617	.2642	.2666	.2690	.2714
10.0	.1745	.1922	.2070	.2210	.2343	.2471	.2594	.2619	.2643	.2667	.2690	.2714	.2738	.2761	.2784	.2807	.2830
11.0	.1896	.2070	.2213	.2347	.2476	.2599	.2718	.2741	.2764	.2787	.2810	.2833	.2856	.2878	.2900	.2923	.2945
12.0	.2043	.2214	.2353	.2483	.2606	.2725	.2840	.2862	.2884	.2906	.2928	.2950	.2972	.2993	.3015	.3036	.3057
13.0	.2188	.2356	.2490	.2615	.2735	.2849	.2959	.2981	.3002	.3023	.3044	.3065	.3086	.3107	.3128	.3148	.3168
14.0	.2330	.2495	.2625	.2746	.2861	.2971	.3077	.3097	.3118	.3138	.3159	.3179	.3199	.3219	.3238	.3258	.3278
15.0	.2470	.2631	.2757	.2874	.2985	.3090	.3192	.3212	.3232	.3252	.3271	.3290	.3310	.3329	.3348	.3367	[illegible]

Table XIV (c-d)

Isopycnal derivative, $(\partial S / \partial t)_\rho$

3000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	0134	0341	0538	0730	0917	1100	1279	1314	1349	1384	1419	1454	1489	1523	1558	1592	1626
−1.0	0311	0516	0708	0895	1076	1253	1426	1460	1494	1528	1562	1595	1629	1662	1695	1728	1761
0.0	0485	0688	0875	1056	1231	1403	1570	1603	1636	1668	1701	1733	1765	1797	1829	1861	1893
1.0	0656	0856	1038	1214	1384	1549	1711	1742	1774	1806	1837	1868	1899	1930	1961	1991	2022
2.0	0824	1020	1198	1368	1533	1693	1848	1879	1909	1940	1970	2000	2030	2060	2089	2119	2148
3.0	0988	1182	1354	1519	1678	1833	1983	2013	2042	2071	2100	2129	2158	2187	2215	2244	2272
4.0	1149	1340	1508	1667	1821	1970	2115	2144	2172	2200	2228	2256	2284	2311	2339	2366	2393
5.0	1306	1495	1658	1812	1961	2105	2244	2272	2299	2326	2353	2380	2407	2433	2460	2486	2512
6.0	1461	1646	1804	1954	2098	2237	2371	2397	2424	2450	2476	2502	2527	2553	2578	2603	2628
7.0	1612	1795	1948	2093	2232	2366	2495	2521	2546	2571	2596	2621	2645	2670	2694	2719	2743
8.0	1761	1941	2090	2230	2364	2492	2617	2642	2666	2690	2714	2738	2762	2785	2809	2832	2855
9.0	1907	2083	2228	2363	2493	2617	2737	2760	2784	2807	2830	2853	2876	2898	2921	2943	2965
10.0	2050	2224	2364	2494	2619	2739	2854	2877	2899	2922	2944	2966	2988	3009	3031	3053	3074
11.0	2190	2361	2497	2623	2743	2859	2970	2991	3013	3034	3056	3077	3098	3119	3140	3160	3181
12.0	2328	2496	2627	2750	2865	2976	3083	3104	3125	3145	3166	3186	3206	3226	3246	3266	3286
13.0	2464	2629	2756	2874	2985	3092	3195	3215	3235	3255	3274	3294	3313	3332	3352	3371	3390
14.0	2597	2759	2882	2996	3103	3206	3305	3324	3343	3362	3381	3400	3418	3437	3455	3474	3492
15.0	2728	2887	3006	3116	3219	3318	3413	3432	3450	3468	3486	3504	3522	3540	3558	3575	3593

4000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	0574	0774	0959	1137	1311	1481	1648	1681	1714	1746	1779	1811	1844	1876	1908	1940	1972
−1.0	0738	0936	1116	1289	1458	1623	1784	1815	1847	1879	1910	1941	1973	2004	2034	2065	2096
0.0	0898	1094	1269	1438	1602	1761	1916	1947	1978	2008	2038	2069	2099	2129	2158	2188	2218
1.0	1055	1249	1420	1584	1742	1896	2047	2076	2106	2135	2164	2193	2222	2251	2280	2308	2337
2.0	1210	1401	1568	1727	1880	2029	2174	2202	2231	2259	2287	2315	2343	2371	2399	2426	2453
3.0	1361	1550	1712	1866	2015	2159	2299	2326	2354	2381	2408	2435	2462	2488	2515	2542	2568
4.0	1510	1696	1854	2004	2147	2286	2421	2447	2474	2500	2526	2552	2578	2604	2629	2655	2680
5.0	1656	1840	1993	2138	2277	2411	2541	2566	2592	2617	2642	2667	2692	2717	2741	2766	2790
6.0	1799	1980	2129	2270	2404	2533	2658	2683	2707	2732	2756	2780	2804	2827	2851	2875	2898
7.0	1940	2118	2263	2399	2528	2653	2774	2797	2821	2844	2867	2890	2913	2936	2959	2982	3004
8.0	2078	2254	2394	2526	2651	2771	2887	2910	2932	2955	2977	2999	3021	3043	3065	3087	3108
9.0	2213	2387	2523	2650	2771	2886	2998	3020	3042	3063	3085	3106	3127	3148	3169	3190	3211
10.0	2347	2517	2649	2772	2889	3000	3107	3128	3149	3170	3191	3211	3231	3252	3272	3292	3312
11.0	2477	2645	2773	2892	3004	3112	3215	3235	3255	3275	3295	3315	3334	3353	3373	3392	3411
12.0	2606	2771	2895	3010	3118	3221	3321	3340	3359	3378	3397	3416	3435	3454	3472	3491	3509
13.0	2732	2895	3015	3126	3230	3330	3425	3443	3462	3480	3499	3517	3535	3553	3570	3588	3605
14.0	2857	3016	3133	3240	3340	3436	3527	3545	3563	3581	3598	3616	3633	3650	3667	3684	3701
15.0	2979	3136	3249	3352	3449	3541	3629	3646	3663	3680	3697	3713	3730	3746	3763	3779	3795

Table XIV (e-h)

Isopycnal derivative, $(\partial S/\partial t)_\rho$

5000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0
−2.0	0.1000	0.1194	0.1366	0.1531	0.1693	0.1850	0.1881	0.1912	0.1943	0.1974	0.2005	0.2035	0.2066	0.2096	0.2126	0.2156	0.2186
−1.0	0.1149	0.1341	0.1510	0.1671	0.1827	0.1980	0.2010	0.2040	0.2070	0.2100	0.2130	0.2159	0.2188	0.2218	0.2247	0.2276	0.2305
0.0	0.1296	0.1487	0.1651	0.1808	0.1960	0.2107	0.2137	0.2166	0.2194	0.2223	0.2252	0.2280	0.2309	0.2337	0.2365	0.2393	0.2421
1.0	0.1440	0.1629	0.1789	0.1942	0.2089	0.2232	0.2260	0.2288	0.2316	0.2344	0.2372	0.2399	0.2427	0.2454	0.2481	0.2508	0.2535
2.0	0.1582	0.1769	0.1925	0.2074	0.2216	0.2354	0.2382	0.2409	0.2436	0.2462	0.2489	0.2516	0.2542	0.2568	0.2594	0.2621	0.2646
3.0	0.1722	0.1907	0.2059	0.2203	0.2341	0.2474	0.2501	0.2527	0.2553	0.2579	0.2604	0.2630	0.2655	0.2681	0.2706	0.2731	0.2756
4.0	0.1859	0.2042	0.2190	0.2329	0.2463	0.2592	0.2617	0.2643	0.2668	0.2692	0.2717	0.2742	0.2766	0.2791	0.2815	0.2839	0.2863
5.0	0.1994	0.2174	0.2318	0.2454	0.2583	0.2707	0.2732	0.2756	0.2780	0.2804	0.2828	0.2852	0.2875	0.2899	0.2922	0.2945	0.2968

6000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0
−2.0	0.1409	0.1597	0.1757	0.1911	0.2060	0.2205	0.2234	0.2263	0.2291	0.2320	0.2348	0.2377	0.2405	0.2433	0.2461	0.2489	0.2517
−1.0	0.1545	0.1732	0.1889	0.2038	0.2183	0.2324	0.2352	0.2380	0.2408	0.2435	0.2463	0.2490	0.2517	0.2545	0.2572	0.2599	0.2625
0.0	0.1679	0.1865	0.2018	0.2164	0.2304	0.2441	0.2468	0.2495	0.2522	0.2549	0.2575	0.2601	0.2628	0.2654	0.2680	0.2706	0.2732
1.0	0.1811	0.1995	0.2145	0.2287	0.2424	0.2556	0.2582	0.2608	0.2634	0.2660	0.2685	0.2711	0.2736	0.2761	0.2786	0.2812	0.2836
2.0	0.1941	0.2124	0.2270	0.2408	0.2540	0.2669	0.2694	0.2719	0.2744	0.2769	0.2793	0.2818	0.2842	0.2867	0.2891	0.2915	0.2939
3.0	0.2070	0.2250	0.2393	0.2527	0.2655	0.2779	0.2803	0.2828	0.2852	0.2875	0.2899	0.2923	0.2947	0.2970	0.2993	0.3017	0.3040
4.0	0.2196	0.2374	0.2514	0.2644	0.2768	0.2887	0.2911	0.2934	0.2957	0.2980	0.3003	0.3026	0.3049	0.3071	0.3094	0.3116	0.3139
5.0	0.2320	0.2497	0.2632	0.2758	0.2878	0.2994	0.3017	0.3039	0.3061	0.3084	0.3106	0.3128	0.3149	0.3171	0.3193	0.3214	0.3236

7000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0
−2.0	0.1799	0.1983	0.2132	0.2274	0.2412	0.2546	0.2572	0.2599	0.2625	0.2652	0.2678	0.2704	0.2730	0.2756	0.2782	0.2808	0.2834
−1.0	0.1923	0.2106	0.2252	0.2391	0.2524	0.2655	0.2681	0.2706	0.2732	0.2757	0.2783	0.2808	0.2833	0.2858	0.2883	0.2908	0.2933
0.0	0.2045	0.2227	0.2370	0.2505	0.2635	0.2762	0.2787	0.2812	0.2836	0.2861	0.2885	0.2910	0.2934	0.2958	0.2982	0.3007	0.3030
1.0	0.2166	0.2346	0.2487	0.2618	0.2745	0.2867	0.2891	0.2915	0.2939	0.2963	0.2986	0.3010	0.3033	0.3057	0.3080	0.3103	0.3126
2.0	0.2285	0.2464	0.2601	0.2729	0.2852	0.2970	0.2994	0.3017	0.3040	0.3063	0.3086	0.3108	0.3131	0.3153	0.3176	0.3198	0.3220
3.0	0.2402	0.2580	0.2714	0.2839	0.2957	0.3072	0.3094	0.3117	0.3139	0.3161	0.3183	0.3205	0.3227	0.3248	0.3270	0.3291	0.3313
4.0	0.2518	0.2694	0.2825	0.2946	0.3061	0.3172	0.3193	0.3215	0.3236	0.3258	0.3279	0.3300	0.3321	0.3342	0.3362	0.3383	0.3404
5.0	0.2632	0.2806	0.2934	0.3052	0.3163	0.3270	0.3291	0.3311	0.3332	0.3353	0.3373	0.3393	0.3413	0.3433	0.3453	0.3473	0.3493

10000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0
−2.0	0.2853	0.3028	0.3149	0.3260	0.3367	0.3471	0.3492	0.3513	0.3533	0.3554	0.3574	0.3595	0.3615	0.3635	0.3655	0.3676	0.3696
−1.0	0.2945	0.3119	0.3238	0.3348	0.3452	0.3554	0.3574	0.3594	0.3614	0.3634	0.3654	0.3673	0.3693	0.3713	0.3732	0.3752	0.3771
0.0	0.3036	0.3210	0.3328	0.3435	0.3537	0.3635	0.3655	0.3674	0.3694	0.3713	0.3732	0.3751	0.3770	0.3789	0.3808	0.3827	0.3845
1.0	0.3126	0.3300	0.3416	0.3521	0.3620	0.3716	0.3735	0.3753	0.3772	0.3791	0.3809	0.3828	0.3846	0.3864	0.3882	0.3901	0.3919
2.0	0.3216	0.3389	0.3503	0.3606	0.3702	0.3795	0.3813	0.3832	0.3850	0.3867	0.3885	0.3903	0.3921	0.3938	0.3956	0.3973	0.3991
3.0	0.3306	0.3478	0.3590	0.3690	0.3784	0.3873	0.3891	0.3909	0.3926	0.3943	0.3960	0.3978	0.3995	0.4011	0.4028	0.4045	0.4062
4.0	0.3394	0.3566	0.3675	0.3773	0.3864	0.3951	0.3968	0.3985	0.4001	0.4018	0.4035	0.4051	0.4067	0.4084	0.4100	0.4116	0.4132
5.0	0.3482	0.3652	0.3760	0.3855	0.3943	0.4027	0.4043	0.4060	0.4076	0.4092	0.4108	0.4123	0.4139	0.4155	0.4170	0.4186	0.4201

Table XV

Specific heat seawater C_p [J/(kg °C)]

PRESSURE DECIBARS	TEMPERATURE °C 0	10	20	30	40	
0	4048.4	4041.8	4044.8	4049.1	4051.2	SALINITY 25
1000	4011.5	4012.9	4020.2	4026.9	4031.8	
2000	3978.0	3986.3	3997.4	4006.2	4013.6	
3000	3947.8	3962.0	3976.2	3986.9	3996.7	
4000	3920.6	3939.8	3956.7	3968.9	3980.9	
5000	3896.3	3919.6	3938.6	3952.0	3966.1	
6000	3874.4	3901.1	3921.9	3936.3	3952.4	
7000	3854.9	3884.3	3906.5	3921.7	3939.5	
8000	3837.4	3869.0	3892.2	3907.9	3927.6	
9000	3821.8	3855.1	3879.0	3895.1	3916.4	
10000	3807.7	3842.3	3866.7	3883.0	3905.9	
0	4017.2	4013.8	4019.1	4024.7	4027.2	SALINITY 30
1000	3982.1	3986.2	3995.4	4003.2	4008.4	
2000	3950.3	3960.8	3973.3	3983.1	3990.8	
3000	3921.6	3937.6	3953.0	3964.3	3974.4	
4000	3895.7	3916.3	3934.1	3946.9	3959.1	
5000	3872.5	3897.0	3916.7	3930.6	3944.9	
6000	3851.7	3879.3	3900.6	3915.3	3931.7	
7000	3833.1	3863.3	3885.7	3901.1	3919.3	
8000	3816.5	3848.7	3872.0	3887.8	3907.9	
9000	3801.6	3835.4	3859.2	3875.4	3897.1	
10000	3788.2	3823.2	3847.4	3863.6	3887.1	
0	3986.5	3986.3	3993.9	4000.7	4003.5	SALINITY 35
1000	3953.3	3959.9	3970.9	3979.7	3985.2	
2000	3923.1	3935.7	3949.6	3960.2	3968.2	
3000	3895.9	3913.5	3930.0	3942.0	3952.3	
4000	3871.3	3893.2	3911.8	3925.1	3937.6	
5000	3849.3	3874.7	3895.0	3909.2	3923.9	
6000	3829.5	3857.9	3879.5	3894.5	3911.1	
7000	3811.8	3842.6	3865.2	3880.7	3899.3	
8000	3796.0	3828.7	3851.9	3867.8	3888.2	
9000	3781.8	3816.0	3839.7	3855.7	3877.9	
10000	3769.1	3804.4	3828.3	3844.3	3868.3	
0	3956.4	3959.3	3968.9	3977.0	3980.1	SALINITY 40
1000	3925.0	3934.1	3946.8	3956.6	3962.3	
2000	3896.4	3910.9	3926.2	3937.6	3945.8	
3000	3870.6	3889.8	3907.2	3919.9	3930.5	
4000	3847.4	3870.4	3889.7	3903.4	3916.2	
5000	3826.4	3852.8	3873.5	3888.1	3903.0	
6000	3807.7	3836.7	3858.6	3873.8	3890.7	
7000	3790.9	3822.2	3844.8	3860.4	3879.3	
8000	3776.0	3808.9	3832.0	3847.9	3868.7	
9000	3762.6	3796.9	3820.2	3836.1	3858.8	
10000	3750.6	3785.9	3809.3	3825.1	3849.5	

Table XVI

Adiabatic lapse rate Γ [°C./1000 decibars]

0 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	−.0678	−.0545	−.0417	−.0294	−.0175	−.0058	.0056	.0079	.0101	.0123	.0146	.0168	.0190	.0212	.0234	.0256	.0277
−1.0	−.0558	−.0428	−.0306	−.0187	−.0071	.0042	.0152	.0174	.0196	.0217	.0239	.0260	.0281	.0303	.0324	.0345	.0366
0.0	−.0440	−.0315	−.0196	−.0081	.0031	.0140	.0246	.0267	.0288	.0309	.0330	.0350	.0371	.0391	.0412	.0432	.0452
1.0	−.0326	−.0205	−.0090	.0021	.0130	.0235	.0338	.0358	.0378	.0398	.0418	.0438	.0458	.0478	.0498	.0517	.0537
2.0	−.0214	−.0097	.0014	.0122	.0226	.0328	.0427	.0447	.0466	.0486	.0505	.0524	.0544	.0563	.0582	.0601	.0619
3.0	−.0105	.0008	.0116	.0220	.0321	.0419	.0515	.0534	.0553	.0571	.0590	.0609	.0627	.0645	.0664	.0682	.0700
4.0	.0002	.0111	.0215	.0316	.0413	.0508	.0600	.0619	.0637	.0655	.0673	.0691	.0709	.0727	.0744	.0762	.0779
5.0	.0106	.0212	.0312	.0409	.0503	.0595	.0684	.0702	.0720	.0737	.0754	.0772	.0789	.0806	.0823	.0840	.0857
6.0	.0208	.0310	.0407	.0501	.0592	.0680	.0767	.0784	.0801	.0817	.0834	.0851	.0867	.0884	.0900	.0917	.0933
7.0	.0308	.0407	.0500	.0591	.0679	.0764	.0847	.0864	.0880	.0896	.0912	.0929	.0945	.0961	.0976	.0992	.1008
8.0	.0406	.0501	.0591	.0679	.0764	.0846	.0926	.0942	.0958	.0974	.0989	.1005	.1020	.1036	.1051	.1066	.1082
9.0	.0501	.0593	.0681	.0765	.0847	.0926	.1004	.1019	.1035	.1050	.1065	.1080	.1095	.1110	.1124	.1139	.1154
10.0	.0595	.0684	.0768	.0850	.0929	.1006	.1081	.1095	.1110	.1125	.1139	.1154	.1168	.1182	.1197	.1211	.1225
11.0	.0687	.0773	.0854	.0933	.1009	.1083	.1156	.1170	.1184	.1198	.1212	.1226	.1240	.1254	.1268	.1282	.1295
12.0	.0778	.0860	.0939	.1015	.1088	.1160	.1230	.1244	.1257	.1271	.1284	.1298	.1311	.1325	.1338	.1351	.1365
13.0	.0867	.0946	.1022	.1095	.1166	.1235	.1303	.1316	.1329	.1342	.1356	.1369	.1382	.1395	.1407	.1420	.1433
14.0	.0954	.1031	.1104	.1175	.1243	.1310	.1375	.1388	.1400	.1413	.1426	.1438	.1451	.1463	.1476	.1488	.1501
15.0	.1040	.1114	.1184	.1253	.1319	.1383	.1446	.1458	.1471	.1483	.1495	.1507	.1520	.1532	.1544	.1556	.1567
16.0	.1124	.1196	.1264	.1330	.1393	.1456	.1516	.1528	.1540	.1552	.1564	.1576	.1587	.1599	.1611	.1622	.1634
17.0	.1208	.1277	.1342	.1405	.1467	.1527	.1586	.1597	.1609	.1620	.1632	.1643	.1654	.1666	.1677	.1688	.1699
18.0	.1290	.1356	.1419	.1481	.1540	.1598	.1655	.1666	.1677	.1688	.1699	.1710	.1721	.1732	.1743	.1754	.1764
19.0	.1371	.1435	.1496	.1555	.1612	.1668	.1723	.1734	.1744	.1755	.1766	.1776	.1787	.1797	.1808	.1818	.1829
20.0	.1451	.1513	.1571	.1628	.1683	.1737	.1790	.1801	.1811	.1821	.1832	.1842	.1852	.1863	.1873	.1883	.1893
21.0	.1531	.1589	.1646	.1701	.1754	.1806	.1857	.1867	.1877	.1887	.1897	.1907	.1917	.1927	.1937	.1947	.1957
22.0	.1609	.1665	.1720	.1772	.1824	.1874	.1924	.1933	.1943	.1953	.1963	.1972	.1982	.1991	.2001	.2010	.2020
23.0	.1686	.1741	.1793	.1844	.1893	.1942	.1990	.1999	.2009	.2018	.2027	.2037	.2046	.2055	.2064	.2074	.2083
24.0	.1763	.1815	.1865	.1914	.1962	.2009	.2055	.2064	.2074	.2083	.2092	.2101	.2110	.2119	.2128	.2137	.2145
25.0	.1839	.1889	.1937	.1984	.2030	.2076	.2120	.2129	.2138	.2147	.2156	.2164	.2173	.2182	.2190	.2199	.2208
26.0	.1914	.1962	.2008	.2054	.2098	.2142	.2185	.2194	.2202	.2211	.2219	.2228	.2236	.2245	.2253	.2261	.2270
27.0	.1989	.2034	.2079	.2123	.2165	.2208	.2250	.2258	.2266	.2274	.2283	.2291	.2299	.2307	.2315	.2323	.2332
28.0	.2063	.2106	.2149	.2191	.2232	.2273	.2314	.2322	.2330	.2338	.2346	.2354	.2361	.2369	.2377	.2385	.2393
29.0	.2136	.2178	.2219	.2259	.2299	.2338	.2377	.2385	.2393	.2401	.2408	.2416	.2424	.2431	.2439	.2447	.2454
30.0	.2209	.2249	.2288	.2326	.2365	.2403	.2441	.2448	.2456	.2463	.2471	.2478	.2485	.2493	.2500	.2508	.2515
31.0	.2281	.2319	.2356	.2394	.2430	.2467	.2504	.2511	.2518	.2525	.2533	.2540	.2547	.2554	.2561	.2569	.2576
32.0	.2353	.2389	.2425	.2460	.2496	.2531	.2566	.2573	.2580	.2587	.2594	.2601	.2608	.2615	.2622	.2629	.2636
33.0	.2424	.2458	.2492	.2526	.2560	.2594	.2628	.2635	.2642	.2649	.2656	.2662	.2669	.2676	.2683	.2689	.2696
34.0	.2495	.2527	.2559	.2592	.2625	.2657	.2690	.2697	.2703	.2710	.2716	.2723	.2730	.2736	.2743	.2749	.2756
35.0	.2565	.2595	.2626	.2657	.2688	.2720	.2751	.2758	.2764	.2771	.2777	.2783	.2790	.2796	.2802	.2809	.2815
36.0	.2635	.2663	.2692	.2722	.2752	.2782	.2812	.2818	.2825	.2831	.2837	.2843	.2849	.2855	.2862	.2868	.2874
37.0	.2704	.2730	.2758	.2786	.2814	.2843	.2873	.2879	.2885	.2890	.2896	.2902	.2908	.2914	.2920	.2926	.2932
38.0	.2773	.2797	.2823	.2849	.2877	.2904	.2932	.2938	.2944	.2950	.2955	.2961	.2967	.2973	.2978	.2984	.2990
39.0	.2840	.2863	.2887	.2912	.2938	.2965	.2992	.2997	.3003	.3008	.3014	.3019	.3025	.3030	.3036	.3041	.3047
40.0	.2908	.2928	.2951	.2974	.2999	.3024	.3050	.3055	.3061	.3066	.3071	.3076	.3082	.3087	.3093	.3098	.3103

Table XVII (a-b)

Adiabatic lapse rate Γ [°C/1000 decibars]

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0 (1000 DECIBARS)
−2.0	−.0417	−.0294	−.0177	−.0063	.0048	.0156	.0262	.0283	.0304	.0325	.0346	.0366	.0387	.0408	.0428	.0448	.0469
−1.0	−.0307	−.0188	−.0074	.0036	.0144	.0248	.0351	.0371	.0391	.0412	.0432	.0451	.0471	.0491	.0511	.0530	.0550
0.0	−.0199	−.0083	.0027	.0133	.0237	.0338	.0437	.0457	.0477	.0496	.0515	.0535	.0554	.0573	.0592	.0611	.0630
1.0	−.0094	.0018	.0125	.0228	.0328	.0426	.0522	.0541	.0560	.0578	.0597	.0616	.0634	.0653	.0671	.0689	.0708
2.0	.0009	.0118	.0221	.0321	.0418	.0512	.0605	.0623	.0641	.0659	.0677	.0695	.0713	.0731	.0749	.0766	.0784
3.0	.0110	.0215	.0315	.0411	.0505	.0596	.0686	.0703	.0721	.0738	.0756	.0773	.0790	.0807	.0824	.0842	.0858
4.0	.0208	.0310	.0406	.0500	.0590	.0679	.0765	.0782	.0799	.0816	.0832	.0849	.0866	.0882	.0899	.0915	.0932
5.0	.0305	.0403	.0496	.0586	.0674	.0759	.0842	.0859	.0875	.0892	.0908	.0924	.0940	.0956	.0972	.0988	.1004
6.0	.0399	.0494	.0584	.0671	.0756	.0838	.0919	.0934	.0950	.0966	.0982	.0997	.1013	.1028	.1044	.1059	.1074
7.0	.0491	.0583	.0670	.0755	.0836	.0916	.0993	.1009	.1024	.1039	.1054	.1069	.1084	.1099	.1114	.1129	.1143
8.0	.0582	.0671	.0755	.0836	.0915	.0992	.1067	.1082	.1096	.1111	.1126	.1140	.1155	.1169	.1183	.1198	.1212
9.0	.0671	.0756	.0838	.0916	.0993	.1067	.1139	.1153	.1168	.1182	.1196	.1210	.1224	.1238	.1251	.1265	.1279
10.0	.0758	.0841	.0919	.0995	.1069	.1140	.1210	.1224	.1238	.1251	.1265	.1278	.1292	.1305	.1319	.1332	.1345
11.0	.0843	.0923	.0999	.1073	.1144	.1213	.1280	.1294	.1307	.1320	.1333	.1346	.1359	.1372	.1385	.1398	.1411
12.0	.0928	.1005	.1078	.1149	.1217	.1284	.1349	.1362	.1375	.1388	.1400	.1413	.1425	.1438	.1450	.1463	.1475
13.0	.1010	.1085	.1156	.1224	.1290	.1355	.1417	.1430	.1442	.1454	.1467	.1479	.1491	.1503	.1515	.1527	.1539
14.0	.1092	.1164	.1232	.1298	.1362	.1424	.1485	.1497	.1509	.1520	.1532	.1544	.1556	.1567	.1579	.1591	.1602
15.0	.1172	.1241	.1307	.1371	.1432	.1493	.1551	.1563	.1574	.1586	.1597	.1609	.1620	.1631	.1642	.1654	.1665
16.0	.1251	.1318	.1381	.1443	.1502	.1560	.1617	.1628	.1639	.1650	.1661	.1672	.1683	.1694	.1705	.1716	.1727
17.0	.1329	.1393	.1455	.1514	.1571	.1627	.1682	.1693	.1704	.1714	.1725	.1736	.1746	.1757	.1767	.1778	.1788
18.0	.1406	.1468	.1527	.1584	.1640	.1694	.1747	.1757	.1767	.1778	.1788	.1798	.1809	.1819	.1829	.1839	.1849
19.0	.1482	.1542	.1599	.1654	.1707	.1759	.1811	.1821	.1831	.1841	.1851	.1861	.1871	.1880	.1890	.1900	.1910
20.0	.1557	.1615	.1669	.1722	.1774	.1825	.1874	.1884	.1894	.1903	.1913	.1923	.1932	.1942	.1951	.1961	.1970
21.0	.1631	.1687	.1739	.1791	.1841	.1889	.1937	.1947	.1956	.1965	.1975	.1984	.1993	.2002	.2012	.2021	.2030
22.0	.1705	.1758	.1809	.1858	.1906	.1953	.2000	.2009	.2018	.2027	.2036	.2045	.2054	.2063	.2072	.2081	.2090
23.0	.1778	.1829	.1878	.1925	.1972	.2017	.2062	.2071	.2079	.2088	.2097	.2106	.2114	.2123	.2132	.2140	.2149
24.0	.1850	.1899	.1946	.1992	.2037	.2081	.2124	.2132	.2141	.2149	.2158	.2166	.2175	.2183	.2191	.2200	.2208
25.0	.1922	.1968	.2014	.2058	.2101	.2143	.2185	.2193	.2202	.2210	.2218	.2226	.2234	.2243	.2251	.2259	.2267

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0 (2000 DECIBARS)
−2.0	−.0168	−.0055	.0053	.0158	.0261	.0361	.0459	.0479	.0498	.0517	.0537	.0556	.0575	.0594	.0613	.0632	.0651
−1.0	−.0067	.0043	.0148	.0249	.0348	.0445	.0540	.0559	.0578	.0597	.0615	.0634	.0652	.0671	.0689	.0707	.0725
0.0	.0031	.0138	.0240	.0338	.0434	.0528	.0620	.0638	.0656	.0674	.0692	.0710	.0728	.0746	.0763	.0781	.0799
1.0	.0128	.0231	.0330	.0425	.0518	.0609	.0698	.0715	.0733	.0750	.0768	.0785	.0802	.0819	.0836	.0853	.0870
2.0	.0222	.0323	.0418	.0510	.0600	.0688	.0774	.0791	.0808	.0824	.0841	.0858	.0875	.0891	.0908	.0924	.0940
3.0	.0315	.0412	.0504	.0594	.0681	.0765	.0848	.0865	.0881	.0897	.0913	.0930	.0946	.0962	.0978	.0993	.1009
4.0	.0406	.0500	.0589	.0675	.0759	.0841	.0921	.0937	.0953	.0969	.0984	.1000	.1015	.1031	.1046	.1062	.1077
5.0	.0494	.0585	.0672	.0755	.0837	.0916	.0993	.1008	.1024	.1039	.1054	.1069	.1084	.1099	.1114	.1128	.1143
6.0	.0581	.0670	.0753	.0834	.0912	.0989	.1064	.1078	.1093	.1108	.1122	.1137	.1151	.1166	.1180	.1194	.1208
7.0	.0667	.0752	.0833	.0911	.0987	.1061	.1133	.1147	.1161	.1175	.1189	.1203	.1217	.1231	.1245	.1259	.1273
8.0	.0750	.0833	.0911	.0987	.1060	.1131	.1201	.1215	.1228	.1242	.1256	.1269	.1283	.1296	.1309	.1323	.1336
9.0	.0833	.0913	.0988	.1061	.1132	.1201	.1268	.1281	.1294	.1308	.1321	.1334	.1347	.1360	.1373	.1385	.1398
10.0	.0913	.0991	.1064	.1134	.1202	.1269	.1334	.1347	.1360	.1372	.1385	.1398	.1410	.1423	.1435	.1447	.1460
11.0	.0993	.1067	.1138	.1206	.1272	.1336	.1399	.1411	.1424	.1436	.1448	.1460	.1473	.1485	.1497	.1509	.1520
12.0	.1071	.1143	.1211	.1277	.1341	.1403	.1463	.1475	.1487	.1499	.1511	.1523	.1534	.1546	.1558	.1569	.1581
13.0	.1148	.1218	.1283	.1347	.1408	.1468	.1527	.1538	.1550	.1561	.1573	.1584	.1595	.1607	.1618	.1629	.1640
14.0	.1224	.1291	.1355	.1416	.1475	.1533	.1590	.1601	.1612	.1623	.1634	.1645	.1656	.1667	.1677	.1688	.1699
15.0	.1299	.1363	.1425	.1484	.1541	.1597	.1652	.1663	.1673	.1684	.1695	.1705	.1716	.1726	.1737	.1747	.1757

Table XVII (c-d)

Adiabatic lapse rate Γ [°C./1000 decibars]

3000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	.0069	0173	0272	.0368	.0463	.0555	.0646	0664	.0682	.0700	.0718	.0736	.0753	0771	0788	.0806	.0824
−1.0	0161	.0262	0358	.0452	.0543	.0633	.0720	.0738	.0755	.0772	.0790	.0807	.0824	0841	.0858	.0875	0892
0.0	0251	0349	.0442	.0533	.0622	.0708	.0793	.0810	.0827	.0844	0860	.0877	.0893	.0910	.0926	0943	0959
1.0	.0339	0434	.0525	.0613	.0698	.0782	.0865	.0881	.0897	.0913	.0929	.0945	.0961	0977	0993	1009	1025
2.0	.0426	.0518	0606	.0691	.0774	.0855	.0934	.0950	.0966	.0981	0997	.1012	.1028	1043	1059	1074	.1089
3.0	0510	.0600	0685	.0768	0848	.0926	.1003	.1018	1033	.1048	.1063	.1078	.1093	1108	1123	.1138	.1152
4.0	0594	.0680	0763	0843	.0920	.0996	.1070	1085	1100	.1114	.1129	.1143	1157	1172	1186	1200	1214
5.0	0675	.0759	.0839	.0916	.0992	.1065	.1136	.1151	.1165	.1179	.1193	.1207	.1221	.1234	.1248	1262	1276
6.0	0755	.0837	.0914	.0989	1061	.1132	.1201	.1215	.1229	.1242	.1256	.1269	.1283	.1296	1309	.1323	.1336
7.0	.0834	.0913	0988	1060	.1130	.1199	.1265	1279	.1292	.1305	.1318	.1331	.1344	1357	.1370	1382	1395
8.0	0911	0988	.1060	.1130	.1198	1264	.1328	.1341	.1354	.1367	.1379	1392	.1404	.1417	.1429	.1441	.1454
9.0	.0987	1061	.1131	1199	.1264	.1328	.1391	1403	.1415	.1427	.1439	.1452	1464	.1476	1488	.1499	1511
10.0	1062	1134	.1201	.1266	.1330	1391	.1452	.1464	.1475	1487	.1499	.1511	.1522	.1534	.1545	.1557	.1568
11.0	.1136	1205	1270	1333	.1394	.1454	.1512	.1524	.1535	.1547	.1558	.1569	1580	1592	.1603	.1614	.1625
12.0	1208	1275	.1338	.1399	.1458	.1516	.1572	.1583	.1594	.1605	.1616	.1627	1638	.1649	1659	.1670	.1681
13.0	.1280	1344	1405	.1464	.1521	.1577	.1631	.1642	.1652	.1663	.1674	1684	1695	1705	1715	.1726	.1736
14.0	1350	.1413	1471	.1528	.1583	.1637	.1690	.1700	.1710	.1720	.1731	1741	.1751	.1761	.1771	1781	1791
15.0	1420	1480	1537	.1592	.1645	.1697	.1748	.1758	.1767	.1777	.1787	.1797	1807	.1817	1826	.1836	1846

4000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	0294	.0388	.0479	.0567	.0654	.0739	.0823	.0839	.0856	.0872	.0889	.0905	.0922	.0938	.0954	.0971	.0987
−1.0	.0377	0469	.0557	.0643	.0727	.0809	.0891	.0907	.0923	.0939	.0955	0970	0986	.1002	.1018	.1033	.1049
0.0	0459	0549	.0634	.0717	.0799	.0879	.0957	.0973	.0988	.1004	.1019	.1034	1050	.1065	.1080	.1095	.1110
1.0	.0539	0626	.0710	.0790	.0869	.0946	.1022	.1037	.1052	.1067	.1082	.1097	.1112	.1127	.1141	1156	.1170
2.0	0618	0703	0784	.0862	.0938	.1013	1086	.1101	.1115	.1130	.1144	.1159	.1173	.1187	.1201	.1215	.1230
3.0	0695	0778	.0856	.0932	.1006	.1078	.1149	.1163	1177	.1191	.1205	.1219	.1233	.1247	.1260	.1274	1288
4.0	.0772	.0852	.0928	.1001	.1073	.1143	.1211	.1225	.1238	.1252	1265	.1279	.1292	.1305	1318	.1332	.1345
5.0	0847	0924	0998	.1069	1138	.1206	.1272	.1285	.1298	.1311	.1324	.1337	.1350	.1363	.1376	1388	.1401
6.0	0920	0995	1067	.1136	.1203	.1268	1332	.1345	.1357	1370	.1382	.1395	.1407	.1420	1432	.1444	1456
7.0	0992	1066	1135	.1201	1266	.1329	.1391	.1403	.1415	.1427	.1440	.1452	.1464	.1476	.1487	.1499	.1511
8.0	1064	1134	1201	.1266	.1328	1389	.1449	.1461	.1473	.1484	.1496	.1508	.1519	.1531	.1542	.1554	.1565
9.0	1134	1202	1267	.1329	1390	.1449	.1507	.1518	.1529	.1541	.1552	.1563	.1574	.1585	.1596	.1608	.1619
10.0	1203	1269	1332	1392	.1451	.1508	.1563	.1574	.1585	.1596	.1607	.1618	.1629	.1639	.1650	.1661	.1671
11.0	1271	1335	.1396	.1454	.1511	.1566	.1619	.1630	.1641	.1651	.1662	.1672	.1683	.1693	.1703	.1714	1724
12.0	1338	1400	1459	.1515	.1570	.1623	.1675	.1685	1695	.1706	.1716	.1726	.1736	1746	.1756	1766	.1776
13.0	.1405	1465	.1521	1576	1628	.1680	1730	.1740	.1750	.1760	1769	.1779	.1789	.1798	.1808	.1818	.1827
14.0	1470	1528	.1583	1635	.1686	.1736	.1784	.1794	1804	.1813	.1822	.1832	.1841	.1851	.1860	.1869	1878
15.0	1535	1591	1644	.1694	1744	.1792	.1839	.1848	.1857	.1866	1875	.1884	.1893	.1902	.1911	.1920	.1929

Table XVII (e-h)

Adiabatic lapse rate Γ [°C/1000 decibars]

5000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0----	0505	0591	0674	0754	.0834	0912	.0989	.1004	.1019	.1034	.1050	.1065	1080	.1095	.1110	.1125	.1140
−1.0----	0580	.0665	0745	.0823	.0900	.0976	.1050	.1065	.1080	.1095	1109	.1124	.1139	.1153	1168	.1182	.1197
0.0----	0654	0737	.0815	0891	.0966	.1039	1111	.1126	.1140	.1154	.1168	1182	1197	.1211	1225	.1239	.1253
1.0----	0727	0807	.0884	0958	1030	.1101	1171	.1185	.1199	1212	.1226	.1240	.1253	.1267	.1281	1294	1308
2.0----	0799	0877	.0951	1023	.1093	.1162	1229	.1243	1256	.1270	.1283	.1296	.1309	.1322	.1336	1349	.1362
3.0----	0870	0946	1018	1087	1155	.1222	1287	.1300	.1313	.1326	.1339	.1351	.1364	.1377	.1390	1402	1415

6000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0----	0703	0781	0856	.0930	.1002	.1073	.1144	1158	1172	.1186	.1200	.1214	.1228	.1242	1256	.1270	.1284
−1.0----	.0771	.0847	0921	.0992	.1062	.1132	1200	1214	.1227	.1241	.1255	.1268	.1282	.1295	.1308	1322	.1335
0.0----	0838	.0913	.0984	.1054	.1122	.1189	1256	.1269	1282	.1295	.1308	1321	.1334	.1347	.1360	1373	.1386
1.0----	.0904	0977	1047	1114	.1180	.1246	1310	.1323	.1335	.1348	1361	1373	.1386	.1399	.1411	1424	.1436
2.0----	.0969	1041	.1108	.1174	.1238	.1301	.1364	1376	.1388	.1400	.1413	1425	.1437	.1449	.1461	1473	.1485
3.0----	1034	1103	1169	.1233	.1295	.1356	.1416	1428	1440	.1452	.1464	.1476	.1487	.1499	.1511	.1523	.1534

7000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0----	0887	.0958	1026	.1093	1159	.1224	.1289	.1302	1314	1327	1340	1353	.1366	.1379	.1392	1404	.1417
−1.0----	0948	.1018	1084	1149	.1213	1277	.1340	.1352	1365	1377	1390	.1402	.1415	.1427	.1439	.1452	.1464
0.0----	1009	.1077	.1142	.1205	.1268	.1329	.1390	.1402	1414	.1426	.1438	.1450	.1462	.1474	.1486	.1498	.1510
1.0----	1069	.1135	1199	.1260	.1321	.1381	.1440	1451	.1463	.1475	.1486	1498	.1510	.1521	.1533	1544	1556
2.0----	.1128	1193	.1255	.1315	.1374	.1431	1489	.1500	.1511	1523	.1534	1545	.1556	.1568	.1579	.1590	.1601
3.0----	1187	.1250	.1310	.1368	1426	1482	.1537	1548	.1559	1570	1581	1592	.1602	.1613	.1624	.1635	.1645

10000 DECIBARS

TEMP. °C	SALINITY 0.0	5.0	10.0	15.0	20.0	25.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0----	1356	.1409	.1459	.1509	.1559	1609	.1658	.1668	.1678	.1688	.1698	1708	.1718	.1728	.1738	.1748	.1758
−1.0----	1401	.1453	.1503	.1551	.1600	1648	1697	.1706	1716	.1726	.1736	.1745	.1755	.1765	.1774	1784	1794
0.0----	.1446	1497	1546	.1593	.1641	.1688	.1735	.1744	.1754	.1763	.1772	.1782	1791	.1801	.1810	.1819	.1829
1.0----	.1490	.1541	.1588	.1635	.1681	.1727	.1773	.1782	.1791	.1800	1809	.1818	.1827	.1836	.1845	.1854	.1863
2.0----	.1535	1584	.1631	.1677	.1721	.1766	.1810	.1819	1828	.1836	.1845	.1854	1863	.1872	.1880	.1889	.1898
3.0----	.1579	1628	.1673	.1718	1761	.1805	.1847	.1856	.1864	.1873	1881	.1890	.1898	.1907	.1915	.1924	.1932

Table XVIII

Θ (35,t,p,0) adiabatic cooling for seawater raised to surface [°C]

PRESSURE DECIBARS	TEMPERATURE DEGREES CELSIUS																	
	−2.0	−1.0	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
200----	−2.004	−1.006	−0.008	0.991	1.989	2.988	3.986	4.984	5.983	6.981	7.980	8.978	9.977	10.975	11.974	12.972	13.971	14.970
400----	−2.009	−1.012	−0.016	0.981	1.978	2.974	3.971	4.968	5.965	6.962	7.959	8.956	9.953	10.950	11.947	12.945	13.942	14.939
600----	−2.015	−1.020	−0.025	0.970	1.965	2.961	3.956	4.951	5.947	6.942	7.938	8.933	9.929	10.925	11.920	12.916	13.912	14.908
800----	−2.021	−1.028	−0.034	0.959	1.953	2.946	3.940	4.934	5.928	6.922	7.916	8.910	9.904	10.899	11.893	12.888	13.882	14.877
1000----	−2.028	−1.037	−0.045	0.947	1.939	2.931	3.924	4.916	5.908	6.901	7.894	8.886	9.879	10.872	11.865	12.858	13.852	14.845
1200----	−2.036	−1.046	−0.056	0.934	1.925	2.916	3.906	4.897	5.888	6.880	7.871	8.862	9.854	10.845	11.837	12.829	13.821	14.813
1400----	−2.045	−1.056	−0.068	0.921	1.910	2.899	3.889	4.878	5.868	6.858	7.848	8.838	9.828	10.818	11.808	12.799	13.790	14.780
1600----	−2.054	−1.067	−0.080	0.907	1.895	2.883	3.871	4.859	5.847	6.835	7.824	8.813	9.801	10.790	11.779	12.769	13.758	14.748
1800----	−2.064	−1.079	−0.093	0.893	1.879	2.865	3.852	4.838	5.825	6.812	7.800	8.787	9.775	10.762	11.750	12.738	13.726	14.714
2000----	−2.075	−1.091	−0.107	0.878	1.862	2.847	3.832	4.818	5.803	6.789	7.775	8.761	9.747	10.734	11.720	12.707	13.694	14.681
2200----	−2.087	−1.104	−0.121	0.862	1.845	2.829	3.812	4.796	5.781	6.765	7.750	8.735	9.720	10.705	11.690	12.676	13.661	14.647
2400----	−2.099	−1.118	−0.136	0.845	1.827	2.810	3.792	4.775	5.758	6.741	7.724	8.708	9.692	10.675	11.660	12.644	13.628	14.613
2600----	−2.112	−1.132	−0.152	0.828	1.809	2.790	3.771	4.752	5.734	6.716	7.698	8.680	9.663	10.646	11.629	12.612	13.595	14.579
2800----	−2.125	−1.147	−0.168	0.811	1.790	2.770	3.750	4.730	5.710	6.691	7.672	8.653	9.634	10.616	11.597	12.579	13.562	14.544
3000----	−2.139	−1.162	−0.185	0.793	1.771	2.749	3.728	4.706	5.686	6.665	7.645	8.625	9.605	10.585	11.566	12.547	13.528	14.509
3200----	−2.154	−1.179	−0.203	0.774	1.751	2.728	3.705	4.683	5.661	6.639	7.617	8.596	9.575	10.554	11.534	12.513	13.493	14.473
3400----	−2.170	−1.195	−0.221	0.754	1.730	2.706	3.682	4.658	5.635	6.612	7.589	8.567	9.545	10.523	11.501	12.480	13.459	14.438
3600----	−2.186	−1.213	−0.239	0.735	1.709	2.683	3.658	4.634	5.609	6.585	7.561	8.538	9.514	10.491	11.469	12.446	13.424	14.402
3800----	−2.203	−1.231	−0.259	0.714	1.687	2.661	3.634	4.608	5.583	6.558	7.533	8.508	9.484	10.459	11.436	12.412	13.389	14.365
4000----	−2.220	−1.249	−0.278	0.693	1.665	2.637	3.610	4.583	5.556	6.530	7.504	8.478	9.452	10.427	11.402	12.377	13.353	14.329
4200----	−2.238	−1.269	−0.299	0.672	1.642	2.613	3.585	4.557	5.529	6.501	7.474	8.447	9.421	10.394	11.368	12.343	13.317	14.292
4400----	−2.257	−1.288	−0.320	0.650	1.619	2.589	3.559	4.530	5.501	6.473	7.444	8.416	9.389	10.361	11.334	12.308	13.281	14.255
4600----	−2.276	−1.309	−0.341	0.627	1.595	2.564	3.533	4.503	5.473	6.443	7.414	8.385	9.356	10.328	11.300	12.272	13.245	14.217
4800----	−2.295	−1.329	−0.363	0.604	1.571	2.539	3.507	4.476	5.444	6.414	7.383	8.353	9.324	10.294	11.265	12.236	13.208	14.180
5000----	−2.316	−1.351	−0.386	0.580	1.546	2.513	3.480	4.448	5.416	6.384	7.352	8.321	9.291	10.260	11.230	12.200	13.171	14.142
5200----	−2.337	−1.373	−0.409	0.556	1.521	2.487	3.453	4.419	5.386	6.353	7.321	8.289	9.257	10.226	11.195	12.164	13.133	14.103
5400----	−2.358	−1.395	−0.432	0.532	1.496	2.460	3.425	4.391	5.356	6.323	7.289	8.256	9.223	10.191	11.159	12.127	13.096	14.065
5600----	−2.380	−1.418	−0.456	0.506	1.469	2.433	3.397	4.361	5.326	6.291	7.257	8.223	9.189	10.156	11.123	12.090	13.058	14.026
5800----	−2.402	−1.442	−0.481	0.481	1.443	2.405	3.368	4.332	5.296	6.260	7.225	8.190	9.155	10.121	11.087	12.053	13.020	13.987
6000----	−2.425	−1.466	−0.506	0.455	1.416	2.377	3.339	4.302	5.265	6.228	7.192	8.156	9.120	10.085	11.050	12.016	12.981	13.947
6200----	−2.449	−1.490	−0.531	0.428	1.388	2.349	3.310	4.272	5.233	6.196	7.159	8.122	9.085	10.049	11.013	11.978	12.943	13.908
6400----	−2.473	−1.515	−0.557	0.401	1.360	2.320	3.280	4.241	5.202	6.163	7.125	8.087	9.050	10.013	10.976	11.940	12.904	13.868
6600----	−2.497	−1.541	−0.584	0.374	1.332	2.291	3.250	4.210	5.170	6.130	7.091	8.052	9.014	9.976	10.939	11.901	12.864	13.828
6800----	−2.522	−1.567	−0.611	0.346	1.303	2.261	3.219	4.178	5.137	6.097	7.057	8.017	8.978	9.939	10.901	11.863	12.825	13.787
7000----	−2.548	−1.593	−0.638	0.318	1.274	2.231	3.188	4.146	5.104	6.063	7.022	7.982	8.942	9.902	10.863	11.824	12.785	13.747
7200----	−2.574	−1.620	−0.666	0.289	1.245	2.201	3.157	4.114	5.071	6.029	6.988	7.946	8.905	9.865	10.825	11.785	12.745	13.706
7400----	−2.600	−1.648	−0.694	0.260	1.215	2.170	3.125	4.081	5.038	5.995	6.952	7.910	8.868	9.827	10.786	11.745	12.705	13.665
7600----	−2.627	−1.675	−0.723	0.230	1.184	2.138	3.093	4.048	5.004	5.960	6.917	7.874	8.831	9.789	10.747	11.706	12.664	13.624
7800----	−2.655	−1.704	−0.752	0.200	1.153	2.107	3.061	4.015	4.970	5.925	6.881	7.837	8.794	9.751	10.708	11.666	12.624	13.582
8000----	−2.683	−1.732	−0.781	0.170	1.122	2.075	3.028	3.981	4.935	5.890	6.845	7.800	8.756	9.712	10.669	11.626	12.583	13.540
8500----	−2.754	−1.806	−0.857	0.093	1.043	1.993	2.944	3.896	4.848	5.800	6.753	7.707	8.660	9.615	10.569	11.524	12.479	13.435
9000----	−2.828	−1.882	−0.935	0.013	0.961	1.909	2.858	3.808	4.758	5.709	6.660	7.611	8.563	9.516	10.468	11.421	12.375	13.328
9500----	−2.904	−1.960	−1.015	−0.069	0.877	1.824	2.771	3.719	4.667	5.616	6.565	7.514	8.465	9.415	10.366	11.317	12.269	13.220
10000----	−2.983	−2.041	−1.097	−0.154	0.791	1.736	2.681	3.627	4.574	5.521	6.468	7.416	8.364	9.313	10.262	11.211	12.161	13.111

Table XIX

$\Delta\Theta_{I}(S,0,p,0)$ [°C] for salinity ≠35 versus pressure

PRESSURE	SALINITY															
DECIBARS	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
200	004	.003	.003	.003	.002	.002	.002	.001	.001	.000	.000	.000	- .001	- .001	- .002	- .002
400	.007	.007	.006	.005	.004	.004	.003	.002	.001	.001	.000	- .001	- .001	- .002	- .003	- 004
600	.011	010	.009	.008	.007	.006	.004	.003	.002	.001	.000	- .001	- .002	- .003	- .004	- 006
800	015	.013	.012	.010	.009	.007	.006	.004	.003	.001	.000	- .001	- .003	- .004	- .006	- .007
1000	.018	.016	.015	.013	.011	.009	.007	.005	.004	.002	.000	- .002	- 004	- .005	- 007	- .009
1200	.022	.020	.017	.015	.013	.011	.009	.007	.004	.002	.000	- .002	- .004	- .007	- .009	- 011
1400	.025	.023	.020	.018	.015	.013	.010	.008	.005	.003	.000	- .003	- .005	- .008	- .010	- .013
1600	.029	.026	.023	.020	.017	.014	.011	.009	.006	.003	.000	- .003	- .006	- .009	- .011	- .014
1800	.032	029	.026	.022	.019	.016	.013	.010	.006	.003	.000	- .003	- .006	- .010	- .013	- .016
2000	035	.032	.028	.025	.021	.018	.014	.011	.007	.004	000	- .004	- .007	- 011	- 014	- .018
2200	.039	.035	.031	.027	.023	.019	.015	.012	.008	.004	.000	- .004	- .008	- .012	- 015	- .019
2400	042	.038	.033	.029	.025	.021	.017	.013	.008	.004	.000	- .004	- .008	- .013	- .017	- 021
2600	.045	.041	.036	.032	.027	.023	.018	.014	.009	.005	.000	- .005	- .009	- .014	- .018	- .023
2800	048	.043	.039	.034	.029	.024	.019	.014	.010	.005	.000	- .005	- .010	- .014	- .019	- .024
3000	.051	.046	041	.036	.031	.026	.020	.015	.010	.005	.000	- .005	- .010	- .015	- 020	- .026
3200	.054	049	.043	.038	.033	.027	.022	.016	.011	005	.000	- .005	- .011	- .016	- 022	- 027
3400	057	.051	.046	.040	.034	.029	.023	.017	.011	.006	.000	- .006	- .011	- .017	- .023	- .029
3600	.060	.054	.048	.042	.036	.030	.024	.018	.012	.006	.000	- .006	- .012	- .018	- .024	- 030
3800	.063	.057	.050	.044	.038	.032	.025	.019	.013	.006	.000	- .006	- .013	- .019	- .025	- .032
4000	.066	.059	.053	.046	.040	.033	.026	.020	.013	.007	.000	- .007	- .013	- .020	- .026	- 033
4200	.069	.062	.055	.048	.041	.034	.027	.021	.014	.007	.000	- .007	- .014	- .021	- .027	- .034
4400	.071	.064	.057	.050	.043	.036	.029	.021	.014	.007	.000	- .007	- .014	- .021	- .029	- .036
4600	.074	.067	.059	.052	.044	.037	.030	.022	.015	.007	.000	- .007	- .015	- .022	- .030	- .037
4800	.077	.069	.061	.054	.046	.038	.031	.023	.015	.008	.000	- .008	- .015	- .023	- .031	- .038
5000	.079	071	.064	.056	.048	.040	.032	.024	.016	.008	.000	- .008	- .016	- .024	- .032	- 040
5200	.082	.074	.066	.057	.049	.041	.033	.025	.016	.008	.000	- .008	- .016	- .025	- .033	- .041
5400	.085	.076	.068	.059	.051	.042	.034	.025	.017	.008	.000	- .008	- .017	- .025	- .034	- .042
5600	.087	.078	.070	.061	.052	.044	.035	.026	.017	.009	.000	- .009	- .017	- .026	- .035	- .044
5800	.089	.081	.072	.063	.054	.045	.036	.027	.018	.009	.000	- .009	- .018	- .027	- .036	- .045
6000	.092	.083	.073	.064	.055	.046	.037	.028	.018	.009	.000	- .009	- .018	- .028	- .037	- .046
6200	.094	085	.075	.066	.057	.047	.038	.028	.019	.009	.000	- .009	- .019	- .028	- .038	- .047
6400	096	.087	.077	.068	.058	.048	.039	.029	.019	.010	.000	- .010	- .019	- .029	- 039	- .048
6600	.099	.089	.079	.069	.059	.049	.040	.030	.020	.010	.000	- .010	- .020	- .030	- .040	- .049
6800	101	091	.081	.071	.061	.051	.040	.030	020	.010	.000	- .010	- .020	- .030	- .040	- .051
7000	103	.093	.083	.072	.062	.052	.041	.031	.021	.010	.000	- .010	- .021	- .031	- .041	- .052
7200	.105	.095	.084	.074	.063	.053	.042	.032	.021	.011	.000	- .011	- .021	- .032	- .042	- .053
7400	.107	.097	.086	.075	.064	.054	.043	.032	.021	.011	.000	- .011	- .022	- .032	- .043	- .054
7600	109	.099	.088	.077	.066	.055	.044	.033	.022	.011	.000	- .011	- .022	- .033	- .044	- .055
7800	.111	.100	.089	.078	.067	.056	.045	.033	.022	.011	.000	- .011	- .022	- .033	- .045	- .056
8000	.113	.102	.091	.079	.068	.057	.045	.034	.023	.011	.000	- .011	- .023	- .034	- .045	- .057
8500	.118	.106	.095	.083	.071	.059	.047	035	.024	.012	.000	- .012	- .024	- .035	- .047	- .059
9000	.123	.110	098	.086	.074	.061	.049	.037	.025	.012	.000	- .012	- .025	- .037	- .049	- .061
9500	.127	.114	.101	.089	.076	.063	.051	.038	.025	.013	.000	- .013	- .025	- .038	- .051	- .064
10000	.131	.118	.105	.092	.078	.065	.052	.039	.026	.013	.000	- .013	- .026	- .039	- .052	- .065

Table XX

$\Delta\theta_2$(S,t,10000,0) [°C] temperature versus salinity

TEMP. °C	SALINITY															
	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0
−2.0	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001	0.001	0.000	−0.001	−0.001	−0.002	−0.002	−0.003
−1.0	0.003	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.000	0.000	0.000	−0.001	−0.001	−0.001	−0.001
0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.0	−0.003	−0.002	−0.002	−0.002	−0.002	−0.001	−0.001	−0.001	−0.001	0.000	0.000	0.000	0.001	0.001	0.001	0.001
2.0	−0.005	−0.005	−0.004	−0.004	−0.003	−0.003	−0.002	−0.002	−0.001	−0.001	0.000	0.001	0.001	0.002	0.002	0.003
3.0	−0.008	−0.007	−0.006	−0.006	−0.005	−0.004	−0.003	−0.002	−0.002	−0.001	0.000	0.001	0.002	0.002	0.003	0.004
4.0	−0.011	−0.010	−0.008	−0.007	−0.006	−0.005	−0.004	−0.003	−0.002	−0.001	0.000	0.001	0.002	0.003	0.004	0.005
5.0	−0.013	−0.012	−0.011	−0.009	−0.008	−0.007	−0.005	−0.004	−0.003	−0.001	0.000	0.001	0.003	0.004	0.005	0.007
6.0	−0.016	−0.014	−0.013	−0.011	−0.010	−0.008	−0.006	−0.005	−0.003	−0.002	0.000	0.002	0.003	0.005	0.006	0.008
7.0	−0.019	−0.017	−0.015	−0.013	−0.011	−0.009	−0.007	−0.006	−0.004	−0.002	0.000	0.002	0.004	0.006	0.007	0.009
8.0	−0.021	−0.019	−0.017	−0.015	−0.013	−0.011	−0.008	−0.006	−0.004	−0.002	0.000	0.002	0.004	0.006	0.009	0.011
9.0	−0.024	−0.021	−0.019	−0.017	−0.014	−0.012	−0.010	−0.007	−0.005	−0.002	0.000	0.002	0.005	0.007	0.010	0.012
10.0	−0.027	−0.024	−0.021	−0.019	−0.016	−0.013	−0.011	−0.008	−0.005	−0.003	0.000	0.003	0.005	0.008	0.011	0.013
11.0	−0.029	−0.026	−0.023	−0.020	−0.018	−0.015	−0.012	−0.009	−0.006	−0.003	0.000	0.003	0.006	0.009	0.012	0.015
12.0	−0.032	−0.029	−0.026	−0.022	−0.019	−0.016	−0.013	−0.010	−0.006	−0.003	0.000	0.003	0.006	0.010	0.013	0.016
13.0	−0.035	−0.031	−0.028	−0.024	−0.021	−0.017	−0.014	−0.010	−0.007	−0.003	0.000	0.003	0.007	0.010	0.014	0.017
14.0	−0.037	−0.034	−0.030	−0.026	−0.022	−0.019	−0.015	−0.011	−0.007	−0.004	0.000	0.004	0.007	0.011	0.015	0.019
15.0	−0.040	−0.036	−0.032	−0.028	−0.024	−0.020	−0.016	−0.012	−0.008	−0.004	0.000	0.004	0.008	0.012	0.016	0.020

Table XXI

θ (35,t,0,p) adiabatic heating for seawater sunk from the surface [°C]

PRESSURE	TEMPERATURE DEGREES CELSIUS																	
DECIBARS	−2.0	−1.0	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
200	−1 996	−0.994	0 008	1.009	2.011	3.013	4.014	5.016	6.017	7.019	8.020	9 022	10.023	11 025	12 026	13.028	14.029	15.030
400	−1.991	−0 988	0.016	1.019	2.022	3.026	4.029	5.032	6.035	7.038	8.041	9.044	10.047	11.050	12.053	13 056	14.058	15.061
600	−1.985	−0 980	0.025	1.030	2 035	3.040	4.044	5.049	6.054	7.058	8 063	9.067	10.071	11.076	12.080	13.084	14.088	15.092
800	−1 979	−0 972	0 035	1.041	2.048	3.054	4.060	5.067	6.073	7 079	8.085	9.090	10.096	11.102	12.108	13.113	14.119	15.124
1000	−1 972	−0.963	0.045	1.053	2.061	3.069	4.077	5.085	6.092	7.100	8.107	9.114	10.122	11.129	12.136	13.143	14.149	15.156
1200	−1 963	−0.953	0.056	1.066	2.076	3 085	4.094	5.104	6 113	7.122	8.130	9.139	10.147	11.156	12.164	13.173	14.181	15.189
1400	−1 955	−0.943	0.068	1 080	2.091	3.102	4.112	5.123	6.133	7.144	8.154	9.164	10.174	11.184	12.193	13.203	14 212	15.222
1600	−1 945	−0.932	0 081	1 094	2.106	3.119	4.131	5.143	6.155	7.167	8.178	9.190	10.201	11.212	12.223	13.234	14.244	15 255
1800	−1 935	−0 920	0 094	1.109	2.123	3.137	4.150	5.164	6.177	7.190	8.203	9.216	10.228	11.241	12.253	13.265	14.277	15.289
2000	−1 924	−0 907	0.109	1.124	2.140	3.155	4.170	5.185	6 200	7.214	8.228	9.242	10.256	11 270	12.283	13.297	14.310	15.323
2200	−1 912	−0.894	0.123	1.141	2.157	3.174	4 191	5.207	6.223	7.239	8.254	9.269	10.285	11.300	12.314	13.329	14.344	15.358
2400	−1 899	−0.880	0.139	1.157	2.176	3.194	4.212	5.229	6.247	7.264	8.280	9.297	10.314	11.330	12.346	13.362	14.377	15.393
2600	−1.886	−0 865	0.155	1 175	2.195	3.214	4.233	5.252	6.271	7.289	8.307	9.325	10.343	11.360	12.378	13.395	14.412	15.428
2800	−1 872	−0.850	0 172	1 193	2.214	3.235	4.256	5.276	6 296	7.315	8.335	9.354	10.373	11.392	12.410	13.428	14.446	15.464
3000	−1 857	−0 834	0.189	1.212	2 235	3.257	4.278	5.300	6.321	7.342	8 363	9.383	10.403	11.423	12.443	13 462	14.481	15.501
3200	−1 842	−0.817	0.207	1.232	2.255	3.279	4.302	5.325	6.347	7.369	8.391	9.413	10.434	11.455	12.476	13.497	14.517	15.537
3400	−1 826	−0.799	0.226	1.252	2.277	3 301	4.326	5.350	6.373	7.397	8.420	9.443	10.465	11.488	12.510	13.531	14.553	15.574
3600	−1.809	−0 781	0.246	1.272	2.299	3.325	4.350	5.376	6.400	7.425	8.449	9.473	10.497	11.520	12.544	13.567	14.589	15.612
3800	−1.791	−0 763	0.266	1.294	2 321	3.349	4.375	5.402	6.428	7 454	8.479	9.504	10.529	11.554	12.578	13.602	14.626	15.650
4000	−1 773	−0 743	0.287	1 316	2.345	3.373	4.401	5.429	6 456	7.483	8.510	9.536	10.562	11.588	12.613	13.638	14.663	15.688
4200	−1 754	−0 723	0.308	1 338	2 368	3 398	4.427	5.456	6.485	7.513	8.540	9.568	10.595	11.622	12.648	13.675	14.701	15.726
4400	−1 735	−0 702	0.330	1.362	2.393	3 424	4.454	5.484	6 514	7.543	8.572	9.600	10.628	11.656	12.684	13.711	14.738	15.765
4600	−1 715	−0 681	0.352	1.385	2.418	3 450	4.481	5.512	6.543	7.573	8 603	9.633	10.662	11.691	12.720	13.749	14.777	15.805
4800	−1 694	−0 659	0.376	1.410	2.443	3.476	4.509	5 541	6.573	7 605	8.636	9.666	10.697	11.727	12.757	13.786	14.815	15.844
5000	−1.673	−0.636	0.399	1.435	2.469	3.504	4.537	5.571	6.604	7.636	8.668	9.700	10 732	11.763	12.794	13.824	14.854	15.884
5200	−1 651	−0.613	0.424	1.460	2.496	3.531	4.566	5.601	6.635	7.668	8.702	9.734	10.767	11.799	12.831	13.862	14.894	15.925
5400	−1.628	−0 590	0.449	1.486	2.523	3.559	4 595	5.631	6.666	7.701	8.735	9.769	10.803	11.836	12.869	13.901	14.933	15.965
5600	−1 605	−0.565	0.474	1.513	2.551	3 588	4.625	5.662	6.698	7.734	8.769	9.804	10.839	11.873	12.907	13.940	14.973	16.006
5800	−1 581	−0.540	0.500	1.540	2.579	3 617	4.656	5 693	6.730	7.767	8 804	9.839	10.875	11.910	12.945	13.980	15.014	16.048
6000	−1.557	−0.515	0.527	1.567	2.608	3 647	4.686	5.725	6.763	7 801	8 838	9.875	10.912	11.948	12.984	14.019	15.054	16.089
6200	−1.532	−0 489	0.554	1 596	2.637	3.677	4 718	5.757	6.797	7.835	8.874	9.912	10.949	11.986	13.023	14.059	15.096	16.131
6400	−1.506	−0 462	0 581	1.624	2 666	3.708	4.749	5.790	6.830	7.870	8.909	9.948	10.987	12.025	13.063	14.100	15.137	16.174
6600	−1.480	−0.435	0.610	1.653	2.697	3.739	4 782	5.823	6.864	7.905	8.945	9.985	11.025	12.064	13.102	14.141	15.179	16.216
6800	−1.453	−0 407	0.638	1.683	2.727	3.771	4 814	5.857	6 899	7.941	8 982	10.023	11.063	12.103	13.143	14.182	15.221	16.259
7000	−1 426	−0 379	0.668	1.713	2.759	3.803	4.847	5.891	6 934	7.977	9 019	10.061	11.102	12.143	13.183	14.223	15.263	16.303
7200	−1.398	−0.350	0.697	1.744	2.790	3.836	4.881	5.925	6.970	8.013	9.056	10.099	11.141	12.183	13.224	14.265	15.306	16.346
7400	−1.370	−0 321	0.728	1.775	2.822	3.869	4.915	5.960	7.005	8.050	9 094	10.137	11.180	12.223	13.265	14.307	15.349	16.390
7600	−1 341	−0.291	0.758	1.807	2.855	3.903	4.949	5.996	7.042	8.087	9.132	10.176	11.220	12.264	13.307	14.350	15.392	16.435
7800	−1.312	−0 261	0.790	1.839	2.888	3.936	4.984	6.032	7.078	8.124	9 170	10.216	11 260	12.305	13.349	14.393	15.436	16.479
8000	−1 282	−0.230	0.821	1.872	2.922	3.971	5.020	6.068	7 115	8.162	9 209	10.255	11.301	12.346	13 391	14.436	15.480	16 524
8500	−1.205	−0.151	0.903	1 955	3 007	4.059	5.110	6.160	7.210	8 259	9.308	10 356	11.404	12.451	13.498	14.545	15.591	16.637
9000	−1 125	−0.069	0.987	2.041	3 096	4.149	5.202	6.254	7.306	8.358	9.408	10.459	11.509	12.558	13 607	14.656	15.704	16.752
9500	−1.042	0.016	1.073	2.130	3.186	4.242	5 297	6.351	7 405	8.458	9 511	10.563	11 615	12.667	13 718	14.769	15.819	16.869
10000	−0.957	0.103	1.163	2 222	3.280	4.337	5 394	6.450	7 506	8.561	9.616	10.670	11 724	12.777	13.830	14.883	15.935	16.987

Table XXII

Freezing point temperature °C

PRESSURE DECIBARS	SALINITY							
	5	10	15	20	25	30	35	40
0	-0.274	-0.542	-0.812	-1.083	-1.358	-1.638	-1.922	-2.212
100	-0.349	-0.618	-0.887	-1.159	-1.434	-1.713	-1.998	-2.287
200	-0.424	-0.693	-0.962	-1.234	-1.509	-1.788	-2.073	-2.363
300	-0.500	-0.768	-1.038	-1.309	-1.584	-1.864	-2.148	-2.438
400	-0.575	-0.844	-1.113	-1.384	-1.660	-1.939	-2.224	-2.513
500	-0.650	-0.919	-1.188	-1.460	-1.735	-2.014	-2.299	-2.589

Table XXIII

Sound speed in seawater U [m/s]

PRESSURE DECIBARS	TEMPERATURE °C 0	10	20	30	40	
0	1402.4	1447.3	1482.3	1509.1	1528.9	**SALINITY 0**
1000	1418.0	1463.4	1498.9	1526.1	1546.3	
2000	1434.3	1479.8	1515.6	1543.0	1563.6	
3000	1451.0	1496.5	1532.3	1559.9	1580.7	
4000	1468.2	1513.4	1549.1	1576.7	1597.6	
5000	1485.8	1530.5	1565.9	1593.5	1614.4	
6000	1503.7	1547.7	1582.7	1610.1	1631.1	
7000	1521.8	1565.1	1599.6	1626.7	1647.7	
8000	1540.2	1582.5	1616.4	1643.3	1664.1	
9000	1558.8	1599.9	1633.2	1659.8	1680.5	
10000	1577.4	1617.4	1650.0	1676.2	1696.8	
0	1409.2	1453.5	1488.0	1514.5	1533.9	**SALINITY 5**
1000	1424.9	1469.6	1504.6	1531.4	1551.2	
2000	1441.2	1486.1	1521.2	1548.3	1568.4	
3000	1457.9	1502.7	1537.9	1565.1	1585.4	
4000	1475.1	1519.6	1554.6	1581.8	1602.3	
5000	1492.7	1536.6	1571.4	1598.5	1619.1	
6000	1510.5	1553.8	1588.2	1615.1	1635.7	
7000	1528.6	1571.1	1605.0	1631.7	1652.2	
8000	1546.9	1588.5	1621.7	1648.2	1668.6	
9000	1565.4	1605.9	1638.5	1664.6	1684.9	
10000	1583.9	1623.2	1655.2	1680.9	1701.0	
0	1415.8	1459.5	1493.6	1519.7	1538.8	**SALINITY 10**
1000	1431.7	1475.8	1510.2	1536.6	1556.1	
2000	1448.1	1492.3	1526.8	1553.5	1573.2	
3000	1464.9	1508.9	1543.5	1570.3	1590.2	
4000	1482.1	1525.8	1560.2	1587.0	1607.1	
5000	1499.6	1542.8	1577.0	1603.6	1623.8	
6000	1517.4	1560.0	1593.7	1620.2	1640.4	
7000	1535.5	1577.2	1610.5	1636.7	1656.9	
8000	1553.7	1594.6	1627.2	1653.2	1673.3	
9000	1572.1	1611.9	1643.9	1669.5	1689.5	
10000	1590.6	1629.3	1660.6	1685.8	1705.6	
0	1422.5	1465.6	1499.2	1524.9	1543.7	**SALINITY 15**
1000	1438.5	1481.9	1515.8	1541.8	1560.9	
2000	1454.9	1498.4	1532.5	1558.6	1578.0	
3000	1471.8	1515.1	1549.1	1575.4	1595.0	
4000	1489.0	1532.0	1565.8	1592.1	1611.9	
5000	1506.6	1549.0	1582.5	1608.8	1628.6	
6000	1524.4	1566.2	1599.3	1625.3	1645.2	
7000	1542.4	1583.4	1616.0	1641.8	1661.6	
8000	1560.6	1600.7	1632.7	1658.2	1677.9	
9000	1578.9	1618.0	1649.4	1674.5	1694.1	
10000	1597.2	1635.4	1666.1	1690.8	1710.1	
0	1429.1	1471.6	1504.8	1530.0	1548.6	**SALINITY 20**
1000	1445.3	1488.0	1521.4	1547.0	1565.7	
2000	1461.8	1504.6	1538.0	1563.8	1582.8	
3000	1478.7	1521.3	1554.7	1580.6	1599.8	
4000	1495.9	1538.2	1571.4	1597.3	1616.6	
5000	1513.5	1555.2	1588.1	1613.9	1633.3	
6000	1531.3	1572.3	1604.8	1630.4	1649.9	
7000	1549.2	1589.5	1621.5	1646.9	1666.3	
8000	1567.3	1606.8	1638.2	1663.2	1682.6	
9000	1585.6	1624.1	1654.8	1679.5	1698.7	
10000	1603.9	1641.4	1671.5	1695.7	1714.7	

Table XXIII (cont.)

Sound speed in seawater U [m/s]

PRESSURE DECIBARS	TEMPERATURE °C 0	10	20	30	40	
0	1435.8	1477.7	1510.3	1535.2	1553.4	
1000	1452.0	1494.1	1527.0	1552.1	1570.6	SALINITY 25
2000	1468.6	1510.7	1543.6	1569.0	1587.6	
3000	1485.6	1527.5	1560.3	1585.7	1604.5	
4000	1502.8	1544.3	1576.9	1602.4	1621.3	
5000	1520.4	1561.3	1593.6	1619.0	1638.0	
6000	1538.1	1578.4	1610.3	1635.5	1654.6	
7000	1556.0	1595.6	1626.9	1651.9	1671.0	
8000	1574.1	1612.8	1643.5	1668.2	1687.2	
9000	1592.2	1630.1	1660.2	1684.5	1703.3	
10000	1610.4	1647.4	1676.8	1700.6	1719.2	
0	1442.5	1483.7	1515.9	1540.4	1558.3	
1000	1458.8	1500.2	1532.5	1557.3	1575.4	SALINITY 30
2000	1475.4	1516.8	1549.2	1574.1	1592.3	
3000	1492.4	1533.6	1565.8	1590.8	1609.2	
4000	1509.7	1550.4	1582.4	1607.4	1626.0	
5000	1527.2	1567.4	1599.1	1624.0	1642.7	
6000	1544.9	1584.4	1615.7	1640.4	1659.2	
7000	1562.7	1601.5	1632.3	1656.8	1675.6	
8000	1580.7	1618.7	1648.9	1673.1	1691.8	
9000	1598.8	1636.0	1665.5	1689.3	1707.8	
10000	1616.8	1653.3	1682.1	1705.4	1723.5	
0	1449.1	1489.8	1521.5	1545.6	1563.2	
1000	1465.5	1506.3	1538.1	1562.4	1580.2	SALINITY 35
2000	1482.3	1523.0	1554.7	1579.2	1597.1	
3000	1499.3	1539.7	1571.3	1595.9	1613.9	
4000	1516.5	1556.5	1587.9	1612.5	1630.7	
5000	1534.0	1573.4	1604.5	1629.0	1647.3	
6000	1551.6	1590.4	1621.0	1645.4	1663.8	
7000	1569.4	1607.5	1637.6	1661.7	1680.1	
8000	1587.2	1624.6	1654.1	1677.9	1696.2	
9000	1605.2	1641.8	1670.6	1694.0	1712.2	
10000	1623.2	1659.0	1687.2	1710.1	1727.8	
0	1455.8	1495.9	1527.1	1550.8	1568.1	
1000	1472.3	1512.5	1543.7	1567.6	1585.0	SALINITY 40
2000	1489.1	1529.1	1560.3	1584.3	1601.8	
3000	1506.1	1545.8	1576.8	1600.9	1618.6	
4000	1523.3	1562.5	1593.3	1617.5	1635.3	
5000	1540.7	1579.4	1609.8	1633.9	1651.9	
6000	1558.2	1596.3	1626.3	1650.2	1668.3	
7000	1575.9	1613.3	1642.8	1666.5	1684.6	
8000	1593.7	1630.3	1659.2	1682.6	1700.6	
9000	1611.5	1647.4	1675.7	1698.7	1716.4	
10000	1629.3	1664.6	1692.2	1714.6	1732.0	

Table XXIV

Pressure to depth conversion at various latitudes [m]

PRESSURE DECIBARS	LATITUDE DEGREES						
	0.	15.	30.	45.	60.	75.	90.
0----	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500----	496.65	496.48	496.00	495.34	494.69	494.21	494.03
1000----	992.12	991.77	990.81	989.50	988.19	987.24	986.88
1500----	1486.41	1485.88	1484.45	1482.49	1480.53	1479.10	1478.57
2000----	1979.55	1978.85	1976.94	1974.33	1971.72	1969.81	1969.11
2500----	2471.55	2470.67	2468.29	2465.03	2461.77	2459.39	2458.51
3000----	2962.43	2961.38	2958.52	2954.61	2950.71	2947.85	2946.81
3500----	3452.20	3450.98	3447.65	3443.09	3438.54	3435.22	3434.00
4000----	3940.88	3939.49	3935.68	3930.49	3925.30	3921.50	3920.10
4500----	4428.49	4426.93	4422.65	4416.81	4410.98	4406.71	4405.14
5000----	4915.04	4913.30	4908.56	4902.08	4895.60	4890.87	4889.13
5500----	5400.55	5398.64	5393.43	5386.31	5379.19	5373.99	5372.08
6000----	5885.02	5882.95	5877.27	5869.51	5861.75	5856.08	5854.00
6500----	6368.49	6366.24	6360.09	6351.70	6343.31	6337.17	6334.92
7000----	6850.95	6848.53	6841.92	6832.89	6823.86	6817.26	6814.84
7500----	7332.43	7329.84	7322.76	7313.10	7303.44	7296.37	7293.78
8000----	7812.93	7810.17	7802.63	7792.34	7782.04	7774.51	7771.76
8500----	8292.47	8289.54	8281.54	8270.61	8259.69	8251.70	8248.77
9000----	8771.07	8767.97	8759.51	8747.95	8736.40	8727.94	8724.85
9500----	9248.73	9245.46	9236.54	9224.36	9212.17	9203.26	9200.00
10000----	9725.47	9722.04	9712.65	9699.84	9687.03	9677.66	9674.23

Table XXV

Salinity as a function of density anomaly $\gamma(S,t,0)$

TEMP. °C	0.0	5.0	10.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0
	DENSITY ANOMALY																				
−2.0	0.398	6.493	12.629	18.780	20.010	21.241	22.472	23.703	24.933	26.164	27.394	28.624	29.854	31.084	32.313	33.542	34.771	35.999	37.227	38.454	39.681
−1.0	0.284	6.407	12.572	18.751	19.987	21.223	22.459	23.696	24.932	26.167	27.403	28.638	29.874	31.108	32.343	33.577	34.811	36.044	37.277	38.509	39.741
0.0	0.191	6.343	12.536	18.741	19.983	21.225	22.466	23.708	24.949	26.190	27.431	28.671	29.911	31.151	32.391	33.630	34.868	36.107	37.344	38.581	39.818
1.0	0.120	6.299	12.519	18.752	19.998	21.245	22.492	23.738	24.984	26.231	27.476	28.722	29.967	31.212	32.456	33.700	34.943	36.186	37.429	38.671	39.912
2.0	0.070	6.276	12.523	18.781	20.032	21.284	22.536	23.787	25.038	26.289	27.540	28.790	30.040	31.290	32.539	33.787	35.035	36.283	37.530	38.776	40.022
3.0	0.040	6.273	12.546	18.828	20.085	21.342	22.598	23.854	25.110	26.366	27.621	28.876	30.130	31.385	32.638	33.891	35.144	36.396	37.647	38.898	40.148
4.0	0.031	6.290	12.587	18.894	20.156	21.417	22.678	23.939	25.199	26.460	27.719	28.979	30.238	31.496	32.754	34.012	35.268	36.525	37.781	39.036	40.290
5.0	0.041	6.326	12.648	18.978	20.244	21.510	22.776	24.041	25.306	26.570	27.835	29.098	30.362	31.624	32.886	34.148	35.409	36.670	37.929	39.189	40.447
6.0	0.071	6.381	12.727	19.080	20.350	21.620	22.890	24.160	25.429	26.698	27.966	29.234	30.501	31.768	33.035	34.300	35.565	36.830	38.094	39.357	40.619
7.0	0.120	6.454	12.823	19.198	20.473	21.747	23.021	24.295	25.569	26.841	28.114	29.386	30.657	31.928	33.198	34.468	35.737	37.005	38.273	39.540	40.806
8.0	0.188	6.546	12.937	19.333	20.612	21.891	23.169	24.447	25.724	27.001	28.278	29.553	30.829	32.103	33.378	34.651	35.924	37.196	38.467	39.738	41.008
9.0	0.274	6.656	13.069	19.485	20.768	22.051	23.333	24.615	25.896	27.177	28.457	29.736	31.015	32.294	33.572	34.849	36.125	37.401	38.676	39.950	41.223
10.0	0.378	6.783	13.217	19.653	20.940	22.226	23.512	24.798	26.083	27.367	28.651	29.934	31.217	32.499	33.780	35.061	36.341	37.620	38.898	40.176	41.452
11.0	0.500	6.927	13.382	19.837	21.128	22.418	23.707	24.997	26.285	27.573	28.860	30.147	31.433	32.719	34.004	35.287	36.571	37.853	39.135	40.416	41.696
12.0	0.640	7.089	13.563	20.037	21.331	22.625	23.918	25.210	26.502	27.794	29.085	30.375	31.664	32.953	34.241	35.528	36.815	38.100	39.385	40.669	41.952
13.0	0.797	7.267	13.759	20.252	21.549	22.846	24.143	25.439	26.734	28.029	29.323	30.616	31.909	33.201	34.492	35.782	37.072	38.361	39.649	40.936	42.222
14.0	0.971	7.461	13.972	20.482	21.782	23.083	24.382	25.682	26.980	28.278	29.575	30.872	32.168	33.463	34.757	36.050	37.343	38.635	39.925	41.215	42.504
15.0	1.162	7.671	14.200	20.726	22.030	23.334	24.637	25.939	27.241	28.542	29.842	31.141	32.440	33.738	35.035	36.332	37.627	38.922	40.215	41.508	42.800
16.0	1.368	7.897	14.443	20.985	22.292	23.599	24.905	26.210	27.515	28.819	30.122	31.424	32.726	34.027	35.327	36.626	37.924	39.221	40.518	41.813	43.108
17.0	1.591	8.139	14.701	21.258	22.568	23.878	25.187	26.495	27.803	29.110	30.416	31.721	33.025	34.329	35.631	36.933	38.234	39.534	40.833	42.131	43.428
18.0	1.830	8.395	14.973	21.546	22.859	24.171	25.483	26.794	28.104	29.414	30.722	32.030	33.337	34.643	35.949	37.253	38.556	39.859	41.160	42.461	43.760
19.0	2.084	8.666	15.260	21.846	23.162	24.477	25.792	27.106	28.418	29.731	31.042	32.352	33.662	34.971	36.279	37.585	38.891	40.196	41.500	42.803	44.105
20.0	2.354	8.952	15.560	22.161	23.479	24.797	26.114	27.430	28.746	30.061	31.374	32.687	34.000	35.311	36.621	37.930	39.238	40.546	41.852	43.157	44.461
21.0	2.638	9.253	15.875	22.489	23.810	25.130	26.449	27.768	29.086	30.403	31.720	33.035	34.349	35.663	36.975	38.287	39.597	40.907	42.215	43.523	44.829
22.0	2.938	9.567	16.203	22.829	24.153	25.476	26.798	28.119	29.439	30.758	32.077	33.395	34.711	36.027	37.342	38.656	39.968	41.280	42.591	43.900	45.209
23.0	3.251	9.896	16.544	23.183	24.509	25.834	27.158	28.482	29.804	31.126	32.447	33.767	35.085	36.403	37.720	39.036	40.351	41.665	42.977	44.289	45.600
24.0	3.579	10.238	16.899	23.549	24.878	26.205	27.531	28.857	30.182	31.506	32.828	34.150	35.471	36.791	38.110	39.428	40.745	42.061	43.376	44.689	46.002
25.0	3.921	10.593	17.267	23.928	25.259	26.588	27.917	29.244	30.571	31.897	33.222	34.546	35.869	37.191	38.512	39.832	41.151	42.468	43.785	45.101	46.415
26.0	4.277	10.962	17.647	24.319	25.652	26.983	28.314	29.644	30.972	32.300	33.627	34.953	36.278	37.602	38.925	40.247	41.567	42.887	44.205	45.523	46.839
27.0	4.646	11.344	18.040	24.723	26.057	27.390	28.723	30.055	31.385	32.715	34.044	35.372	36.699	38.024	39.349	40.673	41.995	43.317	44.637	45.956	47.274
28.0	5.029	11.738	18.445	25.138	26.474	27.809	29.144	30.477	31.810	33.142	34.472	35.802	37.130	38.458	39.784	41.110	42.434	43.757	45.079	46.400	47.719
29.0	5.425	12.145	18.862	25.564	26.902	28.240	29.576	30.911	32.246	33.579	34.912	36.243	37.573	38.902	40.231	41.558	42.883	44.208	45.532	46.854	48.175
30.0	5.834	12.565	19.291	26.003	27.343	28.681	30.020	31.357	32.693	34.028	35.362	36.695	38.027	39.358	40.687	42.016	43.344	44.670	45.995	47.319	48.642
31.0	6.255	12.996	19.732	26.452	27.794	29.135	30.474	31.813	33.151	34.487	35.823	37.158	38.491	39.824	41.155	42.485	43.814	45.142	46.469	47.794	49.119
32.0	6.689	13.440	20.185	26.913	28.256	29.599	30.940	32.280	33.620	34.958	36.295	37.631	38.966	40.300	41.633	42.965	44.295	45.624	46.953	48.280	49.605
33.0	7.135	13.895	20.649	27.385	28.730	30.073	31.416	32.758	34.099	35.439	36.777	38.115	39.452	40.787	42.121	43.454	44.786	46.117	47.447	48.775	50.102
34.0	7.592	14.362	21.123	27.868	29.214	30.559	31.903	33.247	34.589	35.930	37.270	38.609	39.947	41.284	42.620	43.954	45.287	46.619	47.950	49.280	50.608
35.0	8.062	14.840	21.609	28.361	29.708	31.055	32.401	33.745	35.089	36.432	37.773	39.113	40.453	41.791	43.128	44.464	45.798	47.132	48.464	49.795	51.125
36.0	8.543	15.329	22.106	28.864	30.213	31.561	32.908	34.254	35.599	36.943	38.286	39.628	40.968	42.308	43.646	44.983	46.319	47.653	48.987	50.319	51.650
37.0	9.036	15.830	22.613	29.378	30.728	32.078	33.426	34.773	36.119	37.464	38.808	40.151	41.493	42.834	44.173	45.512	46.849	48.185	49.519	50.853	52.185
38.0	9.539	16.340	23.130	29.902	31.253	32.604	33.953	35.302	36.649	37.995	39.341	40.685	42.028	43.370	44.710	46.050	47.388	48.725	50.061	51.395	52.729
39.0	10.054	16.862	23.658	30.435	31.788	33.139	34.490	35.840	37.188	38.536	39.882	41.227	42.571	43.914	45.256	46.597	47.936	49.274	50.611	51.947	53.281
40.0	10.579	17.393	24.195	30.978	32.332	33.685	35.036	36.387	37.737	39.085	40.433	41.779	43.124	44.468	45.811	47.153	48.493	49.832	51.170	52.507	53.843

Table XXVI

Salinity as a function of specific volume anomaly $\delta(S,t,0)$

TEMP. °C	SPECIFIC VOLUME ANOMALY																
	−400.	−300.	−200.	−100.	0.	100.	200.	300.	400.	500.	600.	700.	800.	900.	1000.	1100.	1200.
−2.0····	40 112	38 806	37 502	36.201	34.901	33 604	32.309	31.016	29.726	28.438	27.152	25.869	24.588	23.310	22.034	20 760	19 490
−1.0····	40.174	38.863	37.554	36 247	34.942	33.639	32.339	31.041	29.745	28 451	27.160	25.871	24 585	23.301	22.019	20 740	19 464
0.0····	40 253	38 937	37 622	36 310	35.000	33 692	32.386	31.083	29.782	28.483	27.186	25 892	24.600	23.311	22 024	20.740	19 458
1.0····	40.349	39.027	37.708	36.391	35.075	33 763	32.452	31.143	29.837	28.533	27.231	25.932	24.635	23 340	22.048	20 758	19.471
2.0····	40 460	39.134	37 810	36 488	35.168	33 850	32.534	31.221	29 910	28.601	27.294	25.989	24.687	23 387	22 090	20.795	19 503
3.0····	40 588	39 257	37 928	36 602	35.277	33.954	32.634	31.316	30 000	28.686	27.374	26.065	24.758	23 453	22.151	20 851	19 553
4.0····	40 731	39.396	38.063	36.731	35 402	34.075	32.750	31.427	30.106	28 788	27.471	26.157	24 846	23.536	22.229	20 924	19 622
5.0····	40 890	39.550	38.212	36.877	35.543	34.212	32.882	31.555	30.230	28.907	27 586	26.267	24.951	23 637	22 325	21.015	19 709
6.0····	41 063	39 719	38 378	37.038	35.700	34.364	33.030	31.699	30.369	29.042	27 717	26.394	25.073	23 754	22 438	21.124	19 812
7.0····	41.251	39.904	38 558	37.214	35.872	34.532	33.194	31.858	30.525	29.193	27.864	26.536	25.211	23.888	22.568	21 249	19 933
8.0····	41 454	40.102	38.753	37.405	36.059	34.715	33.373	32.033	30.696	29.360	28.026	26.695	25.366	24.039	22.714	21 391	20 071
9.0····	41.671	40.315	38.962	37.610	36.261	34.913	33.567	32.224	30 882	29.542	28.205	26.869	25.536	24.205	22.876	21 550	20.225
10.0····	41.901	40.542	39.185	37.830	36.477	35.125	33.776	32.429	31.083	29.740	28.399	27 059	25.722	24.387	23.054	21 724	20.396
11.0····	42.146	40 783	39.423	38.064	36.707	35.352	33.999	32.648	31.299	29.952	28 607	27 264	25 923	24.585	23 248	21.914	20.582
12.0····	42 403	41 037	39 674	38.311	36.951	35.593	34.237	32.882	31.530	30.179	28.831	27.484	26.140	24.797	23.457	22.119	20.783
13.0····	42 674	41.305	39.938	38.573	37 209	35.847	34.488	33.130	31.774	30.420	29.068	27.718	26.371	25.025	23.681	22.340	21 000
14.0····	42 958	41 586	40 215	38.847	37.480	36.116	34.753	33.392	32.033	30.675	29.320	27.967	26.616	25.267	23 920	22.575	21 232
15.0····	43 254	41 879	40 506	39.134	37.765	36.397	35.031	33.667	32 305	30.944	29.586	28 230	26.875	25.523	24 173	22.824	21 478
16.0····	43 563	42 185	40.809	39.435	38.062	36.691	35.323	33 955	32.590	31.227	29 866	28 506	27.149	25.793	24 440	23.088	21 739
17.0····	43 884	42 504	41.125	39.748	38 372	36.999	35.627	34.257	32.889	31 523	30 159	28.796	27.436	26.077	24.721	23.366	22.014
18.0····	44 217	42 834	41 453	40.073	38.695	37.319	35.944	34.572	33.201	31 832	30 465	29.100	27.736	26.375	25.016	23.658	22.303
19.0····	44.563	43 177	41 793	40.411	39.030	37.651	36 274	34.899	33.525	32.154	30.784	29.416	28.050	26.686	25.324	23 964	22.606
20.0····	44 920	43.532	42.145	40.760	39.377	37.996	36 616	35.239	33.863	32.488	31.116	29.745	28.377	27.010	25 645	24.282	22.922
21.0····	45.289	43 898	42.509	41.122	39.737	38.353	36 971	35.591	34.212	32.835	31.461	30.088	28.716	27.347	25.980	24.614	23.251
22.0····	45 669	44.276	42 885	41.496	40.108	38.722	37.337	35.955	34.574	33.195	31 818	30.442	29.068	27.697	26.327	24.959	23.593
23.0····	46 060	44.666	43 272	41.881	40.491	39.102	37 716	36.331	34 948	33.566	32.187	30.809	29.433	28.059	26.687	25.316	23 948
24.0····	46.463	45.066	43.671	42 277	40.885	39.495	38.106	36.719	35.334	33.950	32.568	31.188	29.810	28.434	27.059	25.686	24.316
25.0····	46 877	45.478	44.081	42.685	41.291	39.898	38 508	37.118	35.731	34.345	32.961	31.579	30.199	28.820	27.443	26.069	24.696
26.0····	47.302	45.901	44.502	43.104	41.708	40.313	38.921	37.529	36.140	34 752	33.366	31.982	30.600	29.219	27.840	26 463	25.088
27.0····	47.737	46.334	44.933	43.534	42.136	40.739	39.345	37.952	36.560	35.171	33.783	32.396	31.012	29.629	28.248	26.869	25.492
28.0····	48 183	46.779	45 376	43.974	42 575	41.177	39.780	38.385	36.992	35.600	34.210	32.822	31.436	30 051	28.669	27 288	25.909
29.0····	48 640	47 234	45 829	44.426	43.024	41.624	40.226	38.829	37.434	36.041	34.649	33.259	31.871	30 485	29.100	27.717	26.336
30.0····	49 107	47 699	46.293	44.888	43.485	42 083	40.683	39.285	37.888	36.493	35.099	33.708	32.318	30.930	29.543	28.159	26.776
31.0····	49 584	48 175	46.767	45 360	43.955	42.552	41.151	39.751	38.352	36.955	35.560	34.167	32.775	31.385	29.997	28.611	27.226
32.0····	50.071	48 660	47.251	45 843	44 437	43.032	41.629	40.227	38.827	37.429	36.032	34.637	33.244	31.852	30.462	29.074	27 688
33.0····	50.569	49 156	47 745	46.336	44 928	43.521	42.117	40.714	39.312	37.912	36.514	35.118	33.723	32.330	30.938	29.549	28.161
34.0····	51 076	49.662	48 249	46 838	45.429	44.021	42.615	41.210	39.808	38.406	37.006	35.608	34.212	32.818	31.425	30 034	28.644
35.0····	51 592	50 177	48.763	47 351	45.940	44.531	43.123	41.717	40.313	38 910	37.509	36.110	34.712	33.316	31.922	30.529	29 138
36.0····	52 118	50 701	49 286	47 873	46.461	45.050	43.641	42.234	40.828	39.424	38.022	36.621	35.222	33.824	32.429	31.035	29.643
37.0····	52 653	51 235	49 819	48.404	46.991	45.579	44.169	42 760	41.353	39.948	38.544	37.142	35.742	34.343	32.946	31.551	30.157
38.0····	53 198	51 778	50.361	48.945	47.530	46.117	44.706	43.296	41 888	40 481	39.076	37.673	36.271	34.871	33.473	32.076	30.681
39.0····	53.751	52.330	50.912	49.494	48.079	46.664	45.252	43.841	42.431	41.023	39.617	38.213	36.810	35.409	34.009	32.611	31.215
40.0····	54 312	52.891	51 471	50.053	48.636	47 220	45.807	44.394	42.984	41.575	40.168	38.762	37.358	35.956	34.555	33.156	31.759

Table XXVII (a)

Salinity as a function of density anomaly $\gamma(S,t,1000)$

1000 DECIBARS

TEMP. °C	DENSITY ANOMALY 29.5	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0
−2.0	30.703	31.325	31.946	32.568	33.189	33.810	34.431	35.052	35.673	36.293	36.914	37.534	38.155	38.775	39.395	40.014
−1.5	30.732	31.355	31.978	32.600	33.223	33.845	34.467	35.090	35.712	36.333	36.955	37.577	38.198	38.819	39.441	40.062
−1.0	30.765	31.390	32.013	32.637	33.261	33.885	34.508	35.131	35.755	36.378	37.000	37.623	38.246	38.868	39.491	40.113
−0.5	30.803	31.428	32.053	32.678	33.303	33.928	34.553	35.177	35.802	36.426	37.050	37.674	38.298	38.921	39.545	40.168
0.0	30.845	31.471	32.098	32.724	33.350	33.976	34.602	35.227	35.853	36.478	37.103	37.729	38.353	38.978	39.603	40.227
0.5	30.891	31.518	32.146	32.773	33.400	34.028	34.655	35.281	35.908	36.535	37.161	37.787	38.413	39.039	39.665	40.290
1.0	30.941	31.570	32.198	32.827	33.455	34.083	34.711	35.339	35.967	36.595	37.222	37.850	38.477	39.104	39.731	40.357
1.5	30.995	31.625	32.255	32.884	33.514	34.143	34.772	35.401	36.030	36.659	37.288	37.916	38.544	39.172	39.800	40.428
2.0	31.053	31.684	32.315	32.946	33.577	34.207	34.837	35.467	36.097	36.727	37.357	37.986	38.616	39.245	39.874	40.503
2.5	31.116	31.748	32.380	33.012	33.643	34.275	34.906	35.537	36.168	36.799	37.430	38.060	38.691	39.321	39.951	40.581
3.0	31.182	31.815	32.448	33.081	33.714	34.346	34.979	35.611	36.243	36.875	37.507	38.138	38.770	39.401	40.032	40.663
3.5	31.252	31.886	32.520	33.154	33.788	34.422	35.055	35.688	36.322	36.955	37.587	38.220	38.852	39.485	40.117	40.749
4.0	31.326	31.962	32.597	33.232	33.866	34.501	35.135	35.770	36.404	37.038	37.672	38.305	38.939	39.572	40.205	40.838
4.5	31.404	32.041	32.677	33.313	33.948	34.584	35.219	35.855	36.490	37.125	37.760	38.394	39.029	39.663	40.297	40.931
5.0	31.486	32.123	32.760	33.397	34.034	34.671	35.307	35.943	36.580	37.215	37.851	38.487	39.122	39.757	40.392	41.027
5.5	31.572	32.210	32.848	33.486	34.124	34.761	35.399	36.036	36.673	37.310	37.946	38.583	39.219	39.855	40.491	41.127
6.0	31.661	32.300	32.939	33.578	34.217	34.855	35.494	36.132	36.770	37.408	38.045	38.683	39.320	39.957	40.594	41.230
6.5	31.754	32.394	33.034	33.674	34.314	34.953	35.592	36.231	36.870	37.509	38.148	38.786	39.424	40.062	40.700	41.337
7.0	31.851	32.492	33.133	33.773	34.414	35.054	35.694	36.334	36.974	37.614	38.253	38.893	39.532	40.170	40.809	41.447
7.5	31.951	32.593	33.235	33.876	34.518	35.159	35.800	36.441	37.082	37.722	38.363	39.003	39.643	40.282	40.922	41.561
8.0	32.055	32.698	33.340	33.983	34.625	35.267	35.909	36.551	37.193	37.834	38.475	39.116	39.757	40.398	41.038	41.678
8.5	32.162	32.806	33.450	34.093	34.736	35.379	36.022	36.665	37.307	37.949	38.591	39.233	39.875	40.516	41.157	41.798
9.0	32.273	32.918	33.562	34.207	34.851	35.495	36.138	36.782	37.425	38.068	38.711	39.354	39.996	40.638	41.280	41.922
9.5	32.388	33.033	33.678	34.324	34.968	35.613	36.258	36.902	37.546	38.190	38.834	39.477	40.120	40.763	41.406	42.049
10.0	32.506	33.152	33.798	34.444	35.090	35.735	36.381	37.026	37.671	38.315	38.960	39.604	40.248	40.892	41.536	42.179
10.5	32.627	33.274	33.921	34.568	35.214	35.861	36.507	37.153	37.798	38.444	39.089	39.734	40.379	41.024	41.668	42.312
11.0	32.752	33.400	34.047	34.695	35.342	35.989	36.636	37.283	37.929	38.576	39.222	39.868	40.513	41.159	41.804	42.449
11.5	32.880	33.529	34.177	34.825	35.473	36.121	36.769	37.417	38.064	38.711	39.358	40.004	40.651	41.297	41.943	42.588
12.0	33.011	33.661	34.310	34.959	35.608	36.257	36.905	37.553	38.201	38.849	39.497	40.144	40.791	41.438	42.084	42.731
12.5	33.146	33.796	34.446	35.096	35.746	36.395	37.044	37.693	38.342	38.991	39.639	40.287	40.935	41.582	42.230	42.877
13.0	33.284	33.935	34.586	35.236	35.887	36.537	37.187	37.836	38.486	39.135	39.784	40.433	41.081	41.730	42.378	43.025
13.5	33.425	34.077	34.729	35.380	36.031	36.682	37.332	37.983	38.633	39.283	39.933	40.582	41.231	41.880	42.529	43.177
14.0	33.570	34.222	34.874	35.526	36.178	36.830	37.481	38.132	38.783	39.434	40.084	40.734	41.384	42.034	42.683	43.332
14.5	33.717	34.371	35.024	35.676	36.329	36.981	37.633	38.285	38.936	39.588	40.239	40.889	41.540	42.190	42.840	43.490
15.0	33.868	34.522	35.176	35.829	36.482	37.135	37.788	38.440	39.092	39.744	40.396	41.048	41.699	42.350	43.000	43.651
15.5	34.022	34.677	35.331	35.985	36.639	37.292	37.946	38.599	39.252	39.904	40.557	41.209	41.861	42.512	43.164	43.815
16.0	34.179	34.835	35.489	36.144	36.799	37.453	38.107	38.761	39.414	40.067	40.720	41.373	42.025	42.678	43.330	43.981

Table XXVII (b)

Salinity as a function of density anomaly $\gamma(S,t,2000)$

2000 DECIBARS

TEMP. °C	DENSITY ANOMALY															
	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.5	38.0	38.5	39.0	39.5	40.0	40.5	41.0	41.5
−2.0----	30.447	31 075	31.703	32.331	32.959	33.587	34.215	34 842	35.470	36 097	36 724	37.351	37.978	38.605	39.231	39.857
−1.5----	30.494	31.124	31.753	32.383	33 012	33.641	34.270	34 898	35.527	36.155	36 784	37.412	38.040	38.668	39.295	39.923
−1.0----	30 546	31.177	31.808	32.438	33.068	33.699	34.329	34.958	35.588	36.218	36.847	37.476	38.105	38.734	39.363	39.991
−0.5----	30.602	31.234	31.866	32.497	33.129	33.760	34.391	35.022	35.653	36.284	36.914	37.544	38.175	38.805	39.434	40.064
0.0----	30 662	31.295	31.928	32.561	33.193	33.825	34.458	35.090	35.722	36.353	36.985	37.616	38.248	38.879	39.510	40.140
0.5----	30.726	31.360	31.994	32.628	33.261	33 895	34.528	35 161	35.794	36.427	37.060	37.692	38.325	38.957	39.589	40.220
1.0----	30.793	31.429	32.064	32.698	33.333	33.968	34.602	35.236	35.870	36.504	37.138	37.772	38.405	39.038	39.671	40.304
1.5----	30.865	31.501	32.137	32.773	33.409	34.045	34.680	35.315	35.950	36.585	37.220	37.855	38.489	39.123	39.757	40.391
2.0----	30.940	31.578	32.215	32.852	33.488	34.125	34.762	35.398	36.034	36.670	37 306	37.941	38.577	39.212	39.847	40.482
2.5----	31.019	31.658	32.296	32.934	33.572	34.209	34.847	35 484	36.121	36.758	37.395	38.032	38.668	39.304	39.940	40.576
3.0----	31.102	31.741	32 381	33.020	33.658	34.297	34.936	35.574	36.212	36.850	37.488	38.125	38.763	39.400	40.037	40.674
3.5----	31.189	31.829	32.469	33.109	33 749	34.389	35.028	35.667	36 306	36.945	37.584	38.223	38.861	39.499	40.137	40.775
4.0----	31.279	31.920	32.561	33.202	33.843	34.484	35.124	35 764	36.404	37.044	37.684	38.323	38.963	39.602	40.241	40.879
4.5----	31.373	32 015	32.657	33.299	33.941	34.582	35.224	35 865	36.506	37.147	37.787	38.428	39.068	39.708	40.348	40.987
5.0----	31.470	32.113	32 756	33.399	34.042	34.684	35.327	35.969	36.611	37.252	37.894	38.535	39.176	39.817	40.458	41.098
5.5----	31.571	32.215	32 859	33.503	34.146	34.790	35.433	36.076	36.719	37.361	38.004	38.646	39.288	39.930	40.571	41.213
6.0----	31.675	32.320	32 965	33.610	34.254	34.899	35.543	36.187	36.830	37.474	38.117	38.760	39.403	40.046	40.688	41.331
6.5----	31.783	32.429	33.075	33.720	34.366	35.011	35.656	36.301	36.945	37.590	38.234	38.878	39.522	40.165	40.808	41.451
7.0----	31.894	32.541	33.188	33.834	34 481	35.127	35.773	36.418	37.064	37.709	38.354	38.999	39.643	40.288	40.932	41.576
7.5----	32.009	32.657	33.304	33.952	34 599	35.246	35.892	36 539	37.185	37.831	38.477	39.123	39.768	40.413	41.058	41.703
8.0----	32 127	32.776	33.424	34.072	34.720	35.368	36.016	36.663	37 310	37.957	38.604	39.250	39.896	40.542	41.188	41.833
8.5----	32.249	32 898	33.547	34.196	34 845	35.494	36 142	36.790	37 438	38.086	38.733	39.380	40.027	40.674	41.321	41.967
9.0----	32.373	33.024	33.674	34.323	34.973	35.622	36.272	36.920	37.569	38.218	38.866	39.514	40.162	40.809	41.457	42.104
9.5----	32.501	33.152	33 803	34.454	35.104	35.754	36.404	37.054	37.703	38.353	39.002	39.651	40.299	40.947	41.595	42.243
10.0----	32.633	33.285	33.936	34.587	35.239	35.890	36.540	37.191	37.841	38.491	39.141	39.790	40.440	41.089	41.737	42 386
10.5----	32.767	33.420	34.072	34.724	35.376	36.028	36.679	37.331	37 982	38.632	39.283	39.933	40.583	41.233	41.882	42.532
11.0----	32.905	33.558	34.211	34.864	35.517	36.169	36.821	37.473	38.125	38.777	39.428	40.079	40.730	41.380	42 030	42 680
11.5----	33.046	33.700	34.354	35.007	35.661	36.314	36.967	37.619	38 272	38.924	39.576	40.228	40.879	41.530	42.181	42 832
12.0----	33 190	33.844	34.499	35.153	35.807	36.461	37.115	37.768	38.422	39.074	39.727	40.379	41.032	41.684	42.335	42.987
12.5----	33.337	33.992	34.648	35.303	35.957	36.612	37.266	37 920	38.574	39.228	39.881	40.534	41.187	41.840	42.492	43 144
13.0----	33.487	34.143	34 799	35.455	36.110	36.766	37.421	38.075	38 730	39.384	40.038	40.692	41.345	41.999	42 652	43.304
13.5----	33.640	34 297	34.954	35.610	36.266	36.922	37.578	38.233	38.888	39.543	40.198	40.852	41.507	42.160	42.814	43.467
14.0----	33.796	34.454	35.111	35.768	36.425	37.082	37.738	38.394	39.050	39.706	40.361	41.016	41.671	42.325	42.979	43 633
14.5----	33.956	34.614	35.272	35.929	36.587	37.244	37.901	38.558	39.214	39.871	40.526	41.182	41.838	42.493	43 148	43.802
15.0----	34.118	34.777	35.435	36.094	36.752	37.410	38.067	38.725	39.382	40.038	40.695	41.351	42.007	42.663	43.319	43 974
15.5----	34.283	34.942	35.602	36.261	36.919	37.578	38.236	38.894	39.552	40.209	40.866	41.523	42.180	42.836	43.492	44.148
16.0----	34.451	35.111	35.771	36.431	37.090	37.749	38.408	39.066	39.725	40.383	41.040	41.698	42.355	43.012	43.669	44.325

Table XXVII (c-d)

Salinity as a function of density anomaly $\gamma(S,t,4000)$ and $\gamma(S,t,6000)$

4000 DECIBARS

TEMP. °C	DENSITY ANOMALY												
	45.00	45.25	45.50	45.75	46.00	46.25	46.50	46.75	47.00	47.25	47.50	47.75	48.00
−2.0----	32.875	33.196	33.516	33.837	34.157	34.477	34 797	35.118	35.438	35.758	36.078	36.398	36.718
−1.5----	32.964	33.285	33.606	33.927	34.248	34.569	34 889	35.210	35.531	35.851	36 172	36.492	36.813
−1.0----	33.056	33.378	33.699	34.021	34.342	34.663	34.985	35.306	35.627	35.948	36.269	36.590	36.911
−0.5----	33.152	33 474	33.796	34.118	34.440	34.762	35.083	35.405	35.727	36.048	36.370	36.691	37.013
0.0----	33.251	33.574	33.896	34.219	34.541	34.863	35.185	35.508	35.830	36.152	36.474	36.796	37.118
0.5----	33.354	33.677	34.000	34.322	34.645	34.968	35.291	35.613	35.936	36 259	36.581	36.904	37.226
1.0----	33.460	33.783	34.106	34.430	34.753	35.076	35.399	35.723	36.046	36.369	36.692	37.015	37.337
1.5----	33.569	33.892	34.216	34.540	34.864	35.188	35 511	35.835	36.158	36.482	36.805	37.129	37.452
2.0----	33.681	34.005	34.330	34.654	34.978	35.302	35.626	35.950	36.274	36.598	36.922	37.246	37.570
2.5----	33.796	34.121	34.446	34.771	35.095	35.420	35.745	36 069	36 393	36.718	37.042	37.366	37.691
3.0----	33.915	34.240	34.566	34.891	35.216	35.541	35.866	36.191	36.516	36.841	37.165	37 490	37.815
3.5----	34.037	34.363	34.688	35 014	35.339	35.665	35.990	36.316	36.641	36.966	37.291	37.617	37.942
4.0----	34 162	34 488	34.814	35 140	35.466	35.792	36.118	36.444	36.769	37.095	37.421	37.746	38.072
4.5----	34.290	34.617	34.943	35.269	35.596	35.922	36 248	36.575	36.901	37.227	37.553	37.879	38.205
5.0----	34.421	34 748	35.075	35.402	35.729	36.055	36 382	36 709	37.035	37.362	37.688	38.014	38.341
5.5----	34.555	34 883	35.210	35.537	35.864	36.191	36.519	36.846	37 173	37.499	37.826	38.153	38.480
6.0----	34.692	35 020	35.348	35.675	36.003	36.331	36 658	36.985	37.313	37.640	37.967	38.294	38.622
6.5----	34.832	35 161	35.489	35.817	36.145	36.473	36.800	37.128	37.456	37.784	38.111	38.439	38.766
7.0----	34.975	35.304	35.632	35.961	36.289	36.618	36.946	37.274	37.602	37.930	38.258	38.586	38.914
7.5----	35.121	35.450	35.779	36.108	36.437	36.765	37.094	37.422	37.751	38.079	38.408	38 736	39.064
8.0----	35.270	35.600	35.929	36.258	36.587	36.916	37.245	37.574	37.903	38.231	38.560	38.889	39.217
8.5----	35.422	35.752	36.081	36.411	36.740	37.069	37.399	37.728	38.057	38 386	38.715	39.044	39.373
9.0----	35.576	35.906	36.236	36 566	36.896	37.226	37 555	37.885	38.215	38.544	38.873	39.203	39.532
9.5----	35 734	36.064	36.394	36.725	37.055	37.385	37 715	38.045	38.375	38.704	39 034	39.364	39.693
10.0----	35.894	36.224	36.555	36.886	37.216	37.547	37.877	38 207	38.537	38.868	39.198	39.528	39.858
10.5----	36 057	36.388	36.719	37.049	37.380	37.711	38 042	38.372	38 703	39.033	39.364	39.694	40.024
11.0----	36.222	36.554	36.885	37.216	37.547	37.878	38.209	38.540	38 871	39.202	39.532	39.863	40.194
11.5----	36.390	36.722	37.054	37.385	37.717	38.048	38.379	38.711	39.042	39.373	39.704	40.035	40.366
12.0----	36.561	36.893	37.225	37.557	37.889	38 221	38.552	38.884	39.215	39.547	39.878	40.209	40.540
12.5----	36.735	37.067	37.400	37.732	38.064	38 396	38 728	39.059	39.391	39.723	40.055	40 386	40.718
13.0----	36.911	37.244	37.576	37.909	38.241	38 573	38 906	39.238	39.570	39.902	40.234	40.566	40.897
13.5----	37.090	37.423	37.756	38.088	38.421	38 754	39.086	39.419	39.751	40.083	40.416	40.748	41.080
14.0----	37.272	37.605	37 938	38.271	38.604	38.937	39.269	39.602	39.935	40.267	40.600	40.932	41.265

6000 DECIBARS

TEMP. °C	DENSITY ANOMALY										
	55.00	55.10	55.20	55.30	55.40	55.50	55.60	55.70	55.80	55.90	56.00
−2.0----	34.602	34.733	34.863	34.994	35 124	35 255	35 385	35.516	35.646	35.777	35.907
−1.5----	34.728	34.858	34.989	35.120	35.250	35.381	35.512	35.643	35 773	35.904	36.035
−1.0----	34.856	34.987	35.118	35.249	35.379	35.510	35.641	35.772	35 903	36.034	36 165
−0.5----	34 987	35 118	35 249	35.380	35.511	35.642	35.773	35.904	36.035	36.166	36.297
0.0----	35.121	35.252	35.384	35.515	35.646	35 777	35.908	36.040	36.171	36 302	36.433
0.5----	35.258	35 389	35.521	35.652	35.784	35.915	36.046	36.178	36.309	36.440	36.572
1.0----	35.398	35.529	35.661	35.792	35.924	36 055	36 187	36.319	36.450	36 582	36.713
1.5----	35.540	35.672	35.804	35.935	36.067	36.199	36.330	36.462	36.594	36.726	36.857
2.0----	35.685	35.817	35.949	36 081	36 213	36.345	36.477	36.608	36 740	36 872	37 004
2.5----	35.833	35 965	36.097	36.229	36.361	36.493	36 625	36.758	36.890	37.022	37.153
3.0----	35.984	36.116	36 248	36.380	36.513	36.645	36 777	36.909	37.041	37.174	37.306
3.5----	36 137	36 269	36 402	36.534	36.667	36 799	36 931	37 064	37 196	37 328	37.460
4.0----	36.293	36.426	36 558	36 691	36.823	36 956	37.088	37.221	37.353	37.485	37.618
4.5----	36 452	36 584	36 717	36.850	36.982	37 115	37 247	37 380	37.513	37.645	37.778
5.0----	36 613	36.746	36 878	37 011	37 144	37 277	37.409	37 542	37 675	37.808	37 940

Table XXVIII

Density anomaly $\gamma(S,t,0)$ conversion to anomaly of specific volume $v(S,t,0)$

	ANOMALY OF SPECIFIC VOLUME v(S,t,0)									
γ(S,t,0)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1.0	99.001	98.901	98.801	98.702	98.602	98.502	98.403	98.303	98.203	98.104
2.0	98.004	97.904	97.805	97.705	97.606	97.506	97.407	97.307	97.208	97.108
3.0	97.009	96.910	96.810	96.711	96.612	96.512	96.413	96.314	96.214	96.115
4.0	96.016	95.917	95.818	95.718	95.619	95.520	95.421	95.322	95.223	95.124
5.0	95.025	94.926	94.827	94.728	94.629	94.530	94.431	94.332	94.233	94.135
6.0	94.036	93.937	93.838	93.739	93.641	93.542	93.443	93.345	93.246	93.147
7.0	93.049	92.950	92.851	92.753	92.654	92.556	92.457	92.359	92.260	92.162
8.0	92.064	91.965	91.867	91.768	91.670	91.572	91.473	91.375	91.277	91.178
9.0	91.080	90.982	90.884	90.786	90.688	90.589	90.491	90.393	90.295	90.197
10.0	90.099	90.001	89.903	89.805	89.707	89.609	89.511	89.413	89.315	89.218
11.0	89.120	89.022	88.924	88.826	88.728	88.631	88.533	88.435	88.338	88.240
12.0	88.142	88.045	87.947	87.849	87.752	87.654	87.557	87.459	87.362	87.264
13.0	87.167	87.069	86.972	86.875	86.777	86.680	86.582	86.485	86.388	86.291
14.0	86.193	86.096	85.999	85.902	85.804	85.707	85.610	85.513	85.416	85.319
15.0	85.222	85.125	85.028	84.931	84.834	84.737	84.640	84.543	84.446	84.349
16.0	84.252	84.155	84.058	83.961	83.865	83.768	83.671	83.574	83.478	83.381
17.0	83.284	83.187	83.091	82.994	82.898	82.801	82.704	82.608	82.511	82.415
18.0	82.318	82.222	82.125	82.029	81.932	81.836	81.740	81.643	81.547	81.451
19.0	81.354	81.258	81.162	81.065	80.969	80.873	80.777	80.681	80.584	80.488
20.0	80.392	80.296	80.200	80.104	80.008	79.912	79.816	79.720	79.624	79.528
21.0	79.432	79.336	79.240	79.144	79.048	78.953	78.857	78.761	78.665	78.569
22.0	78.474	78.378	78.282	78.187	78.091	77.995	77.900	77.804	77.708	77.613
23.0	77.517	77.422	77.326	77.230	77.135	77.040	76.944	76.849	76.753	76.658
24.0	76.563	76.467	76.372	76.276	76.181	76.086	75.991	75.895	75.800	75.705
25.0	75.610	75.515	75.419	75.324	75.229	75.134	75.039	74.944	74.849	74.754
26.0	74.659	74.564	74.469	74.374	74.279	74.184	74.089	73.994	73.899	73.805
27.0	73.710	73.615	73.520	73.425	73.331	73.236	73.141	73.047	72.952	72.857
28.0	72.763	72.668	72.573	72.479	72.384	72.290	72.195	72.101	72.006	71.912
29.0	71.817	71.723	71.628	71.534	71.440	71.345	71.251	71.157	71.062	70.968
30.0	70.874	70.780	70.685	70.591	70.497	70.403	70.309	70.214	70.120	70.026
31.0	69.932	69.838	69.744	69.650	69.556	69.462	69.368	69.274	69.180	69.086
32.0	68.992	68.898	68.805	68.711	68.617	68.523	68.429	68.336	68.242	68.148
33.0	68.054	67.961	67.867	67.773	67.680	67.586	67.492	67.399	67.305	67.211

Table XXIX

Anomaly of specific volume v(S,t,0) conversion to density anomaly γ(S,t,0) [kg/m^3]

v(S,t,0)	DENSITY ANOMALY γ(S,t,0)									
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
67.0----	34.126	34.019	33.912	33.805	33.699	33.592	33.485	33.378	33.271	33.165
68.0----	33.058	32.951	32.844	32.738	32.631	32.525	32.418	32.311	32.205	32.098
69.0----	31.992	31.885	31.779	31.672	31.566	31.459	31.353	31.247	31.141	31.034
70.0----	30.928	30.822	30.715	30.609	30.503	30.397	30.291	30.184	30.078	29.972
71.0----	29.866	29.760	29.654	29.548	29.442	29.336	29.230	29.124	29.018	28.912
72.0----	28.807	28.701	28.595	28.489	28.383	28.278	28.172	28.066	27.961	27.855
73.0----	27.749	27.644	27.538	27.432	27.327	27.221	27.116	27.010	26.905	26.799
74.0----	26.694	26.589	26.483	26.378	26.273	26.167	26.062	25.957	25.851	25.746
75.0----	25.641	25.536	25.431	25.326	25.220	25.115	25.010	24.905	24.800	24.695
76.0----	24.590	24.485	24.380	24.275	24.170	24.066	23.961	23.856	23.751	23.646
77.0----	23.541	23.437	23.332	23.227	23.123	23.018	22.913	22.809	22.704	22.599
78.0----	22.495	22.390	22.286	22.181	22.077	21.972	21.868	21.764	21.659	21.555
79.0----	21.450	21.346	21.242	21.138	21.033	20.929	20.825	20.721	20.616	20.512
80.0----	20.408	20.304	20.200	20.096	19.992	19.888	19.784	19.680	19.576	19.472
81.0----	19.368	19.264	19.160	19.056	18.953	18.849	18.745	18.641	18.537	18.434
82.0----	18.330	18.226	18.123	18.019	17.915	17.812	17.708	17.605	17.501	17.397
83.0----	17.294	17.191	17.087	16.984	16.880	16.777	16.673	16.570	16.467	16.363
84.0----	16.260	16.157	16.054	15.950	15.847	15.744	15.641	15.538	15.435	15.331
85.0----	15.228	15.125	15.022	14.919	14.816	14.713	14.610	14.507	14.405	14.302
86.0----	14.199	14.096	13.993	13.890	13.787	13.685	13.582	13.479	13.377	13.274
87.0----	13.171	13.069	12.966	12.863	12.761	12.658	12.556	12.453	12.351	12.248
88.0----	12.146	12.043	11.941	11.839	11.736	11.634	11.531	11.429	11.327	11.225
89.0----	11.122	11.020	10.918	10.816	10.714	10.611	10.509	10.407	10.305	10.203
90.0----	10.101	9.999	9.897	9.795	9.693	9.591	9.489	9.387	9.285	9.184
91.0----	9.082	8.980	8.878	8.776	8.675	8.573	8.471	8.369	8.268	8.166
92.0----	8.065	7.963	7.861	7.760	7.658	7.557	7.455	7.354	7.252	7.151
93.0----	7.049	6.948	6.847	6.745	6.644	6.543	6.441	6.340	6.239	6.137
94.0----	6.036	5.935	5.834	5.733	5.632	5.530	5.429	5.328	5.227	5.126
95.0----	5.025	4.924	4.823	4.722	4.621	4.520	4.419	4.319	4.218	4.117
96.0----	4.016	3.915	3.814	3.714	3.613	3.512	3.412	3.311	3.210	3.110
97.0----	3.009	2.908	2.808	2.707	2.607	2.506	2.406	2.305	2.205	2.104
98.0----	2.004	1.904	1.803	1.703	1.603	1.502	1.402	1.302	1.201	1.101
99.0----	1.001	0.901	0.801	0.701	0.600	0.500	0.400	0.300	0.200	0.100
100.0----	0.000	−0.100	−0.200	−0.300	−0.400	−0.500	−0.600	−0.700	−0.799	−0.899
101.0----	−0.999	−1.099	−1.199	−1.298	−1.398	−1.498	−1.597	−1.697	−1.797	−1.896
102.0----	−1.996	−2.096	−2.195	−2.295	−2.394	−2.494	−2.593	−2.693	−2.792	−2.892
103.0----	−2.991	−3.090	−3.190	−3.289	−3.388	−3.488	−3.587	−3.686	−3.786	−3.885
104.0----	−3.984	−4.083	−4.182	−4.282	−4.381	−4.480	−4.579	−4.678	−4.777	−4.876
105.0----	−4.975	−5.074	−5.173	−5.272	−5.371	−5.470	−5.569	−5.668	−5.767	−5.865
106.0----	−5.964	−6.063	−6.162	−6.261	−6.359	−6.458	−6.557	−6.655	−6.754	−6.853
107.0----	−6.951	−7.050	−7.149	−7.247	−7.346	−7.444	−7.543	−7.641	−7.740	−7.838
108.0----	−7.937	−8.035	−8.133	−8.232	−8.330	−8.428	−8.527	−8.625	−8.723	−8.822

Table XXX

Salinity as a function of anomaly of specific volume v(S,t,0)

TEMP. °C	ANOMALY OF SPECIFIC VOLUME v(S,t,0)																				
	107.	105.	103.	101.	99.	97.	95.	93.	91.	89.	87.	85.	83.	81.	79.	77.	75.	73.	71.	69.	67.
−2.0----	−8.153	−5.691	−3.242	−0.808	1.611	4.058	6.523	9.005	11.501	14.009	16.529	19.061	21.603	24.156	26.718	29.290	31.872	34.463	37.062	39.671	42.288
−1.0----	−8.315	−5.840	−3.377	−0.929	1.503	3.960	6.438	8.931	11.438	13.958	16.490	19.033	21.587	24.150	26.724	29.307	31.900	34.501	37.112	39.731	42.358
0.0----	−8.453	−5.965	−3.489	−1.029	1.415	3.885	6.374	8.879	11.397	13.928	16.471	19.025	21.590	24.164	26.749	29.343	31.946	34.558	37.178	39.808	42.446
1.0----	−8.567	−6.068	−3.579	−1.106	1.350	3.830	6.330	8.846	11.376	13.918	16.472	19.036	21.612	24.197	26.792	29.396	32.009	34.631	37.262	39.902	42.549
2.0----	−8.659	−6.148	−3.648	−1.163	1.305	3.796	6.307	8.834	11.374	13.927	16.492	19.067	21.652	24.248	26.853	29.467	32.090	34.722	37.363	40.012	42.669
3.0----	−8.729	−6.206	−3.695	−1.198	1.280	3.783	6.304	8.842	11.392	13.956	16.530	19.115	21.711	24.316	26.931	29.555	32.188	34.830	37.480	40.138	42.804
4.0----	−8.776	−6.243	−3.721	−1.213	1.276	3.789	6.321	8.869	11.430	14.003	16.587	19.182	21.788	24.403	27.027	29.661	32.303	34.953	37.612	40.280	42.955
5.0----	−8.801	−6.258	−3.726	−1.208	1.292	3.815	6.357	8.915	11.486	14.069	16.663	19.267	21.882	24.506	27.140	29.782	32.433	35.093	37.761	40.437	43.121
6.0----	−8.806	−6.253	−3.710	−1.183	1.327	3.860	6.412	8.980	11.560	14.153	16.756	19.370	21.994	24.627	27.269	29.920	32.580	35.248	37.925	40.609	43.301
7.0----	−8.789	−6.227	−3.675	−1.139	1.381	3.924	6.486	9.063	11.653	14.254	16.867	19.489	22.122	24.764	27.415	30.074	32.743	35.419	38.103	40.796	43.496
8.0----	−8.752	−6.181	−3.620	−1.075	1.454	4.007	6.578	9.164	11.763	14.373	16.994	19.626	22.267	24.917	27.576	30.244	32.920	35.605	38.297	40.997	43.705
9.0----	−8.695	−6.115	−3.546	−0.993	1.545	4.107	6.688	9.283	11.890	14.509	17.139	19.778	22.428	25.086	27.753	30.429	33.113	35.805	38.505	41.213	43.928
10.0----	−8.618	−6.030	−3.454	−0.893	1.655	4.226	6.815	9.419	12.035	14.662	17.300	19.947	22.605	25.271	27.946	30.629	33.320	36.020	38.727	41.442	44.164
11.0----	−8.522	−5.927	−3.343	−0.774	1.782	4.362	6.960	9.572	12.196	14.831	17.477	20.132	22.797	25.471	28.153	30.844	33.542	36.249	38.963	41.685	44.414
12.0----	−8.407	−5.805	−3.213	−0.639	1.926	4.515	7.121	9.741	12.373	15.016	17.670	20.332	23.005	25.686	28.375	31.073	33.779	36.492	39.213	41.941	44.677
13.0----	−8.274	−5.664	−3.067	−0.485	2.088	4.685	7.299	9.927	12.567	15.217	17.878	20.548	23.227	25.915	28.612	31.316	34.029	36.749	39.476	42.211	44.953
14.0----	−8.122	−5.506	−2.902	−0.316	2.266	4.872	7.494	10.129	12.776	15.434	18.102	20.779	23.465	26.160	28.863	31.574	34.293	37.019	39.753	42.494	45.242
15.0----	−7.953	−5.331	−2.721	−0.130	2.461	5.074	7.704	10.347	13.001	15.665	18.340	21.024	23.717	26.418	29.127	31.845	34.570	37.302	40.042	42.789	45.543
16.0----	−7.766	−5.138	−2.523	0.072	2.672	5.293	7.930	10.580	13.241	15.912	18.593	21.284	23.983	26.690	29.406	32.129	34.860	37.599	40.344	43.097	45.857
17.0----	−7.562	−4.929	−2.309	0.290	2.899	5.528	8.171	10.828	13.496	16.174	18.861	21.558	24.263	26.976	29.698	32.427	35.164	37.908	40.659	43.417	46.182
18.0----	−7.341	−4.704	−2.079	0.525	3.141	5.777	8.428	11.091	13.765	16.449	19.143	21.845	24.557	27.276	30.003	32.738	35.480	38.230	40.986	43.750	46.520
19.0----	−7.104	−4.462	−1.834	0.775	3.399	6.042	8.699	11.369	14.049	16.739	19.439	22.147	24.864	27.589	30.321	33.062	35.809	38.564	41.326	44.094	46.870
20.0----	−6.851	−4.205	−1.573	1.041	3.672	6.322	8.986	11.661	14.347	17.043	19.748	22.462	25.184	27.915	30.653	33.398	36.151	38.910	41.677	44.451	47.231
21.0----	−6.582	−3.932	−1.297	1.321	3.960	6.616	9.286	11.967	14.659	17.361	20.071	22.790	25.518	28.253	30.996	33.747	36.504	39.269	42.040	44.818	47.603
22.0----	−6.297	−3.644	−1.006	1.617	4.263	6.925	9.601	12.287	14.985	17.692	20.407	23.132	25.864	28.605	31.353	34.108	36.870	39.639	42.415	45.198	47.987
23.0----	−5.998	−3.342	−0.702	1.927	4.580	7.248	9.929	12.621	15.324	18.036	20.757	23.486	26.223	28.968	31.721	34.481	37.248	40.021	42.802	45.589	48.382
24.0----	−5.683	−3.025	−0.383	2.252	4.911	7.585	10.271	12.969	15.676	18.393	21.119	23.853	26.595	29.344	32.102	34.866	37.637	40.415	43.200	45.991	48.789
25.0----	−5.354	−2.694	−0.051	2.591	5.256	7.935	10.627	13.329	16.042	18.763	21.494	24.232	26.979	29.733	32.494	35.262	38.038	40.820	43.609	46.404	49.206
26.0----	−5.011	−2.349	0.294	2.944	5.614	8.299	10.995	13.703	16.420	19.146	21.881	24.624	27.374	30.133	32.898	35.671	38.450	41.236	44.029	46.828	49.634
27.0----	−4.654	−1.990	0.653	3.310	5.986	8.676	11.377	14.089	16.811	19.541	22.280	25.027	27.782	30.544	33.314	36.091	38.874	41.664	44.460	47.263	50.072
28.0----	−4.283	−1.618	1.027	3.690	6.371	9.066	11.772	14.488	17.214	19.949	22.692	25.443	28.202	30.968	33.741	36.521	39.308	42.102	44.902	47.708	50.521
29.0----	−3.899	−1.234	1.415	4.084	6.770	9.469	12.179	14.899	17.629	20.368	23.115	25.870	28.633	31.402	34.180	36.963	39.754	42.551	45.355	48.165	50.981
30.0----	−3.501	−0.837	1.815	4.490	7.181	9.884	12.598	15.323	18.057	20.800	23.550	26.309	29.075	31.848	34.629	37.416	40.210	43.011	45.818	48.631	51.450
31.0----	−3.092	−0.428	2.229	4.909	7.604	10.312	13.030	15.759	18.496	21.242	23.997	26.759	29.528	32.305	35.089	37.880	40.677	43.481	46.291	49.108	51.930
32.0----	−2.669	−0.007	2.656	5.341	8.040	10.751	13.474	16.206	18.947	21.697	24.455	27.220	29.993	32.773	35.560	38.354	41.155	43.962	46.775	49.594	52.420
33.0----	−2.234	0.426	3.095	5.784	8.488	11.203	13.929	16.665	19.409	22.162	24.924	27.692	30.468	33.252	36.042	38.839	41.642	44.452	47.269	50.091	52.920
34.0----	−1.788	0.872	3.547	6.240	8.948	11.667	14.396	17.135	19.883	22.639	25.403	28.175	30.954	33.741	36.534	39.334	42.140	44.953	47.772	50.597	53.429
35.0----	−1.330	1.330	4.011	6.708	9.419	12.142	14.874	17.616	20.367	23.127	25.894	28.669	31.451	34.240	37.036	39.839	42.648	45.464	48.285	51.114	53.948
36.0----	−0.861	1.801	4.486	7.188	9.902	12.628	15.364	18.109	20.863	23.625	26.395	29.172	31.957	34.749	37.548	40.354	43.165	45.984	48.808	51.639	54.476
37.0----	−0.382	2.284	4.973	7.678	10.396	13.125	15.864	18.612	21.369	24.133	26.906	29.686	32.474	35.269	38.070	40.878	43.693	46.514	49.341	52.174	55.013
38.0----	0.106	2.779	5.472	8.181	10.901	13.633	16.375	19.125	21.885	24.652	27.428	30.210	33.000	35.798	38.602	41.412	44.229	47.052	49.882	52.718	55.560
39.0----	0.607	3.285	5.982	8.693	11.417	14.152	16.896	19.649	22.411	25.181	27.959	30.744	33.537	36.336	39.142	41.955	44.775	47.600	50.432	53.270	56.115
40.0----	1.119	3.802	6.502	9.217	11.943	14.680	17.427	20.183	22.947	25.720	28.500	31.287	34.082	36.884	39.692	42.507	45.329	48.157	50.991	53.832	56.678

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