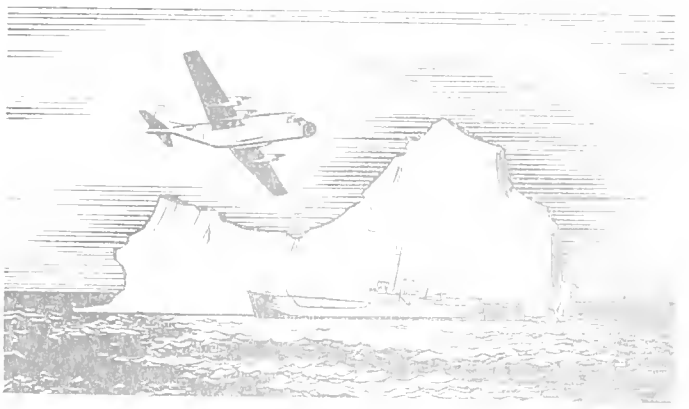
UNITED STATES COAST GUARD

OCEANOGRAPHIC REPORT No. 11

CG 373-11

OCEANOGRAPHY OF THE GRAND BANKS REGION OF NEWFOUNDLAND IN 1965



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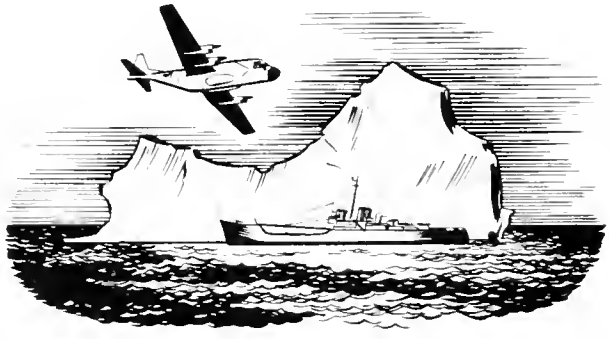

UNITED STATES COAST GUARD OCEANOGRAPHIC UNIT

REPORT No. 11 CG 373-11

OCEANOGRAPHY OF THE GRAND BANKS REGION OF NEWFOUNDLAND IN 1965

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Abstract

Three oceanographic surveys were conducted in the vicinity of the Grand Banks of Newfoundland in support of International Ice Patrol operations 1965. Measurements of temperature and salinity obtained from serial Nansen bottle observations were used to determine the dynamic topography, a principal factor in studying the most probable drift of icebergs endangering shipping in this area. A short check survey of one standard section was conducted during the season in order to detect any short term changes in the Labrador Current. Subsequent analysis of selected oceanographic sections was accomplished to calculate the volume flow and heat transport through these sections. In addition, an isentropic analysis was undertaken in order to make a comparison with the circulation deduced from the dynamic topography.

A change in vertical sampling technique was attempted in order to define more accurately the maximum and minimum points in the distribution of temperature and salinity.

Studies of iceberg deterioration and specific drift factors were initiated during Ice Patrol 1964 and were continued during 1965 with some increase in emphasis.

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Oceanography of the Grand Banks of Newfoundland in 1965

by

Ronald C. Kollmeyer, U.S. Coast Guard

Introduction

The Ice Patrol surveys during 1965 were conducted in a somewhat different manner from the standard sampling routine of the past. A new oceanographic station array was established paralleling the old standard surveys in some areas and differing considerably in others. Figure 1A shows the old trackline of the southern survey and the new trackline used in 1965. The purpose of revising the trackline was to reach a compromise between adequate sampling of the area while keeping the survey as synoptic as possible. The new station array included 62 stations compared to 97 stations of the previous method and allowed completion in 7 days in lieu of 14 days.

The standard sections of previous years have retained their designations in the new station array despite their relocation. Their new positions are not significantly different and allow comparison with historical Ice Patrol data. Figure 1A shows the section designations under the new and the old station arrays.

The standard treatment has been given the data as in past years with the exception of the volume and heat flow comparison for the standard sections. Annual volume and heat flow comparisons lose their significance unless adjusted for time. They are virtually meaningless unless compared to flow buildups and declines irrespective of the specific calendar survey dates. Past data indicates the major buildup and decline in the volume flow of the Labrador Current can occur anytime during the spring. This requires that the data must be adjusted in time by volume flow maximums in order to make comparisons on an annual basis. It will be shown in the following sections that monthly surveys will not provide the information required to define the accelerations of this system. Past data analysis techniques have not even shown the volume flow trends which would allow an annual time matching of the flow peak or peaks.

The sampling of the water mass was accomplished by first conducting an electronic bathythermograph lowering to 410 meters at each station. Nansen bottles were then hung at levels that would obtain temperature and salinity data which would best describe the water column. The merits, results, and comparisons of this technique are examined in a following paper.

Some methods of presentation, new to Ice Patrol, have been attempted in an effort to analyze the data more effectively. Ultimately, they may lead to an understanding of the circulation in the area which will allow formulation of better sampling techniques and possible prediction of current changes necessary for the solution of the berg tracking problem.

NARRATIVE

General

Three oceanographic cruises were conducted by USCG cutter *Evergreen*, a 180-foot tender class oceanographic vessel, in support of the International Ice Patrol during the spring and summer of 1965. A summary of the location and extent of each cruise follows.

The first cruise began on 30 March 1965, with the occupation of *Evergreen* Station 9235 on the southwestern slope of the Tail-of-the-Banks and proceeded northward with serial stations terminating at station 9296 on the Grand Banks west of Flemish Cap on 7 April 1965. This cruise was designed to delineate the three principle water types in the area, namely, the Labrador Current Water, Mixed Water, and Atlantic Current Water, and to provide, within 12 hours of observation, vertical temperature distribution and dynamic height at each station to commander, International Ice Patrol. Serial stations 9253 through 9260 were reoccupied as stations 9298 through

9306 on 11 and 12 April 1965, and referred to herein as the check survey to detect any changes in the horizontal and vertical distribution of water mass types and associated dynamic properties. The first cruise was terminated on 12 April 1965.

During the second cruise, which lasted from 24 April to 12 May 1965, *Evergreen* occupied serial stations 9313 to 9351 to provide a dynamic topographic chart of the water over the northeastern slope of the Grand Banks. These stations, which were occupied during the period 7 May to 10 May 1965, were in eastward oriented sections terminating at the latitude of Flemish Cap and represent an attempt to define any easterly branching of the Labrador Current.

The third cruise began with the occupation of station 9352 on 19 May 1965. A line of serial stations running east to the northern tip of Flemish Cap was occupied to provide overlap with the sections completed on the previous cruise. Serial stations were occupied down to the Tail-of-the-Banks which approximated those occupied during the first cruise. Occupation of station 9408 on 25 May 1965, completed the survey for the season.

Additional Projects

As a part of a continuing study of iceberg drift and deterioration, a series of photographs, supported by sextant angles and range finder distances, were taken at 30-degree intervals around a berg to permit detection of mass wastage. These observations were made at approximately 24-hour intervals during the period from 26 April to 6 May 1965. A track of the drift of the same berg was maintained by hourly navigational positions obtained by radar reference to a buoy from 26 to 29 April 1965. Experimental dye-marking of the berg selected for these studies was also performed.

A study of the effect of pH of seawater upon its electrical conductivity, as utilized in salinity measurements with the inductive salinometer, was conducted during the first cruise as was a study of the possibility of classification of surface water type by Forel Color Scale. Inconclusive results were obtained and no data is presented.

During the first cruise an investigation was made of the steady state conditions presumptive in geostrophic circulation by means of analysis of electronic bathythermograph (ELBT) traces. The traces obtained gave indications of gross changes in the thermal structure over all periods covered by the study (6-minute to 1-week scales).

Instrumentation

Teflon-lined water sampling bottles of the Nansen type, manufactured by the Ballauf Manufacturing Co. or the United Machine Co., were used during each cruise. Temperatures were measured with protected deep-sea reversing thermometers mostly of Richter & Wiese manufacture, but with some manufactured by G. M. Manufacturing Co., Kahl Scientific Instrument Corp., and Walter H. Kessler Co., Inc. Thermometer performance was continually monitored by pairing and intercomparison. The following standard deviations from the accepted paired average reflect thermometer performance during the season.

Cruise	Standard deviation (° C)	Number of comparisons
1st	±0.005	342
2d	±.007	177
3d	±.008	294

Depths of observation are based on wire angle geometry and thermometric computations from unprotected deep-sea reversing thermometers. The salinity of each seawater sample collected was measured with an RS–7A inductive salinometer manufactured by Industrial Instruments Corp. Forty-one replicate salinity samples were intercompared using a Hytech Corp. 6210 inductive salinometer which yielded a standard deviation of 0.007°/∞. The salinity determination procedures used were those described by Morse (1963). It is considered that the precision of measurement was within 0.005°/∞ and that the accuracy of the reported salinities is ±0.01°/∞.

Depth to the bottom at each station was determined with an Alpine Precision Echo Sounder Recorder (PESR).

All observed data were processed by a PDP–5 digital computer manufactured by the Digital Equipment Corp. The computer was programed for the correction of reversing thermometers and determination of thermometric depth; computation of sigma-t, specific volume anomaly and dynamic height integration; and computation of volume transport. The programing of the computer has been described in greater detail by O'Hagan (1964), and Morse and O'Hagan (1964).

At each station a Hytech Corp. electronic bathythermograph (ELBT) Model 480 MOD I,

was used to determine the vertical thermal gradient to 400 m. to facilitate selection of sampling depths for the subsequent Nansen cast. As a result vertical thermal gradient sampling rather than standard depth sampling was accomplished.

A small shipboard fabricated marker buoy of light construction, floated by 12 inner tubes riding to 570 fathoms of nylon and dacron line secured to a 10-foot length of chain and a 75-pound danforth anchor was used in conjunction with the Hytech ELBT for a preliminary and cursory internal wave study. This buoy was lost due to a loss of floatation.

For iceberg drift studies a Geodyne Corp. toroidal fiberglass buoy equipped with a tripod mast, antenna array, and Motorola Co. radar transponder, Model SST–133X, was moored with a fixed bridle, swivel, ballast ball, 120 fathoms of 1 inch braided nylon, one shot (15 fathoms) of one-half inch anchor chain and a 75-pound danforth anchor in a reference position. *Evergreen*'s radar was used hourly to determine navigational positions and the drift track of the berg with reference to the buoy. Horizontal control is estimated to be valid within 200 to 300 yards. The buoy was an unqualified success, operating at radar ranges of up to 12 miles and up to 70 hours on a single charge of the two serial 12 volt standard truck type, lead acid cells.

Twin drogues made of 28-foot cargo parachutes suspended at 10 and 70 meters depth from a buoy of truck type inner tubes and bamboo poles, and equipped with a radar reflector and light were used as an adjunct to the iceberg drift study for acquiring subsurface current information.

Personnel

The oceanographic work of the first and second cruises was under the direction of Lt. Comdr. Richard M. Morse, USCG who was assisted by Lt. Comdr. Ronald C. Kollmeyer, USCG; Mr. Thomas C. Wolford, oceanographer, USCG; Mr. Robert B. Elder, oceanographer, USCG; and Ens. Melvin S. Swanson, USCGR. Lieutenant Commander Kollmeyer directed the third cruise assisted by Mr. Wolford and Ensign Swanson. Technical assistants for the entire season were David C. Lockhart, aerographer's mate first class and Edward S. Olszewski, sonarman second class. Dennis L. Noble, aerographer's mate first class; John T. Nichols, sonarman second class; and James D. Brower, aerographer's mate third class assisted during the first and second cruises; and William H. Harrell, sonarman first class; William E. Heller, aerographer's mate second class; and David J. Wood, sonarman second class assisted during the third cruise.

DYNAMIC HEIGHT CHARTS

General

The dynamic height topographic charts of the sea surface, for the Grand Banks region of Newfoundland, are presented in figures 2A through 5A. They were constructed from data obtained on the first, check, second, and third surveys conducted during Ice Patrol 1965.

The first and third survey charts, figures 2A and 5A, represent data obtained using the new station array. They describe the surface currents, their velocities and directions, as determined from dynamic computations. The check survey, figure 3A, consisting of section U and a portion of the the section immediately to the south was obtained approximately 1 week after the occupation of these same stations on the first survey. The purpose of this immediate reoccupation was to examine short term changes that may occur in the flow pattern of the Labrador Current not detected in the past due to intervals of a month or more between surveys.

The second survey chart, figure 4A, is a supplemental survey of the northern area, adjacent to the main region of interest. It provided the characteristic description of the easterly flow and southward turning of the Labrador Current prior to its entering the area of major interest.

The third survey, figure 5A, describes the circulation in the area of major interest during the late spring. Flow patterns are quite different than found in early spring as seen in figure 2A.

The designated section U is noted on figures 2A, 3A, and 5A. This section includes the most interesting flow patterns of the region. Starting at the westernmost end of the section, the typical high stand of Banks water is always observed which grades into the main southward flowing stream of the Labrador Current. Just to the east of this current, a trough or low stand of mixed water is found with the northward flowing Atlantic Current forming the eastern boundary of the section. The circulation changes which occurred in this section between the several surveys will be discussed in detail in the following sections.

Treatment of Data

Numerical integration of the anomaly of specific volume, based on the temperature and salinity distribution obtained at each station, was accomplished on shipboard using a Digital Equipment Corp. PDP–5 computer. All deep sea reversing thermometers were corrected by the computer thus eliminating all hand computations. Actual observations were used as data inputs for the computation of dynamic heights. No scaled data for standard depths, other than the 1,000-meter reference level, were used in the computations. The programs used are described by O'Hagan (1964).

Daily transmissions of the computed dynamic heights for each station occupied, along with the temperature distribution down to 150 meters, were made to Commander, International Ice Patrol, Argentia, Newfoundland. This allowed the immediate construction and use of portions of the sea surface topography charts for iceberg drift prediction.

Chart Discussion

The first survey chart, obtained during 30 March to 7 April 1965, figure 2A, shows the Labrador Current flowing south along the 100-fathom curve. At the Tail-of-the-Banks, part of the current flows west and another portion recurves to the east forming a pool of quiet water. Some filaments in this area turn and flow northward contributing to the mixed water area of the trough. This trough area is the region of current reversal where the Labrador Current flows south on the western side and the Atlantic Current flows north on the eastern side. The water in this region has a low specific volume. It is made up of a mixture of Labrador Current water and Atlantic Current water giving a water mass characteristic between the two as seen in the T–S curve of figure 6A. This mixture produces a water mass of a characteristically low dynamic stand compared to the much higher topography towards the Banks and towards the Atlantic Current to the east. For this reason it is referred to as the low or trough of the circulation pattern. This is a characteristic feature generally found in the vicinity of the 1,000-fathom curve and sometimes extends as far south as the Tail-of-the-Banks.

The meanders of the Atlantic Current outline the pool of water formed to the east of the tail. This appears to be supplied by the water of the Labrador Current spilling into the area and is a normal circulation feature found in past years.

An area of contour uncertainty exists in the northeast part of the current chart, figure 2A, at 46°30′ N., 48°00′ W. Insufficient data in the area prevents the determination of flow direction from dynamic topography alone and will be discussed in the following section in isentropic analysis.

The check survey chart, obtained during 11–12 April 1965, figure 3A, represents an interesting reoccupation of section U within 9 days of the first occupation. The 971.1 dynamic meter streamline, nonexistent in that area on the first survey, was found. In addition, the 971.0 dynamic meter streamline was found to have shifted east by about 30 miles, while the trough feature shifted eastward less than 10 miles resulting in a swifter flowing Labrador Current.

The second survey, 7–10 May 1965, figure 4A, shows the Labrador Current tracking along the 100-fathom curve with some lateral filaments spilling onto the Banks as it turns to the south. The 971.0 and 970.9 dynamic meter streamlines are in much the same position, passing through section F, as on the first survey. The 971.1 dynamic meter streamline was not observed, however, contours up to 971.08 dynamic meters are drawn and indicate that lighter water was further up on the Banks. This was also reflected in figure 3A, the check survey, where 971.1 dynamic meter streamline appeared well up on the Banks in section U.

The third survey, 19–25 May 1965, figure 5A, showed the Labrador Current as a strong uniform flow along the 100-fathom curve from 47°30′ N. to 43°00′ N. The characteristic trough was greatly elongated and the pool of quiet water found during the first survey was missing. The streamlines of the Atlantic Current tended to turn north at the Tail-of-the-Banks without describing any low velocity or stationary pool of water. A cyclonic eddy occurred to the east at 44°00′ N., 46°00′ W. This eddy or gyre exhibited water characteristics similar to those found in the pool of water, described by the first survey data, at the Tail-of-the-Banks. The eddy appeared to be the result of the pinching off of the pool and its subsequent movement to the northeast. This pinching off of an eddy is a phennomena exhibited by Gulf Stream filaments and described by Fuglister et al. (1951). Insufficient

data prevents a detailed description of this eddy, however, its presence is apparent.

GENERAL CIRCULATION

Volume and Heat Flow

A summary of volume flow through the designated section U is given in table IA. The computations were made by a modified method described by Jakhelln (1936). It is interesting to note that the volume flow through section U doubled during the 9-day interval between the section occupation on the first survey and the check survey. The volume flow then remained relatively constant between the check survey and the third survey. It appears that a radical change took place on the Banks between the first and check surveys. Not only is a greater volume observed on the check survey but a significantly warmer mean temperature and higher minimum temperature is also found. The third survey volume flow remains high; however, the mean temperature, minimum temperature, and minimum salinity drop below the first survey values indicating that the Labrador Current is exhibiting its full flow characteristics.

The general water characteristics of the Labrador Current between the first and third surveys are quite different. Figure 7A shows a T–S plot of the Labrador Current. The points are mean values (for the given depths) of all stations on each of the first and third surveys situated in the southward flowing stream. This is similar to figure 6A showing the Labrador Current characteristics for the entire season. On the first survey, the water was less stratified than during the third survey. This is indicated in figure 6A by the smaller sigma-t change across the same depth interval on the first survey than on the third, particularly from 100 to 150 meters. A comparison of the water mass between the two surveys shows the third survey found colder, less saline water down to a level between 100 and 150 meters and then a sharp density increase with warmer, more saline water below 150 meters. This density gradient defines the depth limits of change of the Labrador flow. This change at depth of the density structure between surveys can be traced to spring changes in the east-west slope of the σ_t surfaces resulting in greater stratification, and will be treated more fully in the following chapter on isentropic analysis.

Dynamic Height Changes

A surface dynamic height plot of the stations of section U on the first, check, and third surveys, figure 8A, shows that in 9 days a change in height of the inboard station occurred without a significant change in the trough dynamic height. The trough is located in water which is a mixture of the Labrador Current and the Atlantic Current and does not show the extreme characteristics of either current system. Apparently the abrupt change in elevation of the stations on the Banks and the increase in volume flow is related to the change of water characteristics on the Grand Banks and continental slope as shown on the temperature-salinity sections, figure 9A. These sections were constructed from the temperatures and salinities of stations in section U on the first, check, and third surveys.

The temperature and salinity distributions of section U during the three occupations are clearly shown in figure 9A. The first survey reveals that the cold water is generally confined to the surface along with reduced salinity required for stability, probably reflecting the results of disintegrating sea ice. The check survey shows colder water of low salinity to be subsurface and connected to a colder water mass on the Banks. The density of this water is less than the first survey water at the same depth indicating that it probably did not result from surface sinking. By the third survey the situation had again changed showing a core of cold water off the Banks, with even lower salinity than cold water of the previous survey. The salinity decreases as the Banks are approached indicating that different water mass has also arrived there. The temperature of the Banks water has also increased above what it was earlier, but this can be explained by the warmer air temperatures as summer approaches.

Because of the method of computing currents in the shallow Banks water, the deeper water areas to the east along the slope and below the core of the Labrador Current greatly influence the dynamic height on the Banks. This is the water located between stations 9252 and 9258; 9303 and 9304; 9390 and 9389; on the first, check, and third surveys, respectively, of figure 9A. Between these stations the water shows a definite salinity reduction with time. First, an increase in the amount of water of less than 34.0‰ was observed during the check survey. This is followed by an increase in the amount of water of less than

33.5°/₀₀ and the arrival 33.0°/₀₀ water found during the third survey. The salinity reduction in this area and on the Banks would cause the calculated elevation of the sea surface as the Banks are approached. In the trough area, the dynamic height change between the first survey, station 9259; and the check survey; station 9305, as shown in figure 8A, is almost negligible. A significant change is detected on the third survey. Examination of the temperature and salinity curves of figure 10A discloses that significant salinity changes were not found in this area until the third survey, when both a reduction in salinity and temperature was observed. Because the trough stations showed little elevation change over the short period between the first and check surveys, it would seem that the flow of the Labrador Current at this time affected or was affected by the characteristics of the Banks and adjacent continental slope water.

Isobaric Slope

The Labrador Current can be thought of as an edge phenomenon, flowing as the result of steady state requirements of the sea height difference between light, low salinity water on the Grand Banks and slope and the heavier, higher salinity water located off the slope between the Labrador and the Atlantic Current. This edge phenomenon can be observed from the velocity profiles and isotherms for the Labrador Current in section U, figure 11A. It can be seen that the fastest flowing water is not necessarily the coldest, but grades colder and less saline as the Banks are approached. Thus, a wedge of low temperature, low salinity water overrides mixed water of less severe characteristics. Because light-cold water and heavy-warm water are anomalous relationships, it is apparent that salinity controls the density in this current regime.

Figure 8A shows the section U plot of the dynamic heights indicating the gross changes that occurred over the periods between the surveys. Note that only small changes occurred on the Banks between the check survey and the third survey which were separated by more than a month. Observe also the gradual elevation of the trough station during the two periods, leading to the speculation that this mixed water is slowly changing its characteristics as the spring progresses. However, this cannot be conclusively proved because the location of the lowest station, in dynamic height, does not mean that it was actually situated at the lowest sea surface elevation point. Figure 12A, a T–S plot from stations 9259 and 9388 of the first and third surveys in the mixed water trough shows a density decrease with time above 600 meters, with the reduced salinity causing the density to decrease even under conditions of decreasing temperature at mid-depth.

The changing isobaric slope between the two water masses allows greater or lesser volumes of water to be transported. This slope can be adjusted either by a changing of the dynamic height of the trough (mixed water) or the surface dynamic height on the Banks.

The changes observed between the survey periods leads to the hypothesis that an increase in the dynamic height of the water on the Banks and slope caused a swifter warmer current to flow during the check survey than during the first survey. This increase of the height of the water on the Banks could be caused by the influx of arctic and sub-arctic melt water from the north. It could be assumed here that we were observing cause, adjustment, and affect. This means that the increase in elevation of water on the Banks and slope, with a resulting water volume flow increase, causes entrainment of the existing water in the area. This slope water would then become colder with the arrival from the north of greater volumes of cold water to fulfill the mass continuity requirements being satisfied by entrainment. Alternately, the warmer mean temperatures observed during the check survey could be the result of linearizing the velocity data between stations thus causing an apparent volume flow in warmer water. The small reduction of the volume flow, as seen on the third survey, would result from the greater elevation of the sea surface in the trough area due to the eventual mixing of these more severe water properties as the water transits to the Tail-of-the-Banks and then back up through section U.

Eastern Banks and Slope Controls

The concepts discussed above are postulated from only three sections and need further work to be completely substantiated; however, the spring freshening of the Grand Banks water is a fact and its influence on the mixed water and the resulting slope of the sea surface between the two water masses is a logical outcome. It is apparent from a further analysis of the data, that the water on the Grand Banks changes as the season progresses and would require some form of ad-

justment and continuity of flow in the current or the mixed water laying further to the east.

Figure 13A is a T–S plot of the more westerly stations on the Banks in 1965. The figure includes north-south lines of the first, check, and third survey stations, and two second survey stations which straddle the northern end of the first and third survey lines. Each station is represented by a point determined from the station's average salinity and average temperature, the use of which are permitted by shallow depth and homogeneity of the water. The stations taken on each of the separate surveys are connected by lines for clarity. Although these stations are not centrally located on the Banks, they are representative of the Banks water slightly modified by the swifter flowing current to the east. The salinity of the water on the Banks during the third survey (stations 9353 to 9403) has been reduced by about 0.2‰ from the first survey (stations 9238 to 9296). As expected, the water is warmer to the south because of warmer air temperatures.

The stations occupied during the second survey, numbers 9342 and 9343, whose locations match stations 9296 of the first survey and 9352 of the third, show that the low salinity water had already arrived at the northern end of the Grand Banks when the second survey was made. On the check survey, the salinities of stations 9301 and 9302 fall nicely between the first and third survey stations of similar location, stations 9255, 9256 and 9373, 9391 respectively. Salinity decreases were observed at both stations while mean temperatures remained about the same. A period of only 9 days separated the check survey stations from the first survey stations, however, the salinities had already lowered by half of the total change found during the third survey, 7 weeks after the first survey.

The above findings tend to indicate that the pronounced water characteristics indigenous to the Labrador Current in the spring, arrive rather abruptly. This is also supported by the volume flow data from the check survey. This is contrary to previous beliefs that gradual temperature and salinity changes take place during the early spring and that the changes which occur in the current system occur over a period of months. Rather, it is apparent that the time scale of change is more on the order of 1 to 2 weeks and perhaps less.

Circulation Response

The abrupt changes in water characteristics and dynamic heights that occurred on the Banks and slope were in response to the arrival of the colder, less saline water from the north. It is reasonable to conclude that because these changes occur on the Banks and slope first, a certain period of lag is to be expected prior to the arrival of this water in the trough area. The water in the Labrador Current must circuitously flow down toward the Tail-of-the-Banks before its arrival in the trough area. As pointed out above, the dynamic height of the trough area during the three surveys showed a gradual increase in elevation. Figure 8A shows that although an abrupt change had occurred in the dynamic height of the Banks and slope water between the first and the check survey, the trough station on the check survey changed little in dynamic height. Conversely, the Banks station on the third survey changed little from the check survey while the trough station exhibited a considerable change. This leads to the conclusion that the low salinity water observed in the main stream of the Labrador Current during the check survey had not had sufficient time to complete the trip to the trough area and influence the water type there. However, on the third survey significant changes in the water properties above 400 meters occurred. Figure 10A indicates these temperature and salinity changes which occurred in the trough area during the survey intervals. Between the dates of the check survey and the third survey light, low salinity water arrived at the trough. The effect was to raise the elevation of the trough and thus reduce volume flow.

If section U is examined over a year (figure 14A), limited correlation appears to exist between the change in mean salinity of the Banks' water and the volume of water flowing south. An exact correlation cannot be made here because of the influence of temperature on the water's specific volume, the time lag, and unknown mixing proportions which tend to modify the elevation of the water in the trough area. This is evident from the volume reduction that occurred on the third survey even though the Banks station decreased in salinity and had a higher dynamic height. If the check survey had not been conducted, the rapid rise of volume flow would not have been observed and the portion of figure 13A for 1965 would have looked like that for 1964. This kink in the volume flow curve for 1965

tends to indicate that the adjustments were caught prior to any low salinity influence and subsequent elevation of the trough region as observed on the third survey.

Data of the Banks salinity and volume flow from past years, presented in Table IIA, do not show good correlation with the concept of salinity decrease on the Banks and increase in volume flow. These data are from surveys which were separated in time by a month or more and hence cannot be expected to show a correlation due to the lag time between the arrival of the low salinity water on the Banks and the mixing of the water in unknown proportions in the trough area. The only way to observe this postulated salinity decrease and volume increase is to start the survey before the water of lowered salinity completes its swing towards the Tail-of-the-Banks and then north to the trough area. At a current velocity of 1 to 2 knots, less than a week is required. Lateral mixing in section U is held to a minimum because of the steep east-west slope of the σ_t surfaces. This will be discussed in further detail in the section on isentropic analysis. As the current passes the trough area, some alteration of the properties take place in the trough; however, the greatest changes occur while the water completes its trip from north to south and then north to the trough region. Data of previous years do not provide any means for determining short-term volume flow tendencies or the rate of change of the salinity of the Banks water. The significant flow changes observed during 1965 were the result of closely timed, repeated sections.

Future Work

A greater understanding of the salinity-volume flow relationships would enable a temperature-salinity monitoring system on the Banks to indicate salinity reduction and volume changes occurring to the Labrador Current. These could have implications in iceberg drift prediction.

Weekly fluctuations of the Labrador Current might be superimposed on seasonal variations which would tend to alias the data collected at monthly intervals thus rendering year to year comparisons misleading. Attempts will be made during the spring of 1966 to more accurately define the flow changes and to determine whether or not these changes are of a short- or long-term duration.

ISENTROPIC ANALYSIS

Basic Concepts

A method of observing water movements and changes in property distribution for comparison with dynamic heights is desired. It would be advantageous to have such a comparison in the hope of verifying and eliminating ambiguities in dynamic height contour charts. Isentropic analysis provides this independent method for determining water movement. Rossby et al. (1937) pioneered isentropic analysis of the atmosphere. They showed that atmospheric specific humidity proved valuable for observing the distribution of identifying properties on surfaces of equal density. Parr (1938a) and Montgomery (1938) applied a similar technique to the oceans and found it extremely useful in tracing water mass source and movements. Parr (1938a) made direct comparisons of isentropic charts with Ice Patrol dynamic height charts and indicated that true water movements at the southern end of the Grand Banks, Newfoundland, could better be deduced from the analysis of water circulation on density surfaces. Montgomery (1938) extended his analysis to water movements of the upper layers of the southern North Atlantic Ocean and deduced source locations of the various density layers.

The implementation of isentropic analysis calls for the determination of the surfaces of constant entropy. According to Montgomery (1938), this surface is best approximated by the surface of constant potential density which at pressures of less than 1,000 decibars is equivalent to surfaces of equal sigma-t. This approximation is necessary because no surfaces exist in the ocean along which the mixing of water masses can take place without altering the mass distribution and therefore the entropy or energy level of the system.

A sigma-t or quasi-isentropic surface presentation is useful because flow patterns on these surfaces represent the nearest approach to the true conditions of movement. In addition, the currents tend to flow parallel to the contour lines of the sigma-t surface therefore providing information on the direction of movement. These are axiomatic truths because of the hydrodynamic fact that flow will take place along levels of equal density unless active mixing alters the energy levels. Some departure will take place because of the effect known as cabbeling [1] where water

[1] Smith (1931) describes this phenomena. Von Arx (1962) refers to it as caballing

mixed on a sigma-t surface will seek a slightly deeper density surface.

It is emphasized here that the basis of isentropic analysis is the deduction of flow patterns from the distribution of dissolved substances which are independent of the density determinations. Furthermore, flow patterns are independent of the assumptions for geostrophic movement and hence can verify or disclose any deviations from computed gradient flow. Oxygen and other chemical properties, due to their independence from density computations are ideal flow indicators on the density surfaces when due consideration is given to biological changes. However since these values are not always available, either temperature or salinity may be used. Parr (1938b) favored temperature because he felt the interpolated values are more certain than those of salinity. Montgomery (1938) on the other hand takes the view that salinity is superior due to the strong vertical temperature gradients and the actual temperature on the sigma-t surface would not be representative. For Ice Patrol requirements, the wide range of temperature compared to the accuracy of determination provides for very great property variation on the sigma-t surface which is the best definitive characteristic of the current system. It would be redundant to contour both temperature and salinity since they are used to define the sigma-t surface initially.

Chart Preparation

Charts of the temperature distribution on selected sigma-t surfaces in the Grand Banks area during the first and third surveys, were prepared from the plots of temperature versus sigma-t at each station. These are shown in figures 15A to 23A. The depth of the surface at each station has been indicated and a comparison with the surface dynamic height contours may be made with figures 2A and 5A. On each chart, the intersection of the sigma-t surface with the sea surface is shown as a broken line and, when it occurs, the intersection with the bottom as a dashed line.

Chart Analysis

An examination of the isentropic charts, figures 15A to 17A, reveals that the distribution of the 1° C. isotherm clearly delineates the boundary of the Labrador Current. A comparison with the 25 and 50 meter horizontal isotherm charts of figures 24A and 25A for the same survey shows that the horizontal isotherm charts do not clearly display the water tongues characteristic of the Labrador cold core. However on the sigma-t surface charts the tongues of water are very nicely demarked, therefore, several levels were prepared for analysis of the water movement.

The sigma-t surfaces of 26.7, 26.8, and 27.0, figures 15A to 17A, from the first survey show a severe downward slope towards the Banks. This slope would tend to reduce or even eliminate horizontal mixing because a crossing of strong horizontal density gradients would be required. The third survey isentropic charts, figures 18A to 20A, show a definite leveling of these surfaces and a slight increase in depth. This is probably due to the greater volumes of lighter water in the area since a 26.6 surface can be drawn for the third survey, whereas, on the first survey, water of a sigma-t of 26.7 was the lightest water present in abundance. If a comparison is made between the isotherm charts, plotted on the 25- and 50-meter levels for the first survey, and the isentropic temperature distribution charts, definite differences can be seen. As pointed out above, the tongues of water cannot be observed on the constant depth charts, figures 24A and 25A, even though these levels are in the depth range of the sigma-t charts which clearly describe the boundaries of the temperature tongues. This is apparently because these tongues of water are moving along steeply sloped surfaces and horizontal slices at specific levels fail to capture them. A comparison at the third survey sigma-t charts and the horizontal presentation at 75 meters, figures 18A to 23A and 26A show that the isotherms appear quite similar in their distribution on both types of presentation. Horizontal mixing can now take place due to the lessened horizontal gradient and the tongue like property distribution is destroyed as the Labrador Current flows south. Both presentations of the third survey are similar with the water grading from cold to warm toward the east as the influence of the Atlantic Current begins to dominate the temperature distribution. This greater horizontal mixing is obvious from the north-south temperature distribution of the Labrador where the third survey shows the arrival of colder water at the head of the system than found on the first survey. In addition, this colder water appears to be warmed faster as it travels south thus indicating more active mixing is taking place with the warmer Atlantic Current.

The unique display of tongues of cold water on the sigma-t surfaces leads to the question as to

what is actually being observed. From the volume flow calculations, the flow during the first survey is minimal. This leads to the postulation that late winter steady state conditions are described. That is to say that the cold water input at the head of the system is being advected south and warmed sufficiently such that steady conditions of the conveyor belt form exist. On the other hand, the beginning of cold water intrusion into a background of existing winter water conditions might be a better conclusion.

The arguments for steady state are few indeed since 1 week after the first survey, a vast increase of water along with profound property changes occurred in the Labrador Current. If steady state conditions existed on the first survey, great mixing would be required to warm the prow of cold water moving south. The warming would result from the warmer water on all sides of the tongue including in front of the intruding prow. The anomalous point is that the salinity along the core of the Labrador during the first survey grades lower to the south. This was quite different from the expected situation of the Labrador Current grading more saline to the south. Figures 27A and 28A are plots of salinity at the center stations along the Labrador Current during the first and third surveys. It shows that the salinity graded lower from north to south during the first survey and then higher from north to south on the third survey. The lateral salt distribution grades higher to the east and slightly less to the west. On the Banks the salinity grades higher to the south during the first survey, as expected. If mixing and warming are occurring with resulting steady state conditions as envisioned above, then the contribution from the east would cause higher salinities as the water moved south rather than the lower salinities actually observed. Water from the west would tend to lower the salinity slightly, but this effect would be masked by the much greater salt content of the water from the east. A more reasonable explanation is that we are observing the intrusion of new water from the north, the initial arrival of more severe properties resulting from the spring freshening of the Labrador Current.

The higher salinity to the north observed on the first survey can be attributed to the winter increase in salinity and off-shore mixing further north due to a reduced flow rate. This would not be observed later in the season because of the increased flow and contribution of sea ice melt water. In this situation the intruding cold water could account for the great slopes of the sigma-t surfaces which would also tend to isolate these tongues from any lateral influence. This colder water mass seems to be invading a more uniform environment and a leveling adjustment towards some form of equilibrium has not had time to take place. Horizontal mixing, across sigma-t surfaces, would be minimal initially, but would eventually become dominate and alter the property distribution to that found on the third survey. This theory is also compatible with the great freshening of flow observed only 1 week after the first survey. Water velocities of only 0.5 knots would be required to move the intruding cold water from the north, found on the first survey, down to section U of the check survey. Velocities of this magnitude were found in the Labrador Current during the first and check survey periods. It could also be expected that some indication of a change of this magnitude would be observed in the first survey results. Again a relation is seen with the speculation from the previous section in that there is a salinity flow control on the Banks and slope and that this initial flow is tied in with new water arriving on the Banks and slope. This causes a change in the dynamics of the regime and requires a supply of water to fill the continuity conditions of flow, thus explaining the warmer temperatures observed during the check survey of section U where warmer water is drawn in to meet increased mass continuity requirements.

Some surface influence is also shown in the sigma-t presentation. This is indicated by the crowding of the isotherms as the sigma-t surface approached the sea surface and is particularly apparent in the southeastern regions of the Banks nearer to the Atlantic Current. Montgomery (1938) cited the sea surface intersection with the sigma-t surfaces as the formation region of the water found on or slightly below the particular intersecting sigma-t surface. No doubt some surface mixing and sinking is taking place, however, the water on the sigma-t surfaces flowing along the Banks' slope has its source outside of the immediate area of interest.

Isentropic and Geostrophic Comparison

The fact that these isentropic presentations disclose flow tendencies independent of geostrophic computations provides a useful tool for comparison with the dynamic calculations. Certain areas of uncertainty in the calculated surface circulation

can be substantiated or altered based on the isentropic flow patterns. Parr (1938b) objected to some interpretations, on the part of Ice Patrol, of the dynamic height charts used for iceberg drift predictions. Parr's isentropic analysis near the southern end of the Banks tended to show a large pooling tendency which was not shown on the dynamic charts. This pool is now generally accepted as a quasi-fixed feature. Parr's work did show that better water movement information could be obtained from isentropic analysis, however the discrepancies that he found were much greater than can be discovered using present day data collection techniques. Prior to World War II the sparseness of station data coupled with technique differences probably accounted for a weakness in the dynamic height charts.

Good comparisons can be seen between the circulation deduced from the isentropic charts and the dynamic height charts shown in figures 2A and 5A. Where the dynamic height charts present quantitative current information, future changes are reflected in the isentropic charts. Figures 15A to 18A indicate that cold water was entering the system during the first survey, and ultimately was seen to have a definite circulation effect based on data obtained on the check survey conducted only 8 days later. This cold water intrusion from the north is not indicated in the dynamic height charts. Basically, the direction of flow of the dynamic height and the isentropic charts match very nicely in all areas. Figure 2A, shows an area of uncertainty, indicated by dotted streamline, in the northwest section current pattern deduced by dynamic heights, however, the sigma-t surface of 26.7, figure 15A, distinctly shows the water flowing onto the Banks in that area. A cyclonic flow pattern is defined by the dynamic height streamlines based on third survey data, figure 5A, in the southeast quadrant of the survey area. A look at the isentropic charts substantiates this circulation. Several sigma-t levels definitely show the cyclonic circulation with water of low temperature and low salinity entering from the east. This is incongruous with the water types usually found in the Atlantic Current and it can be concluded that this is a closed cell which probably had its origin from the cold water pool normally found at the Tail-of-the-Banks as shown in figure 2A. Looking at the 26.6 σ_t level, figure 18A, the cell appears separate from the general near surface flow. On this level, water of 11.0° C. enters from the east which is anomalously warm and is probably near surface water being entrained from the warmer layers of the Atlantic Current.

At the 26.8-σ_t level, figure 19A, the cell remains quite warm and shallow and affected by the warmer surface water movements. A slight indication of upwelling is seen now from the temperature lowering near the center of this cyclonic circulation with warmer water at the periphery being drawn around the eddy.

The 27.0-σ_t level, figure 20A, reflects active upwelling in the eddy center not only by colder temperatures, but also by a definite dome in the depth of the sigma-t surface. Warmer water of the Atlantic Current appears to be moving anticyclonically around the eddy in a northwesterly direction. Although it is not shown in these illustrations, the data indicates not only a cooling of the eddy waters but also a reduction in salinity. On this level, the coldest water appears to be displaced slightly to the north from the 26.8-σ_t level. The 27.2-σ_t level, figure 21A, is inconclusive as to whether or not a circulation connection exists with the northwest meander of the Atlantic Current cited above. In this situation the eddy does not appear to be closed. Although isotherm contours do not indicate the circulation in the case of the 27.4-σ_t and 27.6-σ_t levels, figures 22A and 23A, the topography of the sigma-t surfaces again show that the cyclonic circulation seems to be causing some upward movement of the water in the eddy.

In conclusion, it has been shown that isentropic analysis is an excellent tool for depicting details of the circulation in the vicinity of the Grand Banks. The presentations would be more accurate if a nondensity related property such as oxygen was used. For Ice Patrol current prediction procedures, it appears that detailed analysis of this nature is not warranted in all areas on a routine basis, however, to completely define and predict the Labrador's variation, the cold water core should be examined with this method. Because the water moves along sigma-t surfaces, the intrusive flow of the Labrador Current water is clearly shown by the isotherms in contrast to the rather nondescript presentation of the horizontal levels. The method is probably most valuable for observing the trend of future conditions, since water masses of differing characteristics which ultimately influence the entire area can frequently be traced from their point of original entry.

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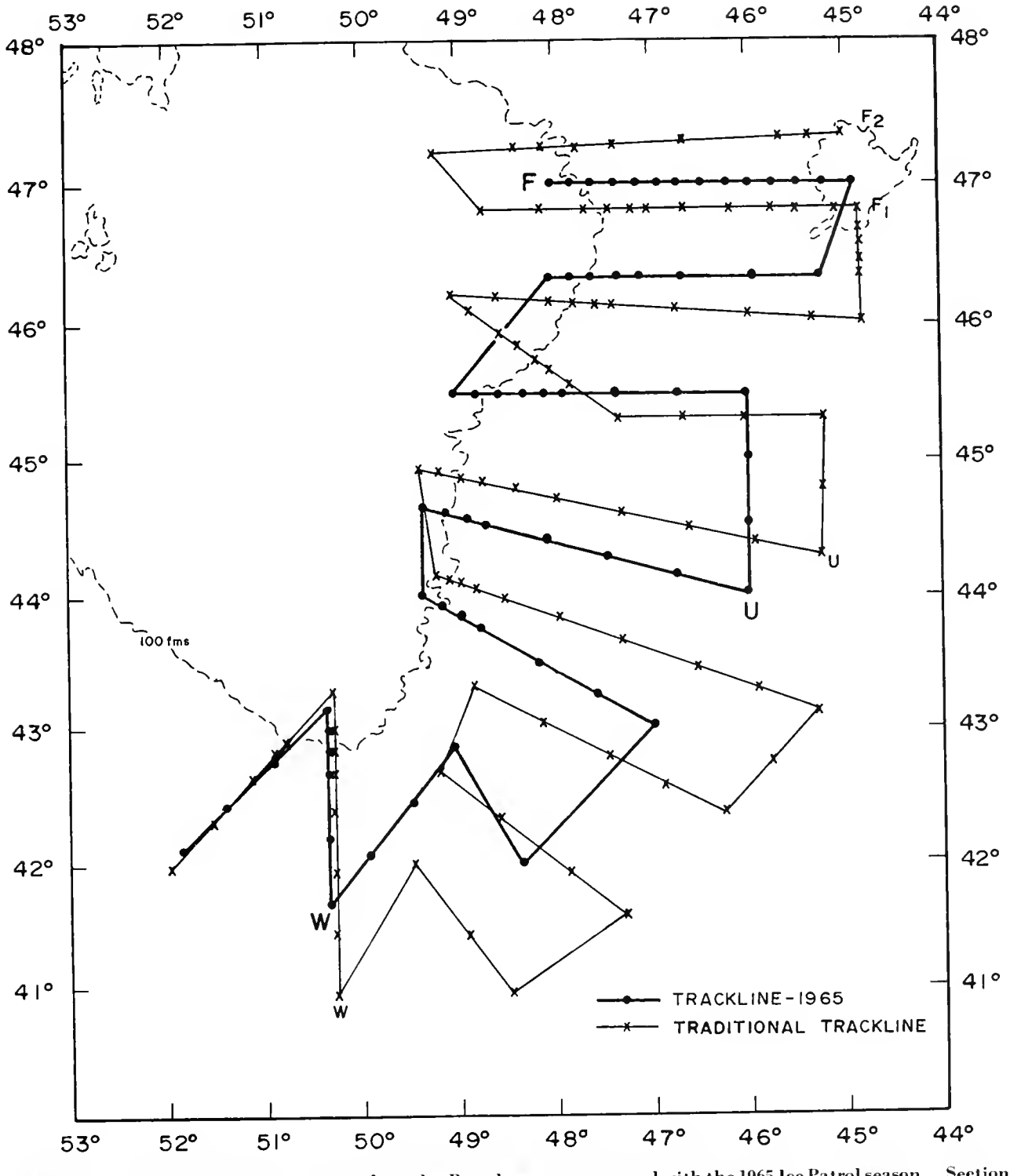


Figure 1A. Trackline and station array of past Ice Patrol seasons compared with the 1965 Ice Patrol season. Section letter designations are shown.

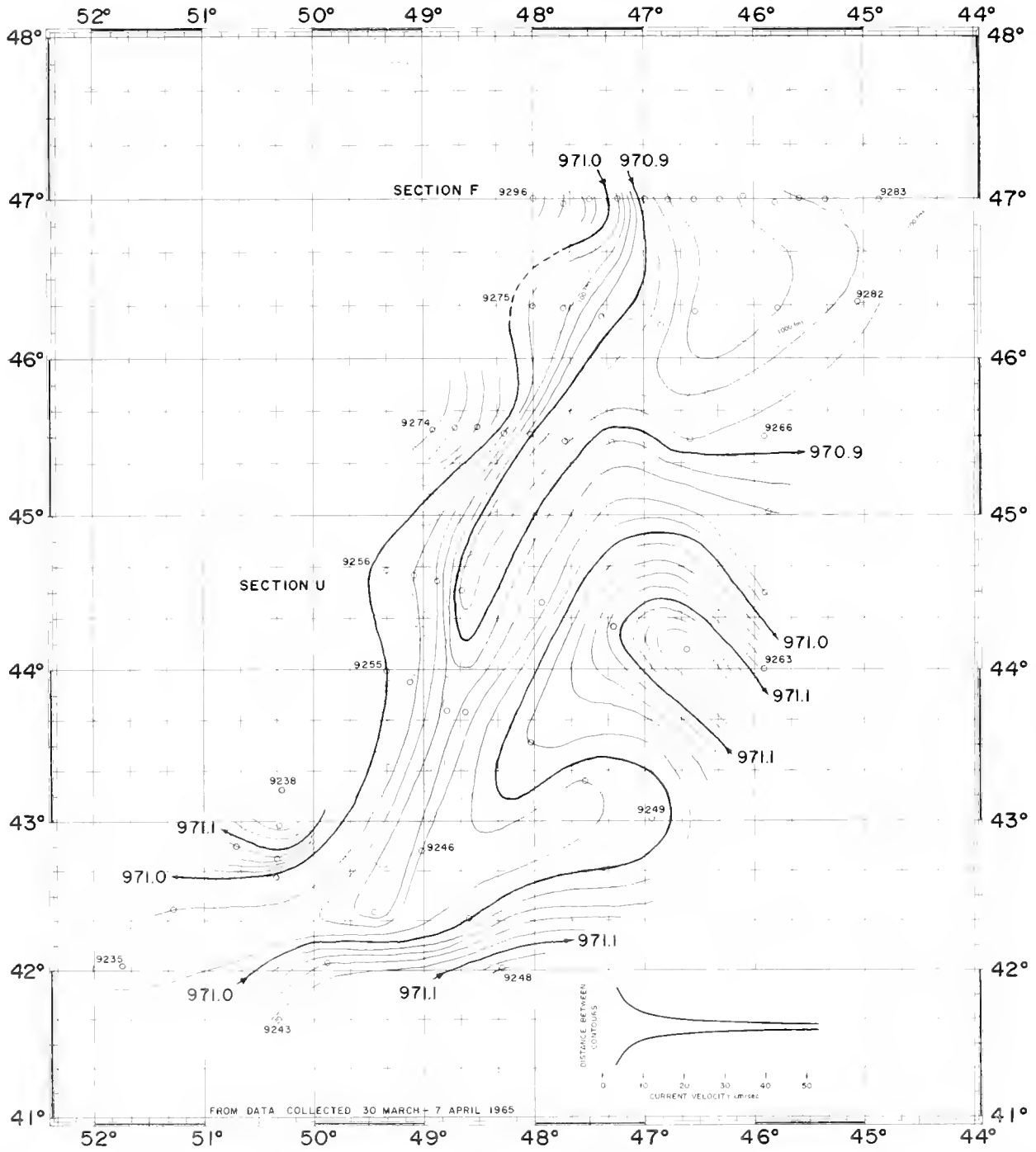


Figure 2A. Dynamic topography of the sea surface relative to the 1,000-decibar surface, from data collected during the first survey 30 March–7 April 1965. Oceanographic station positions are indicated and the station numbers given at turning points.

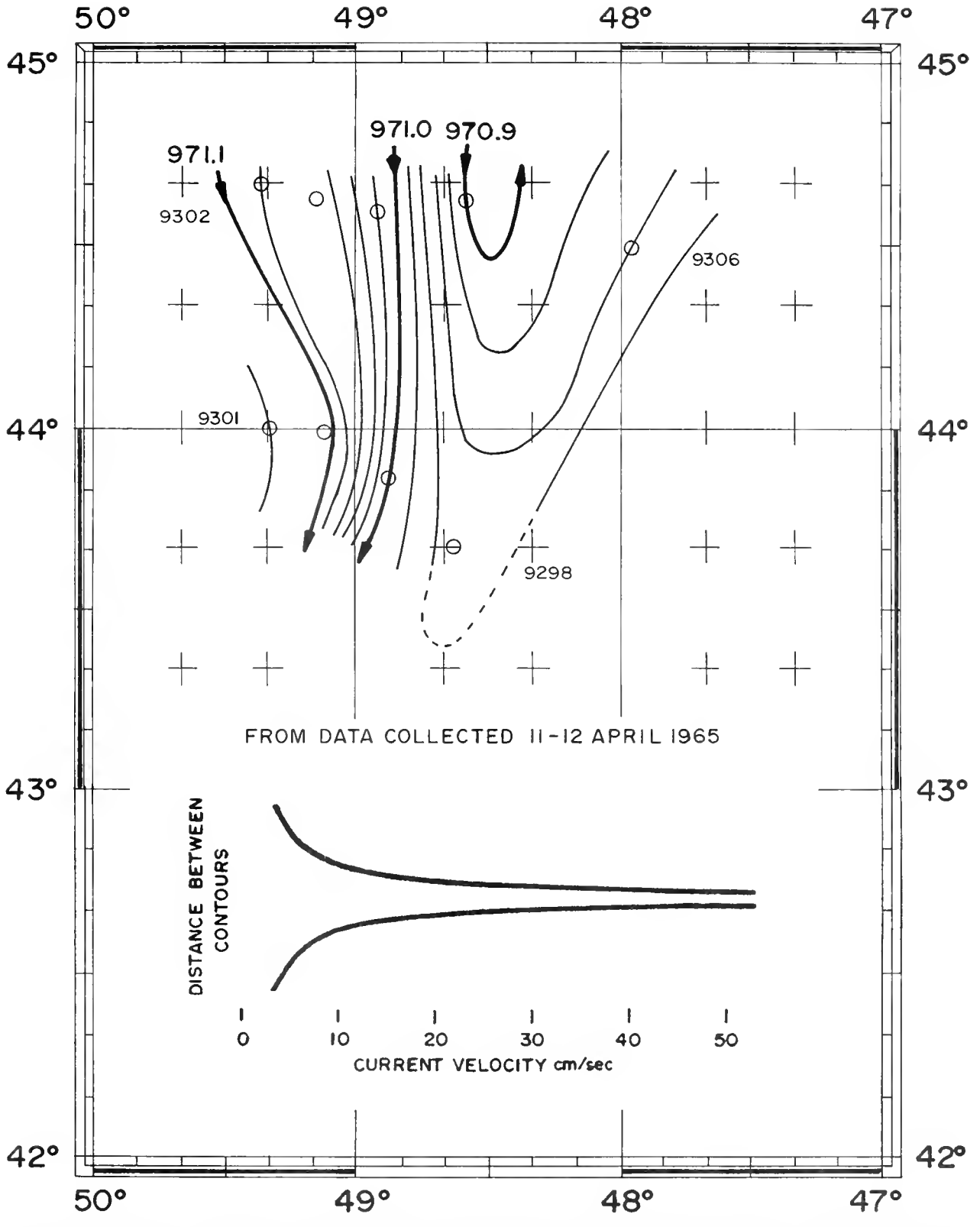


Figure 3A. Dynamic topography of the sea surface relative to the 1,000-decibar surface, from data collected during the check survey 11-12 April 1965. Oceanographic station positions are indicated and the station numbers given at turning points.

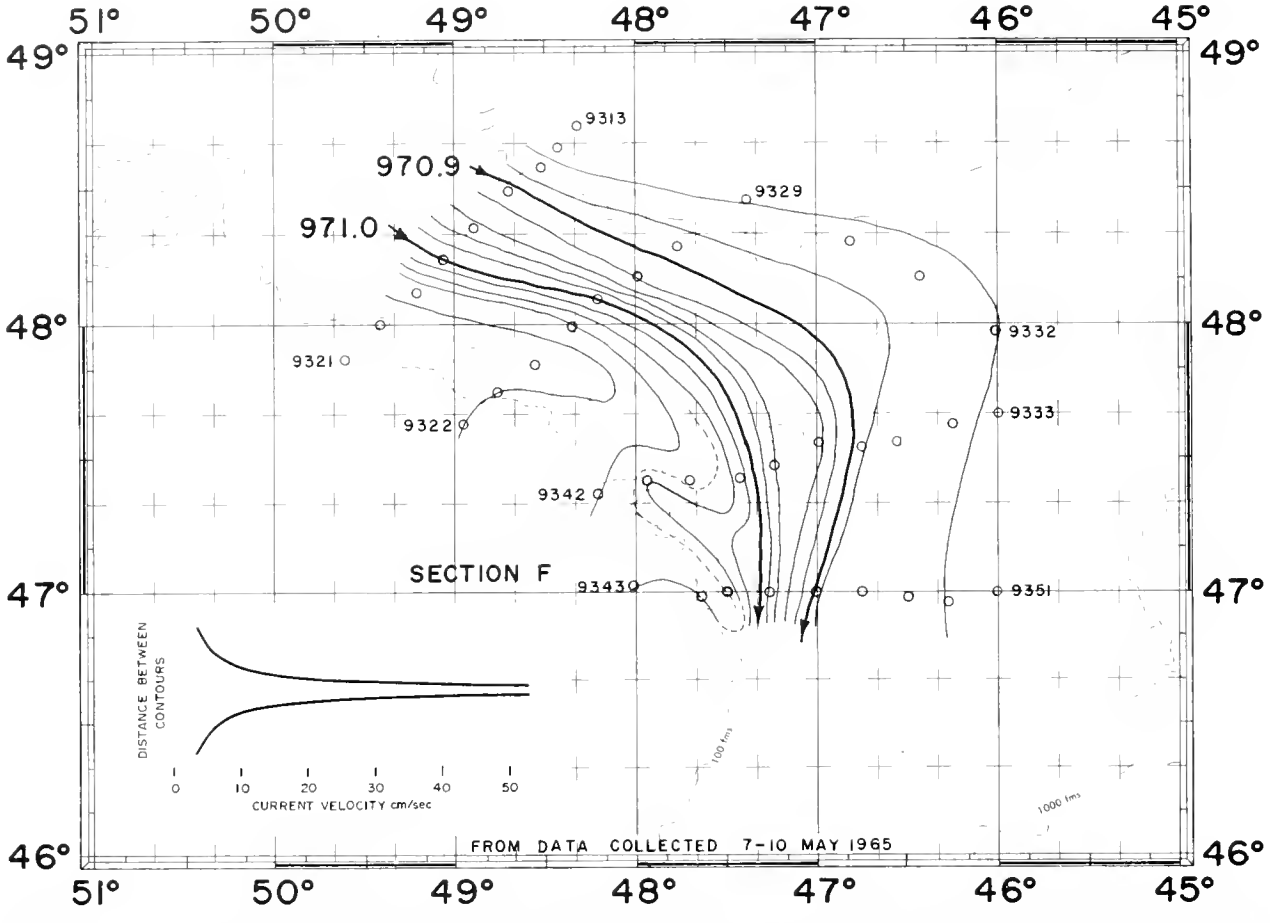


Figure 4A. Dynamic topography of the sea surface relative to the 1,000-decibar surface, from data collected during the second survey 7–10 May 1965. Oceanographic station positions are indicated and the station numbers given at turning points.

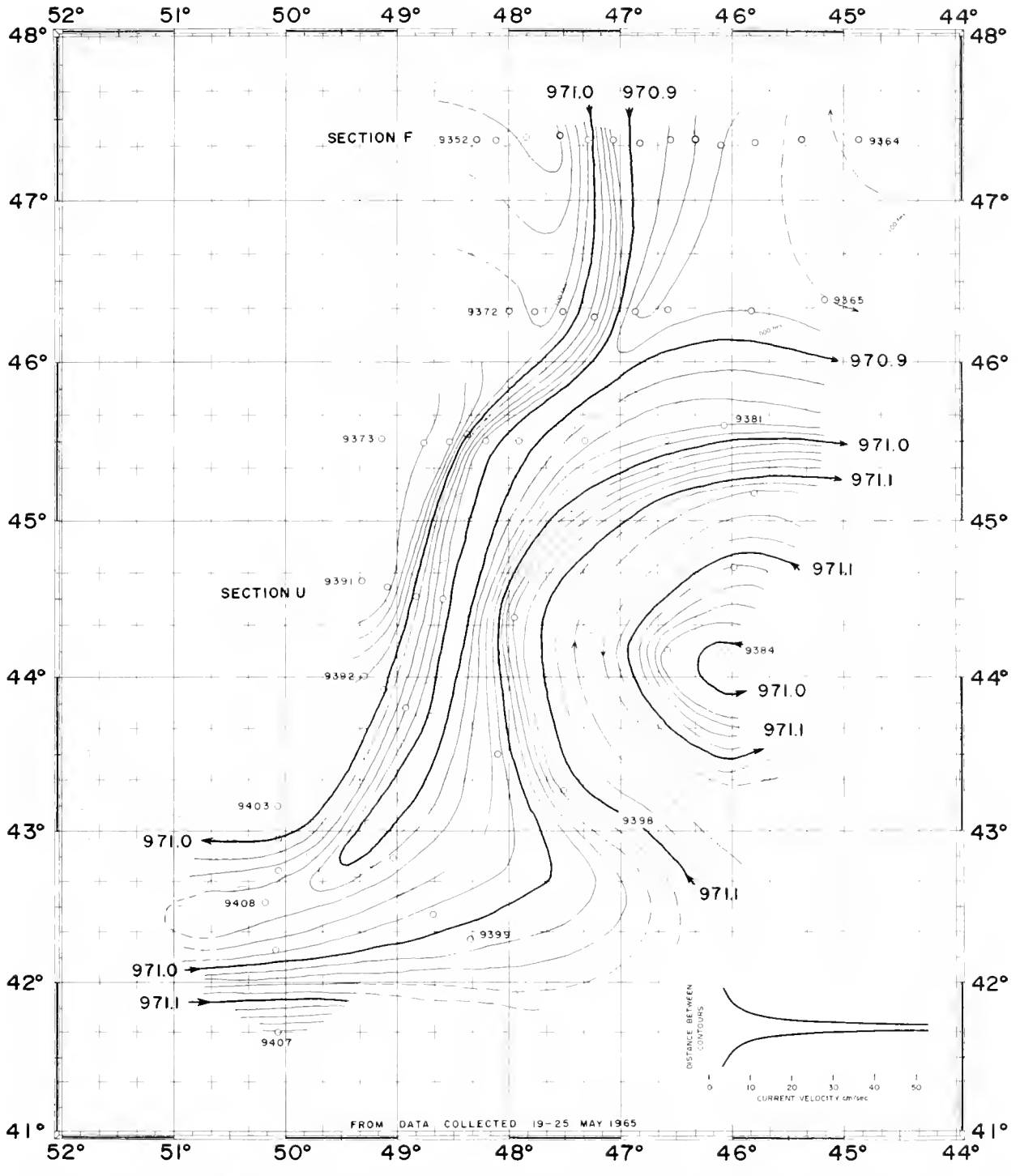


Figure 5A. **Dynamic topography of the sea surface relative to the 1,000-decibar surface, from data collected during the third survey 19–25 May 1965. Oceanographic station positions are indicated and the station numbers given at turning points.**

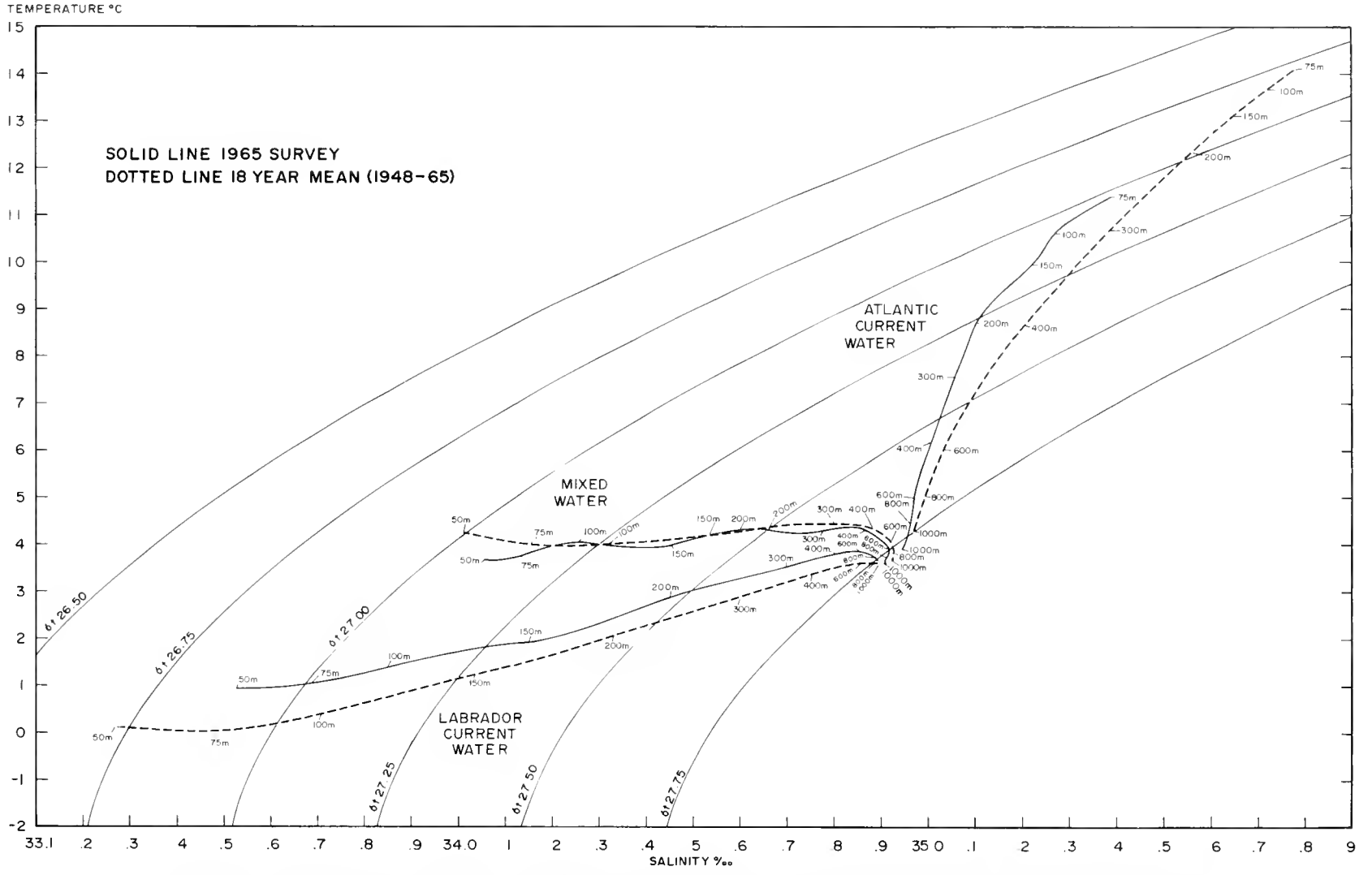


Figure 6A. Mean temperature-salinity relationships for Labrador Current Water, Atlantic Current Water, and Mixed Water found in the Grand Banks region. Solid lines show conditions found during 1965 and broken lines represent the 18-year mean.

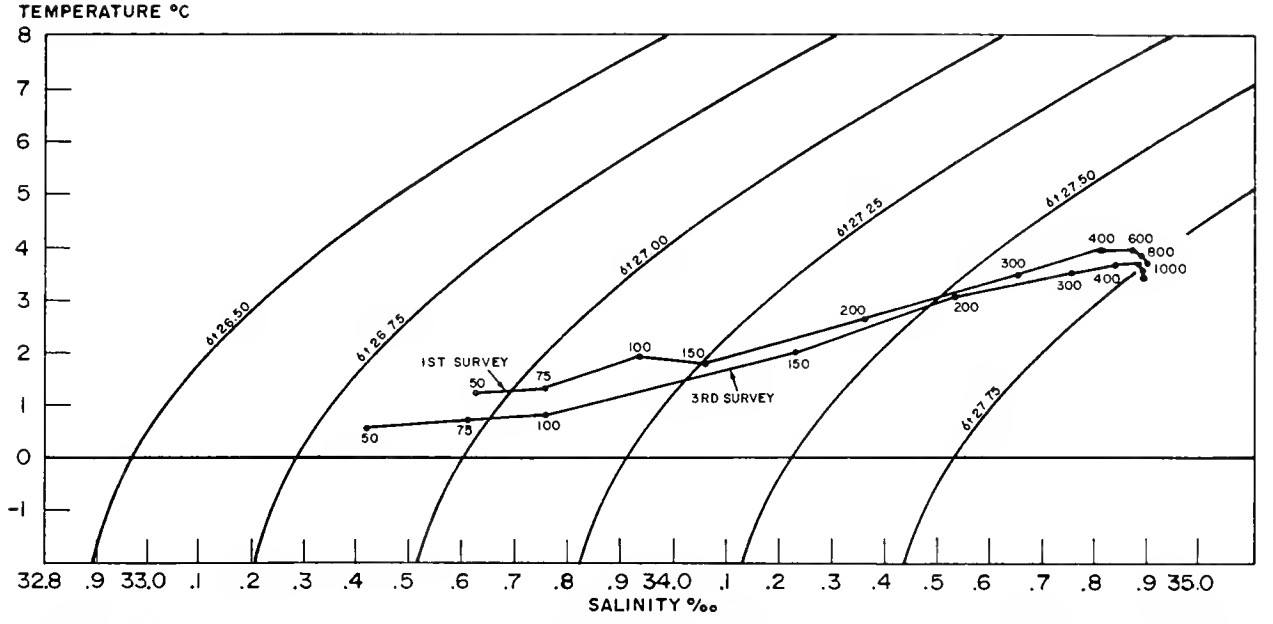


Figure 7A. Mean temperature-salinity plot of all stations on the first and third surveys situated in the Labrador Current during 1965.

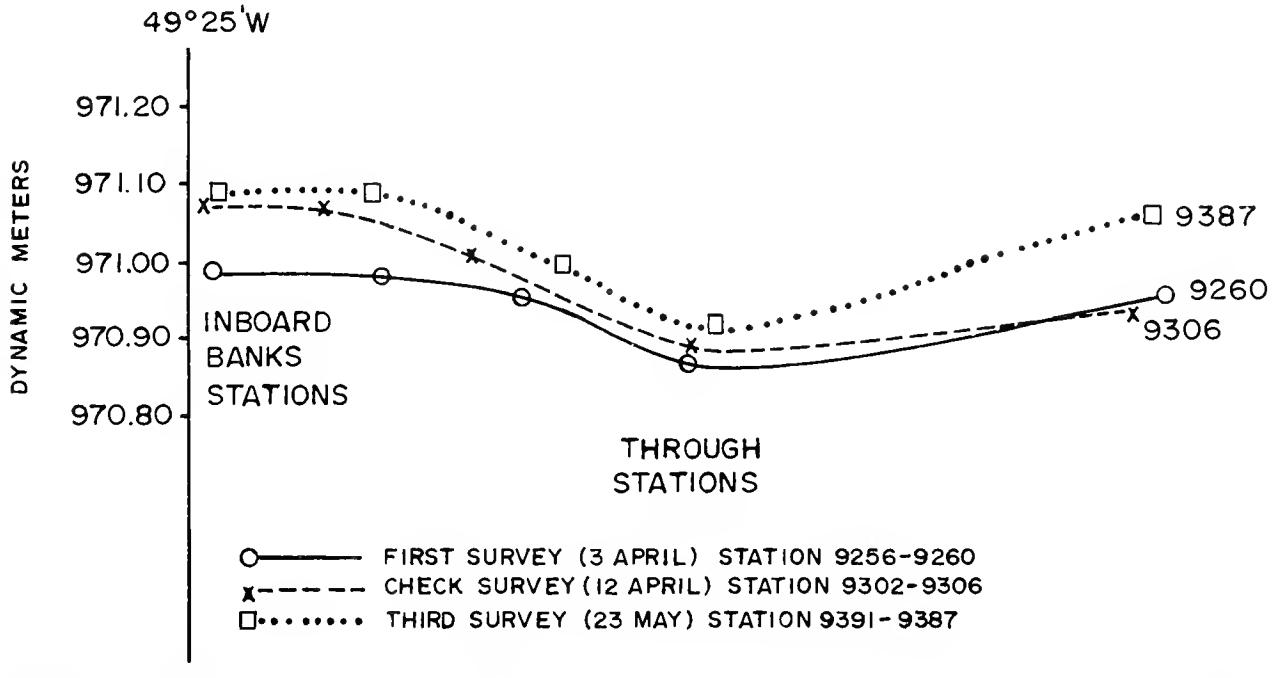
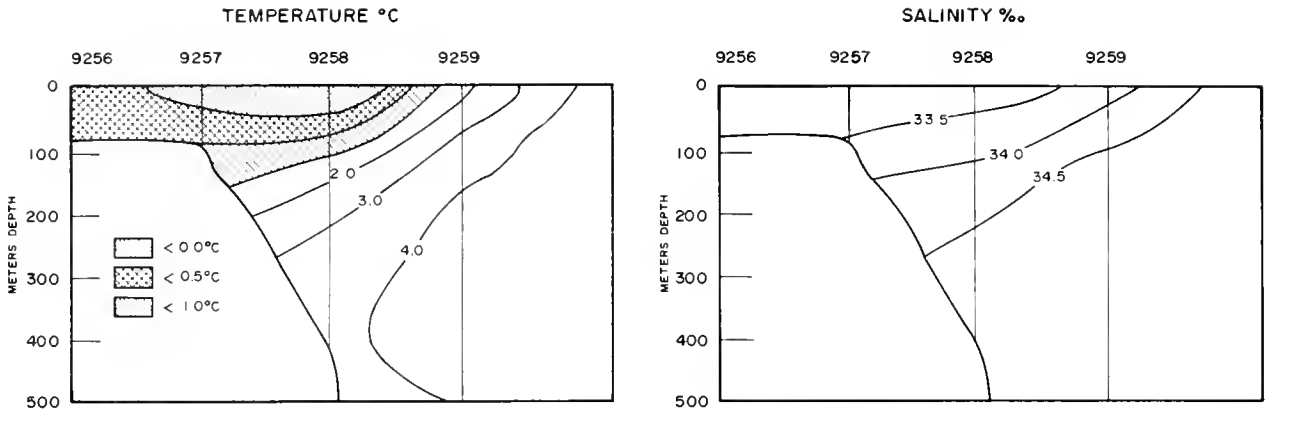
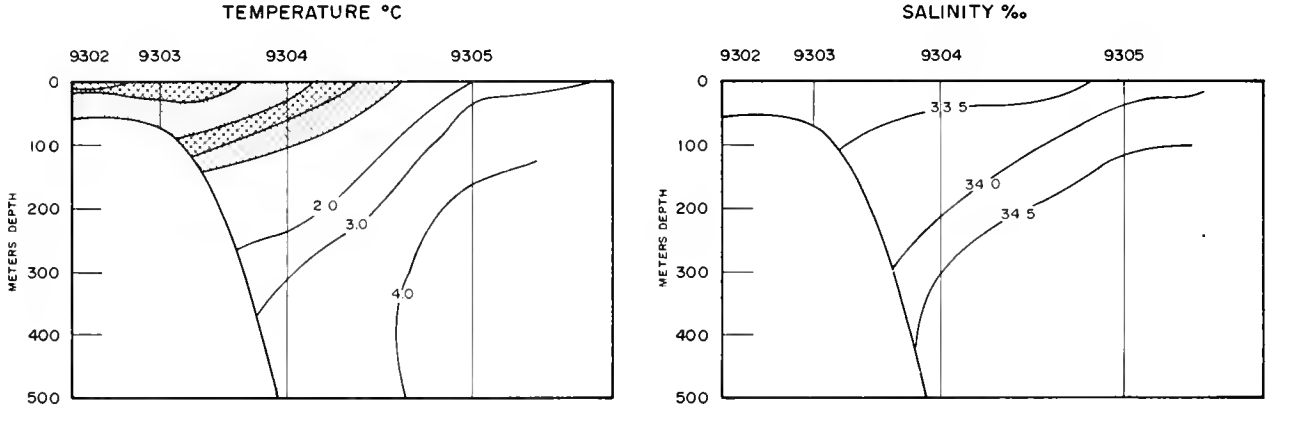


Figure 8A. Surface dynamic heights in dynamic meters along section U for the first, check, and third Ice Patrol surveys 1965.

FIRST SURVEY



CHECK SURVEY



THIRD SURVEY

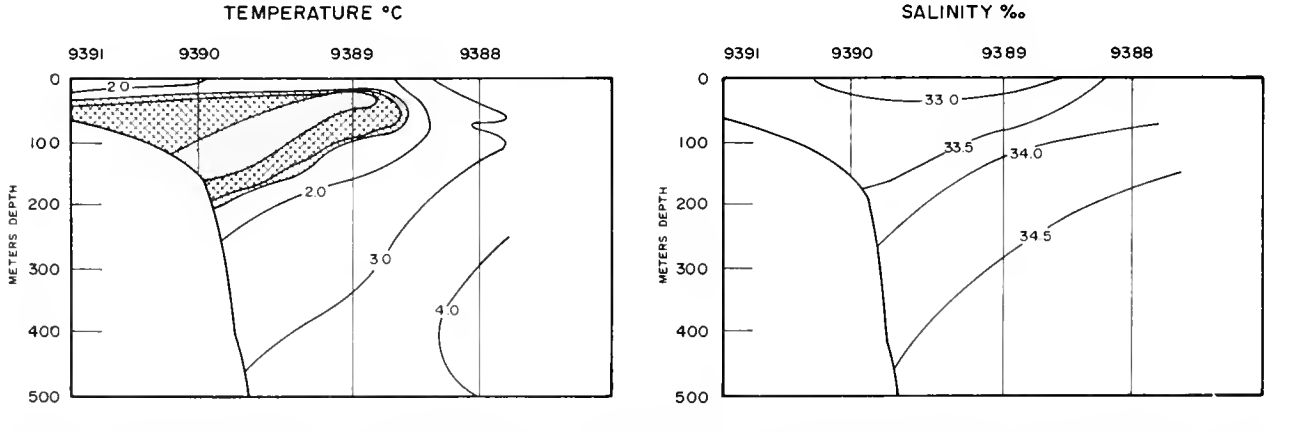


Figure 9A. Temperature and salinity distribution along section U for the first, check and third Ice Patrol surveys 1965.

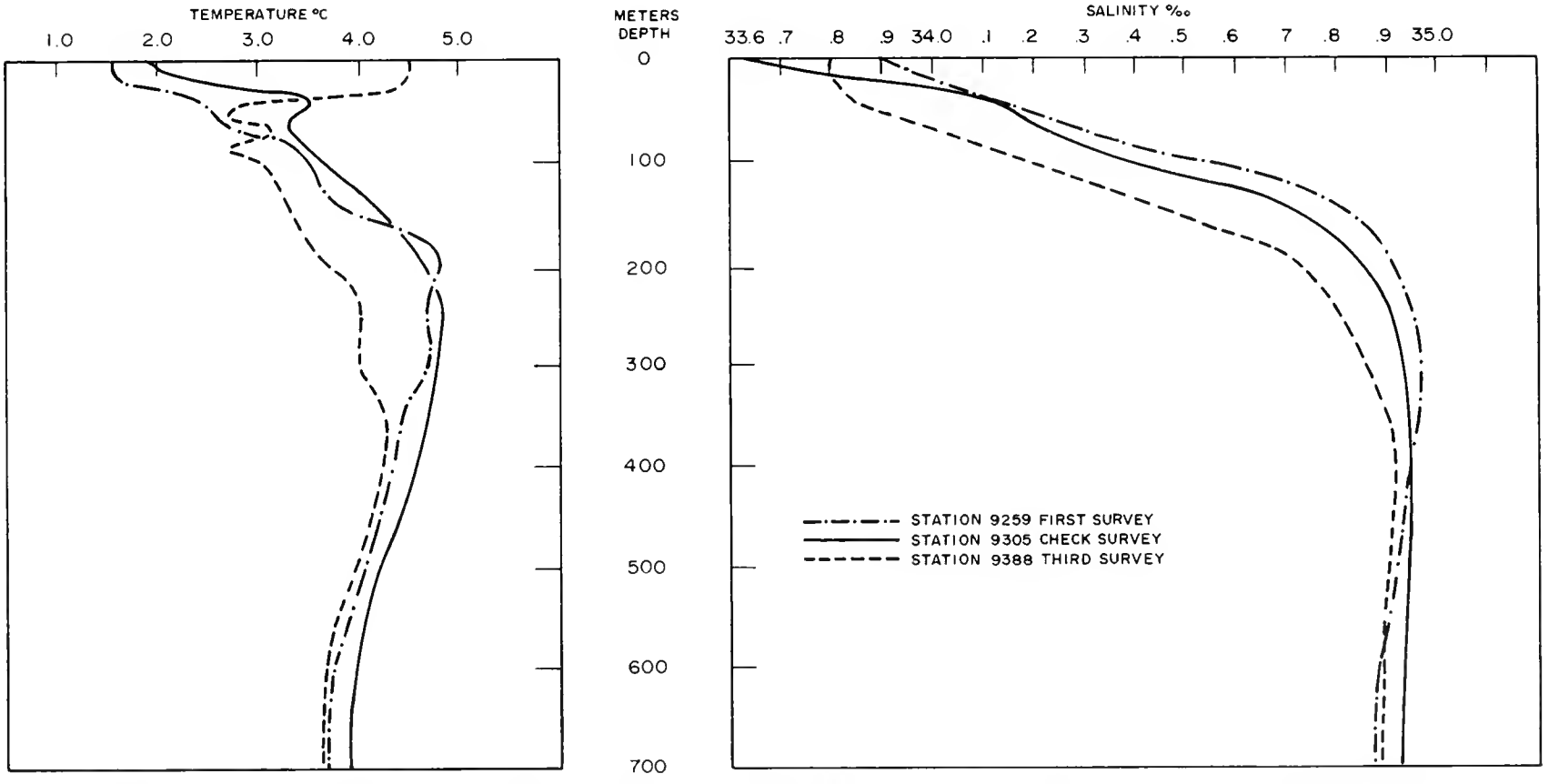
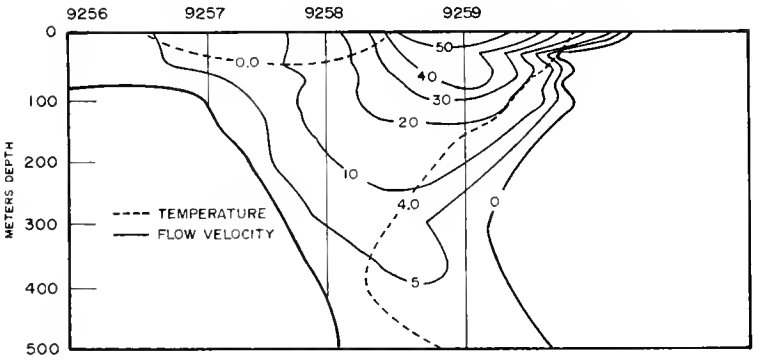


Figure 10A. Vertical distribution of temperature and salinity in the dynamic topography trough area of section U of the first, check and third Ice Patrol surveys 1965.

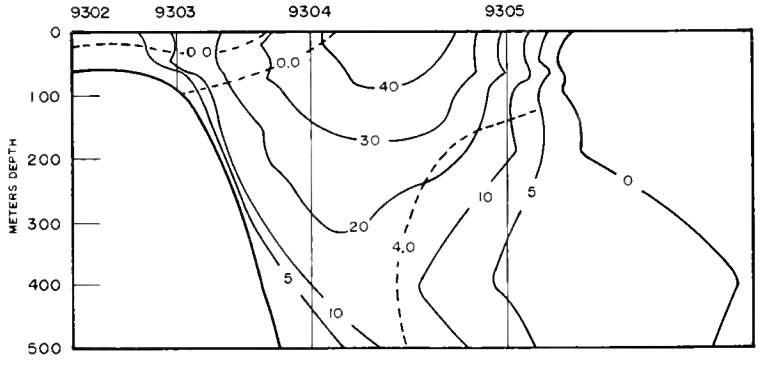
FIRST SURVEY

TEMPERATURE °C AND FLOW VELOCITY cm/sec



CHECK SURVEY

TEMPERATURE °C AND FLOW VELOCITY cm/sec



THIRD SURVEY

TEMPERATURE °C AND FLOW VELOCITY cm/sec

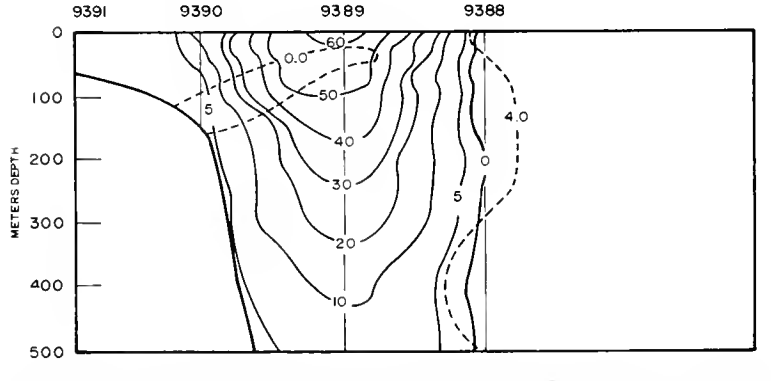


Figure 11A. Velocity distribution along section U for the first, check and third Ice Patrol surveys 1965. The 0.0° C. and 4.0° C. isotherms are indicated by dashed lines.

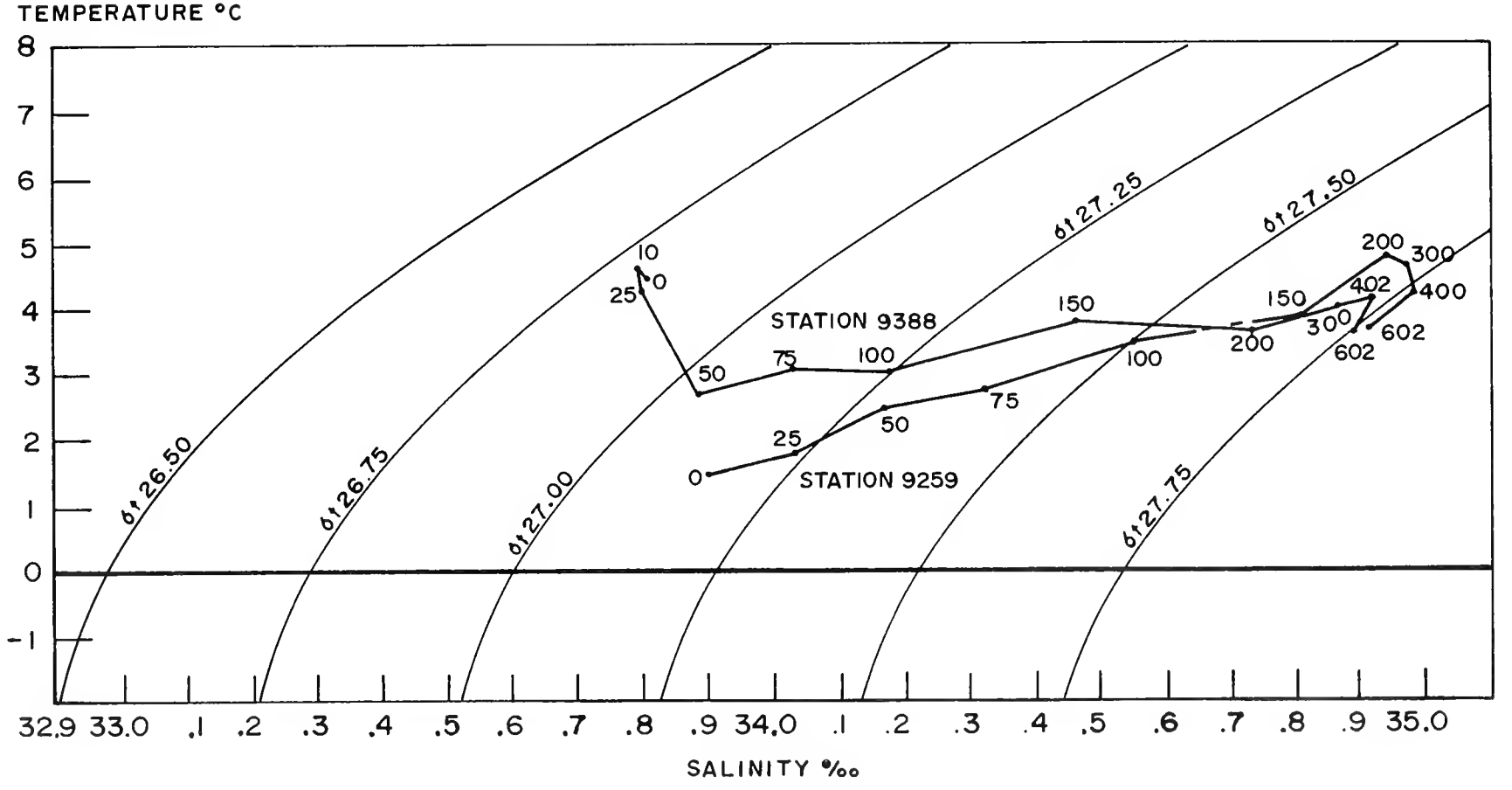


Figure 12A. Temperature-salinity plot of stations 9259 and 9388 located in the dynamic height trough area of section L of the first and third Ice Patrol surveys 1965.

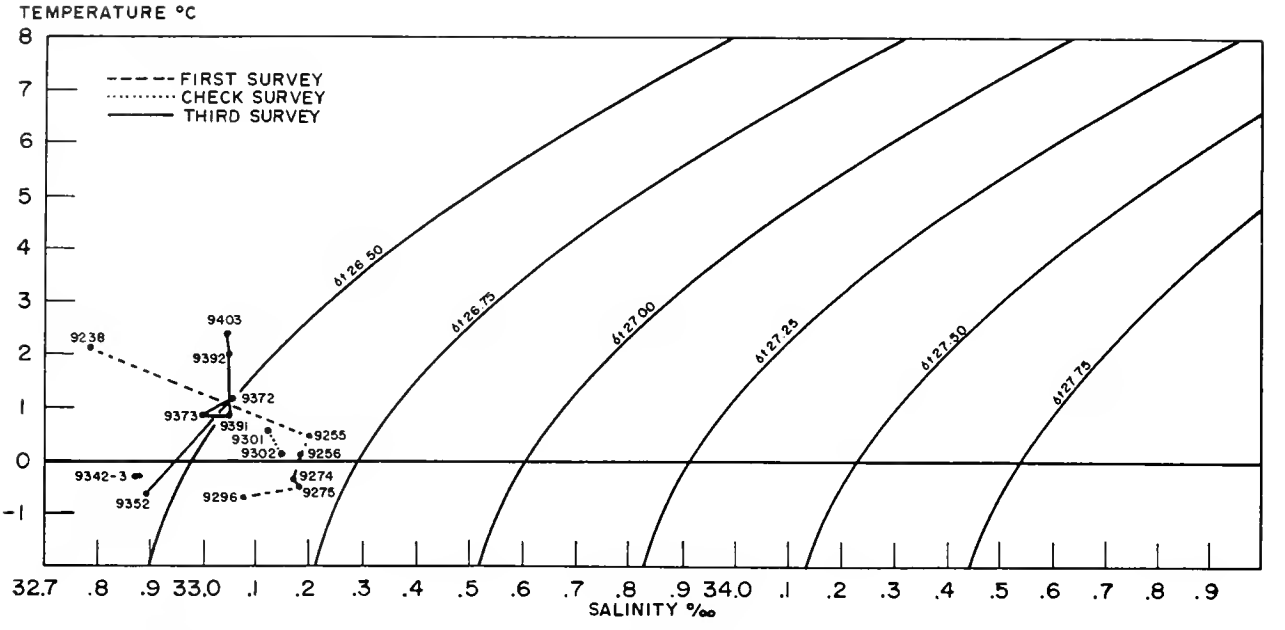


Figure 13A. Mean temperature-salinity plots, averaged over total depth, of the most westerly stations on the Grand Banks of Newfoundland for the first, check, second and third Ice Patrol surveys 1965. Stations 9342 and 9343 from the second survey are shown as almost coincident points.

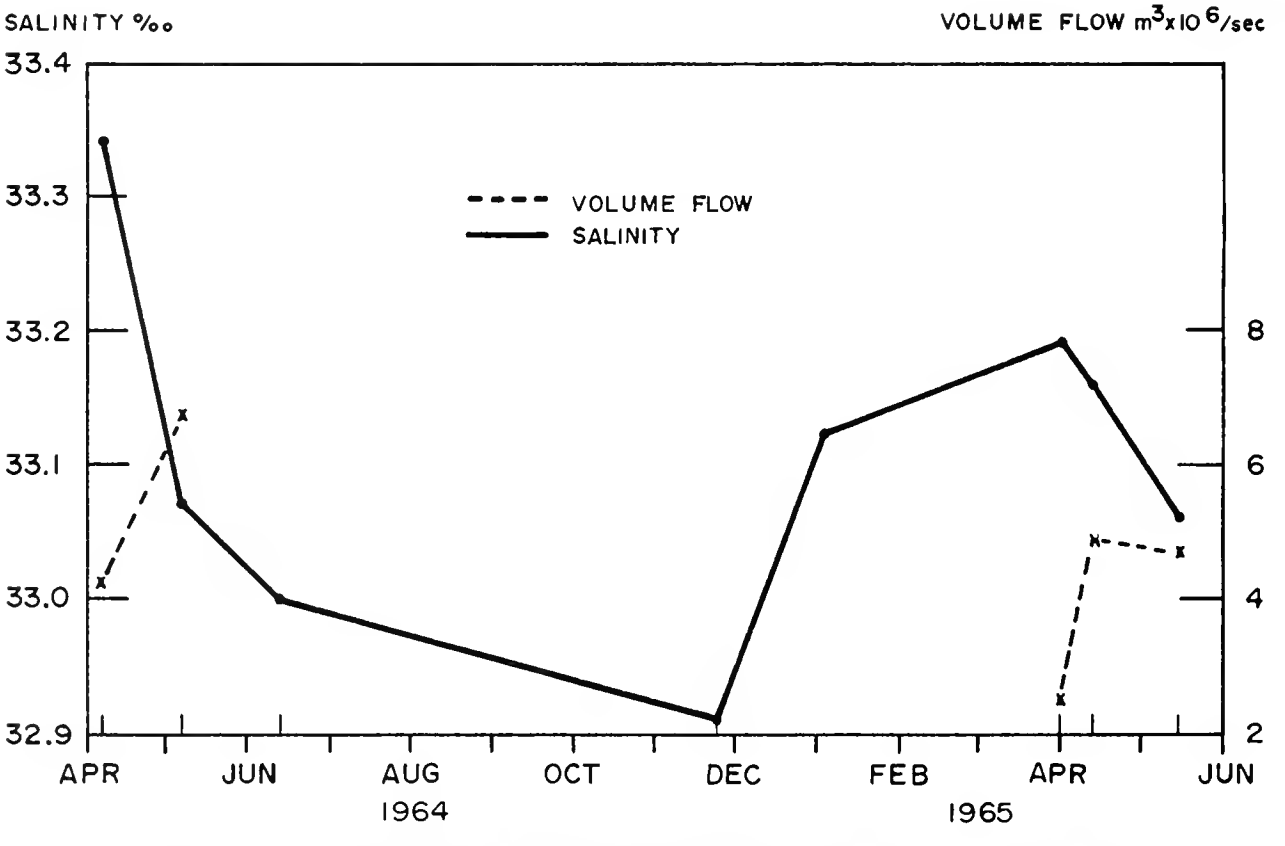


Figure 14A. Variation of volume flow through section U and the change in salinity of the water on the Grand Banks during 1964–65.

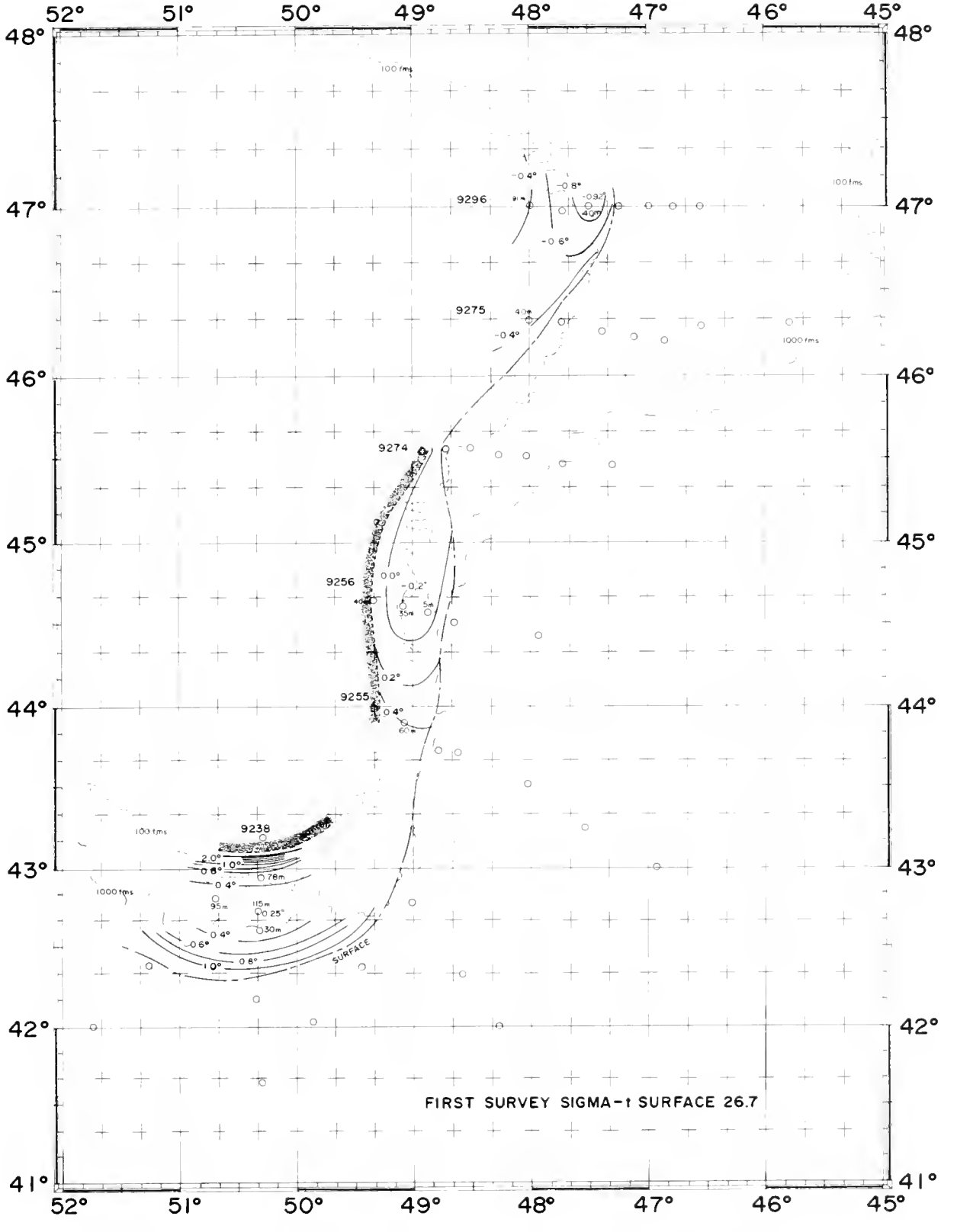


Figure 15A. Sigma-t level, 26.7, showing isotherm contours and sigma-t surface intersections with the bottom and sea surface. Based on data collected during the first survey of Ice Patrol 1965.

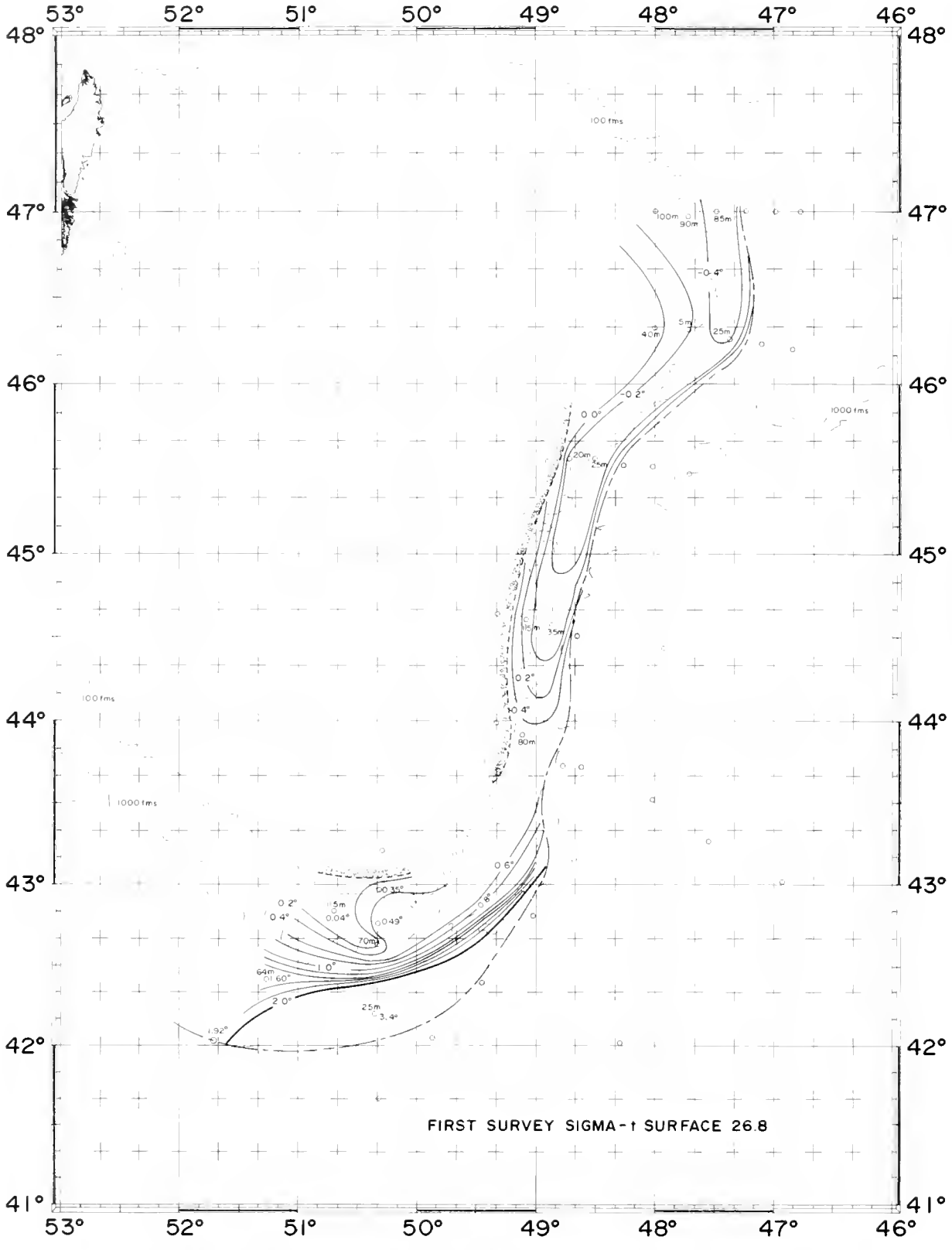


Figure 16A. Sigma-t level, 26.8, showing isotherm contours and sigma-t surface intersections with the bottom and sea surface. Based on data collected during the first survey of Ice Patrol 1965.

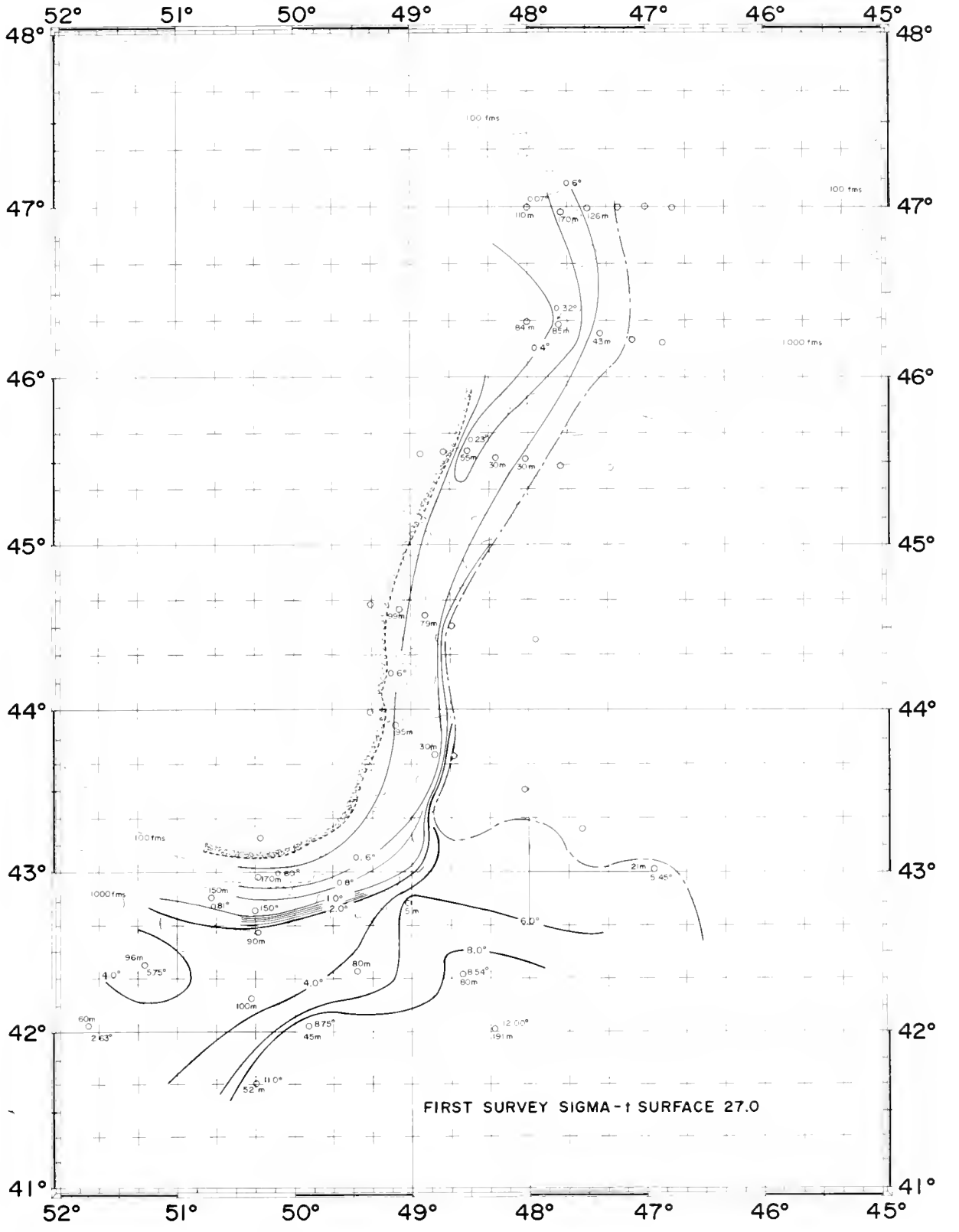


Figure 17A. Sigma-t level, 27.0, showing isotherm contours and sigma-t surface intersections with the bottom and sea surface. Based on data collected during the first survey of Ice Patrol 1965.

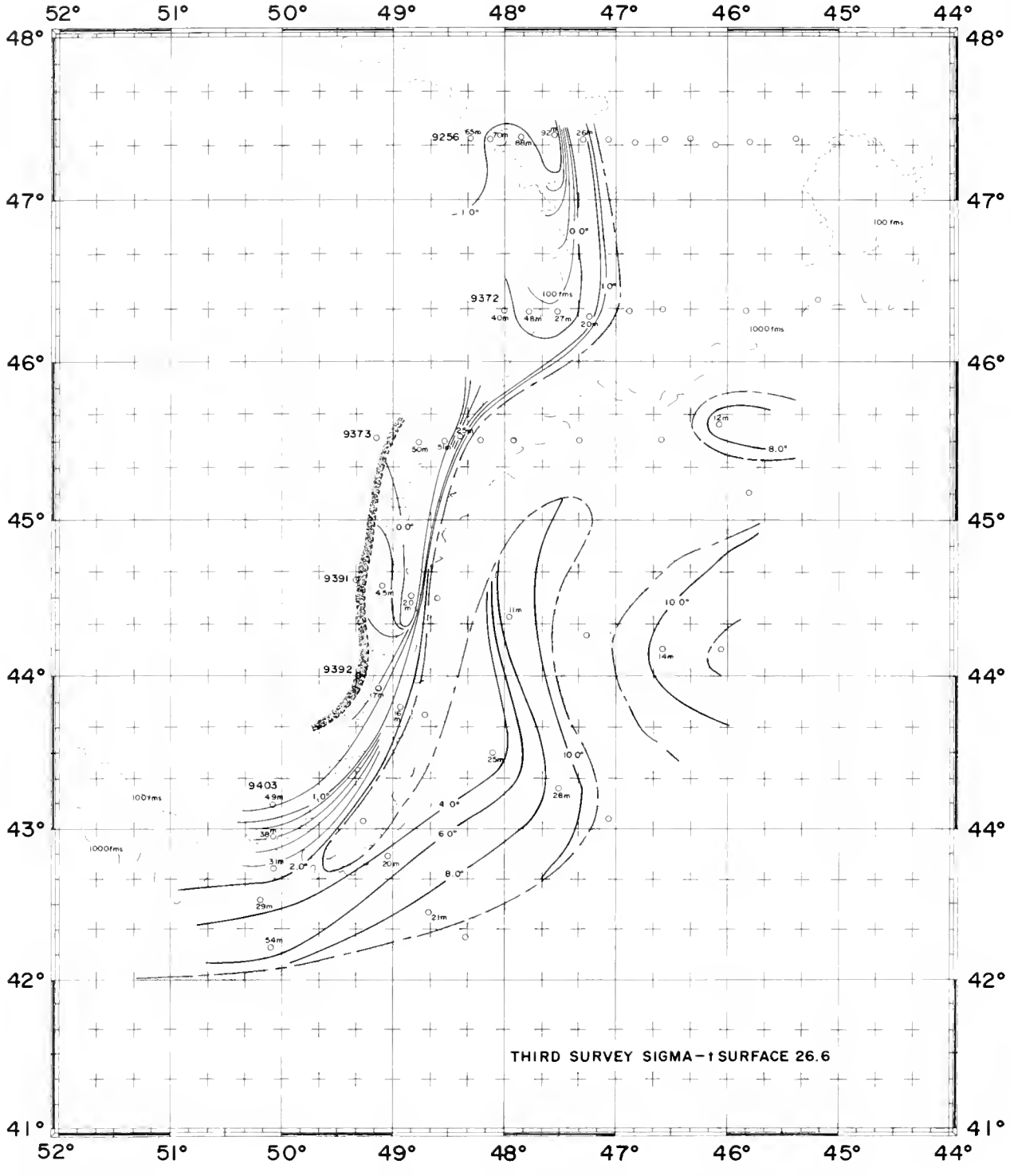


Figure 18A. Sigma-t level, 26.6, showing isotherm contours and sigma-t surface intersections with the bottom and sea surface. Based on data collected during the third survey of the Ice Patrol 1965.

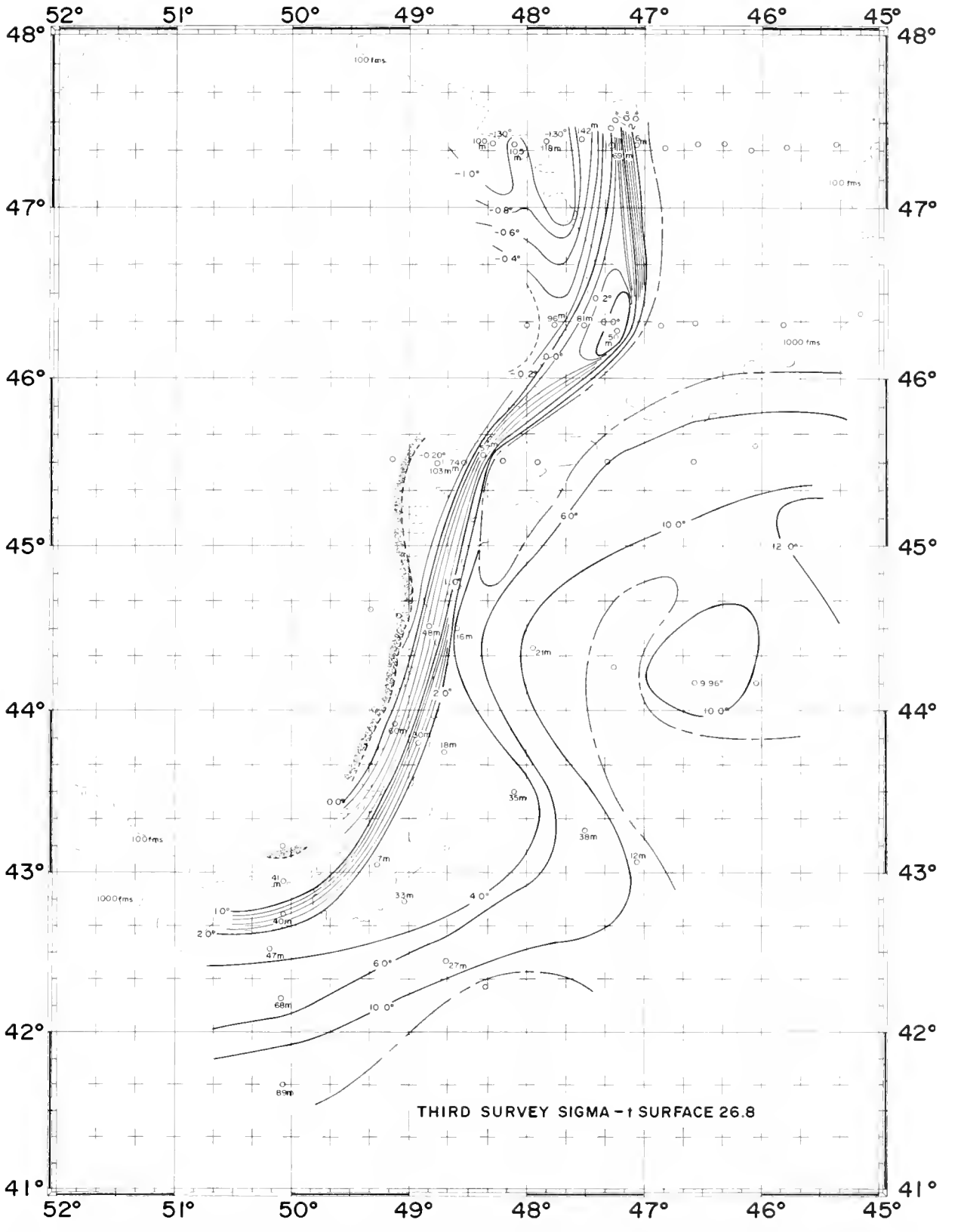


Figure 19A. Sigma-t level, 26.8, showing isotherm contours and sigma-t surface intersections with the bottom and sea surface. Based on data collected during the third survey of the Ice Patrol 1965.

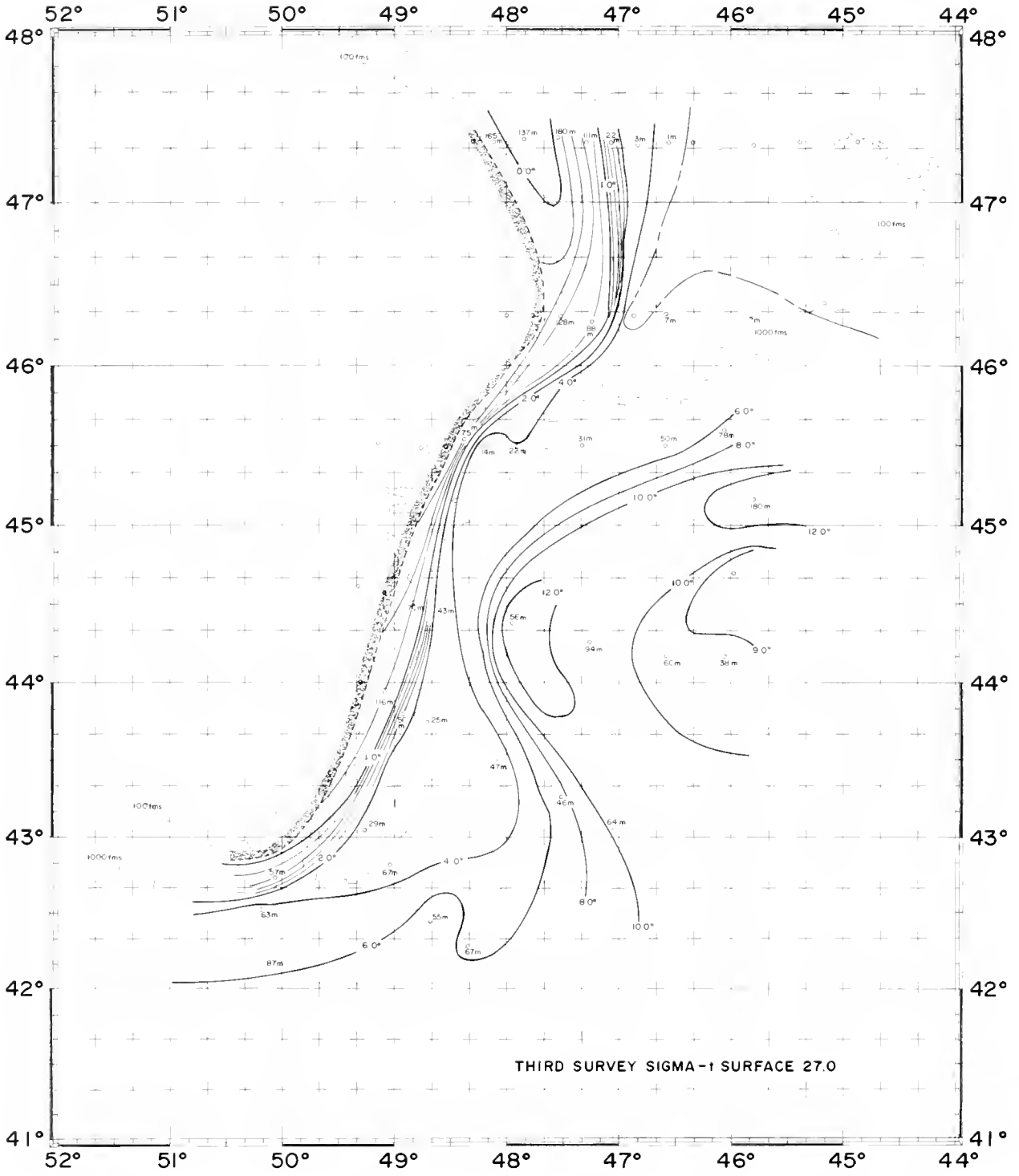


Figure 20A. Sigma-t level, 27.0, showing isotherm contours and sigma-t surface intersections with the bottom and sea surface. Based on data collected during the third survey of the Ice Patrol 1965.

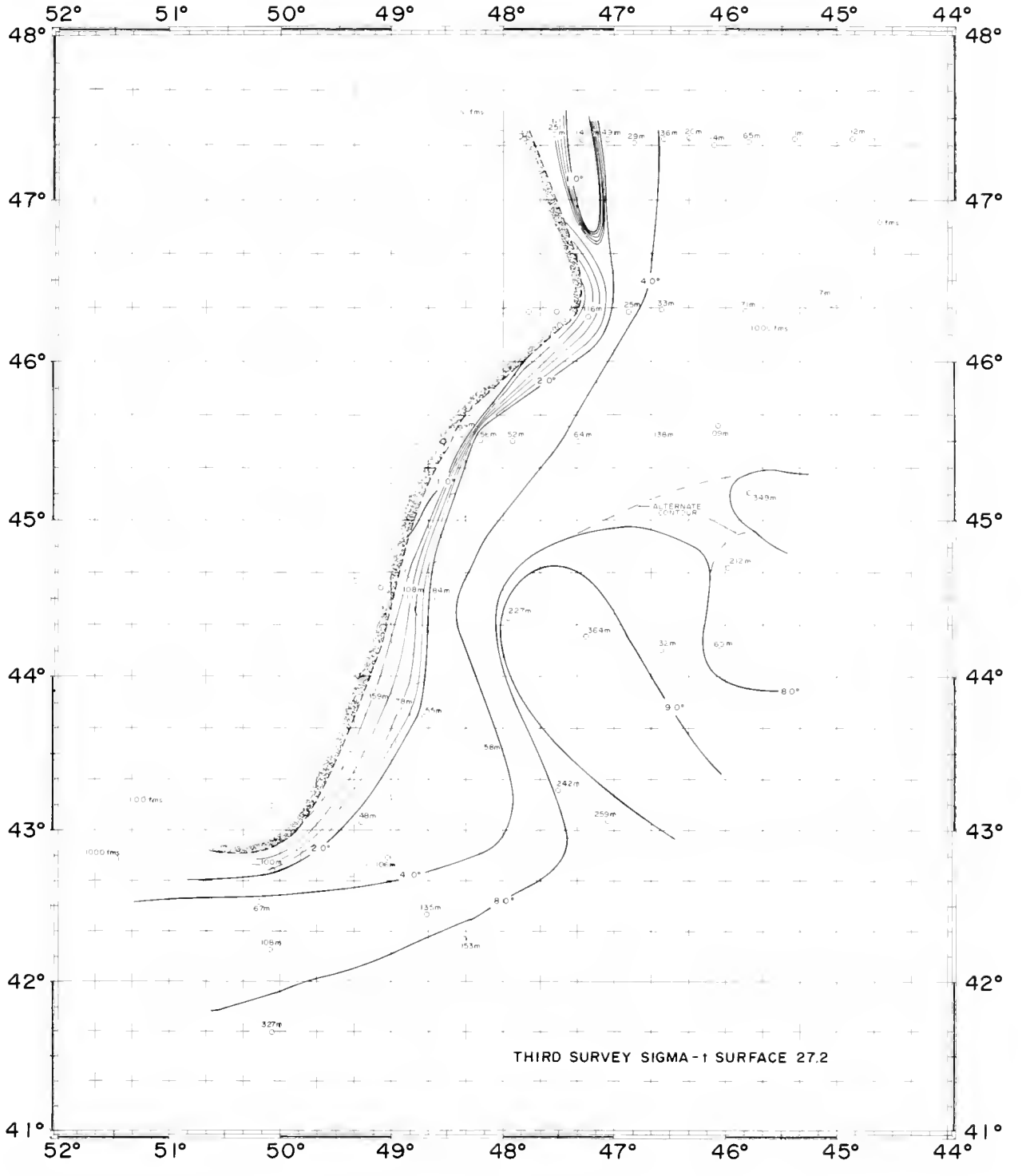


Figure 21A. Sigma-t level, 27.2, showing isotherm contours and sigma-t surface intersection with the bottom. Based on data collected during the third survey of Ice Patrol 1965.

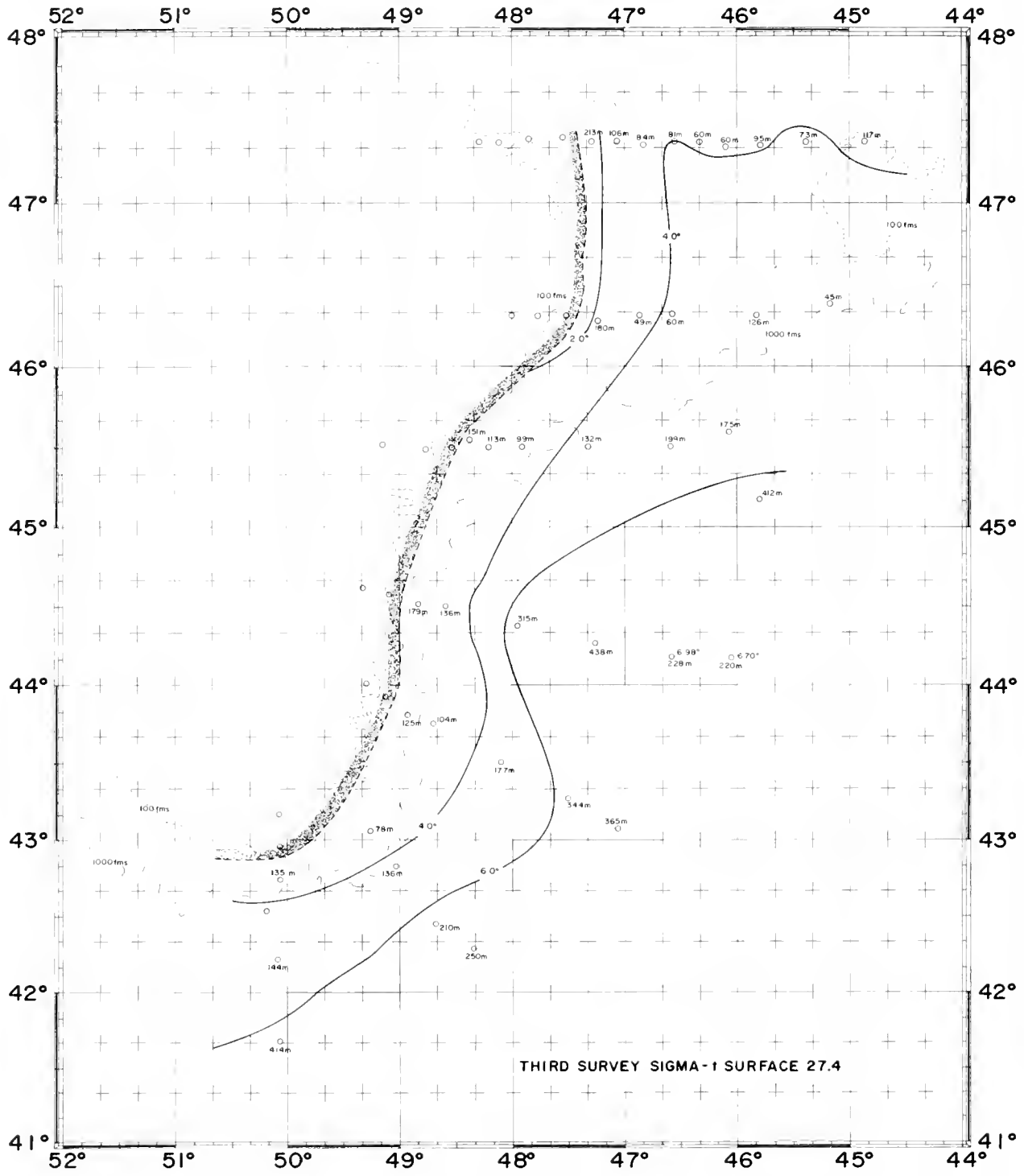


Figure 22A. **Sigma-t level, 27.4, showing isotherm contours and sigma-t surface intersection with the bottom. Based on data collected during the third survey of Ice Patrol 1965.**

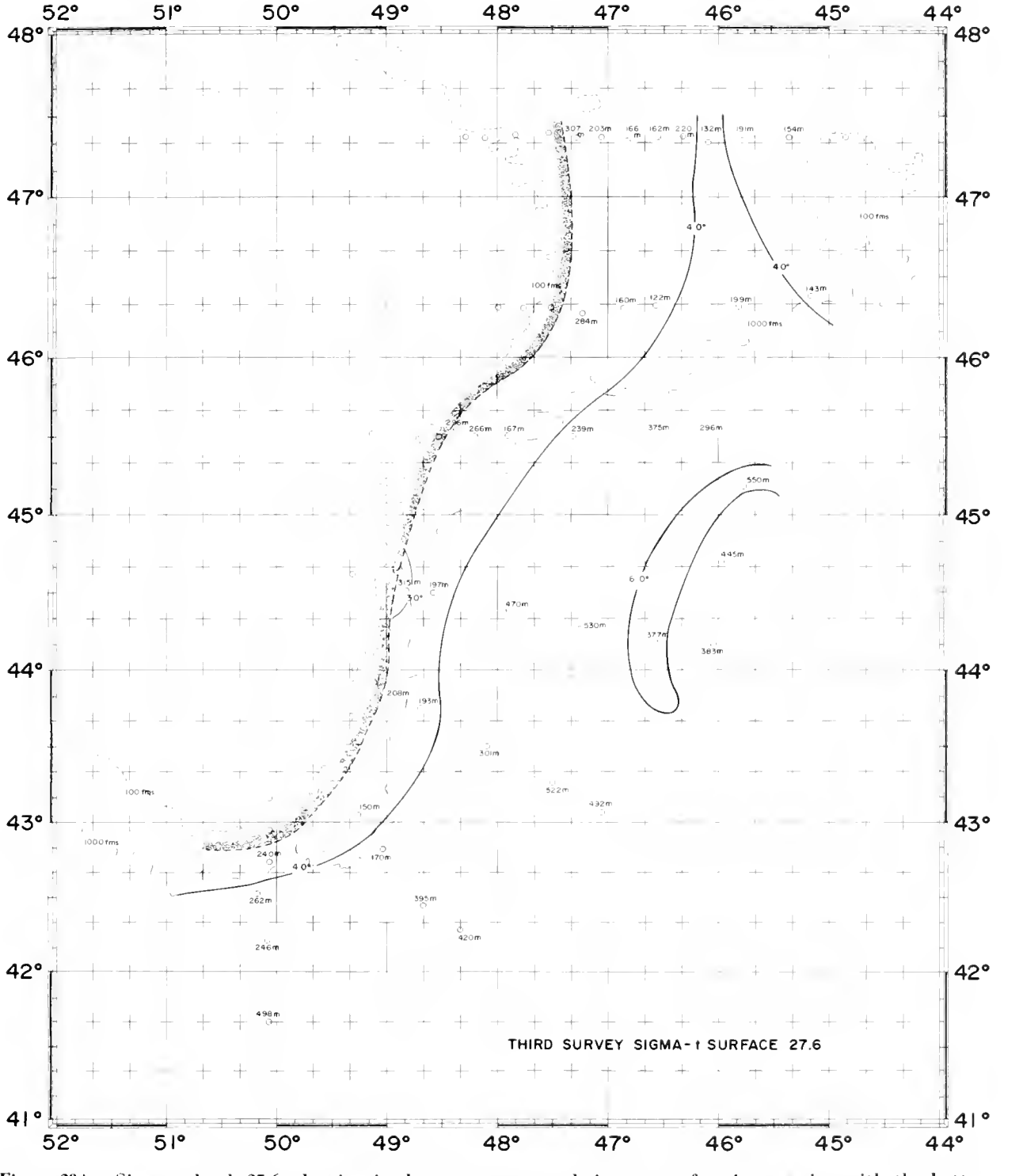


Figure 23A. Sigma-t level, 27.6, showing isotherm contours and sigma-t surface intersection with the bottom. Based on data collected during the third survey of Ice Patrol 1965.

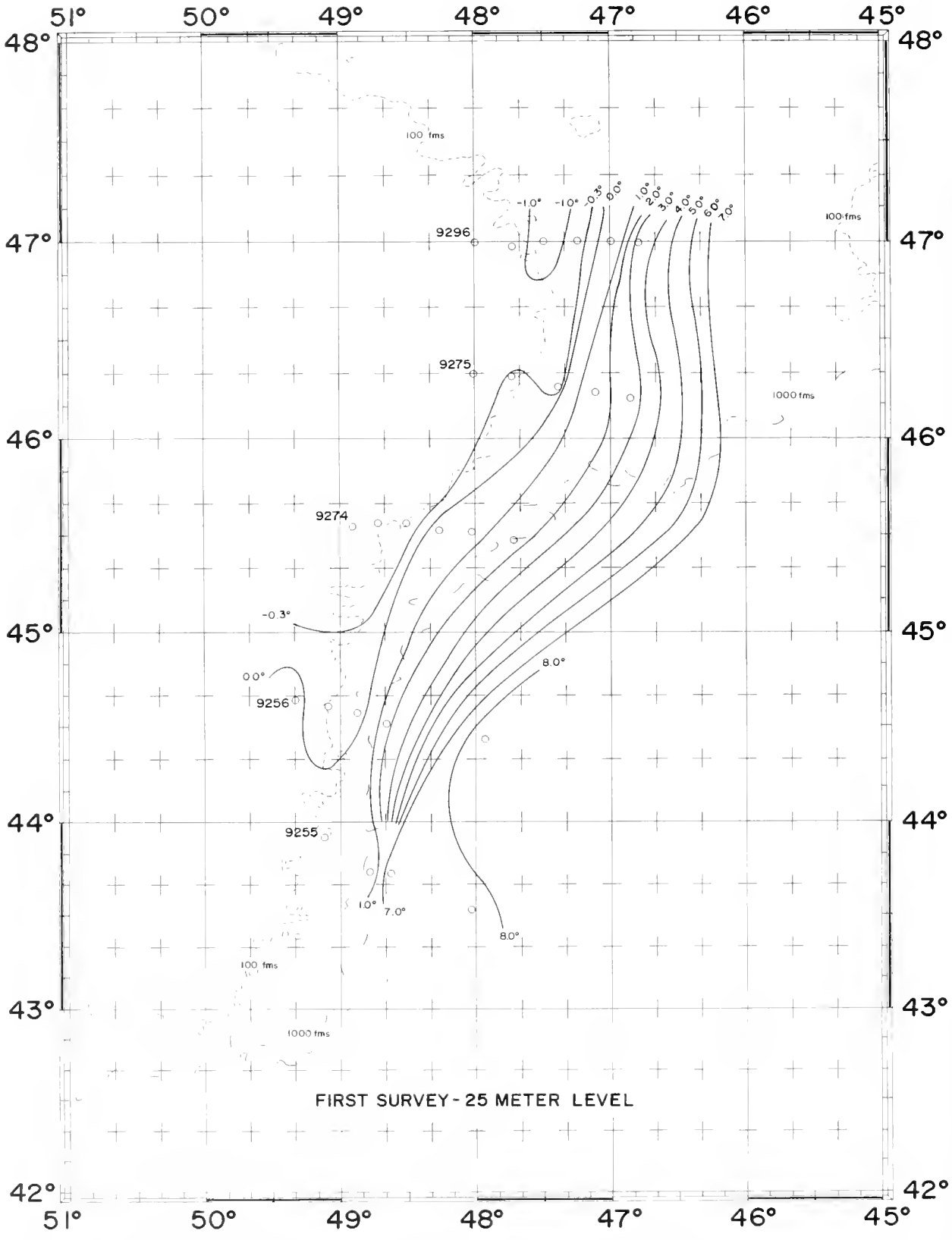


Figure 21A. Isotherm contours at the 25 meter level. Based on data collected during the first survey of Ice Patrol 1965. Contour interval: Heavy lines 2° C., light 0.2° C.

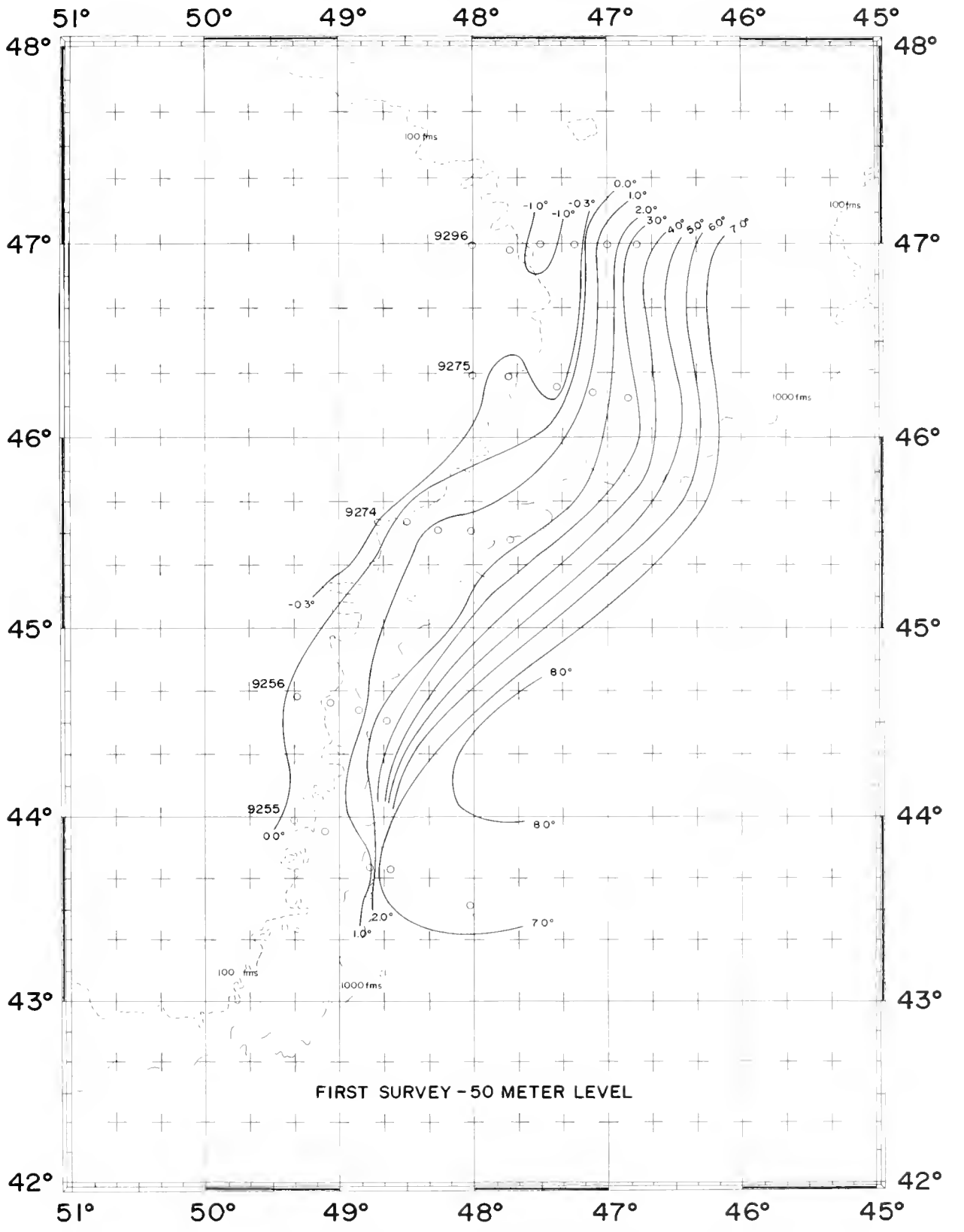


Figure 25A. Isotherm contours at the 50 meter level. Based on data collected during the first survey of Ice Patrol 1965. Contour interval: Heavy lines 2° C., light 0.2° C.

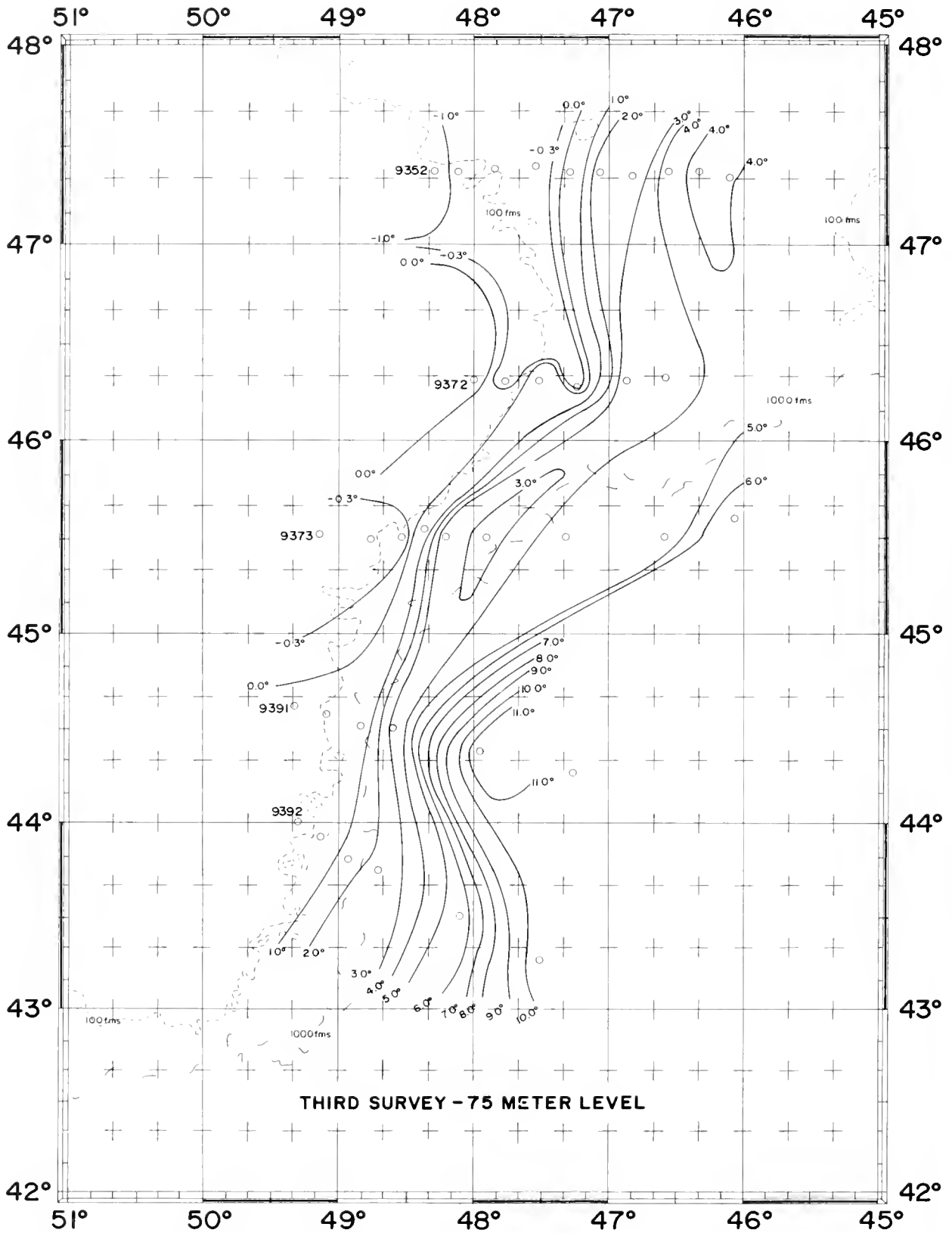


Figure 26A. Isotherm contours at the 75 meter level. Based on data collected during the third survey of Ice Patrol 1965.

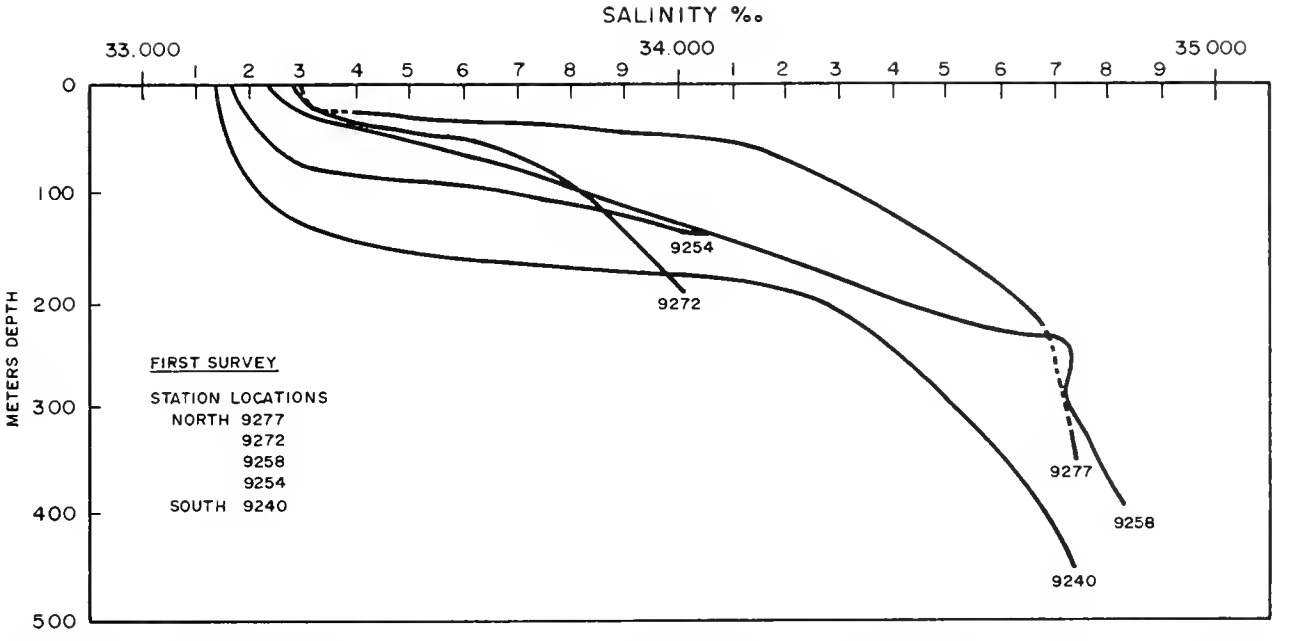


Figure 27A. Vertical distribution of salinity for the line of (center) stations along the core of the Labrador Current. Based on data collected during the first survey of Ice Patrol 1965.

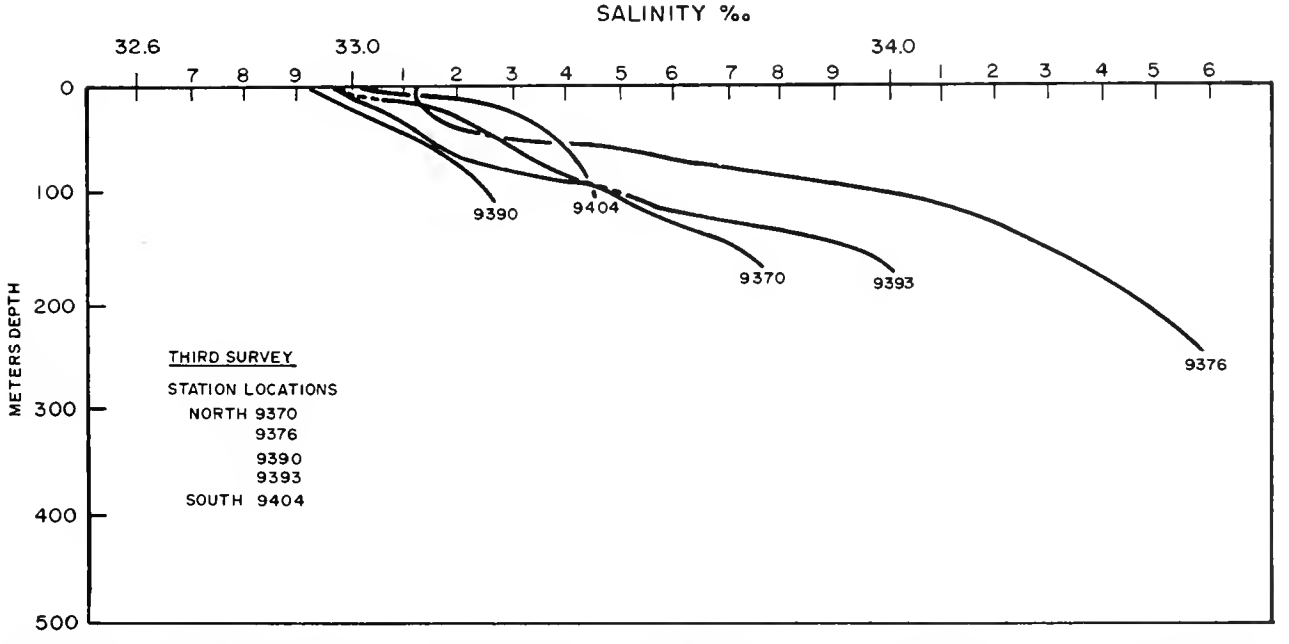


Figure 28A. Vertical distribution of salinity for the line of (center) stations along the core of the Labrador Current. Based on data collected during the third survey of Ice Patrol 1965.

Table 1A

	1st survey	Check survey	3d survey
Volume $m.^3 \times 10^6$/sec	2. 504	4. 983	4. 708
Heat °C $m.^3 \times 10^6$/sec	5. 522	12. 352	10. 202
Mean temperature °C	2. 20	2. 48	2. 17
Minimum temperature °C	−. 24	−. 34	−. 49
Minimum salinity	33. 122	33. 084	32. 895

TABLE IIA

Date	Dynamic height on Banks, dynamic meters	To 50 m.		Dynamic height of trough, dynamic meters	To 100 m.		Station Nos.	Difference in dynamic height	Volume transport $\frac{m.^3 \times 10^6}{sec.}$ through section	Minimum temperature of section
		Mean temperature °C	Mean salinity		Mean temperature °C	Mean salinity				
13–23 Apr. 1949	971. 023	0. 74	33. 30	970. 894	4. 95	34. 342	3789, 3794	−0. 129		
7–17 May 1949	971. 045	1. 93	33. 128	971. 008	−. 17	33. 376	3846, 3849	−. 037		
6–19 Apr. 1950	971. 083	−. 85	33. 128	970. 927	−. 24	33. 558	4046, 4050	−. 156	4. 34	−1. 76
2–13 May 1950	971. 072	. 84	33. 070	971. 000	2. 45	33. 584	4105, 4108	−. 072	1. 50	−1. 55
9–20 June 1950	971. 079	1. 97	33. 408	970. 930	2. 87	33. 794	4217, 4221	−. 149	4. 00	−1. 60
3–15 Apr. 1951	971. 112	. 45	32. 820	970. 966	5. 50	33. 886	4351, 4355	−. 146	3. 21	−1. 11
23 May–4 June 1951	971. 105	3. 78	32. 580	970. 972	5. 23	33. 788	4492, 4496	−. 133	2. 07	−1. 29
29 Apr.–12 May 1952	971. 087	1. 92	32. 830	970. 904	2. 27	33. 350	4808, 4804	−. 183	4. 40	−. 74
4–16 June 1952	971. 047	4. 09	32. 83	970. 967	7. 19	34. 23	4908, 4904	−. 080	1. 90	−1. 04
3–14 Apr. 1953	971. 086	. 22	32. 94	970. 923	2. 85	33. 82	5033, 5037	−. 163	2. 96	−1. 36
6–17 June 1953	971. 071	1. 97	32. 60	970. 916	2. 73	33. 65	5217, 5214	−. 155	3. 73	−. 41
1–15 Apr. 1954	971. 177	−. 27	32. 86	970. 940	1. 12	33. 52	5321, 5325	−. 237	5. 28	−1. 16
26 Apr.–8 May 1954	971. 115	−. 11	32. 89	970. 928	. 18	33. 48	5436, 5432	−. 187	4. 37	−1. 09
27 May–11 June 1954	971. 083	. 56	32. 93	970. 919	1. 66	33. 746	5517, 5521	−. 164	4. 52	−. 63
1–13 Apr. 1956	971. 036	. 08	33. 20	970. 897	3. 78	34. 168	6077, 6080	−. 139	3. 58	−. 46
19 May–1 June 1956	971. 098	1. 34	32. 94	970. 911	2. 14	33. 795	6171, 6175	−. 187	4. 87	−1. 04
4–18 Apr. 1957	971. 126	−. 48	33. 093	970. 898	1. 87	34. 025	6384, 6388	−. 228	5. 83	−1. 10
1–12 May 1957	971. 110	−. 50	32. 928	970. 913	1. 61	34. 091	6474, 6477	−. 197	4. 69	−1. 50
3–15 Apr. 1958	971. 153	. 62	32. 862	970. 947	5. 43	34. 070	6614, 6619	−. 206	5. 50	−. 30
23 May–5 June 1958	971. 140	3. 80	32. 758	970. 966	3. 99	33. 734	6789, 6794	−. 174	4. 29	−. 55
5–18 Apr. 1959	971. 129	−. 04	33. 130	970. 906	2. 48	34. 206	6931, 6934	−. 223	5. 38	−1. 31
30 Apr.–11 May 1959	971. 066	−. 24	33. 228	970. 899	2. 37	33. 996	7018, 7022	−. 167	3. 72	−. 85
27 May–6 June 1959	971. 132	. 81	32. 925	970. 951	2. 70	33. 815	7104, 7107	−. 181	4. 14	−1. 07
2–17 Apr. 1960	971. 131	. 23	33. 022	970. 916	2. 20	33. 800	7345, 7350	−. 215	5. 59	. 02
18 June–1 July 1960	971. 136	4. 38	32. 525	970. 914	4. 50	33. 951	7493, 7496	−. 222	4. 54	−1. 36
2–15 Apr. 1961	971. 008	−. 57	32. 950	970. 916	3. 12	33. 996	7628, 7632	−. 092	1. 46	−. 65
25 May–5 June 1961	971. 093	1. 92	32. 888	970. 920	3. 19	34. 034	7772, 7776	−. 173	3. 42	−. 45
1–13 Apr. 1962	971. 138	. 48	33. 085	970. 905	2. 66	33. 994	7991, 7996	−. 233	6. 31	−. 97
23 May–3 June 1962	971. 132	1. 86	32. 802	970. 959	1. 29	33. 645	8158, 8161	−. 173	5. 24	−. 69
30 Mar.–8 Apr. 1963	971. 145	−. 80	33. 065	970. 915	. 44	33. 823	8427, 8431	−. 230	6. 62	−1. 17
14–25 May 1963	971. 105	1. 60	32. 848	970. 900	. 53	33. 274	8584, 8587	−. 200	4. 48	−. 64
5–16 Apr. 1964	971. 045	−. 24	33. 347	970. 922	1. 45	34. 123	8834, 8838	−. 123	4. 35	−. 96
2–13 May 1964	971. 120	−. 10	33. 074	970. 900	4. 08	33. 985	8984, 8989	−. 220	6. 75	−1. 05

Interim Report

Iceberg Deterioration

by

Ronald C. Kollmeyer, U.S. Coast Guard

Introduction

The problem of iceberg deterioration is an intimate part of iceberg forecasting. The ability of commander, International Ice Patrol to make accurate predictions of the positions of icebergs that may menace the shipping lanes depends not only on reliable drift data but dependable estimates of life expectancy as well. At present, the only way to determine when a berg can be dropped from consideration is by direct observation of its progressive reduction in size. Hence, as techniques of drift prediction are perfected and scouting for position becomes less necessary, there must be a corresponding increased ability to predict deterioration rate, if any substantial saving in man hours, fuel and equipment are to be safely realized. This will require perfection of the techniques to the point where accurate automatic downgrading of specific bergs can be made with complete confidence without actually viewing them.

Some attention has been given to the problem of iceberg deterioration since 1912, however no quantitative work was ever accomplished which would lead to reasonably precise predictions.

The idealized solution to the problem calls for a detailed examination of the heat budget of an iceberg. Basically, the heat transfer into a berg causes melting, the rate of which is dependent upon many factors. Coupled with the melting is the phenomena of calving or the breaking off of ice pieces. The calving problem complicates prediction schemes because of its randomness in both quantity and frequency. Mass distribution, prominence configuration and existing cracks all play a part in calving thus rendering the calving problem unpredictable under any conditions.

Detailed heat transfer studies can be accomplished for small areas of ice surface, but difficulty arises when these studies are extended to the entire surface of an iceberg. Unequal heat transfer, caused by unequal temperature distributions and turbulence, prevents the extension of mathematical relationships to actual conditions and makes modeling difficult. The underwater configuration also plays a major part in the deterioration by presenting varying surface areas for a given mass. These shapes can only be speculated on until actual observations are made. In the interim gross conclusions must be drawn to categorize the subsurface shapes and sizes into groups, sub-groups and deterioration types. These types reflect the mass to surface area ratios which affect the heat transfer and melting rates. At present only the portion of the berg above the water can be classified by deterioration type. Bergs of the drydocked or pinnacle shapes tend to have low mass to surface area ratios while a blocky or spherical berg tends to have a larger ratio. While these ratios play a role in grouping surface deterioration types, no consideration can be given to the underwater portion because of the lack of ability to determine the underwater configuration.

The logical direction for research in berg deterioration should be along statistical lines. Basic deterioration parameters must be measured along with quantitative mass size changes in an attempt to correlate the data and develop an effective method for predicting deterioration rates. This prediction method must be based on easily obtainable parameters such as air and water temperatures, wind velocities, sea state, berg size, and configuration.

Previous Work

In the past no really quantitative work has been performed on berg deterioration. Much is available in the descriptive field of berg disintegration but basic correlative data along with mass changes are not available.

Barnes (1912) one of the early observers of bergs, made water temperature measurements in the vicinity of icebergs in and near the Strait of

Belle Isle and postulated the causes of observed surface warming as a berg is approached. He further elucidated on this warming phenomena near bergs and the part it plays in deterioration in a 1913 report and again in 1927. Barnes (1927) looked closely at the physical properties of bergs, including the quantities of entrapped air. He speculated on the causes of calving based on his observations of river ice. A correlation was drawn by Barnes between the internal thermal stresses set up by natural conditions, i.e., the sun, and the calving that resulted. He cites observations made in bright sunlight, concluding that the penetrating rays through the clear melt water on the bergs surface sets up the expansion stresses. He attempted to create these stresses by using thermite bombs to induce greater calving. Zeusler (1926) and Ricketts (1930) made qualitative studies of the melting processes supported by actual observations. Smith (1931) summarized the basic knowledge to date, citing the various methods of berg deterioration and the conditions causing them. He made detailed observations of several bergs deteriorating under different environmental conditions. The next work of significance occurred when Bullard (1960) reported on the attempts to destroy bergs. Thermite bombs were used to duplicate the experiments of Barnes (1927). High explosive bombs were also tried to fracture the larger bergs, and the melting of a berg was "hastened" by covering it with lampblack. All of these methods attained only a limited degree of success and were not pursued further. In 1960 a program was initiated to gather statistical deterioration data on bergs. Coast Guard ships of opportunity were to make studies on deterioration when required to standby dangerous bergs drifting in the shipping lanes. No information as to whether or not the project gathered any useful data is available, however, very few bergs in the past 5 years have required a standby vessel.

In 1964 a preliminary study was conducted by Ice Patrol (Kollmeyer et al, 1964) in order to gain some insight into the problem and to develop the techniques required for future work. A berg was observed over a week's time in a relatively warm air environment and in water slightly above 0° C. Unfortunately quantitative size measurements were of no value due to the inaccuracy of radar determined ranges and no correlation work could be accomplished. The various problems encountered, particularly those of size and shape measurements, lead to the use of more elaborate and effective equipment during the 1965 study.

Theoretical Analysis

The deterioration parameters that can be considered the most important are those which contribute to the actual melting of a berg. Calving or breakage is random, and at the present time cannot be directly tied to environmental conditions. All forms of heat transfer must be examined. Basic principles of thermodynamics indicate that to develop a workable estimate and prediction system, all aspects of radiative heat transfer along with detailed analysis of the small scale phenomena of the fluid boundary layers must be investigated.

The intent herein is not to present an all encompassing document of heat transfer to icebergs, but to outline an intensive study that will ultimately lead to accurate deterioration prediction models.

The heat budget of an iceberg can be described as follows:

$$\text{Net heat added} = (Q_s - Q_r) + Q_a + Q_w + Q_{awr} - Q_{ir} \quad (1)$$

Net heat added = heat required to raise a berg's temperature. In this treatment, complete melting is the primary concern, therefore the net heat added will be considered as that heat used to raise a berg's temperature to 0° C. and to melt the ice (heat of fusion).

Q_s = direct incoming solar radiation
Q_r = solar radiation reflected from a berg's surface
Q_a = convective-conductive heat from the air
Q_w = convective-conductive heat from the water
Q_{awr} = air and water radiative transfer to berg
Q_{ir} = iceberg back radiation

A quantitative look must be given to the heat budget equation of a berg to determine which terms are important and which ones can be dropped. A hypothetical berg will be used for this purpose. Deterioration data based on years of experience will be drawn from Ice Patrol (Lenczyk 1964), as shown in table IC. Listed therein are rules of thumb used to predict the life of various sized bergs in several different water temperature environments. These are gross figures and will be utilized only to show the importance of each heat transfer process. The selected figures to be used are 2.2° C. water tem-

perature, medium sized, blocky berg, and a deterioration time of 20 days (2.88×10^4 min.). The dimensions of the berg selected are 100 meters wide, 100 meters long, and 300 meters in overall height. Using an ice density of 0.9 gm/cm^3 (Smith 1931) this gives an above the water height of 30 meters. With a total mass of 2.7×10^{12} gms and a surface area of 1.4×10^9 cm^2.

Because the berg is constantly being reduced in size, it will be assumed that this reduction is linear as far as its surface area is concerned over the 20-day period. This means that a representative area, integrated with respect to time, can be assumed to be one-half of the initial surface area which would be 7.0×10^8 cm^2.

Before proceeding with the analysis a few more assumptions must be made. The net heat added to an iceberg must be utilized for both raising the berg's temperature to its melting point and for heat of fusion to melt the berg. Barnes (1927) has shown that the icebergs are basically fresh water and can even be compared to distilled water. Due to the bergs glacial origin this seems reasonable and therefore, the physical constants for fresh water such as heat of fusion may be applied to icebergs.

According to Bader (1961) direct temperature measurements of the Greenland ice cap indicate that as the various glaciers flow towards the sea they assume an internal temperature similar to the mean annual air temperatures. Furthermore, the internal temperatures are found to be quite uniform from top to bottom varying only about 1° C. Bader shows that in the vicinity of the Jacobshaven glacier, postulated by Smith (1931) to be a prime source of bergs, a temperature of about −12° C. would apply. For this paper this figure will be assumed to be the minimum internal temperature of an iceberg.

During melting, the berg's surface would be 0° C. and it would have a negative internal temperature gradient. This gradient would certainly be a variable and some actual measurements will be required. For the purpose of this treatment it will be assumed that a specific portion of received heat will be utilized for raising the berg's surface temperature to 0° C. prior to melting and maintaining the thermal gradient.

The quantities (Q_s-Q_r) of equation (1) are affected by the icebergs particular properties of absorption and reflection. Q_s, the incoming solar radiation, is an environmental property which not only tends to provide direct heat energy for melting the bergs surface but also indirect energy for heating the bergs environment.

The nature of the ice surface on which this incoming radiation (Q_s) falls, is an important factor in determining the effectiveness of this heat source. Before any heating can take place, the radiant energy must penetrate this surface. The ratio of reflected energy to incident energy, or albedo, provides the first tool for estimating the heat energy available for melting. The albedo percentage must be estimated from measurements made on snow fields since no direct observations have been made on icebergs. Clean snow fields are very similar to icebergs because of the extreme whiteness of bergs due to their saturation with air bubbles. The air bubbles decrease the transparency of bergs and cause scattering of the incident radiation increasing the reflection. Albedo measurements have been made for sea ice, however, puddling, brine pockets, and darkened transparent areas can severely reduce the albedo and prevent comparison.

Chernigovskii (1939) shows snow albedos range from 87 percent during March to 60 percent during July in the Arctic. This reduction is due primarily to melting, puddling and surface texture changes during the summer. Numerous investigators have looked at the albedo of Antarctic snow fields. Hoinkes (1960) indicates that values ranging from 75 to 93 percent have been found for instantaneous measurements. A value of 80 percent seems reasonable for a berg and will be assumed until more accurate measurements can be obtained. Actually, the albedo of a snow field should be somewhat lower than a berg's because of the berg's facets. These facets cause random reflection which scatters a great deal of the incident radiation. This phenomena is variable depending on a particular berg's configuration and can be treated in general terms only, however, it is reasonable to suspect that the albedo might be a good deal higher than the assumed 80 percent.

Solar radiation values from Hess (1959) show that at 45° N., a latitude of Ice Patrol interest, the maximum incoming radiation reaching the earth's surface during March and June ranges from 0.14 to 0.38 gm cals/cm^2/min on a 24-hour basis. Some direct measurements, figure 1c, show that during a week in April 1965 an average of 0.14 gm cals/cm^2/min were received in the Ice Patrol area of the Grand Banks of Newfoundland.

Using an albedo of 80 percent, a figure for solar radiation into the berg ($Q_s - Q_r$) of 0.03 gm cals/cm^2/min is obtained. Applying this figure to the hypothetical berg described above, and taking only that portion of the berg above the water that receives this radiation, it is found that 1.1×10^8 cm$^2 \times 0.03$ gm cal/cm^2/min $\times 2.88 \times 10^4$ min $= 0.095 \times 10^{12}$ gm cals of heat received by the berg during its 20-day decay period.

Back radiation (Q_{ir}) from a berg represents a loss of heat in the budget. Surface and near surface radiative losses will be the most important and would certainly be more intense than any radiation from the colder interior. The Stefan-Boltzman radiation law states that $Q = k\sigma T^4$; where σ is the universal cgs units constant of 8.312×10^{-11} gm cals/cm^2/°K^4 min, T is the absolute temperature degrees Kelvin, and k is blackbody or perfect radiation constant. According to Shumskiy et al. (1964) the radiative ability of snow, the k constant, is as high as 0.99. If 0° C. is assumed for the surface, an upper value of radiated heat loss from the berg can be estimated and would be on the order of 0.46 gm cals/cm^2/min. Assuming radiative heat loss from the total surface of the hypothetical berg results in a Q_{ir} of 0.46 gm cals/cm^2/min $\times 2.88 \times 10^4$ min $\times 7.0 \times 10^8$ cm^2 $= 9.26 \times 10^{12}$ gm cals during the decay period.

It should be pointed out that the maximum radiative intensity from the sun comes in at about 0.48μ, indicating that the greatest intensity lies in the visible range. The reradiated energy from the berg will follow the Wien's displacement law which states that the maximum radiative frequency (λ_{max}) is a function of temperature:

$$\lambda_{max} = \frac{2897}{T^\circ}$$

where T is in degrees Kelvin. This says that the berg will radiate energy in the vicinity of 10μ or long wave radiation. The frequency of emission is also the frequency of greatest absorption therefore a berg will readily receive long-wave radiation from its fluid environment.

Radiative heat transfer from the berg's environment (Q_{awr}) involves so called blackbody radiation based on the environmental absolute temperatures. Using the Stefan-Boltzman radiation law and assuming perfect blackbody radiation for temperatures from 0° C. to 20° C., it is found that the radiative heat transferred to a berg varies from 46.1×10^{-2} gm cals/cm^2/min to 61.3×10^{-2} gm cals/cm^2/min as shown in figure 6C. This transfer of heat will affect the berg proportionately as the air and/or sea temperature varies. The fluid environment radiation is not perfect blackbody radiation as is the sun's but is considered more of a greybody type. However for the purposes of this paper, perfect radiation will be assumed to obtain maximum heat transfer values. Because most of the berg's mass is below the water surface, the water will dominate the radiative heat transfer quantities. This long-wave radiation is absorbed most readily by a berg and since the fluid environment is surrounding the berg on all its facets, reflection due to angular incidence would be minimal. For this reason, consideration of an albedo would probably not apply in this situation. As can be seen from figure 6C, even with the air at a higher or lower temperature than the water, the overall radiative effect will be little changed. This is true not only because of the small magnitude change in Q due to warmer or cooler air, but because of the smaller surface area presented to the air compared to that bathed in the sea. Using the total hypothetical berg surface area and equal air and water temperatures, arbitrarily taken at 2.2° C., gives a heating contribution of 0.48 gm cals/cm^2/min $\times 7.0 \times 10^8$ cm$^2 \times 2.88 \times 10^4$ min $= 9.67 \times 10^{12}$ gm cals.

Summing up the computed quantities thus far:

$$Q_s - Q_r = 0.095 \times 10^{12} \text{ gm cals}$$

$$Q_{awr} = +9.67 \times 10^{12} \text{ gm cals}$$

$$Q_{ir} = \frac{-9.26 \times 10^{12} \text{ gm cals}}{0.505 \times 10^{12} \text{ gm cals}} \text{ net heat added.}$$

As mentioned, the net heat added to a berg is utilized for both melting and raising the berg's temprature to 0° C. The amount of heat needed to raise the hypothetical berg's 2.7×10^{12} gms of ice from −12° C. to 0° C. will be given by:

$$Q_{\Delta T} = c_p \times \Delta T^\circ \times M$$

where:

M = mass of the berg
c_p = specific heat of ice at −12° C.

therefore:

$$Q_{\Delta T} = 0.49 \text{ gm cals/gm °C.} \times 12^\circ \times 2.7 \times 10^{12} \text{ gm} = 15.85 \times 10^{12} \text{ gm cals.}$$

The rest of the added heat must go into the heat of fusion which would equal: $Q_f = h_f \times M$

where:

h_f=heat of fusion of water

therefore Q_f=79.7 gm cals/gms$\times 2.7\times 10^{12}$ gms= 215.0×10^{12} gm cals. This means that 230.9×10^{12} gm cals of heat are needed to melt this model berg in the 20-day period. However, only 0.505×10^{12} gm cals have been accounted for. Therefore the remaining heat must come from sensible heat transfer from the environment by conduction and convection. Because the heat transferred by conduction and convection amounts to approximately 500 times the amount of heat added by radiation, the terms (Q_s-Q_r), Q_{ir}, and Q_{awr} can be dropped from the heat budget equation as negligible and the most attention must be given to conduction and convection. This is somewhat contrary to what is found in the literature concerning studies of glaciers. Heat budgets presented by Hoinkes (1964) for various glaciers in the northern hemisphere show that short-wave radiation accounts for up to 89 percent of the source of incoming heat after consideration of albedo. This means only 11 percent of the incoming heat is supplied by environmental temperatures. These figures are not applicable to an iceberg due to the percent of surface area exposed to solar radiation and because of the berg's warmer environmental subarctic temperatures. The submergence of a berg in a comparatively warm liquid, with a high specific heat, cannot be compared with the exposure of a glacier's surface to arctic winds.

The problem of examining the conductive-convective terms, Q_a and Q_w, is complicated by the turbulence of the environmental fluids and the random surface configurations of the visible and submerged portions of the berg. For these reasons, the terms Q_a and Q_w, the conductive-convective heat flow from the fluid environment to the berg must be examined from first principles of thermodynamics in order to gain a more thorough undertanding of the problem. Prandtl (1952) analyzed the heat flow, from a moving fluid, through a boundary. The following discussion is based on his treatment. In the case of laminar flow of fluid past a boundary, i.e., water or air flow past a berg's surface, it is a fundamental concept that a velocity gradient is established as the boundary is approached. This gradient ranges between the velocities of 0 at the boundary to maximum flow at a given distance away from the boundary. The gradient is the result of fluid friction. The thickness of the velocity gradient, or boundary layer, is a function of the viscosity of the fluid and the velocity of flow. In the case of laminar flow, all movement is parallel to the direction of flow.

Heat transfer in laminar flow is given by the equation of continuity as follows:

$$\frac{\partial Q_1}{\partial x}+\frac{\partial Q_2}{\partial y}+\frac{\partial Q_3}{\partial z}=0$$

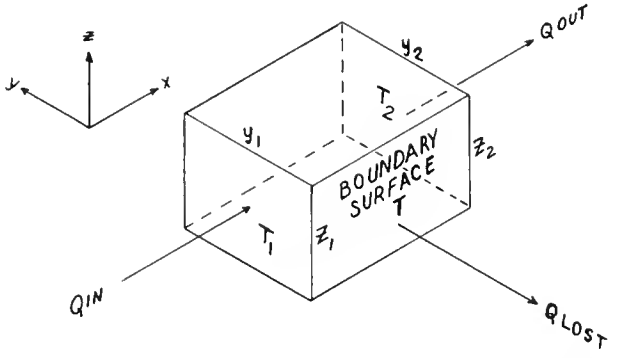
Q_1 is the heat transfer along the direction of flow given by $Q_1=c_p\rho uT$, where c_p is the constant pressure specific heat, ρ is the density, T is the temperature and u is the rate of flow. Q_2 is the heat lost in the direction of maximum temperature gradient, in this case to the boundary due to conduction, and is given by $Q_2=-k\dfrac{\partial T}{\partial y}$ where k is the molecular thermal conductivity coefficient. Since the thermal conductivity of fluids is small, there is an abrupt fall in temperature as the boundary is approached. The thickness of the thermal boundary layer in laminar flow is a function of the velocity distribution near the boundary and the thermal conductivity of the fluid. A low thermal conductivity and high viscosity will form a thick heat barrier giving a low heat transfer compared to higher conductivity and low viscosity for the same fluid velocities. Q_3 is the same as Q_2 in the h direction. No thermal gradient is assumed in the direction of flow due to flow velocity (u), hence no molecular transfer. In nature, flow is seldom laminar. In the case of fluid movement around icebergs, configuration and surface roughness would rule out laminar flow entirely. The above relationship must be modified to include turbulence.

In turbulent flow the boundary layer concept is retained, however, great reduction in its thickness occurs. Turbulence provides still another mechanism for heat transfer; that of apparent heat conduction. The temperature distribution away from the boundary, in the turbulent case, is uniform due to mixing. As the boundary is approached there is an abrupt fall in temperature. This provides for a heat flow in the direction of the maximum gradient. This is given by $Q=-c_pA_q\dfrac{\partial T}{\partial n}$ where A_q is the eddy exchange coefficient. This type of heat flow disappears as the laminar subboundary layer is reached where molecular transfer must complete the flow. The

equation of continuity shown by Prandlt (1952) now takes the form of:

$$\rho c_p u \frac{\partial T}{\partial x} - \frac{\partial}{\partial y}\left\{(c_p A_q + k)\frac{\partial T}{\partial y}\right\} - \frac{\partial}{\partial z}\left\{(c_p A_q + k)\frac{\partial T}{\partial z}\right\} = 0$$

Assume now an element of fluid on the boundary surface with one side acting as the heat flow boundary and with no heat flow assumed in the direction as shown below.



It can be assumed that the heat (Q) lost through the boundary surface must pass through the boundary layer and must equal the heat lost between the sections y_1 z_1 and y_2 z_2. This is true even in the turbulent case since A_q is zero in the laminar subboundary layer. The continuity expression shown above now reduces to

$$\rho c_p u \frac{\partial T}{\partial x} - \frac{\partial}{\partial y}\left(\frac{k\partial T}{\partial y}\right) = 0$$

or over the area of the surfaces

$$c_p \rho \iint u(T_1 - T_2)\,dydz = \iint k\left(\frac{\partial T}{\partial y}\right)dxdz$$

From this expression it is apparent that the heat transfer through the boundary surface is controlled entirely by the thickness of the laminar subboundary layer and the thermal conductivity. This means that if u is low enough, assuming good mixing within the elemental volume, the heat flow through the boundary will be limited by the amount of heat coming in. In this case the temperature T_2 would be equal to the temperature at the boundary. As u increases, T_2 will become greater than the boundary temperature and approach T_1 in value. At the same time more heat will be provided for boundary transfer. When this occurs, the heat flow across the boundary tends toward an equilibrium condition where $T_1 - T_2 \to 0$, and $\frac{\partial T}{\partial y} \to \frac{\partial T_1}{\partial y}$. The equilibrium condition is never reached as long as (u) increases. This is because the gradient $\frac{\partial T}{\partial y}$ will increase with (u) as the thickness of the laminar subboundary layer is reduced.

The difficulty in evaluating the conductive-convective heat transfer relationship shown above is lack of knowledge of the temperature gradient $\frac{dT}{dy}$ near the surface of the berg. The gradient is impossible to measure due to its minute thickness when turbulent flow exists. It does not lend itself to modeling due to the variable effects of large and small eddies created by the erratic surface shapes found on bergs. Schlicting (1960) shows the Reynolds analogy which allows the derivation of relations for heat transfer from relations for turbulent flow. This is convenient since fluid velocity measurements near boundaries have been made and eventually may be attempted in the vicinity of an iceberg. In the Reynolds analogy, Prandtl numbers given by $P_t = \frac{A_\tau}{A_q}$ and $P = gc_p \frac{\mu}{k}$ are defined showing the relationship of the eddy and molecular transfer coefficients for convenience of notation. The basic equation showing momentum transfer and heat transfer, within both the turbulent and laminar subboundary layers is given by:

$$\tau = (\mu + A_\tau)\frac{d\bar{u}}{dy} \text{ (stress)} \qquad (2)$$

$$q = -c_p g\left(\frac{k}{c_p g} + A_q\right)\frac{\overline{dT}}{dy} \text{ (heat)} \qquad (3)$$

where:

$\frac{d\bar{u}}{dy}$ = velocity gradient in a particular layer

$\frac{\overline{dT}}{dy}$ = temperature gradient in a particular layer

μ = molecular coefficient of viscosity

A_τ = eddy coefficient of momentum transfer

A_q = eddy coefficient of thermal conductivity

g = gravity

c_p = specific heat

k = molecular thermal conductivity

The assumption is introduced that the ratio $\frac{q}{\tau}$ will remain constant across the width of the boundary layer. This is reasonable since the momentum lost in the turbulent layer is that transferred to the laminar layer in the absence of friction, and the heat lost from the turbulent layer is that transmitted through the laminar layer. The reader is referred to Schlicting (1960) for a complete treatment of this development. The end result of the integration and combination of the above equations, (2) and (3), is an expression for the local coefficient of heat transfer across a boundary:

$$\alpha=\frac{gc_p\tau}{\left[1+\frac{\bar{u}_1}{\bar{U}_\infty}\left(\frac{P}{P_t}-1\right)\right]}\bar{U}_\infty \qquad (4)$$

where:

τ=stress in the laminar subboundary layer
$\bar{U}_\infty$=average fluid velocity at a great distance from the boundary surface
$\bar{u}_1$=average fluid velocity at the top of the laminar subboundary layer
P=ratio of molecular momentum and thermal transfer coefficients
P_t=ratio of turbulent momentum and thermal transfer coefficients
g=gravity
c_p=specific heat

A basic problem of measurement of the boundary layer stress (τ) remains in equation (4). Simplification of this equation is required before the calculation of Qa and Qw can be attempted and used in practical deterioration problems.

Statistical Approach

Certain simplifications of equation (4) will now be made. P_t can be set equal to 1, which implies that the turbulent mechanism for the exchange of momentum is the same as that for heat. According to Schlicting (1960), because the boundary velocity and temperature profiles are quite similar, little error will result from this assumption. The Prandtl number P will equal 1 when dealing with gases, but will differ considerably in liquids. This means that the heat transfer between the air-ice boundary and the water-ice boundary should receive slightly different treatment.

The stress term in the above equation can be further broken down into $\tau=\frac{\mu d\bar{u}_1}{dy}$. With $\bar{u}_1=0$ at the wall, and linearizing the gradient, the equation (4) will now take the form:

$$\alpha=\frac{gc_p\bar{u}_1\mu}{\left[\bar{U}_\infty+\bar{u}_1\left(\frac{P}{P_t}-1\right)\right]y}$$

Now setting $P=1$ and $P_t=1$ as stipulated above for the air exposed portion of the berg, the equation evolves down to:

$$\alpha=\frac{gc_p\bar{u}_1\mu}{\bar{U}_\infty y} \text{ or } \frac{F}{\bar{U}_\infty} \qquad (5)$$

with F being equal to a number made up by gravity, specific heat, viscosity, and the term $\frac{\bar{u}_1}{y}$ representing the laminar subboundary layer velocity gradient. This gradient is impractical to determine in the field at this time and requires that an empirical approach be attempted. A general expression for heat transfer is:

$$q=\alpha(T_\infty-T_b) \qquad (6)$$

where:

T_∞=average air temperature at a great distance from the berg
T_b=surface temperature of the iceberg, assumed to be 0° C.
α=coefficient of heat transfer

Thus combining equations (5) and (6) the rate of heat transfer per unit area from the air environment to the berg becomes:

$$q=\alpha T_\infty=\frac{T_\infty}{\bar{U}_\infty}F \text{ gm cals/cm}^2\text{/sec} \qquad (7)$$

For a water environment the relationship is not as concise because $P\neq1$, therefore

$$\alpha=\frac{gc_p\bar{u}_1\mu}{[\bar{U}_\infty+\bar{u}_1(P-1)]}y \qquad (8)$$

The measurement of $\bar{U}_\infty$ for water would be very difficult if not impossible. Water movement relative to the berg will be very small in the horizontal and totally negligible when compared to the turbulence caused by the rolling of a berg. Water velocities of several knots are possible as a berg oscillates or rolls in a seaway. This is a variable and depends upon the bergs size stability and the

state of the sea. The characterization of the rolling effects is best approached from a categorization based on sea state and berg size and will be treated so below. It eliminates the need to measure oscillatory periods and to further break down the equation for α in a water environment. Thus the intangible values of equation (8) must be combined with the known constant terms of g and c_p and will result in the simplified relationship $\alpha = R$. However, the value R will now be determined for sea conditions as well as for berg size in order to include the considerations of water velocity and turbulent heat transfer. With this approach the heat transfer equation from the water environment to the berg is given by:

$$q = RT_\infty \text{ gm cals/cm}^2\text{/sec} \tag{9}$$

Bergs of characteristic size, shape and sea state environment can be observed, cataloged and their characteristic deterioration constants R and F determined.

To apply equations (7) and (9), a statistical program would have to be initiated to determine the constants of R and F in the air and water environment. Bergs must be categorized into groups and subgroups and the R and F values assigned as follows:

Water portion: (R value)	Large	Medium	Small	Sea State
				Rough
				Moderate
				Calm

Air portion: (F value)	Large		Medium		Small		Deterioration Type
	Fast	Slow	Fast	Slow	Fast	Slow	

Whereas the underwater portion will be affected by sea state and size, the above the water portion will be affected by size and deterioration type. Evidence tends to indicate that certain bergs, i.e., drydock and pinnacle types, deteriorate faster than domed or blocky shaped bergs. Until a technique is developed for observing the underwater portion of a berg, this shape modifier will have to be neglected for the water environment. In order to obtain R and F, an empirical relationship is developed to define the required measurements as follows:

Deterioration time

$$= \frac{\text{heat of fusion} + \text{temperature change of ice}}{\text{heat flux above and below the water}}$$

$$D \text{ time} = \frac{\Delta M_1[h_f + \Delta T^\circ c_p]}{\frac{T_{a\infty}}{U_{a\infty}} F} + \frac{\Delta M_2[h_f + \Delta T^\circ c_p]}{T_{w\infty} R}$$

where:

h_f = heat of fusion for fresh water
ΔM_1 = mass change above the water
ΔT° = change of temperature from -12° C. to 0° C.
ΔM_2 = mass change below the water
$T_{a\infty}$ = air temperature, representative, away from the berg's immediate environment
$T_{w\infty}$ = water temperature, representative, away from the berg's immediate environment
$U_{a\infty}$ = fluid velocity, air, measured at approximately one-half the berg height, away from the berg's immediate environment
c_p = specific heat

This can be further simplified because of the known constants involved, therefore:

$$\text{D time (hrs)} = 0.024 \left[\frac{U_{a\infty}}{T_{a\infty}} \frac{\Delta M_1}{F} + \frac{\Delta M_2}{T_{w\infty} R} \right] \tag{10}$$

With the above equation it is now possible to solve for F or R. In order to do this, bergs must be located in certain environments which will

cause the elimination of one of the terms. For example, in order to solve for F, a berg must be located in water which is 0° C. or less. This all but eliminates the melting of the underwater portion and allows the dropping of the term containing R thus allowing the solution for F. Accurate mass measurements with time must be made in order to determine ΔM_1. Conversely, a cold air and warm water environment will allow the determination of R with the elimination of the F term.

The known density value will allow computation of total mass and mass change from the measurement of the above the water volume, therefore, only these measurements need be made. By studying many bergs in various environments the values of F and R can be determined and the table shown above can be completed. The figures for F and R will become more reliable as more bergs are observed.

After F and R are characterized, the equation for deterioration time, equation 10, can be modified for practical application. This is done by substituting the total mass (M_t) of the berg that must deteriorate above the water (.1 M_t) and below the water (.9 M_t) for the ΔM_1 and ΔM_2 values respectively. Further simplication of terms of equation (10) gives:

$$G=\frac{.1M_t}{F} \text{ and } S=\frac{.9M_t}{R}$$

thus,

$$D \text{ time}=0.024\left[G\frac{U_{a\infty}}{T_{a\infty}}+\frac{S}{T_{w\infty}}\right]$$

where the G and S terms can be precomputed and a table prepared similar to that above for F and R. Because the table is already broken down for size, only the estimation or rather the designation of the mass values of the small, medium, and large bergs must be made. These characteristic values for mass are best left to be designated from the size measurements obtained for the determination of R and F. The basic approach is to determine the values of R and F for many bergs and then attempt to categorize these bergs for mass and size into the types and groups shown above. A more sophisticated breakdown could be employed depending on the direction dictated by the obtained data.

This approach is at best only a start. A better breakdown for size and shape may evolve as the study progresses. A more detailed deterioration expression cannot be used because of the limitation requirement of minimal data gathering for a particular berg. Thus, this system is presented which would allow deterioration predictions to be made based on data collected by either ships or aircraft without the involvement of scientific personnel.

Data Collection

During the interval between the first and second current surveys of Ice Patrol 1965, an iceberg was studied for the drift and deterioration rate. Many environmental measurements were made, along with actual size measurements of the berg in an effort to initiate a deterioration study.

Environmental parameters were measured on an hourly basis and are presented in figures 1C through 5C. They include: air temperature, sea surface temperature, barometric pressure, wind direction, wind velocity, wave height, wave direction, and incident solar radiation. The solar radiation was measured continuously and recorded by an Epply pyrheliometer.

Several oceanographic casts were made in the vicinity of the berg during the study period fo 27 April to 6 May 1965. The stations occupied can be found in the appendix and include stations 9307 to 9312.

Size measurements of the berg were accomplished daily by a photographic mapping technique. A series of photographs were taken around the berg at approximately 30° intervals of arc. This provided photographs covering all sides of the berg. Overlapping pictures of the starting point were made at the completion of the round of photographs and used to estimate the amount of berg rotation during the photographing process. With this knowledge, and assuming uniform rotation, the pictures obtained at the recorded intervals could be adjusted to their true angular aspect. This process is displayed graphically in figure 7C. A sample series of photographs are shown in figures 8C and 9C.

The subject berg had a surface configuration which was characteristic enough to detect the rotation. Provisions were made however to put a dye spot on the berg (figure 10C) to provide a benchmark to detect this motion. For this particular berg, the dye mark was utilized solely to test the various dyes selected for use. The dye Rhodamine B was found to be the most satisfactory and the use of a sporting bow with a glass vial tipped arrow, figure 10C, proved to be a successful means of dye application.

The method of measurement employed the use of an optical rangefinder and a standard navigation sextant. While the distance of the ship from the iceberg was being determined with the rangefinder, certain characteristic elevations of the berg, above the waterline, were being measured with the sextant. The results of these measurements allowed trigonometric computation of certain vertical dimensions which were used as calibration measurements for the round of photographs which were subsequently taken. Several elevation measurements were made on the different parts of the berg and the mean for each characteristic height was used. With each photograph calibrated by one or more measured elevations, other dimensions of the berg could be picked off the various photographs. After each photograph was adjusted for the correct angular aspect, the horizontal widths were measured starting at the waterline and at 25-foot intervals to the top of the berg. Indentations, gaps, and other surface discontinuities were also measured in relation to the centerline as shown in figure 11C. With these measurements, along with a relatively constant distance from the berg for each photograph, a topographic map of the bergs configuration above the water was constructed, as shown in figure 12C. Starting with the waterline, levels at 25-foot intervals were subsequently constructed. The picture measurements provided the widths and distances for the construction of guide points on a plan view of the berg. Once the guide points were established, some artistic work was required to connect the points and fill in the measurement gaps using the photographs for reference. For the accuracies involved, the distance from the berg for pictures taken beyond 400 yards could be considered at infinity because it affected the angle of the constructed tangent lines very little.

Once the scaled mapping was completed, a planimeter was used to compute the areas at each level. These areas were then integrated over the entire height and the total volume above the water was obtained.

Daily measurements were obtained in an effort to observe the changes with time in order to correlate the measured mass reductions with the observed meteorological and oceanographic parameters. Due to the cold conditions existing during the study period, and the apparent slight deterioration, only two volumetric determinations were made. The maps used in these determinations are shown in figure 13C. The amount of visual change in the berg is displayed in figure 14C showing similar aspect photographs taken at an interval of 10 days.

Data Correlation

Environmental conditions of the study berg remained relatively constant during the study period. Figures 1C and 4C, the plots of air temperature during part of the study period and the surface water temperatures as measured by the ship's hull probe, show a slight warming tendency of the water. The upper water layers, less than 5 meters, indicate temperatures above 0° C. during the last few days of the study, however, the Nansen cast information indicates that the berg's basic environment was subzero water. This indicated that little subsurface deterioration took place which seems to be substantiated from the size measurements. Looking at figure 14C, calving did occur during the period of study and probably accounted for most of the loss of mass above the water. Little or no correlation with deterioration is seen from the wave height and wave direction observations. As was pointed out in the previous sections, the sea state will cause oscillatory motions of the berg and will contribute to the subsurface turbulence in the bergs vicinity, thus circulating the water and hastening melting in the warmer environments. Wind velocity and direction during the study period are shown in figure 2C.

Calculations based on the topographic maps constructed from the berg's measurements provide the volume of the above-the-water portion of the berg. The total mass of the iceberg may be obtained using the iceberg's density and the total volume determination. Smith (1931) has made actual measurements of iceberg density. He shows a figure of 0.8997 gm/cm^3 as a mean. Due to the contained air, this density value will vary from berg to berg and within different parts of the berg. However the density variation will be within relatively narrow limits and the figure 0.9 gm/cm^3 will be sufficiently accurate in comparison to the accuracy in size determination. Using Archimedes flotation principle the mass of the iceberg can be calculated as follows:

$$\text{Percent of ice below the water} = \frac{\text{density of berg}}{\text{density of sea water}}$$

$$\text{Total berg volume} = \frac{\text{volume above the water}}{\text{percent of total volume above the water}}$$

Total berg mass=total berg volume×berg density
These calculations were performed for the study berg and the tabulated results are shown below

28 April

Volume	Mass
707,300m^3	636,570×10^3 kg.

6 May

Volume	Mass
624,200m^3	561,780×10^3 kg.

The above calculations determine that a change of 12 percent took place over an 8-day period. The accuracy of these calculations is based on the accuracy of measurement and the precision of construction of the topographic map of the berg. Because a good deal of artwork is involved, the precision of construction probably contributes most of the error. For this reason, the work done on size measurements performed this year are believed to have a probable error of 5 percent and could be as high as 10 percent. Because of this, and the small mass change, more frequent topographic maps were not prepared.

Referring to the statistical approach, this study berg is difficult to categorize. The air temperatures are cold showing a mean of about 1.1° C. with a general rise to a maximum of 5° C. towards the end of the survey. This air temperature rise is reflected in the sea water temperature at the surface. In order to determine the deterioration constants S or G, the melting of the berg above the water and below the water must be quantitatively tagged. As pointed out in the previous sections, this can only be done by eliminating one of the melting environments, i.e., obtain a berg in a cold water, warm air or warm water, cold air environment. Unfortunately, this study berg falls into a cold water, cold air category where little deterioration can occur. The water is as cold as can be expected any time of the year and the air is only slightly above freezing, but the berg did change its mass 12 percent in 8 days. As the berg deteriorates its overall surface area will be reduced. If environmental conditions are held constant and similar to the first 8 days, the observed volume loss of 1.04×10^4 m^3/day would diminish due to a diminished surface area for heat transfer. However, if it is assumed that in the extreme case this rate will remain constant, a minimum of 70 days would be required for this berg to deteriorate. The true situation is that because of the reduced surface area and therefore reduced heat transfer much longer would be required to melt the berg. This berg would be considered as nondeteriorating in terms of significant changes over a 1- or 2-week period. It is therefore impossible to tag the cause of the observed limited deterioration or to calculate either of the deterioration constants relating to the air or water environment.

The study conducted did demonstrate that more severe differences must exist in the bergs environment to allow computation of the desired constants. It also provided for the development and improvement of the mapping technique employed.

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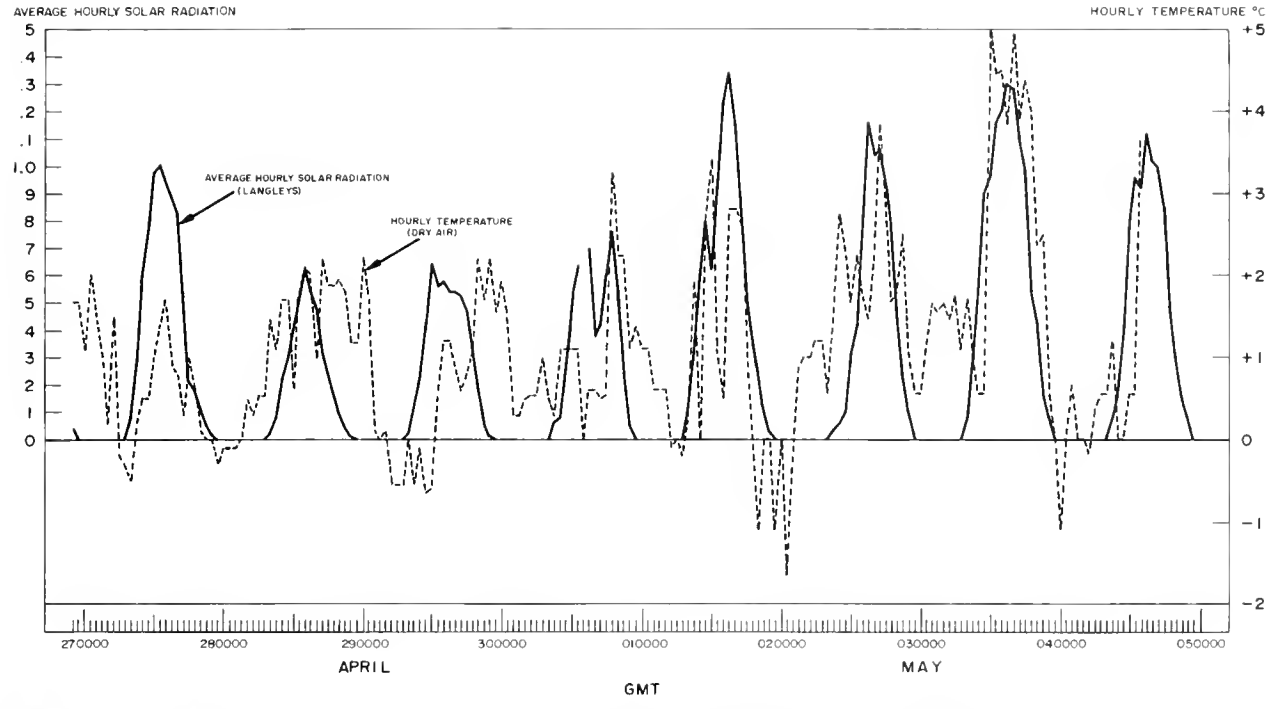


Figure 1C. Average hourly incident solar radiation and hourly dry-bulb air temperature observed during the iceberg study 26 April–6 May 1965.

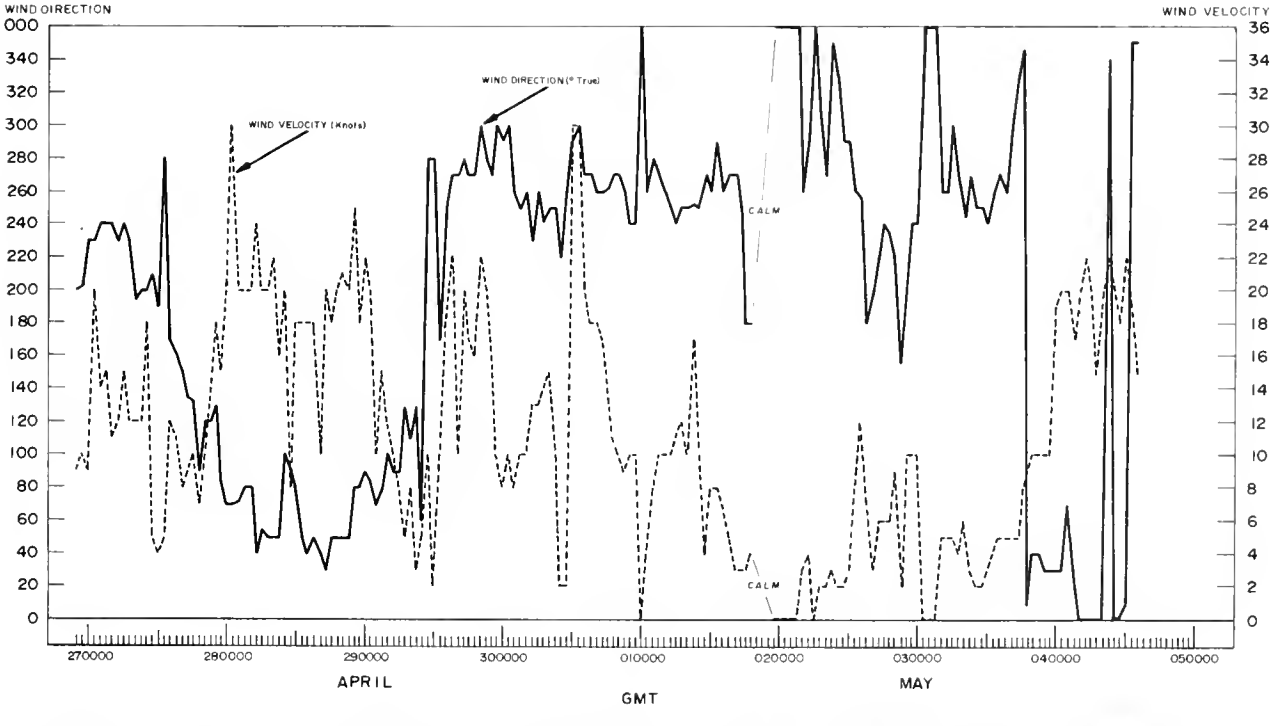


Figure 2C. Hourly true wind direction and velocity observed during the iceberg study 26 April–6 May 1965.

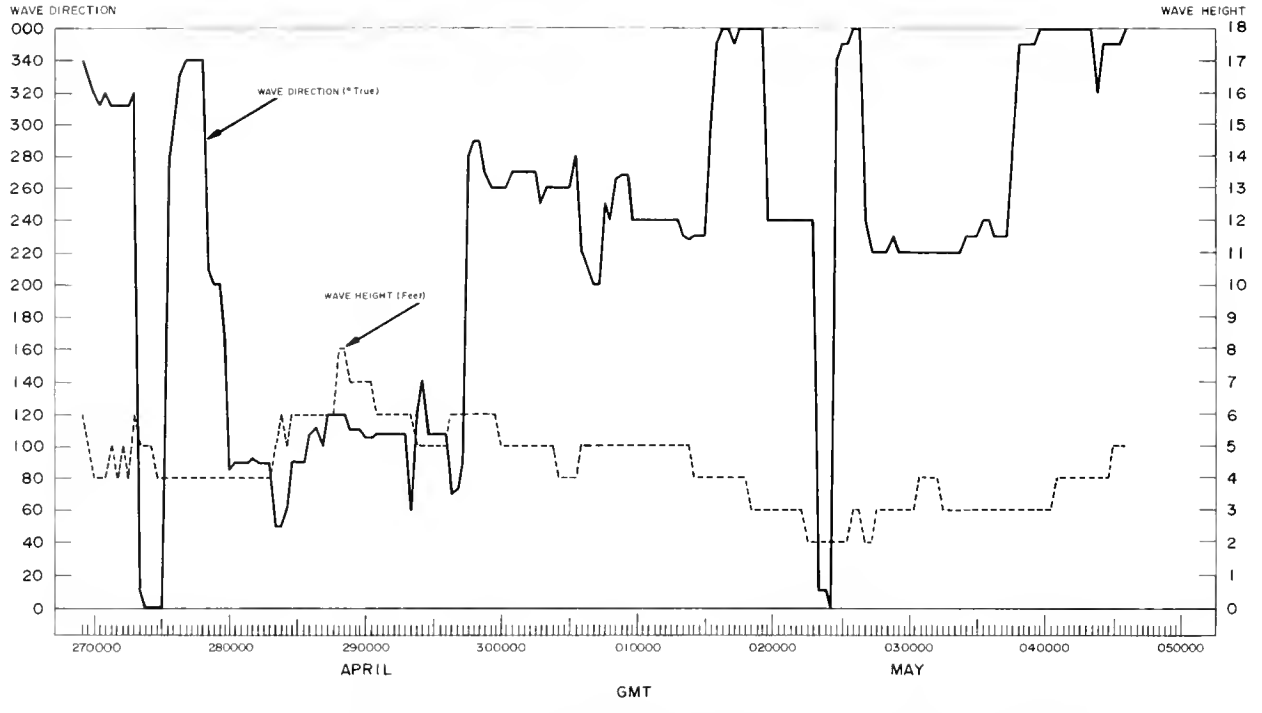


Figure 3C. **Hourly true wave direction and significant wave height observed during the iceberg study 26 April–6 May 1965.**

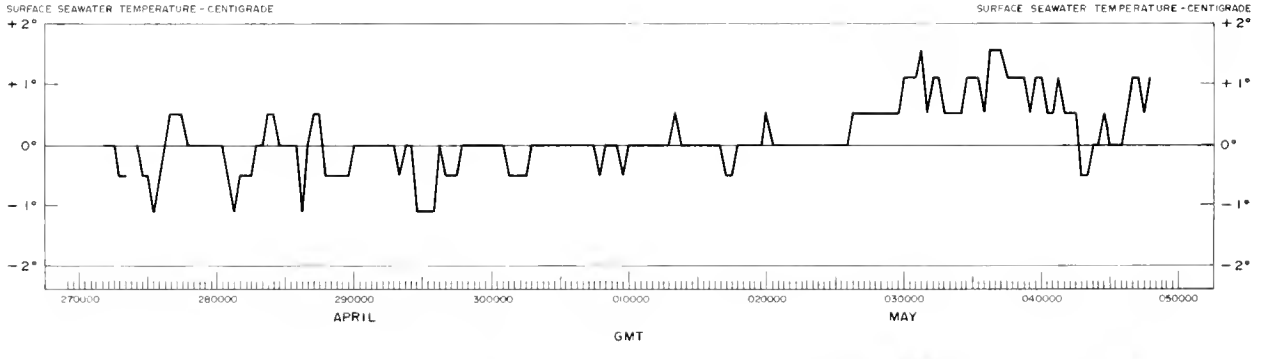


Figure 4C. **Hourly seawater surface temperature observed during the iceberg study 26 April–6 May 1965.**

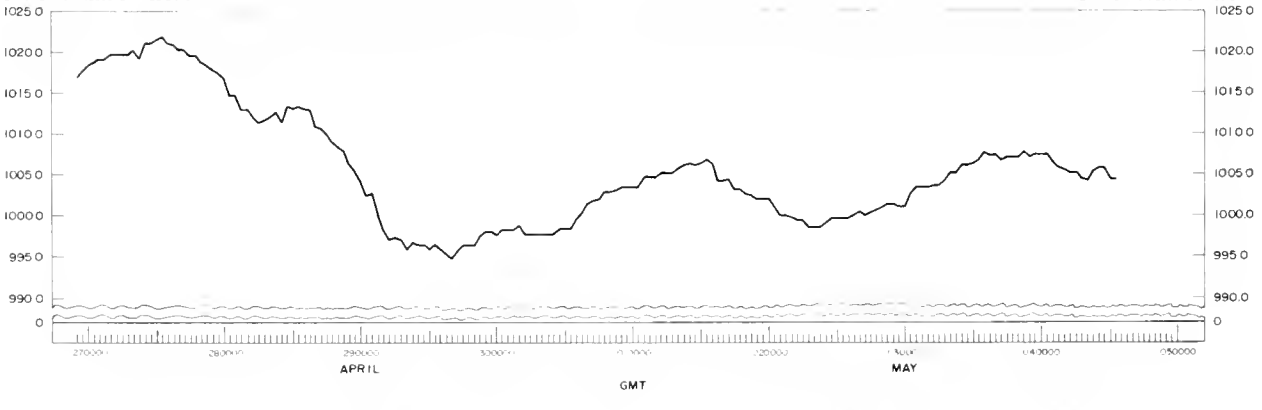


Figure 5C. **Hourly barometric pressure observed during the iceberg study 26 April–6 May 1965.**

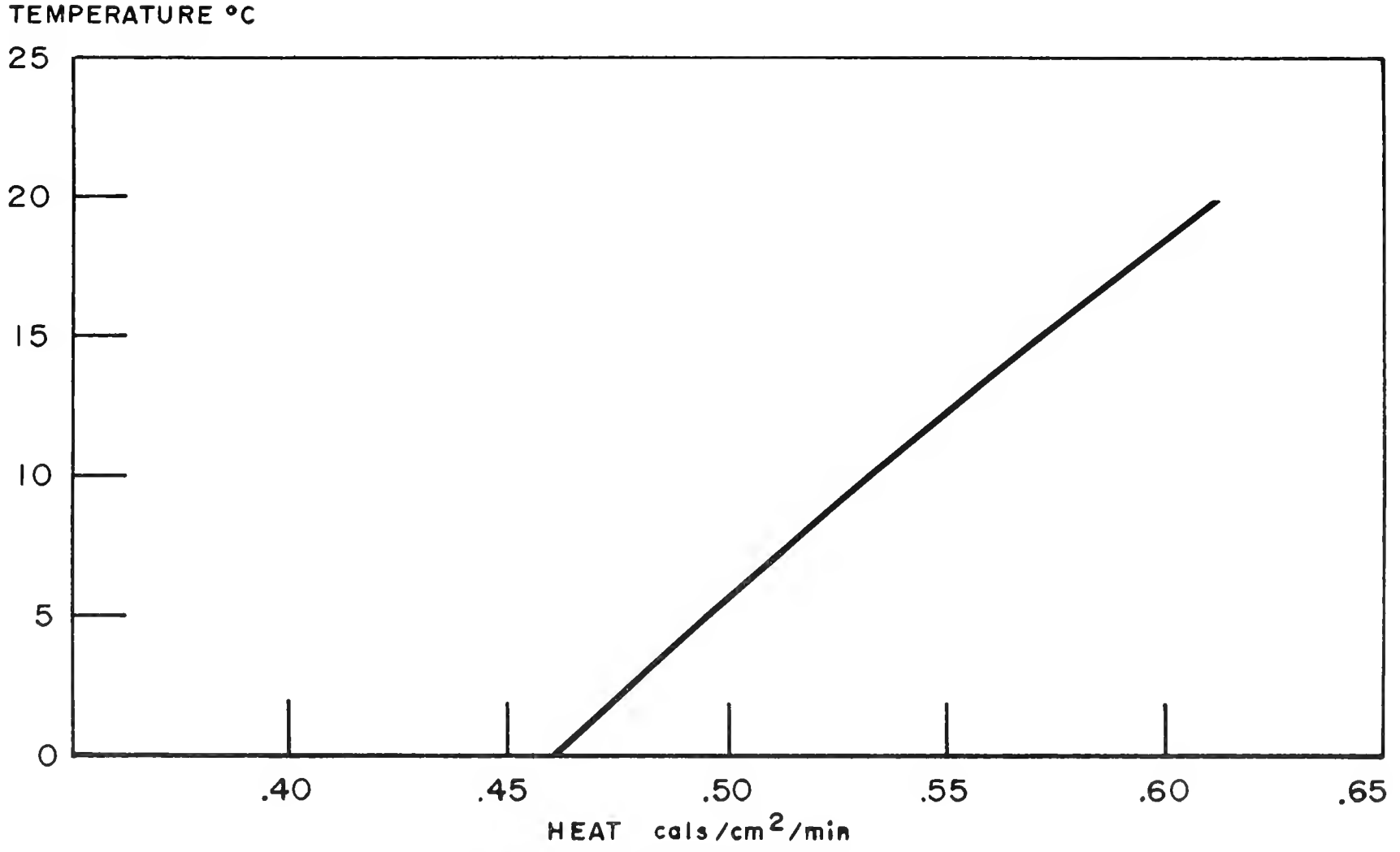


Figure 6C. Blackbody heat radiation for temperatures between 0° C. and 20° C. Based on the Stefan-Boltzman radiation law.

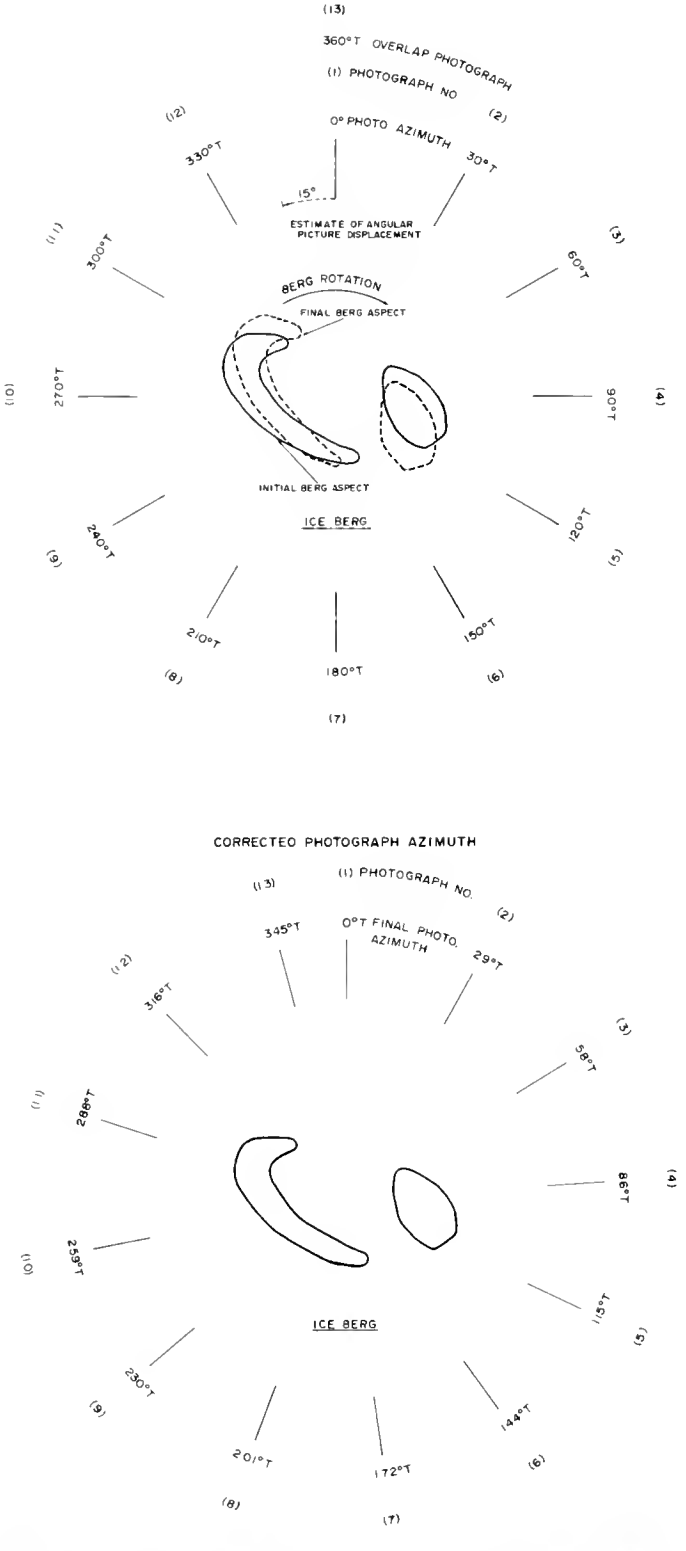
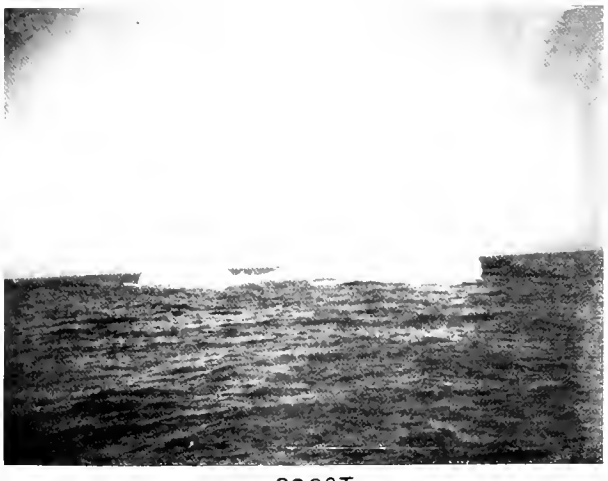
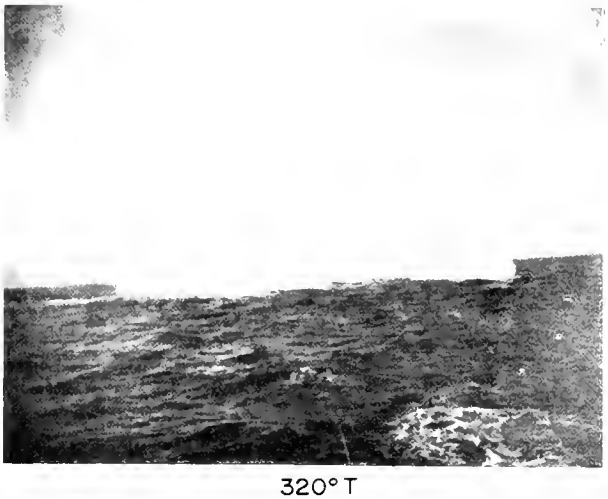


Figure 7C. (Upper drawing) Plan view of iceberg waterline showing initial and final berg aspect at the commencement and termination of a round of photographs. (Lower drawing) True photograph azimuth after angular compensation for berg rotation during round of photographs.



290°T



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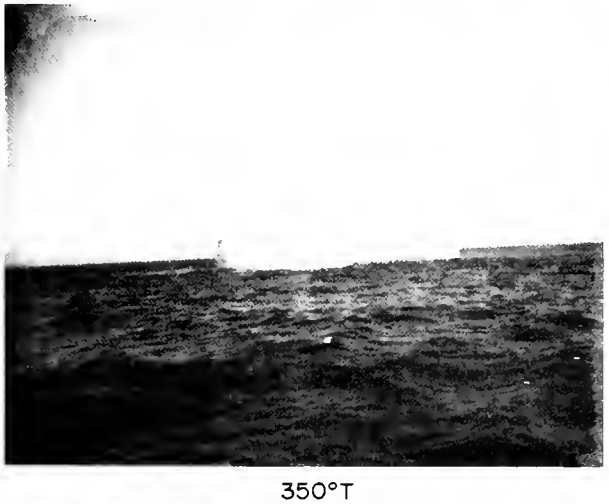

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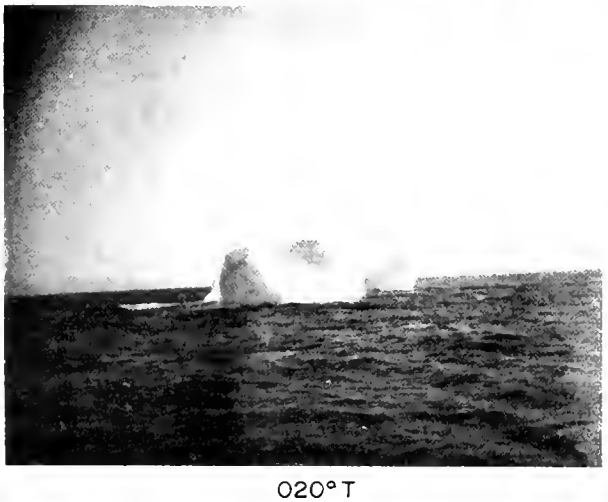

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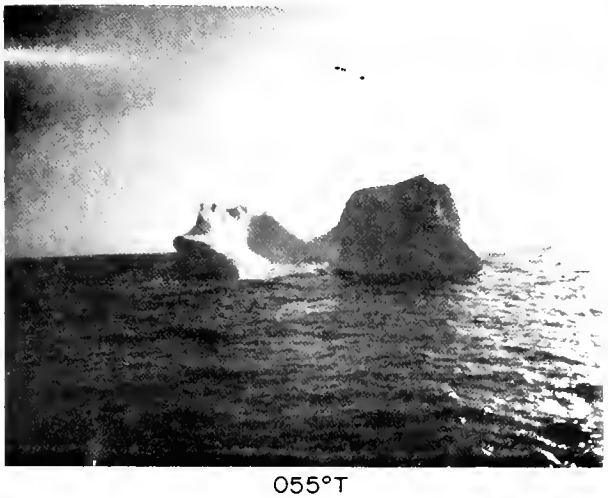

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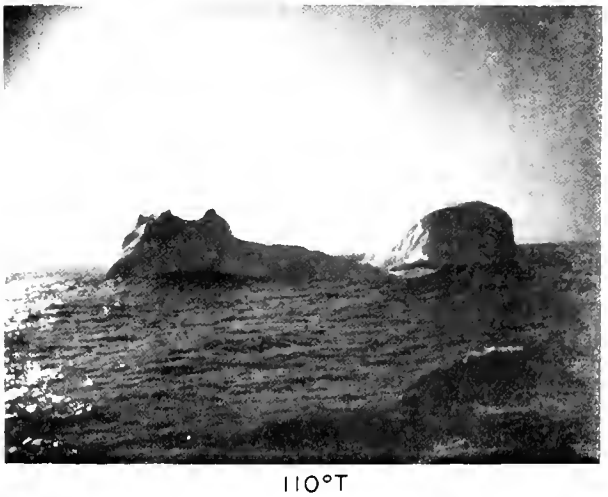
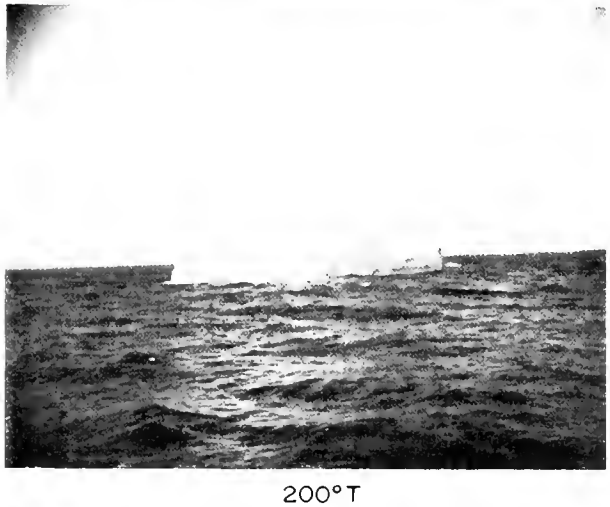


110°T

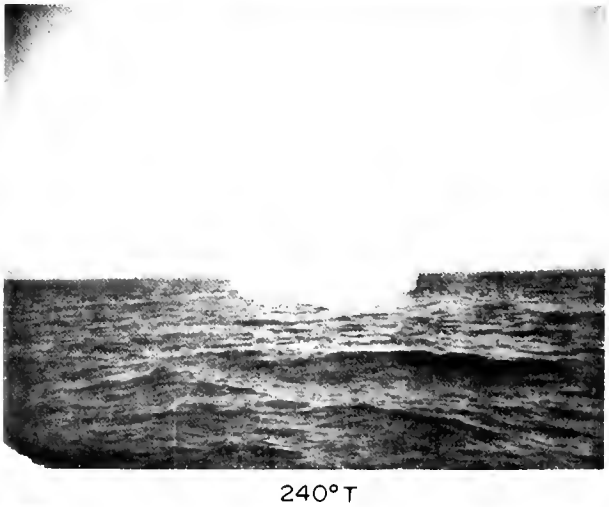
Figure 8C. Sample round of iceberg photographs starting from 290° T. (See next figure.)

140°T

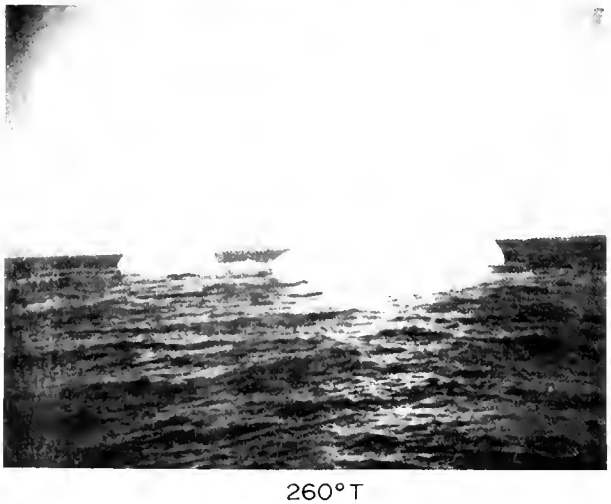
170°T



200°T



240°T



260°T

290° (overlap)

Figure 9C. **Sample round of iceberg photographs (continued from previous figure). Photograph repeated at 290° T (overlap) shows berg rotation during period of photographs.**

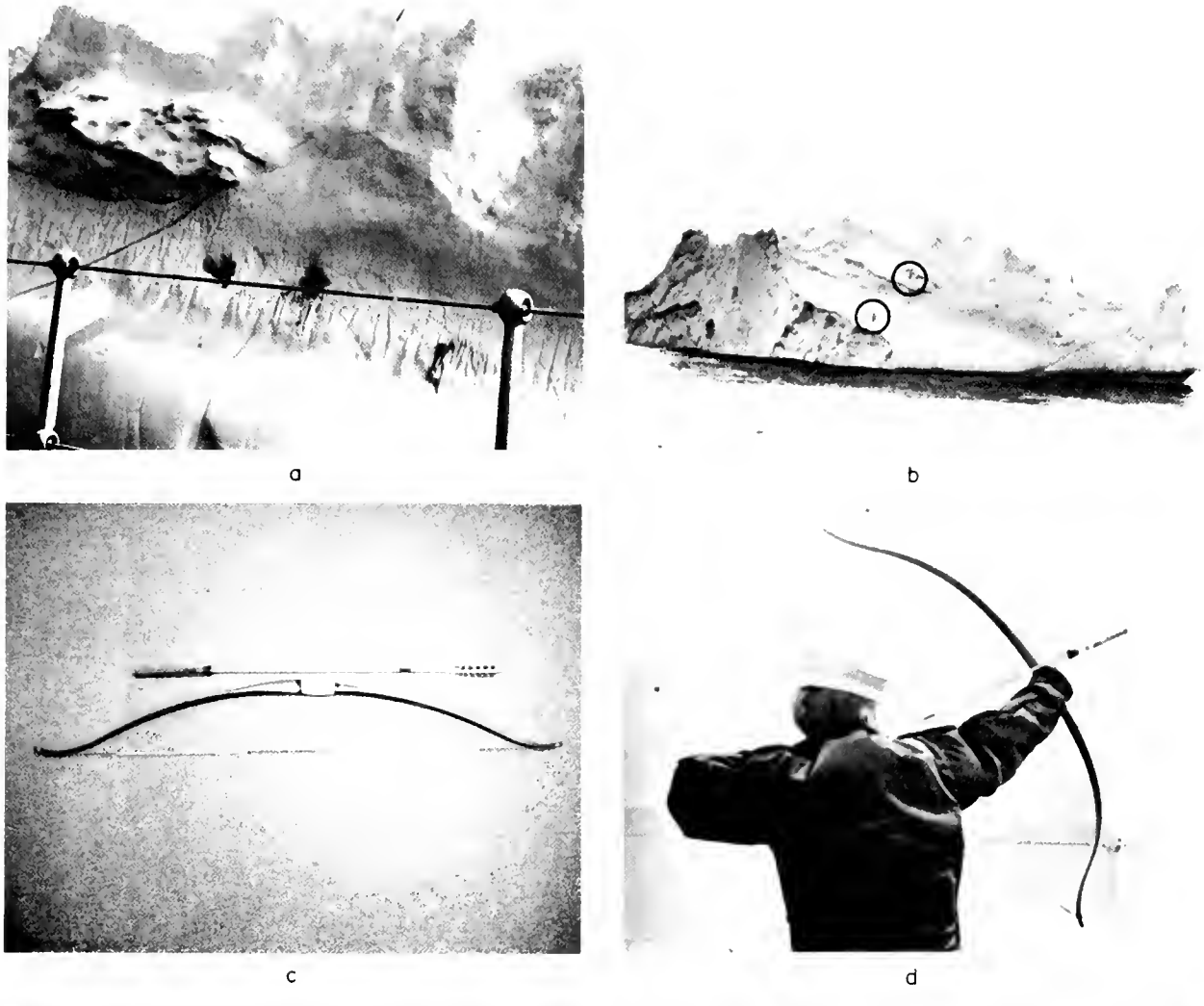


Figure 10C. Dye spots on iceberg, close up picture (a); at distance picture (b), circled for clarity. Bow and glass tipped arrow used in dye application, picture (c); archer in action, picture (d).

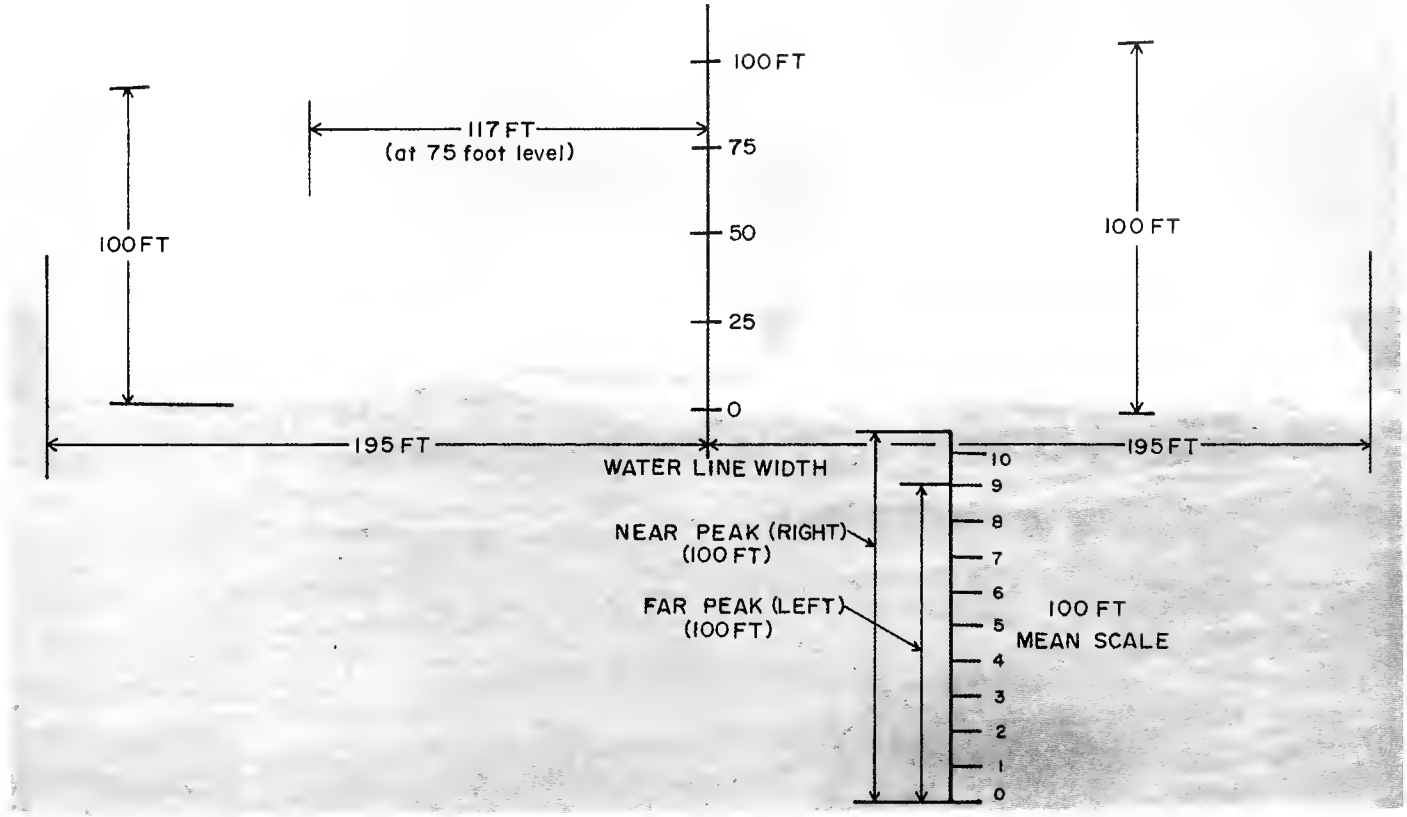


Figure 11C. Measurement technique employed on each photograph using prominent elevations as reference heights. Mean reference height is established as shown by considering perspective.

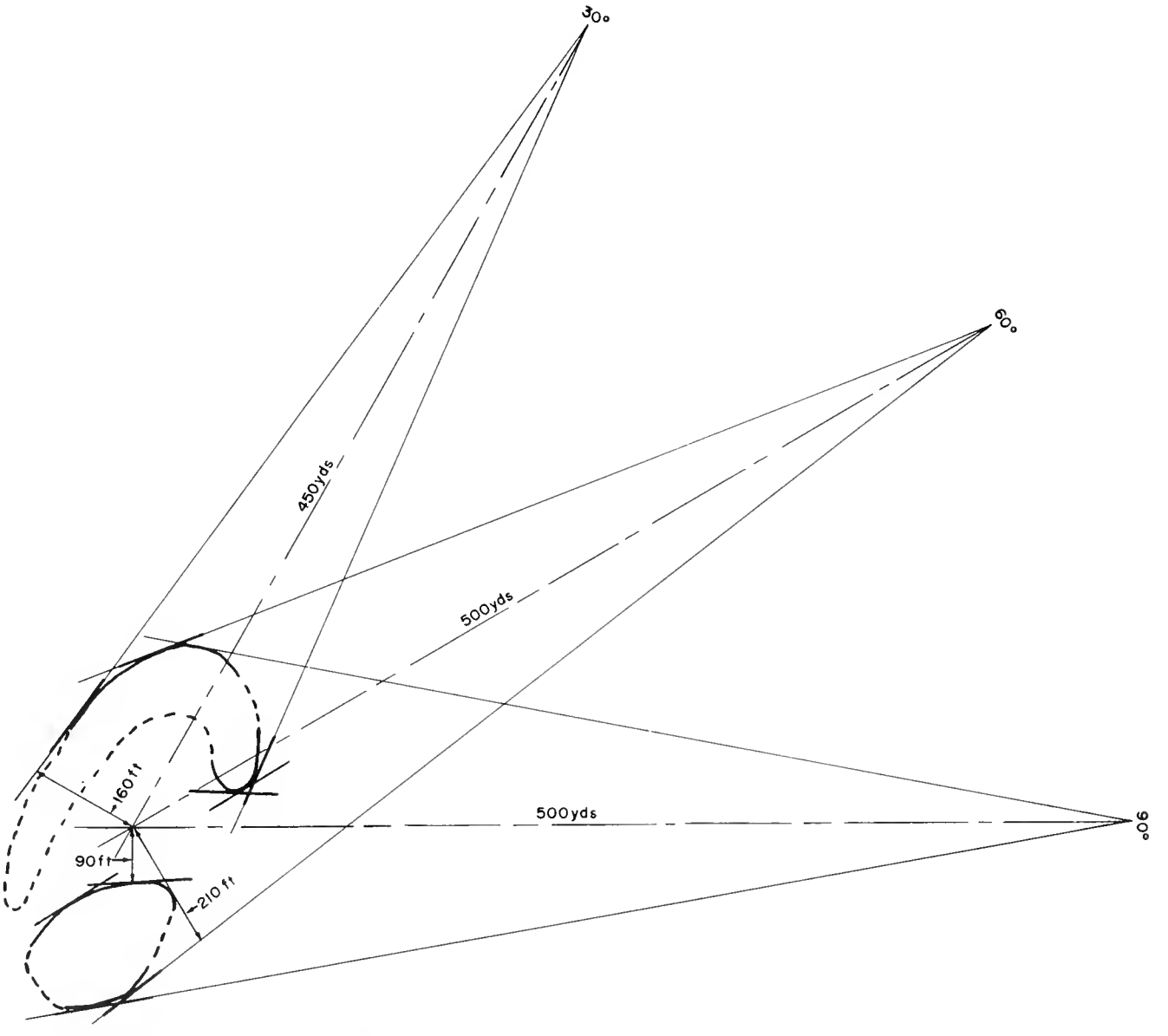


Figure 12C. **Method of topographic map construction based on measurements from photographs, azimuth, and distance from berg.**

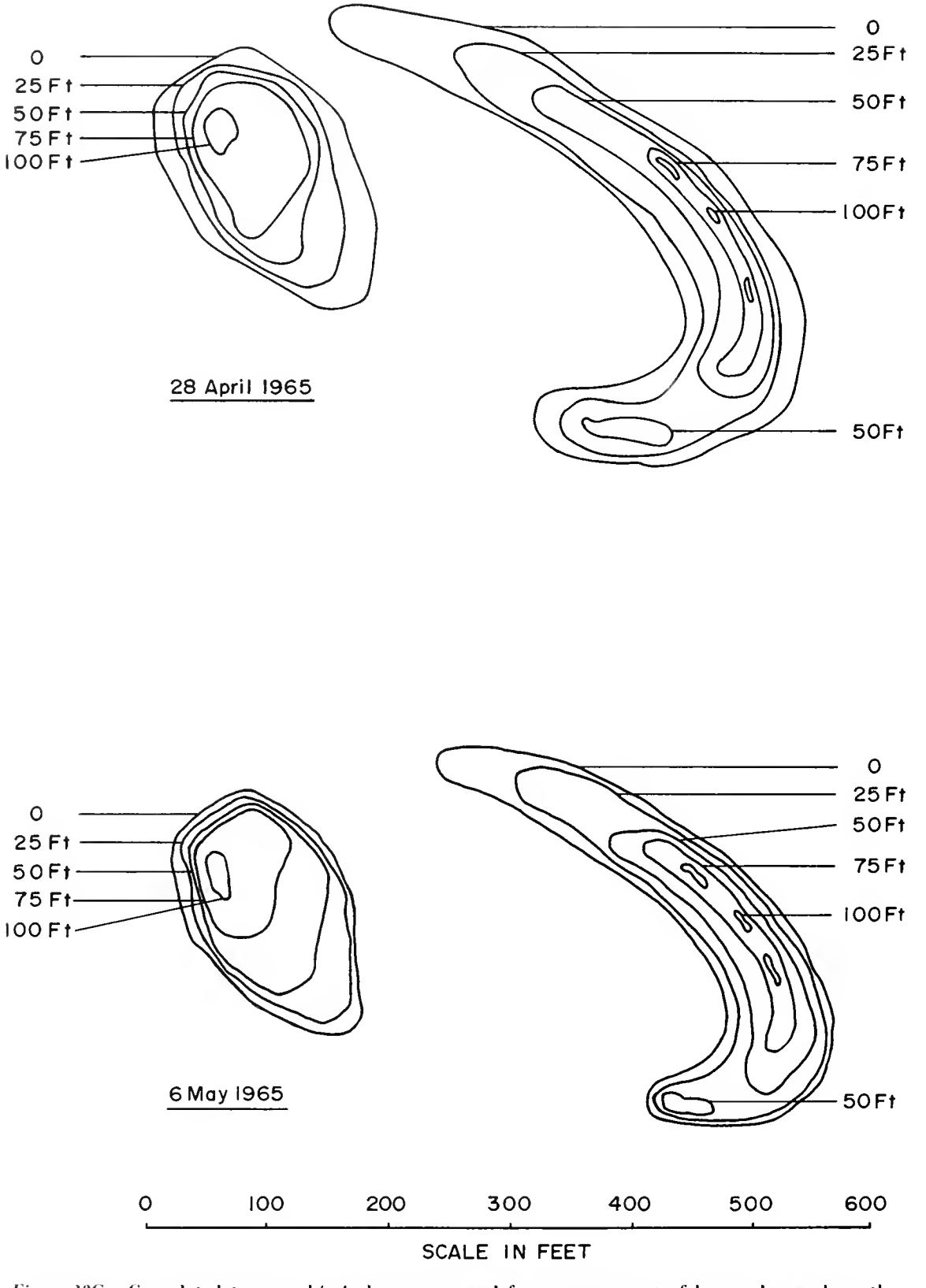


Figure 13C. Completed topographic iceberg map nsed for measurement of berg volume above the water. Upper map based on observations obtained at eommencement of study 28 April 1965 and lower map based on observations obtained at the termination of the study 6 May 1965.

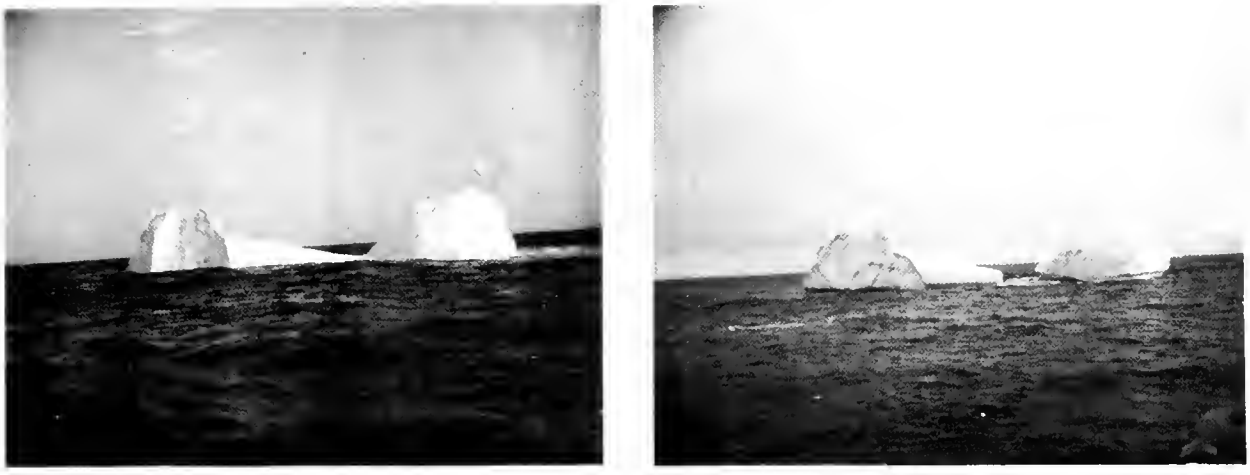


Figure 14C. Similar aspeet ieeberg photographs showing wastage during the study period. Left photograph was taken on 26 April 1965, right photograph on 6 May 1965.

TABLE 1C. Estimated deterioration time in days for icebergs

Sea water temperature	Small berg under 50′ high, less than 200′ long	Medium berg 50′–150′ high, 200′–400′ long	Large berg over 150′ high, over 400′ long
	Days	*Days*	*Days*
32	15	40	90
36	8	16	35
40	5	10	20

An Examination of Vertical Sampling Methods and Their Influence on Dynamic Height Calculations

by

Ronald C. Kollmeyer, *U.S. Coast Guard*

Introduction

The primary objective of the Ice Patrol surveys is to gather dynamic height information on the Labrador Current and Gulf Stream off the Grand Banks of Newfoundland for the purpose of predicting iceberg drift from geostrophic current maps. Dynamic heights are calculated from temperature and salinity measurements of the water at various depths.

For 35 years Ice Patrol surveys have sampled temperature and salinity at standard depths of 0. 25, 50, 75, 100, 150, 200, 300, 400, 600, 800, 1,000, and 1,500 meters. This standard sampling system is a compromise between the ideal of continuous vertical water column values on the one hand, and the practical necessity of rapid survey with a minimum quantity of samples on the other.

A greater economy of effort and equipment, and more reliable oceanographic inferences, could be obtained if gradient depths (i.e., depths of sharp water property change) were known prior to attaching Nansen bottles to the wire. The intervals between bottles would then be set to assure that no important changes were missed, and that depths of changes were more accurately determined. Toward this end an electronic bathythermograph with a depth limit of 410 meters was used during Ice Patrol 1965 to provide information critical to the spacing of Nansen bottles. This gradient sampling method is compared to the standard sampling method herein, in an attempt to determine their merits and failings.

A continuous sampling device which gives a very great or unlimited number of data points such as to provide an unbroken record of temperature and salinity through the entire column is ideal, eliminating problems arising from Nansen bottle spacing altogether. The measurement accuracies of such a device, as they apply to dynamic height calculation, was examined and the results comprise the latter part of this paper.

Sampling Methods

Analysis of the waters off the Grand Banks discloses that this area has some of the most unusual variation in vertical distribution of water properties in the world. With the Labrador Current running parallel to the Gulf Stream in some areas and sinking beneath it in other locations, vertical changes in temperature and salinity are quite severe over short distances. Figures 1D, 2D and 3D show examples of temperature and salinity distribution of water columns down to 1,000 meters as determined from data obtained during Ice Patrol 1965.

Designing an adequate sampling program for water masses such as shown presents a problem. Since great changes in the vertical distribution of temperature and salinity occur at various levels for different stations, a fixed point sampling program will frequently miss critical maximum and minimum points in the property distribution. An example of this is demonstrated in figure 2D where the extreme values would have been missed by the standard sampling points shown above. Conversely, many Ice Patrol areas are very uniform, as shown in figure 4D, where using even a small number of Nansen bottles would suffice.

During Ice Patrol 1965, a gradient sampling approach was used. This method allows the positioning of Nansen bottles to be based on the results of a preliminary bathythermograph drop at each station. A Hytech Electronic Bathythermograph, Model 480 MOD 1 with a modified sensing fish was used to determine the temperature structure down to 410 meters, the limiting depth of the instrument. Thus a more complete description of the temperature distribution will be obtained by reversing thermometers and if a stable water column is assumed the variation of salinity with

depth will be adequately described. Past Ice Patrol data indicate stable water columns below 100 meters are the rule.

Ice Patrol requirements are better fulfilled by the gradient sampling method. First, better temperature-salinity information is obtained for the dynamic height calculations required for surface current determinations and, second, a more accurate picture of the vertical variations of temperature is described for tracing and analysis of the Labrador Current. As an added feature to this method, it is noted from figure 4D that many areas of the Grand Banks are quite uniform in their property distribution allowing fewer Nansen bottles than usual to be used on a cast, thus decreasing time on station, reducing data processing time, and risking less equipment. This is illustrated by Table ID, where each station on two of the surveys of 1965 is compared for the number of bottles used with the standard depth and the gradient sampling methods.

The advantage of the gradient sampling method lies in the obtaining of better definition of the property distribution. With a more accurate description of the temperature and salinity structure, the accuracy of the dynamic height calculations will also improve. To show this, a standard model of the temperature and salinity structure for each station taken during the first and third surveys was prepared. All observed data points obtained from the gradient sampling method were used to provide a graphic plot of temperature and salinity versus depth. Supplemental temperatures were gleaned from the bathythermograph records and along with the observed data were plotted on H.O. 17325 temperature-salinity-density paper. Corresponding supplemental salinities were then obtained for an assumed stable water column. The resulting composite temperature-depth and salinity-depth plots are certainly a close approach to describing the properties of each water column. Figure 5D shows an example of a property distribution plot based on observed values from Nansen bottles and the bathythermograph supplemental points.

The dynamic heights based on observed gradient sampling values were computed immediately during the survey. Later, a second set of points representing the temperature and salinity values at the standard Ice Patrol depths were abstracted from the composite distribution curves to 1,000 meters and processed on the computer for dynamic heights. Figure 6D shows what the property distribution would look like if this water mass had been sampled using the standard Ice Patrol depths only. Although the density distribution is adequately described, in figure 6D, important temperature and salinity distribution detail is lacking. A third set of points representing any significant change in temperature and salinity with depth were abstracted from the curves and processed by the computer. This third set of points was sufficient to adequately describe the distribution of temperature and salinity and the resulting dynamic height is considered the closest approach to the true value. Figure 5D, shows an example of the vertical distribution of these 3 sets of computer processed points: the observed Nansen bottle points, abstracted standard depth points. and abstracted true points.

Table IID shows the comparison between the surface dynamic heights of the two sampling methods and the true value. It can be seen that both methods give results quite close to the true dynamic height value of the station with the gradient method giving slightly better results; standard deviations are $\sigma = \pm 0.0039$ DM for gradient sampling and $\sigma = \pm 0.0052$ DM for standard sampling. These values are for all 119 stations taken on the first and third surveys of Ice Patrol. These stations were taken both on and off the Grand Banks and include shallow stations where the cumulative errors are minimal in many cases. A total of 62 stations were taken in water greater than 1,000 meters, the assumed depth of no motion, and a more realistic comparison is shown from these; $\sigma = \pm 0.0044$ DM for gradient sampling, and $\sigma = \pm 0.0065$ DM for standard sampling. The gradient method is, however, head and shoulders above standard sampling because the extreme temperature values obtained more accurately describe the existing distribution. These values are essential for the proper analysis and interpretation of the water masses of the Ice Patrol area. Table IID also presents the maximum differences from the true value. In the case of gradient sampling, a large difference occurred due to the missing of gradients caused by encountering a greater than anticipated wire angle.

The errors listed above for the gradient sampling method and the standard depth method can significantly influence the calculated current. The influence is dependent upon the station spacing and the current velocity. In figure 7D, station interval is plotted against calculated current

error at 45° North latitude. The two curves reflect a total error between 2 stations of 0.0088 DM for gradient sampling and 0.0130 DM for standard depth sampling. For stations 10 miles apart, the standard depth sampling method can cause an error of up to 6.8 $cm/_{sec}$ or about one-tenth of a knot. In some low current areas, the velocity of the surface current could be of this magnitude resulting in a 100-percent error factor. The gradient sampling error is slightly better, showing a 4.6 $cm/_{sec}$ possible error. These current velocity errors do not reflect any instrument measurement error which could add more than 0.01 DM of error to dynamic height calculations.

The close comparison between the dynamic heights determined from standard depth sampling and gradient sampling indicates that the vertical distribution of temperature and salinity at a number of stations does not have to be completely described in detail in order to do dynamic calculations for the sea surface. A plot of the specific volume anomaly (δ) versus depth is, in general, quite uniform with only gradually changing gradients. In many cases only a few data points in the water column are required to draw a curve which describes the mass distribution. Due to the regularity of change of the anomaly curve within a stable water mass, the trapezoidal rule employed in the numerical integration of a water column for dynamic heights will give satisfactory answers in many cases from a curve constructed with only a few points. As an example, figure 8D shows large alternating changes of temperature and salinity with depth; however, the specific volume anomaly versus depth curve is extremely regular, indicating that this particular water column could have been sampled by almost any method and with a minimum of data points for the determination of the surface dynamics. However, some stable water columns do not have so smooth a curve and many sample points would be necessary for an adequate description.

For Ice Patrol survey work, dynamic height information and a complete description of temperature and salinity distribution must be obtained quickly. These two aims require two different sampling techniques: first, only a few data points critically located and rapidly obtained are needed in any given water column for the adequate determination of dynamic heights based on a smooth curve (the exact number of samples required needs further study because it depends on the water mass involved); second, a detailed description of the properties requiring a great number of point samples which is virtually prohibitive from the synoptic standpoint. In this situation the ultimate solution is attainable only with a continuous sampling device. A sampler such as this could be lowered in a water column and provide as many data points as considered necessary to fulfill both requirements of Ice Patrol surveys along with adding to the rapidity with which a survey can be conducted.

The state of the art in the field of electronic continuous samplers leaves much to be desired. Whereas the point sampling technique using Nansen bottles and reversing thermometers can miss maximum-minimum temperature information and also fail to describe the gradients of density exactly, the inherent inaccuracies of a continuous sampler also pose a problem.

In using a continuous sampler for the accomplishment of Ice Patrol survey aims the data abstracted from its output must be sufficiently accurate to perform dynamic height calculations. Basically, two causes of error must be considered when comparing the final results of the point (Nansen bottles) versus continuous sampling systems:

(*a*) missed density gradients

(*b*) instrument accuracy

As discussed above, a good approach to the true dynamic height of a water column can be made from several data points and a smooth drawn anomaly curve. This method could give accuracies to within ± 2 dynamic centimeters or better depending on the water column. However, the possibility of missing the gradients still exists and generally the missed gradient error must be minimized because of additional instrument errors that must be considered in any sampling system.

In general, with a fixed number of samples of the vertical distribution of some property, the error in describing the distribution by point sample and using straight line integration between these points for dynamic computations is shown in figure 9D and given by the relationship:

$$\text{error} = \frac{\text{change of property gradient}}{\textit{fixed} \text{ number of samples over given distance}}$$

where the change of gradient of some property (P) is $\frac{d^2P}{dD^2}$, and the fixed number of samples (n) over a given distance is defined by $\frac{n}{D}$. At the limit

condition, $\frac{d^2P}{dD^2} \longrightarrow 0$, any $\frac{n}{D}$ will suffice to give 0 error. However as the second derivative of a distribution curve segment increases, the error also increases if $\frac{n}{D}$ remains the same. If $\frac{n}{D}$ is allowed to vary with the second derivative, the error resultant can be held constant. The error can be held constant or minimized when using a continuous sampler by abstracting sufficient data points in the areas of greatest property change; or at close spaced uniform intervals over the entire water column, therefore, making $\frac{n}{D}$ large enough to handle any gradient change. Predicting density gradient changes directly from the temperature and salinity data is difficult; therefore the abstracting of closely spaced uniform interval data points would be the superior method.

An approach was made to this problem by using gradient sampling in an effort to properly describe the density distribution and catch the important changes in gradient. However it was found that the areas of greatest temperature variations are not necessarily the areas of greatest variations in density gradient. On the contrary, figure 8D shows great variations with depth of both temperature and salinity in the upper 200 meters but almost a straight line distribution of density. On the other hand, between 400 and 600 meters, the temperature and salinity gradients are almost vertical while the density gradient is about half of the slope observed in the upper 200 meters where great temperature and salinity variations existed. Past practice has been to sample these deeper levels more sparsely because of the less acute changes exhibited by temperature and salinity, however, this could lead to anomaly errors. Figures 10D and 11D show examples of intermediate level density gradients missed by the standard sampling.

In order to compare the point sampling method with that of a continuous sampler, an approach similar to that used for comparing gradient sampling with standard depth sampling was utilized. Stations representing the various water types found in the Ice Patrol area were plotted to provide vertical temperature and salinity distribution curves as described above. Several of these stations were then processed for the anomaly of specific volume and this was plotted against depth with smooth curves drawn between the points. Then straight lines were drawn between the standard Ice Patrol sampling depths. By past methods, the values at the standard depths would have been numerically integrated linearizing the data between each standard depth. The areas bounded by the curve of the specific volume anomaly and the straight lines between the standard sampling levels represent the errors introduced in the dynamic height calculations by standard level, fixed sample number method of data collection. This error was then measured by use of a planimeter to obtain the area bounded by the curves which represents the integration error between each depth interval (figure 12D). Table IIID lists the results of this analysis giving the errors, plus or minus, on either side of the idealized distribution curve.

Because of the random character of the anomaly distribution curve, the accumulated errors tend to cancel each other and reduce the totals in most cases. The trend of the curves is towards the more gradual anomaly change with depth resulting in an error which is positive or greater than the true value. Although the accumulated error represents the probable error of standard depth sampling, it is obvious that from the several stations so analyzed that the error ranges from small to large depending on positive or negative error values along the curve. Only 15 stations were selected for this treatment so statistical treatment is not very effective, however, the station distribution is an example of the variety of water masses found in the survey area.

It is attempted herein to show the conditions that can exist and how great the errors can be. Each water column exhibits a random distribution of standard sampling depth errors and a truly representative error is difficult to define. Table IIID indicates what can be expected by insufficiently describing the gradient of density and basing dynamic height computations on the straight line distribution between points. These figures are comparable to the errors determined by standard level sampling versus gradient sampling shown above.

Continuous Sampling Devices

A continuous sampling system which gives an unlimited number of points would be the ultimate solution to the problem of calculating dynamic heights with a minimum of gradient errors. The advantages of a continuous sampling system can be offset to a greater or lesser extent by the in-

ability of the instrument to measure water properties with sufficient accuracy.

The continuous sampling devices that are available on the market today provide a measurement accuracy from 0.01° C. to 0.05° C. in temperature and about 0.03‰ in salinity. Kollmeyer (1964) pointed out that errors of ±0.02° C. and 0.02‰ can, under some circumstances, result in a maximum possible error of 0.0169 dynamic meters in 1,000 meters. To evaluate the final accuracies in dynamic heights obtained from a continuous sampler, a more realistic analysis is required here. A selected group of stations, some of which were used in the comparative anomaly plots above, were processed several additional times on the computer using different error values of temperature and salinity. The errors used were designed to be additive therefore increasing the anomaly of specific volume and giving a maximum error. As mentioned above, there were a great number of points used such that they do approach the concept of continuous samples. The results are shown in table IVD, with errors given in dynamic meters difference from the true values.

The instrument error is also present when using Nansen bottles and reversing thermometers. Whitney (1957) indicates that accuracies of ±0.024° C. for 0.05° C. scale graduations and ±0.036° C. for 0.1° C. graduations can be expected, and Kollmeyer (1964) indicates ±0.01° C. and ±0.02° C. respectively. During Ice Patrol 1965 some 813 thermometer comparisons were made during the surveys. Each Nansen bottle contained two thermometers with the accepted temperature value being the average figure except in cases of obvious malfunction. Since the true value of the temperature is not known, the error in these thermometer readings can be represented by the standard deviation of each thermometer from its paired average. Table VD shows this deviation for each survey during the 1965 Ice Patrol season giving the largest 95-percent confidence limit of ±0.016° C. obtained during the third survey. An analysis conducted this year on Ice Patrol between two different inductive salinometers, Industrial Instruments Model RS–7A and Hytech Model 6210 using 3 different operators and duplicate bottled salinity samples yielded a standard deviation between duplicate samples of 0.007‰ over 41 comparisons. This gives a 95-percent confidence limit of 0.014‰ for a laboratory salinometer at sea.

From table IVD it can be seen that the average of the maximum instrument error in dynamic heights over 1,000 meters for point sampling is ±0.0124 DM using measurement accuracies of ±0.016° C. and ±0.014‰. The average of the maximum instrument error for a continuous sampler ranges from ±0.0234 DM to ±0.0286 DM over measurement accuracies of ±0.01° C. and ±0.05° C. respectively and with a salinity error of ±0.03‰. It is obvious that the errors from both instruments suites will be random, tending to result in a bell-shaped distribution curve with the maximum errors of table IVD as its practical end points. With this assumption it is then possible to compute the 2σ or 95-percent confidence limit of measurement accuracy for these dynamic heights. Table IVD also lists this 2σ value.

It can be observed from table IVD that the greatest dynamic height error contribution is from the salinity measurement error which is about five times as great as the error in temperature measurement. A temperature measurement error of ±0.05° C. only accounts for about 0.005 dynamic meters while a salinity measurement error of ±0.03‰ accounts for about 0.025 dynamic meters over 1,000 meters.

In order to evaluate the accuracy of a continuous sampler versus the Nansen bottle point sampling method for dynamic height calculations, the errors must be considered as follows: Total error (δ) = instrument error (δi) + missed gradient error (δg).

The total error for the continuous sampler falls within a range of ±0.0231 DM to ±0.0282 DM, depending on the temperature error, and using the average 95-percent confidence figures for instrument error from table IVD and a missed gradient error of 0. For point sampling, the missed gradient error value is so variable and dependent on the water mass and density gradient levels that it is difficult to assign a fixed error, however, from the comparisons of the fixed sampling method and the gradient sampling method presented herein, it has been shown that over 1,000 meters of integration, the 95-percent confidence limit of point sampling error is ±0.0133 DM due to missed gradients. Using this figure and the average 95-percent confidence limit instrument error of ±0.0122 DM from table IVD for Nansen bottles, the error resulting from the use of standard depth point sampling is equal to

± 0.0255 DM. By comparing this figure with that of the greatest continuous sampler error of ± 0.0282 DM shown above, it is concluded that both systems give comparable results insofar as dynamic height calculations are concerned with the continuous sampler providing a much more complete description of the temperature and salinity distribution.

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Kollmeyer, Ronald C. (1964). An Examination of Errors in Dynamic Height Determinations. U.S. Coast Guard. Unpublished manuscript, series, October 1963.

Whitney, G. G., Jr. (1957). Factors Affecting the Accuracy of Thermometric Depth Determination. Journal du Conseil, vol. XXII, No. 2, pp. 167–173.

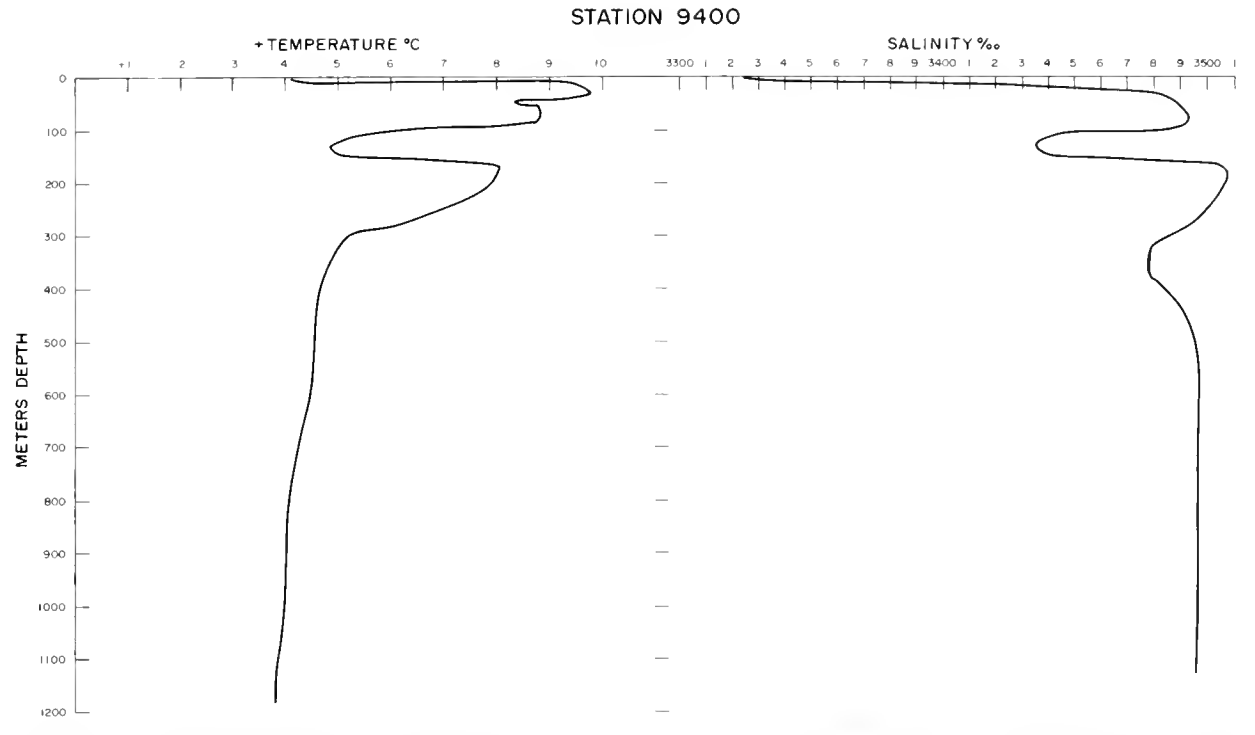

Figure 1D. Vertical distribution of temperature and salinity for station 9400 based on observed data points.

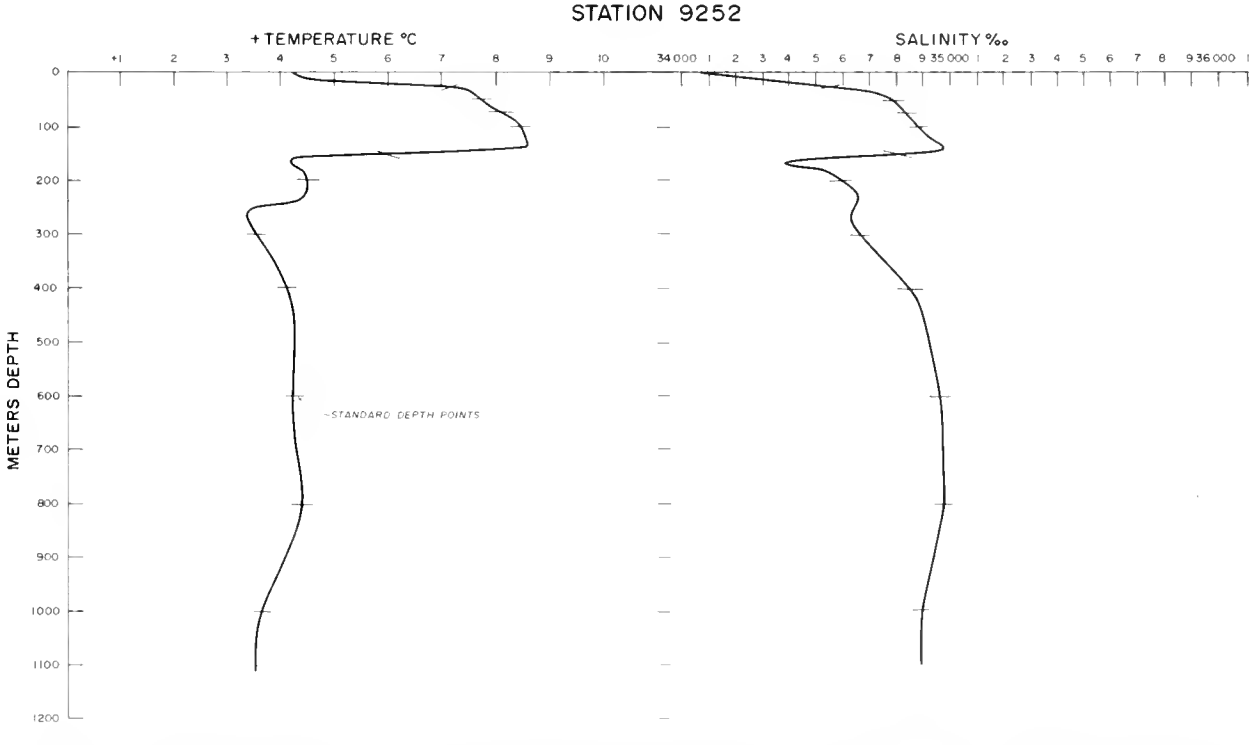

Figure 2D. Vertical distribution of temperature and salinity for station 9252 based on observed data points.

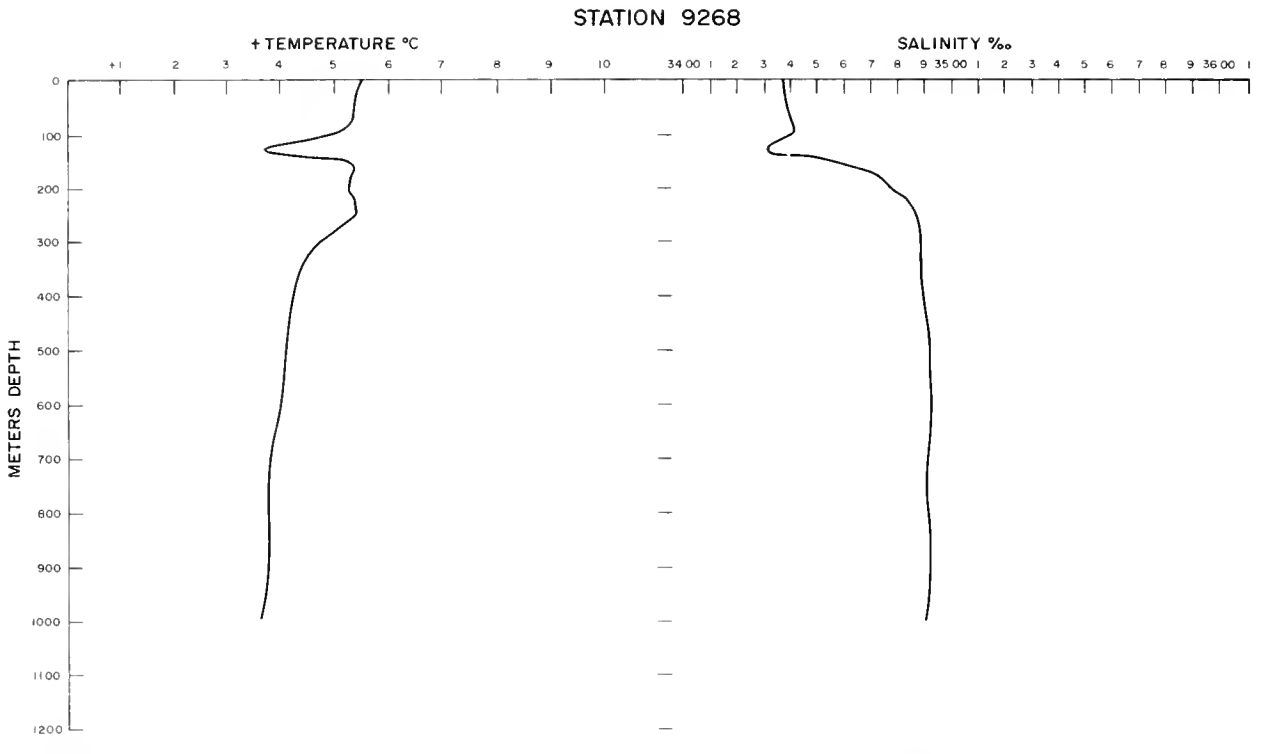

Figure 3D. Vertical distribution of temperature and salinity for station 9268 based on observed data points.

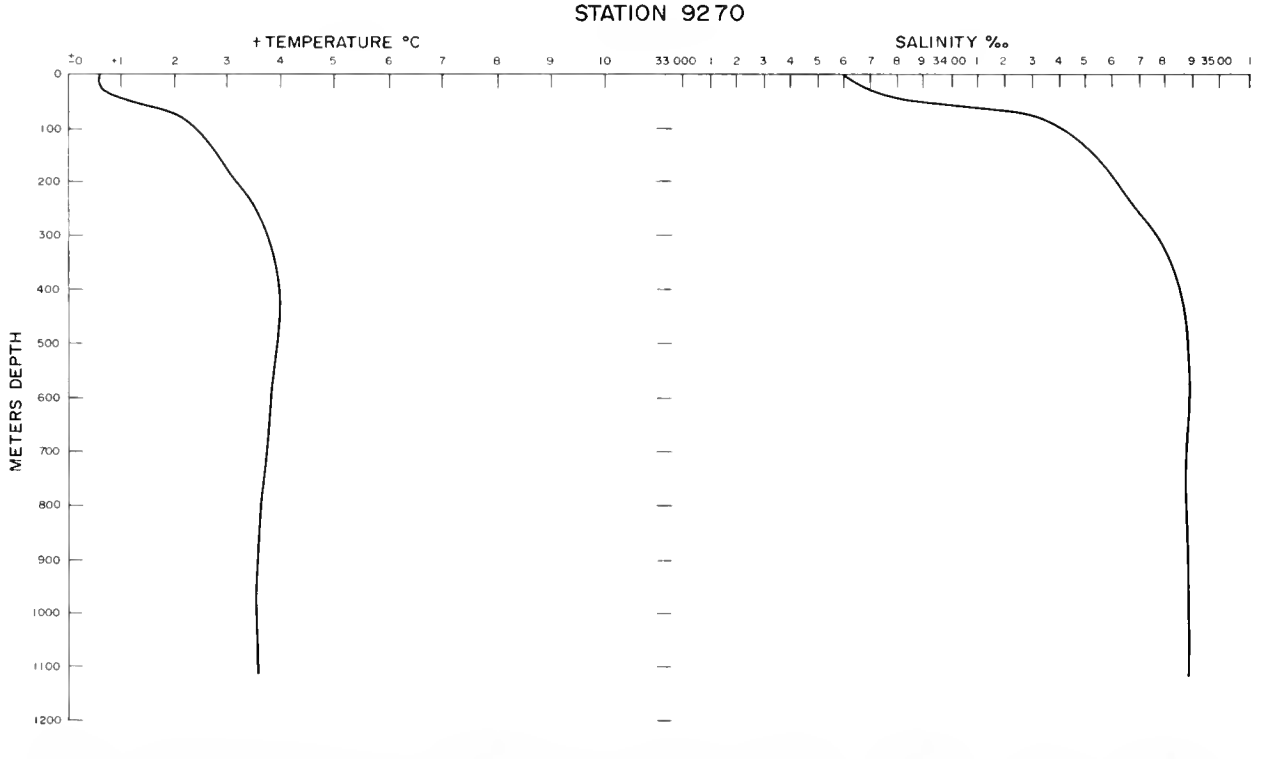

Figure 4D. Vertical distribution of temperature and salinity for station 9270 based on observed data points.

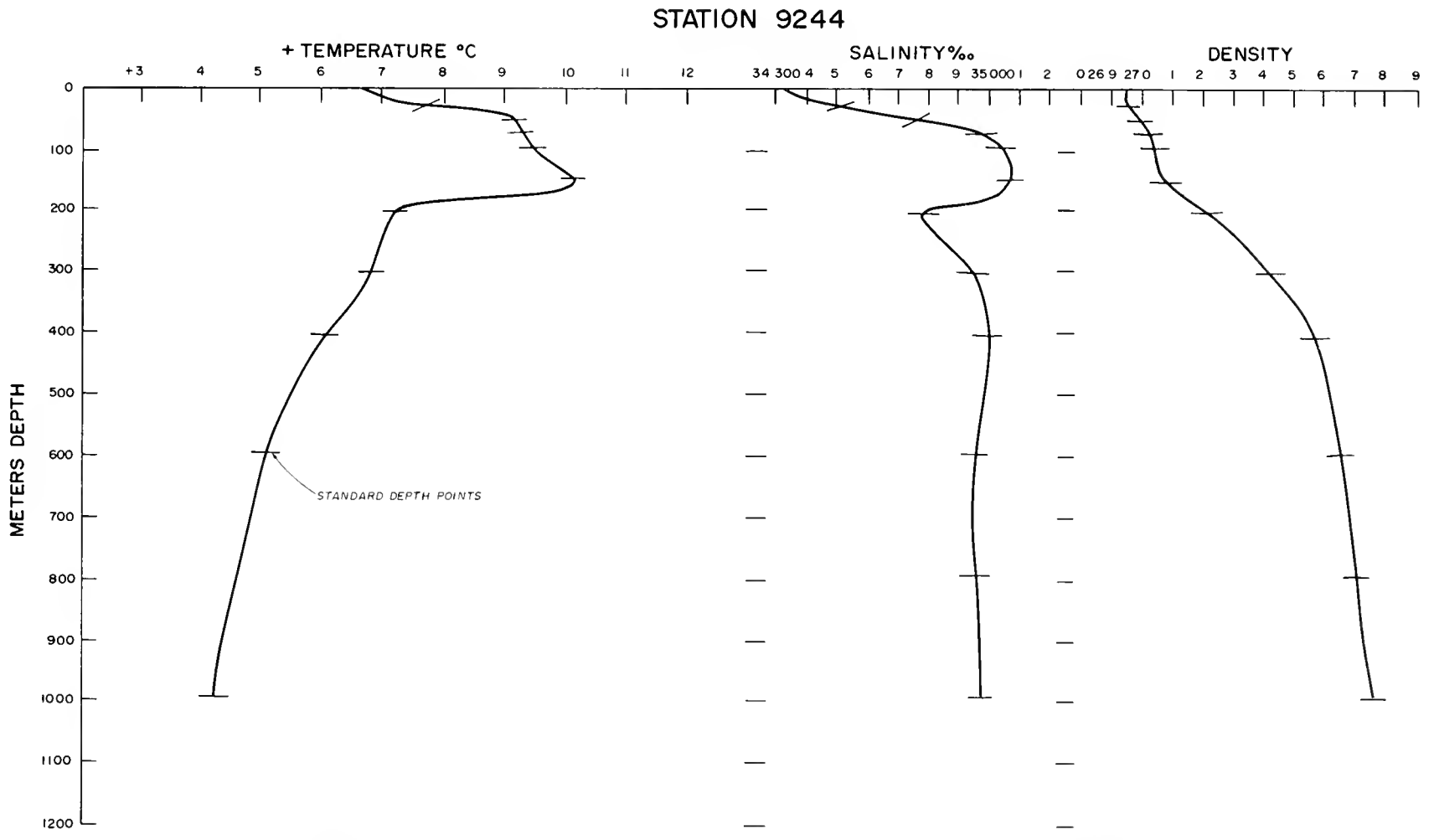

Figure 6D. Vertical distribution of temperature, salinity and density for station 9244 based on abstracted standard depth data points from the "true" curve shown in figure 5.

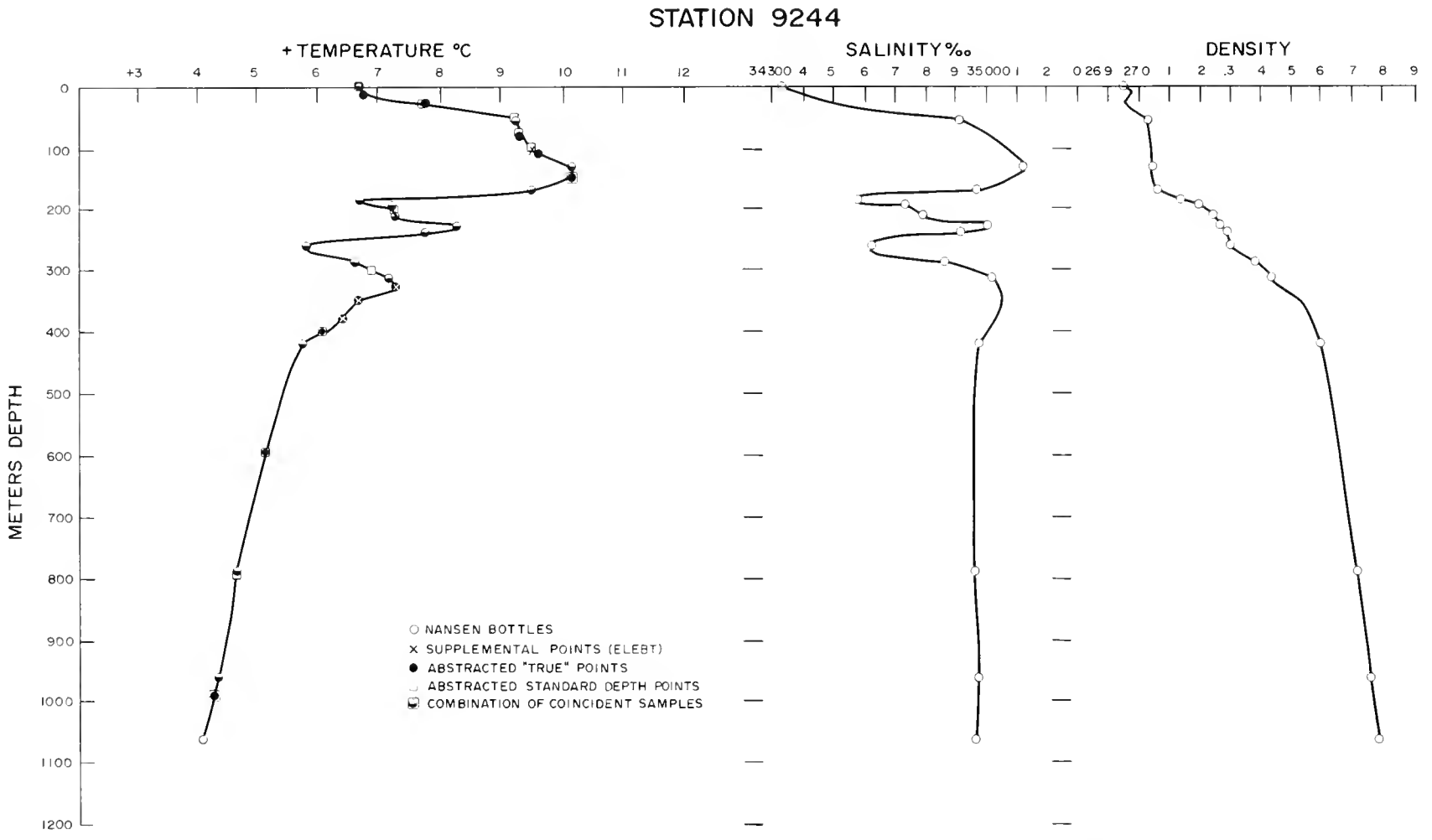

Figure 5D. Vertical distribution of temperature, salinity and density for station 9244 based on observed data and supplemental bathythermograph points. Also shown are the points used for the 3 sets of dynamic height computations based on; Nansen bottles (observed values), Abstracted Standard depths, or Abstracted "True" points.

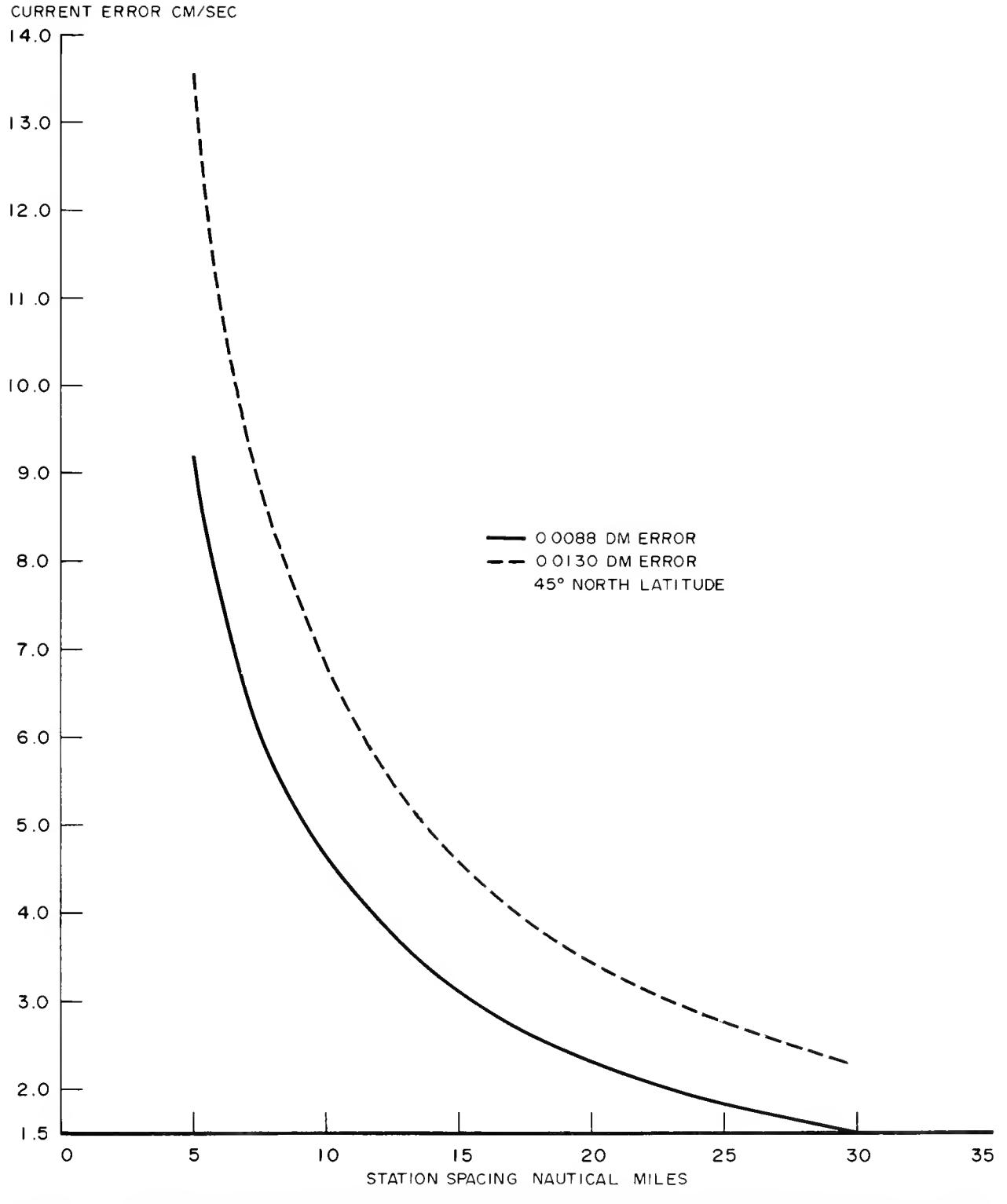

Figure 7D. Curves representing a surface dynamic height error between any two stations showing the relation between the station spacing and computed current velocity error.

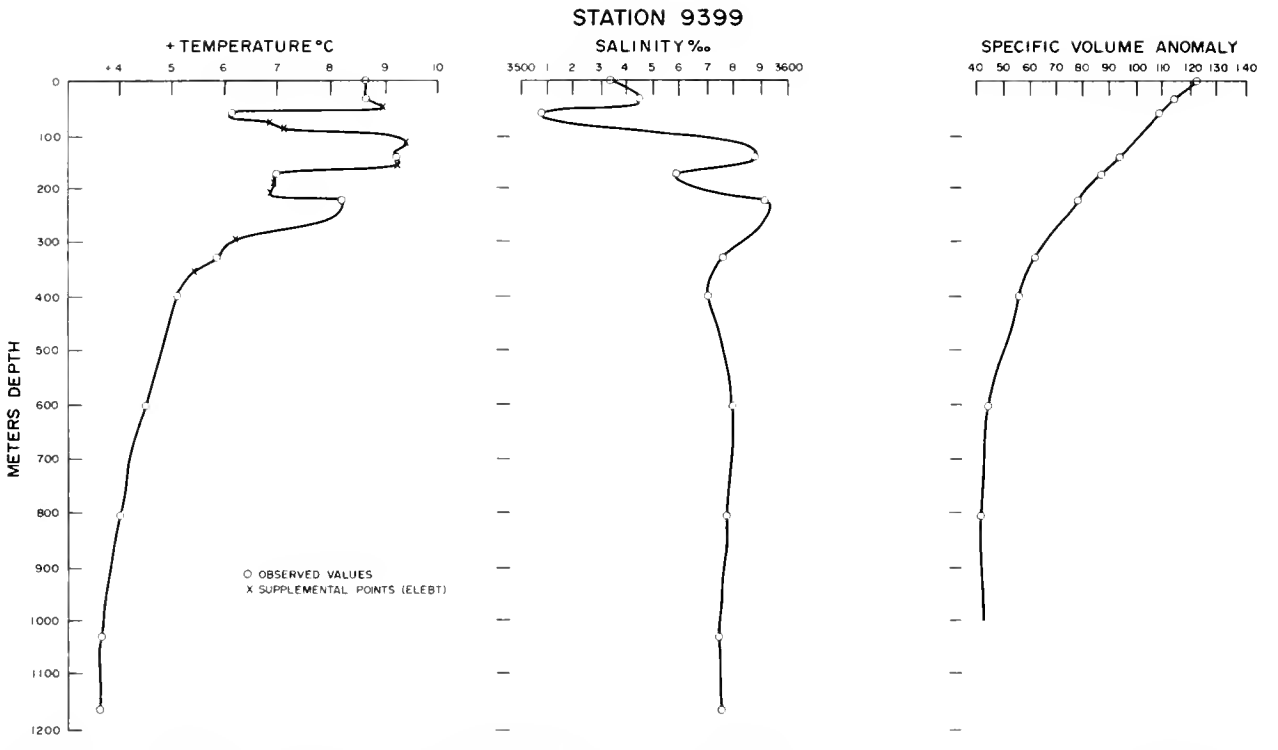

Figure 8D. Vertical distribution of temperature, salinity and specific volume anomaly for station 9399 based on observed values and supplemental points from the electronic bathythermograph.

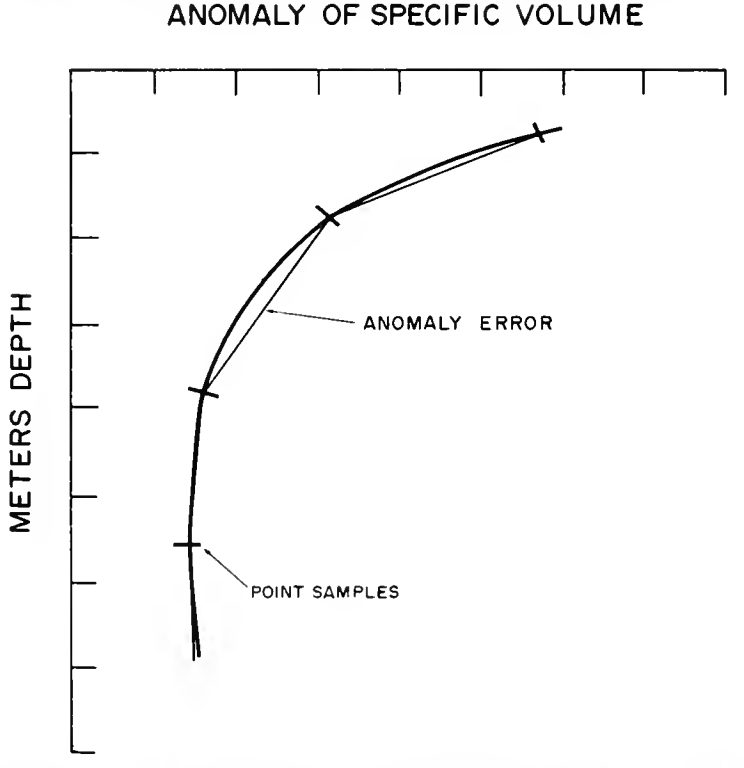

Figure 9D. Plot showing the anomaly of specific volume error that results from the straight line numerical integration of the point samples. This error is the result of the straight line's departure from the smooth "true" curve.

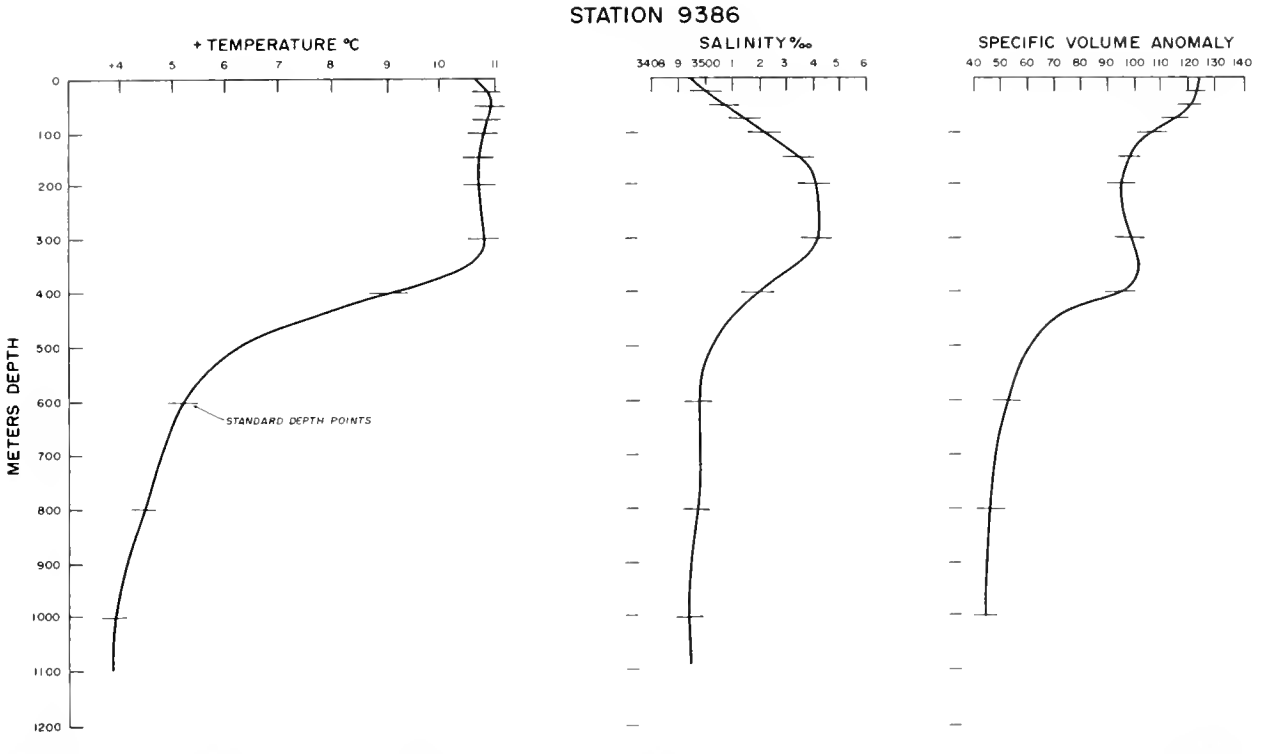

Figure 10D. Vertical distribution of temperature, salinity and specific volume anomaly for station 9386 based on observed values. Shown also are the Standard depth points along each curve.

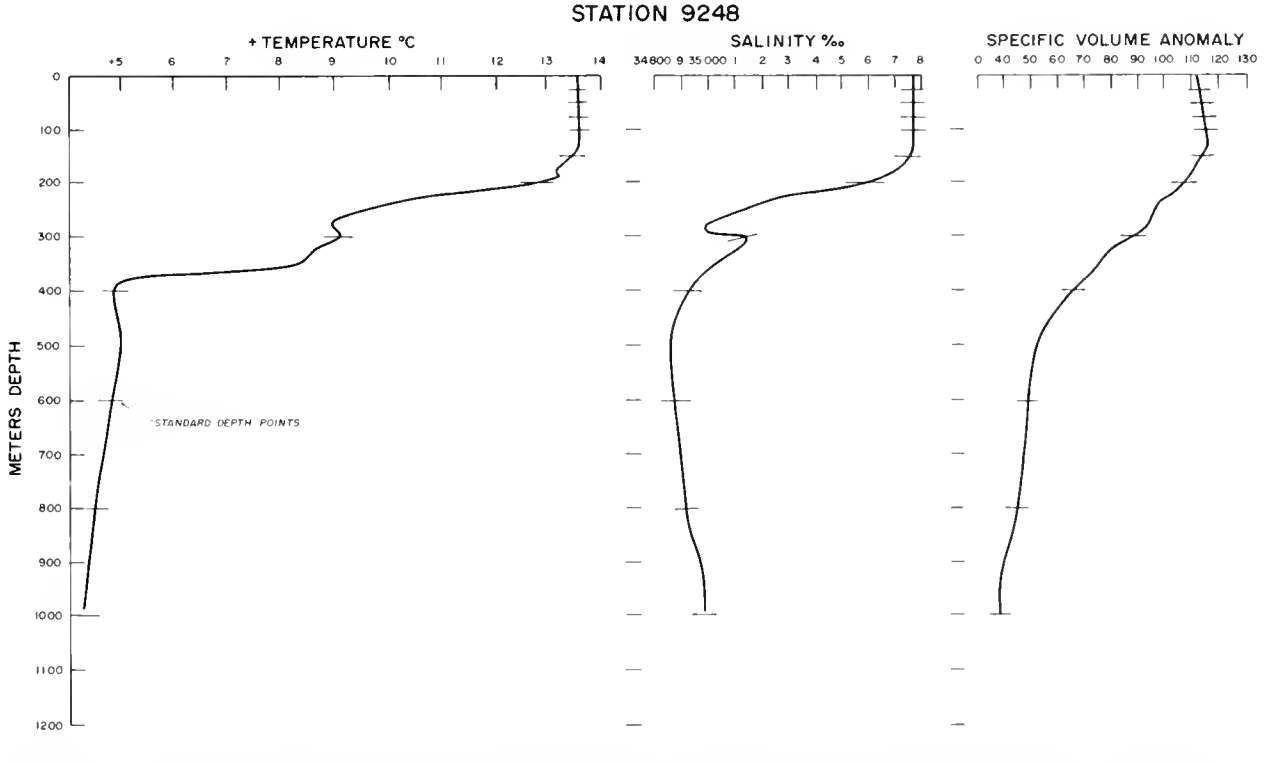

Figure 11D. Vertical distribution of temperature, salinity and specific volume anomaly for station 9248 based on observed values. Shown also are the Standard depth points along each curve.

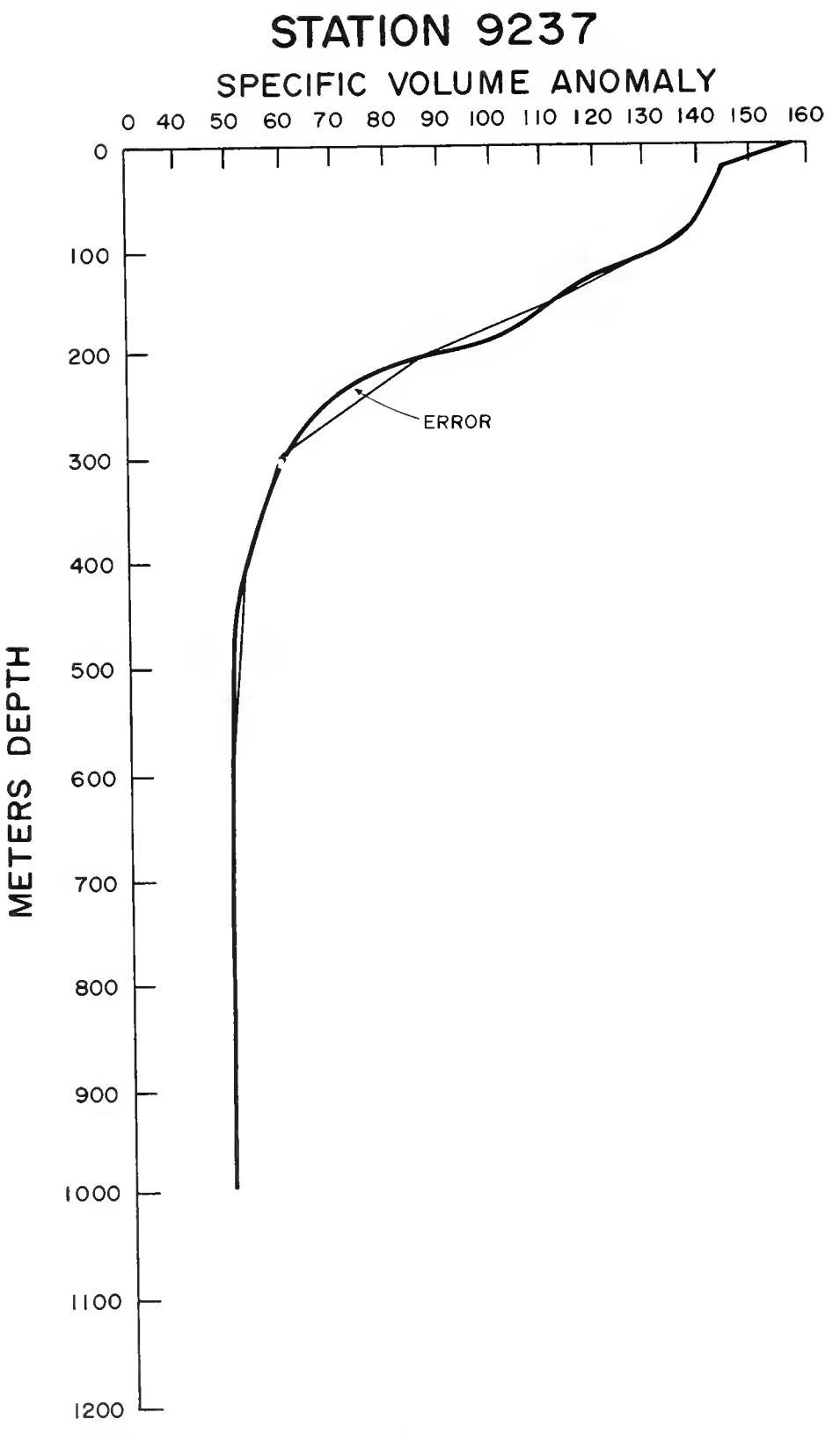

Figure 12D. Vertical distribution of the specific volume anomaly showing straight lines drawn between Standard depth levels. The area between the straight lines and the smooth "true" curve represents the numerical integration error.

TABLE IID. Comparison of number of Nansen bottles used for gradient sampling during Ice Patrol 1965 and what would have been used for standard depth sampling

Survey	Number of stations	Gradient sampling	Standard depth sampling	Difference
1st	62	517	637	120
3d	57	464	576	112

TABLE IIE. Standard deviations between standard depths and gradient sampling dynamic height computations

	Number of stations	True standard (σ)	2σ	Maximum difference	True gradient (σ)	2σ	Maximum difference
Stations to 1,000 meters.	62	±0.0066 DM.	±0.0133 DM.	+0.020 DM.	±0.0044 DM.	±0.0088 DM.	−0.012 DM.
All stations	119	±0.0052 DM.	±0.0104 DM.	−0.008 DM.	±0.0039 DM.	±0.0078 DM.	−0.014 DM.

TABLE IIF. Plus and minus errors in dynamic heights obtained from the measurement of the areas bounded by the idealized distribution curve of the specific volume anomaly and straight lines between standard depths

Station No.	+ error	− error	Alg. sum. dynamic meters
9236	0.0075	0.0007	+0.0068
9244	.0035	.0043	−.0008
9247	.0025	.0004	+.0021
9248	.0107	.0018	+.0089
9249	.0036	.0020	+.0016
9379	.0040	.0009	+.0031
9386	.0221	.0038	+.0183
9396	.0067	.0054	+.0013
9399	.0040	.0016	+.0024
9407	.0109	.0023	+.0086
9241	.0041	.0013	+.0028
9408	.0034	.0019	+.0015
9242	.0075	.0004	+.0071
9243	.0050	.0018	+.0032
9240	.0040	.0016	+.0024
9385	.0047	.0038	+.0009
9398	.0061	.0030	+.0031

TABLE IVD. Instrument measurement error

Station No.	True dynamic height DM	Dynamic height with maximum instrument error ±0.05° C. ± 0.030°/₀₀ DM	Maximum error	2σ of normal distribution curve	Dynamic height with maximum instrument error ±0.01° C. ± 0.030°/₀₀ DM	Maximum error	2σ of normal distribution curve	Dynamic height with maximum instrument error ±0.016° C. ± 0.014°/₀₀ DM	Maximum error	2σ of normal distribution curve
9236	0.5737	0.6016	0.0279	0.0275	0.5971	0.0234	0.0231	0.5859	0.0122	0.0120
9241	.5925	.6195	.0270	.0266	.6159	.0234	.0231	.6043	.0118	.0116
9242	.5663	.5942	.0279	.0275	.5896	.0233	.0230	.5786	.0123	.0121
9243	.6825	.7116	.0291	.0287	.7060	.0235	.0232	.6947	.0122	.0120
9247	.5950	.6270	.0320	.0316	.6221	.0271	.0267	.6084	.0134	.0132
9248	.7341	.7634	.0293	.0289	.7574	.0233	.0230	.7466	.0125	.0123
9249	.5892	.6176	.0284	.0280	.6128	.0236	.0233	.6015	.0123	.0121
9268	.5291	.5571	.0280	.0276	.5525	.0234	.0231	.5413	.0122	.0120
9379	.5248	.5527	.0279	.0275	.5483	.0235	.0232	.5370	.0122	.0120
9385	.6035	.6344	.0309	.0305	.6270	.0235	.0232	.6158	.0123	.0121
9396	.5613	.5894	.0281	.0277	.5848	.0235	.0232	.5734	.0121	.0119
9398	.6960	.7251	.0291	.0287	.7194	.0234	.0231	.7086	.0126	.0124
9399	.6028	.6313	.0285	.0281	.6262	.0234	.0231	.6152	.0124	.0122
9400	.5960	.6249	.0289	.0285	.6191	.0231	.0228	.6086	.0126	.0124
9408	.5332	.5589	.0257	.0253	.5528	.0196	.0193	.5454	.0122	.0120
Averages			.0286	.0282		.0234	.0231		.0124	.0122

*All Dynamic Heights must be added to the standard 970.403 based on the 1,000-decibar level.

TABLE VD. Thermometer comparisons

Survey	σ	2σ	Number of comparisons
1st	±0.005° C	±0.010° C	342
2d	±0.007° C	±0.014° C	177
3d	±0.008° C	±0.016° C	294

TABLE OF OCEANOGRAPHIC DATA

The following is the observed and interpolated data for the Coast Guard Oceanographic Unit oceanographic stations taken in conjunction with the International Ice Patrol 1965 in the Grand Banks of Newfoundland area. The data was obtained from CG cutter *Evergreen*, 30 March 1965, to 25 May 1965. Presentation is from National Oceanographic Data Center Cruise Listing No. 31–540.

Notes:

Depth to bottom—uncorrected sounding depth in meters based on a speed of sound in sea water of 4,800 ft./sec.

Depth (m)—postscript T indicates a depth determined by thermometric calculations.

Sound velocity—in meters per second to tenths according to Wilson's formula.

A complete description of codes can be found in NODC publication M–2, "Processing Physical and Chemical Data From Oceanographic Stations."

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DIFF INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4202 N	05145 W		150	21	03	30	153	1965	001	9235	3383	14	30	9	8		X1	8	5		0001

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
04		29	S12	119	072	061	8	10	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΣΔO DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	CODE
		STD	0000	0192	3352	2681	0012441	0000	14559								
153		OBS	0000	0192	33517	2681			14559								
		STD	0010	0213	3360	2686	0011967	0012	14571								
		STD	0020	0233	3368	2691	0011515	0024	14582								
		STD	0030	0252	3376	2696	0011063	0035	14593								
		STD	0050	0287	3390	2704	0010303	0057	14614								
		STD	0075	0324	3406	2714	0009436	0081	14636								
		STD	0100	0354	3420	2722	0008677	0104	14655								
		STD	0125	0376	3432	2729	0008007	0125	14670								
153		OBS	0133	0382	34352	2731			14674								
		STD	0150	0384	3440	2735	0007507	0144	14678								
		STD	0200	0393	3453	2744	0006667	0180	14692								
153		OBS	0221	0397	34583	2748			14698								
		STD	0250	0405	3459	2748	0006390	0212	14706								
		STD	0300	0419	3464	2750	0006213	0244	14721								
153		OBS	0373	0440	34805	2761			14744								
		STD	0400	0482	3490	2763	0005122	0300	14767								
153		OBS	0401	0483	34898	2764			14768								
153		OBS	0446	0460	34909	2767			14766								
		STD	0500	0435	3490	2769	0004649	0349	14764								
		STD	0600	0399	3488	2771	0004488	0395	14766								
153		OBS	T0674	0380	34874	2773			14770								
		STD	0700	0378	3488	2773	0004378	0439	14773								
		STD	0800	0372	3488	2774	0004352	0483	14788								
		STD	0900	0366	3489	2775	0004316	0526	14802								
153		OBS	0902	0366	34889	2775			14802								
		STD	1000	0364	3489	2776	0004369	0570	14817								
		STD	1100	0362	3489	2776	0004429	0614	14833								
153		OBS	T1152	0361	34892	2776			14842								
		STD	1200	0360	3489	2776	0004488	0658	14849								
		STD	1300	0358	3489	2776	0004545	0703	14865								
153		OBS	T1359	0357	34888	2776			14875								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DIFF INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4225 N	05116 W		150	21	03	30	196	1965	001	9236	2487	12	28	5	4		X2	6	8		0002

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
06		12	S04	071	039	039	8	15	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΣΔO DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	CODE
		STD	0000	0047	3328	2672	0013332	0000	14491								
196		OBS	0000	0047	33283	2672			14491								
		STD	0010	0041	3329	2672	0013276	0013	14489								
		STD	0020	0035	3329	2673	0013220	0027	14488								
		STD	0030	0029	3329	2674	0013172	0040	14487								
		STD	0050	0016	3330	2675	0013062	0066	14485								
196		OBS	0060	0010	33300	2675			14484								
196		OBS	0066	0204	33544	2683			14575								
		STD	0075	0391	3382	2688	0011870	0097	14661								
196		OBS	0086	0538	34076	2692			14728								
		STD	0100	0586	3427	2702	0010654	0125	14752								
196		OBS	0102	0589	34291	2703			14754								
		STD	0125	0561	3450	2723	0008669	0149	14749								
196		OBS	0127	0555	34513	2725			14747								
		STD	0150	0438	3447	2735	0007507	0170	14702								
196		OBS	0152	0435	34470	2735			14701								
196		OBS	0178	0495	34628	2741			14732								
		STD	0200	0514	3469	2743	0006790	0205	14745								
196		OBS	0203	0516	34703	2744			14746								
		STD	0250	0508	3480	2753	0005959	0237	14752								
		STD	0300	0498	3487	2760	0005380	0266	14757								
196		OBS	0305	0497	34876	2760			14757								
		STD	0400	0472	3494	2768	0004670	0316	14764								
196		OBS	T0404	0471	34943	2768			14764								
		STD	0500	0426	3492	2772	0004398	0361	14761								
		STD	0600	0394	3491	2774	0004209	0404	14764								
196		OBS	0604	0393	34909	2774			14764								
		STD	0700	0384	3491	2775	0004207	0446	14776								
		STD	0800	0375	3491	2776	0004208	0488	14789								
196		OBS	0802	0375	34906	2776			14789								
		STD	0900	0366	3490	2776	0004233	0531	14802								
		STD	1000	0360	3490	2777	0004248	0573	14816								
196		OBS	1018	0359	34897	2777			14818								
		STD	1100	0356	3489	2777	0004357	0616	14831								
196		OBS	T1193	0355	34886	2776			14846								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4250 N	05042 W		150	20	03	30	239	1965	001	9237	1207	11	30	7	4		X7	6	8		0003

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		11	S06	051	006	006	7	10	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg–at/l	TOTAL–P µg–at/l	NO₂–N µg–at/l	NO₃–N µg–at/l	SiO₄–Si µg–at.l	pH	SCC
		STD	0000	0158	3304	2645	0015845	0000	14537								
239		OBS	0000	0158	33038	2645			14537								
		STD	0010	0125	3309	2652	0015242	0016	14525								
		STD	0020	0098	3313	2657	0014776	0031	14515								
239		OBS	0024	0088	33145	2658			14511								
		STD	0030	0083	3315	2659	0014532	0045	14510								
		STD	0050	0068	3317	2662	0014300	0074	14507								
		STD	0075	0049	3319	2665	0014010	0109	14503								
239		OBS	0088	0039	33207	2666			14500								
		STD	0100	0012	3329	2674	0013083	0143	14491								
239		OBS	0108	0001	33345	2679			14487								
		STD	0125	0038	3350	2690	0011615	0174	14510								
		STD	0150	0091	3372	2704	0010253	0202	14541								
		STD	0200	0186	3409	2728	0008123	0247	14597								
239		OBS	0219	0218	34213	2735			14616								
		STD	0250	0263	3434	2741	0006895	0285	14642								
		STD	0300	0324	3452	2750	0006139	0318	14679								
239		OBS	0387	0396	34740	2761			14727								
		STD	0400	0397	3475	2761	0005247	0375	14730								
		STD	0500	0402	3480	2765	0005023	0426	14749								
239		OBS	T0574	0405	34823	2766			14763								
		STD	0600	0406	3483	2767	0004935	0476	14768								
		STD	0700	0408	3484	2767	0004980	0525	14785								
239		OBS	0758	0409	34847	2768			14795								
		STD	0800	0406	3485	2768	0004980	0575	14801								
		STD	0900	0399	3487	2771	0004843	0624	14815								
239		OBS	T0953	0397	34871	2771			14823								
		STD	1000	0396	3487	2771	0004884	0673	14831								
239		OBS	T1062	0395	34874	2771			14841								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4313 N	05017 W		150	30	03	31	036	1965	001	9238	0073	01	31	3	4		X7	5	8		0004

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		11	S03	003	011	006	7	03	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg–at/l	TOTAL–P µg–at l	NO₂–N µg–at/l	NO₃–N µg–at l	SiO₄–Si µg–at.l	pH	SCC
		STD	0000	0218	3278	2621	0018193	0000	14560								
036		OBS	0000	0218	32783	2621			14560								
		STD	0010	0218	3278	2621	0018187	0018	14562								
		STD	0020	0217	3279	2621	0018175	0036	14563								
		STD	0030	0214	3279	2621	0018156	0055	14563								
036		OBS	0040	0211	32786	2621			14564								
		STD	0050	0206	3280	2623	0017989	0091	14563								
036		OBS	0070	0194	32831	2626			14562								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ′ 1/10	LONGITUDE ° ′ 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4258 N	05019 W		150	20	03	31	056	1965	001	9239	0256	02	32	4	3		X2	6	8	0005

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		36	S10	003	000	000	8	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁻⁵	Σ Δ D DYN. M. x 10⁻³	SOUND VELOCITY	O₂ ml l	PO₄-P µg-at l	TOTAL-P µg-at l	NO₃-N µg-at	NO₂-N µg-at l	SiO₄-Si µg-at	pH	STDY
		STD	0000	0200	3289	2630	0017283	0000	14554								
056		OBS	0000	0200	32886	2630			14554								
		STD	0010	0200	3289	2630	0017280	0017	14555								
		STD	0020	0201	3289	2630	0017270	0035	14557								
		STD	0030	0201	3289	2631	0017266	0052	14559								
056		OBS	0030	0201	32890	2631			14559								
056		OBS	0041	0199	32887	2630			14560								
		STD	0050	0160	3295	2638	0016533	0086	14545								
056		OBS	0051	0155	32956	2639			14543								
		STD	0075	0029	3323	2669	0013631	0123	14494								
056		OBS	0081	0007	33288	2674			14486								
		STD	0100	0014	3333	2677	0012789	0156	14493								
		STD	0125	0031	3341	2683	0012263	0188	14506								
		STD	0150	0057	3353	2691	0011491	0217	14523								
056		OBS	0162	0073	33597	2696			14533								
		STD	0200	0136	3387	2714	0009420	0270	14572								
056		OBS	T0203	0142	33890	2715			14575								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ′ 1/10	LONGITUDE ° ′ 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4246 N	05020 W		150	20	03	31	070	1965	001	9240	1134	10	21	4	5		X2	2	8	0006

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		04	S09	993	006	006	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁻⁵	Σ Δ D DYN. M. x 10⁻³	SOUND VELOCITY	O₂ ml l	PO₄-P µg-at l	TOTAL-P µg-at l	NO₃-N µg-at	NO₂-N µg-at l	SiO₄-Si µg-at	pH	STDY
		STD	0000	0089	3313	2658	0014694	0000	14508								
070		OBS	0000	0089	33134	2658			14508								
		STD	0010	0086	3314	2658	0014631	0015	14508								
		STD	0020	0082	3314	2658	0014608	0029	14508								
		STD	0030	0078	3314	2659	0014585	0044	14508								
		STD	0050	0068	3316	2661	0014375	0073	14507								
070		OBS	0061	0061	33169	2662			14505								
		STD	0075	0050	3319	2664	0014040	0108	14503								
		STD	0100	0031	3323	2669	0013638	0143	14499								
070		OBS	0117	0018	33256	2671			14496								
		STD	0125	0027	3336	2679	0012622	0176	14503								
		STD	0150	0067	3368	2703	0010410	0205	14530								
070		OBS	0178	0136	34009	2725			14570								
		STD	0200	0209	3424	2738	0007171	0249	14609								
070		OBS	T0203	0218	34268	2739			14614								
		STD	0250	0261	3437	2744	0006675	0283	14642								
		STD	0300	0300	3447	2749	0006263	0315	14668								
		STD	0400	0358	3468	2760	0005329	0373	14712								
070		OBS	T0402	0359	34688	2760			14713								
		STD	0500	0375	3473	2762	0005233	0426	14737								
		STD	0600	0391	3478	2764	0005163	0478	14761								
070		OBS	T0601	0391	34777	2764			14761								
		STD	0700	0403	3482	2766	0005074	0529	14783								
070		OBS	T0796	0408	34853	2768			14801								
		STD	0800	0408	3485	2768	0004982	0580	14802								
		STD	0900	0406	3486	2769	0004971	0629	14818								
		STD	1000	0397	3488	2771	0004874	0679	14831								
070		OBS	T1014	0395	34877	2772			14833								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DIFF. INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4238 N	05019 W		150	20	03	31	089	1965	001	9241	1701	11	32	4	4		X2	4	8		0007

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		03	S02	986	000	000	8	16	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0065	3319	2663	0014151	0000	14497								
089		OBS	0000	0065	33188	2663			14497								
		STD	0010	0052	3321	2666	0013913	0014	14493								
		STD	0020	0040	3323	2668	0013697	0028	14490								
		STD	0030	0028	3325	2670	0013482	0041	14486								
089		OBS	0038	0019	33269	2672			14484								
		STD	0050	0007	3329	2674	0013094	0068	14481								
089		OBS	0067	-0010	33312	2677			14476								
		STD	0075	0058	3358	2695	0011121	0098	14512								
		STD	0100	0270	3404	2717	0009132	0124	14617								
089		OBS	0106	0321	34056	2714			14640								
089		OBS	0115	0178	34022	2723			14578								
		STD	0125	0157	3403	2725	0008363	0145	14571								
089		OBS	0125	0157	34027	2725			14571								
089		OBS	0130	0180	34114	2730			14583								
089		OBS	0134	0200	34221	2737			14594								
089		OBS	0144	0230	34312	2742			14610								
		STD	0150	0254	3434	2742	0006762	0164	14622								
089		OBS	0172	0321	34429	2743			14656								
		STD	0200	0312	3446	2747	0006403	0197	14657								
089		OBS	T0239	0309	34509	2751			14663								
		STD	0250	0316	3453	2752	0005950	0228	14668								
		STD	0300	0345	3462	2756	0005594	0257	14690								
089		OBS	0383	0382	34740	2762			14721								
		STD	0400	0387	3476	2763	0005065	0310	14726								
		STD	0500	0407	3484	2767	0004780	0360	14752								
089		OBS	T0577	0411	34873	2770			14767								
		STD	0600	0406	3487	2770	0004612	0407	14768								
		STD	0700	0389	3488	2772	0004483	0452	14778								
089		OBS	0768	0380	34881	2773			14785								
		STD	0800	0377	3488	2774	0004414	0496	14790								
		STD	0900	0371	3488	2774	0004439	0541	14804								
089		OBS	T0977	0367	34880	2775			14815								
		STD	1000	0366	3488	2775	0004466	0585	14818								
		STD	1100	0364	3488	2775	0004519	0630	14834								
089		OBS	T1148	0364	34881	2775			14842								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	4212 N	05022 W		150	20	03	31	131	1965	001	9242	3036	12	01	3	2		X7	5	8	0008

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		16	S05	997	026	026	7	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0284	3355	2676	0012918	0000	14599								
131		OBS	0000	0284	33547	2676			14599								
		STD	0010	0286	3355	2676	0012917	0013	14602								
131		OBS	0012	0290	33557	2677			14604								
		STD	0020	0345	3367	2681	0012527	0026	14631								
		STD	0030	0401	3379	2685	0012156	0038	14658								
131		OBS	0035	0423	33838	2686			14668								
		STD	0050	0429	3384	2686	0012078	0062	14673								
		STD	0075	0440	3386	2686	0012056	0092	14682								
131		OBS	0086	0444	33886	2688			14686								
		STD	0100	0310	3390	2702	0010533	0121	14632								
		STD	0125	0196	3401	2720	0008777	0145	14588								
131		OBS	0131	0192	34055	2724			14588								
		STD	0150	0336	3432	2733	0007643	0165	14657								
131		OBS	0180	0506	34657	2742			14738								
		STD	0200	0496	3469	2746	0006583	0201	14737								
		STD	0250	0477	3477	2754	0005827	0232	14739								
		STD	0300	0467	3484	2761	0005262	0260	14744								
131		OBS	0300	0467	34838	2761			14744								
131		OBS	T0398	0471	34945	2769			14763								
		STD	0400	0470	3495	2769	0004573	0309	14763								
		STD	0500	0444	3495	2772	0004381	0354	14769								
131		OBS	0594	0424	34953	2774			14776								
		STD	0600	0423	3495	2774	0004246	0397	14777								
		STD	0700	0413	3494	2775	0004300	0439	14789								
		STD	0800	0403	3493	2775	0004350	0483	14801								
		STD	0900	0393	3493	2776	0004322	0526	14813								
131		OBS	T0992	0383	34921	2776			14825								
		STD	1000	0376	3492	2777	0004282	0569	14823								
131		OBS	T1016	0363	34920	2778			14820								
		STD	1100	0360	3492	2779	0004181	0611	14833								
		STD	1200	0356	3492	2779	0004218	0653	14848								
131		OBS	T1201	0356	34918	2779			14848								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	4140 N	05019 W		150	10	03	31	170	1965	001	9243	3786	12	32	2	2		X1	6	6	0009

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
03		30	S14	003	067	050	8	15	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	1312	3573	2695	0011135	0000	15022								
170		OBS	0000	1312	35729	2695			15022								
		STD	0010	1312	3573	2695	0011193	0011	15023								
		STD	0020	1312	3572	2695	0011242	0022	15025								
		STD	0030	1312	3572	2694	0011300	0034	15027								
170		OBS	0030	1312	35718	2694			15027								
170		OBS	0040	1297	35705	2696			15023								
		STD	0050	1132	3535	2701	0010719	0056	14964								
170		OBS	0056	1049	35167	2702			14933								
		STD	0075	1042	3516	2702	0010617	0082	14933								
		STD	0100	1035	3515	2703	0010623	0109	14935								
		STD	0125	1030	3514	2703	0010654	0135	14937								
170		OBS	0133	1029	35141	2703			14938								
		STD	0150	1028	3514	2703	0010682	0162	14941								
		STD	0200	1026	3515	2704	0010696	0216	14948								
170		OBS	0210	1026	35155	2705			14950								
		STD	0250	0909	3503	2715	0009786	0267	14912								
170		OBS	0287	0826	34961	2722			14886								
		STD	0300	0808	3496	2725	0008845	0313	14881								
170		OBS	0313	0782	34945	2728			14873								
170		OBS	T0363	0600	34814	2743			14808								
170		OBS	0384	0625	34880	2745			14822								
		STD	0400	0634	3494	2748	0006696	0391	14829								
170		OBS	0415	0640	34987	2751			14835								
		STD	0500	0573	3499	2760	0005649	0453	14822								
		STD	0600	0511	3500	2768	0004950	0506	14814								
170		OBS	T0622	0500	34998	2769			14813								
		STD	0700	0473	3498	2771	0004721	0554	14814								
		STD	0800	0443	3497	2774	0004535	0600	14818								
170		OBS	0827	0436	34969	2774			14820								
		STD	0900	0418	3497	2776	0004332	0645	14825								
		STD	1000	0399	3497	2779	0004182	0687	14833								
170		OBS	T1052	0393	34973	2779			14839								
		STD	1100	0392	3497	2779	0004197	0729	14847								
		STD	1200	0388	3495	2778	0004393	0772	14862								
170		OBS	T1238	0387	34942	2778			14868								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4203 N	04954 W		149	29	03	31	223	1965	001	9244	3430	11	28	4	4		X2	6	2		0010

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		28	S20	020	022	006	8	17	

MESSENGR TIME at HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	DUP
		STD	0000	0663	3432	2695	0011126	0000	14767								
223		OBS	0000	0663	34316	2695			14767								
		STD	0010	0697	3435	2693	0011327	0011	14782								
		STD	0020	0739	3443	2694	0011307	0023	14802								
223		OBS	0027	0772	34502	2694			14816								
		STD	0030	0793	3456	2696	0011107	0034	14826								
		STD	0050	0909	3488	2703	0010491	0055	14877								
223		OBS	0052	0919	34905	2703			14881								
		STD	0075	0946	3497	2704	0010474	0082	14896								
		STD	0100	0975	3504	2704	0010491	0108	14912								
		STD	0125	1004	3510	2704	0010521	0134	14927								
223		OBS	0132	1012	35122	2705			14931								
		STD	0150	0980	3506	2705	0010490	0160	14922								
223		OBS	0169	0946	34996	2706			14912								
223		OBS	0185	0664	34569	2715			14801								
223		OBS	0195	0719	34756	2722			14827								
		STD	0200	0719	3477	2723	0008827	0209	14828								
223		OBS	0211	0720	34792	2725			14830								
223		OBS	0227	0821	35006	2727			14875								
223		OBS	0236	0770	34943	2729			14856								
		STD	0250	0630	3469	2729	0008281	0251	14800								
223		OBS	T0262	0574	34608	2730			14778								
223		OBS	0288	0656	34867	2740			14819								
		STD	0300	0686	3494	2741	0007247	0290	14833								
223		OBS	0313	0710	35008	2743			14846								
		STD	0400	0589	3498	2757	0005808	0355	14812								
223		OBS	T0418	0568	34974	2759			14806								
		STD	0500	0539	3497	2763	0005378	0411	14808								
		STD	0600	0507	3497	2766	0005138	0464	14811								
		STD	0700	0480	3496	2769	0004948	0514	14817								
223		OBS	0794	0458	34956	2771			14823								
		STD	0800	0457	3496	2771	0004810	0563	14824								
		STD	0900	0441	3496	2773	0004666	0611	14834								
223		OBS	0968	0428	34968	2775			14840								
		STD	1000	0421	3497	2776	0004489	0656	14842								
223		OBS	T1069	0404	34965	2778			14847								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4225 N	04927 W		149	29	04	01	024	1965	001	9245	2743	11	26	3	3		X2	5	8		0011

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		28	S10	054	022	017	7	10	

MESSENGR TIME at HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	DUP
		STD	0000	0428	3382	2684	0012156	0000	14665								
024		OBS	0000	0428	33822	2684			14665								
024		OBS	0009	0428	33822	2684			14666								
		STD	0010	0428	3382	2684	0012163	0012	14666								
		STD	0020	0426	3382	2685	0012150	0024	14667								
		STD	0030	0423	3382	2685	0012145	0036	14668								
024		OBS	0041	0421	33821	2685			14668								
		STD	0050	0394	3379	2685	0012105	0061	14658								
024		OBS	0062	0367	33776	2687			14648								
		STD	0075	0390	3395	2698	0010883	0089	14663								
		STD	0100	0430	3424	2717	0009129	0114	14687								
		STD	0125	0462	3449	2734	0007618	0135	14708								
		STD	0150	0487	3470	2747	0006349	0153	14725								
024		OBS	0151	0488	34711	2748			14726								
		STD	0200	0483	3480	2756	0005614	0183	14733								
		STD	0250	0476	3486	2761	0005143	0210	14740								
		STD	0300	0469	3492	2767	0004672	0234	14746								
024		OBS	T0327	0464	34938	2769			14748								
		STD	0400	0446	3495	2772	0004297	0279	14753								
024		OBS	T0499	0428	34954	2774			14762								
		STD	0500	0428	3495	2774	0004167	0321	14762								
		STD	0600	0416	3496	2776	0004079	0363	14774								
024		OBS	0606	0415	34961	2776			14774								
		STD	0700	0403	3495	2777	0004087	0403	14785								
		STD	0800	0390	3494	2777	0004104	0444	14796								
		STD	0900	0377	3493	2778	0004109	0485	14807								
024		OBS	T0902	0377	34934	2778			14807								
		STD	1000		3494												
024		OBS	1077		34944												

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO.	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4248 N	04902 W		149	29	04	01	055	1965	001	9246	2624	12	27	4	4		X0		0	0012

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		27	S24	064	028	022	8	15	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-a	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QUAL
		STD	0000	0619	3427	2698	0010899	0000	14749								
055		OBS	0000	0619	34273	2698			14749								
		STD	0010	0629	3455	2718	0008966	0010	14758								
		STD	0020	0739	3481	2723	0008478	0019	14807								
055		OBS	0021	0755	34837	2723			14813								
		STD	0030	0963	3508	2710	0009818	0028	14896								
055		OBS	0031	0974	35092	2709			14901								
055		OBS	0041	0958	35142	2715			14897								
		STD	0050	0969	3514	2714	0009496	0047	14903								
		STD	0075	0999	3514	2708	0010030	0072	14918								
055		OBS	0092	1019	35143	2705			14928								
		STD	0100	0926	3502	2711	0009822	0096	14893								
055		OBS	0122	0742	34798	2722			14824								
		STD	0125	0731	3479	2723	0008672	0119	14820								
		STD	0150	0665	3475	2729	0008151	0140	14798								
055		OBS	0154	0658	34742	2729			14796								
		STD	0200	0671	3497	2746	0006657	0178	14811								
055		OBS	0213	0674	34974	2745			14815								
055		OBS	0233	0622	34920	2748			14797								
		STD	0250	0613	3494	2751	0006203	0210	14796								
055		OBS	T0252	0612	34944	2751			14796								
		STD	0300	0564	3494	2757	0005654	0239	14785								
		STD	0400	0487	3493	2766	0004913	0292	14770								
055		OBS	0400	0487	34931	2766			14770								
		STD	0500	0457	3495	2771	0004539	0339	14774								
		STD	0600	0432	3497	2775	0004219	0383	14781								
055		OBS	0603	0431	34968	2775			14781								
		STD	0700	0412	3496	2776	0004132	0425	14789								
		STD	0800	0397	3495	2777	0004111	0466	14799								
055		OBS	T0808	0396	34952	2777			14800								
		STD	0900	0390	3495	2778	0004145	0507	14813								
		STD	1000	0384	3495	2778	0004159	0549	14827								
055		OBS	T1027	0382	34946	2778			14830								
		STD	1100	0383	3495	2779	0004240	0591	14843								
		STD	1200	0388	3496	2779	0004347	0634	14862								
055		OBS	1208	0389	34956	2778			14864								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO.	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4221 N	04836 W		149	28	04	01	091	1965	001	9247	3210	10	28	6	5		X1	3	2	0013

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		28	S15	068	033	025	7	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QUAL
		STD	0000	0716	3436	2692	0011465	0000	14788								
091		OBS	0000	0716	34363	2692			14788								
		STD	0010	0743	3445	2695	0011196	0011	14802								
		STD	0020	0768	3452	2696	0011036	0022	14814								
		STD	0030	0790	3459	2699	0010841	0033	14825								
		STD	0050	0827	3467	2699	0010815	0055	14843								
091		OBS	0061	0843	34702	2699			14852								
091		OBS	0070	0854	34714	2699			14858								
		STD	0075	0852	3474	2701	0010704	0082	14858								
		STD	0100	0839	3483	2710	0009895	0108	14858								
		STD	0125	0826	3490	2718	0009237	0132	14858								
		STD	0150	0814	3494	2723	0008801	0154	14858								
091		OBS	0161	0808	34954	2725			14858								
		STD	0200	0696	3488	2735	0007669	0195	14820								
091		OBS	0240	0631	34874	2743			14801								
		STD	0250	0626	3489	2745	0006783	0231	14801								
091		OBS	0272	0616	34910	2748			14801								
091		OBS	0286	0502	34758	2750			14755								
		STD	0300	0510	3479	2752	0006134	0264	14761								
		STD	0400	0569	3501	2762	0005357	0321	14804								
091		OBS	T0402	0570	35010	2762			14805								
		STD	0500	0528	3501	2767	0004936	0373	14804								
		STD	0600	0485	3501	2772	0004510	0420	14803								
091		OBS	T0608	0482	35013	2773			14803								
		STD	0700	0436	3498	2775	0004303	0464	14799								
		STD	0800	0400	3494	2776	0004273	0507	14800								
091		OBS	0813	0396	34931	2776			14800								
		STD	0900	0377	3491	2776	0004287	0550	14807								
		STD	1000	0367	3491	2777	0004256	0592	14819								
091		OBS	T1039	0367	34908	2777			14825								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4201 N	04818 W		149	28	04	01	131	1965	001	9248	3457	09	28	5	4		X1	3	3		0014

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		27	S10	108	061	050	7	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	1352	3577	2690	0011615	0000	15036								
131		OBS	0000	1352	35770	2690			15036								
		STD	0010	1352	3577	2690	0011651	0012	15037								
		STD	0020	1353	3577	2690	0011686	0023	15039								
		STD	0030	1353	3577	2690	0011722	0035	15041								
		STD	0050	1354	3577	2690	0011793	0059	15044								
		STD	0075	1355	3577	2690	0011875	0088	15049								
		STD	0100	1356	3577	2689	0011964	0118	15053								
		STD	0125	1357	3577	2689	0012055	0148	15058								
131		OBS	0137	1357	35771	2689			15060								
		STD	0150	1348	3576	2690	0012013	0178	15059								
131		OBS	0165	1324	35753	2694			15053								
		STD	0200	1250	3560	2698	0011436	0237	15032								
131		OBS	0219	1121	35375	2705			14988								
131		OBS	0227	1048	35253	2708			14962								
		STD	0250	0940	3501	2708	0010429	0291	14923								
131		OBS	T0282	0885	34984	2715			14907								
		STD	0300	0906	3515	2724	0008961	0340	14921								
131		OBS	0303	0910	35157	2724			14922								
131		OBS	0322	0858	35113	2729			14906								
		STD	0400	0660	3496	2746	0006898	0419	14840								
131		OBS	T0486	0499	34852	2758			14788								
		STD	0500	0497	3486	2759	0005714	0482	14789								
		STD	0600	0481	3488	2762	0005485	0538	14800								
		STD	0700	0465	3490	2765	0005245	0592	14810								
		STD	0800	0449	3492	2769	0005008	0643	14820								
131		OBS	0827	0445	34922	2770			14823								
		STD	0900	0433	3496	2774	0004589	0691	14831								
131		OBS	T0914	0431	34973	2775			14832								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4301 N	04656 W		149	36	04	01	212	1965	001	9249	3749	10	26	4	5		X1	6	4		0015

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		26	S10	098	050	044	8	13	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0534	3415	2698	0010843	0000	14713								
212		OBS	0000	0534	34147	2698			14713								
		STD	0010	0540	3416	2698	0010826	0011	14717								
		STD	0020	0546	3420	2701	0010606	0022	14722								
212		OBS	0025	0549	34229	2703			14724								
		STD	0030	0573	3428	2704	0010334	0032	14735								
		STD	0050	0658	3446	2707	0010047	0052	14775								
212		OBS	0050	0658	34462	2707			14775								
		STD	0075	0716	3464	2713	0009523	0077	14804								
		STD	0100	0772	3476	2715	0009447	0101	14832								
		STD	0125	0824	3483	2712	0009723	0125	14857								
212		OBS	0125	0824	34830	2712			14857								
212		OBS	0135	0844	34841	2710			14866								
212		OBS	0145	0775	34779	2716			14841								
		STD	0150	0678	3466	2720	0008984	0148	14802								
212		OBS	0160	0515	34465	2726			14735								
		STD	0200	0599	3471	2735	0007667	0190	14779								
212		OBS	0240	0628	34862	2743			14800								
		STD	0250	0605	3486	2746	0006711	0225	14792								
		STD	0300	0517	3484	2755	0005865	0257	14764								
212		OBS	T0333	0483	34820	2757			14756								
		STD	0400	0482	3490	2764	0005085	0312	14767								
212		OBS	0415	0481	34913	2765			14770								
		STD	0500	0461	3493	2769	0004727	0361	14776								
		STD	0600	0442	3495	2772	0004463	0407	14784								
212		OBS	T0610	0440	34954	2773			14785								
		STD	0700	0434	3495	2773	0004462	0451	14798								
		STD	0800	0428	3495	2774	0004511	0496	14812								
		STD	0900	0422	3495	2774	0004550	0541	14826								
212		OBS	T0981	0417	34945	2775			14837								
		STD	1000	0413	3495	2775	0004515	0587	14839								
212		OBS	T1048	0400	34955	2777			14842								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4316 N	04732 W		149	37	04	02	011	1965	001	9250	3585	11	27	4	3		X0		0	0016

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		28	S09	112	044	039	7	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0854	3491	2714	0009337	0000	14849								
011		OBS	0000	0854	34910	2714			14849								
		STD	0010	0867	3494	2714	0009327	0009	14856								
		STD	0020	0880	3497	2715	0009320	0019	14862								
		STD	0030	0891	3500	2715	0009285	0028	14869								
		STD	0050	0913	3506	2716	0009220	0046	14881								
011		OBS	0064	0926	35091	2717			14888								
		STD	0075	0931	3510	2717	0009228	0070	14892								
		STD	0100	0943	3513	2717	0009248	0093	14901								
		STD	0125	0954	3516	2718	0009264	0116	14910								
		STD	0150	0966	3519	2718	0009282	0139	14918								
011		OBS	0186	0982	35235	2719			14931								
		STD	0200	0846	3506	2727	0008490	0183	14880								
011		OBS	0239	0624	34831	2741			14797								
		STD	0250	0618	3487	2745	0006788	0222	14797								
011		OBS	T0267	0606	34905	2749			14796								
		STD	0300	0562	3488	2753	0006075	0254	14783								
011		OBS	0318	0543	34876	2755			14778								
		STD	0400	0503	3495	2765	0004962	0309	14777								
011		OBS	0425	0492	34963	2768			14776								
		STD	0500	0471	3496	2770	0004592	0357	14780								
		STD	0600	0445	3497	2773	0004379	0402	14786								
011		OBS	T0640	0436	34967	2774			14789								
		STD	0700	0422	3496	2775	0004256	0445	14793								
		STD	0800	0404	3495	2776	0004216	0487	14802								
011		OBS	0859	0396	34941	2776			14808								
		STD	0900	0391	3494	2777	0004215	0529	14813								
		STD	1000	0384	3494	2778	0004215	0571	14827								
		STD	1100	0382	3494	2778	0004272	0614	14843								
011		OBS	T1100	0382	34944	2778			14843								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4331 N	04801 W		149	38	04	02	062	1965	001	9251	3365	12	27	3	2		X7	6	8	0017

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		26	S25	119	033	028	6	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0727	3456	2706	0010144	0000	14795								
062		OBS	0000	0727	34560	2706			14795								
		STD	0010	0732	3457	2705	0010172	0010	14799								
		STD	0020	0736	3457	2705	0010206	0020	14802								
		STD	0030	0741	3458	2705	0010234	0031	14806								
062		OBS	0045	0748	34590	2705			14811								
		STD	0050	0774	3465	2706	0010205	0051	14823								
		STD	0075	0889	3490	2708	0010085	0076	14874								
		STD	0100	0980	3512	2710	0009948	0101	14915								
062		OBS	0107	1002	35179	2711			14924								
062		OBS	0116	1027	35246	2712			14936								
		STD	0125	0978	3518	2715	0009517	0126	14919								
062		OBS	0133	0935	35124	2718			14903								
062		OBS	0142	0683	34687	2722			14803								
		STD	0150	0671	3470	2724	0008594	0148	14800								
		STD	0200	0612	3479	2739	0007235	0188	14786								
062		OBS	T0224	0592	34818	2744			14782								
		STD	0250	0591	3483	2745	0006746	0223	14786								
		STD	0300	0590	3486	2748	0006574	0256	14794								
062		OBS	0368	0588	34894	2751			14805								
		STD	0400	0575	3490	2753	0006223	0320	14805								
		STD	0500	0533	3492	2759	0005674	0380	14805								
062		OBS	0565	0504	34932	2764			14804								
		STD	0600	0482	3494	2767	0005015	0433	14801								
		STD	0700	0431	3494	2773	0004510	0481	14796								
062		OBS	0764	0406	34942	2776			14797								
		STD	0800	0398	3493	2775	0004294	0525	14799								
		STD	0900	0381	3492	2776	0004260	0568	14808								
062		OBS	T0986	0371	34911	2777			14818								
		STD	1000	0370	3491	2777	0004292	0610	14820								
		STD	1100	0364	3491	2777	0004305	0653	14834								
062		OBS	T1166	0363	34910	2777			14845								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4343 N	04838 W		149	38	04	02	099	1965	001	9252	2688	11	28	4	4		X1	3	5		0018

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		28	S20	142	011	006	7	14	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0430	3407	2704	0010281	0000	14669								
099		OBS	0000	0430	34074	2704			14669								
		STD	0010	0586	3437	2709	0009789	0010	14739								
		STD	0020	0692	3458	2712	0009562	0020	14785								
099		OBS	0021	0700	34592	2712			14789								
		STD	0030	0746	3470	2714	0009410	0029	14809								
099		OBS	0032	0755	34718	2714			14814								
		STD	0050	0775	3473	2712	0009629	0048	14824								
		STD	0075	0804	3477	2711	0009778	0072	14840								
		STD	0100	0832	3484	2712	0009716	0097	14856								
		STD	0125	0860	3494	2715	0009444	0121	14872								
099		OBS	0126	0861	34942	2715			14872								
099		OBS	0136	0863	34988	2719			14875								
		STD	0150	0570	3453	2724	0008585	0143	14757								
099		OBS	0168	0418	34380	2730			14695								
099		OBS	0179	0449	34524	2738			14712								
		STD	0200	0443	3461	2745	0006592	0181	14714								
099		OBS	T0237	0432	34666	2751			14717								
		STD	0250	0379	3464	2754	0005744	0212	14696								
099		OBS	0263	0334	34622	2757			14679								
		STD	0300	0361	3470	2761	0005155	0239	14697								
		STD	0400	0414	3486	2768	0004611	0288	14738								
099		OBS	0421	0421	34889	2770			14745								
		STD	0500	0421	3492	2772	0004346	0333	14759								
		STD	0600	0422	3496	2775	0004154	0375	14776								
099		OBS	0625	0422	34963	2775			14780								
		STD	0700	0428	3497	2775	0004265	0418	14796								
		STD	0800	0437	3498	2775	0004409	0461	14816								
099		OBS	0813	0438	34978	2775			14819								
		STD	0900	0395	3493	2776	0004351	0505	14814								
099		OBS	0996	0363	34896	2776			14816								
		STD	1000	0362	3490	2776	0004301	0548	14817								
		STD	1100	0348	3490	2778	0004218	0591	14828								
099		OBS	T1107	0348	34896	2778			14829								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4344 N	04847 W		149	38	04	02	126	1965	001	9253	1829	13	26	5	3		X1	3	5		0019

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		26	S18	159	033	022	8	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0030	3355	2694	0011201	0000	14487								
126		OBS	0000	0030	33551	2694			14487								
		STD	0010	0044	3357	2695	0011124	0011	14495								
		STD	0020	0057	3360	2697	0010967	0022	14503								
		STD	0030	0070	3363	2698	0010812	0033	14511								
		STD	0050	0097	3371	2703	0010362	0054	14528								
		STD	0075	0131	3383	2711	0009667	0079	14548								
		STD	0100	0165	3398	2720	0008767	0102	14570								
		STD	0125	0199	3416	2732	0007662	0123	14591								
126		OBS	0135	0212	34236	2737			14600								
		STD	0150	0265	3438	2744	0006554	0141	14627								
126		OBS	0162	0297	34469	2749			14644								
126		OBS	0188	0331	34569	2753			14664								
		STD	0200	0343	3460	2755	0005644	0171	14672								
		STD	0250	0386	3470	2758	0005366	0199	14700								
		STD	0300	0420	3479	2762	0005100	0225	14724								
126		OBS	T0324	0433	34828	2764			14733								
		STD	0400	0462	3493	2768	0004629	0273	14759								
126		OBS	0432	0466	34954	2770			14767								
		STD	0500	0425	3492	2772	0004386	0319	14760								
		STD	0600	0382	3489	2774	0004224	0362	14759								
126		OBS	T0650	0369	34886	2775			14761								
		STD	0700	0370	3490	2776	0004102	0403	14770								
		STD	0800	0371	3491	2777	0004131	0444	14787								
126		OBS	0863	0372	34916	2777			14798								
		STD	0900	0371	3491	2777	0004217	0486	14804								
		STD	1000	0367	3491	2777	0004256	0529	14819								
126		OBS	T1098	0364	34907	2777			14834								
		STD	1100	0364	3491	2777	0004327	0571	14834								
		STD	1200	0360	3491	2777	0004363	0615	14849								
126		OBS	T1294	0357	34907	2778			14864								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4355 N	04907 W		149	39	04	02	167	1965	001	9254	0172	01	29	5	4		X0	0		0020

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		24	S14	183	022	017	7	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0044	3316	2662	0014285	0000	14487								
167		OBS	0000	0044	33156	2662			14487								
		STD	0010	0044	3318	2663	0014138	0014	14489								
		STD	0020	0044	3319	2665	0013998	0028	14491								
		STD	0030	0044	3321	2666	0013851	0042	14493								
		STD	0050	0043	3325	2669	0013565	0070	14497								
		STD	0075	0043	3330	2673	0013202	0103	14501								
167		OBS	0075	0043	33296	2673			14501								
		STD	0100	0062	3366	2702	0010504	0133	14519								
167		OBS	0100	0062	33664	2702			14519								
		STD	0125	0095	3393	2721	0008683	0157	14542								
167		OBS	0140	0122	34047	2729			14558								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4359 N	04920 W		149	39	04	02	180	1965	001	9255	0058	00	26	4	4		X1	2	4	0021

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		25	S15	166	022	017	7	02	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml l	PO₄-P µg-at l	TOTAL-P µg-at l	NO₂-N µg-at l	NO₃-N µg-at l	SiO₄-Si µg-at l	pH	SCC
		STD	0000	0052	3320	2665	0013998	0000	14492								
180		OBS	0000	0052	33199	2665			14492								
		STD	0010	0049	3320	2665	0013976	0014	14492								
		STD	0020	0047	3320	2665	0013961	0028	14493								
		STD	0030	0044	3320	2665	0013939	0042	14493								
180		OBS	0035	0043	33201	2666			14493								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4439 N	04920 W		149	49	04	02	239	1965	001	9256	0082	00	26	5	2		X0	0		0022

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		23	S14	176	017	006	8	02	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at l	SiO₄-Si µg-at l	pH	SCC
		STD	0000	0012	3312	2661	0014389	0000	14472								
239		OBS	0000	0012	33122	2661			14472								
		STD	0010	0013	3315	2663	0014200	0014	14475								
		STD	0020	0014	3317	2665	0014004	0028	14477								
		STD	0030	0015	3320	2667	0013816	0042	14480								
		STD	0050	0017	3325	2671	0013432	0070	14485								
239		OBS	0050	0017	33249	2671			14485								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT IND CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4437 N	04905 W		149	49	04	03	015	1965	001	9257	0128	01	23	5	2		X0	0			0023

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S08	196	017	017	7	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	CODE
		STD	0000	-0019	3320	2669	0013655	0000	14459								
015		OBS	0000	-0019	33200	2669			14459								
		STD	0010	-0020	3320	2669	0013619	0014	14461								
		STD	0020	-0020	3321	2669	0013590	0027	14462								
		STD	0030	-0021	3321	2669	0013554	0041	14464								
015		OBS	0035	-0021	33213	2670			14464								
		STD	0050	0008	3340	2683	0012236	0067	14483								
015		OBS	0055	0016	33458	2688			14488								
		STD	0075	0044	3363	2700	0010664	0095	14506								
015		OBS	0095	0063	33726	2707			14520								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT IND CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4435 N	04852 W		149	48	04	03	035	1965	001	9258	0420	04	26	4	6		X0	0			0024

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S12	200	032	011	7	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	CODE
		STD	0000	-0018	3323	2671	0013430	0000	14460								
035		OBS	0000	-0018	33230	2671			14460								
		STD	0010	-0020	3324	2672	0013341	0013	14461								
		STD	0020	-0022	3327	2674	0013100	0027	14462								
035		OBS	0029	-0024	33301	2677			14463								
		STD	0030	-0023	3331	2678	0012787	0040	14464								
		STD	0050	0005	3348	2690	0011612	0064	14482								
		STD	0075	0043	3367	2703	0010354	0091	14506								
035		OBS	0079	0049	33701	2705			14510								
		STD	0100	0088	3380	2711	0009624	0116	14533								
		STD	0125	0134	3392	2718	0009015	0140	14559								
		STD	0150	0180	3406	2726	0008291	0161	14586								
		STD	0200	0273	3438	2744	0006653	0199	14639								
035		OBS	0227	0323	34579	2755			14668								
035		OBS	T0246	0410	34728	2758			14710								
		STD	0250	0405	3473	2759	0005354	0229	14708								
035		OBS	T0296	0363	34727	2763			14698								
		STD	0300	0364	3473	2763	0004963	0254	14699								
035		OBS	T0395	0392	34827	2768			14728								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DIFF. INDICTR.	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4431 N	04839 W		149	48	04	03	054	1965	001	9259	2012	12	20	3	5		X0		0	0025

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S12	200	022	011	7	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0154	3390	2715	0009288	0000	14547								
054		OBS	0000	0154	33898	2715			14547								
		STD	0010	0176	3397	2719	0008895	0009	14560								
		STD	0020	0198	3405	2723	0008451	0018	14572								
		STD	0030	0219	3412	2727	0008082	0026	14584								
		STD	0050	0259	3425	2734	0007427	0042	14606								
		STD	0075	0307	3440	2742	0006721	0059	14633								
		STD	0100	0351	3454	2749	0006091	0075	14658								
054		OBS	0102	0354	34550	2750			14660								
		STD	0125	0397	3467	2755	0005588	0090	14683								
		STD	0150	0436	3478	2759	0005193	0103	14705								
054		OBS	0182	0471	34890	2764			14727								
		STD	0200	0470	3490	2765	0004716	0128	14730								
		STD	0250	0468	3493	2768	0004510	0151	14737								
		STD	0300	0466	3497	2771	0004303	0173	14745								
054		OBS	T0303	0466	34967	2771			14746								
		STD	0400	0435	3495	2773	0004143	0215	14749								
054		OBS	0402	0434	34954	2773			14748								
		STD	0500	0404	3492	2774	0004124	0257	14752								
		STD	0600	0373	3489	2775	0004105	0298	14755								
054		OBS	T0602	0372	34891	2775			14755								
		STD	0700	0366	3489	2775	0004152	0339	14768								
		STD	0800	0360	3488	2776	0004200	0381	14782								
054		OBS	0804	0360	34884	2776			14783								
		STD	0900	0360	3490	2777	0004168	0423	14799								
		STD	1000	0361	3490	2777	0004258	0465	14816								
054		OBS	T1026	0361	34906	2777			14821								
		STD	1100	0359	3491	2778	0004268	0508	14832								
		STD	1200	0355	3491	2778	0004287	0550	14847								
054		OBS	T1208	0355	34909	2778			14849								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DIFF. INDICTR.	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4426 N	04756 W		149	47	04	03	100	1965	001	9260	3383	11	25	3	2		X8	6	7	0026

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		19	S09	196	044	028	7	13	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0880	3501	2718	0008984	0000	14860								
100		OBS	0000	0880	35010	2718			14860								
		STD	0010	0876	3501	2718	0008944	0009	14860								
100		OBS	0019	0871	35005	2719			14859								
		STD	0020	0870	3500	2719	0008947	0018	14859								
100		OBS	0028	0865	34993	2719			14858								
		STD	0030	0865	3499	2719	0008966	0027	14859								
100		OBS	0034	0864	34979	2718			14859								
		STD	0050	0855	3497	2719	0009003	0045	14858								
		STD	0075	0841	3494	2718	0009065	0067	14856								
		STD	0100	0824	3491	2719	0009084	0090	14854								
		STD	0125	0807	3487	2718	0009178	0113	14851								
100		OBS	0135	0799	34857	2718			14849								
100		OBS	0144	0792	34842	2718			14848								
		STD	0150	0785	3483	2718	0009201	0136	14846								
100		OBS	0153	0782	34825	2718			14845								
		STD	0200	0658	3484	2737	0007458	0178	14805								
		STD	0250	0556	3486	2752	0006085	0211	14772								
100		OBS	T0290	0496	34866	2760			14754								
		STD	0300	0487	3487	2761	0005252	0240	14752								
100		OBS	0386	0430	34872	2767			14743								
		STD	0400	0429	3488	2768	0004628	0289	14745								
		STD	0500	0417	3491	2772	0004371	0334	14757								
100		OBS	T0583	0404	34924	2774			14765								
		STD	0600	0399	3492	2775	0004191	0377	14766								
		STD	0700	0375	3490	2775	0004161	0419	14772								
100		OBS	0779	0362	34886	2776			14780								
		STD	0800	0362	3489	2776	0004194	0460	14783								
		STD	0900	0360	3489	2776	0004227	0503	14799								
100		OBS	T0992	0358	34895	2777			14814								
		STD	1000	0359	3490	2777	0004236	0545	14816								
		STD	1100	0369	3492	2778	0004292	0588	14837								
100		OBS	T1150	0377	34931	2778			14849								

REFERENCE CTRY. CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4417 N	04717 W		149	47	04	03	152	1965	001	9261	3749	12	16	3	2		X0		0	0027

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
03		16	S17	179	128	117	8	10	

MESSENGR TIME OF HR 1, 10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at l	NO_3-N µg-at l	SiO_4-Si µg-at l	pH	SCC
		STD	0000	1082	3539	2713	0009425	0000	14938								
145		OBS	0000	1082	35391	2713			14938								
		STD	0010	1082	3539	2713	0009448	0009	14940								
		STD	0020	1081	3539	2713	0009461	0019	14941								
		STD	0030	1080	3539	2713	0009484	0028	14943								
		STD	0050	1079	3539	2713	0009520	0047	14946								
		STD	0075	1078	3539	2713	0009570	0071	14949								
		STD	0100	1077	3538	2714	0009620	0095	14953								
		STD	0125	1075	3538	2714	0009672	0119	14956								
		STD	0150	1074	3538	2714	0009714	0144	14960								
		STD	0200	1071	3538	2714	0009814	0192	14967								
		STD	0250	1068	3537	2714	0009904	0242	14974								
145		OBS	0256	1068	35373	2714			14975								
145		OBS	0265	1066	35375	2715			14976								
145		OBS	0293	1020	35232	2712			14962								
		STD	0300	0961	3515	2715	0009845	0291	14941								
145		OBS	0307	0909	35079	2718			14922								
145		OBS	T0375	0740	34979	2737			14867								
		STD	0400	0707	3498	2741	0007409	0377	14859								
		STD	0500	0595	3498	2756	0006047	0445	14831								
152		OBS	T0594	0516	34976	2766			14814								
		STD	0600	0513	3498	2766	0005131	0500	14814								
		STD	0700	0468	3497	2771	0004763	0550	14812								
152		OBS	0787	0438	34957	2773			14814								
		STD	0800	0435	3496	2774	0004542	0596	14815								
		STD	0900	0413	3495	2775	0004449	0641	14822								
152		OBS	T0999	0397	34936	2776			14832								
		STD	1000	0397	3494	2776	0004423	0686	14832								
		STD	1100	0387	3493	2777	0004422	0730	14844								
152		OBS	T1165	0383	34930	2777			14854								

REFERENCE CTRY. CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4408 N	04637 W		149	46	04	03	196	1965	001	9262	3840	12	14	2	2		X1	6	7	0028

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		14	S20	142	139	122	8	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	1137	3549	2711	0009660	0000	14959								
196		OBS	0000	1137	35489	2711			14959								
		STD	0010	1136	3549	2711	0009668	0010	14960								
		STD	0020	1136	3549	2711	0009700	0019	14962								
		STD	0030	1135	3549	2711	0009707	0029	14963								
		STD	0050	1134	3549	2711	0009747	0049	14966								
		STD	0075	1133	3549	2711	0009798	0073	14970								
		STD	0100	1132	3549	2711	0009842	0097	14974								
		STD	0125	1131	3549	2711	0009894	0122	14977								
		STD	0150	1130	3548	2712	0009945	0147	14981								
		STD	0200	1128	3548	2712	0010046	0197	14989								
		STD	0250	1127	3548	2712	0010165	0247	14996								
		STD	0300	1126	3548	2712	0010276	0299	15004								
196		OBS	0371	1125	35476	2712			15015								
		STD	0400	1125	3548	2712	0010522	0403	15020								
196		OBS	0410	1125	35476	2712			15022								
		STD	0500	0752	3507	2742	0007553	0493	14894								
196		OBS	T0561	0582	34902	2752			14835								
		STD	0600	0561	3492	2756	0006158	0561	14833								
		STD	0700	0512	3496	2765	0005356	0619	14830								
196		OBS	0759	0485	34976	2769			14829								
		STD	0800	0464	3497	2771	0004793	0670	14827								
		STD	0900	0424	3495	2774	0004553	0717	14827								
196		OBS	T0978	0402	34937	2776			14830								
		STD	1000	0397	3493	2776	0004467	0762	14832								
		STD	1100	0386	3493	2777	0004424	0806	14844								
196		OBS	T1154	0385	34928	2777			14853								

REFERENCE CTRY. CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME IGMT MO	STATION TIME IGMT DAY	STATION TIME IGMT HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4400 N	04555 W		149	45	04	03	239	1965	001	9263	3750	13	15	5	2		X8	5	8	0029

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		13	S24	095	133	122	2	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	1054	3533	2713	0009406	0000	14928								
239		OBS	0000	1054	35329	2713			14928								
		STD	0010	1053	3533	2713	0009442	0009	14929								
		STD	0020	1051	3532	2713	0009454	0019	14930								
		STD	0030	1049	3532	2713	0009473	0028	14931								
		STD	0050	1045	3531	2713	0009511	0047	14932								
		STD	0075	1038	3530	2714	0009517	0071	14934								
		STD	0100	1029	3529	2715	0009497	0095	14935								
239		OBS	0111	1024	35287	2715			14934								
		STD	0125	1014	3528	2717	0009385	0118	14933								
		STD	0150	0997	3527	2719	0009222	0142	14931								
		STD	0200	0961	3524	2722	0008974	0187	14926								
		STD	0250	0926	3519	2724	0008879	0232	14920								
		STD	0300	0891	3512	2725	0008935	0276	14914								
239		OBS	0304	0888	35118	2725			14914								
		STD	0400	0666	3494	2744	0007128	0357	14842								
239		OBS	0405	0657	34938	2745			14839								
		STD	0500	0567	3494	2757	0005934	0422	14819								
		STD	0600	0497	3495	2766	0005147	0477	14807								
239		OBS	T0613	0490	34948	2767			14806								
		STD	0700	0466	3496	2770	0004783	0527	14811								
		STD	0800	0441	3496	2773	0004585	0574	14817								
239		OBS	T0826	0435	34962	2774			14819								
		STD	0900	0419	3496	2776	0004403	0619	14825								
		STD	1000	0400	3496	2778	0004260	0662	14834								
239		OBS	T1062	0391	34963	2779			14840								
		STD	1100	0386	3496	2779	0004203	0704	14844								
		STD	1200	0376	3494	2778	0004316	0747	14857								
239		OBS	T1273	0371	34920	2777			14867								

REFERENCE CTRY. CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME IGMT MO	STATION TIME IGMT DAY	STATION TIME IGMT HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4430 N	04555 W		149	45	04	04	042	1965	001	9264	3749	11	16	4	2		X4	7	8	0030

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		18	S18	044	111	110	6	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0451	3418	2710	0009684	0000	14679								
042		OBS	0000	0451	34182	2710			14679								
		STD	0010	0467	3422	2712	0009575	0010	14688								
		STD	0020	0475	3426	2714	0009371	0019	14693								
042		OBS	0025	0476	34273	2715			14695								
		STD	0030	0473	3428	2716	0009210	0028	14694								
042		OBS	0039	0468	34300	2718			14694								
		STD	0050	0457	3431	2720	0008836	0046	14691								
		STD	0075	0434	3432	2723	0008546	0068	14686								
		STD	0100	0415	3433	2726	0008299	0089	14682								
042		OBS	0121	0402	34343	2728			14680								
		STD	0125	0401	3434	2729	0008076	0110	14681								
		STD	0150	0395	3435	2730	0007979	0130	14683								
		STD	0200	0384	3437	2732	0007793	0169	14686								
042		OBS	0215	0380	34371	2733			14687								
		STD	0250	0418	3447	2737	0007423	0207	14710								
042		OBS	T0262	0428	34504	2738			14717								
		STD	0300	0443	3467	2750	0006248	0241	14732								
042		OBS	0371	0457	34884	2765			14752								
		STD	0400	0446	3489	2767	0004781	0297	14752								
		STD	0500	0413	3489	2771	0004482	0343	14755								
042		OBS	0584	0392	34893	2773			14760								
		STD	0600	0389	3489	2773	0004272	0387	14762								
		STD	0700	0372	3490	2776	0004105	0429	14771								
042		OBS	0737	0367	34906	2777			14775								
		STD	0800	0366	3491	2777	0004103	0470	14785								
		STD	0900	0362	3491	2777	0004135	0511	14800								
042		OBS	T0946	0360	34907	2777			14807								
		STD	1000	0357	3490	2778	0004183	0552	14815								
		STD	1100	0351	3490	2778	0004232	0594	14829								
042		OBS	T1108	0350	34899	2778			14830								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4501 N	04553 W		149	55	04	04	092	1965	001	9265	3596	12	16	5	4		X4	5	8	0031

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		18	S08	037	122	117	6	11	

MESSENGR TIME of HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΔD DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0915	3494	2707	0010052	0000	14872								
092		OBS	0000	0915	34938	2707			14872								
		STD	0010	0907	3483	2699	0010749	0010	14869								
		STD	0020	0880	3473	2696	0011100	0021	14859								
092		OBS	0027	0851	3443P	2677P											
		STD	0030	0818	3465	2699	0010796	0032	14837								
		STD	0050	0638	3451	2714	0009435	0053	14768								
092		OBS	0063	0557	34452	2719			14737								
		STD	0075	0518	3442	2722	0008706	0075	14722								
092		OBS	0090	0477	34393	2724			14707								
		STD	0100	0474	3440	2725	0008396	0097	14708								
		STD	0125	0467	3443	2728	0008122	0117	14709								
		STD	0150	0462	3446	2731	0007870	0137	14712								
092		OBS	0191	0458	34533	2737			14718								
		STD	0200	0459	3457	2740	0007066	0175	14720								
		STD	0250	0465	3474	2753	0005910	0207	14733								
		STD	0300	0470	3487	2763	0005057	0234	14745								
092		OBS	T0318	0472	34897	2765			14750								
		STD	0400	0447	3494	2771	0004383	0282	14753								
092		OBS	0425	0439	34947	2772			14754								
		STD	0500	0408	3492	2774	0004195	0324	14753								
		STD	0600	0378	3490	2775	0004105	0366	14757								
092		OBS	T0641	0369	34891	2775			14760								
		STD	0700	0364	3489	2776	0004098	0407	14768								
		STD	0800	0358	3490	2777	0004094	0448	14782								
092		OBS	0851	0357	34896	2777			14790								
		STD	0900	0359	3490	2777	0004147	0489	14799								
		STD	1000	0364	3491	2778	0004203	0531	14818								
092		OBS	T1072	0367	34920	2778			14831								
		STD	1100	0366	3492	2778	0004256	0573	14835								
		STD	1200	0356	3491	2778	0004292	0616	14848								
092		OBS	T1249	0348	34903	2778			14853								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1. 10	LONGITUDE ° 1 10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4531 N	04555 W		149	55	04	04	140	1965	001	9266	3155	11	19	2	2		X4	X	9	0032

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S08	041	092	061	6	10	

MESSENGR TIME of HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΔD DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0480	3446	2729	0007901	0000	14695								
140		OBS	0000	0480	34460	2729			14695								
		STD	0010	0476	3446	2730	0007872	0008	14695								
		STD	0020	0471	3446	2730	0007836	0016	14694								
		STD	0030	0467	3446	2731	0007806	0024	14694								
140		OBS	0047	0459	34457	2731			14694								
		STD	0050	0436	3444	2732	0007641	0039	14684								
140		OBS	0073	0304	34327	2737			14631								
		STD	0075	0304	3433	2737	0007243	0058	14631								
		STD	0100	0302	3433	2737	0007202	0076	14634								
		STD	0125	0299	3434	2738	0007160	0094	14637								
140		OBS	0126	0299	34337	2738			14637								
140		OBS	0148	0560	34802	2747			14756								
		STD	0150	0559	3481	2748	0006363	0111	14756								
		STD	0200	0544	3488	2755	0005726	0141	14759								
		STD	0250	0523	3492	2761	0005241	0168	14760								
140		OBS	T0296	0501	34950	2766			14759								
		STD	0300	0498	3495	2766	0004783	0193	14758								
		STD	0400	0430	3492	2771	0004340	0239	14746								
140		OBS	0429	0416	34917	2772			14745								
		STD	0500	0404	3492	2774	0004166	0281	14752								
		STD	0600	0389	3492	2775	0004086	0323	14762								
140		OBS	T0642	0384	34920	2776			14767								
		STD	0700	0377	3491	2776	0004109	0364	14773								
		STD	0800	0367	3491	2777	0004084	0405	14786								
140		OBS	0852	0363	34906	2777			14793								
		STD	0900	0360	3491	2778	0004090	0445	14799								
		STD	1000	0356	3491	2778	0004127	0487	14814								
140		OBS	T1084	0355	34912	2778			14828								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT IND.	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4529 N	04634 W		149	56	04	04	174	1965	001	9267	3145	12	18	4	4		X2	4	8	0033

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		14	S06	044	061	056	6	14	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-E10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at	NO₂-N µg-at	NO₃-N µg-at	SiO₄-Si µg-at	pH	SOUD
		STD	0000	0454	3442	2729	0007957	0000	14683								
174		OBS	0000	0454	34416	2729			14683								
		STD	0010	0398	3441	2734	0007445	0008	14661								
174		OBS	0010	0398	34410	2734			14661								
		STD	0020	0385	3442	2736	0007289	0015	14658								
		STD	0030	0374	3442	2737	0007155	0022	14655								
		STD	0050	0355	3443	2740	0006923	0036	14650								
174		OBS	0060	0348	34434	2741			14649								
		STD	0075	0345	3445	2742	0006722	0053	14650								
		STD	0100	0340	3447	2744	0006551	0070	14652								
		STD	0125	0335	3449	2746	0006374	0086	14655								
174		OBS	0125	0335	34485	2746			14655								
		STD	0150	0443	3473	2755	0005635	0101	14708								
174		OBS	0150	0443	34731	2755			14708								
174		OBS	0165	0432	34717	2755			14705								
174		OBS	0180	0436	34734	2756			14710								
		STD	0200	0458	3481	2759	0005260	0128	14723								
174		OBS	T0225	0477	34872	2762			14736								
		STD	0250	0476	3490	2764	0004848	0154	14740								
174		OBS	T0298	0475	34925	2767			14748								
		STD	0300	0473	3492	2766	0004718	0178	14747								
174		OBS	0397	0414	34899	2771			14739								
		STD	0400	0414	3490	2771	0004320	0223	14739								
		STD	0500	0399	3490	2773	0004215	0265	14749								
174		OBS	T0596	0387	34909	2775			14760								
		STD	0600	0386	3491	2775	0004127	0307	14761								
		STD	0700	0374	3490	2776	0004135	0348	14772								
174		OBS	0790	0365	34896	2776			14783								
		STD	0800	0365	3490	2776	0004160	0390	14784								
		STD	0900	0360	3490	2777	0004184	0432	14799								
		STD	1000	0355	3490	2777	0004214	0474	14814								
174		OBS	T1003	0355	34897	2777			14814								
		STD	1100	0356	3490	2777	0004298	0516	14831								
174		OBS	T1176	0360	34898	2777			14845								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT IND.	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4528 N	04718 W		149	57	04	04	217	1965	001	9268	1920	10	14	3	2		X1	3	5	0034

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		14	S16	034	067	061	7	14	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-E10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at	NO₂-N µg-at	NO₃-N µg-at	SiO₄-Si µg-at	pH	SOUD
		STD	0000	0550	3437	2714	0009325	0000	14722								
217		OBS	0000	0550	34374	2714			14722								
		STD	0010	0548	3438	2715	0009294	0009	14723								
		STD	0020	0546	3438	2715	0009262	0019	14724								
		STD	0030	0544	3438	2716	0009230	0028	14725								
		STD	0050	0541	3439	2717	0009160	0046	14727								
217		OBS	0070	0537	34396	2717			14729								
		STD	0075	0532	3441	2719	0008941	0069	14728								
217		OBS	0096	0511	34416	2722			14723								
		STD	0100	0495	3440	2723	0008627	0091	14717								
217		OBS	0105	0474	34389	2724			14709								
		STD	0125	0368	3431	2729	0008034	0112	14666								
217		OBS	0125	0368	34306	2729			14666								
217		OBS	0143	0496	34583	2737			14726								
		STD	0150	0507	3462	2739	0007173	0131	14733								
217		OBS	0176	0529	34717	2744			14747								
		STD	0200	0524	3475	2747	0006464	0165	14750								
217		OBS	T0202	0524	34760	2748			14750								
217		OBS	T0224	0539	34854	2753			14761								
		STD	0250	0510	3486	2757	0005535	0195	14754								
		STD	0300	0464	3487	2763	0004989	0221	14743								
217		OBS	0320	0449	34880	2766			14740								
		STD	0400	0428	3490	2770	0004467	0268	14745								
217		OBS	T0476	0412	34916	2773			14751								
		STD	0500	0408	3492	2773	0004233	0312	14753								
		STD	0600	0395	3491	2774	0004205	0354	14764								
217		OBS	0644	0390	34911	2775			14770								
		STD	0700	0387	3491	2775	0004208	0396	14778								
		STD	0800	0379	3491	2776	0004199	0438	14791								
217		OBS	T0836	0376	34913	2776			14796								
		STD	0900	0370	3491	2777	0004205	0480	14804								
		STD	1000	0358	3490	2777	0004254	0522	14815								
217		OBS	T1000	0358	34896	2777			14815								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4529 N	04743 W		149	57	04	05	004	1965	001	9269	1390	13	20	3	2		X1				0035

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		15	S15	027	080	070	7	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SA
		STD	0000	0198	3413	2730	0007837	0000	14570								
004		OBS	0000	0198	34130	2730			14570								
		STD	0010	0191	3413	2730	0007782	0008	14568								
		STD	0020	0186	3413	2731	0007742	0016	14568								
		STD	0030	0183	3413	2731	0007716	0023	14568								
004		OBS	0043	0182	34135	2731			14570								
		STD	0050	0192	3417	2734	0007509	0039	14576								
		STD	0075	0225	3430	2741	0006718	0056	14596								
		STD	0100	0256	3441	2748	0006222	0073	14616								
		STD	0125	0284	3451	2753	0005723	0088	14633								
		STD	0150	0309	3459	2757	0005362	0101	14649								
004		OBS	0166	0324	34638	2760			14659								
		STD	0200	0353	3470	2762	0004991	0127	14678								
		STD	0250	0384	3478	2765	0004747	0152	14700								
004		OBS	T0294	0402	34829	2767			14716								
		STD	0300	0402	3483	2767	0004608	0175	14717								
		STD	0400	0398	3486	2770	0004436	0220	14732								
004		OBS	0431	0396	34871	2771			14736								
		STD	0500	0384	3488	2773	0004229	0264	14743								
		STD	0600	0371	3488	2774	0004177	0306	14754								
004		OBS	T0650	0366	34886	2775			14760								
		STD	0700	0364	3489	2775	0004142	0347	14768								
		STD	0800	0361	3489	2776	0004187	0389	14783								
004		OBS	0868	0359	34888	2776			14793								
		STD	0900	0359	3489	2776	0004230	0431	14799								
		STD	1000	0358	3489	2776	0004282	0474	14815								
		STD	1100	0357	3490	2777	0004325	0517	14831								
004		OBS	T1103	0357	34896	2777			14832								
		STD	1200	0356	3491	2778	0004321	0560	14848								
		STD	1300	0354	3492	2779	0004305	0603	14864								
004		OBS	T1303	0354	34916	2779			14864								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4531 N	04801 W		149	58	04	05	025	1965	001	9270	1189	11	21	4	2		X0		0		0036

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S20	047	044	039	8	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SA
		STD	0000	0057	3361	2697	0010930	0000	14500								
025		OBS	0000	0057	33605	2697			14500								
		STD	0010	0062	3364	2700	0010688	0011	14504								
		STD	0020	0066	3368	2702	0010446	0021	14508								
		STD	0030	0071	3371	2705	0010206	0032	14512								
025		OBS	0037	0074	33734	2707			14515								
		STD	0050	0136	3400	2724	0008405	0050	14549								
		STD	0075	0215	3433	2745	0006483	0069	14592								
025		OBS	0078	0221	34348	2745			14596								
025		OBS	0097	0242	34407	2748			14609								
		STD	0100	0244	3441	2749	0006093	0085	14610								
		STD	0125	0264	3447	2752	0005852	0100	14624								
		STD	0150	0282	3453	2755	0005594	0114	14637								
025		OBS	0151	0283	34529	2755			14637								
		STD	0200	0322	3463	2759	0005219	0141	14663								
		STD	0250	0353	3471	2762	0004958	0166	14686								
		STD	0300	0376	3477	2765	0004785	0191	14705								
025		OBS	T0333	0387	34807	2767			14715								
		STD	0400	0391	3484	2769	0004510	0237	14729								
025		OBS	0482	0392	34874	2772			14743								
		STD	0500	0390	3487	2772	0004339	0281	14745								
		STD	0600	0381	3488	2773	0004310	0325	14758								
025		OBS	T0651	0376	34878	2774			14764								
		STD	0700	0371	3488	2774	0004265	0368	14770								
		STD	0800	0363	3488	2775	0004261	0410	14784								
025		OBS	0872	0359	34883	2776			14794								
		STD	0900	0359	3488	2776	0004276	0453	14799								
		STD	1000	0358	3489	2776	0004335	0496	14815								
		STD	1100	0357	3489	2776	0004400	0540	14831								
025		OBS	T1114	0357	34886	2776			14834								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4532 N	04816 W		149	58	04	05	043	1965	001	9271	0713	06	21	5	6		X0	0		0037

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S26	044	022	011	8	06	

MESSENGR TIME AT HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ△D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QSC
		STD	0000	0031	3356	2695	0011161	0000	14487								
043		OBS	0000	0031	33557	2695			14487								
		STD	0010	0031	3356	2695	0011169	0011	14489								
		STD	0020	0032	3356	2695	0011177	0022	14491								
043		OBS	0024	0032	33555	2695			14491								
		STD	0030	0050	3364	2700	0010624	0033	14502								
		STD	0050	0104	3388	2716	0009111	0053	14533								
043		OBS	0058	0123	33962	2722			14544								
		STD	0075	0138	3402	2725	0008272	0075	14554								
		STD	0100	0160	3409	2730	0007900	0095	14569								
		STD	0125	0180	3416	2734	0007523	0114	14583								
		STD	0150	0198	3423	2738	0007140	0133	14596								
043		OBS	0174	0215	34283	2741			14608								
		STD	0200	0228	3433	2743	0006646	0167	14619								
		STD	0250	0251	3441	2748	0006264	0199	14638								
		STD	0300	0273	3448	2752	0005962	0230	14657								
043		OBS	T0388	0308	34594	2758			14688								
		STD	0400	0312	3461	2758	0005421	0287	14692								
		STD	0500	0346	3471	2763	0005093	0339	14724								
		STD	0600	0374	3478	2766	0004954	0390	14754								
043		OBS	T0606	0376	34781	2766			14756								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4534 N	04830 W		149	58	04	05	057	1965	001	9272	0210	02	21	5	6		X0	0		0038

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S24	051	011	006	8	05	

MESSENGR TIME AT HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ△D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QSC
		STD	0000	-0041	3328	2676	0012953	0000	14450								
057		OBS	0000	-0041	33280	2676			14450								
		STD	0010	-0041	3330	2677	0012834	0013	14452								
		STD	0020	-0041	3331	2678	0012716	0026	14454								
057		OBS	0023	-0041	33315	2679			14454								
		STD	0030	-0027	3340	2685	0012083	0038	14463								
057		OBS	0048	0008	33577	2698			14485								
		STD	0050	0012	3359	2698	0010807	0061	14487								
		STD	0075	0052	3371	2706	0010099	0087	14511								
057		OBS	0097	0083	33810	2712			14530								
		STD	0100	0087	3382	2713	0009466	0112	14533								
		STD	0125	0114	3391	2718	0008956	0135	14550								
		STD	0150	0136	3398	2722	0008578	0156	14565								
057		OBS	T0196	0157	34058	2727			14583								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4534 N	04842 W		149	58	04	05	070	1965	001	9273	0119	01	21	5	5		X0	0		0039

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S22	051	017	006	7	04	

MESSENGR TIME AT HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ△D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QSC
		STD	0000	-0027	3333	2679	0012643	0000	14457								
070		OBS	0000	-0027	33328	2679			14457								
		STD	0010	-0028	3333	2680	0012603	0013	14458								
		STD	0020	-0030	3334	2680	0012571	0025	14459								
		STD	0030	-0031	3334	2680	0012531	0038	14460								
070		OBS	0043	-0033	33344	2681			14462								
		STD	0050	-0027	3340	2685	0012076	0062	14467								
070		OBS	0061	-0018	33472	2690			14474								
		STD	0075	-0008	3353	2695	0011163	0091	14481								
070		OBS	0095	0005	33541	2695			14491								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDIC'R	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4533 N	04855 W		149	58	04	05	086	1965	001	9274	0073	01	21	4	2		X1	3	2	0040

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S22	051	017	006	7	03	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SOQ
		STD	0000	-0033	3317	2666	0013857	0000	14452								
086		OBS	0000	-0033	33166	2666			14452								
		STD	0010	-0033	3317	2666	0013853	0014	14454								
		STD	0020	-0033	3317	2666	0013849	0028	14456								
		STD	0030	-0034	3317	2666	0013842	0042	14457								
086		OBS	0030	-0034	33166	2666			14457								
		STD	0050	-0037	3318	2668	0013715	0069	14459								
086		OBS	0060	-0039	33187	2668			14460								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDIC'R	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4621 N	04800 W		149	68	04	05	145	1965	001	9275	0119	01	21	8	3		X1	6	5	0041

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		24	S24	075	033	022	7	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SOQ
		STD	0000	-0046	3317	2667	0013790	0000	14446								
145		OBS	0000	-0046	33168	2667			14446								
		STD	0010	-0047	3317	2667	0013751	0014	14447								
		STD	0020	-0048	3318	2668	0013704	0027	14449								
		STD	0030	-0049	3318	2668	0013665	0041	14450								
145		OBS	0035	-0050	33183	2668			14450								
		STD	0050	0007	3342	2685	0012079	0067	14482								
		STD	0075	0078	3371	2704	0010248	0095	14523								
145		OBS	0085	0099	33795	2710			14535								
145		OBS	0099	0120	33882	2716			14548								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDIC'R	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4619 N	04744 W		149	67	04	05	158	1965	001	9276	0157	01	73	0	4		X1	2	6	0042

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		23	S28	088	028	017	8	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SOQ
		STD	0000	-0020	3334	2679	0012619	0000	14461								
158		OBS	0000	-0020	33335	2679			14461								
		STD	0010	-0022	3335	2680	0012530	0013	14461								
		STD	0020	-0024	3336	2681	0012442	0025	14462								
		STD	0030	-0026	3337	2682	0012353	0037	14463								
158		OBS	0034	-0027	33369	2682			14463								
		STD	0050	-0011	3345	2688	0011766	0062	14475								
		STD	0075	0019	3358	2697	0010914	0090	14494								
158		OBS	0087	0036	33641	2701			14505								
		STD	0100	0056	3371	2706	0010120	0116	14517								
		STD	0125	0100	3385	2714	0009321	0141	14543								
158		OBS	0145	0140	33972	2721			14566								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4616 N	04723 W		149	67	04	05	177	1965	001	9277	0366	02	69	9	7		X1	3	4		0043

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		22	S26	095	033	022	8	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	-0046	3330	2678	0012788	0000	14448								
177		OBS	0000	-0046	33299	2678			14448								
		STD	0010	-0046	3330	2678	0012761	0013	14450								
		STD	0020	-0046	3331	2678	0012734	0026	14451								
177		OBS	0023	-0046	33306	2678			14452								
		STD	0030	-0002	3348	2690	0011583	0038	14476								
177		OBS	0032	0012	33526	2693			14483								
177		OBS	0045	0114	33880	2716			14537								
		STD	0050	0134	3397	2722	0008619	0058	14548								
177		OBS	0059	0167	34128	2732			14566								
		STD	0075	0189	3420	2736	0007269	0078	14579								
		STD	0100	0220	3431	2743	0006685	0095	14598								
		STD	0125	0248	3440	2747	0006245	0111	14616								
		STD	0150	0274	3448	2752	0005878	0127	14632								
177		OBS	0154	0278	34497	2753			14635								
177		OBS	T0175	0297	34557	2756			14648								
		STD	0200	0318	3462	2759	0005256	0154	14662								
177		OBS	T0221	0334	34674	2761			14673								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4614 N	04707 W		149	67	04	05	196	1965	001	9278	1042	10	24	5	2		X1	3	1		0044

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		24	S30	098	033	022	7	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0139	3393	2718	0008953	0000	14541								
196		OBS	0000	0139	33929	2718			14541								
		STD	0010	0141	3393	2718	0008959	0009	14543								
		STD	0020	0142	3394	2719	0008896	0018	14546								
		STD	0030	0144	3396	2720	0008758	0027	14549								
196		OBS	0035	0145	33967	2721			14550								
		STD	0050	0174	3407	2727	0008136	0044	14567								
		STD	0075	0217	3422	2736	0007330	0063	14592								
		STD	0100	0254	3436	2744	0006583	0080	14614								
		STD	0125	0286	3447	2750	0006042	0096	14633								
		STD	0150	0312	3457	2755	0005540	0111	14650								
196		OBS	0181	0336	34653	2760			14667								
		STD	0200	0342	3466	2760	0005186	0137	14672								
		STD	0250	0359	3473	2764	0004865	0163	14689								
196		OBS	0251	0359	34735	2764			14689								
196		OBS	0291	0418	34865	2768			14722								
		STD	0300	0415	3487	2769	0004448	0186	14723								
		STD	0400	0388	3487	2772	0004254	0229	14728								
196		OBS	T0407	0387	34874	2772			14729								
		STD	0500	0376	3488	2773	0004165	0271	14739								
		STD	0600	0367	3488	2775	0004141	0313	14752								
196		OBS	0620	0366	34880	2775			14755								
		STD	0700	0362	3488	2775	0004143	0354	14767								
		STD	0800	0359	3489	2776	0004172	0396	14782								
196		OBS	T0835	0358	34887	2776			14787								
		STD	0900	0356	3489	2776	0004214	0438	14797								
		STD	1000	0355	3489	2776	0004293	0480	14814								
196		OBS	T1000	0355	34886	2776			14814								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° ' 1/10	° ' 1/10	INDICTR	10°	1°	MO.	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4613 N	04650 W		149	66	04	05	215	1965	001	9279	1218	12	24	5	2		X0	X	0		0045

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		24	S29	102	039	028	8	09	

MESSENGR TIME HR. 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₃-N µg-at/l	NO₂-N µg-at/l	SiO₄-Si µg-at/l	pH	QUAL
		STD	0000	0207	3415	2731	0007721	0000	14574								
215		OBS	0000	0207	34154	2731			14574								
		STD	0010	0209	3416	2731	0007716	0008	14577								
		STD	0020	0211	3416	2731	0007719	0015	14579								
215		OBS	0022	0211	34160	2731			14580								
		STD	0030	0218	3419	2733	0007545	0023	14584								
215		OBS	0035	0223	34214	2735			14588								
		STD	0050	0245	3429	2739	0007010	0038	14601								
		STD	0075	0278	3440	2745	0006468	0054	14621								
		STD	0100	0307	3450	2750	0005985	0070	14639								
		STD	0125	0333	3459	2755	0005565	0084	14655								
215		OBS	0145	0350	34649	2758			14667								
		STD	0150	0353	3466	2759	0005250	0098	14669								
		STD	0200	0380	3475	2763	0004885	0123	14690								
		STD	0250	0398	3481	2766	0004667	0147	14706								
215		OBS	0271	0403	34837	2768			14712								
		STD	0300	0398	3485	2769	0004416	0170	14715								
		STD	0400	0384	3487	2772	0004212	0213	14726								
215		OBS	T0459	0377	34878	2773			14733								
		STD	0500	0374	3488	2774	0004121	0255	14738								
		STD	0600	0367	3488	2775	0004133	0296	14752								
215		OBS	0691	0362	34888	2776			14765								
		STD	0700	0362	3489	2776	0004105	0337	14767								
		STD	0800	0361	3489	2776	0004150	0378	14783								
		STD	0900	0359	3490	2777	0004189	0420	14799								
215		OBS	T0977	0356	34898	2777			14810								
		STD	1000	0355	3490	2777	0004189	0462	14814								
		STD	1100	0350	3490	2778	0004212	0504	14828								
215		OBS	T1189	0345	34905	2779			14841								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° ' 1/10	° ' 1/10	INDICTR	10°	1°	MO.	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4618 N	04631 W		149	66	04	06	013	1965	001	9280	1060	11	23	5	5		X0		0		0046

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		22	S23	129	039	028	8	08	

MESSENGR TIME HR. 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₃-N µg-at/l	NO₂-N µg-at/l	SiO₄-Si µg-at/l	pH	QUAL
		STD	0000	0326	3446	2745	0006414	0000	14630								
013		OBS	0000	0326	34456	2745			14630								
		STD	0010	0324	3448	2747	0006227	0006	14631								
		STD	0020	0323	3450	2749	0006069	0012	14632								
		STD	0030	0321	3452	2750	0005911	0018	14634								
		STD	0050	0318	3456	2754	0005596	0030	14636								
013		OBS	0069	0315	34594	2757			14638								
		STD	0075	0320	3461	2758	0005256	0044	14642								
		STD	0100	0337	3465	2759	0005131	0057	14654								
		STD	0125	0353	3470	2762	0004928	0069	14665								
		STD	0150	0366	3474	2764	0004776	0081	14675								
		STD	0200	0386	3480	2766	0004571	0105	14693								
013		OBS	0205	0387	34808	2767			14694								
		STD	0250	0396	3485	2769	0004347	0127	14706								
013		OBS	T0285	0399	34875	2771			14713								
		STD	0300	0395	3488	2771	0004197	0148	14714								
		STD	0400	0375	3488	2774	0004064	0190	14722								
013		OBS	0461	0366	34878	2775			14729								
		STD	0500	0362	3488	2775	0003992	0230	14733								
		STD	0600	0355	3489	2777	0003929	0269	14747								
013		OBS	T0699	0351	34896	2777			14762								
		STD	0700	0351	3490	2778	0003895	0309	14762								
		STD	0800	0352	3491	2779	0003913	0348	14779								
		STD	0900	0353	3491	2778	0004006	0387	14796								
013		OBS	T0939	0353	34913	2779			14803								
		STD	1000	0354	3491	2779	0004074	0428	14814								
013		OBS	1060	0355	34914	2779			14824								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4619 N	04548 W		149	65	04	06	048	1965	001	9281	0421	04	21	8	3		X0	0		0047

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		26	S28	135	039	028	8	05	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY $\times 10^7$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	S
		STD	0000	0374	3440	2736	0007279	0000	14650								
048		OBS	0000	0374	34400	2736			14650								
		STD	0010	0374	3440	2736	0007263	0007	14651								
		STD	0020	0374	3441	2736	0007254	0015	14653								
		STD	0030	0373	3441	2736	0007237	0022	14654								
		STD	0050	0373	3441	2737	0007212	0036	14657								
		STD	0075	0372	3442	2738	0007174	0054	14661								
		STD	0100	0371	3443	2738	0007143	0072	14665								
048		OBS	0111	0371	34429	2738			14667								
		STD	0125	0391	3456	2747	0006353	0089	14679								
048		OBS	0142	0410	34688	2755			14692								
		STD	0150	0410	3471	2757	0005445	0104	14694								
		STD	0200	0408	3481	2765	0004723	0129	14702								
		STD	0250	0400	3488	2771	0004164	0151	14708								
048		OBS	0256	0399	34881	2771			14709								
		STD	0300	0387	3488	2773	0004046	0172	14711								
048		OBS	T0367	0362	34889	2776			14712								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4622 N	04504 W		149	65	04	06	082	1965	001	9282	0869	09	23	4	2		X0	0		0048

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		23	S18	149	039	022	8	07	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY $\times 10^7$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at	TOTAL-P µg-at	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	S
		STD	0000	0404	3444	2736	0007246	0000	14663								
082		OBS	0000	0404	34443	2736			14663								
		STD	0010	0403	3444	2736	0007244	0007	14664								
		STD	0020	0402	3444	2736	0007241	0014	14665								
		STD	0030	0400	3444	2736	0007239	0022	14666								
		STD	0050	0398	3444	2737	0007232	0036	14668								
		STD	0075	0395	3444	2737	0007233	0054	14671								
		STD	0100	0392	3444	2737	0007225	0072	14674								
082		OBS	0123	0389	34442	2738			14677								
		STD	0125	0391	3446	2739	0007104	0090	14678								
		STD	0150	0416	3465	2751	0005957	0107	14695								
082		OBS	T0178	0438	34826	2763			14711								
		STD	0200	0433	3484	2765	0004764	0133	14713								
		STD	0250	0423	3487	2768	0004483	0157	14718								
		STD	0300	0413	3489	2771	0004276	0178	14722								
		STD	0400	0395	3491	2774	0004031	0220	14731								
082		OBS	0404	0394	34911	2774			14731								
		STD	0500	0379	3490	2775	0004003	0260	14741								
		STD	0600	0363	3489	2776	0003989	0300	14751								
082		OBS	T0602	0363	34894	2776			14751								
		STD	0700	0360	3490	2777	0004029	0340	14766								
		STD	0800	0357	3490	2777	0004062	0381	14781								
082		OBS	T0815	0356	34897	2777			14783								
082		OBS	0862	0355	34897	2777			14791								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4700 N	04452 W		149	74	04	06	133	1965	001	9283	0147	01	23	7	4		X1	8	6	0049

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		29	S19	166	039	028	7	04	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY $\times 10^7$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	S
		STD	0000	0379	3443	2738	0007079	0000	14652								
133		OBS	0000	0379	34433	2738			14652								
		STD	0010	0378	3443	2738	0007078	0007	14653								
		STD	0020	0378	3443	2738	0007086	0014	14655								
		STD	0030	0377	3443	2738	0007086	0021	14656								
		STD	0050	0375	3443	2738	0007091	0035	14659								
133		OBS	0059	0374	34432	2738			14660								
		STD	0075	0372	3444	2739	0007034	0053	14661								
		STD	0100	0368	3445	2740	0006942	0071	14664								
133		OBS	0123	0364	34457	2741			14666								
		STD	0125	0365	3446	2741	0006848	0088	14667								
133		OBS	0138	0374	34489	2743			14673								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4655 N	04513 W		149	65	04	06	173	1965	001	9284	0186	02	26	4	2		X1	6	6		0050

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		27	S10	166	039	028	7	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QCD
		STD	0000	0384	3443	2737	0007142	0000	14654								
173		OBS	0000	0384	34431	2737			14654								
		STD	0010	0384	3443	2737	0007143	0007	14656								
		STD	0020	0383	3443	2737	0007142	0014	14657								
		STD	0030	0382	3443	2738	0007134	0021	14658								
		STD	0050	0381	3443	2738	0007134	0036	14661								
173		OBS	0058	0380	34434	2738			14662								
		STD	0075	0378	3444	2738	0007111	0053	14664								
		STD	0100	0375	3444	2739	0007079	0071	14667								
173		OBS	0121	0372	34441	2739			14669								
		STD	0125	0373	3445	2740	0007001	0089	14670								
		STD	0150	0382	3452	2744	0006586	0106	14679								
173		OBS	0169	0394	34606	2750			14689								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4700 N	04521 W		149	75	04	06	184	1965	001	9285	0192	02	27	8	4		X1	6	6		0051

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		27	S10	169	028	017	7	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QCD
		STD	0000	0358	3442	2739	0006963	0000	14643								
184		OBS	0000	0358	34422	2739			14643								
		STD	0010	0359	3443	2739	0006938	0007	14645								
		STD	0020	0361	3444	2740	0006907	0014	14648								
		STD	0030	0362	3444	2740	0006882	0021	14650								
		STD	0050	0365	3445	2741	0006827	0034	14655								
		STD	0075	0368	3447	2742	0006759	0051	14660								
		STD	0100	0371	3449	2743	0006686	0068	14666								
		STD	0125	0375	3450	2744	0006619	0085	14672								
184		OBS	0127	0375	34504	2744			14672								
184		OBS	0137	0395	34605	2750			14684								
		STD	0150	0397	3470	2757	0005389	0100	14688								
184		OBS	T0183	0403	34760	2761			14697								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4700 N	04536 W		149	75	04	06	199	1965	001	9286	0252	03	24	7	5		X1	3	6		0052

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		24	S07	169	028	017	7	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QCD
		STD	0000	0364	3442	2738	0007072	0000	14646								
199		OBS	0000	0364	34415	2738			14646								
		STD	0010	0363	3442	2738	0007073	0007	14647								
		STD	0020	0362	3442	2738	0007074	0014	14648								
		STD	0030	0362	3441	2738	0007082	0021	14649								
		STD	0050	0360	3441	2738	0007084	0035	14652								
		STD	0075	0358	3441	2738	0007093	0053	14655								
199		OBS	0076	0358	34413	2738			14655								
		STD	0100	0351	3443	2740	0006938	0071	14656								
		STD	0125	0343	3444	2742	0006780	0088	14657								
199		OBS	0125	0343	34441	2742			14657								
		STD	0150	0389	3465	2754	0005680	0103	14684								
199		OBS	0176	0418	34802	2763			14702								
		STD	0200	0411	3481	2765	0004744	0129	14704								
		STD	0250	0398	3483	2768	0004491	0153	14707								
199		OBS	T0252	0397	34834	2768			14707								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4659 N	04549 W		149	65	04	06	217	1965	001	9287	0280	03	24	4	4		X1	3	6		0053

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		27	S02	166	028	011	7	06	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0358	3442	2739	0006978	0000	14643								
217		OBS	0000	0358	34420	2739			14643								
		STD	0010	0356	3443	2740	0006892	0007	14644								
		STD	0020	0354	3444	2741	0006799	0014	14645								
		STD	0030	0352	3445	2742	0006713	0021	14646								
		STD	0050	0348	3447	2744	0006534	0034	14648								
		STD	0075	0343	3450	2747	0006319	0050	14650								
		STD	0100	0338	3452	2749	0006096	0065	14652								
217		OBS	0100	0338	34523	2749			14652								
217		OBS	0120	0391	34650	2754			14680								
		STD	0125	0389	3465	2754	0005642	0080	14680								
		STD	0150	0382	3466	2756	0005512	0094	14681								
217		OBS	0150	0382	34663	2756			14681								
		STD	0200	0409	3479	2763	0004884	0120	14702								
217		OBS	0215	0411	34818	2765			14706								
		STD	0250	0405	3485	2768	0004441	0143	14710								
217		OBS	T0280	0389	34856	2770			14708								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4701 N	04606 W		149	76	04	06	233	1965	001	9288	0334	03	24	1	4		X1	3	6		0054

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		27	S02	163	039	022	8	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0363	3443	2739	0006980	0000	14645								
233		OBS	0000	0363	34426	2739			14645								
		STD	0010	0355	3444	2741	0006808	0007	14644								
		STD	0020	0349	3444	2741	0006760	0014	14643								
		STD	0030	0343	3445	2743	0006637	0020	14642								
		STD	0050	0334	3447	2745	0006419	0033	14642								
233		OBS	0062	0330	34481	2747			14642								
		STD	0075	0330	3449	2747	0006242	0049	14644								
		STD	0100	0329	3451	2749	0006113	0065	14648								
233		OBS	0118	0329	34524	2750			14651								
		STD	0125	0341	3456	2752	0005866	0080	14658								
		STD	0150	0376	3466	2756	0005475	0094	14679								
233		OBS	T0178	0406	34758	2761			14697								
		STD	0200	0401	3478	2763	0004897	0120	14699								
		STD	0250	0389	3482	2768	0004503	0143	14703								
		STD	0300	0378	3486	2772	0004108	0165	14707								
233		OBS	0334	0370	34892	2775			14710								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4700 N	04619 W		149	76	04	07	008	1965	001	9289	0328	03	24	1	4		X1	4	3		0055

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		00	S00	166	022	011	8	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0351	3463	2756	0005316	0000	14643								
008		OBS	0000	0351	34632	2756			14643								
		STD	0010	0353	3464	2757	0005285	0005	14646								
		STD	0020	0356	3465	2757	0005263	0011	14648								
		STD	0030	0358	3466	2758	0005233	0016	14651								
		STD	0050	0363	3467	2758	0005175	0026	14657								
		STD	0075	0369	3469	2759	0005110	0039	14664								
		STD	0100	0374	3471	2760	0005047	0052	14670								
		STD	0125	0380	3473	2761	0004977	0064	14677								
008		OBS	0128	0381	34731	2761			14678								
008		OBS	0143	0402	34796	2764			14690								
		STD	0150	0401	3480	2765	0004682	0076	14691								
		STD	0200	0393	3482	2768	0004458	0099	14696								
		STD	0250	0384	3485	2770	0004238	0121	14701								
		STD	0300	0376	3487	2773	0004018	0142	14706								
008		OBS	T0328	0371	34886	2775			14709								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4700 N	04633 W		149	76	04	07	022	1965	001	9290	0732	07	24	2	4		X1	4	4		0056

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OF FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		00	S00	169	022	011	8	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	NODC
		STD	0000	0368	3465	2756	0005355	0000	14650								
022		OBS	0000	0368	34648	2756			14650								
		STD	0010	0368	3465	2757	0005321	0005	14652								
		STD	0020	0367	3466	2757	0005288	0011	14653								
		STD	0030	0367	3466	2757	0005254	0016	14655								
		STD	0050	0366	3467	2758	0005187	0026	14658								
		STD	0075	0364	3469	2759	0005099	0039	14662								
		STD	0100	0363	3470	2761	0005018	0052	14665								
		STD	0125	0362	3471	2762	0004930	0064	14669								
		STD	0150	0361	3472	2763	0004849	0077	14673								
022		OBS	0160	0360	34728	2763			14674								
022		OBS	0192	0402	34826	2767			14699								
		STD	0200	0401	3483	2767	0004500	0100	14700								
		STD	0250	0393	3485	2770	0004315	0122	14705								
		STD	0300	0386	3486	2771	0004215	0143	14710								
		STD	0400	0374	3488	2774	0004031	0184	14722								
022		OBS	T0426	0371	34886	2775			14725								
		STD	0500	0365	3489	2775	0003965	0224	14735								
		STD	0600	0359	3489	2776	0003972	0264	14749								
022		OBS	T0675	0357	34892	2777			14760								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4700 N	04647 W		149	76	04	07	038	1965	001	9291	1152	10	00	0	X		X0	0			0057

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OF FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		00	S00	163	017	011	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	NODC
		STD	0000	0349	3459	2753	0005629	0000	14641								
038		OBS	0000	0349	34588	2753			14641								
		STD	0010	0350	3459	2753	0005611	0006	14643								
		STD	0020	0350	3460	2754	0005586	0011	14645								
		STD	0030	0350	3460	2754	0005569	0017	14647								
		STD	0050	0351	3461	2755	0005526	0028	14651								
038		OBS	0065	0352	34617	2755			14654								
		STD	0075	0333	3461	2757	0005345	0041	14647								
038		OBS	0079	0326	34613	2757			14645								
		STD	0100	0334	3463	2758	0005254	0055	14652								
		STD	0125	0344	3466	2759	0005139	0068	14661								
		STD	0150	0353	3470	2762	0004951	0080	14669								
038		OBS	0173	0362	34743	2764			14678								
038		OBS	0197	0386	34803	2767			14692								
		STD	0200	0386	3481	2767	0004496	0104	14693								
		STD	0250	0386	3484	2770	0004318	0126	14702								
		STD	0300	0385	3486	2771	0004204	0147	14710								
038		OBS	T0395	0382	34893	2774			14725								
		STD	0400	0382	3489	2774	0004019	0188	14726								
		STD	0500	0373	3489	2775	0004006	0229	14738								
38		OBS	T0594	0367	34894	2776			14751								
		STD	0600	0367	3489	2776	0004029	0269	14752								
		STD	0700	0361	3490	2777	0004020	0309	14766								
038		OBS	0793	0357	34901	2777			14780								
		STD	0800	0357	3490	2777	0004045	0349	14781								
		STD	0900	0353	3490	2778	0004084	0390	14796								
		STD	1000	0350	3490	2778	0004131	0431	14812								
038		OBS	T1012	0350	34898	2778			14814								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4700 N	04700 W		149	77	04	07	064	1965	001	9292	1088	10	00	0	X		X0		0	0058

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		00	S00	152	017	011	7	07	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml-l	PO₄-P µg-at l	TOTAL-P µg-at l	NO₂-N µg-at l	NO₃-N µg-at l	SiO₄-Si µg-at l	pH	T °C
		STD	0000	0083	3377	2709	0009795	0000	14514								
064		OBS	0000	0083	33773	2709			14514								
		STD	0010	0107	3387	2715	0009201	0009	14527								
		STD	0020	0131	3396	2721	0008670	0018	14541								
		STD	0030	0153	3404	2726	0008211	0027	14554								
		STD	0050	0195	3420	2736	0007304	0042	14578								
		STD	0075	0241	3437	2746	0006387	0060	14604								
		STD	0100	0281	3452	2754	0005605	0074	14628								
064		OBS	0122	0310	34626	2760			14645								
		STD	0125	0312	3463	2760	0005070	0088	14647								
		STD	0150	0326	3466	2761	0004993	0100	14657								
		STD	0200	0351	3472	2763	0004821	0125	14677								
		STD	0250	0371	3477	2765	0004689	0149	14694								
064		OBS	T0269	0377	34788	2766			14700								
		STD	0300	0385	3482	2768	0004504	0172	14709								
064		OBS	0393	0399	34875	2771			14731								
		STD	0400	0398	3488	2771	0004287	0216	14732								
		STD	0500	0385	3488	2773	0004240	0258	14743								
064		OBS	T0590	0376	34888	2774			14754								
		STD	0600	0375	3489	2775	0004147	0300	14756								
		STD	0700	0370	3489	2775	0004180	0342	14770								
064		OBS	T0784	0365	34895	2776			14782								
		STD	0800	0364	3490	2776	0004162	0384	14784								
		STD	0900	0359	3490	2777	0004182	0425	14799								
		STD	1000	0355	3490	2777	0004212	0467	14814								
064		OBS	T1041	0353	34897	2777			14820								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4700 N	04714 W		149	77	04	07	083	1965	001	9293	0612	06	24	4	4		X2	6	8	0059

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		09	S06	152	011	000	7	06	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml-l	PO₄-P µg-at l	TOTAL-P µg-at l	NO₂-N µg-at l	NO₃-N µg-at l	SiO₄-Si µg-at l	pH	T °C
		STD	0000	-0052	3329	2677	0012872	0000	14445								
083		OBS	0000	-0052	33285	2677			14445								
		STD	0010	-0054	3329	2677	0012830	0013	14446								
		STD	0020	-0055	3329	2678	0012782	0026	14447								
		STD	0030	-0057	3330	2678	0012740	0038	14448								
083		OBS	0035	-0058	33300	2678			14448								
		STD	0050	-0057	3331	2679	0012640	0064	14451								
083		OBS	0053	-0057	33319	2680			14452								
		STD	0075	-0007	3353	2695	0011168	0094	14482								
		STD	0100	0045	3374	2709	0009830	0120	14512								
		STD	0125	0094	3394	2722	0008601	0143	14542								
		STD	0150	0139	3412	2733	0007538	0163	14568								
083		OBS	0159	0154	34178	2737			14577								
		STD	0200	0209	3433	2745	0006492	0198	14610								
		STD	0250	0267	3449	2753	0005802	0229	14646								
		STD	0300	0314	3463	2760	0005217	0256	14676								
083		OBS	0389	0373	34795	2767			14719								
		STD	0400	0374	3480	2767	0004635	0306	14721								
		STD	0500	0382	3484	2770	0004533	0351	14741								
083		OBS	T0579	0388	34866	2771			14757								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4700 N	04730 W		149	77	04	07	096	1965	001	9294	0212	02	25	3	2		X2	3	8		0060

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		04	S06	156	006	000	6	06	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	-0098	3307	2661	0014382	0000	14421								
096		OBS	0000	-0098	33067	2661			14421								
		STD	0010	-0101	3307	2661	0014351	0014	14421								
		STD	0020	-0103	3307	2661	0014316	0029	14422								
096		OBS	0029	-0104	33074	2662			14423								
		STD	0030	-0104	3308	2662	0014247	0043	14423								
		STD	0050	-0098	3316	2668	0013641	0071	14430								
096		OBS	0072	-0092	33247	2675			14438								
		STD	0075	-0090	3325	2675	0012966	0104	14439								
096		OBS	0097	-0049	33357	2682			14464								
		STD	0100	-0034	3339	2684	0012106	0135	14471								
		STD	0125	0072	3365	2700	0010668	0164	14528								
096		OBS	0126	0075	33660	2701			14529								
		STD	0150	0103	3385	2714	0009344	0189	14549								
		STD	0200	0162	3405	2726	0008243	0233	14586								
096		OBS	T0208	0171	34059	2726			14591								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4659 N	04744 W		149	67	04	07	108	1965	001	9295	0181	02	27	3	2		X1	3	6		0061

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		01	S02	159	006	000	8	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	-0090	3312	2665	0014016	0000	14425								
108		OBS	0000	-0090	33118	2665			14425								
		STD	0010	-0091	3311	2664	0014069	0014	14426								
		STD	0020	-0092	3311	2664	0014060	0028	14427								
		STD	0030	-0093	3311	2664	0014051	0042	14428								
		STD	0050	-0095	3310	2663	0014109	0070	14431								
		STD	0075	-0098	3310	2664	0014087	0106	14434								
108		OBS	0085	-0099	33099	2663			14435								
		STD	0100	-0098	3310	2664	0014059	0141	14438								
		STD	0125	-0095	3311	2664	0014023	0176	14443								
108		OBS	0125	-0095	33106	2664			14443								
		STD	0150	-0106	3317	2669	0013481	0210	14443								
108		OBS	0150	-0106	33170	2669			14443								
108		OBS	T0175	0073	33696	2704			14537								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1 10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4700 N	04800 W		149	78	04	07	124	1965	001	9296	0144	01	04	2	4		X4	5	8		0062

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		02	S02	173	022	011	5	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	-0058	3307	2660	0014503	0000	14439								
124		OBS	0000	-0058	33069	2660			14439								
		STD	0010	-0060	3307	2660	0014483	0014	14440								
		STD	0020	-0063	3307	2660	0014460	0029	14440								
		STD	0030	-0067	3307	2660	0014433	0043	14440								
124		OBS	0035	-0069	33073	2660			14440								
		STD	0050	-0077	3310	2663	0014195	0072	14439								
124		OBS	0050	-0077	33097	2663			14439								
		STD	0075	-0073	3325	2675	0013027	0106	14447								
124		OBS	0075	-0073	33250	2675			14447								
124		OBS	0090	-0040	33376	2684			14467								
		STD	0100	-0024	3346	2690	0011616	0137	14477								
		STD	0125	0034	3366	2703	0010377	0164	14511								
124		OBS	0125	0034	3380P	2714P											
124		OBS	0135	0064	33744	2708			14527								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4410 N	04842 W		149	48	04	09	024	1965	CKS	9297	0896	08	34	2	4		X1	5	3		0063

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		33	S12	234	000	-006	8	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	-0033	3323	2672	0013367	0000	14453								
024		OBS	0000	-0033	33230	2672			14453								
		STD	0010	-0026	3330	2677	0012858	0013	14459								
		STD	0020	-0018	3337	2682	0012354	0026	14465								
		STD	0030	-0009	3343	2687	0011933	0038	14472								
024		OBS	0047	0006	33538	2695			14483								
		STD	0050	0011	3356	2696	0011031	0061	14486								
		STD	0075	0053	3371	2706	0010105	0087	14512								
		STD	0100	0092	3385	2715	0009269	0111	14535								
		STD	0125	0129	3399	2724	0008449	0134	14558								
		STD	0150	0162	3411	2731	0007777	0154	14578								
		STD	0200	0222	3431	2742	0006748	0190	14616								
024		OBS	0211	0233	34352	2745			14623								
		STD	0250	0264	3445	2750	0006077	0222	14644								
		STD	0300	0300	3455	2755	0005685	0252	14669								
024		OBS	T0366	0338	34670	2761			14698								
		STD	0400	0354	3471	2762	0005093	0306	14711								
		STD	0500	0386	3481	2767	0004773	0355	14743								
024		OBS	T0542	0393	34832	2768			14753								
		STD	0600	0391	3485	2770	0004622	0402	14762								
024		OBS	0676	0388	34868	2772			14773								
		STD	0700	0387	3487	2772	0004534	0448	14777								
		STD	0800	0384	3487	2772	0004583	0493	14792								
024		OBS	T0804	0384	34869	2772			14793								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4346 N	04840 W		149	38	04	11	119	1965	CKS	9298	1829	13	13	2	4		X4	X	9		0064

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		12	S13	071	061	061	1	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at l	NO_3-N µg-at l	SiO_4-Si µg-at l	pH	SCC
		STD	0000	0103	3355	2690	0011640	0000	14520								
119		OBS	0000	0103	33546	2690			14520								
		STD	0010	0102	3361	2695	0011147	0011	14522								
		STD	0020	0101	3366	2699	0010761	0022	14523								
		STD	0030	0100	3372	2704	0010299	0033	14525								
119		OBS	0037	0099	33759	2707			14527								
		STD	0050	0119	3384	2712	0009509	0053	14539								
		STD	0075	0154	3398	2721	0008685	0075	14561								
		STD	0100	0187	3410	2728	0008020	0096	14581								
		STD	0125	0217	3422	2736	0007353	0116	14600								
		STD	0150	0245	3433	2742	0006762	0133	14618								
		STD	0200	0292	3451	2752	0005844	0165	14649								
119		OBS	T0225	0311	34582	2756			14662								
		STD	0250	0319	3461	2758	0005378	0193	14670								
		STD	0300	0334	3465	2760	0005261	0219	14685								
		STD	0400	0358	3473	2764	0004985	0271	14713								
119		OBS	0444	0366	34764	2766			14724								
		STD	0500	0375	3480	2767	0004728	0319	14738								
		STD	0600	0385	3486	2771	0004480	0365	14759								
119		OBS	0664	0387	34878	2772			14771								
		STD	0700	0382	3488	2773	0004389	0410	14775								
		STD	0800	0371	3488	2774	0004352	0453	14787								
119		OBS	0884	0365	34885	2775			14798								
		STD	0900	0365	3489	2776	0004297	0496	14801								
		STD	1000	0366	3490	2776	0004318	0540	14818								
		STD	1100	0367	3490	2776	0004413	0583	14836								
119		OBS	T1124	0367	34905	2777			14840								
		STD	1200	0366	3491	2777	0004443	0627	14852								
		STD	1300	0363	3491	2777	0004475	0672	14868								
119		OBS	T1321	0362	34908	2777			14871								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ′ 1/10	LONGITUDE ° ′ 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4347 N	04846 W		149	38	04	11	147	1965	CKS	9299	0759	04	13	2	2		X4	4	8	0065

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		16	S10	003	050	044	1	06	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	QUAL
		STD	0000	0022	3332	2676	0012963	0000	14480								
147		OBS	0000	0022	33315	2676			14480								
		STD	0010	0035	3339	2681	0012453	0013	14488								
		STD	0020	0044	3354	2693	0011362	0025	14496								
147		OBS	0020	0044	33539	2693			14496								
		STD	0030	0046	3380	2714	0009384	0035	14502								
147		OBS	0040	0048	34028	2732			14508								
		STD	0050	0060	3404	2732	0007633	0052	14515								
		STD	0075	0089	3406	2732	0007654	0071	14533								
		STD	0100	0115	3409	2733	0007594	0090	14549								
		STD	0125	0138	3412	2733	0007525	0109	14564								
		STD	0150	0159	3415	2734	0007453	0128	14578								
147		OBS	0198	0191	34203	2736			14600								
		STD	0200	0192	3421	2737	0007264	0165	14601								
		STD	0250	0207	3426	2740	0007026	0200	14617								
147		OBS	0297	0226	34326	2743			14634								
		STD	0300	0227	3433	2744	0006687	0235	14635								
147		OBS	T0396	0277	34497	2753			14675								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ′ 1/10	LONGITUDE ° ′ 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4355 N	04907 W		149	39	04	11	169	1965	CKS	9300	0165	02	11	3	4		X4	4	8	0066

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		16	S10	997	072	072	0	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	QUAL
		STD	0000	0070	3315	2660	0014452	0000	14499								
169		OBS	0000	0070	33152	2660			14499								
		STD	0010	0052	3315	2661	0014355	0014	14493								
169		OBS	0010	0052	33152	2661			14493								
169		OBS	0015	0000	33200	2668			14470								
		STD	0020	-0002	3321	2669	0013647	0028	14470								
		STD	0030	-0004	3325	2672	0013338	0042	14472								
169		OBS	0030	-0004	33249	2672			14472								
169		OBS	0040	-0005	33322	2678			14474								
		STD	0050	-0003	3335	2680	0012566	0068	14477								
		STD	0075	0002	3346	2689	0011722	0098	14485								
169		OBS	0075	0002	33463	2689			14485								
		STD	0100	0050	3367	2703	0010421	0126	14514								
169		OBS	0100	0050	33666	2703			14514								
		STD	0125	0057	3370	2705	0010194	0152	14522								
		STD	0150	0064	3374	2707	0009961	0177	14529								
169		OBS	T0160	0067	33751	2708			14533								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ′ 1/10	LONGITUDE ° ′ 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4400 N	04919 W		149	49	04	11	188	1965	CKS	9301	0038	00	14	3	4		X4	4	8	0067

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		36	S10	973	050	050	7	02	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	QUAL
		STD	0000	0059	3314	2659	0014523	0000	14494								
188		OBS	0000	0059	33135	2659			14494								
		STD	0010	0054	3313	2660	0014502	0015	14493								
		STD	0020	0049	3313	2660	0014489	0029	14493								
		STD	0030	0044	3313	2660	0014469	0043	14492								
188		OBS	0035	0041	33130	2660			14491								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	QUADR INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4440 N	04919 W		149	49	04	12	018	1965	CKS	9302	0057	00	17	3	4		X4	4	8	0068

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		16	S03	980	039	039	1	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCI
		STD	0000	0091	3309	2654	0015025	0000	14508								
	018	OBS	0000	0091	33092	2654			14508								
	018	OBS	0008	0066	33117	2658			14498								
		STD	0010	0043	3313	2660	0014476	0015	14488								
	018	OBS	0015	-0007	33173	2666			14467								
		STD	0020	-0007	3317	2666	0013906	0029	14468								
		STD	0030	-0008	3317	2666	0013908	0043	14469								
		STD	0050	-0009	3317	2666	0013912	0071	14472								
	018	OBS	0050	-0009	33170	2666			14472								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	QUADR INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4438 N	04905 W		149	49	04	12	048	1965	CKS	9303	0071	00	14	2	2		X4	4	8	0069

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		16	S08	963	050	050	0	03	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCI
		STD	0000	0030	3325	2670	0013498	0000	14482								
	048	OBS	0000	0030	33250	2670			14482								
		STD	0010	0024	3325	2670	0013466	0013	14481								
		STD	0020	0017	3325	2671	0013438	0027	14480								
	048	OBS	0020	0017	33249	2671			14480								
		STD	0030	0009	3327	2673	0013238	0040	14478								
		STD	0050	-0012	3335	2680	0012525	0066	14473								
	048	OBS	0050	-0012	33350	2680			14473								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	QUADR INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4435 N	04855 W		149	48	04	12	078	1965	CKS	9304	0603	05	14	4	2		X6	5	8	0070

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		15	S16	932	061	061	1	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCI
		STD	0000	-0034	3308	2660	0014480	0000	14451								
	078	OBS	0000	-0034	33084	2660			14451								
		STD	0010	-0023	3311	2661	0014321	0014	14458								
		STD	0020	-0013	3317	2666	0013905	0029	14465								
		STD	0030	-0002	3327	2673	0013185	0042	14473								
	078	OBS	0049	0018	33557	2695			14489								
		STD	0050	0025	3358	2697	0010948	0066	14493								
	078	OBS	0058	0082	33737	2706			14522								
		STD	0075	0083	3375	2707	0009973	0092	14526								
		STD	0100	0087	3377	2709	0009846	0117	14532								
		STD	0125	0096	3381	2711	0009600	0141	14541								
		STD	0150	0109	3386	2715	0009306	0165	14551								
	078	OBS	0193	0142	33978	2722			14575								
		STD	0200	0157	3402	2724	0008436	0209	14583								
		STD	0250	0244	3430	2740	0007032	0248	14633								
		STD	0300	0296	3449	2750	0006098	0281	14667								
	078	OBS	T0315	0304	34524	2752			14673								
	078	OBS	0370	0307	34597	2758			14685								
		STD	0400	0313	3464	2761	0005206	0337	14693								
		STD	0500	0357	3475	2765	0004909	0388	14730								
	078	OBS	T0533	0379	34789	2766			14745								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4437 N	04836 W		149	48	04	12	139	1965	CKS	9305	2926	12	15	3	4		X4	4	8	0071

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		15	S12	902	078	078	1	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ Φ DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0197	3364	2690	0011574	0000	14563								
139		OBS	0000	0197	33636	2690			14563								
		STD	0010	0215	3373	2697	0010997	0011	14573								
		STD	0020	0244	3384	2703	0010390	0022	14589								
139		OBS	0022	0251	33862	2704			14593								
		STD	0030	0305	3398	2709	0009842	0032	14619								
139		OBS	0043	0354	34114	2715			14644								
		STD	0050	0343	3413	2717	0009063	0051	14641								
139		OBS	0065	0329	34183	2723			14638								
		STD	0075	0341	3426	2728	0008085	0072	14646								
		STD	0100	0369	3444	2739	0007016	0091	14664								
		STD	0125	0395	3459	2749	0006168	0108	14682								
139		OBS	0128	0398	34602	2749			14683								
		STD	0150	0420	3468	2753	0005774	0123	14697								
		STD	0200	0460	3482	2760	0005207	0150	14724								
139		OBS	T0234	0479	34894	2764			14739								
		STD	0250	0476	3490	2765	0004844	0175	14740								
		STD	0300	0468	3492	2767	0004661	0199	14745								
		STD	0400	0448	3494	2771	0004394	0244	14754								
139		OBS	0467	0434	34947	2773			14759								
		STD	0500	0424	3494	2774	0004196	0287	14760								
		STD	0600	0399	3494	2776	0004079	0329	14766								
139		OBS	T0641	0392	34931	2776			14770								
		STD	0700	0388	3493	2776	0004085	0369	14778								
		STD	0800	0381	3493	2777	0004096	0410	14792								
139		OBS	0821	0379	34927	2777			14794								
		STD	0900	0370	3492	2778	0004131	0452	14804								
		STD	1000	0361	3491	2778	0004171	0493	14817								
139		OBS	T1024	0360	34910	2778			14820								
		STD	1100	0357	3491	2778	0004222	0535	14832								
139		OBS	T1189	0356	34911	2778			14846								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4429 N	04758 W		149	47	04	12	180	1965	CKS	9306	3292	11	64	0	5		X4	4	8	0072

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		14	S30	851	111	106	5	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ Φ DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0432	3404	2701	0010564	0000	14669								
180		OBS	0000	0432	34039	2701			14669								
		STD	0010	0431	3404	2701	0010556	0011	14670								
180		OBS	0014	0429	34045	2702			14670								
		STD	0020	0417	3405	2704	0010350	0021	14666								
		STD	0030	0399	3405	2705	0010181	0031	14660								
		STD	0050	0371	3406	2709	0009852	0051	14652								
180		OBS	0064	0358	34077	2712			14649								
		STD	0075	0351	3409	2713	0009457	0075	14648								
180		OBS	0078	0350	34097	2714			14648								
		STD	0100	0352	3415	2718	0009032	0099	14653								
		STD	0125	0354	3424	2725	0008393	0120	14659								
180		OBS	0129	0354	34251	2726			14660								
		STD	0150	0373	3434	2731	0007848	0141	14673								
180		OBS	T0176	0399	34459	2738			14690								
		STD	0200	0436	3459	2744	0006667	0177	14711								
180		OBS	0231	0468	34721	2751			14731								
		STD	0250	0468	3475	2754	0005875	0208	14735								
		STD	0300	0462	3481	2759	0005414	0237	14741								
180		OBS	T0339	0452	34847	2763			14744								
		STD	0400	0424	3487	2768	0004647	0287	14743								
180		OBS	0429	0412	34885	2770			14743								
		STD	0500	0397	3489	2772	0004297	0332	14748								
		STD	0600	0379	3489	2774	0004191	0374	14757								
		STD	0700	0365	3489	2776	0004124	0416	14768								
		STD	0800	0354	3490	2778	0004012	0456	14780								
		STD	0900	0346	3490	2778	0004004	0496	14793								
186		OBS	T0930	0344	34906	2779			14798								
		STD	1000	0341	3491	2780	0003953	0536	14808								
		STD	1100	0340	3492	2780	0003947	0576	14824								
186		OBS	T1128	0340	34924	2781			14829								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	48128N	050590W		150	80	04	29	201	1965	CKS	9307	0192	02	29	4	2		X2	6	8	0073

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		30	S22	963	022	016	7	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	S CDC
		STD	0000	-0102	3277	2637	0016648	0000	14415								
201		OBS	0000	-0102	32770	2637			14415								
		STD	0010	-0098	3280	2639	0016422	0017	14418								
		STD	0020	-0095	3283	2642	0016198	0033	14422								
		STD	0030	-0091	3285	2643	0016050	0049	14426								
		STD	0050	-0084	3287	2644	0015910	0081	14433								
201		OBS	0052	-0083	32871	2645			14433								
201		OBS	0061	-0084	32870	2644			14435								
		STD	0075	-0077	3300	2655	0014925	0119	14442								
		STD	0100	-0059	3320	2670	0013452	0155	14457								
		STD	0125	-0035	3336	2682	0012337	0187	14475								
201		OBS	0125	-0035	33358	2682			14475								
		STD	0150	-0004	3348	2690	0011545	0217	14495								
201		OBS	T0169	0023	33545	2694			14511								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	48128N	050590W		150	80	04	30	067	1965	CKS	9308	0150	01	27	3	2		X1	3	3	0074

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		26	S13	976	006	000	7	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	S CDC
		STD	0000	-0083	3286	2643	0016048	0000	14425								
067		OBS	0000	-0083	32856	2643			14425								
		STD	0010	-0084	3286	2643	0016032	0016	14426								
		STD	0020	-0085	3286	2644	0016016	0032	14427								
		STD	0030	-0085	3286	2644	0016000	0048	14429								
		STD	0050	-0087	3286	2644	0015961	0080	14431								
067		OBS	0054	-0087	32862	2644			14432								
		STD	0075	-0113	3297	2653	0015034	0119	14425								
067		OBS	0079	-0118	33000	2656			14423								
		STD	0100	-0035	3333	2680	0012559	0153	14470								
067		OBS	0118	0008	33490	2691			14495								
		STD	0125	0018	3352	2693	0011357	0183	14501								
067		OBS	0138	0026	33541	2694			14507								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	48128N	050590W		150	80	04	30	173	1965	CKS	9309	0192	02	20	3	2		X2	6	8	0075

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		26	S17	017	005	003	7	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	S CDC
		STD	0000	-0110	3275	2636	0016763	0000	14411								
173		OBS	0000	-0110	32752	2636			14411								
		STD	0010	-0109	3276	2637	0016674	0017	14413								
		STD	0020	-0108	3277	2637	0016586	0033	14415								
		STD	0030	-0108	3278	2638	0016505	0050	14417								
		STD	0050	-0106	3281	2640	0016329	0083	14422								
173		OBS	0060	-0105	32817	2641			14424								
		STD	0075	-0136	3293	2651	0015250	0122	14413								
173		OBS	0075	-0136	32933	2651			14413								
		STD	0100	-0094	3313	2666	0013857	0159	14440								
		STD	0125	-0051	3330	2678	0012711	0192	14466								
173		OBS	0135	-0034	33365	2682			14477								
		STD	0150	-0008	3345	2688	0011754	0222	14492								
173		OBS	T0170	0026	33555	2695			14513								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	48128N	050590W		150	80	05	01	079	1965	CKS	9310	0247	02	23	3	2		X1	0	1		0076

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		25	S10	058	003	000	7	06	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	-0085	3280	2639	0016501	0000	14423								
079		OBS	0000	-0085	32796	2639			14423								
		STD	0010	-0088	3280	2639	0016494	0016	14423								
		STD	0020	-0091	3280	2639	0016478	0033	14423								
		STD	0030	-0094	3279	2639	0016471	0049	14424								
079		OBS	0041	-0097	32793	2639			14424								
		STD	0050	-0112	3282	2641	0016202	0082	14419								
079		OBS	0057	-0122	32843	2643			14416								
		STD	0075	-0144	3296	2654	0015021	0121	14410								
079		OBS	0082	-0146	33008	2657			14411								
		STD	0100	-0091	3318	2670	0013485	0157	14442								
		STD	0125	-0031	3336	2682	0012340	0189	14477								
079		OBS	0143	0000	33459	2688			14495								
		STD	0150	0003	3347	2689	0011656	0219	14498								
		STD	0200	0025	3355	2694	0011183	0276	14517								
079		OBS	T0205	0027	33554	2695			14519								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	47570N	050515W		150	70	05	02	075	1965	CKS	9311	0133	01	24	2	2		X4	X	9		0077

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S02	986	011	006	6	05	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	-0157	3284	2644	0015936	0000	14390								
075		OBS	0000	-0157	32844	2644			14390								
		STD	0010	-0078	3285	2643	0016105	0016	14429								
075		OBS	0010	-0078	32850	2643			14429								
		STD	0020	-0087	3285	2643	0016046	0032	14426								
		STD	0030	-0097	3286	2644	0015994	0048	14423								
		STD	0050	-0115	3286	2645	0015887	0080	14418								
		STD	0075	-0138	32B7	2646	0015751	0120	14411								
075		OBS	0075	-0138	32867	2646			14411								
		STD	0100	-0030	3337	2683	0012246	0155	14473								
075		OBS	0100	-0030	33374	2683			14473								
		STD	0125	0007	3348	2690	0011636	0184	14496								
075		OBS	0125	0007	33476	2690			14496								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	47570N	050515W		150	70	05	02	202	1965	CKS	9312	0141	01	22	2	2		X1	2	2		0078

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		22	S09	010	017	009	7	05	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	-0037	3284	2640	0016328	0000	14446								
202		OBS	0000	-0037	32841	2640			14446								
		STD	0010	-0079	3284	2642	0016163	0016	14428								
202		OBS	0010	-0079	32842	2642			14428								
		STD	0020	-0088	3285	2643	0016082	0032	14426								
		STD	0030	-0097	3285	2644	0016001	0048	14423								
		STD	0050	-0115	3287	2645	0015850	0080	14418								
202		OBS	0073	-0135	32879	2647			14413								
		STD	0075	-0122	3294	2651	0015236	0119	14420								
202		OBS	0098	-0020	33396	2684			14478								
		STD	0100	-0019	3340	2685	0012106	0153	14479								
		STD	0125	-0001	3344	2687	0011846	0183	14491								
202		OBS	0127	0000	33446	2687			14492								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT IND.	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° ' 1/10		10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT	
31	540	EV	4844 N	04819 W		149	88	05	07	089	1965	002	9313	2195	12	34	5	4		X2	6	8	0079

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB			
		34	S16	081	044	039	7	08	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ△D DYN. M. X 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	NODC
		STD	0000	0350	3452	2748	0006150	0000	14641								
089		OBS	0000	0350	34520	2748			14641								
		STD	0010	0346	3452	2748	0006121	0006	14641								
		STD	0020	0344	3452	2748	0006111	0012	14642								
		STD	0030	0341	3452	2749	0006091	0018	14642								
		STD	0050	0338	3452	2749	0006087	0031	14644								
089		OBS	0065	0337	34519	2749			14646								
		STD	0075	0341	3455	2751	0005901	0046	14650								
		STD	0100	0349	3462	2756	0005470	0060	14658								
		STD	0125	0356	3469	2761	0005032	0073	14666								
		STD	0150	0362	3474	2764	0004736	0085	14674								
089		OBS	0174	0367	34790	2767			14680								
		STD	0200	0367	3480	2768	0004375	0108	14685								
		STD	0250	0366	3481	2769	0004335	0130	14693								
		STD	0300	0365	3482	2770	0004295	0151	14701								
		STD	0400	0363	3484	2772	0004216	0194	14717								
089		OBS	0404	0363	34842	2772			14717								
		STD	0500	0365	3486	2773	0004180	0236	14734								
		STD	0600	0367	3488	2774	0004161	0277	14752								
089		OBS	0610	0367	34878	2774			14754								
		STD	0700	0367	3489	2775	0004146	0319	14769								
		STD	0800	0365	3489	2776	0004210	0361	14785								
089		OBS	0820	0364	34894	2776			14788								
		STD	0900	0359	3489	2776	0004226	0403	14799								
		STD	1000	0354	3489	2777	0004252	0445	14813								
089		OBS	T1051	0352	34888	2777			14821								
		STD	1100	0350	3489	2777	0004308	0488	14828								
		STD	1200	0348	3489	2777	0004372	0532	14844								
089		OBS	T1243	0347	34885	2777			14851								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT IND.	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° ' 1/10		10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT	
31	540	EV	4839 N	04825 W		149	88	05	07	109	1965	002	9314	2085	13	01	4	3		X5	5	8	0080

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB			
		36	S18	095	056	050	5	08	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ△D DYN. M. X 10³	SOUND VELOCITY	O_2 ml	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	NODC
		STD	0000	0344	3449	2746	0006299	0000	14638								
109		OBS	0000	0344	34493	2746			14638								
		STD	0010	0344	3450	2746	0006279	0006	14640								
		STD	0020	0343	3450	2747	0006267	0013	14641								
		STD	0030	0342	3450	2747	0006247	0019	14642								
		STD	0050	0341	3451	2747	0006208	0031	14645								
		STD	0075	0340	3451	2748	0006170	0047	14649								
		STD	0100	0339	3452	2749	0006125	0062	14653								
109		OBS	0110	0338	34523	2749			14654								
		STD	0125	0343	3457	2752	0005810	0077	14659								
		STD	0150	0350	3464	2757	0005371	0091	14667								
		STD	0200	0361	3476	2766	0004620	0116	14682								
109		OBS	0221	0365	34794	2768			14687								
		STD	0250	0365	3480	2768	0004402	0139	14692								
		STD	0300	0365	3482	2770	0004294	0160	14701								
		STD	0400	0364	3485	2773	0004152	0203	14717								
109		OBS	T0441	0364	34857	2773			14724								
		STD	0500	0364	3486	2773	0004163	0244	14734								
		STD	0600	0364	3487	2774	0004175	0286	14751								
109		OBS	T0662	0364	34879	2775			14761								
		STD	0700	0364	3488	2775	0004187	0328	14767								
		STD	0800	0364	3489	2776	0004199	0370	14784								
109		OBS	0883	0362	34900	2777			14797								
		STD	0900	0361	3490	2777	0004168	0411	14800								
		STD	1000	0356	3490	2778	0004171	0453	14814								
		STD	1100	0352	3491	2778	0004184	0495	14829								
109		OBS	T1125	0351	34908	2778			14833								
		STD	1200	0349	3490	2778	0004281	0537	14845								
		STD	1300	0348	3489	2777	0004422	0581	14861								
109		OBS	T1324	0348	34888	2777			14865								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4835 N	04831 W		149	88	05	07	127	1965	002	9315	1866	12	35	3	4		X2	5	8	0081

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		36	S18	112	061	050	8	10	

MESSENGR TIME AT HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	OCS
		STD	0000	0264	3423	2732	0007591	0000	14600								
127		OBS	0000	0264	34230	2732			14600								
		STD	0010	0266	3427	2735	0007310	0007	14603								
		STD	0020	0268	3430	2738	0007105	0015	14606								
		STD	0030	0270	3433	2740	0006901	0022	14609								
127		OBS	0041	0272	34347	2741			14612								
		STD	0050	0262	3436	2743	0006622	0035	14609								
127		OBS	0052	0260	34362	2743			14609								
127		OBS	0072	0305	34500	2750			14633								
		STD	0075	0308	3451	2751	0005901	0051	14635								
		STD	0100	0327	3459	2755	0005490	0065	14649								
		STD	0125	0344	3466	2759	0005142	0078	14661								
		STD	0150	0359	3472	2763	0004857	0091	14672								
127		OBS	0181	0374	34783	2766			14685								
		STD	0200	0373	3479	2767	0004539	0114	14687								
		STD	0250	0371	3480	2768	0004486	0137	14695								
		STD	0300	0369	3481	2769	0004435	0159	14702								
		STD	0400	0365	3483	2771	0004329	0203	14717								
127		OBS	T0414	0364	34830	2771			14719								
		STD	0500	0367	3485	2772	0004291	0246	14735								
		STD	0600	0370	3487	2773	0004274	0289	14753								
127		OBS	T0621	0371	34870	2773			14757								
		STD	0700	0371	3488	2774	0004287	0332	14770								
		STD	0800	0369	3489	2775	0004285	0375	14786								
127		OBS	0828	0368	34889	2775			14791								
		STD	0900	0365	3489	2776	0004290	0417	14801								
		STD	1000	0360	3489	2776	0004318	0461	14816								
127		OBS	T1056	0357	34891	2777			14824								
		STD	1100	0359	3489	2776	0004378	0504	14832								
		STD	1200	0367	3489	2776	0004544	0549	14852								
127		OBS	T1242	0372	34895	2775			14862								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4829 N	04842 W		149	88	05	07	144	1965	002	9316	1646	12	36	3	3		X4	4	6	0082

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		36	S16	122	072	056	7	11	

MESSENGR TIME AT HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	OCS
		STD	0000	0110	3359	2693	0011362	0000	14523								
144		OBS	0000	0110	33588	2693			14523								
		STD	0010	0109	3360	2694	0011244	0011	14525								
		STD	0020	0108	3362	2695	0011124	0022	14526								
144		OBS	0021	0108	33619	2695			14526								
		STD	0030	0095	3370	2703	0010423	0033	14523								
144		OBS	0031	0094	33714	2704			14523								
		STD	0050	0126	3390	2717	0009098	0053	14543								
144		OBS	0057	0139	33963	2721			14551								
		STD	0075	0182	3412	2730	0007823	0074	14575								
		STD	0100	0236	3431	2741	0006813	0092	14605								
		STD	0125	0281	3447	2750	0005998	0108	14631								
144		OBS	0129	0287	34489	2751			14635								
		STD	0150	0308	3456	2755	0005578	0123	14648								
		STD	0200	0349	3470	2762	0004952	0149	14676								
		STD	0250	0376	3479	2767	0004590	0173	14697								
144		OBS	0259	0380	34807	2768			14700								
		STD	0300	0379	3481	2768	0004513	0196	14706								
		STD	0400	0376	3482	2769	0004503	0241	14722								
144		OBS	T0414	0375	34820	2769			14724								
		STD	0500	0373	3484	2771	0004412	0285	14738								
		STD	0600	0371	3485	2772	0004405	0329	14754								
144		OBS	T0621	0371	34855	2772			14757								
		STD	0700	0371	3487	2773	0004377	0373	14770								
		STD	0800	0371	3488	2774	0004375	0417	14787								
144		OBS	0828	0371	34880	2774			14792								
		STD	0900	0366	3488	2775	0004366	0461	14802								
		STD	1000	0360	3489	2776	0004359	0504	14816								
144		OBS	T1056	0358	34886	2776			14824								
		STD	1100	0356	3489	2776	0004387	0548	14831								
		STD	1200	0354	3489	2777	0004430	0592	14847								
144		OBS	T1242	0353	34888	2777			14853								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4821 N	04854 W		149	88	05	07	161	1965	002	9317	1097	09	36	5	3		X4	4	5	0083

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		35	S12	125	039	028	7	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0109	3346	2683	0012300	0000	14521								
161		OBS	0000	0109	33464	2683			14521								
		STD	0010	0098	3352	2688	0011808	0012	14519								
161		OBS	0019	0090	33566	2692			14517								
		STD	0020	0092	3357	2692	0011393	0024	14518								
		STD	0030	0107	3365	2698	0010875	0035	14528								
		STD	0050	0137	3381	2709	0009853	0056	14547								
		STD	0075	0172	3398	2720	0008811	0079	14569								
		STD	0100	0204	3414	2730	0007846	0100	14589								
		STD	0125	0234	3428	2739	0007036	0118	14608								
		STD	0150	0260	3440	2746	0006360	0135	14625								
161		OBS	0195	0301	34576	2757			14653								
		STD	0200	0304	3458	2757	0005427	0164	14655								
		STD	0250	0333	3466	2760	0005137	0191	14677								
		STD	0300	0356	3472	2763	0004955	0216	14696								
161		OBS	T0341	0370	34760	2765			14709								
		STD	0400	0370	3478	2767	0004721	0265	14719								
		STD	0500	0370	3482	2770	0004525	0311	14736								
161		OBS	0568	0370	34846	2772			14748								
169		OBS	T0584	0370	34838	2771			14750								
		STD	0600	0370	3484	2771	0004463	0356	14753								
		STD	0700	0369	3486	2773	0004396	0400	14769								
169		OBS	0782	0369	34871	2774			14783								
		STD	0800	0371	3487	2774	0004404	0444	14787								
		STD	0900	0384	3488	2773	0004569	0489	14809								
169		OBS	T0905	0385	34884	2773			14810								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4814 N	04903 W		149	89	05	07	185	1965	002	9318	0320	03	34	5	3		X1	7	7	0084

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	S12	129	022	011	7	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	-0016	3303	2655	0014975	0000	14458								
185		OBS	0000	-0016	33029	2655			14458								
		STD	0010	-0023	3303	2655	0014936	0015	14457								
		STD	0020	-0029	3304	2656	0014829	0030	14456								
185		OBS	0029	-0035	33054	2657			14455								
		STD	0030	-0042	3306	2658	0014620	0045	14452								
185		OBS	0040	-0100	33082	2662			14427								
		STD	0050	-0090	3309	2662	0014204	0073	14433								
185		OBS	0073	-0071	33275	2677			14448								
		STD	0075	-0070	3331	2679	0012581	0107	14450								
185		OBS	0083	-0064	33431	2689			14455								
185		OBS	0088	0080	33505	2688			14523								
185		OBS	0098	0062	33611	2697			14518								
		STD	0100	0062	3363	2699	0010764	0136	14519								
185		OBS	0107	0063	33698	2704			14521								
		STD	0125	0102	3384	2713	0009410	0161	14544								
		STD	0150	0152	3403	2725	0008311	0183	14573								
		STD	0200	0239	3435	2744	0006587	0221	14624								
185		OBS	0219	0267	34445	2749			14640								
		STD	0250	0307	3458	2757	0005490	0251	14665								
		STD	0300	0358	3474	2764	0004825	0277	14697								
185		OBS	T0316	0370	34778	2766			14705								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1. 10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4807 N	04912 W		149	89	05	07	199	1965	002	9319	0230	02	33	5	3		X2	7	8	0085

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	S18	135	022	017	7	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	-0053	3286	2643	0016106	0000	14439								
199		OBS	0000	-0053	32862	2643			14439								
		STD	0010	-0064	3287	2643	0016031	0016	14435								
		STD	0020	-0075	3287	2644	0015949	0032	14432								
		STD	0030	-0086	3288	2645	0015875	0048	14429								
199		OBS	0045	-0101	32882	2646			14424								
		STD	0050	-0106	3289	2647	0015684	0080	14423								
		STD	0075	-0131	3296	2653	0015057	0118	14416								
199		OBS	0088	-0142	32996	2656			14414								
		STD	0100	-0151	3302	2659	0014524	0155	14412								
		STD	0125	-0170	3310	2666	0013844	0190	14408								
199		OBS	0135	-0177	33144	2669			14407								
		STD	0150	-0101	3323	2674	0013040	0224	14446								
199		OBS	0150	-0101	33230	2674			14446								
199		OBS	0170	0019	33480	2689			14509								
		STD	0200	0114	3375	2705	0010178	0282	14560								
199		OBS	T0225	0116	33887	2716			14567								

PEFERENCE CTRY CODE	PEFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4800 N	04925 W		149	89	05	07	213	1965	002	9320	0165	02	32	5	4		X2	4	8	0086

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		33	S16	142	022	017	7	06	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	-0011	3282	2637	0016625	0000	14458								
213		OBS	0000	-0011	32816	2637			14458								
		STD	0010	-0012	3282	2637	0016618	0017	14459								
		STD	0020	-0013	3282	2637	0016602	0033	14460								
213		OBS	0024	-0013	32817	2637			14461								
		STD	0030	-0028	3283	2639	0016435	0050	14455								
213		OBS	0048	-0075	32888	2646			14437								
		STD	0050	-0082	3289	2646	0015763	0082	14434								
213		OBS	0072	-0138	32978	2655			14413								
		STD	0075	-0137	3299	2656	0014810	0120	14414								
		STD	0100	-0121	3309	2663	0014074	0156	14427								
213		OBS	0120	-0096	33205	2672			14443								
		STD	0125	-0088	3324	2674	0013023	0190	14448								
		STD	0150	-0038	3343	2688	0011766	0221	14478								
213		OBS	T0161	-0011	33531	2695			14494								

PEFERENCE CTRY CODE	PEFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4752 N	04936 W		149	79	05	07	226	1965	002	9321	0163	02	33	3	5		X7	5	8	0087

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	S22	152	017	011	7	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	-0080	3282	2640	0016341	0000	14426								
226		OBS	0000	-0080	32819	2640			14426								
		STD	0010	-0077	3282	2640	0016339	0016	14429								
		STD	0020	-0074	3282	2640	0016329	0033	14432								
		STD	0030	-0070	3282	2640	0016327	0049	14435								
226		OBS	0031	-0070	32823	2640			14435								
		STD	0050	-0090	3284	2642	0016120	0081	14430								
		STD	0075	-0115	3292	2650	0015410	0121	14423								
		STD	0100	-0141	3305	2661	0014322	0158	14417								
226		OBS	0104	-0145	33072	2663			14416								
		STD	0125	-0097	3323	2674	0013068	0192	14444								
		STD	0150	0001	3348	2690	0011570	0223	14497								
226		OBS	T0155	0026	33533	2693			14510								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4738 N	04857 W		149	78	05	08	017	1965	002	9322	0152	01	34	6	4		X7	5	8	0088

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	S18	146	006	000	7	05	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma \Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_3-N µg-at/l	NO_2-N µg-at/l	SiO_4-Si µg-at/l	pH	SCT
		STD	0000	-0074	3284	2641	0016239	0000	14429								
017		OBS	0000	-0074	32835	2641			14429								
		STD	0010	-0078	3284	2642	0016197	0016	14428								
		STD	0020	-0084	3284	2642	0016156	0032	14427								
		STD	0030	-0092	3284	2643	0016101	0049	14425								
		STD	0050	-0112	3285	2644	0015988	0081	14419								
017		OBS	0052	-0114	32849	2644			14419								
017		OBS	0072	-0141	32977	2655			14411								
		STD	0075	-0135	3302	2658	0014585	0119	14415								
		STD	0100	-0084	3330	2679	0012592	0153	14447								
		STD	0125	-0026	3350	2693	0011295	0183	14481								
017		OBS	0128	-0018	33512	2694			14485								
017		OBS	T0149	0038	33590	2697			14515								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4745 N	04845 W		149	78	05	08	032	1965	002	9323	0186	02	33	3	3		X2	5	8	0089

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		33	S14	142	022	017	7	05	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma \Delta D$ DYN. M x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_3-N µg-at/l	NO_2-N µg-at/l	SiO_4-Si µg-at/l	pH	SCT
		STD	0000	-0054	3288	2644	0015980	0000	14439								
032		OBS	0000	-0054	32878	2644			14439								
		STD	0010	-0056	3288	2644	0015976	0016	14439								
		STD	0020	-0058	3288	2644	0015979	0032	14440								
032		OBS	0026	-0059	32874	2644			14440								
		STD	0030	-0072	3288	2645	0015885	0048	14435								
		STD	0050	-0123	3293	2651	0015327	0079	14415								
		STD	0075	-0153	3302	2659	0014537	0116	14407								
032		OBS	0088	-0154	33077	2663			14409								
		STD	0100	-0100	3321	2672	0013224	0151	14438								
		STD	0125	-0015	3343	2687	0011879	0183	14485								
		STD	0150	0036	3356	2695	0011145	0211	14514								
032		OBS	0166	0050	33604	2698			14524								
032		OBS	T0181	0050	33610	2698			14526								

REFERENCE CTRY CODE	REFERENCE ID. NO	SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4750 N	04833 W		149	78	05	08	045	1965	002	9324	0221	02	35	3	3		X4	7	3	0090

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S18	142	011	011	7	07	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma \Delta D$ DYN. M x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at	TOTAL-P µg-at	NO_3-N µg-at	NO_2-N µg-at	SiO_4-Si µg-at	pH	SCT
		STD	0000	-0079	3286	2643	0016030	0000	14427								
045		OBS	0000	-0079	32860	2643			14427								
		STD	0010	-0082	3286	2644	0015992	0016	14427								
		STD	0020	-0086	3287	2644	0015950	0032	14427								
		STD	0030	-0091	3287	2645	0015905	0048	14426								
045		OBS	0030	-0091	32869	2645			14426								
		STD	0050	-0106	3290	2648	0015615	0079	14423								
		STD	0075	-0125	3294	2651	0015266	0118	14419								
045		OBS	0091	-0137	32959	2653			14416								
		STD	0100	-0128	3300	2656	0014742	0156	14422								
		STD	0125	-0103	3314	2667	0013735	0191	14440								
045		OBS	0132	-0096	33194	2671			14445								
		STD	0150	-0015	3337	2682	0012330	0224	14488								
045		OBS	T0168	0034	33508	2691			14515								
045		OBS	0193	0047	33655	2702			14528								
		STD	0200	0066	3373	2707	0010024	0280	14538								
045		OBS	T0218	0144	33973	2721			14580								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR,1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4759 N	04821 W		149	78	05	08	058	1965	002	9325	0282	03	35	4	3		X4	4	3		0091

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		35	S10	146	072	067	7	06	

MESSENGR TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	QQQ
		STD	0000	-0052	3284	2641	0016278	0000	14439								
058		OBS	0000	-0052	32840	2641			14439								
		STD	0010	-0055	3284	2641	0016240	0016	14439								
		STD	0020	-0058	3285	2642	0016202	0032	14440								
058		OBS	0025	-0059	32847	2642			14440								
		STD	0030	-0078	3286	2643	0016017	0049	14432								
		STD	0050	-0134	3292	2650	0015373	0080	14410								
058		OBS	0051	-0136	32923	2650			14409								
		STD	0075	-0143	3301	2658	0014640	0117	14411								
058		OBS	0091	-0148	33086	2664			14412								
		STD	0100	-0112	3320	2672	0013260	0152	14432								
		STD	0125	-0022	3348	2691	0011466	0183	14482								
		STD	0150	0054	3371	2706	0010107	0210	14524								
		STD	0200	0161	3405	2726	0008238	0256	14585								
058		OBS	T0223	0191	34154	2732			14604								
		STD	0250	0210	3422	2736	0007351	0295	14618								
058		OBS	T0274	0213	34243	2738			14623								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR,1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4805 N	04812 W		149	88	05	08	075	1965	002	9326	0413	04	35	4	4		X1	7	6		0092

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		35	S13	149	022	017	7	07	

MESSENGR TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	QQQ
		STD	0000	-0031	3287	2643	0016122	0000	14449								
075		OBS	0000	-0031	32871	2643			14449								
		STD	0010	-0032	3287	2643	0016114	0016	14450								
075		OBS	0010	-0032	32871	2643			14450								
		STD	0020	-0113	3292	2649	0015452	0032	14415								
075		OBS	0026	-0142	32947	2652			14403								
		STD	0030	-0148	3297	2654	0014967	0047	14401								
075		OBS	0036	-0156	33000	2657			14398								
		STD	0050	-0106	3318	2670	0013462	0076	14427								
		STD	0075	-0024	3347	2690	0011547	0107	14473								
		STD	0100	0051	3373	2708	0009940	0134	14515								
		STD	0125	0117	3396	2722	0008597	0157	14552								
		STD	0150	0175	3416	2734	0007495	0177	14585								
075		OBS	T0166	0208	34271	2740			14604								
		STD	0200	0265	3445	2750	0006056	0211	14636								
075		OBS	0233	0310	34594	2757			14663								
		STD	0250	0329	3465	2760	0005174	0239	14675								
		STD	0300	0368	3478	2767	0004627	0263	14702								
		STD	0400	0372	3478	2766	0004735	0310	14720								
075		OBS	T0400	0372	34783	2766			14720								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4810 N	04759 W		149	87	05	08	094	1965	002	9327	1042	09	35	5	4		X1	0	2		0093

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		35	S13	152	044	033	7	12	

MESSENGR TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–$x10^7$	$\Sigma\Delta D$ DYN. M $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	STUD
		STD	0000	0125	3367	2698	0010862	0000	14531								
094		OBS	0000	0125	33666	2698			14531								
		STD	0010	0129	3371	2701	0010555	0011	14535								
		STD	0020	0134	3376	2705	0010205	0021	14539								
094		OBS	0026	0136	33805	2708			14542								
		STD	0030	0153	3385	2711	0009653	0031	14551								
094		OBS	0041	0186	33936	2715			14569								
		STD	0050	0187	3395	2716	0009168	0050	14571								
094		OBS	0061	0188	33958	2717			14573								
094		OBS	0072	0303	34401	2743			14631								
		STD	0075	0304	3440	2743	0006668	0070	14632								
		STD	0100	0307	3442	2744	0006598	0086	14638								
		STD	0125	0311	3444	2745	0006522	0103	14644								
094		OBS	0144	0314	34448	2745			14648								
		STD	0150	0315	3447	2747	0006318	0119	14650								
		STD	0200	0322	3460	2757	0005443	0148	14663								
094		OBS	0215	0324	34635	2759			14667								
		STD	0250	0349	3470	2762	0004993	0174	14684								
094		OBS	0283	0366	34755	2765			14698								
		STD	0300	0368	3477	2766	0004702	0198	14701								
		STD	0400	0375	3482	2769	0004490	0244	14722								
094		OBS	T0410	0376	34823	2769			14724								
		STD	0500	0378	3484	2770	0004464	0289	14740								
		STD	0600	0381	3486	2772	0004432	0334	14758								
094		OBS	T0615	0381	34862	2772			14760								
		STD	0700	0378	3487	2773	0004419	0378	14773								
		STD	0800	0375	3488	2774	0004395	0422	14789								
094		OBS	T0820	0374	34884	2774			14792								
094		OBS	T0891	0374	34885	2774			14804								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4817 N	04745 W		149	87	05	08	113	1965	002	9328	1573	12	01	6	2		X1	4	2		0094

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		34	S10	156	039	033	8	10	

MESSENGR TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–$x10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	STUD
		STD	0000	0216	3401	2719	0008879	0000	14576								
113		OBS	0000	0216	34010	2719			14576								
		STD	0010	0217	3403	2720	0008777	0009	14578								
113		OBS	0010	0217	34025	2720			14578								
		STD	0020	0232	3415	2729	0007949	0017	14588								
		STD	0030	0247	3426	2736	0007239	0025	14598								
		STD	0050	0276	3438	2743	0006588	0039	14616								
113		OBS	0062	0294	34396	2743			14626								
		STD	0075	0247	3437	2745	0006436	0055	14607								
113		OBS	0078	0238	34361	2745			14603								
		STD	0100	0265	3444	2749	0006071	0071	14620								
		STD	0125	0292	3452	2753	0005718	0085	14637								
		STD	0150	0316	3460	2757	0005351	0099	14652								
		STD	0200	0354	3472	2763	0004851	0125	14678								
113		OBS	0207	0358	34730	2764			14681								
		STD	0250	0360	3476	2766	0004654	0148	14690								
		STD	0300	0363	3478	2767	0004571	0171	14699								
		STD	0400	0367	3482	2770	0004409	0216	14718								
113		OBS	T0414	0368	34825	2770			14721								
		STD	0500	0365	3483	2771	0004398	0260	14734								
		STD	0600	0362	3484	2772	0004374	0304	14749								
113		OBS	T0621	0361	34846	2773			14753								
		STD	0700	0364	3486	2773	0004332	0348	14767								
		STD	0800	0367	3487	2774	0004382	0391	14785								
113		OBS	0828	0368	34872	2774			14790								
		STD	0900	0366	3488	2775	0004374	0435	14802								
		STD	1000	0363	3489	2776	0004342	0479	14817								
113		OBS	T1056	0361	34899	2777			14826								
		STD	1100	0359	3490	2777	0004349	0522	14832								
		STD	1200	0354	3489	2777	0004415	0566	14847								
113		OBS	T1242	0351	34887	2777			14853								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DUPLT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4827 N	04723 W		149	87	05	08	141	1965	002	9329	2158	12	01	5	2		X1	8	7	0095

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S12	163	039	033	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0330	3435	2736	0007265	0000	14630								
141		OBS	0000	0330	34348	2736			14630								
		STD	0010	0328	3436	2737	0007162	0007	14631								
		STD	0020	0326	3437	2738	0007074	0014	14632								
		STD	0030	0323	3439	2740	0006910	0021	14633								
		STD	0050	0319	3444	2744	0006508	0035	14635								
		STD	0075	0313	3453	2752	0005798	0050	14638								
141		OBS	0081	0312	34552	2754			14639								
		STD	0100	0355	3465	2758	0005302	0064	14661								
141		OBS	0104	0363	34668	2758			14666								
		STD	0125	0364	3469	2760	0005112	0077	14670								
		STD	0150	0366	3472	2762	0004922	0090	14675								
		STD	0200	0369	3477	2766	0004619	0113	14685								
		STD	0250	0371	3480	2768	0004468	0136	14695								
141		OBS	0261	0372	34807	2768			14697								
		STD	0300	0373	3482	2769	0004379	0158	14704								
141		OBS	T0380	0375	34835	2770			14718								
		STD	0400	0375	3484	2771	0004342	0202	14722								
		STD	0500	0376	3486	2772	0004294	0245	14739								
141		OBS	T0575	0377	34871	2773			14752								
		STD	0600	0376	3487	2773	0004292	0288	14756								
		STD	0700	0371	3488	2774	0004280	0331	14770								
141		OBS	0771	0368	34882	2775			14781								
		STD	0800	0367	3488	2775	0004285	0374	14785								
		STD	0900	0363	3489	2776	0004287	0417	14800								
141		OBS	T0988	0360	34892	2776			14814								
		STD	1000	0360	3489	2776	0004307	0459	14816								
		STD	1100	0356	3489	2777	0004335	0503	14831								
141		OBS	T1163	0353	34894	2777			14840								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DUPLT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4818 N	04649 W		149	86	05	08	167	1965	002	9330	1372	12	85	0	4		X1	2	2	0096

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S12	159	044	033	7	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0250	3396	2712	0009490	0000	14590								
167		OBS	0000	0250	33964	2712			14590								
		STD	0010	0237	3397	2714	0009387	0009	14586								
		STD	0020	0224	3397	2715	0009284	0019	14582								
167		OBS	0021	0223	33966	2715			14582								
		STD	0030	0252	3414	2726	0008190	0028	14599								
167		OBS	0031	0255	34161	2728			14600								
		STD	0050	0252	3424	2734	0007446	0043	14603								
		STD	0075	0248	3436	2744	0006522	0061	14607								
167		OBS	0077	0248	34367	2745			14608								
		STD	0100	0293	3451	2752	0005786	0076	14633								
167		OBS	0122	0330	34634	2759			14654								
		STD	0125	0331	3464	2759	0005169	0090	14655								
		STD	0150	0338	3468	2762	0004955	0102	14663								
		STD	0200	0352	3475	2766	0004608	0126	14678								
		STD	0250	0366	3480	2768	0004417	0149	14693								
		STD	0300	0381	3483	2769	0004383	0171	14708								
167		OBS	0305	0382	34831	2769			14709								
		STD	0400	0366	3484	2771	0004261	0214	14718								
167		OBS	T0407	0365	34838	2771			14719								
		STD	0500	0371	3486	2773	0004232	0256	14737								
		STD	0600	0377	3488	2774	0004238	0299	14756								
167		OBS	T0609	0377	34884	2774			14758								
		STD	0700	0372	3489	2775	0004202	0341	14771								
		STD	0800	0367	3490	2776	0004159	0383	14786								
167		OBS	0810	0366	34902	2776			14787								
		STD	0900	0360	3490	2777	0004149	0424	14799								
		STD	1000	0355	3490	2778	0004175	0466	14814								
167		OBS	T1034	0354	34902	2778			14819								
		STD	1100	0352	3490	2778	0004214	0508	14829								
		STD	1200	0349	3490	2778	0004251	0550	14845								
167		OBS	T1217	0349	34904	2778			14848								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DUPE INDEX	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR, 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4810 N	04626 W		149	86	05	08	190	1965	002	9331	1317	11	35	6	3		X1	2	3	0097

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S13	159	044	038	8	10	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QUAL
		STD	0000	0270	3404	2717	0009076	0000	14600								
190		OBS	0000	0270	34040	2717			14600								
		STD	0010	0239	3405	2720	0008772	0009	14588								
		STD	0020	0217	3406	2722	0008555	0018	14580								
		STD	0030	0203	3406	2724	0008393	0026	14576								
190		OBS	0047	0201	34076	2725			14578								
		STD	0050	0204	3410	2727	0008128	0043	14580								
190		OBS	00580	0213	34151	2730			14586								
		STD	0075	0245	3429	2739	0007024	0062	14605								
		STD	0100	0286	3447	2750	0006026	0078	14629								
		STD	0125	0319	3462	2759	0005209	0092	14650								
190		OBS	0129	0324	34641	2760			14653								
		STD	0150	0333	3467	2761	0004983	0105	14660								
		STD	0200	0352	3473	2764	0004756	0129	14678								
		STD	0250	0366	3478	2767	0004563	0152	14692								
190		OBS	0276	0371	34798	2768			14699								
		STD	0300	0373	3481	2768	0004454	0175	14704								
190		OBS	T0367	0378	34846	2771			14718								
		STD	0400	0378	3486	2772	0004223	0218	14723								
		STD	0500	0376	3488	2774	0004142	0260	14739								
190		OBS	T0549	0375	34892	2775			14747								
		STD	0600	0373	3489	2775	0004102	0301	14755								
		STD	0700	0369	3489	2776	0004139	0342	14770								
190		OBS	0731	0368	34894	2776			14774								
		STD	0800	0367	3490	2776	0004196	0384	14786								
		STD	0900	0363	3490	2776	0004221	0426	14801								
190		OBS	T0935	0361	34898	2777			14806								
		STD	1000	0356	3490	2777	0004201	0468	14814								
		STD	1100	0347	3490	2778	0004177	0510	14827								
190		OBS	T1102	0347	34901	2778			14828								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DUPE INDEX	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR, 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF SMPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4759 N	04600 W		149	76	05	08	216	1965	002	9332	0914	08	33	3	2		X6	3	8	0098

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	S20	159	044	039	7	07	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	QUAL
		STD	0000	0381	3426	2724	0008423	0000	14651								
216		OBS	0000	0381	34257	2724			14651								
		STD	0010	0380	3425	2723	0008453	0008	14652								
216		OBS	0011	0380	34253	2723			14652								
216		OBS	0019	0379	34254	2724			14653								
		STD	0020	0379	3426	2724	0008399	0017	14653								
		STD	0030	0380	3431	2728	0008043	0025	14656								
		STD	0050	0383	3441	2736	0007330	0040	14662								
		STD	0075	0386	3452	2744	0006554	0058	14668								
		STD	0100	0388	3462	2752	0005854	0073	14675								
		STD	0125	0391	3470	2758	0005305	0087	14681								
		STD	0150	0394	3478	2764	0004756	0100	14688								
216		OBS	0166	0396	34818	2767			14692								
		STD	0200	0391	3483	2768	0004397	0123	14695								
		STD	0250	0384	3485	2771	0004222	0144	14701								
		STD	0300	0378	3486	2772	0004131	0165	14707								
216		OBS	T0383	0370	34878	2774			14717								
		STD	0400	0370	3488	2774	0003989	0206	14720								
		STD	0500	0366	3488	2775	0004035	0246	14735								
216		OBS	0583	0362	34886	2776			14747								
		STD	0600	0361	3489	2776	0003994	0286	14750								
		STD	0700	0355	3489	2777	0004013	0326	14764								
216		OBS	0773	0349	34891	2777			14773								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4740 N	04600 W		149	76	05	09	004	1965	002	9333	0570	06	30	5	2		X2	8	8		0099

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		34	S12	152	039	028	8	06	

MESSENGR TIME of HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ△D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0344	3429	2730	0007844	0000	14635								
004		OBS	0000	0344	34288	2730			14635								
		STD	0010	0339	3429	2730	0007789	0008	14635								
		STD	0020	0334	3429	2731	0007734	0016	14634								
		STD	0030	0328	3429	2732	0007680	0023	14634								
		STD	0050	0318	3430	2733	0007571	0039	14633								
004		OBS	0052	0317	34298	2733			14632								
		STD	0075	0332	3442	2741	0006797	0056	14644								
004		OBS	0098	0346	34535	2749			14656								
		STD	0100	0346	3454	2750	0006046	0073	14656								
		STD	0125	0350	3460	2754	0005655	0087	14663								
		STD	0150	0355	3465	2758	0005340	0101	14669								
		STD	0200	0363	3475	2765	0004713	0126	14682								
		STD	0250	0371	3482	2769	0004314	0149	14695								
		STD	0300	0379	3486	2772	0004144	0170	14707								
004		OBS	T0323	0383	34879	2773			14713								
		STD	0400	0371	3489	2775	0003925	0210	14721								
004		OBS	T0414	0370	34894	2775			14723								
		STD	0500	0368	3489	2776	0003949	0249	14736								
004		OBS	T0560	0366	34893	2776			14745								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4738 N	04615 W		149	76	05	09	021	1965	002	9334	0410	04	32	5	2		X2	8	8		0100

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		02	S11	146	044	033	8	06	

MESSENGR TIME of HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ△D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0377	3435	2732	0007654	0000	14650								
021		OBS	0000	0377	34354	2732			14650								
		STD	0010	0378	3439	2735	0007398	0008	14653								
		STD	0020	0378	3443	2738	0007110	0015	14655								
		STD	0030	0379	3446	2740	0006899	0022	14657								
		STD	0050	0380	3451	2744	0006551	0035	14662								
		STD	0075	0381	3455	2747	0006287	0051	14667								
021		OBS	0088	0382	34563	2748			14670								
		STD	0100	0368	3456	2749	0006104	0067	14666								
021		OBS	0122	0349	34557	2751			14661								
		STD	0125	0352	3457	2751	0005895	0082	14663								
		STD	0150	0369	3465	2756	0005481	0096	14675								
		STD	0200	0387	3477	2764	0004806	0122	14693								
021		OBS	T0222	0388	34801	2766			14697								
		STD	0250	0378	3481	2768	0004460	0145	14698								
021		OBS	T0273	0372	34819	2769			14699								
		STD	0300	0373	3483	2770	0004299	0167	14704								
021		OBS	T0387	0374	34859	2772			14720								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4734 N	04634 W		149	76	05	09	063	1965	002	9335	1152	11	32	5	4		X2	6	8		0101

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S14	149	028	017	8	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	ΣΔD DYN. M. X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0283	3408	2719	0008881	0000	14606								
063		OBS	0000	0283	34080	2719			14606								
		STD	0010	0330	3423	2727	0008162	0009	14630								
063		OBS	0014	0341	34273	2729			14636								
		STD	0020	0322	3428	2732	0007691	0016	14629								
		STD	0030	0302	3430	2735	0007386	0024	14622								
063		OBS	0042	0296	34323	2737			14622								
		STD	0050	0312	3438	2740	0006899	0038	14631								
063		OBS	0065	0339	34479	2745			14646								
		STD	0075	0343	3451	2748	0006221	0055	14650								
		STD	0100	0351	3458	2752	0005790	0070	14659								
		STD	0125	0358	3464	2756	0005427	0084	14667								
		STD	0150	0365	3469	2760	0005141	0097	14674								
		STD	0200	0373	3477	2765	0004664	0121	14687								
063		OBS	0223	0376	34799	2767			14692								
		STD	0250	0374	3481	2768	0004419	0144	14696								
		STD	0300	0372	3482	2769	0004369	0166	14704								
063		OBS	T0366	0370	34834	2771			14714								
		STD	0400	0371	3484	2771	0004299	0209	14720								
		STD	0500	0374	3487	2773	0004199	0252	14738								
063		OBS	0551	0376	34880	2774			14748								
		STD	0600	0374	3488	2774	0004180	0294	14755								
		STD	0700	0370	3489	2775	0004165	0336	14770								
063		OBS	0746	0368	34896	2776			14777								
		STD	0800	0365	3490	2776	0004136	0377	14785								
		STD	0900	0359	3490	2777	0004152	0419	14799								
063		OBS	0961	0356	34903	2778			14808								
		STD	1000	0354	3490	2778	0004155	0460	14814								
063		OBS	1085	0350	34903	2778			14826								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DA	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4733 N	04645 W		149	76	05	09	079	1965	002	9336	1161	11	31	3	3		X2	6	8		0102

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S17	149	033	022	8	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	ΣΔD DYN. M. X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0194	3376	2701	0010612	0000	14563								
079		OBS	0000	0194	33760	2701			14563								
		STD	0010	0191	3379	2703	0010371	0010	14564								
		STD	0020	0187	3382	2706	0010137	0021	14564								
079		OBS	0029	0184	33843	2708			14565								
		STD	0030	0185	3385	2708	0009876	0031	14565								
079		OBS	0048	0204	34062	2724			14579								
		STD	0050	0224	3411	2726	0008205	0049	14589								
079		OBS	0070	0319	34379	2739			14637								
		STD	0075	0303	3437	2740	0006912	0068	14631								
079		OBS	0083	0281	34363	2742			14623								
		STD	0100	0253	3437	2745	0006499	0084	14614								
079		OBS	0102	0252	34378	2745			14614								
		STD	0125	0295	3456	2756	0005444	0099	14639								
079		OBS	0148	0332	34712	2765			14660								
		STD	0150	0333	3471	2765	0004660	0112	14661								
		STD	0200	0346	3474	2765	0004630	0135	14675								
		STD	0250	0358	3476	2766	0004603	0158	14689								
		STD	0300	0367	3479	2767	0004542	0181	14701								
079		OBS	T0373	0376	34827	2770			14718								
		STD	0400	0376	3483	2770	0004426	0226	14722								
		STD	0500	0376	3486	2772	0004291	0270	14739								
079		OBS	T0559	0376	34868	2773			14749								
		STD	0600	0375	3487	2773	0004295	0313	14755								
		STD	0700	0371	3488	2774	0004265	0355	14770								
079		OBS	0758	0368	34886	2775			14779								
		STD	0800	0365	3489	2776	0004210	0398	14785								
		STD	0900	0359	3489	2776	0004226	0440	14799								
079		OBS	T0977	0356	34891	2777			14810								
		STD	1000	0355	3489	2777	0004248	0482	14814								
079		OBS	T1065	0354	34893	2777			14824								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICA	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4734 N	04659 W		149	76	05	09	094	1965	002	9337	1097	09	32	3	3		X1	6	6		0103

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S08	159	017	011	8	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$x10^7$	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0139	3357	2689	0011711	0000	14536								
094		OBS	0000	0139	33566	2689			14536								
		STD	0010	0138	3360	2692	0011446	0012	14537								
		STD	0020	0136	3364	2695	0011135	0023	14539								
		STD	0030	0135	3368	2698	0010825	0034	14541								
094		OBS	0039	0134	33719	2702			14542								
		STD	0050	0152	3380	2707	0010030	0055	14553								
		STD	0075	0190	3398	2718	0008942	0078	14577								
		STD	0100	0225	3415	2729	0007933	0100	14598								
		STD	0125	0256	3429	2738	0007142	0118	14618								
		STD	0150	0284	3442	2746	0006417	0135	14636								
		STD	0200	0329	3463	2758	0005293	0165	14666								
094		OBS	0200	0329	34629	2758			14666								
		STD	0250	0346	3469	2762	0005039	0190	14683								
		STD	0300	0360	3474	2764	0004846	0215	14698								
094		OBS	T0378	0376	34799	2767			14718								
		STD	0400	0378	3481	2768	0004596	0262	14723								
		STD	0500	0383	3485	2771	0004442	0308	14742								
094		OBS	0561	0384	34864	2772			14753								
		STD	0600	0382	3487	2772	0004373	0352	14758								
		STD	0700	0378	3488	2774	0004344	0395	14773								
094		OBS	0731	0376	34881	2774			14778								
		STD	0800	0372	3489	2775	0004319	0438	14788								
094		OBS	T0852	0369	34889	2775			14795								
094		OBS	0860	0362	34887	2776			14793								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICA	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4729 N	04715 W		149	77	05	09	113	1965	002	9338	0649	05	31	3	3		X7	6	6		0104

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S10	161	039	022	7	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$x10^7$	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0062	3345	2685	0012123	0000	14500								
113		OBS	0000	0062	33452	2685			14500								
		STD	0010	0057	3345	2685	0012118	0012	14499								
113		OBS	0018	0053	33447	2685			14499								
		STD	0020	0058	3346	2686	0012039	0024	14501								
		STD	0030	0079	3351	2688	0011774	0036	14513								
113		OBS	0044	0108	33590	2693			14530								
		STD	0050	0114	3363	2696	0011072	0059	14534								
		STD	0075	0141	3381	2708	0009885	0085	14553								
		STD	0100	0167	3397	2719	0008858	0109	14570								
		STD	0125	0194	3412	2729	0007931	0130	14589								
		STD	0150	0221	3425	2738	0007169	0148	14606								
113		OBS	0185	0258	34409	2747			14630								
		STD	0200	0278	3447	2750	0006019	0181	14642								
		STD	0250	0331	3463	2758	0005343	0210	14676								
113		OBS	T0261	0340	34659	2760			14682								
		STD	0300	0355	3470	2762	0005095	0236	14695								
113		OBS	0353	0370	34755	2764			14711								
		STD	0400	0372	3479	2767	0004677	0285	14720								
		STD	0500	0375	3484	2771	0004427	0330	14738								
113		OBS	T0540	0376	34847	2771			14746								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4726 N	04726 W		149	77	05	09	129	1965	002	9339	0293	03	30	3	2		X2	7	8	0105

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		30	S16	169	044	028	8	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	DUP
		STD	0000	-0014	3295	2648	0015587	0000	14458								
129		OBS	0000	-0014	32950	2648			14458								
		STD	0010	-0015	3295	2648	0015565	0016	14459								
		STD	0020	-0016	3295	2649	0015542	0031	14461								
		STD	0030	-0017	3296	2649	0015511	0047	14462								
129		OBS	0032	-0017	32957	2649			14462								
		STD	0050	-0027	3304	2656	0014827	0077	14462								
129		OBS	0063	-0034	33108	2662			14461								
129		OBS	0072	-0110	33165	2669			14428								
		STD	0075	-0089	3320	2671	0013352	0112	14439								
129		OBS	0088	-0011	33338	2679			14479								
		STD	0100	-0002	3339	2683	0012253	0144	14486								
		STD	0125	0023	3352	2692	0011383	0174	14504								
		STD	0150	0055	3366	2702	0010492	0201	14524								
129		OBS	0151	0056	33664	2702			14525								
		STD	0200	0203	3419	2734	0007501	0246	14606								
		STD	0250	0274	3446	2750	0006090	0280	14649								
129		OBS	T0260	0278	34481	2751			14652								
129		OBS	0278	0278	34489	2752			14655								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4725 N	04742 W		149	77	05	09	145	1965	002	9340	0243	02	32	2	2		X0	0		0106

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		30	S08	176	039	033	8	06	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	DUP
		STD	0000	-0036	3288	2644	0016025	0000	14447								
145		OBS	0000	-0036	32881	2644			14447								
		STD	0010	-0052	3289	2645	0015914	0016	14441								
		STD	0020	-0066	3289	2646	0015819	0032	14436								
		STD	0030	-0078	3290	2647	0015726	0048	14433								
145		OBS	0030	-0078	32898	2647			14433								
		STD	0050	-0097	3300	2655	0014871	0078	14429								
145		OBS	0060	-0106	33057	2660			14427								
		STD	0075	-0088	3315	2667	0013746	0114	14439								
145		OBS	0075	-0088	33149	2667			14439								
		STD	0100	-0009	3340	2684	0012143	0146	14483								
		STD	0125	0054	3361	2698	0010868	0175	14519								
		STD	0150	0100	3377	2708	0009930	0201	14546								
145		OBS	0190	0140	33916	2717			14573								
		STD	0200	0141	3393	2718	0008999	0248	14575								
145		OBS	0220	0142	33947	2719			14579								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4724 N	04757 W		149	77	05	09	159	1965	002	9341	0201	02	31	2	2		X0	0		0107

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		29	S09	169	039	028	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	DUP
		STD	0000	0008	3290	2643	0016089	0000	14467								
159		OBS	0000	0008	32897	2643			14467								
		STD	0010	-0009	3293	2646	0015758	0016	14462								
		STD	0020	-0020	3296	2649	0015478	0032	14459								
		STD	0030	-0027	3301	2654	0015063	0047	14458								
159		OBS	0045	-0029	33104	2661			14461								
		STD	0050	-0027	3315	2665	0013988	0076	14463								
159		OBS	0055	-0024	33177	2667			14466								
159		OBS	0070	-0096	33215	2673			14435								
		STD	0075	-0084	3325	2675	0012987	0110	14442								
159		OBS	0090	-0039	33358	2682			14467								
		STD	0100	0000	3342	2685	0012057	0141	14487								
159		OBS	0100	0000	33417	2685			14487								
159		OBS	0110	0025	33466	2688			14501								
		STD	0125	0046	3350	2689	0011659	0171	14514								
		STD	0150	0065	3360	2696	0011014	0199	14528								
159		OBS	0150	0065	33599	2696			14528								
159		OBS	T0175	0066	33732	2707			14534								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4722 N	04812 W		149	78	05	09	171	1965	002	9342	0174	02	30	2	2		X0		0	0108

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		27	S08	179	033	022	8	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH
		STD	0000	-0011	3283	2638	0016533	0000	14458							
171		OBS	0000	-0011	32828	2638			14458							
		STD	0010	-0043	3284	2641	0016308	0016	14445							
		STD	0020	-0069	3285	2643	0016107	0033	14434							
		STD	0030	-0089	3287	2644	0015942	0049	14427							
		STD	0050	-0112	3289	2647	0015666	0080	14420							
171		OBS	0065	-0115	32909	2649			14421							
		STD	0075	-0090	3304	2658	0014573	0118	14436							
		STD	0100	-0034	3331	2678	0012716	0152	14470							
		STD	0125	0014	3351	2692	0011413	0182	14499							
171		OBS	0130	0023	33545	2694			14505							
		STD	0150	0055	3365	2701	0010568	0210	14524							
171		OBS	0160	0069	33688	2703			14533							

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4701 N	04801 W		149	78	05	09	202	1965	002	9343	0150	01	24	5	4		X4	X	9	0109

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		25	S09	169	000	-006	1	06	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH
		STD	0000	0000	3284	2638	0016504	0000	14463							
202		OBS	0000	0000	32838	2638			14463							
		STD	0010	-0005	3284	2639	0016471	0016	14462							
202		OBS	0012	-0007	32839	2639			14462							
		STD	0020	-0021	3284	2640	0016392	0033	14457							
		STD	0030	-0037	3284	2640	0016315	0049	14451							
202		OBS	0030	-0037	32841	2640			14451							
		STD	0050	-0077	3293	2649	0015474	0081	14437							
202		OBS	0072	-0089	33088	2662			14437							
		STD	0075	-0086	3312	2665	0013976	0118	14440							
202		OBS	0097	-0061	33344	2682			14458							
		STD	0100	-0053	3338	2684	0012101	0150	14462							
		STD	0125	0053	3364	2700	0010634	0179	14519							
202		OBS	0127	0065	33658	2701			14525							

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4659 N	04738 W		149	67	05	09	218	1965	002	9344	0175	02	25	5	4		X4	X	9	0110

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		25	S10	159	011	006	1	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH
		STD	0000	-0023	3288	2643	0016062	0000	14453							
218		OBS	0000	-0023	32883	2643			14453							
		STD	0010	-0034	3291	2646	0015798	0016	14450							
		STD	0020	-0046	3294	2649	0015543	0032	14447							
		STD	0030	-0057	3297	2651	0015282	0047	14443							
		STD	0050	-0079	3302	2656	0014769	0077	14437							
		STD	0075	-0108	3309	2663	0014132	0113	14429							
218		OBS	0078	-0111	33098	2664			14428							
218		OBS	0087	-0051	33265	2675			14460							
		STD	0100	-0027	3335	2681	0012428	0146	14474							
		STD	0125	0020	3352	2692	0011375	0176	14502							
		STD	0150	0067	3369	2703	0010362	0203	14530							
218		OBS	T0169	0102	33813	2711			14551							

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10	INDCTR	10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4700 N	04730 W		149	77	05	09	237	1965	002	9345	0220	02	20	2	2		X4	X	9		0111

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		24	S08	152	+006	+008	1	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$x10^7$	$\Sigma\Delta D$ DYN. M. $x\ 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	-0035	3287	2643	0016106	0000	14447								
237		OBS	0000	-0035	32871	2643			14447								
		STD	0010	-0038	3287	2643	0016097	0016	14447								
237		OBS	0010	-0038	32870	2643			14447								
		STD	0020	-0084	3288	2645	0015880	0032	14428								
237		OBS	0021	-0088	32877	2645			14426								
		STD	0030	-0086	3291	2648	0015606	0048	14429								
		STD	0050	-0083	3299	2654	0014995	0078	14435								
237		OBS	0063	-0080	33057	2659			14439								
		STD	0075	-0049	3314	2665	0013961	0115	14457								
		STD	0100	0008	3329	2674	0013064	0148	14489								
237		OBS	0105	0018	33316	2676			14495								
		STD	0125	0052	3340	2681	0012453	0180	14515								
237		OBS	0131	0062	33436	2683			14521								
		STD	0150	0092	3355	2691	0011549	0210	14539								
		STD	0200	0158	3398	2721	0008745	0261	14583								
237		OBS	0210	0170	34088	2729			14592								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10	INDCTR	10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4700 N	04716 W		149	77	05	10	019	1965	002	9346	0710	05	23	3	2		X4	X	9		0112

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		20	S14	146	+006	+006	1	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$x10^7$	$\Sigma\Delta D$ DYN. M. $x\ 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0076	3320	2664	0014096	0000	14503								
019		OBS	0000	0076	33203	2664			14503								
019		OBS	0009	0060	33206	2665			14497								
		STD	0010	0052	3321	2666	0013913	0014	14493								
		STD	0020	-0017	3325	2672	0013275	0028	14464								
019		OBS	0022	-0028	33258	2674			14459								
		STD	0030	-0020	3332	2678	0012724	0041	14465								
		STD	0050	0003	3346	2688	0011755	0065	14481								
		STD	0075	0041	3363	2700	0010648	0093	14505								
019		OBS	0080	0050	33661	2702			14510								
		STD	0100	0097	3376	2707	0009984	0119	14536								
		STD	0125	0148	3391	2716	0009185	0143	14565								
019		OBS	0126	0150	33915	2716			14566								
		STD	0150	0185	3409	2728	0008098	0164	14588								
019		OBS	0174	0220	34246	2737			14610								
		STD	0200	0267	3440	2746	0006450	0201	14637								
		STD	0250	0334	3462	2757	0005447	0231	14677								
019		OBS	0258	0342	34647	2759			14682								
		STD	0300	0354	3470	2762	0005085	0257	14695								
019		OBS	0376	0371	34766	2765			14715								
		STD	0400	0375	3478	2766	0004789	0306	14721								
		STD	0500	0382	3484	2770	0004506	0353	14741								
019		OBS	0519	0382	34843	2770			14744								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° '1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4700 N	04700 W		149	77	05	10	037	1965	002	9347	1262	12	23	3	2		X4	X	9	0113

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		22	S11	132	000	-006	3	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0224	3381	2702	0010469	0000	14577								
037		OBS	0000	0224	33808	2702			14577								
		STD	0010	0270	3399	2713	0009459	0010	14601								
037		OBS	0015	0289	34069	2717			14611								
		STD	0020	0289	3407	2718	0009019	0019	14612								
		STD	0030	0289	3408	2718	0008949	0028	14614								
		STD	0050	0289	3411	2721	0008735	0046	14617								
037		OBS	0073	0289	34183	2727			14622								
		STD	0075	0293	3420	2728	0008106	0067	14625								
		STD	0100	0332	3443	2742	0006740	0085	14649								
		STD	0125	0352	3457	2751	0005895	0101	14663								
037		OBS	0145	0354	34638	2757			14668								
		STD	0150	0351	3464	2757	0005380	0115	14668								
037		OBS	0169	0341	34651	2759			14667								
		STD	0200	0353	3471	2762	0004916	0141	14678								
		STD	0250	0368	3478	2767	0004583	0165	14693								
037		OBS	0267	0371	34803	2768			14698								
		STD	0300	0373	3481	2768	0004454	0187	14704								
037		OBS	T0389	0375	34843	2771			14720								
		STD	0400	0375	3485	2771	0004266	0231	14722								
		STD	0500	0373	3488	2774	0004110	0273	14738								
037		OBS	T0586	0371	34897	2776			14752								
		STD	0600	0370	3490	2776	0004040	0314	14754								
		STD	0700	0366	3490	2776	0004090	0354	14769								
037		OBS	0782	0362	34895	2776			14780								
		STD	0800	0361	3490	2776	0004128	0395	14783								
		STD	0900	0357	3490	2777	0004152	0437	14798								
037		OBS	T0993	0354	34898	2777			14812								
		STD	1000	0354	3490	2777	0004192	0479	14813								
		STD	1100	0352	3490	2777	0004265	0521	14829								
037		OBS	1166	0352	34894	2777			14840								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° '1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4700 N	04645 W		149	76	05	10	053	1965	002	9348	0914	09	23	2	2		X1	5	5	0114

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		19	S10	119	017	011	8	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ O DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0517	3436	2717	0009079	0000	14709								
053		OBS	0000	0517	34357	2717			14709								
		STD	0010	0510	3436	2717	0009028	0009	14707								
		STD	0020	0500	3435	2718	0008951	0018	14705								
		STD	0030	0487	3435	2720	0008836	0027	14701								
053		OBS	0048	0458	34345	2723			14692								
		STD	0050	0453	3435	2723	0008494	0044	14690								
		STD	0075	0395	3444	2737	0007249	0064	14671								
053		OBS	0080	0386	34461	2739			14669								
		STD	0100	0388	3454	2745	0006451	0081	14674								
		STD	0125	0391	3462	2752	0005903	0097	14680								
		STD	0150	0395	3470	2757	0005366	0111	14687								
		STD	0200	0403	3480	2765	0004746	0136	14700								
053		OBS	0213	0406	34825	2766			14704								
		STD	0250	0414	3487	2769	0004424	0159	14714								
053		OBS	T0250	0414	34865	2769			14714								
		STD	0300	0400	3487	2770	0004287	0181	14716								
		STD	0400	0380	3488	2773	0004094	0222	14724								
053		OBS	0426	0376	34881	2774			14727								
		STD	0500	0373	3489	2775	0004058	0263	14738								
		STD	0600	0368	3490	2776	0004025	0304	14753								
053		OBS	0639	0366	34899	2776			14758								
		STD	0700	0362	3490	2777	0004016	0344	14767								
		STD	0800	0355	3490	2777	0004023	0384	14781								
053		OBS	T0851	0351	34901	2778			14787								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4659 N	04630 W		149	66	05	10	068	1965	002	9349	0360	03	22	3	2		X1	3	2	0115

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S14	098	039	028	8	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SSD
		STD	0000	0476	3436	2722	0008609	0000	14692								
068		OBS	0000	0476	34360	2722			14692								
		STD	0010	0472	3436	2722	0008580	0009	14692								
		STD	0020	0468	3436	2723	0008556	0017	14692								
		STD	0030	0465	3436	2723	0008534	0026	14692								
		STD	0050	0457	3436	2724	0008481	0043	14692								
068		OBS	0052	0456	34357	2724			14692								
		STD	0075	0417	3437	2729	0007996	0063	14680								
068		OBS	0082	0414	34392	2731			14680								
		STD	0100	0451	3451	2736	0007324	0082	14700								
068		OBS	0112	0453	34570	2741			14703								
		STD	0125	0416	3460	2747	0006307	0100	14691								
068		OBS	0142	0380	34643	2754			14679								
		STD	0150	0382	3467	2756	0005460	0114	14681								
		STD	0200	0392	3479	2765	0004707	0140	14695								
068		OBS	T0227	0394	34839	2769			14701								
		STD	0250	0393	3485	2770	0004315	0162	14705								
		STD	0300	0385	3488	2772	0004092	0183	14710								
068		OBS	T0330	0376	34890	2775			14711								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4658 N	04617 W		149	66	05	10	079	1965	002	9350	0311	03	19	3	2		X2	2	8	0116

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S13	098	044	033	8	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SSD
		STD	0000	0419	3435	2727	0008072	0000	14668								
079		OBS	0000	0419	34353	2727			14668								
		STD	0010	0419	3436	2728	0008041	0008	14670								
		STD	0020	0420	3436	2728	0008017	0016	14672								
		STD	0030	0420	3437	2729	0007984	0024	14674								
		STD	0050	0421	3438	2729	0007929	0040	14677								
		STD	0075	0422	3439	2730	0007865	0060	14682								
079		OBS	0080	0422	34397	2731			14683								
		STD	0100	0387	3445	2738	0007117	0078	14672								
079		OBS	0124	0376	34555	2748			14673								
		STD	0125	0377	3456	2748	0006214	0095	14674								
079		OBS	0149	0400	34716	2758			14689								
		STD	0150	0400	3472	2758	0005287	0110	14689								
		STD	0200	0392	3478	2764	0004757	0135	14695								
		STD	0250	0384	3485	2770	0004233	0157	14701								
079		OBS	T0272	0380	34877	2773			14703								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4700 N	04600 W		149	76	05	10	095	1965	002	9351	0302	03	21	3	2		X6	5	8	0117

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S18	085	044	033	7	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M X 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SSD
		STD	0000	0437	3439	2728	0007976	0000	14676								
095		OBS	0000	0437	34390	2728			14676								
		STD	0010	0434	3440	2729	0007904	0008	14676								
		STD	0020	0431	3440	2730	0007838	0016	14677								
		STD	0030	0428	3441	2731	0007766	0024	14677								
		STD	0050	0422	3442	2733	0007628	0039	14678								
		STD	0075	0415	3444	2735	0007457	0058	14680								
		STD	0100	0408	3446	2737	0007278	0076	14681								
095		OBS	0102	0407	34457	2737			14681								
		STD	0125	0405	3458	2747	0006345	0093	14686								
		STD	0150	0402	3469	2756	0005512	0108	14690								
		STD	0200	0395	3484	2769	0004363	0133	14697								
095		OBS	0204	0394	34848	2769			14698								
		STD	0250	0385	3486	2771	0004135	0154	14702								
095		OBS	0280	0378	34873	2773			14704								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4722 N	04818 W		149	78	05	19	094	1965	003	9352	0159	01	36	4	2		X4	7	8		0118

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	S18	156	028	028	2	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SOQ
		STD	0000	0140	3284	2630	0017273	0000	14526								
094		OBS	0000	0140	32835	2630			14526								
		STD	0010	0067	3284	2635	0016812	0017	14495								
		STD	0020	0006	3285	2639	0016433	0034	14469								
		STD	0030	-0044	3287	2643	0016065	0050	14448								
		STD	0050	-0111	3294	2651	0015301	0081	14421								
094		OBS	0050	-0111	32938	2651			14421								
		STD	0075	-0124	3309	2664	0014080	0118	14421								
094		OBS	0080	-0127	33122	2666			14421								
		STD	0100	-0106	3325	2676	0012897	0152	14436								
		STD	0125	-0045	3343	2688	0011744	0183	14471								
094		OBS	0145	0032	33576	2696			14512								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4722 N	04807 W		149	78	05	19	106	1965	003	9353	0181	02	35	3	3		X4	7	8		0119

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S16	173	033	033	5	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SOQ
		STD	0000	0133	3282	2629	0017374	0000	14523								
106		OBS	0000	0133	32816	2629			14523								
		STD	0010	0075	3283	2634	0016931	0017	14499								
		STD	0020	0025	3284	2638	0016567	0034	14478								
		STD	0030	-0017	3286	2641	0016259	0050	14460								
		STD	0050	-0076	3289	2646	0015807	0082	14437								
106		OBS	0050	-0076	32887	2646			14437								
		STD	0075	-0089	3301	2656	0014806	0121	14436								
106		OBS	0090	-0097	33109	2664			14437								
		STD	0100	-0053	3327	2676	0012942	0155	14461								
		STD	0125	0025	3354	2694	0011241	0186	14505								
106		OBS	0140	0050	33630	2700			14520								
		STD	0150	0052	3363	2700	0010680	0213	14522								
106		OBS	0165	0055	33638	2700			14526								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4723 N	04751 W		149	77	05	19	122	1965	003	9354	0210	02	35	3	3		X4	6	8		0120

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S18	186	039	033	6	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SOQ
		STD	0000	0106	3283	2632	0017129	0000	14511								
122		OBS	0000	0106	32827	2632			14511								
		STD	0010	0100	3283	2632	0017083	0017	14510								
122		OBS	0017	0095	32829	2633			14509								
		STD	0020	0069	3284	2635	0016822	0034	14498								
		STD	0030	-0006	3287	2641	0016223	0051	14466								
122		OBS	0043	-0075	32912	2648			14436								
		STD	0050	-0076	3293	2649	0015477	0082	14437								
		STD	0075	-0081	3302	2656	0014759	0120	14441								
122		OBS	0084	-0082	33061	2660			14442								
		STD	0100	-0069	3315	2667	0013794	0156	14452								
122		OBS	0110	-01500	33200	26730											
		STD	0125	-0049	3323	2672	0013252	0190	14466								
		STD	0150	-0030	3334	2680	0012491	0222	14481								
122		OBS	0172	-0012	33485	2691			14495								
122		OBS	T0193	0063	33667	2702			14535								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4723 N	04733 W		149	77	05	19	137	1965	003	9355	0267	02	36	3	4		X2	6	8		0121

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S08	207	028	028	7	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta$D DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SUS
		STD	0000	0134	3284	2631	0017221	0000	14524								
137		OBS	0000	0134	32837	2631			14524								
		STD	0010	0060	3285	2636	0016699	0017	14492								
		STD	0020	0007	3286	2640	0016361	0033	14470								
137		OBS	0025	-0012	32867	2641			14462								
		STD	0030	-0015	3287	2642	0016184	0050	14461								
		STD	0050	-0027	3290	2645	0015896	0082	14460								
137		OBS	0050	-0027	32900	2645			14460								
		STD	0075	-0112	3297	2653	0015037	0121	14425								
137		OBS	0081	-0124	32994	2656			14421								
		STD	0100	-0120	3306	2661	0014307	0157	14427								
		STD	0125	-0101	3319	2671	0013359	0192	14442								
137		OBS	0126	-0100	33191	2671			14442								
		STD	0150	-0036	3334	2681	0012461	0224	14478								
		STD	0200	0092	3374	2706	0010110	0280	14550								
137		OBS	T0233	0173	34078	2728			14596								
137		OBS	T0243	0197	34192	2735			14610								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4722 N	04718 W		149	77	05	19	150	1965	003	9356	0329	03	36	3	2		X2	6	8		0122

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		33	S13	210	022	017	8	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta$D DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SUS
		STD	0000	0243	3307	2641	0016241	0000	14575								
150		OBS	0000	0243	33065	2641			14575								
		STD	0010	0160	3310	2650	0015389	0016	14541								
		STD	0020	0090	3313	2657	0014730	0031	14511								
		STD	0030	0034	3317	2664	0014122	0045	14488								
150		OBS	0045	-0027	33237	2672			14463								
		STD	0050	-0025	3325	2673	0013231	0073	14465								
		STD	0075	-0015	3335	2680	0012503	0105	14475								
150		OBS	0098	-0006	33508	2693			14486								
		STD	0100	-0000	3353	2694	0011195	0134	14489								
		STD	0125	0069	3376	2709	0009815	0161	14528								
150		OBS	0126	0072	33768	2709			14529								
		STD	0150	0131	3396	2721	0008695	0184	14563								
		STD	0200	0228	3430	2741	0006873	0223	14618								
		STD	0250	0293	3452	2753	0005811	0254	14658								
		STD	0300	0324	3464	2760	0005239	0282	14681								
150		OBS	T0307	0326	34648	2760			14683								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4722 N	04704 W		149	77	05	19	167	1965	003	9357	0927	09	36	3	2		X2	6	8		0123

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		33	S11	220	056	050	8	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0314	3350	2670	0013525	0000	14612								
167		OBS	0000	0314	33500	2670			14612								
		STD	0010	0269	3364	2685	0012097	0013	14596								
		STD	0020	0205	3373	2697	0010926	0024	14571								
167		OBS	0025	0167	33761	2703			14555								
167		OBS	0029	0133	33778	2706			14541								
		STD	0030	0140	3379	2707	0010021	0035	14544								
167		OBS	0049	0252	34008	2716			14600								
		STD	0050	0252	3401	2716	0009183	0054	14600								
		STD	0075	0251	3414	2726	0008208	0076	14606								
		STD	0100	0251	3427	2737	0007234	0095	14611								
167		OBS	0122	0250	34376	2745			14616								
		STD	0125	0257	3439	2746	0006396	0112	14620								
167		OBS	0146	0297	34490	2750			14642								
		STD	0150	0301	3450	2751	0005966	0128	14644								
		STD	0200	0339	3466	2760	0005155	0155	14671								
167		OBS	T0219	0350	34705	2762			14680								
		STD	0250	0356	3473	2764	0004838	0180	14688								
		STD	0300	0365	3476	2765	0004747	0204	14700								
167		OBS	0389	0376	34809	2768			14720								
		STD	0400	0376	3481	2768	0004577	0251	14722								
		STD	0500	0378	3484	2770	0004465	0296	14740								
167		OBS	T0580	0380	34856	2771			14754								
		STD	0600	0380	3486	2772	0004427	0341	14757								
		STD	0700	0381	3487	2772	0004455	0385	14775								
167		OBS	0764	0382	34872	2772			14786								
		STD	0800	0380	3488	2773	0004493	0430	14791								
167		OBS	T0856	0374	34879	2774			14798								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4721 N	04650 W		149	76	05	19	183	1965	003	9358	1225	11	36	2	3		X2	6	8		0124

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		33	S09	234	050	044	8	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0386	3391	2696	0011069	0000	14648								
183		OBS	0000	0386	33912	2696			14648								
		STD	0010	0313	3399	2709	0009823	0010	14620								
		STD	0020	0269	3405	2718	0009003	0020	14603								
183		OBS	0021	0266	34053	2718			14602								
		STD	0030	0275	3411	2722	0008608	0029	14608								
183		OBS	0047	0293	34161	2724			14619								
		STD	0050	0263	3416	2727	0008132	0045	14607								
183		OBS	0058	0193	34161	2733			14578								
		STD	0075	0223	3427	2739	0006999	0064	14595								
		STD	0100	0262	3442	2748	0006197	0081	14618								
		STD	0125	0295	3454	2754	0005594	0096	14638								
183		OBS	0136	0307	34583	2757			14646								
		STD	0150	0317	3461	2758	0005285	0109	14653								
		STD	0200	0348	3471	2763	0004867	0135	14676								
183		OBS	T0236	0364	34763	2766			14689								
		STD	0250	0366	3477	2766	0004638	0158	14692								
		STD	0300	0370	3480	2768	0004498	0181	14703								
		STD	0400	0377	3484	2770	0004361	0225	14723								
183		OBS	T0418	0378	34846	2771			14726								
		STD	0500	0378	3486	2772	0004317	0269	14740								
		STD	0600	0379	3488	2773	0004264	0312	14757								
183		OBS	0627	0379	34884	2774			14762								
		STD	0700	0374	3489	2775	0004232	0354	14772								
		STD	0800	0369	3490	2776	0004218	0396	14786								
183		OBS	T0832	0367	34897	2776			14791								
		STD	0900	0364	3490	2777	0004211	0439	14801								
		STD	1000	0360	3490	2777	0004246	0481	14816								
183		OBS	1065	0357	34902	2777			14826								
		STD	1100	0351	3490	2778	0004202	0523	14829								
183		OBS	T1119	0347	34904	2779			14830								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	IO. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4722 N	04634 W		149	76	05	19	202	1965	003	9359	1253	11	35	4	4		X1	6	6		0125

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		36	S09	237	067	061	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0494	3408	2698	0010897	0000	14695								
202		OBS	0000	0494	34081	2698			14695								
		STD	0010	0489	3418	2706	0010111	0011	14696								
		STD	0020	0482	3426	2713	0009446	0020	14696								
		STD	0030	0475	3434	2720	0008781	0029	14696								
		STD	0050	0456	3447	2733	0007625	0046	14693								
		STD	0075	0427	3458	2745	0006522	0063	14687								
		STD	0100	0391	3464	2753	0005729	0079	14676								
202		OBS	0119	0359	34645	2757			14666								
		STD	0125	0344	3463	2757	0005368	0093	14660								
202		OBS	0134	0331	34626	2758			14656								
		STD	0150	0358	3469	2760	0005073	0106	14671								
202		OBS	0165	0380	34745	2763			14684								
		STD	0200	0379	3477	2765	0004728	0130	14690								
		STD	0250	0378	3480	2767	0004538	0153	14698								
		STD	0300	0377	3482	2769	0004424	0176	14706								
		STD	0400	0375	3486	2772	0004194	0219	14722								
202		OBS	T0414	0375	34867	2773			14725								
		STD	0500	0373	3488	2774	0004110	0260	14738								
		STD	0600	0370	3489	2775	0004092	0301	14754								
202		OBS	T0619	0369	34894	2776			14756								
		STD	0700	0366	3490	2776	0004061	0342	14769								
		STD	0800	0362	3490	2777	0004102	0383	14784								
202		OBS	0825	0361	34902	2777			14787								
		STD	0900	0355	3490	2778	0004092	0424	14797								
		STD	1000	0349	3490	2778	0004097	0465	14811								
202		OBS	T1027	0348	34903	2778			14815								
202		OBS	T1067	0347	34902	2778			14822								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	IO. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4722 N	04620 W		149	76	05	19	218	1965	003	9360	0540	05	34	3	4		X1	6	2		0126

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		36	S04	240	050	044	8	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0472	3422	2711	0009640	0000	14688								
218		OBS	0000	0472	34217	2711			14688								
		STD	0010	0469	3422	2711	0009600	0010	14689								
218		OBS	0015	0468	34233	2713			14689								
		STD	0020	0404	3427	2722	0008566	0019	14664								
218		OBS	0024	0360	34292	2729			14646								
		STD	0030	0360	3432	2731	0007778	0027	14648								
		STD	0050	0362	3440	2737	0007204	0042	14653								
218		OBS	0074	0363	34491	2744			14658								
		STD	0075	0363	3449	2744	0006540	0059	14659								
		STD	0100	0368	3455	2748	0006213	0075	14666								
		STD	0125	0374	3460	2752	0005881	0090	14673								
		STD	0150	0379	3465	2755	0005556	0104	14680								
		STD	0200	0389	3476	2763	0004906	0131	14694								
218		OBS	T0246	0399	34858	2770			14707								
		STD	0250	0398	3486	2770	0004293	0154	14707								
		STD	0300	0392	3488	2772	0004128	0175	14713								
218		OBS	T0397	0382	34893	2774			14725								
		STD	0400	0382	3489	2774	0004041	0215	14725								
		STD	0500	0374	3488	2774	0004121	0256	14738								
218		OBS	0501	0374	34879	2774			14739								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4720 N	04606 W		149	76	05	19	233	1965	003	9361	0393	04	34	5	3		X1	7	2		0127

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S06	247	056	039	8	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0502	3420	2706	0010091	0000	14700								
233		OBS	0000	0502	34200	2706			14700								
		STD	0010	0465	3424	2713	0009404	0010	14687								
		STD	0020	0435	3428	2720	0008802	0019	14677								
		STD	0030	0412	3432	2726	0008279	0027	14669								
233		OBS	0034	0404	34343	2728			14667								
		STD	0050	0404	3444	2736	0007315	0043	14671								
		STD	0075	0404	3458	2747	0006287	0060	14677								
233		OBS	0086	0404	34625	2751			14679								
		STD	0100	0411	3467	2753	0005706	0075	14685								
		STD	0125	0420	3474	2758	0005299	0089	14694								
233		OBS	0137	0423	34767	2760			14698								
		STD	0150	0423	3478	2761	0005053	0102	14700								
233		OBS	0189	0422	34830	2765			14707								
		STD	0200	0431	3486	2766	0004592	0126	14713								
233		OBS	T0241	0452	34932	2770			14729								
		STD	0250	0447	3493	2770	0004299	0148	14728								
		STD	0300	0416	3491	2772	0004148	0169	14724								
233		OBS	T0370	0374	34888	2775			14717								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4721 N	04548 W		149	75	05	20	006	1965	003	9362	0311	03	34	5	3		X0	X	0		0128

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S06	251	056	050	8	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0545	3431	2710	0009747	0000	14719								
006		OBS	0000	0545	34310	2710			14719								
		STD	0010	0541	3431	2710	0009713	0010	14719								
006		OBS	0015	0538	34310	2711			14719								
		STD	0020	0528	3432	2713	0009503	0019	14716								
		STD	0030	0510	3433	2715	0009238	0029	14710								
		STD	0050	0475	3437	2723	0008578	0047	14700								
		STD	0075	0438	3441	2730	0007912	0067	14689								
		STD	0100	0408	3445	2736	0007327	0086	14681								
		STD	0125	0384	3450	2743	0006734	0104	14676								
006		OBS	0142	0371	34534	2747			14673								
		STD	0150	0372	3455	2748	0006259	0120	14675								
		STD	0200	0377	3466	2756	0005529	0149	14687								
		STD	0250	0382	3477	2764	0004800	0175	14699								
006		OBS	T0290	0386	34868	2772			14709								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4722 N	04523 W		149	75	05	20	027	1965	003	9363	0247	02	35	2	2		X0	X	0		0129

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S06	247	050	044	8	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0551	3426	2705	0010220	0000	14721								
027		OBS	0000	0551	34256	2705			14721								
		STD	0010	0496	3429	2714	0009361	0010	14701								
		STD	0020	0447	3432	2722	0008626	0019	14682								
027		OBS	0025	0426	34335	2725			14675								
		STD	0030	0420	3435	2727	0008134	0027	14673								
		STD	0050	0400	3439	2732	0007652	0043	14669								
		STD	0075	0381	3446	2740	0006961	0061	14666								
		STD	0100	0369	3452	2746	0006414	0078	14666								
		STD	0125	0365	3460	2752	0005833	0093	14669								
027		OBS	0125	0365	34595	2752			14669								
		STD	0150	0368	3467	2758	0005321	0107	14675								
		STD	0200	0396	3483	2768	0004441	0132	14698								
027		OBS	0200	0396	34831	2768			14698								

REFERENCE CTRY. CODE	REFERENCE NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4722 N	04452 W		149	74	05	20	048	1965	003	9364	0214	02	35	2	2		X0	0		0130

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S06	247	050	044	8	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARO TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCOD
		STD	0000	0536	3430	2710	0009727	0000	14716								
048		OBS	0000	0536	34299	2710			14716								
		STD	0010	0482	3433	2719	0008910	0009	14695								
		STD	0020	0442	3435	2725	0008348	0018	14681								
048		OBS	0025	0427	34361	2727			14675								
		STD	0030	0422	3437	2728	0008041	0026	14674								
		STD	0050	0407	3438	2731	0007789	0042	14671								
048		OBS	0051	0406	34382	2731			14671								
		STD	0075	0395	3440	2734	0007551	0061	14671								
		STD	0100	0384	3444	2738	0007161	0080	14671								
048		OBS	0102	0383	34441	2738			14671								
		STD	0125	0386	3450	2742	0006758	0097	14677								
		STD	0150	0390	3459	2749	0006141	0113	14684								
048		OBS	0177	0394	34705	2758			14691								

REFERENCE CTRY. CODE	REFERENCE NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4623 N	04511 W		149	65	05	20	108	1965	003	9365	2058	12	34	6	4		X1	4	2	0131

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		01	S10	274	089	072	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARO TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCOD
		STD	0000	0571	3440	2713	0009396	0000	14731								
108		OBS	0000	0571	34397	2713			14731								
		STD	0010	0518	3442	2722	0008629	0009	14712								
		STD	0020	0472	3444	2729	0007988	0017	14694								
		STD	0030	0433	3446	2735	0007424	0025	14680								
108		OBS	0030	0433	34462	2735			14680								
		STD	0050	0423	3452	2740	0006906	0039	14680								
		STD	0075	0412	3459	2747	0006293	0056	14680								
		STD	0100	0403	3465	2753	0005775	0071	14682								
		STD	0125	0396	3470	2757	0005352	0085	14683								
108		OBS	0128	0395	34707	2758			14684								
		STD	0150	0394	3473	2760	0005128	0098	14687								
		STD	0200	0391	3479	2765	0004694	0123	14695								
		STD	0250	0388	3483	2769	0004410	0145	14702								
108		OBS	T0262	0387	34842	2770			14704								
		STD	0300	0395	3486	2771	0004276	0167	14714								
		STD	0400	0415	3492	2773	0004149	0209	14740								
108		OBS	0411	0417	34929	2773			14743								
		STD	0500	0391	3491	2775	0004082	0250	14746								
		STD	0600	0371	3490	2776	0004028	0291	14754								
108		OBS	T0635	0366	34897	2776			14758								
		STD	0700	0365	3490	2776	0004079	0331	14768								
		STD	0800	0363	3490	2776	0004143	0372	14784								
108		OBS	0844	0362	34895	2776			14791								
		STD	0900	0359	3490	2777	0004189	0414	14799								
		STD	1000	0354	3489	2777	0004222	0456	14813								
108		OBS	T1075	0352	34893	2777			14825								
		STD	1100	0351	3489	2777	0004298	0499	14829								
108		OBS	T1163	0350	34890	2777			14839								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4619 N	04550 W		149	65	05	20	138	1965	003	9366	0640	06	36	3	3		X1	0	3		0132

WATER COLOR CODE	WATER TRANS (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		08	S07	281	072	061	8	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SUS
		STD	0000	0562	3409	2690	0011620	0000	14723								
138		OBS	0000	0562	34086	2690			14723								
		STD	0010	0487	3409	2699	0010764	0011	14694								
		STD	0020	0429	3411	2707	0010057	0022	14672								
138		OBS	0020	0429	34105	2707			14672								
		STD	0030	0435	3416	2710	0009710	0031	14677								
		STD	0050	0446	3425	2716	0009169	0050	14686								
		STD	0075	0460	3435	2723	0008591	0073	14697								
138		OBS	0086	0466	34393	2725			14702								
		STD	0100	0449	3442	2729	0007981	0093	14698								
		STD	0125	0419	3449	2738	0007167	0112	14690								
		STD	0150	0389	3457	2748	0006285	0129	14683								
138		OBS	0152	0387	34582	2749			14683								
		STD	0200	0469	3484	2761	0005158	0158	14728								
138		OBS	T0218	0478	34887	2763			14735								
		STD	0250	0437	3486	2766	0004710	0182	14723								
138		OBS	T0289	0400	34845	2768			14714								
		STD	0300	0397	3485	2769	0004405	0205	14715								
		STD	0400	0375	3490	2775	0003892	0247	14723								
138		OBS	T0406	0374	34905	2776			14723								
		STD	0500	0360	3491	2777	0003777	0285	14733								
		STD	0600	0353	3491	2778	0003773	0323	14747								
138		OBS	T0618	0352	34908	2778			14749								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4619 N	04635 W		149	66	05	20	173	1965	003	9367	0933	09	01	6	4		X1	4	2		0133

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		36	S06	257	094	072	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SUS
		STD	0000	0603	3419	2693	0011318	0000	14741								
173		OBS	0000	0603	34191	2693			14741								
		STD	0010	0572	3424	2701	0010596	0011	14731								
		STD	0020	0542	3429	2709	0009887	0021	14721								
		STD	0030	0515	3434	2716	0009219	0031	14712								
		STD	0050	0464	3444	2729	0007935	0048	14696								
		STD	0075	0410	3454	2743	0006648	0066	14679								
		STD	0100	0367	3463	2755	0005568	0081	14666								
173		OBS	0103	0362	34639	2756			14665								
		STD	0125	0366	3468	2759	0005205	0095	14671								
		STD	0150	0371	3472	2762	0004973	0108	14677								
		STD	0200	0380	3479	2766	0004587	0131	14690								
		STD	0250	0390	3485	2770	0004279	0154	14703								
		STD	0300	0399	3489	2772	0004126	0175	14716								
173		OBS	0306	0400	34893	2772			14718								
		STD	0400	0398	3492	2775	0003989	0215	14733								
		STD	0500	0390	3492	2775	0003996	0255	14746								
173		OBS	T0509	0389	34923	2776			14747								
173		OBS	0549	0384	34916	2776			14751								
		STD	0600	0375	3492	2777	0003953	0295	14756								
173		OBS	T0666	0368	34916	2777			14764								
		STD	0700	0368	3491	2777	0003979	0335	14770								
173		OBS	0732	0368	34912	2777			14775								
		STD	0800	0366	3491	2777	0004066	0375	14785								
173		OBS	T0834	0365	34911	2777			14791								
		STD	0900	0362	3491	2778	0004098	0416	14800								
173		OBS	T0915	0361	34912	2778			14802								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4619 N	04652 W		149	66	05	20	193	1965	003	9368	1280	08	34	2	2		X1	4	2		0134

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		12	S03	254	111	083	8	11	

MESSENGR TIME GMT HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	ΣΔD DYN. M x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCN
		STD	0000	0465	3409	2701	0010558	0000	14683								
193		OBS	0000	0465	34085	2701			14683								
		STD	0010	0404	3414	2712	0009535	0010	14660								
		STD	0020	0357	3420	2722	0008643	0019	14643								
		STD	0030	0325	3426	2729	0007906	0027	14632								
		STD	0050	0301	3437	2741	0006862	0042	14626								
193		OBS	0050	0301	34372	2741			14626								
		STD	0075	0350	3451	2746	0006324	0059	14653								
193		OBS	0075	0350	34505	2746			14653								
		STD	0100	0352	3453	2748	0006179	0074	14659								
		STD	0125	0355	3458	2752	0005844	0089	14664								
		STD	0150	0357	3463	2756	0005512	0104	14670								
193		OBS	0175	0359	34708	2762			14676								
		STD	0200	0439	3486	2765	0004679	0129	14716								
193		OBS	0230	0459	34922	2768			14730								
		STD	0250	0420	3487	2768	0004451	0152	14716								
193		OBS	T0255	0412	34865	2769			14714								
		STD	0300	0405	3487	2770	0004340	0174	14718								
		STD	0400	0390	3489	2773	0004141	0216	14729								
193		OBS	0400	0390	34888	2773			14729								
		STD	0500	0375	3489	2774	0004072	0257	14739								
193		OBS	T0544	0371	34888	2775			14745								
		STD	0600	0369	3490	2776	0004006	0298	14753								
193		OBS	T0666	0366	34904	2777			14763								
		STD	0700	0362	3490	2777	0003986	0338	14767								
193		OBS	T0798	0355	34902	2778			14780								
		STD	0800	0355	3490	2777	0004023	0378	14781								
193		OBS	0835	0355	34900	2777			14786								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4617 N	04714 W		149	67	05	20	214	1965	003	9369	0448	04	31	2	2		X1	0	1		0135

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		09	S06	247	078	056	8	08	

MESSENGR TIME GMT HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCN
		STD	0000	0239	3295	2633	0017051	0000	14572								
214		OBS	0000	0239	32954	2633			14572								
214		OBS	0009	0113	33079	2652			14519								
		STD	0010	0106	3308	2652	0015203	0016	14516								
		STD	0020	0048	3313	2660	0014500	0031	14492								
214		OBS	0023	0034	33150	2662			14487								
		STD	0030	0016	3321	2668	0013729	0045	14480								
214		OBS	0047	-0012	33325	2678			14472								
		STD	0050	-0015	3333	2679	0012664	0071	14471								
214		OBS	0061	-0018	33381	2683			14472								
		STD	0075	0034	3356	2695	0011144	0101	14501								
		STD	0100	0116	3386	2714	0009345	0127	14546								
214		OBS	0104	0128	33900	2717			14553								
		STD	0125	0160	3402	2724	0008437	0149	14572								
		STD	0150	0195	3415	2732	0007721	0169	14593								
		STD	0200	0256	3438	2745	0006505	0205	14632								
		STD	0250	0304	3456	2755	0005612	0235	14663								
214		OBS	T0286	0332	34654	2760			14682								
		STD	0300	0341	3469	2762	0005030	0262	14689								
214		OBS	T0383	0375	34791	2767			14718								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4619 N	04731 W		149	67	05	20	229	1965	003	9370	0192	02	03	3	4		X1	2	3		0136

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		09	S08	244	061	050	8	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCU
		STD	0000	0280	3298	2631	0017211	0000	14590								
229		OBS	0000	0280	32975	2631			14590								
		STD	0010	0138	3302	2645	0015855	0017	14530								
		STD	0020	0030	3307	2656	0014867	0032	14483								
229		OBS	0026	-0018	33091	2660			14462								
		STD	0030	-0022	3310	2661	0014368	0047	14462								
		STD	0050	-0039	3317	2667	0013782	0075	14458								
229		OBS	0062	-0050	33209	2671			14455								
		STD	0075	0029	3335	2678	0012717	0108	14496								
229		OBS	0088	0070	33452	2684			14518								
		STD	0100	0042	3348	2688	0011792	0138	14508								
229		OBS	0114	0037	33548	2694			14508								
		STD	0125	0059	3364	2700	0010668	0166	14522								
229		OBS	0129	0066	33666	2702			14526								
		STD	0150	0077	3376	2709	0009862	0192	14535								
229		OBS	0166	0085	33777	2709			14542								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4619 N	04746 W		149	67	05	20	239	1965	003	9371	0146	01	03	3	4		X1	4	3		0137

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		09	S12	247	050	044	8	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCU
		STD	0000	0225	3284	2625	0017788	0000	14564								
239		OBS	0000	0225	32843	2625			14564								
		STD	0010	0118	3285	2633	0017025	0017	14518								
239		OBS	0012	0099	32852	2634			14510								
		STD	0020	0052	3289	2640	0016351	0034	14491								
		STD	0030	0001	3295	2647	0015643	0050	14470								
		STD	0050	-0069	3306	2659	0014508	0080	14442								
239		OBS	0060	-0089	33119	2665			14435								
		STD	0075	-0062	3321	2671	0013374	0115	14452								
		STD	0100	-0018	3338	2683	0012256	0147	14479								
		STD	0125	0027	3357	2696	0011054	0176	14506								
239		OBS	0125	0027	33566	2696			14506								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4619 N	04800 W		149	68	05	21	010	1965	003	9372	0119	01	05	2	4		X0	X	0		0138

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		09	S10	247	050	044	8	04	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCU
		STD	0000	0306	3295	2627	0017628	0000	14601								
010		OBS	0000	0306	32948	2627			14601								
		STD	0010	0200	3300	2639	0016421	0017	14557								
		STO	0020	0117	3305	2649	0015497	0033	14522								
010		OBS	0025	0083	33068	2653			14508								
		STD	0030	0065	3307	2654	0015046	0048	14501								
		STD	0050	0014	3314	2662	0014248	0078	14482								
010		OBS	0059	0002	33186	2666			14478								
		STD	0075	0012	3330	2675	0013012	0112	14487								
010		OBS	0098	0026	33535	2693			14501								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	4531 N	04908 W		149	59	05	21	072	1965	003	9373	0070	00	13	2	2		X4	7	8	0139

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		12	S17	166	057	056	1	04	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O2 ml/l	PO4-P µg-at/l	TOTAL-P µg-at/l	NO2-N µg-at/l	NO3-N µg-at/l	SiO4-Si µg-at/l	pH	SOC
		STD	0000	0254	3293	2629	0017385	0000	14578								
072		OBS	0000	0254	32925	2629			14578								
		STD	0010	0093	3295	2643	0016117	0017	14508								
		STD	0020	0011	3297	2649	0015516	0033	14473								
072		OBS	0020	0011	32973	2649			14473								
		STD	0030	0009	3300	2651	0015298	0048	14474								
072		OBS	0030	0009	33000	2651			14474								
		STD	0050	0071	3310	2655	0014887	0078	14507								
072		OBS	0050	0071	33095	2655			14507								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	4530 N	04846 W		149	58	05	21	098	1965	003	9374	0134	01	13	2	2		X4	7	8	0140

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		13	S18	152	061	061	1	04	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O2 ml/l	PO4-P µg-at/l	TOTAL-P µg-at/l	NO2-N µg-at/l	NO3-N µg-at/l	SiO4-Si µg-at/l	pH	SOC
		STD	0000	0215	3290	2630	0017322	0000	14560								
098		OBS	0000	0215	32895	2630			14560								
		STD	0010	0144	3292	2637	0016653	0017	14531								
		STD	0020	0084	3295	2643	0016066	0033	14506								
098		OBS	0020	0084	32950	2643			14506								
		STD	0030	0044	3300	2649	0015469	0049	14490								
		STD	0050	-0015	3309	2659	0014496	0079	14468								
098		OBS	0065	-0041	33152	2666			14459								
		STD	0075	-0036	3320	2669	0013555	0114	14464								
		STD	0100	-0025	3330	2677	0012833	0147	14474								
098		OBS	0115	-0018	33365	2682			14481								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.	NODC STATION NUMBER
31	540	EV	4530 N	04832 W		149	58	05	21	113	1965	003	9375	0183	02	13	2	2		X4	7	8	0141

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		14	S18	146	072	072	1	06	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O2 ml/l	PO4-P µg-at/l	TOTAL-P µg-at/l	NO2-N µg-at/l	NO3-N µg-at/l	SiO4-Si µg-at/l	pH	SOC
		STD	0000	0185	3286	2629	0017400	0000	14547								
113		OBS	0000	0185	32857	2629			14547								
		STD	0010	0181	3286	2630	0017336	0017	14547								
113		OBS	0010	0181	32862	2630			14547								
		STD	0020	0046	3295	2645	0015863	0034	14489								
113		OBS	0025	-0003	32980	2650			14468								
		STD	0030	-0021	3299	2652	0015241	0050	14460								
113		OBS	0049	-0060	33066	2659			14446								
		STD	0050	-0058	3308	2660	0014396	0079	14448								
		STD	0075	-0018	3336	2681	0012414	0113	14474								
113		OBS	0089	-0001	33471	2690			14486								
		STD	0100	0003	3348	2690	0011569	0143	14490								
		STD	0125	0013	3351	2692	0011407	0171	14499								
		STD	0150	0022	3354	2694	0011247	0200	14508								
113		OBS	0162	0027	33550	2694			14512								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4532 N	04822 W		149	58	05	21	131	1965	003	9376	0649	06	12	2	2		X4	9	8		0142

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		14	S18	132	078	078	1	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0264	3312	2644	0015994	0000	14585								
131		OBS	0000	0264	33119	2644			14585								
		STD	0010	0255	3312	2645	0015916	0016	14582								
		STD	0020	0245	3312	2645	0015846	0032	14580								
131		OBS	0020	0245	33120	2645			14580								
		STD	0030	-0016	3315	2664	0014048	0047	14465								
131		OBS	0030	-0016	33149	2664			14465								
		STD	0050	0004	3337	2681	0012446	0073	14480								
		STD	0075	0038	3363	2700	0010639	0102	14504								
131		OBS	0075	0038	33629	2700			14504								
		STD	0100	0103	3386	2715	0009262	0127	14540								
		STD	0125	0159	3406	2727	0008127	0149	14572								
		STD	0150	0208	3423	2737	0007217	0168	14600								
131		OBS	0165	0234	34324	2743			14615								
		STD	0200	0270	3444	2749	0006175	0201	14638								
		STD	0250	0312	3458	2756	0005537	0231	14667								
131		OBS	T0297	0340	34676	2761			14688								
		STD	0300	0341	3468	2761	0005105	0257	14689								
131		OBS	T0379	0365	34761	2765			14713								
		STD	0400	0366	3478	2767	0004696	0306	14717								
		STD	0500	0372	3483	2770	0004469	0352	14737								
131		OBS	T0595	0377	34839	2770			14755								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4530 N	04813 W		149	58	05	21	151	1965	003	9377	1353	11	12	4	3		X4	X	9		0143

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		13	S09	122	089	083	1	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0492	3386	2680	0012549	0000	14692								
151		OBS	0000	0492	33858	2680			14692								
		STD	0010	0479	3405	2697	0010979	0012	14690								
151		OBS	0015	0440	34077	2703			14675								
		STD	0020	0359	3402	2707	0010017	0022	14641								
151		OBS	0025	0295	33974	2709			14614								
		STD	0030	0306	3401	2711	0009624	0032	14620								
		STD	0050	0340	3414	2718	0008961	0051	14640								
151		OBS	0064	0351	34211	2723			14648								
		STD	0075	0326	3425	2728	0008022	0072	14639								
		STD	0100	0286	3433	2739	0007081	0091	14627								
		STD	0125	0267	3441	2747	0006330	0108	14624								
151		OBS	0133	0265	34434	2749			14625								
		STD	0150	0286	3450	2752	0005832	0123	14638								
151		OBS	0196	0330	34651	2760			14666								
		STD	0200	0332	3466	2761	0005088	0150	14668								
		STD	0250	0354	3472	2763	0004893	0175	14687								
151		OBS	T0294	0366	34763	2765			14699								
		STD	0300	0366	3477	2766	0004685	0199	14701								
151		OBS	0392	0371	34824	2770			14719								
		STD	0400	0372	3483	2770	0004383	0244	14720								
		STD	0500	0378	3486	2772	0004313	0288	14740								
151		OBS	0591	0380	34880	2773			14756								
		STD	0600	0380	3488	2773	0004276	0331	14758								
		STD	0700	0377	3488	2774	0004303	0374	14773								
151		OBS	0789	0375	34888	2774			14787								
		STD	0800	0375	3489	2774	0004339	0417	14789								
		STD	0900	0374	3489	2774	0004437	0461	14805								
		STD	1000	0371	3488	2774	0004510	0505	14820								
151		OBS	T1012	0370	34882	2774			14822								
		STD	1100	0364	3488	2775	0004527	0551	14834								
151		OBS	T1123	0362	34876	2775			14837								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF SMPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4530 N	04754 W		149	57	05	21	183	1965	003	9378	1460	12	16	4	2		X4	X	8		0144

WATER		WIND			BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE			DRY BULB	WET BULB			
		16	S22		105	089	089	1	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0490	3398	2690	0011642	0000	14692								
183		OBS	0000	0490	33976	2690			14692								
		STD	0010	0480	3398	2691	0011500	0012	14690								
		STD	0020	0437	3399	2696	0011025	0023	14674								
183		OBS	0021	0431	33988	2697			14671								
		STD	0030	0341	3402	2709	0009859	0033	14635								
183		OBS	0037	0288	34048	2716			14614								
		STD	0050	0283	3408	2719	0008908	0052	14614								
		STD	0075	0273	3420	2729	0007932	0073	14616								
183		OBS	0079	0271	34222	2731			14616								
		STD	0100	0311	3441	2743	0006699	0091	14639								
		STD	0125	0352	3462	2755	0005520	0107	14664								
183		OBS	0131	0361	34660	2758			14669								
		STD	0150	0362	3468	2759	0005189	0120	14673								
		STD	0200	0365	3473	2763	0004887	0145	14683								
		STD	0250	0368	3478	2767	0004587	0169	14693								
		STD	0300	0372	3482	2769	0004365	0191	14704								
		STD	0400	0378	3487	2773	0004146	0234	14723								
183		OBS	T0419	0379	34880	2773			14727								
		STD	0500	0371	3488	2774	0004066	0275	14737								
		STD	0600	0365	3489	2775	0004059	0316	14751								
183		OBS	T0630	0363	34888	2776			14755								
		STD	0700	0362	3489	2776	0004091	0356	14767								
		STD	0800	0360	3489	2776	0004153	0398	14782								
183		OBS	0843	0359	34893	2776			14789								
		STD	0900	0357	3489	2777	0004177	0439	14798								
		STD	1000	0354	3490	2777	0004203	0481	14814								
183		OBS	T1078	0352	34899	2778			14826								
		STD	1100	0353	3490	2777	0004263	0523	14830								
183		OBS	T1152	0355	34896	2777			14839								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF SMPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4530 N	04719 W		149	57	05	21	214	1965	003	9379	2195	12	14	4	2		X4	X	8		0145

WATER		WIND			BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE			DRY BULB	WET BULB			
		14	S24		112	100	100	1	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0601	3392	2672	0013328	0000	14737								
214		OBS	0000	0601	33919	2672			14737								
		STD	0010	0613	3397	2674	0013103	0013	14744								
214		OBS	0016	0620	34014	2677			14748								
		STD	0020	0601	3407	2684	0012225	0026	14742								
		STD	0030	0557	3419	2699	0010820	0037	14728								
214		OBS	0037	0531	34254	2707			14719								
		STD	0050	0499	3428	2713	0009514	0058	14708								
		STD	0075	0450	3434	2723	0008563	0080	14693								
214		OBS	0077	0447	34349	2724			14692								
		STD	0100	0449	3447	2733	0007603	0101	14698								
		STD	0125	0451	3457	2741	0006903	0119	14705								
		STD	0150	0453	3466	2748	0006278	0135	14711								
		STD	0200	0458	3476	2755	0005631	0165	14722								
214		OBS	0203	0458	34761	2756			14723								
		STD	0250	0379	3475	2763	0004958	0191	14697								
214		OBS	0280	0378	34734	2762			14702								
		STD	0300	0420	3482	2764	0004875	0216	14724								
214		OBS	0330	0460	34907	2767			14747								
		STD	0400	0432	3491	2770	0004467	0263	14747								
214		OBS	T0407	0430	34906	2770			14747								
		STD	0500	0425	3491	2771	0004461	0307	14760								
		STD	0600	0416	3491	2772	0004458	0352	14773								
214		OBS	0612	0415	34913	2772			14775								
		STD	0700	0399	3492	2775	0004285	0396	14783								
		STD	0800	0384	3492	2776	0004205	0438	14793								
214		OBS	0815	0382	34922	2776			14795								
		STD	0900	0371	3492	2777	0004143	0480	14804								
		STD	1000	0362	3491	2778	0004197	0522	14817								
214		OBS	T1042	0360	34909	2778			14823								
		STD	1100	0359	3491	2777	0004275	0564	14832								
214		OBS	T1153	0359	34904	2777			14841								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4532 N	04635 W		149	56	05	22	015	1965	003	9380	2963	12	XX	0	0		X4	X	8	0146

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		19	S08	119	083	083	1	10	

MESSENGR TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ△O DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0672	3398	2668	0013734	0000	14766								
015		OBS	0000	0672	33982	2668			14766								
		STD	0010	0589	3403	2682	0012368	0013	14735								
		STD	0020	0523	3406	2693	0011395	0025	14710								
015		OBS	0025	0497	34076	2697			14701								
		STD	0030	0494	3408	2698	0010937	0036	14700								
		STD	0050	0483	3408	2699	0010839	0058	14699								
015		OBS	0073	0471	34100	2702			14698								
		STD	0075	0470	3411	2703	0010501	0085	14698								
		STD	0100	0459	3420	2711	0009737	0110	14699								
		STD	0125	0448	3428	2718	0009046	0133	14700								
		STD	0150	0438	3436	2726	0008357	0155	14700								
		STD	0200	0416	3450	2739	0007128	0194	14701								
015		OBS	0202	0415	34509	2740			14702								
		STD	0250	0436	3464	2748	0006340	0227	14720								
		STD	0300	0457	3473	2753	0005956	0258	14738								
015		OBS	T0302	0458	34736	2754			14739								
		STD	0400	0436	3482	2762	0005191	0314	14747								
015		OBS	0403	0435	34817	2762			14747								
		STD	0500	0394	3485	2769	0004562	0363	14746								
		STD	0600	0364	3487	2774	0004175	0406	14751								
015		OBS	T0604	0363	34873	2774			14751								
		STD	0700	0352	3489	2777	0003977	0447	14763								
		STD	0800	0341	3491	2779	0003803	0486	14775								
015		OBS	0803	0341	34910	2780			14775								
		STD	0900	0338	3492	2781	0003765	0524	14790								
		STD	1000	0336	3492	2781	0003822	0562	14806								
015		OBS	T1027	0335	34925	2781			14810								
		STD	1100	0333	3493	2782	0003791	0600	14822								
		STD	1200	0331	3494	2783	0003801	0638	14838								
015		OBS	T1216	0331	34937	2783			14840								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4536 N	04604 W		149	56	05	22	048	1965	003	9381	3383	12	24	3	3		X4	X	9	0147

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		23	S14	115	083	078	1	13	

MESSENGR TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ△O DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4–P µg-at/l	TOTAL–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0736	3391	2653	0015145	0000	14790								
048		OBS	0000	0736	33905	2653			14790								
		STD	0010	0688	3400	2667	0013820	0014	14774								
		STD	0020	0660	3409	2678	0012804	0028	14766								
048		OBS	0025	0654	34131	2682			14765								
		STD	0030	0667	3416	2682	0012386	0040	14771								
		STD	0050	0700	3428	2688	0011928	0065	14789								
048		OBS	0050	0700	34283	2688			14789								
		STD	0075	0663	3430	2694	0011358	0094	14779								
		STD	0100	0626	3446	2711	0009732	0120	14771								
048		OBS	0111	0610	34580	2723			14768								
		STD	0125	0672	3477	2730	0008041	0142	14797								
048		OBS	0125	0672	34771	2730			14797								
		STD	0150	0584	3473	2738	0007286	0162	14765								
048		OBS	0150	0584	34727	2738			14765								
		STD	0200	0427	3456	2743	0006826	0197	14707								
048		OBS	0200	0427	34556	2743			14707								
		STD	0250	0418	3474	2758	0005387	0227	14714								
048		OBS	0250	0418	34742	2758			14714								
		STD	0300	0444	3483	2763	0005063	0253	14734								
048		OBS	T0311	0448	34849	2764			14738								
		STD	0400	0429	3487	2767	0004725	0302	14745								
		STD	0500	0408	3489	2771	0004437	0348	14753								
		STD	0600	0386	3491	2775	0004144	0391	14761								
048		OBS	0601	0386	34907	2775			14761								
		STD	0700	0385	3493	2777	0004046	0432	14777								
048		OBS	0796	0383	34933	2777			14792								
		STD	0800	0382	3493	2777	0004086	0473	14792								
		STD	0900	0367	3492	2778	0004097	0514	14803								
		STD	1000	0358	3491	2778	0004173	0555	14815								
048		OBS	1021	0357	34904	2778			14818								
		STD	1100	0358	3491	2778	0004232	0597	14832								
		STD	1200	0359	3492	2779	0004255	0639	14849								
048		OBS	T1200	0359	34920	2779			14849								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4510 N	04548 W		149	55	05	22	084	1965	003	9382	3566	12	25	3	3		X2	6	8		0148

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		24	S08	132	083	078	7	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	1310	3541	2671	0013451	0000	15017								
084		OBS	0000	1310	35408	2671			15017								
		STD	0010	1352	3562	2678	0012743	0013	15035								
		STD	0020	1380	3577	2684	0012228	0026	15048								
084		OBS	0026	1390	35833	2687			15053								
		STD	0030	1386	3583	2688	0011938	0038	15052								
		STD	0050	1365	3579	2689	0011869	0061	15048								
084		OBS	0062	1351	35771	2690			15045								
		STD	0075	1331	3573	2692	0011679	0091	15041								
		STD	0100	1293	3566	2694	0011521	0120	15031								
		STD	0125	1254	3559	2696	0011373	0149	15021								
		STD	0150	1216	3552	2698	0011244	0177	15011								
084		OBS	0155	1208	35506	2698			15009								
084		OBS	0186	1279	35718	2701			15041								
		STD	0200	1226	3561	2703	0010908	0232	15024								
		STD	0250	1059	3530	2710	0010286	0285	14970								
084		OBS	T0285	0961	35150	2715			14938								
		STD	0300	0931	3514	2720	0009429	0334	14930								
		STD	0400	0759	3506	2740	0007558	0419	14880								
084		OBS	T0414	0739	35053	2743			14874								
		STD	0500	0643	3504	2755	0006224	0488	14851								
		STD	0600	0556	3503	2765	0005316	0546	14832								
084		OBS	0621	0541	35022	2766			14830								
		STD	0700	0507	3502	2770	0004849	0597	14829								
		STD	0800	0468	3501	2774	0004547	0644	14829								
084		OBS	0828	0458	35005	2775			14830								
		STD	0900	0433	3498	2776	0004441	0689	14831								
		STD	1000	0405	3495	2776	0004417	0733	14836								
084		OBS	T1056	0393	34943	2777			14840								
		STD	1100	0385	3494	2778	0004338	0777	14844								
		STD	1200	0374	3493	2778	0004365	0820	14856								
084		OBS	T1241	0372	34924	2778			14862								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4442 N	04600 W		149	46	05	22	118	1965	003	9383	3658	11	24	3	2		X2	6	8		0149

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		24	S09	152	083	072	7	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA–T	SPECIFIC VOLUME ANOMALY–X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	1005	3445	2653	0015126	0000	14899								
118		OBS	0000	1005	34445	2653			14899								
		STD	0010	1073	3463	2656	0014909	0015	14927								
118		OBS	0015	1107	34727	2657			14941								
		STD	0020	1041	3484	2678	0012844	0029	14920								
118		OBS	0024	0995	34919	2692			14905								
		STD	0030	0994	3493	2692	0011467	0041	14906								
		STD	0050	0991	3495	2694	0011316	0064	14908								
		STD	0075	0988	3497	2697	0011120	0092	14911								
118		OBS	0080	0987	34976	2697			14912								
		STD	0100	0925	3493	2704	0010450	0119	14892								
		STD	0125	0858	3488	2711	0009875	0144	14870								
		STD	0150	0803	3482	2715	0009506	0168	14853								
		STD	0200	0731	3472	2717	0009375	0216	14832								
118		OBS	0209	0723	34695	2717			14830								
		STD	0250	0724	3486	2730	0008278	0260	14839								
118		OBS	0291	0724	34904	2733			14846								
		STD	0300	0686	3485	2734	0007914	0300	14832								
118		OBS	0349	0575	34759	2742			14795								
118		OBS	T0384	0592	34903	2751			14809								
		STD	0400	0589	3492	2752	0006258	0371	14811								
		STD	0500	0573	3501	2762	0005509	0430	14822								
118		OBS	0580	0559	35036	2765			14830								
		STD	0600	0541	3502	2766	0005159	0483	14826								
		STD	0700	0468	3498	2772	0004660	0532	14812								
118		OBS	0778	0430	34962	2775			14809								
		STD	0800	0426	3496	2775	0004381	0578	14811								
		STD	0900	0415	3497	2777	0004310	0621	14823								
118		OBS	T0996	0411	34973	2777			14838								
		STD	1000	0411	3497	2778	0004315	0664	14838								
118		OBS	T1058	0412	34994	2779			14849								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4410 N	04603 W		149	46	05	22	156	1965	003	9384	3931	12	04	3	2		X2	6	8		0150

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		22	S08	156	106	089	8	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SUSP
		STD	0000	1040	3474	2670	0013521	0000	14915								
156		OBS	0000	1040	34740	2670			14915								
		STD	0010	0992	3478	2681	0012460	0013	14900								
		STD	0020	0958	3482	2690	0011641	0025	14890								
		STD	0030	0938	3486	2697	0011050	0036	14884								
156		OBS	0032	0936	34870	2698			14884								
		STD	0050	0982	3498	2699	0010906	0058	14905								
156		OBS	0073	1010	35084	2702			14921								
		STD	0075	1000	3507	2703	0010590	0085	14917								
		STD	0100	0884	3497	2714	0009540	0110	14877								
		STD	0125	0790	3489	2722	0008783	0133	14845								
		STD	0150	0718	3484	2729	0008185	0154	14820								
156		OBS	0185	0655	34828	2737			14801								
		STD	0200	0655	3487	2740	0007195	0193	14804								
		STD	0250	0655	3496	2747	0006602	0227	14813								
156		OBS	0253	0655	34966	2747			14814								
156		OBS	T0291	0621	34980	2753			14807								
		STD	0300	0612	3498	2754	0005964	0259	14805								
		STD	0400	0535	3498	2764	0005113	0314	14790								
156		OBS	0422	0522	34982	2766			14788								
		STD	0500	0507	3500	2769	0004773	0364	14795								
		STD	0600	0486	3502	2773	0004478	0410	14804								
156		OBS	T0633	0478	35026	2774			14806								
		STD	0700	0456	3501	2775	0004291	0454	14808								
		STD	0800	0429	3499	2777	0004217	0496	14813								
156		OBS	T0842	0420	34981	2777			14816								
		STD	0900	0411	3498	2778	0004173	0538	14822								
		STD	1000	0398	3497	2779	0004184	0580	14833								
156		OBS	1070	0390	34964	2779			14841								
		STD	1100	0387	3496	2779	0004215	0622	14845								
156		OBS	T1183	0380	34956	2779			14856								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4410 N	04636 W		149	46	05	22	185	1965	003	9385	3931	12	23	3	2		X2	6	8		0151

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		23	S10	159	083	072	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SUSP
		STD	0000	0799	3391	2644	0015995	0000	14815								
185		OBS	0000	0799	33907	2644			14815								
		STD	0010	0908	3442	2667	0013803	0015	14864								
		STD	0020	0999	3485	2686	0012056	0028	14905								
185		OBS	0020	0999	34853	2686			14905								
		STD	0030	0993	3488	2689	0011789	0040	14905								
		STD	0050	0981	3493	2695	0011251	0063	14904								
		STD	0075	0967	3500	2703	0010580	0090	14904								
		STD	0100	0952	3506	2710	0009910	0116	14904								
185		OBS	0122	0939	35122	2717			14903								
		STD	0125	0925	3510	2718	0009267	0140	14898								
		STD	0150	0819	3498	2725	0008584	0162	14861								
185		OBS	0189	0684	34823	2732			14813								
		STD	0200	0681	3484	2734	0007801	0203	14814								
		STD	0250	0666	3489	2740	0007254	0241	14817								
		STD	0300	0648	3495	2747	0006674	0275	14819								
		STD	0400	0600	3506	2762	0005350	0336	14817								
185		OBS	T0408	0596	35070	2763			14817								
		STD	0500	0520	3502	2769	0004770	0386	14801								
		STD	0600	0460	3498	2773	0004453	0432	14792								
185		OBS	T0612	0454	34976	2773			14792								
		STD	0700	0431	3496	2774	0004362	0476	14797								
		STD	0800	0411	3495	2776	0004299	0520	14805								
185		OBS	0816	0408	34949	2776			14806								
		STD	0900	0401	3495	2777	0004275	0562	14817								
		STD	1000	0392	3495	2778	0004259	0605	14830								
185		OBS	T1041	0389	34952	2778			14836								
		STD	1100	0384	3495	2778	0004252	0648	14843								
185		OBS	T1184	0377	34939	2778			14854								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4416 N	04716 W		149	47	05	22	218	1965	003	9386	4023	11	21	5	4		X2	6	8		0152

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S14	146	083	078	8	08	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	1062	3495	2682	0012361	0000	14926								
218		OBS	0000	1062	34947	2682			14926								
		STD	0010	1063	3499	2685	0012083	0012	14928								
		STD	0020	1063	3502	2688	0011885	0024	14930								
		STD	0030	1064	3506	2691	0011630	0036	14933								
		STD	0050	1065	3513	2696	0011177	0059	14937								
		STD	0075	1066	3520	2701	0010737	0086	14943								
		STD	0100	1068	3527	2706	0010314	0112	14948								
		STD	0125	1069	3532	2710	0010021	0138	14953								
		STD	0150	1071	3537	2713	0009746	0163	14959								
218		OBS	0171	1072	35399	2716			14963								
		STD	0200	1074	3540	2715	0009681	0211	14968								
		STD	0250	1077	3541	2715	0009821	0260	14978								
		STD	0300	1081	3541	2715	0009961	0309	14987								
218		OBS	T0317	1082	35414	2715			14991								
218		OBS	0353	1046	35314	2714			14982								
		STD	0400	0889	3520	2731	0008515	0402	14931								
		STD	0500	0633	3503	2755	0006162	0475	14847								
218		OBS	0545	0553	34979	2762			14821								
		STD	0600	0524	3498	2765	0005262	0532	14819								
		STD	0700	0477	3497	2770	0004822	0583	14816								
218		OBS	T0745	0458	34971	2772			14815								
		STD	0800	0435	3496	2774	0004512	0629	14815								
		STD	0900	0404	3494	2776	0004385	0674	14818								
218		OBS	0957	0392	34932	2776			14823								
		STD	1000	0386	3493	2777	0004320	0717	14827								
218		OBS	T1099	0380	34931	2777			14841								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4423 N	04758 W		149	47	05	23	013	1965	003	9387	3621	13	24	4	4		X8	7	8		0153

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S10	139	050	044	7	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0760	3377	2639	0016460	0000	14798								
013		OBS	0000	0760	33772	2639			14798								
		STD	0010	0996	3460	2667	0013856	0015	14899								
		STD	0020	1186	3527	2684	0012200	0028	14977								
013		OBS	0028	1303	35702	2695			15023								
		STD	0030	1293	3568	2695	0011212	0040	15020								
		STD	0050	1203	3552	2701	0010750	0062	14991								
		STD	0075	1109	3535	2705	0010376	0088	14960								
013		OBS	0098	1042	35240	2709			14938								
		STD	0100	1041	3524	2709	0010075	0114	14938								
		STD	0125	1029	3524	2711	0009952	0139	14938								
		STD	0150	1017	3523	2712	0009827	0164	14938								
		STD	0200	0993	3523	2716	0009579	0212	14937								
013		OBS	0218	0984	35226	2717			14937								
		STD	0250	0867	3510	2727	0008612	0258	14897								
		STD	0300	0726	3496	2737	0007654	0298	14849								
013		OBS	T0327	0670	34922	2742			14831								
		STD	0400	0615	3498	2754	0006147	0367	14822								
013		OBS	0435	0591	35000	2759			14819								
		STD	0500	0552	3500	2763	0005312	0425	14814								
		STD	0600	0498	3500	2770	0004744	0475	14808								
013		OBS	0651	0474	35004	2773			14807								
		STD	0700	0452	3499	2774	0004391	0521	14806								
		STD	0800	0415	3496	2776	0004272	0564	14807								
013		OBS	T0868	0397	34943	2777			14810								
		STD	0900	0394	3494	2777	0004251	0606	14814								
		STD	1000	0384	3494	2778	0004252	0649	14827								
		STD	1100	0377	3493	2778	0004285	0692	14840								
013		OBS	T1108	0376	34934	2778			14841								
		STD	1200	0371	3493	2778	0004305	0735	14854								
		STD	1300	0366	3493	2779	0004336	0778	14869								
013		OBS	1306	0366	34932	2779			14870								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4430 N	04836 W		149	48	05	23	056	1965	003	9388	2743	12	21	1	2		X2	X	8		0154

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		21	S08	105	050	044	7	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0450	3380	2680	0012529	0000	14673								
	056	OBS	0000	0450	33802	2680			14673								
		STD	0010	0451	3380	2680	0012560	0013	14675								
	056	OBS	0016	0451	33798	2680			14676								
		STD	0020	0426	3380	2683	0012320	0025	14667								
		STD	0030	0369	3382	2690	0011625	0037	14645								
		STD	0050	0274	3387	2703	0010421	0059	14608								
	056	OBS	0051	0270	33877	2704			14606								
		STD	0075	0286	3401	2713	0009454	0084	14619								
		STD	0100	0302	3416	2723	0008533	0106	14632								
		STD	0125	0318	3430	2733	0007626	0127	14645								
		STD	0150	0335	3444	2743	0006728	0144	14658								
		STD	0200	0367	3472	2762	0004952	0174	14684								
	056	OBS	0201	0368	34730	2763			14685								
		STD	0250	0381	3478	2765	0004743	0198	14699								
		STD	0300	0394	3482	2767	0004571	0221	14713								
		STD	0400	0420	3492	2772	0004246	0265	14742								
	056	OBS	T0402	0420	34919	2772			14742								
		STD	0500	0395	3490	2773	0004195	0307	14747								
		STD	0600	0369	3489	2775	0004075	0349	14753								
	056	OBS	T0602	0368	34889	2775			14753								
		STD	0700	0364	3489	2776	0004092	0390	14768								
		STD	0800	0360	3490	2777	0004096	0431	14783								
	056	OBS	0805	0360	34898	2777			14783								
		STD	0900	0357	3490	2777	0004115	0472	14798								
		STD	1000	0355	3491	2778	0004138	0513	14814								
	056	OBS	T1032	0354	34908	2778			14819								
		STD	1100	0352	3491	2779	0004162	0554	14829								
		STD	1200	0350	3491	2779	0004219	0596	14845								
	056	OBS	T1218	0350	34914	2779			14848								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4431 N	04850 W		149	48	05	23	076	1965	003	9389	1390	12	20	2	2		X2	6	8		0155

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		23	S03	112	033	028	6	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0196	3290	2631	0017187	0000	14552								
	076	OBS	0000	0196	32895	2631			14552								
		STD	0010	0195	3290	2631	0017177	0017	14553								
	076	OBS	0015	0195	32897	2632			14554								
		STD	0020	0052	3303	2651	0015284	0033	14493								
	076	OBS	0025	-0049	33141	2665			14449								
		STD	0030	-0034	3319	2668	0013658	0048	14457								
	076	OBS	0048	0017	33366	2680			14486								
		STD	0050	0022	3339	2682	0012381	0074	14489								
		STD	0075	0085	3366	2700	0010669	0103	14525								
		STD	0100	0139	3389	2715	0009270	0128	14557								
	076	OBS	0120	0174	34046	2725			14578								
		STD	0125	0179	3407	2727	0008197	0149	14581								
		STD	0150	0203	3417	2733	0007632	0169	14597								
		STD	0200	0246	3435	2744	0006646	0205	14627								
	076	OBS	0214	0257	34398	2746			14635								
		STD	0250	0285	3450	2752	0005889	0236	14654								
		STD	0300	0319	3462	2759	0005340	0264	14678								
		STD	0400	0365	3478	2767	0004684	0315	14717								
	076	OBS	T0426	0373	34813	2769			14725								
		STD	0500	0378	3484	2770	0004462	0360	14740								
	076	OBS	0576	0381	34862	2772			14754								
		STD	0600	0381	3486	2772	0004405	0405	14758								
		STD	0700	0380	3487	2773	0004423	0449	14774								
	076	OBS	T0769	0380	34879	2773			14786								
		STD	0800	0380	3488	2773	0004454	0493	14791								
		STD	0900	0379	3489	2774	0004463	0538	14807								
	076	OBS	0982	0379	34891	2774			14821								
		STD	1000	0378	3489	2774	0004520	0583	14823								
		STD	1100	0374	3490	2775	0004529	0628	14839								
	076	OBS	T1157	0370	34898	2776			14846								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4435 N	04905 W		149	49	05	23	092	1965	003	9390	0141	01	25	2	2		X2	6	8		0156

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		27	S11	105	033	028	8	03	

MESSENGR TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0201	3291	2632	0017108	0000	14554								
092		OBS	0000	0201	32910	2632			14554								
		STD	0010	0129	3296	2641	0016255	0017	14525								
		STD	0020	0068	3300	2648	0015597	0033	14499								
092		OBS	0027	0032	33029	2652			14485								
		STD	0030	0031	3304	2653	0015097	0048	14485								
		STD	0050	0022	3312	2660	0014439	0077	14485								
		STD	0075	0011	3320	2667	0013769	0113	14485								
		STD	0100	-0000	3326	2672	0013252	0147	14485								
092		OBS	0106	-0003	33274	2674			14485								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4437 N	04919 W		149	49	05	23	103	1965	003	9391	0064	01	27	3	4		X2	6	8		0157

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		26	S10	105	033	028	8	05	

MESSENGR TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0233	3304	2640	0016339	0000	14570								
103		OBS	0000	0233	33042	2640			14570								
103		OBS	0007	0231	33048	2641			14571								
		STD	0010	0206	3304	2642	0016160	0016	14560								
103		OBS	0018	0146	33028	2645			14535								
		STD	0020	0133	3303	2646	0015748	0032	14529								
		STD	0030	0079	3304	2651	0015360	0048	14507								
		STD	0050	0029	3306	2655	0014947	0078	14487								
103		OBS	0056	0028	33064	2655			14488								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4400 N	04918 W		149	49	05	23	137	1965	003	9392	0044	00	26	3	4		X2	6	8		0158

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		20	S08	105	067	056	8	04	

MESSENGR TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA–T	SPECIFIC VOLUME ANOMALY–x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄–P µg-at/l	TOTAL–P µg-at/l	NO₂–N µg-at/l	NO₃–N µg-at/l	SiO₄–Si µg-at/l	pH	SCC
		STD	0000	0299	3305	2635	0016821	0000	14599								
137		OBS	0000	0299	33047	2635			14599								
		STD	0010	0242	3305	2640	0016350	0017	14576								
137		OBS	0015	0212	33055	2643			14564								
		STD	0020	0173	3306	2646	0015803	0033	14547								
137		OBS	0025	0149	33058	2648			14538								
		STD	0030	0147	3306	2648	0015607	0048	14537								
137		OBS	0035	0144	33061	2648			14537								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4355 N	04907 W		149	39	05	23	151	1965	003	9393	0183	02	21	4	3		X2	7	8		0159

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		18	S16	088	050	044	8	05	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0199	3297	2637	0016662	0000	14554								
151		OBS	0000	0199	32967	2637			14554								
		STD	0010	0088	3307	2652	0015175	0016	14508								
		STD	0020	0002	3316	2665	0014024	0031	14472								
151		OBS	0020	0002	33163	2665			14472								
		STD	0030	0003	3319	2667	0013819	0044	14474								
		STD	0050	0004	3325	2671	0013362	0072	14479								
		STD	0075	0006	3336	2680	0012524	0104	14485								
151		OBS	0081	0006	33390	2683			14487								
		STD	0100	0045	3357	2695	0011124	0134	14510								
		STD	0125	0089	3376	2708	0009936	0160	14537								
		STD	0150	0124	3391	2718	0009026	0184	14559								
151		OBS	0152	0127	33917	2718			14560								
151		OBS	0179	0156	34022	2724			14579								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4348 N	04856 W		149	38	05	23	165	1965	003	9394	0887	08	18	3	3		X8	7	8		0160

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		18	S12	081	050	044	7	07	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0184	3293	2635	0016831	0000	14547								
165		OBS	0000	0184	32931	2635			14547								
		STD	0010	0183	3313	2651	0015315	0016	14551								
		STD	0020	0182	3332	2666	0013867	0031	14555								
		STD	0030	0180	3348	2679	0012647	0044	14558								
165		OBS	0049	0178	33734	2700			14564								
		STD	0050	0177	3374	2700	0010658	0067	14563								
		STD	0075	0159	3396	2719	0008871	0092	14563								
165		OBS	0079	0158	33988	2721			14563								
		STD	0100	0196	3413	2730	0007861	0113	14585								
		STD	0125	0238	3429	2739	0006993	0131	14610								
		STD	0150	0274	3443	2748	0006254	0148	14632								
		STD	0200	0332	3465	2760	0005163	0176	14668								
165		OBS	0209	0340	34678	2761			14673								
		STD	0250	0350	3472	2764	0004853	0201	14685								
		STD	0300	0360	3477	2767	0004621	0225	14698								
165		OBS	T0384	0373	34827	2770			14718								
		STD	0400	0374	3483	2770	0004405	0270	14721								
		STD	0500	0378	3486	2772	0004313	0314	14740								
165		OBS	T0567	0380	34877	2773			14752								
		STD	0600	0380	3488	2773	0004291	0357	14758								
		STD	0700	0380	3488	2773	0004351	0400	14774								
165		OBS	T0764	0379	34884	2774			14784								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR,1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4345 N	04842 W		149	38	05	23	179	1965	003	9395	2396	11	16	3	2		X8	7	8		0161

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		16	S16	061	061	050	5	11	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	DUP
		STD	0000	0408	3362	2670	0013487	0000	14653								
179		OBS	0000	0408	33619	2670			14653								
		STD	0010	0407	3363	2671	0013407	0013	14655								
179		OBS	0015	0406	33634	2672			14655								
		STD	0020	0362	3376	2686	0012004	0026	14639								
179		OBS	0029	0298	33945	2707			14616								
		STD	0030	0297	3395	2707	0009999	0037	14615								
		STD	0050	0277	3405	2717	0009087	0056	14611								
179		OBS	0073	0268	34166	2727			14613								
		STD	0075	0270	3418	2728	0008061	0078	14614								
		STD	0100	0298	3436	2740	0006960	0096	14633								
		STD	0125	0321	3451	2750	0006056	0113	14649								
179		OBS	0144	0337	34607	2756			14660								
		STD	0150	0340	3462	2757	0005425	0127	14663								
		STD	0200	0360	3471	2762	0004985	0153	14681								
		STD	0250	0375	3478	2766	0004654	0177	14696								
179		OBS	T0290	0384	34824	2768			14707								
		STD	0300	0385	3483	2769	0004425	0200	14709								
		STD	0400	0390	3487	2771	0004278	0243	14729								
179		OBS	0414	0391	34875	2772			14731								
		STD	0500	0382	3488	2773	0004207	0286	14742								
179		OBS	T0586	0376	34889	2774			14754								
		STD	0600	0376	3489	2775	0004158	0328	14756								
		STD	0700	0373	3490	2776	0004139	0369	14771								
179		OBS	0785	0370	34906	2776			14784								
		STD	0800	0369	3491	2776	0004140	0411	14787								
		STD	0900	0365	3491	2777	0004174	0452	14801								
		STD	1000	0360	3491	2777	0004205	0494	14816								
179		OBS	T1003	0360	34906	2777			14817								
		STD	1100	0359	3491	2778	0004245	0536	14832								
179		OBS	T1101	0359	34910	2778			14833								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10		10°	1°	MO	DAY	HR,1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4330 N	04806 W		149	38	05	23	213	1965	003	9396	3292	11	24	4	3		X2	7	8		0162

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		26	S21	037	067	067	6	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S °/..	SIGMA-T	SPECIFIC VOLUME ANOMALY-X10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	DUP
		STD	0000	0609	3332	2624	0017883	0000	14732								
213		OBS	0000	0609	33323	2624			14732								
		STD	0010	0606	3332	2624	0017856	0018	14733								
213		OBS	0015	0605	33325	2625			14733								
		STD	0020	0468	3336	2643	0016055	0035	14678								
213		OBS	0026	0329	33401	2661			14621								
		STD	0030	0344	3351	2668	0013729	0050	14630								
		STD	0050	0417	3397	2697	0010980	0074	14670								
		STD	0075	0509	3434	2716	0009206	0100	14717								
213		OBS	0091	0568	34463	2719			14746								
		STD	0100	0507	3445	2725	0008424	0122	14722								
		STD	0125	0394	3439	2733	0007637	0142	14678								
213		OBS	0131	0380	34381	2734			14673								
		STD	0150	0425	3449	2738	0007250	0160	14697								
213		OBS	0187	0484	34665	2745			14730								
		STD	0200	0479	3468	2747	0006466	0195	14730								
		STD	0250	0467	3475	2754	0005863	0225	14734								
213		OBS	T0279	0465	34791	2757			14739								
		STD	0300	0471	3482	2759	0005418	0254	14745								
		STD	0400	0499	3498	2768	0004730	0304	14775								
213		OBS	0403	0500	34980	2768			14776								
		STD	0500	0453	3496	2772	0004411	0350	14773								
		STD	0600	0417	3494	2774	0004247	0393	14774								
213		OBS	0600	0417	34940	2774			14774								
		STD	0700	0399	3493	2775	0004211	0436	14783								
213		OBS	0794	0387	34920	2776			14793								
		STD	0800	0387	3492	2776	0004240	0478	14794								
		STD	0900	0382	3492	2776	0004264	0520	14809								
		STD	1000	0375	3492	2777	0004262	0563	14823								
213		OBS	T1013	0374	34922	2777			14824								
		STD	1100	0367	3492	2778	0004268	0606	14836								
213		OBS	T1118	0365	34918	2778			14838								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.		NODC STATION NUMBER
31	540	EV	4316 N	04731 W		149	37	05	24	006	1965	003	9397	3584	13	25	6	3		X2	7	8		0163

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		26	S30	061	067	061	7	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0878	3416	2651	0015282	0000	14848								
006		OBS	0000	0878	34157	2651			14848								
		STD	0010	0863	3418	2655	0014944	0015	14844								
		STD	0020	0848	3419	2659	0014608	0030	14840								
		STD	0030	0833	3421	2662	0014281	0044	14836								
006		OBS	0032	0830	34214	2663			14836								
		STD	0050	0923	3462	2680	0012633	0071	14879								
		STD	0075	1024	3508	2699	0010913	0101	14926								
006		OBS	0080	1041	35157	2702			14934								
		STD	0100	1024	3515	2704	0010480	0127	14931								
		STD	0125	1003	3513	2707	0010284	0153	14927								
		STD	0150	0983	3512	2710	0010090	0179	14924								
		STD	0200	0941	3510	2715	0009708	0228	14916								
006		OBS	0239	0908	35075	2718			14910								
		STD	0250	0873	3505	2722	0009074	0275	14899								
006		OBS	T0290	0766	34982	2733			14864								
		STD	0300	0757	3499	2735	0007874	0318	14862								
		STD	0400	0673	3503	2750	0006558	0390	14846								
006		OBS	0426	0652	35038	2754			14842								
		STD	0500	0579	3501	2761	0005593	0451	14825								
		STD	0600	0505	3499	2768	0004927	0503	14811								
006		OBS	0639	0483	34983	2770			14808								
		STD	0700	0471	3499	2772	0004622	0551	14814								
		STD	0800	0451	3499	2774	0004485	0596	14822								
006		OBS	T0855	0440	34993	2776			14827								
		STD	0900	0431	3499	2777	0004343	0641	14830								
		STD	1000	0412	3497	2777	0004355	0684	14839								
006		OBS	1085	0397	34961	2778			14847								
		STD	1100	0394	3496	2778	0004301	0727	14848								
		STD	1200	0378	3494	2778	0004340	0771	14857								
006		OBS	T1274	0366	34926	2778			14865								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT.	WAVE OBSERVATIONS PER.	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT.		NODC STATION NUMBER
31	540	EV	4304 N	04704 W		149	37	05	24	034	1965	003	9398	3749	12	26	5	2		X2	7	8		0164

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		27	S23	071	083	072	4	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-10^7	$\Sigma\Delta D$ DYN. M. x 10^3	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	1088	3497	2679	0012633	0000	14935								
034		OBS	0000	1088	34970	2679			14935								
		STD	0010	1088	3498	2680	0012590	0013	14937								
		STD	0020	1089	3498	2680	0012620	0025	14939								
034		OBS	0024	1089	34985	2680			14940								
		STD	0030	1075	3499	2683	0012334	0038	14936								
		STD	0050	1035	3502	2693	0011483	0062	14925								
		STD	0075	0999	3506	2702	0010647	0089	14917								
		STD	0100	0978	3509	2708	0010137	0115	14913								
034		OBS	0101	0977	35091	2708			14913								
		STD	0125	0976	3512	2711	0009934	0140	14917								
034		OBS	0140	0975	35137	2712			14919								
		STD	0150	0981	3517	2714	0009698	0165	14924								
		STD	0200	1009	3526	2716	0009607	0213	14943								
034		OBS	0233	1027	35279	2714			14955								
		STD	0250	0980	3523	2718	0009463	0261	14941								
		STD	0300	0854	3510	2729	0008508	0306	14900								
034		OBS	T0377	0699	34963	2741			14852								
		STD	0400	0672	3497	2745	0006988	0383	14845								
		STD	0500	0571	3499	2760	0005637	0446	14821								
034		OBS	T0571	0519	34995	2767			14812								
		STD	0600	0509	3499	2768	0004977	0499	14813								
		STD	0700	0476	3499	2772	0004684	0548	14816								
034		OBS	0771	0455	34980	2773			14819								
		STD	0800	0446	3498	2774	0004498	0594	14820								
		STD	0900	0418	3496	2776	0004406	0638	14824								
034		OBS	T0997	0399	34954	2777			14833								
		STD	1000	0399	3495	2777	0004315	0682	14833								
		STD	1100	0387	3495	2778	0004267	0725	14845								
034		OBS	T1178	0383	34952	2779			14856								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT IND CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4217 N	04821 W		149	28	05	24	112	1965	003	9399	3658	12	28	4	2		X2	6	8		0165

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		27	S19	102	061	050	8	12	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARO TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0867	3452	2682	0012402	0000	14849								
112		OBS	0000	0867	34523	2682			14849								
		STD	0010	0866	3456	2685	0012111	0012	14850								
		STD	0020	0864	3460	2688	0011827	0024	14852								
		STD	0030	0863	3464	2691	0011534	0036	14853								
112		OBS	0035	0862	34658	2693			14854								
		STD	0050	0690	3439	2697	0010999	0058	14787								
112		OBS	0060	0609	34268	2698			14755								
		STD	0075	0669	3442	2703	0010514	0085	14783								
		STD	0100	0769	3468	2709	0009991	0111	14829								
		STD	0125	0868	3494	2714	0009585	0135	14875								
112		OBS	0139	0924	35082	2716			14900								
		STD	0150	0825	3493	2720	0009044	0159	14862								
112		OBS	0174	0699	34760	2725			14816								
		STD	0200	0783	3498	2730	0008149	0202	14855								
112		OBS	T0224	0825	35110	2734			14877								
		STD	0250	0753	3505	2740	0007286	0240	14853								
		STD	0300	0639	3497	2750	0006392	0274	14815								
112		OBS	0332	0584	34929	2754			14798								
		STD	0400	0512	3489	2759	0005531	0334	14779								
112		OBS	0400	0512	34888	2759			14779								
		STD	0500	0483	3495	2768	0004839	0386	14785								
		STD	0600	0456	3498	2773	0004405	0432	14791								
112		OBS	0603	0455	34983	2773			14791								
		STD	0700	0429	3498	2776	0004190	0475	14796								
		STD	0800	0406	3497	2778	0004091	0517	14803								
112		OBS	T0807	0405	34965	2777			14804								
		STD	0900	0387	3494	2777	0004182	0558	14811								
		STD	1000	0374	3493	2778	0004191	0600	14822								
112		OBS	1030	0372	34925	2778			14826								
		STD	1100	0371	3493	2778	0004242	0642	14838								
112		OBS	T1170	0370	34938	2779			14849								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT IND CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4227 N	04841 W		149	28	05	24	135	1965	003	9400	3237	11	29	4	2		X1	8	7		0166

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		29	S18	105	050	044	8	13	

MESSENGR TIME OF CAST HR 1/10	CAST NO.	CARO TYPE	DEPTH (m)	T °C	S °/₀₀	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0406	3344	2656	0014853	0000	14650								
135		OBS	0000	0406	33435	2656			14650								
		STD	0010	0649	3401	2673	0013249	0014	14759								
		STD	0020	0840	3447	2682	0012434	0027	14841								
		STD	0030	0979	3483	2687	0011946	0039	14899								
135		OBS	0030	0979	34827	2687			14899								
		STD	0050	0943	3487	2697	0011102	0062	14889								
		STD	0075	0898	3492	2708	0010057	0089	14878								
135		OBS	0081	0887	34935	2711			14875								
		STD	0100	0636	3451	2714	0009482	0113	14775								
135		OBS	0102	0617	34483	2714			14768								
		STD	0125	0486	3437	2721	0008787	0136	14717								
135		OBS	0132	0484	34334	2719			14716								
		STD	0150	0655	3472	2728	0008236	0157	14794								
135		OBS	0172	0805	35072	2734			14860								
		STD	0200	0793	3504	2734	0007857	0197	14860								
		STD	0250	0708	3498	2741	0007165	0235	14834								
135		OBS	T0276	0632	34950	2749			14808								
		STD	0300	0534	3483	2752	0006105	0268	14771								
135		OBS	0308	0508	34802	2753			14761								
		STD	0400	0465	3485	2762	0005275	0325	14760								
135		OBS	T0403	0464	34849	2762			14760								
		STD	0500	0458	3492	2768	0004767	0375	14774								
		STD	0600	0446	3497	2773	0004398	0421	14786								
135		OBS	0600	0446	34965	2773			14786								
		STD	0700	0424	3496	2775	0004279	0464	14794								
135		OBS	T0791	0409	34958	2776			14802								
		STD	0800	0409	3496	2777	0004201	0507	14804								
		STD	0900	0404	3496	2777	0004237	0549	14819								
135		OBS	T0995	0397	34962	2778			14831								
		STD	1000	0397	3496	2778	0004246	0591	14832								
		STD	1100	0385	3495	2778	0004265	0634	14844								
135		OBS	T1122	0382	34946	2778			14846								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4249 N	04902 W		149	29	05	24	164	1965	003	9401	2542	11	30	4	3		X1	3	7		0167

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		29	S20	105	067	050	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0452	3343	2650	0015384	0000	14669								
164		OBS	0000	0452	33425	2650			14669								
		STD	0010	0391	3345	2659	0014604	0015	14646								
		STD	0020	0340	3348	2666	0013915	0029	14626								
		STD	0030	0297	3353	2674	0013170	0043	14610								
		STD	0050	0239	3364	2687	0011877	0068	14589								
164		OBS	0056	0229	33684	2692			14587								
		STD	0075	0296	3396	2708	0009942	0095	14623								
		STD	0100	0373	3429	2727	0008182	0118	14664								
		STD	0125	0438	3456	2742	0006837	0137	14699								
		STD	0150	0490	3479	2754	0005717	0152	14728								
164		OBS	0150	0490	34789	2754			14728								
		STD	0200	0489	3486	2760	0005230	0180	14737								
		STD	0250	0487	3491	2764	0004900	0205	14745								
		STD	0300	0486	3495	2767	0004644	0229	14753								
164		OBS	T0338	0485	34963	2768			14759								
164		OBS	0399	0462	34967	2771			14760								
		STD	0400	0462	3497	2772	0004331	0274	14760								
		STD	0500	0448	3498	2774	0004204	0316	14771								
164		OBS	T0599	0434	34984	2776			14781								
		STD	0600	0434	3498	2776	0004146	0358	14782								
		STD	0700	0420	3498	2777	0004084	0399	14792								
164		OBS	0797	0408	34971	2778			14803								
		STD	0800	0408	3497	2778	0004107	0440	14804								
		STD	0900	0394	3496	2778	0004140	0481	14814								
		STD	1000	0383	3494	2778	0004203	0523	14826								
164		OBS	T1015	0382	34941	2778			14828								
		STD	1100	0375	3495	2779	0004180	0565	14840								
164		OBS	T1103	0375	34945	2779			14840								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICATOR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	540	EV	4303 N	04916 W		149	39	05	24	192	1965	003	9402	1353	10	29	3	3		X	X			0168

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		25	S17	112	061	044	8	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0290	3347	2669	0013579	0000	14601								
192		OBS	0000	0290	33466	2669			14601								
		STD	0010	0263	3359	2682	0012427	0013	14593								
		STD	0020	0243	3371	2693	0011366	0025	14587								
		STD	0030	0228	3382	2703	0010421	0036	14584								
192		OBS	0048	0218	34011	2719			14585								
		STD	0050	0220	3403	2720	0008780	0055	14586								
		STD	0075	0249	3428	2738	0007132	0075	14607								
192		OBS	0086	0263	34371	2744			14616								
		STD	0100	0285	3445	2748	0006168	0092	14629								
192		OBS	0120	0313	34553	2754			14645								
		STD	0125	0317	3457	2755	0005567	0106	14648								
		STD	0150	0338	3466	2760	0005106	0120	14662								
		STD	0200	0369	3479	2767	0004474	0143	14686								
192		OBS	T0216	0376	34822	2769			14692								
		STD	0250	0378	3483	2770	0004310	0165	14698								
		STD	0300	0380	3484	2770	0004302	0187	14707								
192		OBS	0354	0381	34857	2771			14717								
		STD	0400	0380	3487	2773	0004169	0229	14724								
		STD	0500	0377	3488	2774	0004153	0271	14740								
192		OBS	T0542	0376	34888	2774			14746								
		STD	0600	0374	3489	2775	0004136	0312	14755								
		STD	0700	0371	3489	2775	0004185	0354	14770								
192		OBS	0715	0370	34892	2775			14773								
		STD	0800	0368	3490	2776	0004170	0396	14786								
		STD	0900	0367	3490	2776	0004245	0438	14802								
192		OBS	T0939	0366	34901	2776			14808								
		STD	1000	0365	3490	2776	0004299	0481	14818								
192		OBS	T1028	0365	34901	2776			14823								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10	INDICTR	10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4310 N	05004 W		150	30	05	24	239	1965	003	9403	0064	00	22	3	2		X1	3	3		0169

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		23	S12	091	056	033	8	03	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0328	3300	2629	0017421	0000	14611								
239		OBS	0000	0328	33000	2629			14611								
		STD	0010	0327	3300	2629	0017441	0017	14612								
239		OBS	0010	0327	32997	2629			14612								
		STD	0020	0296	3301	2632	0017086	0035	14601								
		STD	0030	0236	3304	2640	0016387	0051	14577								
239		OBS	0049	0039	33135	2660			14493								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10	INDICTR	10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4257 N	05004 W		150	20	05	25	010	1965	003	9404	0128	01	22	4	2		X1	3	2		0170

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		22	S12	098	056	033	8	03	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0303	3301	2632	0017164	0000	14600								
010		OBS	0000	0303	33006	2632			14600								
		STD	0010	0170	3315	2654	0015075	0016	14546								
		STD	0020	0062	3327	2670	0013508	0030	14501								
010		OBS	0024	0025	33312	2675			14485								
		STD	0030	0026	3332	2676	0012906	0044	14486								
		STD	0050	0028	3336	2679	0012616	0069	14491								
		STD	0075	0031	3341	2683	0012245	0100	14497								
010		OBS	0097	0033	33456	2687			14503								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.	CODE	° 1/10	° '1/10	INDICTR	10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4244 N	05004 W		150	20	05	25	024	1965	003	9405	0845	06	26	3	3		X1	4	2		0171

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		24	S16	105	044	039	8	07	

MESSENGR TIME OF T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0165	3299	2641	0016256	0000	14540								
024		OBS	0000	0165	32990	2641			14540								
		STD	0010	0165	3300	2642	0016219	0016	14541								
		STD	0020	0165	3300	2642	0016182	0032	14543								
024		OBS	0025	0165	33002	2642			14544								
		STD	0030	0149	3316	2656	0014863	0048	14540								
024		OBS	0047	0108	33619	2695			14531								
		STD	0050	0113	3365	2697	0010914	0074	14534								
		STD	0075	0150	3385	2711	0009642	0099	14557								
		STD	0100	0184	3404	2724	0008452	0122	14579								
		STD	0125	0216	3421	2735	0007420	0142	14599								
024		OBS	0144	0238	34329	2743			14614								
		STD	0150	0244	3435	2744	0006602	0159	14618								
		STD	0200	0287	3449	2751	0005949	0191	14646								
		STD	0250	0323	3462	2758	0005341	0219	14672								
		STD	0300	0352	3472	2763	0004915	0245	14694								
024		OBS	0382	0384	34837	2769			14723								
		STD	0400	0384	3484	2770	0004434	0291	14726								
		STD	0500	0383	3487	2772	0004291	0335	14742								
024		OBS	T0572	0382	34880	2773			14754								
		STD	0600	0380	3488	2773	0004276	0378	14758								
024		OBS	T0616	0378	34879	2773			14759								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4213 N	05005 W		150	20	05	25	057	1965	003	9406	3109	11	25	2	3		X1	4	2	0172

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		25	S11	102	056	044	8	10	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0452	3317	2630	0017324	0000	14666								
057		OBS	0000	0452	33167	2630			14666								
		STD	0010	0419	3317	2634	0016974	0017	14654								
		STD	0020	0394	3317	2636	0016719	0034	14645								
057		OBS	0025	0384	33176	2638			14641								
		STD	0030	0395	3331	2647	0015707	0050	14648								
		STD	0050	0436	3380	2682	0012451	0078	14676								
		STD	0075	0489	3426	2712	0009578	0106	14708								
		STD	0100	0541	3456	2730	0007953	0128	14738								
057		OBS	0121	0585	34688	2735			14761								
		STD	0125	0572	3469	2736	0007390	0147	14756								
057		OBS	0145	0539	34694	2741			14746								
		STD	0150	0555	3473	2742	0006912	0165	14754								
057		OBS	0193	0664	35023	2751			14808								
		STD	0200	0655	3502	2752	0006080	0197	14806								
		STD	0250	0598	3500	2758	0005565	0226	14791								
		STD	0300	0549	3499	2763	0005096	0253	14779								
057		OBS	T0389	0482	34968	2769			14766								
		STD	0400	0479	3497	2770	0004543	0301	14767								
		STD	0500	0453	3497	2773	0004344	0346	14773								
057		OBS	0587	0429	34969	2775			14777								
		STD	0600	0423	3496	2775	0004167	0388	14777								
		STD	0700	0387	3492	2776	0004148	0430	14778								
057		OBS	0789	0366	34905	2777			14783								
		STD	0800	0366	3491	2777	0004073	0471	14785								
		STD	0900	0366	3491	2777	0004153	0512	14802								
		STD	1000	0365	3491	2777	0004234	0554	14818								
057		OBS	1017	0365	34913	2777			14821								
		STD	1100	0364	3492	2778	0004232	0596	14835								
057		OBS	T1129	0364	34920	2778			14839								

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR,1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	540	EV	4140 N	05004 W		150	10	05	25	115	1965	003	9407	3566	11	31	2	2		X1	4	2	0173

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	S14	115	106	067	8	09	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-x10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	1515	3600	2673	0013277	0000	15091								
115		OBS	0000	1515	35998	2673			15091								
		STD	0010	1515	3600	2672	0013311	0013	15092								
		STD	0020	1515	3600	2672	0013354	0027	15094								
		STD	0030	1515	3599	2672	0013388	0040	15096								
		STD	0050	1514	3599	2672	0013466	0067	15099								
115		OBS	0059	1514	35990	2672			15100								
		STD	0075	1481	3593	2675	0013288	0100	15092								
		STD	0100	1430	3583	2678	0013035	0133	15078								
		STD	0125	1381	3575	2682	0012697	0165	15065								
		STD	0150	1333	3567	2686	0012396	0197	15053								
115		OBS	0195	1249	35544	2693			15030								
		STD	0200	1241	3553	2694	0011777	0257	15028								
		STD	0250	1153	3542	2702	0011076	0314	15005								
115		OBS	T0252	1149	35418	2703			15004								
		STD	0300	1009	3527	2717	0009763	0366	14960								
115		OBS	0385	0805	35080	2735			14895								
		STD	0400	0778	3507	2738	0007765	0454	14887								
		STD	0500	0626	3501	2755	0006215	0524	14844								
115		OBS	T0575	0545	34989	2763			14823								
		STD	0600	0534	3499	2765	0005292	0581	14823								
		STD	0700	0494	3500	2770	0004833	0632	14823								
115		OBS	0771	0470	35001	2773			14825								
		STD	0800	0462	3499	2773	0004621	0679	14826								
		STD	0900	0436	3498	2775	0004478	0725	14832								
115		OBS	T0987	0417	34962	2776			14838								
		STD	1000	0414	3496	2776	0004454	0770	14839								
		STD	1100	0397	3495	2777	0004412	0814	14849								
115		OBS	1126	0393	34944	2777			14851								

REFERENCE		SHIP	LATITUDE	LONGITUDE	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SMPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	NO.	CODE	° 1/10	° ' 1/10		10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	540	EV	4232 N	05011 W		150	20	05	25	168	1965	003	9408	2614	12	24	1	2		x1	0	1		0174

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		26	S12	098	061	044	8	12	

MESSENGR TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-$\times 10^7$	$\Sigma\Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0435	3334	2645	0015882	0000	14661								
168		OBS	0000	0435	33336	2645			14661								
		STD	0010	0422	3336	2649	0015551	0016	14657								
		STD	0020	0396	3339	2654	0015089	0031	14649								
		STD	0030	0357	3342	2660	0014520	0046	14634								
168		OBS	0032	0348	33427	2661			14631								
		STD	0050	0232	3375	2697	0010990	0071	14588								
168		OBS	0052	0225	33788	2700			14586								
		STD	0075	0330	3431	2733	0007604	0095	14642								
		STD	0100	0443	3459	2744	0006643	0112	14698								
168		OBS	0112	0498	34625	2740			14723								
		STD	0125	0444	3457	2742	0006826	0129	14702								
168		OBS	0128	0433	34560	2742			14698								
		STD	0150	0439	3462	2746	0006418	0146	14704								
		STD	0200	0451	3474	2755	0005707	0176	14719								
		STD	0250	0464	3483	2760	0005227	0203	14734								
168		OBS	0276	0470	34856	2762			14741								
		STD	0300	0434	3486	2766	0004707	0228	14730								
168		OBS	T0381	0426	34887	2769			14741								
		STD	0400	0454	3494	2770	0004463	0274	14756								
168		OBS	0411	0468	34973	2771			14764								
		STD	0500	0432	3495	2773	0004243	0318	14764								
		STD	0600	0402	3493	2775	0004150	0360	14767								
168		OBS	0619	0397	34929	2775			14769								
		STD	0700	0385	3492	2776	0004103	0401	14777								
		STD	0800	0375	3492	2777	0004139	0442	14789								
168		OBS	T0831	0373	34912	2777			14793								
		STD	0900	0374	3492	2777	0004195	0484	14805								
		STD	1000	0375	3493	2777	0004234	0526	14822								
168		OBS	T1058	0375	34930	2778			14832								
		STD	1100	0369	3492	2778	0004292	0569	14837								
168		OBS	1171	0353	34906	2778			14842								

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