TR-82

TECHNICAL REPORT

OPERATION DEEP FREEZE 60

1959-1960

OCEANOGRAPHIC SURVEY RESULTS

Oceanographic Branch
Marine Surveys Division

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ABSTRACT

Results of oceanographic research during the U.S. Navy operations in support of DEEP FREEZE 60, 1959—1960, are presented. Observations in areas of the Antarctic, Antarctic Convergence, and South Pacific were made from aboard four icebreakers, USS BURTON ISLAND (AGB-1), USS ATKA (AGB-3), USS GLACIER (AGB-4), and USCGC EASTWIND (WAGB -279). Ships' tracks to, in, and from the Antarctic and locations of all oceanographic stations are given.

In Eastern Balleny Basin, surface temperatures ranged from —0.44° to —1.58°C. Within the surface layer, temperature decreased to a depth of about 100 meters and then increased to a maximum of greater than 1.25°C, indicating the upper level of the Antarctic Circumpolar Water. Surface salinities were low (less than 34.00%), reflecting Antarctic summer conditions. Values increased rapidly to 34.50% in the upper 200 meters with salinity maxima occurring between 600 and 1,200 meters depth.

A west-east line of stations taken in McMurdo Sound is discussed. An extremely low temperature structure was noted, with temperatures from surface to bottom not exceeding 0.00°C throughout the water column. The effects of ice in the area were evident by low surface temperatures and salinities. Below the surface layer, temperatures decreased gradually to values as low as —1.93°C near the bottom of the deeper stations.

Near the Ross Ice Shelf, several stations were taken along a northwest to southeast track to the shelf and the other, along a track closely paralleling the shelf edge. Throughout the areas temperatures were less than 0°C, the degree of coldness indicating distance from the Ice Shelf. Surface values ranged from —0.40°C at about 60 miles from the Shelf, to —1.42°C at its edge. Salinities varied little, increasing slightly from surface to bottom (maximum differences not exceeding 00.35%).

Oceanographic observations were made for the first time in the Bellingshausen Sea off the Eights Coast. Observed surface temperatures were low (from —1.50° to —1.75°C) and showed no indication of summer warming. Below the 150-meter depth, temperatures increased rapidly to 1.00°C at 450 meters. Salinities increased with depth from a surface minimum of 32.95% to values greater than 34.50% below 350 meters.

Several transits across the Antarctic Convergence were made and the results from surface and subsurface measurements dilineate the positions of the Convergence, as well as the water dissimilarities.

Ice observations and reconnaissance by the ships are discussed and presented.

Fourty-eight bottom samples were collected and analyzed. These are discussed by area, and detail results of the analyses are presented in Appendix B.

FOREWORD

DEEP FREEZE 60 was the sixth consecutive United States expedition in support of Antarctic research. Personnel from the U. S. Navy Hydrographic Office, supported by the National Science Foundation, conducted marine geophysical research from several icebreakers of TASK FORCE 43. In addition to oceanographic studies in the Ross Sea, Amundsen-Bellingshausen Seas, and South Pacific Ocean, stations were occupied along the Thurston Peninsula during the first successful penetration into the previously unexplored Bellingshausen Sea. The analyses and tabulation of data collected are presented in this report.

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Rear Admiral, U. S. Navy
Hydrographer

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I. INTRODUCTION

A. Purpose

Operation DEEP FREEZE 60 (1959-1960) was a continuation of United States support of scientific effort in the Antarctic. It also marked the sixth consecutive year of U. S. Navy Hydrographic Office participation in obtaining oceanographic-hydrographic data in Antarctic waters. The Hydrographic Office's work during DEEP FREEZE 60 was supported by the National Science Foundation. During DEEP FREEZE 60 considerably more ship time was provided for oceanographic work than in previous years.

Surveys were conducted in the Ross and Amundsen-Bellingshausen Seas, McMurdo Sound, the area of the Antarctic Convergence, Bransfield Strait at Palmer Peninsula, and across the Drake Passage. In addition, one of the vessels conducted surveys along the west coast of South America during transit to and from the Antarctic.

B. Summary of Operations

Oceanographic-hydrographic data were obtained from aboard four icebreakers, USS GLACIER (AGB-4), USS BURTON ISLAND (AGB-1), USS ATKA (AGB-3), and USCGC EASTWIND (WAGB-279). Observations were made on a not-to-interfere basis with the vessels primary mission. Three icebreakers carried oceanographers and bathythermograph (BT) teams, while the fourth had aboard a bathythermograph team only.

Tracks made by the ships conducting survey operations are shown by Figure 1. The shaded portion of this figure indicates an area of numerous track lines by several vessels. The locations of stations made by the icebreakers in the Ross Sea, McMurdo Sound, South American Quadrant, and Thurston Peninsula are presented in Figures 2 through 5, respectively. Basic observations, in each of these areas consisted of vertical temperature measurements, collection of water, bottom, and biological samples. Also, limited gravity measurements were made. While underway, between stations and in transit from one area to another, continuous temperature recordings, soundings, ice and meteorological observations, BT lowerings, and surface water collections were made. Table 1 summarizes these observations by ship.

C. Methods

Vertical temperature measurements were made by standard Nansen casts employing paired reversing thermometers. The corrected observed values were averaged when differences did not exceed 0.06°C. Depth of observation was determined by thermometric calculation from protected and unprotected thermometers.

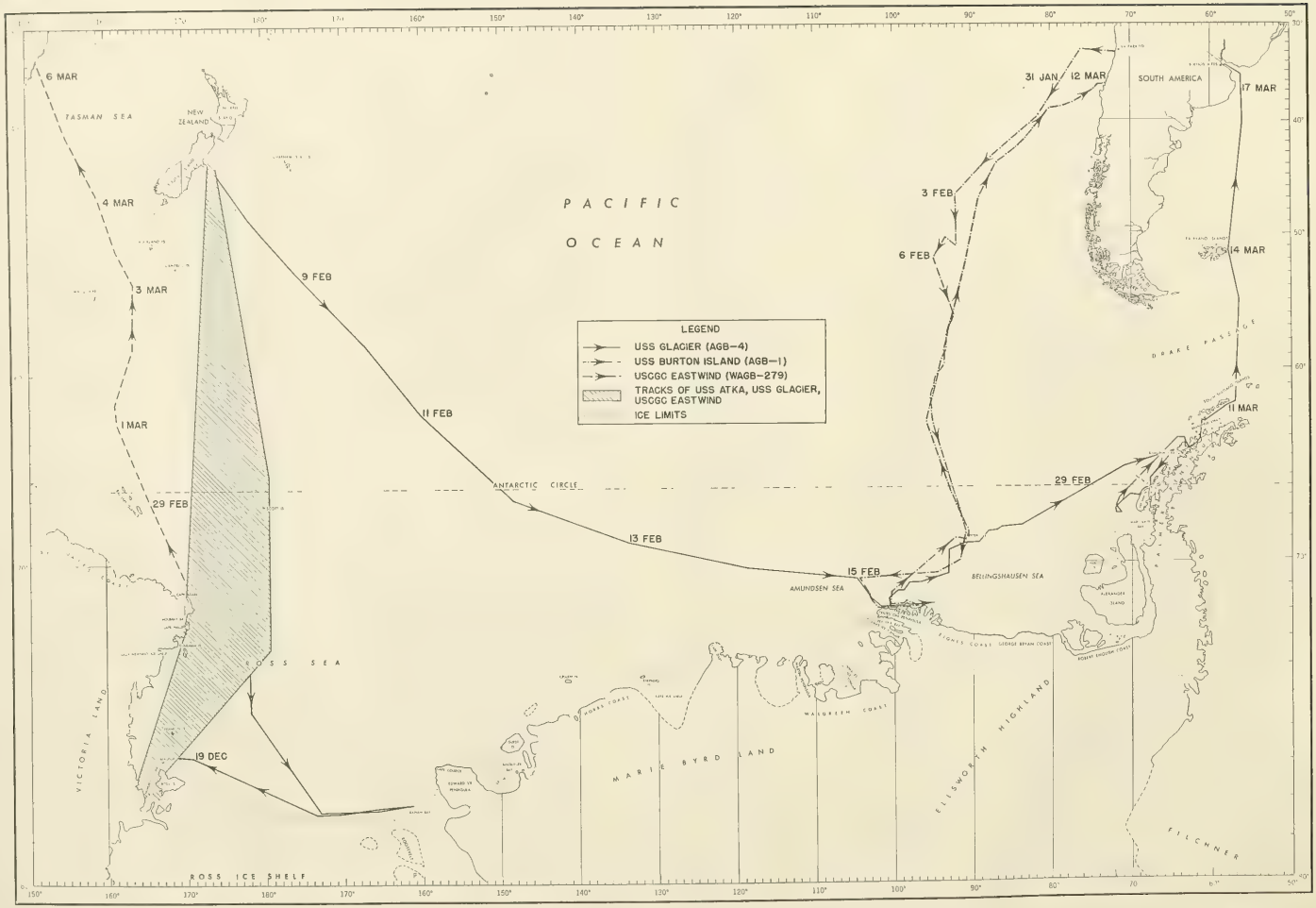


FIGURE 1. TRACKS OF ICEBREAKERS CONDUCTING OCEANOGRAPHIC WORK ON DEEP FREEZE 60

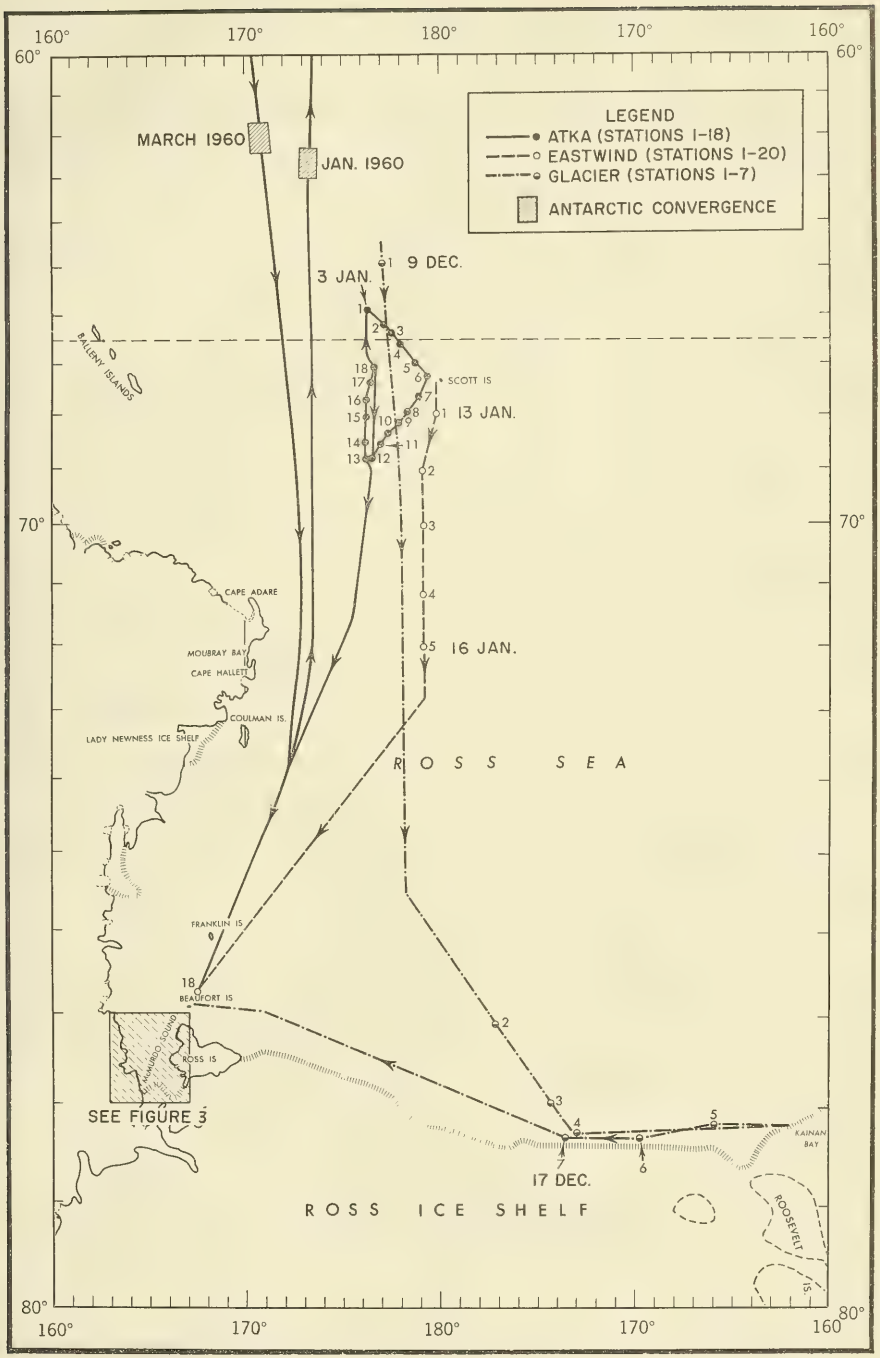


FIGURE 2. OCEANOGRAPHIC STATION LOCATIONS IN THE ROSS SEA AREA

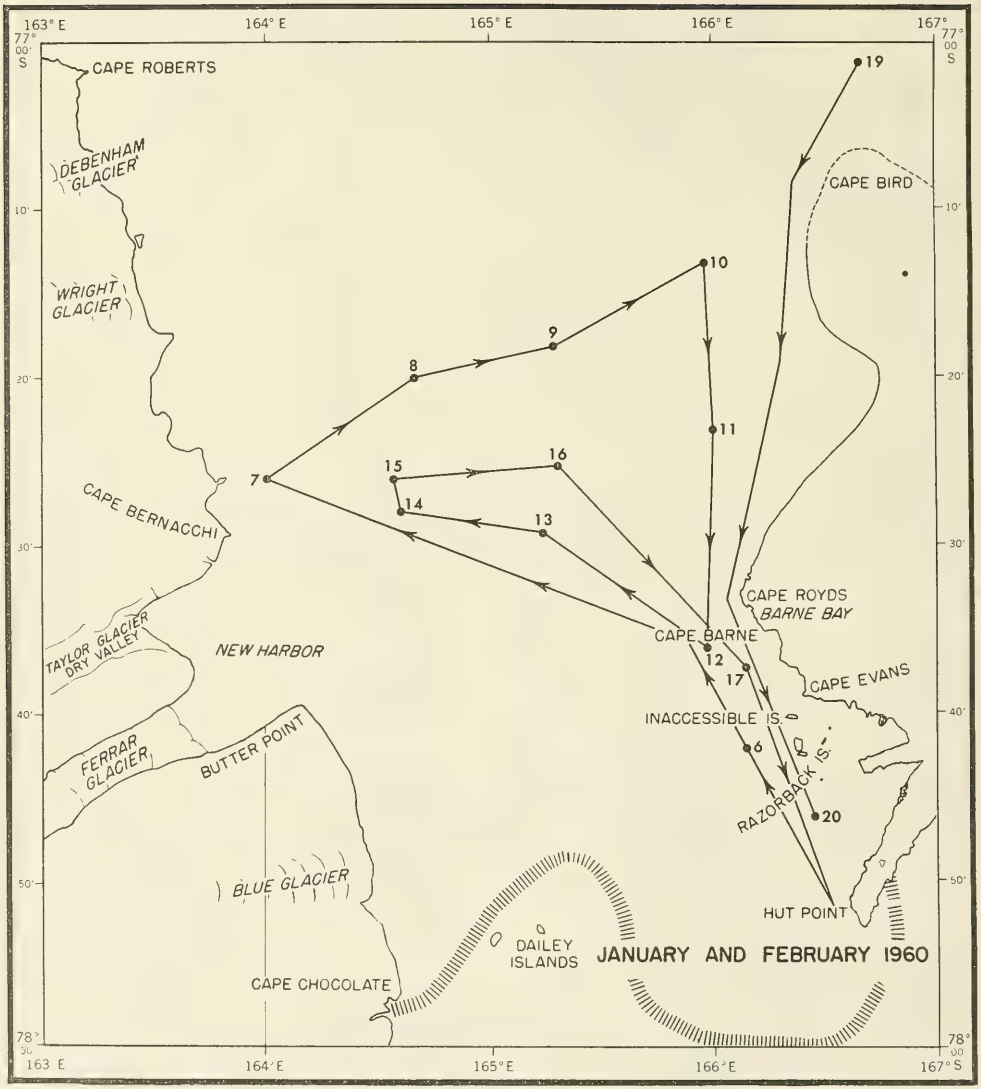


FIGURE 3. OCEANOGRAPHIC STATION LOCATIONS IN McMURDO SOUND, USCGC EASTWIND

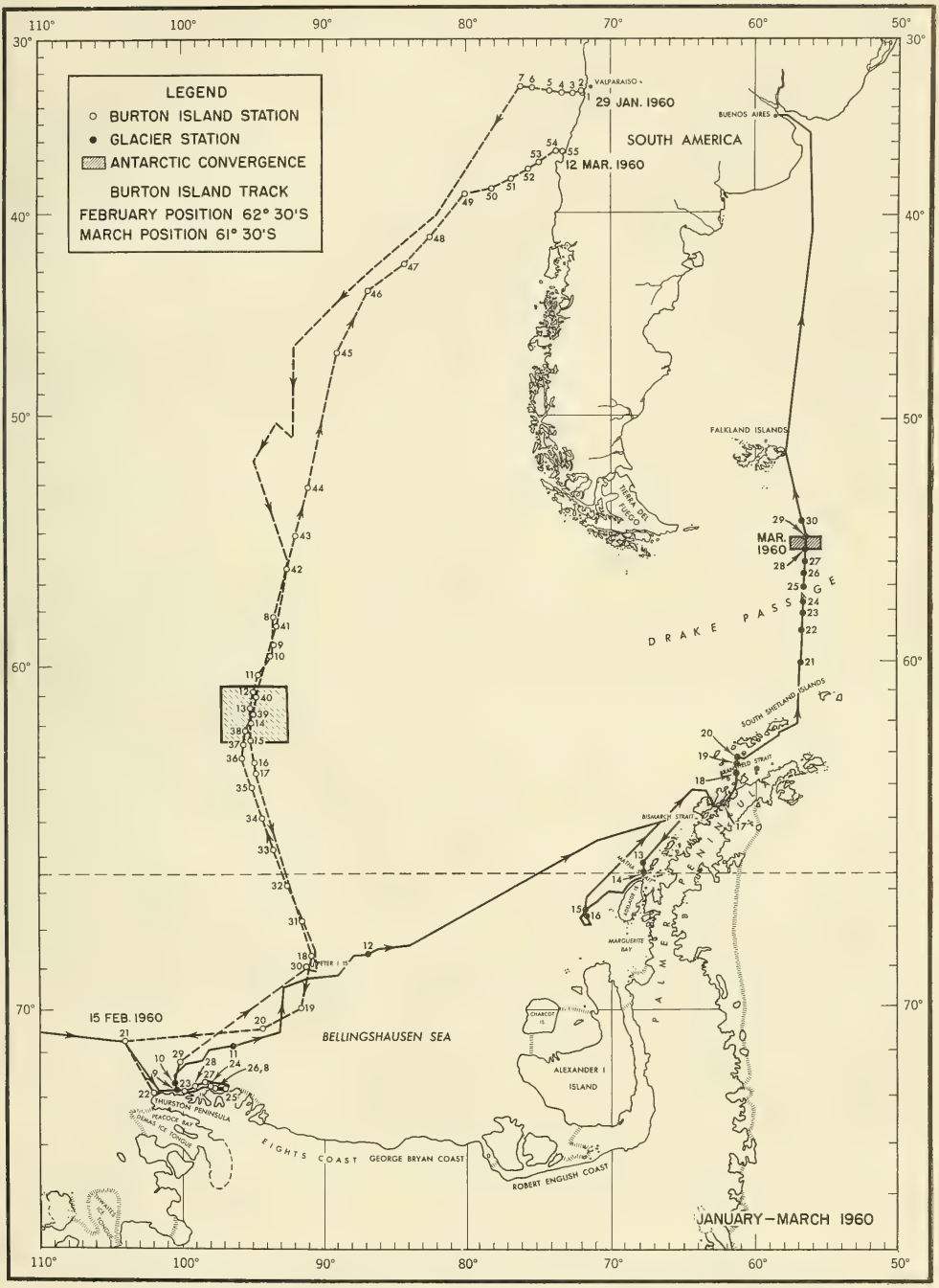


FIGURE 4. OCEANOGRAPHIC STATION LOCATIONS, SOUTH AMERICAN QUADRANT

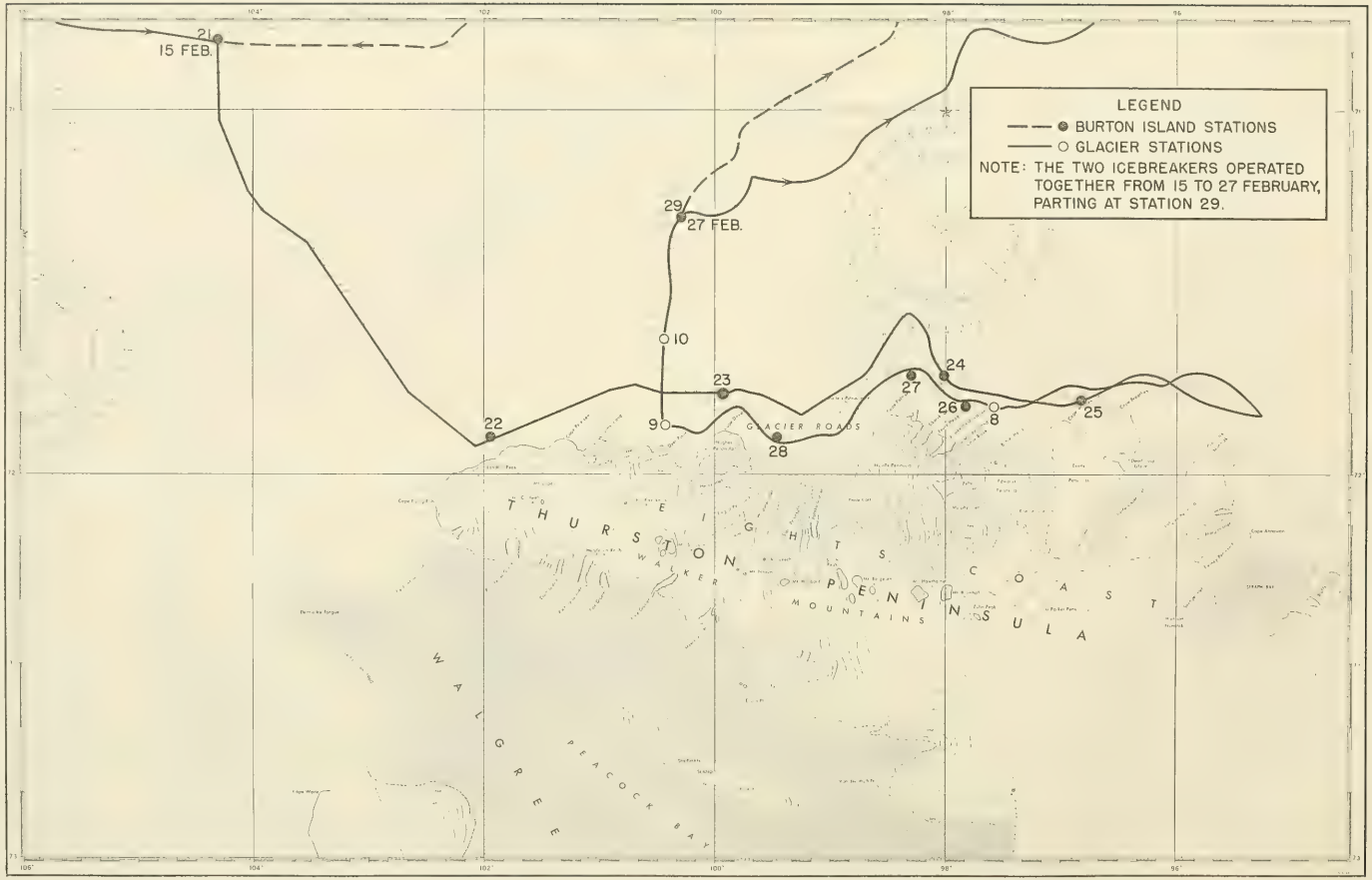


FIGURE 5. OCEANOGRAPHIC STATION LOCATIONS IN THE THURSTON PENINSULA AREA, FEBRUARY 1960

Salinity samples obtained from Nansen bottles were stored in gasket-sealed, 360-ml glass citrate bottles for return to the Hydrographic Office. Analysis was made by a University of Washington conductivity bridge. Duplicate runs were made on each sample; accuracies are considered good to within 0.01 parts per thousand (‰).

Dissolved oxygen samples were analyzed aboard ship by a modified Winkler method. Duplicate analyses were made on all samples; where variations greater than 0.05 ml/l occurred between two readings, a third titration was made.

The foregoing observed data were evaluated and coded for processing by a Burrough's DATATRON computer. Machine computations provide temperature, salinity, and oxygen interpolation at standard depths, and calculations of density, anomaly of dynamic depth, and sound velocity. Listings of these data are given in APPENDIX A.

TABLE 1. SUMMARY OF OCEANOGRAPHIC OBSERVATIONS - DEEP FREEZE 60

	BURTON ISLAND	GLACIER	ATKA	EASTWIND
Ocean Stations	55	30	18	20
Oxygen Stations	41	12	-	6
BT's	731	586	1,757	789
Miles of Soundings	6,900	18,920	22,360	24,856
Miles of Ice Track	690	4,760	4,225	500
Miles of Continuous Temperature Records	6,190	2,120	-	9,000
Sea and Swell Obs.	417	392	431	534
Water Samples for Other Agencies	22	6	-	27
Surface Water Samples	14	183	-	394
Plankton Tows	6	4	-	-
Dredge Hauls	1	-	-	-
Bottom Grab Samples	1	2	-	-
Core Samples	8	18	-	19
Gravity Measurements	-	22	-	11
Rock Collections	-	4	-	1

Additional observations by other ships: ARNEB - 202 BT's,
PETERSON - 623 BT's

BT lowerings with 900-foot instrument were scheduled on an hourly basis aboard the four icebreakers and on a 4-hour basis on other ships of the Task Force. A total of 4,688 BT lowerings was made, including observations taken during transit to and from the Antarctic. Prints of these slides and the accompanying weather observations are on file with the

U. S. Navy Hydrographic Office. BT transects across the Antarctic Convergence Zone are presented in this report as cross sections.

Bottom samples were collected by Phleger corers, a Kullenberg-type corer with a 4-inch-diameter plastic barrel, and an Orange-peel grab sampler. All samples thus obtained were returned to this Office for laboratory analyses. Forty-eight samples were taken in the Ross Sea, McMurdo Sound, Amundsen and Bellingshausen Seas, and the Palmer Peninsula area. Results of these analyses are listed in APPENDIX B. Numerous rock samples were obtained from various islands and other locations in the Antarctic.

Ice observations were made aboard all icebreakers by the BT team at hourly intervals and the aerographers at 3-hour intervals. These observations include ice concentration, thickness, age, and type, and are presented graphically for different areas and periods. In addition, the ships' quartermasters made regular ice observations and entered concentrations in the ships' logs.

Meteorological and sea and swell observations were made from 1- to 3-hour intervals by aerographers assigned to each icebreaker. These data were recorded on standard WBAN forms and forwarded to the National Weather Record Center, Asheville, North Carolina. Surface weather observations also were taken during each Nansen cast (APPENDIX A) and BT lowering.

Continuous underway soundings by UQN-1B echo sounders were made by all ships. In addition, a detailed sounding program was accomplished around Scott and Peter I Islands. A sounding track was made to the west of Coulman Island in the Ross Sea and along the Thurston Peninsula in the Amundsen and Bellingshausen Seas, where no soundings previously had been made. Echograms and sounding journals were forwarded to the Hydrographic Office for incorporation into new and revised nautical charts.

Continuous air/sea temperature measurements were made with resistance bulb thermometers and recorded by a 4-channel Brown recorder. The sea element was trailed just below the water surface, and the air element was installed above the main deck level. Measurements were made by the EASTWIND in the Antarctic and Pacific between Panama, Australia, and Tasmanian Sea; BURTON ISLAND, along the western coast of South America into the Bellingshausen Sea and return to United States; and GLACIER, from New Zealand to the ice in the Amundsen Sea, and from the Bellingshausen Sea north along the east coast of South America to the Sargasso Sea. A portion across the Antarctic Convergence in the Drake Passage is included in this report. All records are on file in the U. S. Navy Hydrographic Office.

Surface water samples were collected in route to and from the Antarctic and areas of open water in the Antarctic. Most of these were 360-ml samples for salinity determinations. Some were collected in ½-gallon quantities for the National Institute of Oceanography, Wormley, England, and Institute of Meteorology, Stockholm, Sweden.

Additional observations taken during DEEP FREEZE 60 included gravity measurements by a Lacoste-Romberg geodetic gravimeter; biological samplings, plankton nets and dredge; transparency, black and white Secchi discs; and water color by a modified Forel scale covering the blue-green-yellow color range.

D. Participating Personnel

The following four oceanographers from the U. S. Navy Hydrographic Office participated aboard icebreakers on Operation DEEP FREEZE 60:

Robert B. Starr . . . . . USS GLACIER
James Q. Tierney . . . . . USS BURTON ISLAND
Richard H. Evans . . . . . USS BURTON ISLAND
Lloyd W. Wilson . . . . . USCGC EASTWIND

q In addition, LCDR J. Morgan (USN), TASK FORCE 43, supervised all ocean stations taken by ATKA, and the GLACIER stations along the Ross Ice Shelf.

E. Other DEEP FREEZE Publications

Since 1954, the U. S. Navy Hydrographic Office has been conducting oceanographic survey operations in the Antarctic in support of the DEEP FREEZE program. The oceanographic results are presented in the following reports:

REPORT NO.	SHORT TITLE	HYDRO REF. NO.	SHIP(S)
HO 16331	Pre-DEEP FREEZE (1954-1955)	00504	USS ATKA
TR-33	DEEP FREEZE I (1955-1956)	00533	USS GLACIER
		00514	USS EDISTO
TR-29	DEEP FREEZE II (1956-1957)	00560	USS ATKA
		00561	USS STATEN ISLAND
		00562	USCGC NORTHWIND
		00563	USS GLACIER
TR-77*	DEEP FREEZE III (1957-1958)	00590	USS ATKA
		00591	USS GLACIER
		00592	USS BURTON ISLAND
		00593	USCGC WESTWIND

REPORT NO.	SHORT TITLE	HYDRO REF. NO.	SHIP(S)
TR-78*	DEEP FREEZE IV (1958-1959)	00610	USS GLACIER
		00611	USCGC NORTHWIND
		00612	USS EDISTO
		00613	USS STATEN ISLAND
TR-105*	DEEP FREEZE 61 (1960-1961)	00672	USS STATEN ISLAND
		00674	USS EDISTO

*Final report in preparation; however, data listings are available.

II. ROSS SEA - MCMURDO SOUND AREA, OCEANOGRAPHY

A. General

The Ross Sea lies south of the Pacific Ocean between 160°E and 150°W. It is a large open body of water with depths generally less than 400 fathoms and with free circulation to the circumpolar ocean waters to the north. To the south, the sea is bounded by the floating seaward margin of the Ross Ice Shelf. Many glaciers and small ice shelves extend along its margins, but in spite of this, a relatively large percentage of land is exposed during the summer season.

McMurdo Sound is located in the southwestern part of the Ross Sea, bounded on the west by the Victoria Range of Antarctica, on the east by Ross Island, and on the south-southeast by the Ross Ice Shelf. The United States Antarctic station, Naval Air Facility McMurdo, is located on the western coast of Cape Armitage at Hut Point, the southernmost point on Ross Island.

Kainan Bay is a small bay in the Ross Ice Shelf, in the eastern Ross Sea, approximately 400 miles east of Ross Island. Little America V Station (no longer in operation) is located on the Ross Ice Shelf, two to three miles inland of Kainan Bay.

Sea ice forms in the Ross Sea during the autumn and winter seasons, but usually breaks up sufficiently in late summer to permit ship transit to all corners of the sea. A general east to west set removes much of the ice and bergs, but some are confined in a gyral in the northern portions.

Three icebreakers operated in the Ross Sea at various times from December 1959 into March 1960. During these months, a total of 45 oceanographic stations was taken. Figure 2 shows by different symbols the tracks and stations occupied by these ships. In addition, the locations of the Antarctic Convergence Zone, as indicated by ATKA BT's are illustrated.

Serial-depth temperature and salinity observations were made on all oceanographic stations. Determinations for dissolved oxygen were made at only five stations across the eastern Balleny Basin. Data for the eastern Balleny Basin and for McMurdo Sound are presented in Figures 6 and 7, respectively. No profiles were prepared for the western Ross Sea and the Ross Ice Shelf areas.

B. Physical Properties

1. Eastern Balleny Basin (Figures 2 and 6)

Five oceanographic stations were taken across the Balleny Basin along 179°E longitude from 13 through 16 January 1960. Data were obtained from surface to bottom. Stations 2 and 3 were made in the basin with

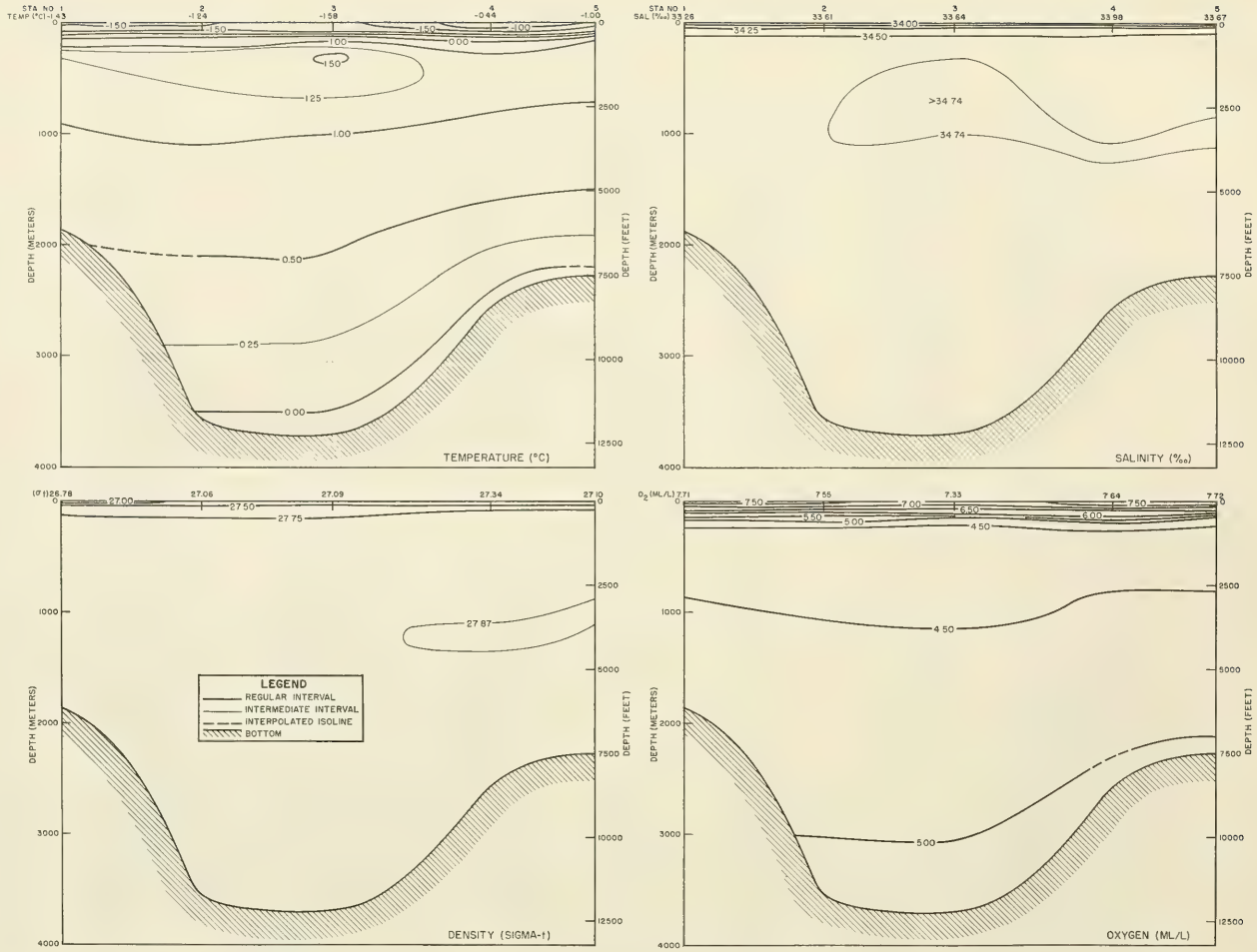


FIGURE 6. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, DENSITY, OXYGEN—EASTERN BALLENY BASIN, 11-13 JANUARY 1960, USCGC EASTWIND

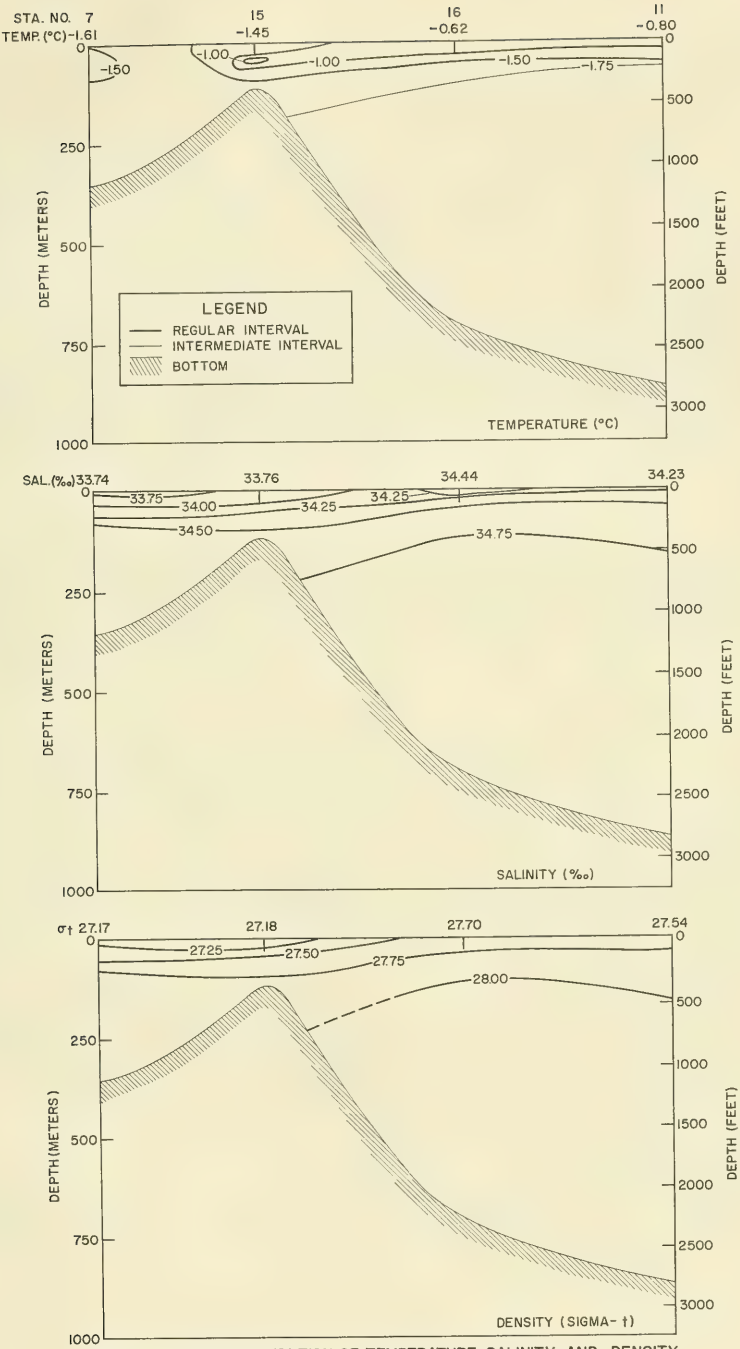


FIGURE 7. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, AND DENSITY IN McMURDO SOUND, 31 JANUARY–1 FEBRUARY 1960

depths greater than 3,000 meters; stations 1, 4, and 5 were made on the ridges with depths less than 2,600 meters.

a. Temperature

Surface temperatures for the five stations ranged from -0.44° to -1.58°C. Within the surface layer, temperature decreased to -1.50°C at a depth of about 100 meters, except at station 3, where temperatures increased slightly from -1.58° to -1.50°C at 100 meters. Below 100 meters, temperature increased in the transition zone to a maximum of greater than 1.25°C, indicating the upper level of the Antarctic Circumpolar Water. On station 3, the deepest station in the basin, temperatures exceeded 1.50°C between 280 and 360 meters depth. Temperature maxima on stations 4 and 5 were less than 1.25°C. From 500 to 600 meters to the bottom, temperatures decreased gradually with depth through the Circumpolar Water. Although the bottom temperature on station 3 was less than 0°C, salinities around 34.70 ‰ preclude presence of Antarctic Bottom Water.

b. Salinity

Surface salinities were less than 34.00 ‰, reflecting Antarctic summer conditions. Within the surface layer, values increased rapidly to 34.50 ‰ in the upper 200 meters. Just below this, values of 34.70 ‰ were observed, delineating Circumpolar Water. Salinity maxima occurred between 600 and 1,200 meters depth. Below this, values decreased only 0.02 to 0.04 ‰ to the bottom, where about 34.71 ‰ was observed on all stations.

c. Density

Values at the surface ranged from a low of 26.78 at the northernmost station to a high of 27.34 at station 4 to the south. Immediately below the surface, densities increased rapidly with the 27.75 isopycnal between 100 and 150 meters. Below this, densities gradually increased to 27.86 near the bottom on station 1, and 27.88 and 27.89 at stations 2 through 5. A cell of water with a density of 27.87 and greater was observed at mid-depth on stations 4 and 5, coinciding with the high salinity values obtained.

d. Oxygen

From a surface high of greater than 7.00 ml/l, oxygen content decreased rapidly in the surface layer, reaching a minimum of less than 4.50 ml/l at approximately 500 meters. From this level to the bottom, oxygen content increased only slightly with depth.

2. McMurdo Sound (Figures 3 and 7)

Fifteen oceanographic stations were occupied in and around McMurdo Sound aboard EASTWIND from 26 January through 13 February 1960. Figure 3

shows the locations and sequence of 14 of these stations. Station 18 lies off the chart north of Cape Bird. Stations 7, 15, 16, and 11, taken 31 January to 1 February, were selected to represent a west-east transect across McMurdo Sound. Of these, stations 7 and 15 were taken when ice was present, whereas 16 and 11 were taken in open water. Figure 7 presents the vertical distribution of temperature, salinity, and density for these stations.

a. Temperature

The extremely low temperature structure in McMurdo Sound is readily seen in Figure 7. Throughout the water column, all values were less than 0.00°C. Summer warming of the surface layer is evident at stations 11 and 16, where slight negative gradients were formed. The local effects of melting ice at stations 7 and 15 resulted in the very low surface temperatures and resultant positive gradients. Below this, temperatures decreased gradually to values as low as -1.93°C near the bottom at the deeper stations.

b. Salinity

The low surface salinities occurring at stations 7 and 15 are due to melting ice; values at stations 11 and 16 are normal for the open areas.

c. Density

The density pattern parallels that of salinity; values were slightly lower in areas of ice and higher in the more open waters. Low temperatures and high salinities account for the high density values of greater than 28.00 near the bottom at the deeper stations.

3. Western Ross Sea

From 1 to 6 January, ATKA conducted a series of oceanographic stations to the west of Scott Island in an area bounded by 65° to 69°S and 175°E to 180° (Fig. 2). Because of the vertical sampling interval, no cross sections have been prepared. The tabulated data, however, are presented in APPENDIX A. These data show a similar physical structure to the stations taken across the Balleny Basin by EASTWIND (Fig. 6).

4. Ross Ice Shelf

Six oceanographic stations were taken in the vicinity of the Ross Ice Shelf by GLACIER from 13 to 17 December 1959. Three of these were taken along a northwest to southeast track to the shelf and the other three closely paralleling the shelf edge (Fig. 2). Throughout the area, temperatures were less than 0°C. Surface values ranged from -0.40°C, at

about 60 miles from the shelf, to -1.42°C at the ice shelf. Temperatures decreased from the surface to minimum values at the maximum depth sampled; a minimum of -1.94°C was observed at 550 meters on station 7. On several stations, there was evidence of slightly warmer water occurring at various depths in the water column.

Surface salinities varied little from stations 2 through 7. The seemingly high values (34.45 to 34.51 ‰) are most likely a result of the early sampling period. From the surface to the bottom, salinities increased slightly with maximum differences not exceeding 00.35 ‰. On some stations, there are indications of a very slight salinity minimum immediately below the surface layer. On approaching the ice shelf, the deeper isohalines appear to dip sharply as indicated by a salinity of 34.58 ‰, which occurs at 250 meters on station 2 and 500 meters on station 4. A maximum value of 34.84 ‰ was observed close to the bottom at station 7.

III. BELLINGSHAUSEN SEA, OCEANOGRAPHY

A. General

Previous to DEEP FREEZE 60, no oceanographic stations are known to have been taken in the sector of the Bellingshausen Sea off the Eights Coast. Ice conditions permitted penetration into this area by GLACIER and BURTON ISLAND in February 1960. Oceanographic stations were occupied along the coast of Thurston Peninsula and northward to Peter I Island. The locations of these and the ships' tracks are shown in Figures 4 and 5.

The configuration of the continent along the Palmer Peninsula, and to some extent bottom contours, produce eddies and countercurrents which force water from the East Wind Drift across the Antarctic Divergence into the West Wind Drift forming a clockwise gyral in the Bellingshausen Sea.

B. Physical Properties

The vertical distribution of physical properties is shown by Figures 8 and 9. Figure 8 is a cross section of nine stations extending from Cape Flying Fish eastward, closely paralleling the coast to about 97°W. Depths at the stations varied widely, 165 to 1,000 meters. Figure 9 is a cross section of three stations taken from a point about two miles from the coast to about thirty miles to the north. These varied from 300 to 550 meters in depth.

1. Temperature

Surface temperatures were low at all stations; values ranged from a high of -1.50°C to a low of -1.75°C, showing no trend or indication of summer warming. In general, temperatures increased from the surface to the -1.50°C isotherm at about 150 meters except where it appears at 50 meters on station 23. Below this, values increased more rapidly, with the 1.00°C isotherm being observed at 450 meters, near the maximum depth sampled. At the easternmost stations, an intrusion of colder water at mid-depth was noted from the data. Cells of slightly warmer water also were observed at several stations.

2. Salinity

Salinities increased with depth from a surface minimum of 32.95 ‰ at the northernmost station (Fig. 9) to values of greater than 34.50 ‰ below 350 meters. The greatest increase was in the surface layer, the 34.00 ‰ isohaline being observed at 100 meters or less. This isohaline reached 35 meters on station B129 and approximately 50 meters at B123. Lower salinities at mid-depth on the four easternmost stations also indicated the presence of an intrusion of a different water type.

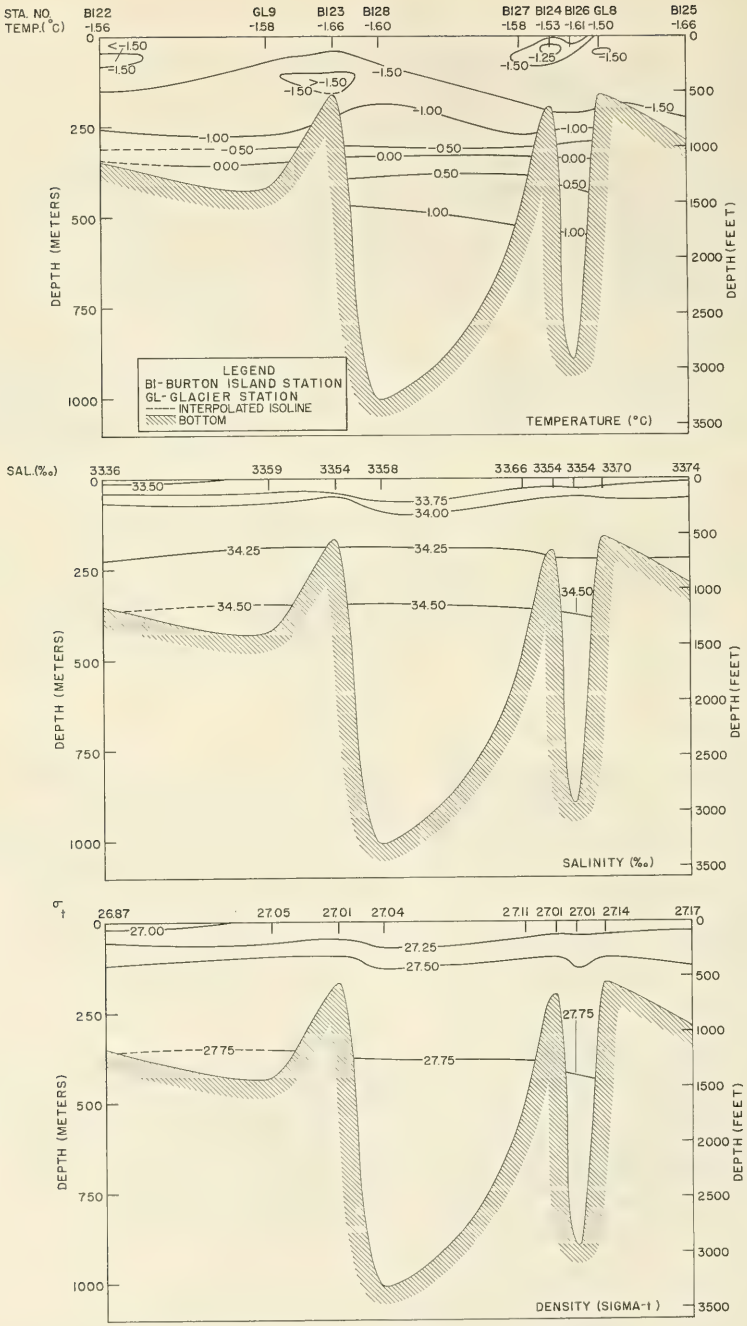


FIGURE 8. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, AND DENSITY IN THE BELLINGSHAUSEN SEA, USS GLACIER AND USS BURTON ISLAND, 16–25 FEBRUARY 1960

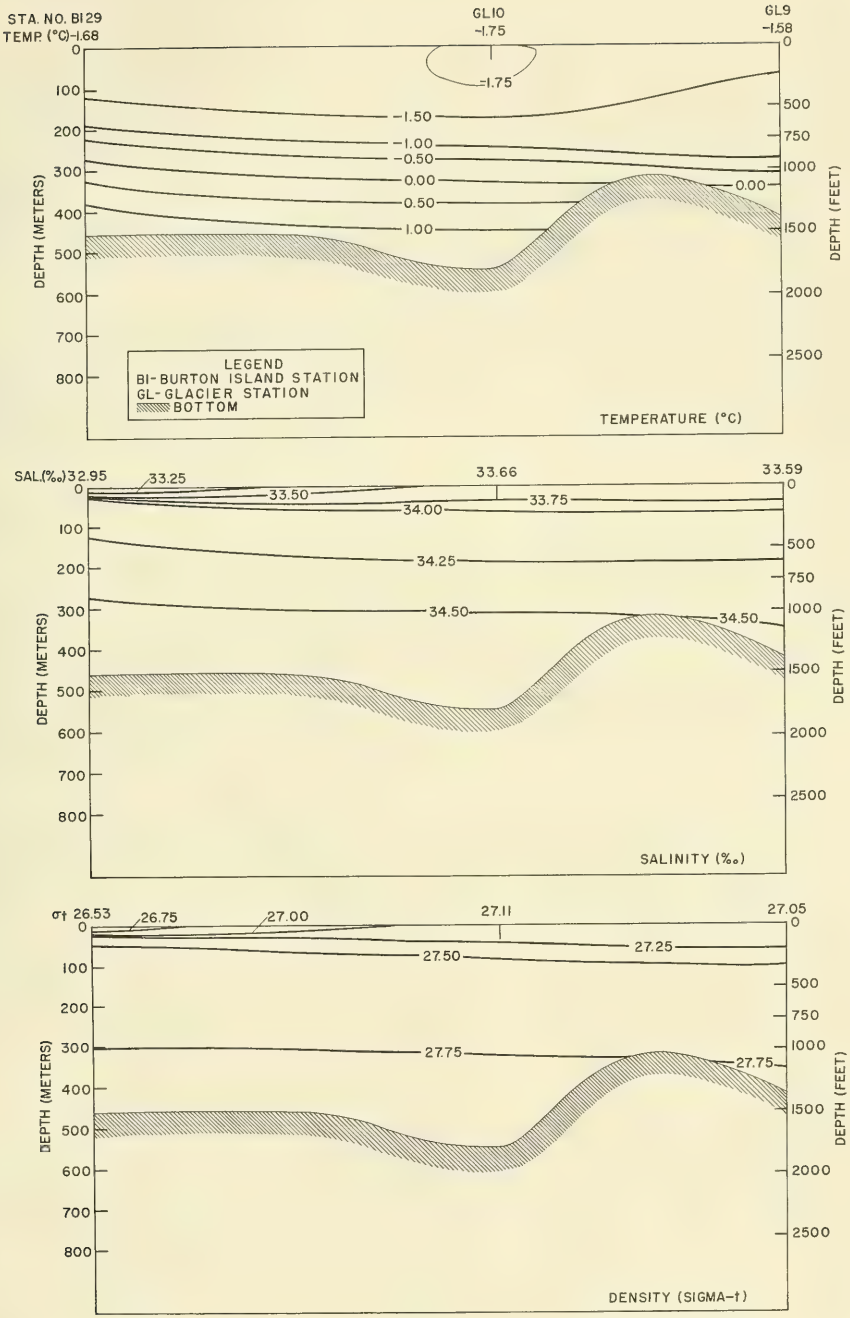


FIGURE 9. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, AND DENSITY IN THE BELLINGSHAUSEN SEA, USS GLACIER AND USS BURTON ISLAND, 24-27 FEBRUARY 1960

3. Density

The density structure closely follows the salinity pattern, with the lowest surface value being noted at station B129. Near the surface, densities increased rapidly to an isopycnal of 27.50, occurring at approximately 100 meters or less. Values increased to 27.75 at 350 meters depth.

IV. BRANSFIELD STRAIT - DRAKE PASSAGE, OCEANOGRAPHY

A. General

Bransfield Strait is a comparatively narrow passage between the northern tip of Palmer Peninsula and the South Shetland Islands. Its width, between Trinity Island to the south and Deception Island to the north, is approximately 60 miles. This strait is almost always ice free during the greater part of the Antarctic summer.

To the north of the South Shetland Islands lies Drake Passage, which separates Antarctica from South America by a distance of about 450 miles. Water circulation through the passage is from west to east induced by the West Wind Drift. The water passing through this passage is considerably warmer than that flowing through Bransfield Strait. The Antarctic Convergence, as observed on this survey, was located between 55°15'S and 55°30'S.

B. Physical Properties

Three oceanographic stations (18, 19, and 20) were occupied across Bransfield Strait aboard GLACIER on 10 March 1960 (Fig. 4). Soundings for these stations were 622, 1,189 and 494 meters, respectively. Figure 10 presents vertical distribution of temperature, salinity, density, and oxygen. The physical properties in the upper 100 meters of this cross section correspond closely with continental shelf water of low temperature and salinity values and high oxygen content. Below this level to maximum sampling depths, a transition toward Bottom Water appears with evidence of possibly a southern boundary of Circumpolar Water near station 20.

Ten stations were occupied by GLACIER across Drake Passage during the period 12 and 13 March along the 057°W meridian from 60°S to approximately 54°S. Sonic depths for stations 21 through 28 were around 4,000 meters with the depth shoaling to 82 meters on station 30. Figure 11 presents vertical distribution of temperature, salinity, and density.

Figure 4 shows ships' tracks and station locations for both of these areas.

1. Bransfield Strait (Figure 10)

a. Temperature

Surface temperatures ranged from 0.50 to 0.75°C, with the minimum temperature noted at station 19. A slight negative gradient, resulting from surface seasonal warming, occurred to about 100 meters where minimum temperatures were observed. Below this, values increased slightly with depth to the maximum depths sampled.

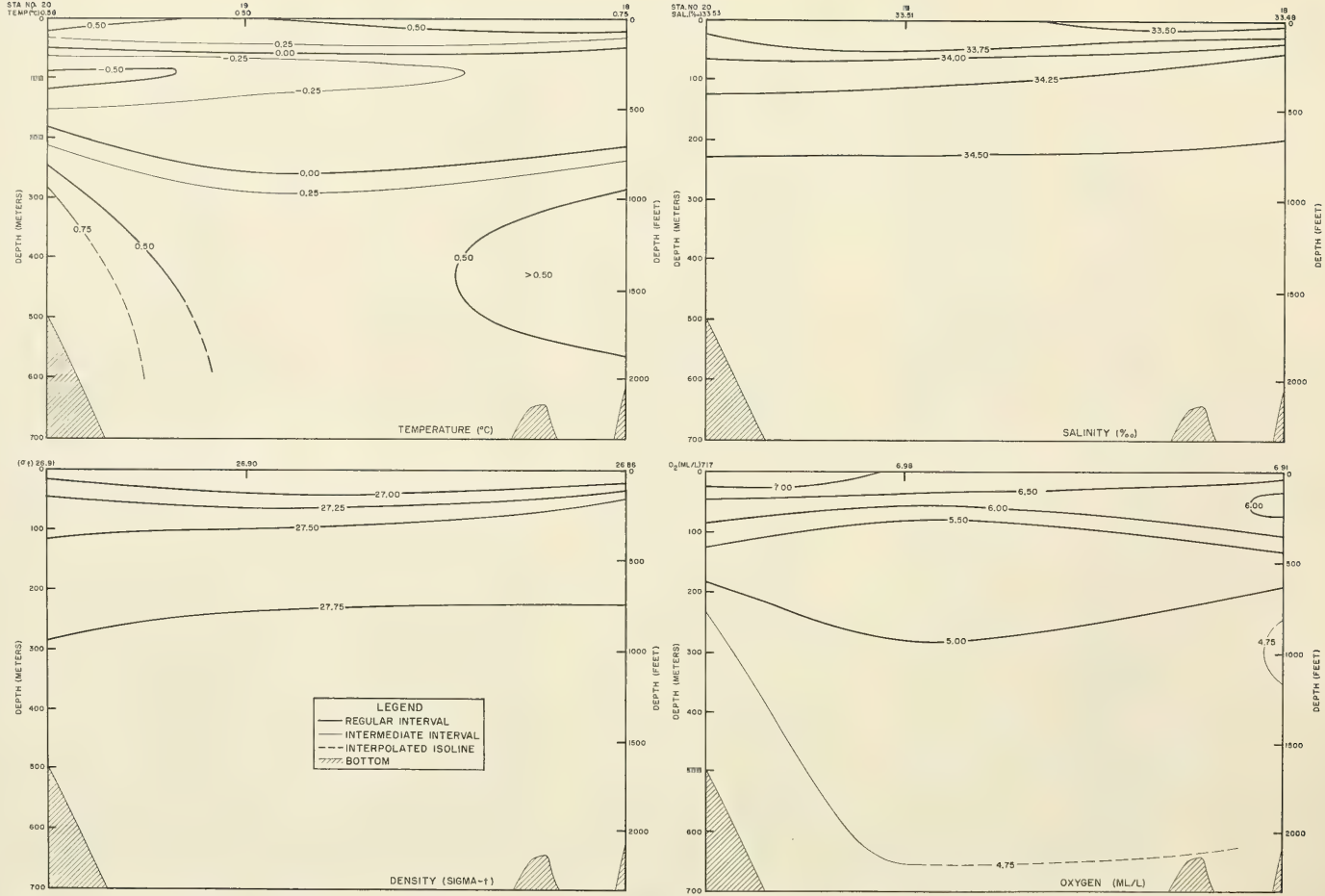


FIGURE 10. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, DENSITY, AND OXYGEN ACROSS BRANSFIELD STRAIT, USS GLACIER, 10 MARCH 1960

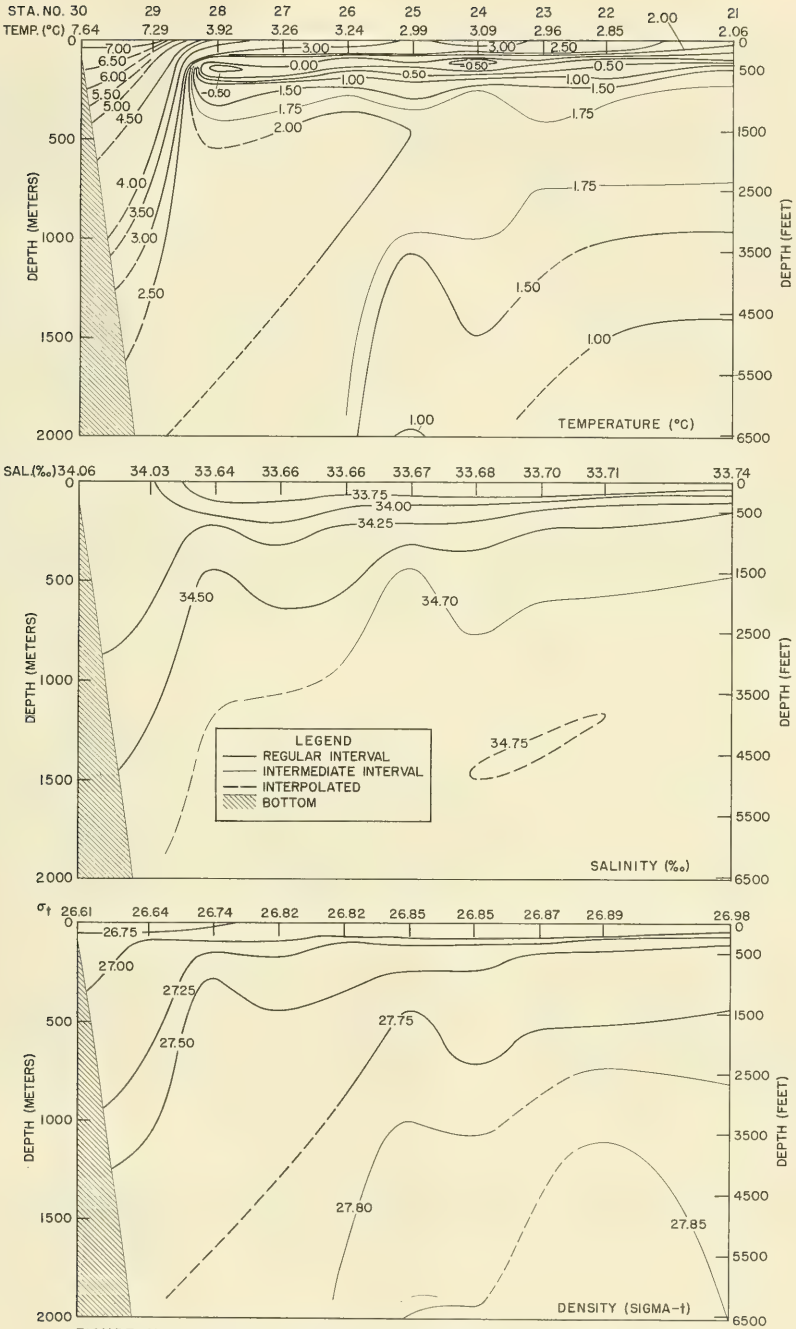


FIGURE 11. VERTICAL DISTRIBUTION OF TEMPERATURE, SALINITY, AND DENSITY ACROSS DRAKE PASSAGE, USS GLACIER, 12-13 MARCH 1960

b. Salinity

Salinity distribution was uniform across Bransfield Strait and varied only slightly, approximately 1.00 ‰ vertically to the depths sampled. From low surface values caused by summer ice melt to a depth of about 150 meters, maximum salinity changes occurred. Below this depth, salinities changed little, about 0.05 ‰, to the lowest depth sampled.

c. Density

The configuration of the isopycnals closely followed the isohalines, both horizontally and with depth. Densities increased from 26.90 at the surface to as high as 27.85 at the deepest observation.

d. Oxygen

A high surface value of dissolved oxygen, 7.17 ml/l, was observed at station 20. Below the surface, values varied from about 7.00 to 4.75 ml/l at maximum sampling depths on stations 18 and 19. At station 20, the 4.75 ml/l oxygen isoline was at 230 meters and dipped to 660 meters at station 19. Station 18 shows cells of lower oxygen at approximately 75 and 300 meters depth.

2. Drake Passage (Figure 11)

a. Temperature

This is an excellent cross section of temperature from Antarctic into Subantarctic regions crossing the Antarctic Convergence. The Convergence is readily apparent between stations 28 and 29, where surface values increased more than 3°C within a very short distance (approximately 15 nm). In this zone, the cold water from the Antarctic surface layer sinks beneath the considerably warmer and less dense waters from the north to form the well-defined Antarctic Intermediate Water Mass.

The rise of deep, warm water from the north is shown by the 2° isotherm. This water continues southward, forming the Antarctic Circumpolar Water, between 400 and 700 meters, with maximum temperatures at about 500 meters. Below the Circumpolar Water, temperatures gradually decreased with depth in a transition zone. The very cold and deep Antarctic Bottom Water was not reached.

b. Salinity

From the southernmost station northward, the layer of Antarctic Surface Water, with salinities less than 34.00 ‰, increased in depth from 50 to 200 meters just south of the Convergence. In the

vicinity of the Convergence, these low salinities shoaled to the surface. Below this, the 34.25 and 34.50 ‰ isohalines parallel the 34.00 ‰ to the Convergence where they turn sharply downward to the north, indicating the Antarctic Intermediate Water. The characteristic salinity minimum at the core of Intermediate Water is not evident, possibly owing to the sampling interval.

Below the surface layer, the 34.70 ‰ isohaline is indicative of Antarctic Circumpolar Water. Below the Circumpolar Water, a salinity maximum of greater than 34.75 ‰ was noted in the transition zone at about 1,300 meters, stations 22 through 24. Salinity decreased only 0.05‰ from here to the greatest depth shown on the cross section.

c. Density

In the Antarctic Surface Water, isopycnals closely parallel the salinity pattern, with densities increasing from less than 27.00 to approximately 27.50. North of the Convergence, these isopycnals dip sharply. On the two stations north of the Convergence, a 26.75 isopycnal lies just below the surface, delineating Subantarctic Surface Water from Antarctic Surface Water. The 27.75 isopycnal parallels the 34.70 ‰ isohaline where the warm, deep water rises to form the Circumpolar Water. Densities greater than 27.85 were observed in the transition water on the southernmost stations.

V. ANTARCTIC CONVERGENCE

A. General

The Antarctic Convergence is considered as the zone where the cold and more dense surface water of the Antarctic region sinks below the warmer and less dense surface water to the north. This zone is usually marked by a sharp north-south decrease in the surface water temperature of 1° to 3°C (2° to 6°F). The mean surface temperature associated with this drop is about 2°C (36°F) during January through March; this gradient (north to south temperature decrease) is also generally found at moderate depths. The mean temperature of the Convergence surface gradient decreases as winter approaches. At greater depths, sinking water mixes with adjacent water and eventually spreads to the north as the Antarctic Intermediate Water, recognizable by its minimum salinity. It is emphasized that the main water circulation in the Convergence area is west to east, and the north-south movements are vectors of small magnitude.

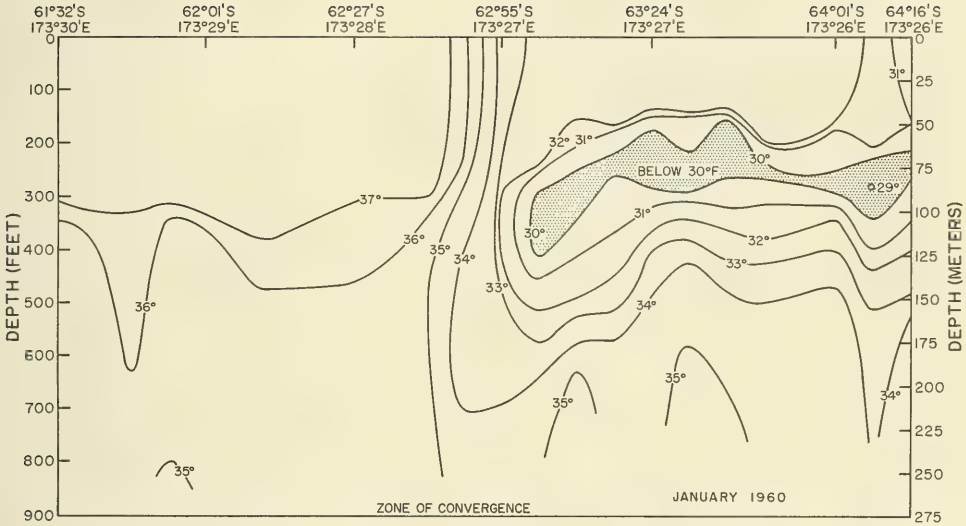
Four temperature profiles are presented from data collected by a 900-foot BT across the Convergence. BT's were taken half-hourly except when prevented by rough seas. One other Convergence crossing is presented with temperature, salinity, and density profiles. These data were obtained by Nansen casts.

B. Bathythermograph Sections

1. Figure 12 presents the vertical distribution of temperatures for two crossings of the Antarctic Convergence taken by ATKA south of New Zealand, towards McMurdo Sound. The first is the result of observations made in January 1960. The position, during this early summer crossing, was between 62°30'S. and 63°S. This section provides a good example of the major characteristics of the Convergence. The rapid surface temperature change, 37° to 33°F in about fifteen miles, and the nearly vertical isotherms in this zone are clearly indicated. To the north, the Subantarctic Water is shown with an isothermal layer to about 300 feet; to the south, the Antarctic Surface Water, with an isothermal layer to about 150 feet.

The second crossing by ATKA was made during March 1960, between 61°47'S and 62°30'S. The Convergence in this section is not so readily apparent by a rapid surface change; however, below the surface, the typical structure is noted. During this period, late summer, the surface layer of the Antarctic Surface Water is considerably deeper.

2. Figure 13 is a crossing of the Convergence made by GLACIER during transit from New Zealand to Thurston Peninsula in February 1960. The vessel crossed the Convergence at an angle, at approximately 60° to 61°S. An interesting feature of this section is the warmer surface layer of the Antarctic Surface Water than noted in the previous cross sections of this report.



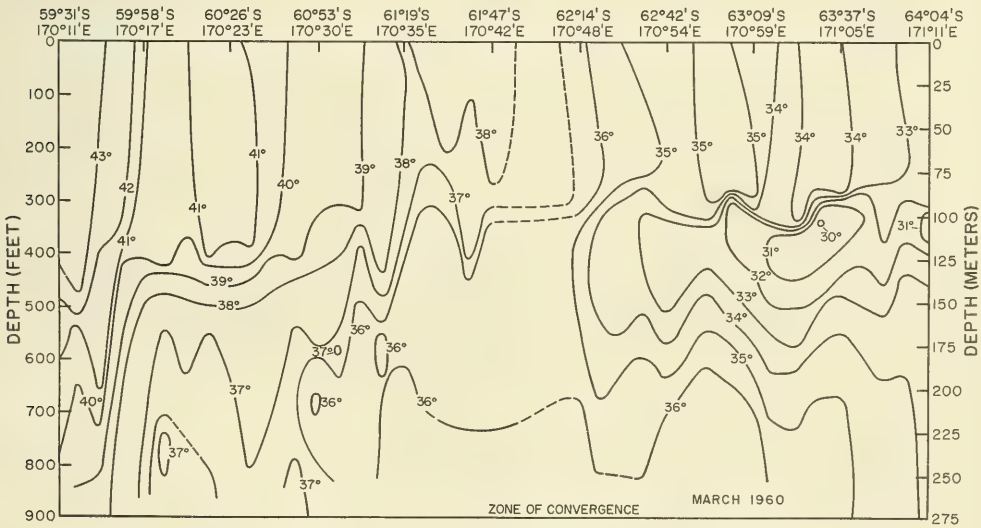


FIGURE 12. VERTICAL DISTRIBUTION OF TEMPERATURE (°F), PACIFIC ANTARCTIC CONVERGENCE, USS ATKA

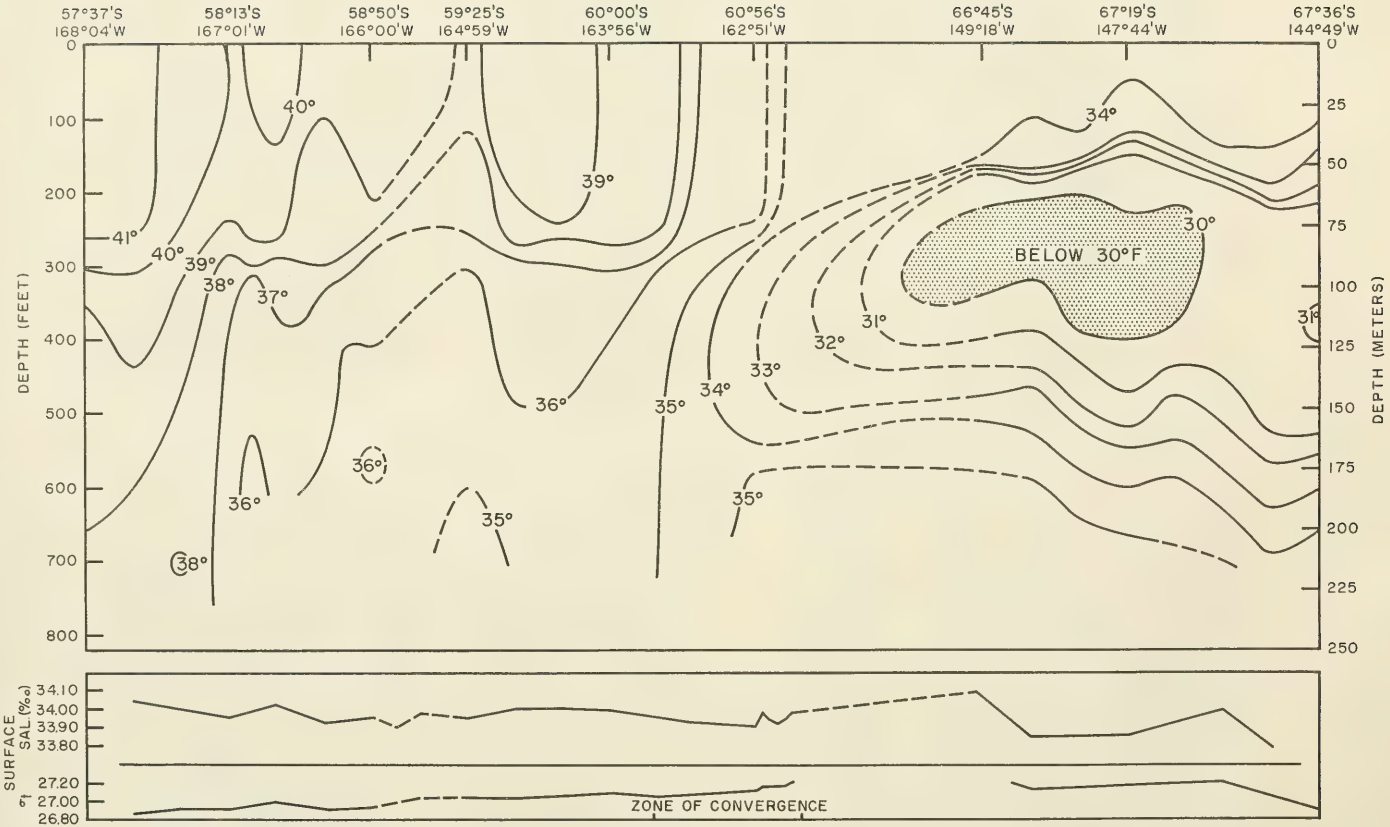


FIGURE 13. VERTICAL DISTRIBUTION OF TEMPERATURE (°F), PACIFIC ANTARCTIC CONVERGENCE, USS GLACIER, FEBRUARY 1960

3. BURTON ISLAND crossed the Convergence during March 1960 from about 61° to 65°S along the 91° through 95°W meridians. During this crossing, both BT and Nansen cast observations were made.

Figure 14 presents the results of BT observations, showing detailed surface structure.

It is noted that the Convergence Zone in this section compared to previous sections appears to be considerably broader. South of the Convergence, surface temperatures decrease regularly, with water of temperatures less than 30°F appearing at the surface at the southern end of this section.

C. Oceanographic Station Sections

During February, BURTON ISLAND occupied stations southward from Valparaiso, Chile, to the vicinity of Thurston Peninsula. In March, the ship returned along approximately the same track, taking a continuous series of stations from Peter I Island to Concepcion, Chile. Oceanographic conditions observed to the 2000-meter depth during this leg are shown in Figures 15 and 16. The cross section for temperature indicates the Convergence near stations 39 (60°41'S) and 40 (61°11'S). Observational depths in this vicinity were limited to about 500 meters, owing to adverse sea conditions.

These sections are good examples of physical conditions characteristic of the Antarctic and Subantarctic regions. The main features of the water masses are discussed in previous sections; however, these figures show physical features much farther north than the others.

A series of oceanographic stations was made across the Convergence in Drake Passage by GLACIER during March 1960. Figure 4 shows the position of the Convergence in this area and Figure 11 presents vertical distribution of the physical properties of the water. A discussion of this crossing is in Section IV, Drake Passage Oceanography.

D. Continuous Surface Temperature Record

Figure 17 is a continuous trace of surface water and shade-air temperatures, measured by resistance bulb thermometers, across the Antarctic Convergence in Drake Passage. Temperatures increased from 3.4° at 55°22.4'S to 7.2°C at 55°14'S. Associated air temperatures gradually increased from 5.8° to 7.3°C.

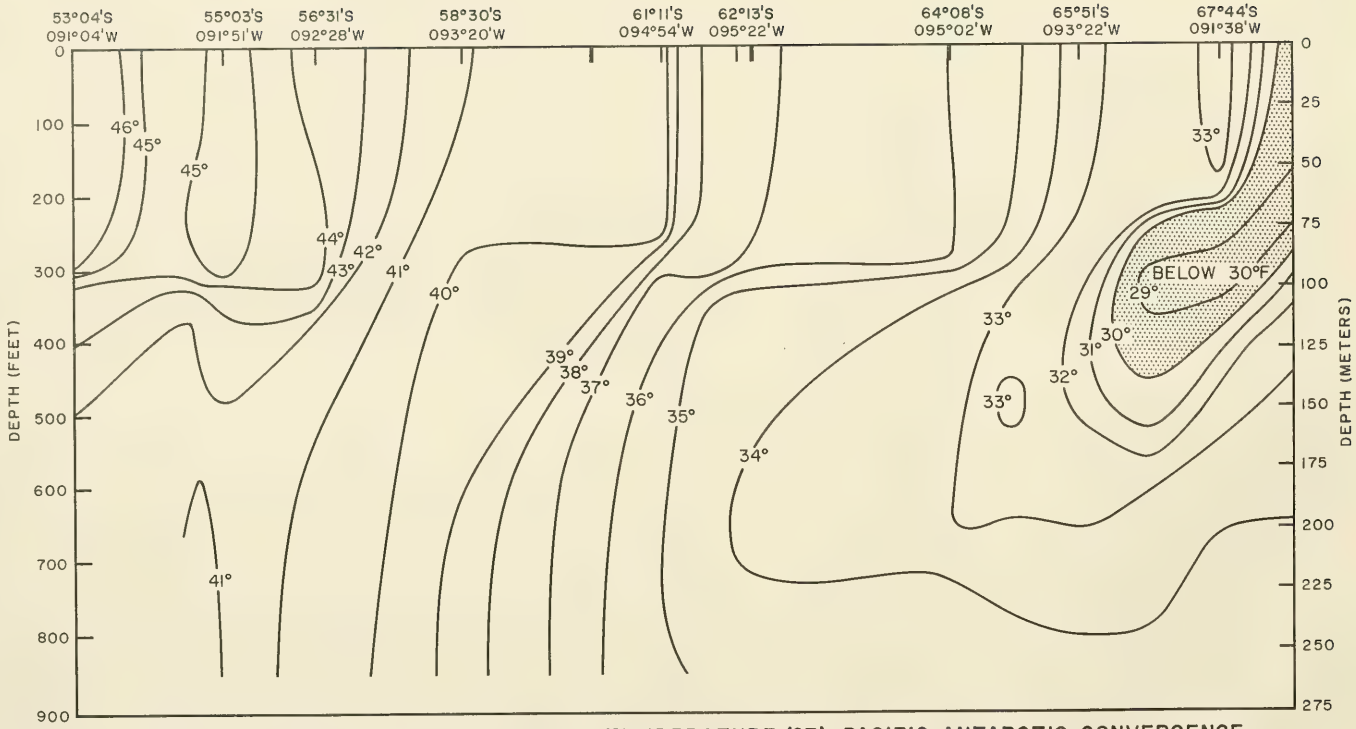


FIGURE 14. VERTICAL DISTRIBUTION OF TEMPERATURE (°F), PACIFIC ANTARCTIC CONVERGENCE, USS BURTON ISLAND, MARCH 1960

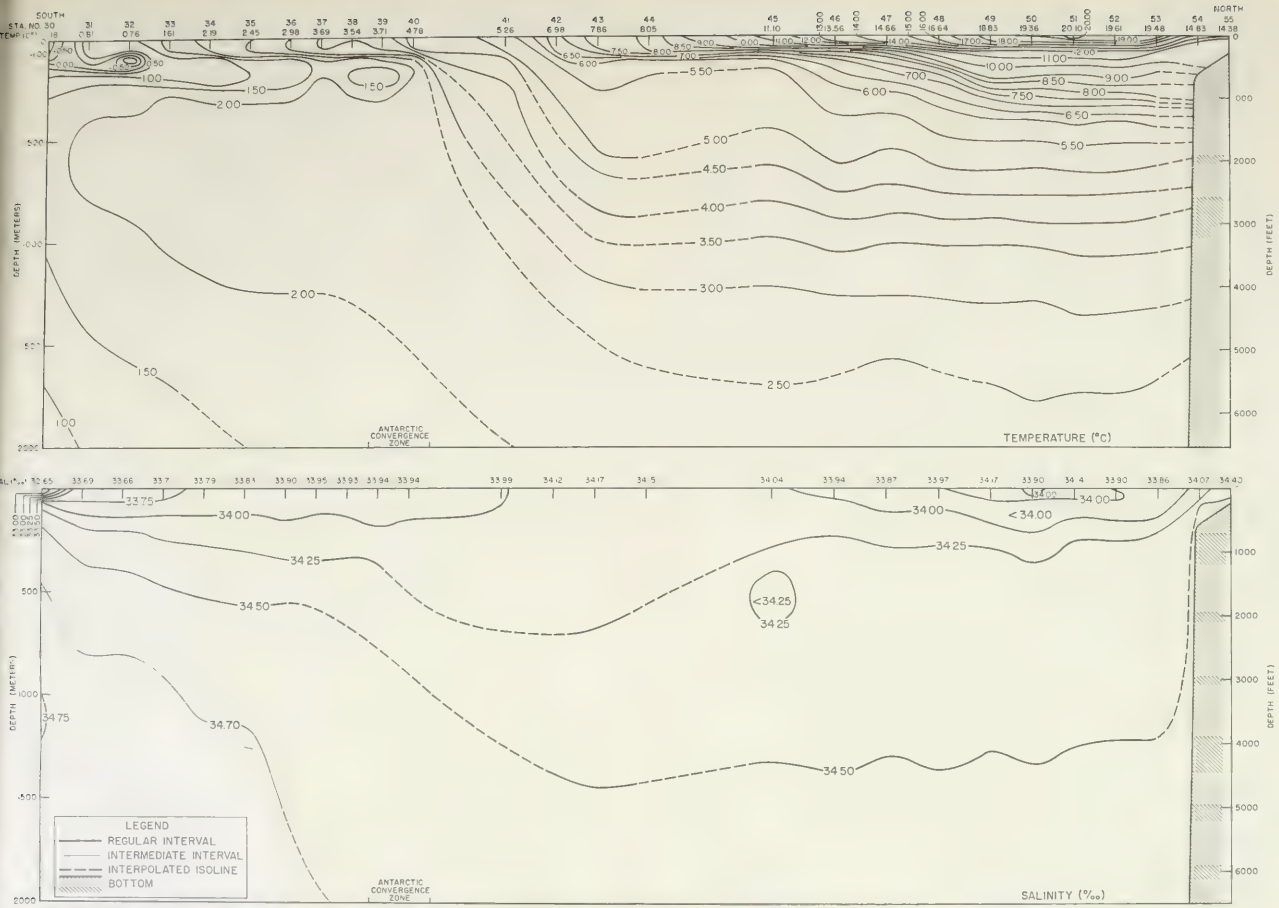


FIGURE 15. VERTICAL DISTRIBUTION OF TEMPERATURE AND SALINITY FROM PETER I. ISLAND TO CONCEPCION, CHILE USS BURTON ISLAND, 29 FEBRUARY – 12 MARCH 1960

FIGURE 16. VERTICAL DISTRIBUTION OF DENSITY (SIGMA-t), AND OXYGEN FROM PETER I ISLAND TO CONCEPCION, CHILE, USS BURTON ISLAND, FEBRUARY–MARCH 1960

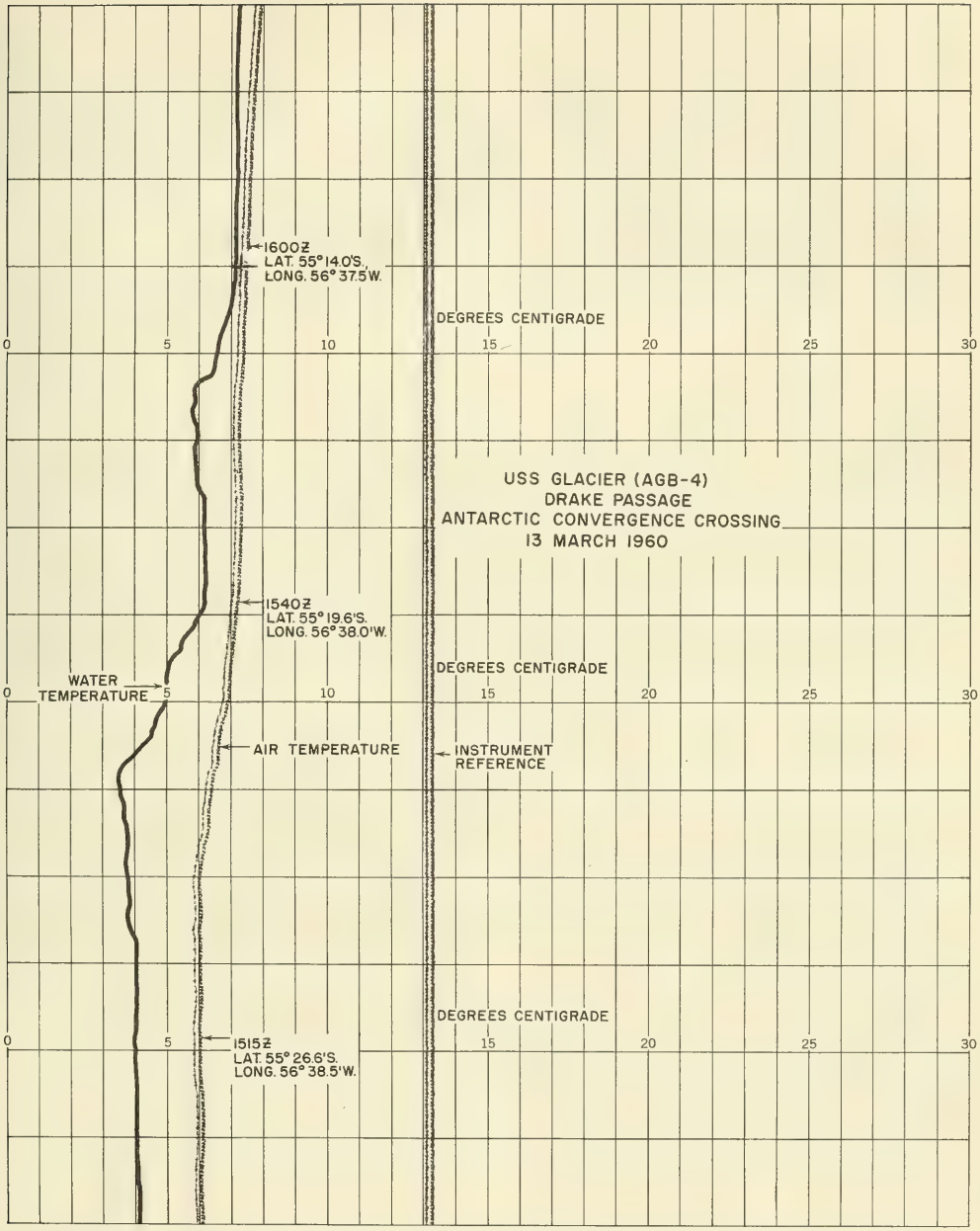


FIGURE 17. CONTINUOUS SURFACE TEMPERATURE RECORD, CONVERGENCE ZONE, DRAKE PASSAGE

VI. ICE CONDITIONS

A. General

Ice conditions in the Antarctic were recorded aboard ATKA, EASTWIND, GLACIER, and BURTON ISLAND, annotating percent concentration, thickness, age, topography, and snow cover. These data are portrayed by conventional ice symbols along ships' tracks. Widths of tracks illustrated vary according to visibility conditions at time of observation. Figures 18 through 22 illustrate ice conditions in the Western Ross Sea from December through March; Figure 23, for the Amundsen and Bellingshausen Seas during February; and Figure 24, along the western coast of the Palmer Peninsula during March.

B. Geographic Area

1. Ross Sea Area

Aboard GLACIER on 9 December 1959, the first icebergs and growlers were sighted at 60°30'S, 177°E (Fig. 18). The pack, varying from five- to eight-tenths concentration of average thickness four to five feet, was entered shortly thereafter. At about 74°S, the ship entered open water on 12 December and remained in this until reaching Kainan Bay. GLACIER and ARNEB departed Kainan Bay on 18 December for McMurdo Sound, transiting open water to the vicinity of Beaufort Island. Grounded icebergs blocked passage of the ships between Beaufort Island and Cape Bird. GLACIER left McMurdo 9 January for New Zealand, passing through intermittent patches of one and five-tenths concentration to about 65°S; no ice was sighted north of this.

ATKA also entered the ice pack on 9 December 1959, reporting three- and four-tenths coverage of young and slush ice at approximately 65°30'S (Fig. 19). The concentration increased to seven-tenths of winter ice at 70°S. Thickness of this ice varied from three to five feet with large floes and fields predominating. From 70°S to the vicinity of Franklin Island, the ship operated in open water, except for a patch of nine-tenths winter and young ice at 72°S. McMurdo Sound was filled with eight-tenths concentration of five-foot bay ice from 13 through 15 December. This ice extended north midway between Beaufort Island and Franklin Island.

On 1 January 1960, ATKA sailed northward to conduct oceanographic stations in the vicinity of Scott Island. After passing through five- and eight-tenths ice in McMurdo Sound (Fig. 20), open water was reached at about 76°S, near Franklin Island. Ice was again encountered at 71°S, 177°E, where three- and four-tenths of block and brash were reported. From 71° to 66°S, and in the vicinity of Scott Island, concentrations varied from four- to seven-tenths of block, brash, and slush with an average thickness of three feet, during the period 3 through 5

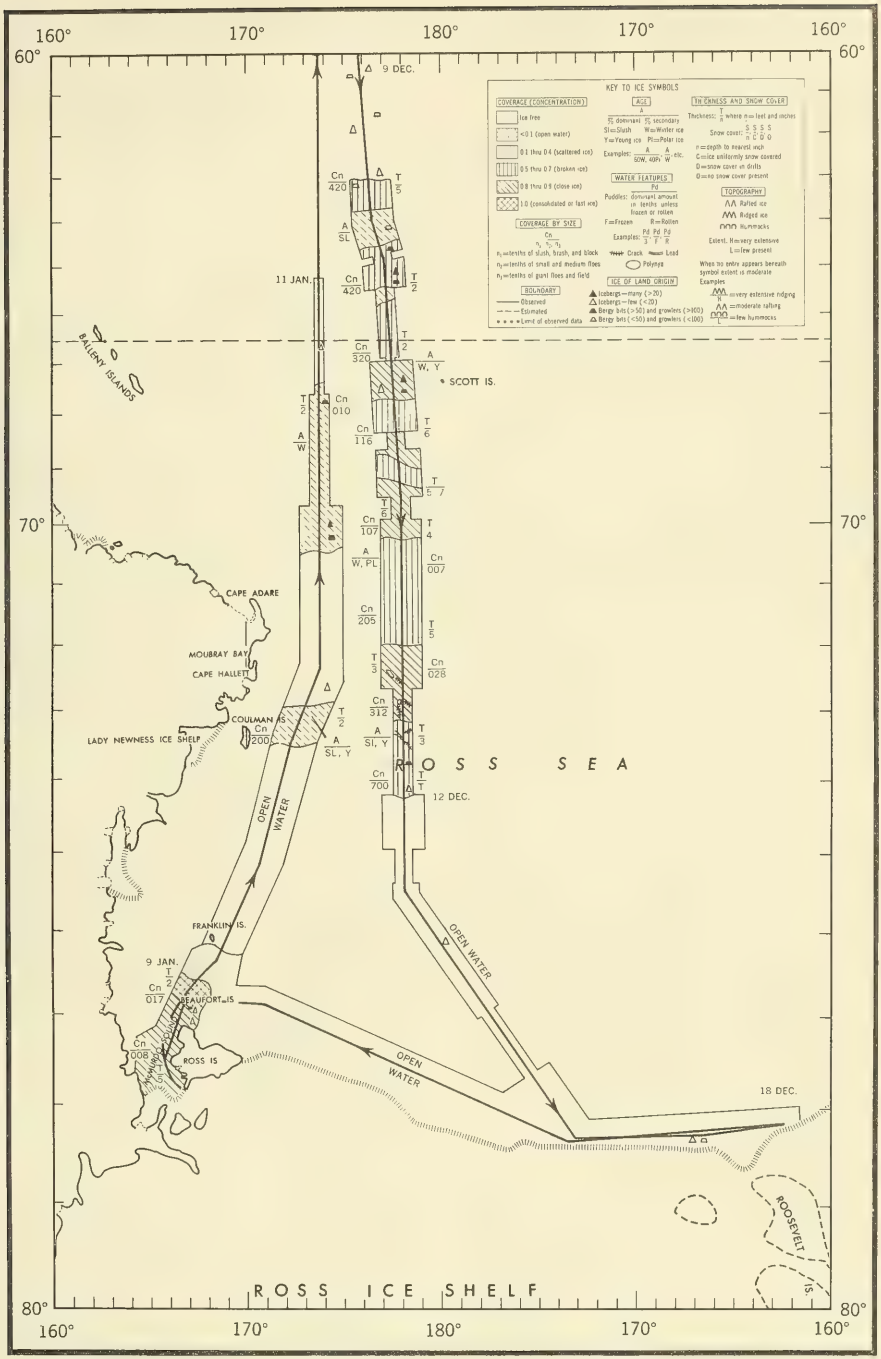


FIGURE 18. ICE CONDITIONS, ROSS SEA AREA, USS GLACIER, DECEMBER 1959–JANUARY 1960

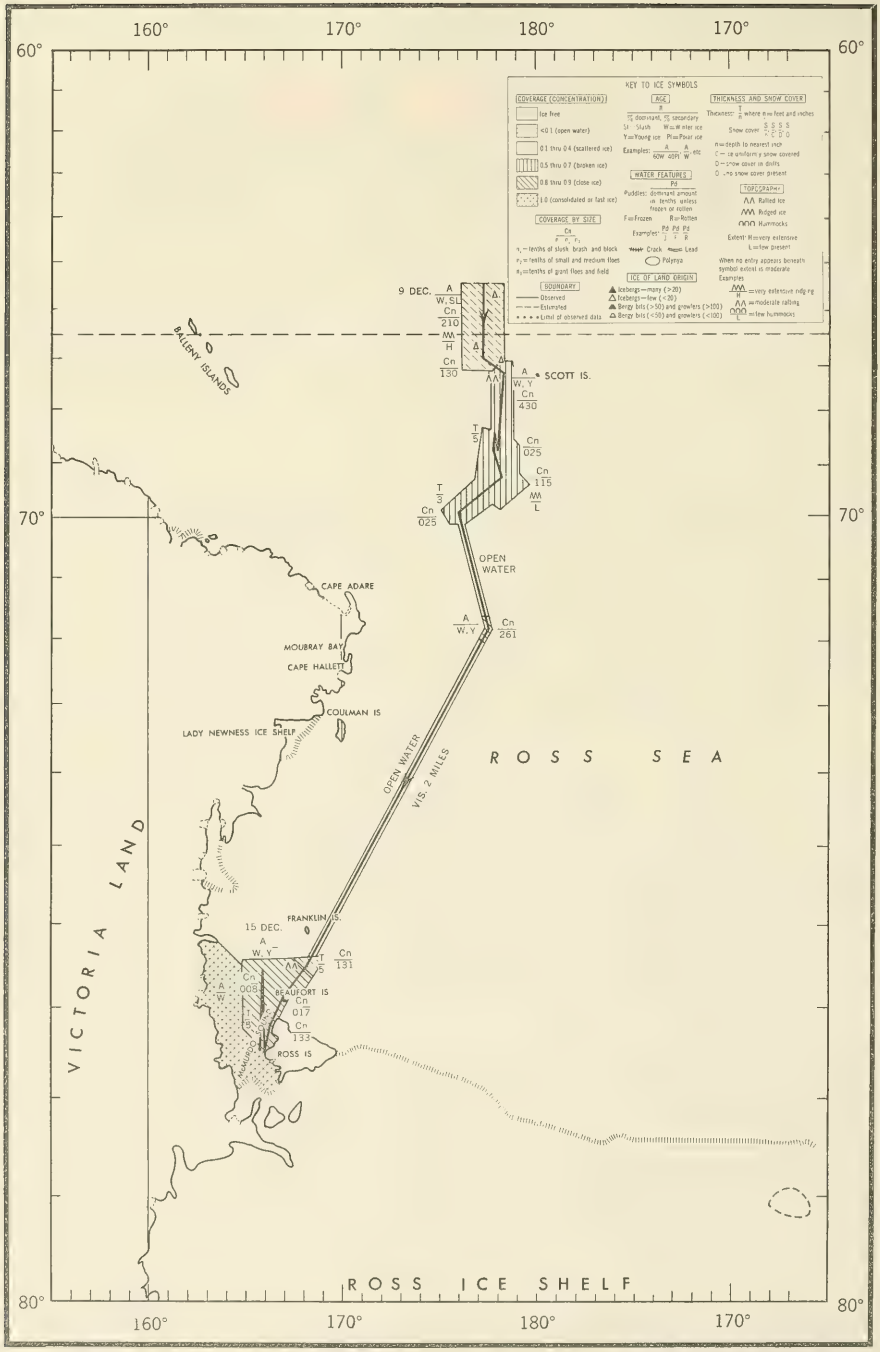


FIGURE 19. ICE CONDITIONS, ROSS SEA AREA, USS ATKA, DECEMBER 1959

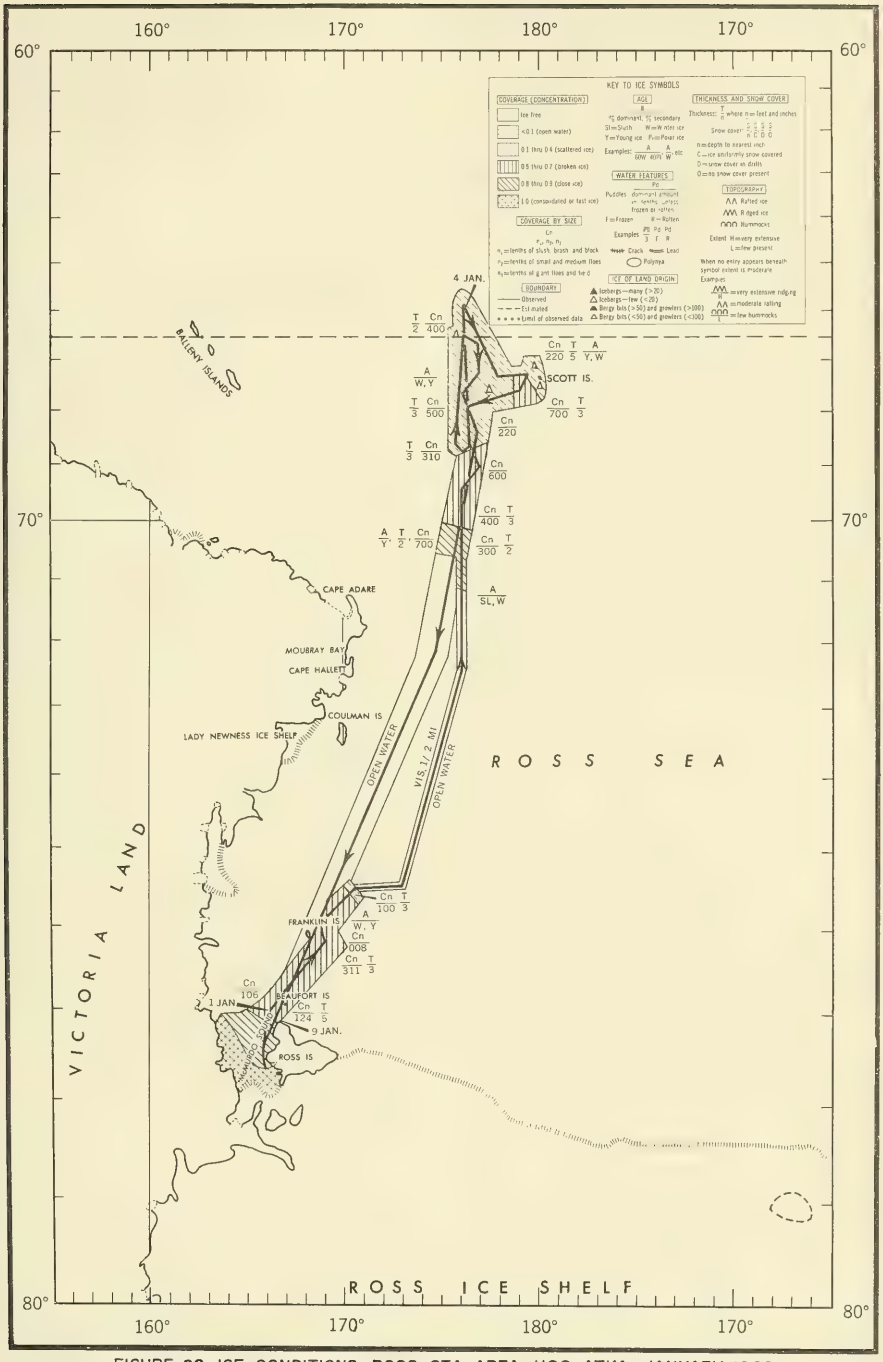


FIGURE 20. ICE CONDITIONS, ROSS SEA AREA, USS ATKA, JANUARY 1960

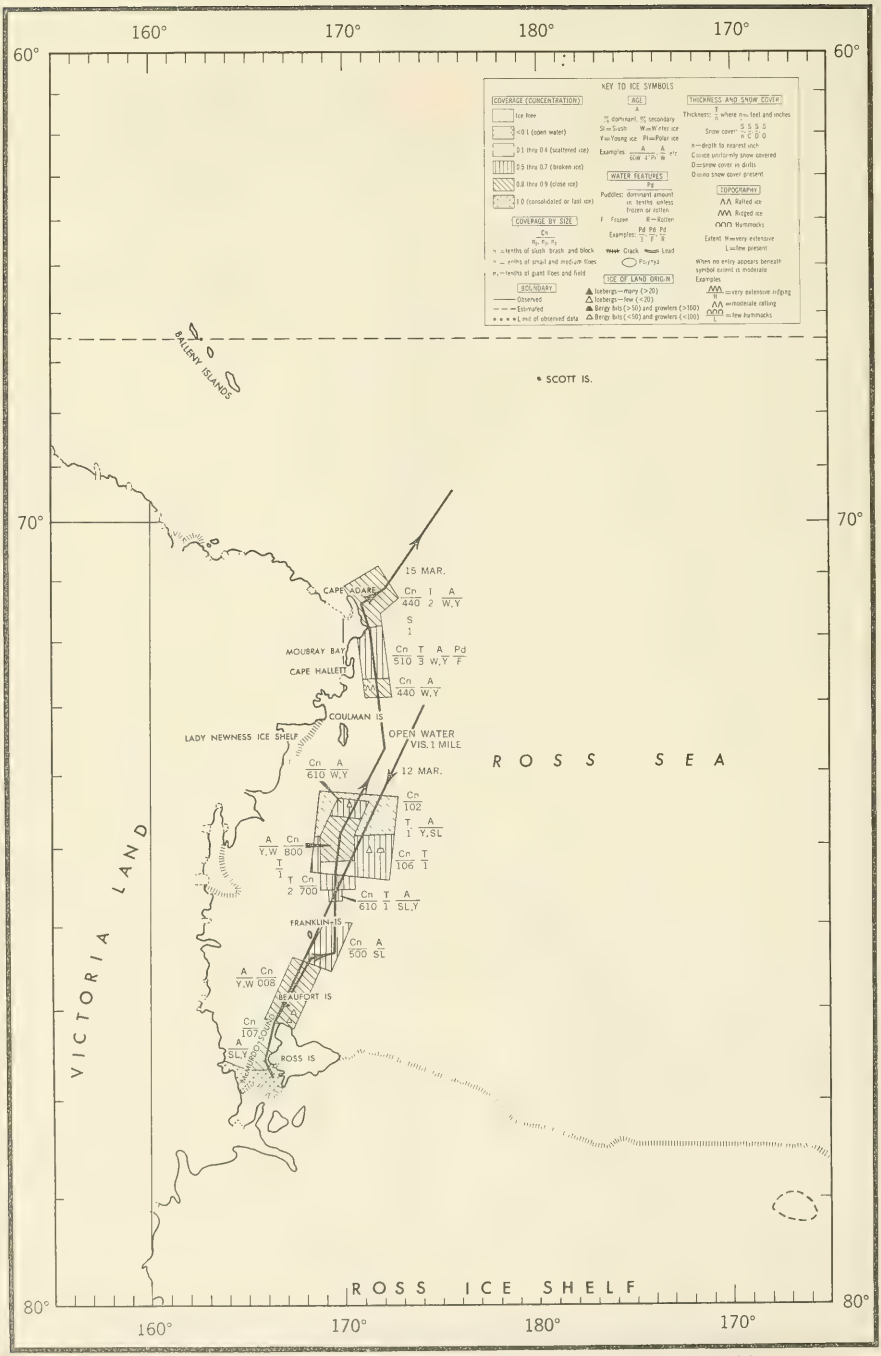


FIGURE 21. ICE CONDITIONS, ROSS SEA AREA, USS ATKA, MARCH 1960

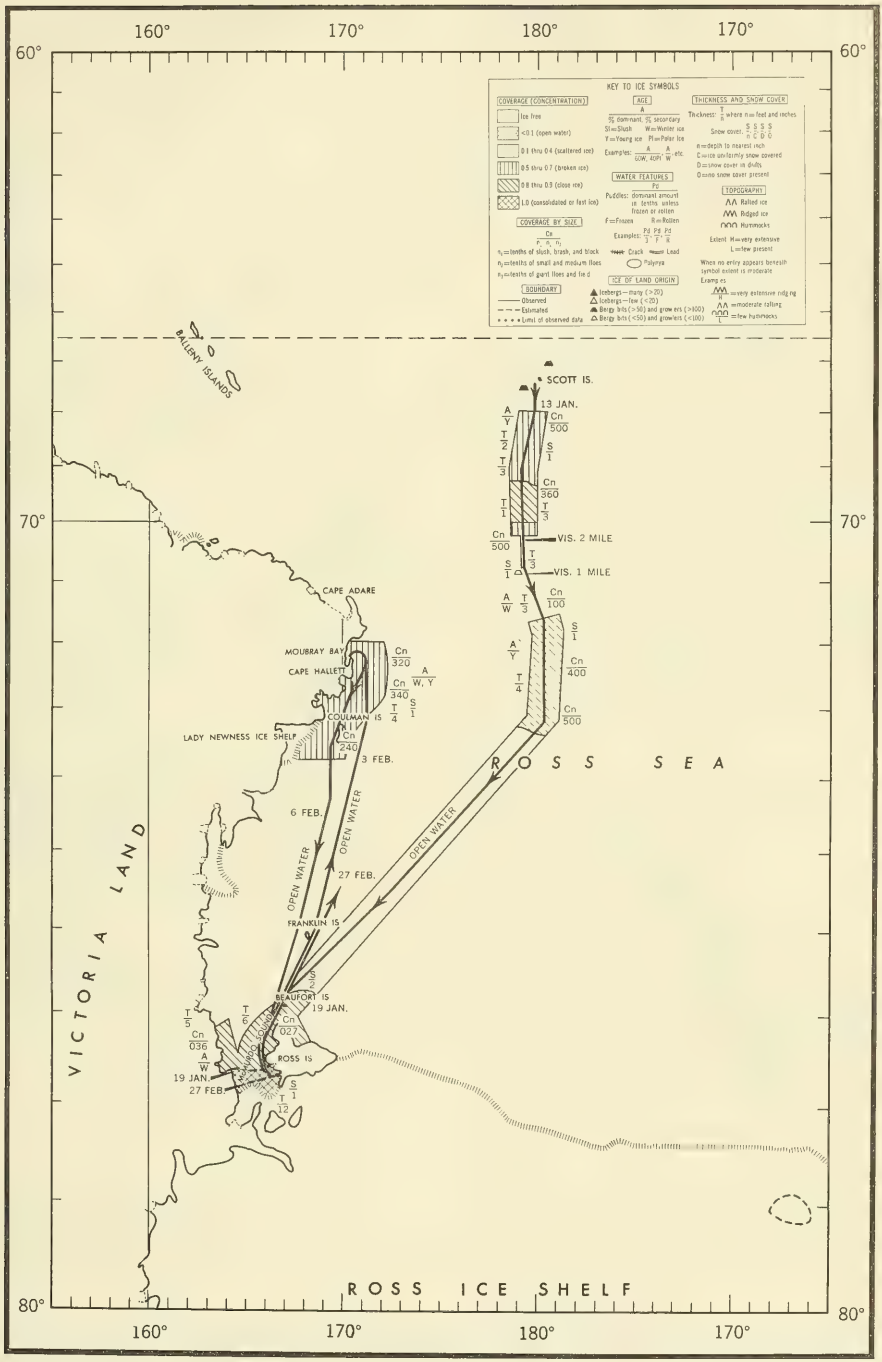


FIGURE 22. ICE CONDITIONS, ROSS SEA AREA, USCGC EASTWIND, JANUARY–FEBRUARY 1960.

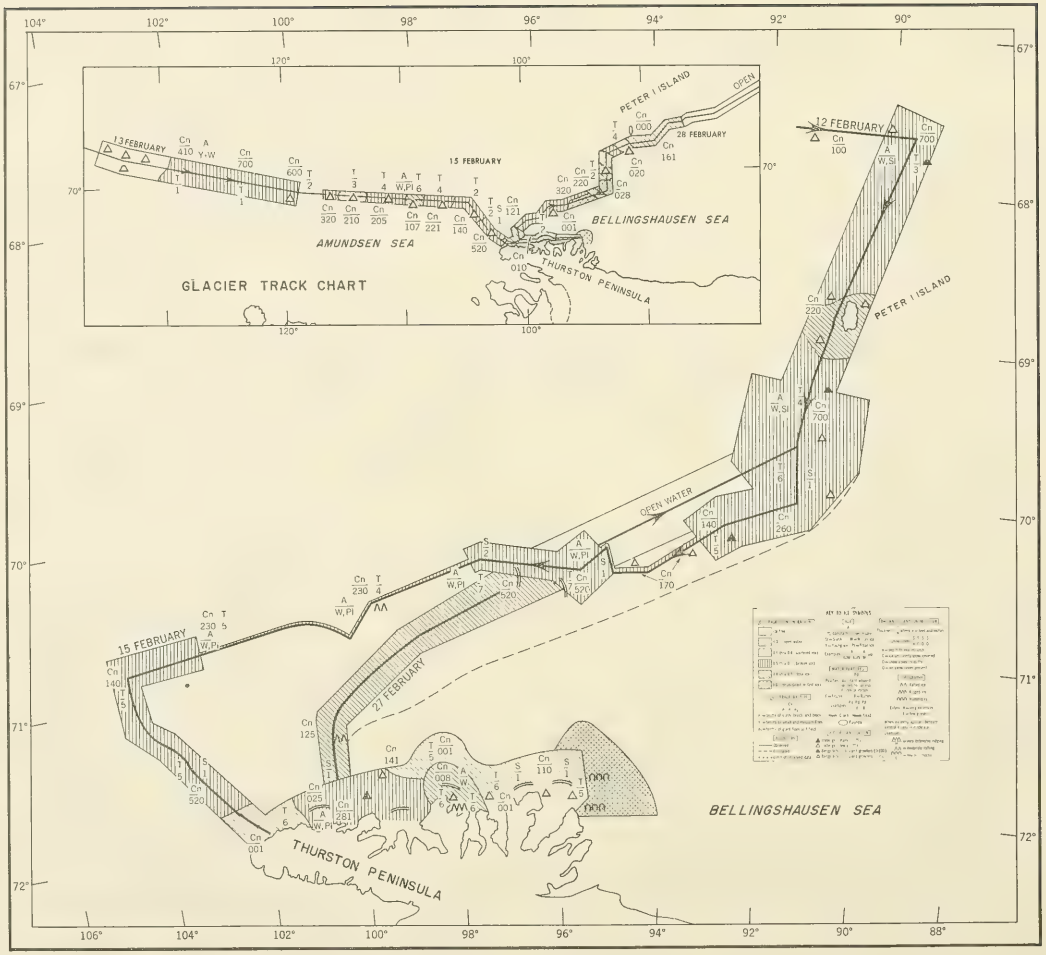


FIGURE 23. ICE CONDITIONS, AMUNDSEN-BELLINGSHAUSEN SEAS, USS BURTON ISLAND AND USS GLACIER, FEBRUARY 1960

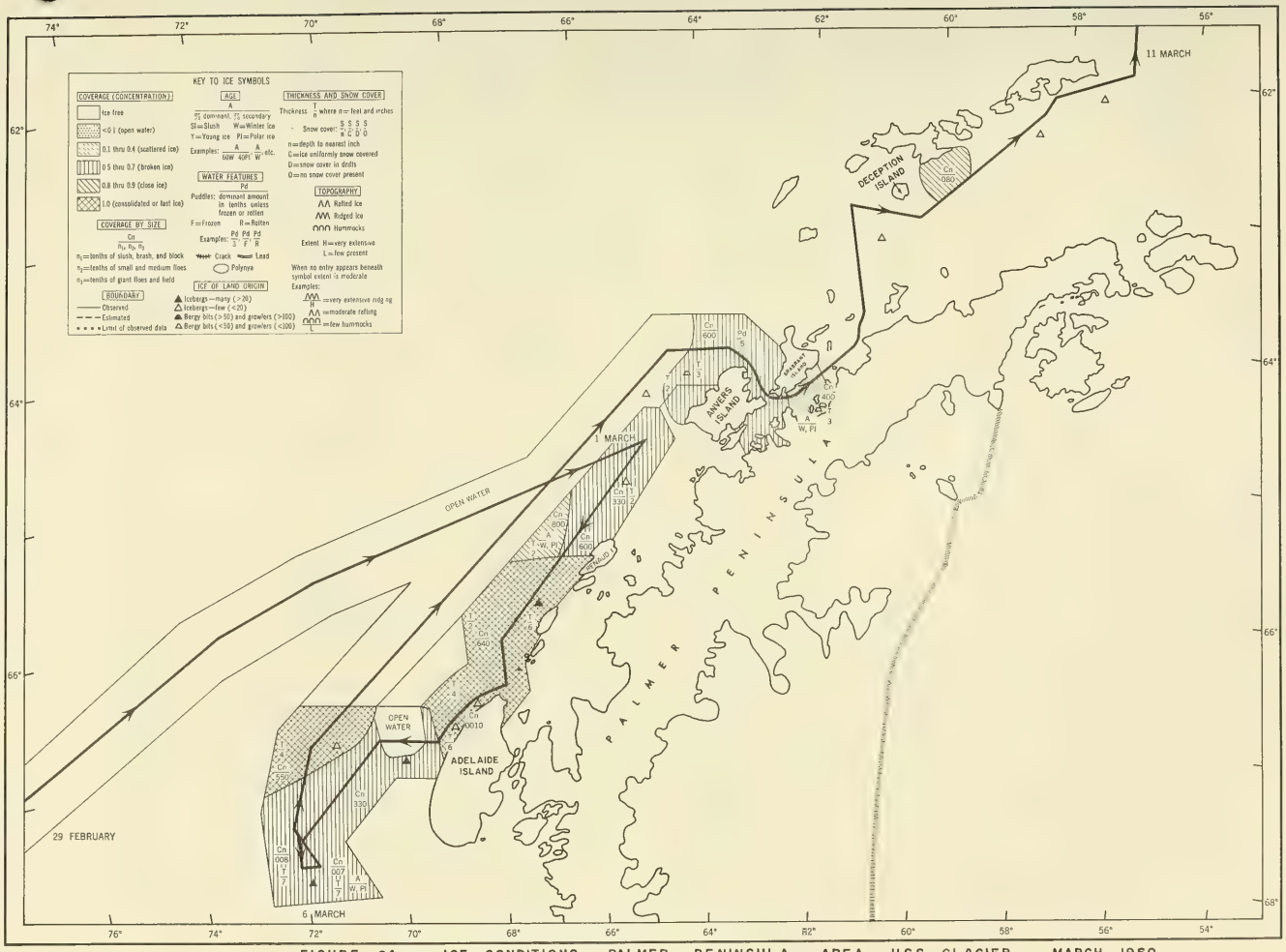


FIGURE 24. ICE CONDITIONS, PALMER PENINSULA AREA, USS GLACIER, MARCH 1960.

January. On the return trip, open water was traversed south of 70°30'S to McMurdo, where ice was re-entered.

From 12 through 15 March 1960, ATKA proceeded to McMurdo Sound and then north via Hallett Station, west of the 173°E meridian (Fig. 21). Ice was encountered all along the ship's track to Cape Adare, except around Coulman Island. New ice was rapidly forming. From McMurdo to Coulman Island, this new ice was young slush, varying from three- to eight tenths concentration and averaging one-foot thick. In contrast to this, along the coast from Cape Hallett to Cape Adare, the ice was primarily rotten winter ice, two- and three-foot thick block and brash, with young ice secondary. Six- to eight-tenths concentration was recorded. After departing the ice north of Cape Adare, no ice was encountered.

EASTWIND first entered ice at approximately 68°S, 179°E, on 13 January 1960, while in transit from New Zealand to McMurdo Sound (Fig. 22). From this position to 73°30'S, the concentration varied from one- to nine-tenths of brash, block, and small and medium floes of two- to four-foot thickness. No ice was observed from 73°30'S to the vicinity of Beaufort Island, where nine-tenths coverage was encountered.

In McMurdo Sound, small, medium, and large floes of five-foot thickness were concentrated along the western shore and to the north of Marble Point. Fast bay ice extended as far north as Tent Island.

On 2 February, the ship departed McMurdo for Hallett Station. Little ice was encountered before arriving in the vicinity of Moubray Bay, where five- to seven-tenths concentration was entered. Hallett Harbor was ice free except for a few grounded bergs on 3 February. During three days at Hallett, up to five-tenths concentration of ice moved in and out of the harbor daily with the changes of tide. On 6 February, EASTWIND departed Hallett Station for McMurdo escorting ARNEB. Their route was to the west of Coulman Island through five- to seven-tenths of brash, block, and small floes, averaging four-foot thick. Open water extended from just south of Coulman Island to McMurdo Sound.

EASTWIND departed McMurdo 27 February for Sidney, Australia, via Hallett Station. At the time of departure, the fast bay ice extended about two miles north of NAF McMurdo, from the Glacier Tongue to the Dailey Islands. After leaving McMurdo Sound area, the only ice encountered was in the vicinity of Cape Hallett where the same ice conditions existed as reported above.

2. Amundsen - Bellingshausen Seas Area

While proceeding southward to rendezvous with GLACIER for scientific survey operations at the Thurston Peninsula area, BURTON ISLAND first sighted ice on 12 February at 67°30'S, 92°W (Fig. 23).

Several large icebergs and light brash of one-tenth coverage were observed. Shortly thereafter, three-foot ice of seven-tenths concentration was entered; these conditions prevailed to the vicinity of Peter I Island. Four-tenths coverage of brash, block, and small floes with scattered bergs surrounded the island. From just south of the island to about 70°30'S, 94°W, ice conditions worsened, changing from predominantly brash and block to a high concentration of small and medium floes. These floes contained ice of seven-foot thickness. From here and proceeding westward to the rendezvous point, ice conditions improved. Although concentrations ranged from five- to seven-tenths, there was a marked reduction in percentage of small and medium floes.

GLACIER first observed ice at 69°43'S, 130°16'W, on 13 February (Inset, Fig. 23). In contrast to the ice encountered by BURTON ISLAND in the Bellingshausen Sea, the ice observed by GLACIER in the Amundsen Sea was thin and rotten, presenting little difficulty to the ship's movement. A few bergs were noticed along the track. Concentrations varied up to eight-tenths.

The two ships rendezvoused 15 February and proceeded southward to the Thurston Peninsula, passing through ice of five- to eight-tenths concentration, about five-foot thick, with a snow cover in excess of one foot. Upon arrival 15 February, the ships followed a shore lead, about three miles wide, eastward along the coast. Ice along the lead was predominantly one- to two-tenths with intermittent patches of five- to eight-tenths coverage. Very thick fast ice prevented further eastward passage. This ice was several years old and very heavily hummocked. The concentration was nine-tenths to total coverage, and individual floes were sometimes several miles across and over ten-foot thick. Helicopter reconnaissance revealed a shore lead to the southeast off Eights Coast; however, the ice pack to the north appeared to be virtually impassable.

After conducting survey operations in the Thurston Peninsula area, the ships proceeded northward from the vicinity of Williams Island about 25 February. Progress was slowed by soft ice of nine-tenths coverage and temporarily stopped by ice under pressure. On 26 and 27 February, the ships headed in an easterly direction, making little progress owing to heavy concentrations of pressure-ridged ice and poor visibility. On 27 February, GLACIER and BURTON ISLAND parted company at about 71°S, 100°W, in relatively open water and proceeded toward Peter I Island, maintaining distances of five and ten miles from the edge of the ice pack, respectively. GLACIER encountered intermittent patches of ice to the vicinity of Peter I Island, while enroute to Palmer Peninsula. BURTON ISLAND passed through mostly open water and reported the last observed ice at 69°S.

3. Palmer Peninsula Area

On 1 March, GLACIER again entered ice off Anvers Island along the

western coast of Palmer Peninsula (Fig. 24). The ship sailed southward along the coast, passing through two-foot thick ice of concentrations of six- to ten-tenths to the vicinity of Renaud Island. South of this to Adelaide Island, ice under pressure reduced ship's movement to a minimum. West of Adelaide, ice conditions improved as six-tenths concentration was reported on 5 March. At this time, GLACIER met the Chilean icebreaker, ARA GENERAL SAN MARTIN, and escorted her to open water. GLACIER turned southward, following leads through ice of six- to eight-tenths coverage and reached the Danish vessel, MV KISTA DAN, at 68°S,71°W, on 6 March. By 8 March, pressure on the ice field diminished sufficiently, and the pack opened enough for GLACIER to escort the vessel to open water. GLACIER then proceeded to Deception Island. Open water prevailed except in the passage between Anvers and Brabant Islands and DeGerlache Strait, where six- and four-tenths of brash and block were encountered, respectively. The last ice observed consisted of a few icebergs and shorefast ice as far north as King George Island.

VII. BOTTOM SEDIMENTS

A. General

The distribution of bottom sediments appears to be related in a general way to distance from the Antarctic Continent and depth of water. The sediments sampled in depths less than 500 fathoms are principally of terrigenous origin and may be classified as a marine glacial till with two important exceptions: (1) the volcanic ash deposits of McMurdo Sound and in the vicinity of Ross Island, Peter I Island, and other volcanic features, and (2) the predominantly biological sediments with an irregular and undertermined distribution. Varying amounts of organic constituents are associated with the terrigenous sediments; the most frequent being siliceous sponge spicules. The features common to all of these sediments are the lack of chemical weathering and their poor sorting. Ice rafting is presumably the most effective transporting agent.

In water deeper than 500 fathoms, the few botton sediments collected are composed generally of sufficient planktonic micro-organisms to be classed as organic deposits, except where local conditions prevail. These local variations are found in the vicinity of islands and at the base of the Antarctic Contentinental Slope. Part of these sediments appear to be the result of ice rafting, as well as other transporting agents.

Identifications and percentages of organic and inorganic constituents are only gross approximations of the major elements comprising the sand and larger fractions. In particular, any volcanic derivative is grouped under volcanic glass, and pyroxene includes all ferromagnesium minerals such as augite and horneblende. Also, the percentages given for planktonic micro-organisms, particularly at the top of cores and in grab samples, are probably low since some of these constituents, especially diatoms, are evidently lost during sampling and laboratory processing. However, micro-scopic examination of the silts and comparison with the coarser fractions of about one-third of the samples agreed reasonably well in the diatom estimates. Perhaps the delicate forms do not occur in appreciable percentages in many of the sediments since the only diatoms seen in the sand fractions were two large, thick walled species of Coscinodiscus.

B. Areal Description

1. Ross Sea Area

a. McMurdo Sound - The terrigenous sediments sampled in the Ross Sea are divisible into two provinces depending on their source. Those derived from Ross Island and associated volcanics are one of these. Fifteen cores of predominantly volcanic glass and feldspar were obtained by EASTWIND in McMurdo Sound. In some few cases, rock fragments or organic remains comprise the primary components.

The sediment types range mostly from olive gray to greenish black silts and sands. Their mineral grains, for the most part, average medium to medium high in sphericity; subangular to subrounded in roundness; and dull-pitted to polished-pitted in surface texture. Although the bottom of McMurdo Sound appears to be very irregular, hard, and variable in composition there seems to be a general decrease of mean phi size and biological content with increasing water depth. Charting distribution of the biological constituents indicates there is possibly an increase in the planktonic micro-organism content of the sediments from west to east and from south to north.

b. Southwestern Ross Sea - EASTWIND cores 14 and 15 were obtained in slightly over 400 fathoms of water, one to the north and the other to the south of Beaufort Island. Although only about 20 miles apart, they differ materially in composition. The northern core (14) consists primarily of the remains of planktonic organisms throughout its entire length, excluding the very bottom where volcanic glass and feldspar become the predominant constituents. Core 15, however, is predominantly feldspar, volcanic glass, and rock fragments throughout its entire length.

c. Southeastern Ross Sea - Five of the seven cores taken by GLACIER in this area extend over a distance of more than 130 miles along the Ross Ice Shelf. In these, the top comparatively rich organic zone, varying from 5 to 7 inches thick, appears to indicate a period of relatively high plankton productivity. Below this, the microfauna are sparse but increase somewhat at the bottom of the two longest cores, 6 and 7. Volcanic glass and rock fragments are present in all of these cores, but their occurrences are so variable and irregular, due probably to glacial dumping, that they are useless for correlation. However, because of the high percentage of rock fragments in cores 4 and 5 and their contained pink feldspars, which are uncommon in the other cores, these sediments are probably derived from Roosevelt Island, immediately to the south under the Ross Ice Shelf.

Cores 1 and 2 taken by GLACIER somewhat farther north of the ice shelf are similar to those described. The calcium carbonate content of the silts from core 2 was analyzed. This decreases from a high of 3.75% at the top to a minimum of 2.0% at 9 to 12 inches depth and then increases to 2.75% at the bottom of the core. The data are not adequate for correlation, but indicate a low calcium carbonate content for Southern Ross Sea sediments.

d. Northwestern Ross Sea - The only other bottom sediments obtained in the Ross Sea were in the northwest sector in water depth exceeding 1,000 fathoms. EASTWIND sample 2, containing a high percentage of rock fragments and radiolarian tests, consists of surface mud taken from the bottom Nansen bottle of an oceanographic cast. Core No. 3 was taken

in an indentation in the Antarctic Continental Slope. Since its location is beneath the Ross Ice Pack on the side opposite the indentation from Cape McCormick, the nearest land about 140 miles west, the supply of coarse terrestrial sediment, except for occasional dumping from icebergs, should be relatively low. This dumping shows up in the 18- to 20-inch segment of the core where 61 percent of the sediment is sand size or coarser and 40 percent of this is composed of rock fragments. Except for this segment, the silt-size fraction is remarkably high and constant at approximately 50 percent of the sample. This is not typical of glacial marine sediments. The content of radiolaria is adequately high for this core to be classed as a radiolarian ooze, except for the higher percentage of sponge spicules. Because of its location, slumping from the shelf could account for all or part of the sediments sampled.

2. Thurston Peninsula Area

a. BURTON ISLAND and GLACIER obtained thirteen bottom sediment samples close inshore along the Thurston Peninsula for a distance of over 90 miles from 101°57'W to 96°50'W. The bathymetry along this coast is extremely irregular and the bottom sediments vary in texture and composition. Two submarine rifts with depths in excess of 500 fathoms were crossed along the coast. These are to the east and west of Noville Peninsula. It is impossible to tell their extent to the north from the available soundings, but oceanographic stations over them sampled warm Antarctic Circumpolar Water at depth, which indicates they must be open to the north.

In texture, sediments range from silty sands on the shoals to pebbly silty clays in the deeps. For the most part, they are gray to brown in color, of medium low to medium high sphericity, subangular in roundness, and dull-pitted to polished-pitted in surface texture. Feldspar is the predominant mineralogical constituent while rock fragments are secondary. Quartz, pyroxene, and mica also are important constituents. All grains are fresh and unweathered. Very few radiolarians and diatoms are evident in these sediments, but the Globigerina and benthic foraminifera content total as high as 55 percent, especially where the bottom water temperature was found to be warmer than 0°C. In the few cores that are long enough, and in which the biological content at the surface is prominent, it appears that no appreciable organics, except for sponge spicules, extend to a depth greater than 3 to 4 inches.

b. Three cores were obtained by the ships north of Thurston Peninsula but still on the shelf in depths of 300 fathoms or less. Two of these cores in 225 and 235 fathoms consist primarily of feldspar and rock fragments with relatively little biological constituents, except for appreciable amounts of fecal pellets in GLACIER core 14. In texture, these 2 cores average from silty mud to sandy mud, particularly in their surface layers. GLACIER core 13 in 300-fathoms depth, however, ranges from clayey silt to silty mud in texture and consists primarily of

feldspar and quartz except at its bottom. Here rock fragments predominate, and the texture is sandy mud. Also, this core contains 30 percent Globigerinoides at its top and traces of coral fragments, benthic foraminifera, sponge spicules, fecal pellets, and radiolaria in segments throughout its length.

c. One sediment sample was obtained from the bottom Nansen bottle of a BURTON ISLAND cast in 1,300 fathoms of water at the base of the Antarctic Continental Slope. Although this sample was collected at 70°48'S, it contained 80 percent Globigerinoides, 5 percent spicules, and only 15 percent inorganic constituents. Its contents may result from slump of material down the Continental Slope.

3. Peter I Island Area

a. North of the Bellingshausen Sea, 2 cores were obtained in the vicinity of Peter I Island. BURTON ISLAND sample 9, taken in 1,450 fathoms on the island's western slope, averaged 95 percent volcanic ash and 5 percent planktonic biological remains. GLACIER sample 15 was obtained in 2,025 fathoms about 90 miles east of Peter I Island. This core consists of silty clay throughout, but has some sandy constituents in the 2 to 5, 7.5 to 9.25, and 23 to 25 inch segments. Feldspar is the predominant mineral while volcanic glass, rock fragments, and quartz are secondary. Radiolarians are the most common biological constituent and reach a maximum of 30 percent at the top. In certain segments, fecal pellets are prominent.

4. Adelaide Island Area

a. Five bottom sediment samples were obtained from GLACIER in the vicinity of Adelaide Island. Three of these were at the north end off Matha Strait while the other two were 45 miles west of the south end. These two groups of cores are remarkedly different in texture, but are similar in the distribution of organic and inorganic constituents.

The cores off Matha Strait are composed of grayish olive gravel and pebbly sand to a depth of 6 inches. Only one core penetrates deeper than this, and it contains medium bluish gray clayey silt from here to the bottom with an increase in amount of the sand fraction at 6 to 8 inches and 16.5 to 18.5 inches. Feldspar in the predominant mineral constituent of this core while quartz and rock fragments are secondary. Volcanic glass averages 10 to 15 percent from the 3- through 14.5-inch segment, and a trace of pyrite is evident from 14.5 inches to the bottom. Traces of planktonic micro-organisms, sponge spicules, and fecal pellets exhibit an irregular distribution up to 10 percent throughout the core. However, these range from 20 to 25 percent of the sand size in the upper 8 inches.

b. Both southern cores consist of grayish olive silty clay or clayey silt of medium low to medium sphericity from their tops to a depth

of 13 inches. Below this, core 19 is composed of medium gray silty mud to pebbly silty sand of medium low sphericity, while core 20 is composed of dark greenish gray silty mud of medium low sphericity. Lithologically, both cores have feldspar as their predominant mineral to the 13-inch depth, but below this, rock fragments increase to equal quantity. Quartz is an important constituent throughout these cores. A trace of volcanic glass also is present in both, and pyrite appears as a trace from about the 15-inch depth to the bottom of the cores. Above 13 inches, the biological content is 25 percent or more and is sufficiently high in diatoms in the surface layers for these to be classified as diatomaceous oozes. Below 15 inches, the biological content is never more than 5 percent. The 13- to 15-inch layers of both cores appear to be a transitional zone.

c. Mineralogically and biologically the northern and southern Adelaide Island cores correlate reasonably well. The top 6 inches of the Matha Strait cores correspond to the top 13 inches of the southwestern cores, while the 6- to 8-inch zone of the one long northern core agrees with the 13- to 15-inch transition zones of the southern ones. In addition, the segments below the transition zones also appear comparable. Texturally, however, these two groups of cores are exactly the inverse of each other. The only place they agree is in their transition zones. This textural anomaly is probably dependent upon debris-carrying ice reaching these localities and partially melting.

5. Rock Samples

a. Rock samples were collected from various islands in the Antarctic. A sample of vesicular basalt was obtained from the top of Scott Island (67°24'S, 179°55'W). Samples of diorite were collected from Mulroy Island (71°54'S, 97°51'W) and a rock islet off Williams Island, Thurston Peninsula (71°54'S, 100°00'W). Visual identification of a rock sample from Brabant Island, Palmer Peninsula (64°25'S, 62°17'W), appeared to be quartz-diorite. Samples from Penguin Island, Palmer Peninsula (62°05'S, 57°52'W), were of volcanic origin. Lichens and mosses were collected from Scott Island, Mulroy Island, Thurston Peninsula, and Penguin Island.

VIII. MISCELLANEOUS OBSERVATIONS

A. Transparency and Water Color

Table 2 summarizes transparency and water color data obtained on DEEP FREEZE 60. Transparency estimates were obtained by averaging the depths in meters at which the white and black Secchi discs (about 30 cm. in diameter) disappeared from sight on lowering and reappeared on raising. Aside from the limitations attendent with such observations, it is felt that they have some gross relative value in describing sea water transparency. Several estimates of water color were made by visual comparison with a modified blue-green-yellow Forel scale. Determinations were made in percent yellow, but are listed in the table by actual color.

In the deeper portion of the Western Ross Sea, transparencies averaged 14 meters for the white disc and 7 for the black; water color ranged from blue to deep blue. In the shallower water of McMurdo Sound and Ross Ice Shelf, transparencies were considerably less, averaging about 7 meters for the white disc. These low values and prevalence of greenish blue water color are attributed to the summer plankton bloom.

Observations taken in Thurston Peninsula area during late February resulted in values for the white disc of 15 to 17 meters. Water color was described as deep blue.

TABLE 2. TRANSPARENCY AND WATER COLOR MEASUREMENTS

Date	Position	Transparency (Meters) White	Transparency (Meters) Black	Water Color
Eastern Balleny Basin, Ross Sea Area				
13 Jan 1960	68°00'S, 179°55'E	14	7	Blue
14 Jan 1960	69°03'S, 179°06'E	17	8	Blue
14 Jan 1960	70°02'S, 179°10'E	13	7	Blue
15 Jan 1960	71°13'S, 179°10'E	19	6	Blue
16 Jan 1960	72°00'S, 179°10'E	19	8	Deep Blue
West of Scott Island, Ross Sea Area				
9 Dec 1959	64°55'S, 177°01'E	8		
3 Jan 1960	65°58'S, 176°20'E	13		
4 Jan 1960	66°19'S, 177°06'E	14		
4 Jan 1960	66°25'S, 177°22'E	14		
4 Jan 1960	66°42'S, 178°00'E	14		
4 Jan 1960	67°00'S, 178°44'E	14		
4 Jan 1960	67°21'S, 179°33'E	11		
4 Jan 1960	67°39'S, 178°57'E	13		
4 Jan 1960	67°54'S, 178°24'E	15		
5 Jan 1960	68°08'S, 177°56'E	16		

TABLE 2. TRANSPARENCY AND WATER COLOR MEASUREMENTS (Cont'd)

Date	Position	Transparency (Meters) White	Transparency (Meters) Black	Water Color
McMurdo Sound and Environs, Ross Sea				
26 Jan 1960	77°42'S, 166°10'E	13	5	
31 Jan 1960	77°26'S, 164°00'E	13	3	
31 Jan 1960	77°20'S, 164°40'E	9	2-3/4	
31 Jan 1960	77°18'S, 165°16'E	12	3	
31 Jan 1960	77°13'S, 165°58'E	8	2-1/2	
31 Jan 1960	77°23'S, 166°00'E	6	2	
31 Jan 1960	77°36'S, 165°59'E	8	2-1/2	
1 Feb 1960	77°29'S, 165°13'E	5-1/2	1-1/2	
1 Feb 1960	77°28'S, 164°36'E	17	5-1/2	
1 Feb 1960	77°26'S, 164°34'E	9	3	
1 Feb 1960	77°25'S, 165°18'E	6		
1 Feb 1960	77°37'S, 166°09'E	7	1	
12 Feb 1960	76°43'S, 167°33'E	7-1/2	2-1/2	
13 Feb 1960	77°01'S, 166°40'E	7	2	
Along Ross Ice Shelf, Ross Sea				
13 Dec 1959	77°07'S, 177°19'W	10		
13 Dec 1959	77°58'S, 174°25'W	5		
13 Dec 1959	78°20'S, 173°02'W	8		
17 Dec 1959	78°14'S, 165°54'W	4		
17 Dec 1959	78°21'S, 169°49'W	5		
17 Dec 1959	78°22'S, 173°42'W	8		
Thurston Peninsula Area				
16 Feb 1960	71°46'S, 097°24'W	15	6	Blue
25 Feb 1960	71°41'S, 100°54'W	17	5	Blue
Near Peter I Island, Bellingshausen Sea				
28 Feb 1960	68°40'S, 086°56'W	8	5	Blue
Gerlache Strait, Palmer Peninsula				
9 Mar 1960	64°27'S, 062°18'W	5	2	Bluish Green

B. Gravity Observations

A subsidiary program of gravity observations was conducted with a LaCoste and Romberg geodetic gravimeter. This instrument has a range of 6,000 mgals and a low drift rate. All possible check points and pendulum bases were occupied enroute to and from the Antarctic. A minimum of 4 reading was taken and averaged at each observation site. The values obtained, were referred to the Hydrographic Office datum and are presented in Table 3.

TABLE 3. GRAVITY OBSERVATIONS

Date of Observations: 25 Nov 1959 - 23 Feb 1960

Reference Station: Hydrographic Office - Rm. 144

Sta. No.	Latitude	Longitude	Elev. M	Observed Gravity	Remarks
1	38°50.8'N	76°55.7'W	90	980.0841	Hydro Rm. 144
2	42°21.1'N	71°03.2'W	6	980.3965	South Station Boston, Mass.
3	42°20.0'N	71°00.8'W	4	980.3962	Berth AIEA, Castle Isle, Boston, Mass.
4	8°57.5'N	79°34.0'W	4	978.2391	Pier 15C Balboa, Canal Zone
5	8°57.2'N	79°34.6'W	4	978.2389	Pier I Rodman, Naval Base
6	43°36.6'S	172°42.8'E	2	980.5410	Fuel Pier Port Lyttelton, N.Z.
7	43°36.3'S	172°43.0'E	3	980.5400	Pier 4 Port Lyttelton, N.Z.
8	43°36.6'S	172°42.9'E	2	980.5419	Cladstone Wharf Port Lyttelton, N.Z.
9	43°32'S	172°38'E	7	980.5105	Embassy Hotel Christchurch, N.Z.
10	43°31.8'S	172°37.5'E	7	980.5084	Pendulum Base Christchurch, N.Z.
11	67°24.0'S	179°55'W	52	982.5588	Top of Scott Island Antarctica
12	41°16'S	174°48'E	3	980.2829	Drydock Pier Gate Wellington, N.Z.
13	41°17.2'S	174°46'E	122	980.2656	Dominion Seismological Lab, Wellington, N.Z.
14	41°14.2'S	174°55'E	3	980.2939	Dominion Physical Lab. Lower Hut, Wellington, N.Z.
15				980.2888	Dominion Museum (Te, Aro), Wellington, N.Z.

TABLE 3. GRAVITY OBSERVATIONS (Cont'd)

Sta. No.	Latitude	Longitude	Elev. M	Observed Gravity	Remarks
16			297	980.2248	Top of Tinakore Hill Wellington, N.Z.
17				980.2882	Waterloo Hotel Wellington, N.Z.
18	71°54.5'S	97°51.25'W	27	982.7872	Mulroy Island, Thurston Peninsula, Antarctica
19	71°55.5'S	97°52'W	185	982.7378	Astro Site, Norville Peninsula, Antarctica
20	71°54.5'S	100°00'W	1	982.7325	Granite Rock, Thurston Peninsula, Antarctica Off Williams Island
21	71°38.0'S	100°27'W	1	982.7315	Ice floe, Antarctica
22	64°25.5'S	62°17'W	1	982.2930	Brabante Island Palmer Peninsula, Antarctica
23	62°58.6'S	60°34.2'W	1	982.2195	British Base Deception Island, Antarctica
24	62°05.3'S	57°52.2'W	3	982.1843	Penguin Island, Antarctica
25	51°41.5'S	57°51.1'W	3	981.2405	Port Stanley Falkland Islands
26	34°35'S	58°20'W		979.7052	Villa Ortazar, Buenos Aires
27				979.7040	Instituto Geografico Militar, Buenos Aires
28				979.7307	Ezeiza Airport over BM, Buenos Aires
29				979.7320	Ezeiza Airport Pendulum Base, Buenos Aires
30				979.7045	Instituto Antarctico Buenos Aires
31	22°53'S	43°14'W		978.7980	Galleo Airport Rio de Janeiro, Brazil
32				978.7980	Santos Dumont Airport Rio de Janeiro, Brazil
33				978.8085	U. S. Embassy, Rio de Janeiro

APPENDIX A

OCEANOGRAPHIC STATION DATA

SHIP	HYDRO REFERENCE NO.
USS ATKA	00649
USS BURTON ISLAND	00650
USCGC EASTWIND	00651
USS GLACIER	00652

EXPLANATION OF OCEANOGRAPHIC STATION DATA

GENERAL

Each of the items appearing on the data pages is explained below. The vertical arrows shown in some of the column headings indicate the location of decimal points. The presence of asterisks to the left of data indicates these data are doubtful; hence, they were not used in the construction of the curve from which interpolated values (standard depth values) were derived. Observed values which were obviously invalid were omitted entirely.

SURFACE OBSERVATIONS

1. Cruise Number. This number is arbitrarily assigned. It identifies a cruise and provides a means of sorting from the IBM file all cards pertaining to that particular cruise. For operation DEEP FREEZE 60, Reference Number 00649 was assigned to USS ATKA; Reference Number 00650, USS BURTON ISLAND; Reference Number 00651, USCGC EASTWIND; and Reference Number 00652, USS GLACIER.

2. Station Number. Stations are numbered consecutively, starting with one, at the beginning of each cruise. Therefore, for a complete identification of a particular station, both cruise and station numbers are necessary.

3. Date. Month and day are given in Arabic numerals. The last three figures of the year are indicated. The hour is Greenwich Mean Time and is that hour nearest to the start of the first cast.

4. Latitude and Longitude. The position of the station is given in degrees and minutes.

5. Sonic Depth. Sonic Depth is the uncorrected sounding for the station, recorded in meters.

6. Maximum Sample Depth. The maximum depth from which a water sample was obtained at the station is given to the nearest 100 meters.

7. Wind. Wind speed is given in meters per second. Direction from which the wind blows is coded in degrees true to the nearest ten degrees. The last zero is omitted. North is 36 on this scale and calm is 0. See Table I, Compass Direction Conversion Table for Wind, Sea, and Swell Directions.

8. Anemometer Height. The height of the anemometer above the waterline is given in meters.

9. Barometric Pressure. Barometric pressure is coded in millibars, neglecting the 900 or 1000. Thus, 996 millibars is coded as 96 and 1008 millibars is coded on 08.

10. Air Temperature. Dry bulb and wet bulb temperatures are entered to the nearest tenth of a degree (centigrade). A negative temperature is coded by dropping the minus sign and adding 50; thus - 10° is coded as 60.

11. Humidity. The percent of humidity is coded directly, 100 percent being coded as 99.

12. Weather. Weather is coded as indicated in Table II, Numerical Weather Codes - Present Weather.

13. Cloud. Cloud type and amount are coded as indicated in Table III, Cloud Type, and IV, Cloud Amount.

14. Sea. Sea direction and amount are coded as indicated in Tables I and V, respectively.

15. Swell. Swell direction and amount are coded as indicated in Table I and VI, respectively.

16. Visibility. Visibility is coded as indicated in Table VII, Visibility.

SUBSURFACE OBSERVATIONS

1. Sample Depth. Observed (actual) depth of each sample is given in meters. Interpolated values at standard depths are also given. The standard depths, in meters are: 0, 10, 20, 30, 50, 100, 150, 200, 250, 300, 400, 500, 600, 800, 1000, 1200, 1500, 2500, 3000, and thence every 1000 meters.

2. Temperature. The centigrade temperature is given in degrees and hundredths.

3. Salinity. Salinity is given in parts per thousand (by weight) to two decimal places.

4. Sigma-t. To convert to density divide by 1000 and add 1. Thus, a sigma-t value of 22.35 converts to a density of 1.02235.

5. Delta-D. The values in the columns are the anomalies of dynamic depths from the surface to each level in dynamic meters. Each entry is the cumulative sum of the anomalies of dynamic depth of the layer above. These values have been computed for the standard depths only, and serve to identify computed points.

6. Dissolved Oxygen. These values when given are in milliliters per liter to two decimal places. Values of 10.00 or above rarely occur and are coded as 9.99.

7. Sound Velocity. Sound velocity is given in feet per second to one decimal place, corrected for pressure at each depth.

TABLE I. COMPASS DIRECTION CONVERSION TABLE FOR WIND, SEA, and SWELL DIRECTIONS

Code	Direction
00	Calm
01	5° to 14°
02	15° to 24° NNE
03	25° to 34°
04	35° to 44°
05	45° to 54° NE
06	55° to 64°
07	65° to 74° ENE
08	75° to 84°
09	85° to 94° E
10	95° to 104°
11	105° to 114° ESE
12	115° to 124°
13	125° to 134°
14	135° to 144° SE
15	145° to 154°
16	155° to 164° SSE
17	165° to 174°
18	175° to 184°
19	185° to 194°
20	195° to 204° SSW
21	205° to 214°
22	215° to 224°
23	225° to 234° SW
24	235° to 244°
25	245° to 254° WSW
26	255° to 264°
27	265° to 274° W
28	275° to 284°
29	285° to 294° WNW
30	295° to 304°
31	305° to 314°
32	315° to 324° NW
33	325° to 334°
34	335° to 344° NNW
35	345° to 354°
36	355° to 4° N
99	Variable or unknown

TABLE II NUMERICAL WEATHER CODES—PRESENT WEATHER

00 Cloud development NOT observed or NOT observable during past hour.	01 Clouds generally dissolving or becoming less developed during past hour.	02 State of sky on the whole unchanged during past hour.	03 Clouds generally forming or developing during past hour.	04 Visibility reduced by smoke.	05 Haze.	06 Widespread dust in suspension in the air, NOT raised by wind, at time of observation.	07 Dust or sand raised by wind, at time of observation.	08 Well developed dust devil(s) within past hour.	09 Duststorm or sandstorm within sight of or at station during past hour.
10 Light fog.	11 Patches of shallow fog at station, NOT deeper than 6 feet on land.	12 More or less continuous shallow fog at station, NOT deeper than 6 feet on land.	13 Lightning visible, no thunder heard.	14 Precipitation within sight, but NOT reaching the ground.	15 Precipitation within sight, reaching the ground, but distant from station.	16 Precipitation within sight, reaching the ground, near to but NOT at station.	17 Thunder heard, but no precipitation at the station.	18 Squall(s) within sight during past hour.	19 Funnel cloud(s) within sight during past hour.
20 Drizzle (NOT freezing and NOT falling as showers) during past hour, but NOT at time of ob.	21 Rain (NOT freezing and NOT falling as showers) during past hour, but NOT at time of ob.	22 Snow (NOT falling as showers) during past hour, but NOT at time of observation.	23 Rain and snow (NOT falling as showers) during past hour, but NOT at time of observation.	24 Freezing drizzle or freezing rain (NOT falling as showers) during past hour, but NOT at time of observation.	25 Showers of rain during past hour, but NOT at time of observation.	26 Showers of snow, or of rain and snow, during past hour, but NOT at time of observation.	27 Showers of hail, or of hail and rain, during past hour, but NOT at time of observation.	28 Fog during past hour, but NOT at time of observation.	29 Thunderstorm (with or without precipitation) during past hour, but NOT at time of observation.
30 Slight or moderate duststorm or sandstorm has decreased during past hour.	31 Slight or moderate duststorm or sandstorm no appreciable change during past hour.	32 Slight or moderate duststorm or sandstorm has increased during past hour.	33 Severe duststorm or sandstorm, has decreased during past hour.	34 Severe duststorm or sandstorm, no appreciable change during past hour.	35 Severe duststorm or sandstorm, has increased during past hour.	36 Slight or moderate drifting snow, generally low.	37 Heavy drifting snow, generally low.	38 Slight or moderate drifting snow, generally high.	39 Heavy drifting snow, generally high.
40 Fog at distance at time of observation, but NOT at station during past hour.	41 Fog in patches.	42 Fog, sky discernible, has become thinner during past hour.	43 Fog, sky NOT discernible, has become thinner during past hour.	44 Fog, sky discernible, no appreciable change during past hour.	45 Fog, sky NOT discernible no appreciable change during past hour.	46 Fog, sky discernible, has begun or become thicker during past hour.	47 Fog, sky NOT discernible, has begun or become thicker during past hour.	48 Fog, depositing rime, sky discernible.	49 Fog, depositing rime, sky not discernible.
50 Intermittent drizzle (NOT freezing) slight at time of observation.	51 Continuous drizzle (NOT freezing) slight at time of observation.	52 Intermittent drizzle (NOT freezing) moderate at time of ob.	53 Continuous drizzle (NOT freezing), moderate at time of ob.	54 Intermittent drizzle (NOT freezing), thick at time of observation.	55 Continuous drizzle (NOT freezing), thick at time of observation.	56 Slight freezing drizzle.	57 Moderate or thick freezing drizzle.	58 Drizzle and rain, slight.	59 Drizzle and rain, moderate or heavy.
60 Intermittent rain (NOT freezing), slight at time of observation.	61 Continuous rain (NOT freezing), slight at time of observation.	62 Intermittent rain (NOT freezing), moderate at time of ob.	63 Continuous rain (NOT freezing), moderate at time of observation.	64 Intermittent rain (NOT freezing), heavy at time of observation.	65 Continuous rain (NOT freezing), heavy at time of observation.	66 Slight freezing rain.	67 Moderate or heavy freezing rain.	68 Rain or drizzle and snow, slight.	69 Rain or drizzle and snow, moderate or heavy.
70 Intermittent fall of snowflakes, slight at time of observation.	71 Continuous fall of snowflakes, slight at time of observation.	72 Intermittent fall of snowflakes, moderate at time of observation.	73 Continuous fall of snowflakes, moderate at time of observation.	74 Intermittent fall of snowflakes, heavy at time of observation.	75 Continuous fall of snowflakes, heavy at time of observation.	76 Ice needles (with or without fog).	77 Granular snow (with or without fog).	78 Isolated starlike snow crystals (with or without fog).	79 Ice pellets (sleet, U. S. definition).
80 Slight rain shower(s).	81 Moderate or heavy rain shower(s).	82 Violent rain shower(s).	83 Slight shower(s) of rain and snow mixed.	84 Moderate or heavy shower(s) of rain and snow mixed.	85 Slight snow shower(s).	86 Moderate or heavy snow shower(s).	87 Slight shower(s) of soft or small hail with or without rain or rain and snow mixed.	88 Moderate or heavy shower(s) of soft or small hail with or without rain or rain and snow mixed.	89 Slight shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder.
90 Moderate or heavy shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder.	91 Slight rain at time of ob., thunderstorm during past hour, but NOT at time of observation.	92 Moderate or heavy rain at time of ob.; thunderstorm during past hour, but NOT at time of observation.	93 Slight snow or rain and snow mixed or hail at time of observation.; thunderstorm during past hour, but not at time of observations.	94 Mod. or heavy snow, or rain and snow mixed or hail at time of ob.; thunderstorm during past hour, but NOT at time of observation.	95 Slight or mod. thunderstorm without hail, but with rain and/or snow at time of observation.	96 Slight or moderate thunderstorm, with hail at time of observation.	97 Heavy thunderstorm, without hail, but with rain and/or snow at time of observation.	98 Thunderstorm combined with duststorm or sandstorm at time of observation.	99 Heavy thunderstorm with hail at time of observation.

TABLE III. CLOUD TYPE

Code	
0	Stratus or Fractostratus
1	Cirrus
2	Cirrostratus
3	Cirrocumulus
4	Altocumulus
5	Altostratus
6	Stratoscumulus
7	Nimbostratus
8	Cumulus or Fractocumulus
9	Cumulonimbus

TABLE IV. CLOUD AMOUNT

Code	
0	No clouds
1	Less than 1/10 or 1/10
2	2/10 and 3/10
3	4/10
4	5/10
5	6/10
6	7/10 and 8/10
7	9/10 and 9/10 plus
8	10/10
9	Sky obscured

TABLE V. SEA AMOUNT

Code	Mean Max. Height of Sea Waves in feet (Approx.)	Description
0	0	Calm (glassy)
1	0 - 1/3	Calm (rippled)
2	1/3 - 1 2/3	Smooth (wavelets)
3	1 2/3 - 4	Slight
4	4 - 8	Moderate
5	8 - 13	Rough
6	13 - 20	Very rough
7	20 - 30	High
8	30 - 45	Very high
9	over 45	Phenomenal+

+ As might be expected in center of hurricane

TABLE VI. SWELL AMOUNT

Code	Approximate Height (feet)	Description		Approximate Length (feet)
0	------	No swell		------
1	1 to 6	Low swell	Short	0 to 600
			Average	
2			Long	Above 600
3	6 to 12	Moderate	Short	0 to 300
4			Average	300 to 600
5			Long	Above 600
6	Greater than 12	High	Short	0 to 300
7			Average	300 to 600
8			Long	Above 600
9	------	Confused		-----

TABLE VII. VISIBILITY

Code		
0	Dense Fog	50 yards
1	Thick Fog	200 yards
2	Fog	400 yards
3	Moderate Fog	1000 yards
4	Thin Fog or Mist	1 mile
5	Visibility poor	2 miles
6	Visibility moderate	5 miles
7	Visibility good	10 miles
8	Visibility very good	30 miles
9	Visibility excellent	Over 30 miles

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0001	01	03	960	21	65° 58′S	176° 20′E	3668	10

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	02	24	94	50 6	50 8	95	26	0	8	34	2	36	1	6		13

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 29	33 56	27 02	0 000		4716 3
0000	-01 29	33 56	27 02			4716 3
0010	-01 39	33 59	27 04	0 010		4715 4
0020	-01 48	33 67	27 11	0 020		4714 9
0020	-01 48	33 67	27 11			4714 9
0030	-01 59	33 91	27 31	0 029		4714 8
0050	-01 74	34 27	27 60	0 042		4715 2
0050	-01 74	34 27	27 60			4715 2
0075	-01 74	34 32	27 65	0 053		4716 9
0100	-01 73	34 38	27 69	0 064		4718 8
0100	-01 73	34 38	27 69			4718 8
0150	00 07	34 58	27 78	0 082		4750 6
0200	01 19	34 70	27 81	0 098		4770 9
0200	01 19	34 70	27 81			4770 9
0250	01 30	34 71	27 81	0 113		4775 6
0300	01 37	34 72	27 82	0 128		4779 6
0300	01 37	34 72	27 82			4779 6
0400	01 33	34 72	27 82	0 158		4785 0
0500	01 28	34 72	27 82	0 189		4790 2
0500	01 28	34 72	27 82			4790 2
0600	01 22	34 72	27 83	0 219		4795 3
0800	01 08	34 73	27 84	0 277		4805 1
1000	00 90	34 73	27 86	0 334		4814 3
1000	00 90	34 73	27 86			4814 3

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0002	01	04	960	01	66° 19′S	177° 06′E	3556	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ψ	WET ψ			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	36	24	93	50 6	50 8	95	02	0	8	00	0	00	0	6		14

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 48	33 54	27 01	0 000		4713 2
0000	-01 48	33 54	27 01			4713 2
0010	-01 48	34 01	27 39	0 009		4715 8
0020	-01 47	34 32	27 64	0 015		4717 9
0020	-01 47	34 32	27 64			4717 9
0030	-01 61	34 30	27 63	0 019		4716 2
0050	-01 75	34 28	27 61	0 029		4715 1
0050	-01 75	34 28	27 61			4715 1
0075	-01 63	34 35	27 67	0 040		4718 8
0100	-01 35	34 42	27 72	0 050		4725 0
0100	-01 35	34 42	27 72			4725 0
0150	00 29	34 59	27 78	0 068		4754 0
0200	01 27	34 70	27 81	0 084		4772 1
0200	01 27	34 70	27 81			4772 1
0250	01 27	34 71	27 82	0 099		4775 1
0300	01 26	34 72	27 82	0 114		4778 0
0300	01 26	34 72	27 82			4778 0
0400	01 21	34 73	27 84	0 143		4783 3
0500	01 17	34 73	27 84	0 172		4788 6
0500	01 17	34 73	27 84			4788 6
0600	01 14	34 73	27 84	0 201		4794 1
0800	01 07	34 73	27 85	0 258		4805 0
1000	00 99	34 73	27 85	0 315		4815 7
1000	00 99	34 73	27 85			4815 7
1200	00 89					
1500	00 72					
2000	00 36					
2000	00 36	* 34 90				

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0003	01	04	960	04	66° 25′S	177° 22′E	3603	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	34	24	93	50 6	50 6	99	42	0	8	00	0	00	0	4		14

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 28	33 58	27 03	0 000		4716 5
0000	-01 28	33 58	27 03			4716 5
0010	-01 29	33 67	27 11	0 010		4717 3
0020	-01 32	33 76	27 18	0 019		4717 9
0020	-01 32	33 76	27 18			4717 9
0030	-01 45	33 83	27 24	0 028		4716 7
0050	-01 48	33 96	27 35	0 044		4718 0
0050	-01 48	* 34 51	*27 79			* 4720 4
0075	-00 83	34 11	27 45	0 061		4730 3
0100	-00 27	34 25	27 54	0 076		4741 0
0100	-00 27	34 25	27 54			4741 0
0150	00 51	34 50	27 70	0 100		4756 9
0200	01 04	34 66	27 79	0 118		4768 5
0200	01 04	34 66	27 79			4768 5
0250	01 22	34 69	27 80	0 134		4774 3
0300	01 35	34 72	27 82	0 150		4779 3
0300	01 35	34 72	27 82			4779 3
0400	01 33	34 73	27 83	0 179		4785 0
0500	01 30	34 73	27 83	0 209		4790 5
0500	01 30	34 73	27 83			4790 5
0600	01 21	34 73	27 84	0 238		4795 2
0800	01 04	34 72	27 84	0 297		4804 5
1000	00 90	34 72	27 85	0 354		4814 3
1000	00 90	34 72	27 85			4814 3
1200	00 78	34 72	27 86	0 410		4824 4
1500	00 63	34 71	27 86	0 492		4839 9
2000	00 48	34 71	27 87	0 625		4867 4
2000	00 48	34 71	27 87			4867 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0004	01	04	960	08	66° 42′S	178° 00′E	3658	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	18	24	94	50 6	50 6	99	43	0	8	00	0	00	0	7		14

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 29	33 53	26 99	0 000		4716 1
0000	-01 29	33 53	26 99			4716 1
0010	-01 30	33 57	27 03	0 011		4716 8
0020	-01 33	33 60	27 05	0 021		4717 0
0020	-01 33	33 60	27 05			4717 0
0030	-01 41	33 84	27 25	0 030		4717 4
0050	-01 52	34 20	27 54	0 044		4718 4
0050	-01 52	34 20	27 54			4718 4
0075	-01 55	34 27	27 60	0 057		4719 7
0100	-01 58	34 35	27 67	0 069		4721 1
0100	-01 58	34 35	27 67			4721 1
0150	00 02	34 57	27 78	0 088		4749 8
0200	01 27	34 70	27 81	0 103		4772 1
0200	01 27	34 70	27 81			4772 1
0250	01 33	34 71	27 81	0 119		4776 0
0300	01 37	34 72	27 82	0 134		4779 6
0300	* 00 97	34 72	*27 84		*	4773 7
0400	01 44	34 73	27 82	0 164		4786 7
0500	01 46	34 73	27 82	0 195		4792 9
0500	01 46	34 73	27 82			4792 9
0600	01 36	34 73	27 83	0 226		4797 4
0800	01 17	34 74	27 85	0 285		4806 5
1000	01 00	34 74	27 86	0 341		4815 9
1000	01 00	34 74	27 86			4815 9
1200	00 86	34 75	27 87	0 395		4825 7
1500	00 68	34 76	27 89	0 470		4840 9
2000	00 50	34 78	27 92	0 583		4868 0
2000	00 50	34 78	27 92			4868 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0005	01	04	960	11	67° 00′S	178° 44′E	3840	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	95	51 1	51 4	95	01	0	6	00	0	00	0	7		14

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 30	33 47	26 94	0 000		4715 7
0000	-01 30	33 47	26 94			4715 7
0010	-01 36	33 56	27 02	0 011		4715 8
0020	-01 43	33 68	27 12	0 021		4715 8
0020	-01 43	33 68	27 12			4715 8
0030	-01 56	33 92	27 32	0 029		4715 4
0050	-01 74	34 26	27 60	0 042		4715 2
0050	-01 74	34 26	27 60			4715 2
0075	-01 70	34 32	27 64	0. 054		4717 6
0100	-01 66	34 39	27 70	0 065		4720 0
0100	-01 66	34 39	27 70			4720 0
0150	00 18	34 55	27 75	0 083		4752 2
0200	01 33	34 66	27 77	0 101		4772 8
0200	01 33	34 66	27 77			4772 8
0250	01 45	34 69	27 79	0 117		4777 7
0300	01 53	34 72	27 80	0 134		4782 0
0300	01 53	34 72	27 80			4782 0
0400	01 52	34 74	27 82	0 165		4787 9
0500	01 49	34 75	27 83	0 194		4793 4
0500	01 49	34 75	27 83			4793 4
0600	01 40	34 75	27 84	0 224		4798 0
0800	01 22	34 75	27 85	0 281		4807 3
1000	01 06	34 75	27 86	0 337		4816 8
1000	01 06	34 75	27 86			4816 8
1200	00 92	34 75	27 87	0 391		4826 6
1500	00 73	34 74	27 88	0 470		4841 6
2000	00 49	34 72	27 87	0 599		4867 6
2000	00 49	34 72	27 87			4867 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0006	01	04	960	14	67° 21′S	179° 33′E	3749	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
01	07	24	95	51 4	51 7	95	02	6	6	00	0	20	1	7		11

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 40	33 52	26 99	0 000		4714 4
0000	-01 40	33 52	26 99			4714 4
0010	-01 46	33 56	27 02	0 011		4714 2
0020	-01 52	33 64	27 09	0 021		4714 2
0020	-01 52	33 64	27 09			4714 2
0030	-01 60	33 86	27 27	0 030		4714 5
0050	-01 71	34 18	27 53	0 043		4715 3
0050	-01 71	34 18	27 53			4715 3
0075	-01 73	34 24	27 58	0 057		4716 7
0100	-01 75	34 31	27 64	0 069		4718 2
0100	-01 75	34 31	27 64			4718 2
0150	-00 05	34 52	27 74	0 089		4748 5
0200	01 02	34 66	27 79	0 107		4768 2
0200	01 02	34 66	27 79			4768 2
0250	01 17	34 69	27 81	0 122		4773 6
0300	01 29	34 72	27 82	0 137		4778 4
0300	01 29	34 72	27 82			4778 4
0400	01 34	34 73	27 83	0 167		4785 2
0500	01 36	34 74	27 83	0 197		4791 5
0500	01 36	34 74	27 83			4791 5
0600	01 30	34 74	27 84	0 226		4796 5
0800	01 18	34 73	27 84	0 284		4806 6
1000	01 06	34 73	27 85	0 343		4816 7
1000	01 06	34 73	27 85			4816 7
1200	00 94	34 73	27 85	0 400		4826 8
1500	00 77	34 72	27 86	0 484		4842 1
2000	00 48	34 72	27 87	0 617		4867 4
2000	00 48	34 72	27 87			4867 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0007	01	04	960	19	67° 39′S	178° 57′E	3658	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	95	50 3	51 1	85	03	6	8	00	0	00	0	7		13

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 35	33 68	27 12	0 000		4715 9
0000	-01 35	33 68	27 12			4715 9
0010	-01 50	33 79	27 21	0 009		4714 6
0020	-01 61	33 92	27 32	0 017		4714 0
0020	-01 61	33 92	27 32			4714 0
0030	-01 73	34 10	27 47	0 024		4713 5
0050	-01 75	34 36	27 68	0 035		4715 5
0050	-01 75	34 36	27 68			4715 5
0075	-01 10	34 42	27 71	0 045		4727 4
0100	-00 52	34 48	27 73	0 054		4738 2
0100	-00 52	34 48	27 73			4738 2
0150	00 49	34 60	27 78	0 072		4757 1
0200	01 09	34 68	27 80	0 088		4769 4
0200	01 09	34 68	27 80			4769 4
0250	01 09	34 69	27 81	0 103		4772 4
0300	01 09	34 70	27 82	0 118		4775 4
0300	01 09	34 70	27 82			4775 4
0400	01 07	34 71	27 83	0 148		4781 1
0500	01 06	34 71	27 83	0 177		4786 9
0500	01 06	34 71	27 83			4786 9
0600	01 06	34 72	27 84	0 206		4792 9
0800	01 05	34 72	27 84	0 264		4804 6
1000	01 01	34 73	27 85	0 321		4816 0
1000	01 01	34 73	27 85			4816 0
1200	00 95	34 73	27 85	0 378		4827 0
1500	00 83	34 73	27 86	0 462		4843 0
2000	00 53	34 72	27 87	0 597		4868 2
2000	00 53	34 72	27 87			4868 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0008	01	04	960	22	67° 54′S	178° 24′E	2926	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	95	50 0	50 6	90	02	6	8	00	0	00	0	7		15

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-01 51	33 74	27 17	0 000		4713 6
0000	-01 51	33 74	27 17			4713 6
0010	-01 51	33 78	27 20	0 009		4714 4
0020	-01 51	33 85	27 26	0 017		4715 3
0020	-01 51	33 85	27 26			4715 3
0030	-01 51	34 03	27 40	0 025		4716 6
0050	-01 52	34 30	27 62	0 036		4718 8
0050	-01 52	34 30	27 62			4718 8
0075	-01 38	34 35	27 66	0 048		4722 7
0100	-01 14	34 41	27 70	0 058		4728 3
0100	-01 14	34 41	27 70			4728 3
0150	00 03	34 55	27 76	0 077		4749 9
0200	00 82	34 64	27 79	0 094		4765 2
0200	00 82	34 64	27 79			4765 2
0250	01 07	34 67	27 80	0 110		4772 0
0300	01 25	34 70	27 81	0 125		4777 8
0300	01 25	34 70	27 81			4777 8
0400	01 29	34 71	27 81	0 156		4784 4
0500	01 30	34 72	27 82	0 187		4790 5
0500	01 30	34 72	27 82			4790 5
0600	01 25	34 72	27 82	0 217		4795 7
0800	01 14	34 72	27 83	0 277		4806 0
1000	01 03	34 72	27 84	0 336		4816 2
1000	01 03	34 72	27 84			4816 2
1200	00 92	34 72	27 85	0 394		4826 5
1500	00 77	34 72	27 86	0 479		4842 1
2000	00 51	34 72	27 87	0 614		4867 9
2000	00 51	34 72	27 87			4867 9

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00649	0009	01	05	960	01	68° 08′S	177° 56′E	3475	20

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
01	32	24	90	01 1	51 1	63	01	4	7	00	0	00	0	7		16

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σt ↓	ΣΔD ↓	O₂ml/l ↓	Vf ↓
0000	-01 33	33 97	27 35	0 000		4717 4
0000	-01 33	33 97	27 35			4717 4
0010	-01 46	33 82	27 23	0 008		4715 3
0020	-01 56	33 72	27 15	0 017		4713 9
0020	-01 56	33 72	27 15			4713 9
0030	-01 63	33 84	27 25	0 025		4713 9
0050	-01 64	34 05	27 42	0 040		4715 8
0050	-01 64	*35 14	*28 31			*4720 6
0075	-01 28	34 27	27 59	0 055		4724 0
0100	-00 87	34 44	27 71	0 066		4732 6
0100	-00 87	34 44	27 71			4732 6
0150	00 37	34 56	27 75	0 085		4755 1
0200	01 16	34 64	27 77	0 102		4770 2
0200	01 16	34 64	27 77			4770 2
0250	01 29	34 69	27 80	0 119		4775 3
0300	01 37	34 72	27 82	0 134		4779 6
0300	01 37	34 72	27 82			4779 6
0400	01 34	34 74	27 83	0 164		4785 2
0500	01 31	34 75	27 84	0 192		4790 8
0500	01 31	34 75	27 84			4790 8
0600	01 28	34 75	27 85	0 220		4796 3
0800	01 21	34 74	27 84	0 278		4807 1
1000	01 12	34 73	27 84	0 336		4817 6
1000	01 12	34 73	27 84			4817 6
1200	01 02	34 72	27 84	0 395		4828 0
1500	00 85	34 72	27 85	0 483		4843 3
2000	00 51	34 72	27 87	0 619		4867 9
2000	00 51	34 72	27 87			4867 9

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0010	01	05	960	04	68° 22′S	177° 25′E	1372	10

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	02	24	94	00 3	50 6	86	02	6	7	00	0	00	0	6		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 53	33 96	27 35	0 000		4714 2
0000	-01 53	33 96	27 35			4714 2
0010	-01 54	33 96	27 35	0 007		4714 7
0020	-01 55	33 96	27 35	0 015		4715 1
0020	-01 55	33 96	27 35			4715 1
0030	-01 60	34 10	27 46	0 022		4715 5
0049	-01 64	34 29	27 62			4716 8
0050	-01 64	34 29	27 62	0 033		4716 9
0075	-01 57	34 35	27 67	0 044		4719 7
0099	-01 50	34 41	27 71			4722 5
0100	-01 46	34 41	27 71	0 054		4723 2
0150	00 07	34 57	27 78	0 072		4750 6
0197	01 01	34 67	27 80			4768 0
0200	01 02	34 67	27 80	0 088		4768 3
0250	01 23	34 71	27 82	0 104		4774 5
0296	01 36	34 73	27 83			4779 3
0300	01 36	34 73	27 83	0 118		4779 5
0400	01 36	34 74	27 83	0 148		4785 5
0493	01 36	34 74	27 83			4791 1
0500	01 36	34 74	27 83	0 177		4791 5
0600	01 31	34 74	27 84	0 206		4796 7
0800	01 14	34 74	27 85	0 264		4806 1
0986	00 87	34 72	27 85			4813 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0011	01	05	960	07	68° 35′S	176° 56′E	3475	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	36	24	92	00 0	00 0	99	03	6	8	00	0	00	0	8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 71	33 85	27 26	0 000		4710 9
0000	-01 71	33 85	27 26			4710 9
0010	-01 59	33 92	27 32	0 008		4713 7
0020	-01 53	33 99	27 37	0 015		4715 5
0020	-01 53	33 99	27 37			4715 5
0030	-01 63	34 10	27 46	0 022		4715 0
0050	-01 73	34 27	27 60	0 033		4715 4
0050	-01 73	34 27	27 60			4715 4
0075	-01 68	34 38	27 69	0 044		4718 1
0099	-01 47	34 47	27 76			4723 3
0100	-01 44	34 47	27 76	0 054		4723 8
0150	00 03	34 59	27 79	0 070		4750 1
0198	00 96	34 67	27 80			4767 3
0200	00 97	34 67	27 80	0 086		4767 5
0250	01 21	34 70	27 81	0 101		4774 2
0297	01 37	34 72	27 82			4779 4
0300	01 37	34 72	27 82	0 116		4779 6
0400	01 35	34 71	27 81	0 147		4785 2
0495	01 32	34 71	27 81			4790 5
0500	01 32	34 71	27 81	0 178		4790 7
0600	01 25	34 72	27 82	0 209		4795 7
0800	01 13	34 75	27 86	0 267		4806 0
0992	01 02	34 76	27 87			4815 8
1000	01 02	34 76	27 87	0 321		4816 3
1200	00 90	34 75	27 87	0 373		4826 3
1500	00 75	34 76	27 89	0 450		4841 9
1990	00 52	34 72	27 87			4867 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0012	01	05	960	10	68° 49′S	176° 25′E	3658	19

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	34	24	90	51 1	51 1	99	42	0	8	00	0	00	0	4		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 56	33 89	27 29	0 000		4713 5
0000	-01 56	33 89	27 29			4713 5
0010	-01 57	33 96	27 35	0 008		4714 2
0019	-01 57	34 04	27 41			4715 1
0020	-01 58	34 05	27 42	0 015		4715 0
0030	-01 67	34 17	27 52	0 021		4714 7
0048	-01 74	34 34	27 66			4715 4
0050	-01 74	34 35	27 67	0 031		4715 6
0075	-01 60	34 43	27 73	0 041		4719 6
0096	-01 37	34 49	27 77			4724 8
0100	-01 22	34 50	27 78	0 050		4727 4
0150	00 32	34 62	27 80	0 065		4754 6
0192	01 14	34 69	27 81			4769 7
0200	01 17	34 70	27 81	0 081		4770 6
0250	01 30	34 74	27 84	0 095		4775 7
0288	01 37	34 76	27 85			4779 1
0300	01 37	34 76	27 85	0 109		4779 8
0400	01 34	34 74	27 83	0 137		4785 2
0481	01 31	34 73	27 83			4789 6
0500	01 30	34 73	27 83	0 166		4790 5
0600	01 24	34 73	27 83	0 196		4795 6
0800	01 14	34 74	27 85	0 254		4806 1
0963	01 05	34 74	27 85			4814 4
1000	01 03	34 74	27 86	0 310		4816 3
1200	00 93	34 74	27 86	0 365		4826 7
1500	00 77	34 74	27 87	0 446		4842 2
1942	00 55	34 72	27 87			4865 0

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0013	01	05	960	14	68° 49′S	176° 14′E	3658	10

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	34	24	89	51 4	51 4	99	02	0	8	00	0	00	0	7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 51	33 86	27 27	0 000		4714 1
0000	-01 51	33 86	27 27			4714 1
0010	-01 52	33 89	27 29	0 008		4714 7
0019	-01 55	33 95	27 34			4715 0
0020	-01 58	33 97	27 36	0 016		4714 7
0030	-01 62	34 14	27 50	0 022		4715 4
0048	-01 73	34 37	27 69			4715 7
0050	-01 59	34 37	27 68	0 032		4718 0
0075	-00 04	34 42	27 66	0 043		4743 8
0097	00 94	34 46	27 64			4760 1
0100	00 94	34 47	27 64	0 054		4760 3
0150	01 01	34 64	27 78	0 074		4765 0
0194	01 09	34 73	27 84			4769 2
0200	01 11	34 73	27 84	0 089		4769 9
0250	01 25	34 72	27 82	0 103		4774 9
0291	01 34	34 72	27 82			4778 6
0300	01 34	34 72	27 82	0 118		4779 2
0400	01 37	34 73	27 82	0 148		4785 6
0485	01 38	34 73	27 82			4790 8
0500	01 38	34 73	27 82	0 178		4791 7
0600	01 36	34 74	27 83	0 208		4797 4
0800	01 25	34 76	27 86	0 266		4807 8
0976	01 07	34 79	27 89			4815 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0014	01	05	960	17	68° 32′S	176° 14′E	3393	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	34	24	90	50 6	51 1	89	02	0	8	00	0	00	0	7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 72	33 81	27 23	0 000		4710 6
0000	-01 72	33 81	27 23			4710 6
0010	-01 73	33 87	27 28	0 008		4711 3
0020	-01 73	33 95	27 35	0 016		4712 2
0020		33 95				
0030	-01 74	34 07	27 44	0 023		4713 2
0050	-01 75	34 25	27 59	0 034		4715 0
0050	-01 75	34 25	27 59			4715 0
0075	-01 77	34 32	27 65	0 046		4716 4
0099	-01 79	34 39	27 70			4717 9
0100	-01 75	34 39	27 70	0 057		4718 6
0150	-00 05	34 55	27 77	0 075		4748 7
0199	01 01	34 65	27 78			4768 0
0200	01 01	34 65	27 78	0 092		4768 0
0250	01 20	34 69	27 80	0 108		4774 0
0298	01 33	34 71	27 81			4778 9
0300	01 33	34 71	27 81	0 123		4779 0
0400	01 33	34 72	27 82	0 154		4785 0
0496	01 33	34 72	27 82			4790 7
0500	01 33	34 72	27 82	0 184		4790 9
0600	01 28	34 72	27 82	0 215		4796 2
0800	01 19	34 72	27 83	0 276		4806 7
0994	01 10	34 72	27 84			4816 9
1000	01 10	34 72	27 84	0 336		4817 3
1200	01 00	34 72	27 84	0 396		4827 7
1500	00 84	34 73	27 86	0 482		4843 2
1993	00 57	34 73	27 88			4868 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0015	01	05	960	20	68° 04′S	176° 14′E	3475	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	34	24	91	50 6	51 1	89	02	0	8	00	0	00	0	7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 67	33 82	27 24	0 000		4711 4
0000	-01 67	33 82	27 24			4711 4
0010	-01 66	33 83	27 25	0 008		4712 2
0020	-01 65	33 89	27 29	0 016		4713 2
0020	-01 65	33 89	27 29			4713 2
0030	-01 73	34 06	27 43	0 024		4713 3
0050	-01 80	34 31	27 64	0 035		4714 4
0050	-01 80	34 31	27 64			4714 4
0075	-01 68	34 35	27 67	0 046		4718 0
0100	-01 42	34 39	27 69	0 056		4723 8
0100	-01 42	34 39	27 69			4723 8
0150	00 10	34 55	27 76	0 075		4751 0
0200	01 07	34 66	27 79	0 092		4769 0
0200	01 07	34 66	27 79			4769 0
0250	01 25	34 70	27 81	0 108		4774 8
0300	01 38	34 73	27 82	0 123		4779 8
0300	01 38	34 73	27 82			4779 8
0400	01 34	34 73	27 83	0 152		4785 2
0500	01 30	34 73	27 83	0 182		4790 5
0500	01 30	34 73	27 83			4790 5
0600	01 26	34 73	27 83	0 212		4795 9
0800	01 17	34 74	27 85	0 270		4806 5
1000	01 08	34 74	27 85	0 327		4817 1
1000	01 08	34 74	27 85			4817 1
1200	00 98	34 74	27 86	0 383		4827 5
1500	00 82	34 73	27 86	0 466		4842 9
2000	00 51	34 71	27 86	0 602		4867 8
2000	00 51	34 71	27 86			4867 8

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0016	01	05	960	23	67° 41′S	176° 14′E	3475	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	29	24	92	51 1	51 9	84	02	0	8	00	0	00	0	6		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 41	33 74	27 17	0 000		4715 2
0000	-01 41	33 74	27 17			4715 2
0010	-01 48	33 82	27 23	0 009		4715 0
0020	-01 55	33 91	27 31	0 017		4714 9
0020	-01 55	33 91	27 31			4714 9
0030	-01 68	34 06	27 43	0 024		4714 1
0050	-01 79	34 28	27 61	0 035		4714 5
0050	-01 79	34 28	27 61			4714 5
0075	-01 55	34 34	27 66	0 047		4720 0
0100	-01 23	34 40	27 70	0 057		4726 8
0100	-01 23	34 40	27 70			4726 8
0150	00 07	34 56	27 77	0 076		4750 5
0200	00 93	34 67	27 81	0 092		4766 9
0200	00 93	34 67	27 81			4766 9
0250	01 17	34 69	27 81	0 108		4773 6
0300	01 33	34 71	27 81	0 123		4779 0
0300	01 33	34 71	27 81			4779 0
0400	01 29	34 73	27 83	0 153		4784 4
0500	01 24	34 75	27 85	0 181		4789 7
0500	01 24	34 75	27 85			4789 7
0600	01 20	34 75	27 85	0 209		4795 1
0800	01 10	34 75	27 86	0 264		4805 5
1000	01 01	34 74	27 86	0 319		4816 0
1000	01 01					
1200	00 91	34 74	27 86	0 374		4826 4
1500	00 76	34 74	27 87	0 454		4842 0
2000	00 48	34 73	27 88	0 582		4867 5
2000	00 48	34 73	27 88			4867 5

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0017	01	06	960	02	67° 23′S	176° 24′E	3529	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	32	24	95	50 3	51 4	80	02	6	8	00	0	00	0	6		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 33	33 78	27 20	0 000		4716 6
0000	-01 33	33 78	27 20			4716 6
0010	-01 35	33 76	27 18	0 009		4716 8
0019	-01 37	33 74	27 17			4716 9
0020	-01 39	33 76	27 18	0 018		4716 8
0030	-01 54	33 99	27 37	0 026		4716 0
0048	-01 71	34 28	27 61			4715 6
0050	-01 71	34 29	27 62	0 038		4715 8
0075	-01 63	34 35	27 67	0 049		4718 8
0097	-01 42	34 41	27 71			4723 7
0100	-01 31	34 42	27 71	0 059		4725 6
0150	00 26	34 60	27 79	0 077		4753 6
0195	01 15	34 70	27 82			4770 0
0200	01 17	34 70	27 81	0 092		4770 6
0250	01 31	34 74	27 84	0 107		4775 8
0292	01 39	34 76	27 85			4779 6
0300	01 39	34 76	27 85	0 121		4780 1
0400	01 36	34 75	27 84	0 149		4785 6
0487	01 32	34 75	27 84			4790 1
0500	01 31	34 75	27 84	0 177		4790 8
0600	01 24	34 75	27 85	0 205		4795 7
0800	01 09	34 75	27 86	0 260		4805 4
0976	00 98	*34 98	* 28 05		*	4815 2
1000	00 96	34 75	27 87	0 314		4815 3
1200	00 85	34 75	27 88	0 366		4825 6
1500	00 69	34 75	27 89	0 442		4841 0
1962	00 49	34 75	27 90			4865 4

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00649	0018	01	06	960	06	67° 04′S	176° 35′E	3475	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	32	24	95	50 6	51 1	89	02	6	8	00	0	00	0	6		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 39	33 72	27 15	0 000		4715 4
0000	-01 39	33 72	27 15			4715 4
0010	-01 41	33 77	27 19	0 009		4715 9
0020	-01 42	33 86	27 26	0 018		4716 7
0020	-01 42	33 86	27 26			4716 7
0030	-01 56	34 08	27 45	0 025		4716 1
0050	-01 76	34 39	27 70	0 035		4715 4
0050	-01 76	34 39	27 70			4715 4
0075	-01 80	34 39	27 70	0 045		4716 3
0100	-01 83	34 39	27 70	0 055		4717 3
0100	-01 83	34 39	27 70			4717 3
0150	-00 31	34 53	27 76	0 073		4744 6
0200	00 73	34 63	27 79	0 090		4763 8
0200	00 73	34 63	27 79			4763 8
0250	01 12	34 68	27 80	0 106		4772 8
0300	01 39	34 72	27 82	0 121		4779 9
0300	01 39	34 72	27 82			4779 9
0400	01 34	34 73	27 83	0 151		4785 2
0500	01 29	34 73	27 83	0 181		4790 4
0500	01 29	34 73	27 83			4790 4
0600	01 23	34 73	27 83	0 211		4795 5
0800	01 11	34 73	27 84	0 269		4805 6
1000	00 99	34 73	27 85	0 326		4815 7
1000	00 99	34 73	27 85			4815 7
1200	00 87	34 73	27 86	0 382		4825 8
1500	00 71	34 73	27 87	0 463		4841 2
2000	00 44	34 72	27 88	0 592		4866 8
2000	00 44	34 72	27 88			4866 8

SURFACE OBSERVATIONS																			
H. O. REF. NO.	STATION	DATE				POSITION				SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH								
		MO.	DAY	YEAR	HOUR	LATITUDE		LONGITUDE											
00650	B001	01	29	960	00	33° 05′S		071° 45′W		0106	01								
WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	18	24	13	17 5	14 7	74	02	8	1	19	4			8		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	13 33	34 31	25 81	0 000	4 33	4913 2
0000	13 33	34 31	25 81		4 33	4913 2
0010	12 85	34 34	25 93	0 021	3 72	4908 6
0010	12 85	34 34	25 93		3 72	4908 6
0019	12 17	34 39	26 10		2 48	4901 7
0020	12 16	34 39	26 10	0 041	2 42	4901 7
0029	12 05	34 42	26 15		1 96	4901 0
0030	12 04	34 42	26 15	0 060	1 93	4901 0
0048	11 84	34 46	26 22		1 53	4899 9
0050	11 80	34 46	26 23	0 097	1 53	4899 6
0073	11 43	34 45	26 29		1 36	4896 7
0075	11 40	34 45	26 29	0 142	1 33	4896 5
0097	11 20	34 50	26 37		0 86	4895 7

SURFACE OBSERVATIONS																			
H. O. REF. NO.	STATION	DATE				POSITION				SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH								
		MO.	DAY	YEAR	HOUR	LATITUDE		LONGITUDE											
00650	B002	01	29	960	02	33° 04′S		071° 50′W		0183	02								
WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	18	24	15	17 4	15 6	82	02		0	19	3			8		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	17 02	34 11	24 85	0 000	5 80	4951 0
0000	17 02	34 11	24 85		5 80	4951 0
0010	15 82	34 15	25 15	0 030	5 44	4939 6
0010	15 82	34 15	25 15		5 44	4939 6
0019	12 37	34 13	25 86		4 61	4903 0
0020	12 37	34 15	25 88	0 054	4 49	4903 1
0029	12 28	34 31	26 02		3 49	4903 2
0030	12 23	34 31	26 03	0 075	3 41	4902 7
0048	11 59	34 40	26 22		2 05	4896 9
0050	11 59	34 42	26 24	0 113	1 90	4897 0
0072	11 57	34 61	26 39		0 70	4898 9
0075	11 57	34 62	26 39	0 156	0 64	4899 1
0096	11 57	34 69	26 45		0 34	4900 6
0100	11 57	34 70	26 46	0 197	0 33	4900 9
0144	11 44	34 75	26 52		0 29	4902 2
0150		34 75			0 30	
0169		34 74			0 32	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	B003	01	29	1960	06	33° 01′ S	072° 25′ W	3840	25

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18	24	14	18 8	16 3	77	03	8	2	19	4			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	19 70	34 31	24 33	0 000	5 39	4977 5
0000	19 70	34 31	24 33		5 39	4977 5
0009	19 69	34 32	24 34			4978 0
0010	19 92	34 30	24 27	0 036	6 29	4980 1
0019	15 76	34 22	25 22		7 10	4939 8
0020	15 57	34 22	25 26	0 068	6 77	4937 9
0029	14 04	34 24	25 61		4 47	4922 4
0030	13 87	34 23	25 64	0 094	4 42	4920 5
0048	11 66	34 17	26 03		3 53	4896 8
0050	11 61	34 19	26 05	0 137	3 41	4896 4
0071	11 13	34 33	26 25		2 34	4892 6
0075	11 03	34 34	26 28	0 184	2 21	4891 7
0095	10 63	34 38	26 38			4888 4
0100	10 60	34 40	26 40	0 227	1 51	4888 4
0143	10 22	34 51	26 55		0 72	4886 9
0150	10 09	34 51	26 57	0 306	0 66	4885 8
0172	09 84	34 51	26 62		* 1 19	4884 1
0190	09 84	34 58	26 67		0 48	4885 4
0200	09 67	34 57	26 69	0 379	0 52	4884 0
0250	08 89	34 54	26 80	0 446	0 77	4877 3
0285	08 40	34 51	26 85		1 00	4873 2
0300	08 23	34 50	26 87	0 510	1 15	4872 0
0381	07 33	34 44	26 95			4865 2
0400	07 13	34 44	26 98	0 630	2 11	4863 7
0433	06 79	34 42	27 01		2 41	4861 2
0476		34 38			2 79	
0500	06 28	34 38	27 05	0 742	2 82	4858 4
0600	05 59	34 39	27 14	0 847	2 93	4855 3
0800	04 47	34 39	27 27	1 036	2 97	4852 0
0868	04 17	34 40	27 31		3 01	4852 0
1000	03 85	34 45	27 39	1 203	2 76	4855 6
1200	03 41	34 52	27 49	1 352	2 52	4861 6
1312	03 17	34 55	27 53		2 46	4865 0
1500	02 76	34 59	27 60	1 545	2 60	4870 5
1764	02 33	34 63	27 67		2 79	4880 2
2000	02 08	34 66	27 71	1 813	2 99	4890 7
2234	01 96	34 67	27 73		3 14	4902 9
2500		34 66			3 24	
2528		34 66			3 25	

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	B004	01	29	960	16	33° 04.5′	073° 20.W′	3840	33

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	20	24	17	18 7	16 8	75	02	6	6	22	4			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	19 39	34 25	24 37	0 000	5 07	4974 4
0000	19 39	34 25	24 37		5 07	4974 4
0010	19 33	34 26	24 39	0 036	5 02	4974 4
0010	19 33	34 26	24 39		5 02	4974 4
0019	19 25	34 25	24 40		5 05	4974 2
0020	18 82	34 20	24 48	0 071	5 17	4970 0
0028	15 91	33 91	24 95		5 87	4940 7
0030	15 51	33 92	25 05	0 103	5 83	4936 7
0047	12 96	33 97	25 62		5 52	4910 6
0050	12 78	33 96	25 65	0 156	5 50	4908 7
0071	11 80	33 96	25 84		5 23	4898 9
0075	11 69	33 97	25 87	0 212	5 12	4897 9
0094	11 21	34 03	26 00		4 68	4893 7
0100	11 06	34 06	26 05	0 264	4 59	4892 5
0141	10 32	34 24	26 32		3 97	4886 9
0150	10 30	34 30	26 37	0 356	3 30	4887 5
0189	10 10	34 48	26 55		1 11	4888 1
0200	09 98	34 49	26 58	0 436	1 00	4887 4
0250	09 36	34 53	26 71	0 509	0 90	4883 0
0284	08 90	34 53	26 79		0 78	4879 4
0300	08 64	34 51	26 81	0 576	0 91	4877 1
0381	07 39	34 43	26 94		1 91	4865 9
0400	07 10	34 41	26 96	0 699	2 33	4863 2
0460	06 30	34 36	27 03		3 41	4856 2
0500	05 95	34 33	27 05	0 812	3 81	4853 8
0600	05 22	34 30	27 12	0 917	4 33	4849 9
0620	05 10	34 30	27 13		4 35	4849 5
0781	04 41	34 35	27 25		3 57	4849 9
0800	04 34	34 36	27 26	1 109	3 45	4850 1
0945	03 89	34 44	27 37		2 73	4852 8
1000	03 76	34 46	27 40	1 275	2 61	4854 4
1192	03 34	34 53	27 50		2 37	4860 2
1200	03 33	34 53	27 50	1 420	2 38	4860 5
1500	02 88	34 59	27 59	1 613	2 67	4872 2
1622	02 72	34 61	27 62		2 76	4877 3
2000	02 26	34 63	27 68	1 895	2 93	4893 2
2080	02 18	34 64	27 69		2 97	4896 8
2500	01 91	34 67	27 74	2 145	3 24	4917 9
2549	01 89	34 67	27 74		3 26	4920 5
3000	01 83	34 68	27 75	2 381	3 32	4946 2
3028	01 83	34 68	27 75		3 32	4947 9
3322	01 77	34 69	27 76		3 27	4964 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	B005	01	30	960	00	33° 00S′	074° 12W′	3747	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	20	24	16	18 9	15 6	70	02	6	5	22	4			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	19 09	33 93	24 20	0 000	5 41	4970 4
0000	19 09	33 93	24 20		5 41	4970 4
0010	19 09	33 93	24 20	0 037	5 15	4971 0
0010	19 09	33 93	24 20		5 15	4971 0
0019	19 08	33 93	24 20		5 28	4971 4
0020	19 08	33 93	24 20	0 075	5 29	4971 5
0028	18 71	33 94	24 31		5 34	4968 5
0030	18 27	33 93	24 41	0 111	5 44	4964 4
0047	15 16	33 90	25 11		5 85	4934 0
0050	14 76	33 91	25 20	0 174	5 70	4930 0
0071	12 64	33 94	25 66		5 03	4908 3
0075	12 46	33 94	25 70	0 238	5 09	4906 5
0094	11 72	33 94	25 84		5 14	4899 3
0100	11 57	33 97	25 89	0 294	4 89	4898 0
0141	10 64	34 17	26 21		3 43	4890 4
0150	10 44	34 21	26 28	0 392	3 20	4888 8
0188	09 74	34 35	26 51		2 34	4883 2
0200	09 68	34 37	26 53	0 475	2 04	4883 3
0250	09 28	34 42	26 64	0 551	1 15	4881 6
0282	08 93	34 44	26 71		0 90	4879 3
0300	08 62	34 44	26 76	0 621	0 93	4876 6
0377	07 41	34 43	26 93		1 62	4865 9
0400	07 08	34 41	26 96	0 746	2 28	4863 0
0456	06 34	34 36	27 02		3 29	4856 5
0472	06 14	34 34	27 04		3 42	4854 7
0500	05 92	34 33	27 06	0 859	3 63	4853 4
0600	05 22	34 31	27 12	0 964	4 03	4850 0
0616	05 12	34 31	27 14		4 05	4849 6
0780	04 31				3 43	
0800	04 25	34 38	27 29	1 152	3 31	4848 9
0947	03 83	34 44	27 38		2 65	4852 1
1000	03 72	34 46	27 41	1 315	2 56	4853 8
1197	03 33	34 53	27 50		2 37	4860 3
1200	03 32	34 53	27 50	1 460	2 37	4860 4
1500	02 84	34 58	27 59	1 653	2 54	4871 6
1626	02 66	34 60	27 62		2 62	4876 6
2000	02 23	34 64	27 69	1 933	2 87	4892 8
2078	02 16	34 65	27 70		2 93	4896 4
2500	01 91	34 67	27 74	2 180	3 26	4917 9
2523	01 90	34 67	27 74		3 27	4919 1
2994	01 82	34 69	27 76		3 29	4945 8
3000	01 82					
3480	01 70					

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	B006	01	30	960	10	32° 56′S	075° 22′W	4572	38

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	20	24	17	19 0	15 3	67	02	6	8	22	4			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	19 70	34 03	24 12	0 000	5 13	4976 5
0000	19 70	34 03	24 12		5 13	4976 5
0009	19 68	34 03	24 13		5 06	4976 8
0010	19 68	34 03	24 13	0 038	5 07	4976 9
0018	19 68	34 03	24 13		5 15	4977 3
0020	19 28	34 02	24 22	0 076	5 30	4973 7
0028	17 91	34 00	24 55		5 72	4961 0
0030	17 72	34 01	24 60	0 111	5 75	4959 3
0046	16 17	34 09	25 03		5 76	4945 1
0050	15 69	34 09	25 14	0 173	5 61	4940 4
0070	13 75	34 08	25 55		5 13	4921 0
0075	13 45	34 05	25 59	0 239	5 13	4917 9
0093	12 50	34 00	25 74		5 13	4908 3
0100	12 15	34 03	25 83	0 297	4 92	4904 9
0140	10 83	34 22	26 22		3 43	4892 8
0150	10 82	34 30	26 28	0 397	2 84	4893 6
0186	10 68	34 51	26 47		1 16	4894 9
0200	10 57	34 53	26 51	0 481	0 90	4894 5
0250	10 08	34 59	26 64	0 557	0 28	4891 9
0279	09 72	34 60	26 71		0 15	4889 4
0300	09 41	34 59	26 75	0 627	0 18	4886 8
0373	08 17	34 51	26 88		0 90	4875 6
0400	07 46	34 45	26 94	0 755	1 74	4868 0
0466	06 27	34 36	27 03		3 21	4856 2
0500	06 03	34 34	27 05	0 869	3 60	4854 9
0520	05 89	34 33	27 06		3 79	4854 2
0600	05 43	34 31	27 10	0 975	4 00	4852 8
0691	04 98	34 31	27 15		4 02	4852 1
0800	04 54	34 34	27 23	1 173	3 60	4852 7
0866	04 30	34 36	27 27		3 37	4853 5
1000	03 85	34 43	27 37	1 346	2 92	4855 5
1040	03 73	34 45	27 40		2 81	4856 3
1200	03 36	34 52	27 49	1 496	2 55	4860 9
1302	03 15	34 55	27 53		2 43	4864 1
1500	02 83	34 59	27 60	1 689	2 35	4871 5
1744	02 50	34 62	27 65		2 26	4881 4
2000	02 26	34 65	27 69	1 966	2 73	4893 3
2196	02 11	34 66	27 71		2 99	4902 7
2500	01 94	34 67	27 73	2 213	3 16	4918 3
2655	01 87	34 68	27 75		3 23	4926 5
3000	01 77	34 69	27 76	2 447	3 30	4945 4
3116	01 75	34 69	27 76		3 34	4952 0
3585	01 71	34 70	27 78		3 58	4979 0
3770	01 64	34 69	27 77		3 54	4988 8

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	B007	01	30	960	19	32° 54.5′	076° 12.W′	4297	38

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18	24	19	19 9	15 6	63	02	8	2	22	4			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	19 79	34 05	24 11	0 000	5 20	4977 4
0000	19 79	34 05	24 11		5 20	4977 4
0009	19 84	34 05	24 10		5 30	4978 4
0010	19 83	34 05	24 10	0 038	5 25	4978 3
0018	19 72	34 05	24 13		5 13	4977 8
0020	19 49	34 03	24 18	0 076	5 28	4975 7
0027	18 58	33 99	24 38		5 67	4967 4
0030	17 98	34 00	24 53	0 112	5 74	4961 8
0044	15 69	34 02	25 08		5 84	4939 8
0050	15 21	34 05	25 21	0 174	5 77	4935 3
0066	13 82	34 10	25 55		5 29	4921 6
0075	12 75	34 11	25 77	0 237	4 72	4910 4
0088	11 63	34 12	26 00		3 89	4898 6
0100	11 61	34 27	26 12	0 289	2 91	4899 7
0132	11 51	34 55	26 35		1 09	4901 5
0150	11 45	34 61	26 41	0 379	0 79	4902 1
0176		34 67			0 46	
0200	11 21	34 69	26 52	0 460	0 41	4902 6
0250	10 85	34 70	26 59	0 537	0 35	4901 4
0266		34 70			0 34	
0300	10 36	34 67	26 65	0 612	0 35	4898 5
0358	09 63	34 61	26 73		0 37	4893 0
0400	09 46	34 57	26 73	0 755	0 59	4893 3
0453	08 08	34 51	26 90		0 86	4879 2
0460	07 80	34 50	26 93		1 33	4876 0
0500	07 15	34 44	26 98	0 884	2 29	4869 9
0600	05 87	34 34	27 07	0 996	3 86	4858 8
0620	05 68	34 33	27 09		4 08	4857 4
0783	04 86	34 33	27 18		3 62	4856 1
0800	04 77	34 34	27 20	1 200	3 51	4855 9
0948	04 09	34 42	27 34		2 75	4855 7
1000	03 95	34 44	27 37	1 377	2 62	4856 9
1198	03 46	34 52	27 48		2 29	4862 2
1200	03 46	34 52	27 48	1 528	2 29	4862 3
1500	02 93	34 57	27 57	1 727	2 46	4872 8
1622	02 75	34 59	27 60		2 52	4877 6
2000	02 34	34 64	27 68	2 015	2 69	4894 3
2051	02 29	34 64	27 68		2 72	4896 7
2500	01 94	34 67	27 73	2 266	3 15	4918 3
2500	01 94	34 67	27 73		3 15	4918 3
2962	01 80	34 68	27 75		3 29	4943 6
3000	01 80	34 68	27 75	2 502	3 33	4945 8
3431	01 75	34 69	27 76		3 53	4970 5
3810	01 62	34 69	27 77		3 36	4990 8

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0008	02	08	960	06	58° 27′S	093° 30′W	4755	29

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	03	24	84	06 8	05 6	82	63	0	8	19	3			6		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	05 46	34 02	26 87	0 000	6 83	4816 4
0000	05 46	34 02	26 87		6 83	4816 4
0009	05 45	34 02	26 87		6 87	4816 8
0010	05 45	34 02	26 87	0 012	6 87	4816 8
0018	05 46	34 02	26 87		6 89	4817 4
0020	05 46	34 02	26 87	0 024	6 89	4817 6
0027	05 48	34 02	26 86		6 89	4818 2
0030	05 49	34 02	26 86	0 036	6 88	4818 5
0045	05 51	34 02	26 86		6 84	4819 7
0050	05 50	34 02	26 86	0 060	6 86	4819 9
0068	05 48	34 02	26 86		6 89	4820 7
0075	05 47	34 02	26 87	0 090	6 88	4821 0
0091	05 44	34 02	26 87		6 87	4821 5
0100	05 18	34 02	26 90	0 120	6 87	4818 5
0136	04 44	34 03	26 99		6 87	4810 7
0150	04 32	34 04	27 01	0 176	6 86	4809 9
0181	04 14	34 05	27 04		6 84	4809 3
0200	04 19	34 07	27 05	0 228	6 66	4811 2
0250	04 18	34 11	27 08	0 280	6 27	4814 2
0273	04 19	34 13	27 10		6 13	4815 8
0300	04 04	34 14	27 12	0 329	5 90	4815 3
0366	03 71	34 17	27 18		5 77	4814 8
0400	03 56	34 18	27 20	0 424	6 09	4814 8
0461	03 28	*34 04	*27 12		6 66	*4813 9
0463	03 24	34 19	27 24		5 66	4814 1
0500	03 20	34 22	27 27	0 512	6 20	4815 8
0600	03 05	34 30	27 34	0 593	6 55	4820 0
0617	03 02	*34 07	*27 16		6 66	*4819 6
0773	02 66	34 42	27 47		4 29	4825 2
0800	02 62	34 44	27 49	0 736	4 24	4826 3
0933	02 47	34 51	27 56		4 07	4832 4
1000	02 43	34 54	27 59	0 856	4 05	4835 9
1175	02 33	34 62	27 66		4 02	4845 2
1200	02 32	34 63	27 67	0 962	4 02	4846 6
1500	02 15	34 70	27 74	1 102	4 07	4862 3
1590	02 09	34 71	27 75		4 09	4866 8
2000	01 74	34 73	27 80	1 308	4 25	4886 1
2023	01 72	34 73	27 80		4 26	4887 2
2473	01 43	34 74	27 83		4 47	4909 6
2500	01 41	34 74	27 83	1 495	4 48	4910 9
2936	01 12	34 72	27 83		4 59	4932 3

SURFACE OBSERVATIONS

H.O. REF NO	STATION	DATE MO	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00650	0009	02	08	960	20	59° 31S	093° 30W	4846	14

WIND SPEED	WIND DIR.	ANEMO. HGT	AIR PRESS	AIR TEMPERATURE DRY ▼	AIR TEMPERATURE WET ▼	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT	VIS.	WATER COL.	WATER TRANS.
08	33	14	74	08 6	07 2	82	45	0	8	35	3			5		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH M	T °C ▼	S ‰ ▼	σt ▼	Σ ΔD	Cond. ▼	Vs ▼
0000	05 62	34 01	26 84	0 000	6 83	4818 5
0000	05 62	34 01	26 84		6 83	4818 5
0010	05 62	34 01	26 84	0 012	6 87	4819 1
0010	05 62	34 01	26 84		6 87	4819 1
0019	05 60	34 01	26 84		6 85	4819 3
0020	05 60	34 01	26 84	0 024	6 85	4819 4
0029	05 60	34 01	26 84		6 85	4819 4
0030	05 60	34 01	26 84	0 037	6 85	4820 0
0048	05 48	34 02	26 86		6 88	4819 5
0050	05 42	34 03	26 88	0 061	6 87	4818 8
0073	04 75	34 06	27 00		6 84	4811 4
0075	04 69	34 07	27 00	0 089	6 85	4810 6
0097	04 17	34 09	27 02		6 91	4804 6
0100	04 15	34 09	27 02	0 116	6 91	4804 5
0145	03 91	34 06	27 07		6 81	4804 0
0150	03 89	34 06	27 07	0 167	6 77	4804 0
0194	03 69	34 09	27 10		6 49	4804 0
0200	03 65	34 09	27 10	0 217	6 45	4803 8
0250	03 40	34 11	27 16	0 264	6 37	4803 3
0293	03 28	34 13	27 19		6 17	4804 3
0300	03 29	34 14	27 19	0 310	6 11	4804 9
0392	03 37	34 22	27 25		5 99	4811 8
0394	03 27	34 22	27 26		5 93	4810 5
0400	03 25	34 22	27 26	0 398	5 93	4810 6
0491	03 01	34 27	27 32		4 91	4812 8
0500	02 99	34 28	27 33	0 479	4 81	4813 1
0592	02 81	34 35	27 41		4 04	4816 3
0600	02 80	34 35	27 41	0 554	4 06	4816 6
0800	02 53	34 47	27 53	0 687	4 50	4825 1
0890	02 44	34 51	27 57		4 60	4829 4
1000	02 34	34 56	27 61	0 803	4 49	4834 7
1200	02 23	34 63	27 68	0 905	4 50	4845 3
1388	02 18	34 68	27 72		4 10	4856 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00650	0010	02	09	960	02	59° 57'S	093° 42'W	4846	47

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
05	02	24	73	06 7	05 7	86	40	6	8	35	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O ml/l ↓	V_f ↓
0000	04 59	33 97	26 93	0 000	6 99	4804 4
0000	04 59	33 97	26 93		6 99	4804 4
0010	04 59	33 98	26 94	0 011	6 95	4805 0
0010	04 59	33 98	26 94		6 95	4805 0
0020	04 55	33 97	26 93	0 023	7 00	4805 0
0020	04 55	33 97	26 93		7 00	4805 0
0030	04 54	33 98	26 94	0 034	6 96	4805 5
0030	04 54	33 98	26 94		6 96	4805 5
0049	04 48	33 99	26 96		6 99	4805 9
0050	04 48	33 99	26 96	0 056	6 99	4805 9
0074	04 45	33 98	26 95		6 98	4806 9
0075	04 39	33 98	26 96	0 094	6 98	4806 1
0098	03 35	34 00	27 08		7 01	4793 1
0100	03 31	34 00	27 08	0 111	7 01	4792 7
0148	02 58	34 03	27 17		6 84	4785 3
0150	02 58	34 03	27 17	0 158	6 83	4785 4
0197	02 54	34 08	27 21		6 51	4787 8
0200	02 54	34 08	27 21	0 203	6 49	4788 0
0250	02 52	34 12	27 25	0 246	6 20	4790 8
0296	02 49	34 15	27 27		5 94	4793 3
0300	02 48	34 15	27 27	0 288	5 92	4793 4
0395	02 39	34 23	27 35		5 38	4798 1
0400	02 39	34 23	27 35	0 367	5 36	4798 4
0494	02 39	34 31	27 41		4 84	4804 3
0500	02 39	34 32	27 42	0 440	4 76	4804 7
0584	02 39	34 39	27 47		3 99	4810 0
0600	02 38	34 40	27 48	0 506	4 06	4810 8
0779	02 32	34 50	27 57		4 43	4821 0
0800	02 32	34 51	27 58	0 627	4 35	4822 3
0976	02 28	34 60	27 65		3 93	4832 6
1000	02 27	34 61	27 66	0 732	3 94	4833 9
1172	02 21	34 66	27 70		3 98	4843 5
1200	02 20	34 67	27 71	0 827	3 99	4845 0
1468	02 07	34 72	27 76		4 05	4859 3
1500	02 04	34 72	27 77	0 956	4 06	4860 7
1962	01 70	34 73	27 80		4 23	4883 2
2000	01 67	34 73	27 80	1 154	4 25	4885 1
2457	01 37	34 74	27 83		4 42	4907 8
2500	01 35	34 74	27 83	1 337	4 43	4910 0
2954	01 09	34 73	27 84		4 51	4933 0
3000	01 06	34 73	27 85	1 507	4 53	4935 2
3452	00 82	34 71	27 85		4 65	4958 2
3952	00 61	34 72	27 87		4 65	4984 5
4000	00 59	34 72	27 87	1 815	4 67	4987 1
4452	00 47	34 72	27 87		4 74	5011 8
4652	00 44	34 71	27 87		4 70	5023 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0011	02	09	960	10	60° 20′S	094° 38′W	4846	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	05	24	73	06 2	05 0	79	01	5	1	35	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	04 39	33 94	26 93	0 000	7 01	4801 5
0000	04 39	33 94	26 93		7 01	4801 5
0010	04 36	33 95	26 94	0 011	7 06	4801 7
0010	04 36	33 95	26 94		7 06	4801 7
0020	04 40	33 95	26 93	0 023	7 00	4802 9
0020	04 40	33 95	26 93		7 00	4802 9
0030	04 42	33 95	26 93	0 034	7 04	4803 7
0030	04 42	33 95	26 93		7 04	4803 7
0050	04 43	33 97	26 94	0 057	7 00	4805 2
0050	04 43	33 97	26 94		7 00	4805 2
0075	04 00	33 97	26 99	0 084	7 06	4800 7
0075	04 00	33 97	26 99		7 06	4800 7
0100	02 40	33 99	27 15	0 109	7 06	4779 7
0100	02 40	33 99	27 15		7 06	4779 7
0150	01 91	34 01	27 21	0 154	7 01	4775 6
0150	01 91	34 01	27 21		7 01	4775 6
0200	01 73	34 03	27 24	0 197	6 83	4776 0
0200	01 73	34 03	27 24		6 83	4776 0
0250	02 19	34 12	27 27	0 239	6 20	4786 1
0300	02 48	34 19	27 31	0 279	5 66	4793 5
0300	02 48	34 19	27 31		5 66	4793 5
0400	02 58	34 30	27 39	0 355	4 88	4801 4
0400	02 58	34 30	27 39		4 88	4801 4
0500	02 52	34 37	27 45	0 425	4 48	4806 8
0500	02 52	34 37	27 45		4 48	4806 8
0600	02 42	34 44	27 51	0 489	4 31	4811 6
0600	02 42	34 44	27 51		4 31	4811 6
0800	02 34	34 55	27 61	0 604	4 13	4822 8
0800	02 34	34 55	27 61		4 13	4822 8
1000	02 20	34 62	27 67	0 705	3 98	4832 9
1000	02 20	34 62	27 67		3 98	4832 9
1200	02 16	34 68	27 72	0 797	4 09	4844 5
1200	02 16	34 68	27 72		4 09	4844 5
1500	01 99	34 72	27 77	0 924	4 21	4860 0
1500	01 99	34 72	27 77		4 21	4860 0
2000	01 61	34 74	27 82	1 117	4 32	4884 2
2000	01 61	34 74	27 82		4 32	4884 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0012	02	09	960	17	60° 57′S	094° 58′W	4938	48

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	05	24	73	05 6	04 7	87	44	0	8			35	3	6		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 m l/l ↓	V_f ↓
0000	04 46	33 97	26 94	0 000	7 02	4802 6
0000	04 46	33 97	26 94		7 02	4802 6
0010	04 43	33 98	26 95	0 011	7 00	4802 8
0010	04 43	33 98	26 95		7 00	4802 8
0020	04 35	33 97	26 95	0 022	7 12	4802 3
0020	04 35	33 97	26 95		7 12	4802 3
0030	04 34	33 97	26 95	0 033	7 07	4802 7
0030	04 34	33 97	26 95		7 07	4802 7
0050	04 30	33 98	26 97	0 056	7 07	4803 4
0050	04 30	33 98	26 97		7 07	4803 4
0075	04 24	33 98	26 97	0 083	7 13	4804 1
0075	04 24	33 98	26 97		7 13	4804 1
0100	03 22	34 00	27 09	0 109	7 06	4791 4
0100	03 22	34 00	27 09		7 06	4791 4
0150	02 86	34 03	27 15	0 157	6 84	4789 4
0150	02 86	34 03	27 15		6 84	4789 4
0200	02 75	34 06	27 18	0 204	6 37	4790 9
0200	02 75	34 06	27 18		6 37	4790 9
0250	02 90	34 13	27 22	0 248	6 05	4796 3
0300	02 96	34 18	27 26	0 291	5 76	4800 4
0300	02 96	34 18	27 26		5 76	4800 4
0400	02 80	34 25	27 33	0 372	5 24	4804 3
0400	02 80	34 25	27 33		5 24	4804 3
0500	02 73	34 33	27 40	0 447	4 80	4809 6
0500	02 73	34 33	27 40		4 80	4809 6
0575	02 62	*34 28	*27 37		5 10	*4812 3
0600	02 60	34 37	27 44	0 517	4 97	4813 9
0766	02 48	34 44	27 51		4 32	4822 3
0800	02 47	34 46	27 52	0 647	4 25	4824 3
0958	02 41	34 54	27 59		4 03	4833 1
1000	02 39	34 56	27 61	0 763	4 01	4835 4
1151	02 31	34 61	27 66		3 98	4843 5
1200	02 29	34 63	27 67	0 866	4 00	4846 2
1440	02 16	34 70	27 74		4 09	4858 8
1500	02 12	34 71	27 75	1 004	4 11	4861 9
1922	01 84	34 74	27 80		4 27	4883 0
2000	01 77	34 74	27 80	1 207	4 30	4886 6
2405	01 47	34 74	27 83		4 42	4906 1
2500	01 42	34 74	27 83	1 393	4 43	4911 0
2891	01 20	34 73	27 84		4 48	4930 9
3000	01 13	34 73	27 84	1 568	4 54	4936 3
3378	00 92	34 72	27 85		4 69	4955 4
3867	00 67	34 73	27 87		4 78	4980 5
4000	00 60	34 73	27 88	1 877	4 78	4987 3
4358	00 48	34 72	27 87		4 79	5006 4
4755	00 44	34 72	27 88		4 82	5029 0

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0013	02	10	960	02	61° 28S′	095° 14W′	4889	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
01	05	24	75	05 6	04 7	88	03	0	6			35	4	8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	04 53	33 83	26 82	0 000	7 04	4803 0
0000	04 53	33 83	26 82		7 04	4803 0
0010	04 56	33 83	26 82	0 012	7 01	4804 0
0010	04 56	33 83	26 82		7 01	4804 0
0020	03 94	33 84	26 89	0 024	7 12	4796 1
0020	03 94	33 84	26 89		7 12	4796 1
0030	03 91	33 83	26 89	0 036	7 29	4796 2
0030	03 91	33 83	26 89		7 29	4796 2
0050	03 87	33 84	26 90	0 060	7 20	4796 9
0050	03 87	33 84	26 90			4796 9
0075	03 83	33 84	26 90	0 089	7 15	4797 8
0075	03 83	33 84	26 90		7 15	4797 8
0100	03 22	33 98	27 07	0 116	7 16	4791 3
0100	03 22	33 98	27 07		7 16	4791 3
0150	02 53	34 01	27 16	0 164	7 03	4784 6
0150	02 53	34 01	27 16		7 03	4784 6
0200	02 41	34 05	27 20	0 209	6 83	4786 0
0200	02 41	34 05	27 20		6 83	4786 0
0250	02 39	34 08	27 23	0 253	6 62	4788 8
0300	02 39	34 12	27 26	0 296	6 29	4791 9
0300	02 39	34 12	27 26		6 29	4791 9
0400	02 48	34 24	27 35	0 375	5 26	4799 7
0400	02 48	34 24	27 35		5 26	4799 7
0500	02 44	34 33	27 42	0 448	4 73	4805 4
0500	02 44	34 33	27 42		4 73	4805 4
0600	02 45	34 39	27 47	0 515	4 46	4811 8
0600	02 45	34 39	27 47		4 46	4811 8
0800	02 39	34 53	27 59	0 636	3 99	4823 4
0800	02 39	34 53	27 59		3 99	4823 4
1000	02 30	34 60	27 65	0 742	3 99	4834 3
1000	02 30	34 60	27 65		3 99	4834 3
1200	02 22	34 66	27 70	0 839	3 99	4845 3
1200	02 22	34 66	27 70		3 99	4845 3
1500	02 05	34 63	27 69	0 980	4 47	4860 5
1500	02 05	34 63	27 69		4 47	4860 5
2000	01 71	34 74	27 81	1 194	4 03	4885 7
2000	01 71	34 74	27 81		4 03	4885 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0014	02	10	960	07	61° 58′S	095° 14′W	5121	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	16	24	76	04 4	03 6	86	02	6	8	35	4			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	04 90	34 01	26 92	0 000	6 97	4808 8
0000	04 90	34 01	26 92		6 97	4808 8
0010	04 89	34 01	26 93	0 011	6 94	4809 2
0010	04 89	34 01	26 93		6 94	4809 2
0020	04 87	34 01	26 93	0 023	6 94	4809 5
0020	04 87				6 94	
0030	04 86	34 01	26 93	0 034	6 89	4810 0
0030	04 86	34 01	26 93		6 89	4810 0
0050	04 82	34 01	26 93	0 057	6 94	4810 7
0050	04 82	34 01	26 93		6 94	4810 7
0075	04 74	34 01	26 94	0 085	6 90	4811 0
0075	04 74	34 01	26 94		6 90	4811 0
0100	04 33	34 01	26 99	0 113	6 95	4806 9
0100	04 33	34 01	26 99		6 95	4806 9
0150	03 47	34 03	27 09	0 165	6 90	4798 0
0150	03 47	*34 10	*27 15		6 90	*4798 3
0200	03 25	34 06	27 13	0 214	6 89	4798 0
0200	03 25	34 06	27 13		6 89	4798 0
0250	03 32	34 09	27 15	0 261	6 29	4802 1
0300	03 32	34 12	27 18	0 307	5 87	4805 2
0300	03 32				5 87	
0400	03 10	34 19	27 25	0 396	5 61	4808 3
0400	03 10	34 19	27 25		5 61	4808 3
0500	02 89	34 26	27 33	0 478	5 10	4811 6
0500	02 89	34 26	27 33		5 10	4811 6
0590	02 83	34 35	27 40			4816 5
0600	02 81	34 36	27 41	0 553		4816 8
0787	02 54	34 46	27 52			4824 5
0800	02 53	34 47	27 53	0 686		4825 2
0984	02 40	34 56	27 61			4834 6
1000	02 39	34 57	27 62	0 801		4835 5
1181	02 29	34 62	27 67			4845 0
1200	02 28	34 63	27 67	0 903		4846 0
1477	02 14	34 70	27 74			4860 7
1500	02 13					
1972	01 77					

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0015	02	10	960	13	62° 33′S	095° 14′W	5029	16

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	18	24	77	03 1	02 1	86	02	6	8	35	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	04 55	33 98	26 94	0 0 0		4803 9
0000	04 55	33 98	26 94			4803 9
0009	04 56	33 97	26 93			4804 5
0010	04 56	33 97	26 93	0 011		4804 6
0017	04 55	33 97	26 93			4804 8
0020	04 55	33 97	26 93	0 023		4805 0
0026	04 54	33 97	26 93			4805 2
0030	04 51	33 97	26 94	0 034		4805 1
0043	04 42	33 97	26 95			4804 6
0050	04 42	33 97	26 95	0 056		4805 0
0065	04 33	33 98	26 96			4804 7
0075	04 19	33 98	26 98	0 084		4803 4
0086	04 00	33 98	27 00			4801 4
0100	03 51	34 01	27 07	0 110		4795 5
0130	02 82	34 04	27 16			4787 7
0150	02 75	34 04	27 16	0 159		4787 9
0174	02 67	34 04	27 17			4788 1
0200	02 56	34 05	27 19	0 204		4788 1
0250	02 44	34 08	27 22	0 248		4789 5
0264	02 43	34 09	27 23			4790 3
0300	02 50	34 13	27 26	0 291		4793 6
0357	02 57	34 18	27 29			4798 2
0400	02 56	34 22	27 32	0 372		4800 8
0442	*02 67	*34 26	*27 35		*	4805 0
0453	*02 40	*34 25	*27 36		*	4801 7
0500	02 53	34 30	27 39	0 447		4806 6
0600	02 49	34 37	27 45	0 517		4812 3
0600	02 49	34 37	27 45			4812 3
0758	02 40	34 47	27 54			4820 8
0800	02 37	34 49	27 56	0 643		4823 0
0917	02 31	34 55	27 61			4829 3
1000	02 27	34 58	27 64	0 753		4833 8
1162	02 20	34 64	27 69			4842 6
1200	02 18	34 65	27 70	0 851		4844 7
1500	02 04	34 70	27 75	0 984		4860 7
1593	02 00	34 71	27 76			4865 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0016	02	10	960	19	63° 16′S	094° 55′W	5029	15

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	21	24	78	03 1	02 6	92	02	6	8	21	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	03 41	33 94	27 02	0 000		4787 9
0000	03 41	33 94	27 02			4787 9
0008	03 39	33 94	27 03			4788 1
0010	03 38	33 94	27 03	0 010		4788 0
0016	03 37	33 94	27 03			4788 3
0020	03 38	33 94	27 03	0 021		4788 6
0024	03 39	33 94	27 03			4789 0
0030	03 40	33 94	27 03	0 031		4789 5
0040	03 40	33 94	27 03			4790 1
0050	03 39	33 94	27 03	0 052		4790 6
0060	03 38	33 94	27 03			4791 0
0075	03 38	33 94	27 03	0 078		4791 9
0080	03 33	33 94	27 03			4791 5
0100	02 67	33 98	27 12	0 103		4783 5
0120	02 14	34 00	27 18			4777 1
0150	01 61	34 00	27 22	0 149		4771 2
0160	01 48	34 00	27 23			4769 8
0200	01 41	34 01	27 24	0 191		4771 2
0241	01 34	34 04	27 27			4772 8
0250	01 44	34 06	27 28	0 232		4774 9
0300	01 92	34 15	27 32	0 272		4785 3
0324	02 08	34 19	27 34			4789 2
0400	02 31	34 29	27 40	0 346		4797 5
0407	02 33	34 30	27 41			4798 2
0418	02 36	34 31	27 41			4799 3
0500	02 28	34 36	27 46	0 414		4803 3
0561	02 24	34 40	27 49			4806 5
0600	02 24	34 43	27 52	0 477		4808 9
0707	02 23	34 51	27 58			4815 5
0800	02 23	34 56	27 62	0 589		4821 2
0855	02 23	34 58	27 64			4824 6
1000	02 18	34 59	27 65	0 691		4832 5
1092	02 14	34 59	27 65			4837 4
1200	02 09	34 61	27 67	0 789		4843 2
1500	01 93	34 70	27 76	0 924		4859 1
1539	01 91	34 72	27 78			4861 2

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0017	02	11	960	01	63° 35′S	094° 47′W	4938	17

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	18	24	82	02 9	02 7	98	02	0	8	21	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 m l/l ↓	V_f ↓
0000	03 36	33 94	27 03	0 000		4787 2
0000	03 36	33 94	27 03			4787 2
0009	03 36	33 94	27 03			4787 7
0010	03 35	33 94	27 03	0 010		4787 6
0018	03 33	33 94	27 03			4787 8
0020	03 33	33 94	27 03	0 021		4787 9
0027	03 34	33 94	27 03			4788 5
0030	03 34	33 94	27 03	0 031		4788 7
0045	03 34	33 94	27 03			4789 6
0050	03 33	33 94	27 03	0 052		4789 7
0067	03 30	33 95	27 04			4790 4
0075	02 82	33 95	27 09	0 077		4784 0
0090	02 07	33 96	27 16			4774 1
0100	01 73	33 97	27 19	0 101		4769 8
0135	01 01	*34 42	*27 60		*	4763 2
0150	01 07	33 98	27 24	0 144		4763 1
0182	01 22	34 01	27 26			4767 4
0200	01 39	34 05	27 28	0 185		4771 1
0250	01 78	34 14	27 32	0 225		4780 2
0275	01 94	34 18	27 34			4784 2
0300	02 07	34 22	27 36	0 262		4787 7
0371	02 31	34 31	27 42			4795 8
0400	02 32	34 34	27 44	0 333		4797 8
0469	02 33	34 41	27 49			4802 4
0500	02 35	34 43	27 51	0 397		4804 6
0600	02 35	34 49	27 56	0 456		4810 8
0630	02 35	34 51	27 57			4812 6
0794	02 22	34 59	27 65			4820 9
0800	02 22	34 59	27 65	0 562		4821 2
0962	02 17	34 65	27 70			4830 4
1000	02 16	34 66	27 71	0 656		4832 5
1200	02 06	34 70	27 75	0 742		4843 2
1222	02 05	34 70	27 75			4844 3
1500	01 87	34 73	27 79	0 862		4858 3
1687	01 73	34 74	27 81			4867 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0018	02	12	960	16	68° 37′S	090° 43′W	0780	07

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	18	24	80	00 0	50 5	92	02	6	5	18	3			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 50	32 68	26 31	0 000		4709 1
0000	-01 50	32 68	26 31			4709 1
0010	-01 59	32 74	26 36	0 017		4708 6
0010	-01 59	32 74	26 36			4708 6
0020	-01 70	32 86	26 46	0 033		4707 9
0020	-01 70	32 86	26 46			4707 9
0030	-01 59	33 46	26 94	0 047		4712 9
0030	-01 59	33 46	26 94			4712 9
0050	-01 54	34 05	27 42	0 065		4717 4
0050	-01 54	34 05	27 42			4717 4
0075	-01 61	34 12	27 48	0 080		4718 1
0075	-01 61	34 12	27 48			4718 1
0100	-01 55	34 14	27 49	0 095		4720 6
0100	-01 55	34 14	27 49			4720 6
0150	00 09	34 32	27 57	0 123		4749 8
0150	00 09	34 32	27 57			4749 8
0200	01 09	34 45	27 62	0 148		4768 4
0200	01 09					
0250	01 41	34 55	27 68	0 171		4776 5
0300	01 64	34 62	27 72	0 192		4783 2
0300	01 64	34 62	27 72			4783 2
0400	01 84	34 68	27 75	0 231		4792 3
0400	01 84	34 68	27 75			4792 3
0500	01 85	34 70	27 76	0 268		4798 5
0500	01 85	34 70	27 76			4798 5
0600	01 84	34 72	27 78	0 303		4804 4
0700	01 82	34 73	27 79			4810 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0019	02	13	960	03	69° 55S	091° 41W	3840	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	27	24	83	53 4	54 3	83	01	6	2	21	1			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 55	32 70	26 33	0 000		4708 4
0000	-01 55	32 70	26 33			4708 4
0010	-01 56	32 68	26 31	0 017		4708 8
0010	-01 56	32 68	26 31			4708 8
0020	-01 52	32 84	26 44	0 034		4710 7
0020	-01 52	32 84	26 44			4710 7
0030	-01 47	33 57	27 03	0 047		4715 3
0030	-01 47	33 57	27 03			4715 3
0050	-01 62	34 02	27 40	0 064		4716 0
0050	-01 62	34 02	27 40			4716 0
0075	-01 35	34 11	27 46	0 080		4722 2
0075	-01 35	34 11	27 46			4722 2
0100	-01 16	34 22	27 55	0 095		4727 1
0100	-01 16					
0150	00 84	34 40	27 60	0 121		4761 5
0150	00 84	34 40	27 60			4761 5
0200	01 27	34 48	27 63	0 146		4771 2
0200	01 27	* 34 65	*27 77		*	4771 9
0250	01 51	34 55	27 67	0 169		4778 0
0300	01 65	34 60	27 70	0 190		4783 2
0300	01 65	34 60	27 70			4783 2
0400	01 66	34 66	27 75	0 229		4789 6
0400	01 66	34 66	27 75			4789 6
0500	01 71	34 69	27 77	0 266		4796 4
0500	01 71	34 69	27 77			4796 4

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00650	0020	02	14	960	01	70° 26′S	094° 30′W	0640	06

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
09	07	24	69	52 1	52 9	86	73	0	8	00	0	00	0	4		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 m l/l ↓	V_f ↓
0000	-01 72	32 80	26 41	0 000		4706 2
0000	-01 72	32 80	26 41			4706 2
0010	-01 70	32 83	26 44	0 016		4707 2
0010	-01 70	32 83	26 44			4707 2
0020	-01 62	33 20	26 73	0 031		4710 7
0020	-01 62	33 20	26 73			4710 7
0029	-01 77	33 65	27 10			4710 8
0030	-01 77	33 67	27 12	0 042		4710 9
0049	-01 79	33 97	27 36			4713 1
0050	-01 79	33 98	27 37	0 059		4713 2
0073	-01 75	34 07	27 44			4715 6
0075	-01 75	34 07	27 44	0 076		4715 7
0098	-01 77	34 11	27 48			4716 9
0100	-01 77	34 11	27 48	0 091		4717 0
0147	-01 55	* 34 55	* 27 83			* 4725 2
0150	-01 52	34 20	27 54	0 120		4724 3
0195	-00 99	34 28	27 59			4735 7
0200	-00 92	34 29	27 60	0 146		4737 1
0250	-00 24	34 40	27 65	0 170		4751 1
0293	00 24	34 48	27 69			4761 3
0300	00 31	34 49	27 70	0 191		4762 8
0391	00 99	34 63	27 77			4779 0
0400	01 00	34 63	27 77	0 228		4779 7
0490	01 20	34 67	27 79			4788 2
0500	01 23	34 67	27 79	0 262		4789 2
0589	01 63	34 69	27 77			4800 5

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0021	02	15	960	07	70° 48S	104° 18W	2651	25

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	23	24	85	54 4	55 0	86	02	6	7	00	0			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 58	32 82	26 43	0 000		4708 5
0000	-01 58	32 82	26 43			4708 5
0010	-01 58	32 82	26 43	0 016		4709 1
0010	-01 58	32 82	26 43			4709 1
0019	-01 54	32 82	26 42			4710 2
0020	-01 55	32 99	26 56	0 032		4710 9
0029	-01 64	34 10	27 46			4714 8
0030	-01 65	34 11	27 47	0 042		4714 8
0049	-01 75	34 19	27 54			4714 7
0050	-01 75	34 19	27 54	0 054		4714 7
0073	-01 69	34 22	27 56			4717 2
0075	-01 69	34 22	27 56	0 067		4717 3
0097	-01 61	34 24	27 58			4719 9
0100	-01 59	34 25	27 58	0 080		4720 5
0147	-01 19	34 32	27 63			4729 9
0150	-01 14	34 32	27 63	0 105		4730 8
0196	-00 47	34 38	27 65			4744 2
0200	-00 43	34 39	27 66	0 127		4745 1
0250	00 08	34 47	27 70	0 148		4756 3
0295	00 51	34 54	27 73			4765 7
0300	00 57	34 55	27 73	0 168		4767 0
0395	01 38	34 70	27 80			4785 3
0400	01 39	34 70	27 80	0 203		4785 8
0495	01 48	34 71	27 80			4792 8
0500	01 48	34 71	27 80	0 235		4793 1
0574	01 44	34 72	27 81			4797 0
0600	01 42	34 72	27 81	0 267		4798 2
0766	01 26	34 73	27 83			4805 8
0800	01 22	34 73	27 83	0 329		4807 2
0959	01 07					
1000	01 04	34 72	27 84	0 388		4816 4
1152	00 94	34 72	27 85			4823 9
1200	00 91	34 72	27 85	0 446		4826 3
1442	00 79	34 72	27 86			4838 9
1500	00 76	34 72	27 86	0 531		4841 9
1927	00 56	34 70	27 85			4864 2
2000	00 53	34 70	27 86	0 669		4868 1
2416	00 40	34 70	27 86			4890 8
2500	00 38	34 71	27 87	0 801		4895 5
2514	00 38	34 71	27 87			4896 3

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0022	02	16	960	01	71° 54′S	101° 57′W	0348	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	25	24	84	52 8	53 4	83	75	6	8	00	0			7		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 56	33 36	26 87	0 000		4709 1
0000	-01 56	33 36	26 87			4709 1
0010	-01 64	33 38	26 88	0 012		4710 6
0010	-01 64	33 38	26 88			4710 6
0020	-01 63	33 58	27 04	0 023		4712 2
0020	-01 63	33 58	27 04			4712 2
0030	-01 61	33 58	27 04	0 033		4713 1
0030	-01 61	33 58	27 04			4713 1
0050	-01 46	33 81	27 22	0 052		4717 6
0050	-01 46	33 81	27 22			4717 6
0075	-01 45	34 05	27 42	0 071		4720 3
0075	-01 45	34 05	27 42			4720 3
0100	-01 60	34 12	27 48	0 087		4719 8
0100	-01 60	*34 69	*27 94			4722 2
0150	-01 50	34 20	27 54	0 116		4724 7
0150	-01 50	34 20	27 54			4724 7
0200	-01 51	34 22	27 56	0 142		4727 6
0200	-01 51	34 22	27 56			4727 6
0250	-01 19	34 29	27 60	0 168		4735 9
0300	-00 55	34 41	27 68	0 190		4749 3
0300	-00 55	34 41	27 68			4749 3

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0023	02	16	960	05	71° 47′S	099° 55′W	0165	01

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	24	24	84	54 2	54 7	92	02	6	8	00	0			7		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 66	33 54	27 01	0 000		4710 3
0000	-01 66	33 54	27 01			4710 3
0010	-01 67	33 54	27 01	0 011		4710 8
0010	-01 67	33 54	27 01			4710 8
0020	-01 63	33 54	27 01	0 021		4712 0
0020	-01 63	33 54	27 01			4712 0
0030	-01 62	33 55	27 02	0 032		4712 8
0030	-01 62	33 55	27 02			4712 8
0050	-01 35	34 00	27 38	0 049		4720 2
0050	-01 35	34 00	27 38			4720 2
0075	-01 46	34 09	27 45	0 066		4720 4
0075	-01 46	34 09	27 45			4720 4
0100	-01 50	34 16	27 51	0 081		4721 5
0100	-01 50	34 16	27 51			4721 5
0125	-01 51	34 20	27 54			4723 0
0150	-01 53	34 20	27 54	0 109		4724 2
0150	-01 53	34 20	27 54			4724 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0024	02	16	960	11	71° 44′S	098° 01′W	0200	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	24	24	83	54 6	54 9	91	02	6	8	00	0			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 53	33 54	27 01	0 000		4712 4
0000	-01 53	33 54	27 01			4712 4
0010	-01 43	33 56	27 02	0 011		4714 7
0010	-01 43	33 56	27 02			4714 7
0020	-01 43	33 61	27 06	0 021		4715 5
0020	-01 43	33 61	27 06			4715 5
0030	-01 15	33 81	27 21	0 030		4721 3
0030	-01 15	33 81	27 21			4721 3
0050	-01 21	33 94	27 32	0 046		4722 1
0050	-01 21	33 94	27 32			4722 1
0075	-01 43	34 10	27 46	0 064		4720 9
0075	-01 43	34 10	27 46			4720 9
0100	-01 61	34 14	27 50	0 079		4719 7
0100	-01 61	34 14	27 50			4719 7
0150	-01 69	34 16	27 51	0 108		4721 5
0150	-01 69	34 16	27 51			4721 5
0200	-01 62	34 20	27 54	0 136		4725 7
0200	-01 62	34 20	27 54			4725 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0025	02	16	960	16	71° 48′S	096° 50′W	0241	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	24	24	82	55 9	56 0	84	01	4	2	00	0			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 66	33 74	27 17	0 000		4711 2
0000	-01 66	33 74	27 17			4711 2
0010	-01 58	33 75	27 18	0 009		4713 1
0010	-01 58	33 75	27 18			4713 1
0020	-01 57	33 82	27 24	0 018		4714 2
0020	-01 57	33 82	27 24			4714 2
0030	-01 60	33 89	27 29	0 026		4714 6
0030	-01 60	33 89	27 29			4714 6
0050	-01 55	33 98	27 36	0 041		4717 0
0050	-01 55	33 98	27 36			4717 0
0075	-01 62	34 07	27 44	0 058		4717 7
0075	-01 62	34 07	27 44			4717 7
0100	-01 67	34 09	27 46	0 074		4718 5
0100	-01 67	34 09	27 46			4718 5
0125	-01 63	34 14	27 50			4720 9
0150	-01 68	34 18	27 53	0 103		4721 7
0150	-01 68	34 18	27 53			4721 7
0175	-01 66	34 21	27 55			4723 7
0200	-01 67	34 23	27 57	0 130		4725 1
0200	-01 67	34 23	27 57			4725 1
0250	-01 24	34 28	27 60	0 155		4735 0
0250	-01 24	34 28	27 60			4735 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0026	02	18	960	08	71° 47′S	097° 50′W	0896	06

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	23	24	89	54 7	55 3	86	02	6	8	00	0			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 61	33 54	27 01	0 000		4711 1
0000	-01 61	33 54	27 01			4711 1
0010	-01 61	33 53	27 00	0 011		4711 7
0010	-01 61	33 53	27 00			4711 7
0020	-01 71	33 54	27 01	0 021		4710 7
0020	-01 71	33 54	27 01			4710 7
0030	-01 25	33 71	27 14	0 031		4719 3
0030	-01 25	33 71	27 14			4719 3
0050	-01 40	34 00	27 38	0 048		4719 4
0050	-01 40	34 00	27 38			4719 4
0075	-01 60	34 10	27 46	0 064		4718 2
0075	-01 60	34 10	27 46			4718 2
0100	-01 56	34 13	27 49	0 079		4720 4
0100	-01 56	34 13	27 49			4720 4
0150	-01 69	34 16	27 51	0 109		4721 5
0150	-01 69	34 16	27 51			4721 5
0200	-01 64	34 21	27 55	0 136		4725 5
0200	-01 64	34 21	27 55			4725 5
0250	-01 28	34 27	27 59	0 162		4734 4
0250	-01 28	34 27	27 59			4734 4
0300	-00 40	34 38	27 65	0 186		4751 5
0300	-00 40	34 38	27 65			4751 5
0350	00 04	34 48	27 71			4761 6
0400	00 36	34 53	27 73	0 227		4769 7
0400	00 36	34 53	27 73			4769 7
0450	00 69	34 60	27 77			4777 9
0500	00 87	34 62	27 77	0 263		4783 7
0500	00 87	34 62	27 77			4783 7
0550	01 00	34 66	27 79			4788 8
0600	01 03	34 66	27 79	0 297		4792 2
0600	01 03	34 66	27 79			4792 2

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0027	02	23	960	18	71° 44S	098° 18W	0494	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	31	24	67	50 0	50 4	91	02	6	6	00	0			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 58	33 66	27 11	0 000		4712 1
0000	-01 58	33 66	27 11			4712 1
0010	-01 59	33 65	27 10	0 010		4712 5
0010	-01 59	33 65	27 10			4712 5
0020	-01 64	33 67	27 12	0 019		4712 4
0020	-01 64	33 67	27 12			4712 4
0030	-01 61	33 72	27 16	0 029		4713 7
0030	-01 61	33 72	27 16			4713 7
0050	-01 41	33 88	27 28	0 046		4718 7
0050	-01 41	33 88	27 28			4718 7
0075	-01 50	34 10	27 46	0 064		4719 8
0075	-01 50	34 10	27 46			4719 8
0100	-01 59	34 15	27 50	0 079		4720 0
0100	-01 59	34 15	27 50			4720 0
0150	-01 57	34 21	27 55	0 107		4723 6
0150	-01 57	34 21	27 55			4723 6
0200	-01 47	34 25	27 58	0 133		4728 3
0200	-01 47	34 25	27 58			4728 3
0250	-01 28	34 27	27 59	0 158		4734 4
0300	-00 86	34 34	27 63	0 182		4744 2
0300	-00 86	34 34	27 63			4744 2
0400	00 65	34 60	27 77	0 222		4774 4
0400	00 65	34 60	27 77			4774 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0028	02	24	960	00	71° 54′S	099° 28′W	1006	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	67	51 1	51 4	95	71	6	4	00	0			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 60	33 58	27 04	0 000		4711 5
0000	-01 60	33 58	27 04			4711 5
0010	-01 62	33 58	27 04	0 010		4711 7
0010	-01 62	33 58	27 04			4711 7
0020	-01 71	33 57	27 04	0 021		4710 9
0020	-01 71	33 57	27 04			4710 9
0030	-01 69	33 58	27 04	0 031		4711 8
0030	-01 69	33 58	27 04			4711 8
0050	-01 72	33 63	27 09	0 051		4712 8
0050	-01 72	33 63	27 09			4712 8
0075	-01 53	33 85	27 26	0 073		4718 2
0075	-01 53	33 85	27 26			4718 2
0100	-01 46	34 12	27 48	0 091		4722 0
0100	-01 46	34 12	27 48			4722 0
0150	-01 28	34 20	27 53	0 120		4728 1
0150	-01 28	34 20	27 53			4728 1
0200	-00 89	34 26	27 57	0 147		4737 5
0200	-00 89	34 26	27 57			4737 5
0250	-00 84	34 31	27 61	0 172		4741 4
0300	-00 56	34 39	27 66	0 195		4749 1
0300	-00 56	34 39	27 66			4749 1
0400	00 69	34 61	27 77	0 234		4775 0
0400	00 69	34 61	27 77			4775 0
0500	01 08	34 69	27 81	0 266		4787 1
0500	01 08	34 69	27 81			4787 1

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0029	02	27	960	19	71° 18′S	100° 18′W	0457	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	67	50 1	51 1	81	46	0	6	00	0			5		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 68	32 95	26 53	0 000		4707 5
0000	-01 68	32 95	26 53			4707 5
0010	-01 66	32 97	26 55	0 015		4708 5
0010	-01 66	32 97	26 55			4708 5
0020	-01 73	33 39	26 89	0 028		4709 8
0020	-01 73	33 39	26 89			4709 8
0030	-01 70	34 01	27 39	0 038		4713 5
0030	-01 70	34 01	27 39			4713 5
0050	-01 73	34 15	27 51	0 050		4714 9
0050	-01 73	34 15	27 51			4714 9
0075	-01 70	34 18	27 53	0 065		4717 0
0075	-01 70	34 18	27 53			4717 0
0100	-01 60	34 22	27 56	0 078		4720 2
0100	-01 60	34 22	27 56			4720 2
0150	-01 29	34 28	27 60	0 104		4728 3
0150	-01 29	34 28	27 60			4728 3
0200	-00 89	34 34	27 63	0 128		4737 8
0200	-00 89	34 34	27 63			4737 8
0250	-00 27	34 45	27 70	0 149		4750 8
0300	00 28	34 55	27 75	0 168		4762 6
0300	00 28	34 55	27 75			4762 6
0400	01 19	34 71	27 82	0 201		4782 9
0400	01 19	34 71	27 82			4782 9
0450	01 19	34 72	27 83			4785 9

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00650	0030	02	29	960	06	68° 47′S	091° 11′W	2560	19

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
06	18	24	79	00 1	50 3	94	02	6	7	03	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 18	32 65	26 28	0 000		4714 1
0000	-01 18	32 65	26 28			4714 1
0010	-01 15	32 65	26 28	0 018		4715 1
0010	-01 15	32 65	26 28			4715 1
0020	-01 19	32 73	26 34	0 035		4715 4
0020	-01 19	32 73	26 34			4715 4
0030	-01 24	32 99	26 55	0 051		4716 4
0030	-01 24	32 99	26 55			4716 4
0050	-01 56	33 93	27 32	0 073		4716 6
0050	-01 56	33 93	27 32			4716 6
0075	-01 22	34 13	27 48	0 090		4724 3
0075	-01 22	34 13	27 48			4724 3
0100	-00 11	34 28	27 55	0 105		4743 6
0100	-00 11	34 28	27 55			4743 6
0150	00 78	34 42	27 61	0 130		4760 7
0150	00 78	34 42	27 61			4760 7
0200	01 21	34 51	27 66	0 154		4770 4
0200	01 21	34 51	27 66			4770 4
0250	01 42	34 56	27 68	0 175		4776 7
0300	01 58	34 60	27 71	0 196		4782 2
0300	01 58	34 60	27 71			4782 2
0400	01 77	34 66	27 74	0 236		4791 2
0400	01 77	34 66	27 74			4791 2
0500	01 84	34 71	27 77	0 273		4798 4
0500	01 84	34 71	27 77			4798 4
0600	01 81	34 72	27 78	0 308		4803 9
0600	01 81	34 72	27 78			4803 9
0700	01 80	34 74	27 80			4809 8
0800	01 66	34 74	27 81	0 376		4813 7
0800	01 66	34 74	27 81			4813 7
1000	01 55	34 75	27 83	0 441		4824 0
1000	01 55	34 75	27 83			4824 0
1200	01 41	34 75	27 84	0 504		4833 9
1200	01 41	34 75	27 84			4833 9
1500	01 16	34 74	27 85	0 596		4848 0
1500	01 16	34 74	27 85			4848 0
1900	00 94	34 73	27 85			4868 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0031	03	02	960	04	67° 45′S	091° 38′W	4389	18

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	09	24	96	51 0	51 7	85	03	6	8	03	3			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	00 81	33 69	27 03	0 000	7 73	4749 1
0000	00 81	33 69	27 03		7 73	4749 1
0008	00 82	33 68	27 02		7 55	4749 7
0010	00 81	33 68	27 02	0 010	7 72	4749 6
0017	00 79	33 68	27 02		8 02	4749 7
0020	00 79	33 68	27 02	0 021	7 88	4749 9
0026	00 79	33 68	27 02		7 69	4750 3
0030	00 79	33 68	27 02	0 031	7 73	4750 5
0043	00 79	33 68	27 02		7 90	4751 3
0050	00 91	33 73	27 05	0 052	8 10	4753 7
0064	00 96	33 80	27 11		8 36	4755 6
0075	00 74	33 82	27 14	0 077	8 43	4753 0
0086	00 54	33 84	27 16		8 43	4750 8
0100	00 18	33 90	27 23	0 099	8 24	4746 4
0129	-00 04	34 03	27 35		7 65	4745 3
0150	00 52	34 12	27 39	0 137	6 91	4755 5
0173	01 02	34 21	27 43		6 24	4764 7
0200	01 30	34 28	27 47	0 171	5 83	4770 8
0250	01 70	34 39	27 53	0 201	5 23	4780 1
0265	01 78	34 42	27 55		5 09	4782 3
0300	01 85	34 46	27 57	0 228	4 91	4785 6
0362	01 95	34 51	27 61		4 63	4790 9
0400	02 00	34 53	27 62	0 280	4 38	4794 0
0462	02 04	34 57	27 65		4 30	4798 4
0500	02 04	34 60	27 67	0 328	4 56	4800 8
0533	02 04	34 62	27 69		4 70	4802 9
0600	02 04	34 65	27 71	0 372	4 26	4807 0
0712	02 03	34 68	27 73		4 05	4813 6
0800	01 99	34 70	27 75	0 453	4 78	4818 4
0894	01 93	34 71	27 77		5 09	4823 1
1000	01 86	34 72	27 78	0 529	4 49	4828 4
1076	01 80	34 73	27 79		4 30	4832 1
1200	01 70	34 73	27 80	0 602	4 89	4838 0
1358	01 58	34 73	27 81		5 36	4845 7
1500	01 48	34 73	27 82	0 707	5 24	4852 6
1838	01 26	34 74	27 84		4 94	4869 5

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0032	03	02	960	12	66° 47′S	092° 32′W	4663	19

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	18	24	89	50 6	51 0	91	44	0	8	03	3			5		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	00 76	33 66	27 01	0 000	8 22	4748 2
0000	00 76	33 66	27 01		8 22	4748 2
0010	00 76	33 66	27 01	0 011	7 65	4748 8
0010	00 76	33 66	27 01		7 65	4748 8
0020	00 72	33 66	27 01	0 021	7 78	4748 8
0020	00 72	33 66	27 01		7 78	4748 8
0030	00 79	33 66	27 00	0 032	7 61	4750 4
0030	00 79	33 66	27 00		7 61	4750 4
0050	00 80	33 68	27 02	0 053	7 59	4751 8
0050	00 80	33 68	27 02		7 59	4751 8
0075	-01 07	33 81	27 21	0 077	7 82	4725 3
0075	-01 07	33 81	27 21		7 82	4725 3
0100	-01 28	33 87	27 27	0 098	7 77	4723 7
0100	-01 28	33 87	27 27		7 77	4723 7
0150	00 34	34 08	27 37	0 136	6 67	4752 6
0150	00 34	34 08	27 37		6 67	4752 6
0200	01 41	34 25	27 44	0 170	5 46	4772 3
0200	01 41	34 25	27 44		5 46	4772 3
0250	01 71	34 34	27 49	0 202	4 94	4780 0
0300	01 91	34 42	27 54	0 232	4 56	4786 3
0300	01 91	34 42	27 54		4 56	4786 3
0400	02 01	34 53	27 62	0 285	4 19	4794 1
0400	02 01	34 53	27 62		4 19	4794 1
0500	02 08	34 58	27 65	0 334	4 01	4801 3
0500	02 08	34 58	27 65		4 01	4801 3
0579	02 08	34 62	27 68		4 01	4806 2
0600	02 08	34 63	27 69	0 380	4 02	4807 5
0773	02 04	34 69	27 74		4 13	4817 4
0800	02 03	34 70	27 75	0 463	4 15	4818 9
0967	01 93	34 72	27 77		4 25	4827 5
1000	01 90	34 72	27 78	0 540	4 27	4829 0
1162	01 75	34 73	27 80		4 32	4836 5
1200	01 72	34 73	27 80	0 613	4 31	4838 3
1457	01 55	34 74	27 82		4 25	4851 1
1500	01 52	34 74	27 82	0 718	4 25	4853 3
1951	01 21	34 73	27 84		4 29	4875 4

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00650	0033	03	02	960	21	65° 51′S	093° 22′W	4681	19

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
10	15	24	83	00 7	00 3	94	71	0	8	03	3			5		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	01 61	33 71	26 99	0 000	7 64	4761 0
0000	01 61	33 71	26 99		7 64	4761 0
0009	01 62	33 72	27 00		7 42	4761 7
0010	01 62	33 72	27 00	0 011	7 42	4761 8
0019	01 59	33 72	27 00		7 42	4761 9
0020	01 59	33 72	27 00	0 021	7 42	4762 0
0028	01 60	33 71	26 99		7 39	4762 5
0030	01 62	33 71	26 99	0 032	7 39	4762 9
0047	01 62	33 72	27 00		7 41	4764 0
0050	01 57	33 73	27 01	0 054	7 44	4763 5
0071	01 23	33 81	27 10		7 53	4760 1
0075	01 18	33 84	27 12	0 079	7 51	4759 7
0094	00 95	33 96	27 23		7 39	4757 9
0100	00 88	33 97	27 25	0 101	7 37	4757 3
0142	00 63	34 03	27 31		7 11	4756 3
0150	00 64	34 04	27 32	0 141	7 04	4756 9
0189	00 82	34 10	27 36		6 61	4762 2
0200	01 01	34 13	27 37	0 178	6 34	4765 8
0250	01 71	34 25	27 42	0 213	5 34	4779 6
0284	02 00	34 32	27 45		4 86	4786 2
0300	02 01	34 34	27 46	0 246	4 76	4787 4
0380	02 05	34 43	27 53		4 36	4793 1
0400	02 07	34 45	27 55	0 306	4 30	4794 7
0478	02 12	34 51	27 59		4 11	4800 3
0500	02 13	34 52	27 60	0 361	4 08	4801 8
0566	02 15	34 56	27 63		4 02	4806 2
0600	02 15	34 57	27 64	0 412	4 00	4808 2
0755	02 12	34 64	27 70		3 97	4817 3
0800	02 11	34 66	27 71	0 504	3 99	4819 9
0945	02 06	34 72	27 76		4 06	4828 1
1000	02 03	34 72	27 77	0 586	4 10	4830 9
1135	01 94	*34 57	*27 65		4 19	*4837 0
1200	01 90	34 73	27 79	0 662	4 22	4841 0
1423	01 74	34 74	27 81		4 30	4851 9
1500	01 69	34 74	27 81	0 772	4 32	4855 7
1911	01 39	34 74	27 83		4 42	4875 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0034	03	03	960	06	64° 55′	094° 18′W	4709	18

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	27	24	85	02 0	01 6	92	02	6	2	03	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	02 19	33 79	27 01	0 000	7 33	4769 8
0000	02 19	33 79	27 01		7 33	4769 8
0010	02 19	33 80	27 02	0 011	7 31	4770 5
0010	02 19	33 80	27 02		7 31	4770 5
0020	02 15	33 79	27 01	0 021	7 30	4770 4
0020	02 15	33 79	27 01		7 30	4770 4
0029	02 16	33 79	27 01		7 31	4771 1
0030	02 17	33 79	27 01	0 032	7 31	4771 3
0049	02 18	33 80	27 02		7 32	4772 6
0050	02 18	33 80	27 02	0 053	7 32	4772 7
0073	01 87	33 82	27 06		7 34	4769 6
0075	01 76	33 83	27 08	0 078	7 36	4768 2
0098	00 78	33 93	27 22		7 50	4755 5
0100	00 78	33 94	27 23	0 101	7 50	4755 6
0146	00 75	34 02	27 30		7 42	4758 3
0150	00 75	34 02	27 30	0 142	7 39	4758 5
0195	00 77	34 04	27 31		6 92	4761 6
0200	00 85	34 05	27 31	0 181	6 81	4763 1
0250	01 55	34 18	27 37	0 219	5 83	4777 0
0294	01 95	34 27	27 41		5 18	4785 8
0300	01 96	34 28	27 42	0 254	5 12	4786 4
0392	02 11	34 41	27 51		4 46	4794 6
0400	02 11	34 42	27 52	0 317	4 44	4795 1
0491	02 11	34 48	27 57		4 20	4800 8
0500	02 12	34 49	27 58	0 374	4 17	4801 5
0526	02 16	34 50	27 58		4 08	4803 7
0600	02 19	34 55	27 62	0 427	4 02	4808 7
0702	02 19	34 60	27 66		3 97	4815 0
0800	02 12	34 63	27 69	0 523	3 98	4819 9
0879	02 08	34 65	27 71		4 00	4824 1
1000	02 07	34 68	27 73	0 611	4 07	4831 3
1057	02 06	34 69	27 74			4834 6
1200	01 98	34 71	27 76	0 693	4 17	4842 0
1329	01 90	34 73	27 79		4 23	4848 6
1500	01 78	34 73	27 79	0 809	4 30	4857 0
1804	01 55	34 73	27 81		4 40	4871 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0035	03	03	960	12	64° 09.5′	095° 02.W′	4755	18

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	21	24	89	02 2	01 7	91	01	6	4	24	4			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	02 45	33 83	27 02	0 000	7 77	4773 7
0000	02 45	33 83	27 02		7 77	4773 7
0009	02 56	33 83	27 01		7 22	4775 9
0010	02 56	33 83	27 01	0 011	7 22	4775 9
0018	02 56	33 83	27 01		7 23	4776 4
0020	02 55	33 83	27 01	0 021	7 23	4776 4
0027	02 54	33 83	27 01		7 22	4776 6
0030	02 55	33 83	27 01	0 032	7 17	4777 0
0045	02 57	33 83	27 01		7 05	4778 2
0050	02 55	33 84	27 02	0 053	7 07	4778 2
0067	02 50	33 87	27 05		7 17	4778 6
0075	02 22	33 90	27 10	0 078	7 27	4775 2
0090	01 79	33 95	27 17		7 38	4770 0
0100	01 60	33 97	27 20	0 101	7 35	4767 9
0135	01 13	34 01	27 26		7 22	4763 2
0150	01 04	34 02	27 28	0 143	7 17	4762 8
0180	00 97	34 04	27 30		6 98	4763 7
0200	01 12	34 07	27 31	0 183	6 71	4767 2
0250	01 46	34 15	27 35	0 221	6 05	4775 5
0271	01 60	34 19	27 38		5 79	4779 0
0300	01 83	34 25	27 41	0 257	5 40	4784 4
0363	02 15	34 36	27 47		4 74	4793 2
0400	02 19	34 40	27 50	0 322	4 49	4796 2
0458	02 21	34 44	27 53		4 25	4800 1
0500	02 18	34 46	27 55	0 381	4 20	4802 2
0508	02 17	34 46	27 55		4 19	4802 6
0600	02 13	34 52	27 60	0 436	4 08	4807 7
0678	02 10	34 56	27 63		4 02	4812 1
0800	02 09	34 61	27 67	0 536	4 03	4819 4
0850	02 08	34 63	27 69		4 03	4822 3
1000	02 06	34 67	27 72	0 625	4 02	4831 1
1024	02 05	34 68	27 73		4 02	4832 5
1200	02 01	34 71	27 76	0 708	4 10	4842 5
1290	01 97	34 72	27 77		4 14	4847 3
1500	01 85	34 73	27 79	0 826	4 22	4858 0
1762	01 62	34 73	27 81		4 31	4870 2

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0036	03	03	960	20	63° 12.5′	095° 48.W′	4938	14

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	27	24	97	52 0	51 3	89	03	4	6	30	3			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	02 98	33 90	27 03	0 000	7 15	4781 6
0000	02 98	33 90	27 03		7 15	4781 6
0008	03 02	33 90	27 03		7 12	4782 7
0010	03 02	33 90	27 03	0 010	7 13	4782 8
0016	03 02	33 90	27 03		7 16	4783 1
0020	03 01	33 90	27 03	0 021	7 16	4783 2
0024	03 01	33 90	27 03		7 16	4783 5
0030	03 03	33 90	27 03	0 031	7 16	4784 1
0040	03 04	33 90	27 03		7 16	4784 9
0050	03 03	33 90	27 03	0 052	7 14	4785 3
0059	03 03	33 90	27 03		7 14	4785 8
0075	02 70	33 93	27 08	0 078	7 22	4782 2
0078	02 62	33 93	27 09		7 23	4781 2
0100	01 58	33 95	27 18	0 101	7 29	4767 5
0118	01 08	33 97	27 23		7 33	4761 3
0150	01 11	34 00	27 26	0 144	7 07	4763 8
0158	01 13	34 01	27 26		7 00	4764 6
0200	01 28	34 08	27 31	0 184	6 56	4769 6
0239	01 45	34 13	27 34		6 22	4774 7
0250	01 56	34 14	27 34	0 223	6 16	4777 0
0300	01 97	34 14	27 31	0 261	6 09	4785 9
0323		34 19			5 74	
0368	02 24	34 36	27 46		4 57	4794 8
0400	02 25	34 38	27 48	0 332	4 49	4797 0
0411	02 25	34 39	27 49		4 46	4797 7
0496	02 25	34 47	27 55		4 19	4803 1
0500	02 25	34 47	27 55	0 392	4 18	4803 3
0600	02 21	34 53	27 60	0 447	4 02	4808 9
0624	02 20	34 54	27 61		4 00	4810 2
0760	02 18	34 61	27 67		4 02	4818 3
0800	02 17	34 63	27 68	0 546	4 02	4820 7
0971	02 12				4 02	
1000	02 11	34 64	27 70	0 637	4 07	4831 7
1200	02 02	34 66	27 72	0 727	4 68	4842 4
1369	01 92	34 68	27 74		5 61	4851 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0037	03	04	960	02	62° 43′S	095° 35′W	4938	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	23	24	99	02 1	01 6	91	02	6	8	24	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	03 69	33 95	27 00	0 000	7 16	4791 8
0000	03 69	33 95	27 00		7 16	4791 8
0008	03 73	33 95	27 00		6 93	4792 9
0010	03 72	33 95	27 00	0 011	6 95	4792 9
0015	03 70	33 94	27 00		7 00	4792 8
0020	03 71	33 94	27 00	0 021	7 02	4793 3
0023	03 72	33 94	26 99		7 02	4793 6
0030	03 72	33 94	26 99	0 032	7 00	4794 0
0039	03 73	33 94	26 99		6 99	4794 7
0050	03 59	33 93	27 00	0 054	6 99	4793 3
0058	03 48	33 93	27 01		6 99	4792 3
0075	03 25	33 92	27 02	0 080	7 05	4790 0
0078	03 19	33 92	27 03		7 06	4789 3
0100	02 38	33 97	27 14	0 105	7 05	4779 3
0117	01 98	34 00	27 19		7 04	4774 6
0150	01 86	34 03	27 23	0 150	6 87	4775 0
0157	01 85	34 04	27 24		6 82	4775 3
0200	02 06	34 10	27 27	0 192	6 36	4781 1
0237	02 16	34 14	27 29		6 01	4785 0
0250	02 14	34 15	27 30	0 232	5 92	4785 5
0300	02 11	34 20	27 34	0 271	5 55	4788 2
0320	02 11	34 22	27 36		5 40	4789 5
0400	02 19	34 31	27 43	0 342	4 78	4795 8
0409	02 21	34 32	27 43		4 71	4796 7

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0038	03	04	960	07	62° 13S′	095° 22W′	4938	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
12	24	24	99	02 0	01 6	92	02	6	8	24	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	03 54	33 93	27 00	0 000	7 05	4789 7
0000	03 54	33 93	27 00		7 05	4789 7
0009	03 57	33 93	27 00		7 07	4790 6
0010	03 56	33 93	27 00	0 011	7 08	4790 5
0018	03 50	33 93	27 01		7 10	4790 2
0020	03 51	33 93	27 01	0 021	7 09	4790 4
0028	03 53	33 93	27 00		7 08	4791 2
0030	03 54	33 93	27 00	0 032	7 09	4791 4
0047	03 55	33 93	27 00		7 12	4792 6
0050	03 53	33 93	27 00	0 053	7 12	4792 5
0070	03 40	33 93	27 02		7 11	4791 9
0075	03 05	33 94	27 06	0 079	7 09	4787 2
0093	02 06	33 98	27 17		7 04	4774 3
0100	01 96	33 98	27 18	0 103	7 04	4773 2
0140	01 55	34 00	27 23		7 03	4769 7
0150	01 52	34 00	27 23	0 147	7 02	4769 8
0187	01 48	34 02	27 25		6 91	4771 5
0200	01 55	34 04	27 26	0 189	6 79	4773 4
0250	01 79	34 11	27 30	0 230	6 33	4780 2
0281	01 92	34 15	27 32		6 03	4784 1
0300	02 01	34 18	27 34	0 268	5 79	4786 7
0376	02 26	34 28	27 40		5 04	4795 3
0400	02 30	34 31	27 42	0 341	4 86	4797 4
0472	02 31	34 38	27 47		4 51	4802 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0039	03	04	960	12	61° 41′S	095° 08′W	5029	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ψ	WET ψ			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	27	24	00	02 4	01 8	89	02	6	8	24	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	03 71	33 94	27 00	0 000	7 11	4792 1
0000	03 71	33 94	27 00		7 11	4792 1
0008	03 70	33 94	27 00		7 05	4792 4
0010	03 69	33 94	27 00	0 011	7 05	4792 4
0016	03 67	33 93	26 99		7 04	4792 4
0020	03 68	33 94	27 00	0 021	7 02	4792 9
0024	03 68	33 94	27 00		7 00	4793 1
0030	03 70	33 94	27 00	0 032	7 01	4793 7
0040	03 71	33 93	26 99		7 02	4794 4
0050	03 70	33 93	26 99	0 054	7 02	4794 9
0059	03 69	33 93	26 99		7 02	4795 3
0075	03 28	33 93	27 03	0 080	7 09	4790 5
0080	03 14	33 93	27 04		7 11	4788 8
0100	02 34	33 95	27 13	0 105	7 10	4778 6
0120	01 79	33 97	27 19		7 10	4771 9
0150	01 49	33 98	27 21	0 151	7 16	4769 3
0161	01 42	33 98	27 22		7 16	4768 9
0200	01 45	34 01	27 24	0 193	7 02	4771 8
0243	01 49	34 05	27 27		6 73	4775 1
0250	01 55	34 06	27 27	0 235	6 64	4776 5
0300	01 89	34 14	27 31	0 275	6 02	4784 8
0328	02 04	34 18	27 33		5 73	4788 8
0400	02 29	34 27	27 39	0 350	5 14	4797 1
0422	02 32	34 30	27 41		5 01	4799 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0040	03	04	960	16	61° 11′S	094° 55′W	4983	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	27	24	00	02 4	01 8	89	02	6	8	24	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	04 78	33 94	26 88	0 000	7 00	4806 8
0000	04 78	33 94	26 88		7 00	4806 8
0009	04 80	33 94	26 88		6 83	4807 7
0010	04 79	33 94	26 88	0 012	6 84	4807 6
0017	04 74	33 94	26 89		6 88	4807 3
0020	04 74	33 94	26 89	0 024	6 88	4807 5
0026	04 75	33 93	26 88		6 88	4807 9
0030	04 76	33 93	26 88	0 035	6 88	4808 3
0043	04 77	33 94	26 88		6 88	4809 3
0050	04 78	33 94	26 88	0 059	6 89	4809 8
0065	04 79	33 95	26 89		6 93	4810 9
0075	03 94	33 96	26 99	0 087	6 97	4799 8
0086	03 19	33 97	27 07		7 00	4790 0
0100	02 74	33 98	27 12	0 113	7 00	4784 5
0130	02 10	33 99	27 18		6 99	4777 1
0150	02 02	34 00	27 19	0 159	6 93	4777 2
0174	01 96	34 01	27 20		6 84	4777 8
0200	02 02	34 03	27 22	0 203	6 65	4780 3
0250	02 10	34 08	27 25	0 246	6 30	4784 6
0263	02 12	34 09	27 26		6 22	4785 7
0300	02 13	34 13	27 29	0 287	6 00	4788 2
0353	02 18	34 18	27 32		5 72	4792 3
0400	02 27	34 20	27 33	0 366	5 51	4796 5
0449	02 41	34 21	27 33		5 34	4801 5

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0041	03	05	960	06	58° 31′S	093° 20′W	3658	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	27	24	96	06 1	04 4	76	02	6	8	26	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	05 26	33 99	26 87	0 000	6 93	4813 6
0000	05 26	33 99	26 87		6 93	4813 6
0008	05 27	33 99	26 87		6 82	4814 2
0010	05 26	33 99	26 87	0 012	6 83	4814 1
0016	05 25	33 98	26 86		6 85	4814 3
0020	05 26	33 99	26 87	0 024	6 84	4814 7
0022	05 26	33 99	26 87		6 83	4814 9
0030	05 28	33 99	26 86	0 036	6 82	4815 6
0036	05 29	33 99	26 86		6 82	4816 1
0050	05 31	33 98	26 85	0 060	6 86	4817 2
0055	05 31	33 98	26 85		6 86	4817 5
0073	05 27	33 99	26 87		6 82	4818 0
0075	05 21	34 00	26 88	0 090	6 82	4817 4
0100	04 61	34 06	27 00	0 118	6 79	4811 0
0110	04 47	34 08	27 03		6 76	4809 7
0147	04 45	34 11	27 05		6 58	4811 8
0150	04 43	34 11	27 06	0 171	6 58	4811 7
0200	04 14	34 11	27 09	0 222	6 48	4810 7
0224	04 02	34 11	27 10		6 42	4810 4
0250	03 87	34 12	27 12	0 271	6 34	4809 9
0300	03 69	34 13	27 15	0 319	6 18	4810 4
0303	03 68	34 13	27 15		6 17	4810 5
0390	03 71	34 16	27 17		5 92	4816 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00650	0042	03	05	960	16	56° 32.5′	092° 28.W′	5121	04

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
10	27	24	00	06 7	05 0	77	01	6	8	28	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ $\Sigma\Delta D$	O_2 ml/l ↓	V_f ↓
0000	06 98	34 12	26 75	0 000	6 73	4836 8
0000	06 98	34 12	26 75		6 73	4836 8
0009	06 99	34 11	26 74		6 50	4837 4
0010	06 98	34 11	26 74	0 013	6 49	4837 3
0018	06 94	34 11	26 75		6 49	4837 3
0020	06 95	34 11	26 75	0 026	6 52	4837 5
0026	06 98	34 12	26 75		6 59	4838 3
0030	06 98	34 12	26 75	0 039	6 60	4838 5
0044	06 99	34 12	26 75		6 62	4839 5
0050	06 99	34 12	26 75	0 066	6 59	4839 8
0066	06 99	34 11	26 74		6 55	4840 8
0075	06 99	34 11	26 74	0 098	6 58	4841 3
0088	06 99	34 12	26 75		6 61	4842 1
0100	06 48	34 13	26 83	0 131	6 61	4836 2
0133	05 56	34 14	26 95		6 61	4826 1
0150	05 50	34 16	26 97	0 190	6 59	4826 4
0177	05 41	34 19	27 01		6 56	4826 9
0200	05 37	34 19	27 01	0 244	6 54	4827 7
0250	05 25	34 19	27 03	0 298	6 52	4829 1
0266	05 20	34 19	27 03		6 52	4829 4
0300	05 04	34 17	27 03	0 351	6 57	4829 2
0356	04 86	34 16	27 05		6 60	4830 0
0400	04 78	34 17	27 06	0 457	6 56	4831 6
0446	04 77	34 19	27 08		6 47	4834 2

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0043	03	06	960	00	55° 03′S	091° 51′W	5121	15

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	32	24	02	06 7	05 2	80	51	0	8	28	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	07 86	34 17	26 66	0 000	6 44	4848 2
0000	07 86	34 17	26 66		6 44	4848 2
0008	07 86	34 17	26 66		6 44	4848 7
0010	07 85	34 17	26 67	0 014	6 43	4848 7
0016	07 83	34 17	26 67		6 41	4848 8
0020	07 85	34 17	26 67	0 028	6 43	4849 2
0023	07 86	34 17	26 66		6 44	4849 5
0030	07 85	34 17	26 67	0 042	6 45	4849 8
0039	07 85	34 17	26 67		6 45	4850 4
0050	07 86	34 17	26 66	0 069	6 44	4851 2
0059	07 86	34 17	26 66		6 44	4851 7
0075	07 84	34 17	26 67	0 104	6 44	4852 4
0078	07 84	34 17	26 67		6 44	4852 6
0100	06 86	34 18	26 81	0 137	6 56	4841 4
0118	06 30	34 19	26 90		6 61	4835 2
0150	05 90	34 22	26 97	0 197	6 55	4831 9
0158	05 83	34 23	26 99		6 54	4831 5
0200	05 75	34 23	27 00	0 252	6 51	4833 0
0239	05 65	34 23	27 01		6 49	4834 0
0250	05 60	34 23	27 02	0 306	6 49	4833 9
0300	05 42	34 21	27 02	0 361	6 50	4834 4
0321	05 36	34 21	27 03		6 50	4834 9
0398	05 21	34 21	27 05		6 53	4837 4
0400	05 21	34 21	27 05	0 468	6 52	4837 5
0405	05 21	34 21	27 05		6 50	4837 8
0500	05 20	34 24	27 07	0 574	6 15	4843 5
0532	05 15	34 25	27 09		6 06	4844 7
0600	04 93	34 25	27 11	0 678	5 99	4845 8
0672	04 68	34 25	27 14		5 83	4846 7
0800	04 22	34 27	27 20	0 876	5 33	4848 1
0814	04 17	34 27	27 21		5 28	4848 2
1000	03 47	34 32	27 32	1 054	4 77	4849 7
1038	03 35	34 33	27 34		4 68	4850 3
1200	02 94	34 39	27 43	1 212	4 36	4854 4
1469	02 61	34 52	27 56		4 02	4866 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0044	03	06	960	12	53° 05′S	091° 04′W	4938	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
09	34	24	02	10 1	08 6	81	02	6	8	34	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	08 05	34 15	26 62	0 000	6 60	4850 5
0000	08 05	34 15	26 62		6 60	4850 5
0008	08 04	34 16	26 63		6 36	4850 9
0010	08 04	34 16	26 63	0 014	6 38	4851 0
0015	08 03	34 15	26 62		6 45	4851 1
0020	08 01	34 15	26 63	0 028	6 55	4851 2
0023	08 01	34 15	26 63		6 59	4851 4
0030	08 03	34 15	26 62	0 043	6 54	4852 0
0038	08 05	34 15	26 62		6 48	4852 8
0050	08 05	34 15	26 62	0 071	6 39	4853 5
0056	08 05	34 15	26 62		6 37	4853 8
0075	08 05	34 15	26 62	0 107	6 42	4854 9
0076	08 03	34 15	26 62		6 42	4854 7
0100	06 74	34 17	26 82	0 141	6 53	4839 8
0114	06 20	34 18	26 90		6 56	4833 6
0150	05 58	34 20	26 99	0 199	6 53	4827 6
0153	05 54	34 20	27 00		6 53	4827 3
0200	05 42	34 20	27 01	0 254	6 50	4828 4
0232	05 34	34 20	27 02		6 49	4829 3
0250	05 29	34 20	27 03	0 307	6 49	4829 7
0300	05 20	34 19	27 03	0 361	6 50	4831 4
0316	05 18	34 19	27 03		6 50	4832 1
0400	05 18	34 21	27 05	0 468	6 34	4837 1
0410	05 18	34 21	27 05		6 31	4837 7

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0045	03	08	960	02	47° 07.5′	089° 01W′	5014	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	36	24	03	12 0	11 1	90	02	6	8	34	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	11 10	34 04	26 03	0 000	6 11	4886 9
0000	11 10	34 04	26 03		6 11	4886 9
0010	11 10	34 04	26 03	0 020	6 11	4887 5
0010	11 10	34 04	26 03		6 11	4887 5
0020	11 05	34 04	26 04	0 040	6 14	4887 5
0020	11 05	34 04	26 04		6 14	4887 5
0030	11 01	34 04	26 05	0 060	6 12	4887 7
0030	11 01	34 04	26 05		6 12	4887 7
0050	10 71	34 06	26 12	0 099	6 17	4885 4
0050	10 71	34 06	26 12		6 17	4885 4
0075	08 55	34 09	26 50	0 142	6 66	4860 9
0075	08 55	34 09	26 50		6 66	4860 9
0100	06 43	34 10	26 81	0 177	6 64	4835 5
0100	06 43	34 10	26 81		6 64	4835 5
0150	05 65	34 15	26 95	0 237	6 59	4828 3
0150	05 65	34 15	26 95		6 59	4828 3
0200	05 35	34 19	27 01	0 292	6 49	4827 5
0200	05 35	34 19	27 01		6 49	4827 5
0250	05 38	34 24	27 05	0 346	6 19	4831 1
0300	05 40	34 26	27 06	0 398	6 05	4834 4
0300	05 40	34 26	27 06		6 05	4834 4
0400	05 12	34 25	27 09	0 501	6 22	4836 5
0400	05 12	34 25	27 09		6 22	4836 5
0500	04 90	34 21	27 08	0 605	6 26	4839 3
0500	04 90	34 21	27 08		6 26	4839 3
0587	04 67	34 24	27 13		5 98	4841 5
0600	04 63	34 24	27 14	0 707	5 91	4841 7
0783	04 06	34 28	27 23		5 01	4844 9
0800	04 01	34 29	27 24	0 897	4 95	4845 3
0979	03 54	34 35	27 34		4 31	4849 6
1000	03 48	34 36	27 35	1 069	4 23	4850 0
1176	03 07	34 45	27 46		3 69	4855 1
1200	03 04	34 46	27 47	1 220	3 64	4856 1
1472	02 73	34 56	27 58		3 23	4868 3
1500	02 70	34 57	27 59	1 415	3 23	4869 6
1968	02 21	34 63	27 68		3 28	4890 5

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0046	03	08	960	21	44° 08′S	086° 51′W	3658	15

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	02	24	10	15 8	14 5	87	02	6	8	35	4			7		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 m l/l ↓	V_f ↓
0000	13 56	33 94	25 48	0 000	5 66	4914 3
0000	13 56	33 94	25 48		5 66	4914 3
0008	13 53	33 94	25 49		5 93	4914 4
0010	13 54	33 94	25 48	0 025	5 90	4914 7
0016	13 56	33 94	25 48		5 87	4915 2
0020	13 55	33 94	25 48	0 050	5 91	4915 4
0023	13 55	33 94	25 48		5 93	4915 5
0030	13 55	33 94	25 48	0 075	5 88	4915 9
0039	13 55	33 95	25 49		5 82	4916 5
0050	11 13	34 00	25 99	0 121	6 34	4890 1
0059	09 69	34 03	26 27		6 61	4873 7
0075	08 49	34 05	26 48	0 166	6 67	4860 0
0079	08 25	34 05	26 51		6 67	4857 3
0100	07 51	34 07	26 64	0 204	6 59	4849 3
0120	07 02	34 10	26 73		6 47	4844 3
0150	06 78	34 16	26 81	0 271	6 18	4843 2
0161	06 69	34 18	26 84		6 10	4842 8
0200	06 39	34 23	26 92	0 332	6 04	4841 4
0247	06 09	34 27	26 99		5 99	4840 4
0250	06 07	34 27	26 99	0 389	5 99	4840 3
0300	05 83	34 29	27 03	0 444	5 99	4840 2
0336	05 69	34 29	27 05		5 99	4840 5
0400	05 50	34 27	27 06	0 551	6 07	4841 7
0431	05 42	34 27	27 07		6 11	4842 5
0448	*05 47	34 27	*27 06		6 24 *	4844 1
0500	05 29	34 26	27 08	0 656	6 18	4844 8
0600	05 06	34 25	27 10	0 761	5 99	4847 6
0600	05 06	34 25	27 10		5 99	4847 6
0751	04 64	34 26	27 15		5 49	4850 9
0800	04 40	34 27	27 19	0 962	5 20	4850 5
0904	03 96	34 31	27 26		4 65	4850 8
1000	03 64	34 36	27 34	1 141	4 22	4852 3
1136	03 27	34 42	27 42		3 72	4855 4
1200	03 13	34 45	27 46	1 296	3 53	4857 4
1500	02 71	34 55	27 57	1 496	2 97	4869 6
1534	02 69	34 56	27 58		2 94	4871 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0047	03	09	960	09'	42° 40′S	084° 21′W	3292	19

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
12	02	24	12	17 2	16 1	89	02	6	8	02	4			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	14 66	33 87	25 19	0 000	5 69	4925 9
0000	14 66	33 87	25 19		5 69	4925 9
0010	14 66	33 87	25 19	0 028	5 71	4926 4
0010	14 66	33 87	25 19		5 71	4926 4
0019	14 64	33 87	25 20		5 71	4926 8
0020	14 62	33 87	25 20	0 056	5 72	4926 6
0028	14 48	33 87	25 23		5 75	4925 6
0030	14 46	33 87	25 24	0 083	5 72	4925 5
0046	14 26	33 87	25 28		5 71	4924 3
0050	13 11	33 89	25 53	0 136	5 95	4912 1
0070	09 17	33 95	26 29		6 60	4867 7
0075	08 95	33 96	26 33	0 188	6 52	4865 4
0093	08 31	33 98	26 45		6 25	4858 6
0100	08 19	33 99	26 47	0 229	6 18	4857 5
0140	07 58	34 05	26 61		5 71	4852 5
0150	07 44	34 08	26 65	0 304	5 51	4851 4
0187	06 95	34 17	26 79		4 97	4847 7
0200	06 79	34 18	26 82	0 371	4 98	4846 4
0250	06 27	34 23	26 93	0 432	5 03	4842 8
0284	05 99	34 25	26 98		5 06	4841 2
0300	05 90	34 26	27 00	0 489	5 25	4841 0
0382	05 51	34 27	27 06		5 82	4840 7
0400	05 46	34 26	27 06	0 597	5 73	4841 1
0480	05 23	34 25	27 08		5 66	4842 7
0500	05 17	34 25	27 08	0 702	5 78	4843 1
0540	05 06	34 25	27 10		5 93	4844 0
0600	04 89	34 25	27 12	0 806	5 75	4845 3
0721	04 52	34 26	27 16		5 31	4847 4
0800	04 25	34 28	27 21	1 002	4 90	4848 5
0902	03 90	34 32	27 28		4 44	4849 9
1000	03 55	34 37	27 35	1 177	4 07	4851 1
1084	03 30	34 41	27 41		3 79	4852 7
1200	03 11	34 47	27 47	1 328	3 41	4857 2
1357	02 87	34 53	27 54		3 05	4863 3
1500	02 67	34 57	27 59	1 523	3 05	4869 1
1818	02 29	34 62	27 67		3 04	4882 8

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0048	03	09	960	22	41° 24′S	082° 32′W	3292	16

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	02	24	12	20 5	17 8	77	01	6	2	02	3			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 m l/l ↓	V_f ↓
0000	16 64	33 97	24 83	0 000	5 49	4946 7
0000	16 64	33 97	24 83		5 49	4946 7
0009	16 59	33 97	24 84		5 50	4946 7
0010	16 59	33 97	24 84	0 031	5 51	4946 8
0018	16 58	33 97	24 84		5 57	4947 2
0020	16 58	33 97	24 84	0 062	5 54	4947 3
0027	16 58	33 97	24 84		5 54	4947 7
0030	16 28	33 97	24 91	0 093	5 69	4944 8
0045	14 60	33 96	25 28		6 30	4928 2
0050	13 74	33 96	25 46	0 149	6 48	4919 3
0067	11 55	33 96	25 89		6 69	4895 8
0075	11 08	33 97	25 98	0 207	6 41	4890 9
0089	10 36	33 99	26 12		6 04	4883 3
0100	09 98	34 00	26 20	0 256	6 03	4879 5
0134	08 91	34 02	26 39		6 00	4868 6
0150	08 46	34 06	26 49	0 341	5 90	4864 2
0178	07 80	34 12	26 63		5 72	4857 8
0200	07 47	34 16	26 71	0 415	5 54	4855 1
0250	06 85	34 23	26 85	0 481	5 23	4850 4
0268	06 66	34 25	26 90		5 15	4849 1
0300	06 42	34 27	26 94	0 541	5 03	4847 9
0360	06 04	34 30	27 02		5 03	4846 6
0400	05 94	34 29	27 02	0 654	5 27	4847 6
0439	05 71	34 29	27 05		5 47	4846 9
0454	05 59	34 30	27 07		5 54	4846 2
0500	05 48	34 28	27 07	0 762	5 52	4847 4
0590	05 23	34 26	27 08		5 48	4849 3
0600	05 19	34 26	27 09	0 867	5 44	4849 4
0742	04 66	34 26	27 15		4 94	4850 6
0800	04 40	34 28	27 19	1 069	4 80	4850 6
0901	03 99	34 31	27 26		4 52	4851 1
1000	03 66	34 36	27 33	1 248	4 15	4852 6
1149	03 24	34 43	27 43		3 69	4855 8
1200	03 12	34 45	27 46	1 402	3 56	4857 2
1500	02 65	34 55	27 58	1 601	3 13	4868 8
1605	02 58	34 58	27 61		3 11	4874 1

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0049	03	10	960	15	39° 04.5′	080° 02.W′	4023	18

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	02	24	16	20 4	19 3	90	01	6	8	03	3			8		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	18 83	34 17	24 45	0 000	5 26	4968 8
0000	18 83	34 17	24 45		5 26	4968 8
0010	18 80	34 18	24 47	0 035	5 32	4969 2
0010	18 80	34 18	24 47		5 32	4969 2
0019	18 75	34 17	24 47		5 30	4969 2
0020	18 74	34 17	24 47	0 070	5 28	4969 2
0028	18 64	34 16	24 49		5 27	4968 6
0030	18 46	34 15	24 53	0 104	5 42	4967 0
0047	16 53	34 04	24 91		6 29	4948 6
0050	15 85	34 03	25 06	0 168	6 33	4941 8
0071	12 47	33 96	25 71		6 37	4906 5
0075	12 29	33 96	25 75	0 233	6 28	4904 7
0095	11 49	33 95	25 89		5 93	4896 7
0100	11 35	33 95	25 92	0 288	5 92	4895 4
0143	10 34	33 96	26 10		5 70	4886 2
0150	10 23	33 98	26 14	0 389	5 61	4885 4
0191	09 54	34 07	26 32		5 10	4879 9
0200	09 34	34 09	26 37	0 479	4 90	4878 1
0250	08 30	34 20	26 62	0 558	4 12	4868 7
0287	07 62	34 25	26 76		3 89	4862 5
0300	07 39	34 26	26 80	0 628	4 00	4860 4
0384	06 23	34 29	26 98		4 66	4850 5
0400	06 11	34 29	27 00	0 749	4 81	4849 9
0482	05 64	34 28	27 05		5 38	4848 5
0500	05 58	34 28	27 06	0 859	5 46	4848 7
0522	05 50	34 27	27 06		5 53	4848 9
0600	05 25	34 26	27 08	0 965	5 47	4850 2
0698	04 88	34 26	27 12		5 22	4851 0
0800	04 41	34 28	27 19	1 167	4 65	4850 7
0874	04 09	34 31	27 25		4 29	4850 8
1000	03 57	34 38	27 36	1 344	3 76	4851 4
1052	03 40	34 41	27 40		3 57	4852 2
1200	03 16	34 48	27 48	1 494	3 07	4857 9
1322	02 98	34 53	27 53		2 80	4862 8
1500	02 74	34 58	27 60	1 688	2 84	4870 2
1776	02 42	34 61	27 65		2 91	4882 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0050	03	10	960	23	38° 39′S	078° 22′W	4023	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	27	24	14	21 4	19 7	87	02	6	5	29	3			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	19 36	33 90	24 11	0 000	5 38	4972 8
0000	19 36	33 90	24 11		5 38	4972 8
0010	18 96	33 90	24 21	0 038	5 41	4969 6
0010	18 96	33 90	24 21		5 41	4969 6
0020	18 65	33 93	24 31	0 074	5 42	4967 4
0020	18 65	33 93	24 31		5 42	4967 4
0030	18 58	34 03	24 41	0 110	5 38	4967 7
0030	18 58	34 03	24 41		5 38	4967 7
0050	13 81	33 99	25 47	0 171	6 75	4920 2
0050	13 81	33 99	25 47		6 75	4920 2
0075	12 10	33 95	25 77	0 231	6 19	4902 5
0075	12 10	33 95	25 77		6 19	4902 5
0100	11 23	33 96	25 94	0 285	5 89	4894 1
0100	11 23	33 96	25 94		5 89	4894 1
0150	10 22	33 96	26 12	0 386	5 39	4885 2
0150	10 22	33 96	26 12		5 39	4885 2
0200	09 02	33 99	26 35	0 477	4 62	4873 7
0200	09 02	33 99	26 35		4 62	4873 7
0250	08 24	34 05	26 51	0 559	3 53	4867 3
0300	07 49	34 13	26 69	0 634	3 16	4861 1
0300	07 49	34 13	26 69		3 16	4861 1
0400	06 11	34 32	27 02	0 760	4 56	4850 0
0400	06 11	34 32	27 02		4 56	4850 0
0500	05 56	34 27	27 05	0 869	5 26	4848 4
0500	05 56	34 27	27 05		5 26	4848 4
0587	05 25	34 26	27 08		5 49	4849 4
0600	05 20	34 26	27 09	0 975	5 46	4849 5
0783	04 52	34 27	27 17		4 86	4851 2
0800	04 45	34 28	27 19	1 177	4 77	4851 3
0980	03 75	34 36	27 32		3 93	4852 6
1000	03 68	34 37	27 34	1 356	3 86	4852 9
1178	03 18	34 46	27 46		3 31	4856 8
1200	03 16	34 47	27 47	1 509	3 26	4857 9
1476	02 88	34 54	27 55		2 88	4870 6
1500	02 85	34 55	27 56	1 710	2 89	4871 6
1974	02 27	34 62	27 67		3 06	4891 7

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0051	03	11	960	07	38° 12.5′	076° 53.W′	4114	19

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	22	24	14	24.4	19.6	64	02	6	2	24	2			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	20.10	34.14	24.10	0.000	5.29	4980.5
0000	20.10	34.14	24.10		5.29	4980.5
0010	20.02	34.13	24.11	0.038	5.31	4980.4
0010	20.02	34.13	24.11		5.31	4980.4
0020	19.78	34.15	24.19	0.076	5.32	4978.8
0020	19.78	34.15	24.19		5.32	4978.8
0030	19.49	34.21	24.31	0.113	5.31	4976.9
0030	19.49	34.21	24.31		5.31	4976.9
0050	14.53	34.00	25.32	0.176	6.75	4927.9
0050	14.53	34.00	25.32		6.75	4927.9
0075	12.42	33.97	25.73	0.238	6.31	4906.2
0075	12.42	33.97	25.73		6.31	4906.2
0100	11.51	33.95	25.89	0.293	5.79	4897.3
0100	11.51	33.95	25.89		5.79	4897.3
0150	10.22	34.02	26.17	0.394	5.39	4885.4
0150	10.22	34.02	26.17		5.39	4885.4
0200	08.98	34.12	26.45	0.482	4.88	4873.8
0200	08.98	34.12	26.45		4.88	4873.8
0250	08.40	34.27	26.66	0.558	3.63	4870.2
0300	07.78	34.35	26.82	0.627	3.03	4865.7
0300	07.78	34.35	26.82		3.03	4865.7
0400	06.42	34.33	26.99	0.748	3.80	4854.1
0400	06.42	34.33	26.99		3.80	4854.1
0500	05.70	34.29	27.05	0.858	4.96	4850.4
0500	05.70	34.29	27.05		4.96	4850.4
0557	05.43	34.28	27.08		5.15	4850.1
0600	05.25	34.27	27.09	0.965	5.14	4850.2
0745	04.66	34.27	27.16		4.83	4850.8
0800	04.43	34.29	27.20	1.166	4.52	4851.0
0933	03.94	34.35	27.30		3.85	4852.4
1000	03.72	34.39	27.35	1.343	3.53	4853.5
1123	03.39	34.46	27.44		3.06	4856.5
1200	03.27	34.49	27.48	1.495	2.88	4859.5
1409	02.95	34.56	27.56		2.59	4867.7
1500	02.82	34.58	27.59	1.691	2.66	4871.3
1893	02.29	34.63	27.67		2.96	4887.3

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0052	03	11	960	17	37° 36′S	075° 33′W	4023	19

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	15	24	15	21 6	19 1	79	02	6	3	24	2			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	19 61	33 90	24 05	0 000	5 38	4975 1
0000	19 61	33 90	24 05		5 38	4975 1
0010	19 52	33 96	24 11	0 038	5 26	4975 1
0010	19 52	33 96	24 11		5 26	4975 1
0020	19 52	34 08	24 21	0 076	5 32	4976 2
0020	19 52	34 08	24 21		5 32	4976 2
0030	19 55	34 09	24 21	0 113	5 37	4977 1
0030	19 55	34 09	24 21		5 37	4977 1
0049	14 58	34 00	25 31		6 72	4928 4
0050	14 45	34 00	25 34	0 177	6 68	4927 1
0074	12 20	33 96	25 76		5 94	4903 6
0075	12 17	33 96	25 77	0 239	5 92	4903 3
0098	11 57	33 97	25 89		5 64	4897 9
0100	11 51	33 97	25 90	0 294	5 64	4897 3
0140	10 47	33 98	26 10		5 62	4887 6
0150	10 28	34 00	26 14	0 395	5 53	4886 0
0197	09 41	34 09	26 36		4 98	4878 7
0200	09 36	34 10	26 38	0 485	4 89	4878 3
0250	08 53	34 25	26 63	0 564	3 69	4871 7
0296	07 81	34 33	26 80		3 18	4865 8
0300	07 74	34 33	26 81	0 633	3 20	4865 1
0395	06 37	34 32	26 99		3 99	4853 1
0400	06 32	34 32	27 00	0 755	4 08	4852 7
0495	05 61	34 28	27 05		5 22	4848 8
0500	05 60	34 28	27 06	0 865	5 25	4849 0
0561	05 40	34 27	27 07		5 46	4849 9
0600	05 25	34 26	27 08	0 971	5 43	4850 2
0750	04 65	34 26	27 15		5 04	4850 9
0800	04 43	34 28	27 19	1 174	4 75	4851 0
0939	03 90	34 35	27 30		3 96	4852 2
1000	03 71	34 39	27 35	1 352	3 56	4853 4
1129	03 37	34 47	27 45		2 95	4856 6
1200	03 23	34 50	27 49	1 502	2 88	4859 0
1416	02 86	34 56	27 57		2 75	4866 8
1500	02 74	34 58	27 60	1 695	2 77	4870 2
1898	02 36	34 62	27 66		2 86	4888 5

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0053	03	12	960	00	37° 13′S	074° 54′W	4206	17

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	15	24	15	19 4	17 6	83	02	6	5	12	3			8		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	19 48	33 86	24 05	0 000	5 21	4973 8
0000	19 48	33 86	24 05		5 21	4973 8
0009	19 45	33 86	24 06		5 18	4974 0
0010	19 44	33 86	24 06	0 039	5 19	4974 0
0019	19 36	33 85	24 07		5 26	4973 8
0020	19 35	33 85	24 07	0 077	5 26	4973 7
0028	19 27	33 85	24 09		5 26	4973 5
0030	18 90	33 83	24 17	0 115	5 47	4970 0
0047	15 92	33 77	24 84		6 59	4941 4
0050	15 30	33 79	24 99	0 183	6 58	4935 2
0070	12 23	33 90	25 71		6 31	4903 5
0075	11 91	33 90	25 77	0 248	6 14	4900 2
0094	10 90	33 90	25 96		5 56	4889 6
0100	10 78	33 91	25 99	0 302	5 41	4888 6
0141	09 96	34 02	26 21		4 50	4881 8
0150	09 73	34 05	26 28	0 398	4 38	4879 6
0188	08 95	34 18	26 50		3 79	4872 9
0200	08 94	34 23	26 55	0 481	3 37	4873 7
0250	08 70	34 37	26 69	0 555	2 19	4874 3
0282	08 39	34 41	26 77		1 92	4872 5
0300	08 02	34 39	26 81	0 622	2 19	4868 9
0377	06 73	34 33	26 95		3 35	4856 8
0400	06 40	34 31	26 98	0 744	3 88	4853 7
0473	05 78	34 29	27 04		4 80	4849 8
0493	05 72	34 29	27 05		4 85	4850 2
0500	05 68	34 29	27 05	0 855	4 88	4850 1
0600	05 18	34 26	27 09	0 962	4 97	4849 2
0658	04 91	34 26	27 12		5 04	4849 0
0800	04 33	34 30	27 22	1 160	4 43	4849 7
0825	04 23	34 31	27 24		4 33	4849 9
0994	03 57	34 39	27 37		3 66	4851 1
1000	03 56	34 39	27 37	1 334	3 63	4851 3
1200	03 20	34 50	27 49	1 482	2 85	4858 6
1250	03 12	34 52	27 51		2 72	4860 5
1500	02 73	34 59	27 60	1 674	2 79	4870 1
1697	02 46	34 61	27 64		2 85	4878 0

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0054	03	12	960	17	36° 36′S	073° 33′W	0183	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	15	16 7	14 4	79	02	6	8	00	0			7		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	14 83	34 07	25 31	0 000	5 82	4928 4
0000	14 83	34 07	25 31		5 82	4928 4
0010	12 93	34 19	25 80	0 024	4 76	4908 9
0010	12 93	34 19	25 80		4 76	4908 9
0020	11 31	34 17	26 09	0 045	3 63	4891 1
0020	11 31	34 17	26 09		3 63	4891 1
0030	11 17	34 23	26 17	0 064	3 05	4890 3
0050	10 99	34 35	26 29	0 100	2 03	4889 8
0055	10 96	34 38	26 32		1 81	4889 9
0075	10 95	34 49	26 41	0 143	1 02	4891 4
0080	10 95	34 51	26 42		0 88	4891 8
0100	10 73	34 55	26 49	0 183	0 54	4890 5
0105	10 72	34 56	26 50		0 48	4890 8
0130	10 90	34 66	26 55		0 29	4894 7
0150		34 65			0 33	
0155		34 64			0 36	

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00650	0055	03	12	960	19	36° 37′S	073° 11′W	0085	01

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	15	16 7	14 4	79	02	6	8	00	0			7		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	14 28	34 40	25 68	0 000	6 68	4923 8
0000	14 28	34 40	25 68		6 68	4923 8
0010	12 27	34 39	26 08	0 021	3 75	4902 3
0010	12 27	34 39	26 08		3 75	4902 3
0020	10 96	34 41	26 34	0 039	0 74	4888 0
0020	10 96	34 41	26 34		0 74	4888 0
0030	11 08	34 47	26 37	0 056	0 37	4890 2
0030	11 08	34 47	26 37		0 37	4890 2
0039	11 05	34 48	26 38		0 43	4890 4
0049	11 05	34 55	26 44		0 32	4891 3
0050	11 05	34 55	26 44	0 089	0 32	4891 3
0059	11 05	34 53	26 42		0 30	4891 8
0069	11 06	34 55	26 43		0 30	4892 6
0075	11 05	34 55	26 44	0 130	0 32	4892 8
0079	11 04	34 55	26 44		0 35	4892 9

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0001	01	13	960	15	68 006	179° 55E	1870	18

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
04	09	33	73	51 4	51 7	95	70	0	8	33	0	33	1	3	04	14

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 43	33 26	26 78	0 000	7 71	4712 8
0000	-01 43	33 26	26 78		7 71	4712 8
0010	-01 44	33 35	26 85	0 012	7 72	4713 6
0010	-01 44	33 35	26 85		7 72	4713 6
0020	-01 47	33 91	27 31	0 022	7 43	4716 1
0020	-01 47	33 91	27 31		7 43	4716 1
0030	-01 55	34 17	27 52	0 029	7 08	4716 6
0030	-01 55	34 17	27 52		7 08	4716 6
0050	-01 66	34 30	27 63	0 040	6 81	4716 6
0050	-01 66	34 30	27 63		6 81	4716 6
0060	-01 72	34 32	27 64		6 63	4716 4
0075	-01 67	34 36	27 68	0 051	6 41	4718 2
0080	-01 62	34 37	27 68		6 34	4719 3
0100	-01 22	34 42	27 71	0 061	6 04	4727 0
0100	-01 22	34 42	27 71		6 04	4727 0
0125	-00 45	34 50	27 75			4740 8
0150	00 23	34 58	27 78	0 079	5 07	4753 1
0150	00 23	34 58	27 78		5 07	4753 1
0175	00 69	34 64	27 80			4761 7
0200	00 93	34 66	27 80	0 095	4 59	4766 9
0200	00 93	34 66	27 80		4 59	4766 9
0250	01 23	34 71	27 82	0 110	4 48	4774 5
0250	01 23	34 71	27 82			4774 5
0300	01 29	34 72	27 82	0 125	4 40	4778 4
0300	01 29	34 72	27 82		4 40	4778 4
0400	01 19	34 72	27 83	0 155	4 44	4782 9
0400	01 19	34 72	27 83			4782 9
0500	01 08	34 71	27 83	0 184	4 44	4787 2
0500	01 08	34 71	27 83		4 44	4787 2
0600	01 15	34 73	27 84	0 213	4 40	4794 3
0600	01 15	34 73	27 84		4 40	4794 3
0800	01 06	34 74	27 85	0 269	4 48	4804 9
0800	01 06	34 74	27 85		4 48	4804 9
1000	00 94	34 73	27 85	0 325	4 51	4814 9
1000	00 94	34 73	27 85		4 51	4814 9
1200	00 84	34 72	27 85	0 381	4 59	4825 3
1200	00 84	34 72	27 85		4 59	4825 3
1500	00 69	34 72	27 86	0 464	4 65	4840 9
1500	00 69	34 72	27 86		4 65	4840 9
1800	00 55	34 71	27 86		4 70	4856 5

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0002	01	14	960	02	69 03S	179° 06E	3566	35

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	15	33	74	00 0	51 1	80	03	5	7					8		17

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	↓ $\Sigma \Delta D$	O_2 m l/l ↓	V_f ↓
0000	-01 24	33 61	27 06	0 000	7 55	4717 3
0000	-01 24	33 61	27 06		7 55	4717 3
0010	-01 47	33 64	27 09	0 010	7 57	4714 4
0010	-01 47	33 64	27 09		7 57	4714 4
0020	-01 59	33 65	27 10	0 020	7 42	4713 1
0020	-01 59	33 65	27 10		7 42	4713 1
0030	-01 60	34 11	27 47	0 028	6 99	4715 6
0030	-01 60	34 11	27 47		6 99	4715 6
0050	-01 75	34 31	27 64	0 039	6 58	4715 2
0050	-01 75	34 31	27 64		6 58	4715 2
0060	-01 77	34 30	27 63		6 43	4715 5
0075	-01 46	34 35	27 66	0 050	6 15	4721 5
0080	-01 35	34 36	27 67		6 06	4723 6
0100	-00 83	34 42	27 70	0 060	5 75	4733 1
0100	-00 83	34 42	27 70		5 75	4733 1
0125	00 00	34 50	27 72		5 22	4747 7
0150	00 24	34 55	27 75	0 079	5 08	4753 1
0150	00 24	34 55	27 75		5 08	4753 1
0175	00 37	34 58	27 77			4756 7
0200	00 79	34 63	27 78	0 096	4 68	4764 7
0200	00 79	34 63	27 78		4 68	4764 7
0250	01 24	34 72	27 83	0 112	4 40	4774 7
0250	01 24	34 72	27 83		4 40	4774 7
0300	01 45	34 71	27 80	0 127	4 44	4780 8
0300	01 45	34 71	27 80		4 44	4780 8
0400	01 39	34 72	27 82	0 158	4 27	4785 9
0400	01 39	34 72	27 82		4 27	4785 9
0500	01 39	34 74	27 83	0 188	4 30	4791 9
0500	01 39	34 74	27 83		4 30	4791 9
0600	01 25	34 73	27 83	0 218	4 32	4795 7
0600	01 25	34 73	27 83		4 32	4795 7
0800	01 15	34 73	27 84	0 277	4 39	4806 2
0800	01 15	34 73	27 84		4 39	4806 2
1000	01 05	34 74	27 85	0 334	4 46	4816 6
1000	01 05	34 74	27 85		4 46	4816 6
1200	00 94	34 73	27 85	0 390	4 57	4826 8
1200	00 94	34 73	27 85		4 57	4826 8
1500	00 78	34 71	27 85	0 476	4 63	4842 2
1500	00 78	34 71	27 85		4 63	4842 2
2000	00 56	34 74	27 89	0 609	4 72	4868 7
2000	00 56	34 74	27 89		4 72	4868 7
2500	00 36	34 72	27 88	0 733	4 88	4895 2
2500	00 36	34 72	27 88		4 88	4895 2
3000	00 20	34 71	27 88	0 852	5 01	4922 3
3500	00 09	34 70	27 88		5 11	4950 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0003	01	14	960	23	70 02S	179° 10E	3694	36

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	33	73	01 7	00 4	81	03	2	4					8		13

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 58	33 64	27 09	0 000	7 33	4712 0
0000	-01 58	33 64	27 09		7 33	4712 0
0010	-01 59	33 72	27 16	0 010	7 33	4712 8
0010	-01 59	33 72	27 16		7 33	4712 8
0020	-01 55	33 96	27 35	0 018	6 92	4715 1
0020	-01 55	33 96	27 35		6 92	4715 1
0030	-01 65	34 15	27 51	0 024	6 70	4714 9
0030	-01 65	34 15	27 51		6 70	4714 9
0050	-01 75	34 30	27 63	0 035	6 44	4715 2
0050	-01 75	34 30	27 63		6 44	4715 2
0075	-01 83	34 33	27 66	0 046	6 31	4715 5
0075	-01 83	34 33	27 66		6 31	4715 5
0100	-00 74	34 43	27 70	0 057	5 63	4734 6
0100	-00 74	34 43	27 70		5 63	4734 6
0125	00 28	34 53	27 73		5 03	4752 1
0150	00 71	34 60	27 76	0 075	4 79	4760 4
0150	00 71	34 60	27 76		4 79	4760 4
0175	01 06	34 66	27 79			4767 3
0200	01 14	34 66	27 78	0 092	4 49	4770 0
0200	01 14	34 66	27 78		4 49	4770 0
0250	01 46	34 71	27 80	0 108	4 34	4777 9
0250	01 46	34 71	27 80			4777 9
0300	01 54	34 73	27 81	0 124	4 25	4782 2
0300	01 54	34 73	27 81		4 25	4782 2
0400	01 47	34 76	27 84	0 154	4 23	4787 2
0400	01 47	34 76	27 84		4 23	4787 2
0500	01 41	34 74	27 83	0 183	4 26	4792 2
0500	01 41	34 74	27 83		4 26	4792 2
0600	-01 31	34 75	27 84	0 212	4 36	4796 7
0600	01 31	34 75	27 84		4 36	4796 7
0800	01 16	34 74	27 85	0 269	4 41	4806 4
0800	01 16	34 74	27 85			4806 4
1000	01 00	34 74	27 86	0 325	4 46	4815 9
1000	01 00	34 74	27 86		4 46	4815 9
1200	00 92	34 73	27 86	0 381	4 53	4826 5
1200	00 92	34 73	27 86			4826 5
1500	00 77	34 72	27 86	0 464	4 62	4842 1
1500	00 77	34 72	27 86		4 62	4842 1
2000	00 56	34 72	27 87	0 600	4 72	4868 6
2000	00 56	* 34 76	* 27 90			* 4868 8
2500	00 37	34 72	27 88	0 727	4 84	4895 4
2500	00 37	34 72	27 88		4 84	4895 4
3000	00 20	34 71	27 88	0 847	4 99	4922 3
3000	00 20	34 71	27 88			4922 3
3600	-00 04	34 71	27 89		5 19	4954 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0004	01	15	960	23	71 13S	179° 10E	2560	25

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	12	33	74	50 8	50 8	99	02	0	8	12	0			4		19

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 m l/l ↓	V_f ↓
0000	-00 44	33 98	27 33	0 000	7 64	4731 3
0000	-00 44	33 98	27 33		7 64	4731 3
0010	-00 47	34 06	27 39	0 007	7 66	4731 8
0010	-00 47	34 06	27 39		7 66	4731 8
0020	-00 58	34 01	27 36	0 014	7 64	4730 5
0020	-00 58	34 01	27 36		7 64	4730 5
0030	-00 86	34 09	27 43	0 021	7 47	4727 1
0030	-00 86	34 09	27 43		7 47	4727 1
0050	-01 61	34 35	27 67	0 032	6 55	4717 6
0050	-01 61	34 35	27 67		6 55	4717 6
0060	-01 65	34 38	27 69			4717 7
0075	-01 60	34 43	27 73	0 042	6 37	4719 6
0075	-01 60	34 43	27 73		6 37	4719 6
0085	-01 59	34 45	27 75			4720 5
0100	-01 53	34 48	27 77	0 051	6 24	4722 4
0100	-01 53	34 48	27 77		6 24	4722 4
0125	-00 99	34 53	27 79		5 93	4732 6
0150	-00 20	34 59	27 81	0 067	5 33	4746 6
0150	-00 20	34 59	27 81		5 33	4746 6
0175	00 48	34 66	27 83			4758 7
0200	00 79	34 69	27 83	0 082	4 71	4764 9
0200	00 79	34 69	27 83		4 71	4764 9
0250	00 78	34 70	27 84	0 095	4 52	4767 8
0250	00 78	34 70	27 84			4767 8
0300	01 16	34 73	27 84	0 109	4 40	4776 6
0300	01 16	34 73	27 84		4 40	4776 6
0400	01 16	34 72	27 83	0 138	4 40	4782 5
0400	01 16	34 72	27 83		4 40	4782 5
0500	01 16	34 73	27 84	0 167	4 40	4788 5
0600	01 13	34 73	27 84	0 195	4 40	4794 0
0600	01 13	34 73	27 84		4 40	4794 0
0800	01 01	34 73	27 85	0 252	4 50	4804 1
0800	01 01	34 73	27 85		4 50	4804 1
1000	00 91	34 73	27 86	0 307	4 58	4814 5
1000	00 91	34 73	27 86		4 58	4814 5
1200	00 80	34 75	27 88	0 360	4 64	4824 8
1200	00 80	34 75	27 88		4 64	4824 8
1500	00 60	34 71	27 86	0 439	4 72	4839 5
1500	00 60	34 71	27 86		4 72	4839 5
1800	00 36	34 71	27 87			4853 7
2000	00 29	34 71	27 88	0 567	4 91	4864 5
2000	00 29	34 71	27 88		4 91	4864 5
2500	-00 04	34 71	27 89	0 679		4889 1
2500	-00 04	34 71	27 89			4889 1

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0005	01	16	960	08	72 005	179° 106	2268	21

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	15	33	76	50 1	50 1	99	72	0	8	18	3			6		19

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-01 00	33 67	27 10	0 000	7 72	4721 3
0000	-01 00	33 67	27 10		7 72	4721 3
0010	-01 01	33 70	27 12	0 010	7 75	4721 9
0010	-01 01	33 70	27 12		7 75	4721 9
0020	-00 91	33 98	27 34	0 018	7 58	4725 2
0020	-00 91	33 98	27 34		7 58	4725 2
0030	-01 38	34 25	27 58	0 024	6 97	4719 6
0030	-01 38	34 25	27 58		6 97	4719 6
0040	-01 62	34 35	27 67			4716 9
0049	-01 68	34 40	27 71		6 63	4716 7
0050	-01 69	34 40	27 71	0 033	6 62	4716 6
0059	-01 71	34 41	27 72			4716 8
0075	-01 57	34 43	27 73	0 043	6 43	4720 1
0079	-01 45	34 44	27 73		6 33	4722 3
0098	-00 45	34 56	27 79		5 64	4739 5
0100	-00 33	34 57	27 80	0 052	5 54	4741 5
0123	00 64	34 65	27 81		4 77	4757 9
0148	00 94	34 68	27 81		4 60	4764 0
0150	00 96	34 69	27 82	0 067	4 60	4764 5
0172	01 08	34 72	27 84			4767 7
0197	01 02	34 70	27 82		4 52	4768 2
0200	01 03	34 70	27 82	0 081	4 51	4768 6
0246	01 10	34 72	27 84			4772 4
0250	01 11	34 72	27 83	0 096	4 43	4772 8
0295	01 16	34 72	27 83		4 38	4776 2
0300	01 17	34 72	27 83	0 110	4 38	4776 7
0394	01 21	34 72	27 83		4 38	4782 9
0400	01 21	34 72	27 83	0 139	4 38	4783 2
0492	01 14	34 74	27 85		4 39	4787 7
0500	01 14	34 74	27 85	0 167	4 39	4788 2
0591	01 08	34 72	27 84		4 40	4792 7
0600	01 07	34 72	27 84	0 196	4 40	4793 0
0789	00 94	34 72	27 85		4 49	4802 3
0800	00 94	34 72	27 85	0 253	4 49	4803 0
0988	00 88	34 76	27 88		4 57	4813 5
1000	00 87	34 76	27 88	0 306	4 58	4814 0
1187	00 77	34 73	27 86			4823 5
1200	00 76	34 73	27 87	0 357	4 67	4824 1
1486	00 50	34 72	27 87		4 78	4837 2
1500	00 49	34 72	27 87	0 435	4 79	4837 9
1785	00 28	34 72	27 89			4851 6
2000	00 20	34 71	27 88	0 556	4 94	4863 1
2085	00 18	34 71	27 88		4 96	4867 9

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0006	01	26	960	08	77 42S	166° 10E	0307	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	07	33	90	54 4	56 0	60	03	8	6					8		13

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 m l/l ↓	V_f ↓
0000	-01 60	33 74	27 17	0 000	8 14	4712 2
0000	-01 60	33 74	27 17		8 14	4712 2
0010	-01 43	34 00	27 38	0 008	8 28	4716 6
0010	-01 43	34 00	27 38		8 28	4716 6
0020	-01 23	34 38	27 68	0 014	7 83	4722 0
0020	-01 23	34 38	27 68		7 83	4722 0
0030	-01 26	34 44	27 73	0 018	7 81	4722 3
0030	-01 26	34 44	27 73		7 81	4722 3
0050	-01 38	34 60	27 86	0 024	7 35	4722 3
0050	-01 38	34 60	27 86		7 35	4722 3
0075	-01 61	34 67	27 93	0 029	7 11	4720 5
0075	-01 61	34 67	27 93		7 11	4720 5
0100	-01 77	34 72	27 97	0 033	6 75	4719 7
0100	-01 77	34 72	27 97		6 75	4719 7
0125	-01 80	34 76	28 00		6 63	4720 9
0150	-01 85	34 77	28 01	0 039	6 61	4721 6
0150	-01 85	34 77	28 01		6 61	4721 6
0200	-01 88	34 78	28 02	0 044	6 58	4724 1
0200	-01 88	34 78	28 02		6 58	4724 1
0250	-01 87	34 81	28 05	0 048	6 61	4727 4
0250	-01 87	34 81	28 05		6 61	4727 4
0300	-01 89	34 84	28 07	0 050	6 58	4730 2
0300	-01 89	34 84	28 07		6 58	4730 2

SURFACE OBSERVATIONS									
H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0007	01	31	960	03	79 26S	164° 00E	0347	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	09	33	03	51 7	52 8	77	02	4	8					8		13

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 m l/l ↓	V_f ↓
0000	-01 61	33 74	27 17	0 000		4712 0
0000	-01 61	33 74	27 17			4712 0
0010	-01 50	33 86	27 27	0 009		4714 9
0010	-01 50	33 86	27 27			4714 9
0020	-01 32	33 93	27 32	0 016		4718 6
0020	-01 32	33 93	27 32			4718 6
0030	-01 23	34 00	27 37	0 024		4720 9
0030	-01 23	34 00	27 37			4720 9
0050	-01 34	34 12	27 47	0 037		4720 9
0050	-01 34	34 12	27 47			4720 9
0075	-01 43	34 50	27 78	0 049		4722 6
0075	-01 43	34 50	27 78			4722 6
0100	-01 64	34 60	27 87	0 056		4721 2
0100	-01 64	34 60	27 87			4721 2
0125	-01 72	34 64	27 90			4721 6
0150	-01 91	34 68	27 94	0 066		4720 2
0150	-01 91	34 68	27 94			4720 2
0200	-01 95	34 70	27 96	0 074		4722 7
0200	-01 95	34 70	27 96			4722 7
0250	-01 95	34 72	27 98	0 081		4725 7
0250	-01 95	34 72	27 98			4725 7
0300	-01 93	34 73	27 98	0 087		4729 1
0325	-01 92	34 74	27 99			4730 8

SURFACE OBSERVATIONS									
H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0008	01	31	960	08	79 20S	164° 40E	0265	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	27	33	00	51 7	52 2	86	02	6	7	18	2			8		09

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 m l/l ↓	V_f ↓
0000	-01 11	33 97	27 34	0 000		4720 9
0000	-01 11	33 97	27 34			4720 9
0010	-01 14	33 97	27 34	0 007		4721 0
0010	-01 14	33 97	27 34			4721 0
0020	-01 16	33 98	27 35	0 015		4721 3
0020	-01 16	33 98	27 35			4721 3
0030	-01 15	33 99	27 36	0 022		4722 1
0030	-01 15	33 99	27 36			4722 1
0050	-01 00	34 16	27 49	0 035		4726 4
0050	-01 00	34 16	27 49			4726 4
0075	-01 00	34 26	27 57	0 049		4728 3
0075	-01 00	34 26	27 57			4728 3
0100	-01 12	34 41	27 70	0 061		4728 6
0100	-01 12	34 41	27 70			4728 6
0125	-01 18	34 49	27 77			4729 5
0150	-01 64	34 60	27 87	0 077		4724 2
0150	-01 64	34 60	27 87			4724 2
0175	-01 88	34 68	27 94			4722 2
0200	-01 91	34 69	27 95	0 086		4723 3
0200	-01 91	34 69	27 95			4723 3
0250		34 69				
0250	*00 83	34 69	*27 83		*	4768 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00651	0009	01	31	1960	11	77° 18′ S	165° 16′ E	0612	06

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
03	34	33	99	52 2	53 1	81	01	6	5	18	1			8		12

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 25	33 87	27 27	0 000		4718 3
0000	-01 25	33 87	27 27			4718 3
0010	-00 99	34 04	27 40	0 008		4723 6
0010	-00 99	34 04	27 40			4723 6
0020	-01 09	34 17	27 50	0 014		4723 2
0020	-01 09	34 17	27 50			4723 2
0030	-01 81	34 24	27 58	0 019		4712 8
0030	-01 81	34 24	27 58			4712 8
0050	-01 57	34 37	27 68	0 029		4718 3
0050	-01 57	34 37	27 68			4718 3
0075	-01 50	34 48	27 77	0 038		4721 4
0075	-01 50	34 48	27 77			4721 4
0100	-01 71	34 58	27 86	0 046		4720 0
0100	-01 71	34 58	27 86			4720 0
0125	-01 88	34 70	27 96			4719 3
0150	-01 95	34 69	27 95	0 056		4719 7
0150	-01 95	34 69	27 95			4719 7
0175	-01 96	34 71	27 97			4721 1
0200	-01 93	34 72	27 97	0 063		4723 1
0200	-01 93	34 72	27 97			4723 1
0250	-01 88	34 78	28 02	0 068		4727 1
0250	-01 88	34 78	28 02			4727 1
0300	-01 88	34 81	28 05	0 072		4730 2
0300 *	-01 86 *	34 87	*28 09		*	4730 8
0350	-01 88	34 84	28 07			4733 3
0400	-01 87	34 86	28 09	0 076		4736 5
0400	-01 87	34 86	28 09			4736 5
0450	-01 92	34 87	28 10			4738 8
0500	-01 92	34 89	28 11	0 076		4741 8
0500	-01 92	34 89	28 11			4741 8
0550	-01 91	34 89	28 11			4745 0
0600	-01 90	34 87	28 10	0 075		4748 0
0600	-01 90	34 87	28 10			4748 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0010	01	31	960	15	77° 13S	165° 58E	0860	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	36	33	99	52 1	53 2	76	03	6	8	08	2			8		08

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ $\Sigma \Delta D$	O_2 ml/l ↓	V_f ↓
0000	-00 66	34 12	27 45	0 000		4728 5
0000	-00 66	34 12	27 45			4728 5
0010	-00 66	34 13	27 46	0 006		4729 2
0010	-00 66	34 13	27 46			4729 2
0020	-00 42	34 29	27 57	0 012		4734 2
0020	-00 42	34 29	27 57			4734 2
0030	-00 61	34 35	27 63	0 017		4732 1
0030	-00 61	34 35	27 63			4732 1
0050	-01 05	34 46	27 74	0 025		4726 9
0050	-01 05	34 46	27 74			4726 9
0075	-01 11	34 52	27 79	0 034		4727 7
0075	-01 11	34 52	27 79			4727 7
0100	-01 28	34 56	27 83	0 041		4726 7
0100	-01 28	34 56	27 83			4726 7
0125	-01 47	34 62	27 88			4725 5
0150	-01 78	34 71	27 96	0 052		4722 4
0150	-01 78	34 71	27 96			4722 4
0175	-01 85	34 75	28 00			4723 0
0200	-01 87	34 76	28 01	0 058		4724 2
0200	-01 87	34 76	28 01			4724 2
0250	-01 88	34 79	28 03	0 063		4727 2
0250	-01 88	34 79	28 03			4727 2
0295	-01 87	34 81	28 05			4730 1
0300	-01 87	34 82	28 05	0 066		4730 4
0344	-01 88	34 85	28 08			4733 0
0394	-01 92	34 85	28 08			4735 3
0400	-01 92	34 85	28 08	0 070		4735 7
0443	-01 90	34 85	28 08			4738 6
0492	-01 92	34 85	28 08			4741 2
0500	-01 92	34 85	28 08	0 072		4741 7
0541	-01 90	34 85	28 08			4744 4
0590	-01 89	34 85	28 08			4747 5
0600	-01 88	34 85	28 08	0 073		4748 2
0640	-01 87	34 86	28 09			4750 8
0689	-01 92	* 34 91	* 28 13		*	4753 2
0738	-01 91	34 87	28 10			4756 1
0788	-01 91	34 88	28 10			4759 1
0800	-01 91	34 88	28 10	0 072		4759 8
0837	-01 90	34 89	28 11			4762 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0011	01	31	960	18	79 23S	166° 00E	0869	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	36	33	96	52 2	53 1	79	02	6	6	36	2	00	0	8		06

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ $\Sigma \Delta D$	O_2 ml/l ↓	V_f ↓
0000	-00 80	34 23	27 54	0 000		4726 8
0000	-00 80	34 23	27 54			4726 8
0010	-00 86	34 24	27 55	0 005		4726 5
0010	-00 86	34 24	27 55			4726 5
0020	-00 97	34 38	27 67	0 010		4726 0
0020	-00 97	34 38	27 67			4726 0
0030	-01 03	34 45	27 73	0 014		4726 0
0030	-01 03	34 45	27 73			4726 0
0050	-01 30	34 55	27 82	0 021		4723 4
0050	-01 30	34 55	27 82			4723 4
0075	-01 88	34 67	27 93	0 027		4716 2
0075	-01 88	34 67	27 93			4716 2
0100	-01 94	34 69	27 95	0 031		4716 8
0100	-01 94	34 69	27 95			4716 8
0125	-01 90	34 72	27 97			4719 1
0150	-01 92	34 74	27 99	0 038		4720 4
0150	-01 92	34 74	27 99			4720 4
0175	-01 92	34 77	28 02			4722 0
0200	-01 88	34 79	28 03	0 043		4724 2
0200	-01 88	34 79	28 03			4724 2
0250	-01 88	34 81	28 05	0 047		4727 2
0250	-01 88	34 81	28 05			4727 2
0280	-01 90	34 83	28 06			4728 8
0300	-01 89	34 83	28 06	0 049		4730 1
0375	-01 87	34 84	28 07			4735 0
0400	-01 89	34 84	28 07	0 053		4736 1
0469	-01 92	34 85	28 08			4739 8
0500	-01 92	34 85	28 08	0 055		4741 7
0563	-01 92	34 86	28 09			4745 5
0600	-01 91	34 87	28 10	0 056		4747 9
0658	-01 90	34 88	28 10			4751 5
0800	-01 90	34 88	28 10	0 053		4760 0
0800	-01 90	34 88	28 10			4760 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0012	01	31	960	22	79 36S	165° 59E	0640	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	36	33	95	51 7	52 6	80	02	6	6	34	2			8		08

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-00 56	34 20	27 51	0 000		4730 4
0000	-00 56	34 20	27 51			4730 4
0009	-00 58	34 20	27 51			4730 6
0010	-00 58	34 20	27 51	0 006		4730 7
0018	-00 61	34 20	27 51			4730 7
0020	-00 61	34 21	27 52	0 012		4730 9
0027	-00 63	34 25	27 55			4731 2
0030	-00 64	34 27	27 57	0 017		4731 3
0045	-00 74	34 36	27 64			4731 0
0050	-00 81	34 36	27 65	0 027		4730 2
0068	-01 03	34 38	27 67			4727 9
0075	-01 10	34 43	27 71	0 037		4727 5
0091	-01 28	34 54	27 81			4726 1
0100	-01 41	34 59	27 85	0 045		4724 8
0114	-01 56	34 65	27 91			4723 5
0137	-01 67	34 67	27 93			4723 3
0150	-01 74	34 69	27 95	0 056		4723 0
0160	-01 78	34 71	27 96			4723 0
0182	-01 84	34 74	27 99			4723 5
0200	-01 87	34 77	28 01	0 062		4724 3
0228	-01 88	34 79	28 03			4725 9
0250	-01 85	34 77	28 01	0 067		4727 5
0260	-01 84	34 77	28 01			4728 3
0300	-01 90	34 80	28 04	0 071		4729 9
0303	-01 90	34 80	28 04			4730 0
0346	-01 91	34 82	28 06			4732 5
0400	-01 90	34 84	28 07	0 076		4736 0
0434	-01 89	34 85	28 08			4738 2
0500		34 87				
0521		34 88				

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0013	02	01	960	02	77 29S	165° 13E	0479	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	27	33	92	52 9	53 8	79	02	6	7	36	1			8		06

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-00 40	34 16	27 47		0 000		4732 7
0000	-00 40	34 16	27 47				4732 7
0010	-00 47	34 17	27 48		0 006		4732 3
0010	-00 47	34 17	27 48				4732 3
0020	-00 50	34 17	27 48		0 012		4732 4
0020	-00 50	34 17	27 48				4732 4
0029	-00 55	34 21	27 52				4732 3
0030	-00 56	34 22	27 52		0 018		4732 3
0049	-00 88	34 40	27 68				4729 2
0050	-00 91	34 41	27 69		0 028		4728 9
0073	-01 42	34 59	27 86				4723 0
0075	-01 45	34 60	27 86		0 036		4722 7
0097	-01 69	34 69	27 94				4720 6
0100	-01 73	34 69	27 95		0 041		4720 2
0121	-01 89	34 70	27 96				4718 9
0146	-01 87	34 74	27 99				4720 9
0150	-01 88	34 75	28 00		0 048		4721 0
0170	-01 91	34 79	28 03				4721 9
0194	-01 87	34 81	28 05				4724 1
0200	-01 88	34 81	28 05		0 053		4724 3
0243	-01 93						
0250	-01 93	34 83	28 06		0 055		4726 5
0291	-01 92	34 84	28 07				4729 2
0300	-01 92	34 84	28 07		0 057		4729 7
0340	-01 93	34 85	28 08				4732 0
0388	-01 90	34 85	28 08				4735 3
0400	-01 91	34 86	28 09		0 060		4735 9
0437	-01 95	34 88	28 11				4737 6

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0014	02	01	960	07	79 28S	164° 36E	0219	02

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	17	33	90	52 2	53 1	82	01	6	6	36	2			8		17

SUBSURFACE OBSERVATIONS					
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-01 56	33 67	27 11	0 000		4712 5
0000	-01 56	33 67	27 11			4712 5
0010	-01 63	33 72	27 16	0 009		4712 2
0010	-01 63	33 72	27 16			4712 2
0019	-01 70	33 83	27 25			4712 1
0020	-01 69	33 84	27 25	0 018		4712 4
0029	-01 60	33 96	27 35			4714 8
0030	-01 57	33 98	27 37	0 026		4715 5
0048	-01 20	34 26	27 58			4723 6
0050	-01 22	34 27	27 59	0 038		4723 4
0072	-01 40	34 43	27 72			4722 6
0075	-01 44	34 46	27 75	0 049		4722 3
0097	-01 65	34 59	27 86			4720 8
0100	-01 67	34 60	27 87	0 056		4720 7
0121	-01 80	34 63	27 90			4720 1
0145	-01 87	34 67	27 93			4720 5
0150	-01 87	34 67	27 93	0 066		4720 8
0170	-01 87	34 67	27 93			4722 0
0194	-01 96	34 68	27 94			4722 1

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0015	02	01	960	10	79 26S	164° 34E	0115	01

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	17	33	89	51 1	52 8	66	01	6	2	36	2			8		09

SUBSURFACE OBSERVATIONS					
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-01 45	33 76	27 18	0 000		4714 6
0000	-01 45	33 76	27 18			4714 6
0010	-01 46	33 78	27 20	0 009		4715 1
0010	-01 46	33 78	27 20			4715 1
0020	-01 44	33 85	27 26	0 017		4716 4
0020	-01 44	33 85	27 26			4716 4
0030	-00 95	34 08	27 43	0 025		4725 6
0030	-00 95	34 08	27 43			4725 6
0040	-01 20	34 18	27 52			4722 8
0050	-00 83	34 26	27 57	0 037		4729 5
0055	-00 80	34 29	27 59			4730 4
0070	-01 30	34 33	27 64			4723 6
0075	-01 31	34 36	27 67	0 049		4723 9
0085	-01 33	34 42	27 71			4724 4
0100	-01 63	34 54	27 82	0 058		4721 1
0100	-01 63	34 54	27 82			4721 1

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0016	02	01	960	13	77 25S	165° 18E	0730	07

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
13	18	33	90	53 3	54 1	80	01	6	4	36	2			8		06

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-00 62	34 44	27 70	0 000		4730 5
0000	-00 62	34 44	27 70			4730 5
0010	-00 66	34 24	27 54	0 005		4729 6
0010	-00 66	34 24	27 54			4729 6
0019	-00 71	34 24	27 55			4729 4
0020	-00 73	34 25	27 56	0 010		4729 2
0029	-00 92	34 35	27 64			4727 2
0030	-00 96	34 37	27 66	0 015		4726 7
0048	-01 49	34 59	27 86			4720 4
0050	-01 51	34 60	27 87	0 022		4720 3
0072	-01 66	34 66	27 92			4719 5
0075	-01 67	34 67	27 93	0 027		4719 6
0096	-01 76	34 72	27 97			4719 6
0100	-01 77	34 74	27 99	0 031		4719 8
0120	-01 83	34 79	28 03			4720 2
0144	-01 88	34 77	28 01			4720 8
0150	-01 89	34 78	28 02	0 037		4721 0
0169	-01 90	34 79	28 03			4722 0
0193	-01 86	34 79	28 03			4724 1
0200	-01 87	34 79	28 03	0 041		4724 3
0243	-01 91	34 81	28 05			4726 4
0250	-01 91	34 81	28 05	0 044		4726 8
0287	-01 90	34 82	28 06			4729 2
0300	-01 89	34 83	28 06	0 047		4730 1
0383	-01 86	34 85	28 08			4735 6
0400	-01 87	34 85	28 08	0 050		4736 5
0479	-01 92	34 86	28 09			4740 5
0500	-01 92	34 86	28 09	0 052		4741 7
0575	-01 92	34 85	28 08			4746 1
0600	-01 91	34 85	28 08	0 053		4747 8
0671	-01 90	34 86	28 09			4752 2
0719	-01 93	34 87	28 10			4754 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0017	02	01	960	17	79 376	166° 09E	0310	03

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	23	33	94	54 4	57 2	36	01	1	2	22	1			8		07

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-00 68	34 20	27 51	0 000		4728 6
0000	-00 68	34 20	27 51			4728 6
0010	-00 72	34 22	27 53	0 006		4728 6
0010	-00 72	34 22	27 53			4728 6
0020	-00 70	34 23	27 54	0 011		4729 6
0020	-00 70	34 23	27 54			4729 6
0030	-00 67	34 26	27 56	0 017		4730 8
0030	-00 67	34 26	27 56			4730 8
0050	-00 90	34 32	27 62	0 027		4728 6
0050	-00 90					
0075	-01 05	34 39	27 68	0 038		4728 1
0075	-01 05	34 39	27 68			4728 1
0100	-01 16	34 44	27 73	0 048		4728 1
0100	-01 16	34 44	27 73			4728 1
0125	-01 34	34 50	27 78			4727 0
0150	-01 52	34 58	27 85	0 064		4726 0
0150	-01 52	34 58	27 85			4726 0
0200	-01 84	34 62	27 89	0 075		4724 1
0200	-01 84	34 62	27 89			4724 1
0250	-01 81	34 73	27 98	0 084		4728 0
0250	-01 81	34 73	27 98			4728 0
0300	-01 88	34 75	28 00	0 090		4730 0
0300	-01 88	34 75	28 00			4730 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0018	02	12	960	20	78 43S	167° 33E	0790	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	35	33	95	53 9	55 6	59	02	6	6	34	2			8		08

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-00 42	34 41	27 67	0 000		4733 5
0000	-00 42	34 41	27 67			4733 5
0010	-00 45	34 42	27 68	0 004		4733 7
0010	-00 45	34 42	27 68			4733 7
0020	-00 46	34 42	27 68	0 008		4734 1
0020	-00 46	34 42	27 68			4734 1
0030	-00 58	34 48	27 73	0 012		4733 1
0030	-00 58	34 48	27 73			4733 1
0050	-00 60	34 51	27 76	0 020		4734 1
0050	-00 60	34 51	27 76			4734 1
0075	-00 79	34 54	27 79	0 028		4732 8
0075	-00 79	34 54	27 79			4732 8
0100	-01 15	34 60	27 85	0 035		4728 9
0100	-01 15	34 60	27 85			4728 9
0125	-01 79	34 67	27 93			4720 6
0150	-01 88	34 70	27 96	0 045		4720 8
0150	-01 88	34 70	27 96			4720 8
0175	-01 88	34 77	28 01			4722 6
0200	-01 87	34 75	28 00	0 052		4724 2
0200	-01 87	34 75	28 00			4724 2
0250	-01 92	34 78	28 02	0 056		4726 5
0250	-01 92	34 78	28 02			4726 5
0300	-01 90	34 79	28 03	0 060		4729 8
0300	-01 90	34 79	28 03			4729 8
0350	-01 87	34 78	28 02			4733 2
0400	-01 91	34 81	28 05	0 067		4735 7
0400	-01 91	34 81	28 05			4735 7
0500	-01 92	34 85	28 08	0 070		4741 7
0500	-01 92	34 85	28 08			4741 7
0600	-01 89	34 84	28 07	0 072		4748 0
0600	-01 89	34 84	28 07			4748 0
0750	-01 93	34 87	28 10			4756 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0019	02	13	1960	01	77° 01′ S	166° 40′ E	0750	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
01	05	33	93	52 8	54 4	62	70	4	7	34	2			8		07

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-00 74	34 35	27 64	0 000		4728 3
0000	-00 74	34 35	27 64			4728 3
0010	-00 76	34 36	27 65	0 005		4728 6
0010	-00 76	34 36	27 65			4728 6
0020	-00 79	34 38	27 66	0 009		4728 8
0020	-00 79	*34 53	*27 78			* 4729 5
0030	-00 79	34 40	27 68	0 013		4729 5
0030	-00 79	34 40	27 68			4729 5
0050	-00 91	34 41	27 69	0 022		4728 9
0050	-00 91	34 41	27 69			4728 9
0075	-01 13	34 55	27 81	0 030		4727 5
0075	-01 13	34 55	27 81			4727 5
0100	-01 20	34 55	27 82	0 038		4727 9
0100	-01 20	34 55	27 82			4727 9
0125	-01 53	34 65	27 91			4724 7
0150	-01 81	34 75	28 00	0 048		4722 1
0150	-01 81	34 75	28 00			4722 1
0175	-01 90	34 77	28 01			4722 3
0200	-01 88	34 79	28 03	0 053		4724 2
0200	-01 88	34 79	28 03			4724 2
0250	-01 92	34 82	28 06	0 056		4726 7
0250	-01 92	34 82	28 06			4726 7
0300	-01 90	34 81	28 05	0 059		4729 9
0300	-01 90	34 81	28 05			4729 9
0350 *	-01 88	*34 89	*28 11			* 4733 5
0400	-01 92	34 84	28 07	0 063		4735 7
0400	-01 92	34 84	28 07			4735 7
0500	-01 93	34 84	28 07	0 066		4741 4
0500	-01 93	34 84	28 07			4741 4
0600	-01 89	34 87	28 10	0 067		4748 2
0600	-01 89	34 87	28 10			4748 2
0750	-01 94	34 88	28 10			4756 3

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00651	0020	02	13	960	10	77 46S	166° 27E	0545	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	09	33	90	62 8	63 3	68	03	0	8					7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ $\Sigma \Delta D$	O_2 ml/l ↓	V_f ↓
0000	-01 80	34 12	27 48	0 000		4710 6
0000	-01 80	34 12	27 48			4710 6
0010	-01 84	34 08	27 45	0 006		4710 4
0010	-01 84	34 08	27 45			4710 4
0020	-01 80	34 11	27 48	0 012		4711 8
0020	-01 80	34 11	27 48			4711 8
0030	-01 75	34 16	27 52	0 018		4713 4
0030	-01 75	34 16	27 52			4713 4
0050	-01 66	34 27	27 60	0 029		4716 5
0050	-01 66	34 27	27 60			4716 5
0075	-01 65	34 45	27 75	0 040		4718 9
0075	-01 65	34 45	27 75			4718 9
0100	-01 55	34 53	27 81	0 048		4722 3
0100	-01 55	34 53	27 81			4722 3
0150	-01 76	34 69	27 95	0 059		4722 7
0150	-01 76	34 69	27 95			4722 7
0200	-01 89	34 76	28 01	0 066		4723 9
0200	-01 89	34 76	28 01			4723 9
0250	-01 90	34 79	28 03	0 070		4726 8
0300	-01 91	34 81	28 05	0 074		4729 7
0300	-01 91	34 81	28 05			4729 7
0400	-01 87	34 84	28 07	0 078		4736 5
0400	-01 87	34 84	28 07			4736 5
0500	-01 93	34 86	28 09	0 080		4741 5
0500	-01 93	34 86	28 09			4741 5

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0001	12	09	959	04	64° 55′S	177° 01′E	2468	10

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
16	23	24	72	52 4	53 1	86	02	8	8	22	2			7		08

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-01 46	33 99	27 37	0 000		4715 5
0000	-01 46	33 99	27 37			4715 5
0010	-01 57	34 00	27 38	0 007		4714 4
0020	-01 53	34 01	27 39	0 014		4715 6
0030	-01 56	34 02	27 40	0 021		4715 8
0050	-01 63	34 04	27 42	0 035		4716 0
0050	-01 63	34 04	27 42			4716 0
0075	-01 38	34 22	27 55	0 050		4722 2
0100	-00 87	34 38	27 67	0 062		4732 3
0100	-00 87	34 38	27 67			4732 3
0150	00 90	34 61	27 76	0 081		4763 3
0150	00 90	34 61	27 76			4763 3
0200	01 04	34 66	27 79	0 098		4768 5
0200	01 04	34 66	27 79			4768 5
0250	01 18	34 68	27 80	0 114		4773 7
0300	01 28	34 70	27 81	0 130		4778 2
0300	01 28	34 70	27 81			4778 2
0400	01 24	34 71	27 82	0 161		4783 6
0500	01 19	34 72	27 83	0 191		4788 9
0500	01 19	34 72	27 83			4788 9
0600	01 14	34 72	27 83	0 220		4794 1
0800	01 03	34 72	27 84	0 278		4804 3
1000	00 90	34 71	27 84	0 336		4814 3
1000	00 90	34 71	27 84			4814 3

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0002	12	13	959	03	77° 07′S	177° 19′W	0635	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	19	24	79	52 3	53 4	75	01	6	2	18	2					10

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-00 40	34 51	27 75	0 000		4734 2
0000	-00 40	34 51	27 75			4734 2
0010	-00 92	34 44	27 72	0 004		4726 5
0010	-00 92	34 44	27 72			4726 5
0020	-01 29	34 48	27 76	0 007		4721 5
0020	-01 29	34 48	27 76			4721 5
0030	-01 34	34 48	27 76	0 011		4721 3
0050	-01 39	34 48	27 77	0 018		4721 7
0050	-01 39	34 48	27 77			4721 7
0075	-01 24	34 51	27 78	0 026		4725 6
0100	-01 17	34 54	27 81	0 034		4728 3
0100	-01 17	34 54	27 81			4728 3
0150	-01 46	34 56	27 83	0 048		4726 9
0200	-01 66	34 57	27 85	0 061		4726 7
0200	-01 66	34 57	27 85			4726 7
0250	-01 72	34 58	27 86	0 073		4728 8
0300	-01 78	34 60	27 87	0 085		4730 9
0300	-01 78	34 60	27 87			4730 9
0400	-01 86	34 67	27 93	0 104		4735 9
0500	-01 91	34 79	28 03	0 115		4741 6
0500	-01 91	34 79	28 03			4741 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0003	12	13	959	08	77° 58′S	174° 25′W	0534	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	10	24	79	50 3	51 4	79	02	6	1	00	0	00	0	7		05

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-00 43	34 51	27 75		0 000		4733 8
0000	-00 43	34 51	27 75				4733 8
0010	-00 69	34 51	27 76		0 003		4730 3
0010	-00 69	34 51	27 76				4730 3
0020	-01 39	34 52	27 80		0 007		4720 1
0020	-01 39	34 52	27 80				4720 1
0030	-01 30	34 51	27 79		0 010		4722 0
0050	-01 23	34 51	27 78		0 016		4724 3
0050	-01 23	34 51	27 78				4724 3
0075	-01 53	34 52	27 80		0 024		4721 1
0100	-01 75	34 53	27 82		0 032		4719 2
0100	-01 75	34 53	27 82				4719 2
0150	-01 80	34 54	27 83		0 046		4721 4
0200	-01 83	34 57	27 85		0 059		4724 0
0200	-01 83	34 57	27 85				4724 0
0250	-01 81	34 62	27 89		0 070		4727 5
0300	-01 80	34 66	27 92		0 080		4730 8
0300	-01 80	34 66	27 92				4730 8
0400	-01 82	34 75	28 00		0 094		4736 9
0500	-01 90	34 83	28 06		0 100		4741 9
0500	-01 90	34 83	28 06				4741 9

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0004	12	13	959	10	78° 20′S	173° 02′W	0460	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	14	24	79	51 7	52 4	83	02	4	1	00	0	00	0	7		08

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-00 52	34 50	27 75		0 000		4732 3
0000	-00 52	34 50	27 75				4732 3
0010	-01 10	34 45	27 73		0 004		4723 7
0010	-01 10	34 45	27 73				4723 7
0020	-01 40	34 51	27 79		0 007		4719 9
0020	-01 40	34 51	27 79				4719 9
0030	-01 40	34 50	27 78		0 010		4720 4
0050	-01 40	34 48	27 77		0 017		4721 5
0050	-01 40	34 48	27 77				4721 5
0075	-01 54	34 49	27 78		0 025		4720 8
0100	-01 62	34 49	27 78		0 033		4721 0
0100	-01 62	34 49	27 78				4721 0
0150	-01 43	34 54	27 81		0 049		4727 2
0200	-01 38	34 57	27 84		0 062		4731 1
0200	-01 38	34 57	27 84				4731 1
0250	-01 58	34 56	27 84		0 076		4730 9
0300	-01 73	34 55	27 83		0 089		4731 5
0300	-01 73	34 55	27 83				4731 5
0400	-01 81	34 57	27 85		0 114		4736 2
0500	-01 88	34 58	27 86		0 137		4741 1
0500	-01 88	34 58	27 86				4741 1

SURFACE OBSERVATIONS										
H. O. REF. NO.	STATION	DATE				POSITION			SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE		LONGITUDE		
00652	0005	12	17	959	15	78° 14′		165° 54′W	0502	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	20	24	92	56 7	57 4	75	02	0	8	26	2	26		7		04

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 m l/l ↓	V_f ↓
0000	-00 46	34 45	27 71	0 000		4733 0
0000	-00 46	34 45	27 71			4733 0
0010	-00 47	34 45	27 71	0 004		4733 5
0020	-00 49	34 45	27 71	0 008		4733 8
0030	-00 50	34 45	27 71	0 012		4734 2
0050	-00 53	34 46	27 72	0 020		4735 0
0075	-00 50	34 46	27 72	0 029		4736 9
0090	-00 58	34 46	27 72			4736 6
0100	-00 75	34 46	27 73	0 039		4734 5
0150	-01 44	34 47	27 76	0 057		4726 8
0190	-01 77	34 47	27 77			4723 9
0200	-01 76	34 47	27 77	0 074		4724 7
0250	-01 75	34 48	27 78	0 090		4727 9
0290	-01 74	34 48	27 78			4730 4
0300	-01 74	34 48	27 78	0 106		4731 0
0390	-01 76	34 51	27 80			4736 2
0400	-01 77	34 52	27 81	0 135		4736 6
0440	-01 79					
0470	-01 82	34 55	27 83			4740 1
0490	-01 90	34 61	27 88			4740 3

SURFACE OBSERVATIONS										
H. O. REF. NO.	STATION	DATE				POSITION			SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE		LONGITUDE		
00652	0006	12	17	959	19	78° 21′S		169° 49′W	0576	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	15	24	94	57 1	57 8	75	02	0	8	22	2	22	1	7		05

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 m l/l ↓	V_f ↓
0000	-00 72	34 47	27 73	0 000		4729 1
0000	-00 72	34 47	27 73			4729 1
0010	-00 73	34 47	27 73	0 004		4729 5
0020	-00 74	34 47	27 73	0 007		4730 0
0020	-00 74	34 47	27 73			4730 0
0030	-01 11	34 47	27 75	0 011		4724 8
0050	-01 63	34 47	27 76	0 018		4717 8
0050	-01 63	34 47	27 76			4717 8
0075	-01 70	34 48	27 77	0 026		4718 3
0099	-01 75	34 50	27 79			4719 0
0100	-01 75	34 50	27 79	0 034		4719 0
0150	-01 85	34 56	27 84	0 049		4720 7
0199	-01 89	34 59	27 87			4723 1
0200	-01 89	34 59	27 87	0 061		4723 2
0250	-01 81	34 59	27 87	0 073		4727 4
0298	-01 77	34 59	27 87			4730 9
0300	-01 77	34 59	27 87	0 084		4731 0
0398	-01 80	34 61	27 88			4736 4
0400	-01 80	34 61	27 88	0 106		4736 6
0500	-01 84	34 63	27 90	0 126		4742 0
0547	-01 86	34 64	27 91			4744 5

SURFACE OBSERVATIONS																											
H. O. REF. NO.	STATION	DATE				POSITION				SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH																
		MO.	DAY	YEAR	HOUR	LATITUDE			LONGITUDE																		
00652	0007	12	17	959	23	78°	22′	S	173°	42′	W	0585	05														
WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE				HUMID-ITY	WEATHER	CLOUD				SEA				SWELL				VIS.	WATER				
SPEED	DIR.			DRY ↓		WET ↓				TYPE		AMT.		DIR.		AMT.		DIR.		AMT.			COL.		TRANS.		
02	21	24	96	56	6	57	2	78	06	0		8		22		2		22		1		7			08		

SUBSURFACE OBSERVATIONS												
SAMPLE DEPTH (M)	T °C ↓		S‰ ↓		σ_t ↓		↓ ΣΔD		O_2 ml/l ↓	V_f ↓		
0000	-01	42	34	49	27	77	0	000		4718	3	
0000	-01	42	34	49	27	77				4718	3	
0010	-01	43	34	49	27	77	0	003		4718	7	
0020	-01	44	34	48	27	77	0	007		4719	1	
0030	-01	45	34	48	27	77	0	010		4719	5	
0050	-01	48	34	48	27	77	0	017		4720	2	
0075	-01	51	34	47	27	76	0	025		4721	2	
0100	-01	54	34	47	27	76	0	034		4722	2	
0100	-01	54	34	47	27	76				4722	2	
0150	-01	61	34	48	27	77	0	051		4724	1	
0200	-01	67	34	49	27	78	0	067		4726	2	
0200	-01	67	34	49	27	78				4726	2	
0250	-01	46	34	51	27	79	0	082		4732	6	
0250	-01	46	34	51	27	79				4732	6	
0300	-01	58	34	53	27	81	0	097		4733	7	
0300	-01	58	34	53	27	81				4733	7	
0350	-01	69	34	55	27	83				4735	1	
0400	-01	77	34	57	27	85	0	123		4736	9	
0400	-01	77	34	57	27	85				4736	9	
0500	-01	90	34	72	27	97	0	141		4741	4	
0550	-01	94	34	84	28	07				4744	3	

SURFACE OBSERVATIONS																											
H. O. REF. NO.	STATION	DATE				POSITION				SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH																
		MO.	DAY	YEAR	HOUR	LATITUDE			LONGITUDE																		
00652	0008	02	16	960	16	71°	49′	S	097°	35′	W	0165	01														
WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE				HUMID-ITY	WEATHER	CLOUD				SEA				SWELL				VIS.	WATER				
SPEED	DIR.			DRY ↓		WET ↓				TYPE		AMT.		DIR.		AMT.		DIR.		AMT.			COL.		TRANS.		
06	23	24	81	56	7	58	1	59	01	4		2		00		0		00		0		7	04		15		

SUBSURFACE OBSERVATIONS												
SAMPLE DEPTH (M)	T °C ↓		S‰ ↓		σ_t ↓		↓ ΣΔD		O_2 ml/l ↓	V_f ↓		
0000	-01	50	33	70	27	14	0	000	7	32	4713	6
0000	-01	50	33	70	27	14			7	32	4713	6
0010	-01	76	33	67	27	12	0	009	7	37	4709	9
0010	-01	76	33	67	27	12			7	37	4709	9
0020	-01	71	33	69	27	13	0	019	7	28	4711	4
0020	-01	71	33	69	27	13		*	7	14	4711	4
0030	-01	56	33	81	27	23	0	028	7	21	4714	9
0030	-01	56	33	81	27	23			7	21	4714	9
0050	-01	40	33	96	27	34	0	044	7	15	4719	2
0050	-01	40	33	96	27	34			7	15	4719	2
0075	-01	66	34	08	27	45	0	061	6	52	4717	1
0075	-01	66	34	08	27	45			6	52	4717	1
0100	-01	64	34	14	27	50	0	076	6	31	4719	2
0100	-01	64	34	14	27	50			6	31	4719	2
0150	-01	59	34	19	27	54	0	105	6	17	4723	2
0150	-01	59	34	19	27	54			6	17	4723	2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0009	02	24	960	21	71° 52'S	100° 26'W	0420	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
00	00	24	74	01 6	00 4	81	02	4	5	00	0			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-01 58	33 59	27 05	0 000	7 60	4711 8
0000	-01 58	33 59	27 05		7 60	4711 8
0010	-01 62	33 59	27 05	0 010	7 59	4711 8
0010	-01 62	33 59	27 05		7 59	4711 8
0020	-01 69	33 63	27 08	0 020	7 51	4711 4
0025	-01 71	33 65	27 10		7 46	4711 5
0030	-01 69	33 66	27 11	0 030	7 43	4712 2
0049	-01 59	33 77	27 20		7 21	4715 4
0050	-01 58	33 78	27 20	0 048	7 19	4715 6
0074	-01 46	34 05	27 42		6 64	4720 1
0075	-01 46	34 05	27 42	0 067	6 62	4720 2
0099	-01 49	34 14	27 49		6 18	4721 5
0100	-01 49	34 14	27 49	0 083	6 18	4721 6
0148	-01 46	34 21	27 55		6 05	4725 2
0150	-01 45	34 21	27 55	0 112	6 05	4725 5
0196	-01 32	34 26	27 58		5 96	4730 5
0200	-01 31	34 26	27 58	0 138	5 96	4730 9
0245	-01 25	34 29	27 61		5 85	4734 6
0250	-01 22	34 30	27 61	0 162	5 83	4735 4
0292	-00 84	34 37	27 66		5 60	4744 2
*0337	-00 28	34 46	*27 71		5 17 *	4755 9
*0358	00 14	34 56	*27 76		4 90 *	4764 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0010	02	25	960	23	71° 38′S	100° 27′W	0549	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	15	24	65	00 0	50 3	95	71	0	8					3	04	17

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 75	33 66	27 11	0 000	6 85	4709 4
0000	-01 75	33 66	27 11		6 85	4709 4
0010	-01 87	33 65	27 10	0 010	6 85	4708 1
0010	-01 87	33 65	27 10		6 85	4708 1
0020	-01 83	33 66	27 11	0 019	6 97	4709 4
0025	-01 81	33 66	27 11		7 00	4710 0
0030	-01 79	33 69	27 14	0 029	6 98	4710 7
0050	-01 75	33 85	27 26	0 046	6 81	4713 2
0050	-01 75	33 85	27 26		6 81	4713 2
0075	-01 73	34 12	27 48	0 064	6 40	4716 2
0075	-01 73	34 12	27 48		6 40	4716 2
0100	-01 75	34 16	27 52	0 079	6 34	4717 6
0100	-01 75	34 16	27 52		6 34	4717 6
0150	-01 63	34 21	27 55	0 106	6 13	4722 6
0150	-01 63	34 21	27 55		6 13	4722 6
0200	-01 43	34 26	27 59	0 132	6 01	4729 0
0200	-01 43	34 26	27 59		6 01	4729 0
0250	-01 07	34 33	27 63	0 156	5 72	4737 9
0250	-01 07	34 33	27 63		5 72	4737 9
0300	-00 38	34 49	27 73	0 177	5 30	4752 3
0300	-00 38	34 49	27 73		5 30	4752 3
0400	00 86	34 66	27 80	0 211	4 48	4777 8
0400	00 86	34 66	27 80		4 48	4777 8
0450		34 71			4 34	
0500	01 16	34 72	27 83	0 241	4 36	4788 4
0500	01 16	34 72	27 83		4 36	4788 4

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0011	02	28	960	02	70° 44′S	096° 27′W	0411	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	36	24	70	50 6	51 7	79	03	0	8					7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 56	32 97	26 55	0 000		4709 5
0000	-01 56	32 97	26 55			4709 5
0010	-01 61	33 13	26 68	0 014		4709 9
0020	-01 65	33 34	26 85	0 027	7 32	4710 8
0020	-01 65	33 34	26 85		7 32	4710 8
0030	-01 69	33 73	27 17	0 038	6 98	4712 5
0045	-01 73	34 10	27 47		6 63	4714 3
0050	-01 73	34 11	27 47	0 053	6 59	4714 7
0070	-01 71	34 16	27 51		6 44	4716 4
0075	-01 67	34 17	27 52	0 068	6 39	4717 4
0100	-01 46	34 22	27 56	0 082	6 15	4722 4
0120	-01 26	34 26	27 58		5 96	4726 9
0150	-00 86	34 32	27 62	0 107	5 63	4735 2
0170	-00 63	34 36	27 64		5 49	4740 1
0200	-00 39	34 40	27 66	0 130	5 45	4745 8
0220	-00 20	34 43	27 68		5 43	4750 0
0250	00 17	34 50	27 71	0 150	4 99	4757 8
0270	00 39	34 54	27 73		4 77	4762 4
0300	00 65	34 57	27 74	0 169	4 55	4768 3
0320	00 82	34 61	27 77		4 46	4772 2
0370	01 21	34 74	27 84		4 47	4781 5

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0012	02	28	960	22	68° 40′S	086° 56′W	3704	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
		24	75	50 1	50 7	88	71	6	8					7	04	08

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-00 96	32 66	26 28	0 000	7 96	4717 6
0000	-00 96	32 66	26 28		7 96	4717 6
0010	-00 82	32 71	26 31	0 017	7 97	4720 5
0015	-00 75	32 74	26 34		7 97	4722 1
0020	-01 13	33 20	26 72	0 033	7 50	4718 4
0030	-01 63	33 92	27 32	0 043	6 86	4714 3
0030	-01 63	33 92	27 32		6 86	4714 3
0050	-01 62	34 01	27 39	0 058	6 79	4716 0
0050	-01 62				6 79	
0075	-01 44	34 13	27 48	0 074	6 51	4720 8
0075	-01 44	34 13	27 48		6 51	4720 8
0100	-00 22	34 27	27 55	0 088	5 55	4741 9
0100	-00 22	34 27	27 55		5 55	4741 9
0150	00 71	34 42	27 62	0 114	4 73	4759 6
0150		34 42			4 73	
0200	01 29	34 53	27 67	0 137	4 31	4771 7
0200	01 29	34 53	27 67		4 31	4771 7
0250	01 53	34 59	27 70	0 158	4 14	4778 5
0250	01 53	34 59	27 70		4 14	4778 5
0300	01 72	34 64	27 73	0 178	4 02	4784 4
0300	01 72	34 64	27 73		4 02	4784 4
0350	01 77	34 67	27 75		4 01	4788 3
0400	01 85	34 69	27 76	0 216	3 99	4792 5
0450	01 86	34 71	27 77		3 99	4795 7
0500	01 81	34 72	27 78	0 252	4 02	4798 0
0500	01 81	34 72	27 78		4 02	4798 0
0550	01 79	34 74	27 80		4 09	4800 8
0600	01 82	34 74	27 80	0 286	4 09	4804 2
0600	01 82	34 74	27 80		4 09	4804 2
0700	01 68	*34 63	* 27 72		4 41 *	4807 6
0800	01 63	34 74	27 81	0 352	4 18	4813 3
0800	01 63	* 34 67	* 27 76		4 18 *	4813 0
1000	01 40	34 74	27 83	0 416	4 30	4821 8
1000	01 40	34 74	27 83		4 30	4821 8
1200	01 32	34 74	27 84	0 478	4 31	4832 5
1200	01 32	34 74	27 84		4 31	4832 5
1500	01 11	34 73	27 84	0 570	4 42	4847 2
1500	01 11	34 73	27 84		4 42	4847 2
2000	00 83	34 73	27 86	0 718	4 42	4872 7
2000	00 83	34 73	27 86		4 42	4872 7
2500	00 55	34 72	27 87	0 856	4 64	4898 1
2500	00 55	34 72	27 87		4 64	4898 1
3000	00 44	34 71	27 87	0 988	4 67	4925 9
3000	00 44	34 71	27 87		4 67	4925 9

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0013	03	02	960	23	66° 15′S	067° 52′W	0500	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
10	06	24	96	01 2	01 0	97	51		9					3		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	-01 26	32 89	26 47	0 000	7 20	4713 8
0000	-01 26	32 89	26 47		7 20	4713 8
0010	-01 69	33 02	26 59	0 015	7 21	4708 2
0015	-01 81	33 08	26 64		7 22	4706 8
0020	-01 78	33 09	26 65	0 029	6 99	4707 7
0030	-01 75	33 20	26 74	0 043	6 57	4709 2
0030	-01 75	33 20	26 74		6 57	4709 2
0050	-01 77	33 79	27 22	0 065	5 84	4712 7
0050	-01 77	33 79	27 22		5 84	4712 7
0075	-01 55	33 96	27 35	0 085	5 62	4718 4
0075	-01 55	33 96	27 35		5 62	4718 4
0100	-01 73	34 05	27 43	0 102	5 92	4717 4
0100	-01 73	34 05	27 43		5 92	4717 4
0150	-01 18	34 20	27 53	0 132	5 85	4729 7
0150	-01 18	34 20	27 53		5 85	4729 7
0200	-00 22	34 37	27 63	0 158	4 87	4748 3
0200	-00 22	34 37	27 63		4 87	4748 3
0250	00 38	34 51	27 71	0 179	4 61	4761 0
0250	00 38	34 51	27 71		4 61	4761 0
0300	01 06	34 66	27 79	0 197	4 26	4774 8
0300	01 06	34 66	27 79		4 26	4774 8
0350	01 19	34 69	27 80		4 39	4779 8
0400	01 18	34 71	27 82	0 229	4 40	4782 7
0400	01 18	34 71	27 82		4 40	4782 7
0450	01 18	34 73	27 84		4 30	4785 8

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0014	03	04	960	05	68° 25′S	067° 57′W	0490	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
07	36	24	92	01 1	00 6	91	45	0	8					5		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 67	33 02	26 59	0 000	7 31	4707 9
0000	-01 67	33 02	26 59		7 31	4707 9
0010	-01 78	33 03	26 60	0 015	7 31	4706 8
0015	-01 80	33 04	26 61		7 31	4706 8
0020	-01 78	33 04	26 61	0 029	7 31	4707 4
0030	-01 74	33 05	26 62	0 043	7 31	4708 7
0030	-01 74	33 05	26 62		7 31	4708 7
0050	-01 68	33 78	27 21	0 066	6 00	4714 0
0050	-01 68	33 78	27 21		6 00	4714 0
0075	-01 68	33 98	27 37	0 086	5 98	4716 4
0075	-01 68	33 98	27 37		5 98	4716 4
0100	-01 75	34 07	27 44	0 103	6 16	4717 2
0100	-01 75	34 07	27 44		6 16	4717 2
0150	-01 31	34 16	27 50	0 133	5 91	4727 5
0150	-01 31	34 16	27 50		5 91	4727 5
0200	-00 60	34 32	27 61	0 160	5 33	4742 2
0200	-00 60	34 32	27 61		5 33	4742 2
0250	00 37	34 52	27 72	0 182	4 65	4760 9
0250	00 37	34 52	27 72		4 65	4760 9
0300	00 88	34 61	27 76	0 200	4 40	4771 9
0300	00 88				4 40	
0350	01 14	34 68	27 80		4 35	4779 0
0400	01 16	34 72	27 83	0 233	4 30	4782 5
0400	01 16	34 72	27 83		4 30	4782 5
0450	01 12	34 70	27 82		4 35	4784 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0015	03	06	1960	08	67° 23′ S	071° 40′ W	0437	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	28	24	74	53 4	54 7	69	03	4	6							

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	-01 54	33 08	26 64	0 000	7 43	4710 2
0000	-01 54	33 08	26 64		7 43	4710 2
0010	-01 65	33 05	26 61	0 014	7 45	4709 0
0010	-01 65	33 05	26 61		7 45	4709 0
0020	-01 54	33 08	26 64	0 028	7 48	4711 4
0020	-01 54	33 08	26 64		7 48	4711 4
0030	-01 33	33 19	26 72	0 042	7 42	4715 8
0030	-01 33	33 19	26 72		7 42	4715 8
0050	-01 86	33 80	27 23	0 064	6 31	4711 3
0050	-01 86	33 80	27 23		6 31	4711 3
0075	-01 80	34 07	27 44	0 083	6 27	4714 9
0075	-01 80	34 07	27 44		6 27	4714 9
0100	-01 76	34 10	27 47	0 098	6 32	4717 1
0100	-01 76	34 10	27 47		6 32	4717 1
0125	-01 82	34 12	27 49		6 44	4717 8
0150	-01 63	34 14	27 50	0 128	6 17	4722 3
0150	-01 63	34 14	27 50		6 17	4722 3
0175	-01 34	34 21	27 54		6 00	4728 7
0200	-00 85	34 33	27 62	0 155	5 44	4738 4
0200	-00 85	34 33	27 62		5 44	4738 4
0225	-00 28*	34 50	*27 74		5 03	*4749 4
0250	00 07	34 46	27 69	0 177	4 87	4756 1
0250	00 07	34 46	27 69		4 87	4756 1
0300	00 50	34 47	27 67	0 198	4 81	4765 6
0300		34 47			4 81	
0350	00 81*	34 72	*27 85		4 51	*4774 3
0400	00 99	34 66	27 79	0 236	4 35	4779 7
0400	-00 99	34 66	27 79		4 35	4779 7
0430	01 07	34 67	27 80		4 25	4782 7

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0016	03	08	960	17	67° 31′S	071° 36′W	0430	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	27	24	94	52 9	53 9	76	02	6	8					7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-01 75	33 07	26 63	0 000	7 14	4706 9
0000	-01 75	33 07	26 63		7 14	4706 9
0010	-01 82	33 09	26 65	0 014	7 14	4706 4
0015	-01 83	33 10	26 66		7 11	4706 6
0020	-01 79	33 21	26 75	0 028	7 07	4708 0
0030	-01 76	33 44	26 93	0 040	6 91	4710 1
0030	-01 76	33 44	26 93		6 91	4710 1
0050	-01 84	33 99	27 38	0 058	6 32	4712 4
0050	-01 84	33 99	27 38		6 32	4712 4
0075	-01 77	34 07	27 44	0 075	6 43	4715 4
0075	-01 77	34 07	27 44		6 43	4715 4
0100	-01 84	34 10	27 47	0 091	6 49	4715 9
0100	-01 84	34 10	27 47		6 49	4715 9
0150	-01 78	34 14	27 50	0 121	6 44	4720 0
0150	-01 78	34 14	27 50		6 44	4720 0
0200	-01 28	34 23	27 56	0 148	5 91	4731 2
0200	-01 28	34 23	27 56		5 91	4731 2
0250	-00 90	34 35	27 64	0 173	5 76	4740 7
0250	-00 90	34 35	27 64		5 76	4740 7
0300	00 21	34 52	27 73	0 193	5 17	4761 4
0300	00 21	34 52	27 73		5 17	4761 4
0350	00 93	34 65	27 79		4 44	4775 8
0400	01 08				9 89	
0400	01 08	*33 80	*27 10		9 89	*4777 3

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00652	0017	03	09	960	20	64° 27′S	062° 18′W	0348	02

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
05	23	24	08	51 1	52 1	80	02			23	2			7	08	05

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	-00 86	33 34	26 83	0 000		4722 1
0000	-00 86	33 34	26 83			4722 1
0009	-00 83	33 31	26 80			4722 9
0010	-00 83	33 31	26 80	0 012		4723 0
0018	-00 84	33 31	26 80			4723 3
0020	-00 86	33 30	26 79	0 025		4723 1
0026	-00 90	33 30	26 79			4722 8
0030	-00 87	33 36	26 84	0 037		4723 8
0044	-00 72	33 59	27 02			4727 9
0050	-00 59	33 72	27 12	0 059		4730 9
0066	-00 31	33 99	27 33			4737 3
0075	-00 22	34 06	27 38	0 080		4739 5
0088	-00 10	34 16	27 45			4742 5
0100	00 03	34 24	27 51	0 096		4745 6
0138	00 38	34 43	27 65			4754 0
0150	00 52	34 48	27 68	0 121		4757 0
0176	00 65	34 54	27 72			4760 8
0200	00 54	34 54	27 73	0 141		4760 5
0222	00 26	34 54	27 74			4757 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE MO.	DATE DAY	DATE YEAR	DATE HOUR	POSITION LATITUDE	POSITION LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00652	0018	03	10	960	03	63° 37′S	061° 23′W	0622	06

WIND SPEED	WIND DIR.	ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE DRY ↓	AIR TEMPERATURE WET ↓	HUMIDITY	WEATHER	CLOUD TYPE	CLOUD AMT.	SEA DIR.	SEA AMT.	SWELL DIR.	SWELL AMT.	VIS.	WATER COL.	WATER TRANS.
05	23	24	10	50 1	51 2	80	03	6	4	28	2			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	00 75	33 48	26 86	0 000	6 91	4747 3
0000	00 75	33 48	26 86		6 91	4747 3
0010	00 72	33 47	26 86	0 012	6 55	4747 4
0015	00 68	33 47	26 86			4747 1
0020	00 53	33 57	26 95	0 024	6 27	4745 5
0030	00 28	33 78	27 13	0 034	6 08	4743 2
0030		33 78			6 08	
0049	-00 01	34 21	27 49		5 94	4741 8
0050	-00 01	34 22	27 50	0 049	5 95	4741 9
0073	-00 02	34 31	27 57			4743 5
0075	-00 04	34 31	27 57	0 063	6 04	4743 3
0098	-00 21	34 36	27 62		6 12	4742 3
0100	-00 19	34 36	27 62	0 076	6 08	4742 7
0146	-00 02	34 45	27 68		5 27	4748 5
0150	-00 05	34 45	27 69	0 098	5 24	4748 2
0195	-00 21	34 49	27 73			4748 6
0200	-00 15	34 50	27 73	0 118	4 93	4749 9
0250	00 36	34 58	27 77	0 136	4 73	4761 0
0293	00 59	34 62	27 79		4 66	4767 2
0300	00 56	34 62	27 79	0 152	4 67	4767 1
0391	00 42	34 63	27 81		4 81	4770 5
0400	00 47	34 64	27 81	0 183	4 81	4771 8
0488	00 71	34 68	27 83			4780 8
0500	00 71	34 68	27 83	0 213	4 79	4781 5
0584	00 43	34 66	27 83		4 77	4782 3

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0019	03	10	960	06	63° 18′S	061° 19′W	1189	07

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
03	25	24	10	50 9	52 0	78	02	6	3	26	2			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	00 50	33 51	26 90	0 000	6 98	4743 6
0000	00 50	33 51	26 90		6 98	4743 6
0010	00 47	33 52	26 91	0 012	7 03	4743 8
0012	00 47	33 52	26 91			4743 9
0020	00 49	33 51	26 90	0 023	7 06	4744 7
0024	00 49	33 51	26 90		7 08	4744 9
0030	00 48	33 52	26 91	0 035	6 86	4745 2
0041	00 45	33 58	26 96			4745 6
0050	00 16	33 73	27 10	0 056	6 20	4742 4
0075	-00 36	34 04	27 37	0 077	5 59	4737 3
0082	-00 44	34 11	27 43		5 46	4736 8
0100	-00 37	34 20	27 50	0 093	5 25	4739 3
0122	-00 27	34 29	27 57		5 06	4742 5
0150	-00 11	34 37	27 62	0 120	5 12	4747 0
0163	-00 06	34 40	27 65			4748 7
0200	-00 08	34 47	27 70	0 142	5 25	4750 8
0245	-00 11	34 53	27 75		5 28	4753 3
0250	-00 06	34 54	27 76	0 160	5 24	4754 4
0300	00 32	34 58	27 77	0 178	4 89	4763 3
0327	00 43	34 60	27 78		4 76	4766 7
0400	00 39	34 62	27 80	0 210	4 83	4770 5
0409	00 39	34 62	27 80			4771 1
0492	00 40	34 64	27 81		4 86	4776 2
0500	00 40	34 64	27 81	0 240	4 86	4776 7
0600	00 39	34 67	27 84	0 269	4 81	4782 6
0659	00 37	34 68	27 85		4 75	4785 9

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0020	03	10	960	08	63° 08′S	061° 16′W	0494	04

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	27	24	11	50 9	51 9	80	03	6	3	26	2			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	00 58	33 53	26 91	0 000	7 17	4744 9
0000	00 58	33 53	26 91		7 17	4744 9
0010	00 61	33 53	26 91	0 012	7 17	4746 0
0011	00 61	33 53	26 91			4746 0
0020	00 55	33 69	27 04	0 022	7 16	4746 4
0022	00 52	33 72	27 07		7 16	4746 1
0030	00 30	33 83	27 17	0 032	6 94	4743 8
0037	00 15	33 89	27 22			4742 2
0050	00 02	33 92	27 26	0 049	6 50	4741 1
0055	-00 05	33 94	27 27		6 42	4740 4
0074	-00 43	34 04	27 37		6 20	4736 1
0075	-00 44	34 04	27 37	0 069	6 18	4736 0
0100	-00 54	34 13	27 45	0 085	5 81	4736 4
0112	-00 59	34 18	27 49			4736 5
0150	-00 27	34 35	27 62	0 113	5 23	4744 4
0150	-00 27	34 35	27 62		5 23	4744 4
0188	00 05	34 42	27 66			4751 9
0200	00 13	34 44	27 67	0 136	4 90	4753 9
0227	00 32	34 49	27 70		4 76	4758 6
0250	00 53	34 54	27 73	0 157	4 67	4763 4
0300	00 84	34 60	27 76	0 175	4 54	4771 2
0311	00 88	34 61	27 76			4772 5
0358	00 96	34 61	27 76		4 53	4776 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0021	03	12	1960	04	59° 57′ S	057° 00′ W	3658	30

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	04	24	06	02 1	01 7	90	47		9	01	1			2		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	02 06	33 74	26 98	0 000		4767 7
0000	02 06	33 74	26 98			4767 7
0010	02 03	33 74	26 98	0 011		4767 9
0010	02 03	33 74	26 98			4767 9
0020	01 99	33 74	26 99	0 022		4767 9
0020	01 99	33 74	26 99			4767 9
0030	01 38	33 75	27 04	0 032		4759 6
0030	*02 61	33 75	*26 94			* 4777 5
0050	00 10	33 93	27 26	0 051		4742 3
0050	00 10	33 93	27 26			4742 3
0060	-00 57	34 02	27 36			4733 1
0075	-00 33	34 15	27 46	0 069		4738 2
0075	-00 33	34 15	27 46			4738 2
0100	00 25	34 27	27 53	0 084		4749 1
0100	00 25	34 27	27 53			4749 1
0125		34 42				
0150	01 58	34 50	27 63	0 110		4772 8
0150	01 58	34 50	27 63			4772 8
0175	01 69	34 55	27 66			4776 2
0200	01 70	34 56	27 66	0 133		4777 8
0200	01 70	34 56	27 66			4777 8
0250	01 79	34 57	27 67	0 156		4782 2
0250	01 79	34 57	27 67			4782 2
0300	01 83	34 60	27 69	0 177		4785 9
0300	01 83	34 60	27 69			4785 9
0350	01 89	34 65	27 72			4789 9
0400	01 89	34 67	27 74	0 218		4793 0
0400		34 67				
0500	01 89	34 71	27 77	0 255		4799 1
0500	01 89	34 71	27 77			4799 1
0600	01 82	34 72	27 78	0 291		4804 1
0600	01 82	34 72	27 78			4804 1
0800	01 66	34 73	27 80	0 360		4813 7
0800	01 66	34 73	27 80			4813 7
1000	01 44	34 74	27 83	0 425		4822 4
1000	01 44	34 74	27 83			4822 4
1200	01 23	34 73	27 83	0 487		4831 1
1500	00 98	34 72	27 84	0 579		4845 2
1500	00 98	34 72	27 84			4845 2
2000	00 71	34 71	27 85	0 725		4870 8
2000	00 71	34 71	27 85			4870 8
2500	00 36	34 70	27 87	0 862		4895 1
2500	00 36	*34 73	*27 89			* 4895 3
3000	00 11	34 68	27 86	0 987		4920 8
3000	00 11	34 68	27 86			4920 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0022	03	12	1960	11	58° 51′ S	056° 56′ W	3658	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	03	24	07	04 4	03 9	93	47		9	03	2			5		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	02 85	33 71	26 89	0 000		4779 0
0000	02 85	33 71	26 89			4779 0
0010	02 75	33 71	26 90	0 012		4778 1
0010	02 75	33 71	26 90			4778 1
0020	02 68	33 72	26 91	0 023		4777 8
0020	02 68	33 72	26 91			4777 8
0030	02 65	33 71	26 91	0 035		4777 9
0030	02 65	33 71	26 91			4777 9
0050	02 57	33 72	26 92	0 058		4778 0
0050	02 57	33 72	26 92			4778 0
0060	00 40	33 91	27 23			4747 4
0075	-00 16	34 04	27 36	0 081		4740 3
0075	-00 16	34 04	27 36			4740 3
0100	00 20	34 19	27 46	0 098		4748 0
0100	00 20	34 19	27 46			4748 0
0125	00 63	34 29	27 52			4756 4
0150	00 78	34 32	27 53	0 128		4760 2
0150	00 78	34 32	27 53			4760 2
0175	00 94	34 39	27 58			4764 4
0200	01 09	34 42	27 60	0 154		4768 3
0200	01 09	34 42	27 60			4768 3
0247	01 59	34 57	27 68			4779 1
0250	01 60	34 57	27 68	0 178		4779 4
0296	01 70	34 61	27 70			4783 8
0300	01 71	34 61	27 70	0 199		4784 1
0346	01 80	34 63	27 71			4788 3
0395	*02 72	34 66	*27 66			*4804 6
0400	01 86	34 66	27 73	0 239		4792 5
0494	01 89	*34 84	*27 87			*4799 3
0500	01 89	34 69	27 75	0 277		4799 0
0593	01 82	34 71	27 78			4803 6
0600	01 82	34 71	27 78	0 314		4804 0
0791	01 70	*34 78	*27 84			*4813 9
0800	01 69	34 74	27 81	0 383		4814 2
0990	01 51	*34 84	*27 90			*4823 3
1000	01 50	34 75	27 83	0 448		4823 3
1188	01 31	34 75	27 84			4831 7
1200	01 30	34 75	27 85	0 509		4832 2
1486	01 01	34 73	27 85			4844 9
1500	01 00	34 73	27 85	0 598		4845 5
1984	00 73	34 73	27 87			4870 2

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0023	03	12	960	15	58° 19'S	056° 54'W	3658	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	29	24	08	04 4	04 1	96	46		5	02	3			3		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 m l/l ↓	V_f ↓
0000	02 96	33 70	26 87	0 000		4780 5
0000	02 96	33 70	26 87			4780 5
0010	02 77	33 70	26 89	0 012		4778 4
0010	02 77	33 70	26 89			4778 4
0020	02 69	33 70	26 90	0 023		4777 8
0020	02 69	33 70	26 90			4777 8
0030	02 62	33 70	26 90	0 035		4777 4
0030	02 62	33 70	26 90			4777 4
0050	02 61	33 70	26 90	0 058		4778 5
0050	02 61	33 70	26 90			4778 5
0060	02 44	33 71	26 93			4776 7
0075	00 52	33 86	27 18	0 084		4749 9
0075	00 52	33 86	27 18			4749 9
0100	-00 06	34 00	27 32	0 105		4743 2
0100	-00 06	34 00	27 32			4743 2
0125	00 29	34 18	27 45			4750 8
0150	00 66	34 30	27 53	0 138		4758 3
0150	00 66	34 30	27 53			4758 3
0175	00 95	34 37	27 56			4764 5
0200	01 22	34 43	27 59	0 165		4770 2
0240	01 53	34 51	27 64			4777 5
0250	01 54	34 52	27 64	0 189		4778 3
0300	01 57	34 57	27 68	0 212		4781 9
0336	01 62	34 60	27 70			4784 9
0384	01 71	34 63	27 72			4789 2
0400	01 73	34 64	27 73	0 253		4790 5
0480	01 80	34 66	27 74			4796 4
0500	01 81	34 67	27 74	0 292		4797 8
0577	01 81	34 69	27 76			4802 4
0600	01 81	34 70	27 77	0 329		4803 8
0769	01 72	34 71	27 78			4812 6

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0024	03	12	960	19	57° 47'S	056° 50'W	4023	19

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
11	27	24	10	04 3	04 0	96	47		8	30	2			4		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	03 09	33 68	26 85	0 000		4782 3
0000	03 09	33 68	26 85			4782 3
0010	03 06	33 68	26 85	0 012		4782 4
0010	03 06	33 68	26 85			4782 4
0020	03 00	33 69	26 86	0 024		4782 2
0020	03 00	33 69	26 86			4782 2
0030	02 68	33 70	26 90	0 036		4778 3
0030	02 68	33 70	26 90			4778 3
0050	02 49	33 71	26 92	0 059		4776 8
0050	02 49	33 71	26 92			4776 8
0060	02 45	33 71	26 93			4776 8
0075	00 59	33 78	27 11	0 085		4750 6
0075	00 59	33 78	27 11			4750 6
0100	-00 65	33 92	27 29	0 107		4733 8
0100	-00 65	33 92	27 29			4733 8
0125	-00 39	34 12	27 44			4740 1
0150	00 10	34 17	27 45	0 143		4749 3
0150	00 10	34 17	27 45			4749 3
0175	00 68	34 20	27 44			4759 7
0200	01 19	34 26	27 46	0 175		4769 0
0200	01 19	34 26	27 46			4769 0
0241	01 74	34 40	27 53			4780 2
0250	01 79	34 41	27 54	0 205		4781 5
0289	01 90	34 46	27 57			4785 6
0300	01 86	34 47	27 58	0 232		4785 7
0337	01 81	34 49	27 60			4787 3
0385	01 91	34 56	27 65			4791 9
0400	01 94	34 57	27 65	0 282		4793 3
0482	01 99	34 62	27 69			4799 1
0500	01 95	34 63	27 70	0 326		4799 6
0578	01 84	34 65	27 73			4802 8
0600	01 85	34 66	27 73	0 368		4804 3
0771	01 85	34 70	27 76			4814 6
0800	01 84	34 70	27 77	0 445		4816 2
0965	01 78	34 72	27 79			4825 2
1000	01 75	34 72	27 79	0 519		4826 8
1159	01 63	34 74	27 81			4834 6
1200	01 62	34 74	27 81	0 589		4836 9
1451	01 52	34 75	27 83			4850 4
1500	01 49	34 75	27 83	0 689		4852 9
1945	01 05	34 73	27 85			4872 7

SURFACE OBSERVATIONS

H.O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0025	03	13	960	00	57° 13′S	056° 48′W	4023	23

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
06	29	24	13	05 3	05 0	96	46	0	8	29	2			5		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 m l/l ↓	V_f ↓
0000	02 99	33 67	26 85	0 000		4780 8
0000	02 99	33 67	26 85			4780 8
0010	02 94	33 68	26 86	0 012		4780 7
0010	02 94	33 68	26 86			4780 7
0020	02 79	33 68	26 87	0 024		4779 2
0020	02 79	33 68	26 87			4779 2
0029	02 76	33 68	26 88			4779 3
0030	02 76	33 68	26 88	0 036		4779 4
0049	02 68	33 69	26 89			4779 4
0050	02 67	33 69	26 89	0 059		4779 3
0059	02 62	33 69	26 90			4779 1
0073	01 09	33 84	27 13			4758 2
0075	01 09	33 82	27 11	0 086		4758 3
0092	00 71	33 82	27 14			4753 6
0098	00 40	33 88	27 20			4749 5
0100	00 34	33 90	27 22	0 109		4748 8
0122	-00 03	34 09	27 39			4745 3
0147	00 12	34 12	27 41			4749 2
0150	00 13	34 13	27 42	0 147		4749 6
0172	00 34	34 18	27 45			4754 3
0197	00 86	34 23	27 46			4763 8
0200	00 89	34 24	27 46	0 179		4764 5
0250	01 28	34 38	27 55	0 209		4773 9
0275	01 44	34 44	27 59			4778 0
0300	01 54	34 49	27 62	0 235		4781 1
0400	01 86	34 65	27 72	0 279		4792 5
0459	02 00	34 72	27 77			4798 3
0500	01 98	34 72	27 77	0 317		4800 5
0600	01 95	34 72	27 77	0 353		4806 0
0800	01 93	34 72	27 77	0 426		4817 6
0920	01 83	34 72	27 78			4823 2
1000	01 65	34 72	27 80	0 498		4825 4
1200	01 29	34 72	27 82	0 566		4832 0
1384	01 08	34 72	27 84			4839 8
1500	01 08	34 72	27 84	0 660		4846 7
1848	01 03	34 72	27 84			4866 6
2000	00 97					
2314	00 80					

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0026	03	13	1960	04	56° 41′ S	056° 44′ W	4023	20

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	27	24	17	04 8	04 1	90	28	0	5	28	2			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	↓ $\Sigma \Delta D$	O_2 ml/l ↓	V_f ↓
0000	03 24	33 66	26 82	0 000		4784 3
0000	03 24	33 66	26 82			4784 3
0010	03 21	33 66	26 82	0 012		4784 5
0010	03 21	33 66	26 82			4784 5
0019	03 12	33 67	26 84			4783 8
0020	03 12	33 67	26 84	0 025		4783 8
0029	03 07	33 68	26 85			4783 7
0030	03 07	33 68	26 85	0 037		4783 8
0048	02 77	33 69	26 88			4780 6
0050	02 77	33 69	26 88	0 061		4780 7
0057	02 46	33 71	26 93			4776 8
0072	00 16	33 82	27 17			4744 1
0075	00 05	33 83	27 18	0 087		4742 6
0096	-00 39	33 90	27 26			4737 4
0100	-00 35	33 91	27 26	0 108		4738 3
0120	-00 10	33 96	27 29			4743 6
0144	00 33	34 03	27 33			4751 8
0150	00 47	34 05	27 34	0 147		4754 4
0168	00 83	34 10	27 35			4761 1
0184	01 05	34 16	27 39			4765 6
0192	01 22	34 16	27 38			4768 6
0200	01 29	34 19	27 40	0 183		4770 2
0222	01 46	34 27	27 45			4774 4
0250	01 58	34 29	27 46	0 217		4777 9
0259	01 63	*34 35	*27 50			*4779 4
0296	01 89	34 32	27 46			4785 3
0300	01 90	34 33	27 46	0 249		4785 7
0371	02 04	34 40	27 51			4792 3
0400	02 04	34 42	27 53	0 310		4794 1
0447	02 05	34 45	27 55			4797 2
0500	02 05	34 47	27 57	0 367		4800 4
0599	02 05	34 52	27 61			4806 5
0600	02 05	34 52	27 61	0 421		4806 6
0755	02 08	34 60	27 67			4816 6
0800	02 08	34 63	27 69	0 518		4819 4
0912	02 04	34 70	27 75			4825 7
1000	01 93	34 70	27 76	0 602		4829 4
1155	01 80	*34 73	*27 79			*4836 8
1200	01 82	34 71	27 78	0 679		4839 7
1500	01 84	34 72	27 78	0 795		4857 8
1583	01 85	34 72	27 78			4862 9
2000	01 70	34 74	27 81	0 987		4885 5
2041	01 67	34 74	27 81			4887 5

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0027	03	13	960	08	56° 08′S	056° 41′W	4023	08

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMIDITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
02	36	24	19	05 8	04 8	86	02	4	3	30	2			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	03 26	33 66	26 82	0 000		4784 6
0000	03 26	33 66	26 82			4784 6
0010	03 21	33 63	26 80	0 013		4784 4
0010	03 21	33 63	26 80			4784 4
0020	03 15	33 64	26 81	0 025		4784 1
0020	03 15	33 64	26 81			4784 1
0030	03 14	33 62	26 79	0 038		4784 5
0030	03 14	33 62	26 79			4784 5
0050	02 59	33 67	26 88	0 062		4778 1
0050	02 59	33 67	26 88			4778 1
0060	02 52	33 66	26 88			4777 6
0075	02 58	33 67	26 88	0 092		4779 4
0075	02 58	33 67	26 88			4779 4
0100	00 31	33 75	27 10	0 118		4747 7
0100	00 31	33 75	27 10			4747 7
0125	00 16	33 80	27 15			4747 2
0150	−00 38	33 85	27 22	0 164		4740 6
0150	−00 38	33 85	27 22			4740 6
0175	00 08	33 93	27 26			4749 5
0200	00 59	33 99	27 28	0 205		4758 9
0200	00 59	33 99	27 28			4758 9
0238	01 42	34 16	27 36			4774 3
0250	01 50	34 18	27 37	0 243		4776 3
0287	01 68	34 23	27 40			4781 3
0300	01 70	34 24	27 41	0 279		4782 4
0334	01 74	34 26	27 42			4785 1
0382	01 81	34 33	27 47			4789 3
0400	01 86	34 35	27 48	0 344		4791 2
0478	02 03	34 42	27 53			4798 6
0500	02 05	34 43	27 53	0 405		4800 2
0573	02 11	34 47	27 56			4805 6
0600	02 13	34 48	27 57	0 462		4807 6
0765	02 24	34 57	27 63			4819 3

SURFACE OBSERVATIONS									
H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0028	03	13	960	13	55° 35′S	056° 39′W	4389	05

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
08	32	24	20	06 7	06 2	93	46	0	8	21	3			5		

SUBSURFACE OBSERVATIONS						
SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
0000	03 92	33 64	26 74	0 000		4793 8
0000	03 92	33 64	26 74			4793 8
0010	03 76	33 65	26 76	0 013		4792 2
0010	03 76	33 65	26 76			4792 2
0020	03 49	33 68	26 81	0 026		4789 1
0020	03 49	33 68	26 81			4789 1
0029	03 45	33 68	26 81			4789 1
0030	03 44	33 68	26 81	0 038		4789 0
0049	03 39	33 68	26 82			4789 4
0050	03 40	33 68	26 82	0 063		4789 6
0059	03 45	33 68	26 81			4790 9
0073	03 35	33 68	26 82			4790 3
0075	03 07	33 69	26 86	0 094		4786 5
0098	00 62	33 78	27 11			4752 4
0100	00 49	33 79	27 13	0 121		4750 6
0122	-00 50	33 85	27 22			4737 1
0147	-00 72	33 89	27 26			4735 3
0150	-00 64	33 91	27 28	0 164		4736 8
0171	-00 19	34 02	27 35			4745 5
0196	00 15	34 08	27 38			4752 4
0200	00 31	34 11	27 39	0 202		4755 2
0230	01 18	34 28	27 48			4770 8
0250	01 29	34 30	27 49	0 234		4773 7
0276	01 40	34 33	27 50			4777 0
0300	01 43	34 35	27 52	0 264		4778 9
0322	01 48	34 37	27 53			4781 1
0368	01 62	34 42	27 56			4786 1
0400	01 70	34 45	27 58	0 320		4789 3
0460	01 83	34 51	27 61			4795 0

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0029	03	13	960	17	55° 06′S	056° 37′W	2232	16

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
05	32	24	18	08 9	07 9	88	28	4	5	27	2			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
0000	07 29	34 03	26 64	0 000		4840 4
0000	07 29	34 03	26 64			4840 4
0010	07 19	34 03	26 65	0 014		4839 7
0010	07 19	34 03	26 65			4839 7
0020	06 82	34 03	26 70	0 028		4835 5
0020	06 82	34 03	26 70			4835 5
0029	06 80	34 05	26 72			4835 9
0030	06 78	34 05	26 72	0 041		4835 7
0049	06 25	34 07	26 81			4829 9
0050	06 20	34 07	26 81	0 067		4829 4
0059	* 05 91	34 09	* 26 87			* 4826 1
0074	05 37	34 12	26 96			4820 0
0075	05 36	34 12	26 96	0 097		4819 9
0098	05 13	34 17	27 02			4818 4
0100	05 11	34 17	27 03	0 124		4818 2
0123	04 90	34 14	27 03			4816 6
0148	04 74	34 14	27 05			4815 9
0150	04 73	34 14	27 05	0 176		4815 9
0172	04 66	34 15	27 06			4816 3
0197	04 55	34 17	27 09			4816 4
0200	04 58	34 17	27 09	0 227		4817 0
0215	04 66	34 16	27 07			4818 9
0239	04 59	34 16	27 08			4819 4
0250	04 51	34 15	27 08	0 278		4818 9
0287	04 33	34 13	27 08			4818 5
0300	04 32	34 14	27 09	0 328		4819 2
0335	04 28	34 15	27 10			4820 8
0383	04 19	34 16	27 12			4822 4
0400	04 24	34 17	27 12	0 428		4824 2
0479	04 28	34 20	27 14			4829 5
0500	04 20	34 21	27 16	0 526		4829 7
0577	03 93	34 23	27 20			4830 7
0600	03 85	34 24	27 22	0 619		4831 0
0767	03 34	34 31	27 33			4834 0
0800	03 28	34 34	27 35	0 789		4835 3
0960	02 99	34 45	27 47			4841 1
1000	02 91	34 45	27 48	0 936		4842 4
1154	02 64	34 46	27 51			4847 7
1200	02 59	34 49	27 54	1 066		4849 9
1447	02 37	34 60	27 64			4861 8
1500	02 33	34 62	27 66	1 238		4864 5
1645	02 24	34 64	27 69			4871 9

SURFACE OBSERVATIONS

H. O. REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00652	0030	03	13	960	21	54° 30′S	056° 47′W	0082	01

WIND		ANEMO. HGT.	AIR PRESS	AIR TEMPERATURE		HUMID-ITY	WEATHER	CLOUD		SEA		SWELL		VIS.	WATER	
SPEED	DIR.			DRY ↓	WET ↓			TYPE	AMT.	DIR.	AMT.	DIR.	AMT.		COL.	TRANS.
12	32	24	18	09 6	08 6	88	02	1	3	32	2			7		

SUBSURFACE OBSERVATIONS

SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	↓ ΣΔD	O_2 ml/l ↓	V_f ↓
0000	07 64	34 06	26 61	0 000		4845 0
0000	07 64	34 06	26 61			4845 0
0009	07 57	34 07	26 63			4844 6
0010	07 56	34 07	26 63	0 014		4844 6
0019	07 49	34 06	26 63			4844 2
0020	07 49	34 06	26 63	0 028		4844 2
0029	07 43	34 07	26 65			4844 0
0030	07 38	34 07	26 65	0 043		4843 5
0048	06 73	34 07	26 74			4836 2
0050	06 70	34 07	26 75	0 070		4835 9
0058	06 60	34 07	26 76			4835 1
0073	06 56	34 08	26 78			4835 5

APPENDIX B

SEDIMENT ANALYSIS SUMMARY SHEETS

EXPLANATION OF SEDIMENT ANALYSIS SUMMARY SHEETS

Results of bottom sediment analysis performed by the U. S. Navy Hydrographic Office are recorded on the sediment analysis sheet. Almost all bottom samples are analyzed weeks after the collection of the samples; therefore, various procedures normally carried out during a routine sediment analysis are not attempted. Determinations such as: wet density, water content, porosity, etc., are not possible after the samples have lost their "in situ" moisture; therefore, these parameters are not included on the analysis sheet.

The following is a description of the terms employed on the sediment analysis sheets:

1. Ship. The name of the ship used for collecting bottom sample.

2. Sample Number. A consecutive number, commencing with 1, assigned to each bottom grab sample or core taken successively throughout the cruise.

3. Latitude. Expressed in degrees, minutes, and seconds.

4. Longitude. Expressed in degrees, minutes, and seconds.

5. Date. Day (GMT), month, and year.

6. Cruise. The code name of the operation during which the bottom sample was taken.

7. Sampler Type. Identified by name or designation of device employed.

8. Water Depth. The uncorrected sonic sounding recorded to the nearest whole fathom and meter.

9. Core Length. Recorded to a fraction of an inch and centimeter as observed in the laboratory. This information is not given when a grab sampler was employed.

10. Core Penetration. Recorded to a fraction of an inch and centimeter as observed in the field. This information is not given when a grab sampler was employed.

11. Laboratory Number. A reference number assigned to each subsample which is retained in the laboratory sample file.

12. Subsample Depth in Core. Depth from the core top of the subsample top and bottom recorded to a fraction of an inch. This information is not entered when a surface grab sample was obtained.

13. Sediment Type. Determined by the sand, silt, and clay ratios of the sample based on the F.P. Shephard sediment triangle with modification of coarser material taken from Willman.

14. Color. Based on the Geological Society of America Rock-Color Chart. For those samples where color was not determined in the field, the sample was moistened in the laboratory for a color determination.

15. Odor. A laboratory description. A qualitative description of any noticeable odors.

16. Size Analysis and Statistical Measures. Sample size fraction values are based on dry weight and given in phy (ϕ) units to the nearest whole percent. An American Instrument Company sieving machine and U.S. standard sieves were used for determining sand and larger fractions. The pipette method of analysis was used to determine silt, clay, and colloid fractions.

The following table is presented for the conversion of phi units to millimeters:

$$[-\phi = \log_2 \text{diameter (millimeters)}]$$

Phi (ϕ)	Millimeters	Geological Classification
<-2	>4	Pebble
-2 to -1	4.0 to 2.0	Granule
-1 to 4	2.0 to 0.625	Sand
4 to 9	0.0625 to 0.00195	Silt
9 to 12	0.00195 to 0.00024	Clay
>12	<0.00025	Colloid

$Q_{1\phi}$ - (first phi quartile). Is the size read from the distribution curve above which 25 percent of the diameters in the distribution are larger and below which 75 percent of the diameters are smaller and is expressed to the nearest hundredth of a phi unit.

$Q_{3\phi}$ - (third phi quartile). Is the size read from the distribution curve above which 75 percent of the diameters in the distribution are larger and below which 25 percent of the diameters are smaller and is expressed to the hundredth of a phi unit.

QD_ϕ - (phi quartile deviation). Is that statistical parameter which is a measure of one-half of the spread of the quartiles and is expressed in phi units to the nearest hundredth with the given value computed from the formula:

$$QD_\phi = \frac{Q_{3\phi} - Q_{1\phi}}{2}$$

Sk_ϕ - (phi quartile skewness). Is that statistical parameter which is a measure of half the sum of the first and third quartile values less the median and is expressed in phi units to the nearest hundredth with the given value computed from the formula:

$$Sk_\phi = \frac{Q_{1\phi} + Q_{3\phi}}{2} = Md_\phi$$

Md_ϕ - (phi median). Is the middlemost member of the distribution curve above which 50 percent of the diameters in the distribution are larger and below which 50 percent of the diameters are smaller and is expressed to the nearest hundredth of a phi unit.

17. Subsample Dry Weight. Dry weight to the nearest hundredth of a gram.

18. Sphericity (avg.). A measure of the approach of the grain to the form of a sphere, expressed as one of the following: high, medium high, medium, medium low, or low. Determination was accomplished with a miscroscope and was based on a comparison of the sand and larger size fractions with a chart based on Waddell's method.

19. Roundness (avg.). A function of the sharpness of the grain edges and recorded as one of the following: very angular, angular, subangular, subrounded, rounded, or well rounded. Determination and laboratory procedures were the same as for Sphericity.

20. Surface Texture (avg.). A description of the physical appearance of the grain based on the scheme propoed by Krumbein and Pettijohn. These descriptions are recorded as dull or polished and one of the following: smooth, striated, faceted, frosted, pitted, or etched.

21. Mineral Content. A rough estimate of the percentage of mineralogical constituents contained in the sand size and larger materials based on a microscopic examination of the sample.

22. Biological Content. A rough estimate of the percentage of biological constituents contained in the sand size and larger materials based on a microscopic examination of the sample.

23. Remarks. Codes for mineral trace constituents and major foraminifera types, and space for additional information pertaining to the bottom sample.

OCEANOGRAPHIC Log Sheet RR
NHO 3167/18A (Rev 8-60)

SEDIMENT ANALYSIS SHEET

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	1	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	77 ° 07 ' 00 " S	8. WATER DEPTH (fm.)	345 (m.) 635
4. LONGITUDE	177 ° 19 ' 00 " W	9. CORE LENGTH (in.)	17 (cm.) 43.2
5. DATE (day, month, year)	13 Dec. 1959	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5091	5092	5093
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3	3 - 6	6 - 8
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)	Grayish Olive 10Y 4/2		
(LABORATORY)	Greenish Gray 5GY 6/1	Greenish Gray 5GY 6/1	Grnsh. Gray 5GY 6/1 Lt.Olv.Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)		QDφ 2.62	4 QDφ 2.95 QDφ 2.47
b. −2φ to −1φ (%)	1	SKφ +0.22	1 SKφ −0.30 SKφ +0.03
c. −1φ to 0φ (%)		Mdφ 9.00	1 Mdφ 8.80 Mdφ 9.20
d. 0φ to 1φ (%)	1	Qlφ 6.60	1 Qlφ 5.55 1 Qlφ 6.75
e. 1φ to 2φ (%)	1	Q3φ 11.85	2 Q3φ 11.45 Q3φ 11.70
f. 2φ to 3φ (%)	2		3 1
g. 3φ to 4φ (%)	2		3 1
h. 4φ to 6φ (%)	13		13 15
i. 6φ to 9φ (%)	30		24 30
j. 9φ to 12φ (%)	26		28 30
k. >12φ (%)	24		21 22
17. SUBSAMPLE DRY WEIGHT (gm.)	15.39		19.36 16.39
18. SPHERICITY (avg.)	Medium		Medium Medium
19. ROUNDNESS (avg.)	Subangular		Subangular Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	35		40 40
b. SECONDARY Quartz	20		30 25
c. TERTIARY Rock Fragments	10		20 10
d. OTHER Volcanic Glass	5		Trace 10
e. OTHER Pyroxene			5
f. TRACE (see remarks)	M, P, G 5		MA, M, G 5 G, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	A - Trace		C 5
b. RADIOLARIA	15		Trace
c. DIATOMS	5		Trace
d. OTHER Spicules	Trace		Trace Trace
e. OTHER Fecal Pellets	5		Trace 5

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Core contained numerous Pebbles from 3" to 5.5" and at 15.5". Color changes occur at 3" , 6" and 13.25".

*One pebble 0.25", 0.80 gm. not included in analysis.

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	1 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' "	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5094	5095	5096
12. SUBSAMPLE DEPTH IN CORE (in.)	8 - 10.5	10.5 - 13.25	13.25 - 15.5
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Grnsh. Gray 5GY 6/1 Lt. Olv. " 5Y 5/2	Grnsh.Gray 5GY 6/1 Lt.Olv.Gray 5Y 5/2	Lt.Olv.Gray 5Y 5/2 Medium Gray N 5
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)		QDφ 2.33	QDφ 2.55 QDφ 3.15
b. −2φ to −1φ (%)		SKφ +0.03	1 SKφ −0.05 2 SKφ 0.00
c. −1φ to 0φ (%)		Mdφ 9.50	Mdφ 9.40 1 Mdφ 8.75
d. 0φ to 1φ (%)	1	Qlφ 7.20	1 Qlφ 6.60 2 Qlφ 5.60
e. 1φ to 2φ (%)		Q3φ 11.85	1 Q3φ 11.90 5 Q3φ 11.90
f. 2φ to 3φ (%)	1		2 3
g. 3φ to 4φ (%)	2		2 4
h. 4φ to 6φ (%)	11		11 11
i. 6φ to 9φ (%)	29		28 24
j. 9φ to 12φ (%)	32		30 24
k. >12φ (%)	25		25 21
17. SUBSAMPLE DRY WEIGHT (gm.)	19.65		15.45 17.52
18. SPHERICITY (avg.)	Medium		Medium Medium
19. ROUNDNESS (avg.)	Subangular		Subangular Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted Dull-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	50		45 40
b. SECONDARY Quartz	30		30 35
c. TERTIARY Rock Fragments	Trace		5 20
d. OTHER Volcanic Glass	Trace		5 Trace
e. OTHER Pyroxene	5		5
f. TRACE (see remarks)	G, M 5		G, M 5 G, MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	Trace		Trace
c. DIATOMS	Trace		
d. OTHER Spicules	5		Trace
e. OTHER Fecal Pellets	5		5

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	1 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' "	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5097							
12. SUBSAMPLE DEPTH IN CORE (in.)	15.5 - 17							
13. SEDIMENT TYPE	Sandy Mud							
14. COLOR (FIELD) (GSA rock color chart)	Dark Greenish Gray 5GY 4/1							
(LABORATORY)	Lt.Olv.Gray 5Y 5/2							
	Med.Lt.Gray N 6							
15. ODOR								
16. SIZE ANALYSIS AND STATISTICAL MEASURES								
a. <−2φ (%)	9	QDφ	3.85		QDφ		QDφ	
b. −2φ to −1φ (%)	5	SKφ	+1.83		SKφ		SKφ	
c. −1φ to 0φ (%)	3	Mdφ	6.40		Mdφ		Mdφ	
d. 0φ to 1φ (%)	1	Qlφ	2.35		Qlφ		Qlφ	
e. 1φ to 2φ (%)	5	Q3φ	10.05		Q3φ		Q3φ	
f. 2φ to 3φ (%)	6							
g. 3φ to 4φ (%)	6							
h. 4φ to 6φ (%)	12							
i. 6φ to 9φ (%)	21							
j. 9φ to 12φ (%)	17							
k. >12φ (%)	14							
17. SUBSAMPLE DRY WEIGHT (gm.)	24.12							
18. SPHERICITY (avg.)	Medium Low							
19. ROUNDNESS (avg.)	Subangular							
20. SURFACE TEXTURE (avg.)	Polished-Pitted							
21. MINERAL CONTENT (%)								
a. DOMINANT Feldspar	35							
b. SECONDARY Quartz	20							
c. TERTIARY Rock Fragments	40							
d. OTHER Volcanic Glass	Trace							
e. OTHER								
f. TRACE (see remarks)	MA, M, P, O, G 5							
22. BIOLOGICAL CONTENT (%)								
a. FORAMINIFERA (see remarks)								
b. RADIOLARIA	Trace							
c. DIATOMS								
d. OTHER Spicules	Trace							
e. OTHER Fecal Pellets	Trace							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	2	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	77 ° 57 ' 30 " S	8. WATER DEPTH (fm.)	292 (m.) 534
4. LONGITUDE	174 ° 25 ' 00 " W	9. CORE LENGTH (in.)	22 (cm.) 55.9
5. DATE (day, month, year)	13 Dec. 1959	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5119		5120		5121			
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 1.5		1.5 - 4		4 - 6.5			
13. SEDIMENT TYPE	Silty Clay		Silty Clay		Clayey Mud			
14. COLOR (FIELD) (GSA rock color chart)	Moderate Olv. Brown 5Y 4/4		Moderate Olv Brown 5Y 4/4					
(LABORATORY)	Greenish Gray 5GY 6/1*		Greenish Gray 5GY 6/1		Light Olive Gray 5Y 6/1			
15. ODOR								
16. SIZE ANALYSIS AND STATISTICAL MEASURES								
a. <−2φ (%)		QDφ	2.48		QDφ		QDφ	3.73
b. −2φ to −1φ (%)		SKφ	+0.28	Trace	SKφ	2	SKφ	-0.23
c. −1φ to 0φ (%)	1	Mdφ	9.10		Mdφ	9.65	3	Mdφ 7.30
d. 0φ to 1φ (%)	2	Qlφ	6.90	1	Qlφ	7.35	5	Qlφ 3.35
e. 1φ to 2φ (%)	2	Q3φ	11.85	2	Q3φ		6	Q3φ 10.80
f. 2φ to 3φ (%)	3			2			7	
g. 3φ to 4φ (%)	3			2			6	
h. 4φ to 6φ (%)	8			8			13	
i. 6φ to 9φ (%)	30			28			20	
j. 9φ to 12φ (%)	27			31			21	
k. >12φ (%)	25			26			16	
17. SUBSAMPLE DRY WEIGHT (gm.)	10.30			10.41			19.44	
18. SPHERICITY (avg.)	Medium Low			Medium			Medium Low	
19. ROUNDNESS (avg.)	Subangular			Subangular			Angular	
20. SURFACE TEXTURE (avg.)	Dull-Pitted			Dull-Pitted			Polished-Pitted	
21. MINERAL CONTENT (%)								
a. DOMINANT Feldspar	50			55			60	
b. SECONDARY Quartz	25			30			25	
c. TERTIARY Rock Fragments	5			5			10	
d. OTHER Volcanic Glass	Trace			Trace				
e. OTHER								
f. TRACE (see remarks)	G, M, P 5			G, M, P, 5			MA, M, P 5	
22. BIOLOGICAL CONTENT (%)								
a. FORAMINIFERA (see remarks)							G - Trace	
b. RADIOLARIA	10			5			Trace	
c. DIATOMS	Trace			Trace			Trace	
d. OTHER Spicules	5			Trace			Trace	
e. OTHER Calcium Carbonate	3.75			3.0			3.0	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Color Changes occur at 1.5", 9", and 14.5".

*Mixed with Dark Yelloish Brown (10YR 4/2).

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 2 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' '		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5122	5123	5124
12. SUBSAMPLE DEPTH IN CORE (in.)	6.5 - 9	9 - 12	12 - 14.5
13. SEDIMENT TYPE	Sandy Mud	Sandy Mud	Pebbly Silty Mud
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Light Olive Gray 5Y 5/2	Ltolv Gray 5Y 5/2 Olive Gray 5Y 4/1	Ltolv Gray 5Y 5/2 Olive Gray 5Y 4/1
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	3	4	12
b. −2φ to −1φ (%)	2	2	1
c. −1φ to 0φ (%)	4	3	3
d. 0φ to 1φ (%)	5	4	4
e. 1φ to 2φ (%)	6	6	6
f. 2φ to 3φ (%)	8	7	7
g. 3φ to 4φ (%)	7	8	6
h. 4φ to 6φ (%)	15	15	14
i. 6φ to 9φ (%)	18	18	16
j. 9φ to 12φ (%)	17	16	16
k. >12φ (%)	16	17	16
17. SUBSAMPLE DRY WEIGHT (gm.)	28.66	26.58	29.31
18. SPHERICITY (avg.)	Medium Low	Medium	Medium Low
19. ROUNDNESS (avg.)	Angular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	55	50	45
b. SECONDARY Rock Fragments	20	25	30
c. TERTIARY Quartz	20	20	25
d. OTHER Volcanic Glass	Trace		Trace
e. OTHER Pyrite			Trace
f. TRACE (see remarks)	MA, M, P, G 5	MA, M, P 5	MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	Trace		
c. DIATOMS			
d. OTHER Spicules	Trace		
e. OTHER Calcium Carbonate	2.25	2.0	2.5

1. SHIP USS GLACIER			6. CRUISE DEEP FREEZE 60			
2. SAMPLE NUMBER 2 (continued)			7. SAMPLER TYPE			
3. LATITUDE ° ' '			8. WATER DEPTH (fm.) (m.)			
4. LONGITUDE ° ' '			9. CORE LENGTH (in.) (cm.)			
5. DATE (day, month, year)			10. CORE PENETRATION (in.) (cm.)			
11. LABORATORY NUMBER	5125		5126		5127	
12. SUBSAMPLE DEPTH IN CORE (in.)	14.5 - 17.5		17.5 - 20		20 - 22	
13. SEDIMENT TYPE	Clayey Mud		Clayey Mud		Clayey Mud	
14. COLOR (FIELD) (GSA rock color chart)	Dark Greenish Gray 5GY 4/1		Dark Greenish Gray 5GY 4/1		Dark Greenish Gray 5GY 4/1	
(LABORATORY)	Medium Gray N 5 Ltolv Gray 5Y 6/1		Medium Gray N 5 Ltolv Gray 5Y 6/1		Medium Gray N 5 Ltolv Gray 5Y 6/1	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	2		1		1	
b. −2φ to −1φ (%)	2		3		1	
c. −1φ to 0φ (%)	3		3		3	
d. 0φ to 1φ (%)	4		5		5	
e. 1φ to 2φ (%)	6		6		6	
f. 2φ to 3φ (%)	7		8		8	
g. 3φ to 4φ (%)	8		7		8	
h. 4φ to 6φ (%)	15		16		17	
i. 6φ to 9φ (%)	19		18		17	
j. 9φ to 12φ (%)	16		16		16	
k. >12φ (%)	18		18		19	
17. SUBSAMPLE DRY WEIGHT (gm.)	30.25		30.64		24.87	
18. SPHERICITY (avg.)	Medium		Medium		Medium	
19. ROUNDNESS (avg.)	Subangular		Subrounded		Subrounded	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Dull-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	50		45		45	
b. SECONDARY Quartz	30		35		40	
c. TERTIARY Rock Fragments	15		15		10	
d. OTHER Volcanic Glass	Trace		Trace		Trace	
e. OTHER Pyrite			Trace		Trace	
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5		MA, M, P, G 5	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)						
b. RADIOLARIA						
c. DIATOMS						
d. OTHER Spicules			Trace		Trace	
e. OTHER Calcium Carbonate	2.5		2.75		2.75	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 3		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 78 ° 19 ' 30 " S		8. WATER DEPTH (fm.) 252 (m.) 470	
4. LONGITUDE 173 ° 02 ' 00 " W		9. CORE LENGTH (in.) 13.75 (cm.) 34.9	
5. DATE (day, month, year) 13 Dec. 1959		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5128	5129	5130
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	2 - 4	4 - 6.5
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)	Mod. Olive Brown 5Y 4/4	Mod. Olive Brown 5Y 4/4	Mod. Olive Brown 5Y 4/4
(LABORATORY)	Greenish Gray* 5GY 6/1	Greenish Gray* 5GY 6/1	Greenish Gray* 5GY 6/1
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 2.90	QDφ 2.30	QDφ 2.33
b. −2φ to −1φ (%)	SKφ -0.25	SKφ +0.05	SKφ -0.08
c. −1φ to 0φ (%)	1 Mdφ 9.00	1 Mdφ 9.40	1 Mdφ 9.10
d. 0φ to 1φ (%)	1 Qlφ 5.85	1 Qlφ 7.15	2 Qlφ 6.80
e. 1φ to 2φ (%)	1 Q3φ 11.65	1 Q3φ 11.75	2 Q3φ 11.25
f. 2φ to 3φ (%)	2	2	3
g. 3φ to 4φ (%)	3	2	3
h. 4φ to 6φ (%)	19	9	8
i. 6φ to 9φ (%)	23	31	28
j. 9φ to 12φ (%)	29	32	30
k. >12φ (%)	20	21	22
17. SUBSAMPLE DRY WEIGHT (gm.)	13.36	19.64	20.73
18. SPHERICITY (avg.)	Medium Low	Medium	Medium Low
19. ROUNDNESS (avg.)	Subangular	Subrounded	Subangular
20. SURFACE TEXTURE (avg.)	Polished- Pitted	Dull-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	55	35	55
b. SECONDARY Quartz	25	15	30
c. TERTIARY Rock Fragments	Trace	Trace	5
d. OTHER Volcanic Class	Trace	Trace	Trace
e. OTHER			
f. TRACE (see remarks)	MA, M, P	M, MA, P 5	MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	C - Trace		A - Trace
b. RADIOLARIA	5	Trace	Trace
c. DIATOMS	Trace	Trace	Trace
d. OTHER Sponge Spicules	5	5	Trace
e. OTHER Fecal Pellets	5	40	5

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Mixed with Light Olive Gray 5Y 5/2

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 3 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5131	5132	5133
12. SUBSAMPLE DEPTH IN CORE (in.)	6.5 - 9	9 - 11.5	11.5 - 13.75
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)	Mod. Olive Brown 5Y 4/4	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
(LABORATORY)	Greenish Gray* 5GY 6/1	Light Olive Gray 5Y 5/2	Light Olive Gray** 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 2.93	QDφ 2.60	QDφ 3.25
b. −2φ to −1φ (%)	SKφ -0.33	SKφ -0.10	SKφ -0.10
c. −1φ to 0φ (%)	1 Mdφ 9.25	1 Mdφ 9.30	2 Mdφ 8.15
d. 0φ to 1φ (%)	1 Qlφ 6.00	1 Qlφ 6.60	3 Qlφ 4.80
e. 1φ to 2φ (%)	2 Q3φ 11.85	2 Q3φ 11.80	4 Q3φ 11.30
f. 2φ to 3φ (%)	3	2	5
g. 3φ to 4φ (%)	3	2	4
h. 4φ to 6φ (%)	15	10	15
i. 6φ to 9φ (%)	23	27	23
j. 9φ to 12φ (%)	29	30	24
k. >12φ (%)	23	23	19
17. SUBSAMPLE DRY WEIGHT (gm.)	17.15	17.76	15.18
18. SPHERICITY (avg.)	Medium	Medium Low	Medium
19. ROUNDNESS (avg.)	Subrounded	Subangular	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	45	45	45
b. SECONDARY Quartz	40	35	40
c. TERTIARY Rock Fragments	5	15	10
d. OTHER			
e. OTHER			
f. TRACE (see remarks)	MA, M, P 5	MA, M, P	MA, M, P, O 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	} 5	Trace	
c. DIATOMS		Trace	Trace
d. OTHER Sponge Spicules		Trace	Trace
e. OTHER Fecal Pellets		Trace	Trace

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Mixed with Light Olive Gray 5Y 5/2

**Mixed with Medium Gray N 5

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	4	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	78 ° 08 ' 30 " S	8. WATER DEPTH (fm.)	350 (m.) 636
4. LONGITUDE	162 ° 26 ' 00 " W	9. CORE LENGTH (in.)	7 (cm.) 17.8
5. DATE (day, month, year)	17 Dec. 1959	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5134		5135		5136	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2.5		2.5 - 5		5 - 7	
13. SEDIMENT TYPE	Silty Clay		Clayey Silt		Pebbly Clayey Silt	
14. COLOR (FIELD) (GSA rock color chart)	Dk Yellowish Brown 10YR 4/2					
(LABORATORY)	Grnsh Gray 5GY 6/1		Greenish Gray* 5GY 6/1		Dark Yellowish Brown 10YR 4/2	
	LtOlv Gray 5Y 5/2					
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ 2.68		QDφ 2.80	14	QDφ 4.53
b. −2φ to −1φ (%)	2	SKφ +0.13	1	SKφ +0.40	4	SKφ −0.33
c. −1φ to 0φ (%)		Mdφ 8.75	1	Mdφ 8.30	2	Mdφ 6.55
d. 0φ to 1φ (%)	1	Qlφ 6.20	1	Qlφ 5.90	3	Qlφ 1.70
e. 1φ to 2φ (%)	1	Q3φ 11.55	1	Q3φ 11.50	2	Q3φ 10.75
f. 2φ to 3φ (%)	2		2		2	
g. 3φ to 4φ (%)	3		4		3	
h. 4φ to 6φ (%)	14		17		14	
i. 6φ to 9φ (%)	29		29		22	
j. 9φ to 12φ (%)	27		21		17	
k. >12φ (%)	21		24		16	
17. SUBSAMPLE DRY WEIGHT (gm.)	12.53		22.13		26.75	
18. SPHERICITY (avg.)	Medium Low		Medium Low		Low	
19. ROUNDNESS (avg.)	Subangular		Subangular		Angular	
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Polished-Pitted		Dull-Smooth	
21. MINERAL CONTENT (%)						
a. DOMINANT Volcanic Glass	40		20		Trace	
b. SECONDARY Feldspar	30		30		25	
c. TERTIARY Rock Fragments	10		15		50	
d. OTHER Quartz	10		15		15	
e. OTHER Mica			10		5	
f. TRACE (see remarks)	MA, M		MA, G, P	5	G, MA, P	5
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	A - Trace				C - Trace	
b. RADIOLARIA	10				Trace	
c. DIATOMS	Trace		5		Trace	
d. OTHER Sponge Spicules	Trace				Trace	
e. OTHER Fecal Pellets	Trace				Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

The core contained a color-change at 5 inches.
*Mixed with Dark Yellowish Brown

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	5	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	78 ° 13 ' 30 ' S	8. WATER DEPTH (fm.)	275 (m.) 502
4. LONGITUDE	165 ° 54 ' 00 " W	9. CORE LENGTH (in.)	10 (cm.) 25.4
5. DATE (day, month, year)	17 Dec. 1959	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5137		5138		5139	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2		2 - 2.75		2.75 - 5.5	
13. SEDIMENT TYPE	Pebbly Silty Sand		Pebbly Silty Snd		Silty Clay	
14. COLOR (FIELD) (GSA rock color chart)	Dk Yellowish Brown 10YR 4/2		DkYllsh Brown 10YR 4/2		Dk Yellowish Brown 10YR 4/2	
(LABORATORY)	Dark Greenish Gray 5GY 4/1		Greenish Gray* 5GY 6/1		Pale Yellsh Brown 10YR 6/2	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	26	QDφ 3.68	11**	QDφ 2.92		QDφ
b. −2φ to −1φ (%)	6	SKφ +0.58	7	SKφ +0.12	1	SKφ
c. −1φ to 0φ (%)	9	Mdφ 1.00	11	Mdφ 2.44	3	Mdφ 9.27
d. 0φ to 1φ (%)	9	Qlφ −2.10	9	Qlφ −0.36	2	Qlφ 6.26
e. 1φ to 2φ (%)	8	Q3φ 5.25	7	Q3φ 5.48	2	Q3φ
f. 2φ to 3φ (%)	7		9		2	
g. 3φ to 4φ (%)	4		3		1	
h. 4φ to 6φ (%)	9		22		11	
i. 6φ to 9φ (%)	9		8		26	
j. 9φ to 12φ (%)	7		6		24	
k. >12φ (%)	7		7		27	
17. SUBSAMPLE DRY WEIGHT (gm.)	66.93		21.30		15.99	
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Dull-Smooth		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Rock Fragments	40		40		20	
b. SECONDARY Feldspar	30		30		40	
c. TERTIARY Quartz	20		20		30	
d. OTHER Mica	5		5		5	
e. OTHER Volcanic Glass	Trace		Trace		Trace	
f. TRACE (see remarks)	G, MA, P	5	G, MA, P	5	G, MA, P	5
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)			C - Trace			
b. RADIOLARIA	Trace		Trace		Trace	
c. DIATOMS						
d. OTHER Sponge Spicules	Trace		Trace		Trace	
e. OTHER Fecal Pellets			Trace		Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Mixed with Pale Yellowish Brown 10YR 6/2

**One Pebble 0.63", 6.65 gm. not included in analysis.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 5 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE ° ' "		9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5140		5141			
12. SUBSAMPLE DEPTH IN CORE (in.)	5.5 - 6.5		6.5 - 10			
13. SEDIMENT TYPE	Sandy Mud		Sandy Mud			
14. COLOR (FIELD) (GSA rock color chart)	Dk Yellowish Brown 10YR 4/2		Dk Yellsh Brown 10YR 4/2			
(LABORATORY)	Pale Yellsh Brown 10YR 6/2		Pale Yelsh Brown 10YR 6/2			
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	4	QDφ 4.71	9***	QDφ 4.00		QDφ
b. −2φ to −1φ (%)	10	SKφ +0.97	4	SKφ +0.63		SKφ
c. −1φ to 0φ (%)	12	Mdφ 3.67	7	Mdφ 4.12		Mdφ
d. 0φ to 1φ (%)	15	Qlφ −0.07	7	Qlφ 0.75		Qlφ
e. 1φ to 2φ (%)	4	Q3φ 9.35	8	Q3φ 8.75		Q3φ
f. 2φ to 3φ (%)	3		8			
g. 3φ to 4φ (%)	3		6			
h. 4φ to 6φ (%)	10		13			
i. 6φ to 9φ (%)	13		14			
j. 9φ to 12φ (%)	13		11			
k. >12φ (%)	14		13			
17. SUBSAMPLE DRY WEIGHT (gm.)	27.19		49.84			
18. SPHERICITY (avg.)	Medium Low		Medium			
19. ROUNDNESS (avg.)	Subangular		Subangular			
20. SURFACE TEXTURE (avg.)	Dull-Smooth		Polished-Pitted			
21. MINERAL CONTENT (%)						
a. DOMINANT Rock Fragments	40		30			
b. SECONDARY Feldspar	35		40			
c. TERTIARY Quartz	15		20			
d. OTHER Volcanic Glass	Trace					
e. OTHER						
f. TRACE (see remarks)	G, MA, M, P, O 10		G, MA, M, P, O 10			
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)						
b. RADIOLARIA						
c. DIATOMS						
d. OTHER Fecal Pellets	Trace					
e. OTHER Sponge Spicules	Trace					

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

***One Pebble 0.63", 6.00 gm. not included in analysis.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 6		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 78 ° 21 ' 12 " S		8. WATER DEPTH (fm.) 315	(m.) 575
4. LONGITUDE 169 ° 49 ' 00 " W		9. CORE LENGTH (in.) 16	(cm.) 40.6
5. DATE (day, month, year) 17 Dec. 1959		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5176		5177		5178	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 1.38		1.38 - 3		3 - 4.88	
13. SEDIMENT TYPE	Silty Clay		Silty Clay		Silty Clay	
14. COLOR (FIELD) (GSA rock color chart)	Dk Yellowish Brown 10YR 4/2					
(LABORATORY)	Lt Olive Gray 5Y5/2 Olive Gray 5Y 4/1		Lt Olive Gray 5Y 5/2		Greenish Gray 5GY 6/1	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ		QDφ		QDφ
b. −2φ to −1φ (%)		SKφ		SKφ		SKφ
c. −1φ to 0φ (%)		Mdφ 9.90		Mdφ 9.77		Mdφ 9.60
d. 0φ to 1φ (%)		Qlφ 7.43		Qlφ 7.60		Qlφ 7.48
e. 1φ to 2φ (%)	1	Q3φ	1	Q3φ	1	Q3φ
f. 2φ to 3φ (%)						
g. 3φ to 4φ (%)						
h. 4φ to 6φ (%)	13		9		8	
i. 6φ to 9φ (%)	26		31		34	
j. 9φ to 12φ (%)	30		31		24	
k. >12φ (%)	29		29		34	
17. SUBSAMPLE DRY WEIGHT (gm.)	6.80		9.33		11.00	
18. SPHERICITY (avg.)	Medium Low		Medium		Medium	
19. ROUNDNESS (avg.)	Subangular		Subrounded		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	35		25		35	
b. SECONDARY Quartz	35		25		35	
c. TERTIARY Rock Fragments	Trace		Trace		Trace	
d. OTHER Volcanic Glass	Trace		5		5	
e. OTHER						
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5		MA, M, P 5	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	G, A, C 5		G, A, C 5		G, A, C 5	
b. RADIOLARIA	10		15		5	
c. DIATOMS	Trace		5		Trace	
d. OTHER Sponge Spicules	10		15		10	
e. OTHER						

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

The core contained color-changes at 3, 4.88, 12 and 13.25 inches and a dark bank from 0 to 1.88 inches.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 6 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5179	5180	5181
12. SUBSAMPLE DEPTH IN CORE (in.)	4.88 - 7	7 - 9	9 - 12
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Light Olive Gray 5Y 5/2	Lt. Olive Gray 5Y 5/2	Lt. Olive Gray* 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ	SKφ	SKφ
c. −1φ to 0φ (%)	Mdφ 9.43	Mdφ 9.48	Mdφ 9.10
d. 0φ to 1φ (%)	Qlφ 7.28	Qlφ 7.05	Qlφ 6.66
e. 1φ to 2φ (%)	2 Q3φ	2 Q3φ	2 Q3φ
f. 2φ to 3φ (%)			
g. 3φ to 4φ (%)			
h. 4φ to 6φ (%)	11	12	16
i. 6φ to 9φ (%)	32	31	31
j. 9φ to 12φ (%)	29	28	24
k. >12φ (%)	27	27	27
17. SUBSAMPLE DRY WEIGHT (gm.)	12.57	13.04	18.92
18. SPHERICITY (avg.)	Medium Low	Medium Low	Medium
19. ROUNDNESS (avg.)	Subangular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Dull-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	45	50	45
b. SECONDARY Quartz	35	40	25
c. TERTIARY Rock Fragments	Trace		Trace
d. OTHER Volcanic Glass	5	5	15
e. OTHER			
f. TRACE (see remarks)	MA, M, P, O 5	MA, M, O, P 5	MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G, A, C	G, Trace	G, A, C, Trace
b. RADIOLARIA	5	Trace	5
c. DIATOMS		Trace	
d. OTHER Sponge Spicules	5	Trace	5
e. OTHER	Fecal Pellets Tr.		Coral Fragment

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Mixed with Dark Yellowish Brown 10YR 4/2

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 6 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5182	5183	
12. SUBSAMPLE DEPTH IN CORE (in.)	12 - 13.25	13.25 - 16	
13. SEDIMENT TYPE	Silty Clay	Silty Clay	
14. COLOR (FIELD) (GSA rock color chart)		Light Olive Gray 5Y 5/2	
(LABORATORY)	Dk Yellsh Brown** 10YR 4/2	Dk Yellsh Brown 10YR 4/2	
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ	SKφ	SKφ
c. −1φ to 0φ (%)	Mdφ 9.10	Mdφ 9.18	Mdφ
d. 0φ to 1φ (%)	Qlφ 6.72	Qlφ 6.75	Qlφ
e. 1φ to 2φ (%)	2 Q3φ	1 Q3φ	Q3φ
f. 2φ to 3φ (%)			
g. 3φ to 4φ (%)			
h. 4φ to 6φ (%)	15	16	
i. 6φ to 9φ (%)	32	31	
j. 9φ to 12φ (%)	25	24	
k. >12φ (%)	27	27	
17. SUBSAMPLE DRY WEIGHT (gm.)	12.26	15.43	
18. SPHERICITY (avg.)	Medium	Medium Low	
19. ROUNDNESS (avg.)	Subangular	Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Dull-Pitted	
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	50	50	
b. SECONDARY Quartz	30	35	
c. TERTIARY Volcanic Glass	10	5	
d. OTHER			
e. OTHER			
f. TRACE (see remarks)	MA, M, P 5	MA, M, P 5	
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G	G, C	
b. RADIOLARIA	5		
c. DIATOMS		5	
d. OTHER Sponge Spicules			
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

**Mixed with Pale Yellowish Brown 10YR 6/2

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER
2. SAMPLE NUMBER	7
3. LATITUDE	78 ° 22 ' 00 " S
4. LONGITUDE	173 ° 42 ' 00 " W
5. DATE (day, month, year)	17 Dec. 1959
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	Phleger Core, 80 lb.
8. WATER DEPTH (fm.)	320 (m.) 585
9. CORE LENGTH (in.)	22 (cm.) 55.9
10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5185		5186		5187	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3		3 - 5.5		5.5 - 8	
13. SEDIMENT TYPE	Silty Clay		Silty Clay		Silty Clay	
14. COLOR (FIELD) (GSA rock color chart)	Dk Yellowish Brown 10YR 4/2					
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ 2.46		QDφ		QDφ
b. −2φ to −1φ (%)	Trace	SKφ -0.19		SKφ		SKφ
c. −1φ to 0φ (%)	Trace	Mdφ 9.20		Mdφ 9.90		Mdφ 9.95
d. 0φ to 1φ (%)	2	Qlφ 6.55	4	Qlφ 7.59	Trace	Qlφ 7.65
e. 1φ to 2φ (%)	2	Q3φ 11.47		Q3φ		Q3φ
f. 2φ to 3φ (%)	2					
g. 3φ to 4φ (%)	2					
h. 4φ to 6φ (%)	12		8		11	
i. 6φ to 9φ (%)	28		28		28	
j. 9φ to 12φ (%)	34		30		31	
k. >12φ (%)	19		31		29	
17. SUBSAMPLE DRY WEIGHT (gm.)	7.91		12.10		14.38	
18. SPHERICITY (avg.)	Medium		Medium		Medium Low	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	45		50		55	
b. SECONDARY Quartz	25		30		35	
c. TERTIARY Rock Fragments	15		10		Trace	
d. OTHER Volcanic Glass			Trace		5	
e. OTHER						
f. TRACE (see remarks)	MA, M, P 5		MA, M, P, G 5		MA, M, P, O 5	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	G, A, C		A, C Trace		A, C Trace	
b. RADIOLARIA		10	5		Trace	
c. DIATOMS						
d. OTHER Sponge Spicules			Trace		Trace	
e. OTHER Fecal Pellets	Trace				Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER
2. SAMPLE NUMBER	7 (continued)
3. LATITUDE	° ' "
4. LONGITUDE	° ' "
5. DATE (day, month, year)	
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	
8. WATER DEPTH (fm.)	(m.)
9. CORE LENGTH (in.)	(cm.)
10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5188		5189		5190	
12. SUBSAMPLE DEPTH IN CORE (in.)	8 - 10.5		10.5 - 13		13 - 15	
13. SEDIMENT TYPE	Silty Clay		Silty Clay		Silty Clay	
14. COLOR (FIELD) (GSA rock color chart)						
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ		QDφ		QDφ
b. −2φ to −1φ (%)		SKφ		SKφ		SKφ
c. −1φ to 0φ (%)		Mdφ 10.15		Mdφ 10.10		Mdφ 10.72
d. 0φ to 1φ (%)	Trace	Qlφ 7.93	2	Qlφ 7.72	2	Qlφ 8.02
e. 1φ to 2φ (%)		Q3φ		Q3φ		Q3φ
f. 2φ to 3φ (%)						
g. 3φ to 4φ (%)						
h. 4φ to 6φ (%)	8		9		6	
i. 6φ to 9φ (%)	29		27		26	
j. 9φ to 12φ (%)	31		30		30	
k. >12φ (%)	32		31		35	
17. SUBSAMPLE DRY WEIGHT (gm.)	13.27		15.30		10.95	
18. SPHERICITY (avg.)	Medium		Medium		Medium	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subrounded	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	40		50		55	
b. SECONDARY Quartz	30		35		30	
c. TERTIARY Rock Fragments	Trace		5		Trace	
d. OTHER Volcanic Glass	15		5		10	
e. OTHER Pyrite					Trace	
f. TRACE (see remarks)	MA, M, P 5		MA, M, P, O 5		MA, M, P 5	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)						
b. RADIOLARIA	Trace		Trace			
c. DIATOMS			Trace			
d. OTHER Sponge Spicules	Trace		Trace		Trace	
e. OTHER Fecal Pellets			Trace		Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 7 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5191	5192	5193
12. SUBSAMPLE DEPTH IN CORE (in.)	15 - 17	17 - 18.88	18.88 - 19.75
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2*
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ	SKφ	SKφ
c. −1φ to 0φ (%)	Mdφ 10.85	Mdφ 10.85	Mdφ 11.05
d. 0φ to 1φ (%)	1 Q1φ 8.35	1 Q1φ 8.35	1 Q1φ 8.45
e. 1φ to 2φ (%)	Q3φ	Q3φ	Q3φ
f. 2φ to 3φ (%)			
g. 3φ to 4φ (%)			
h. 4φ to 6φ (%)	4	4	4
i. 6φ to 9φ (%)	26	26	25
j. 9φ to 12φ (%)	35	34	33
k. >12φ (%)	35	35	37
17. SUBSAMPLE DRY WEIGHT (gm.)	12.62	13.07	8.67
18. SPHERICITY (avg.)	Medium Low	Medium Low	Medium Low
19. ROUNDNESS (avg.)	Subangular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Smooth	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	50	55	55
b. SECONDARY Quartz	30	35	35
c. TERTIARY Volcanic Glass	10	Trace	Trace
d. OTHER Rock Fragments	Trace	5	5
e. OTHER			
f. TRACE (see remarks)	MA, M, P 5	MA, M, P 5	MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			G - Trace
b. RADIOLARIA		Trace	Trace
c. DIATOMS			
d. OTHER Sponge Spicules	Trace	Trace	Trace
e. OTHER Fecal Pellets	5	Trace	Trace

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Streaked with Medium Gray N 5

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 7 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5194		
12. SUBSAMPLE DEPTH IN CORE (in.)	19.75 - 22		
13. SEDIMENT TYPE	Silty Clay		
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray		
(LABORATORY)	Light Olive Gray 5Y 5/2*		
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	1 QDφ	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ	SKφ	SKφ
c. −1φ to 0φ (%)	1 Mdφ 10.50	Mdφ	Mdφ
d. 0φ to 1φ (%)	Q1φ 7.75	Q1φ	Q1φ
e. 1φ to 2φ (%)	1 Q3φ	Q3φ	Q3φ
f. 2φ to 3φ (%)	1		
g. 3φ to 4φ (%)	1		
h. 4φ to 6φ (%)	6		
i. 6φ to 9φ (%)	25		
j. 9φ to 12φ (%)	30		
k. >12φ (%)	34		
17. SUBSAMPLE DRY WEIGHT (gm.)	14.20		
18. SPHERICITY (avg.)	Medium Low		
19. ROUNDNESS (avg.)	Subangular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	45		
b. SECONDARY Quartz	30		
c. TERTIARY Rock Fragments	15		
d. OTHER Volcanic Glass	Trace		
e. OTHER			
f. TRACE (see remarks)	MA, M, P, O 5		
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G, C,		
b. RADIOLARIA	5		
c. DIATOMS			
d. OTHER			
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Streaked with Medium Gray N 5

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

OCEANOGRAPHIC Log Sheet RR
NHO 3167/18A (Rev.8-60)

SEDIMENT ANALYSIS SHEET

1. SHIP	USCGC EASTWIND	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	EW-2	7. SAMPLER TYPE	Nansen Bottle
3. LATITUDE	71 ° 13 ' 00 " S	8. WATER DEPTH (fm.)	1400 (m.) 2560
4. LONGITUDE	179 ° 10 ' 00 " E	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)	15 Jan. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5184						
12. SUBSAMPLE DEPTH IN CORE (in.)	0						
13. SEDIMENT TYPE	Silty Mud						
14. COLOR (FIELD) (GSA rock color chart)	Very Light Olive Gray						
(LABORATORY)	5Y 6/2						
	Light Olive Gray						
	5Y 5/2						
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%) **	4	QDφ	2.70		QDφ		QDφ
b. −2φ to −1φ (%)	4	SKφ	+1.13		SKφ		SKφ
c. −1φ to 0φ (%)	4	Mdφ	5.40		Mdφ		Mdφ
d. 0φ to 1φ (%)	3	Qlφ	3.83		Qlφ		Qlφ
e. 1φ to 2φ (%)	3	Q3φ	9.23		Q3φ		Q3φ
f. 2φ to 3φ (%)	4						
g. 3φ to 4φ (%)	4						
h. 4φ to 6φ (%)	32						
i. 6φ to 9φ (%)	16						
j. 9φ to 12φ (%)	10						
k. >12φ (%)	15						
17. SUBSAMPLE DRY WEIGHT (gm.)	12.67						
18. SPHERICITY (avg.)	Medium						
19. ROUNDNESS (avg.)	Subangular						
20. SURFACE TEXTURE (avg.)	Polished-Pitted						
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	30						
b. SECONDARY Feldspar	30						
c. TERTIARY Quartz	10						
d. OTHER Volcanic Glass	5						
e. OTHER							
f. TRACE (see remarks)	MA, M, O, P 5						
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA	15						
c. DIATOMS							
d. OTHER Sponge Spicules	5						
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

**One pebble 0.44", 3.05 gm. not included in analysis.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USCGC EASTWIND	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	EW-3	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	72 ° 00 ' 00 " S	8. WATER DEPTH (fm.)	1240 (m.) 2268
4. LONGITUDE	179 ° 10 ' 00 " E	9. CORE LENGTH (in.)	31.5 (cm.) 80.0
5. DATE (day, month, year)	16 Jan. 1960	10. CORE PENETRATION (in.)	36 (cm.) 91.4

11. LABORATORY NUMBER	5003			5004		5005	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2			6 - 8		12 - 14	
13. SEDIMENT TYPE	Clayey Silt*			Silty Mud*		Sandy Silt**	
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray			Light Olive Gray		Light Olive Gray	
(LABORATORY)	5Y 5/2			5Y 5/2		5Y 5/2	
	Light Olive Gray			Light Olive Gray		Light Olive Gray	
	5Y 5/2			5Y 5/2		5Y 5/2	
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ	2.39		QDφ 2.58		QDφ 1.32
b. −2φ to −1φ (%)	2	SKφ	+1.44	3	SKφ +1.22	1	SKφ +0.48
c. −1φ to 0φ (%)	1	Mdφ	5.17	2	Mdφ 5.20	1	Mdφ 4.40
d. 0φ to 1φ (%)	1	Qlφ	4.22	3	Qlφ 3.84	3	Qlφ 3.56
e. 1φ to 2φ (%)	2	Q3φ	9.00	3	Q3φ 9.00	3	Q3φ 6.20
f. 2φ to 3φ (%)	2			4		5	
g. 3φ to 4φ (%)	9			12		27	
h. 4φ to 6φ (%)	42			32		33	
i. 6φ to 9φ (%)	16			16		12	
j. 9φ to 12φ (%)	14			13		5	
k. >12φ (%)	12			13		9	
17. SUBSAMPLE DRY WEIGHT (gm.)	19.83			17.91		20.83	
18. SPHERICITY (avg.)	Medium Low			Medium		Medium Low	
19. ROUNDNESS (avg.)	Subangular			Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted			Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	25			35		35	
b. SECONDARY Quartz	5			10		15	
c. TERTIARY Rock Fragments	5			10		5	
d. OTHER Volcanic Glass	5			5		5	
e. OTHER							
f. TRACE (see remarks)	G, MA, M, O, P 5			M, O, P 5		MA, M, O 5	
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	A - Trace						
b. RADIOLARIA	25			15		25	
c. DIATOMS	Trace			Trace		Trace	
d. OTHER Sponge Spicules	30			20		10	
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Siliceous Ooze
**Radiolarian Ooze

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-3 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5006	5007	5008
12. SUBSAMPLE DEPTH IN CORE (in.)	16 - 18	18 - 20	22 - 24
13. SEDIMENT TYPE	Sandy Silt	Pebbly Sandy Silt	Silty Mud
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 1.87	39 QDφ 4.56	1 QDφ 2.90
b. −2φ to −1φ (%)	SKφ +0.71	3 SKφ −0.57	2 SKφ +0.85
c. −1φ to 0φ (%)	1 Mdφ 4.70	3 Mdφ 1.58	2 Mdφ 5.45
d. 0φ to 1φ (%)	1 Qlφ 3.54	3 Qlφ −3.55	4 Qlφ 3.40
e. 1φ to 2φ (%)	2 Q3φ 7.28	3 Q3φ 5.57	5 Q3φ 9.20
f. 2φ to 3φ (%)	5	4	7
g. 3φ to 4φ (%)	27	6	7
h. 4φ to 6φ (%)	32	17	29
i. 6φ to 9φ (%)	14	10	17
j. 9φ to 12φ (%)	10	6	14
k. >12φ (%)	9	7	12
17. SUBSAMPLE DRY WEIGHT (gm.)	17.36	48.79	34.30
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subrounded	Subangular	Subrounded
20. SURFACE TEXTURE (avg.)	Dull-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	75	35	70
b. SECONDARY Rock Fragments	Trace	40	10
c. TERTIARY Quartz	15	5	10
d. OTHER Volcanic Glass		Trace	Trace
e. OTHER			
f. TRACE (see remarks)	G, O, P, M 5	MA, M, O, P 5	G, MA, M, O, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	Trace	5	Trace
c. DIATOMS		Trace	Trace
d. OTHER Sponge Spicules	5	10	5
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-3 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5009	5010	5011
12. SUBSAMPLE DEPTH IN CORE (in.)	24 - 26	26 - 28	28 - 31.5
13. SEDIMENT TYPE	Clayey Silt	Silty Mud	Clayey Silt
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 2.52	QDφ 3.02	QDφ 2.64
b. −2φ to −1φ (%)	1 SKφ +0.32	3 SKφ +0.92	1 SKφ +0.71
c. −1φ to 0φ (%)	1 Mdφ 7.26	2 Mdφ 6.10	2 Mdφ 5.89
d. 0φ to 1φ (%)	1 Qlφ 5.07	3 Qlφ 4.00	3 Qlφ 3.96
e. 1φ to 2φ (%)	2 Q3φ 10.10	4 Q3φ 10.05	4 Q3φ 9.25
f. 2φ to 3φ (%)	3	6	5
g. 3φ to 4φ (%)	6	7	2
h. 4φ to 6φ (%)	32	24	34
i. 6φ to 9φ (%)	21	20	17
j. 9φ to 12φ (%)	17	16	17
k. >12φ (%)	16	15	16
17. SUBSAMPLE DRY WEIGHT (gm.)	16.86	31.81	29.30
18. SPHERICITY (avg.)	Medium High	Medium	Medium
19. ROUNDNESS (avg.)	Subrounded	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Dull-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	40	55	45
b. SECONDARY Rock Fragments	5	15	10
c. TERTIARY Quartz	10	10	10
d. OTHER Volcanic Glass	Trace	Trace	Trace
e. OTHER			
f. TRACE (see remarks)	G, M, MA, O, P 5	G, MA, M, O, P 5	G, MA, M, O, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)		G, C - Trace	
b. RADIOLARIA	15	5	10
c. DIATOMS	5	Trace	5
d. OTHER Sponge Spicules	20	10	15
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

OCEANOGRAPHIC Log Sheet RR
Form 3167/184 (Rev 8-60)

SEDIMENT ANALYSIS SHEET

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-4		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 77 ° 26 ' 00 " S		8. WATER DEPTH (fm.) 189	(m.) 343
4. LONGITUDE 164 ° 00 ' 00 " E		9. CORE LENGTH (in.) 8	(cm.) 20.3
5. DATE (day, month, year) 31 Jan. 1960		10. CORE PENETRATION (in.) 12	(cm.) 30.5
11. LABORATORY NUMBER	5071	5072	5073
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	2 - 4	4 - 6.75
13. SEDIMENT TYPE	Sand*	Silty Sand*	Silty Sand*
14. COLOR (FIELD) (GSA rock color chart)	Greenish Black 5GY 2/1	Greenish Black 5GY 2/1	Greenish Black 5GY 2/1
(LABORATORY)	Olive Black 5Y 2/1	Greenish Black 5GY 2/1	Greenish Black 5GY 2/1
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 0.84	QDφ 1.09	** QDφ 0.99
b. −2φ to −1φ (%)	2 SKφ −0.20	1 SKφ +0.06	1 SKφ +0.06
c. −1φ to 0φ (%)	2 Mdφ 2.58	Mdφ 3.28	Mdφ 3.30
d. 0φ to 1φ (%)	10 Q1φ 1.54	4 Q1φ 2.25	3 Q1φ 2.37
e. 1φ to 2φ (%)	22 Q3φ 3.22	16 Q3φ 4.43	15 Q3φ 4.35
f. 2φ to 3φ (%)	28	21	21
g. 3φ to 4φ (%)	28	28	31
h. 4φ to 6φ (%)		18	18
i. 6φ to 9φ (%)	9	4	6
j. 9φ to 12φ (%)		4	5
k. >12φ (%)		4	1
17. SUBSAMPLE DRY WEIGHT (gm.)	19.45	29.48	29.01
18. SPHERICITY (avg.)	Medium High	Medium High	Medium High
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subrounded
20. SURFACE TEXTURE (avg.)	Dull-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	65	65	65
b. SECONDARY Feldspar	25	25	35
c. TERTIARY Rock Fragments	5	Trace	Trace
d. OTHER Quartz	Trace	Trace	Trace
e. OTHER			
f. TRACE (see remarks)	MA	MA, M	MA, M, O
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA			
c. DIATOMS	Trace	Trace	Trace
d. OTHER Sponge Spicules	5	10	Trace
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash
**One Pebble 0.44", 4.40 gm. not included in size analysis

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-4 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE ° ' "		9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)
11. LABORATORY NUMBER	5074		
12. SUBSAMPLE DEPTH IN CORE (in.)	6.75 - 8		
13. SEDIMENT TYPE	Silty Sand*		
14. COLOR (FIELD) (GSA rock color chart)	Greenish Black 5GY 2/1		
(LABORATORY)	Greenish Black 5GY 2/1		
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 1.37	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ +0.39	SKφ	SKφ
c. −1φ to 0φ (%)	TR Mdφ 3.40	Mdφ	Mdφ
d. 0φ to 1φ (%)	3 Q1φ 2.42	Q1φ	Q1φ
e. 1φ to 2φ (%)	15 Q3φ 5.16	Q3φ	Q3φ
f. 2φ to 3φ (%)	21		
g. 3φ to 4φ (%)	23		
h. 4φ to 6φ (%)	19		
i. 6φ to 9φ (%)	8		
j. 9φ to 12φ (%)	6		
k. >12φ (%)	5		
17. SUBSAMPLE DRY WEIGHT (gm.)	29.14		
18. SPHERICITY (avg.)	Medium High		
19. ROUNDNESS (avg.)	Subrounded		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	60		
b. SECONDARY Feldspar	35		
c. TERTIARY Rock Fragments	Trace		
d. OTHER Quartz	Trace		
e. OTHER			
f. TRACE (see remarks)	MA, M, O		
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	C		
b. RADIOLARIA	5		
c. DIATOMS			
d. OTHER Sponge Spicules			
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-5		7. SAMPLER TYPE PVC	
3. LATITUDE 77 ° 26 ' 00 " S		8. WATER DEPTH (fm.) 152	(m.) 277
4. LONGITUDE 164 ° 00 ' 00 " E		9. CORE LENGTH (in.) 16.25	(cm.) 41.3
5. DATE (day, month, year) 31 Jan. 1960		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5286		5287		5288	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3		3 - 6		6 - 9	
13. SEDIMENT TYPE	Clayey Silt*		Sandy Silt*		Silty Sand*	
14. COLOR (FIELD) (GSA rock color chart)	Greenish Black 5GY 2/1		Greenish Black 5GY 2/1		Greenish Black 5GY 2/1	
(LABORATORY)	Olive Gray 5Y 3/2		Olive Gray 5Y 3/2		Olive Gray 5Y 3/2	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ 2.45		QDφ 2.15		QDφ 1.73
b. −2φ to −1φ (%)	1	SKφ +1.15	1	SKφ +1.15	Trace	SKφ +0.73
c. −1φ to 0φ (%)		Mdφ 5.25		Mdφ 4.50	1	Mdφ 4.20
d. 0φ to 1φ (%)		Q1φ 3.95	1	Q1φ 3.50	2	Q1φ 3.20
e. 1φ to 2φ (%)	2	Q3φ 8.85	4	Q3φ 7.80	6	Q3φ 6.65
f. 2φ to 3φ (%)	6		10		12	
g. 3φ to 4φ (%)	19		23		23	
h. 4φ to 6φ (%)	29		27		28	
i. 6φ to 9φ (%)	19		14		11	
j. 9φ to 12φ (%)	14		11		10	
k. >12φ (%)	11		8		7	
17. SUBSAMPLE DRY WEIGHT (gm.)	11.98		18.26		18.64	
18. SPHERICITY (avg.)	Medium		Medium		Medium	
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Volcanic Glass	35		40		50	
b. SECONDARY Feldspar	20		25		35	
c. TERTIARY Quartz	Trace		Trace		Trace	
d. OTHER Rock Fragments					Trace	
e. OTHER						
f. TRACE (see remarks)	MA, M		MA, M		MA, M, O	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	G, C	5	G - Trace		G, C	Trace
b. RADIOLARIA			Trace		Trace	
c. DIATOMS	5		5		5	
d. OTHER Sponge Spicules	30		30		10	
e. OTHER Bryozoa	5		Trace		Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Siliceous ooze and volcanic ash
The core contained a layer of sponge spicules and bryozoa at the surface and a layer of sponge spicules at three inches.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-5 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE ° ' "		9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5289		5290		5291	
12. SUBSAMPLE DEPTH IN CORE (in.)	9 - 12		12 - 14		14 - 16.25	
13. SEDIMENT TYPE	Silty Sand*		Silty Sand*		Silty Sand*	
14. COLOR (FIELD) (GSA rock color chart)	Greenish Black 5GY 2/1		Greenish Black 5GY 2/1		Greenish Black 5GY 2/1	
(LABORATORY)	Olive Grey 5Y 3/2		Olive Gray 5Y 3/2		Olive Gray 5Y 3/2	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	1	QDφ 1.83		QDφ 1.88	1	QDφ 1.70
b. −2φ to −1φ (%)	Trace	SKφ +0.53		SKφ +0.78	1	SKφ +0.55
c. −1φ to 0φ (%)	1	Mdφ 4.05	Trace	Mdφ 4.10	1	Mdφ 3.20
d. 0φ to 1φ (%)	2	Q1φ 2.75	2	Q1φ 3.00	5	Q1φ 2.05
e. 1φ to 2φ (%)	10	Q3φ 6.40	8	Q3φ 6.75	16	Q3φ 5.45
f. 2φ to 3φ (%)	15		15		19	
g. 3φ to 4φ (%)	20		23		19	
h. 4φ to 6φ (%)	24		24		17	
i. 6φ to 9φ (%)	11		9		8	
j. 9φ to 12φ (%)	10		12		7	
k. >12φ (%)	6		7		5	
17. SUBSAMPLE DRY WEIGHT (gm.)	32.36		29.20		34.55	
18. SPHERICITY (avg.)	Medium		Medium		Medium	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Volcanic Glass	40		50		50	
b. SECONDARY Feldspar	25		35		30	
c. TERTIARY Quartz	Trace		Trace		Trace	
d. OTHER Rock Fragments	5		Trace		5	
e. OTHER						
f. TRACE (see remarks)	MA, M, O		MA, M, O		MA, M, O	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	C, G	5	G - Trace		G - Trace	
b. RADIOLARIA			Trace		Trace	
c. DIATOMS	5		Trace		5	
d. OTHER Sponge Spicules	20		15		10	
e. OTHER Echinoderm Spines	Trace					

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Siliceous ooze and volcanic ash

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-6		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 77 ° 13 ' 00 " S		8. WATER DEPTH (fm.) 470 (m.) 860	
4. LONGITUDE 165 ° 58 ' 00 " E		9. CORE LENGTH (in.) 8 (cm.) 20.3	
5. DATE (day, month, year) 31 Jan. 1960		10. CORE PENETRATION (in.) 18 (cm.) 45.7	
11. LABORATORY NUMBER	5012	5013	5014
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	3 - 5	6 - 8
13. SEDIMENT TYPE	Clayey Silt*	Clayey Silt*	Silty Mud
14. COLOR (FIELD) (GSA rock color chart)	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1
(LABORATORY)	Dusky Yellowish Gr 10GY 3/2	Dusky Yellowish Gr 10GY 3/2	Dusky Yellowish Gr** 10GY 3/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 2.82	QDφ 2.53	QDφ 3.21
b. −2φ to −1φ (%)	SKφ +0.50	SKφ +0.15	SKφ +0.57
c. −1φ to 0φ (%)	1 Mdφ 7.78	Mdφ 7.70	3 Mdφ 6.17
d. 0φ to 1φ (%)	Q1φ 5.46	1 Q1φ 5.32	3 Q1φ 3.53
e. 1φ to 2φ (%)	3 Q3φ 11.10	1 Q3φ 10.38	4 Q3φ 9.95
f. 2φ to 3φ (%)		3	8
g. 3φ to 4φ (%)	8	7	11
h. 4φ to 6φ (%)	19	20	19
i. 6φ to 9φ (%)	29	31	20
j. 9φ to 12φ (%)	21	21	15
k. >12φ (%)	18	16	15
17. SUBSAMPLE DRY WEIGHT (gm.)	9.36	11.74	7.95
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Angular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	50	40	50
b. SECONDARY Feldspar	15	10	20
c. TERTIARY Rock Fragments	Trace	Trace	10
d. OTHER Quartz	Trace	Trace	Trace
e. OTHER			
f. TRACE (see remarks)	MA, M, O	MA, M, O	MA
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)		G - Trace	
b. RADIOLARIA	10	15	10
c. DIATOMS	15	25	5
d. OTHER Sponge Spicules	10	10	5
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Depth (in)	Composition
Top	Black, subangular pebble (1" X 1" X 0.37" - 21.3 gm) -basaltic; somewhat pitted, but not badly weathered; with very small olivine phenocrysts.
0 - 8	Silt and clay with black streaks-probably organic

*Diatom ooze and volcanic ash
**With black streaks

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-7		7. SAMPLER TYPE PVC	
3. LATITUDE 77 ° 13 ' 00 " S		8. WATER DEPTH (fm.) 470 (m.) 860	
4. LONGITUDE 165 ° 58 ' 00 " E		9. CORE LENGTH (in.) 14 (cm.) 35.6	
5. DATE (day, month, year) 31 Jan. 1960		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5292	5293	5294
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3	3 - 5	5 - 7.5
13. SEDIMENT TYPE	Clayey Silt	Clayey Silt	Clayey Mud
14. COLOR (FIELD) (GSA rock color chart)	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1
(LABORATORY)	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	2* QDφ 2.55	QDφ 2.55	5 QDφ 3.58
b. −2φ to −1φ (%)	1 SKφ +1.25	Trace SKφ +0.10	2 SKφ +0.28
c. −1φ to 0φ (%)	1 Mdφ 6.80	Mdφ 8.50	1 Mdφ 6.95
d. 0φ to 1φ (%)	1 Q1φ 5.50	1 Q1φ 6.05	1 Q1φ 3.65
e. 1φ to 2φ (%)	2 Q3φ 10.60	1 Q3φ 11.15	2 Q3φ 10.80
f. 2φ to 3φ (%)	3	1	5
g. 3φ to 4φ (%)	3	2	13
h. 4φ to 6φ (%)	23	19	16
i. 6φ to 9φ (%)	28	29	17
j. 9φ to 12φ (%)	25	34	26
k. >12φ (%)	12	12	12
17. SUBSAMPLE DRY WEIGHT (gm.)	17.17	10.35	17.71
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subangular	Subrounded	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Dull-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	40	10	25
b. SECONDARY Volcanic Glass	20	15	20
c. TERTIARY Rock Fragments	30	5	30
d. OTHER Quartz	10	Trace	Trace
e. OTHER			
f. TRACE (see remarks)	G, MA, M, P	MA, M	MA, M
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)		G, C - Trace	
b. RADIOLARIA	Trace	Trace	
c. DIATOMS	Trace	Trace	Trace
d. OTHER Sponge Spicules	Trace	Trace	Trace
e. OTHER Fecal Pellets		70	25

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*One pebble 0.44", 4.05 gm., not included in size analysis.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER EW-7 (continued)			7. SAMPLER TYPE				
3. LATITUDE ° ' "			8. WATER DEPTH (fm.) (m.)				
4. LONGITUDE ° ' "			9. CORE LENGTH (in.) (cm.)				
5. DATE (day, month, year)			10. CORE PENETRATION (in.) (cm.)				
11. LABORATORY NUMBER	5295		5296		5297		
12. SUBSAMPLE DEPTH IN CORE (in.)	7.5 - 9.5		9.5 - 12		12 - 14		
13. SEDIMENT TYPE	Silty Sand		Clayey Silt		Clayey Silt		
14. COLOR (FIELD)	Olive Gray		Olive Gray		Olive Gray		
(GSA rock color chart)	5Y 4/1		5Y 4/1		5Y 4/1		
(LABORATORY)	Olive Gray 5Y 4/1		Olive Gray		Olive Gray		
	Dark Gray N 3		5Y 3/2		5Y 3/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	3	QDφ 3.23		QDφ 2.65		QDφ 2.60	
b. −2φ to −1φ (%)	9	SKφ +0.53		SKφ +0.35		SKφ +0.30	
c. −1φ to 0φ (%)	7	Mdφ 3.35		Mdφ 7.95		Mdφ 7.95	
d. 0φ to 1φ (%)	11	Qlφ 0.65		Qlφ 5.65		Qlφ 5.65	
e. 1φ to 2φ (%)	8	Q3φ 7.10	4	Q3φ 10.95	1	Q3φ 10.85	
f. 2φ to 3φ (%)	8				2		
g. 3φ to 4φ (%)	11		6		5		
h. 4φ to 6φ (%)	13		19		22		
i. 6φ to 9φ (%)	13		30		29		
j. 9φ to 12φ (%)	10		24		25		
k. >12φ (%)	7		18		16		
17. SUBSAMPLE DRY WEIGHT (gm.)	22.22		7.44		8.71		
18. SPHERICITY (avg.)	Medium		Medium		Medium		
19. ROUNDNESS (avg.)	Subangular		Angular		Angular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	15		10		10		
b. SECONDARY Volcanic Glass	20		25		20		
c. TERTIARY Rock Fragments	50						
d. OTHER Quartz	Trace		Trace		Trace		
e. OTHER							
f. TRACE (see remarks)	MA, M		MA				
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA	Trace		15		15		
c. DIATOMS	Trace		35		45		
d. OTHER Sponge Spicules	Trace		15		10		
e. OTHER Fecal Pellets	15		Trace		Trace		

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER EW-8			7. SAMPLER TYPE Phleger Core, 80 lb.				
3. LATITUDE 77 ° 22 ' 30 " S			8. WATER DEPTH (fm.) 475 (m.) 869				
4. LONGITUDE 166 ° 00 ' 00 " E			9. CORE LENGTH (in.) 15.5 (cm.) 39.4				
5. DATE (day, month, year) 31 Jan. 1960			10. CORE PENETRATION (in.) 24 (cm.) 61.0				
11. LABORATORY NUMBER	5034		5035		5036		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2		3 - 5		5 - 7.5		
13. SEDIMENT TYPE	Pebbly Silty Sands*		Pebbly Silty Sand		Silty Sand		
14. COLOR (FIELD)	Olive Gray		Olive Gray				
(GSA rock color chart)	5Y 4/1		5Y 4/1				
(LABORATORY)	Gray Olive-Green		Gray Olive-Green		Grayish Black		
	5GY 3/2		5GY 3/2		N 2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	19	QDφ 3.63	26	QDφ 4.20	7	QDφ 2.42	
b. −2φ to −1φ (%)	14	SKφ +1.31	9	SKφ −0.47	5	SKφ +0.40	
c. −1φ to 0φ (%)	10	Mdφ 0.70	7	Mdφ 1.59	8	Mdφ 2.34	
d. 0φ to 1φ (%)	9	Qlφ −1.62	6	Qlφ −2.14	15	Qlφ 0.32	
e. 1φ to 2φ (%)	4	Q3φ 5.64	4	Q3φ 6.25	11	Q3φ 5.15	
f. 2φ to 3φ (%)	4		4		11		
g. 3φ to 4φ (%)	1		3		9		
h. 4φ to 6φ (%)	16		15		14		
i. 6φ to 9φ (%)	10		11		10		
j. 9φ to 12φ (%)	6		8		6		
k. >12φ (%)	6		6		3		
17. SUBSAMPLE DRY WEIGHT (gm.)	15.55		19.44		42.30		
18. SPHERICITY (avg.)	Medium		Medium		Medium		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	50		50		30		
b. SECONDARY Volcanic Glass	5		15		35		
c. TERTIARY Feldspar	5		10		30		
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA, M		MA, M		MA, M, O 5		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA	5		10				
c. DIATOMS	25		10		Trace		
d. OTHER Spicules	10		5		Trace		
e. OTHER							

23. REMARKS:

*Diatom Sand

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER EW-8 (continued)			7. SAMPLER TYPE				
3. LATITUDE ° ' '			8. WATER DEPTH (fm.) (m.)				
4. LONGITUDE ° ' "			9. CORE LENGTH (in.) (cm.)				
5. DATE (day, month, year)			10. CORE PENETRATION (in.) (cm.)				
11. LABORATORY NUMBER	5037		5038		5039		
12. SUBSAMPLE DEPTH IN CORE (in.)	7.5 - 9.5		9.5 - 11		11 - 13		
13. SEDIMENT TYPE	Silty Sand		Silty Sand		Silty Sand		
14. COLOR (FIELD) (GSA rock color chart)			Med. Dark Gray N 4		Med. Dark Gray N 4		
(LABORATORY)	Dark Green-Gray 5GY 4/1		Med. Dark Gray N 4		Dark Gray N 3		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	6	QDφ 3.00	7	QDφ 2.18		QDφ 1.52	
b. −2φ to −1φ (%)	5	SKφ +0.69	5	SKφ +0.67	4	SKφ +0.67	
c. −1φ to 0φ (%)	7	Mdφ 3.86	5	Mdφ 3.15	3	Mdφ 2.65	
d. 0φ to 1φ (%)	5	Q1φ 1.55	5	Q1φ 1.65	8	Q1φ 1.80	
e. 1φ to 2φ (%)	6	Q3φ 7.55	7	Q3φ 6.00	15	Q3φ 4.85	
f. 2φ to 3φ (%)	13		19		27		
g. 3φ to 4φ (%)	9		12		13		
h. 4φ to 6φ (%)	16		15		11		
i. 6φ to 9φ (%)	15		14		11		
j. 9φ to 12φ (%)	12		8		5		
k. >12φ (%)	5		4		4		
17. SUBSAMPLE DRY WEIGHT (gm.)	20.98		28.45		27.47		
18. SPHERICITY (avg.)	Medium		Medium		Medium		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Full-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	25		25		10		
b. SECONDARY Volcanic Glass	45		45		55		
c. TERTIARY Feldspar	20		25		30		
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA		MA		MA		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G - Trace		G - Trace				
b. RADIOLARIA			Trace		Trace		
c. DIATOMS	Trace		Trace		Trace		
d. OTHER Spicules	Trace		Trace		Trace		
e. OTHER Fecal Pellets	10		5		5		

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER EW-8 (continued)			7. SAMPLER TYPE				
3. LATITUDE ° ' '			8. WATER DEPTH (fm.) (m.)				
4. LONGITUDE ° ' "			9. CORE LENGTH (in.) (cm.)				
5. DATE (day, month, year)			10. CORE PENETRATION (in.) (cm.)				
11. LABORATORY NUMBER	5040						
12. SUBSAMPLE DEPTH IN CORE (in.)	13 - 15.5						
13. SEDIMENT TYPE	Pebbly Silty Mud						
14. COLOR (FIELD) (GSA rock color chart)	Med. Dark Gray N 4						
(LABORATORY)	Grayish Olive-Gr. 5GY 3/2						
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	30	QDφ 5.03		QDφ		QDφ	
b. −2φ to −1φ (%)	5	SKφ -0.73		SKφ		SKφ	
c. −1φ to 0φ (%)	4	Mdφ 3.35		Mdφ		Mdφ	
d. 0φ to 1φ (%)	4	Q1φ -2.41		Q1φ		Q1φ	
e. 1φ to 2φ (%)	3	Q3φ 7.65		Q3φ		Q3φ	
f. 2φ to 3φ (%)	3						
g. 3φ to 4φ (%)	4						
h. 4φ to 6φ (%)	14						
i. 6φ to 9φ (%)	14						
j. 9φ to 12φ (%)	11						
k. >12φ (%)	9						
17. SUBSAMPLE DRY WEIGHT (gm.)	15.80						
18. SPHERICITY (avg.)	Medium						
19. ROUNDNESS (avg.)	Subangular						
20. SURFACE TEXTURE (avg.)	Polished-Pitted						
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	60						
b. SECONDARY Volcanic Glass	15						
c. TERTIARY Feldspar	15						
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA, M						
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA	5						
c. DIATOMS	5						
d. OTHER Spicules	Trace						
e. OTHER Fecal Pellets	Trace						

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER EW-9	7. SAMPLER TYPE Phleger Core, 80 lb.
3. LATITUDE 77 ° 36 ' 00 " S	8. WATER DEPTH (fm.) 320 (m.) 585
4. LONGITUDE 165 ° 59 ' 00 " E	9. CORE LENGTH (in.) 2 (cm.) 5.1
5. DATE (day, month, year) 31 Jan. 1960	10. CORE PENETRATION (in.) (cm.)

11. LABORATORY NUMBER	5075			
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2			
13. SEDIMENT TYPE	Sand*			
14. COLOR (FIELD) (GSA rock color chart)				
(LABORATORY)	Olive Gray			
	5Y 4/1			
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)		QDφ 0.44	QDφ	QDφ
b. −2φ to −1φ (%)		SKφ −0.04	SKφ	SKφ
c. −1φ to 0φ (%)		Mdφ 2.87	Mdφ	Mdφ
d. 0φ to 1φ (%)	1	Q1φ 2.39	Q1φ	Q1φ
e. 1φ to 2φ (%)	11	Q3φ 3.27	Q3φ	Q3φ
f. 2φ to 3φ (%)	49			
g. 3φ to 4φ (%)	32			
h. 4φ to 6φ (%)	}			
i. 6φ to 9φ (%)	7			
j. 9φ to 12φ (%)	}			
k. >12φ (%)				
17. SUBSAMPLE DRY WEIGHT (gm.)	19.83			
18. SPHERICITY (avg.)	Medium			
19. ROUNDNESS (avg.)	Subangular			
20. SURFACE TEXTURE (avg.)	Polished-Pitted			
21. MINERAL CONTENT (%)				
a. DOMINANT Volcanic Glass	55			
b. SECONDARY Feldspar	30			
c. TERTIARY				
d. OTHER				
e. OTHER				
f. TRACE (see remarks)	MA			
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	Trace			
b. RADIOLARIA				
c. DIATOMS	10			
d. OTHER Spicules	5			
e. OTHER				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER EW-10	7. SAMPLER TYPE Phleger Core, 80 lb.
3. LATITUDE 77 ° 29 ' 18 " S	8. WATER DEPTH (fm.) 262 (m.) 479
4. LONGITUDE 165 ° 13 ' 00 " E	9. CORE LENGTH (in.) 7 (cm.) 17.8
5. DATE (day, month, year) 1 Feb. 1960	10. CORE PENETRATION (in.) 12 (cm.) 30.5

11. LABORATORY NUMBER	5076		5077	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2		5 - 7	
13. SEDIMENT TYPE	Silty Sand*		Sand*	
14. COLOR (FIELD) (GSA rock color chart)	Med. Dark Gray		Med. Dark Gray	
	N 4		N 4	
(LABORATORY)	Greenish Black		Greenish Black	
	5GY 2/1		5GY 2/1	
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)		QDφ 0.72	QDφ 0.74	QDφ
b. −2φ to −1φ (%)		SKφ +0.18	SKφ +0.06	SKφ
c. −1φ to 0φ (%)		Mdφ 2.89	1 Mdφ 2.68	Mdφ
d. 0φ to 1φ (%)	1	Q1φ 2.35	3 Q1φ 2.00	Q1φ
e. 1φ to 2φ (%)	15	Q3φ 3.79	21 Q3φ 3.48	Q3φ
f. 2φ to 3φ (%)	41		40	
g. 3φ to 4φ (%)	20		16	
h. 4φ to 6φ (%)	9		9	
i. 6φ to 9φ (%)	5		4	
j. 9φ to 12φ (%)	3		3	
k. >12φ (%)	5		3	
17. SUBSAMPLE DRY WEIGHT (gm.)	16.63		30.16	
18. SPHERICITY (avg.)	Medium		Medium	
19. ROUNDNESS (avg.)	Subangular		Subrounded	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)				
a. DOMINANT Volcanic Glass	50		50	
b. SECONDARY Feldspar	45		45	
c. TERTIARY Quartz	Trace		Trace	
d. OTHER				
e. OTHER				
f. TRACE (see remarks)	MA		MA, M	
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)				
b. RADIOLARIA			Trace	
c. DIATOMS	Trace		Trace	
d. OTHER Spicules	Trace		Trace	
e. OTHER Fecal Pellets	5		5	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-11		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 77 ° 28 ' 00 ' S		8. WATER DEPTH (fm.) 120	(m.) 219
4. LONGITUDE 164 ° 35 ' 30" E		9. CORE LENGTH (in.) 20	(cm.) 50.8
5. DATE (day, month, year) 1 Feb. 1960		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5041	5042	5043
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 1.5	1.5 - 3.5	4 - 6
13. SEDIMENT TYPE	Silty Sand*	Silty Sand*	Silty Sand*
14. COLOR (FIELD) (GSA rock color chart)	Olive Gray 5Y 3/2	Olive Gray 5Y 3/2	Olive Gray 5Y 3/2
(LABORATORY)	Black N 1	Gray Olive-Green 5GY 3/2	Gray Olive-Green 5GY 3/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 1.22	QDφ 1.05	QDφ 1.21
b. −2φ to −1φ (%)	1 SKφ +0.36	1 SKφ +0.35	1 SKφ +0.10
c. −1φ to 0φ (%)	1 Mdφ 3.45	1 Mdφ 3.19	2 Mdφ 3.47
d. 0φ to 1φ (%)	4 Qlφ 2.59	5 Qlφ 2.49	5 Qlφ 2.36
e. 1φ to 2φ (%)	9 Q3φ 5.03	12 Q3φ 4.59	11 Q3φ 4.78
f. 2φ to 3φ (%)	20	19	19
g. 3φ to 4φ (%)	27	31	26
h. 4φ to 6φ (%)	21	14	19
i. 6φ to 9φ (%)	7	7	7
j. 9φ to 12φ (%)	6	5	7
k. >12φ (%)	5	5	4
17. SUBSAMPLE DRY WEIGHT (gm.)	16.01	15.54	23.44
18. SPHERICITY (avg.)	Medium	Medium High	Medium high
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	40	55	60
b. SECONDARY Feldspar	10	20	30
c. TERTIARY Quartz	Trace	Trace	Trace
d. OTHER Rock Fragments		Trace	Trace
e. OTHER			
f. TRACE (see remarks)	MA, M 5	MA, M	MA, M
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G, C 5	G, C 5	
b. RADIOLARIA		Trace	
c. DIATOMS	5	Trace	Trace
d. OTHER Sponge Spicules	30	10	5
e. OTHER	5**	10**	Fecal Pellets 5

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

DEPTH (in)	Composition
0 - 1.5	Black silt and sand with long spicules.
1.5 - 6	Greenish silt and sand.
6 - 12	Bluish clay mixed with dark sand and silt.
12 - 16	Greenish silt and sand with local clay.
16 - 20	Olive clay, silt and sand; bottom 0.25" was mostly silt.

*Volcanic Ash and Silicecus Sand
**Bryozoa, fecal pellets, echinoderm spines, ostrocods

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-11 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE ° ' "		9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5044	5045	5046
12. SUBSAMPLE DEPTH IN CORE (in.)	6 - 8	10 - 12	12 - 14
13. SEDIMENT TYPE	Silty Sand*	Silty Sand*	Silty Sand*
14. COLOR (FIELD) (GSA rock color chart)	Dark Green-Gray 5GY 4/1	Dark Green-Gray 5GY 4/1	Dark Green-Gray 5GY 4/1
(LABORATORY)	Dark Green-Gray 5GY 4/1	Dark Green-Gray 5GY 4/1	Dark Greenish Gray 5GY 4/1
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	6 QDφ 1.44	QDφ 1.26	QDφ 1.34
b. −2φ to −1φ (%)	1 SKφ -0.41	1 SKφ +0.25	1 SKφ +0.63
c. −1φ to 0φ (%)	1 Mdφ 4.03	Mdφ 3.75	1 Mdφ 3.41
d. 0φ to 1φ (%)	4 Qlφ 2.18	3 Qlφ 2.73	3 Qlφ 2.74
e. 1φ to 2φ (%)	8 Q3φ 5.07	9 Q3φ 5.26	8 Q3φ 5.42
f. 2φ to 3φ (%)	18	18	19
g. 3φ to 4φ (%)	11	24	32
h. 4φ to 6φ (%)	35	26	15
i. 6φ to 9φ (%)	6	9	11
j. 9φ to 12φ (%)	2	9	3
k. >12φ (%)	9	Trace	6
17. SUBSAMPLE DRY WEIGHT (gm.)	23.44	26.96	22.34
18. SPHERICITY (avg.)	Medium High	Medium	Medium
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	45	55	55
b. SECONDARY Feldspar	30	40	40
c. TERTIARY Quartz	Trace	Trace	Trace
d. OTHER Rock Fragments	15		Trace
e. OTHER			
f. TRACE (see remarks)	MA, M, O	MA, M	MA, M
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G, C - Trace		
b. RADIOLARIA			
c. DIATOMS	Trace	Trace	Trace
d. OTHER Sponge Spicules	5	Trace	Trace
e. OTHER Fecal Pellets	5	5	5

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-11 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE ° ' "		9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)
11. LABORATORY NUMBER	5047	5048	5049
12. SUBSAMPLE DEPTH IN CORE (in.)	14 - 16	16 - 18	18 - 20
13. SEDIMENT TYPE	Silty Sand	Silty Sand	Sandy Silt
14. COLOR (FIELD) (GSA rock color chart)	Dark Green-Gray 5GY 4/1	Dark Green-Gray 5GY 4/1	Dark Greenish Gray 5GY 4/1
(LABORATORY)	Dark Greenish Gray 5GY 4/1	Dark Green-Gray 5GY 4/1	Grayish Olive Green 5GY 3/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	1		
b. −2φ to −1φ (%)		1	1
c. −1φ to 0φ (%)	1	5	
d. 0φ to 1φ (%)	4	13	1
e. 1φ to 2φ (%)	9	10	3
f. 2φ to 3φ (%)	24	9	7
g. 3φ to 4φ (%)	22	17	14
h. 4φ to 6φ (%)	22	21	28
i. 6φ to 9φ (%)	9	15	29
j. 9φ to 12φ (%)	4	7	10
k. >12φ (%)	3	3	8
17. SUBSAMPLE DRY WEIGHT (gm.)	32.73	18.75	20.25
18. SPHERICITY (avg.)	Medium	Medium High	Medium
19. ROUNDNESS (avg.)	Subrounded	Rounded	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Dull-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	55	55	50
b. SECONDARY Feldspar	40	35	35
c. TERTIARY Quartz	Trace	Trace	Trace
d. OTHER Rock Fragments	5	5	Trace
e. OTHER			
f. TRACE (see remarks)	MA, M	MA, M	MA, M 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA			
c. DIATOMS			Trace
d. OTHER Sponge Spicules	Trace		
e. OTHER Fecal Pellets	Trace	5	10

	QDφ 1.28		QDφ 2.19		QDφ 2.07	
	SKφ +0.31		SKφ +0.06		SKφ +0.33	
	Mdφ 3.45		Mdφ 3.65		Mdφ 5.67	
	Qlφ 2.48		Qlφ 1.52		Qlφ 3.93	
	Q3φ 5.04		Q3φ 5.90		Q3φ 8.07	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-12		7. SAMPLER TYPE PVC	
3. LATITUDE 77 ° 28 ' 00 " S		8. WATER DEPTH (fm.) 120	(m.) 219
4. LONGITUDE 164 ° 35 ' 30 " E		9. CORE LENGTH (in.) 7	(cm.) 17.8
5. DATE (day, month, year) 1 Feb. 1960		10. CORE PENETRATION (in.)	(cm.)
11. LABORATORY NUMBER	5298	5299	5300
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	2 - 4	4 - 7
13. SEDIMENT TYPE	Silty Sand*	Silty Sand*	Silty Sand*
14. COLOR (FIELD) (GSA rock color chart)	Olive Gray 5Y 3/2		Dark Green-Gray 5GY 4/1
(LABORATORY)	Dark Green-Gray 5GY 4/1	Dark Green-Gray 5GY 4/1	Dark Green-Gray 5GY 4/1
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	1	1	2
b. −2φ to −1φ (%)	2	1	1
c. −1φ to 0φ (%)	2	2	3
d. 0φ to 1φ (%)	3	7	7
e. 1φ to 2φ (%)	9	10	11
f. 2φ to 3φ (%)	12	12	14
g. 3φ to 4φ (%)	19	20	24
h. 4φ to 6φ (%)	25	23	21
i. 6φ to 9φ (%)	12	10	7
j. 9φ to 12φ (%)	10	8	7
k. >12φ (%)	5	5	4
17. SUBSAMPLE DRY WEIGHT (gm.)	25.33	32.17	25.00
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	50	40	45
b. SECONDARY Feldspar	25	25	30
c. TERTIARY Rock Fragments	10	15	15
d. OTHER Quartz	Trace	Trace	
e. OTHER			
f. TRACE (see remarks)	MA, M 5	MA, M 5	MA, M 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA			
c. DIATOMS	Trace	Trace	Trace
d. OTHER Sponge Spicules	5	5	Trace
e. OTHER Fecal Pellets	5	10	5

	QDφ 1.88		QDφ 1.70		QDφ 1.38	
	SKφ +0.53		SKφ +0.15		SKφ -0.08	
	Mdφ 4.05		Mdφ 3.90		Mdφ 3.55	
	Qlφ 2.70		Qlφ 2.35		Qlφ 2.10	
	Q3φ 6.45		Q3φ 5.75		Q3φ 4.85	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-12A		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 77 ° 25 ' 00 " S		8. WATER DEPTH (fm.) 400 (m.) 730	
4. LONGITUDE 165 ° 18 ' 00 " E		9. CORE LENGTH (in.) 8.25 (cm.) 21.0	
5. DATE (day, month, year) 1 Feb 1960		10. CORE PENETRATION (in.) 12 (cm.) 30.5	
11. LABORATORY NUMBER	5078	5079	5080
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	2 - 4	4 - 6
13. SEDIMENT TYPE	Pebbly Silty Sand	Silty Sand	Sandy Gravel
14. COLOR (FIELD) (GSA rock color chart)	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1	Olive Gray 5Y 4/1
(LABORATORY)	Olive Gray 5Y 3/2	Olive Gray 5Y 3/2	Olive Gray 5Y 3/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	11	9	30
b. −2φ to −1φ (%)	23	14	12
c. −1φ to 0φ (%)	18	19	14
d. 0φ to 1φ (%)	8	10	9
e. 1φ to 2φ (%)	3	5	4
f. 2φ to 3φ (%)	5	5	6
g. 3φ to 4φ (%)	7	7	7
h. 4φ to 6φ (%)	10	12	7
i. 6φ to 9φ (%)	6	8	5
j. 9φ to 12φ (%)	5	6	4
k. >12φ (%)	4	4	3
	QDφ 2.72	QDφ 2.91	QDφ 2.68
	SKφ +1.43	SKφ +1.23	SKφ +0.77
	Mdφ -0.15	Mdφ 0.75	Mdφ -0.45
	Qlφ -1.43	Qlφ -0.93	Qlφ -2.37
	Q3φ 4.00	Q3φ 4.89	Q3φ 3.00
17. SUBSAMPLE DRY WEIGHT (gm.)	40.40	60.14	54.12
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subangular	Subangular	Subrounded
20. SURFACE TEXTURE (avg.)	Dull-Pitted	Dull-Pitted	Dull-Smooth
21. MINERAL CONTENT (%)			
a. DOMINANT Rock Fragments	60	70	75
b. SECONDARY Feldspar	15	15	15
c. TERTIARY Volcanic Glass	10	10	10
d. OTHER Quartz	Trace	Trace	Trace
e. OTHER			
f. TRACE (see remarks)	MA, M	MA, M	MA, M, O
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	5		Trace
c. DIATOMS		5	Trace
d. OTHER Sponge Spicules	5		Trace
e. OTHER Fecal Pellets	5		Trace

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Rock fragments composed of volcanics, granitic rocks and sandstone (beacon)?

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-12A (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5081		
12. SUBSAMPLE DEPTH IN CORE (in.)	6 - 8.25		
13. SEDIMENT TYPE	Pebbly Silty Sand		
14. COLOR (FIELD) (GSA rock color chart)	Olive Gray 5Y 4/1		
(LABORATORY)	Olive Gray 5Y 3/2		
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	16*		
b. −2φ to −1φ (%)	6		
c. −1φ to 0φ (%)	7		
d. 0φ to 1φ (%)	5		
e. 1φ to 2φ (%)	4		
f. 2φ to 3φ (%)	10		
g. 3φ to 4φ (%)	15		
h. 4φ to 6φ (%)	13		
i. 6φ to 9φ (%)	11		
j. 9φ to 12φ (%)	8		
k. >12φ (%)	4		
	QDφ 3.20	QDφ	QDφ
	SKφ -0.53	SKφ	SKφ
	Mdφ 3.14	Mdφ	Mdφ
	Qlφ -0.59	Qlφ	Qlφ
	Q3φ 5.81	Q3φ	Q3φ
17. SUBSAMPLE DRY WEIGHT (gm.)	57.53		
18. SPHERICITY (avg.)	Medium		
19. ROUNDNESS (avg.)	Subangular		
20. SURFACE TEXTURE (avg.)	Dull-Pitted		
21. MINERAL CONTENT (%)			
a. DOMINANT Rock Fragments	30		
b. SECONDARY Feldspar	35		
c. TERTIARY Volcanic Glass	30		
d. OTHER Quartz	Trace		
e. OTHER			
f. TRACE (see remarks)	MA, M, O		
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA			
c. DIATOMS	5		
d. OTHER Sponge Spicules			
e. OTHER Fecal Pellets			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Core contained one large pebble, 1.13" X 1.13" X 0.5", 13.48 gm., at 8.25" which was not analyzed.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USCGC EASTWIND
2. SAMPLE NUMBER	EW-13
3. LATITUDE	77 ° 37 ' 00 " S
4. LONGITUDE	166 ° 09 ' 00 " E
5. DATE (day, month, year)	1 Feb. 1960
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	Phleger Core, 80 lb.
8. WATER DEPTH (fm.)	170 (m.) 310
9. CORE LENGTH (in.)	4 (cm.) 10.2
10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5082			
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3			
13. SEDIMENT TYPE	Silty Sand*			
14. COLOR (FIELD) (GSA rock color chart)	Brownish Gray 5YR 4/1			
(LABORATORY)	Olive Gray 5Y 3/2			
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)		QDφ 2.34	QDφ	QDφ
b. −2φ to −1φ (%)	2	SKφ +0.60	SKφ	SKφ
c. −1φ to 0φ (%)	1	Mdφ 1.38	Mdφ	Mdφ
d. 0φ to 1φ (%)	5	Q1φ 2.64	Q1φ	Q1φ
e. 1φ to 2φ (%)	9	Q3φ 7.32	Q3φ	Q3φ
f. 2φ to 3φ (%)	13			
g. 3φ to 4φ (%)	14			
h. 4φ to 6φ (%)	24			
i. 6φ to 9φ (%)	15			
j. 9φ to 12φ (%)	8			
k. >12φ (%)	8			
17. SUBSAMPLE DRY WEIGHT (gm.)	21.01			
18. SPHERICITY (avg.)	Medium Low			
19. ROUNDNESS (avg.)	Subangular			
20. SURFACE TEXTURE (avg.)	Polished-Fitted			
21. MINERAL CONTENT (%)				
a. DOMINANT Volcanic Glass	30			
b. SECONDARY Feldspar	15			
c. TERTIARY Rock Fragments	5			
d. OTHER Quartz	Trace			
e. OTHER				
f. TRACE (see remarks)	MA			
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	C - Trace, O - 15			
b. RADIOLARIA	Trace			
c. DIATOMS	Trace			
d. OTHER Sponge Spicules	35			
e. OTHER Echinoderm Spines	Trace			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash and Siliceous Sand
This core composed of sand, silt, clay and spicules with a large sponge in the last inch.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USCGC EASTWIND
2. SAMPLE NUMBER	EW-16
3. LATITUDE	77 ° 35 ' 48 " S
4. LONGITUDE	166 ° 13 ' 00 " E
5. DATE (day, month, year)	13 Feb. 1960
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	Phleger Core, 80 lb.
8. WATER DEPTH (fm.)	53 (m.) 97
9. CORE LENGTH (in.)	1 (cm.) 2.5
10. CORE PENETRATION (in.)	4 (cm.) 10.2

11. LABORATORY NUMBER	5088			
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 1			
13. SEDIMENT TYPE	Organic Remains			
14. COLOR (FIELD) (GSA rock color chart)				
(LABORATORY)				
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)		QDφ	QDφ	QDφ
b. −2φ to −1φ (%)		SKφ	SKφ	SKφ
c. −1φ to 0φ (%)		Mdφ	Mdφ	Mdφ
d. 0φ to 1φ (%)		Q1φ	Q1φ	Q1φ
e. 1φ to 2φ (%)		Q3φ	Q3φ	Q3φ
f. 2φ to 3φ (%)				
g. 3φ to 4φ (%)				
h. 4φ to 6φ (%)				
i. 6φ to 9φ (%)				
j. 9φ to 12φ (%)				
k. >12φ (%)				
17. SUBSAMPLE DRY WEIGHT (gm.)				
18. SPHERICITY (avg.)				
19. ROUNDNESS (avg.)				
20. SURFACE TEXTURE (avg.)				
21. MINERAL CONTENT (%)				
a. DOMINANT				
b. SECONDARY Volcanic Glass	5			
c. TERTIARY				
d. OTHER				
e. OTHER				
f. TRACE (see remarks)				
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	C - 5			
b. RADIOLARIA				
c. DIATOMS	Trace			
d. OTHER Sponge Spicules	85			
e. OTHER	5*			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Worm tubes, gastropods, shell fragments, bryozoa

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER EW-17			7. SAMPLER TYPE Phleger Core, 80 lb.				
3. LATITUDE 77 ° 36 ' 18 " S			8. WATER DEPTH (fm.) 93.5 (m.) 171				
4. LONGITUDE 166 ° 16 ' 06 " E			9. CORE LENGTH (in.) 20.5 (cm.) 52.1				
5. DATE (day, month, year) 13 Feb. 60			10. CORE PENETRATION (in.) 24 (cm.) 61.0				
11. LABORATORY NUMBER	4994		4995		4996		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2		3 - 4		5 - 7		
13. SEDIMENT TYPE	Clayey Silt*		Sandy Silt		Silty Sand		
14. COLOR (FIELD) (GSA rock color chart)	Grayish Brown 5YR 3/2						
(LABORATORY)	Olive Gray 5Y 3/2		Grayish Olive 10Y 4/2		Gray Olive Green 5 GY 3/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	2	QDφ 1.68	6	QDφ 2.08	1	QDφ 2.04	
b. −2φ to −1φ (%)	1	SKφ +0.80	2	SKφ -0.01	1	SKφ +0.75	
c. −1φ to 0φ (%)	2	Mdφ 5.48	2	Mdφ 4.79	1	Mdφ 4.46	
d. 0φ to 1φ (%)		Qlφ 4.60	3	Qlφ 2.70	2	Qlφ 3.17	
e. 1φ to 2φ (%)	2	Q3φ 7.95	6	Q3φ 6.85	4	Q3φ 7.25	
f. 2φ to 3φ (%)	7		9		12		
g. 3φ to 4φ (%)	3		10		22		
h. 4φ to 6φ (%)	45		32		25		
i. 6φ to 9φ (%)	16		10		13		
j. 9φ to 12φ (%)	6		7		8		
k. >12φ (%)	17		12		10		
17. SUBSAMPLE DRY WEIGHT (gm.)	8.94		8.05		25.21		
18. SPHERICITY (avg.)	Medium		Medium		Medium		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Volcanic Glass	10		20		15		
b. SECONDARY Feldspar	5		10		10		
c. TERTIARY Rock Fragments	Trace		5		Trace		
d. OTHER							
e. OTHER							
f. TRACE (see remarks)			MA		MA		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G- Trace, C - 10		G - Trace , C -10		G, C 5		
b. RADIOLARIA	Trace						
c. DIATOMS	5		Trace		5		
d. OTHER Sponge Spicules	70		40		65		
e. OTHER Shell Fragments			15**				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Siliceous Ooze
**Many Ostrocods

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER EW-17 (continued)			7. SAMPLER TYPE				
3. LATITUDE ° ' "			8. WATER DEPTH (fm.) (m.)				
4. LONGITUDE ° ' "			9. CORE LENGTH (in.) (cm.)				
5. DATE (day, month, year)			10. CORE PENETRATION (in.) (cm.)				
11. LABORATORY NUMBER	4997		4998		4999		
12. SUBSAMPLE DEPTH IN CORE (in.)	8 - 9		10.5 - 12.5		12.5 - 14		
13. SEDIMENT TYPE	Pebbly Sandy Silt		Silty Mud		Silty Sand		
14. COLOR (FIELD) (GSA rock color chart)							
(LABORATORY)	Dark Gray N 3		Med. Dark Gray N 4		Med. Dark Gray N 4		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	17	QDφ 3.08		QDφ 2.00	5	QDφ 2.27	
b. −2φ to −1φ (%)	4	SKφ -0.53		SKφ +0.77	1	SKφ +1.07	
c. −1φ to 0φ (%)	5	Mdφ 3.35	2	Mdφ 5.15	2	Mdφ 4.00	
d. 0φ to 1φ (%)	2	Qlφ -0.25		Qlφ 3.91	3	Qlφ 2.80	
e. 1φ to 2φ (%)	14	Q3φ 5.90	2	Q3φ 7.92	6	Q3φ 7.34	
f. 2φ to 3φ (%)	7		7		11		
g. 3φ to 4φ (%)	2		16		22		
h. 4φ to 6φ (%)	25		36		18		
i. 6φ to 9φ (%)	10		16		13		
j. 9φ to 12φ (%)	6		9		8		
k. >12φ (%)	7		11		11		
17. SUBSAMPLE DRY WEIGHT (gm.)	30.86		11.04		17.20		
18. SPHERICITY (avg.)	Medium		Medium		Medium		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Volcanic Glass	60		35		35		
b. SECONDARY Feldspar	10		15		10		
c. TERTIARY Rock Fragments	15		Trace		10		
d. OTHER							
e. OTHER							
f. TRACE (see remarks)			MA		MA		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	C - 10		G-Trace, C-10		G-Trace, C-10		
b. RADIOLARIA			Trace		Trace		
c. DIATOMS			Trace		Trace		
d. OTHER Sponge Spicules	5		40		30		
e. OTHER Echinoderm Spines					5**		

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

**Many Ostrocods

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

McMURDO SOUND

1. SHIP USCGC EASTWIND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER EW-17 (continued)	7. SAMPLER TYPE
3. LATITUDE ° ' "	8. WATER DEPTH (fm.) (m.)
4. LONGITUDE ° ' "	9. CORE LENGTH (in.) (cm.)
5. DATE (day, month, year)	10. CORE PENETRATION (in.) (cm.)

11. LABORATORY NUMBER	5000		5001		5002	
12. SUBSAMPLE DEPTH IN CORE (in.)	14 - 16		17 - 19		19 - 20.5	
13. SEDIMENT TYPE	Sandy Silt		Silty Sand		Silty Sand	
14. COLOR (FIELD) (GSA rock color chart)					Dark Gray N 3	
(LABORATORY)	Med. Dark Gray N 4		Med. Dark Gray N 4		Olive Blk 5Y 2/1 Olive Gray 5Y 3/2	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ 1.60	1	QDφ 1.42	2	QDφ 1.58
b. −2φ to −1φ (%)	1	SKφ +0.54		SKφ +0.41	2	SKφ +0.37
c. −1φ to 0φ (%)		Mdφ 4.80	2	Mdφ 4.17	2	Mdφ 3.95
d. 0φ to 1φ (%)	1	Q1φ 3.74	5	Q1φ 3.15	3	Q1φ 2.75
e. 1φ to 2φ (%)	3	Q3φ 6.93	8	Q3φ 6.00	6	Q3φ 5.90
f. 2φ to 3φ (%)	7		11		15	
g. 3φ to 4φ (%)	19		18		21	
h. 4φ to 6φ (%)	38		30		25	
i. 6φ to 9φ (%)	13		11		11	
j. 9φ to 12φ (%)	10		7		6	
k. >12φ (%)	9		7		6	
17. SUBSAMPLE DRY WEIGHT (gm.)	19.39		25.35		22.76	
18. SPHERICITY (avg.)	Medium		Medium		Medium	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Volcanic Glass	40		35		40	
b. SECONDARY Feldspar	10		10		10	
c. TERTIARY Rock Fragments	Trace		5		10	
d. OTHER						
e. OTHER						
f. TRACE (see remarks)	MA		MA			
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	G-Trace, C-10		G-Trace, C-10		C-5	
b. RADIOLARIA	Trace				Trace	
c. DIATOMS	Trace		Trace		Trace	
d. OTHER Sponge Spicules	40		35		35	
e. OTHER Echinoderm Spines			5**		Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

**Many Ostrocods

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USCGC EASTWIND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER EW-18	7. SAMPLER TYPE Phleger Core, 80 lb.
3. LATITUDE 77 ° 37 ' 48 " S	8. WATER DEPTH (fm.) 55 (m.) 100
4. LONGITUDE 166 ° 22 ' 00 " E	9. CORE LENGTH (in.) 3 (cm.) 7.6
5. DATE (day, month, year) 13 Feb. 1960	10. CORE PENETRATION (in.) 5 (cm.) 12.7

11. LABORATORY NUMBER	5089			
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3			
13. SEDIMENT TYPE	Organic remains			
14. COLOR (FIELD) (GSA rock color chart)				
(LABORATORY)				
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)	QDφ	QDφ	QDφ	
b. −2φ to −1φ (%)	SKφ	SKφ	SKφ	
c. −1φ to 0φ (%)	Mdφ	Mdφ	Mdφ	
d. 0φ to 1φ (%)	Q1φ	Q1φ	Q1φ	
e. 1φ to 2φ (%)	Q3φ	Q3φ	Q3φ	
f. 2φ to 3φ (%)				
g. 3φ to 4φ (%)				
h. 4φ to 6φ (%)				
i. 6φ to 9φ (%)				
j. 9φ to 12φ (%)				
k. >12φ (%)				
17. SUBSAMPLE DRY WEIGHT (gm.)				
18. SPHERICITY (avg.)				
19. ROUNDNESS (avg.)				
20. SURFACE TEXTURE (avg.)				
21. MINERAL CONTENT (%)				
a. DOMINANT Volcanic Glass	10			
b. SECONDARY Feldspar	5			
c. TERTIARY				
d. OTHER				
e. OTHER				
f. TRACE (see remarks)				
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	G - Trace			
b. RADIOLARIA				
c. DIATOMS	Trace			
d. OTHER Sponge Spicules	85			
e. OTHER				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

This core was composed of the remains of one sponge and a small amount of sandy mud which was insufficient for analysis.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

McMURDO SOUND

1. SHIP	USCGC EASTWIND	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	EW-19	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	77 ° 46 ' 18 " S	8. WATER DEPTH (fm.)	298 (m.) 545
4. LONGITUDE	166 ° 26 ' 54 " E	9. CORE LENGTH (in.)	1 (cm.) 2.5
5. DATE (day, month, year)	13 Feb 1960	10. CORE PENETRATION (in.)	4 (cm.) 10.2

11. LABORATORY NUMBER	5090			
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 1			
13. SEDIMENT TYPE	Pebbly Sand*			
14. COLOR (FIELD) (GSA rock color chart)	Olive Gray 5Y 4/1			
(LABORATORY)	Olive Gray 5Y 3/2			
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)	21	QDφ 1.66	QDφ	QDφ
b. −2φ to −1φ (%)	2	SKφ -0.79	SKφ	SKφ
c. −1φ to 0φ (%)	2	Mdφ 2.45	Mdφ	Mdφ
d. 0φ to 1φ (%)	2	Qlφ 0.00	Qlφ	Qlφ
e. 1φ to 2φ (%)	13	Q3φ 3.33	Q3φ	Q3φ
f. 2φ to 3φ (%)	25			
g. 3φ to 4φ (%)	28			
h. 4φ to 6φ (%)	8			
i. 6φ to 9φ (%)				
j. 9φ to 12φ (%)				
k. >12φ (%)				
17. SUBSAMPLE DRY WEIGHT (gm.)	30.93			
18. SPHERICITY (avg.)	Medium Low			
19. ROUNDNESS (avg.)	Angular			
20. SURFACE TEXTURE (avg.)	Polished-Pitted			
21. MINERAL CONTENT (%)				
a. DOMINANT Volcanic Glass	40			
b. SECONDARY Feldspar	30			
c. TERTIARY Rock Fragments	20			
d. OTHER				
e. OTHER				
f. TRACE (see remarks)	MA			
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	G - Trace			
b. RADIOLARIA	Trace			
c. DIATOMS	Trace			
d. OTHER Sponge Spicules	10			
e. OTHER				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

OCEANOGRAPHIC Log Sheet RR
NHO 3167/18A (Nov 8-60)

SEDIMENT ANALYSIS SHEET

1. SHIP	USCGC EASTWIND	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	EW-14	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	76 ° 43 ' 00 " S	8. WATER DEPTH (fm.)	433 (m.) 790
4. LONGITUDE	167 ° 33 ' 00 " E	9. CORE LENGTH (in.)	22 (cm.) 55.9
5. DATE (day, month, year)	12 Feb. 1960	10. CORE PENETRATION (in.)	24 (cm.) 61.0

11. LABORATORY NUMBER	5028	5029	5030
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	6 - 8	12 - 14
13. SEDIMENT TYPE	Silty Clay*	Silty Clay*	Silty Clay*
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
(LABORATORY)	Grayish Olive Green 5GY 3/2	Gray Olive Green 5GY 3/2	Gray Olive-Green 5GY 3/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <-2φ (%)	QDφ 2.56	QDφ 2.39	QDφ 2.52
b. -2φ to -1φ (%)	SKφ +0.43	SKφ +0.23	SKφ +0.33
c. -1φ to 0φ (%)	Mdφ 8.78	Mdφ 8.78	Mdφ 8.79
d. 0φ to 1φ (%)	4 Qlφ 6.65	5 Qlφ 6.62	5 Qlφ 6.60
e. 1φ to 2φ (%)	Q3φ 11.77	Q3φ 11.40	Q3φ 11.65
f. 2φ to 3φ (%)			
g. 3φ to 4φ (%)			
h. 4φ to 6φ (%)	11	11	13
i. 6φ to 9φ (%)	37	36	34
j. 9φ to 12φ (%)	25	30	25
k. >12φ (%)	23	18	22
17. SUBSAMPLE DRY WEIGHT (gm.)	7.11	8.44	8.79
18. SPHERICITY (avg.)			
19. ROUNDNESS (avg.)			
20. SURFACE TEXTURE (avg.)			
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	5	5	5
b. SECONDARY Feldspar			
c. TERTIARY			
d. OTHER			
e. OTHER			
f. TRACE (see remarks)			
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	10	10	10
c. DIATOMS	70	70	70
d. OTHER Spicules	15	15	15
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Depth (in.)	Composition
0 - 18.5	Uniform green clay
18.5 - 20	Silt and clay
20 - 22	Bluish sand, silt and clay

*Diatom ooze

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS

1. SHIP	USCGC EASTWIND	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	EW-14 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' "	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5031	5032	5033
12. SUBSAMPLE DEPTH IN CORE (in.)	17 - 18.5	18.5 - 20	20 - 22
13. SEDIMENT TYPE	Silty Clay	Clayey Silt	Silty Sand
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2	Med. Dark Gray N 4	Med. Dark Gray N 4
(LABORATORY)	Gray Olive-Green 5GY 3/2	Dark Green-Gray 5GY 4/1	Dark Green-Gray 5GY 4/1
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <-2φ (%)	QDφ 2.60	2 QDφ 2.49	5 QDφ 3.50
b. -2φ to -1φ (%)	SKφ +0.13	1 SKφ +0.12	8 SKφ +0.35
c. -1φ to 0φ (%)	1 Mdφ 8.57	Mdφ 8.37	9 Mdφ 3.47
d. 0φ to 1φ (%)	Qlφ 6.10	1 Qlφ 6.00	9 Qlφ 0.32
e. 1φ to 2φ (%)	2 Q3φ 11.30	1 Q3φ 10.98	8 Q3φ 7.32
f. 2φ to 3φ (%)	3	1	8
g. 3φ to 4φ (%)	4	2	7
h. 4φ to 6φ (%)	14	17	15
i. 6φ to 9φ (%)	30	31	12
j. 9φ to 12φ (%)	27	28	12
k. >12φ (%)	19	16	7
17. SUBSAMPLE DRY WEIGHT (gm.)	10.64	11.64	14.10
18. SPHERICITY (avg.)	Medium	Medium	Medium High
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Dull-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	25	20	5
b. SECONDARY Feldspar	15	25	15
c. TERTIARY Quartz	5	5	5
d. OTHER Rock Fragments		10	10
e. OTHER			
f. TRACE (see remarks)	MA, M 5	MA, M, O 5	
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	10	10	
c. DIATOMS	25	10	Trace
d. OTHER Spicules	10	10	Trace
e. OTHER Fecal Pellets	5	5	65

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-15		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 77 ° 01 ' 00 " S		8. WATER DEPTH (fm.) 410 (m) 750	
4. LONGITUDE 166 ° 40 ' 00 " E		9. CORE LENGTH (in.) 10 (cm.) 25.4	
5. DATE (day, month, year) 13 Feb. 60		10. CORE PENETRATION (in.) 18 (cm.) 45.7	
11. LABORATORY NUMBER	5083	5084	5085
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	2 - 4	4 - 6
13. SEDIMENT TYPE	Pebbly Sand	Silty Sand	Sandy Mud
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Brown 5Y 5/6		
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	32 QDφ 4.18	2 QDφ 2.96	1 QDφ 3.02
b. −2φ to −1φ (%)	4 SKφ −0.29	6 SKφ +1.24	1 SKφ +0.62
c. −1φ to 0φ (%)	5 Mdφ 1.35	8 Mdφ 2.45	2 Mdφ 4.86
d. 0φ to 1φ (%)	6 Qlφ −3.12	12 Qlφ 0.73	4 Qlφ 2.46
e. 1φ to 2φ (%)	10 Q3φ 5.25	14 Q3φ 6.65	10 Q3φ 8.50
f. 2φ to 3φ (%)	10	15	15
g. 3φ to 4φ (%)	5	7	10
h. 4φ to 6φ (%)	5	8	16
i. 6φ to 9φ (%)	9	13	19
j. 9φ to 12φ (%)	10	9	14
k. >12φ (%)	5	6	8
17. SUBSAMPLE DRY WEIGHT (gm.)	30.02	24.91	19.14
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subrounded
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	30	25	35
b. SECONDARY Rock Fragments	25	15	10
c. TERTIARY Volcanic Glass	10	25	30
d. OTHER Quartz	5	10	10
e. OTHER			
f. TRACE (see remarks)	MA, M	MA, M	MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G - Trace		
b. RADIOLARIA	}	Trace	
c. DIATOMS	} 5	Trace	
d. OTHER Spicules	}	Trace	Trace
e. OTHER Fecal Pellets	25	25	10

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Core contained several small pebbles in the top 2" and one large pebble 0.88" X 0.63" X 0.5", 9.30 gm. at 7". The large pebble was not included in the analysis.

Pebbles composed of all major rock types.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USCGC EASTWIND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER EW-15 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5086	5087	
12. SUBSAMPLE DEPTH IN CORE (in.)	6 - 8	8 - 10	
13. SEDIMENT TYPE	Silty Sand	Silty Sand	
14. COLOR (FIELD) (GSA rock color chart)		Moderate Olive-Bra 5Y 4/4	
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	1 QDφ 2.80	1 QDφ 2.45	QDφ
b. −2φ to −1φ (%)	4 SKφ +0.88	4 SKφ +0.80	SKφ
c. −1φ to 0φ (%)	3 Mdφ 3.92	6 Mdφ 3.15	Mdφ
d. 0φ to 1φ (%)	6 Qlφ 2.00	7 Qlφ 1.50	Qlφ
e. 1φ to 2φ (%)	11 Q3φ 7.60	14 Q3φ 6.40	Q3φ
f. 2φ to 3φ (%)	16	16	
g. 3φ to 4φ (%)	10	11	
h. 4φ to 6φ (%)	16	14	
i. 6φ to 9φ (%)	15	13	
j. 9φ to 12φ (%)	11	8	
k. >12φ (%)	8	6	
17. SUBSAMPLE DRY WEIGHT (gm.)	23.59	23.65	
18. SPHERICITY (avg.)	Medium	Medium	
19. ROUNDNESS (avg.)	Subrounded	Subrounded	
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Dull-Pitted	
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	35	40	
b. SECONDARY Volcanic Glass	25	15	
c. TERTIARY Rock Fragments	15	15	
d. OTHER Quartz	10	10	
e. OTHER			
f. TRACE (see remarks)	MA, M, P 5	MA, M	
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA			
c. DIATOMS			
d. OTHER Spicules	Trace	Trace	
e. OTHER Fecal Pellets	10	20	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

OCEANOGRAPHIC Log Sheet RR
NHO 3167/18A (Rev 8-60)

SEDIMENT ANALYSIS SHEET

1. SHIP	USS BURTON ISLAND
2. SAMPLE NUMBER	1-A
3. LATITUDE	70 ° 48 ' 00 " S
4. LONGITUDE	104 ° 18 ' 00 " W
5. DATE (day, month, year)	15 Feb. 1960
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	Nansen Bottle
8. WATER DEPTH (fm.)	1300 (m.) 2377
9. CORE LENGTH (in.)	(cm.)
10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	4992					
12. SUBSAMPLE DEPTH IN CORE (in.)	0					
13. SEDIMENT TYPE	Silty Clay*					
14. COLOR (FIELD) (GSA rock color chart)						
(LABORATORY)	Pale Yellowish Brown 10YR 6/2					
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ 2.84		QDφ		QDφ
b. −2φ to −1φ (%)	11	SKφ +0.02		SKφ		SKφ
c. −1φ to 0φ (%)		Mdφ 8.67		Mdφ		Mdφ
d. 0φ to 1φ (%)	1	Qlφ 5.05		Qlφ		Qlφ
e. 1φ to 2φ (%)	2	Q3φ 11.53		Q3φ		Q3φ
f. 2φ to 3φ (%)	6					
g. 3φ to 4φ (%)	3					
h. 4φ to 6φ (%)	13					
i. 6φ to 9φ (%)	27					
j. 9φ to 12φ (%)	26					
k. >12φ (%)	20					
17. SUBSAMPLE DRY WEIGHT (gm.)	14.43					
18. SPHERICITY (avg.)	High					
19. ROUNDNESS (avg.)	Rounded					
20. SURFACE TEXTURE (avg.)	Dull-Smooth					
21. MINERAL CONTENT (%)						
a. DOMINANT Rock Fragments	10					
b. SECONDARY Feldspar	5					
c. TERTIARY Volcanic Glass	Trace					
d. OTHER						
e. OTHER						
f. TRACE (see remarks)	M					
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	G-80, A, C-TR					
b. RADIOLARIA	Trace					
c. DIATOMS	Trace					
d. OTHER Spicules	5					
e. OTHER						

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

* Globigerina Ooze

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS BURTON ISLAND
2. SAMPLE NUMBER	1
3. LATITUDE	71 ° 54 ' 00 " S
4. LONGITUDE	101 ° 57 ' 00 " W
5. DATE (day, month, year)	16 Feb. 1960
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	Phleger Core, 80 lb.
8. WATER DEPTH (fm.)	205 (m.) 375
9. CORE LENGTH (in.)	4.75 (cm.) 12.1
10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	4965					
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 4.75					
13. SEDIMENT TYPE	Pebbly Silty Sand*					
14. COLOR (FIELD) (GSA rock color chart)	Medium Olive Gray 5Y 5/1					
(LABORATORY)	Light Olive Gray 5Y 5/2					
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	12**	QDφ 3.62		QDφ		QDφ
b. −2φ to −1φ (%)	8	SKφ -0.20		SKφ		SKφ
c. −1φ to 0φ (%)	3	Mdφ 1.52		Mdφ		Mdφ
d. 0φ to 1φ (%)	3	Qlφ 0.70		Qlφ		Qlφ
e. 1φ to 2φ (%)	4	Q3φ 7.95		Q3φ		Q3φ
f. 2φ to 3φ (%)	5					
g. 3φ to 4φ (%)	9					
h. 4φ to 6φ (%)	21					
i. 6φ to 9φ (%)	15					
j. 9φ to 12φ (%)	10					
k. >12φ (%)	9					
17. SUBSAMPLE DRY WEIGHT (gm.)	20.71**					
18. SPHERICITY (avg.)	Medium					
19. ROUNDNESS (avg.)	Subangular					
20. SURFACE TEXTURE (avg.)	Rough					
21. MINERAL CONTENT (%)						
a. DOMINANT Rock Fragments	30					
b. SECONDARY Feldspar	15					
c. TERTIARY Quartz	5					
d. OTHER						
e. OTHER						
f. TRACE (see remarks)	MA, M, P 5					
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	G - 20, C - 20					
b. RADIOLARIA	Trace					
c. DIATOMS	Trace					
d. OTHER Sponge Spicules	5					
e. OTHER						

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Calcareous Sand

**Two large pebbles: 1.5" x 0.9" x 0.8", 24.33 gm. and 1.1" x 0.8" x 1.0", 16.33 gm. were not included in the analysis.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USS BURTON ISLAND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER 2	7. SAMPLER TYPE Phleger Core, 80 lb.
3. LATITUDE 71 ° 48 ' 00 " S	8. WATER DEPTH (fm.) 191 (m.) 349
4. LONGITUDE 096 ° 50 ' 00 " W	9. CORE LENGTH (in.) 10 (cm.) 25.4
5. DATE (day, month, year) 16 Feb. 1960	10. CORE PENETRATION (in.) (cm.)

11. LABORATORY NUMBER	4966		4967		4968		
12. SUBSAMPLE DEPTH IN CORE (in.)	0-2½		2.5 - 5		5 - 7.5		
13. SEDIMENT TYPE	Clayey Silt*		Clayey Silt		Silty Mud		
14. COLOR (FIELD) (GSA rock color chart)	Yellowish Brown 10YR 5/2		Yellowish Brown 10YR 5/2		Yellowish Brown 10YR 5/2		
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	4	QDφ 2.74		QDφ 2.84		QDφ 2.85	
b. −2φ to −1φ (%)	2	SKφ +0.43	1	SKφ +0.45	}	SKφ +0.49	
c. −1φ to 0φ (%)	1	Mdφ 6.73	1	Mdφ 6.96	2	Mdφ 6.36	
d. 0φ to 1φ (%)	1	Qlφ 4.41	1	Qlφ 4.57	1	Qlφ 4.00	
e. 1φ to 2φ (%)	1	Q3φ 9.90	1	Q3φ 10.25	2	Q3φ 9.70	
f. 2φ to 3φ (%)	4		5		7		
g. 3φ to 4φ (%)	6		10		13		
h. 4φ to 6φ (%)	25		23		22		
i. 6φ to 9φ (%)	24		24		23		
j. 9φ to 12φ (%)	20		20		19		
k. >12φ (%)	13		15		11		
17. SUBSAMPLE DRY WEIGHT (gm.)	13.06		19.28		24.53		
18. SPHERICITY (avg.)	Medium High		Medium High		Medium High		
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subrounded		
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Dull-Pitted		Dull-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	35		65		70		
b. SECONDARY Rock Fragments	15		10		10		
c. TERTIARY Quartz	5		10		10		
d. OTHER Volcanic Glass			Trace		Trace		
e. OTHER	5		5		5		
f. TRACE (see remarks)	5 M, P		M, P, O 5		M, P 5		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G-20, C-15, A-TR		C-5, G-Trace		C-Trace		
b. RADIOLARIA							
c. DIATOMS							
d. OTHER Sponge Spicules	Trace		Trace		Trace		
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

* Calcareous Ooze
The first 5 inches of the core contained silt and clay, with some sand and pebbles; the last 5 inches contained more sand.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER 2 (continued)	7. SAMPLER TYPE
3. LATITUDE ° ' "	8. WATER DEPTH (fm.) (m.)
4. LONGITUDE ° ' "	9. CORE LENGTH (in.) (cm.)
5. DATE (day, month, year)	10. CORE PENETRATION (in.) (cm.)

11. LABORATORY NUMBER	4969						
12. SUBSAMPLE DEPTH IN CORE (in.)	7½ - 10						
13. SEDIMENT TYPE	Silty Sand						
14. COLOR (FIELD) (GSA rock color chart)	Yellowish Brown 10YR 5/2						
(LABORATORY)	Light Olive Gray 5Y 5/2						
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ 1.90		QDφ		QDφ	
b. −2φ to −1φ (%)	}	SKφ +0.99		SKφ		SKφ	
c. −1φ to 0φ (%)	Trace	Mdφ 4.21		Mdφ		Mdφ	
d. 0φ to 1φ (%)	1	Qlφ 3.30		Qlφ		Qlφ	
e. 1φ to 2φ (%)	3	Q3φ 7.10		Q3φ		Q3φ	
f. 2φ to 3φ (%)	11						
g. 3φ to 4φ (%)	30						
h. 4φ to 6φ (%)	27						
i. 6φ to 9φ (%)	10						
j. 9φ to 12φ (%)	9						
k. >12φ (%)	8						
17. SUBSAMPLE DRY WEIGHT (gm.)	18.00						
18. SPHERICITY (avg.)	Medium High						
19. ROUNDNESS (avg.)	Subrounded						
20. SURFACE TEXTURE (avg.)	Dull-Pitted						
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	80						
b. SECONDARY Quartz	10						
c. TERTIARY Rock Fragments	5						
d. OTHER Volcanic Glass	Trace						
e. OTHER	5						
f. TRACE (see remarks)	M, P						
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	C-trace						
b. RADIOLARIA	Trace						
c. DIATOMS							
d. OTHER Sponge Spicules	Trace						
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS BURTON ISLAND
2. SAMPLE NUMBER	3
3. LATITUDE	71 ° 44 ' 00 " S
4. LONGITUDE	098 ° 01 ' 00 " W
5. DATE (day, month, year)	16 Feb. 1960
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	Phleger Core, 80 lb.
8. WATER DEPTH (fm.)	186 (m.) 340
9. CORE LENGTH (in.)	(cm.)
10. CORE PENETRATION (in.)	(cm.)
11. LABORATORY NUMBER	4970
12. SUBSAMPLE DEPTH IN CORE (in.)	0
13. SEDIMENT TYPE	Clayey Silt*
14. COLOR (FIELD) (GSA rock color chart)	
(LABORATORY)	Light Olive Gray 5Y 5/2
15. ODOR	

16. SIZE ANALYSIS AND STATISTICAL MEASURES

a. <−2φ (%)	3	QDφ 2.40		QDφ		QDφ
b. −2φ to −1φ (%)	1	SKφ +0.29		SKφ		SKφ
c. −1φ to 0φ (%)	1	Mdφ 7.21		Mdφ		Mdφ
d. 0φ to 1φ (%)		Q1φ 5.09		Q1φ		Q1φ
e. 1φ to 2φ (%)	1	Q3φ 9.90		Q3φ		Q3φ
f. 2φ to 3φ (%)	3					
g. 3φ to 4φ (%)	2					
h. 4φ to 6φ (%)	27					
i. 6φ to 9φ (%)	29					
j. 9φ to 12φ (%)	21					
k. >12φ (%)	12					

17. SUBSAMPLE DRY WEIGHT (gm.)	25.64			
18. SPHERICITY (avg.)	Medium			
19. ROUNDNESS (avg.)	Subangular			
20. SURFACE TEXTURE (avg.)	Polished-Pitted			
21. MINERAL CONTENT (%)				
a. DOMINANT Feldspar	30			
b. SECONDARY Rock Fragments	10			
c. TERTIARY Quartz	5			
d. OTHER				
e. OTHER				
f. TRACE (see remarks)	M.P.MA.O 10			
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	G-30, C-15, A-TR			
b. RADIOLARIA	Trace			
c. DIATOMS				
d. OTHER Sponge Spicules	Trace			
e. OTHER Ostrocods	Trace			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

* Globigerina Ooze

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS BURTON ISLAND
2. SAMPLE NUMBER	4
3. LATITUDE	71 ° 45 ' 00 " S
4. LONGITUDE	098 ° 00 ' 00 " W
5. DATE (day, month, year)	17 Feb. 1960
6. CRUISE	DEEP FREEZE 60
7. SAMPLER TYPE	Dredge
8. WATER DEPTH (fm.)	205 (m.) 375
9. CORE LENGTH (in.)	(cm.)
10. CORE PENETRATION (in.)	(cm.)
11. LABORATORY NUMBER	4971
12. SUBSAMPLE DEPTH IN CORE (in.)	0
13. SEDIMENT TYPE	Pebbly Sandy Mud
14. COLOR (FIELD) (GSA rock color chart)	
(LABORATORY)	Light Olive Gray 5Y 6/1
15. ODOR	

16. SIZE ANALYSIS AND STATISTICAL MEASURES

a. <−2φ (%)	29	QDφ 5.77		QDφ		QDφ
b. −2φ to −1φ (%)	1	SKφ -2.53		SKφ		SKφ
c. −1φ to 0φ (%)	1	Mdφ 5.63		Mdφ		Mdφ
d. 0φ to 1φ (%)	2	Q1φ -2.67		Q1φ		Q1φ
e. 1φ to 2φ (%)	2	Q3φ 8.87		Q3φ		Q3φ
f. 2φ to 3φ (%)	2					
g. 3φ to 4φ (%)	3					
h. 4φ to 6φ (%)	13					
i. 6φ to 9φ (%)	23					
j. 9φ to 12φ (%)	14					
k. >12φ (%)	9					

17. SUBSAMPLE DRY WEIGHT (gm.)	43.23			
18. SPHERICITY (avg.)	Medium Low			
19. ROUNDNESS (avg.)	Subangular			
20. SURFACE TEXTURE (avg.)	Dull-Pitted			
21. MINERAL CONTENT (%)				
a. DOMINANT Feldspar	45			
b. SECONDARY Rock Fragments	30			
c. TERTIARY Pyroxene	10			
d. OTHER Volcanic Glass	Trace			
e. OTHER Quartz	5			
f. TRACE (see remarks)	MA, M, O 5			
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	C-5, G-Trace			
b. RADIOLARIA				
c. DIATOMS				
d. OTHER Sponge Spicules	Trace			
e. OTHER				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

The sample was received in a jar and was analyzed as a grab.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 5		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 71 ° 47 ' 00 " S		8. WATER DEPTH (fm.) 430 (m.) 786	
4. LONGITUDE 097 ° 50 ' 00 " W		9. CORE LENGTH (in.) 22.5 (cm.) 57.2	
5. DATE (day, month, year) 18 Feb. 1960		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	4972	4973	4974
12. SUBSAMPLE DEPTH IN CORE (in.)	0-3	3 - 7.5	7.5 - 9.75
13. SEDIMENT TYPE	Pebbly Silty Clay*	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)	Yellowish Brown 10YR 5/2	Yellow Brown 10YR 5/2	Yellowish Brown 10YR 5/2
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	11	QDφ 2.51	QDφ 2.32	QDφ 2.23
b. −2φ to −1φ (%)		SKφ -0.01	SKφ +0.11	SKφ -0.09
c. −1φ to 0φ (%)		Mdφ 8.75	Mdφ 9.47	Mdφ 9.56
d. 0φ to 1φ (%)		Qlφ 6.23	Qlφ 7.25	Qlφ 7.24
e. 1φ to 2φ (%)	2	Q3φ 11.25	2 Q3φ 11.90	2 Q3φ 11.70
f. 2φ to 3φ (%)				
g. 3φ to 4φ (%)				
h. 4φ to 6φ (%)	10		10	11
i. 6φ to 9φ (%)	30		33	31
j. 9φ to 12φ (%)	29		31	35
k. >12φ (%)	18		23	20
17. SUBSAMPLE DRY WEIGHT (gm.)	20.98		19.21	13.47
18. SPHERICITY (avg.)	Medium		Medium	Medium High
19. ROUNDNESS (avg.)	Subangular		Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)				
a. DOMINANT Feldspar	10		70	65
b. SECONDARY Rock Fragments	30		10	10
c. TERTIARY Quartz	Trace		10	10
d. OTHER Volcanic Glass	Trace		Trace	Trace
e. OTHER				
f. TRACE (see remarks)	MA, M, P, O 5		MA, M, P, O 5	MA, M, P, O 10
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	G-40, C-10, A-5		C-Trace	G, A, C- Trace
b. RADIOLARIA	Trace		Trace	Trace
c. DIATOMS				Trace
d. OTHER Sponge Spicules	Trace		5	5
e. OTHER				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Depth (in.)	Composition
0 - 17.25	Clay with silt
at 9.75, 11.75 and 7.25	Color - changes
at 17.25	A thin layer of sponge spicules
17.25 - 22.5	Sand silt, clay and pebbles; became coarser, in texture, toward the bottom

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

* Globigerina Sand

1. SHIP USS BURTON ISLAND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 5 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	4975	4976	4977
12. SUBSAMPLE DEPTH IN CORE (in.)	9.75 - 11.75	11.75 - 14	14 - 17.25
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Dark Yellowish Brn. 10YR 4/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)		QDφ 2.38	QDφ 2.40	QDφ 2.68
b. −2φ to −1φ (%)		SKφ -0.02	SKφ +0.10	SKφ +0.19
c. −1φ to 0φ (%)		Mdφ 9.30	Mdφ 9.30	1 Mdφ 8.89
d. 0φ to 1φ (%)		Qlφ 6.90	Qlφ 7.00	Qlφ 6.40
e. 1φ to 2φ (%)	3	Q3φ 11.65	3 Q3φ 11.80	1 Q3φ 11.75
f. 2φ to 3φ (%)				1
g. 3φ to 4φ (%)				2
h. 4φ to 6φ (%)	13		11	16
i. 6φ to 9φ (%)	31		33	30
j. 9φ to 12φ (%)	32		30	26
k. >12φ (%)	22		22	23
17. SUBSAMPLE DRY WEIGHT (gm.)	16.31		14.22	17.61
18. SPHERICITY (avg.)	Medium		Medium	Medium
19. ROUNDNESS (avg.)	Subangular		Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)				
a. DOMINANT Feldspar	75		70	70
b. SECONDARY Quartz	10		10	10
c. TERTIARY Rock Fragments	5		5	10
d. OTHER Volcanic Glass				Trace
e. OTHER				
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5	MA, M, P, O 5
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)				
b. RADIOLARIA	Trace		5	5
c. DIATOMS	Trace			
d. OTHER Sponge Spicules	5		5	
e. OTHER				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP USS BURTON ISLAND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER 5 (continued)			7. SAMPLER TYPE				
3. LATITUDE ° ' '			8. WATER DEPTH (fm.) (m.)				
4. LONGITUDE ° ' "			9. CORE LENGTH (in.) (cm.)				
5. DATE (day, month, year)			10. CORE PENETRATION (in.) (cm.)				
11. LABORATORY NUMBER	4978		4979				
12. SUBSAMPLE DEPTH IN CORE (in.)	17.25 - 20.25		20.25 - 22.5				
13. SEDIMENT TYPE	Pebbly Clayey Silt		Pebbly Sandy Silt				
14. COLOR (FIELD) (GSA rock color chart)			Med. Dark Gray N4				
(LABORATORY)	Lt. Olive Gray and Med. Lt. Gray		Med. Light Gray N6				
15. ODOR	5Y 5/2 N6						
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	9	QDφ 3.14	19	QDφ 4.32		QDφ	
b. −2φ to −1φ (%)	2	SKφ +0.59	7	SKφ -0.89		SKφ	
c. −1φ to 0φ (%)	2	Mdφ 6.55	4	Mdφ 4.07		Mdφ	
d. 0φ to 1φ (%)	2	Qlφ 4.00	4	Qlφ -1.15		Qlφ	
e. 1φ to 2φ (%)	1	Q3φ 10.28	4	Q3φ 7.50		Q3φ	
f. 2φ to 3φ (%)	4		6				
g. 3φ to 4φ (%)	5		5				
h. 4φ to 6φ (%)	21		18				
i. 6φ to 9φ (%)	21		15				
j. 9φ to 12φ (%)	18		11				
k. >12φ (%)	14		6				
17. SUBSAMPLE DRY WEIGHT (gm.)	27.21		32.14				
18. SPHERICITY (avg.)	Medium High		Medium High				
19. ROUNDNESS (avg.)	Subangular		Subangular				
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted				
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	40		60				
b. SECONDARY Feldspar	40		25				
c. TERTIARY Quartz	10		5				
d. OTHER Pyroxene			5				
e. OTHER							
f. TRACE (see remarks)	MA, M, P 5		MA, M, O 5				
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA	Trace						
c. DIATOMS							
d. OTHER Sponge Spicules	5						
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND			6. CRUISE DEEP FREEZE 60				
2. SAMPLE NUMBER 6			7. SAMPLER TYPE Phleger Core, 80 lb.				
3. LATITUDE 71 ° 44 ' 00 " S			8. WATER DEPTH (fm.) 265 (m.) 485				
4. LONGITUDE 098 ° 01 ' 00 " W			9. CORE LENGTH (in.) 10 (cm.) 25.4				
5. DATE (day, month, year) 23 Feb. 1960			10. CORE PENETRATION (in.) (cm.)				
11. LABORATORY NUMBER	4980		4981		4982		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3		3 - 6.25		6.25 - 7.75		
13. SEDIMENT TYPE	Silty Mud		Silty Mud		Silty Sand		
14. COLOR (FIELD) (GSA rock color chart)	Medium Olive Gray 5Y 5/1		Medium Olive Gray 5Y 5/1		Medium Olive Gray 5Y 5/1		
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light olive Gray 5Y 5/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ 2.83		QDφ 2.70	2	QDφ 1.72	
b. −2φ to −1φ (%)		SKφ +0.91		SKφ +1.19	1	SKφ +0.51	
c. −1φ to 0φ (%)	TR	Mdφ 5.78		Mdφ 5.11	1	Mdφ 4.31	
d. 0φ to 1φ (%)		Qlφ 3.86	2	Qlφ 3.59	1	Qlφ 3.10	
e. 1φ to 2φ (%)	2	Q3φ 9.52		Q3φ 9.00	4	Q3φ 6.54	
f. 2φ to 3φ (%)	9		10		14		
g. 3φ to 4φ (%)	16		21		21		
h. 4φ to 6φ (%)	25		26		29		
i. 6φ to 9φ (%)	20		16		12		
j. 9φ to 12φ (%)	15		13		7		
k. >12φ (%)	12		12		8		
17. SUBSAMPLE DRY WEIGHT (gm.)	19.23		22.84		20.67		
18. SPHERICITY (avg.)	Medium		Medium High		Medium		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Polished-Pitted		Dull-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	70		75		70		
b. SECONDARY Quartz	10		10		10		
c. TERTIARY Pyroxene	5		10		10		
d. OTHER Rock Fragments	Trace		Trace		5		
e. OTHER							
f. TRACE (see remarks)	MA, M 5		MA, M, O 5		5		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G, C, A 5		C-Trace		C - Trace		
b. RADIOLARIA	Trace		Trace				
c. DIATOMS							
d. OTHER Sponge Spicules	5		Trace		Trace		
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Depth (in.)	Composition
0 - 6.25	Sand, silt and clay
at 7.75	Change in color
6.25 - 10	Sand and Silt with scattered pebbles and less clay

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER 6 (continued)	7. SAMPLER TYPE
3. LATITUDE ° ' '	8. WATER DEPTH (fm.) (m.)
4. LONGITUDE ° ' "	9. CORE LENGTH (in.) (cm.)
5. DATE (day, month, year)	10. CORE PENETRATION (in.) (cm.)

11. LABORATORY NUMBER	4983						
12. SUBSAMPLE DEPTH IN CORE (in.)	7.75 - 10						
13. SEDIMENT TYPE	Silty Sand						
14. COLOR (FIELD) (GSA rock color chart)							
(LABORATORY)	Olive Gray 5Y 4/1						
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	4	QDφ	1.05	QDφ		QDφ	
b. −2φ to −1φ (%)	1	SKφ	0.00	SKφ		SKφ	
c. −1φ to 0φ (%)	1	Mdφ	4.05	Mdφ		Mdφ	
d. 0φ to 1φ (%)	2	Q1φ	3.00	Q1φ		Q1φ	
e. 1φ to 2φ (%)	3	Q3φ	5.10	Q3φ		Q3φ	
f. 2φ to 3φ (%)	13						
g. 3φ to 4φ (%)	24						
h. 4φ to 6φ (%)	35						
i. 6φ to 9φ (%)	7						
j. 9φ to 12φ (%)	5						
k. >12φ (%)	5						
17. SUBSAMPLE DRY WEIGHT (gm.)	20.77						
18. SPHERICITY (avg.)	Medium						
19. ROUNDNESS (avg.)	Subangular						
20. SURFACE TEXTURE (avg.)	Dull-Pitted						
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	75						
b. SECONDARY Quartz	5						
c. TERTIARY Pyroxene	10						
d. OTHER Rock Fragments	5						
e. OTHER							
f. TRACE (see remarks)	M 5						
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA							
c. DIATOMS							
d. OTHER Sponge Spicules	Trace						
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND	6. CRUISE DEEP FREEZE 60
2. SAMPLE NUMBER 7	7. SAMPLER TYPE Phleger Core, 80 lb.
3. LATITUDE 71 ° 54 ' 00 " S	8. WATER DEPTH (fm.) 596 (m.) 1090
4. LONGITUDE 099 ° 28 ' 00 " W	9. CORE LENGTH (in.) 2.5 (cm.) 6.4
5. DATE (day, month, year) 23 Feb. 1960	10. CORE PENETRATION (in.) (cm.)

11. LABORATORY NUMBER	4984						
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2.5						
13. SEDIMENT TYPE	Pebbly Clayey Silt						
14. COLOR (FIELD) (GSA rock color chart)							
(LABORATORY)	Light Olive Gray 5Y 5/2						
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	12	QDφ	2.72	QDφ		QDφ	
b. −2φ to −1φ (%)	2	SKφ	+0.44	SKφ		SKφ	
c. −1φ to 0φ (%)	1	Mdφ	7.24	Mdφ		Mdφ	
d. 0φ to 1φ (%)	1	Q1φ	4.96	Q1φ		Q1φ	
e. 1φ to 2φ (%)	1	Q3φ	10.40	Q3φ		Q3φ	
f. 2φ to 3φ (%)	1						
g. 3φ to 4φ (%)	2						
h. 4φ to 6φ (%)	15						
i. 6φ to 9φ (%)	30						
j. 9φ to 12φ (%)	21						
k. >12φ (%)	14						
17. SUBSAMPLE DRY WEIGHT (gm.)	28.22						
18. SPHERICITY (avg.)	Medium						
19. ROUNDNESS (avg.)	Subangular						
20. SURFACE TEXTURE (avg.)	Dull-Pitted						
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	40						
b. SECONDARY Feldspar	30						
c. TERTIARY Quartz	5						
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA, M, P, O 5						
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G, C, A 10						
b. RADIOLARIA	Trace						
c. DIATOMS	Trace						
d. OTHER Sponge Spicules	10						
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 8		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 71 ° 18 ' 00 " S		8. WATER DEPTH (fm.) 235	(m.) 430
4. LONGITUDE 100 ° 18 ' 00 " W		9. CORE LENGTH (in.) 8.25	(cm.) 21.0
5. DATE (day, month, year) 27 Feb. 1960		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	4985	4986	4987
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	2 - 3.5	3.5 - 6.25
13. SEDIMENT TYPE	Silty Mud	Silty Mud	Pebbly Sandy Mud
14. COLOR (FIELD) (GSA rock color chart)	Pale Yellowish Brn 10YR 6/2	Pale Yellow Brn 10YR 6/2	Pale Yellow Brn 10YR 6/2
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Pale Yellow Brn 10YR 6/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <-2φ (%)	5 QDφ 3.26	2 QDφ 4.27	29 QDφ 6.14
b. -2φ to -1φ (%)	1 SKφ +1.26	4 SKφ +0.41	2 SKφ -1.10
c. -1φ to 0φ (%)	3 Mdφ 6.00	4 Mdφ 6.28	2 Mdφ 4.26
d. 0φ to 1φ (%)	2 Qlφ 4.00	5 Qlφ 2.42	3 Qlφ -2.98
e. 1φ to 2φ (%)	3 Q3φ 10.52	6 Q3φ 10.96	3 Q3φ 9.30
f. 2φ to 3φ (%)	5	7	5
g. 3φ to 4φ (%)	6	3	5
h. 4φ to 6φ (%)	25	17	11
i. 6φ to 9φ (%)	18	17	14
j. 9φ to 12φ (%)	16	19	14
k. >12φ (%)	16	16	13
17. SUBSAMPLE DRY WEIGHT (gm.)	22.03	20.88	28.73
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subangular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Dull-Pitted	Dull-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	55	60	45
b. SECONDARY Rock Fragments	30	25	40
c. TERTIARY Quartz	10	10	10
d. OTHER			
e. OTHER			
f. TRACE (see remarks)	MA, M, P, O 5	MA, M, P, O 5	MA, M, P, O 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	C - Trace	Trace	
b. RADIOLARIA			
c. DIATOMS			
d. OTHER Sponge Spicules	Trace	Trace	Trace
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Pebbles scattered throughout core color change occurs at 3.5" and a 0.25" gray band at the bottom; core was more clayey at the bottom.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 8 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' "		8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE ° ' "		9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	4988		
12. SUBSAMPLE DEPTH IN CORE (in.)	6.25 - 8.25		
13. SEDIMENT TYPE	Clayey Mud		
14. COLOR (FIELD) (GSA rock color chart)	Pale Yellowish Br 10YR 6/2		
(LABORATORY)	Pale Yellowish Br 10YR 6/2		
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <-2φ (%)	3 QDφ 4.11	QDφ	QDφ
b. -2φ to -1φ (%)	2 SKφ +0.36	SKφ	SKφ
c. -1φ to 0φ (%)	3 Mdφ 7.15	Mdφ	Mdφ
d. 0φ to 1φ (%)	4 Qlφ 3.40	Qlφ	Qlφ
e. 1φ to 2φ (%)	5 Q3φ 11.62	Q3φ	Q3φ
f. 2φ to 3φ (%)	6		
g. 3φ to 4φ (%)	5		
h. 4φ to 6φ (%)	15		
i. 6φ to 9φ (%)	16		
j. 9φ to 12φ (%)	21		
k. >12φ (%)	19		
17. SUBSAMPLE DRY WEIGHT (gm.)	18.94		
18. SPHERICITY (avg.)	Medium Low		
19. ROUNDNESS (avg.)	Subangular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	55		
b. SECONDARY Rock Fragments	30		
c. TERTIARY Quartz	10		
d. OTHER Volcanic Glass	Trace		
e. OTHER			
f. TRACE (see remarks)	MA, M, P, O 5		
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA			
c. DIATOMS			
d. OTHER			
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

OCEANOGRAPHIC Log Sheet RR
NHO 3167/18A (New B-60)

SEDIMENT ANALYSIS SHEET

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	8	7. SAMPLER TYPE	Orange Peel
3. LATITUDE	71 ° 53 ' 30 " S	8. WATER DEPTH (fm.)	68 (m.) 124
4. LONGITUDE	098 ° 55 ' 00 " W	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)	16 Feb. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5195		5196				
12. SUBSAMPLE DEPTH IN CORE (in.)	(jar)		(bag)				
13. SEDIMENT TYPE	Silty Sand		Sand				
14. COLOR (FIELD) (GSA rock color chart)	Pale Brown 5YR 5/2		Pale Brown 5YR 5/2				
(LABORATORY)	Medium Gray N 5		Light Olive Gray 5Y 6/1				
15. ODOR	rancid						
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ 0.78		QDφ 0.68		QDφ	
b. −2φ to −1φ (%)		SKφ +0.43		SKφ +0.03		SKφ	
c. −1φ to 0φ (%)		Mdφ 3.05		Mdφ 2.85		Mdφ	
d. 0φ to 1φ (%)	1	Qlφ 2.70	2	Qlφ 2.20		Qlφ	
e. 1φ to 2φ (%)	10	Q3φ 4.25	14	Q3φ 3.55		Q3φ	
f. 2φ to 3φ (%)	30		39				
g. 3φ to 4φ (%)	31		35				
h. 4φ to 6φ (%)	17						
i. 6φ to 9φ (%)	5						
j. 9φ to 12φ (%)	3		10				
k. >12φ (%)	3						
17. SUBSAMPLE DRY WEIGHT (gm.)	22.90		23.67				
18. SPHERICITY (avg.)	Medium Low		Medium Low				
19. ROUNDNESS (avg.)	Subangular		Subangular				
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Dull-Pitted				
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	75		75				
b. SECONDARY Quartz	15		15				
c. TERTIARY Pyroxene	10		10				
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA, M		MA, M				
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA							
c. DIATOMS							
d. OTHER Sponge Spicules	Trace		Trace				
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	9	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	71 ° 49 ' 00 " S	8. WATER DEPTH (fm.)	90 (m.) 165
4. LONGITUDE	097 ° 35 ' 00 " W	9. CORE LENGTH (in.)	0 (cm.)
5. DATE (day, month, year)	16 Feb. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5197						
12. SUBSAMPLE DEPTH IN CORE (in.)	0						
13. SEDIMENT TYPE	Silty Sand						
14. COLOR (FIELD) (GSA rock color chart)							
(LABORATORY)	Light Olive Gray 5Y 6/1						
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ 1.03		QDφ		QDφ	
b. −2φ to −1φ (%)		SKφ +0.43		SKφ		SKφ	
c. −1φ to 0φ (%)		Mdφ 3.25		Mdφ		Mdφ	
d. 0φ to 1φ (%)	1	Qlφ 2.65		Qlφ		Qlφ	
e. 1φ to 2φ (%)	8	Q3φ 4.70		Q3φ		Q3φ	
f. 2φ to 3φ (%)	30						
g. 3φ to 4φ (%)	27						
h. 4φ to 6φ (%)	21						
i. 6φ to 9φ (%)	6						
j. 9φ to 12φ (%)	1						
k. >12φ (%)	5						
17. SUBSAMPLE DRY WEIGHT (gm.)	11.72						
18. SPHERICITY (avg.)	Medium Low						
19. ROUNDNESS (avg.)	Subangular						
20. SURFACE TEXTURE (avg.)	Dull-Pitted						
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	75						
b. SECONDARY Quartz	15						
c. TERTIARY Pyroxene	10						
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA, M						
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA							
c. DIATOMS							
d. OTHER Sponge Spicules	Trace						
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	10	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	71 ° 53 ' 30 " S	8. WATER DEPTH (fm.)	150 (m.) 280
4. LONGITUDE	100 ° 35 ' 00 " W	9. CORE LENGTH (in.)	2 (cm.) 5.1
5. DATE (day, month, year)	23 Feb. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5198			
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2			
13. SEDIMENT TYPE	Silty Sand			
14. COLOR (FIELD) (GSA rock color chart)				
(LABORATORY)	Pale Yellsh Brown* 10YR 6/2			
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)		QDφ 1.58	QDφ	QDφ
b. −2φ to −1φ (%)		SKφ +0.43	SKφ	SKφ
c. −1φ to 0φ (%)	3	Mdφ 3.00	Mdφ	Mdφ
d. 0φ to 1φ (%)	9	Q1φ 1.85	Q1φ	Q1φ
e. 1φ to 2φ (%)	16	Q3φ 5.00	Q3φ	Q3φ
f. 2φ to 3φ (%)	22			
g. 3φ to 4φ (%)	16			
h. 4φ to 6φ (%)	16			
i. 6φ to 9φ (%)	8			
j. 9φ to 12φ (%)	5			
k. >12φ (%)	6			
17. SUBSAMPLE DRY WEIGHT (gm.)	31.04			
18. SPHERICITY (avg.)	Medium Low			
19. ROUNDNESS (avg.)	Subangular			
20. SURFACE TEXTURE (avg.)	Dull-Pitted			
21. MINERAL CONTENT (%)				
a. DOMINANT Feldspar	60			
b. SECONDARY Quartz	15			
c. TERTIARY Rock Fragments	5			
d. OTHER Mica	5			
e. OTHER				
f. TRACE (see remarks)	MA, P 5			
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)	G, C 10			
b. RADIOLARIA				
c. DIATOMS				
d. OTHER Sponge Spicules	Trace			
e. OTHER Shell Fragments	Trace			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Varlegated

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	11	7. SAMPLER TYPE	Orange Peel
3. LATITUDE	71 ° 53 ' 30 " S	8. WATER DEPTH (fm.)	150 (m.) 280
4. LONGITUDE	100 ° 35 ' 00 " W	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)	23 Feb. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5199			
12. SUBSAMPLE DEPTH IN CORE (in.)	0			
13. SEDIMENT TYPE	Cobble			
14. COLOR (FIELD) (GSA rock color chart)				
(LABORATORY)				
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)		QDφ	QDφ	QDφ
b. −2φ to −1φ (%)		SKφ	SKφ	SKφ
c. −1φ to 0φ (%)		Mdφ	Mdφ	Mdφ
d. 0φ to 1φ (%)		Q1φ	Q1φ	Q1φ
e. 1φ to 2φ (%)		Q3φ	Q3φ	Q3φ
f. 2φ to 3φ (%)				
g. 3φ to 4φ (%)				
h. 4φ to 6φ (%)				
i. 6φ to 9φ (%)				
j. 9φ to 12φ (%)				
k. >12φ (%)				
17. SUBSAMPLE DRY WEIGHT (gm.)				
18. SPHERICITY (avg.)				
19. ROUNDNESS (avg.)				
20. SURFACE TEXTURE (avg.)				
21. MINERAL CONTENT (%)				
a. DOMINANT				
b. SECONDARY				
c. TERTIARY				
d. OTHER				
e. OTHER				
f. TRACE (see remarks)				
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)				
b. RADIOLARIA				
c. DIATOMS				
d. OTHER				
e. OTHER				

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

The sample consisted of one large cobble 5" x 2.5" x 1.5", 526.6 gm. covered with numerous wormtubes, bryozoa, and small mollusks. Cobble is coarsely crystalline granite.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER		6. CRUISE	DEEP FREEZE 60			
2. SAMPLE NUMBER	12		7. SAMPLER TYPE	Phleger Core, 80 lb.			
3. LATITUDE	71 ° 51 ' 36 " S		8. WATER DEPTH (fm.)	230	(m.) 420		
4. LONGITUDE	100 ° 26 ' 00 " W		9. CORE LENGTH (in.)	5.5	(cm.) 14.0		
5. DATE (day, month, year)	24 Feb. 1960		10. CORE PENETRATION (in.)		(cm.)		
11. LABORATORY NUMBER	5200		5201				
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2.5		2.5 - 4.38				
13. SEDIMENT TYPE	Silty Sand		Silty Sand				
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 6/1		Light Olive Gray 5Y 6/1				
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2				
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	2	QDφ 2.43	5	QDφ 2.23		QDφ	
b. −2φ to −1φ (%)	5	SKφ +0.08	2	SKφ +0.53		SKφ	
c. −1φ to 0φ (%)	8	Mdφ 3.35	2	Mdφ 4.15		Mdφ	
d. 0φ to 1φ (%)	10	Qlφ 1.00	5	Qlφ 2.45		Qlφ	
e. 1φ to 2φ (%)	7	Q3φ 5.85	7	Q3φ 6.90		Q3φ	
f. 2φ to 3φ (%)	12		11				
g. 3φ to 4φ (%)	14		15				
h. 4φ to 6φ (%)	18		23				
i. 6φ to 9φ (%)	11		13				
j. 9φ to 12φ (%)	6		8				
k. >12φ (%)	8		9				
17. SUBSAMPLE DRY WEIGHT (gm.)	22.12		22.81				
18. SPHERICITY (avg.)	Medium Low		Medium Low				
19. ROUNDNESS (avg.)	Subangular		Subangular				
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted				
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	50		50				
b. SECONDARY Quartz	15		20				
c. TERTIARY Rock Fragments	15		15				
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5				
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G, C, A 10		C 5				
b. RADIOLARIA							
c. DIATOMS							
d. OTHER Sponge Spicules	5		5				
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

The core contained one large pebble 1.25" x 0.88" x 1.13", 33.0 gm. at 4.38 inches and several small pebbles scattered throughout its length.

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER		6. CRUISE	DEEP FREEZE 60			
2. SAMPLE NUMBER	13		7. SAMPLER TYPE	Phleger Core, 80 lb.			
3. LATITUDE	71 ° 38 ' 00 " S		8. WATER DEPTH (fm.)	300	(m.) 549		
4. LONGITUDE	100 ° 27 ' 00 " W		9. CORE LENGTH (in.)	26	(cm.) 66.0		
5. DATE (day, month, year)	25 Feb. 1960		10. CORE PENETRATION (in.)		(cm.)		
11. LABORATORY NUMBER	5221		5222		5223		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3		3 - 6		6 - 7.75		
13. SEDIMENT TYPE	Clayey Mud*		Clayey Silt		Silty Mud		
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 6/1		Light Olive Gray 5Y 6/1		Light Olive Gray 5Y 6/1		
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ 3.60		QDφ 3.08		QDφ 3.25	
b. −2φ to −1φ (%)	1	SKφ +0.85		SKφ +1.13	1	SKφ +1.25	
c. −1φ to 0φ (%)	1	Mdφ 6.65	1	Mdφ 6.55	2	Mdφ 5.75	
d. 0φ to 1φ (%)	3	Qlφ 3.90	2	Qlφ 4.60	3	Qlφ 3.75	
e. 1φ to 2φ (%)	4	Q3φ 11.10	2	Q3φ 10.75	4	Q3φ 10.25	
f. 2φ to 3φ (%)	6		5		7		
g. 3φ to 4φ (%)	11		9		12		
h. 4φ to 6φ (%)	20		26		25		
i. 6φ to 9φ (%)	14		22		17		
j. 9φ to 12φ (%)	24		16		16		
k. >12φ (%)	16		8		14		
17. SUBSAMPLE DRY WEIGHT (gm.)	15.90		15.32		19.37		
18. SPHERICITY (avg.)	Medium		Medium		Medium Low		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	40		60		55		
b. SECONDARY Quartz	15		25		20		
c. TERTIARY Rock Fragments	5		5		10		
d. OTHER Volcanic Glass					Trace		
e. OTHER							
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5		MA, M, P 5		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G 30; A, C, 5		G, A, C } 5		G, A, C 5		
b. RADIOLARIA	Trace				Trace		
c. DIATOMS							
d. OTHER Sponge Spicules	Trace		Trace		5		
e. OTHER Fecal Pellets	Trace		Trace****		Trace****		

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

The core contained color changes at 7.75, 12, 14.75 and 19 inches.

*Globigerina ooze

****Coral fragments also

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 13 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5224	5225	5226
12. SUBSAMPLE DEPTH IN CORE (in.)	7.75 - 10	10 - 12	12 - 14.75
13. SEDIMENT TYPE	Silty Mud	Clayey Silt	Clayey Silt
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Light Olive Gray** 5Y 5/2	Light Olive Gray** 5Y 5/2	Lt. Olive Gray*** 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 2.93	QDφ 3.03	QDφ 3.15
b. −2φ to −1φ (%)	SKφ +0.93	SKφ +1.26	SKφ +0.45
c. −1φ to 0φ (%)	Mdφ 6.00	1 Mdφ 7.10	1 Mdφ 7.80
d. 0φ to 1φ (%)	4 Qlφ 4.00	Qlφ 5.35	1 Qlφ 5.10
e. 1φ to 2φ (%)	5 Q3φ 9.85	2 Q3φ 11.40	2 Q3φ 11.40
f. 2φ to 3φ (%)	6	3	3
g. 3φ to 4φ (%)	10	6	7
h. 4φ to 6φ (%)	25	24	20
i. 6φ to 9φ (%)	20	25	26
j. 9φ to 12φ (%)	15	18	18
k. >12φ (%)	16	21	22
17. SUBSAMPLE DRY WEIGHT (gm.)	21.85	17.21	18.12
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subangular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	65	65	65
b. SECONDARY Quartz	25	25	25
c. TERTIARY Rock Fragments	5	5	5
d. OTHER Volcanic Glass	Trace		
e. OTHER			
f. TRACE (see remarks)	MA, M, P 5	MA, M, P 5	MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	C - Trace	C, G Trace	
b. RADIOLARIA	Trace	Trace	Trace
c. DIATOMS			
d. OTHER Sponge Spicules	Trace	Trace	Trace
e. OTHER Fecal Pellets	Trace	Trace	Trace

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

**Streaked with Brown

***With Gray streaks

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 13 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5227	5228	5229
12. SUBSAMPLE DEPTH IN CORE (in.)	14.75 - 17	17 - 19	19 - 21.25
13. SEDIMENT TYPE	Clayey Silt	Clayey Silt	Clayey Silt
14. COLOR (FIELD) (GSA rock color chart)			Dark Greenish Gray 5GY 4/1
(LABORATORY)	Med Lt gray N 6 Lt Olv Gray 5Y5/2	Med Lt Gray N 6 Lt Olv Gray 5Y5/2	Medium Gray N 5
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 3.18	QDφ	QDφ 3.08
b. −2φ to −1φ (%)	1 SKφ +0.38	SKφ	SKφ +0.68
c. −1φ to 0φ (%)	1 Mdφ 8.25	Mdφ 8.20	Mdφ 7.40
d. 0φ to 1φ (%)	1 Qlφ 5.45	Qlφ 5.85	1 Qlφ 5.00
e. 1φ to 2φ (%)	1 Q3φ 11.80	1 Q3φ	2 Q3φ 11.15
f. 2φ to 3φ (%)	2	2	3
g. 3φ to 4φ (%)	5	5	8
h. 4φ to 6φ (%)	19	19	22
i. 6φ to 9φ (%)	27	30	26
j. 9φ to 12φ (%)	19	17	18
k. >12φ (%)	24	26	21
17. SUBSAMPLE DRY WEIGHT (gm.)	15.47	12.12	21.59
18. SPHERICITY (avg.)	Medium Low	Medium	Medium Low
19. ROUNDNESS (avg.)	Subangular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	65	65	65
b. SECONDARY Quartz	25	25	25
c. TERTIARY Rock Fragments	5	Trace	5
d. OTHER Volcanic Glass		Trace	
e. OTHER			
f. TRACE (see remarks)	MA, M, P 5	MA, M, P 5	MA, M, P 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G, C Trace	G, C Trace	G, C Trace
b. RADIOLARIA	Trace	Trace	Trace
c. DIATOMS			
d. OTHER Sponge Spicules	Trace	5	Trace
e. OTHER Fecal Pellets	Trace	Trace****	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

****Coral fragments also

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER		6. CRUISE	DEEP FREEZE 60			
2. SAMPLE NUMBER	13 (continued)		7. SAMPLER TYPE				
3. LATITUDE	° ' '		8. WATER DEPTH (fm.)		(m.)		
4. LONGITUDE	° ' "		9. CORE LENGTH (in.)		(cm.)		
5. DATE (day, month, year)			10. CORE PENETRATION (in.)		(cm.)		
11. LABORATORY NUMBER	5230		5231****				
12. SUBSAMPLE DEPTH IN CORE (in.)	21.25 - 24		bottom 2"				
13. SEDIMENT TYPE	Silty Mud		Sandy Mud				
14. COLOR (FIELD) (GSA rock color chart)	Dk Greenish Gray 5GY 4/1		DkGreenish Gray 5GY 4/1				
(LABORATORY)	Medium Gray N 5		Light Olive Gray 5Y 5/2				
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <-2φ (%)		QDφ 3.65	2	QDφ 3.58		QDφ	
b. -2φ to -1φ (%)	}	SKφ +0.55	3	SKφ +0.33		SKφ	
c. -1φ to 0φ (%)	} 2	Mdφ 5.90	4	Mdφ 5.10		Mdφ	
d. 0φ to 1φ (%)	5	Qlφ 2.80	7	Qlφ 1.85		Qlφ	
e. 1φ to 2φ (%)	10	Q3φ 10.10	11	Q3φ 9.00		Q3φ	
f. 2φ to 3φ (%)	10		10				
g. 3φ to 4φ (%)	5		5				
h. 4φ to 6φ (%)	19		17				
i. 6φ to 9φ (%)	20		16				
j. 9φ to 12φ (%)	12		11				
k. >12φ (%)	16		13				
17. SUBSAMPLE DRY WEIGHT (gm.)	19.29		28.57				
18. SPHERICITY (avg.)	Medium Low		Medium Low				
19. ROUNDNESS (avg.)	Subangular		Subangular				
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted				
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	60		45				
b. SECONDARY Rock Fragments	20		40				
c. TERTIARY Quartz	15		10				
d. OTHER							
e. OTHER							
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5				
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)			G, C Trace				
b. RADIOLARIA							
c. DIATOMS							
d. OTHER							
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

****Contained one large Pebble, 1.25" x 0.88" x 0.63", 21.58 gm., which was not included in analysis.

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER		6. CRUISE	DEEP FREEZE 60			
2. SAMPLE NUMBER	14		7. SAMPLER TYPE	Phleger Core, 80 lb.			
3. LATITUDE	70 ° 44 ' 00 ' S		8. WATER DEPTH (fm.)	225	(m.)	411	
4. LONGITUDE	096 ° 27 ' 00 " W		9. CORE LENGTH (in.)	12.5	(cm.)	31.8	
5. DATE (day, month, year)	28 Feb. 1960		10. CORE PENETRATION (in.)	13	(cm.)	33.0	
11. LABORATORY NUMBER	5232		5233		5234		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2		2 - 4.5		4.5 - 7.5		
13. SEDIMENT TYPE	Sandy Mud		Sandy Mud		Sandy Mud		
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light Olive Gray* 5Y 5/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <-2φ (%)	6	QDφ 3.68	4	QDφ 4.03	4	QDφ 4.10	
b. -2φ to -1φ (%)	2	SKφ +0.98	4	SKφ +0.88	2	SKφ +0.90	
c. -1φ to 0φ (%)	2	Mdφ 5.50	3	Mdφ 6.15	3	Mdφ 5.95	
d. 0φ to 1φ (%)	4	Qlφ 2.80	4	Qlφ 3.00	4	Qlφ 2.75	
e. 1φ to 2φ (%)	5	Q3φ 10.15	1	Q3φ 11.05	6	Q3φ 10.95	
f. 2φ to 3φ (%)	8		9		8		
g. 3φ to 4φ (%)	10		9		9		
h. 4φ to 6φ (%)	16		15		14		
i. 6φ to 9φ (%)	16		18		17		
j. 9φ to 12φ (%)	13		11		12		
k. >12φ (%)	19		22		21		
17. SUBSAMPLE DRY WEIGHT (gm.)	25.46		20.75		18.36		
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium Low		
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subrounded		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	30		35		35		
b. SECONDARY Rock Fragments	40		35		35		
c. TERTIARY Quartz	5		5		5		
d. OTHER Volcanic Glass	Trace		Trace		Trace		
e. OTHER							
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5		MA, M, P 5		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G, A, C 5		G, A, C 5		G, A, C 5		
b. RADIOLARIA	Trace		Trace		Trace		
c. DIATOMS							
d. OTHER Fecal Pellets	15		15		15		
e. OTHER Sponge Spicules	Trace		Trace		Trace		

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Core contained color changes at 4.5, 7.5 and 11.5 inches.

*Mixed with Dark Yellowish Brown 10YR 4/2

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	14 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' "	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5235		5236		5237	
12. SUBSAMPLE DEPTH IN CORE (in.)	7.5 - 9.5		9.5 - 11.5		11.5 - 12.5	
13. SEDIMENT TYPE	Clayey Mud		Clayey Mud		Sandy Mud	
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2	
(LABORATORY)	Light Olive Gray 5Y 5/2		Light Olive Gray 5Y 5/2		Medium Gray N 5	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ 3.85		QDφ 3.90	1	QDφ 4.25
b. −2φ to −1φ (%)	3	SKφ +0.50	1	SKφ +0.40	3	SKφ +1.10
c. −1φ to 0φ (%)	3	Mdφ 6.45	2	Mdφ 6.90	3	Mdφ 6.00
d. 0φ to 1φ (%)	4	Qiφ 3.10	4	Qiφ 3.40	5	Qiφ 2.85
e. 1φ to 2φ (%)	6	Q3φ 10.80	6	Q3φ 11.20	6	Q3φ 11.35
f. 2φ to 3φ (%)	8		8		8	
g. 3φ to 4φ (%)	8		9		8	
h. 4φ to 6φ (%)	15		15		16	
i. 6φ to 9φ (%)	19		18		17	
j. 9φ to 12φ (%)	12		15		10	
k. >12φ (%)	22		22		22	
17. SUBSAMPLE DRY WEIGHT (gm.)	20.95		13.01		12.78	
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium Low	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	40		50		45	
b. SECONDARY Rock Fragments	30		25		35	
c. TERTIARY Quartz	10		10		10	
d. OTHER Volcanic Glass	Trace		Trace		Trace	
e. OTHER						
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5		MA, M, P 5	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	G, A, C 5		C Trace		G, A, C Trace	
b. RADIOLARIA						
c. DIATOMS						
d. OTHER Fecal Pellets	10		10		5	
e. OTHER Sponge Spicules	Trace		Trace		Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

OCEANOGRAPHIC Log Sheet RR
NHO 3167/8A (Rev 8-60)

SEDIMENT ANALYSIS SHEET

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	15	7. SAMPLER TYPE	Phelger Core, 80 lb.
3. LATITUDE	68 ° 40 ' 00 " S	8. WATER DEPTH (fm.)	2025 (m.) 3704
4. LONGITUDE	086 ° 56 ' 00 " W	9. CORE LENGTH (in.)	25 (cm.) 63.5
5. DATE (day, month, year)	28 Feb. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5238	5239	5240
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2	2 - 5	5 - 7.5
13. SEDIMENT TYPE	Silty Clay*	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)	Dk Yellsh Brown 10YR 4/2	Dk Yellsh Brown 10YR 4/2	
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 2.18	QDφ 1.23	QDφ
b. −2φ to −1φ (%)	SKφ −0.03	1 SKφ +0.28	SKφ
c. −1φ to 0φ (%)	Mdφ 9.80	1 Mdφ 9.00	1 Mdφ 9.30
d. 0φ to 1φ (%)	Qlφ 7.60	1 Qlφ 8.05	1 Qlφ 7.15
e. 1φ to 2φ (%)	4 Q3φ 11.95	1 Q3φ 10.50	1 Q3φ
f. 2φ to 3φ (%)		2	2
g. 3φ to 4φ (%)		1	2
h. 4φ to 6φ (%)	3	6	9
i. 6φ to 9φ (%)	34	37	30
j. 9φ to 12φ (%)	35	28	28
k. >12φ (%)	25	21	25
17. SUBSAMPLE DRY WEIGHT (gm.)	10.09	12.18	13.34
18. SPHERICITY (avg.)	Medium Low	Medium	Medium
19. ROUNDNESS (avg.)	Subangular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	35	40	50
b. SECONDARY Volcanic Glass	15	15	10
c. TERTIARY Rock Fragments	10	15	15
d. OTHER Quartz	5	10	10
e. OTHER			
f. TRACE (see remarks)	MA, M, P, O 5	MA, M, P, O 5	MA, M, P, O 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	C, A Trace	G Trace	A Trace
b. RADIOLARIA	30	15	10
c. DIATOMS			
d. OTHER Spicules	Trace		
e. OTHER Fecal Pellets		Trace	Trace

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Radiolarian ooze

**Streaked with Brown

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	15 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' '	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5241	5242	5243
12. SUBSAMPLE DEPTH IN CORE (in.)	7.5 - 9.25	9.25 - 12	12 - 15
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Light Olive Gray*** 5Y 5/2	Light Olv Gray**** 5Y 5/2	Lt Olive Gray**** 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	8 QDφ 2.40	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ +0.15	SKφ	SKφ
c. −1φ to 0φ (%)	Mdφ 8.85	Mdφ 10.00	Mdφ 10.15
d. 0φ to 1φ (%)	Qlφ 6.60	Qlφ 7.90	Qlφ 7.90
e. 1φ to 2φ (%)	5 Q3φ 11.40	2 Q3φ	1 Q3φ
f. 2φ to 3φ (%)			
g. 3φ to 4φ (%)			
h. 4φ to 6φ (%)	8	6	7
i. 6φ to 9φ (%)	31	30	29
j. 9φ to 12φ (%)	26	33	33
k. >12φ (%)	23	29	29
17. SUBSAMPLE DRY WEIGHT (gm.)	9.96	17.59	12.22
18. SPHERICITY (avg.)	Medium Low	Medium	Medium
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subangular
20. SURFACE TEXTURE (avg.)	Dull-Pitted	Dull-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	30	40	50
b. SECONDARY Rock Fragments	20	15	10
c. TERTIARY Volcanic Glass	10	10	15
d. OTHER Quartz	5	5	10
e. OTHER			
f. TRACE (see remarks)	MA, M, P, O 5	MA, M, P, O 5	MA, M, P, O 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	A Trace		
b. RADIOLARIA	5	10	10
c. DIATOMS			
d. OTHER Fecal Pellets	25	15	
e. OTHER Spicules		Trace	Trace

23. REMARKS:

MINERAL TRACE CODE
C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

***Mixed with Medium Gray N 5

****Streaked with Gray

FORAMINIFERA CODE
G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 15 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5244	5245	5246
12. SUBSAMPLE DEPTH IN CORE (in.)	15 - 18	18 - 20	20 - 23
13. SEDIMENT TYPE	Silty Clay	Silty Clay	Silty Clay
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
(LABORATORY)	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2	Light Olive Gray 5Y 5/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ	SKφ	SKφ
c. −1φ to 0φ (%)	Mdφ 10.00	Mdφ 10.65	Mdφ 9.60
d. 0φ to 1φ (%)	Q1φ 6.75	Q1φ 8.45	Q1φ 7.20
e. 1φ to 2φ (%)	1 Q3φ	3 Q3φ	3 Q3φ
f. 2φ to 3φ (%)			
g. 3φ to 4φ (%)			
h. 4φ to 6φ (%)	2	3	11
i. 6φ to 9φ (%)	29	25	30
j. 9φ to 12φ (%)	35	34	27
k. >12φ (%)	32	35	30
17. SUBSAMPLE DRY WEIGHT (gm.)	18.95	13.10	18.20
18. SPHERICITY (avg.)	Medium	Medium	Medium Low
19. ROUNDNESS (avg.)	Subrounded	Subrounded	Subangular
20. SURFACE TEXTURE (avg.)	Dull-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	45	60	50
b. SECONDARY Volcanic Glass	10	5	10
c. TERTIARY Rock Fragments	Trace	5	10
d. OTHER Quartz	5	15	10
e. OTHER			
f. TRACE (see remarks)	MA. M. P. O 5	MA. M. P. O 5	MA. M. P. O 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA	10	5	5
c. DIATOMS			
d. OTHER Fecal Pellets	25	5	10
e. OTHER Spicules	Trace	Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60		
2. SAMPLE NUMBER 15 (continued)		7. SAMPLER TYPE		
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)		
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)		
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)		
11. LABORATORY NUMBER	5247			
12. SUBSAMPLE DEPTH IN CORE (in.)	23 - 25			
13. SEDIMENT TYPE	Silty Clay			
14. COLOR (FIELD) (GSA rock color chart)	Light Olive Gray 5Y 5/2			
(LABORATORY)	Light Olive Gray 5Y 5/2			
15. ODOR				
16. SIZE ANALYSIS AND STATISTICAL MEASURES				
a. <−2φ (%)	QDφ 3.00	QDφ	QDφ	
b. −2φ to −1φ (%)	SKφ +0.35	SKφ	SKφ	
c. −1φ to 0φ (%)	1 Mdφ 8.65	Mdφ	Mdφ	
d. 0φ to 1φ (%)	1 Q1φ 6.00	Q1φ	Q1φ	
e. 1φ to 2φ (%)	1 Q3φ 12.00	Q3φ	Q3φ	
f. 2φ to 3φ (%)	2			
g. 3φ to 4φ (%)	1			
h. 4φ to 6φ (%)	20			
i. 6φ to 9φ (%)	25			
j. 9φ to 12φ (%)	24			
k. >12φ (%)	25			
17. SUBSAMPLE DRY WEIGHT (gm.)	13.01			
18. SPHERICITY (avg.)	Medium Low			
19. ROUNDNESS (avg.)	Subangular			
20. SURFACE TEXTURE (avg.)	Polished-Pitted			
21. MINERAL CONTENT (%)				
a. DOMINANT Feldspar	55			
b. SECONDARY Rock Fragments	15			
c. TERTIARY Volcanic Glass	5			
d. OTHER Quartz	15			
e. OTHER				
f. TRACE (see remarks)	MA. M. P. O 5			
22. BIOLOGICAL CONTENT (%)				
a. FORAMINIFERA (see remarks)				
b. RADIOLARIA	Trace			
c. DIATOMS				
d. OTHER Fecal Pellets	5			
e. OTHER Spicules	Trace			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 9		7. SAMPLER TYPE Phleger Core, 80 lb.	
3. LATITUDE 68 ° 46 ' 42 " S		8. WATER DEPTH (fm.) 1,450 (m.) 2651	
4. LONGITUDE 091 ° 11 ' 00 " W		9. CORE LENGTH (in.) 11 (cm.) 27.9	
5. DATE (day, month, year) 29 Feb. 1960		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	4989	4990	4991
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3	3 - 6	6 - 10
13. SEDIMENT TYPE	Sandy Silt*	Silt*	Silt*
14. COLOR (FIELD)	Brownish Black	Brownish Black	Brownish Black
(GSA rock color chart)	5YR 2/1	5YR 2/1	5YR 2/1
(LABORATORY)	Dusky Yellow Brn	Dusky Yellow Brn	Dusky Yellow Brn
	10YR 2/2	10YR 2/2	10YR 2/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	2 QDφ 1.15	QDφ 0.81	QDφ 0.75
b. −2φ to −1φ (%)	1 SKφ +0.40	SKφ +0.19	SKφ +0.15
c. −1φ to 0φ (%)	Mdφ 5.20	Mdφ 5.55	Mdφ 5.56
d. 0φ to 1φ (%)	1 Qlφ 4.45	1 Qlφ 4.93	1 Qlφ 4.96
e. 1φ to 2φ (%)	1 Q3φ 6.75	Q3φ 6.55	Q3φ 6.46
f. 2φ to 3φ (%)	1		
g. 3φ to 4φ (%)	7	4	5
h. 4φ to 6φ (%)	54	59	59
i. 6φ to 9φ (%)	25	27	27
j. 9φ to 12φ (%)	3	3	3
k. >12φ (%)	4	5	4
17. SUBSAMPLE DRY WEIGHT (gm.)	35.04	28.47	30.63
18. SPHERICITY (avg.)	Medium	Medium	Medium
19. ROUNDNESS (avg.)	Subrounded	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Dull-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	95	90	95
b. SECONDARY Feldspar	5	5	5
c. TERTIARY Quartz	Trace	Trace	Trace
d. OTHER			
e. OTHER			
f. TRACE (see remarks)	O, M	O, M	O
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	G - Trace	G - Trace	G - Trace
b. RADIOLARIA	Trace	5	Trace
c. DIATOMS	Trace		Trace
d. OTHER Sponge Spicules	Trace		Trace
e. OTHER			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash from Peter I Island

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS BURTON ISLAND		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 9 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	4993		
12. SUBSAMPLE DEPTH IN CORE (in.)	10 - 11		
13. SEDIMENT TYPE	Silt*		
14. COLOR (FIELD)	Brownish Black		
(GSA rock color chart)	5YR 2/1		
(LABORATORY)	Dusky Yellow Brn		
	10YR 2/2		
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 0.88	QDφ	QDφ
b. −2φ to −1φ (%)	SKφ +0.17	SKφ	SKφ
c. −1φ to 0φ (%)	Mdφ 5.49	Mdφ	Mdφ
d. 0φ to 1φ (%)	1 Qlφ 4.78	Qlφ	Qlφ
e. 1φ to 2φ (%)	Q3φ 6.53	Q3φ	Q3φ
f. 2φ to 3φ (%)			
g. 3φ to 4φ (%)	4		
h. 4φ to 6φ (%)	60		
i. 6φ to 9φ (%)	26		
j. 9φ to 12φ (%)	3		
k. >12φ (%)	5		
17. SUBSAMPLE DRY WEIGHT (gm.)	31.19		
18. SPHERICITY (avg.)	Medium		
19. ROUNDNESS (avg.)	Subangular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		
21. MINERAL CONTENT (%)			
a. DOMINANT Volcanic Glass	85		
b. SECONDARY Feldspar	10		
c. TERTIARY Quartz	Trace		
d. OTHER			
e. OTHER			
f. TRACE (see remarks)	MA, M, O		
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)			
b. RADIOLARIA			
c. DIATOMS	5		
d. OTHER Sponge Spicules			
e. OTHER Organic Remains			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Volcanic Ash from Peter I Island

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

OCEANOGRAPHIC Log Sheet RR
NHO 3167/18A (Rev 8-60)

SEDIMENT ANALYSIS SHEET

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	16	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	66 ° 14 ' 30 " S	8. WATER DEPTH (fm.)	273 (m.) 500
4. LONGITUDE	067 ° 51 ' 30 " W	9. CORE LENGTH (in.)	26.5 (cm.) 67.3
5. DATE (day, month, year)	2 Mar. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5248		5249		5250	
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3		3 - 6		6 - 8	
13. SEDIMENT TYPE	Pebbly Sandy Silt		Pebbly Silty Sand		Silty Mud	
14. COLOR (FIELD) (GSA rock color chart)	Grayish Olive 10Y 4/2		Grayish Olive 10Y 4/2			
(LABORATORY)	Graish Olive* 10Y 4/2		Grayish Olive* 10Y 4/2		Med. Bluish Gray** 5B 5/1	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <-2φ (%)	29	QDφ 5.25	18	QDφ 4.15	7	QDφ 3.03
b. -2φ to -1φ (%)	2	SKφ -1.80	4	SKφ -0.20	4	SKφ -0.58
c. -1φ to 0φ (%)	2	Mdφ 4.00	4	Mdφ 4.10	3	Mdφ 7.40
d. 0φ to 1φ (%)	2	Q1φ -3.05	5	Q1φ -0.25	4	Q1φ 3.80
e. 1φ to 2φ (%)	3	Q3φ 7.45	6	Q3φ 8.05	4	Q3φ 9.85
f. 2φ to 3φ (%)	6		6		5	
g. 3φ to 4φ (%)	6		7		5	
h. 4φ to 6φ (%)	15		13		13	
i. 6φ to 9φ (%)	16		16		27	
j. 9φ to 12φ (%)	11		11		21	
k. >12φ (%)	9		9		13	
17. SUBSAMPLE DRY WEIGHT (gm.)	24.74		31.67		19.09	
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium Low	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	35		35		40	
b. SECONDARY Rock Fragments	25		25		20	
c. TERTIARY Quartz	5		5		5	
d. OTHER Volcanic Glass	5		10		10	
e. OTHER						
f. TRACE (see remarks)	MA, M, P, O	5	MA, M, P, O	5	MA, M, P, O	5
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	C Trace		Trace		C Trace	
b. RADIOLARIA	10		10		5	
c. DIATOMS	5		Trace		Trace	
d. OTHER Sponge Spicules	5		10		10	
e. OTHER Fecal Pellets	5		Trace		5	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*With Dark Gray N 3 streaks

**With Black N 1 streaks

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	16 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' "	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5251		5252		5253	
12. SUBSAMPLE DEPTH IN CORE (in.)	8 - 10		10 - 12.5		12.5 - 14.5	
13. SEDIMENT TYPE	Clayey Silt		Clayey Silt		Clayey Silt	
14. COLOR (FIELD) (GSA rock color chart)						
(LABORATORY)	Med Bluish Gray** 5B 5/1		Med Bluish Gray** 5B 5/1		Med Bluish Gray** 5B 5/1	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <-2φ (%)		QDφ 2.15		QDφ 2.43	3	QDφ 2.23
b. -2φ to -1φ (%)		SKφ -0.25	1	SKφ +0.18	1	SKφ -0.13
c. -1φ to 0φ (%)	1	Mdφ 8.50	2	Mdφ 8.15	2	Mdφ 8.45
d. 0φ to 1φ (%)	1	Q1φ 6.10	2	Q1φ 5.90	2	Q1φ 6.10
e. 1φ to 2φ (%)	3	Q3φ 10.40	2	Q3φ 10.75	2	Q3φ 10.55
f. 2φ to 3φ (%)	3		3		2	
g. 3φ to 4φ (%)	4		3		2	
h. 4φ to 6φ (%)	12		14		10	
i. 6φ to 9φ (%)	33		32		35	
j. 9φ to 12φ (%)	27		24		24	
k. >12φ (%)	17		18		17	
17. SUBSAMPLE DRY WEIGHT (gm.)	19.14		14.21		17.92	
18. SPHERICITY (avg.)	Medium		Medium Low		Medium Low	
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subrounded	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	55		50		45	
b. SECONDARY Rock Fragments	10		10		20	
c. TERTIARY Quartz	10		10		10	
d. OTHER Volcanic Glass	10		10		15	
e. OTHER						
f. TRACE (see remarks)	MA, M, P, O	10	MA, M, P, O	10	MA, M, P, O	10
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	C Trace		C Trace		C Trace	
b. RADIOLARIA	Trace	5		5	Trace	
c. DIATOMS						
d. OTHER Sponge Spicules		5		5	Trace	
e. OTHER Fecal Pellets					Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

**With Black N 1 streaks

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	16 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' '	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5254		5255		5256	
12. SUBSAMPLE DEPTH IN CORE (in.)	14.5 - 16.5		16.5 - 18.5		18.5 - 20.5	
13. SEDIMENT TYPE	Clayey Silt		Silty Mud		Clayey Silt	
14. COLOR (FIELD) (GSA rock color chart)	Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1	
(LABORATORY)	Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)		QDφ 2.65	2	QDφ 2.50		QDφ 1.33
b. −2φ to −1φ (%)		SKφ ±0.85	2	SKφ +0.55	2	SKφ +0.43
c. −1φ to 0φ (%)		Mdφ 6.90	4	Mdφ 6.95	2	Mdφ 5.90
d. 0φ to 1φ (%)	1	Qlφ 5.10	4	Qlφ 5.00	3	Qlφ 5.00
e. 1φ to 2φ (%)		Q3φ 10.40	3	Q3φ 10.00	2	Q3φ 7.65
f. 2φ to 3φ (%)	2		3		2	
g. 3φ to 4φ (%)	8		2		2	
h. 4φ to 6φ (%)	28		17		41	
i. 6φ to 9φ (%)	27		31		26	
j. 9φ to 12φ (%)	21		19		12	
k. >12φ (%)	14		13		9	
17. SUBSAMPLE DRY WEIGHT (gm.)	21.68		17.33		22.85	
18. SPHERICITY (avg.)	Medium		Medium Low		Medium Low	
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subrounded	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Dull-Pitted		Dull-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	55		45		45	
b. SECONDARY Quartz	15		15		15	
c. TERTIARY Rock Fragments	5		30		20	
d. OTHER Volcanic Glass	5		Trace		5	
e. OTHER Pyrite	Trace		Trace			
f. TRACE (see remarks)	MA, M, P, O	10	MA, M, P, O	10	MA, M, P, O	10
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	C	5	C Trace		C, G Trace	
b. RADIOLARIA			Trace		Trace	
c. DIATOMS	Trace				Trace	
d. OTHER Sponge Spicules		5	Trace			5
e. OTHER Fecal Pellets			Trace			

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	16 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' '	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5257		5258		5259	
12. SUBSAMPLE DEPTH IN CORE (in.)	20.5 - 22.5		22.5 - 24.5		24.5 - 26.5	
13. SEDIMENT TYPE	Clayey Silt		Clayey Silt		Clayey Silt	
14. COLOR (FIELD) (GSA rock color chart)	Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1	
(LABORATORY)	Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1		Medium Bluish Gray 5B 5/1	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	1	QDφ 2.00	2	QDφ 2.45		QDφ 1.93
b. −2φ to −1φ (%)	2	SKφ +1.45	2	SKφ +0.90		SKφ +0.23
c. −1φ to 0φ (%)	2	Mdφ 6.05	2	Mdφ 6.80		Mdφ 8.35
d. 0φ to 1φ (%)	3	Qlφ 5.50	3	Qlφ 5.25		Qlφ 6.65
e. 1φ to 2φ (%)	2	Q3φ 9.50	3	Q3φ 10.15	2	Q3φ 10.50
f. 2φ to 3φ (%)	2		2			
g. 3φ to 4φ (%)	2		3			
h. 4φ to 6φ (%)	32		21		15	
i. 6φ to 9φ (%)	28		30		43	
j. 9φ to 12φ (%)	15		19		24	
k. >12φ (%)	12		14		16	
17. SUBSAMPLE DRY WEIGHT (gm.)	14.18		17.06		20.75	
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium	
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subrounded	
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Dull-Pitted		Polished-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	50		50		60	
b. SECONDARY Quartz	15		15		20	
c. TERTIARY Rock Fragments	20		15		5	
d. OTHER Volcanic Glass	5				5	
e. OTHER Pyrite			Trace			
f. TRACE (see remarks)	MA, M, P, O	10	MA, M, P, O	10	MA, M, P, O	10
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)	C - Trace		G, C	5	C - Trace	
b. RADIOLARIA	Trace				Trace	
c. DIATOMS			Trace			
d. OTHER Sponge Spicules	Trace			5	Trace	
e. OTHER Fecal Pellets	Trace				Trace	

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

ADELAIDE ISLAND AREA

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	17	7. SAMPLER TYPE	PVC
3. LATITUDE	66 ° 14 ' 30 ' S	8. WATER DEPTH (fm.)	271 (m.) 496
4. LONGITUDE	067 ° 50 ' 00 " W	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)	3 March 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5260						
12. SUBSAMPLE DEPTH IN CORE (in.)	0						
13. SEDIMENT TYPE	Gravel						
14. COLOR (FIELD) (GSA rock color chart)							
(LABORATORY)							
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	95	QDφ		QDφ		QDφ	
b. −2φ to −1φ (%)	4	SKφ		SKφ		SKφ	
c. −1φ to 0φ (%)	1	Mdφ		Mdφ		Mdφ	
d. 0φ to 1φ (%)		Q1φ		Q1φ		Q1φ	
e. 1φ to 2φ (%)		Q3φ		Q3φ		Q3φ	
f. 2φ to 3φ (%)							
g. 3φ to 4φ (%)							
h. 4φ to 6φ (%)							
i. 6φ to 9φ (%)	1						
j. 9φ to 12φ (%)							
k. >12φ (%)							
17. SUBSAMPLE DRY WEIGHT (gm.)	79.57						
18. SPHERICITY (avg.)	Low						
19. ROUNDNESS (avg.)	Subangular						
20. SURFACE TEXTURE (avg.)	Dull-Pitted						
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	90						
b. SECONDARY Feldspar	5						
c. TERTIARY Quartz	Trace						
d. OTHER Volcanic Glass	Trace						
e. OTHER							
f. TRACE (see remarks)	MA						
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G, C						
b. RADIOLARIA		5					
c. DIATOMS							
d. OTHER Sponge Spicules	Trace						
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	18	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	66 ° 25 ' 24 ' S	8. WATER DEPTH (fm.)	268 (m.) 490
4. LONGITUDE	067 ° 57 ' 00 " W	9. CORE LENGTH (in.)	6.5 (cm.) 16.5
5. DATE (day, month, year)	4 Mar. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5261		5262		5263		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2.25		2.25 - 4.5		4.5 - 6.5		
13. SEDIMENT TYPE	Gravel		Pebbly Silty Sand		Pebbly Silty Sand		
14. COLOR (FIELD) (GSA rock color chart)	Grayish Olive		Med Greenish Gray		Med Greenish Gray		
	10Y 4/2		5G[1] 5/1		5GY 5/1		
(LABORATORY)	Grayish Olive		Greenish Gray		Greenish Gray		
	10Y 4/2		5G[1] 6/1		5GY 6/1		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	52	QDφ	17	QDφ 4.02	14	QDφ 3.90	
b. −2φ to −1φ (%)	7	SKφ	5	SKφ −0.54	6	SKφ −0.28	
c. −1φ to 0φ (%)	3	Mdφ −2.23	7	Mdφ 3.98	6	Mdφ 4.02	
d. 0φ to 1φ (%)	2	Q1φ	6	Q1φ −0.58	7	Q1φ −0.15	
e. 1φ to 2φ (%)	2	Q3φ 4.44	5	Q3φ 7.47	6	Q3φ 7.64	
f. 2φ to 3φ (%)	3		5		5		
g. 3φ to 4φ (%)	4		5		6		
h. 4φ to 6φ (%)	9		15		15		
i. 6φ to 9φ (%)	9		16		16		
j. 9φ to 12φ (%)	6		11		11		
k. >12φ (%)	4		8		9		
17. SUBSAMPLE DRY WEIGHT (gm.)	44.62		26.13		25.38		
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium Low		
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subrounded		
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Dull-Pitted		Dull-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Rock Fragments	65		50		50		
b. SECONDARY Feldspar	10		25		30		
c. TERTIARY Quartz	5		10		10		
d. OTHER Volcanic Glass	Trace		Trace				
e. OTHER Pyrite	Trace		Trace		Trace		
f. TRACE (see remarks)	MA, M, P, O	5	MA, M, P, O	10	MA, M, P, O	10	
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G, A, C	Trace					
b. RADIOLARIA	5		5				
c. DIATOMS	5						
d. OTHER Sponge Spicules	Trace				Trace		
e. OTHER Fecal Pellets	5		Trace		Trace		

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	19	7. SAMPLER TYPE	Phleger Core, 80 lb.
3. LATITUDE	67 ° 22 ' 42 " S	8. WATER DEPTH (fm.)	239 (m.) 437
4. LONGITUDE	071 ° 39 ' 30 " W	9. CORE LENGTH (in.)	31.75 (cm.) 80.6
5. DATE (day, month, year)	6 Mar. 1960	10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5264		5265		5266		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 2.5		2.5 - 5.5		5.5 - 8		
13. SEDIMENT TYPE	Silty Clay*		Silty Clay*		Clayey Silt		
14. COLOR (FIELD) (GSA rock color chart)	Grayish Olive 10Y 4/2		Grayish Olive 10Y 4/2		Grayish Olive 10Y 4/2		
(LABORATORY)	Grayish Olive** 10Y 4/2		Grayish Olive 10Y 4/2		Grayish Olive 10Y 4/2		
15. ODOR	Strong H_2S						
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ 2.27		QDφ 2.39		QDφ 1.91	
b. −2φ to −1φ (%)		SKφ +0.37		SKφ +0.16		SKφ +0.04	
c. −1φ to 0φ (%)		Mdφ 8.60		Mdφ 9.00	1	Mdφ 8.43	
d. 0φ to 1φ (%)	1	Q1φ 6.70	1	Q1φ 6.77	1	Q1φ 6.56	
e. 1φ to 2φ (%)	2	Q3φ 11.24	2	Q3φ 11.55	2	Q3φ 10.38	
f. 2φ to 3φ (%)	3		3		4		
g. 3φ to 4φ (%)	4		3		4		
h. 4φ to 6φ (%)	9		9		7		
i. 6φ to 9φ (%)	36		32		39		
j. 9φ to 12φ (%)	26		27		28		
k. >12φ (%)	20		24		14		
17. SUBSAMPLE DRY WEIGHT (gm.)	9.98		11.33		9.63		
18. SPHERICITY (avg.)	Medium		Medium		Medium		
19. ROUNDNESS (avg.)	Subrounded		Subrounded		Subangular		
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	20		30		40		
b. SECONDARY Quartz	5		5		10		
c. TERTIARY Rock Fragments	5		10		10		
d. OTHER Volcanic Glass	Trace		Trace		Trace		
e. OTHER							
f. TRACE (see remarks)	MA, M, P 5		MA, M, P 5		MA, M, P 5		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	C - Trace		C - Trace		C - Trace		
b. RADIOLARIA	15		15		15		
c. DIATOMS	25		15		10		
d. OTHER Sponge Spicules	20		15		5		
e. OTHER Fecal Pellets	5		5		5		

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

Depth (in)	Composition
0 - 8	Silt and clay
8 - 11	Silt and Clay with some pebbles
11 - 13	silt and clay
13 - 14.75	silt and clay with some pebbles
14.75 - 18	sand, silt, clay and pebbles
18 - 31.75	sand, silt and clay with some pebbles

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

*Diatomaceous ooze

**Streaked with Medium Dark Gray N 4

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	19 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' "	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5267		5268		5269		
12. SUBSAMPLE DEPTH IN CORE (in.)	8 - 11		11 - 13		13 - 14.75		
13. SEDIMENT TYPE	Clayey Silt		Clayey Silt		Silty Mud		
14. COLOR (FIELD) (GSA rock color chart)							
(LABORATORY)	Grayish Olive* 10Y 4/2		Grayish Olive* 10Y 4/2		Grayish Olive* 10Y 4/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	3	QDφ 2.72		QDφ 2.56	4	QDφ 3.26	
b. −2φ to −1φ (%)		SKφ -0.40	1	SKφ +0.09	2	SKφ -0.51	
c. −1φ to 0φ (%)	2	Mdφ 7.82	1	Mdφ 7.63	4	Mdφ 7.19	
d. 0φ to 1φ (%)	2	Q1φ 4.69	3	Q1φ 5.17	4	Q1φ 3.42	
e. 1φ to 2φ (%)	4	Q3φ 10.14	3	Q3φ 10.28	4	Q3φ 9.93	
f. 2φ to 3φ (%)	5		4		5		
g. 3φ to 4φ (%)	5		5		5		
h. 4φ to 6φ (%)	12		16		12		
i. 6φ to 9φ (%)	30		31		28		
j. 9φ to 12φ (%)	20		21		18		
k. >12φ (%)	17		16		15		
17. SUBSAMPLE DRY WEIGHT (gm.)	12.55		12.18		10.64		
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium Low		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	40		40		35		
b. SECONDARY Rock Fragments	20		20		30		
c. TERTIARY Quartz	10		10		10		
d. OTHER Volcanic Glass	Trace		Trace		Trace		
e. OTHER							
f. TRACE (see remarks)	MA, M, P, O 5		MA, M, P, O 5		MA, M, P, O 5		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA	10		10		10		
c. DIATOMS	5		5		Trace		
d. OTHER Sponge Spicuals	10		10		10		
e. OTHER Fecal Pellets	Trace		Trace		Trace		

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

*Diatomaceous ooze

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS }

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	19 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' '	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5270		5271		5272	
12. SUBSAMPLE DEPTH IN CORE (in.)	14.75 - 16		16 - 18		18 - 20	
13. SEDIMENT TYPE	Pebbly Silty Sand		Pebbly Sandy Mud		Sandy Mud	
14. COLOR (FIELD) (GSA rock color chart)	Medium Gray		Medium Gray		Medium Gray	
	N 5		N 5		N 5	
(LABORATORY)	Medium Dark Gray		Medium Dark Gray		Medium Dark Gray	
	N 4		N 4		N 4	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	10	QDφ 4.74	17	QDφ 3.98	4	QDφ 3.98
b. −2φ to −1φ (%)	15	SKφ +2.74	5	SKφ −0.73	6	SKφ −0.03
c. −1φ to 0φ (%)	17	Mdφ 1.00	5	Mdφ 4.30	5	Mdφ 5.65
d. 0φ to 1φ (%)	8	Qlφ −1.00	5	Qlφ −0.40	6	Qlφ 1.65
e. 1φ to 2φ (%)	4	Q3φ 8.47	5	Q3φ 7.55	6	Q3φ 9.60
f. 2φ to 3φ (%)	4		6		7	
g. 3φ to 4φ (%)	4		5		7	
h. 4φ to 6φ (%)	8		18		11	
i. 6φ to 9φ (%)	12		11		19	
j. 9φ to 12φ (%)	10		11		14	
k. >12φ (%)	7		12		14	
17. SUBSAMPLE DRY WEIGHT (gm.)	21.78		26.42		25.36	
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium Low	
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Dull-Pitted		Dull-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Rock Fragments	60		40		35	
b. SECONDARY Feldspar	25		45		50	
c. TERTIARY Quartz	5		10		10	
d. OTHER Volcanic Glass	Trace		Trace		Trace	
e. OTHER Pyrite	Trace		Trace		Trace	
f. TRACE (see remarks)	MA, M, P, O 5		MA, M, P, O 5		MA, M, P, O 5	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)						
b. RADIOLARIA	5		Trace		Trace	
c. DIATOMS					Trace	
d. OTHER Sponge Spicules					Trace	
e. OTHER Fecal Pellets						

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER	6. CRUISE	DEEP FREEZE 60
2. SAMPLE NUMBER	19 (continued)	7. SAMPLER TYPE	
3. LATITUDE	° ' '	8. WATER DEPTH (fm.)	(m.)
4. LONGITUDE	° ' "	9. CORE LENGTH (in.)	(cm.)
5. DATE (day, month, year)		10. CORE PENETRATION (in.)	(cm.)

11. LABORATORY NUMBER	5273		5274		5275	
12. SUBSAMPLE DEPTH IN CORE (in.)	20 -22		22 - 24		24 - 26.5	
13. SEDIMENT TYPE	Sandy Mud		Sandy Mud		Silty Mud	
14. COLOR (FIELD) (GSA rock color chart)	Medium Gray		Medium Gray		Medium Gray	
	N 5		N 5		N 5	
(LABORATORY)	Medium Dark Gray		Medium Dark Gray		Medium Dark Gray	
	N 4		N 4		N 4	
15. ODOR						
16. SIZE ANALYSIS AND STATISTICAL MEASURES						
a. <−2φ (%)	7	QDφ 3.85	4	QDφ 4.05	3	QDφ 2.93
b. −2φ to −1φ (%)	4	SKφ −0.05	5	SKφ +0.25	5	SKφ −0.33
c. −1φ to 0φ (%)	5	Mdφ 5.40	6	Mdφ 5.40	5	Mdφ 5.45
d. 0φ to 1φ (%)	6	Qlφ 1.50	6	Qlφ 1.60	5	Qlφ 2.20
e. 1φ to 2φ (%)	6	Q3φ 9.20	6	Q3φ 9.70	6	Q3φ 8.05
f. 2φ to 3φ (%)	6		6		6	
g. 3φ to 4φ (%)	6		7		6	
h. 4φ to 6φ (%)	15		14		23	
i. 6φ to 9φ (%)	19		18		17	
j. 9φ to 12φ (%)	14		14		12	
k. >12φ (%)	13		13		12	
17. SUBSAMPLE DRY WEIGHT (gm.)	25.76		26.20		24.26	
18. SPHERICITY (avg.)	Medium Low		Medium Low		Medium Low	
19. ROUNDNESS (avg.)	Subrounded		Subangular		Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Dull-Pitted		Dull-Pitted	
21. MINERAL CONTENT (%)						
a. DOMINANT Feldspar	45		45		45	
b. SECONDARY Rock Fragments	35		35		35	
c. TERTIARY Quartz	15		15		15	
d. OTHER Pyrite	Trace		Trace		Trace	
e. OTHER Volcanic Glass	Trace		Trace		Trace	
f. TRACE (see remarks)	MA, M, P, O 5		MA, M, P, O 5		MA, M, P, O, 5	
22. BIOLOGICAL CONTENT (%)						
a. FORAMINIFERA (see remarks)			G, C, Trace			
b. RADIOLARIA	Trace		Trace			
c. DIATOMS	Trace		Trace			
d. OTHER Sponge Spicules	Trace		Trace			
e. OTHER						

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER		6. CRUISE	DEEP FREEZE 60			
2. SAMPLE NUMBER	19 (continued)		7. SAMPLER TYPE				
3. LATITUDE	° ' "		8. WATER DEPTH (fm.)	(m.)			
4. LONGITUDE	° ' "		9. CORE LENGTH (in.)	(cm.)			
5. DATE (day, month, year)			10. CORE PENETRATION (in.)	(cm.)			
11. LABORATORY NUMBER	5276		5277				
12. SUBSAMPLE DEPTH IN CORE (in.)	26.5 - 29		29 - 31.75				
13. SEDIMENT TYPE	Sandy Mud		Sandy Mud				
14. COLOR (FIELD) (GSA rock color chart)	Medium Gray N 5		Medium Gray N 5				
(LABORATORY)	Medium Dark Gray N 4		Medium Dark Gray N 4				
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)	6	QDφ 5.25	1	QDφ 3.96		QDφ	
b. −2φ to −1φ (%)	5	SKφ −0.46	5	SKφ +0.16		SKφ	
c. −1φ to 0φ (%)	5	Mdφ 7.21	7	Mdφ 5.68		Mdφ	
d. 0φ to 1φ (%)	6	Qlφ 1.50	6	Qlφ 1.88		Qlφ	
e. 1φ to 2φ (%)	6	Q3φ 12.00	7	Q3φ 9.81		Q3φ	
f. 2φ to 3φ (%)	7		7				
g. 3φ to 4φ (%)	7		7				
h. 4φ to 6φ (%)	12		12				
i. 6φ to 9φ (%)	17		19				
j. 9φ to 12φ (%)	14		14				
k. >12φ (%)	13		14				
17. SUBSAMPLE DRY WEIGHT (gm.)	36.23		23.44				
18. SPHERICITY (avg.)	Medium Low		Medium Low				
19. ROUNDNESS (avg.)	Subangular		Subangular				
20. SURFACE TEXTURE (avg.)	Dull-Pitted		Dull-Pitted				
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	45		45				
b. SECONDARY Rock Fragments	35		35				
c. TERTIARY Quartz	15		15				
d. OTHER Pyrite	Trace		Trace				
e. OTHER Volcanic Glass	Trace		Trace				
f. TRACE (see remarks)	MA, M, P, O 5		MA, M, P, O, 5				
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)	G, C, Trace		G, C, Trace				
b. RADIOLARIA	Trace		Trace				
c. DIATOMS	Trace		Trace				
d. OTHER Sponge Spicules	Trace		Trace				
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
G—GARNET
MA—MAGNETITE
M—MICA
O—OLIVINE
P—PYROXENE

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP	USS GLACIER		6. CRUISE	DEEP FREEZE 60			
2. SAMPLE NUMBER	20		7. SAMPLER TYPE	Phleger Core, 80 lb.			
3. LATITUDE	67 ° 31 ' 24 " S		8. WATER DEPTH (fm.)	235 (m.) 430			
4. LONGITUDE	071 ° 36 ' 00 " W		9. CORE LENGTH (in.)	21 (cm.) 53.3			
5. DATE (day, month, year)	8 March 1960		10. CORE PENETRATION (in.)	(cm.)			
11. LABORATORY NUMBER	5278		5279		5280		
12. SUBSAMPLE DEPTH IN CORE (in.)	0 - 3		3 - 6		6 - 9		
13. SEDIMENT TYPE	Clayey Silt *		Clayey Silt		Clayey Silt		
14. COLOR (FIELD) (GSA rock color chart)	Grayish Olive 10Y 4/2						
(LABORATORY)	Medium Dark Gray** N 4		Grayish Olive*** 10Y 4/2		Grayish Olive*** 10Y 4/2		
15. ODOR							
16. SIZE ANALYSIS AND STATISTICAL MEASURES							
a. <−2φ (%)		QDφ 2.60		QDφ 2.50		QDφ 1.53	
b. −2φ to −1φ (%)		SKφ +0.40		SKφ +0.75		SKφ −0.08	
c. −1φ to 0φ (%)		Mdφ 8.70		Mdφ 6.30		Mdφ 7.75	
d. 0φ to 1φ (%)		Qlφ 6.50		Qlφ 4.55		Qlφ 6.15	
e. 1φ to 2φ (%)	3	Q3φ 11.70	3	Q3φ 9.55	5	Q3φ 9.20	
f. 2φ to 3φ (%)							
g. 3φ to 4φ (%)							
h. 4φ to 6φ (%)	17		14		18		
i. 6φ to 9φ (%)	35		24		39		
j. 9φ to 12φ (%)	21		20		22		
k. >12φ (%)	24		9		17		
17. SUBSAMPLE DRY WEIGHT (gm.)	9.75		15.60		10.19		
18. SPHERICITY (avg.)	Medium		Medium		Medium		
19. ROUNDNESS (avg.)	Subangular		Subangular		Subangular		
20. SURFACE TEXTURE (avg.)	Polished-Pitted		Polished-Pitted		Polished-Pitted		
21. MINERAL CONTENT (%)							
a. DOMINANT Feldspar	15		15		20		
b. SECONDARY Quartz	10		10		15		
c. TERTIARY Volcanic Glass	Trace		Trace		Trace		
d. OTHER Rock Fragments			Trace		5		
e. OTHER							
f. TRACE (see remarks)	MA, M, P		MA, M, P 5		MA, M, P		
22. BIOLOGICAL CONTENT (%)							
a. FORAMINIFERA (see remarks)							
b. RADIOLARIA	20		25		20		
c. DIATOMS	30		20		20		
d. OTHER Spicules	25		25		20		
e. OTHER							

23. REMARKS:

MINERAL TRACE CODE

C—CALCITE
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O—OLIVINE
P—PYROXENE

Depth (in.)	Composition
0 - 13	Silt and clay
13 - 15.5	Silt, clay with some pebbles
15.5 - 21	Sand, silt, clay and scattered pebbles

* Diatomaceous ooze
** Mixed with Grayish Olive (10Y 4/2)
*** Streaked with Medium Dark Gray (N4)

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
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The core contained color-breaks at 3 and 15.5 inches.

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 20 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5281	5282	5283
12. SUBSAMPLE DEPTH IN CORE (in.)	9 - 11	11 - 13	13 - 15.5
13. SEDIMENT TYPE	Clayey Silt	Clayey Silt	Silty Mud
14. COLOR (FIELD) (GSA rock color chart)			
(LABORATORY)	Grayish Olive** 10Y 4/2	Grayish Olive** 10Y 4/2	Grayish Olive** 10Y 4/2
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	QDφ 2.53	QDφ 2.45	9 QDφ 3.35
b. −2φ to −1φ (%)	1 SKφ +0.43	1 SKφ +0.80	4 SKφ −0.20
c. −1φ to 0φ (%)	1 Mdφ 7.80	2 Mdφ 6.90	4 Mdφ 6.00
d. 0φ to 1φ (%)	1 Q1φ 5.70	2 Q1φ 5.25	4 Q1φ 2.45
e. 1φ to 2φ (%)	1 Q3φ 10.75	2 Q3φ 10.15	3 Q3φ 9.15
f. 2φ to 3φ (%)	2	3	3
g. 3φ to 4φ (%)	2	3	4
h. 4φ to 6φ (%)	21	25	19
i. 6φ to 9φ (%)	33	31	24
j. 9φ to 12φ (%)	21	16	14
k. >12φ (%)	17	14	13
17. SUBSAMPLE DRY WEIGHT (gm.)	10.37	13.22	16.53
18. SPHERICITY (avg.)	Medium	Medium Low	Medium Low
19. ROUNDNESS (avg.)	Subangular	Subangular	Subangular
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	Polished-Pitted
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	25	25	30
b. SECONDARY Quartz	20	20	20
c. TERTIARY Rock Fragments	10	15	30
d. OTHER Volcanic Glass	5	5	Trace
e. OTHER Pyrite			Trace
f. TRACE (see remarks)	MA, M, P, O, 5	MA, M, P, O 5	MA, M, P, O 5
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)		C - Trace	C - Trace
b. RADIOLARIA	15	10	10
c. DIATOMS	10	10	} 5
d. OTHER Spicules	10	10	
e. OTHER Fecal Pellets	Trace	Trace	Trace

23. REMARKS:

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O—OLIVINE
P—PYROXENE

**Mixed with Grayish Olive 10Y 4/2

FORAMINIFERA CODE

G—GLOBIGERINA TYPE (PELAGIC)
A—ARENACEOUS } Benthonic
C—CALCAREOUS } Benthonic

1. SHIP USS GLACIER		6. CRUISE DEEP FREEZE 60	
2. SAMPLE NUMBER 20 (continued)		7. SAMPLER TYPE	
3. LATITUDE ° ' '		8. WATER DEPTH (fm.) (m.)	
4. LONGITUDE ° ' "		9. CORE LENGTH (in.) (cm.)	
5. DATE (day, month, year)		10. CORE PENETRATION (in.) (cm.)	
11. LABORATORY NUMBER	5284	5285	
12. SUBSAMPLE DEPTH IN CORE (in.)	15.5 - 18	18 - 21	
13. SEDIMENT TYPE	Silty Mud	Silty Mud	
14. COLOR (FIELD) (GSA rock color chart)	Drk Grnsh Gray 5GY 4/1	Drk Grnsh Gray 5GY 4/1	
(LABORATORY)	Medium Gray N5	Medium Gray N5	
15. ODOR			
16. SIZE ANALYSIS AND STATISTICAL MEASURES			
a. <−2φ (%)	7 QDφ 3.55	9 QDφ 4.10	QDφ
b. −2φ to −1φ (%)	2 SKφ +0.05	3 SKφ +0.35	SKφ
c. −1φ to 0φ (%)	5 Mdφ 5.65	4 Mdφ 5.75	Mdφ
d. 0φ to 1φ (%)	5 Q1φ 2.15	4 Q1φ 2.00	Q1φ
e. 1φ to 2φ (%)	5 Q3φ 9.25	5 Q3φ 10.20	Q3φ
f. 2φ to 3φ (%)	6	5	
g. 3φ to 4φ (%)	6	6	
h. 4φ to 6φ (%)	17	17	
i. 6φ to 9φ (%)	20	20	
j. 9φ to 12φ (%)	14	14	
k. >12φ (%)	13	13	
17. SUBSAMPLE DRY WEIGHT (gm.)	22.04	30.00	
18. SPHERICITY (avg.)	Medium Low	Medium Low	
19. ROUNDNESS (avg.)	Subangular	Subangular	
20. SURFACE TEXTURE (avg.)	Polished-Pitted	Polished-Pitted	
21. MINERAL CONTENT (%)			
a. DOMINANT Feldspar	35	35	
b. SECONDARY Quartz	30	30	
c. TERTIARY Rock Fragments	30	30	
d. OTHER Volcanic Glass	Trace	Trace	
e. OTHER Pyrite	Trace	Trace	
f. TRACE (see remarks)	MA, M, P, O 5	MA, M, P, O 5	
22. BIOLOGICAL CONTENT (%)			
a. FORAMINIFERA (see remarks)	C Trace	C Trace	
b. RADIOLARIA	Trace	Trace	
c. DIATOMS	Trace	Trace	
d. OTHER Spicules	Trace	Trace	
e. OTHER			

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231 p., including 24 figs. (TR-82).

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Appendix A contains a tabulation of oceanographic data for 123 stations and Appendix B, the analysis of 48 bottom sediment samples.

1. Antarctic - oceanography
2. Antarctic - bottom sediments
3. Antarctic - ice
4. USS ATKA
5. USS BURTON ISLAND
6. USCGC EASTWIND
7. USS GLACIER

i. Title: Operation DEEP FREEZE 60, 1959 - 1960. Oceanographic Survey Results.

ii. TR-82

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