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TECHNICAL REPORT

OPERATION DEEP FREEZE 62

1961—1962

MARINE GEOPHYSICAL INVESTIGATIONS

Marine Surveys Division

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U. S. NAVAL OCEANOGRAPHIC OFFICE
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ABSTRACT

Results of marine geophysical research during the U. S. Navy operations in support of DEEP FREEZE 62, 1961-1962, are presented. Observations were made along ships' tracks to and from and in the Antarctic. Detailed surveys were conducted in the Ross Sea and Commonwealth Bay from three ice-breakers: USS BURTON ISLAND (AGB-1), USS GLACIER (AGB-4), and USCGC EASTWIND (WAGB-279).

U. S. Naval Oceanographic Office personnel recorded 60 oceanographic stations aboard BURTON ISLAND, GLACIER, and EASTWIND. Of these, 59 were taken in the Ross Sea; the majority were occupied in the western and southern sectors. Station data included vertical distribution of observed temperatures, salinities, and dissolved oxygens. Profiles of the observed physical and chemical properties of the water are presented. Densities, dynamic heights, and sound velocities were calculated by electronic computer for all stations.

Water types in the Ross Sea are discussed. From the data presented, it is evident that warmer water from oceanic depths moves in over the continental shelf and extends as a wide tongue into much of the Ross Sea. The lateral and vertical extent of this warm-water penetration into the Ross Sea during the Austral summer is described.

Measurements of the earth's total magnetic field intensity were recorded over approximately 10,000 miles of track on BURTON ISLAND. Nearly half of the collected data were obtained south of New Zealand. A detailed geomagnetic and bathymetric survey was conducted in Commonwealth Bay, Antarctica. Comparisons of total magnetic intensity and bathymetric data are presented in 34 profiles. Bathymetric and total magnetic intensity contour charts of Commonwealth Bay are included.

A summary and field description of 64 bottom sediment samples collected [illegible] transferred to [illegible] resulting data.

FOREWORD

DEEP FREEZE 62 was the eighth consecutive United States expedition in support of Antarctic research. Personnel of the U. S. Naval Oceanographic Office, supported by the National Science Foundation, conducted marine geophysical research from several icebreakers of TASK FORCE 43. Oceanographic data were obtained in the western and southern Ross Sea and off Hobbs Coast. Geomagnetic and Bathymetric measurements were obtained along USS BURTON ISLAND track. A detailed geomagnetic and Bathymetric survey was made of Commonwealth Bay, Antarctica. The analysis and tabulation of data collected are presented in this report.

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CONTENTS

Page

I. INTRODUCTION

A. General 1
B. Summary of Operations 1
C. General Observational Techniques 1

1. Temperatures 5
2. Salinities 5
3. Dissolved Oxygen 5
4. Dissolved Inorganic Phosphate 5
5. Magnetic Total Intensity 6

D. Methods of Data Presentation 6

1. Profiles, Cross Sections, and Contour Charts 6

E. Participating Personnel 6
F. Other DEEP FREEZE Publications 7

II. OCEANOGRAPHY

A. Water Types of the Ross Sea 8
B. Descriptive Oceanography of the Ross Sea 12
C. Summary and Conclusions 32

III. GEOMAGNETISM

A. Summary of Operations 39
B. Observational Technique 39
C. Compilation of Data 39
D. Survey Results 44

1. Enroute Data 44
2. Commonwealth Bay Survey 79

FIGURES

1. Tracks of Icebreakers Conducting Oceanographic Work on DEEP FREEZE 62 2

2. Oceanographic Stations - DEEP FREEZE 62 4

FIGURES (Cont'd)

Page

3. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations B-13, G-04, G-02, and G-01, Southeastern Ross Sea 9

4. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations B-14, B-15, and B-16, Southeastern Ross Sea 10

5. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-02, West-central Ross Sea 11

6. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations E-02, B-26, B-09, B-08, and B-07, West-central Ross Sea 13

7. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations B-06, B-08, B-10, and E-05, Central Ross Sea . . . 14

8. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations B-07, B-24, B-20, B-19, B-14, B-12, and B-13, South-central Ross Sea 15

9. Cross Section of Temperature, Salinity, and Sigma-t through Stations E-12, E-13, E-14, and E-24, Western Ross Sea 16

10. Cross Section of Temperature, Salinity, and Sigma-t through Stations B-04, E-07, B-26, and E-03, West-central Ross Sea 17

11. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-13, East-central Ross Sea 18

12. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-23, South-central Ross Sea off Ross Ice Shelf 19

13. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Stations G-01 and G-02, Southeastern Ross Sea 20

14. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-16, Southeastern Ross Sea 21

15. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations B-23, B-22, B-17, B-16, and G-01, Along Southeast Face of Ross Ice Shelf 22

FIGURES (Cont'd)

Page

16. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-17, Southeastern Ross Sea 24

17. Profile of Temperature, Salinity, and Sigma-t at Station B-22, Southeastern Ross Sea 25

18. Average Ice Conditions, Ross Sea, 16 through 31 January 1962 . . . 27

19. Surface Temperatures (°C) in Ross Sea, Late January and Early February 1962 28

20. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-10, Central Ross Sea 29

21. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations B-03, E-07, B-09, B-10, and B-11, West-central Ross Sea. 30

22. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-07, South-central Ross Sea 31

23. Cross Section of Temperature, Salinity, Oxygen, and Sigma-t through Stations B-01, B-02, B-03, B-04, and B-05, Western Ross Sea . . . 33

24. Profile of Temperature, Salinity, Oxygen, and Sigma-t at Station B-01, Northwestern Ross Sea 34

25. Cross Section of Temperature, Salinity, and Sigma-t through Stations E-11, E-10, E-09, and E-08, Southwestern Ross Sea 35

26. Profile of Temperature, Salinity, and Sigma-t at Station E-11, Western Ross Sea 36

27. Cross Section of Temperature, Salinity, and Sigma-t through Stations E-20, E-18, E-17, and E-16, Northwestern Ross Sea 37

28. Profile of Temperature, Salinity, and Sigma-t at Station E-22, Northwestern Ross Sea 38

29. Locations of Magnetic Measurement Profiles along BURTON ISLAND Track from Hawaiian Islands to 25° South Latitude 40

30. Locations of Magnetic Measurement Profiles along BURTON ISLAND Track in the Vicinity of New Zealand and Australia 41

FIGURES (Cont'd)

Page

31. Locations of Magnetic Measurement Profiles along BURTON ISLAND Track South of New Zealand 42

32. Locations of Magnetic Measurement Profiles along BURTON ISLAND Track in the Ross Sea Area 43

33. Magnetic Intensity and Bathymetric Profiles between Locations 1 and 2 45

34. Magnetic Intensity and Bathymetric Profiles between Locations 2 and 3 46

35. Magnetic Intensity and Bathymetric Profiles between Locations 4 and 5 47

36. Magnetic Intensity and Bathymetric Profiles between Locations 6 and 7 48

37. Magnetic Intensity and Bathymetric Profiles between Locations 7 and 8 49

38. Magnetic Intensity and Bathymetric Profiles between Locations 8 and 9 50

39. Magnetic Intensity and Bathymetric Profiles between Locations 9 and 10 51

40. Magnetic Intensity and Bathymetric Profiles between Locations 11 and 12 52

41. Magnetic Intensity and Bathymetric Profiles between Locations 12 and 13 53

42. Magnetic Intensity and Bathymetric Profiles between Locations 13 and 14 54

43. Magnetic Intensity and Bathymetric Profiles between Locations 15 and 16, 23 and 24 55

44. Magnetic Intensity and Bathymetric Profiles between Locations 17 and 18, 19 and 20, 21 and 22 56

FIGURES (Cont'd)

Page

45. Magnetic Intensity and Bathymetric Profiles between Locations 25 and 26, 27 and 28 57

46. Magnetic Intensity and Bathymetric Profiles between Locations 29 and 30 58

47. Magnetic Intensity and Bathymetric Profiles between Locations 31 and 32, 32 and 33 59

48. Magnetic Intensity and Bathymetric Profiles between Locations 34 and 35 60

49. Magnetic Intensity and Bathymetric Profiles between Locations 35 and 36, 37 and 38 61

50. Magnetic Intensity and Bathymetric Profiles between Locations 39 and 40 62

51. Magnetic Intensity and Bathymetric Profiles between Locations 41 and 42 63

52. Magnetic Intensity and Bathymetric Profiles between Locations 43 and 44 64

53. Magnetic Intensity and Bathymetric Profiles between Locations 44 and 45, 46 and 47 65

54. Magnetic Intensity and Bathymetric Profiles between Locations 47 and 48, 49 and 50 66

55. Magnetic Intensity and Bathymetric Profiles between Locations 50 and 51, 51 and 52 67

56. Magnetic Intensity and Bathymetric Profiles between Locations 52 and 53, 53 and 54 68

57. Magnetic Intensity and Bathymetric Profiles between Locations 54 and 55 69

58. Magnetic Intensity and Bathymetric Profiles between Locations 55 and 56 70

FIGURES (Cont'd)

Page

59. Magnetic Intensity and Bathymetric Profiles between Locations 56 and 57 71

60. Magnetic Intensity and Bathymetric Profiles between Locations 57 and 58 72

61. Magnetic Intensity and Bathymetric Profiles between Locations 58 and 59 73

62. Magnetic Intensity and Bathymetric Profiles between Locations 60 and 61, 61 and 62 74

63. Magnetic Intensity and Bathymetric Profiles between Locations 62 and 63 75

64. Magnetic Intensity and Bathymetric Profiles between Locations 63 and 64, 65 and 66 76

65. Magnetic Intensity and Bathymetric Profiles between Locations 66 and 67, 68 and 69 77

66. Magnetic Intensity and Bathymetric Profiles between Locations 69 and 70 78

67. Commonwealth Bay Survey Track Chart 80

68. Commonwealth Bay Bathymetric Contour Chart 81

69. Commonwealth Bay Total Magnetic Intensity Contour Chart 82

TABLES

1. Summary of Observations - Operation DEEP FREEZE 62 3

2. Water Types of the Ross Sea 12

APPENDIXES

A. Oceanographic Station Data 83

B. Bottom Sediment Samples Summary and Field Description 151

I. INTRODUCTION

A. General

Operation DEEP FREEZE 62 (1961-1962) marked the eighth consecutive year of U. S. Naval Oceanographic Office participation in marine research in the Antarctic. The National Science Foundation supported the scientific program, and the ships taking part in the operation were assigned to Task Force 43.

B. Summary of Operations

Research was conducted during ships' transits to and from the Antarctic, in the Ross Sea, and along Hobbs, Oates, and George V Coasts. Figure 1 shows the convoy route from New Zealand to McMurdo Sound and the ships' tracks of the three principal survey ships: USS BURTON ISLAND (AGB-1), USS GLACIER (AGB-4), and USCGC EASTWIND (WAGB-279). Supplementary observations also were obtained from USS ATKA (AGB-3), USS ARNEB (AKA-56), USS VANCE (DER-387), USS ELKHORN (AOG-7), and by shorebased personnel from NAF McMurdo and NAVOCEANO aerial Reconnaissance Ice teams. Table 1 summarized these observations by ship or command.

Underway observations included sonic soundings, geomagnetic intensity recordings, ice observations, hourly or half-hourly bathythermographs, continuous sea surface and air temperature recordings, and meteorological and sea and swell observations.

Hove-to observations included geomagnetic intensity recordings, Nansen cast oceanographic stations, coring and grab sample operations, current measurements, plankton and biological tows, and bathythermograph lowerings (Fig. 2).

Special McMurdo Sound observations included current measurements and depth soundings.

Bathythermograph teams, aerographer mates and/or quartermasters took BT's and recorded ice, meteorological, and sea and swell observations.

C. General Observational Techniques

Nansen bottles, with deep sea reversing thermometers attached, were used to observe temperatures and to collect water samples for salinity, dissolved oxygen, and inorganic phosphate determinations. The bottles were placed at international standard depths with additional bottles placed where supplementary information was desired.

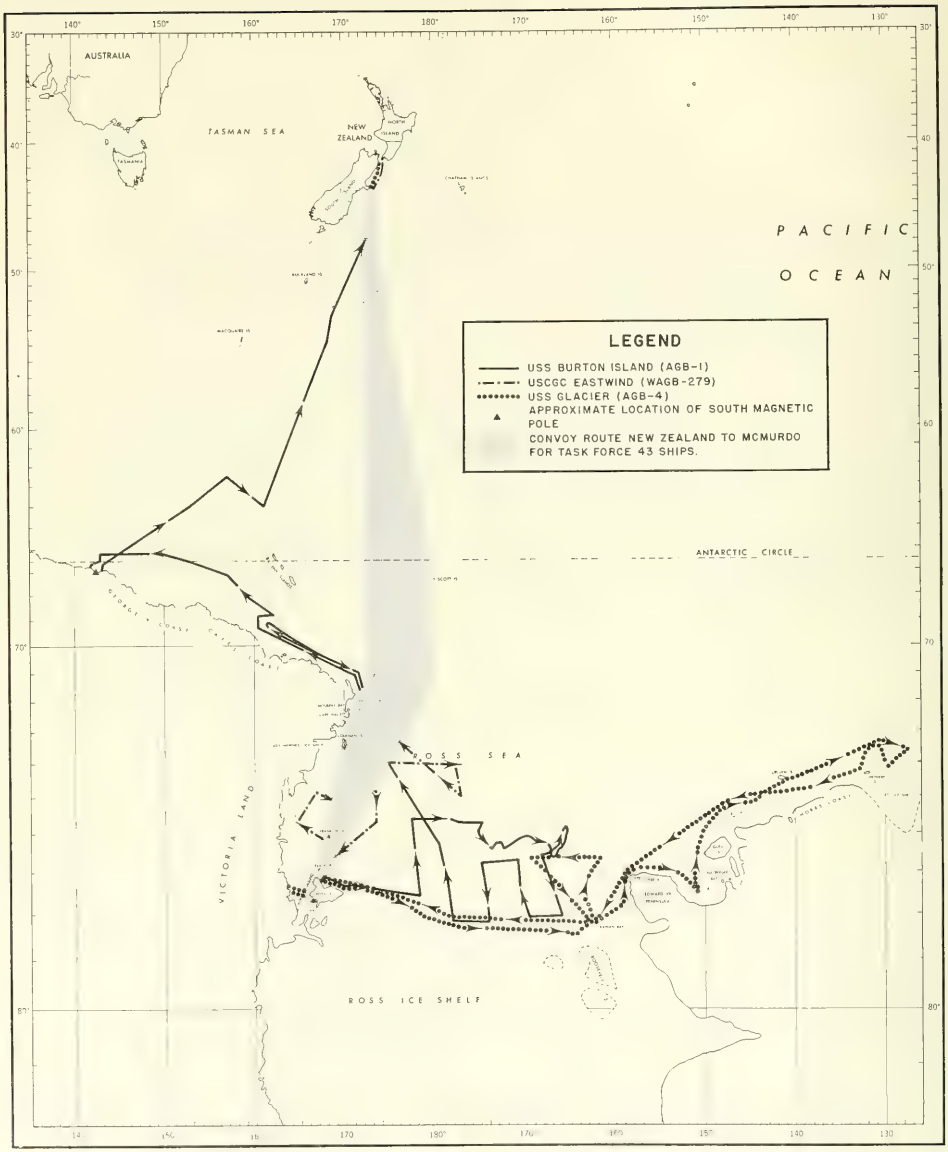

FIGURE 1. TRACKS OF ICEBREAKERS CONDUCTING OCEANOGRAPHIC WORK ON DEEP FREEZE 62

TABLE 1. SUMMARY OF OBSERVATIONS - OPERATION DEEP FREEZE 62

TYPE OF OBSERVATION	BURTON ISLAND	EAST-WIND	GLACIER	ATKA
Oceanographic Stations	26	24	10	-
Serial Salinity	26	24	10	-
Serial Dissolved Oxygen	24	-	5	-
Serial Inorganic Phosphates	25	-	-	-
Bottom Sediment Cores (Collected for F.S.U.)	38	18	2	-
Bottom Samples (Collected for F.S.U.)	6	5	-	-
Plankton Tows (Collected for National Museum)	26	-	-	-
Other Biological Samples (Collected for National Museum)	3	-	-	-
Bathythermograph Casts	1,262	2,346	532	541
Miles of Continuous Sea Surface Temperature Obs.	480	-	-	-
Sea and Swell Observations	600	825	**	**
Miles of Sonic Soundings	17,615	36,500	14,490	**
Miles of Geomagnetic Observations	9,400	-	-	-
Miles of Ice Track	6,000	5,000	**	**
Hours of Off-shore Current Obs. (Two Sites)	-	-	14	-

Meteorological Data Sent to National Weather Records Center, Asheville, N.C.

ADDITIONAL OBSERVATIONS

	BTs	Miles of Soundings
ARNEB	76	7,030
VANCE	65	3,220
ELKHORN	-	10,140

NAVOCEANO shorebased personnel obtained approximately 60 hours of current observations at each of four sites in McMurdo Sound and made 108 lead-line soundings.

A NAVOCEANO Aerial Ice Reconnaissance Team made 202 hours of Ice Observations.

** Not Reported

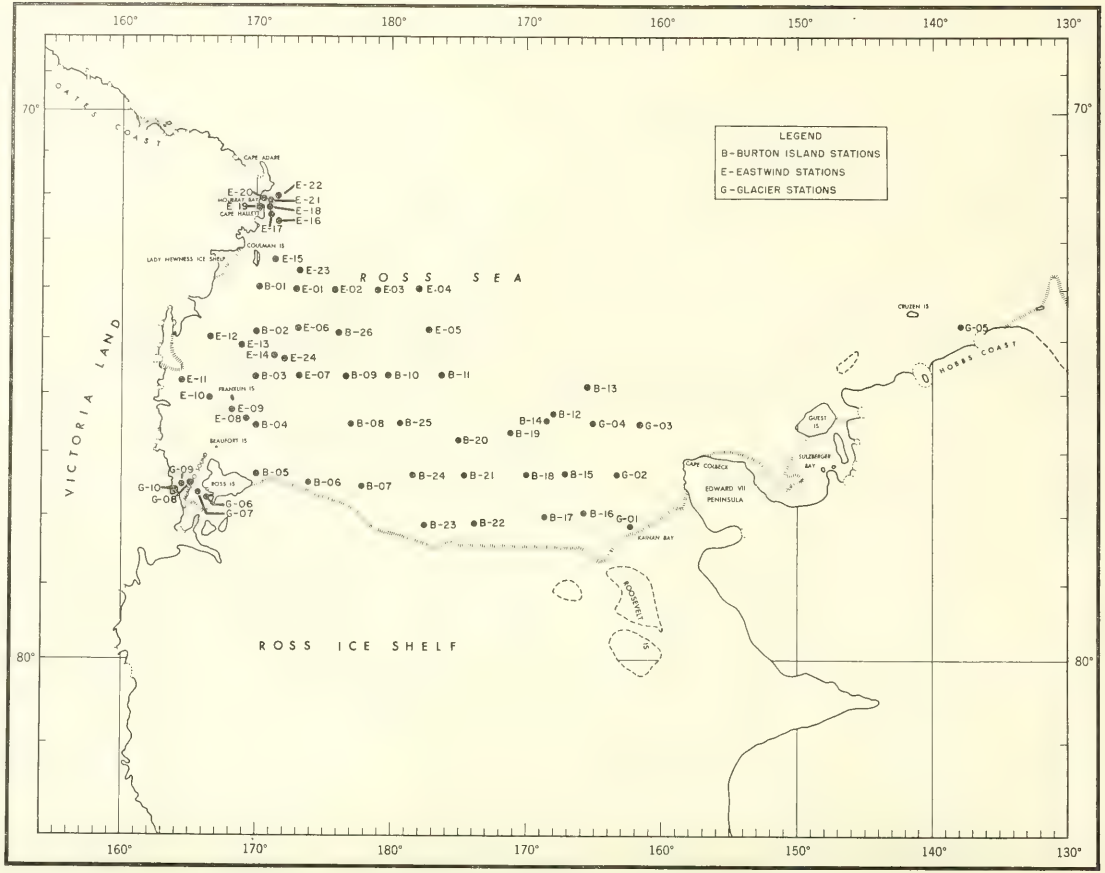

FIGURE 2. OCEANOGRAPHIC STATIONS - DEEP FREEZE 62

Physical and chemical oceanographic data were evaluated, coded, and forwarded to the National Oceanographic Data Center (NODC) for processing by electronic computer. Machine computations provided temperature, salinity, and dissolved oxygen interpolation at standard depths plus dynamic depth calculations, sigma-t, and sound velocity[1]. These data are presented in Appendix A.

Bottom sediments were collected with Phleger and Hydroplastic (PVC) corers. All samples obtained were shipped to the Department of Geology, Florida State University, Tallahassee, Florida, for analyses and publication of the resulting data. The locations and field descriptions of the bottom sediment samples collected are given in Appendix B.

1. Temperatures

Paired protected reversing thermometers were used to observe in situ water temperatures. Paired readings were averaged unless protected thermometers differed by 0.06°C. or more; the reading from the thermometer considered most reliable then was used, or the point was faired from adjacent values. This evaluation of reliability was based on the thermometer's previous history and the credibility of the individual temperature when plotted with better documented adjacent values.

Unprotected reversing thermometers paired with protected reversing thermometers were used to calculate thermometric depth values. Depth of sample then was determined using thermometric depths and/or observed wire angles.

2. Salinities

Salinities analyzed aboard ship were determined by means of a Wenner-Smith-Soule conductivity bridge. Samples returned to the Naval Oceanographic Office were analyzed with an inductively-coupled salinometer. Double determinations were made with the conductivity bridge unless differences exceeded .02‰ when a third determination was made. Single determinations were made with the inductively-coupled salinometer.

3. Dissolved Oxygen

Dissolved oxygen content was determined aboard ship by titration according to the Jacobsen-Robinson-Thompson modification of the Winkler Method. All oxygen samples were analyzed within 4 hours of the time the sample was taken.

4. Dissolved Inorganic Phosphate

Dissolved inorganic phosphate samples were collected at 25 stations. The analyses were determined with a Model B Beckman Spectrophotometer using the method derived by the Canadian Fisheries Research Board. The sensitivity of the

[1] WILSON, W. D. Equation for the speed of sound in sea water, Journal of the Acoustical Society of America, vol. 32, no. 10, pp. 1357, Oct. 1960.

equipment, as used aboard ship, was such that the results were considered questionable; these data are not included in this report.

5. Magnetic Total Intensity

A nuclear resonance total intensity magnetometer, with the sensing unit towed 500 feet astern, was used to record total intensity. Data measurements were recorded once every 2 seconds of time on a strip-chart recorder. Total intensity data records were scaled and converted to values in gammas (1 gamma equals 10^{-5} oersted).

D. Methods of Data Presentation

1. Profiles, Cross Sections, and Contour Charts

Selected cross sections and profiles of observed characteristics are presented for the Ross Sea portion of the oceanographic operations. Temperature, salinity, and dissolved oxygen, and computed values of sigma-t are shown.

Profiles of total magnetic intensity and bathymetry are shown together for direct comparison. In addition, contour charts of bathymetry and total magnetic intensity are presented for the detailed survey of Commonwealth Bay.

E. Participating Personnel

The following scientific personnel from the U. S. Naval Oceanographic Office participated in the field investigations during Operation DEEP FREEZE 62:

James A. Ballard	Oceanographer	USS BURTON ISLAND
Gordon D. Burton	Magnetician	USS BURTON ISLAND
Richard H. Evans	Oceanographer	USS BURTON ISLAND USCGC EASTWIND
Louis J. Francavillese	Oceanographer	USS BURTON ISLAND USCGC EASTWIND
Larry K. Lepley	Bathymetrist	USS BURTON ISLAND
James J. McConnell Jr.	Bathymetrist	USS BURTON ISLAND
Robert F. Obrochta	Magnetician	USS BURTON ISLAND
Lloyd W. Wilson	Oceanographer	USS GLACIER

F. Other DEEP FREEZE Publications (U. S. Naval Oceanographic Office Reports)

Report No.	Short Title	Ship(s)
H.O. 16331	Pre-DEEP FREEZE (1954-1955)	USS ATKA
TR-33	DEEP FREEZE I (1955-1956)	USS GLACIER USS EDISTO
TR-29	DEEP FREEZE II (1956-1957)	USS ATKA USS STATEN ISLAND USCGC NORTHWIND USS GLACIER
TR-77*	DEEP FREEZE III (1957-1958)	USS ATKA USS GLACIER USS BURTON ISLAND USCGC WESTWIND
TR-78*	DEEP FREEZE IV (1958-1959)	USS GLACIER USCGC NORTHWIND USS EDISTO USS STATEN ISLAND
TR-82	DEEP FREEZE 60 (1959-1960)	USS ATKA USS BURTON ISLAND USCGC EASTWIND USS GLACIER
TR-105	DEEP FREEZE 61 (1960-1961)	USS BURTON ISLAND USCGC EASTWIND USS GLACIER

* Final Report not published. Data are available from the National Oceanographic Data Center.

II. OCEANOGRAPHY

by K. Newsom, L. Francavillese, and J. Tierney

A. Water Types of the Ross Sea

During DEEP FREEZE 62, the majority of the oceanographic work was accomplished in the Ross Sea. For the purposes of this report, the Ross Sea is defined as that portion of the great southern ocean that is set off between Cape Adare on the northwest and Cape Colbeck on the southeast, with an additional assignment of most of the oceanic area northward to about 70° South Latitude. Data were collected during January and February; therefore, this discussion deals only with the summer period.

In general, there are three identifiable water types in the Ross Sea: (1) Upper Water, (2) Circumpolar Water, (3) Shelf Water.

(1) Upper Water is practically homogeneous in winter. During the summer, the temperature of the upper 100 to 200 meters is raised by the increased solar radiation, and the salinity is reduced by the associated input of melt water. This warmer, less-saline layer is termed Antarctic Surface Water by Deacon. The deeper portion of the Upper Water is not similarly affected, and it more or less maintains winter conditions all year around; hence, its designation Winter Water by Mosby. Upper Water is a consistent feature of the water column seaward of the continental slope and is present over the continental shelf in the southeastern Ross Sea (Figs. 3 and 4).

The term Antarctic Surface Water is extended to include the warmer, less-saline layer that develops at the surface in areas where Winter Water is not found.

(2) Circumpolar Water is a continuation southward of Antarctic Deep Water; it has a core of maximum salinity slightly greater than 34.70‰ at about 2000 meters below the surface and a temperature minimum warmer than + 0.50°C. This deep layer rises near the Antarctic continent where it becomes known as Circumpolar Water, but it still retains the basic characteristics of Deep Water. At Station B-13 (Fig. 3) just off the edge of the continental shelf, the core of the Circumpolar Water lies at about 500 meters depth. A portion of this water mass moves up the continental slope and extends as a wide tongue-like wedge, becoming locally modified as it penetrates into the Ross Sea. It is altered from above by mixing with Antarctic Surface Water and, to a lesser extent, from below by the cold, saline Shelf Water over which it moves (Figs. 3 through 5). In the southeast sector of the Ross Sea, the intrusive Circumpolar mass is modified most by contact and mixing with Winter Water. The core of this mass, i.e. the zone of maximum temperature and minimum oxygen, can be traced by oxygen minima to within about 50 meters of the surface at Station B-02 in the western Ross Sea (Fig. 5). Additional data are

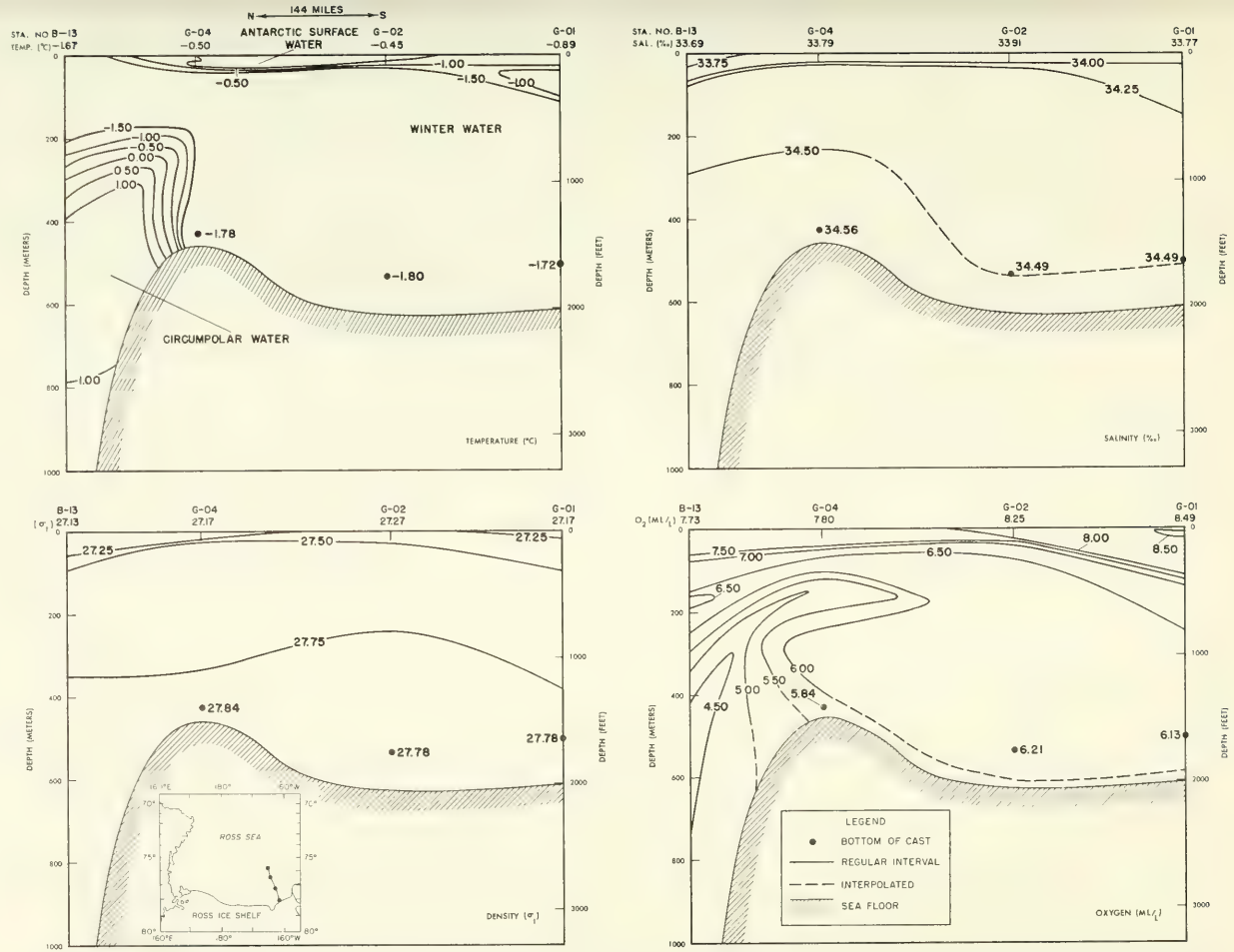

FIGURE 3. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS B-13, G-04, G-02, and G-01, SOUTHEASTERN ROSS SEA

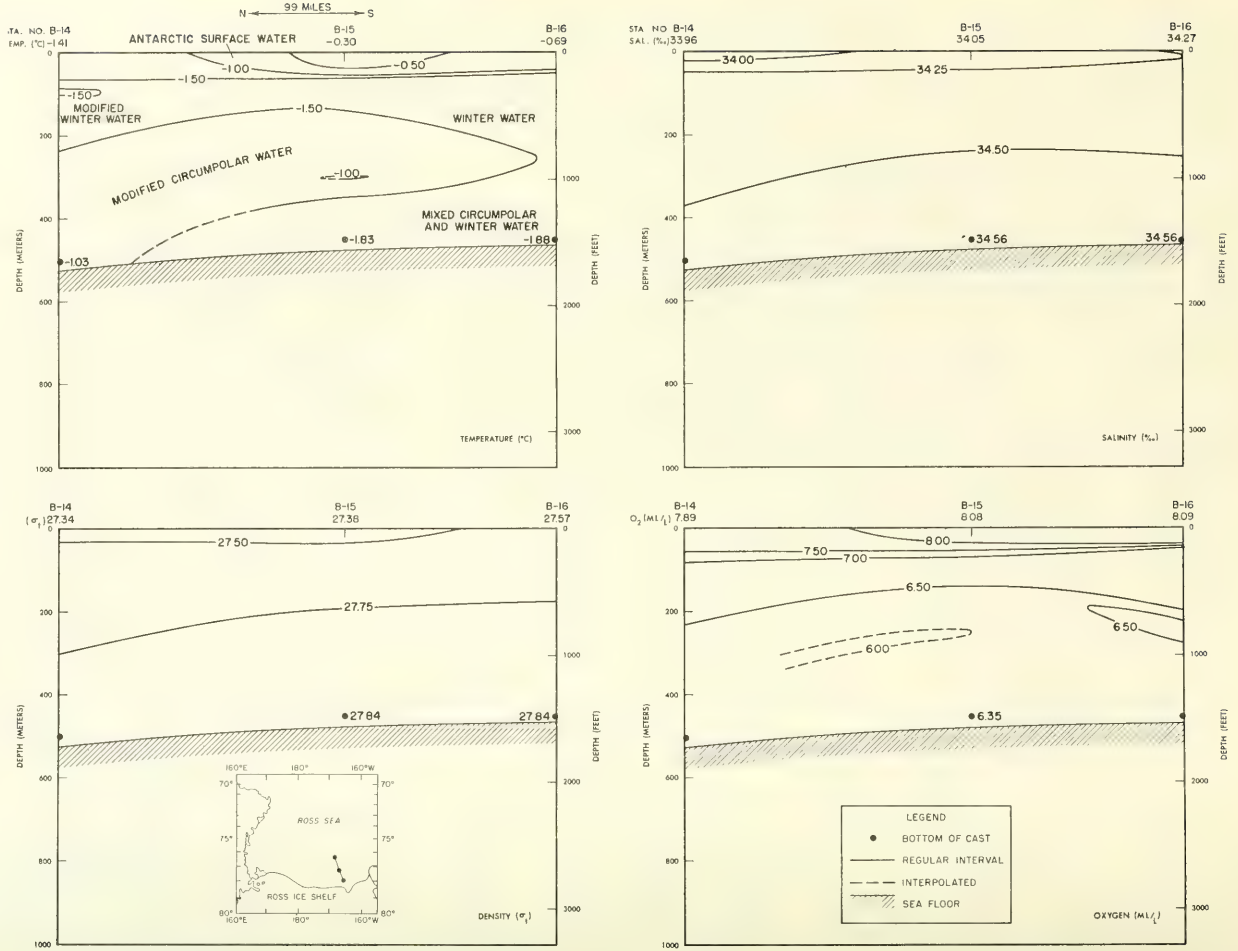

FIGURE 4. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS B-14, B-15, and B-16, SOUTHEASTERN ROSS SEA

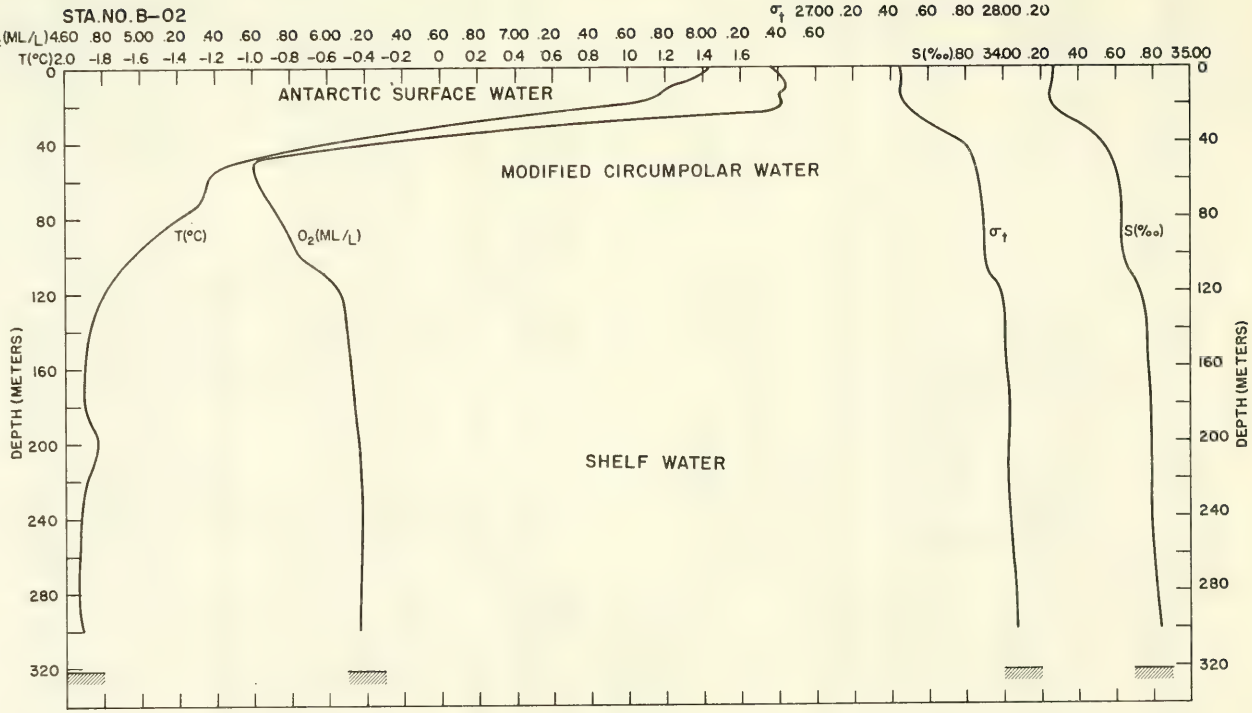

FIGURE 5. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-02, WEST-CENTRAL ROSS SEA

needed to determine accurately the direction and plane of movement of this warm intrusion into the Ross Sea. Present data indicate a southwest and westward movement. Bottom relief without doubt exerts a major influence.

The extent of this penetration was not well established prior to this survey. Present data indicate that in modified form, at least, it invades much of the Ross Sea and can be detected as far south as the western and central portions of the Ross Ice Shelf (Figs. 6, 7, and 8), and westward approaching Victoria Land Coast (Fig.9).

(3) Shelf Water is the coldest, most saline, and most dense water mass in the Ross Sea. It comprises the major portion of the water column in the west and southwest regions, generally becoming a lesser component seaward (Figs. 10 and 7).

Table 2 lists the water types as they exist in the Ross Sea and presents their identifying properties.

TABLE 2. WATER TYPES OF THE ROSS SEA

	Temperature (°C)	Salinity (‰)	Sigma-t	Oxygen (ml/l)
Upper Water				
Antarctic Surface Water	-1.75 - +1.50	33.50 - 34.50	27.00 - 27.65	7.50 - 8.50
Winter Water	-1.70 - -1.90	34.15 - 34.45	27.50 - 27.75	6.30 - 6.80
Circumpolar Water	+1.50 - +0.50	34.60 - 34.75	27.70 - 27.90	4.30 - 4.80
Shelf Water	-1.80 - -2.05	34.75 - 35.00	28.00 - 28.20	6.00 - 6.50

This proposed classification provides a helpful guide in the study of oceanography in this area. Transition zones exist between all the various water types. The change may be great over a short vertical distance, as for example that of the temperature and the oxygen between Winter and Circumpolar Water (Fig. 11). Changes also may be gradual like the salinity change between modified Circumpolar Water and Shelf Water (Fig. 12).

B. Descriptive Oceanography of the Ross Sea

A resident mass of Upper Water occupies the southeastern Ross Sea. A layer of Antarctic Surface Water extends downward to about 30 to 100 meters. Below this layer there is a well-defined transition into Winter Water which extends to bottom. The layer of Antarctic Surface Water at Station G-01 near the Ross Ice Shelf becomes thinner to the north and west at Stations G-02 and B-16 (Figs. 13, 14, and 15). Circumpolar Water intrudes and mixes with Winter Water near the

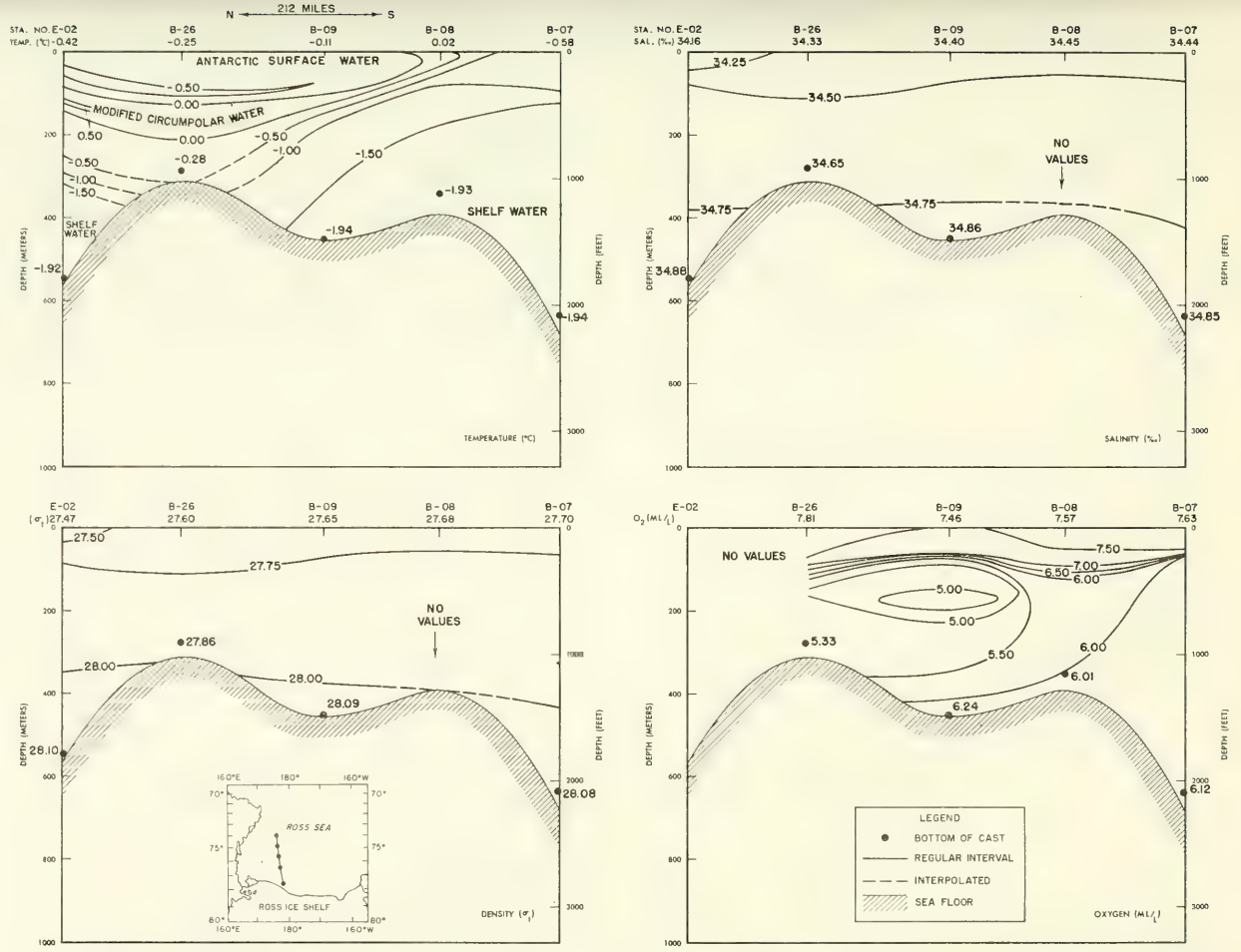

FIGURE 6. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS E-02, B-26, B-09, B-08, AND B-07, WEST-CENTRAL ROSS SEA

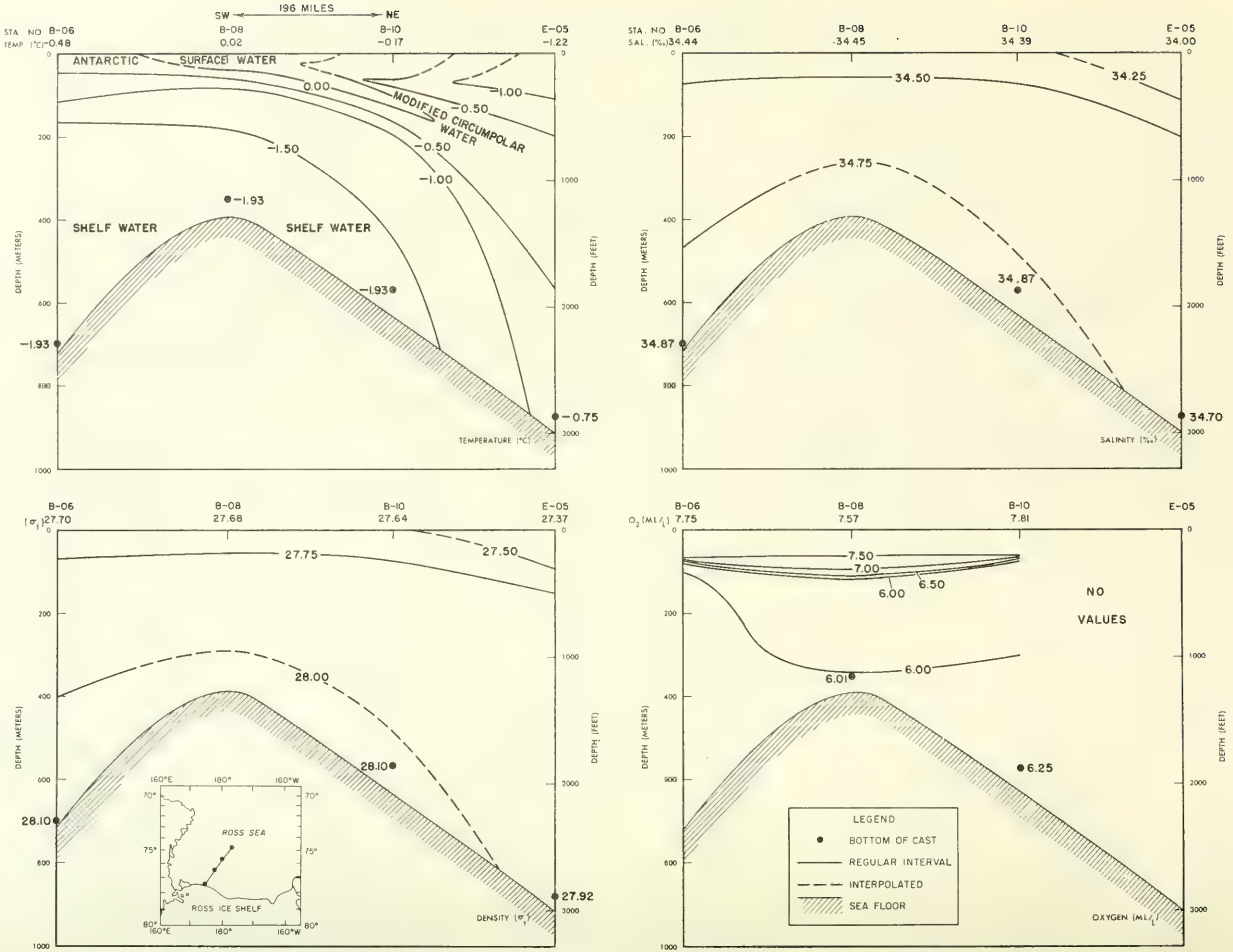

FIGURE 7. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS B-06, B-08, B-10, and E-05, CENTRAL ROSS SEA

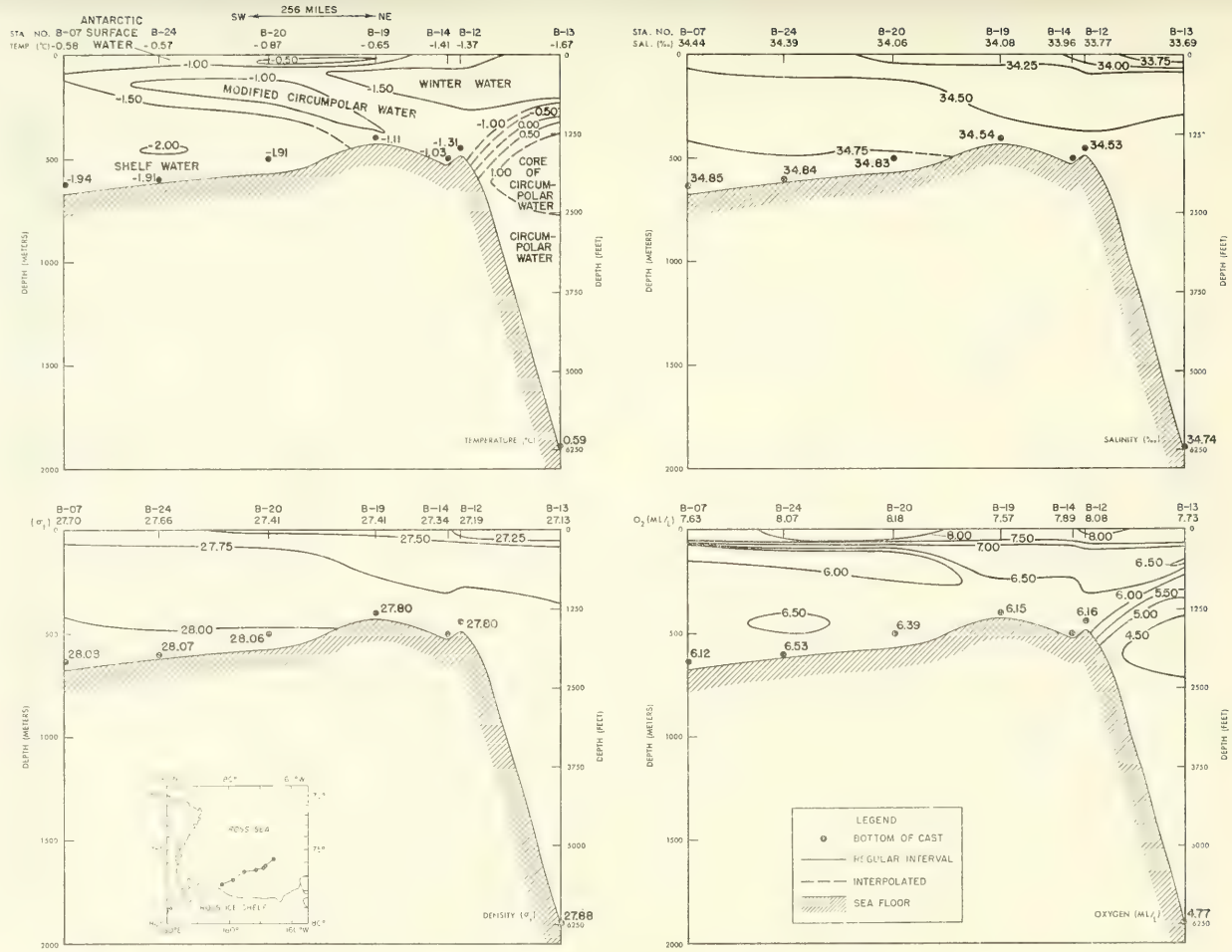

FIGURE 8. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS B-07, B-24, B-20, B-19, B-14, B-12, AND B-13, SOUTH-CENTRAL ROSS SEA

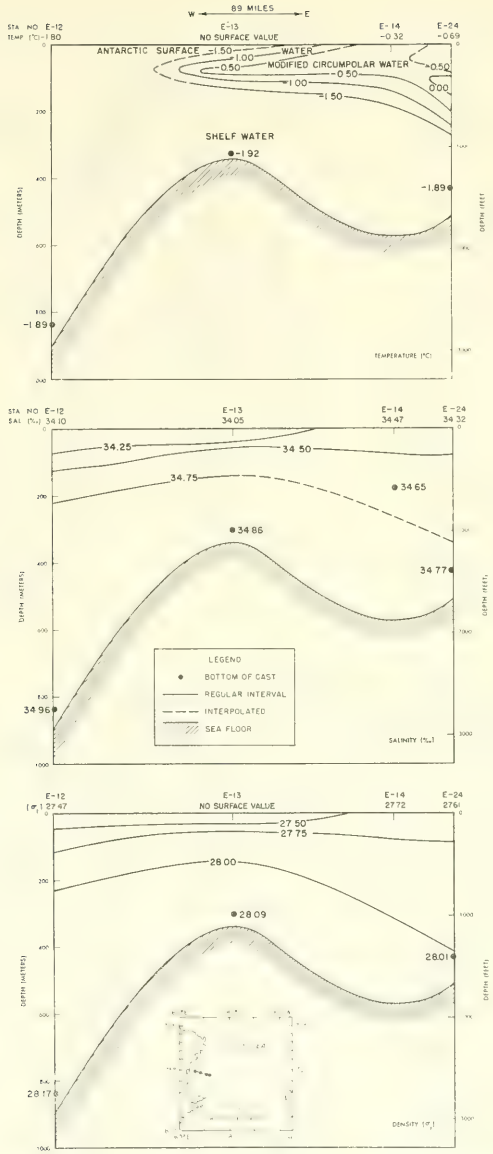

FIGURE 9. CROSS SECTION OF TEMPERATURE, SALINITY, AND SIGMA-T THROUGH STATIONS E-12, E-13, E-14, and E-24, WESTERN ROSS SEA

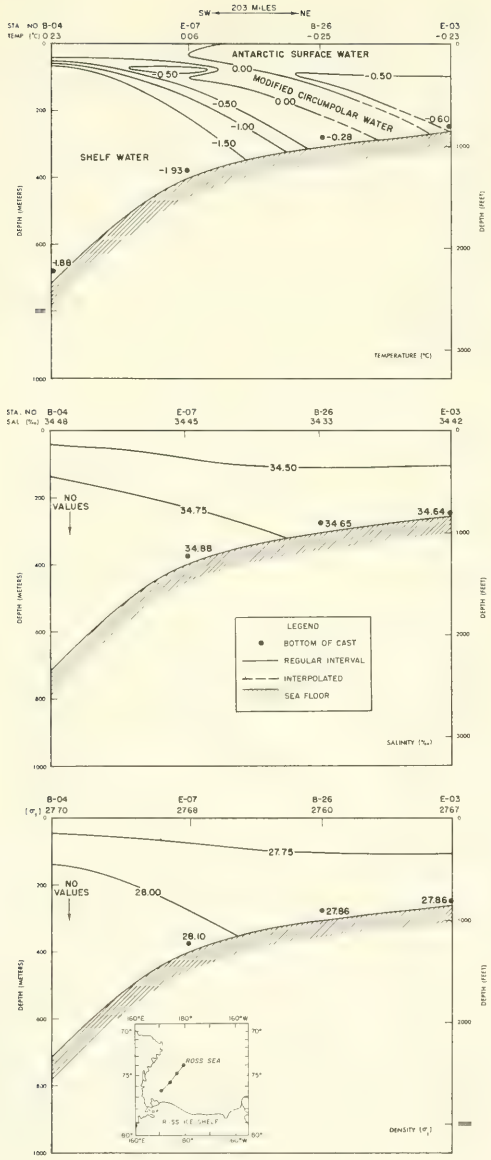

FIGURE 10. CROSS SECTION OF TEMPERATURE, SALINITY, AND SIGMA-T THROUGH STATIONS B-04, E-07, B-26, and E-03, WEST-CENTRAL ROSS SEA

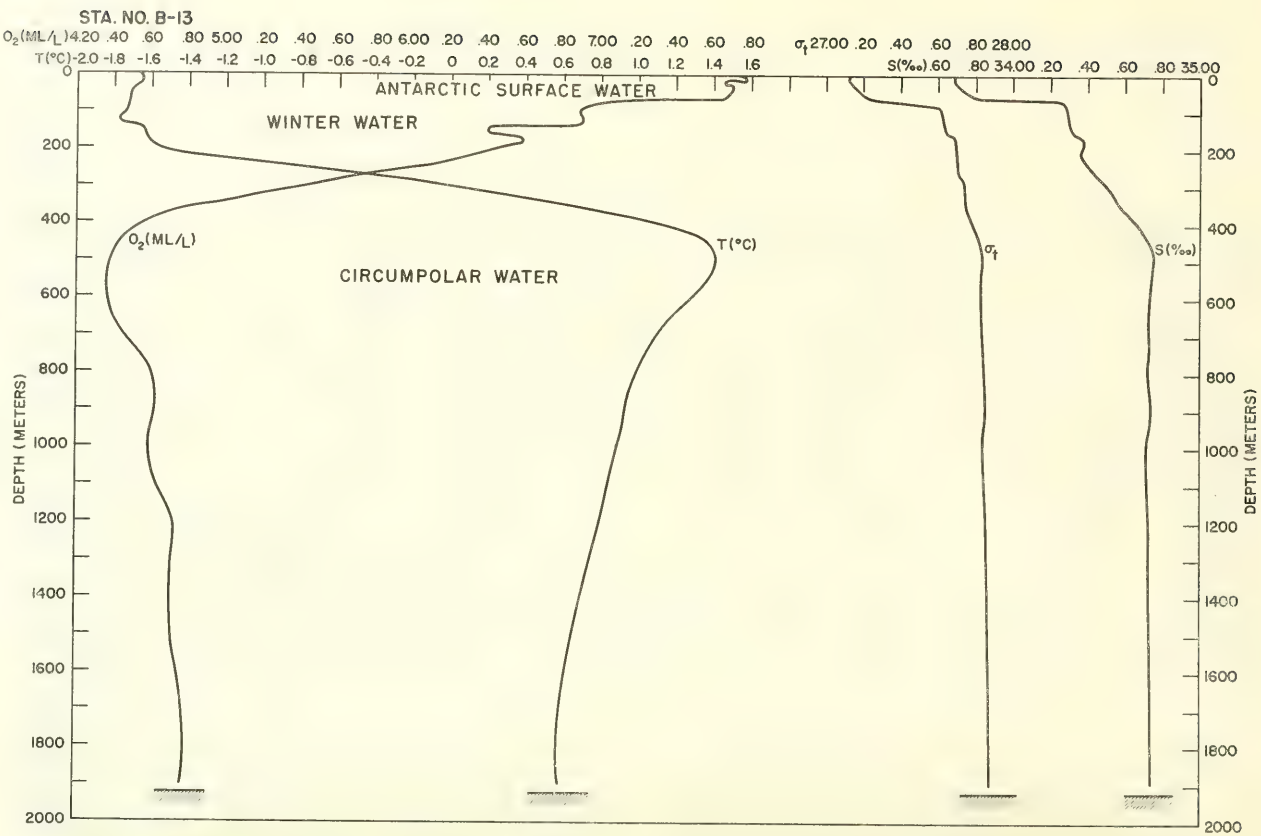

FIGURE 11. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-13, EAST-CENTRAL ROSS SEA

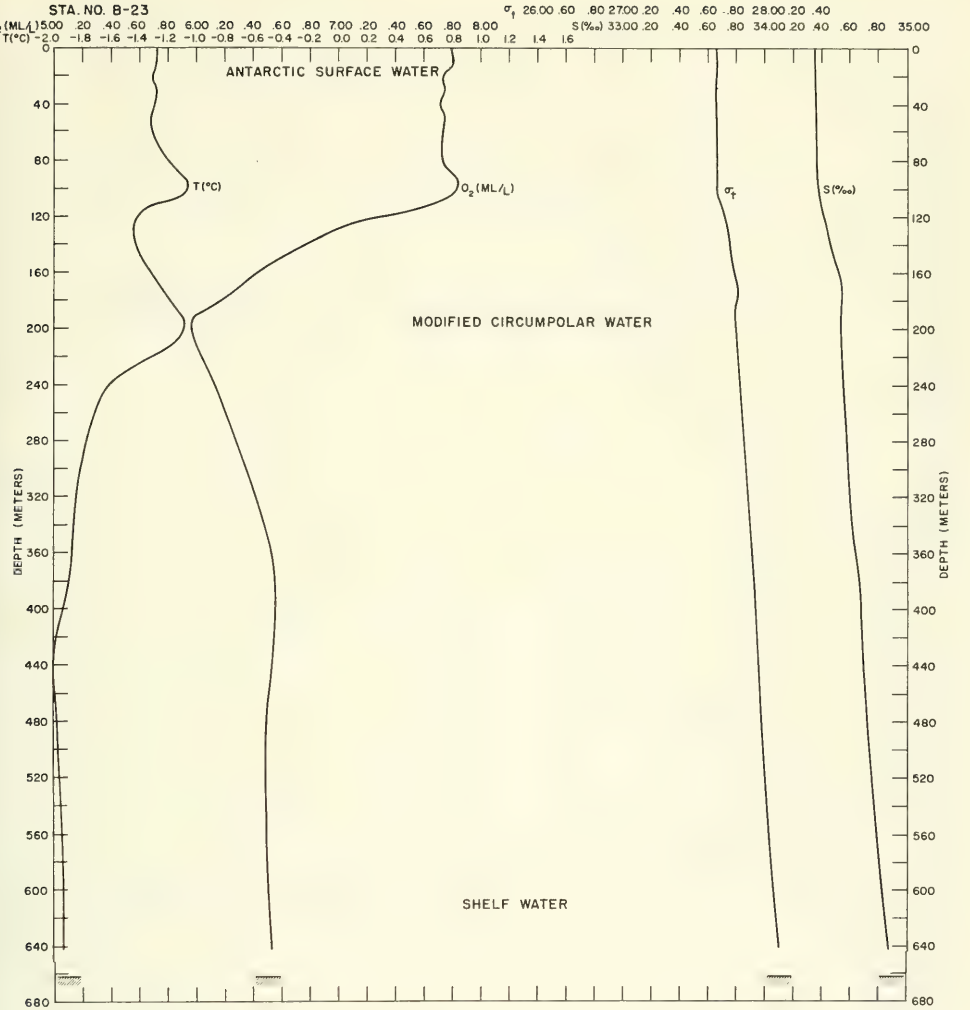

FIGURE 12. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-23, SOUTH-CENTRAL ROSS SEA OFF ROSS ICE SHELF

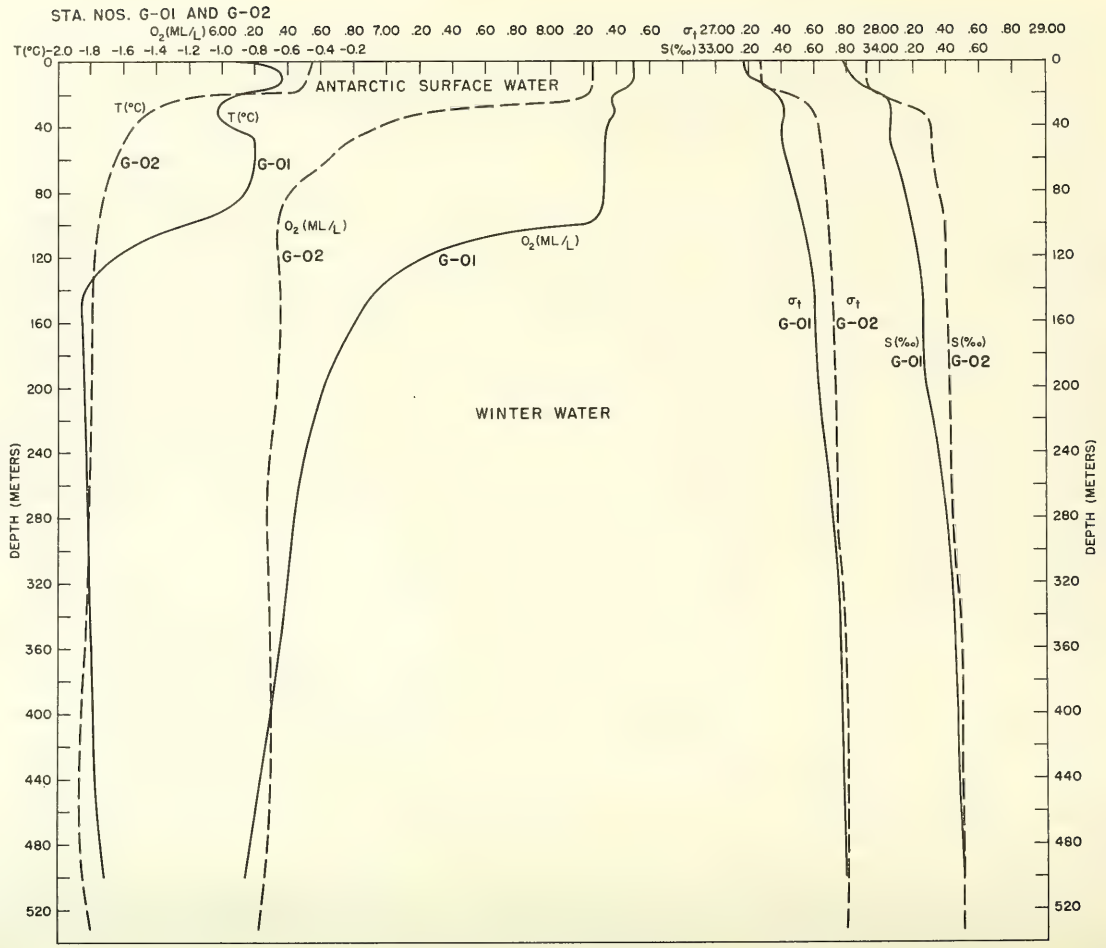

FIGURE 13. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATIONS G-01 AND G-02, SOUTHEASTERN ROSS SEA

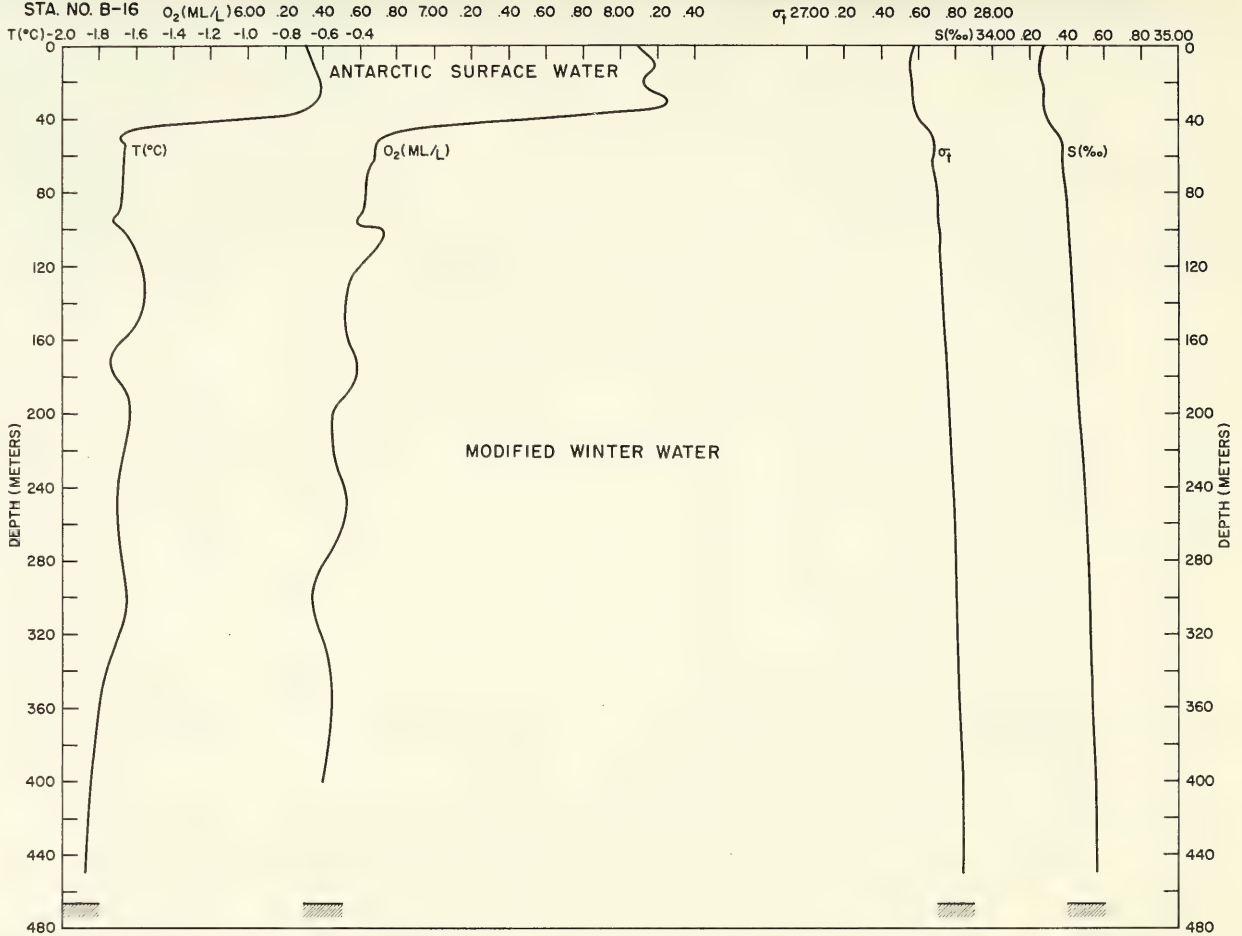

FIGURE 14. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-16, SOUTHEASTERN ROSS SEA

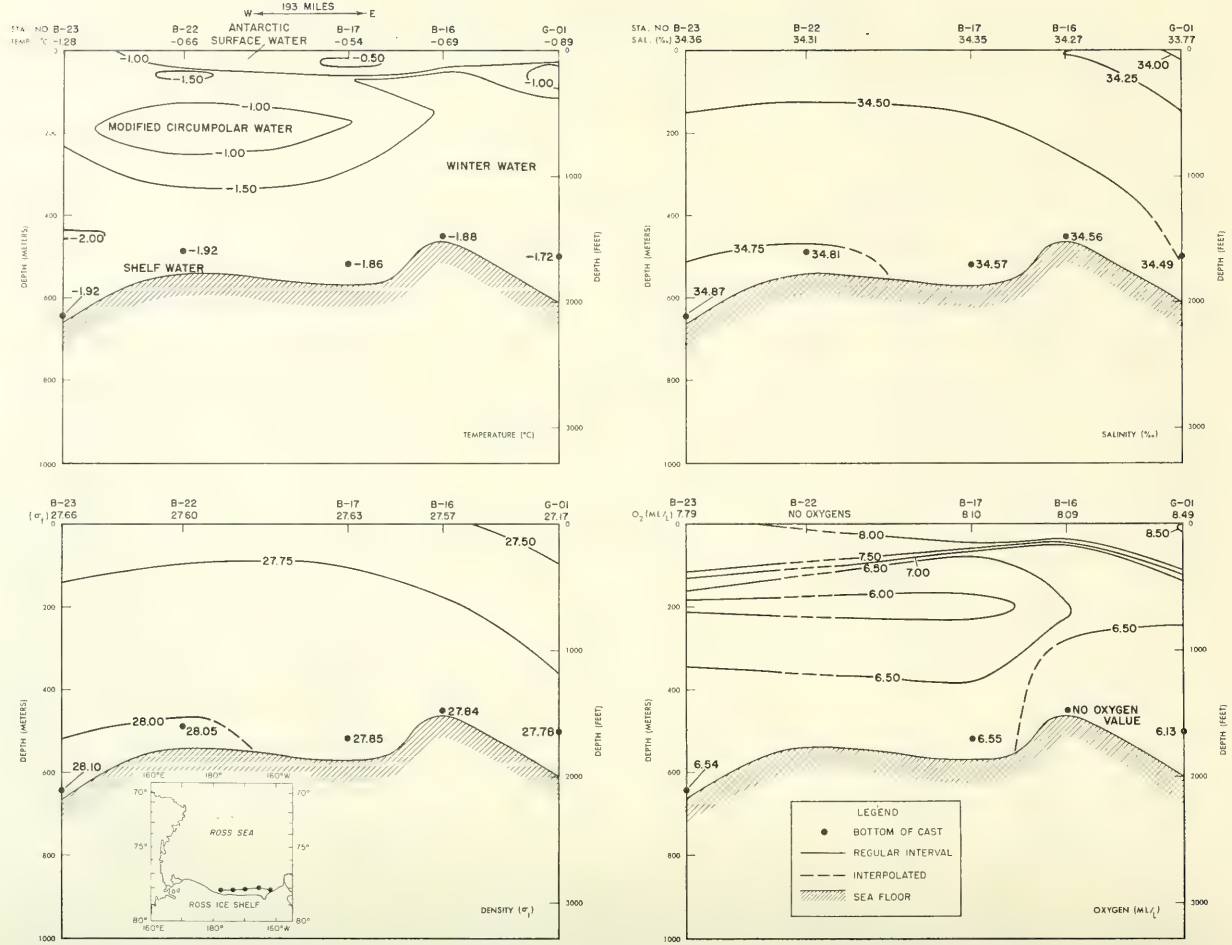

FIGURE 15. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS B-23, B-22, B-17, B-16, AND G-01, ALONG SOUTHEAST FACE OF ROSS ICE SHELF

edge of the continental shelf; this is best demonstrated by temperature and oxygen values in Figure 3.

The profiles for Station B-13 (Fig. 11) present graphically the characteristic inverse relationship between the dissolved oxygen and the temperature curves, which is typical of Circumpolar Water. Also shown are the great differences in oxygen values between Upper Water and Circumpolar Water. Less extreme are the differences between Antarctic Surface Water and Winter Water.

At Station B-16 (Fig. 15), influence of modified Circumpolar Water is evident at about 100 to 170 meters in the predominantly Winter Water column. Slightly increased temperature and reduced oxygen values at that level are evidence of this influence. Modified Circumpolar Water becomes apparent to the west along the Ross Ice Shelf. Strong evidence of this intrusion appears at Station B-17 (Figs. 15 and 16). Here, a well-defined Antarctic Surface Water layer is underlaid by a thin vestige of Winter Water (Fig. 16). This is borne out by a great decrease in temperature and a slight decrease in salinity values at about 50 meters. Below this depth to about 260 meters, Circumpolar Water has its greatest influence where the temperature and salinity values increase and the oxygen is at its minimum. All values indicate decreased Circumpolar Water influence below about 300 meters, but intermediate salinity values throughout the lower portion of the water column show the effect of Circumpolar Water intrusion.

This penetration of warmer, oxygen-poor Circumpolar Water is present as a tongue at about 200 to 300 meters (Figs. 4 and 15), with an eastward limit near Station B-16. A vertical discontinuity of temperature and dissolved oxygen exists at this site, with unmodified Winter Water extending eastward. Below the modified Circumpolar Water, Shelf Water occurs near bottom, and all data indicate that contact and mixing of Shelf Water, modified Circumpolar Water, and Winter Water take place at the deeper levels near Station B-16. West of this at station B-22 (Fig. 17), Antarctic Surface Water extends downward to about 40 meters; below this depth, Winter Water is altered by Circumpolar Water. The core of influence is at about 190 to 200 meters. Below this level, colder more dense Shelf Water is present at about 420 meters and deeper.

Figure 8 depicts a typical summertime structure of the water masses by a series of stations extending from the edge of the continental shelf southwestward almost to the Ross Ice Shelf. Circumpolar Water rises over the continental shelf edge under the Winter Water that is present offshore and extends beneath Antarctic Surface Water almost as far south as the Ross Ice Shelf. Mixing between the intrusive mass and the Winter Water takes place along the contact zone, and further mixing of now modified Circumpolar Water occurs throughout the southern penetration under Antarctic Surface Water, with accompanying changes in temperature and salinity

FIGURE 16. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-17, SOUTHEASTERN ROSS SEA

FIGURE 17. PROFILE OF TEMPERATURE, SALINITY, AND SIGMA-T AT STATION B-22, SOUTHEASTERN ROSS SEA

values. Relatively little exchange takes place between the modified Circumpolar Water and the Shelf Water it overrides as the intrusive layer extends southward over the continental shelf.

Westward of this cross section and entirely over the continental shelf (Fig. 7), further effects of the spreading modified Circumpolar Water and mixed Upper Water are indicated. Modified Circumpolar Water rises to the south and mixes with Antarctic Surface Water, forming a warm layer at Station B-08 where insolation resulted in relatively high temperatures at the sea surface.

Another series of stations occupied farther to the west but still in the central Ross Sea (Fig. 6) demonstrates at Station B-08 the surface effect of the mixing of Antarctic Surface Water and Circumpolar Water. Because of this mixing, surface salinity values in this area are the highest in the Ross Sea. It is significant, too, that the ice disappears earliest where this warmer-water mass has the greatest surface expression (Figs. 18 and 19). This accounts for the previously unexplained situation of the Ross Sea opening up "internally", with an ice-free area appearing first in the west-central Ross Sea and growing asymmetrically outward as summer progresses. Near bottom modified Circumpolar Water mixed with Shelf Water merges to Shelf Water, as indicated by the several criteria.

Offshore at Station E-05 (Fig. 7), Upper Water has mixed with Circumpolar Water along their common boundary. As was mentioned earlier, little mixing has taken place between Shelf Water and the warmer, less-saline Circumpolar Water. The effects of mixing between adjacent layers are shown at Station B-10 (Fig. 20) which is on the East-West and North-South cross sections in this area (Figs. 21 and 7). The profiles at Station B-10 indicate the Antarctic Surface Water extending from the surface to vestigial Winter Water at about 50 meters, which was admixed from below with modified Circumpolar Water. From about 80 to 200 meters, modified Circumpolar Water exists with characteristic temperature-oxygen values. A mixed zone extends downward from about 200 to 410 meters, with Winter Water influencing and cooling the mass. The knees in the temperature and oxygen curves and the changes in slope of the salinity and sigma-t curves provide evidence that at about 480 meters pure Shelf Water was present, extending to bottom.

The southern limit of modified Circumpolar Water extends to very near the Ross Ice Shelf at Station B-07 (Figs. 22 and 6). Oxygen values present the strongest evidence, however, temperature, salinity, and sigma-t values also show, that modified Circumpolar Water with a core at about 75 meters has influenced the Antarctic Surface Water above it. A mixed layer with predominantly modified Circumpolar Water extends from 80 to about 200 meters, mixing below this level with Shelf Water. Effects of modified Circumpolar Water are not apparent below about 300 meters.

FIGURE 18. AVERAGE ICE CONDITIONS, ROSS SEA, 16 THROUGH 31 JANUARY 1962

FIGURE 19. SURFACE TEMPERATURES (°C) IN ROSS SEA, LATE JANUARY AND EARLY FEBRUARY 1962

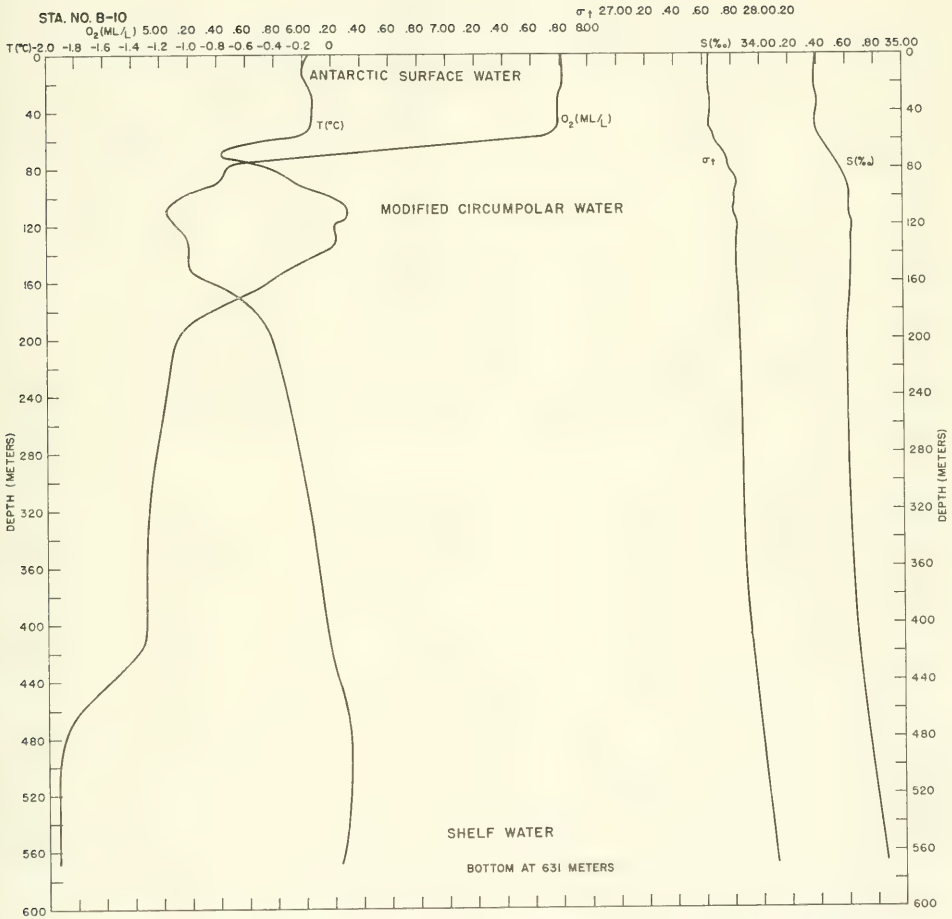

FIGURE 20. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-10, CENTRAL ROSS SEA

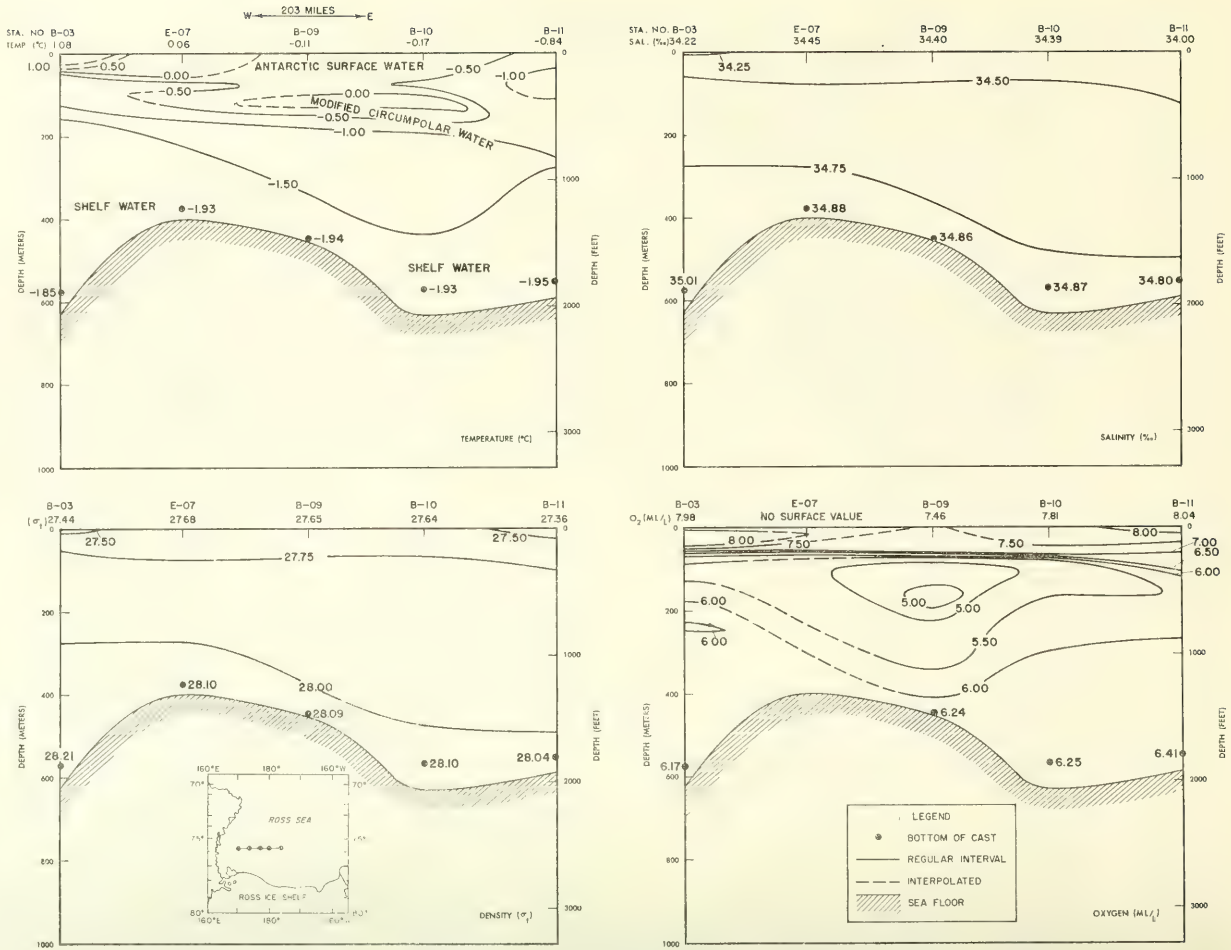

FIGURE 21. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS B-03, E-07, B-09, B-10, AND B-11, WEST-CENTRAL ROSS SEA

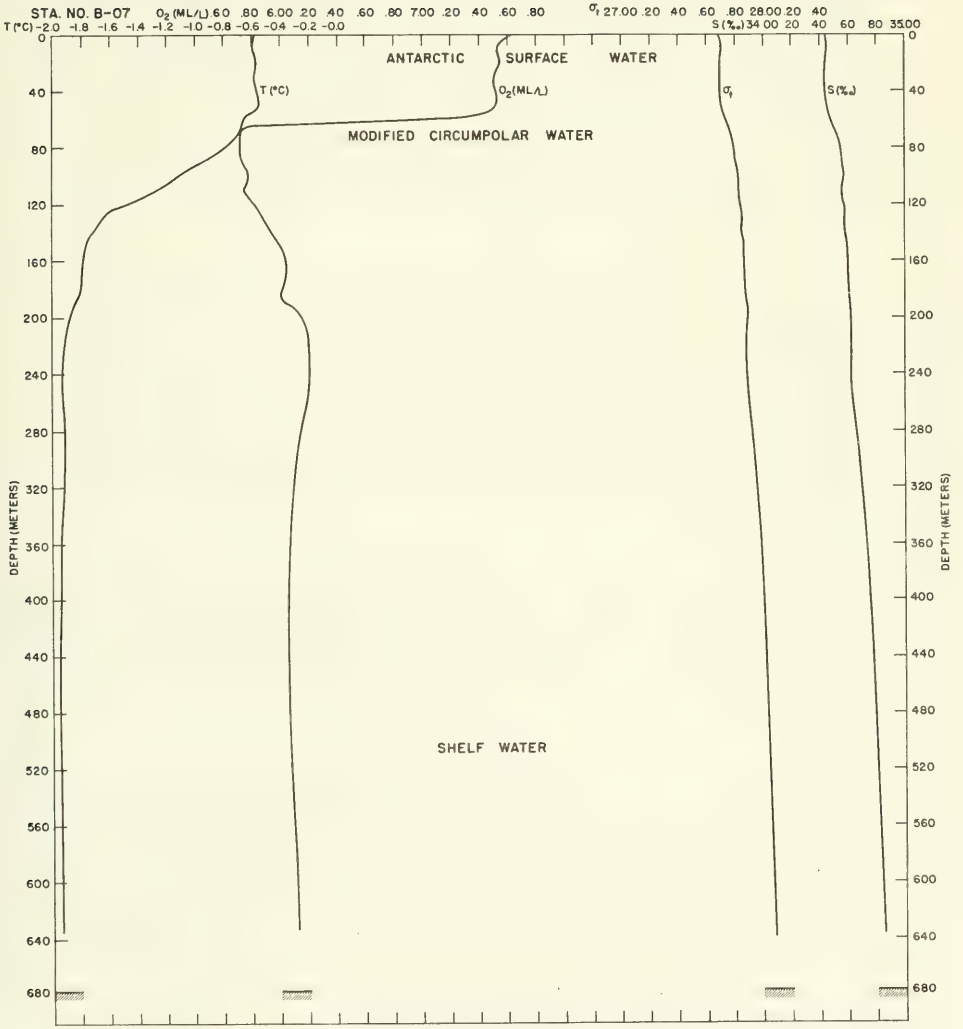

FIGURE 22. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-07, SOUTH-CENTRAL ROSS SEA

The north-south cross section in the western Ross Sea, south to Ross Island, shows a thin layer of modified Circumpolar Water mixed with Antarctic Surface Water above and Shelf Water below (Fig. 23). Circumpolar Water influence has a weak core at about 50 to 100 meters depth centered on Station B-03. Below this level, a mixed layer of modified Circumpolar Water and Shelf Water lies over Shelf Water along this entire cross section. A thin layer of Antarctic Surface Water about 30 meters thick appears at the northern-most station, B-01 (Fig. 24). A slight temperature-oxygen indication of Circumpolar Water influence is centered at 75 meters. Below about 100 to 120 meters, oxygen and temperature show what may be effects of mixing of modified Circumpolar Water residuum with Shelf Water. Moreover, based on salinity-temperature criteria, pure Shelf Water is present from about 90 meters to bottom.

Along the Victoria Land Coast, a layer of Antarctic Surface Water 50 to 120 meters thick lies over Shelf Water (Fig. 25). Station E-11 at the western end of this series shows the seasonal effect of surface cooling (Fig. 26), extending downward about 30 meters into Antarctic Surface Water. This water persists to about 50 meters and mixes with Shelf Water below this depth. Farther north along the coast, modified Circumpolar Water extends westward but does not reach the coast (Fig. 9). It modifies both the Antarctic Surface Water and the underlying Shelf Water. At Station E-12 nearest shore, salinity and sigma-t values indicate the presence of Antarctic Surface Water, and Shelf Water extends from about the 200-meter level to bottom.

The Circumpolar Water influence is recognizable off Cape Adare (Figs. 27 and 28). Southeast of Cape Hallett, the Circumpolar Water core lies at about 100 meters, and is mixed with Antarctic Surface Water above and Shelf Water below. Toward the coast, modified Circumpolar Water influence on the Antarctic Surface Water is evident based on the temperature and salinity data.

C. Summary and Conclusions

From the data presented, it is evident that warmer water from oceanic depths moves in over the continental shelf and extends as a wide tongue into much of the Ross Sea. The lateral and vertical extent of this warm-water penetration into the Ross Sea during the Austral summer now has been generally described. The intrusive mass brings with it temperatures warm enough to influence significantly ice conditions in summer. The water types of the Ross Sea have been defined further and their structure, distribution, and limits have been discussed.

It is anticipated that additional data may permit a more comprehensive interpretation and analysis of Antarctic oceanography.

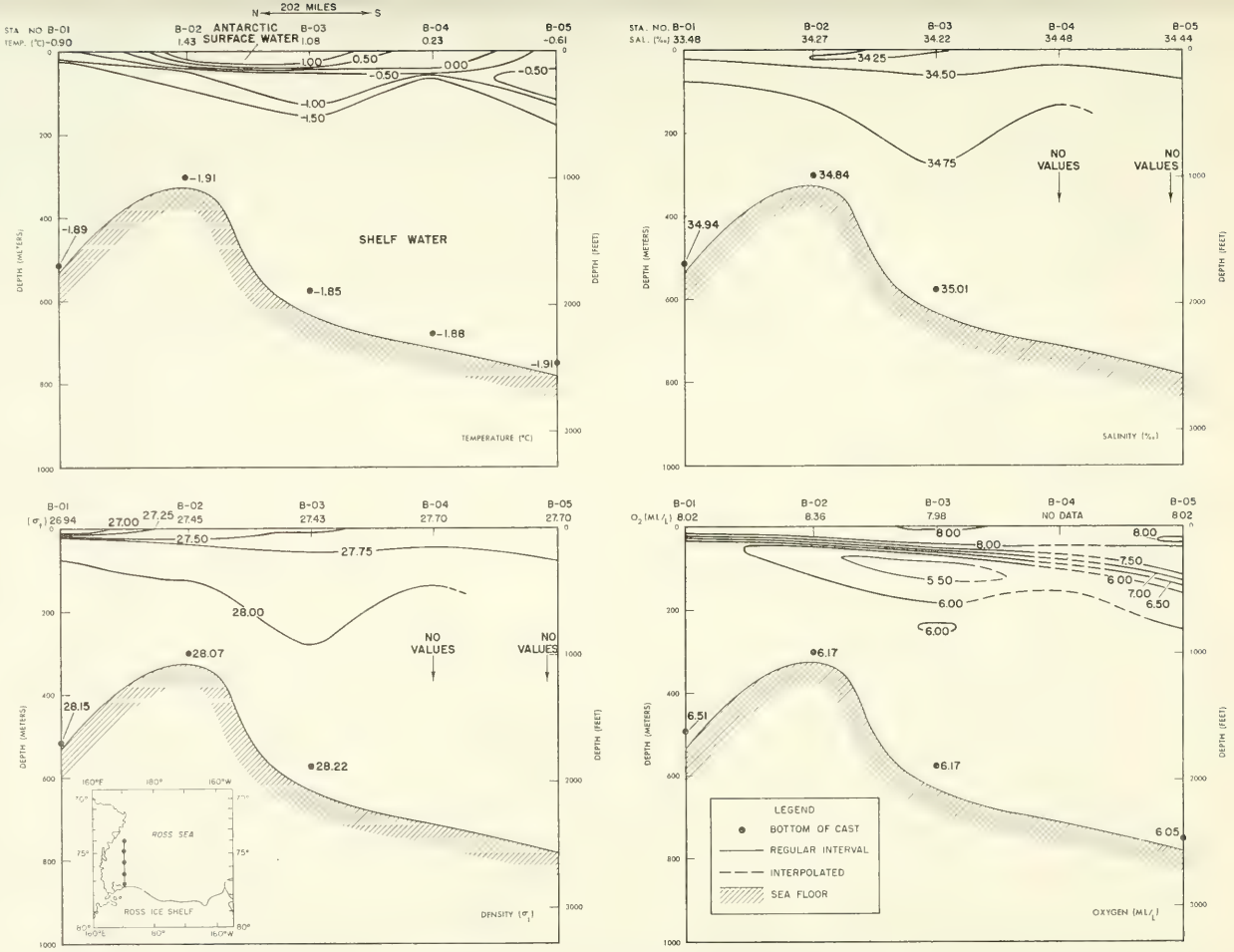

FIGURE 23. CROSS SECTION OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T THROUGH STATIONS B-01, B-02, B-03, B-04, AND B-05, WESTERN ROSS SEA

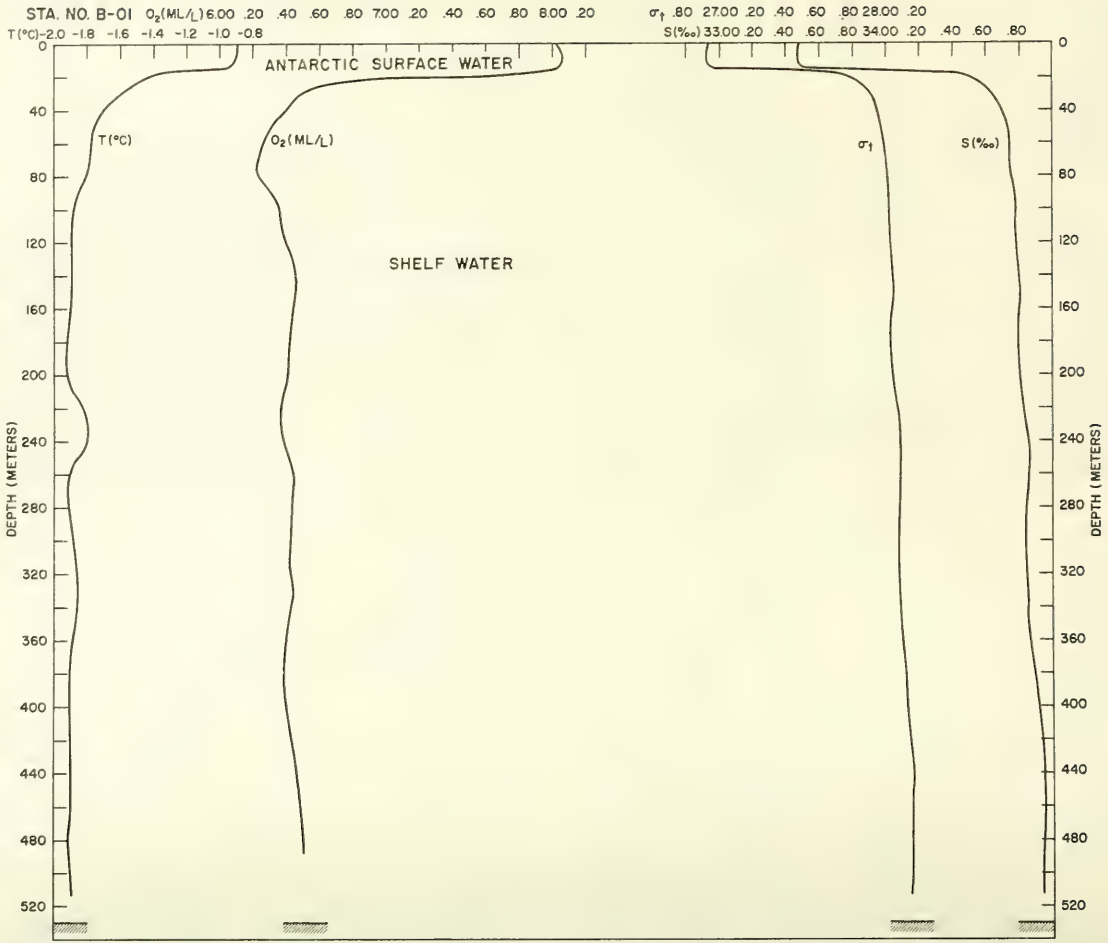

FIGURE 24. PROFILE OF TEMPERATURE, SALINITY, OXYGEN, AND SIGMA-T AT STATION B-01, NORTHWESTERN ROSS SEA

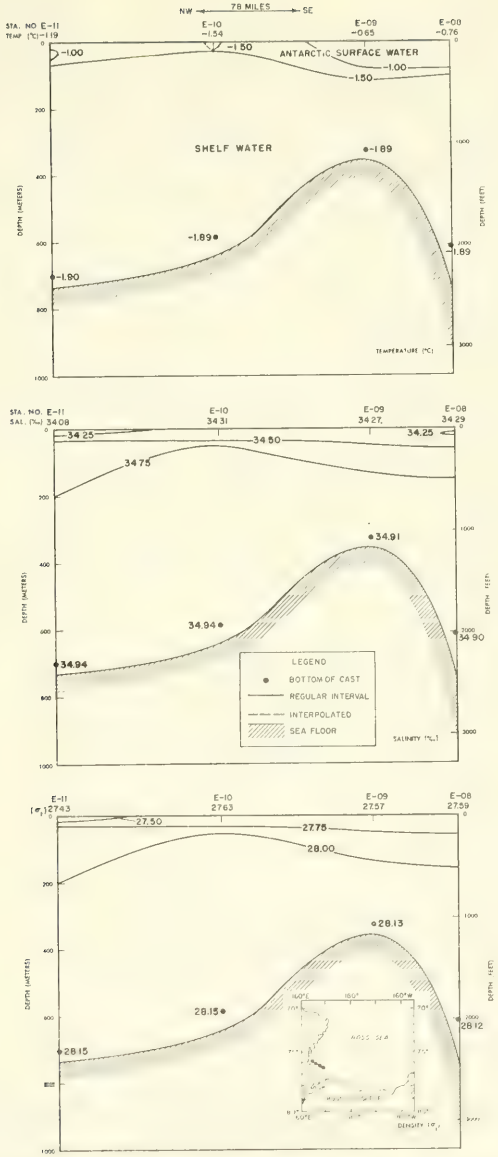

FIGURE 25. CROSS SECTION OF TEMPERATURE, SALINITY, AND SIGMA-T THROUGH STATIONS E-11, E-10, E-09, AND E-08, SOUTHWESTERN ROSS SEA

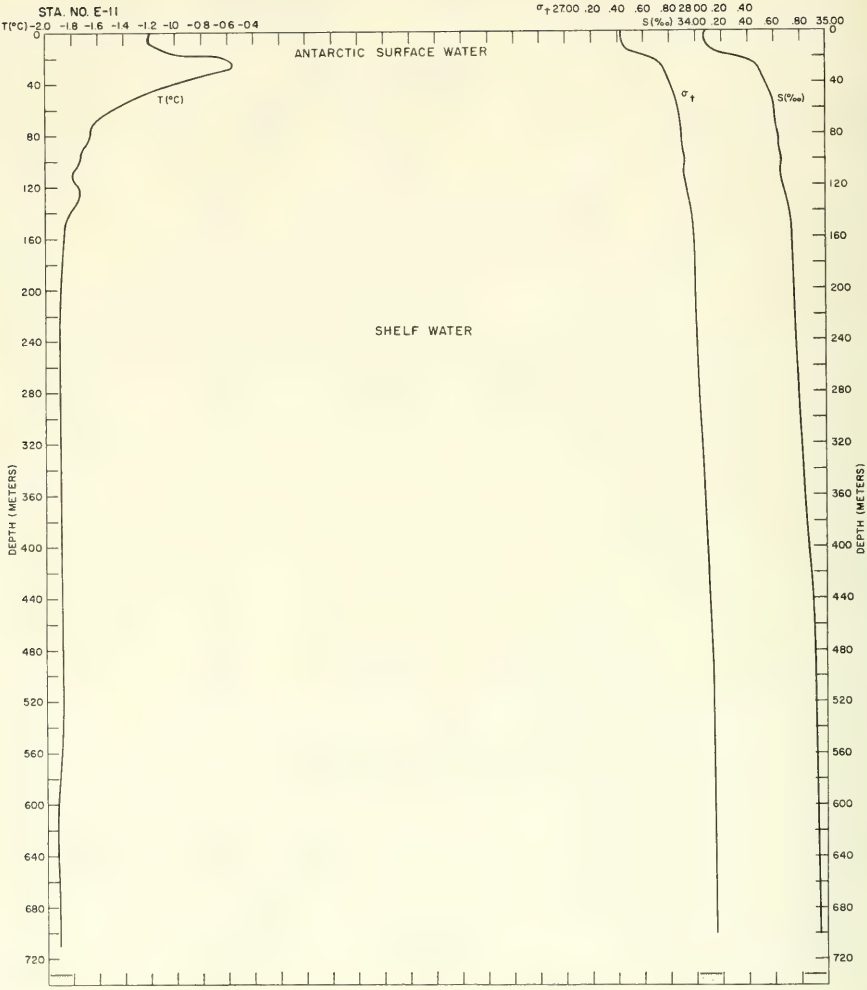

FIGURE 26. PROFILE OF TEMPERATURE, SALINITY, AND SIGMA-T AT STATION E-11, WESTERN ROSS SEA

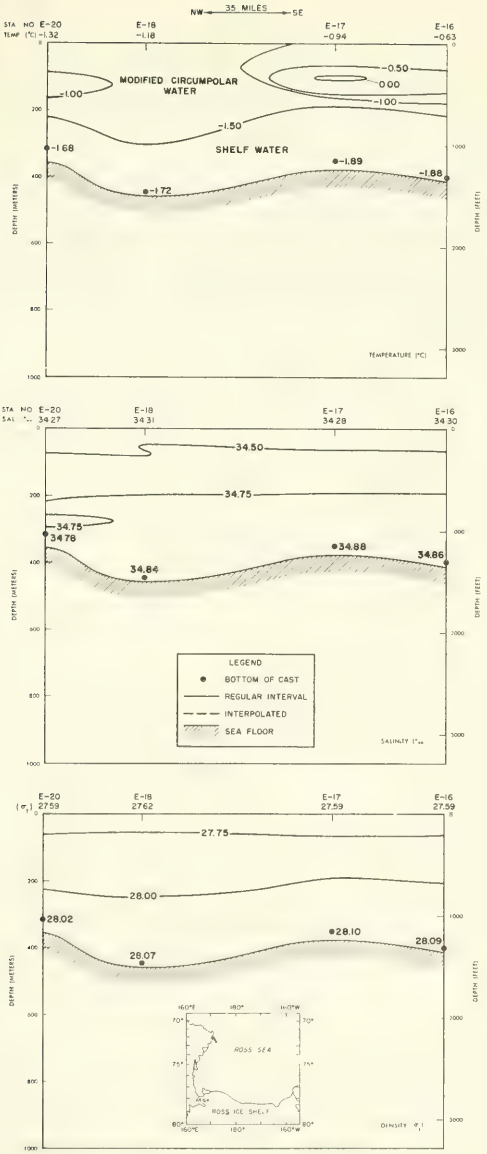

FIGURE 27. CROSS SECTION OF TEMPERATURE, SALINITY, AND SIGMA-T THROUGH STATIONS E-20, E-18, E-17, and E-16, NORTHWESTERN ROSS SEA

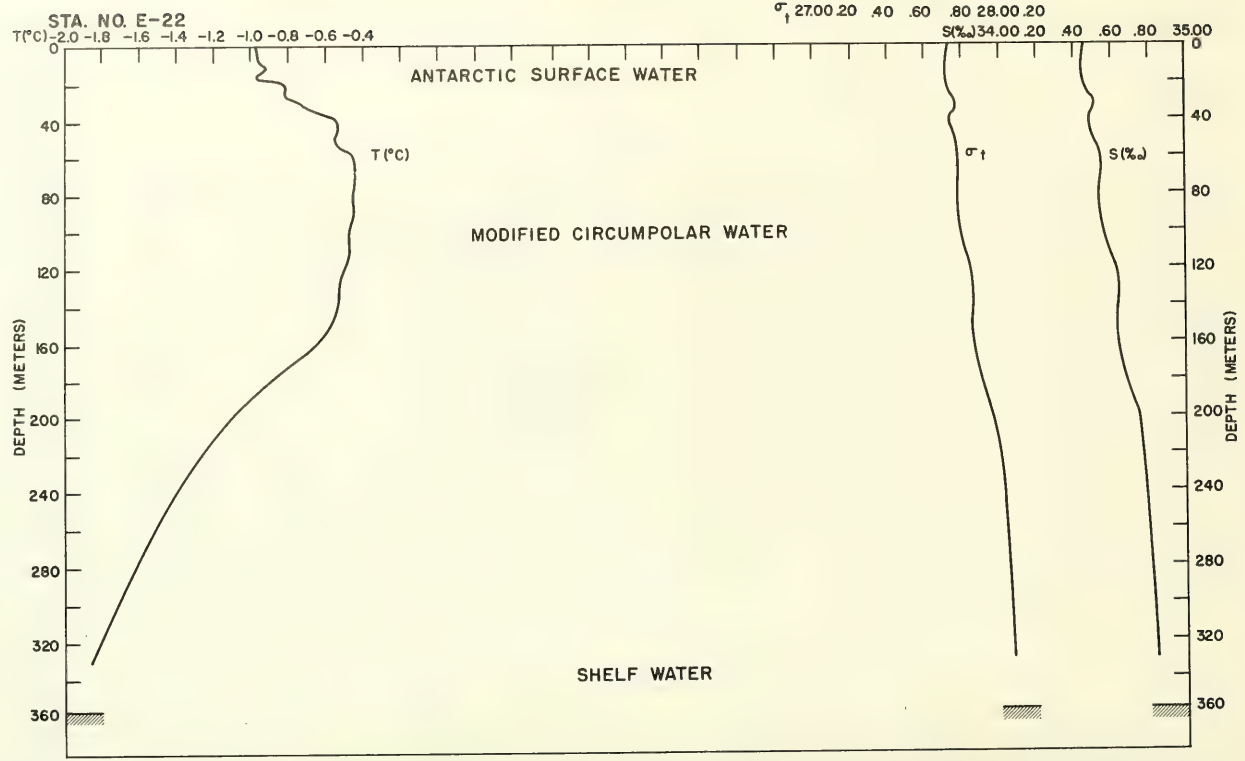

FIGURE 28. PROFILE OF TEMPERATURE, SALINITY, AND SIGMA-T AT STATION E-22, NORTHWESTERN ROSS SEA

III. GEOMAGNETISM
by G. Burton and R. Obrochta

A. Summary of Operations

Measurements of the earth's total magnetic field intensity over approximately 10,000 miles of track were recorded on USS BURTON ISLAND. Most of the data were collected in unsurveyed waters while the ship was performing its primary supporting mission. (Index charts of the ship's track with corresponding profile numbers are shown as Figures 29, 30, 31, and 32.) Approximately half of the collected data were obtained south of New Zealand, and the results include a detailed survey of Commonwealth Bay, Antarctica, in the general vicinity of the south magnetic pole.

Ship positions were determined by radar, celestial navigation, and dead reckoning. When the ship was within radar range of known landmarks, position-fixing errors were less than 1 mile; otherwise, positioning errors varied from 5 to 50 miles depending on weather conditions. The survey of Commonwealth Bay was conducted using radar fixes on surrounding ice walls.

B. Observational Technique

Total magnetic intensity measurements were made with nuclear resonance magnetometers. Two units, a modified Varian model 4901 and a Varian model 4914, were utilized. To reduce the effect of the ship's magnetic field, the sensor usually was towed 500 feet astern. During extreme ice conditions (February 9 through 13), however, the sensor was towed 250 feet astern.

Magnetic data were recorded in analog form on a strip-chart recorder. The sensitivity of the instruments is normally $\pm$ 1-2 gammas (1 gamma = 10^{-5} oersted). With the exception of the Commonwealth Bay survey, however, equipment malfunctions limited the sensitivity to $\pm$ 5-10 gammas. Also, because of difficulties with power supply units, the trace is incomplete in many places.

C. Compilation of Data

The total magnetic intensity data were scaled at 50-gamma intervals and maxima and minima. These values were plotted as magnetic profiles with the associated bathymetric data and ship's track. Geomagnetic data from the detailed survey of Commonwealth Bay were contoured at 50-gamma intervals. No corrections for temporal variations of the magnetic field were made to the magnetic data. No large temporal disturbances were noted during the survey period.

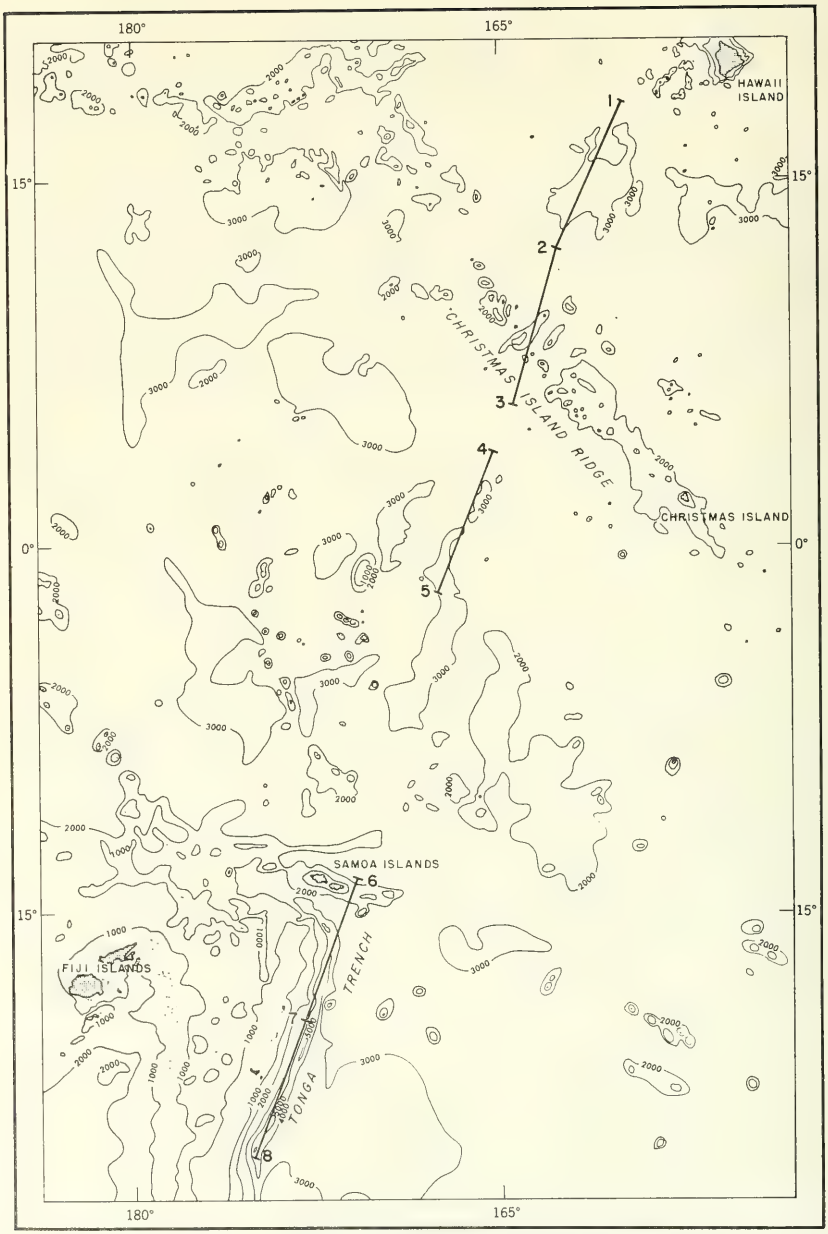

FIGURE 29. LOCATIONS OF MAGNETIC MEASUREMENT PROFILES ALONG BURTON ISLAND TRACK FROM HAWAIIAN ISLANDS TO 25° SOUTH LATITUDE

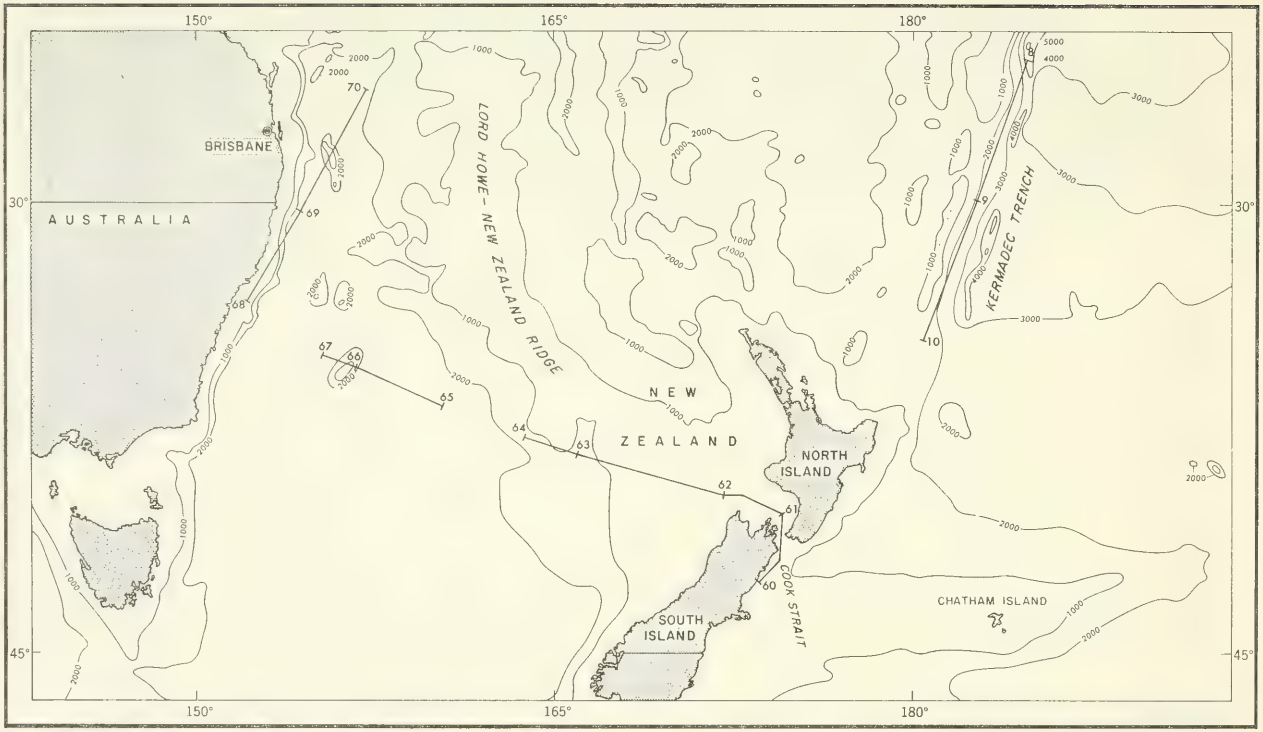

FIGURE 30. LOCATIONS OF MAGNETIC MEASUREMENT PROFILES ALONG BURTON ISLAND TRACK IN THE VICINITY OF NEW ZEALAND AND AUSTRALIA

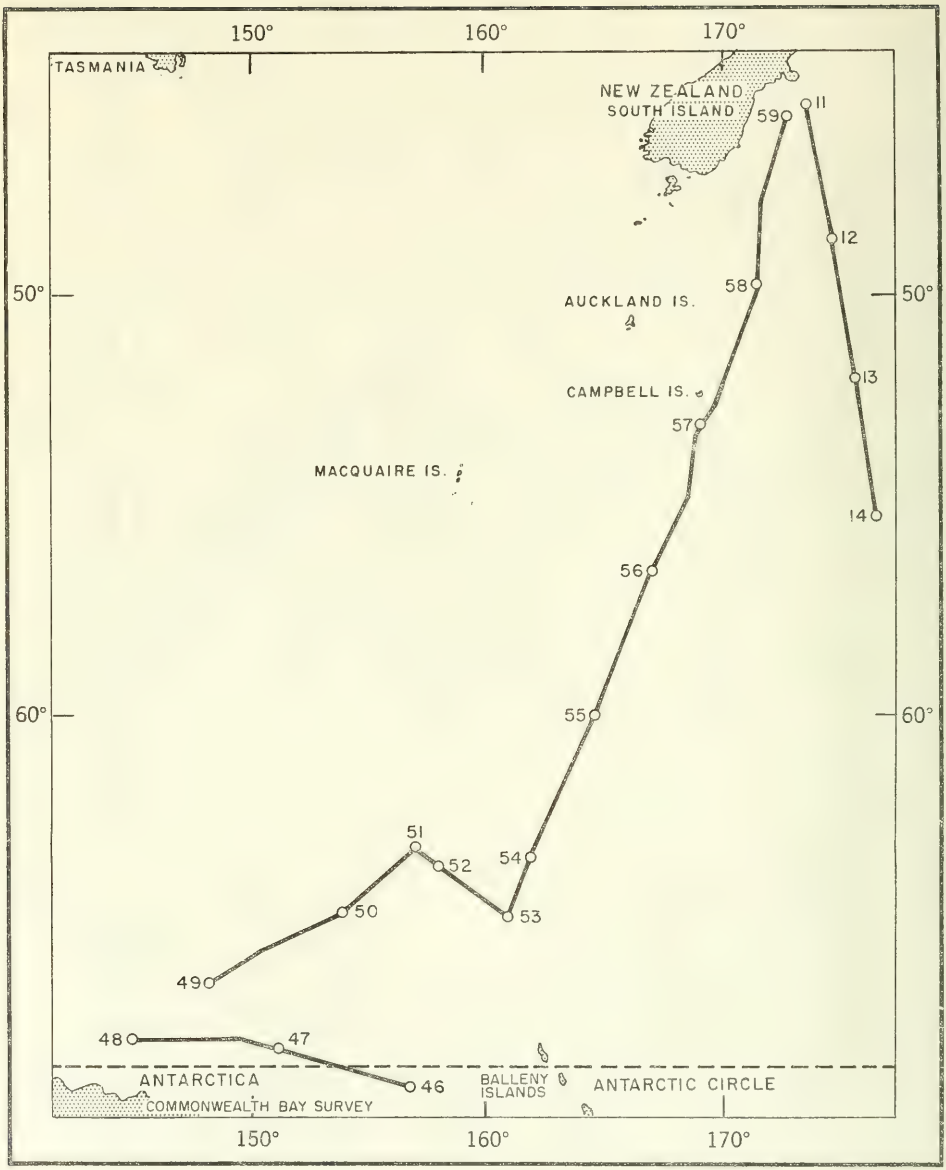

FIGURE 31. LOCATIONS OF MAGNETIC MEASUREMENT PROFILES ALONG BURTON ISLAND TRACK SOUTH OF NEW ZEALAND

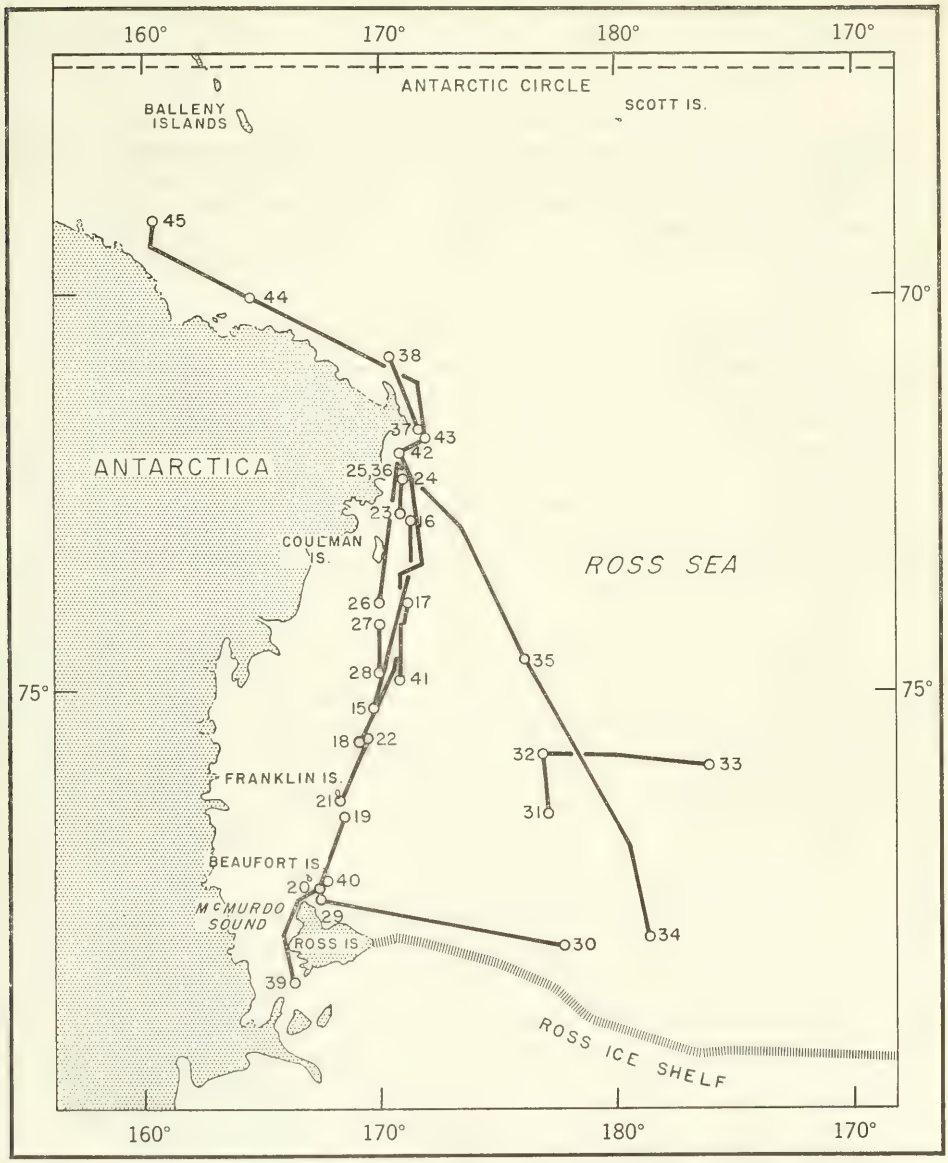

FIGURE 32. LOCATIONS OF MAGNETIC MEASUREMENT PROFILES ALONG BURTON ISLAND TRACK IN THE ROSS SEA AREA

D. Survey Results

1. Enroute Data

The enroute magnetic survey data are presented in Figures 33 through 66 as a series of magnetic total intensity profiles with corresponding bathymetric profiles and detailed plots of the ship's track. A detailed analysis of these single-profile magnetic data is not possible because of insufficient knowledge of the geomagnetic and bathymetric trends. Some of the more significant magnetic features do warrant brief descriptions, however, and are discussed in the following paragraphs.

Hawaiian Islands to New Zealand (Figs. 29 and 30)

A negative anomaly of 700 gammas is associated with a sharp bathymetric feature north of the Christmas Island Ridge (Fig. 34). There is excellent correlation between an 800-gamma anomaly and a steep bathymetric feature on the Samoa Island Rise (Fig. 36). There is a noticeable lack of significant anomalies over the seamounts north of the Tonga Trench (Figs. 36 and 37). There are, however, small anomalies (175 gammas) over the Trench itself. In the vicinity of 31° S, 178° W, on the western side of the Kermadec Trench, there are broad magnetic features with amplitudes of 450 gammas that have no significant bathymetric association (Fig. 39).

South of New Zealand (Fig. 31)

At approximately 45° 45' S, 173° 45' E, on the New Zealand Plateau, there is a broad 1200-gamma anomaly which has no bathymetric correlation (Fig. 40). This lack of bathymetric correlation is characteristic of the anomalies (some of which are very steep) that occur over the plateau. An anomalous zone begins with a 250-gamma anomaly over the slope at the edge of the plateau and continues across it (Figs. 40, 41, 42, and 59, 60, 61). A large, complex anomaly (1750 gammas) is present over the Pacific-Antarctic Ridge (Fig. 57).

The Ross Sea (Fig. 32)

There is an extremely steep, high amplitude anomaly (2500 gammas) north of Ross Island. This anomaly (Fig. 50) is associated with a small bathymetric feature in approximately 50 fathoms of water.

Cook Strait to Australia (Fig. 30)

No anomalies were observed in the passage through Cook Strait (Fig. 62). Anomalies exceeding 400 gammas occur on the Lord Howe - New Zealand Rise between latitudes 38° and 39° South (Fig. 64). An anomaly with an amplitude of 1000 gammas occurs over a broad seamount of 2500 fathoms relief east of Brisbane, Australia (Fig. 66).

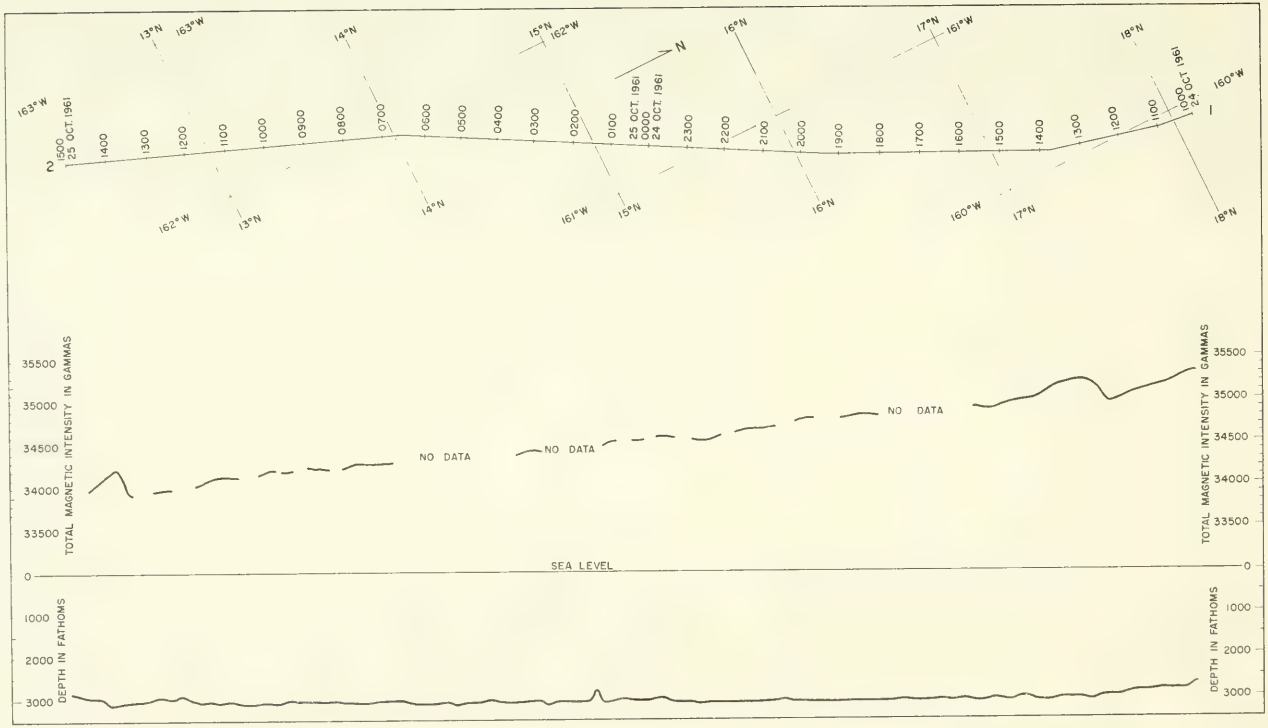

FIGURE 33. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 1 AND 2

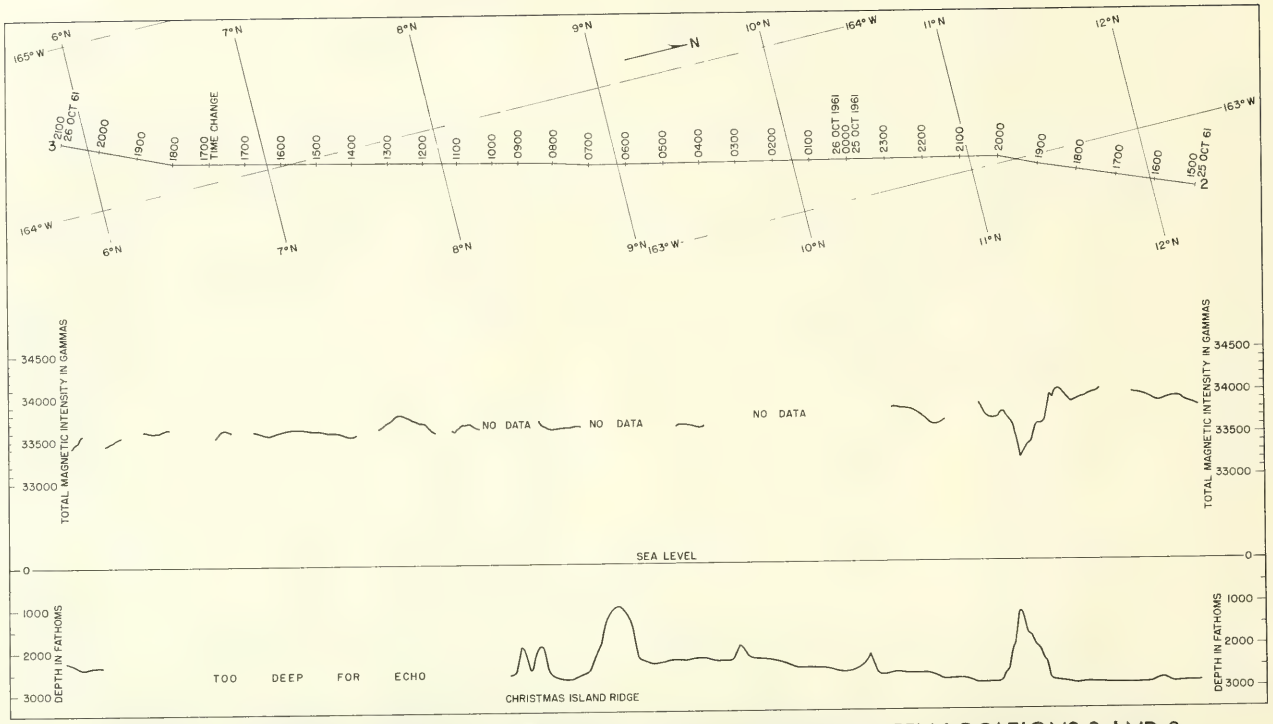

FIGURE 34. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 2 AND 3

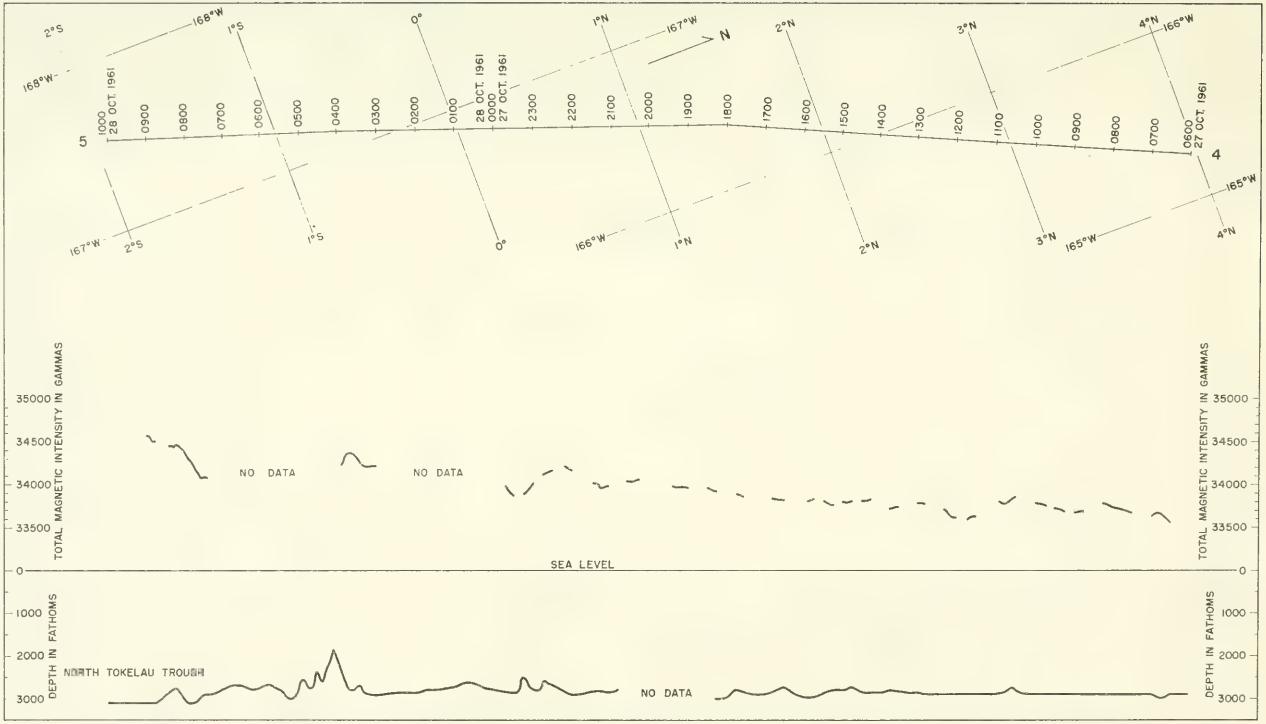

FIGURE 35. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 4 AND 5

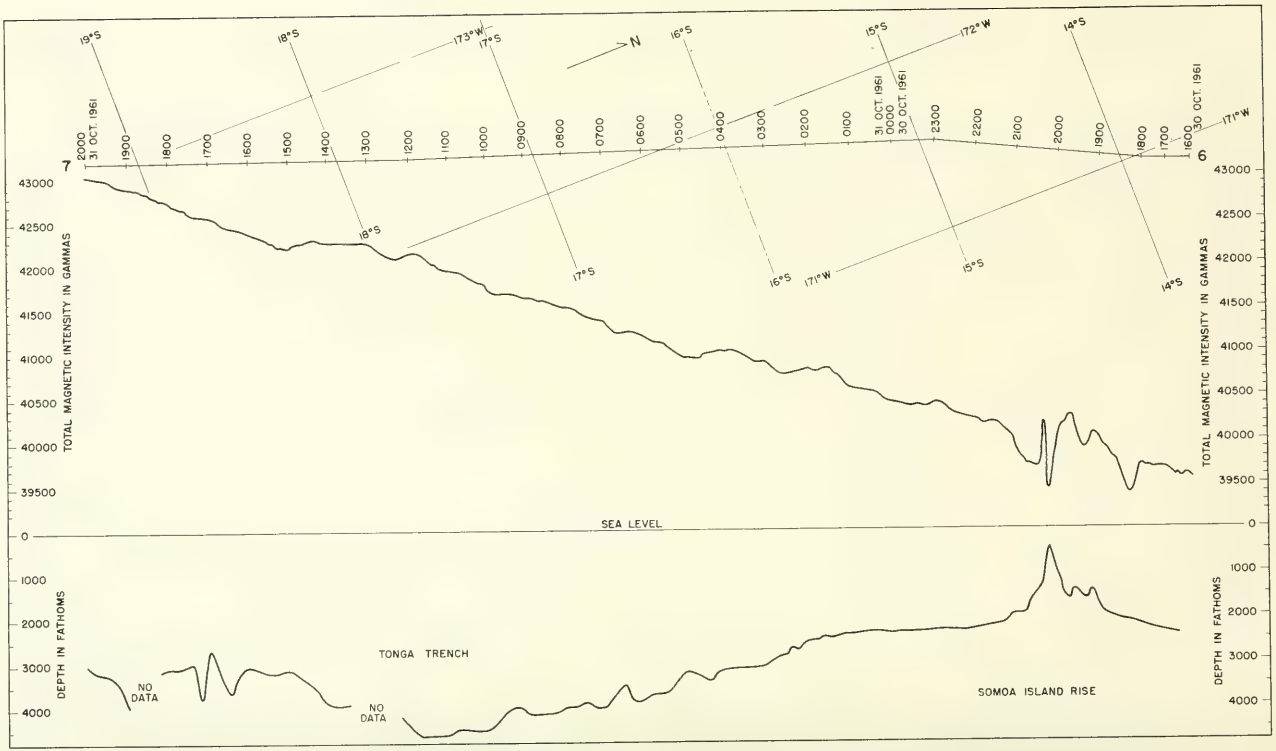

FIGURE 36. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 6 AND 7

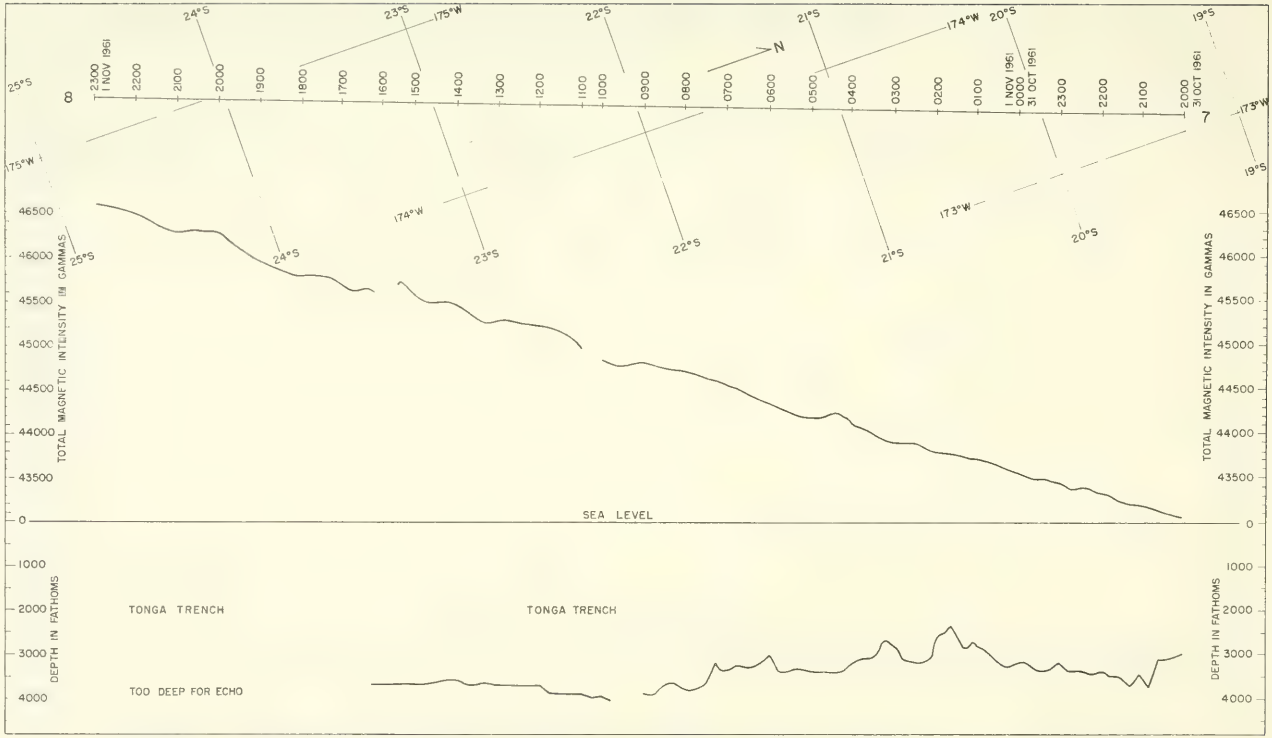

FIGURE 37. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 7 AND 8

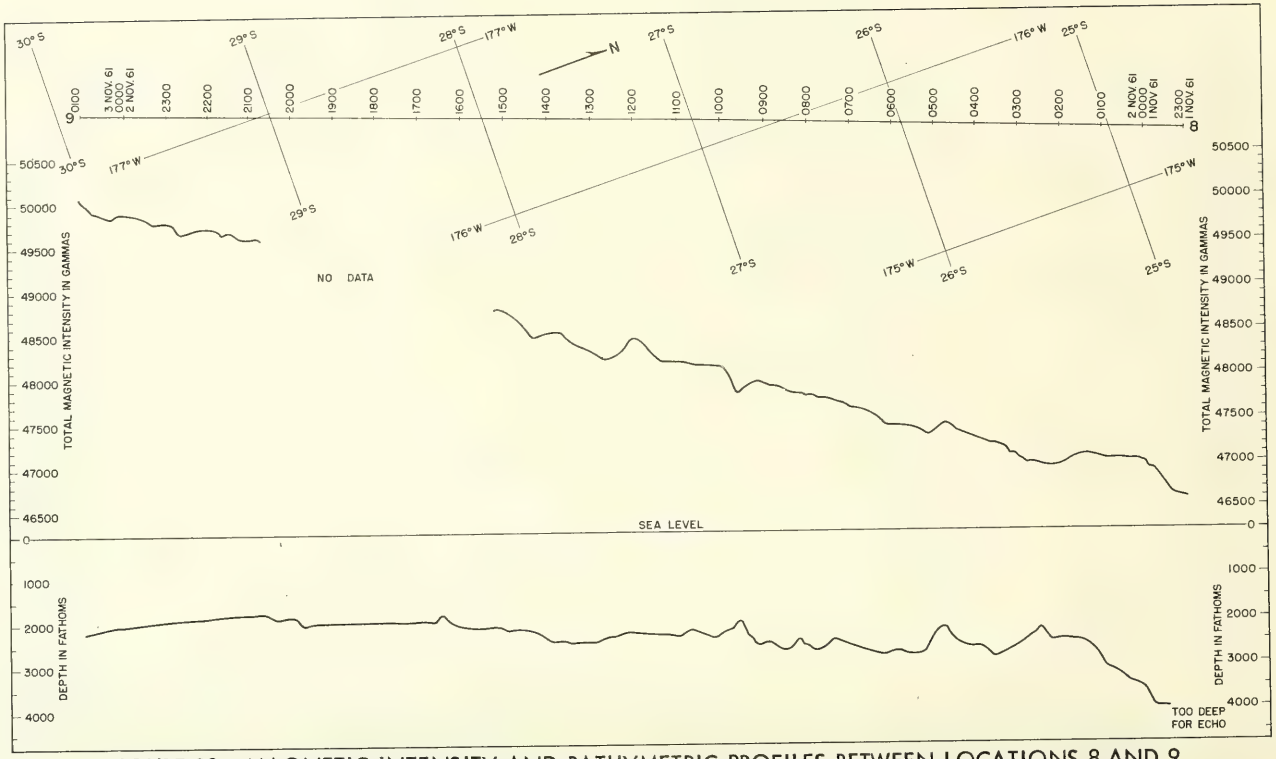

FIGURE 38. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 8 AND 9

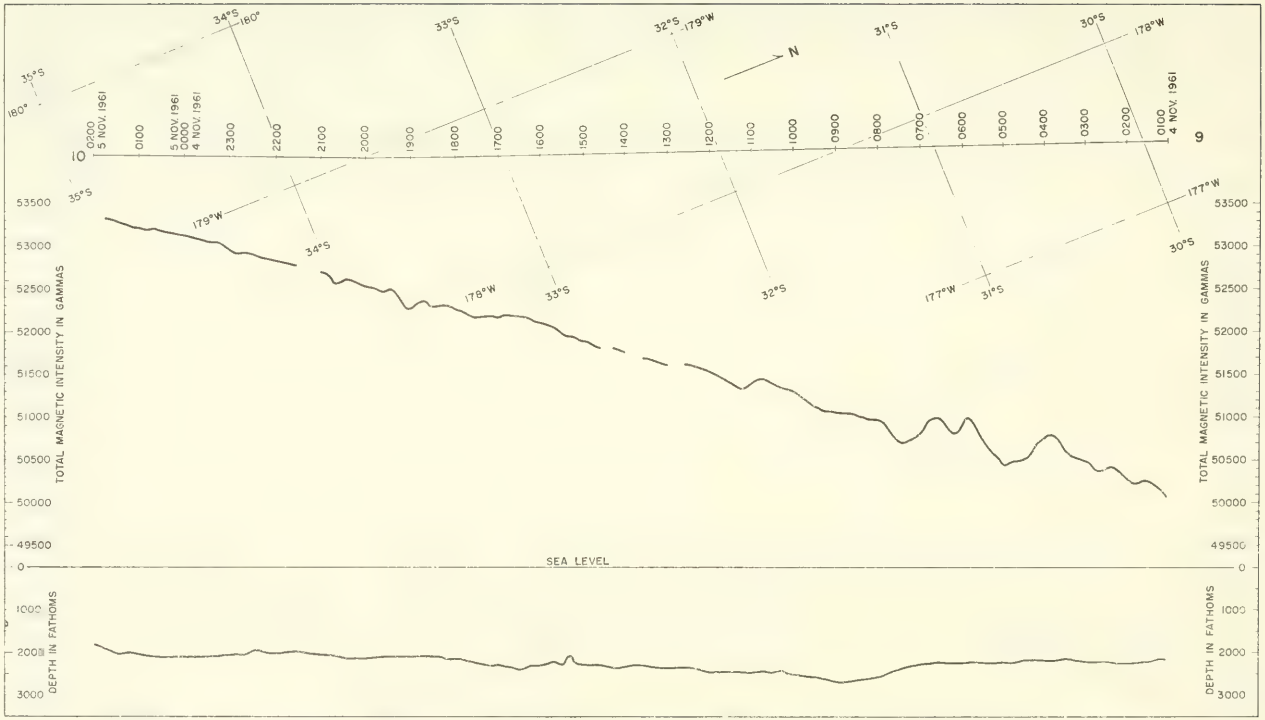

FIGURE 39. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 9 AND 10

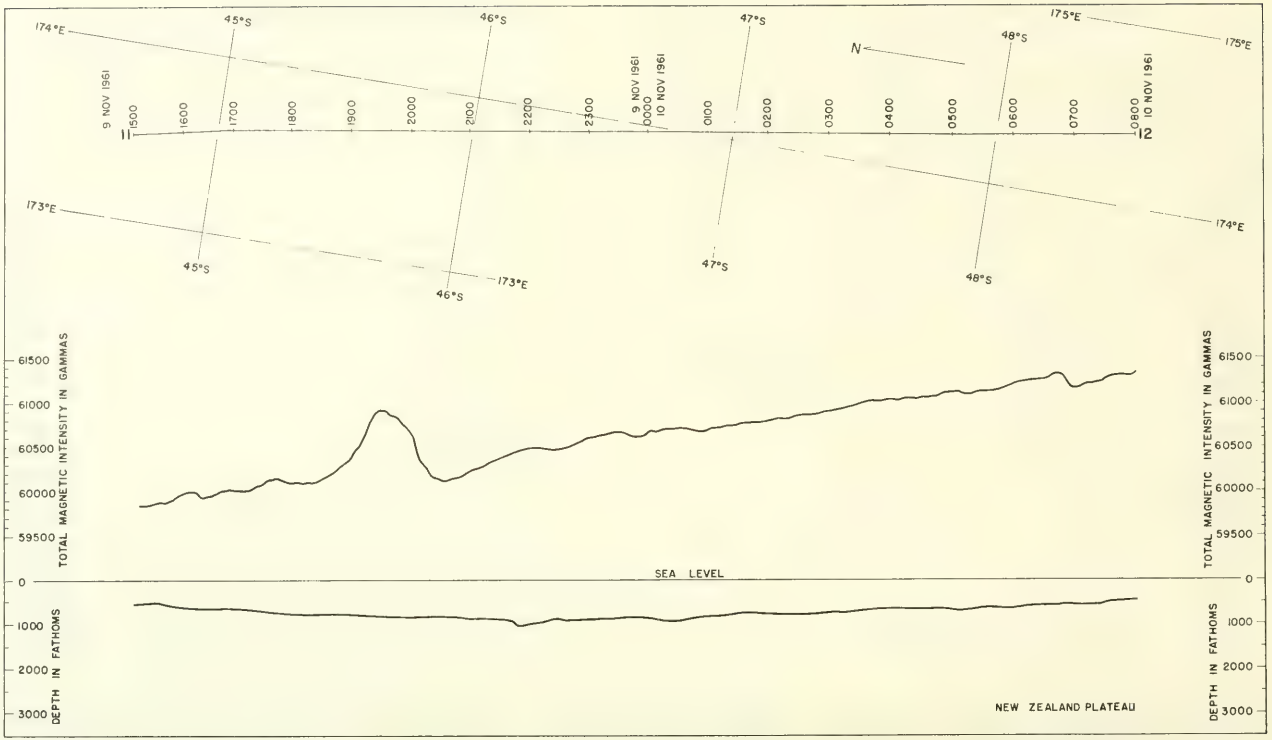

FIGURE 40. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 11 AND 12

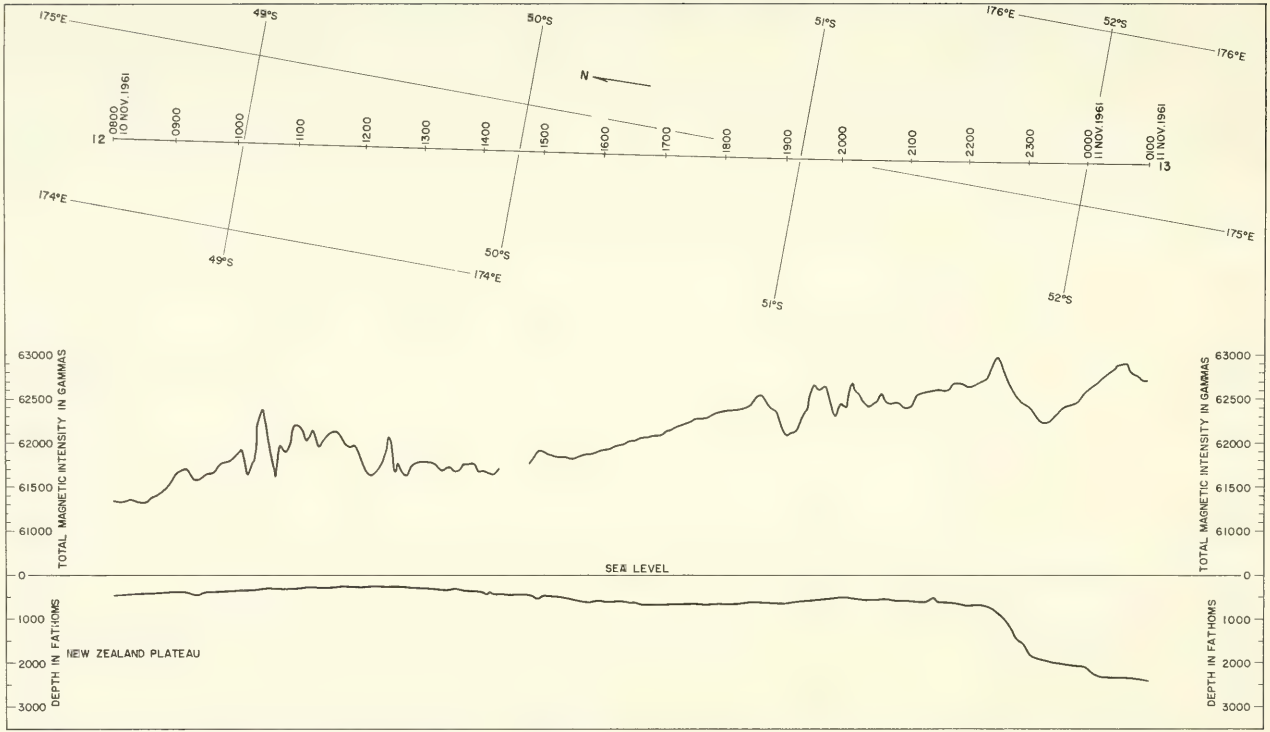

FIGURE 41. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 12 AND 13

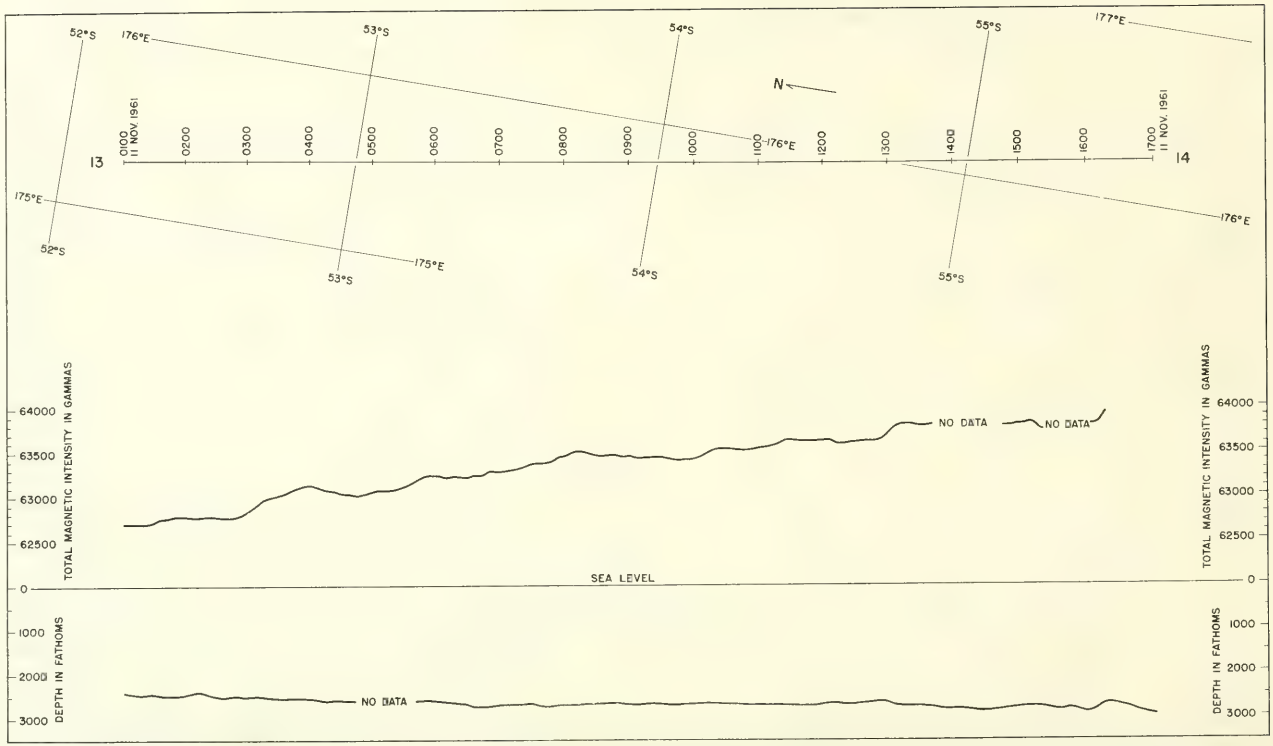

FIGURE 42. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 13 AND 14

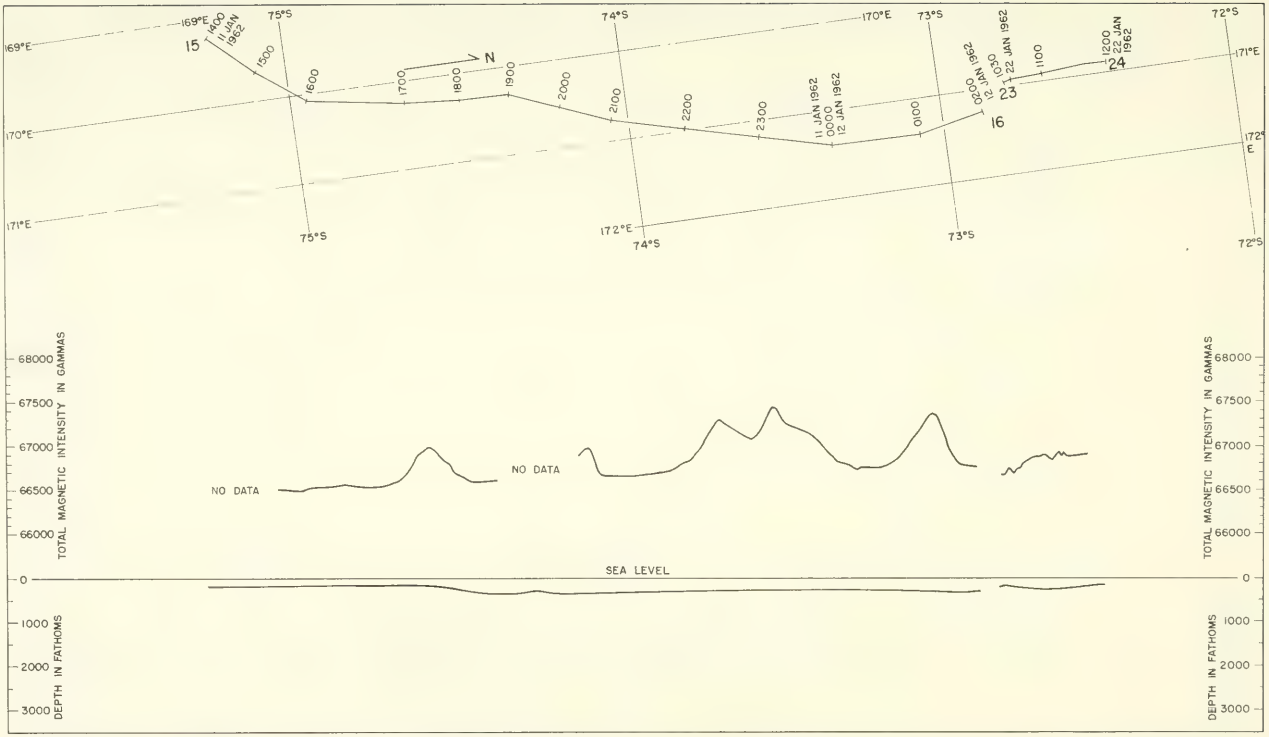

FIGURE 43. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 15 AND 16, 23 AND 24.

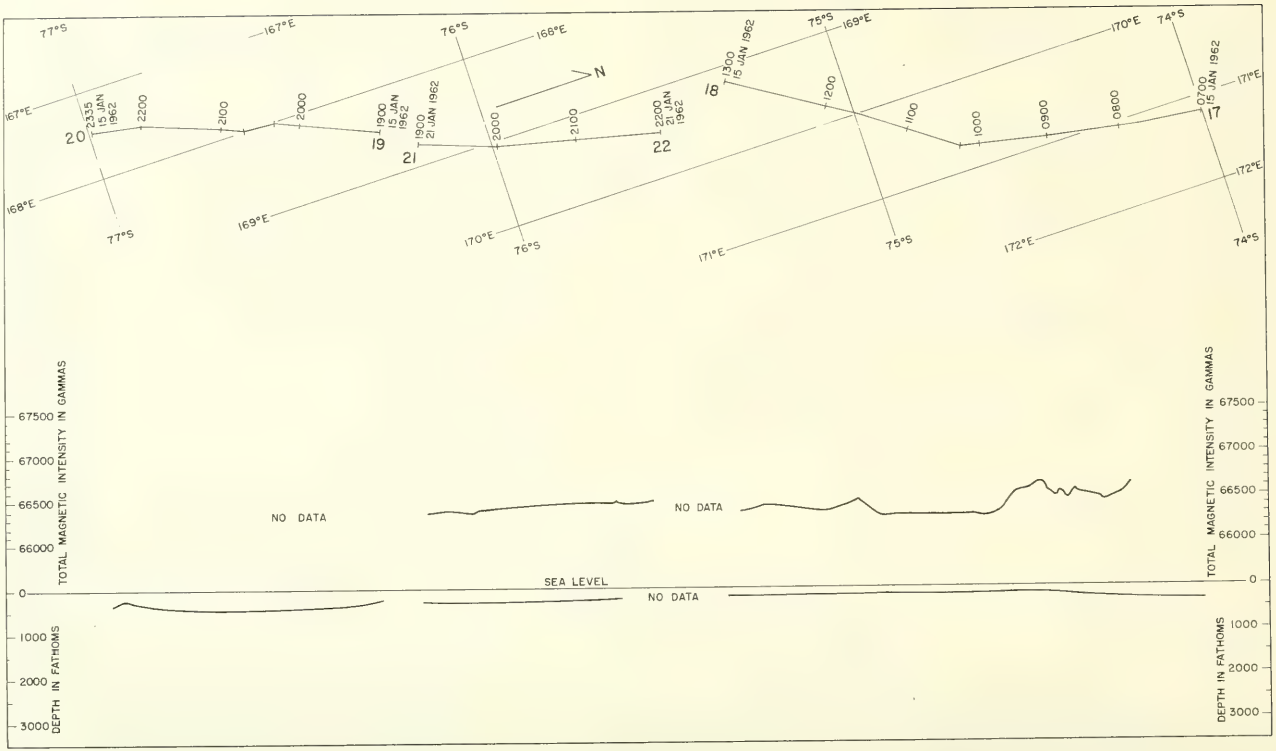

FIGURE 44. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 17 AND 18, 19 AND 20, 21 AND 22

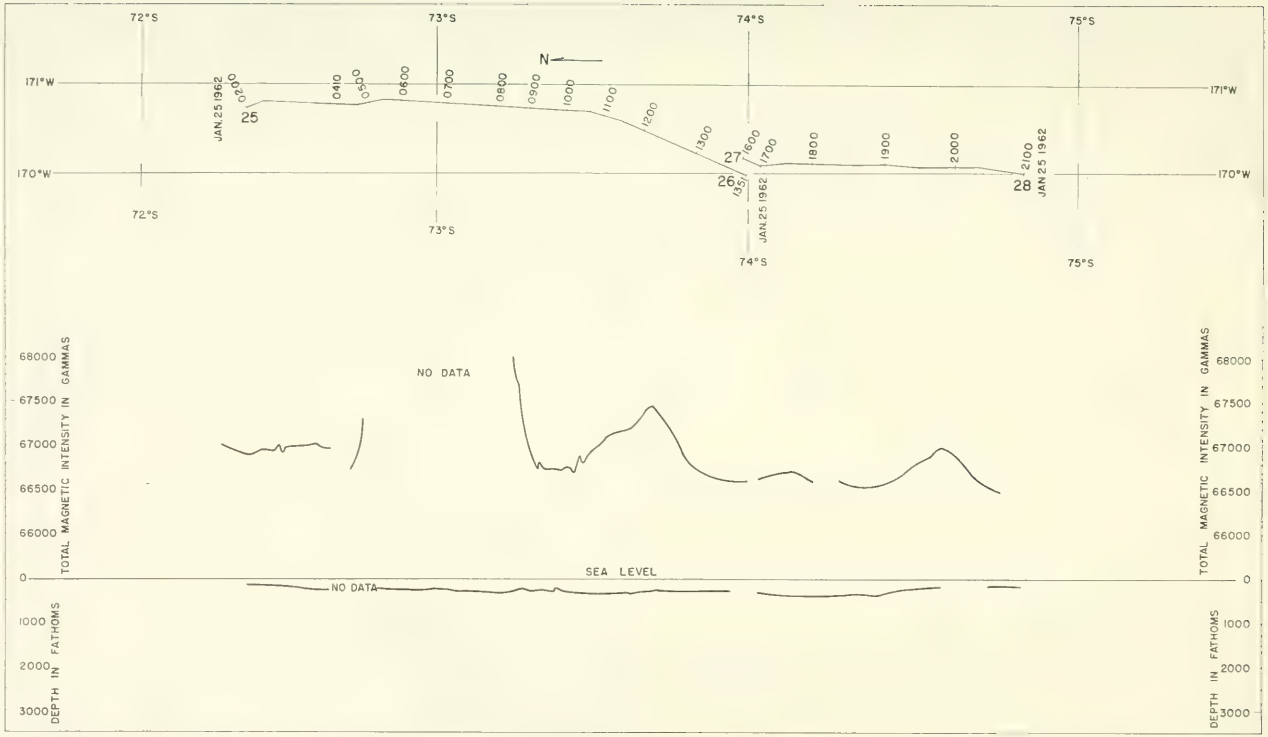

FIGURE 45. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 25 AND 26, 27 AND 28

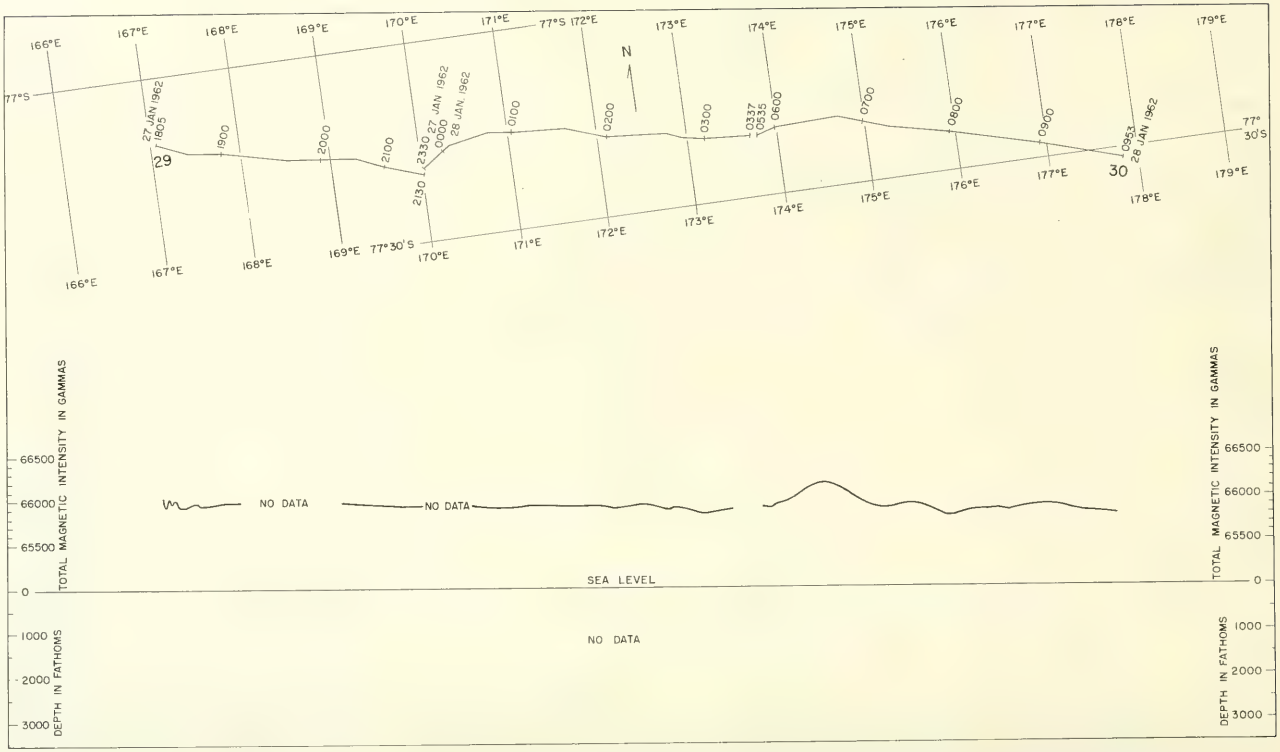

FIGURE 46. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 29 AND 30

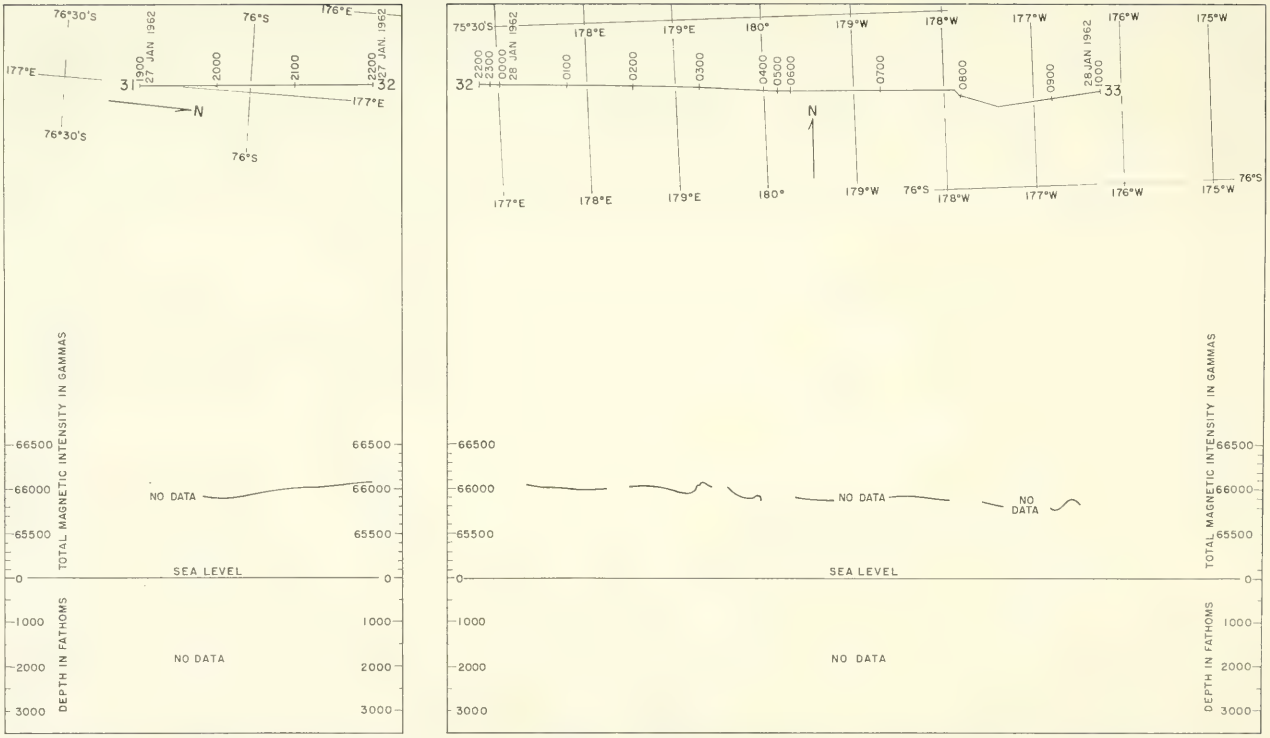

FIGURE 47. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 31 AND 32, 32 AND 33

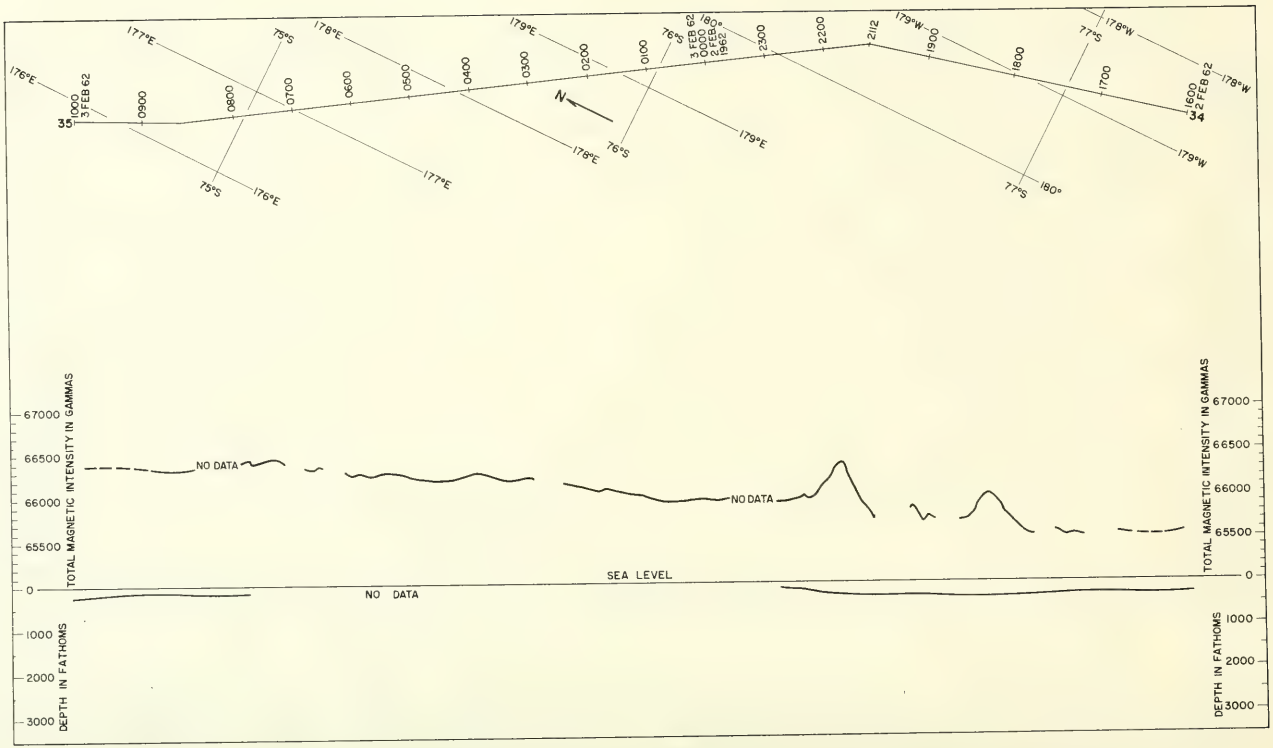

FIGURE 48. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 34 AND 35

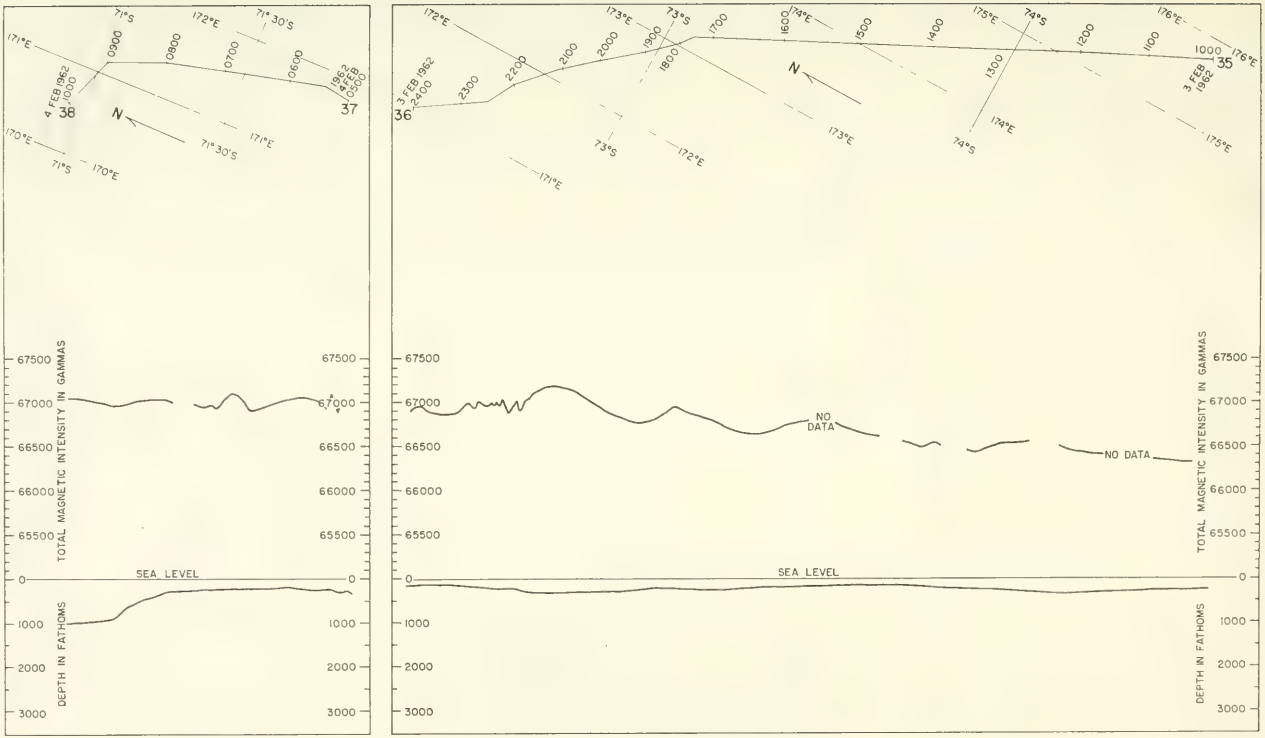

FIGURE 49. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 35 AND 36, 37 AND 38

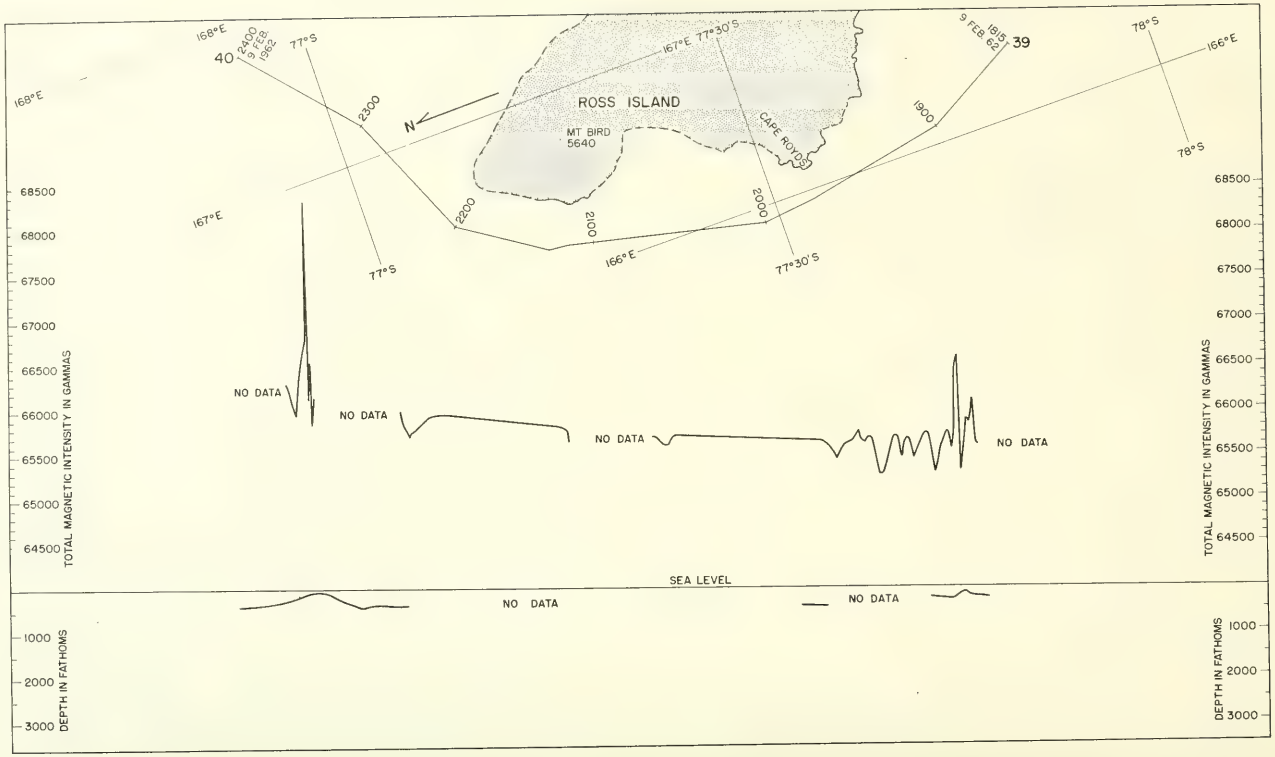

FIGURE 50. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 39 AND 40

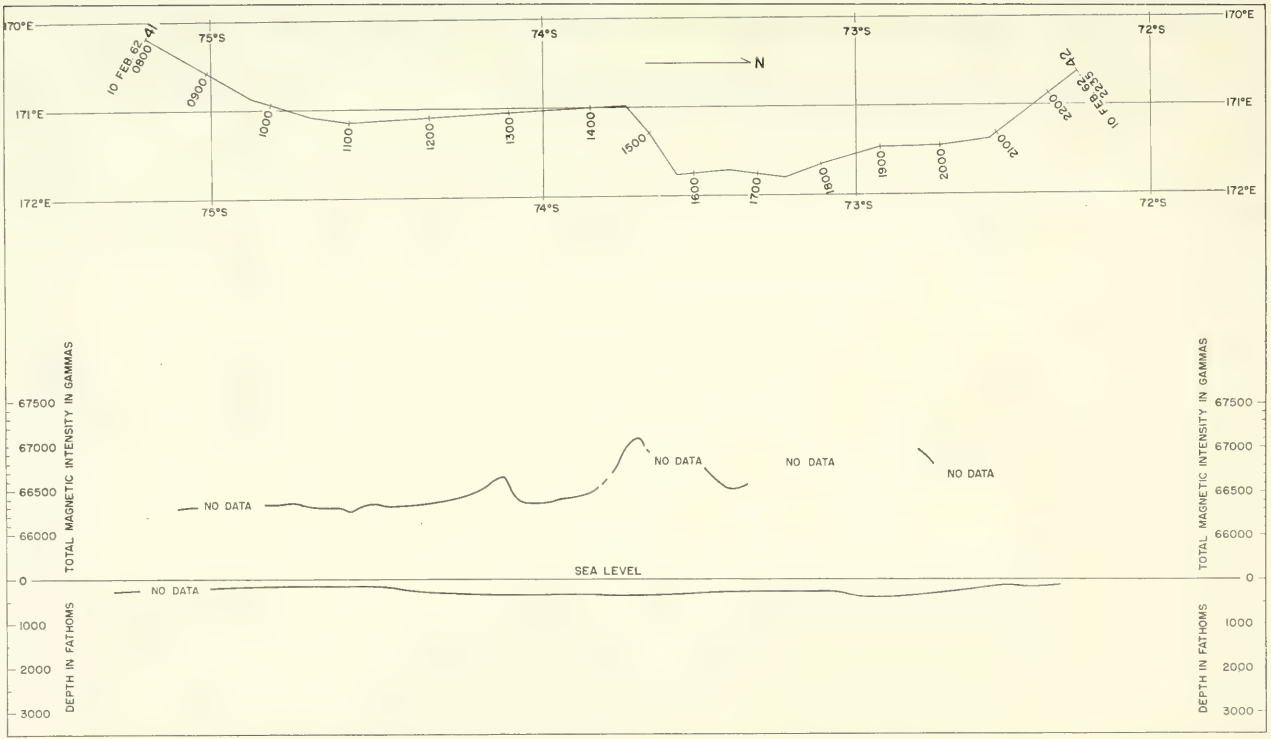

FIGURE 51. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 41 AND 42

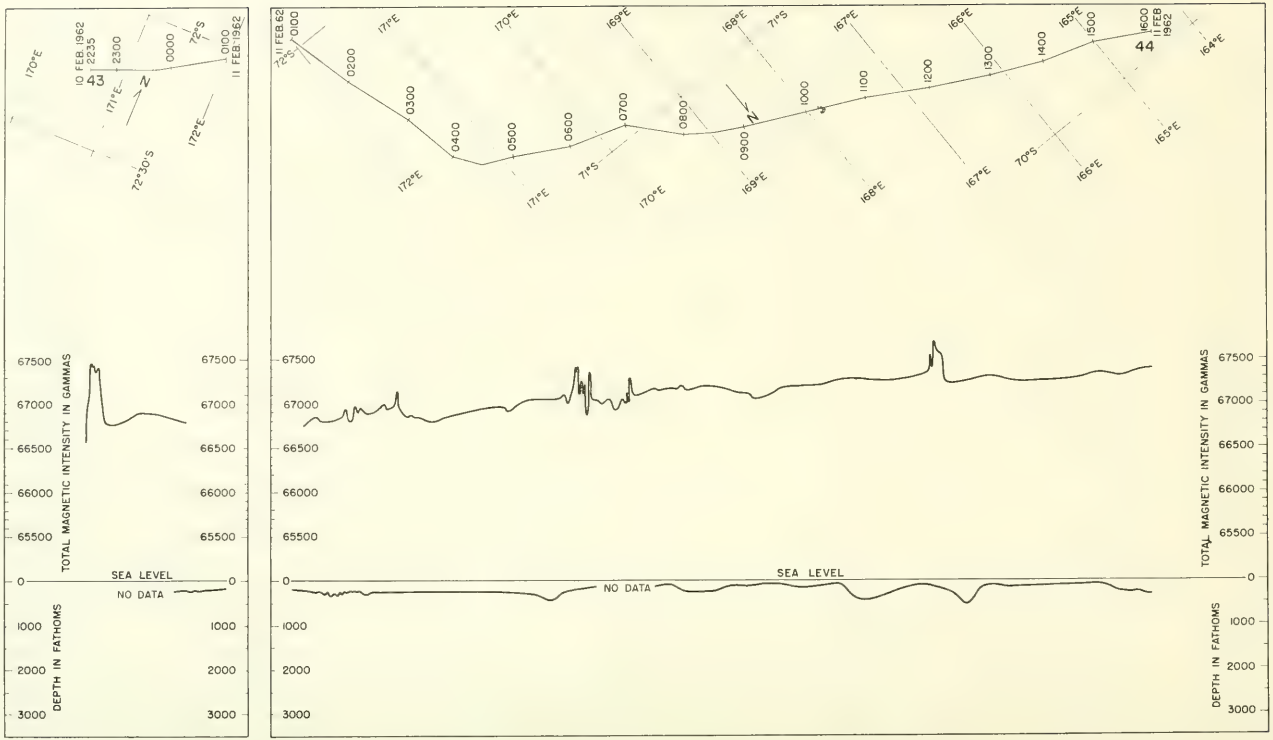

FIGURE 52. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 43 AND 44

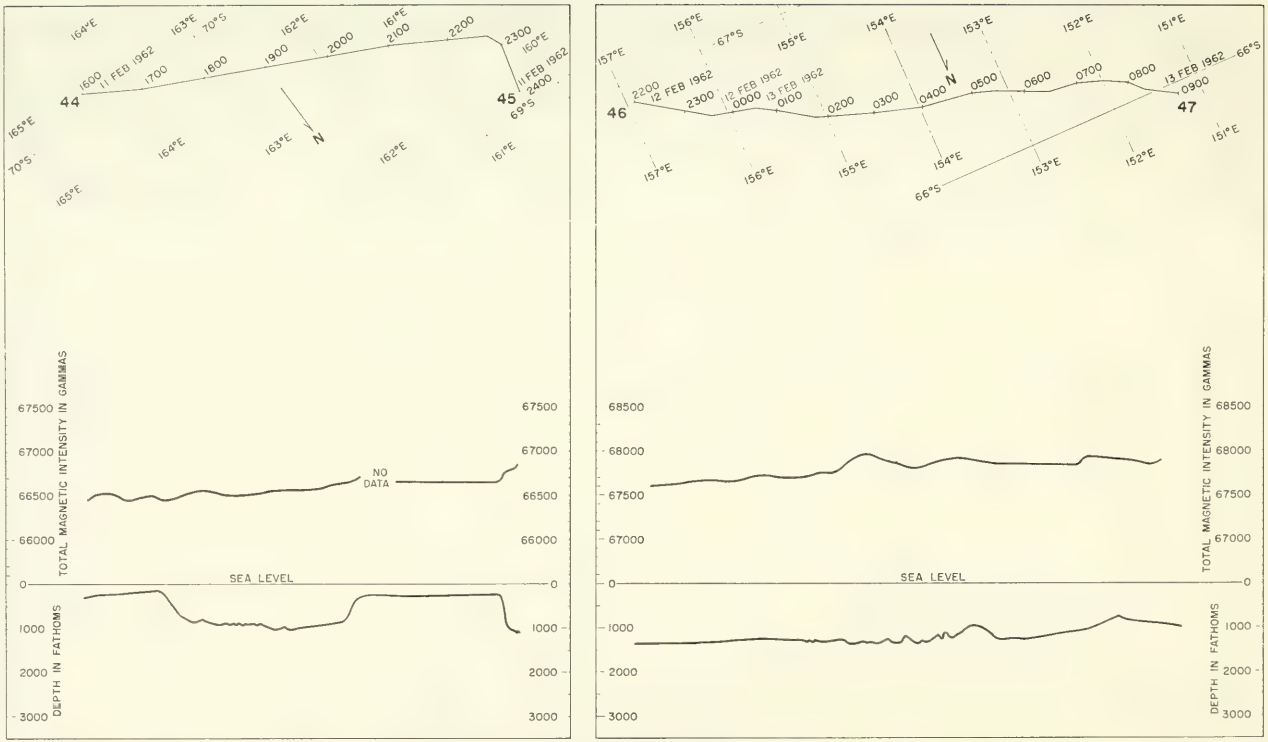

FIGURE 53. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 44 AND 45, 46 AND 47

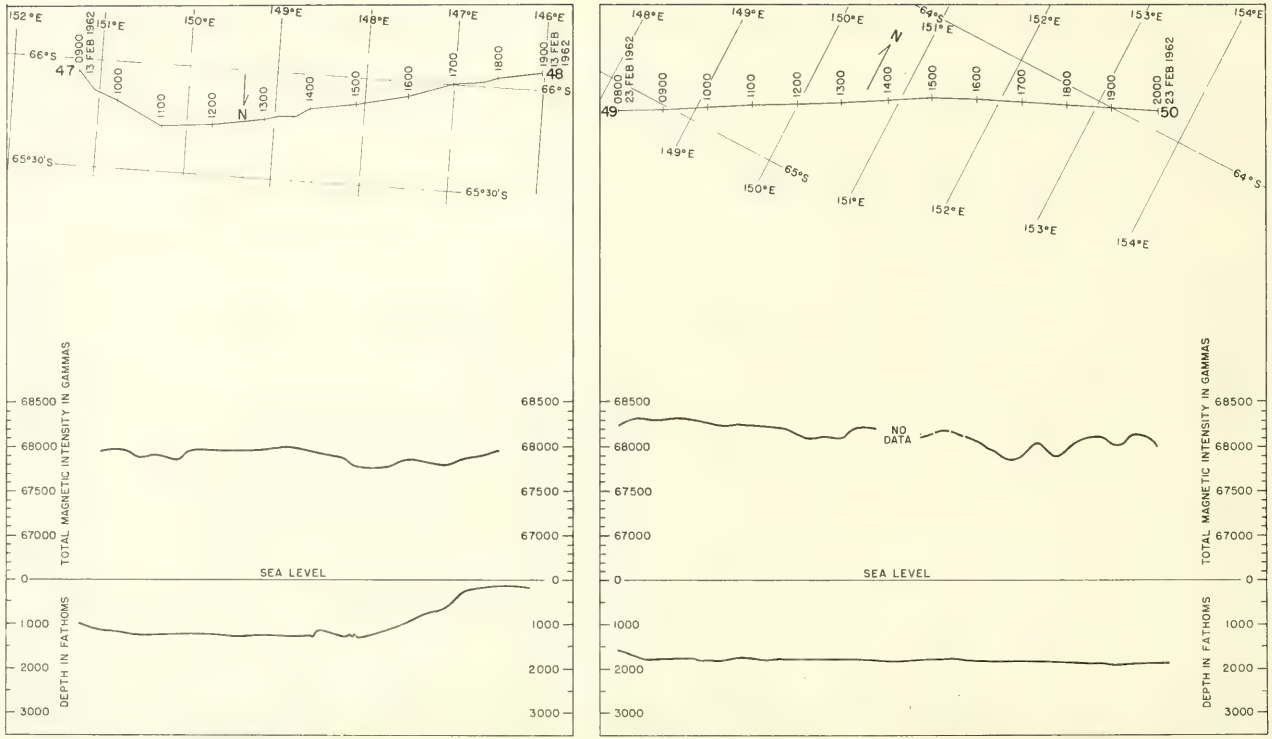

FIGURE 54. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 47 AND 48, 49 AND 50

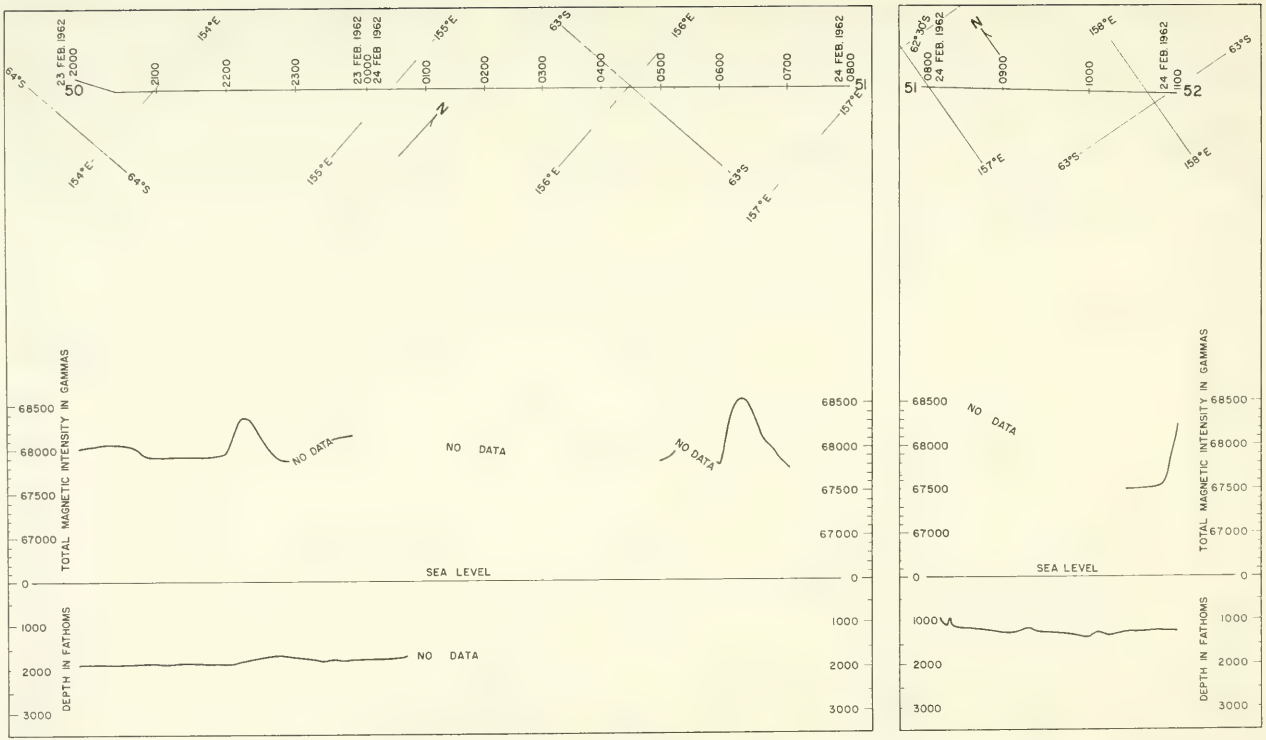

FIGURE 55. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 50 AND 51, 51 AND 52

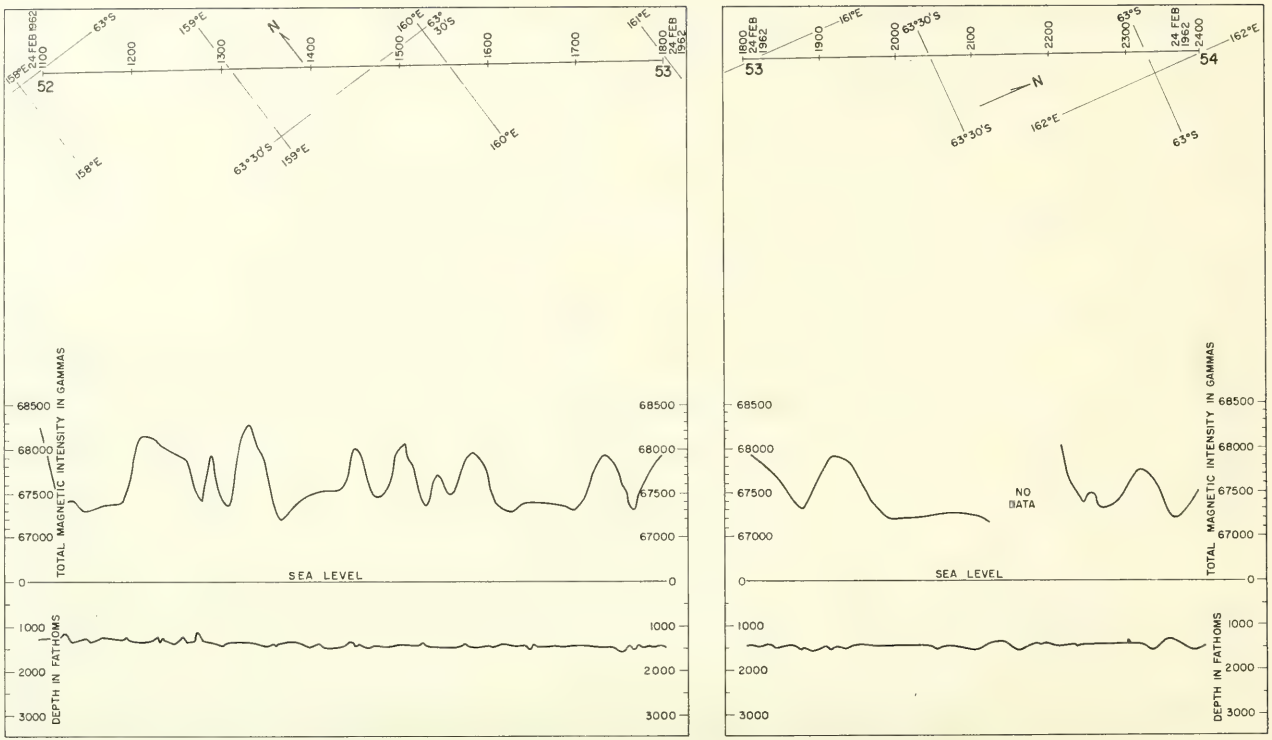

FIGURE 56. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 52 AND 53, 53 AND 54

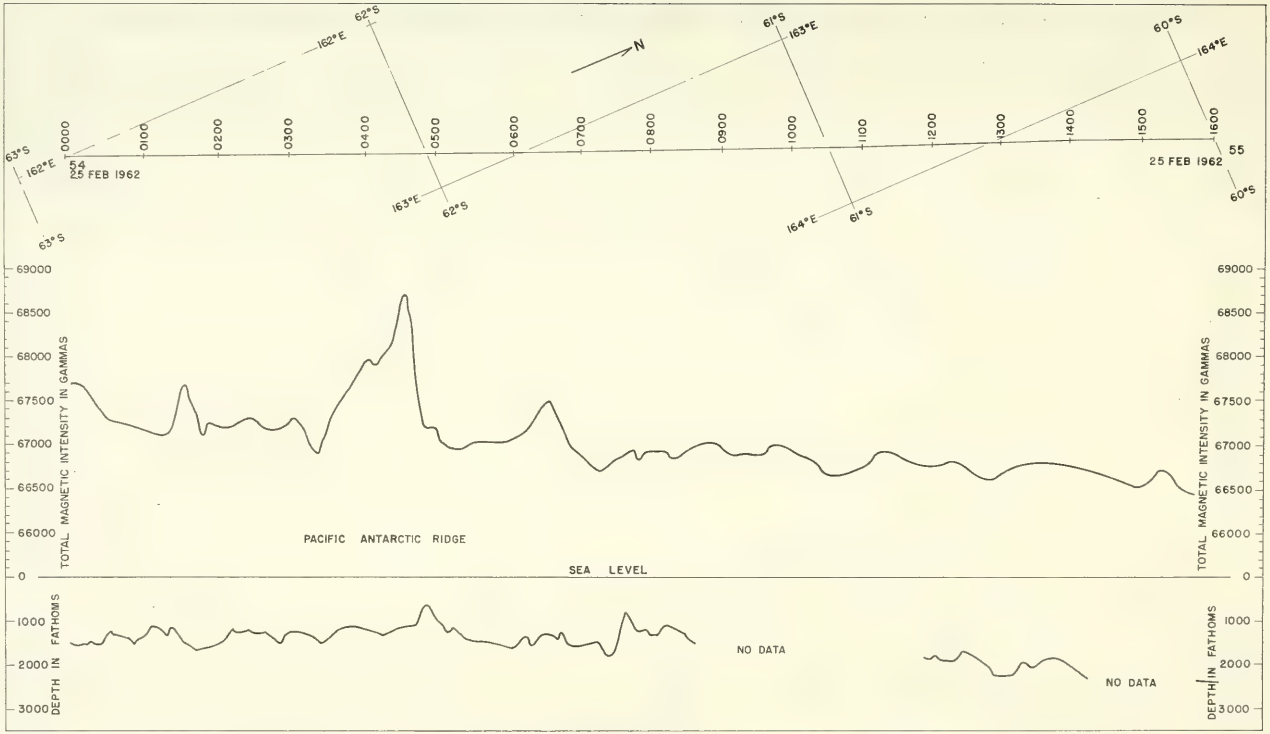

FIGURE 57. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 54 AND 55

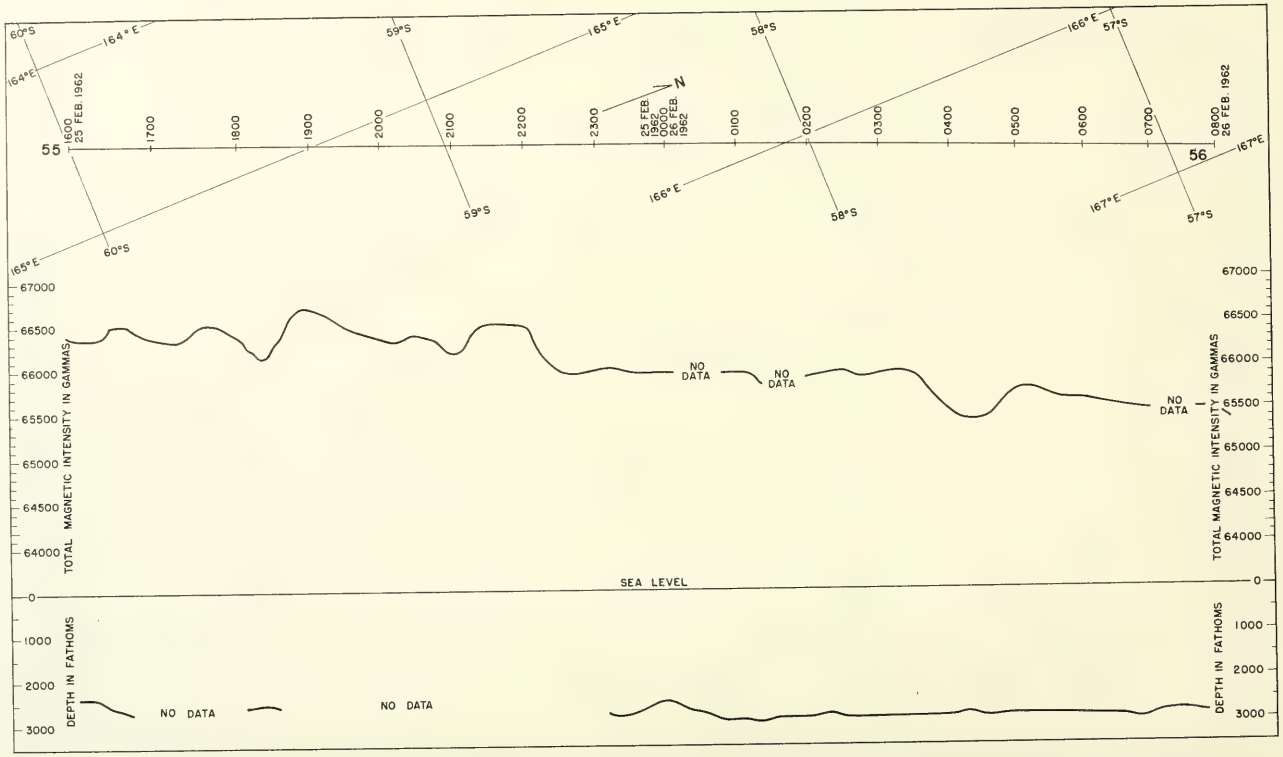

FIGURE 58. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 55 AND 56

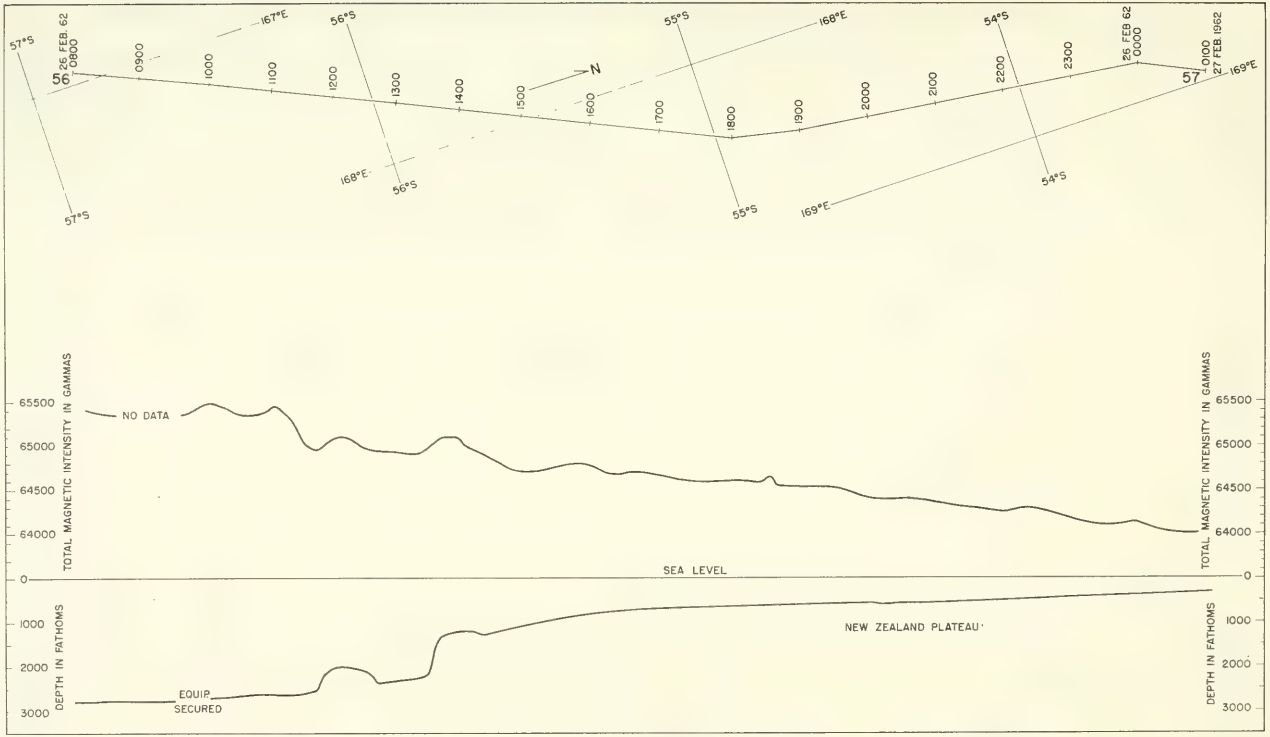

FIGURE 59. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 56 AND 57

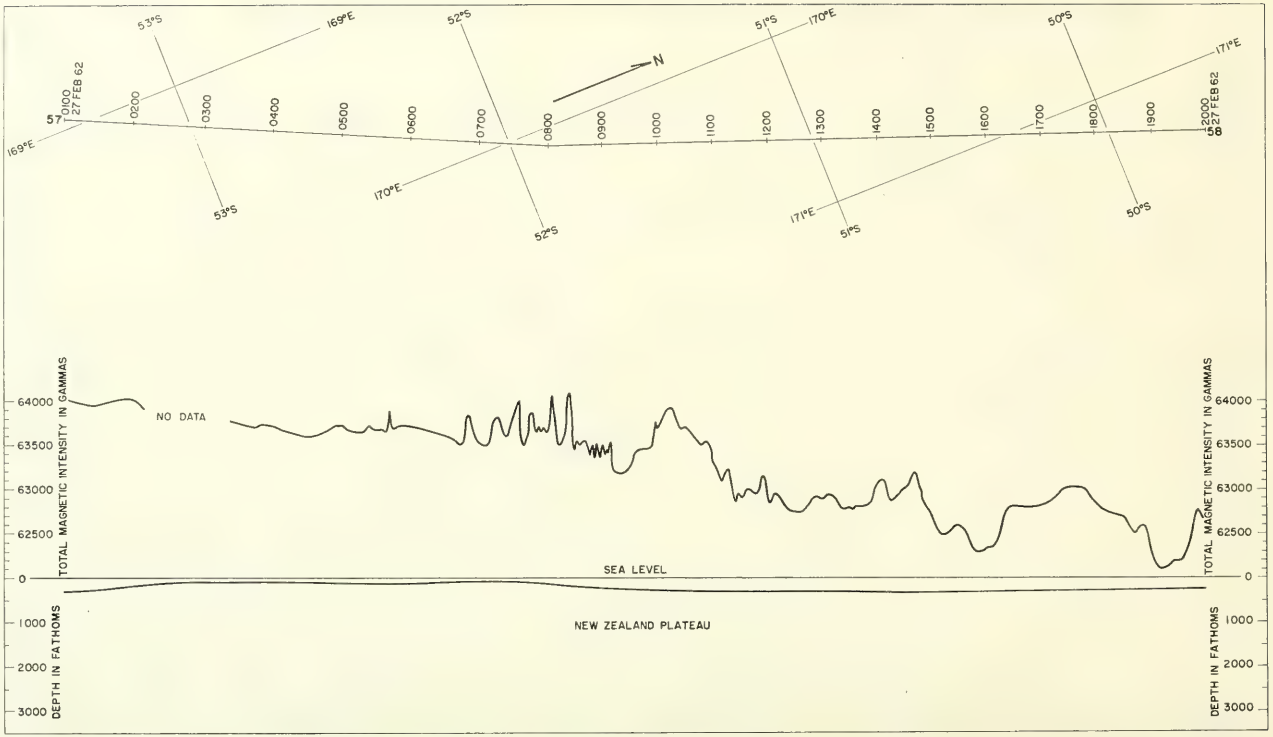

FIGURE 60. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 57 AND 58

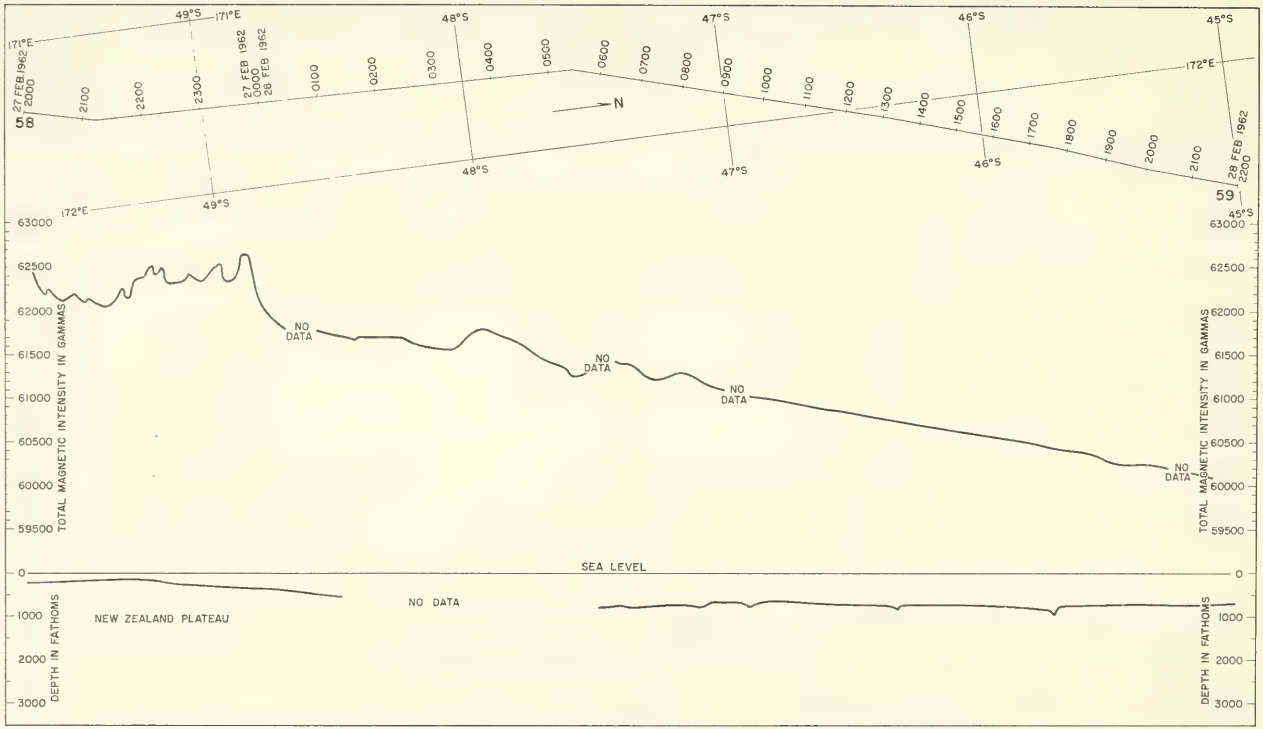

FIGURE 61. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 58 AND 59

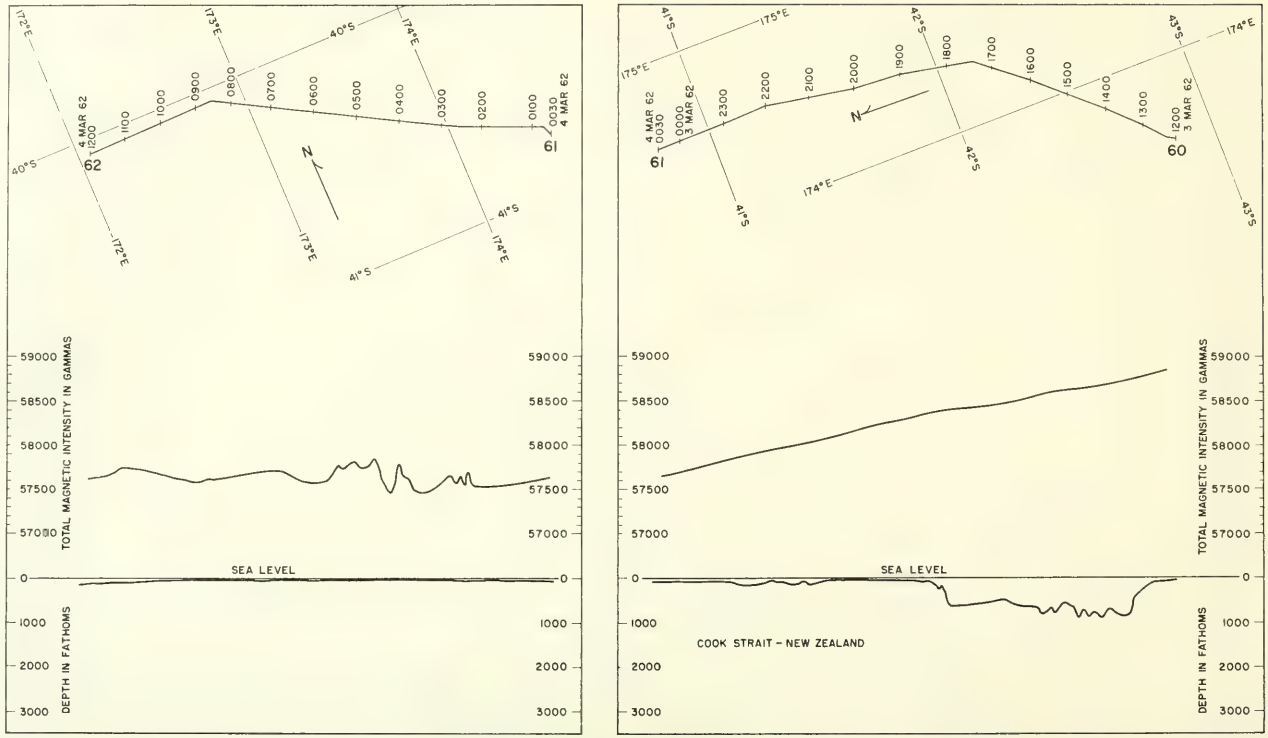

FIGURE 62. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 60 AND 61, 61 AND 62

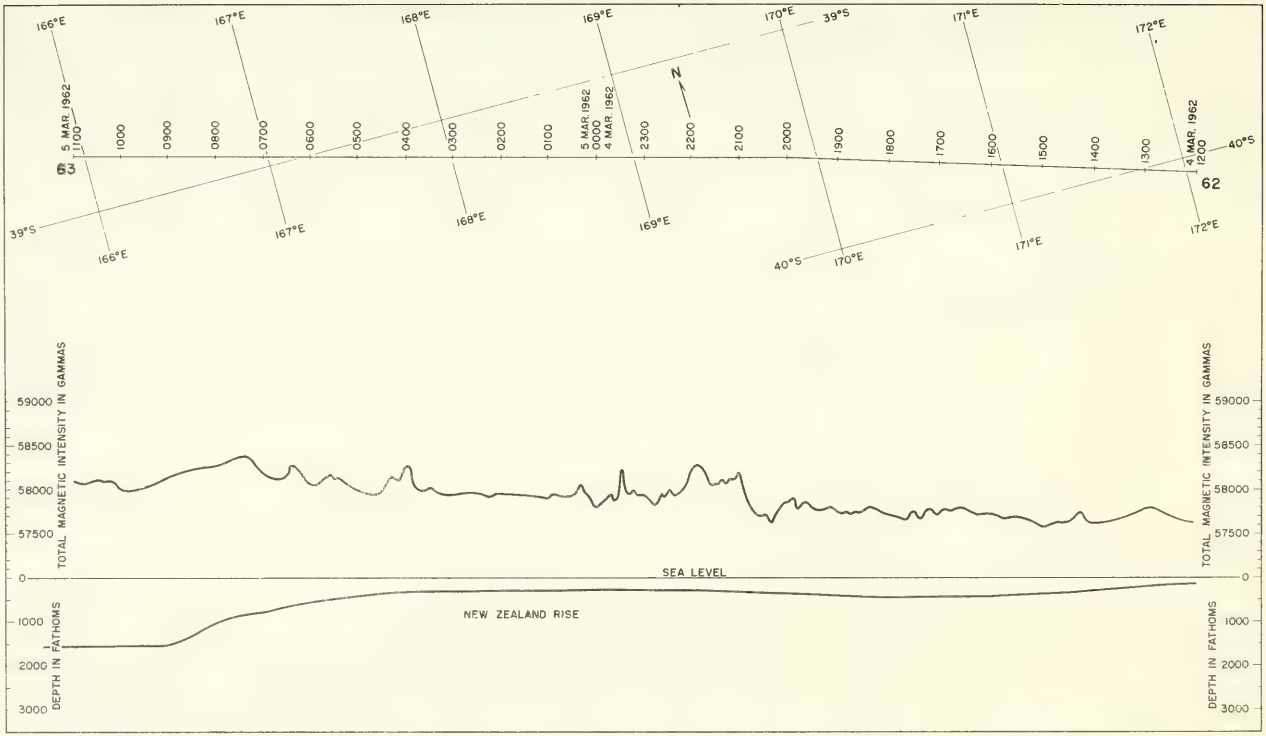

FIGURE 63. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 62 AND 63

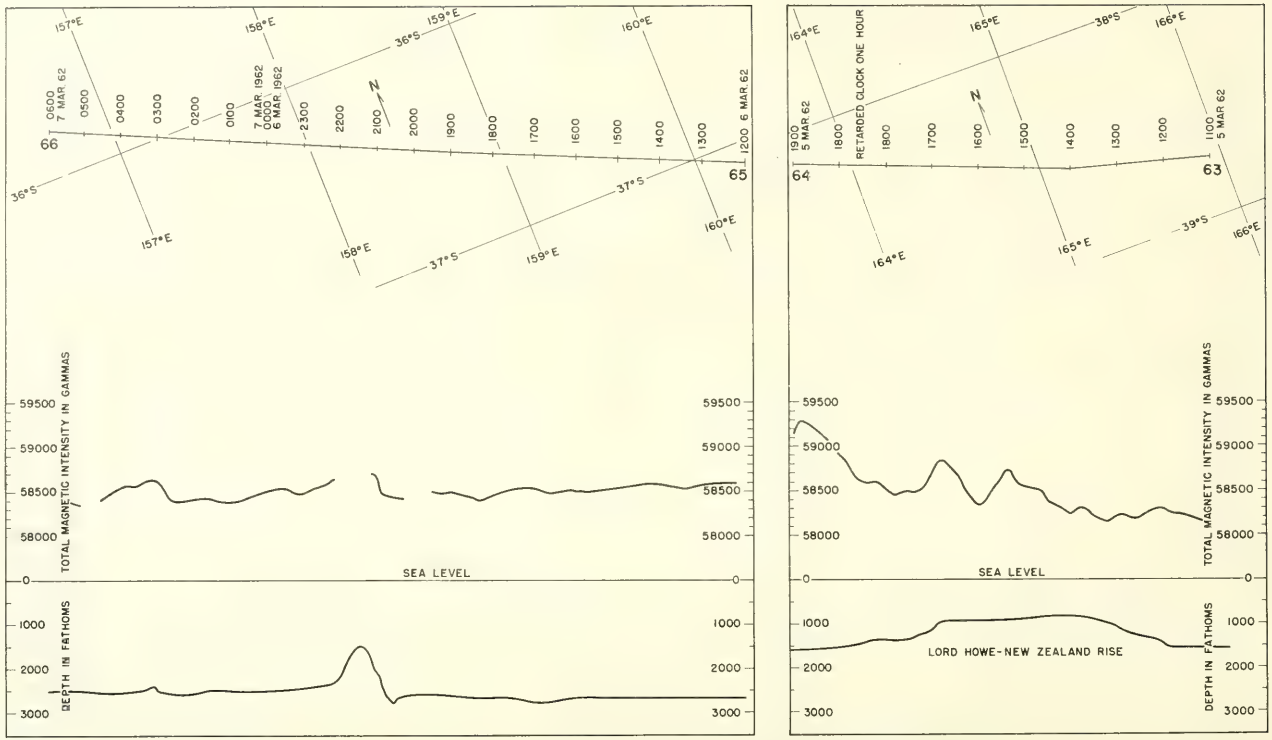

FIGURE 64. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 63 AND 64, 65 AND 66

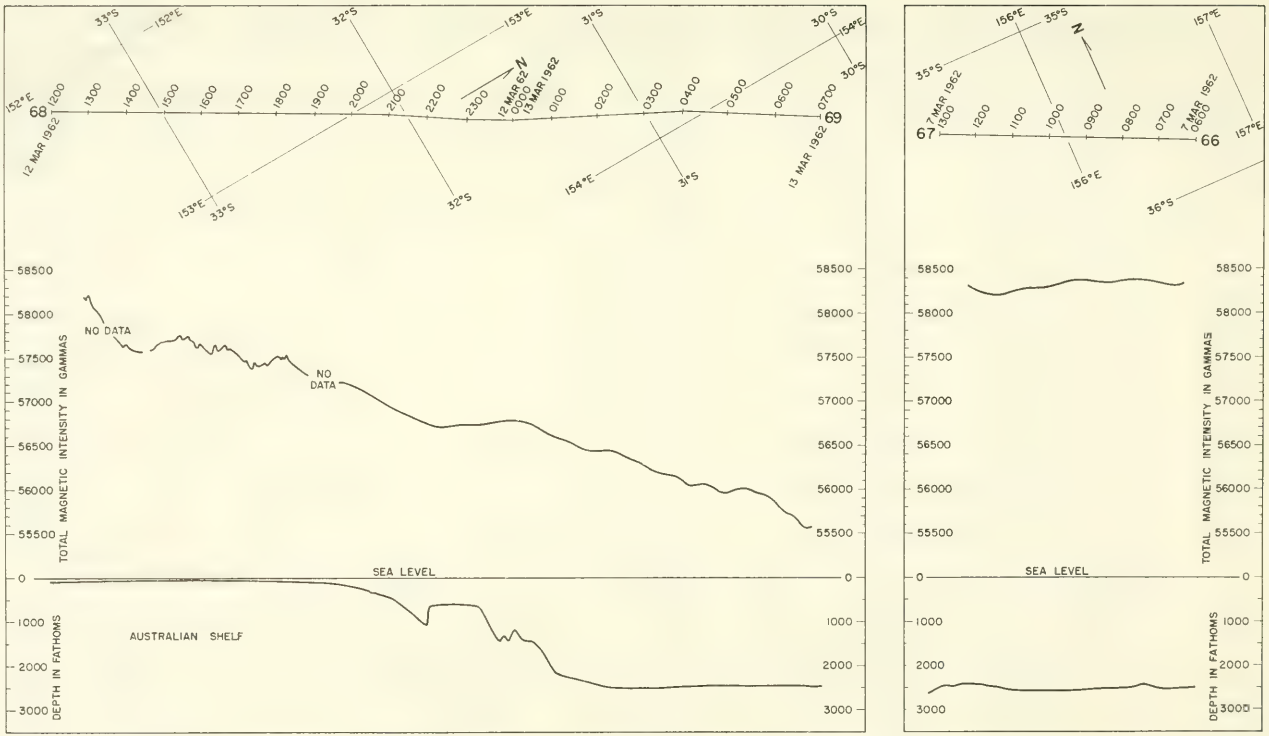

FIGURE 65. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 66 AND 67, 68 AND 69

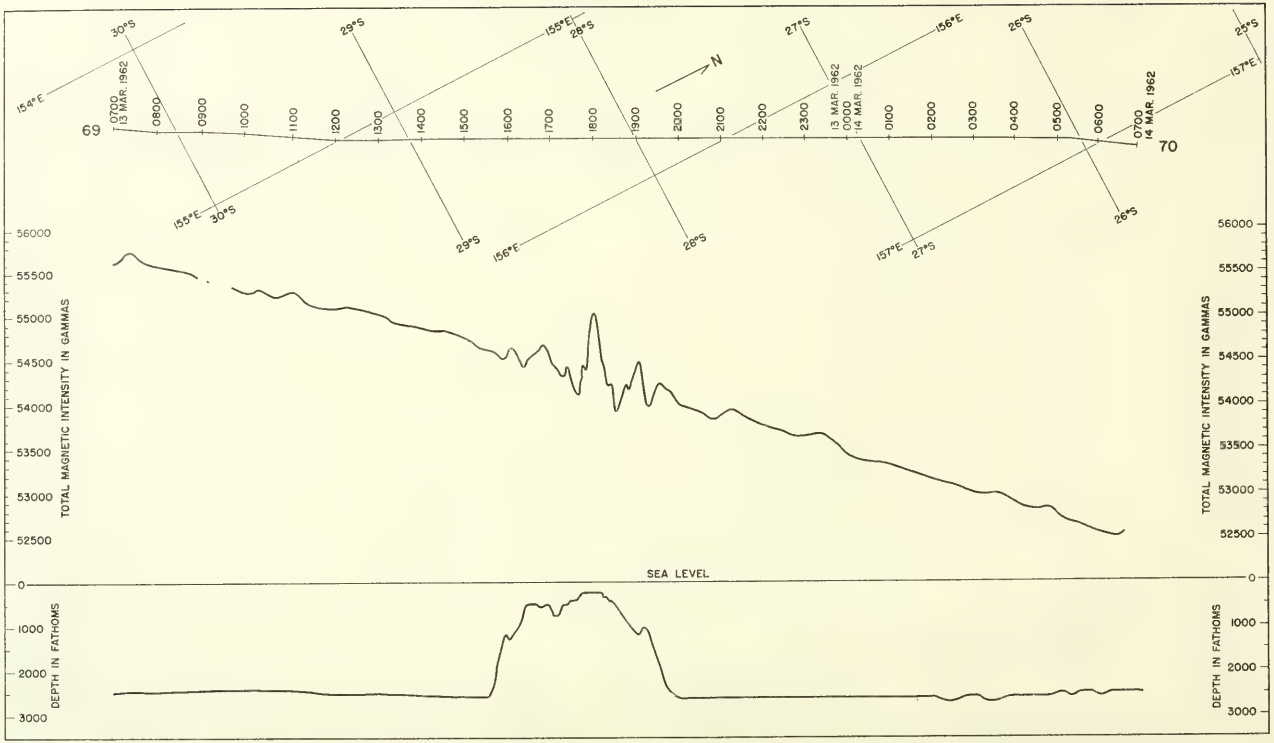

FIGURE 66. MAGNETIC INTENSITY AND BATHYMETRIC PROFILES BETWEEN LOCATIONS 69 AND 70

2. Commonwealth Bay Survey

The track chart of the detailed survey that was conducted in Commonwealth Bay from 19 to 21 February 1962 is presented as Figure 67. Sufficient data were collected on this survey to construct bathymetric and magnetic contour charts of the area (Figs. 68 and 69). The irregular bathymetric relief of the area appears to have no pronounced trends. Attempts made to obtain bottom samples indicated that the area has little or no sedimentary column. The only samples obtained were of sponge spicules and float. A crater cone was located at approximately 66° 49' S, 143° 08' W.

The magnetic field in the area also is irregular with large anomalies. These anomalies in general show very poor correlation with the bathymetric features. Estimates of the depths to the magnetic sources, however, correspond very closely with depths to the floor of the bay. This indicates that there is little or no sedimentary cover over the magnetic source rock. Rock samples collected from out-crops on shore were metamorphic rocks in which magnetite is a common accessory mineral.

The indication that very little, if any, sedimentary cover is present over the magnetic source rock, combined with the lack of correlation between bathymetric and magnetic features, infer that the submarine topography in the Commonwealth Bay area is the result of glacial scouring. The large magnetic anomalies in the area are probably caused by magnetic susceptibility contrasts in the source rock.

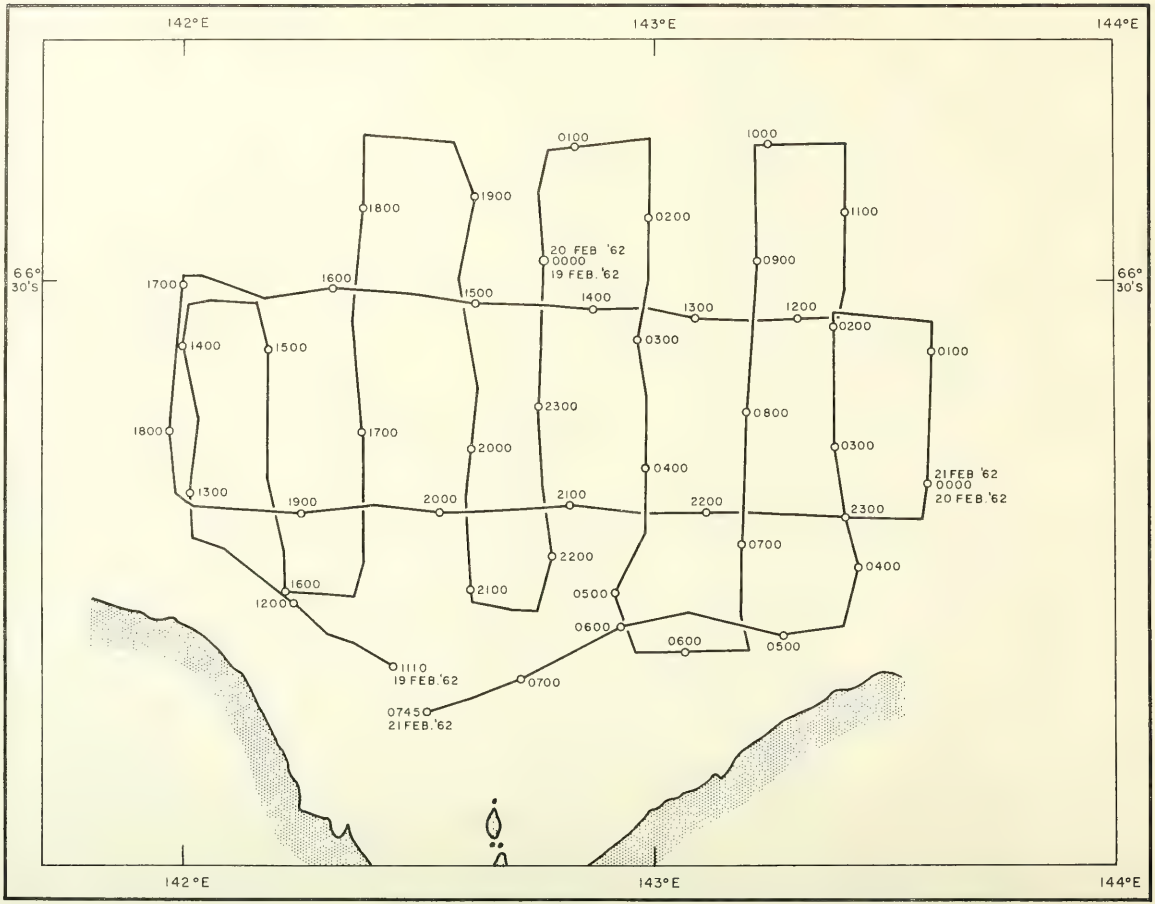

FIGURE 67. COMMONWEALTH BAY SURVEY TRACK CHART

FIGURE 68. COMMONWEALTH BAY BATHYMETRIC CONTOUR CHART

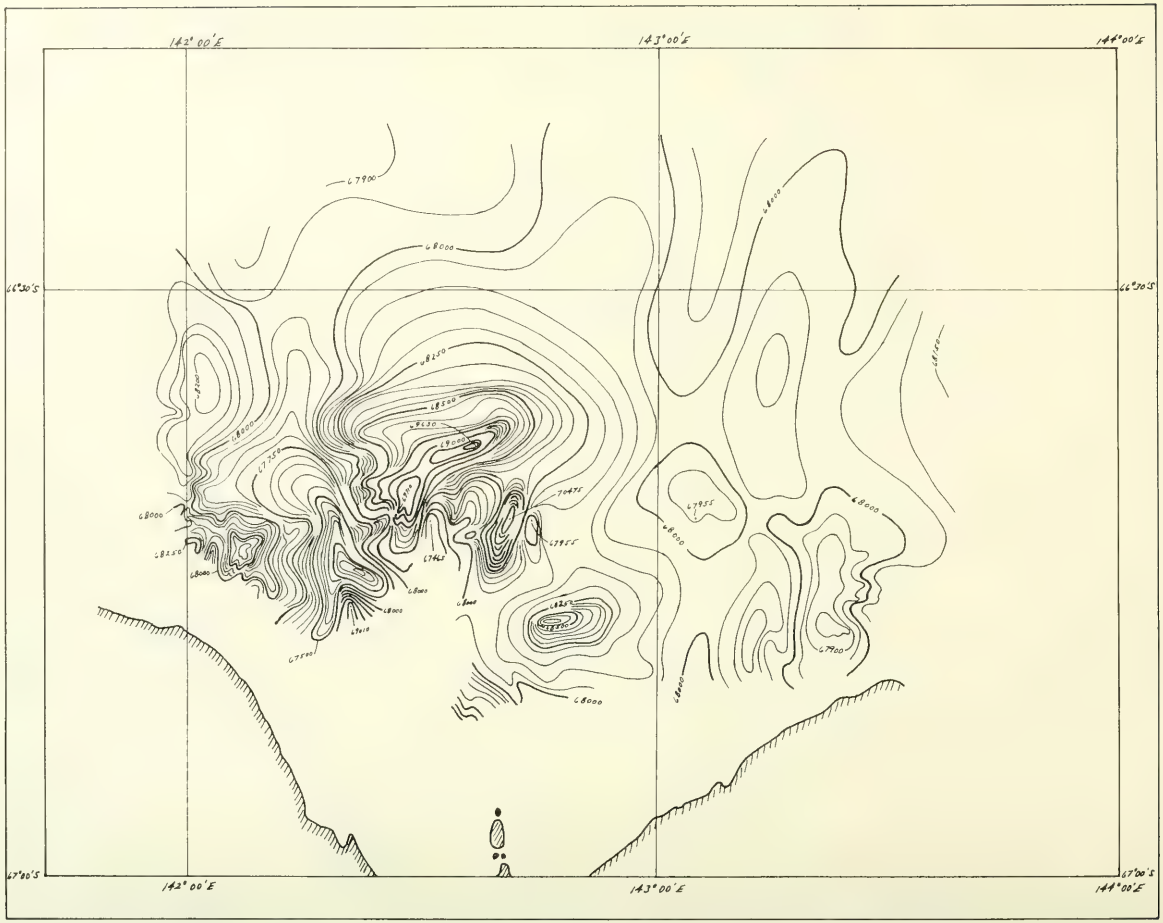

FIGURE 69. COMMONWEALTH BAY TOTAL MAGNETIC INTENSITY CONTOUR CHART

APPENDIX A

OCEANOGRAPHIC STATION DATA

SHIP	NODC REFERENCE NO.
USS BURTON ISLAND	00867
USS GLACIER	00868
USCGC EASTWIND	31951

OCEANOGRAPHIC STATION INDEX

NODC Reference No. 00867

Sta. No.	Page	Consec.* Sta. No.	Sta. No.	Page	Consec.* Sta. No.	Sta. No.	Page	Consec.* Sta. No.
B-01	91	1	B-10	100	10	B-19	109	19
B-02	92	2	B-11	101	11	B-20	110	20
B-03	93	3	B-12	102	12	B-21	111	21
B-04	94	4	B-13	103	13	B-22	112	22
B-05	95	5	B-14	104	14	B-23	113	23
B-06	96	6	B-15	105	15	B-24	114	24
B-07	97	7	B-16	106	16	B-25	115	25
B-08	98	8	B-17	107	17	B-26	116	26
B-09	99	9	B-18	108	18			

NODC Reference No. 00868

G-01	117	1	G-04	120	4	G-07	123	7
G-02	118	2	G-05	121	5	G-08	124	8
G-03	119	3	G-06	122	6	G-09	125	9
						G-10	126	10

NODC Reference No. 31951

E-01	127	1	E-09	135	9	E-17	143	17
E-02	128	2	E-10	136	10	E-18	144	18
E-03	129	3	E-11	137	11	E-19	145	19
E-04	130	4	E-12	138	12	E-20	146	20
E-05	131	5	E-13	139	13	E-21	147	21
E-06	132	6	E-14	140	14	E-22	148	22
E-07	133	7	E-15	141	15	E-23	149	23
E-08	134	8	E-16	142	16	E-24	150	24

* Consecutive Station Number. At NODC (National Oceanographic Data Center) oceanographic stations are numbered consecutively in the chronological order in which they were occupied. Consecutive station number and Cruise Reference Number are required by NODC to identify a station.

EXPLANATION OF OCEANOGRAPHIC STATION DATA

A. 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 right of data indicates those 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.

B. Surface Observations

1. NODC Ref. No. This number is assigned by the National Oceanographic Data Center. It identifies the cruise and provides a means of sorting from the IBM files all cards pertaining to a particular cruise.

2. Station. Stations are numbered to designate a certain station location. Stations are numbered consecutively in the chronological order in which they were occupied by cruise. See oceanographic station index, page 84 , to correlate with station numbers appearing on the station location chart.

3. Date. Month, day, and year are given in Arabic numerals. The hour is Greenwich Mean Time and is that hour nearest to the messenger time of the first Nansen bottle cast.

4. Position. Latitude and longitude of the station are given in degrees and minutes; minutes rounded-off to the nearest whole number.

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

6. Max. 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 the scale and calm is 0. See Table 1, Compass Direction Conversion Table for Wind, Sea, and Swell Directions.

8. Anemometer Height. Not given.

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

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

11. Humidity. Not given.

12. Weather. Weather is coded as indicated in Table 2, Numerical Weather Codes - Present Weather.

13. Cloud. Cloud type and amount are coded as indicated in Tables 3, Cloud Type, and 4, Cloud Amount.

14. Sea. Sea direction and amount are coded as indicated in Tables 1 and 5, respectively.

15. Swell. Swell direction and amount are coded as indicated in Tables1 and 6, respectively.

16. Visibility. Visibility is coded as indicated in Table 7, Visibility.

17. Water. Water color, if entered, is coded as indicated in Table 8, Water Color. Transparency is coded in whole meters from observations taken with a white Secchi disc (30 cm.dia.).

C. Subsurface Observations

STD and OBS preceding the columns of data indicate interpolated values at international standard depths (STD) and actual observed values at sampling depths (OBS).

1. Sample Depth. Observed (actual) depth of each sample and international standard depths are given in meters.

2. Temperature. The Celsius (°C) 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 velocities were computed by Wilson's equation and are recorded in feet per second to one decimal place (corrected for pressure at each depth). See footnote page 5.

TABLE 1. COMPASS DIRECTION CONVERSION TABLE
FOR WIND, SEA, AND SWELL DIRECTIONS

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

TABLE 2. 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 3. CLOUD TYPE

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

TABLE 4. 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 5. 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 6. SWELL AMOUNT

Code	Approximate Height (feet)	Description		Approximate Length (feet)
0	----	No swell		----
1	1 to 6	Low swell	Short or Average	0 to 600
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 7. 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

TABLE 8. WATER COLOR

Code (% yellow)	Description
00	--- Deep blue
10	--- Blue
20	--- Greenish-blue (or green blue)
30	--- Bluish-green (or blue green)
40	--- Green
50	--- Light Green
60	--- Yellowish-green
70	--- Yellow Green
80	--- Green Yellow
90	--- Greenish-yellow
99	--- Yellow

SURFACE OBSERVATIONS

NODC REF NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0001	01	25	1962	03	73° 59′ S	170° 10′ E	0530	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	18		97	51 7	53 3		02	8	3	24				7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	$\Sigma \Delta D$ ▼	O_2 ml/l ▼	V_f ▼
STD	0000	-00 90	33 48	26 94	0 000	8 02	4734 3
OBS	0000	-00 90	33 48	26 94		8 02	4734 3
STD	0010	-00 91	33 47	26 93	0 011	8 06	4734 6
OBS	0010	-00 91	33 47	26 93		8 06	4734 6
STD	0020	-01 45	34 50	27 78	0 019	7 25	4731 6
OBS	0020	-01 45	34 50	27 78		7 25	4731 6
STD	0030	-01 60	34 64	27 90	0 021	6 49	4730 5
OBS	0030	-01 60	34 64	27 90		6 49	4730 5
STD	0050	-01 76	34 73	27 98	0 025	6 31	4729 5
OBS	0050	-01 76	34 73	27 98		6 31	4729 5
STD	0075	-01 79	34 75	28 00	0 028	6 22	4730 5
OBS	0075	-01 79	34 75	28 00		6 22	4730 5
STD	0100	-01 88	34 78	28 02	0 031	6 35	4730 6
OBS	0100	-01 88	34 78	28 02		6 35	4730 6
OBS	0125	-01 89	34 79	28 03		6 41	4731 9
STD	0150	-01 89	34 81	28 05	0 035	6 45	4733 3
OBS	0150	-01 89	34 81	28 05		6 45	4733 3
OBS	0175	-01 92	34 80	28 04		6 42	4734 2
STD	0200	-01 92	34 81	28 05	0 038	6 40	4735 6
OBS	0200	-01 92	34 81	28 05		6 40	4735 6
OBS	0225		34 83			6 36	
OBS	0239	-01 80	34 86	28 09		6 38	4739 8
STD	0250	-01 86	34 86	28 09	0 040	6 42	4739 5
OBS	0263	-01 91	34 86	28 09		6 44	4739 4
OBS	0288		34 84			6 43	
STD	0300	-01 88	34 84	28 07	0 042	6 43	4741 8
OBS	0313	-01 87	34 91*	28 13*		6 42	
OBS	0338	-01 86	34 85	28 08		6 44	4744 2
OBS	0388	-01 90	34 90	28 12		6 39	4746 6
STD	0400	-01 90	34 92	28 14	0 042	6 41	4747 3
OBS	0438	-01 90	34 95	28 16		6 46	4749 6
OBS	0488	-01 91	34 94	28 15		6 51	4752 1
STD	0500	-01 90	34 94	28 15	0 038		4752 9
OBS	0513	-01 89	34 94	28 15			4753 8

SURFACE OBSERVATIONS

NODC REF. NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0002	01	25	1962	10	74° 50′ S	170° 00′ E	0322	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.
07	20		96	51 1	52 8		01	6	6	22	3			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	01 43	34 27	27 45	0 000	8 36	4772 8
OBS	0000	01 43	34 27	27 45		8 36	4772 8
STD	0010	01 23	34 26	27 46	0 006	8 44	4770 3
OBS	0010	01 23	34 26	27 46		8 44	4770 3
OBS	0015	01 17	34 25	27 45		8 40	4769 7
STD	0020	00 89	34 26	27 48	0 013	8 42	4765 9
OBS	0020	00 89	34 26	27 48		8 42	4765 9
STD	0030	-00 73	34 41	27 68	0 018	7 43	4742 8
OBS	0030	-00 73	34 41	27 68		7 43	4742 8
STD	0050	-01 10	34 58	27 84	0 025	5 61	4739 0
OBS	0050	-01 10	34 58	27 84		5 61	4739 0
STD	0075	-01 32	34 63	27 88	0 031	5 71	4737 2
OBS	0075	-01 32	34 63	27 88		5 71	4737 2
STD	0100	-01 64	34 64	27 90	0 036	5 85	4733 7
OBS	0100	-01 64	34 64	27 90		5 85	4733 7
OBS	0125	-01 82	34 75	28 00		6 08	4732 8
STD	0150	-01 88	34 77	28 01	0 044	6 11	4733 3
OBS	0150	-01 88	34 77	28 01		6 11	4733 3
OBS	0175	-01 90	34 79	28 03		6 13	4734 4
STD	0200	-01 83	34 79	28 03	0 048	6 16	4736 9
OBS	0200	-01 83	34 79	28 03		6 16	4736 9
OBS	0225	-01 90	34 79	28 03		6 17	4737 2
STD	0250	-01 92	34 80	28 04	0 052	6 18	4738 3
OBS	0250		34 80			6 18	
OBS	0275	-01 93	34 82	28 06		6 17	4739 6
STD	0300	-01 91	34 84	28 07	0 055	6 17	4741 3
OBS	0300	-01 91	34 84	28 07		6 17	4741 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0003	01	25	1962	17	75° 40′ S	170° 00′ E	0631	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.
06	13		94	52 8	53 9			6	2	19	3			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ O ↓	σ_t ↓	Σ Δ D ↓	O₂ml/l ↓	V_f ↓
STD	0000	01 08	34 22	27 44	0 000	7 98	4767 4
OBS	0000	01 08	34 22	27 44		7 98	4767 4
STD	0010	01 08	34 33	27 52	0 006	8 05	4768 5
OBS	0010	01 08	34 33	27 52		8 05	4768 5
OBS	0015	01 09	34 33	27 52		8 11	4768 9
STD	0020	01 09	34 34	27 53	0 012	8 10	4769 2
OBS	0020	01 09	34 34	27 53		8 10	4769 2
STD	0030	00 76	34 40	27 60	0 017	8 35	4765 1
OBS	0030	00 76	34 40	27 60		8 35	4765 1
OBS	0049	-00 69	34 47	27 73		7 73	4744 7
STD	0050	-00 69	34 47	27 73	0 026	7 62	4744 8
OBS	0074		34 56			5 73	
STD	0075	-00 78	34 56	27 81	0 034	5 70	4745 2
OBS	0099	-00 88	34 62	27 86		5 19	4745 2
STD	0100	-00 88	34 62	27 86	0 041	5 20	4745 3
							4744 7
OBS	0124	-01 01	34 63	27 87			
OBS	0148	-01 40	34 65	27 90		5 71	4740 1
STD	0150	-01 42	34 65	27 90	0 052	5 73	4739 9
OBS	0173	-01 66	34 68	27 94		5 96	4737 5
OBS	0198	-01 81				6 09	
STD	0200	-01 81	34 70	27 96	0 061	6 08	4736 8
OBS	0238	-01 83				5 99	
STD	0250	-01 85	34 73	27 98	0 068	6 01	4739 0
OBS	0286	-01 89				6 07	
STD	0300	-01 91	34 76	28 01	0 074	6 11	4741 0
OBS	0334		34 78			6 16	
OBS	0382	-01 93	34 81	28 05		6 08	4745 4
STD	0400	-01 89	34 82	28 05	0 081	6 11	4747 0
OBS	0430	-01 87	34 96*	28 17*			
OBS	0478	-01 94				6 16	
STD	0500	-01 92	34 92	28 14	0 081	6 12	4752 5
OBS	0526	-01 89	34 85*	28 08*		6 11	
OBS	0574	-01 85	35 01	28 21		6 17	4758 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0004	01	25	1962	23	76° 30′ S	170° 00′ E	0714	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	13		94	54 4	55 6			5	1	14	4			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	00 23	34 48	27 70	0 000		4756 0
OBS	0000	00 23	34 48	27 70			4756 0
STD	0010	00 19	34 47	27 69	0 004		4755 9
OBS	0010	00 19	34 47	27 69			4755 9
OBS	0015	00 21	34 48	27 70			4756 5
STD	0020	00 19	34 49	27 71	0 008		4756 5
OBS	0020	00 19	34 49	27 71			4756 5
STD	0030	00 15	34 48	27 70	0 012		4756 4
OBS	0030	00 15	34 48	27 70			4756 4
OBS	0040	-00 02	34 51	27 73			4754 5
STD	0050	-00 70	34 56	27 80	0 019		4745 0
OBS	0050		34 56				
STD	0075	-01 73	34 64	27 90	0 026		4730 9
OBS	0075	-01 73	34 64	27 90			4730 9
STD	0100	-01 83	34 71	27 96	0 030		4731 1
OBS	0100	-01 83	34 71	27 96			4731 1
OBS	0125	-01 87	34 74	27 99			4732 0
STD	0150	-01 90	34 77	28 01	0 036		4733 0
OBS	0150	-01 90	34 77	28 01			4733 0
OBS	0175	-01 89	34 78	28 02			4734 6
OBS	0189	-01 87					
STD	0200	-01 88					
OBS	0237	-01 91	35 06*	28 25*			
STD	0250	-01 92					
OBS	0286		34 99*	*			
STD	0300	-01 92					
OBS	0334	-01 93	35 06*	28 25*			
OBS	0383	-01 87	35 14*	28 31*			
STD	0400	-01 88					
OBS	0481	-01 92	35 02*	28 22*			
STD	0500	-01 91					
OBS	0579	-01 89					
STD	0600	-01 89					
OBS	0678	-01 88	35 01*	28 21*			

SURFACE OBSERVATIONS

NODC REF NO	STATION	DATE				POSITION		SON. C DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0005	01	27	1962	11	77° 20′ S	170° 00′ E	0779	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.
07	16			59 0	59 6			6	8	14	3			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S‰ ▼	σ_t ▼	$\Sigma \Delta D$ ▼	O_2 ml/l ▼	V_f ▼
STD	0000	-00 61	34 44	27 70	0 000	8 02	4743 1
OBS	0000	-00 61	34 44	27 70		8 02	4743 1
STD	0010	-00 61	34 45	27 71	0 004	8 01	4743 7
OBS	0010	-00 61	34 45	27 71		8 01	4743 7
OBS	0015	-00 57	34 45	27 71		8 03	4744 6
STD	0020	-00 56	34 45	27 71	0 008	8 02	4745 0
OBS	0020	-00 56	34 45	27 71		8 02	4745 0
STD	0030	-00 51	34 48	27 73	0 012	7 97	4746 5
OBS	0030	-00 51	34 48	27 73		7 97	4746 5
OBS	0040	-00 50	34 49	27 74		8 03	4747 2
STD	0050	-00 47	34 49	27 74	0 019	7 92	4748 2
OBS	0050	-00 47	34 49	27 74		7 92	4748 2
STD	0075	-00 41	34 51	27 75	0 028	7 84	4750 6
OBS	0075	-00 41	34 51	27 75		7 84	4750 6
STD	0100	-00 39	34 52	27 76	0 037	7 77	4752 3
OBS	0100	-00 39	34 52	27 76		7 77	4752 3
OBS	0125	-01 05	34 55	27 81		6 96	4743 7
STD	0150	-01 35	34 59	27 85	0 052	6 02	4740 7
OBS	0150	-01 35	34 59	27 85		6 02	4740 7
OBS	0175	-01 51	34 63	27 89		5 92	4739 7
STD	0200	-01 66				5 90	
OBS	0200	-01 66				5 90	
STD	0250	-01 87				6 03	
OBS	0250	-01 87				6 03	
STD	0300	-01 90				6 17	
OBS	0300	-01 90				6 17	
STD	0400	-01 95				6 12	
OBS	0400	-01 95				6 12	
STD	0500	-01 89				6 15	
OBS	0500	-01 89				6 15	
STD	0600	-01 93				6 16	
OBS	0600	-01 93				6 16	
OBS	0700	-01 89				6 26	
OBS	0750	-01 91				6 05	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0006	01	27	1962	17	77° 21′ S	173° 49′ E	0717	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.
04	18		90	58 4	59 0			6	6	17	2			7		.10

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-00 48	34 44	27 70	0 000	7 75	4745 1
OBS	0000	-00 48	34 44	27 70		7 75	4745 1
STD	0010	-00 51	34 45	27 71	0 004	7 81	4745 2
OBS	0010	-00 51	34 45	27 71		7 81	4745 2
STD	0020	-00 47	34 45	27 71	0 008	7 77	4746 4
OBS	0020	-00 47	34 45	27 71		7 77	4746 4
OBS	0025	-00 48	34 45	27 71		7 73	4746 5
STD	0030	-00 49	34 46	27 71	0 012	7 72	4746 7
OBS	0030	-00 49	34 46	27 71		7 72	4746 7
STD	0050	-00 54	34 44	27 70	0 020	7 82	4746 9
OBS	0050	-00 54	34 44	27 70		7 82	4746 9
OBS	0060	-00 49	34 45	27 71		7 75	4748 3
STD	0075	-01 00	34 53	27 79	0 029	6 12	4741 7
OBS	0075	-01 00	34 53	27 79		6 12	4741 7
OBS	0090	-00 93	34 56	27 81		5 76	4743 7
STD	0100	-00 79	34 57	27 82	0 036	6 58	4746 4
OBS	0100	-00 79	34 57	27 82		6 58	4746 4
OBS	0110	-00 97	34 58	27 83		6 26	4744 3
OBS	0120	-01 37	34 58	27 85		6 29	4738 7
OBS	0125	-01 55	34 58	27 85			4736 2
OBS	0135	-01 62	34 59	27 86			4735 7
STD	0150	-01 44	34 60	27 86	0 050		4739 3
OBS	0150	-01 44	34 60	27 86			4739 3
OBS	0175	-01 67	34 60	27 87			4737 1
STD	0200	-01 57	34 63	27 89	0 061		4740 2
OBS	0200	-01 57	34 63	27 89			4740 2
OBS	0225	-01 82	34 65	27 92			4737 8
STD	0250	-01 66	34 64	27 90	0 071		4741 6
OBS	0250	-01 66	34 64	27 90			4741 6
STD	0300	-01 91	34 68	27 94	0 080		4740 6
OBS	0300	-01 91	34 68	27 94			4740 6
STD	0400	-01 92	34 75	28 00	0 093		4746 2
STD	0500	-01 92	34 80	28 04	0 100		4752 0
OBS	0500	-01 92					
STD	0600	-01 93	34 84	28 07	0 104		4757 5
OBS	0700	-01 93	34 87	28 10			4763 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0007	01	27	1962	23	77° 30′ S	177° 55′ E	0677	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
08	18		86	53 9	55 4			4	2	17	3			7		11

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O₂ ml/l ↓	V_f ↓
STD	0000	-00 58	34 44	27 70	0 000	7 63	4743 6
OBS	0000	-00 58	34 44	27 70		7 63	4743 6
STD	0010	-00 59	34 45	27 71	0 004	7 53	4744 0
OBS	0010	-00 59	34 45	27 71		7 53	4744 0
STD	0020	-00 57	34 44	27 70	0 008	7 55	4744 8
OBS	0020	-00 57	34 44	27 70		7 55	4744 8
STD	0030	-00 58	34 44	27 70	0 012	7 51	4745 2
OBS	0030	-00 58	34 44	27 70		7 51	4745 2
STD	0050	-00 55	34 45	27 71	0 020	7 52	4746 8
OBS	0050	-00 55	34 45	27 71		7 52	4746 8
OBS	0060	-00 65	34 48	27 74		7 16	4746 0
OBS	0070	-00 69	34 52	27 77		5 72	4746 1
STD	0075	-00 74	34 53	27 78	0 029	5 72	4745 6
OBS	0090	-00 94	34 56	27 81		5 73	4743 6
STD	0100	-01 11	34 57	27 83	0 036	5 78	4741 5
OBS	0100	-01 11	34 57	27 83		5 78	4741 5
OBS	0110	-01 27	34 56	27 83		5 75	4739 6
OBS	0120	-01 49	34 57	27 84			4736 8
OBS	0125	-01 60	34 58	27 85		5 86	4735 4
OBS	0126	-01 53	34 55	27 83		6 28	4736 4
OBS	0136	-01 69	34 58	27 85			4734 6
OBS	0146	-01 76	34 59	27 86		5 98	4734 1
STD	0150	-01 77	34 59	27 87	0 049	6 00	4734 2
OBS	0165	-01 79	34 60	27 87		6 05	4734 7
OBS	0185	-01 82	34 61	27 88		6 01	4735 4
OBS	0194	-01 86	34 62	27 89		6 10	4735 3
STD	0200	-01 87	34 62	27 89	0 061	6 12	4735 5
OBS	0243	-01 93	34 62	27 89		6 21	4736 9
STD	0250	-01 93	34 63	27 90	0 071	6 20	4737 3
OBS	0292	-01 92	34 67	27 93		6 13	4740 0
STD	0300	-01 92	34 68	27 94	0 080	6 12	4740 4
STD	0400	-01 94	34 74	27 99	0 093	6 08	4745 9
OBS	0488	-01 95	34 79	28 03		6 07	4750 8
STD	0500	-01 95	34 80	28 04	0 101	6 07	4751 5
STD	0600	-01 94	34 84	28 07	0 104	6 10	4757 3
OBS	0635	-01 94	34 85	28 08		6 12	4759 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0008	01	28	1962	05	76° 30′ S	177° 02′ E	0389	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	16		85	52 8	55 0			4	7	20	2			7		09

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	00 02	34 45	27 68	0 000	7 57	4752 7
OBS	0000	00 02	34 45	27 68		7 57	4752 7
STD	0010	00 05	34 44	27 67	0 004	7 60	4753 7
OBS	0010	00 05	34 44	27 67		7 60	4753 7
STD	0020	00 13	34 44	27 67	0 009	7 65	4755 4
OBS	0020	00 13	34 44	27 67		7 65	4755 4
STD	0030	00 03	34 46	27 69	0 013	7 59	4754 5
OBS	0030		34 46			7 59	
STD	0050	-00 18	34 49	27 72	0 021	7 60	4752 6
OBS	0050	-00 18	34 49	27 72		7 60	4752 6
OBS	0060	-00 80	34 53	27 78		7 47	4743 9
STD	0075	-00 98	34 57	27 82	0 029	7 35	4742 2
OBS	0075	-00 98	34 57	27 82		7 35	4742 2
OBS	0090		34 58			7 02	
OBS	0095	-01 08	34 58	27 84		6 95	4741 8
STD	0100	-01 19	34 58	27 84	0 036	6 74	4740 4
OBS	0100	-01 19	34 58	27 84		6 74	4740 4
OBS	0110	-01 26	34 61	27 87		6 27	4740 0
OBS	0120	-01 31	34 61	27 87		5 92	4739 7
OBS	0125	-01 30				5 82	
OBS	0130	-01 33				5 78	
OBS	0140					5 76	
STD	0150	-01 39				5 77	
OBS	0150	-01 39				5 77	
OBS	0175	-01 49				5 76	
STD	0200	-01 66				5 80	
OBS	0200	-01 66				5 80	
STD	0250	-01 70				5 85	
OBS	0250	-01 70				5 85	
STD	0300	-01 89				5 92	
OBS	0300	-01 89				5 92	
OBS	0350	-01 93				6 01	

SURFACE OBSERVATIONS

NODC REF NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0009	01	28	1962	11	75° 40′ S	176° 43′ E	0454	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	09		82	52 5	53 9			4	8	20	2			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma\Delta D$ ↓	O_2 m l/l ↓	V_f ↓
STD	0000	-00 11	34 40	27 65	0 000	7 46	4750 5
OBS	0000	-00 11	34 40	27 65		7 46	4750 5
STD	0010	-00 10	34 40	27 65	0 005	7 43	4751 2
OBS	0010	-00 10	34 40	27 65		7 43	4751 2
STD	0020	-00 08	34 40	27 65	0 009	7 42	4752 1
OBS	0020	-00 08	34 40	27 65		7 42	4752 1
STD	0030	-00 06	34 40	27 65	0 014	7 47	4752 9
OBS	0030	-00 06	34 40	27 65		7 47	4752 9
STD	0050	-00 09	34 41	27 66	0 023	7 41	4753 6
OBS	0050	-00 09	34 41	27 66		7 41	4753 6
OBS	0060	-00 37	34 42	27 68		6 93	4749 9
STD	0075	-00 49	34 55	27 79	0 032	5 25	4749 5
OBS	0075	-00 49	34 55	27 79		5 25	4749 5
OBS	0090	-00 06	34 59	27 80		4 92	4757 0
OBS	0095	-00 04	34 60	27 81		4 92	4757 6
STD	0100	00 07	34 62	27 82	0 040	4 85	4759 7
OBS	0100	00 07	34 62	27 82		4 85	4759 7
OBS	0110	00 15	34 63	27 82		4 76	4761 4
OBS	0120	00 23	34 65	27 83		4 74	4763 3
OBS	0125	00 17	34 65	27 84		4 74	4762 6
OBS	0130	-00 02	34 65	27 85		4 87	4760 1
STD	0150	-00 58	34 64	27 86	0 053	5 09	4752 7
OBS	0150		34 64			5 09	
OBS	0175	-00 99	34 61	27 86		5 48	4747 6
STD	0200	-01 08	34 63	27 88	0 065	4 94	4747 7
OBS	0200	-01 08	34 63	27 88		4 94	4747 7
STD	0250	-01 09	34 63	27 88	0 077	5 08	4750 3
OBS	0250	-01 09	34 63	27 88		5 08	4750 3
STD	0300	-01 19	34 67	27 91	0 087	5 15	4751 7
OBS	0300	-01 19				5 15	
OBS	0350	-01 63	34 72	27 97		5 56	4747 9
STD	0400	-01 88	34 78	28 02	0 100	5 92	4747 0
OBS	0450	-01 94	34 86	28 09		6 24	4749 2

SURFACE OBSERVATIONS

NODC REF. NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0010	01	28	1962	17	75° 40′ S	179° 56′ E	0631	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.
02	13		80	52 2	54 4			4	6	17	3			7		10

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 17	34 39	27 64	0 000	7 81	4749 6
OBS	0000	-00 17	34 39	27 64		7 81	4749 6
STD	0010	-00 20	34 38	27 64	0 005	7 81	4749 6
OBS	0010	-00 20	34 38	27 64		7 81	4749 6
STD	0020	-00 18	34 38	27 64	0 009	7 81	4750 5
OBS	0020	-00 18	34 38	27 64		7 81	4750 5
STD	0030	-00 13	34 40	27 65	0 014	7 78	4751 8
OBS	0030	-00 13	34 40	27 65		7 78	4751 8
STD	0050	-00 15	34 39	27 64	0 023	7 78	4752 6
OBS	0050	-00 15	34 39	27 64		7 78	4752 6
OBS	0060	-00 46	34 42	27 68		7 44	4748 6
OBS	0070	-00 77	34 49	27 75		6 32	4744 7
STD	0075	-00 58	34 52	27 77	0 033	5 79	4748 0
OBS	0080	-00 43	34 55	27 78		5 46	4750 7
OBS	0090	-00 26	34 61	27 83		5 40	4754 1
STD	0100	-00 01	34 62	27 82	0 041	5 15	4758 5
OBS	0100	-00 01	34 62	27 82		5 15	4758 5
OBS	0110	00 11	34 62	27 81		5 04	4760 8
OBS	0120	00 02	34 64	27 84		5 10	4760 1
OBS	0122	00 08	34 64	27 83		5 11	4761 1
OBS	0127	00 03	34 63	27 83		5 18	4760 6
OBS	0146		34 63			5 20	
STD	0150	-00 32	34 63	27 84	0 054	5 26	4756 6
OBS	0171	-00 65	34 62	27 85		5 54	4752 7
OBS	0195	-01 05	34 60	27 85		5 76	4747 8
STD	0200	-01 06	34 60	27 85	0 067	5 77	4747 9
STD	0250	-01 19	34 61	27 86	0 080	5 90	4748 7
OBS	0294	-01 26	34 61	27 87		5 99	4750 0
STD	0300	-01 26	34 61	27 87	0 092	6 00	4750 3
OBS	0394	-01 31	34 66	27 91		6 14	4754 9
STD	0400	-01 37	34 67	27 92	0 112	6 16	4754 4
OBS	0493	-01 92	34 77	28 02		6 32	4751 4
STD	0500	-01 92	34 78	28 02	0 125	6 32	4751 9
OBS	0568	-01 93	34 87	28 10		6 25	4755 9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0011	01	28	1962	23	75° 40′ S	176° 24′ W	0589	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.
07	11		78	53 3	54 4			4	5	18	2			7		11

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ O ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 84	34 00	27 36	0 000	8 04	4737 6
OBS	0000	-00 84	34 00	27 36		8 04	4737 6
STD	0010	-00 85	33 99	27 35	0 007	8 03	4738 0
OBS	0010	-00 85	33 99	27 35		8 03	4738 0
STD	0020	-00 83	34 12	27 45	0 014	7 91	4739 4
OBS	0020	-00 83	34 12	27 45		7 91	4739 4
STD	0030	-00 93	34 23	27 55	0 020	7 69	4738 9
OBS	0030	-00 93	34 23	27 55		7 69	4738 9
STD	0050	-01 25	34 37	27 67	0 030	7 20	4735 7
OBS	0050	-01 25	34 37	27 67		7 20	4735 7
OBS	0060	-01 31	34 38	27 68		7 02	4735 4
OBS	0070	-01 20	34 41	27 70		6 85	4737 8
STD	0075	-01 23	34 41	27 70	0 040	6 69	4737 6
OBS	0080	-01 25	34 41	27 70		6 60	4737 6
OBS	0090	-01 14	34 44	27 72		6 64	4739 9
STD	0100	-01 11	34 47	27 75	0 050	6 59	4741 1
OBS	0100	-01 11	34 47	27 75		6 59	4741 1
OBS	0110	-00 95	34 44*	27 72*		6 24	
OBS	0120	-00 77	34 50	27 76		5 95	4747 5
OBS	0125	-00 70	34 50	27 76		5 92	4748 8
OBS	0130	-00 71	34 51	27 76		5 87	4749 0
STD	0150	-00 61	34 52	27 77	0 067	5 76	4751 7
OBS	0150	-00 61	34 52	27 77		5 76	4751 7
OBS	0175	-00 55	34 56	27 80		5 63	4754 1
STD	0200	-00 51	34 58	27 81	0 082	5 58	4756 2
OBS	0200	-00 51	34 58	27 81		5 58	4756 2
STD	0250	-01 23	34 57	27 83	0 096	5 96	4747 9
STD	0300	-01 67	34 56	27 84	0 110	6 21	4743 8
OBS	0300	-01 67	34 56	27 84		6 21	4743 8
STD	0400	-01 74	34 58	27 86	0 134	6 36	4748 2
OBS	0400	-01 74	34 58	27 86		6 36	4748 2
STD	0500	-01 94	34 76	28 01	0 150	6 37	4751 5
OBS	0500	-01 94	34 76	28 01		6 37	4751 5
OBS	0550	-01 95	34 80	28 04		6 41	4754 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0012	01	29	1962	18	76° 22′ S	168° 12′ W	0485	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.
04	11		72	53 9	54 4			6	5	12	1			7		06

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 37	33 77	27 19	0 000	8 08	4728 4
OBS	0000	-01 37	33 77	27 19		8 08	4728 4
STD	0010	-01 38	33 78	27 20	0 009	8 02	4728 8
OBS	0010	-01 38	33 78	27 20		8 02	4728 8
STD	0020	-01 36	33 78	27 20	0 018	8 00	4729 7
OBS	0020	-01 36	33 78	27 20		8 00	4729 7
STD	0030	-01 35	33 91	27 30	0 026	7 95	4731 0
OBS	0030	-01 35	33 91	27 30		7 95	4731 0
STD	0050	-01 41	34 09	27 45	0 040	7 73	4732 0
OBS	0050	-01 41	34 09	27 45		7 73	4732 0
STD	0075	-01 58	34 21	27 55	0 055	7 34	4731 3
OBS	0075	-01 58	34 21	27 55		7 34	4731 3
STD	0100	-01 63	34 32	27 64	0 067	6 94	4732 4
OBS	0100	-01 63	34 32	27 64		6 94	4732 4
OBS	0110	-01 71	34 34	27 66		6 85	4731 8
OBS	0120	-01 71	34 34	27 66		6 88	4732 3
OBS	0125	-01 79	34 35	27 67		6 85	4731 4
OBS	0130	-01 80	34 39	27 70		6 87	4731 7
STD	0150	-01 73	34 39	27 70	0 088	6 73	4733 9
OBS	0150	-01 73				6 73	
OBS	0175	-01 58	34 38	27 69		6 68	4737 5
STD	0200	-01 57	34 40	27 71	0 108	6 59	4739 1
OBS	0200	-01 57	34 40	27 71		6 59	4739 1
OBS	0225		34 41			6 54	
STD	0250	-01 53	34 43	27 73	0 127	6 56	4742 6
OBS	0250	-01 53	34 43	27 73		6 56	4742 6
OBS	0275	-01 48	34 46	27 75		6 74	4744 9
STD	0300	-01 45	34 47	27 76	0 144	6 49	4746 7
OBS	0300	-01 45					
OBS	0350	-01 27	34 49	27 77		6 21	4752 3
STD	0400	-01 30	34 52	27 79	0 176	6 22	4754 7
OBS	0400	-01 30	34 52	27 79		6 22	4754 7
OBS	0450	-01 31	34 53	27 80		6 16	4757 4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0013	01	29	1962	08	75° 52′ S	165° 33′ W	1920	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.
08	13		76	53 7	54 7			4	7	10	2			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S‰ O	σ_t	$\Sigma \Delta D$	O ml/l	V_f
STD	0000	-01 67	33 69	27 13	0 000	7 73	4723 4
OBS	0000	-01 67	33 69	27 13		7 73	4723 4
STD	0010	-01 65	33 68	27 12	0 009	7 78	4724 2
OBS	0010	-01 65	33 68	27 12		7 78	4724 2
STD	0020	-01 65	33 69	27 13	0 019	7 66	4724 8
OBS	0020	-01 65	33 69	27 13		7 66	4724 8
STD	0030	-01 60	33 86	27 27	0 028	7 70	4726 9
OBS	0030	-01 60	33 86	27 27		7 70	4726 9
STD	0050	-01 71	34 11	27 47	0 042	7 69	4727 4
OBS	0050	-01 71	33 76*	27 19*		7 69	
STD	0075	-01 71	34 28	27 61	0 056	7 00	4729 6
OBS	0075		34 28			7 00	
STD	0100	-01 73	34 29	27 62	0 068	6 88	4730 7
OBS	0100	-01 73	34 29	27 62		6 88	4730 7
OBS	0125	-01 77	34 30	27 63		6 89	4731 5
STD	0150	-01 64	34 32	27 64	0 091	6 39	4734 9
OBS	0150	-01 64	34 32	27 64		6 39	4734 9
OBS	0175	-01 63	34 38*	27 69*		6 58	
STD	0200	-01 42	34 36	27 67	0 112	6 44	4741 2
OBS	0200	-01 42	34 36	27 67		6 44	4741 2
STD	0250	-00 80	34 42	27 70	0 133	5 99	4753 7
OBS	0250	-00 80	34 42	27 70		5 99	4753 7
STD	0300	00 03	34 52	27 74	0 152	5 42	4769 5
OBS	0300	00 03	34 52	27 74		5 42	4769 5
OBS	0350	00 61	34 58	27 75		4 92	4781 1
STD	0400	01 12	34 67	27 79	0 187	4 55	4791 8
OBS	0400	01 12	34 67	27 79		4 55	4791 8
STD	0500	01 41	34 75	27 84	0 217	4 38	4801 8
OBS	0500	01 41	34 75	27 84		4 38	4801 8
STD	0600	01 27	34 73	27 83	0 247	4 36	4805 1
OBS	0600	01 27	34 73	27 83		4 36	4805 1
STD	0800	00 99	34 73	27 85	0 304	4 60	4812 0
OBS	0800	00 99	34 73	27 85		4 60	4812 0
OBS	0900	00 93	34 74	27 86		4 62	4816 7
STD	1000	00 89	34 72	27 85	0 360	4 59	4821 5
OBS	1000	00 89	34 72	27 85		4 59	4821 5
STD	1200	00 80	34 73	27 86	0 415	4 72	4831 3
OBS	1200	00 80	34 73	27 86		4 72	4831 3
STD	1500	00 66	34 73	27 87	0 495	4 71	4845 9
OBS	1500	00 66	34 73	27 87		4 71	4845 9
OBS	1800	00 57	34 74	27 88		4 79	4861 3
OBS	1900	00 59	34 74	27 88		4 77	4867 2

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0014	01	30	1962	21	76° 26′ S	168° 35′ W	0530	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.
08	25		83	51 8	52 6			6	7	24	2			7		09

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 41	33 96	27 34	0 000	7 89	4728 7
OBS	0000	-01 41	33 96	27 34		7 89	4728 7
OBS	0005	-01 46	33 96	27 35		7 91	4728 2
STD	0010	-01 41	33 97	27 35	0 007	7 90	4729 3
OBS	0010	-01 41	33 97	27 35		7 90	4729 3
STD	0020	-01 39	34 02	27 39	0 014	7 91	4730 3
OBS	0020	-01 39	34 02	27 39		7 91	4730 3
STD	0030	-01 42	34 15	27 50	0 021	7 76	4731 0
OBS	0030	-01 42	34 15	27 50		7 76	4731 0
STD	0050	-01 41	34 28	27 60	0 032	7 57	4732 9
OBS	0050	-01 41				7 57	
OBS	0060	-01 45	34 32	27 64		7 39	4733 0
OBS	0070	-01 61				7 20	
STD	0075	-01 62	34 34	27 66	0 043	7 07	4731 3
OBS	0080	-01 62				6 97	
OBS	0090	-01 44	34 35	27 66		6 87	4734 9
STD	0100	-01 61	34 35	27 67	0 054	6 70	4732 8
OBS	0100	-01 61	34 35	27 67		6 70	4732 8
OBS	0110	-01 61	34 35	27 67		6 71	4733 4
OBS	0120	-01 58	34 36	27 67		6 78	4734 4
OBS	0125	-01 63	34 35	27 67		6 76	4733 9
OBS	0130	-01 61	34 40	27 71		6 79	4734 7
STD	0150	-01 56	34 39	27 70	0 075	6 67	4736 5
OBS	0150	-01 56	34 39	27 70		6 67	4736 5
OBS	0175	-01 56	34 34	27 66		6 62	4737 6
STD	0200	-01 58	34 38	27 69	0 095	6 58	4738 9
OBS	0200	-01 58	34 38	27 69		6 58	4738 9
STD	0250	-01 45	34 42	27 72	0 114	6 45	4743 8
OBS	0250	-01 45	34 42	27 72		6 45	4743 8
STD	0300	-01 28	34 47	27 75	0 132	6 16	4749 4
OBS	0300	-01 28	34 47	27 75		6 16	4749 4
OBS	0350	-01 20	34 49	27 77		6 10	4753 4
STD	0400	-01 15	34 57	27 83	0 162		4757 3
OBS	0400	-01 15	34 57	27 83			4757 3
OBS	0450	-01 04	34 53	27 79			4761 5
STD	0500	-01 03					
OBS	0500	-01 03					

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0015	01	31	1962	03	77° 20′ S	167° 12′ W	0485	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.
06	34		84	52 2	53 3			6	6	28	3			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S‰	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_f
STD	0000	-00 30	34 05	27 38	0 000	8 08	4746 0
OBS	0000	-00 30	34 05	27 38		8 08	4746 0
STD	0010	-00 31	34 06	27 38	0 007	8 10	4746 5
OBS	0010	-00 31	34 06	27 38		8 10	4746 5
STD	0020	-00 36	34 11	27 43	0 014	8 01	4746 5
OBS	0020	-00 36	34 11	27 43		8 01	4746 5
STD	0030	-00 37	34 17	27 48	0 020	8 03	4747 2
OBS	0030	-00 37	34 17	27 48		8 03	4747 2
STD	0050	-00 94	34 31	27 61	0 031	7 60	4740 2
OBS	0050	-00 94	34 31	27 61		7 60	4740 2
OBS	0060	-01 52	34 34	27 66		7 05	4732 0
OBS	0070	-01 58	34 36	27 67		6 72	4731 7
STD	0075	-01 62	34 37	27 68	0 043	6 49	4731 4
OBS	0080	-01 63	34 38	27 69		6 40	4731 6
OBS	0090	-01 55	34 39	27 70		6 62	4733 4
STD	0100	-01 54	34 39	27 70	0 053	6 57	4734 1
OBS	0100		34 39			6 57	
OBS	0110	-01 54	34 40	27 70		6 51	4734 7
OBS	0115	-01 60	34 40	27 71		6 51	4734 0
OBS	0120	-01 58	34 38	27 69		6 56	4734 5
OBS	0125	-01 55	34 39	27 70		6 55	4735 3
OBS	0130	-01 53	34 40	27 70		6 51	4735 9
STD	0150	-01 43	34 41	27 71	0 072	6 43	4738 6
OBS	0150	-01 43	34 41	27 71		6 43	4738 6
OBS	0175	-01 39	34 44	27 73		6 33	4740 7
STD	0200	-01 37	34 47	27 76	0 091	6 25	4742 5
OBS	0200	-01 37	34 47	27 76		6 25	4742 5
STD	0250	-01 15	34 51	27 78	0 107	6 25	4748 8
OBS	0250	-01 15	34 51	27 78			4748 8
STD	0300	-00 99	34 54	27 80	0 122	6 25	4754 1
OBS	0300	-00 99	34 54	27 80			4754 1
OBS	0350	-01 54	34 53	27 81		6 25	4748 4
STD	0400	-01 82	34 54	27 83	0 150	6 29	4746 8
OBS	0400		34 54				
OBS	0450	-01 83	34 56	27 84		6 35	4749 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0016	01	31	1962	08	77° 58′ S	165° 50′ W	0466	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	16		84	52 2	53 3			4	4	29	3			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 69	34 27	27 57	0 000	8 09	4741 1
OBS	0000	-00 69	34 27	27 57		8 09	4741 1
STD	0010	-00 65	34 25	27 55	0 005	8 18	4742 2
OBS	0010	-00 65	34 25	27 55		8 18	4742 2
STD	0020	-00 61	34 27	27 57	0 011	8 12	4743 4
OBS	0020	-00 61	34 27	27 57		8 12	4743 4
STD	0030	-00 63	34 27	27 57	0 016	8 25	4743 7
OBS	0030	-00 63	34 27	27 57		8 25	4743 7
OBS	0040	-01 03	34 29	27 60		7 59	4738 2
STD	0050	-01 69	34 36	27 68	0 026	6 73	4728 9
OBS	0050	-01 69	34 36	27 68		6 73	4728 9
OBS	0055	-01 66	34 38	27 69		6 68	4729 7
OBS	0060	-01 67	34 37	27 68		6 68	4729 8
OBS	0070	-01 67	34 38	27 69		6 64	4730 4
STD	0075	-01 68	34 39	27 70	0 036	6 63	4730 6
OBS	0090	-01 69	34 40	27 71		6 62	4731 3
OBS	0095	-01 73	34 39	27 70		6 58	4730 9
STD	0100	-01 67	34 41	27 72	0 046	6 73	4732 2
OBS	0100	-01 67	34 41	27 72		6 73	4732 2
OBS	0110	-01 61	34 41	27 71			4733 6
OBS	0125	-01 56	34 42	27 72		6 56	4735 3
STD	0150	-01 59	34 44	27 74	0 064	6 52	4736 3
OBS	0150	-01 59	34 44	27 74		6 52	4736 3
OBS	0175	-01 74	34 45	27 75		6 58	4735 4
STD	0200	-01 63	34 47	27 76	0 081	6 45	4738 5
OBS	0200	-01 63	34 47	27 76		6 45	4738 5
STD	0250	-01 71	34 50	27 79	0 097	6 53	4740 1
OBS	0250	-01 71	34 50	27 79		6 53	4740 1
STD	0300	-01 65	34 52	27 81	0 112	6 34	4743 9
OBS	0300	-01 65	34 52	27 81		6 34	4743 9
OBS	0350	-01 79	34 53	27 82		6 45	4744 5
STD	0400	-01 85	34 56	27 84	0 139	6 40	4746 4
OBS	0400	-01 85	34 56	27 84		6 40	4746 4
OBS	0450	-01 88	34 56	27 84			4748 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0017	01	31	1962	14	78° 02′ S	168° 46′ W	0567	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.
06	23		82	53 7	53 9		71		8	31	3			5		08

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 54	34 35	27 63	0 000	8 10	4743 8
OBS	0000	-00 54	34 35	27 63		8 10	4743 8
STD	0010	-00 51	34 34	27 62	0 005	8 13	4744 7
OBS	0010	-00 51	34 34	27 62		8 13	4744 7
STD	0020	-00 49	34 34	27 62	0 010	8 13	4745 6
OBS	0020	-00 49	34 34	27 62		8 13	4745 6
STD	0030	-00 48	34 35	27 63	0 014	8 11	4746 3
OBS	0030	-00 48	34 35	27 63		8 11	4746 3
OBS	0040	-00 48	34 34	27 62		8 12	4746 8
STD	0050	-00 75	34 35	27 64	0 024	7 85	4743 3
OBS	0050	-00 75	34 35	27 64		7 85	4743 3
OBS	0070	-01 45	34 41	27 71		6 58	4733 9
STD	0075	-01 44	34 42	27 72	0 034	6 53	4734 4
OBS	0090	-01 41	34 43	27 73		6 39	4735 7
STD	0100	-01 31	34 45	27 74	0 044	6 32	4737 9
OBS	0100	-01 31	34 45	27 74		6 32	4737 9
OBS	0105	-01 29	34 46	27 75		6 25	4738 5
OBS	0110	-01 31	34 46	27 75		6 16	4738 5
OBS	0115	-01 36	34 45	27 74		6 25	4738 0
OBS	0118	-01 25	34 46	27 74		6 22	4739 9
OBS	0123	-01 29	34 46	27 75		6 12	4739 5
OBS	0148	-01 17	34 49	27 77		6 20	4742 9
STD	0150	-01 15	34 49	27 77	0 061	6 16	4743 3
OBS	0173	-01 00	34 52	27 78		5 92	4747 0
OBS	0197	-01 01	34 53	27 79		5 98	4748 2
STD	0200	-01 02	34 53	27 79	0 077	5 98	4748 2
OBS	0222	-01 12	34 54	27 80		5 98	4747 9
STD	0250	-01 29	34 54	27 81	0 092	6 10	4746 8
STD	0300	-01 53	34 53	27 81	0 106	6 29	4745 8
OBS	0320	-01 61	34 53	27 81		6 35	4745 6
STD	0400	-01 78	34 54	27 82	0 134	6 53	4747 4
OBS	0419	-01 81	34 54	27 83		6 55	4748 0
STD	0500	-01 86	34 56	27 84	0 159	6 55	4751 8
OBS	0517	-01 86	34 57	27 85		6 55	4752 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0018	01	31	1962	19	77° 20′ S	170° 07′ W	0543	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.
06	20		83	54 9	55 5			6	6	23	4			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 63	34 23	27 54	0 000	7 96	4741 9
OBS	0000	-00 63	34 23	27 54		7 96	4741 9
STD	0010	-00 54	34 26	27 56	0 005	8 00	4743 9
OBS	0010	-00 54	34 26	27 56		8 00	4743 9
STD	0020	-00 48	34 28	27 57	0 011	7 95	4745 5
OBS	0020	-00 48	34 28	27 57		7 95	4745 5
STD	0030	-00 43	34 31	27 59	0 016	8 01	4746 9
OBS	0030	-00 43	34 31	27 59		8 01	4746 9
STD	0050	-00 36	34 37	27 64	0 026	8 10	4749 3
OBS	0050	-00 36	34 37	27 64		8 10	4749 3
OBS	0060	-00 33	34 37	27 63		8 07	4750 3
OBS	0070	-00 53	34 37	27 64		7 77	4747 8
STD	0075	-00 88	34 38	27 67	0 037	7 29	4742 8
OBS	0090	-01 40	34 41	27 71		6 58	4735 8
OBS	0095	-01 39	34 42	27 72		6 58	4736 3
STD	0100	-01 39	34 41	27 71	0 047	6 50	4736 5
OBS	0100	-01 39	34 41	27 71			4736 5
OBS	0105	-01 37	34 43	27 72		6 45	4737 2
OBS	0120	-01 34	34 45	27 74		6 44	4738 5
OBS	0123	-01 30	34 45	27 74		6 30	4739 3
OBS	0148	-01 02	34 50	27 77		5 99	4745 2
STD	0150	-00 98	34 50	27 77	0 065	5 97	4745 9
OBS	0172	-00 67	34 54	27 79		5 77	4752 0
OBS	0197	-00 59	34 56	27 80		5 69	4754 7
STD	0200	-00 65	34 56	27 80	0 081	5 73	4754 0
OBS	0246	-01 34	34 55	27 82		6 19	4745 9
STD	0250	-01 38	34 55	27 82	0 096	6 22	4745 5
OBS	0296	-01 70	34 54	27 82		6 45	4743 0
STD	0300	-01 71	34 54	27 82	0 109	6 46	4743 1
OBS	0346	-01 79	34 53	27 82		6 51	4744 3
OBS	0395	-01 85	34 54	27 83		6 56	4746 1
STD	0400	-01 85	34 54	27 83	0 136	6 56	4746 4
OBS	0495	-01 87	34 56	27 84		6 51	4751 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0019	02	01	1962	00	76° 40′ S	171° 04′ 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.
05	20		83	52 2	53 3			6	7	35	2			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 65	34 08	27 41	0 000	7 57	4740 9
OBS	0000	-00 65	34 08	27 41		7 57	4740 9
STD	0010	-00 69	34 09	27 42	0 007	7 91	4740 9
OBS	0010	-00 69	34 09	27 42		7 91	4740 9
STD	0020	-00 47	34 14	27 46	0 013	7 91	4745 0
OBS	0020	-00 47				7 91	
STD	0030	-00 44	34 19	27 49	0 019	7 92	4746 2
OBS	0030	-00 44	34 19	27 49		7 92	4746 2
STD	0050	-01 27	34 26	27 58	0 030	7 45	4734 9
OBS	0050	-01 27	34 26	27 58		7 45	4734 9
OBS	0060	-01 50	34 30	27 62		7 19	4732 1
STD	0075	-01 65	34 34	27 66	0 042	6 98	4730 8
OBS	0075	-01 65	34 34	27 66		6 98	4730 8
OBS	0090	-01 67	34 36	27 68		6 72	4731 4
STD	0100	-01 63	34 37	27 68	0 053	6 72	4732 6
OBS	0100	-01 63	34 37	27 68		6 72	4732 6
OBS	0110	-01 60	34 36	27 67		6 71	4733 6
OBS	0125	-01 58	34 37	27 68		6 70	4734 7
STD	0150	-01 53	34 39	27 70	0 073	6 54	4737 0
OBS	0150	-01 53	34 39	27 70		6 54	4737 0
OBS	0175	-01 44	34 42	27 72		6 51	4739 9
STD	0200	-01 44	34 43	27 73	0 092	6 53	4741 3
OBS	0200	-01 44	34 43	27 73		6 53	4741 3
STD	0250	-01 40	34 48	27 77	0 110	6 48	4744 8
OBS	0250	-01 40	34 48	27 77		6 48	4744 8
STD	0300	-01 09	34 50	27 77	0 126	6 13	4752 4
OBS	0300	-01 09	34 50	27 77			4752 4
OBS	0350	-00 97	34 53	27 79		6 02	4757 1
STD	0400	-01 11	34 54	27 80	0 157	6 15	4757 8
OBS	0400	-01 11	34 54	27 80		6 15	4757 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0020	02	01	1962	08	76° 46′ S	175° 06′ W	0564	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	25		85	56 4	57 1		6	6	8	24	4			6		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 87	34 06	27 41	0 000	8 18	4737 4
OBS	0000	-00 87	34 06	27 41		8 18	4737 4
OBS	0009	-00 86	34 07	27 41		8 04	4738 1
STD	0010	-00 80	34 09	27 43	0 007	8 04	4739 2
OBS	0019	-00 47	34 23	27 53		8 01	4745 3
STD	0020	-00 46	34 23	27 53	0 013	7 98	4745 5
OBS	0028	-00 43	34 24	27 53		7 89	4746 5
STD	0030	-00 43	34 25	27 54	0 018	7 94	4746 6
OBS	0038	-00 44	34 28	27 57		8 06	4747 0
OBS	0047	-00 55	34 38	27 65		8 04	4746 3
STD	0050	-00 70	34 38	27 66	0 028	7 89	4744 2
OBS	0056	-00 94	34 38	27 67		7 62	4740 9
OBS	0070	-01 23	34 42	27 71		7 06	4737 4
STD	0075	-01 20	34 46	27 74	0 038	6 84	4738 3
OBS	0094	-01 13	34 53	27 80		6 34	4740 7
STD	0100	-01 13	34 49	27 76	0 047	6 35	4740 9
OBS	0113	-01 13	34 48	27 76		6 36	4741 5
OBS	0118	-00 93	34 50	27 77		5 85	4744 9
OBS	0143	-00 77	34 55	27 80		5 65	4749 0
STD	0150	-00 73	34 55	27 80	0 063	5 73	4750 0
OBS	0160	-00 71	34 55	27 80		5 74	4750 8
OBS	0167	-00 73	34 56	27 81		5 67	4750 9
STD	0200	-00 74	34 58	27 82	0 078	5 69	4752 7
OBS	0207	-00 74	34 59	27 83		5 71	4753 1
STD	0250	-01 15	34 56	27 82	0 092	5 99	4749 0
OBS	0255	-01 19	34 56	27 82		6 02	4748 7
STD	0300	-01 55	34 57	27 84	0 105	6 20	4745 7
OBS	0303	-01 57	34 57	27 84		6 21	4745 5
OBS	0351	-01 70	34 58	27 86		6 29	4746 2
OBS	0399	-01 75	34 62	27 89			4748 2
STD	0400	-01 76	34 62	27 89	0 128	6 42	4748 1
OBS	0448	-01 92	34 70	27 96		6 45	4748 6
OBS	0496	-01 91	34 83	28 06		6 39	4752 0

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0021	02	01	1962	11	77° 20′ S	174° 45′ W	0549	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	13		86	59 4	60 0			6	8	23	4			6		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 68	34 29	27 59	0 000		4741 4
OBS	0000	-00 68	34 29	27 59			4741 4
OBS	0009	-00 68	34 28	27 58		8 15	4741 8
STD	0010	-00 68	34 28	27 58	0 005	8 15	4741 9
OBS	0017	-00 68	34 29	27 59		8 16	4742 3
STD	0020	-00 67	34 29	27 59	0 010	8 15	4742 6
OBS	0026	-00 65	34 29	27 58		8 12	4743 3
STD	0030	-00 78	34 31	27 61	0 015	7 91	4741 6
OBS	0034	-00 88	34 32	27 62		7 75	4740 3
OBS	0043	-00 96	34 33	27 63		7 61	4739 6
STD	0050	-01 26	34 31	27 62	0 025	7 35	4735 3
OBS	0052	-01 29	34 31	27 62		7 33	4735 0
OBS	0064	-00 94	34 34	27 64		7 72	4741 1
STD	0075	-01 19	34 34	27 65	0 037	7 44	4737 9
OBS	0086	-01 37	34 34	27 65		7 18	4735 7
STD	0100	-01 48	34 40	27 70	0 047	6 90	4735 1
OBS	0108	-01 50	34 42	27 72		6 76	4735 3
OBS	0130	-01 39	34 43	27 72		6 48	4738 2
STD	0150	-01 19	34 49	27 77	0 065	6 20	4742 7
OBS	0153	-01 17	34 50	27 77		6 17	4743 2
OBS	0164	-01 14	34 47	27 75		6 09	4744 1
OBS	0185	-01 02	34 50	27 77		6 01	4747 2
STD	0200	-00 97	34 51	27 77	0 082	5 95	4748 8
OBS	0207	-00 94	34 52	27 78		5 93	4749 7
STD	0250	-00 77	34 55	27 80	0 098	5 82	4754 8
OBS	0250	-00 77	34 55	27 80		5 82	4754 8
OBS	0294	-00 76	34 58	27 82		5 94	4757 5
STD	0300	-00 87	34 57	27 82	0 112	5 97	4756 1
OBS	0341	-01 44	34 56	27 83		6 15	4749 6
OBS	0390	-01 72	34 64	27 90		6 33	4748 3
STD	0400	-01 76				6 33	
OBS	0440	-01 83	34 31*	27 64*		6 32	

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0022	02	01	1962	16	78° 06′ S	173° 53′ W	0540	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.
08	23		86	58 7	59 2			6	8	22	4			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 66	34 31	27 60	0 000		4741 8
OBS	0000	-00 66	34 31	27 60			4741 8
OBS	0009	-00 67	34 33	27 62			4742 2
STD	0010	-00 67	34 33	27 62	0 005		4742 3
OBS	0019	-00 66	34 32	27 61			4742 9
STD	0020	-00 65	34 32	27 61	0 010		4743 1
OBS	0028	-00 62	34 34	27 62			4744 0
STD	0030	-00 63	34 35	27 63	0 015		4744 1
OBS	0037	-00 66	34 38	27 66			4744 1
OBS	0047	-01 56	34 39	27 70			4730 9
STD	0050	-01 54	34 39	27 70	0 023		4731 4
OBS	0056	-01 51	34 40	27 70			4732 2
OBS	0070	-01 50	34 41	27 71			4733 2
STD	0075	-01 40	34 42	27 72	0 033		4735 0
OBS	0094	-01 14	34 46	27 74			4740 2
STD	0100	-01 12	34 47	27 75	0 042		4740 9
OBS	0117	-01 03	34 49	27 76			4743 3
OBS	0141	-00 78	34 53	27 78			4748 6
STD	0150	-00 76	34 53	27 78	0 059		4749 4
OBS	0165	-00 72	34 54	27 79			4750 9
OBS	0190	-00 64	34 55	27 79			4753 5
STD	0200	-00 74	34 55	27 80	0 075		4752 5
OBS	0214	-00 86	34 55	27 80			4751 5
OBS	0238	-01 00	34 55	27 81			4750 6
STD	0250	-01 05	34 55	27 81	0 090		4750 5
OBS	0288	-01 23	34 56	27 82			4749 9
STD	0300	-01 32	34 56	27 83	0 104		4749 2
OBS	0338	-01 56	34 56	27 84			4747 5
OBS	0387	-01 77	34 58	27 86			4747 1
STD	0400	-01 84	34 59	27 87	0 128		4746 7
OBS	0437	-01 95	34 66	27 93			4747 4
OBS	0487	-01 92	34 81	28 05			4751 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0023	02	01	1962	22	78° 09′ S	177° 42′ W	0663	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.
04	23		89	58 3	59 2			4	5	20	2			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-01 28	34 36	27 66	0 000	7 79	4732 5
OBS	0000	-01 28	34 36	27 66		7 79	4732 5
STD	0010	-01 28	34 36	27 66	0 004	7 81	4733 1
OBS	0010	-01 28				7 81	
STD	0020	-01 31	34 36	27 67	0 009	7 74	4733 1
OBS	0020	-01 31	34 36	27 67		7 74	4733 1
STD	0030	-01 28	34 36	27 66	0 013	7 75	4734 2
OBS	0030	-01 28	34 36	27 66		7 75	4734 2
OBS	0040	-01 29				7 71	
STD	0050	-01 32	34 36	27 67	0 022	7 75	4734 6
OBS	0050	-01 32	34 36	27 67		7 75	4734 6
OBS	0060	-01 31	34 37	27 67		7 74	4735 4
STD	0075	-01 36	34 37	27 68	0 032	7 73	4735 4
OBS	0075	-01 36				7 73	
STD	0100	-01 05	34 38	27 67	0 043	7 84	4741 6
OBS	0100	-01 05	34 38	27 67		7 84	4741 6
OBS	0125	-01 43	34 43	27 73		7 13	4737 3
STD	0150	-01 38	34 49	27 77	0 062	6 62	4739 7
OBS	0150	-01 38	34 49	27 77		6 62	4739 7
OBS	0175	-01 23	34 55	27 82		6 26	4743 7
OBS	0197	-01 08	34 54	27 80		5 97	4747 1
STD	0200	-01 13	34 54	27 80	0 078	5 98	4746 5
OBS	0246	-01 64	34 56	27 84		6 16	4741 3
STD	0250	-01 66	34 56	27 84	0 091	6 18	4741 2
OBS	0296	-01 80	34 59	27 87		6 34	4741 7
STD	0300	-01 81	34 59	27 87	0 104	6 36	4741 7
OBS	0345	-01 86	34 63	27 90		6 50	4743 6
OBS	0394	-01 91	34 68	27 94		6 57	4745 7
STD	0400	-01 93	34 68	27 94	0 123	6 57	4745 8
OBS	0444	-02 01	34 70	27 96		6 54	4747 0
STD	0500	-01 96	34 74	27 99	0 135	6 51	4751 1
OBS	0543	-01 94	34 77	28 02		6 50	4753 9
STD	0600	-01 92	34 82	28 06	0 142	6 51	4757 5
OBS	0642	-01 92	34 87	28 10		6 54	4760 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0024	02	02	1962	03	77° 20′ S	178° 28′ W	0612	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.
03	07		89	54 4	55 6			6	7	19	2			7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 57	34 39	27 66	0 000	8 07	4743 5
OBS	0000	-00 57	34 39	27 66		8 07	4743 5
STD	0010	-00 64	34 38	27 66	0 004	8 06	4743 0
OBS	0010	-00 64	34 38	27 66		8 06	4743 0
STD	0020	-00 63	34 38	27 66	0 009	8 06	4743 6
OBS	0020	-00 63	34 38	27 66		8 06	4743 6
STD	0030	-00 58	34 37	27 65	0 013	8 07	4744 9
OBS	0030	-00 58	34 37	27 65		8 07	4744 9
OBS	0040	-00 63	34 38	27 66		7 99	4744 7
STD	0050	-00 98	34 42	27 70	0 022	7 07	4740 1
OBS	0050	-00 98	34 42	27 70		7 07	4740 1
OBS	0060	-01 19	34 44	27 73		7 12	4737 5
STD	0075	-01 43	34 46	27 75	0 031	6 64	4734 8
OBS	0075	-01 43	34 46	27 75		6 64	4734 8
STD	0100	-01 33	34 48	27 76	0 040	6 37	4737 7
OBS	0100	-01 33	34 48	27 76		6 37	4737 7
OBS	0125	-00 63	34 55	27 79		5 66	4750 1
STD	0150	-00 88	34 55	27 80	0 056	5 80	4747 7
OBS	0150	-00 88	34 55	27 80		5 80	4747 7
OBS	0175	-01 18	34 55	27 81		5 99	4744 5
STD	0200	-01 23	34 54	27 81	0 071	6 05	4745 0
OBS	0200	-01 23	34 54	27 81		6 05	4745 0
STD	0250	-01 61	34 55	27 83	0 085	6 23	4741 9
OBS	0250	-01 61	34 55	27 83		6 23	4741 9
STD	0300	-01 76	34 57	27 85	0 098	6 34	4742 4
OBS	0300	-01 76	34 57	27 85		6 34	4742 4
OBS	0350	-01 82	34 59	27 87		6 36	4744 3
STD	0400	-01 92	34 66	27 93	0 118	6 50	4745 8
OBS	0400	-01 92	34 66	27 93		6 50	4745 8
OBS	0450	-02 05	34 71	27 97		6 51	4746 8
STD	0500	-01 95	34 76	28 01	0 131	6 50	4751 3
OBS	0500	-01 95	34 76	28 01		6 50	4751 3
STD	0600	-01 91	34 84	28 07	0 136	6 53	4757 8
OBS	0600	-01 91	34 84	28 07		6 53	4757 8

SURFACE OBSERVATIONS									
NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0025	02	02	1962	09	76° 29′ S	179° 25′ W	0640	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	27		88	51 7	53 3			4	6					7		

SUBSURFACE OBSERVATIONS													
	SAMPLE DEPTH (M)	T °C ▼		S‰ ▼		σ_t ▼		Σ Δ D ▼		O_2 ml/l ▼		V_f ▼	
STD	0000	-00	21	34	32	27	59	0	000	8	23	4748	6
OBS	0000	-00	21	34	32	27	59			8	23	4748	6
STD	0010	-00	24	34	29	27	57	0	005	8	18	4748	6
OBS	0010	-00	24	34	29	27	57			8	18	4748	6
STD	0020	-00	23	34	31	27	58	0	010	8	18	4749	4
OBS	0020	-00	23	34	31	27	58			8	18	4749	4
STD	0030	-00	47	34	39	27	66	0	015	8	12	4746	7
OBS	0030	-00	47	34	47*	27	72*			8	12		
OBS	0039	-01	04	34	44	27	72			7	06	4738	7
OBS	0049	-01	21	34	47	27	75			6	98	4736	8
STD	0050	-01	19	34	48	27	76	0	023	6	88	4737	2
OBS	0059	-01	04	34	51	27	78			6	18	4740	1
OBS	0074	-01	04	34	52	27	79			5	96	4741	0
STD	0075	-01	01	34	52	27	78	0	031	5	94	4741	5
OBS	0099	-00	50	34	61	27	84			5	60	4751	0
STD	0100	-00	50	34	62	27	84	0	039	5	60	4751	1
OBS	0123	-00	61	34	67	27	89			5	62	4750	9
OBS	0148	-01	15	34	58	27	84			5	94	4743	6
STD	0150	-01	20	34	58	27	84	0	052	5	97	4742	9
OBS	0173	-01	52	34	58	27	85			6	22	4739	2
OBS	0183	-01	55	34	57	27	84			6	27	4739	3
STD	0200	-01	60	34	58	27	85	0	065	6	28	4739	5
OBS	0230	-01	69	34	60	27	87			6	31	4739	8
STD	0250	-01	74	34	63	27	90	0	076	6	35	4740	3
OBS	0276	-01	81	34	65	27	91			6	41	4740	7
STD	0300	-01	88	34	66	27	92	0	086	6	48	4741	0
OBS	0322	-01	91	34	66	27	93			6	52	4741	7
OBS	0369	-01	90	34	68	27	94			6	55	4744	5
STD	0400	-01	98	34	72	27	98	0	100	6	56	4745	2
OBS	0416	-01	99	34	73	27	98			6	57	4745	9
OBS	0463	-01	93	34	75	28	00					4749	5
STD	0500	-01	93	34	77	28	02	0	110	6	52	4751	7
OBS	0559	-01	92	34	82	28	06			6	43	4755	3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00867	0026	02	03	1962	20	74° 50′ S	176° 18′ E	0308	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.
07	11		98	50 6	51 7			6	6					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S‰ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_f ↓
STD	0000	-00 25	34 33	27 60	0 000	7 81	4748 1
OBS	0000	-00 25	34 33	27 60		7 81	4748 1
STD	0010	-00 27	34 33	27 60	0 005	7 84	4748 3
OBS	0010	-00 27	34 33	27 60		7 84	4748 3
STD	0020	-00 24	34 31	27 58	0 010	7 85	4749 2
OBS	0020	-00 24	34 31	27 58		7 85	4749 2
STD	0030	-00 27	34 31	27 58	0 015	7 85	4749 3
OBS	0030	-00 27	34 31	27 58		7 85	4749 3
OBS	0040	-00 23	34 32	27 59		7 86	4750 5
STD	0050	-00 27	34 32	27 59	0 025	7 92	4750 5
OBS	0050	-00 27	34 32	27 59		7 92	4750 5
OBS	0060	-00 37	34 40	27 66		7 78	4749 9
STD	0075	-00 43	34 48	27 73	0 036	7 41	4750 1
OBS	0075	-00 43	34 48	27 73		7 41	4750 1
STD	0100	-00 59	34 49	27 74	0 046	6 42	4749 1
OBS	0100	-00 59	34 49	27 74		6 42	4749 1
OBS	0125	-00 05	34 57	27 78		5 44	4759 0
STD	0150	00 44	34 65	27 82	0 062	4 98	4768 0
OBS	0150	00 44	34 65	27 82		4 98	4768 0
OBS	0175	00 35	34 67	27 84		5 04	4768 1
STD	0200	00 15	34 69	27 87	0 075	5 12	4766 6
OBS	0200	00 15	34 69	27 87		5 12	4766 6
OBS	0225	-00 22	34 67	27 87		5 31	4762 3
STD	0250	-00 31	34 65	27 86	0 087	5 35	4762 2
OBS	0250	-00 31	34 65	27 86		5 35	4762 2
OBS	0275	-00 28	34 65	27 86		5 33	4764 0

SURFACE OBSERVATIONS

NODC REF. NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0001	01	23	1962	05	78° 09′ S	162 16′ W	0612	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.
09	10		81	56 2	55 6		75	0	9					6		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-00 89	33 77	27 17	0 000	8 49	4735 8
OBS	0000	-00 89	33 77	27 17		8 49	4735 8
STD	0010	-00 63	33 83	27 21	0 009	8 51	4740 6
OBS	0010	-00 63	33 83	27 21		8 51	4740 6
STD	0020	-00 90	34 00	27 36	0 017	8 37	4737 8
OBS	0020	-00 90	34 00	27 36		8 37	4737 8
STD	0030	-01 03	34 07	27 42	0 024	8 38	4736 7
OBS	0030	-01 03	34 07	27 42		8 38	4736 7
STD	0050	-00 80	34 06	27 40	0 037	8 32	4741 2
OBS	0050	-00 80	34 06	27 40		8 32	4741 2
STD	0075	-00 84	34 14	27 47	0 053	8 32	4742 3
OBS	0075	-00 84	34 14	27 47		8 32	4742 3
STD	0100	-01 26	34 19	27 53	0 068	8 20	4737 5
OBS	0100		34 19			8 20	
STD	0150	-01 86	34 26	27 60	0 095	6 86	4731 2
OBS	0150	-01 86	34 26	27 60		6 86	4731 2
STD	0200	-01 85	34 28	27 62	0 119	6 61	4734 2
OBS	0200		34 28			6 61	
STD	0250	-01 83	34 36	27 68	0 140	6 50	4737 6
STD	0300	-01 82	34 41	27 72	0 160	6 41	4740 7
OBS	0300	-01 82	34 41	27 72		6 41	4740 7
STD	0400	-01 79	34 46	27 76	0 194	6 29	4746 9
OBS	0400	-01 79	34 46	27 76		6 29	4746 9
STD	0500	-01 72	34 49	27 78	0 225	6 13	4753 6
OBS	0500	-01 72	34 49	27 78		6 13	4753 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0002	01	23	1962	15	77° 20′ S	163° 17′ W	0622	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
11	09		76	53 2	52 4		02	0	8					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S °/₀₀	σ_t	$\Sigma \Delta D$	O_2 ml/l	v_l
STD	0000	-00 45	33 91	27 27	0 000	8 25	4743 1
OBS	0000	-00 45	33 91	27 27		8 25	4743 1
STD	0010	-00 49	33 92	27 28	0 008	8 25	4743 1
OBS	0014	-00 50	33 92	27 28		8 25	4743 2
STD	0020	-00 89	34 06	27 41	0 015	7 83	4738 2
STD	0030	-01 36	34 23	27 56	0 022	7 29	4732 3
OBS	0035	-01 52	34 28	27 61		7 08	4730 3
STD	0050	-01 61	34 30	27 63	0 032	6 76	4729 9
OBS	0053	-01 63	34 31	27 63		6 71	4729 8
OBS	0070		34 33			6 52	
STD	0075	-01 69	34 34	27 66	0 043	6 48	4730 2
STD	0100	-01 74	34 38	27 69	0 053	6 34	4730 9
OBS	0105		34 39			6 33	
OBS	0141	-01 79	34 39	27 70		6 35	4732 4
STD	0150	-01 79	34 39	27 70	0 073	6 35	4732 9
STD	0200	-01 80	34 41	27 72	0 092	6 33	4735 6
OBS	0215	-01 80	34 42	27 73		6 32	4736 4
STD	0250	-01 81	34 43	27 74	0 111	6 29	4738 2
OBS	0296	-01 82	34 44	27 74		6 27	4740 6
STD	0300	-01 82	34 44	27 74	0 128	6 27	4740 9
OBS	0380	-01 85	34 48	27 78		6 29	4744 9
STD	0400	-01 85	34 48	27 78	0 160	6 29	4746 0
OBS	0466	-01 87	34 49	27 79		6 28	4749·4
STD	0500	-01 84	34 49	27 79	0 190	6 25	4751 7
OBS	0532	-01 80	34 49	27 78		6 21	4754 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE MO.	DAY	YEAR	HOUR	POSITION LATITUDE	LONGITUDE	SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
00868	0003	01	23	1962	22	76° 30′ S	161° 30′ W	0448	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
12	09		73	53 7	53 3		73	0	9					6		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	v_t ↓
STD	0000	-01 20	33 66	27 10	0 000	8 28	4730 5
OBS	0000	-01 20	33 66	27 10		8 28	4730 5
OBS	0009	-01 17	33 68	27 11		8 18	4731 6
STD	0010	-01 27	33 76	27 18	0 009	8 11	4730 4
OBS	0018	-01 79	34 17	27 52		7 53	4724 7
STD	0020	-01 80	34 19	27 54	0 017	7 36	4724 8
OBS	0027	-01 82	34 24	27 58		6 82	4725 1
STD	0030	-01 82	34 24	27 58	0 022	6 82	4725 2
STD	0050	-01 82	34 24	27 58	0 032	6 79	4726 3
OBS	0067		34 24				
STD	0075	-01 81	34 25	27 59	0 045	6 75	4727 9
OBS	0090	-01 81	34 26	27 60		6 71	4728 7
STD	0100	-01 80	34 26	27 60	0 057	6 68	4729 4
OBS	0135	-01 77	34 27	27 61		6 57	4731 9
STD	0150	-01 66	34 29	27 62	0 081	6 50	4734 5
OBS	0181	-01 54	34 31	27 63		6 42	4738 1
STD	0200	-01 58	34 32	27 64	0 104	6 42	4738 6
OBS	0227	-01 64	34 33	27 65		6 43	4739 2
STD	0250	-01 14	34 40	27 69	0 126	6 09	4748 4
OBS	0273	-00 81	34 45	27 72		5 85	4755 0
STD	0300	-00 94	34 46	27 73	0 145	5 85	4754 5
OBS	0367	-01 25	34 48	27 76		5 84	4753 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0004	01	24	1962	04	76° 30′ S	165° 05′ W	0457	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.
12	10		73	51 9	51 7		73	0	9					3		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-00 50	33 79	27 17	0 000	7 80	4741 8
OBS	0000	-00 50	33 79	27 17		7 80	4741 8
OBS	0009	-00 52	33 78	27 17		7 74	4742 0
STD	0010	-00 48	33 78	27 17	0 009	7 75	4742 6
OBS	0017	-00 47	33 80	27 18		7 79	4743 2
STD	0020	-00 75	33 97	27 33	0 017	7 86	4739 9
OBS	0026	-01 20	34 23	27 56		7 89	4734 6
STD	0030	-01 31	34 25	27 58	0 024	7 73	4733 2
OBS	0044	-01 61	34 30	27 63		7 21	4729 5
STD	0050	-01 68	34 31	27 64	0 034	6 98	4728 8
OBS	0066	-01 80	34 34	27 66		6 52	4728 0
STD	0075	-01 78	34 35	27 67	0 045	6 45	4728 8
OBS	0089	-01 75	34 36	27 68		6 26	4730 1
STD	0100	-01 73	34 37	27 69	0 055	5 84	4731 0
OBS	0136	-01 66	34 39	27 70		5 01	4734 2
STD	0150	-01 60	34 40	27 71	0 075	5 06	4735 9
OBS	0184	-01 52	34 43	27 73		5 19	4739 1
STD	0200	-01 54	34 46	27 75	0 093	5 51	4739 8
OBS	0231	-01 57	34 50	27 79		5 97	4741 2
STD	0250	-01 57	34 48	27 77	0 110	6 05	4742 2
STD	0300	-01 57	34 47	27 76	0 126	6 11	4744 9
OBS	0328	-01 59	34 46	27 75		6 17	4746 0
STD	0400	-01 71	34 52	27 81	0 157	5 98	4748 4
OBS	0426	-01 78	34 56	27 84		5 84	4748 9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0005	02	01	1962	04	74 45 S	137 53 W	1270	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
00	00		79	54 7	53 4		03	4	7					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S ‰	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_t
STD	0000	-01 69	34 02	27 40	0 000	7 00	4724 6
OBS	0000	-01 69	34 02	27 40		7 00	4724 6
STD	0010	-01 71	34 04	27 42	0 007	7 04	4724 9
OBS	0010					7 04	
STD	0020	-01 72	34 05	27 43	0 013	7 14	4725 4
OBS	0020	-01 72	34 05	27 43		7 14	4725 4
STD	0030	-01 72	34 10	27 47	0 020	7 07	4726 1
OBS	0030	-01 72	34 10	27 47		7 07	4726 1
STD	0050	-01 72	34 15	27 51	0 032	6 88	4727 5
OBS	0050	-01 72				6 88	
STD	0075	-01 70	34 20	27 55	0 046	6 77	4729 4
OBS	0075	-01 70	34 20	27 55		6 77	4729 4
STD	0100	-01 73	34 22	27 56	0 059	6 69	4730 4
OBS	0100		34 22			6 69	
STD	0150	-01 77	34 24	27 58	0 085	6 66	4732 5
STD	0200	-01 79	34 26	27 60	0 110	6 62	4735 1
OBS	0200	-01 79	34 26	27 60			4735 1
STD	0250	-01 75	34 27	27 61	0 134	6 59	4738 4
STD	0300	-01 72	34 29	27 62	0 158	6 56	4741 7
STD	0400	-01 65	34 31	27 63	0 203	6 51	4748 4
OBS	0400	-01 65	34 31	27 63		6 51	4748 4
STD	0500	-01 64	34 33	27 65	0 246	6 51	4754 1
STD	0600	-01 51	34 36	27 67	0 287	6 42	4761 7
OBS	0600	-01 51	34 36	27 67		6 42	4761 7
STD	0800	-00 89	34 42	27 70	0 365	6 01	4782 5
OBS	0800	-00 89	34 42	27 70		6 01	4782 5
OBS	1000	-00 72*		*			

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0006	02	18	1962	20	77° 42′ S	166° 21′ E	0107	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	18		72	61 2	59 8		02	4	2					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	↓ Σ Δ D	O_2 ml/l ↓	V_t ↓
STD	0000	-01 07	34 37	27 67	0 000		4735 8
OBS	0000	-01 07	34 37	27 67			4735 8
OBS	0005	-01 19	34 38	27 68			4734 3
STD	0010	-01 17	34 39	27 68	0 004		4734 9
OBS	0010	-01 17	34 39	27 68			4734 9
OBS	0015	-01 15	34 40	27 69			4735 5
STD	0020	-01 08	34 41	27 70	0 008		4736 9
OBS	0020	-01 08	34 41	27 70			4736 9
STD	0030	-01 11	34 46	27 74	0 012		4737 2
OBS	0030	-01 11					
STD	0050	-01 04	34 53	27 79	0 019		4739 7
OBS	0050	-01 04	34 53	27 79			4739 7
STD	0075		34 53				
OBS	0075		34 53				

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0007	02	18	1962	21	77° 38′ S	165° 45′ E	0768	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.
03	17		69	57 8	56 0		03	4	6					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-01 80	34 14	27 50	0 000		4723 5
OBS	0000	-01 80	34 14	27 50			4723 5
OBS	0005	-01 82	34 12	27 49			4723 3
STD	0010	-01 80	34 14	27 50	0 006		4724 0
OBS	0010	-01 80	34 14	27 50			4724 0
OBS	0015	-01 67	34 19	27 54			4726 5
STD	0020	-01 64	34 22	27 56	0 012		4727 4
OBS	0020	-01 64	34 22	27 56			4727 4
STD	0030	-01 22	34 27	27 59	0 017		4734 7
OBS	0030	-01 22	34 27	27 59			4734 7
STD	0050	-01 37	34 38	27 68	0 026		4733 9
OBS	0050	-01 37	34 38	27 68			4733 9
STD	0075	-01 50	34 43	27 73	0 036		4733 5
STD	0100	-01 58	34 46	27 75	0 045		4733 8
OBS	0100	-01 58	34 46	27 75			4733 8
STD	0150	-01 56	34 46	27 75	0 062		4736 8
OBS	0150	-01 56	34 46	27 75			4736 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0008	02	18	1962	23	77° 33′ S	164° 59′ E	0402	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	17		70	57 9	56 4		02	4	7					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_l ↓
STD	0000	-01 59	34 23	27 57	0 000		4727 1
OBS	0000	-01 59	34 23	27 57			4727 1
OBS	0005	-01 48	34 24	27 57			4729 2
STD	0010	-00 90	34 32	27 62	0 005		4738 7
OBS	0010	-00 90	34 32	27 62			4738 7
OBS	0015	-00 68	34 34	27 63			4742 4
STD	0020	-00 70	34 35	27 63	0 010		4742 4
OBS	0020	-00 70	34 35	27 63			4742 4
STD	0030	-00 67	34 34	27 63	0 014		4743 4
OBS	0030	-00 67	34 34	27 63			4743 4
OBS	0049	-00 63	34 43	27 70			4745 4
STD	0050	-00 63	34 43	27 70	0 023		4745 5
OBS	0074	-00 68	34 48	27 74			4746 3
STD	0075	-00 69	34 48	27 74	0 033		4746 2
OBS	0098	-00 82	34 53	27 79			4745 7
STD	0100	-00 83	34 53	27 79	0 041		4745 6
OBS	0147	-01 17	34 58	27 84			4743 2

SURFACE OBSERVATIONS

NODC REF. NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0009	02	19	1962	01	77° 30′ S	164° 32′ E	0293	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.
07	11		70	55 4	53 2		02	4	7					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	v_t ↓
STD	0000	-01 67	34 18	27 53	0 000		4725 7
OBS	0000	-01 67	34 18	27 53			4725 7
OBS	0005	-01 59	34 19	27 54			4727 2
STD	0010	-01 56	34 18	27 53	0 006		4727 9
OBS	0010	-01 56	34 18	27 53			4727 9
OBS	0015	-01 59	34 18	27 53			4727 7
STD	0020	-01 61	34 19	27 54	0 011		4727 7
OBS	0020	-01 61	34 19	27 54			4727 7
STD	0030	-01 54	34 20	27 54	0 017		4729 4
OBS	0030	-01 54	34 20	27 54			4729 4
OBS	0049	-01 36	34 19	27 53			4733 2
STD	0050	-01 37	34 20	27 54	0 028		4733 1
OBS	0074	-01 58	34 43	27 73			4732 2
STD	0075	-01 58	34 43	27 73	0 039		4732 3
OBS	0099	-01 54	34 48	27 77			4734 4
STD	0100	-01 54	34 48	27 77	0 048		4734 5
OBS	0148	-01 54	34 53	27 81			4737 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
00868	0010	02	19	1962	02	77° 35′ S	164° 00′ E	0329	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	11		70	56 1	54 4		02	4	8					7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-01 61	33 73	27 16	0 000		4724 5
OBS	0000	-01 61	33 73	27 16			4724 5
OBS	0005	-01 64	33 87	27 28			4725 0
STD	0010	-01 60	34 12	27 48	0 008		4727 0
OBS	0010	-01 60	34 12	27 48			4727 0
OBS	0015	-01 61	34 14	27 50			4727 2
STD	0020	-01 68	34 18	27 53	0 013		4726 6
OBS	0020	-01 68	34 18	27 53			4726 6
STD	0030	-01 67	34 20	27 55	0 019		4727 4
OBS	0030	-01 67	34 20	27 55			4727 4
STD	0050	-01 69	34 34	27 66	0 029		4728 8
OBS	0050	-01 69	34 34	27 66			4728 8
STD	0075	-01 58	34 43	27 73	0 039		4732 3
OBS	0075	-01 58	34 43	27 73			4732 3
STD	0100	-01 64	34 52	27 80	0 047		4733 1
OBS	0100	-01 64	34 52	27 80			4733 1
STD	0150	-01 28	34 57	27 83	0 062		4741 6
OBS	0150	-01 28	34 57	27 83			4741 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0001	02	12	1962	04	74° 00′ S	173° 00′ E	0338	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
06	36		03	51 4	50 3	79	02	6	6	04	3	04	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	v_l ↓
STD	0000	-00 01	34 29	27 55	0 000		4751 5
OBS	0000	-00 01	34 29	27 55			4751 5
OBS	0005	-00 01	34 28	27 55			4751 7
STD	0010	-00 03	34 28	27 55	0 005		4751 7
OBS	0010	-00 03	34 28	27 55			4751 7
STD	0020	-00 06	34 28	27 55	0 011		4751 8
OBS	0020	-00 06	34 28	27 55			4751 8
OBS	0025	-00 03	34 28	27 55			4752 5
STD	0030	-00 04	34 28	27 55	0 016		4752 6
OBS	0030	-00 04	34 28	27 55			4752 6
STD	0050	-00 12	34 30	27 57	0 027		4752 6
OBS	0050	-00 12	34 30	27 57			4752 6
STD	0075	-00 42	34 35	27 62	0 040		4749 7
OBS	0075	-00 42	34 35	27 62			4749 7
OBS	0098	-00 64	34 52	27 77			4748 4
STD	0100	-00 60	34 53	27 78	0 050		4749 1
OBS	0122	-00 25	34 60	27 82			4755 9
OBS	0146	-00 14	34 63	27 84			4759 0
STD	0150	-00 17	34 63	27 84	0 065		4758 8
OBS	0196	-00 51	34 64	27 86			4756 2
STD	0200	-00 54	34 64	27 86	0 078		4756 0
OBS	0245	-00 89	34 66	27 89			4753 2
STD	0250	-00 89	34 66	27 89	0 089		4753 5
OBS	0295	-01 22	34 68	27 92			4751 0
STD	0300	-01 29	34 69	27 93	0 099		4750 2
OBS	0320	-01 66	34 76	28 00			4745 9

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0002	02	12	1962	10	74° 00′ S	176° 00′ E	0567	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		04	51 7	50 7	80	02	6	7	04	3	03	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	v_t ↓
STD	0000	-00 42	34 16	27 47	0 000		4744 7
OBS	0000	-00 42	34 16	27 47			4744 7
STD	0010	-00 44	34 16	27 47	0 006		4745 0
OBS	0010	-00 44	34 16	27 47			4745 0
STD	0020	-00 42	34 16	27 47	0 012		4745 8
OBS	0020	-00 42	34 16	27 47			4745 8
STD	0030	-00 45	34 17	27 48	0 019		4746 0
OBS	0030	-00 45	34 17	27 48			4746 0
STD	0050	-00 58	34 37	27 65	0 029		4746 0
OBS	0050	-00 58	34 37	27 65			4746 0
OBS	0060	-00 59	34 41	27 68			4746 6
STD	0075	-00 20	34 48	27 72	0 040		4753 6
OBS	0075	-00 20	34 48	27 72			4753 6
OBS	0090	00 08	34 59	27 79			4759 1
OBS	0098	00 06	34 60	27 80			4759 3
STD	0100	00 14	34 61	27 80	0 048		4760 6
OBS	0123	00 56	34 67	27 83			4768 4
OBS	0148	-00 13	34 68	27 88			4759 5
STD	0150	-00 13	34 68	27 88	0 062		4759 6
STD	0200	-00 17	34 67	27 87	0 074		4761 7
OBS	0246	-00 45	34 67	27 88			4760 0
STD	0250	-00 53	34 67	27 89	0 085		4759 0
STD	0300	-01 37	34 70	27 94	0 095		4749 0
OBS	0345	-01 84	34 73	27 98			4744 3
STD	0400	-01 89	34 75	28 00	0 108		4746 7
OBS	0444	-01 91	34 78	28 02			4748 9
STD	0500	-01 92	34 83	28 06	0 114		4752 0
OBS	0544	-01 92	34 88	28 10			4754 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SON.C DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0003	02	12	1962	17	74° 00′ S	179° 00′ E	0257	02

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	27		05	51 5	50 5	81	02	6	8	27	1	35	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE ↓ DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-00 23	34 42	27 67	0 000		4748 8
OBS	0000	-00 23	34 42	27 67			4748 8
STD	0010	-00 24	34 41	27 66	0 004		4749 1
OBS	0010	-00 24	34 41	27 66			4749 1
STD	0020	-00 22	34 41	27 66	0 009		4750 0
OBS	0020	-00 22	34 41	27 66			4750 0
STD	0030	-00 25	34 41	27 66	0 013		4750 1
OBS	0030	-00 25	34 41	27 66			4750 1
STD	0050	-00 22	34 42	27 67	0 022		4751 7
OBS	0050	-00 22					
OBS	0060	-00 24	34 42	27 67			4751 9
STD	0075	-00 26	34 42	27 67	0 033		4752 4
OBS	0075	-00 26	34 42	27 67			4752 4
OBS	0090	-00 29	34 45	27 70			4752 9
STD	0100	-00 56	34 48	27 73	0 043		4749 5
OBS	0100	-00 56	34 48	27 73			4749 5
OBS	0125	-00 59					
STD	0150	-00 59	34 65	27 87	0 058		4752 5
OBS	0150	-00 59	34 65	27 87			4752 5
OBS	0175	-00 59					
STD	0200	-00 60	34 63	27 86	0 070		4755 0
OBS	0200	-00 60	34 63	27 86			4755 0
OBS	0225	-00 59	34 63	27 86			4756 5
OBS	0245	-00 60	34 64	27 86			4757 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0004	02	12	1962	23	74° 00′ S	178° 00′ W	0575	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	36		05	51 2	50 1	78	02	6	8	05	2	32	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S °/₀₀	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_t
STD	0000	-01 08	33 96	27 33	0 000		4733 8
OBS	0000	-01 08	33 96	27 33			4733 8
STD	0010	-01 11	33 96	27 33	0 007		4733 8
OBS	0010	-01 11	33 96	27 33			4733 8
STD	0020	-01 10	33 97	27 34	0 015		4734 6
OBS	0020	-01 10	33 97	27 34			4734 6
STD	0030	-01 13	33 97	27 34	0 022		4734 7
OBS	0030	-01 13	33 97	27 34			4734 7
STD	0050	-00 97	34 21	27 53	0 035		4739 3
OBS	0050	-00 97					
STD	0075	-00 87	34 38	27 67	0 048		4743 0
OBS	0075	-00 87	34 38	27 67			4743 0
STD	0100	-00 60	34 41	27 68	0 058		4748 6
OBS	0100	-00 60	34 41	27 68			4748 6
STD	0150	-00 15	34 50	27 73	0 078		4758 5
OBS	0150	-00 15	34 50	27 73			4758 5
STD	0200	00 20	34 58	27 78	0 096		4766 8
OBS	0200	00 20	34 58	27 78			4766 8
STD	0250	00 52	34 61	27 78	0 112		4774 5
OBS	0250	00 52	34 61	27 78			4774 5
STD	0300	00 77	34 67	27 82	0 128		4781 2
OBS	0300	00 77	34 67	27 82			4781 2
OBS	0350	00 73	34 68	27 83			4783 3
STD	0400	00 73	34 69	27 83	0 157		4786 1
OBS	0400	00 73	34 69	27 83			4786 1
STD	0500	00 09	34 68	27 86	0 183		4782 0
OBS	0500	00 09	34 68	27 86			4782 0
OBS	0550	-00 24	34 69	27 89			4779 9

SURFACE OBSERVATIONS

NODC REF NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0005	02	13	1962	06	74° 50′ S	177° 28′ W	0914	09

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	12		05	55 6	53 7	56	02	4	8		0	14	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	v_l ↓
STD	0000	-01 22	34 00	27 37	0 000		4731 8
OBS	0000	-01 22	34 00	27 37			4731 8
STD	0010	-01 20	34 04	27 40	0 007		4732 8
OBS	0010	-01 20	34 04	27 40			4732 8
STD	0020	-01 18	34 01	27 38	0 014		4733 5
OBS	0020	-01 18	34 01	27 38			4733 5
STD	0030	-01 20	34 02	27 39	0 021		4733 8
OBS	0030	-01 20	34 02	27 39			4733 8
STD	0050	-01 09	34 05	27 41	0 035		4736 7
OBS	0050	-01 09	34 05	27 41			4736 7
STD	0075	-01 06	34 11	27 45	0 051		4738 8
OBS	0075	-01 06	34 11	27 45			4738 8
STD	0100	-01 03	34 21	27 53	0 066		4741 1
OBS	0100	-01 03	34 21	27 53			4741 1
STD	0150	-00 58	34 42	27 69	0 090		4751 6
OBS	0150	-00 58	34 42	27 69			4751 6
STD	0200	-00 49	34 50	27 75	0 109		4756 1
OBS	0200		34 50				
STD	0250	-00 41	34 52	27 76	0 127		4760 1
STD	0300	-00 34	34 55	27 78	0 143		4764 0
OBS	0300	-00 34	34 55	27 78			4764 0
STD	0400	-00 21	34 62	27 83	0 173		4771 8
OBS	0400	-00 21	34 62	27 83			4771 8
STD	0500	-00 09	34 65	27 85	0 200		4779 2
OBS	0500	-00 09	34 65	27 85			4779 2
STD	0600	-00 55	34 68	27 90	0 223		4777 9
OBS	0600	-00 55	34 68	27 90			4777 9
OBS	0700	-00 54	34 68	27 89			4783 5
STD	0800	-00 65	34 71	27 92	0 261		4787 5
OBS	0800	-00 65	34 71	27 92			4787 5
OBS	0875	-00 75	34 70	27 92			4790 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0006	02	14	1962	21	74° 47′ S	173° 18′ E	0489	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	23		93	54 3	53 3	75	01	6	8	21	3	09	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_t ↓
STD	0000	00 14	34 39	27 63	0 000		4754 2
OBS	0000	00 14	34 39	27 63			4754 2
STD	0010	00 13	34 39	27 63	0 005		4754 6
OBS	0010	00 13	34 39	27 63			4754 6
STD	0020	00 17	34 39	27 63	0 009		4755 8
OBS	0020	00 17	34 39	27 63			4755 8
STD	0030	00 25	34 41	27 64	0 014		4757 6
OBS	0030	00 25	34 41	27 64			4757 6
STD	0050	00 29	34 39	27 62	0 024		4759 2
OBS	0050	00 29	34 39	27 62			4759 2
OBS	0060	00 11	34 41	27 65			4757 1
STD	0075	-00 83	34 47	27 74	0 034		4744 0
OBS	0080	-00 92	34 50	27 76			4743 0
STD	0100	-00 13	34 62	27 83	0 042		4756 6
OBS	0100	-00 13	34 62	27 83			4756 6
OBS	0125	-00 48	34 64	27 86			4752 8
STD	0150	-00 77	34 66	27 89	0 055		4749 9
OBS	0150	-00 77	34 66	27 89			4749 9
STD	0200	-01 49	34 66	27 91	0 065		4741 5
OBS	0200	-01 49	34 66	27 91			4741 5
STD	0250	-01 73	34 72	27 97	0 073		4740 8
OBS	0250	-01 73	34 72	27 97			4740 8
STD	0300	-01 86	34 78	28 02	0 079		4741 8
OBS	0300	-01 86	34 78	28 02			4741 8
OBS	0350	-01 90	34 82	28 06			4744 1
STD	0400	-01 92	34 85	28 08	0 084		4746 7
OBS	0400	-01 92	34 85	28 08			4746 7
OBS	0450	-01 90	34 90	28 12			4749 9

SURFACE OBSERVATIONS

NODC REF NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0007	02	15	1962	14	75° 40′ S	173° 19′ E	0400	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		92	55 9	54 2	58	22	7	8	22	1	11	1	7	

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	v_t ↓
STD	0000	00 06	34 45	27 68	0 000		4753 3
OBS	0000	00 06	34 45	27 68			4753 3
STD	0010	00 06	34 44	27 67	0 004		4753 8
OBS	0010	00 06	34 44	27 67			4753 8
STD	0020	00 06	34 43	27 66	0 009		4754 3
OBS	0020	00 06	34 43	27 66			4754 3
STD	0030	00 00	34 42	27 66	0 013		4753 9
OBS	0030	00 00	34 42	27 66			4753 9
STD	0050	00 09	34 46	27 69	0 022		4756 5
OBS	0050	00 09	34 46	27 69			4756 5
OBS	0060	-00 05	34 46	27 69			4754 9
OBS	0070	-00 64	34 47	27 73			4746 6
STD	0075	-00 74	34 49	27 75	0 031		4745 5
OBS	0080	-00 75	34 52	27 77			4745 7
OBS	0090	-00 47	34 58	27 81			4750 8
STD	0100	-00 01	34 62	27 82	0 039		4758 4
OBS	0100	-00 01	34 62	27 82			4758 4
OBS	0125	-00 38	34 67	27 88			4754 5
STD	0150	-00 86	34 64	27 88	0 052		4748 4
OBS	0150	-00 86	34 64	27 88			4748 4
STD	0200	-01 39	34 66	27 91	0 063		4743 1
OBS	0200	-01 39	34 66	27 91			4743 1
STD	0250	-01 65	34 73	27 98	0 071		4742 1
OBS	0250	-01 65					
STD	0300	-01 86	34 79	28 03	0 076		4741 9
OBS	0300	-01 86	34 79	28 03			4741 9
OBS	0375	-01 93	34 88	28 10			4745 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0008	02	24	1962	00	76° 25′ S	169° 14′ E	0706	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.
06	09		91	53 9	52 8	74	02	6	7	09	1	10	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S °/₀₀ ▼	σ_t ▼	Σ ΔD ▼	O_2 ml/l ▼	V_l ▼
STD	0000	-00 76	34 29	27 59	0 000		4740 2
OBS	0000	-00 76	34 29	27 59			4740 2
OBS	0005	-00 75	34 28	27 58			4740 5
STD	0010	-00 76	34 26	27 56	0 005		4740 6
OBS	0010	-00 76					
OBS	0015	-00 80	34 24	27 55			4740 1
STD	0020	-00 73	34 29	27 59	0 010		4741 7
OBS	0020	-00 73	34 29	27 59			4741 7
OBS	0025	-00 73					
STD	0030	-00 73	34 31	27 60	0 015		4742 3
OBS	0030	-00 73					
STD	0050	-00 71	34 36	27 64	0 025		4744 0
OBS	0050	-00 71	34 36	27 64			4744 0
OBS	0060	-01 00	34 55	27 81			4741 0
OBS	0070	-00 93	34 61	27 85			4742 8
STD	0075	-00 98	34 62	27 86	0 034		4742 4
OBS	0080	-01 04	34 62	27 87			4741 7
STD	0100	-01 50	34 68	27 93	0 039		4736 0
OBS	0100	-01 50	34 68	27 93			4736 0
OBS	0121	-01 65	34 69	27 94			4734 9
STD	0150	-01 76	34 75	27 99	0 046		4735 1
OBS	0166	-01 81	34 77	28 01			4735 2
STD	0200	-01 87	34 78	28 02	0 052		4736 2
OBS	0212	-01 88	34 79	28 03			4736 8
STD	0250	-01 88	34 78	28 02	0 056		4738 8
OBS	0258	-01 88	34 78	28 02			4739 2
STD	0300	-01 98	34 82	28 06	0 059		4740 1
OBS	0305	-01 99	34 82	28 06			4740 3
OBS	0352	-01 90					
STD	0400	-01 90	34 81	28 05	0 064		4746 8
OBS	0447	-01 90	34 80	28 04			4749 3
STD	0500	-01 92	34 79	28 03	0 070		4751 9
OBS	0543	-01 93	34 79	28 03			4754 1
STD	0600	-01 90	34 87	28 10	0 073		4758 0
OBS	0614	-01 89	34 90	28 12			4759 1

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0009	02	24	1962	03	76° 15′ S	168 16′ E	0355	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		COLOR	TRANS
05	06		92	53 3	52 2	76	22	6	6	09	1	09	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	v_t ↓
STD	0000	−00 65	34 27	27 57	0 000		4741 8
OBS	0000	−00 65	34 27	27 57			4741 8
OBS	0005	−00 65	34 33	27 62			4742 3
STD	0010	−00 65	34 33	27 62	0 005		4742 6
OBS	0010	−00 65	34 33	27 62			4742 6
OBS	0015	−00 70	34 34	27 63			4742 1
STD	0020	−00 66	34 34	27 63	0 010		4743 0
OBS	0020	−00 66	34 34	27 63			4743 0
OBS	0025	−00 69	34 36	27 64			4742 9
STD	0030	−00 68	34 35	27 63	0 015		4743 3
OBS	0030	−00 68	34 35	27 63			4743 3
STD	0050	−00 83	34 55	27 80	0 022		4743 0
OBS	0050	−00 83	34 55	27 80			4743 0
OBS	0060	−00 93	34 59	27 84			4742 2
OBS	0070	−00 70	34 63	27 86			4746 4
STD	0075	−01 03	34 65	27 89	0 029		4741 8
OBS	0080	−01 24	34 66	27 91			4738 9
OBS	0090	−01 29	34 66	27 91			4738 6
STD	0100	−01 35	34 68	27 93	0 034		4738 4
OBS	0100	−01 35	34 68	27 93			4738 4
OBS	0125	−01 69	34 73	27 98			4734 7
STD	0150	−01 77	34 84	28 07	0 040		4735 3
OBS	0150	−01 77					
OBS	0175	−01 87	34 88	28 10			4735 3
STD	0200	−01 88	34 86	28 09	0 042		4736 4
OBS	0200	−01 88	34 86	28 09			4736 4
OBS	0225	−01 88	34 83	28 06			4737 7
STD	0250	−01 89	34 81	28 05	0 044		4738 8
OBS	0250	−01 89	34 81	28 05			4738 8
OBS	0275	−01 91	34 83	28 06			4739 9
STD	0300	−01 93	34 83	28 06	0 046		4741 0
OBS	0300	−01 93	34 83	28 06			4741 0
OBS	0325	−01 89	34 91	28 13			4743 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0010	02	24	1962	06	76 00 S	166 29 E	0638	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
03	06		92	53 9	52 3	66	02	2	8	06	2	09	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S ‰ ▼	σ_t ▼	Σ ΔD ▼	O_2 ml/l ▼	V_t ▼
STD	0000	-01 54	34 31	27 63	0 000		4728 3
OBS	0000	-01 54	34 31	27 63			4728 3
OBS	0005	-01 55	34 31	27 63			4728 4
STD	0010	-01 56	34 30	27 62	0 005		4728 5
OBS	0010	-01 56	34 30	27 62			4728 5
OBS	0015	-01 71	34 30	27 63			4726 4
STD	0020	-01 46	34 36	27 67	0 009		4730 8
OBS	0020	-01 46	34 36	27 67			4730 8
OBS	0025	-01 51	34 43	27 73			4730 7
STD	0030	-01 52	34 46	27 75	0 013		4730 9
OBS	0030	-01 52	34 46	27 75			4730 9
STD	0050	-01 82	34 75	28 00	0 018		4728 7
OBS	0050	-01 82	34 75	28 00			4728 7
OBS	0060	-01 88	34 78	28 02			4728 4
OBS	0070	-01 88	34 80	28 04			4729 1
STD	0075	-01 89	34 81	28 05	0 020		4729 2
OBS	0080	-01 89	34 81	28 05			4729 5
OBS	0090	-01 89	34 81	28 05			4730 1
OBS	0095		34 85				
STD	0100	-01 89	34 83	28 06	0 022		4730 7
OBS	0104	-01 89	34 82	28 05			4730 9
OBS	0119		34 82				
OBS	0143	-01 88	34 84	28 07			4733 2
STD	0150	-01 89	34 85	28 08	0 024		4733 5
OBS	0191	-01 90	34 88	28 10			4735 7
STD	0200	-01 89	34 88	28 10	0 025		4736 4
OBS	0240	-01 88	34 89	28 11			4738 7
STD	0250	-01 88	34 89	28 11	0 026		4739 3
OBS	0288	-01 89	34 89	28 11			4741 2
STD	0300	-01 89	34 89	28 11	0 025		4741 9
OBS	0386	-01 90	34 90	28 12			4746 5
STD	0400	-01 91	34 90	28 12	0 025		4747 1
OBS	0485	-01 93	34 92	28 14			4751 5
STD	0500	-01 92	34 92	28 14	0 022		4752 5
OBS	0583	-01 89	34 94	28 15			4757 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0011	02	24	1962	10	75° 45' S	164° 30' E	0732	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
03	07		92	54 2	52 9	70	02	2	8	06	2		1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	Σ ΔD ↓	O, ml/l ↓	V_l ↓
STD	0000	-01 19	34 08	27 43	0 000		4732 6
OBS	0000	-01 19	34 08	27 43			4732 6
OBS	0005	-01 21	34 07	27 43			4732 5
STD	0010	-01 16	34 09	27 44	0 007		4733 7
OBS	0010	-01 16	34 09	27 44			4733 7
OBS	0015	-01 06	34 14	27 48			4735 7
STD	0020	-00 62	34 34	27 62	0 012		4743 6
OBS	0020	-00 62	34 34	27 62			4743 6
OBS	0025	-00 56	34 46	27 72			4745 3
STD	0030	-00 66	34 49	27 75	0 016		4744 2
OBS	0030	-00 66	34 49	27 75			4744 2
STD	0050	-01 27	34 58	27 84	0 023		4736 4
OBS	0050	-01 27	34 58	27 84			4736 4
OBS	0060	-01 46	34 60	27 86			4734 1
OBS	0070	-01 61	34 61	27 88			4732 4
STD	0075	-01 63	34 62	27 89	0 029		4732 4
OBS	0080	-01 65	34 63	27 89			4732 4
OBS	0090	-01 70	34 64	27 90			4732 2
STD	0100	-01 73	34 66	27 92	0 034		4732 4
OBS	0100	-01 73	34 66	27 92			4732 4
OBS	0110	-01 79	34 65	27 91			4732 0
OBS	0125	-01 73	34 68	27 94			4733 8
STD	0150	-01 84	34 73	27 98	0 042		4733 7
OBS	0150	-01 84	34 73	27 98			4733 7
STD	0200	-01 87	34 75	28 00	0 048		4736 1
OBS	0200	-01 87	34 75	28 00			4736 1
STD	0250	-01 88	34 77	28 01	0 053		4738 7
STD	0300	-01 89	34 80	28 04	0 057		4741 4
OBS	0300	-01 89	34 80	28 04			4741 4
STD	0400	-01 88	34 86	28 09	0 061		4747 3
OBS	0400	-01 88	34 86	28 09			4747 3
STD	0500	-01 87	34 91	28 13	0 060		4753 2
OBS	0500	-01 87	34 91	28 13			4753 2
STD	0600	-01 92	34 93	28 14	0 056		4758 0
OBS	0600	-01 92	34 93	28 14			4758 0
OBS	0700	-01 90	34 94	28 15			4763 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0012	02	24	1962	17	74° 57′ S	166° 30′ E	0894	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
10	30		92	53 6	52 1	68	02	4	8	00	0		0	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	v_t ↓
STD	0000	-01 80	34 10	27 47	0 000		4723 3
OBS	0000	-01 80	34 10	27 47			4723 3
OBS	0005	-01 79	34 10	27 47			4723 7
STD	0010	-01 82	34 14	27 50	0 006		4723 7
OBS	0010		34 14				
OBS	0015	-01 85	34 10	27 47			4723 3
STD	0020	-01 77	34 10	27 47	0 012		4724 8
OBS	0020	-01 77	34 10	27 47			4724 8
OBS	0025	-01 78	34 11	27 48			4725 0
STD	0030	-01 78	34 12	27 48	0 018		4725 3
OBS	0030	-01 78	34 12	27 48			4725 3
OBS	0040	-01 78	34 11	27 48			4725 8
STD	0050	-01 75	34 17	27 52	0 030		4727 1
OBS	0050	-01 75	34 17	27 52			4727 1
OBS	0060	-01 76	34 21	27 56			4727 7
OBS	0070	-01 72	34 27	27 60			4729 1
STD	0075	-01 73	34 28	27 61	0 043		4729 3
OBS	0080	-01 74	34 28	27 61			4729 4
OBS	0088	-01 66	34 28	27 61			4731 1
OBS	0098	-01 62	34 34	27 66			4732 5
STD	0100	-01 62	34 35	27 67	0 055		4732 7
OBS	0108	-01 62	34 38	27 69			4733 2
OBS	0122	-01 75	34 54	27 82			4732 7
OBS	0147	-01 75	34 74	27 99			4735 0
STD	0150	-01 76	34 74	27 99	0 068		4735 0
OBS	0196	-01 88	34 72	27 97			4735 6
STD	0200	-01 88	34 73	27 98	0 075		4735 8
STD	0250	-01 89	34 79	28 03	0 080		4738 7
OBS	0294	-01 89	34 83	28 06			4741 3
STD	0300	-01 89	34 83	28 06	0 083		4741 6
STD	0400	-01 88	34 86	28 09	0 086		4747 3
OBS	0491	-01 87	34 89	28 11			4752 6
STD	0500	-01 87	34 89	28 11	0 086		4753 1
STD	0600	-01 91	34 93	28 14	0 083		4758 1
OBS	0688	-01 92	34 95	28 16			4762 9
STD	0800	-01 90	34 96	28 17	0 069		4769 4
OBS	0837	-01 89	34 96	28 17			4771 6

SURFACE OBSERVATIONS

NODC REF NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0013	02	24	1962	22	75° 05′ S	169° 00′ E	0338	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	30		92	54 2	52 8	69	01	4	2	33	1		0	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	Σ ΔD ↓	O_2 ml/l ↓	V_t ↓
STD	0000		34 05				
OBS	0000		34 05				
OBS	0005		34 04				
STD	0010		34 00				
OBS	0010		34 00				
OBS	0015	-01 66	34 04	27 42			
STD	0020	-01 43	34 06	27 43			
OBS	0020	-01 43	34 06	27 43			
OBS	0025	-01 20	34 13	27 48			
STD	0030	-01 21	34 18	27 52			
OBS	0030	-01 21	34 18	27 52			
OBS	0040	-01 06	34 31	27 62			
STD	0050	-00 63	34 41	27 68			
OBS	0050	-00 63	34 41	27 68			
OBS	0060	-00 74	34 65	27 88			
OBS	0070	-00 12	34 63	27 83			
STD	0075	-00 02	34 67	27 86			
OBS	0080	00 08	34 69	27 87			
OBS	0090	-00 53	34 67	27 89			
STD	0100	-00 87	34 69	27 92			
OBS	0100	-00 87	34 69	27 92			
OBS	0110	-01 07	34 70	27 93			
OBS	0120	-01 30	34 71	27 95			
OBS	0125	-01 48	34 73	27 97			
STD	0150	-01 78	34 77	28 01			
OBS	0150	-01 78	34 77	28 01			
STD	0200	-01 92	34 81	28 05			
OBS	0200	-01 92	34 81	28 05			
STD	0250	-01 92	34 84	28 07			
OBS	0250	-01 92	34 84	28 07			
STD	0300	-01 92	34 86	28 09			
OBS	0300	-01 92	34 86	28 09			
OBS	0325	-01 92					

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0014	02	25	1962	03	75° 15′ S	171° 17′ E	0570	02

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.
18	28		90	53 3	51 7	63	02	4	2	28	4		0	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S ‰	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_l
STD	0000	−00 32	34 47	27 72	0 000		4747 7
OBS	0000	−00 32	34 47	27 72			4747 7
OBS	0005	−00 32	34 50	27 74			4748 1
OBS	0009	−00 32	34 46	27 71			4748 1
STD	0010	−00 33	34 46	27 71	0 004		4748 0
OBS	0017	−00 37	34 47	27 72			4747 8
STD	0020	−00 33	34 47	27 72	0 008		4748 6
OBS	0026	−00 30	34 46	27 71			4749 3
STD	0030	−00 32	34 46	27 71	0 012		4749 3
OBS	0030	−00 32	34 46	27 71			4749 3
OBS	0034	−00 33					
OBS	0043	−00 30	34 47	27 71			4750 3
STD	0050	−00 32	34 44	27 69	0 020		4750 2
OBS	0051	−00 32	34 44	27 69			4750 3
OBS	0059	−00 34	34 46	27 71			4750 5
OBS	0068	−00 33	34 45	27 70			4751 1
STD	0075	−00 45	34 51	27 75	0 029		4750 0
OBS	0077	−00 48	34 53	27 77			4749 7
OBS	0086	−00 36*	34 46*	27 71*			
STD	0100	−00 77	34 60	27 84	0 037		4746 9
OBS	0103	−00 80	34 61	27 85			4746 6
OBS	0121	−00 90	34 60	27 84			4746 0
OBS	0139	−01 02	34 62	27 87			4745 3
STD	0150	−01 17	34 64	27 89	0 049		4743 6
OBS	0157	−01 26	34 65	27 90			4742 7
OBS	0175	−01 48	34 65	27 91			4740 3

SURFACE OBSERVATIONS

NODC REF NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0015	02	25	1962	15	73° 26′ S	171° 24′ E	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.
04	13		90	52 9	51 1	65	02	4	8	00	0			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S °/₀₀ ▼	σ_t ▼	$\Sigma\Delta D$ ▼	O ml/l ▼	V_t ▼
STD	0000	-01 70	33 88	27 29	0 000		4723 8
OBS	0000	-01 70	33 88	27 29			4723 8
OBS	0005	-01 71	33 88	27 29			4723 9
STD	0010	-01 71	33 87	27 28	0 008		4724 1
OBS	0010	-01 71	33 87	27 28			4724 1
OBS	0015	-01 76	33 86	27 27			4723 6
STD	0020	-01 43	33 90	27 30	0 016		4729 2
OBS	0020	-01 43	33 90	27 30			4729 2
OBS	0025	-00 72	33 87	27 25			4740 2
STD	0030	-00 76	33 85	27 23	0 024		4739 8
OBS	0030	-00 76	33 85	27 23			4739 8
OBS	0040	-01 48	33 92	27 31			4729 6
STD	0050	-01 56	33 91	27 31	0 040		4728 8
OBS	0050	-01 56					
OBS	0060	-00 99	33 91	27 29			4738 2
OBS	0070	-00 62	34 22	27 53			4745 8
STD	0075	-00 53	34 26	27 56	0 057		4747 6
OBS	0080	-00 52	34 30	27 59			4748 2
OBS	0090	-00 78	34 37	27 65			4745 1
STD	0100	-00 40	34 50	27 74	0 068		4752 0
OBS	0100	-00 40	34 50	27 74			4752 0
OBS	0110	-00 28	34 60	27 82			4754 8
OBS	0125	-00 38	34 62	27 84			4754 2
STD	0150	-00 97	34 64	27 88	0 083		4746 7
OBS	0150	-00 97	34 64	27 88			4746 7
STD	0200	-01 80	34 69	27 95	0 092		4736 9
OBS	0200	-01 80	34 69	27 95			4736 9
STD	0250	-01 88	34 74	27 99	0 099		4738 6
OBS	0250	-01 88	34 74	27 99			4738 6
STD	0300	-01 88	34 78	28 02	0 104		4741 5
OBS	0300	-01 88	34 78	28 02			4741 5
STD	0400	-01 93	34 85	28 08	0 109		4746 5
OBS	0400	-01 93	34 85	28 08			4746 5
STD	0500	-01 90	34 92	28 14	0 108		4752 8
OBS	0500	-01 90	34 92	28 14			4752 8

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE MO.	DAY	YEAR	HOUR	POSITION LATITUDE	LONGITUDE	SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
31951	0016	02	25	1962	22	72 35 S	171 30 E	0411	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
02	06		90	52 1	50 9	76	02	6	8	00	0	02	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C	S °/₀₀	σ_t	$\Sigma \Delta D$	O_2 ml/l	V_l
STD	0000	-00 63	34 30	27 59	0 000		4742 2
OBS	0000	-00 63	34 30	27 59			4742 2
OBS	0005	-00 65	34 33	27 62			4742 3
STD	0010	-00 65	34 33	27 62	0 005		4742 6
OBS	0010	-00 65	34 33	27 62			4742 6
OBS	0015	-00 71	34 30	27 59			4741 8
STD	0020	-00 64	34 33	27 62	0 010		4743 3
OBS	0020	-00 64	34 33	27 62			4743 3
OBS	0025	-00 66					
STD	0030	-00 65	34 32	27 61	0 015		4743 6
OBS	0030	-00 65	34 32	27 61			4743 6
OBS	0040	-00 65	34 45	27 71			4744 7
STD	0050	-00 67	34 43	27 70	0 024		4744 9
OBS	0050	-00 67	34 43	27 70			4744 9
OBS	0060	-00 63	34 48	27 74			4746 3
OBS	0070	-00 59	34 54	27 78			4747 7
STD	0075	-00 52	34 57	27 80	0 032		4749 2
OBS	0080	-00 45	34 59	27 82			4750 6
OBS	0090	-00 30	34 62	27 84			4753 5
STD	0100	-00 03	34 65	27 85	0 039		4758 3
OBS	0100	-00 03					
OBS	0110	-00 06	34 68	27 87			4758 5
OBS	0125	-00 24	34 71	27 90			4756 8
STD	0150	-00 57	34 69	27 90	0 051		4753 0
OBS	0150	-00 57	34 69	27 90			4753 0
STD	0200	-01 32	34 76	27 99	0 059		4744 6
OBS	0200	-01 32	34 76	27 99			4744 6
STD	0250	-01 84	34 83	28 06	0 064		4739 6
OBS	0250	-01 84	34 83	28 06			4739 6
STD	0300	-01 86	34 86	28 09	0 065		4742 2
OBS	0300	-01 86	34 86	28 09			4742 2
OBS	0350	-01 92	34 87	28 10			4744 0
STD	0400	-01 88	34 86	28 09	0 067		4747 3
OBS	0400	-01 88	34 86	28 09			4747 3

SURFACE OBSERVATIONS

NODC REF NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0017	02	26	1962	00	72° 30′ S	171° 00′ E	0378	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.
01	20		90	53 9	51 9	58		6	8	00	0	02	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ▼	S ‰ ▼	σ_t ▼	Σ ΔD ▼	O_2 ml/l ▼	V_t ▼
STD	0000	-00 94	34 28	27 59	0 000		4737 4
OBS	0000	-00 94	34 28	27 59			4737 4
OBS	0005	-00 97	34 30	27 61			4737 3
STD	0010	-00 95	34 28	27 59	0 005		4737 8
OBS	0010	-00 95	34 28	27 59			4737 8
OBS	0015	-00 98	34 30	27 61			4737 7
STD	0020	-00 90	34 34	27 63	0 010		4739 3
OBS	0020	-00 90	34 34	27 63			4739 3
OBS	0025	-00 77	34 35	27 64			4741 6
STD	0030	-00 74	34 36	27 64	0 015		4742 4
OBS	0030	-00 74	34 36	27 64			4742 4
STD	0050	-00 61	34 44	27 70	0 023		4745 8
OBS	0050	-00 61	34 44	27 70			4745 8
STD	0075	-00 41	34 56	27 79	0 032		4750 8
OBS	0075	-00 41	34 56	27 79			4750 8
OBS	0080	-00 40	34 56	27 79			4751 2
OBS	0090	-00 04*	34 81*	27 98*			
STD	0100	00 05	34 65	27 84	0 039		4759 5
OBS	0100	00 05	34 65	27 84			4759 5
OBS	0110	-00 01	34 63	27 83			4759 0
OBS	0125	-00 03	34 76*	27 93*			
OBS	0140	-00 33	34 69	27 89			4756 1
STD	0150	-00 48	34 68	27 89	0 051		4754 3
OBS	0150	-00 48	34 68	27 89			4754 3
OBS	0160	-00 96	34 70	27 93			4747 7
OBS	0175	-01 37	34 84*	28 06*			
STD	0200	-01 58	34 79	28 02	0 059		4740 7
OBS	0200	-01 58	34 79	28 02			4740 7
STD	0250	-01 83	34 80	28 04	0 063		4739 6
OBS	0250	-01 83	34 80	28 04			4739 6
STD	0300	-01 93	34 82	28 06	0 066		4740 9
OBS	0300	-01 93	34 82	28 06			4740 9
OBS	0350	-01 89	34 88	28 10			4744 5

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0018	02	26	1962	03	72 15′ S	170 43′ E	0457	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	18		90	54 2	52 1	55	02	6	8	00	0	02	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S ‰ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_t ↓
STD	0000	-01 18	34 31	27 62	0 000		4733 8
OBS	0000	-01 18	34 31	27 62			4733 8
OBS	0005	-01 14	34 35	27 65			4734 9
STD	0010	-01 04	34 35	27 65	0 005		4736 7
OBS	0010	-01 04	34 35	27 65			4736 7
OBS	0015	-01 06	34 34	27 64			4736 6
STD	0020	-00 97	34 37	27 66	0 009		4738 4
OBS	0020	-00 97	34 37	27 66			4738 4
OBS	0025	-01 32	34 37	27 67			4733 3
STD	0030	-01 42	34 39	27 69	0 013		4732 1
OBS	0030	-01 42	34 39	27 69			4732 1
STD	0050	-01 38	34 53	27 81	0 020		4734 5
OBS	0050		34 53				
STD	0075	-01 33	34 52	27 80	0 028		4736 6
OBS	0075	-01 33	34 52	27 80			4736 6
OBS	0080	-01 30	34 50	27 78			4737 2
OBS	0090	-01 21	34 53	27 80			4739 3
STD	0100	-01 08	34 56	27 82	0 036		4742 0
OBS	0100	-01 08	34 56	27 82			4742 0
OBS	0109	-01 19	34 58	27 84			4740 8
OBS	0123	-01 13	34 62	27 87			4742 7
OBS	0128	-01 14	34 62	27 87			4742 8
OBS	0138	-01 15	34 63	27 88			4743 3
OBS	0148	-01 15	34 65	27 89			4743 9
STD	0150	-01 17	34 65	27 90	0 048		4743 7
OBS	0173	-01 32	34 69	27 93			4742 8
OBS	0198	-01 40	34 76	27 99			4743 3
STD	0200	-01 40	34 76	27 99	0 056		4743 4
OBS	0247	-01 34	34 77	28 00			4746 9
STD	0250	-01 35	34 77	28 00	0 062		4746 9
OBS	0297		34 80				
STD	0300	-01 56	34 80	28 03	0 067		4746 6
OBS	0396	-01 74	34 85	28 08			4749 3
STD	0400	-01 74	34 85	28 08	0 072		4749 5
OBS	0446	-01 72	34 84	28 07			4752 3

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0019	02	26	1962	05	72° 15′ S	170° 11′ E	0163	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
04	03		90	54 4	52 2	53	02	6	8	00	0		0	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_t ↓
STD	0000	−01 30	34 35	27 66	0 000		4732 2
OBS	0000	−01 30	34 35	27 66			4732 2
OBS	0005	−01 33	34 34	27 65			4731 9
STD	0010	−01 36	34 33	27 64	0 005		4731 7
OBS	0010	−01 36	34 33	27 64			4731 7
OBS	0015	−01 41	34 36	27 67			4731 3
STD	0020	−01 17	34 39	27 68	0 009		4735 4
OBS	0020	−01 17	34 39	27 68			4735 4
OBS	0025	−01 21	34 39	27 69			4735 1
STD	0030	−01 25	34 42	27 71	0 013		4734 9
OBS	0030	−01 25	34 42	27 71			4734 9
OBS	0040	−01 30	34 45	27 74			4734 8
STD	0050	−01 33	34 48	27 76	0 020		4735 0
OBS	0050	−01 33	34 48	27 76			4735 0
OBS	0060	−01 60	34 51	27 80			4731 5
STD	0075	−01 60	34 54	27 82	0 028		4732 5
OBS	0075	−01 60	34 54	27 82			4732 5
OBS	0080	−01 59	34 52	27 80			4732 8
OBS	0090	−01 58	34 54	27 82			4733 6
STD	0100	−01 61	34 57	27 84	0 035		4733 8
OBS	0100	−01 61	34 57	27 84			4733 8
OBS	0110	−01 58	34 58	27 85			4734 9
OBS	0120	−01 65	34 61	27 88			4734 5
OBS	0130	−01 74	34 62	27 89			4733 7
OBS	0140	−01 49	34 64	27 90			4738 2
STD	0150	−01 51	34 71	27 96	0 045		4738 7
OBS	0150	−01 51	34 71	27 96			4738 7

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0020	02	26	1962	08	72° 07′ S	170° 29′ E	0356	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.
06	18		90	53 2	51 6	67	02	6	8	00	0		1	7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	v_l ↓
STD	0000	-01 32	34 27	27 59	0 000		4731 5
OBS	0000	-01 32	34 27	27 59			4731 5
OBS	0005	-01 32	34 26	27 58			4731 7
STD	0010	-01 23	34 27	27 59	0 005		4733 4
OBS	0010	-01 23	34 27	27 59			4733 4
OBS	0015	-01 29	34 31	27 62			4733 0
STD	0020	-01 28	34 30	27 62	0 010		4733 3
OBS	0020	-01 28	34 30	27 62			4733 3
OBS	0025	-01 38	34 31	27 63			4732 1
STD	0030	-01 44	34 35	27 66	0 015		4731 6
OBS	0030	-01 44	34 35	27 66			4731 6
STD	0050	-01 29	34 42	27 71	0 023		4735 4
OBS	0050	-01 29	34 42	27 71			4735 4
OBS	0060	-01 27	34 47	27 75			4736 4
STD	0075	-00 97	34 48	27 75	0 032		4741 9
OBS	0075	-00 97					
OBS	0085	-01 00	34 53	27 79			4742 2
OBS	0090	-00 89	34 57	27 82			4744 4
STD	0100	-00 92	34 57	27 82	0 040		4744 4
OBS	0100	-00 92	34 57	27 82			4744 4
OBS	0105	-00 94	34 57	27 82			4744 4
OBS	0115	-00 86	34 60	27 84			4746 3
OBS	0125	-00 84	34 61	27 85			4747 2
STD	0150	-00 91	34 67	27 90	0 052		4747 8
OBS	0150	-00 91	34 67	27 90			4747 8
OBS	0175	-01 14	34 70	27 93			4745 7
STD	0200	-01 36	34 74	27 97	0 061		4743 9
OBS	0225	-01 51	34 76	28 00			4743 1
STD	0250	-01 59	34 75	27 99	0 067		4743 1
OBS	0275	-01 64	34 74	27 98			4743 7
STD	0300	-01 67	34 76	28 00	0 073		4744 7
OBS	0315	-01 68	34 78	28 02			4745 4

SURFACE OBSERVATIONS

NODC REF. NO	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0021	02	26	1962	10	72° 05′ S	171° 00′ E	0357	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
06	18		90	53 3	51 7	67	02	6	8	00	0		1	7		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	V_t ↓
STD	0000	−00 84	34 42	27 70	0 000		4739 5
OBS	0000	−00 84	34 42	27 70			4739 5
OBS	0005	−00 85	34 39	27 67			4739 5
STD	0010	−00 85	34 40	27 68	0 004		4739 8
OBS	0010	−00 85	34 40	27 68			4739 8
OBS	0015	−00 94	34 42	27 70			4738 8
STD	0020	−00 83	34 43	27 70	0 008		4740 8
OBS	0020	−00 83	34 43	27 70			4740 8
OBS	0025	−00 62	34 47	27 73			4744 5
STD	0030	−00 50	34 49	27 74	0 012		4746 7
OBS	0030	−00 50	34 49	27 74			4746 7
OBS	0040	−00 44	34 50	27 74			4748 2
STD	0050	−00 43	34 52	27 76	0 019		4748 9
OBS	0050	−00 43	34 52	27 76			4748 9
OBS	0060	−00 41	34 54	27 78			4749 9
OBS	0070	−00 44	34 54	27 78			4750 0
STD	0075	−00 42	34 58	27 81	0 027		4750 7
OBS	0080	−00 41	34 59	27 82			4751 2
OBS	0090	−00 88	34 56	27 81			4744 5
STD	0100	−00 93	34 57	27 82	0 035		4744 3
OBS	0100	−00 93	34 57	27 82			4744 3
OBS	0110	−00 90	34 59	27 84			4745 4
OBS	0125	−00 98*	34 74*	27 96*			
STD	0150	−00 83	34 65	27 88	0 047		4748 9
OBS	0150	−00 83	34 65	27 88			4748 9
OBS	0175	−00 65	34 68	27 90			4753 1
STD	0200	−00 66	34 74	27 95	0 057		4754 6
OBS	0200	−00 66	34 74	27 95			4754 6
STD	0250	−01 25	34 77	28 00	0 064		4748 5
OBS	0250	−01 25	34 77	28 00			4748 5
STD	0300	−01 58	34 81	28 04	0 069		4746 3
OBS	0300		34 81				
OBS	0330	−01 66	34 79	28 02			4746 6

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE			HOUR	POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR		LATITUDE	LONGITUDE		
31951	0022	02	26	1962	12	72° 00' S	171° 30' E	0357	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.
08	18		89	53 2	51 1	58	02	4	8	17	1			8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	$\Sigma \Delta D$ ↓	O_2 ml/l ↓	V_l ↓
STD	0000	-00 96	34 47	27 74	0 000		4737 9
OBS	0000	-00 96	34 47	27 74			4737 9
OBS	0005	-00 96	34 46	27 73			4738 2
STD	0010	-00 92	34 45	27 72	0 004		4739 0
OBS	0010	-00 92	34 45	27 72			4739 0
OBS	0015	-00 97					
STD	0020	-00 81	34 46	27 73	0 007		4741 3
OBS	0020	-00 81	34 46	27 73			4741 3
OBS	0025	-00 82	34 48	27 74			4741 5
STD	0030	-00 73	34 52	27 77	0 011		4743 3
OBS	0030	-00 73	34 52	27 77			4743 3
OBS	0040	-00 53	34 49	27 74			4746 8
STD	0050	-00 55	34 52	27 77	0 018		4747 1
OBS	0050	-00 55	34 52	27 77			4747 1
OBS	0060	-00 45	34 55	27 79			4749 3
OBS	0070	-00 44	34 54	27 78			4750 0
STD	0075	-00 45	34 55	27 79	0 026		4750 1
OBS	0080	-00 45	34 55	27 79			4750 4
OBS	0090	-00 45					
STD	0100	-00 47	34 58	27 81	0 034		4751 3
OBS	0100	-00 47	34 58	27 81			4751 3
OBS	0110	-00 47	34 60	27 83			4752 0
OBS	0125	-00 52	34 64	27 86			4752 2
STD	0150	-00 58	34 64	27 86	0 047		4752 6
OBS	0150	-00 58	34 64	27 86			4752 6
OBS	0175	-00 83	34 68	27 91			4750 4
STD	0200	-01 11	34 75	27 97	0 057		4747 8
OBS	0200	-01 11	34 75	27 97			4747 8
STD	0250	-01 46	34 79	28 02	0 063		4745 3
OBS	0250	-01 46					
STD	0300	-01 73	34 82	28 05	0 066		4744 0
OBS	0300		34 82				
OBS	0330	-01 85	34 84	28 07			4743 9

SURFACE OBSERVATIONS

NODC REF NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0023	02	26	1962	20	73° 40′ S	173° 11′ E	0302	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.
13	12		85	53 2	51 1	58	02	6	8	12	4	16	1	8		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	Σ Δ D ↓	O_2 ml/l ↓	v_t ↓
STD	0000	−00 49	34 37	27 64	0 000		4744 6
OBS	0000	−00 49	34 37	27 64			4744 6
OBS	0005	−00 49	34 36	27 63			4744 9
STD	0010	−00 47	34 37	27 64	0 005		4745 5
OBS	0010	−00 47	34 37	27 64			4745 5
OBS	0015	−00 54	34 43	27 69			4745 0
OBS	0019	−00 46	34 46	27 71			4746 5
STD	0020	−00 47	34 43	27 69	0 009		4746 3
OBS	0024	−00 50	34 36	27 63			4745 7
OBS	0029	−00 50	34 37	27 64			4746 1
STD	0030	−00 49	34 37	27 64	0 013		4746 3
OBS	0039	−00 47	34 37	27 64			4747 1
OBS	0048	−00 52	34 36	27 64			4746 7
STD	0050	−00 52	34 36	27 64	0 022		4746 8
OBS	0058	−00 52	34 37	27 64			4747 3
OBS	0068	−00 52	34 44	27 70			4748 2
STD	0075	−00 51	34 44	27 70	0 033		4748 7
OBS	0077	−00 51	34 52*	27 76*			
OBS	0084	−00 49	34 45	27 71			4749 6
OBS	0094	−00 49	34 47	27 72			4750 2
STD	0100	−00 38	34 50	27 74	0 043		4752 3
OBS	0103	−00 32	34 51	27 75			4753 4
OBS	0118	−00 04	34 54	27 76			4758 6
OBS	0142	00 10	34 59	27 79			4762 2
STD	0150	00 11	34 63	27 82	0 059		4763 0
OBS	0166	00 13	34 68	27 86			4764 4
OBS	0190	00 14	34 65	27 84			4765 7
STD	0200	−00 09	34 66	27 86	0 073		4762 9
OBS	0214	−00 34	34 67	27 88			4759 9
OBS	0238	−00 61	34 66	27 88			4757 1
STD	0250	−00 67	34 65	27 88	0 085		4756 8
OBS	0262	−00 67	34 64	27 87			4757 4

SURFACE OBSERVATIONS

NODC REF. NO.	STATION	DATE				POSITION		SONIC DEPTH UNCORRECTED	MAX. SAMPLE DEPTH
		MO.	DAY	YEAR	HOUR	LATITUDE	LONGITUDE		
31951	0024	02	27	1962	06	75° 21′ S	172° 03′ E	0510	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.
14	11		80	55 5	53 7	57	73		9	12	4	10	1	3		

SUBSURFACE OBSERVATIONS

	SAMPLE DEPTH (M)	T °C ↓	S °/₀₀ ↓	σ_t ↓	ΣΔD ↓	O_2 ml/l ↓	V_t ↓
STD	0000	−00 69	34 32	27 61	0 000		4741 4
OBS	0000	−00 69	34 32	27 61			4741 4
OBS	0005	−00 69	34 31	27 60			4741 6
STD	0010	−00 68	34 32	27 61	0 005		4742 1
OBS	0010	−00 68	34 32	27 61			4742 1
OBS	0015	−00 73	34 33	27 62			4741 6
STD	0020	−00 64	34 33	27 62	0 010		4743 3
OBS	0020	−00 64	34 33	27 62			4743 3
OBS	0025	−00 66	34 30	27 59			4743 1
STD	0030	−00 65	34 33	27 62	0 015		4743 7
OBS	0030	−00 65	34 33	27 62			4743 7
OBS	0039	−00 59	34 33	27 61			4745 1
OBS	0049	−00 62					
STD	0050	−00 62	34 37	27 65	0 024		4745 4
OBS	0059	−00 60	34 39	27 66			4746 3
OBS	0069	−00 61	34 39	27 66			4746 7
STD	0075	−00 68	34 43	27 70	0 035		4746 1
OBS	0075	−00 68	34 43	27 70			4746 1
OBS	0079	−00 61	34 42	27 69			4747 3
OBS	0084	−00 40	34 51	27 75			4751 2
OBS	0092	−00 08	34 54	27 76			4756 6
STD	0100	00 14	34 59	27 79	0 044		4760 6
OBS	0105	00 25	34 61	27 80			4762 6
OBS	0126	00 42	34 64	27 81			4766 4
STD	0150	−00 00	34 63	27 83	0 059		4761 4
OBS	0169	−00 26	34 63	27 84			4758 5
STD	0200	−00 46	34 64	27 86	0 072		4757 2
OBS	0212	−00 59	34 64	27 86			4755 9
STD	0250	−01 23	34 64	27 89	0 083		4748 2
OBS	0255	−01 30	34 64	27 89			4747 4
STD	0300	−01 80	34 71	27 96	0 092		4742 4
OBS	0342		34 75				
STD	0400	−01 79	34 77	28 01	0 104		4748 3
OBS	0429	−01 89	34 77	28 01			4748 3

APPENDIX B

BOTTOM SEDIMENT SAMPLES

SUMMARY AND FIELD DESCRIPTION

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA
PRNC-NHO-3167/13 (Rev. 8-58)

VESSEL: USS BURTON ISLAND | CRUISE: 00867 | DEEP FREEZE 62 (WESTERN AND CENTRAL ROSS SEA)

Sample NO.	DATE 1962	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
1 (H)*	25 Jan	73°59'S	170°10'E	290	150	-	4'			Silty sand		
1 (P)*	25 Jan	73°59'S	170°10'E	290	80	-	9"			Silty sand		
2 (P)	25 Jan	74°50'S	170°00'E	181	80	-	9"			Very coarse silty sand		
3 (H)	26 Jan	75°40'S	170°00'E	345	150	-	2 1/2'			Hard-packed, gray-brown sand w/pebbles		
3 (P)	26 Jan	75°40'S	170°00'E	345	80	1'	9"			Hard-packed, gray-brown sand w/pebbles		
4 (H)	26 Jan	76°30'S	170°00'E	391	150	-	-			No description	Core catcher samples combined as one sample.	
4 (P)	26 Jan	76°30'S	170°00'E	391	80	-	-			No description		
5 (H)	27 Jan	77°20'S	170°00'E	440	150	3'	2 1/2'			Med. gray silt & sand	Top 4" retained as grab sample.	
6 (H)	27 Jan	77°21'S	173°49'E	392	150	3'	3'			Medium gray mud		
7 (H)	28 Jan	77°30'S	177°55'E	370	150	5 1/2'	5'			Medium gray mud		
7 (P)	28 Jan	77°30'S	177°55'E	370	80	5'	2 1/2'			Medium gray mud		
8 (H)	28 Jan	76°30'S	177°03'E	213	150	6'	5'			Medium gray silt		
9 (H)	28 Jan	75°40'S	176°43'E	248	150	10'	8 1/2'			Very fluid clay		
9 (P)	28 Jan	75°40'S	176°43'E	248	80	-	-			Very fluid clay		
10 (H)	29 Jan	75°40'S	179°56'E	345	150	9'	8'			Firm clay unlike previous sample		
10 (P)	29 Jan	76°40'S	179°56'E	345	80	2'	16"			Olive-gray clay		

* (H) - Hydro-plastic piston corer (P) - Phleger gravity corer

Use more than one line per sample if necessary.

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA
PRNC-NHO-3167/13 (Rev. 8-58)

VESSEL: USS BURTON ISLAND | CRUISE: 00867 | DEEP FREEZE 62 (WESTERN AND CENTRAL ROSS SEA)

Sample NO.	DATE 1962	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
11 (H)	29 Jan	75°40'S	176°24'W	322	150	-	7 1/2'			Firm clay + scattered coarse sand		
11 (P)	29 Jan	75°40'S	176°24'W	322	80	-	12"			Firm clay + scattered coarse sand		
12 (P)	29 Jan	76°22'S	168°12'W	265	80	2'	14"			Olive gray mud, Volcanic sand		
13 (P)	30 Jan	75°53'S	165°33'W	1100	80	2'	9"			Gray-brown mud	Treated as grab sample	
14 (P)	30 Jan	76°26'S	168°35'W	290	80	2 1/2'	14"			Gray-brown mud		
15 (H)	31 Jan	77°20'S	167°12'W	265	150	5'	4'			Very fluid brown mud		
15 (P)	31 Jan	77°20'S	167°12'W	265	80	2 1/2'	12"			Very fluid brown mud		
16 (H)	31 Jan	77°58'S	165°50'W	255	150	8'	7 1/2'			Olive-gray mud, firm		
16 (P)	31 Jan	77°58'S	165°50'W	255	80	3'	22"			Olive-gray mud, firm		
17 (P)	31 Jan	78°02'S	168°46'W	310	80	2 1/2'	21"			Hard gray mud		
18 (H)	1 Feb	77°20'S	170°07'W	290	150	8'	6'			Firm olive-gray mud		
18 (P)	1 Feb	77°20'S	170°07'W	290	80	3'	24"			Firm olive-gray mud		
19 (H)	1 Feb	76°40'S	171°04'W	235	150	6 1/2'	6 1/2'			Rock fragments in firm, olive-gray mud		
20 (H)	1 Feb	76°47'S	175°06'W	308	150	9'	8'			Fluid mud		
20 (P)	1 Feb	76°47'S	175°06'W	308	80	2 1/2'	24"			Fluid mud		
21 (H)	1 Feb	77°20'S	174°45'W	300	150	-	8'			Fluid mud		
22 (H)	2 Feb	78°07'S	173°53'W	300	150	-	8 1/2'			Fluid mud		

Use more than one line per sample if necessary.

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA
PRNC-NHO-3167/13 (Rev. 8-58)

VESSEL: USS BURTON ISLAND | CRUISE: 00867 | DEEP FREEZE 62 (WESTERN AND CENTRAL ROSS SEA)

Sample NO.	DATE 1962	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
22 (P)	2 Feb	78°07'S	173°53'W	300	80	-	30"			Fluid mud		
23 (H)	2 Feb	78°09'S	177°42'W	363	150	6'	5 1/2'			Dense olive-gray mud		
23 (P)	2 Feb	78°09'S	177°42'W	363	80	3'	28"			Dense olive-gray mud		
24 (H)	2 Feb	77°20'S	178°28'W	335	150	5'	3 1/2'			Olive-gray mud over-lying coarse sandy mud w/pebbles		
24 (P)	2 Feb	77°20'S	178°28'W	335	80	3'	18"			Olive-gray mud over-lying coarse sandy mud w/pebbles		
25 (H)	2 Feb	76°29'S	179°25'W	350	150	7'	4'			Fluid mud		
25 (P)	2 Feb	76°29'S	179°25'W	350	80	3'	21"			Fluid mud		
26 (H)	3 Feb	74°50'S	176°18'E	180	150	-	-			Pebbles retained in core-catcher only		

Use more than one line per sample if necessary.

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA
PRNC-NHO-3167/13 (Rev. 8-58)

VESSEL: USCGC EASTWIND | CRUISE: 31951 | DEEP FREEZE 62

Sample NO.	DATE 1962	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER lb.	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
1 (P)	12 Feb	74°00'S	173°00'E	185	80		5"			Silty coarse sand, dark gray		
2 (P)	12 Feb	74°00'S	176°00'E	310	80		28"			Silty coarse sand, dark gray		
3 (P)	13 Feb	74°00'S	179°00'E	141	80		3"			Sand and shell fragments	Treated as grab sample	
4 (P)	13 Feb	74°00'S	178°00'W	319	80		18"			Volcanic sand, pebbles, sand		
5 (P)	13 Feb	74°50'S	177°28'W	508	80		0			1 piece of coral in retainer No other material		
6 (P)	14 Feb	74°47'S	173°18'E	264	80		27"			Silt, clay		
7 (P)	15 Feb	75°40'S	173°19'E	219	80		15"			Sand, silt, clay		
8 (P)	24 Feb	76°25'S	169°14'E	386	80		8"			Clay, sand, silt, small pebbles, Volcanic ash		
9 (P)	24 Feb	76°15'S	168°16'E	194	80		6"			Clay, some silt, sand, spicules	Treated as grab sample	
10 (P)	24 Feb	76°00'S	166°29'E	349	80		0			Silt, clay, sand	Treated as grab sample	
11 (P)	24 Feb	75°45'S	164°30'E	400	80		10"			Silt, clay, sand		
12 (P)	25 Feb	74°57'S	166°30'E	489	80		28"			Sand, clay, brown to gray		
13 (P)	25 Feb	75°05'S	169°00'E	185	80		17"			Clay, volcanic ash		
14 (P)	25 Feb	75°15'S	171°17'E	312	80		28"			Sand, silt, clay, pebbles		
15 (P)	25 Feb	73°26'S	171°24'E	300	80		24"			Sand, silt, clay, pebbles		
16 (P)	25 Feb	72°35'S	171°30'E	225	80		5"			Sand, silt, worm tubes, pebbles		
17 (P)	26 Feb	72°30'S	171°30'E	207	80		13"			Coarse sand, silt, sand, pebbles		

Use more than one line per sample if necessary.

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA
PRNC-NHO-3167/13 (Rev. 8-58)

VESSEL: USCGC EASTWIND | CR. ISE: 31951 | DEEP FREEZE 62

Sample NO	DATE 1962	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER lb.	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
18 (P)	26 Feb	72°30'S	171°00'E	250	80		0			Pebbles, sand, silt	Treated as grab sample	
19 (P)	26 Feb	72°15'S	170°11'E	89	80		0			Rocks, silt, sand	Treated as grab sample	
20 (P)	26 Feb	72°05'S	171°00'E	195	80		27"			Silt, sand, worm tubes		
21 (P)	26 Feb	72°00'S	171°30'E	195	80		0			Hard dry mud, pebbles, sand	Treated as grab sample	
22 (P)	27 Feb	75°21'S	172°03'E	279	80		30"			Sand, silt, clay		
23 (P)	2 Mar	McMurdo	Sound	230	80		4"			Sand, silt, pebbles, organic material		

Use more than one line per sample if necessary.

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA
PRNC-NHO-3167/13 (Rev. 8-58)

VESSEL: USS GLACIER | CRUISE: 00868 | DEEP FREEZE 62

Sample NO.	DATE 1962	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF CORE	ROCK COLOR CHART CODE NUMBERS CORE TOP	ROCK COLOR CHART CODE NUMBERS CORE BOTTOM	FIELD DESCRIPTION	REMARKS	OBS. INIT.
1 (P)	23 Jan	77°20'S	163°17'W	340	80		9"			Light olive gray (clay?)		
2 (P)	1 Feb	74°45'S	137°53'W	694	80		28"			Pale yellowish brown adhesive clay		

Use more than one line per sample if necessary.

U. S. Naval Oceanographic Office
OPERATION DEEP FREEZE 62, 1961-1962
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2. Antarctic - bottom sediments
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