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Geophysical & Polar Research Center

DEPARTMENT OF GEOLOGY

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Report
Series

**GRAVITY AND MAGNETIC OBSERVATIONS
FROM ICE ISLAND ARLIS-II,
1 JULY TO 6 OCTOBER, 1961**

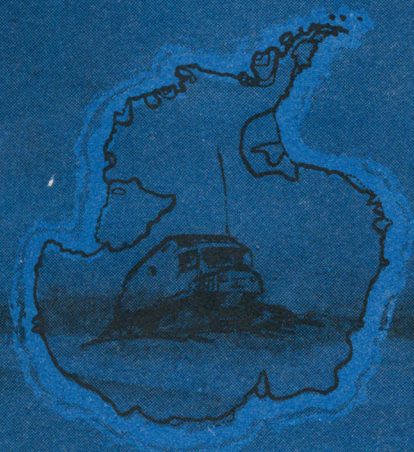
by

Stephen L. Den Hartog and Ned A. Ostenso

Work completed under
Office of Naval Research Contract NONR 1202(16)

RESEARCH REPORT NO. 62-7 September, 1962

6021 South Highland Road
The Highlands
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Contribution No. 90

INTRODUCTION

Ice island ARLIS-II was discovered, or rather, rediscovered, 210 km north of Pt. Barrow, Alaska on 23 May, 1961. It was sighted by an aerial reconnaissance party from the Arctic Research Laboratory while searching for a site for a scientific drift station (LeShack, 1961). The oval-shaped island is 5.6 km long and 2.4 km wide (Fig. 1). It has an average thickness of 20 m and is unique among known ice islands because of its irregular, rock-strewn surface, giving it the appearance of land. As one part of an integrated research program the senior author arrived on ARLIS-II on 20 June 1961 to initiate a program of gravity and magnetic observations. This report is the first of a series designed to disseminate promptly data which may be of interest to other investigators.

DRIFT TRACK

The drift path of ARLIS-II for the period covered in this report is shown in Figures 2 and 3a. Positions of the island were obtained whenever weather permitted by celestial fixes with a theodolite. The celestial fixes are shown as closed circles in Figure 4 and are considered to be accurate to ± 1 nautical mile. In Figure 3a the drift track is shown as straight-line connections between fixes. In practice the actual drift was interpolated between fixes on the basis of available meteorological information. The theoretical and empirical relationships between wind speed and pressure systems and ice movement have been discussed by Shuleikin (1936), Zubov (1948), and Brown and Crary (1959). These studies support the general rules first suggested by Nansen that the speed of ice drift is approximately 1/50th of the velocity of the wind causing the drift, and that the direction of ice drift deviates on the average of 30° from the wind direction. In general this formula worked fairly well for ARLIS-II, although at times the drift seemed to be significantly controlled by a northeasterly current.

Details of the interpolated drift track are shown in Figure 4 and this was used in applying latitude corrections to the observed gravity. In the 132 days between 20 June 1961 and 31 October 1961, the true drift of the ice island was 850 nautical miles (1370 km), or an average of 6.45 miles (10.38 km) per day. The general drift was 320 miles (515 km) in a northwesterly direction for an average velocity of 2.42 nautical miles (3.90 km) per day.

Arnold Hanson of the Department of Meteorology and Climatology, University of Washington did all of the celestial navigation and provided the meteorological data used in interpolating true drift between fixes.

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DEPTH SOUNDING

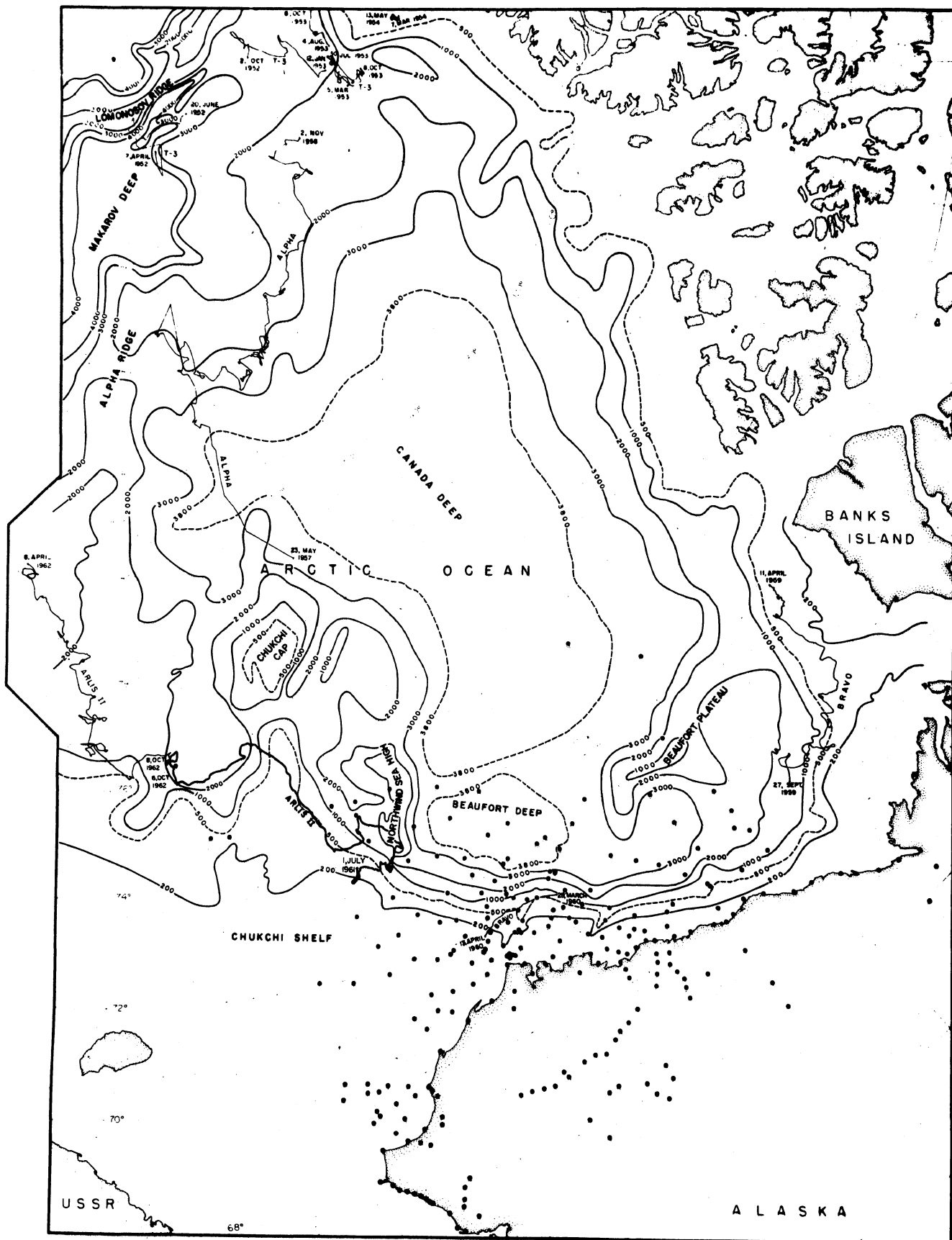
Water-depth soundings were taken once or twice a day, using standard seismic reflection techniques with a Texas Instruments 7000-B seismograph. Depths were calculated from travel-times, using Mathew's tables (1939) and making suitable corrections for the surface ice layer. Intermediate depths were interpolated linearly. The soundings are estimated to be accurate to ± 5 m and the interpolated water depths are probably good to ± 20 m. The bathymetric soundings were done by Henry Kutschale of the Lamont Geological Observatory, Columbia University. The drift of ARLIS-II began just off the continental margin at $73^{\circ}10'N$, $156^{\circ}05'W$ (Fig.2). The island moved southward a short distance onto the continental shelf (Chukchi Shelf), swung northeastward, crossing over the continental slope a second time, and thence onto the Northwind Seahigh. Passing off the Seahigh the island traversed the junction of the Chukchi Cap to the Chukchi Shelf and drifted over a narrow extension of the Canada Deep.

GRAVIMETRY

Gravity observations were made with a Worden Master geodetic gravimeter Model 121, No. 623, generously loaned to the project by its manufacturer, Texas Instruments Inc. This meter has a temperature-compensated element plus a thermostatically-controlled heating jacket. Observations were made on a pier through the floor of a heated building to further ensure that the instrument would not be subjected to thermal shock. The gravimeter was calibrated over the North American standardization line and the constant was found to be 0.125025 mg/scale division. Observations were made every 4 hours excluding 0400 AST, throughout the summer and more frequently at times of apparent abnormal changes in gravity.

Because the ice island was not a perfectly stable platform, it was frequently difficult to read the gravimeter and usually the hairline could not be brought to a complete standstill for null readings, rather, it oscillated, generally with a period of 10 to 15 sec. Under these conditions the dial was set so that the hairline oscillated at equal amplitudes on either side of the null position. Occasionally, during severe storms, oscillations became so violent that the beam bounced off the stops and it was impossible to obtain a reading. Most readings are accurate to 1 mg1 or better.

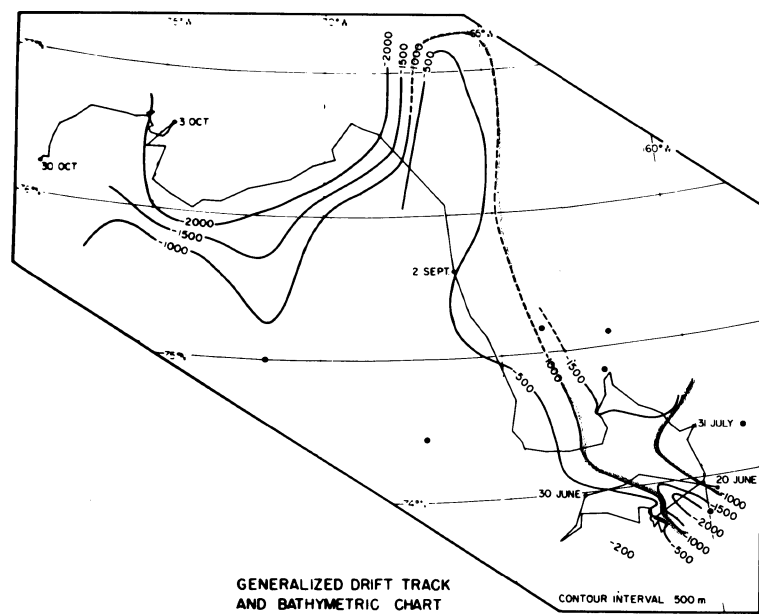
The most serious problem encountered in the survey was uncertainty concerning the drift characteristics of the gravimeter. Three drift control ties were made to the Arctic Research Laboratory, Barrow, Alaska. The first drift interval was from 19 June to 19 September 1961 and the rate of drift was found to be $+ .67$ mg1/day. The remaining two intervals were from 19 September to 22 September 1961 and 22 September to 30 September 1961. Both gave drift rates of $+ 1.7$ mg1/day. Instrument drift



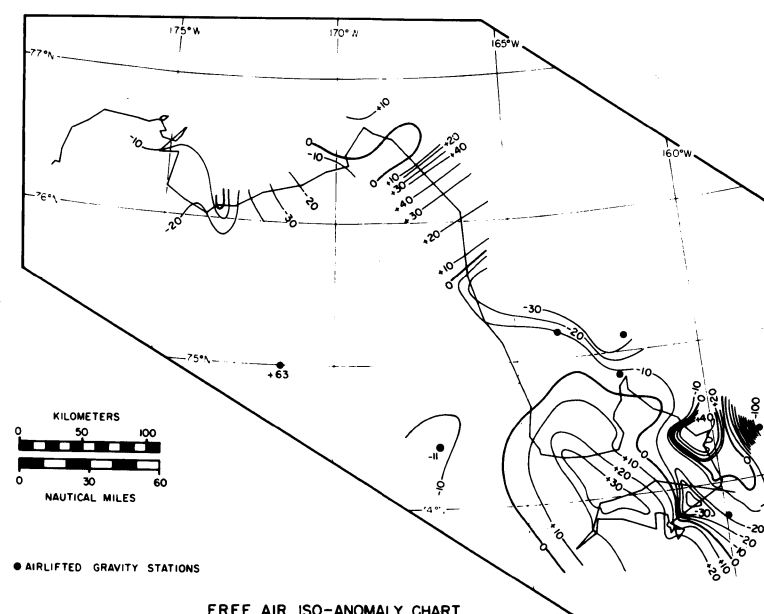
BATHYMETRIC CHART OF THE ARCTIC OCEAN SHOWING THE LOCATION OF AIRLIFTED AND DRIFTING GRAVITY STATIONS

FIGURE 2

ICE ISLAND ARLIS - II 1 JULY TO 6 OCTOBER 1961

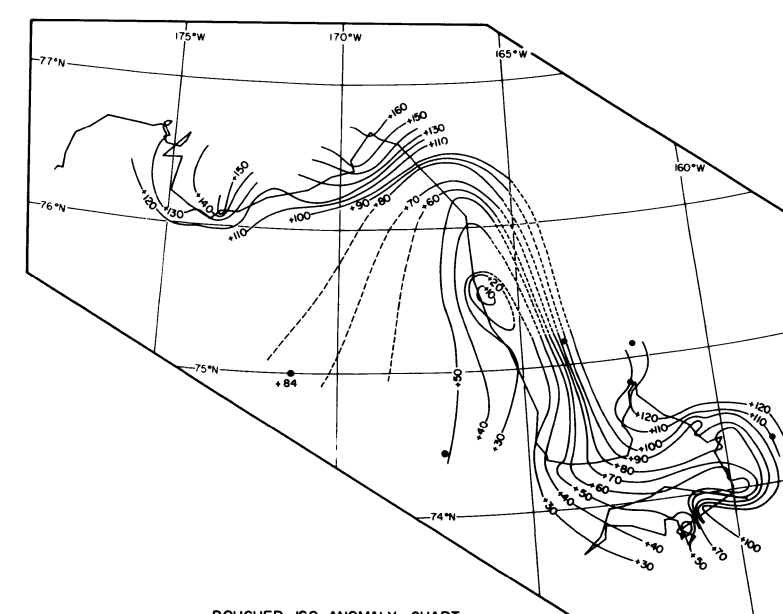


A



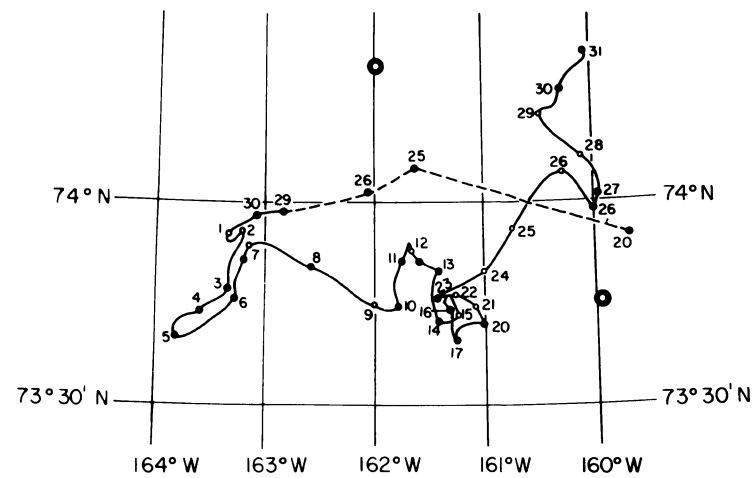
B

FIGURE 3

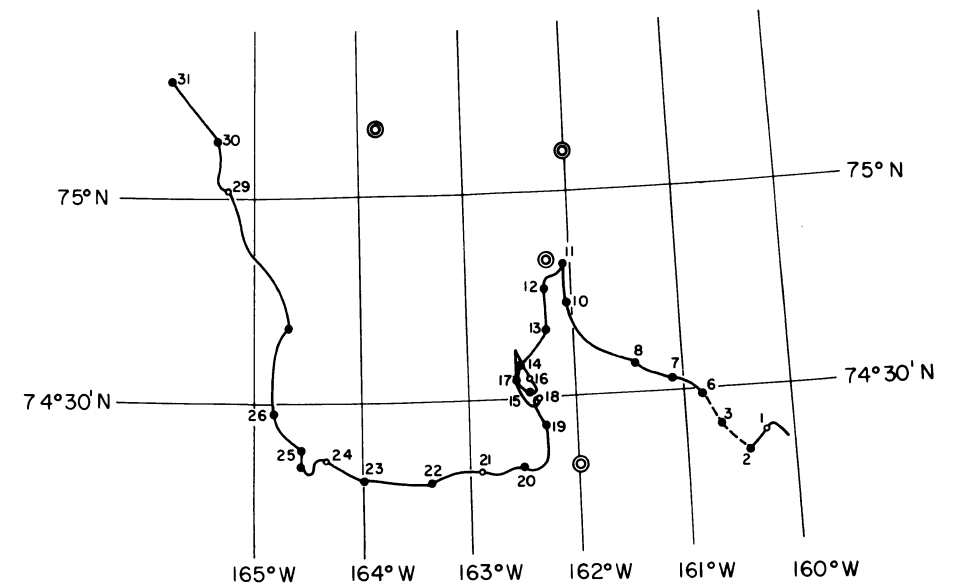


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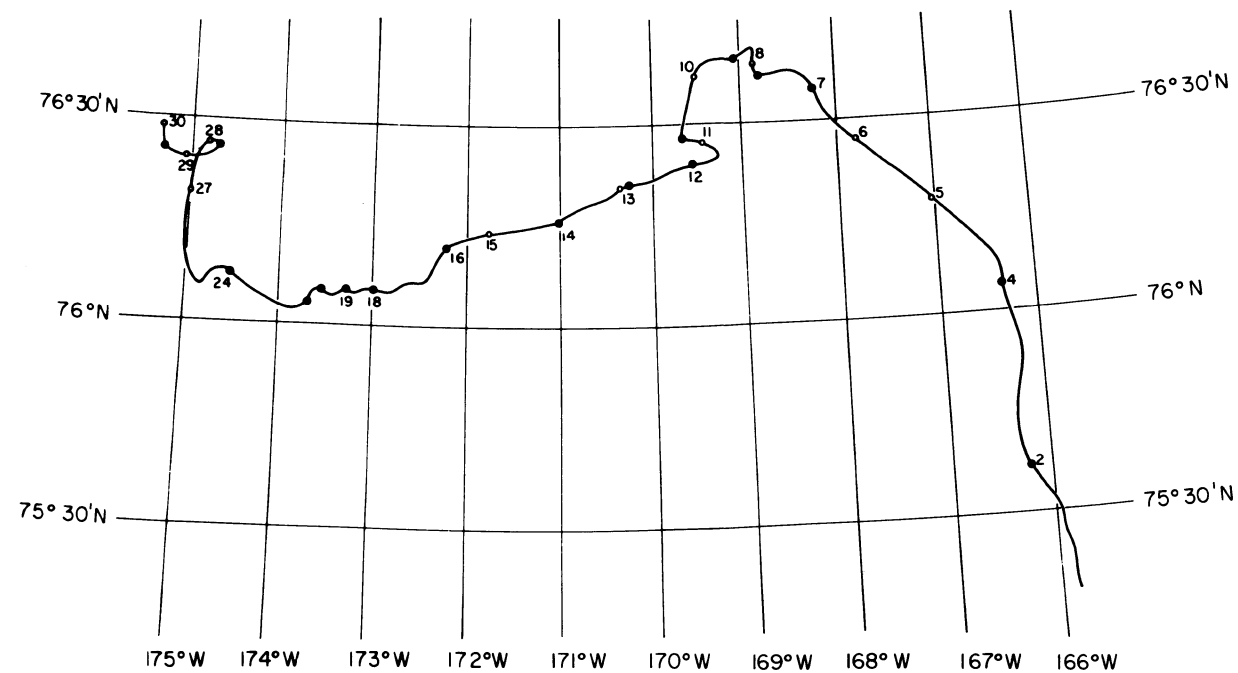
SUMMER 1961, ARLIS-II PLOT



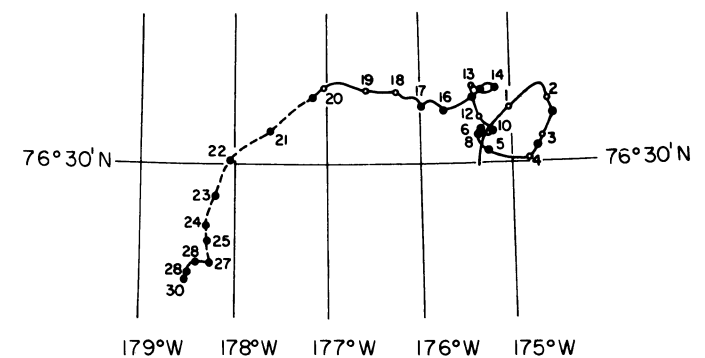
JUNE AND JULY 1961



AUGUST 1961



SEPTEMBER 1961



OCTOBER 1961

- DEAD RECKONING
- CELESTIAL FIX
- ◎ AIRLIFTED GRAVITY STATIONS

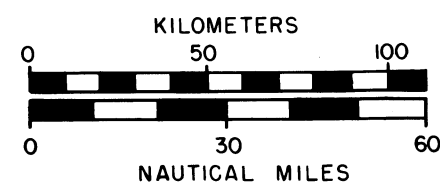


FIGURE 4

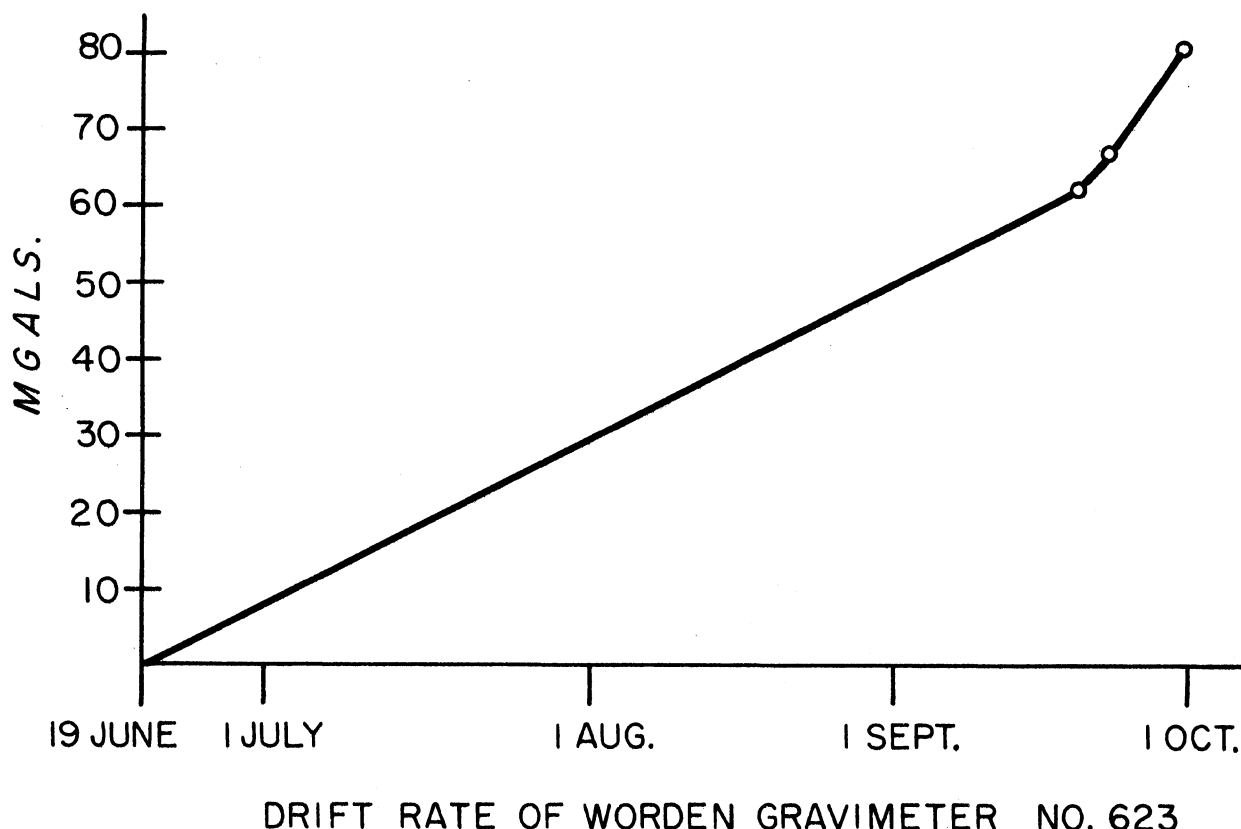


FIGURE 5

for the duration of this survey is shown graphically in Figure 5. Observed gravity, water depth, station positions, and free air and Bouguer anomalies are tabulated in APPENDIX I. The estimated accuracy of observed gravity is ± 10 mgls. Values are tied to an absolute datum at the University of Wisconsin pendulum station at the Arctic Research Laboratory (982.6997 gal). In computing Bouguer anomalies the water column under the gravimeter was corrected to a density equivalent of 2.67 gm/cm^3 . A ± 20 m error in bathymetry would introduce a ± 1.4 mgl error in the Bouguer anomalies.

Free air and Bouguer anomalies and water depths are plotted in profile form in Figure 6. Over the continental margin, between the start of the traverse and 23 July 1961, there were a number of small gravity anomalies which could not be correlated with ocean bottom topography. These occurred in a highly magnetic region (Ostenso, 1962a) and probably were related to local geology. On 23 July 1961 the drift track passed over a narrow tongue of the Canada Deep strongly suggestive of a submarine canyon which cut into the continental shelf. This feature is 40 km wide with slopes as steep as 6° . The Bouguer anomaly over this cleft was the

inverse of the free air anomaly, indicating that the ocean bottom is composed of material with a density appreciably less than 2.67 gm/cm^3 . To eliminate the sharp, positive Bouguer anomaly it was necessary to fill the canyon with material with a density of 2.17 gm/cm^3 . This density corresponds to Globigerina ooze, saturated sand and silt, terrigenous mud, and indurated shale. It is unlikely that there is a layer of Globigerina ooze with a thickness equal to the canyon depth (1700 m), adjacent to the continental margin. Such a deposit of saturated sand and silt, terrigenous mud and/or indurated shale is suggestive of an abyssal cone similar to those found on the floor of the ocean deeps off the mouths of the Mississippi, Hudson, and Ganges rivers. It is interesting to speculate that a great river of the past may have once dumped its sedimentary load down this canyon during the emergent history of the Chukchi Shelf.

From the submarine canyon the island passed over an edge of the Northwind Seahigh. Here, both the free air and Bouguer anomalies increased in response to the rise in ocean bottom. Although the free air anomaly was + 50 mgl, the Bouguer high was only about + 20 mgls above the general increasing trend toward deeper water, indicating that the mean density of the seahigh is near, or slightly greater than, 2.67 gm/cm^3 .

Leaving the Northwind Seahigh, the free air anomaly dropped abruptly to -18 mgls; possibly this was caused by a lens of low density detritus derived from the adjacent upland. Beyond this point free air and Bouguer anomalies generally reflect bottom topography. An exception was the free air low centered on 11 August 1961. A seismic sounding revealed an abnormally thick sedimentary columns under this anomaly. The gravity profiles are probably a better reflection of the surface topography of underlying consolidated material than the surface of the ocean bottom unconsolidated sediments.

The track of the island drift then turned northward, roughly paralleling the -500 m isobath. The free air high on 23 August 1961 is an extension of a broader feature to the south and will be discussed later when considering the free air iso-anomaly map. Similarly, discussion of the adjoining broad low and high will be deferred. A steep narrow gravity low is centered on 1 September 1961 at the eastern edge of the plateau (see Fig. 3a). There is no topographic explanation for the Bouguer and free air lows, but they could be caused by a submarine valley filled with low density sediments. This is a likely location for such a feature.

Leaving the junction of the Chukchi Cap and the continental shelf, the ocean depth increased rapidly. As would be expected the abrupt change in topography is marked by sharp decrease in the free air and increase in the Bouguer anomaly.

Centered on 16 September 1961 are free air and Bouguer lows. It was at this point that the drift track approached a northward projection

FREE AIR AND BOUGUER ANOMALIES, OCEAN BOTTOM TOPOGRAPHY, TOTAL MAGNETIC FIELD AND K-INDICES ALONG DRIFT TRACK OF ARLIS - II

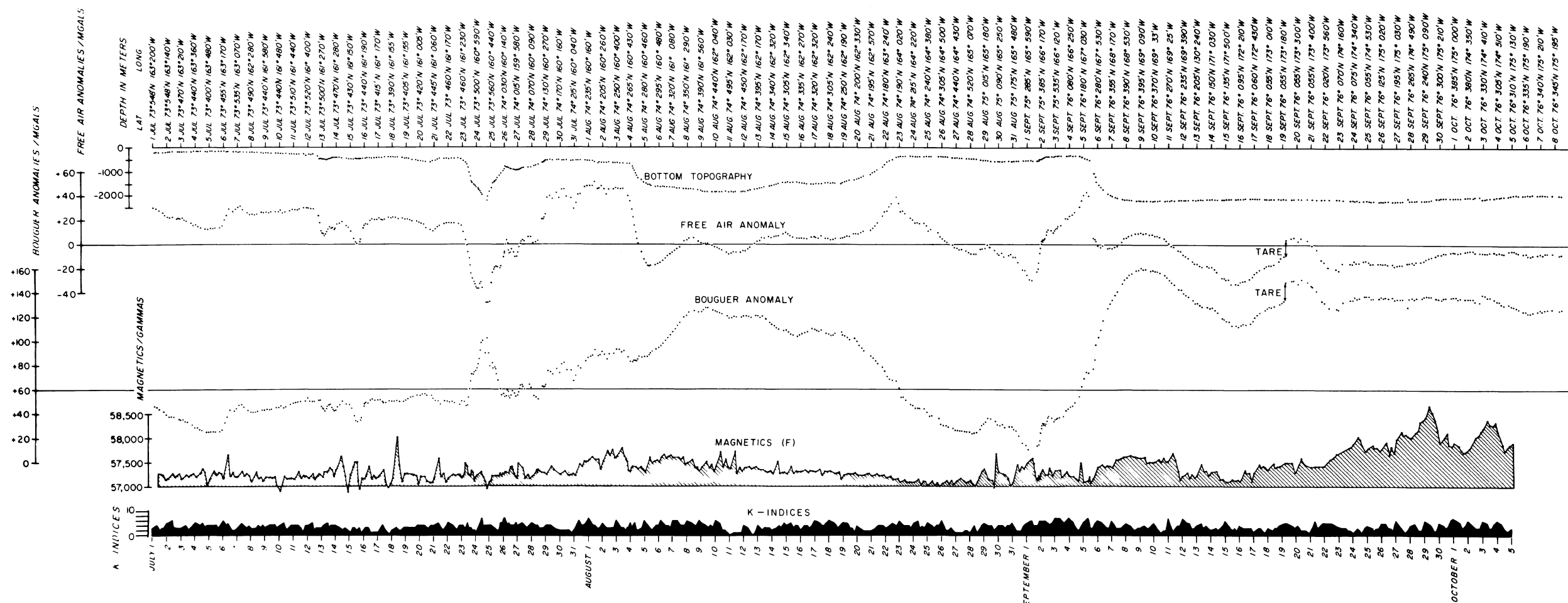


FIGURE 6

of the -1000 m isobath (see Fig. 3a) and the anomalies reflect possible thickening of the crust or ocean bottom unconsolidated sediments or both.

Between 19 September and 23 September 1961 gravity observations were made with a newly acquired, World Wide gravimeter, while the Worden meter was returned to the Arctic Research Laboratory for a gravity tie to an absolute datum and for drift control. The unlikely looking gravity high observed during this interval is probably due to erratic behavior of the new instrument. In addition, it became increasingly difficult to make observations. As summer advanced the ice pack ablated and by late August large patches of open water appeared and the ice island became increasingly less stable. In general, the gravity field from 23 September 1961 on was smooth and isostatic adjustment was good. The small variations in the gravity profiles could indicate variations in the consolidated basement surface.

Free Air and Bouguer iso-anomaly maps are presented in Figures 3b and 3c. For the most part the free air anomaly was near zero, indicating good regional isostatic compensation. There was a + 40 mgal free air anomaly over the Northwind Seahigh and a -40 mgl anomaly over the -2000 m contour tongue separating the Seahigh from the Chukchi Shelf. These anomalies can be quantitatively accounted for by the changes in bottom elevation. The +100 mgl anomaly centered on 74.5° N, 158° W has been discussed by Ostenso (1962b). A broad +30 mgl free air high, centered over 74° N, 163° W, showed no relationship to topography. This anomaly extended southwestward, joining a larger high centered on 73° N, 160° W, which Ostenso (1962a) has suggested to be caused by a rise in granitic basement similar to the granitic rises forming Wrangel, Herald, and the Diomed Islands elsewhere on the Chukchi Shelf.

A broad free air low roughly parallels the -500 m isobath and probably reflects slight overcompensation under the rapid drop in bottom elevation to the northeast. The sharp -30 mgl contour has been explained above as possibly indicating the presence of a buried submarine canyon.

The Chukchi Cap is connected to the Chukchi Shelf by a spur defined by the -500 m isobath in Figure 3a. A positive free air anomaly, with an amplitude of +40 mgals was associated with this spur, implying partial undercompensation of the feature. The -30 mgl anomaly, centered at 76° N, 172° W, has been explained above as being related to crustal thickening at the continental margin. The relative high immediately to the west was based upon data obtained with the World Wide gravimeter and is considered suspect.

The Bouguer iso-anomaly map shows the anomalies almost everywhere to reflect inversely the bottom topography. Exceptions to this rule were discussed when considering the profile section.

MAGNETICS

A Varian M-49 proton precession magnetometer was read concomitantly with the gravimeter. This instrument, on loan from the Antarctic program of the Geophysical and Polar Research Center, measures the absolute value of the total magnetic field (F). These data along with the K-indices from the U. S. Coast and Geodetic Survey magnetic observatory at the Arctic Research Laboratory, Barrow, Alaska are tabulated in APPENDIX II and plotted on Figure 6. No corrections have been applied to the observed data for temporal changes in the earth's magnetic field. An attempt to correlate such changes over the great distances involved might introduce more ambiguities than it would eliminate. Because of the slow rate of island drift relative to temporal magnetic field changes, these data are of limited quantitative value but do show the regional trend of an increasing field to the northwest, and suggest regional changes in magnetic character.

ACKNOWLEDGMENTS

In addition to our aforementioned indebtedness to A. Hanson, H. Kutschale and Texas Instruments Inc., it is a pleasure to acknowledge the invaluable support and assistance so cheerfully given by the director and staff of the Arctic Research Laboratory and the personnel of ARLIS-II.

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APPENDIX I

ARLIS-II Gravity, 1 July 1961 to 8 October 1961

<u>Station</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (GMT)	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u> (m)	<u>Observed</u> <u>Gravity</u> (gals)	<u>Free Air</u> <u>Anomaly</u> (mgal)	<u>Bouguer</u> <u>Anomaly</u> $\rho=2.67$ (mgal)
D61-1	1	Jul	0200	73°54.8'N	163°20.0'W	234	982.8523	29.7	45.8
2	1	Jul	0600	73°54.2'	163°23.0'	237	982.8511	29.0	45.3
3	1	Jul	1000	73°54.1'	163°21.0'	237	982.8495	27.5	43.8
4	1	Jul	1800	73°54.1'	163°18.0'	230	982.8479	25.9	41.7
5	1	Jul	2200	73°54.2'	163°16.0'	226	982.8457	23.6	39.1
D61-6	2	Jul	0200	73°54.8'	163°14.0'	222	982.8449	22.3	37.6
7	2	Jul	0600	73°54.4'	163°12.0'	218	982.8442	22.0	36.9
8	2	Jul	1000	73°53.0'	163°16.0'	214	982.8434	22.3	37.0
9	2	Jul	1900	73°51.0'	163°19.0'	208	982.8406	21.1	35.4
10	2	Jul	2200	73°50.0'	163°20.0'	204	982.8394	20.7	34.7
D61-11	3	Jul	0200	73°47.0'	163°21.0'	202	982.8376	21.3	35.2
12	3	Jul	0600	73°47.0'	163°24.0'	198	982.8362	19.9	33.5
13	3	Jul	1000	73°46.0'	163°26.0'	197	982.8349	19.4	33.0
14	3	Jul	1800	73°45.0'	163°31.0'	193	982.8320	17.4	30.6
15	3	Jul	2200	73°45.0'	163°33.0'	191	982.8300	15.4	28.5
D61-16	4	Jul	0200	73°44.0'	163°36.0'	189	982.8294	15.6	28.5
17	4	Jul	0600	73°43.0'	163°40.0'	187	982.8274	14.4	27.2
18	4	Jul	1000	73°43.0'	163°44.0'	185	982.8264	13.4	26.1
19	4	Jul	1800	73°42.0'	163°52.0'	181	982.8247	12.5	24.9
20	4	Jul	2200	73°41.0'	163°51.0'	179	982.8239	12.5	24.8
D61-21	5	Jul	0200	73°40.0'	163°48.0'	177	982.8234	12.8	25.0
22	5	Jul	0600	73°40.0'	163°42.0'	175	982.8233	12.7	24.7
23	5	Jul	1000	73°41.0'	163°38.0'	173	982.8241	12.7	24.6
24	5	Jul	1800	73°43.0'	163°25.0'	171	982.8266	13.6	25.3
25	5	Jul	2200	73°45.0'	163°20.0'	172	982.8298	15.2	27.0
D61-26	6	Jul	0200	73°45.5'	163°17.0'	183	982.8352	20.2	32.7
27	6	Jul	0600	73°47.0'	163°18.0'	195	982.8403	24.0	37.4
28	6	Jul	1000	73°49.0'	163°17.0'	205	982.8467	28.8	42.9
29	6	Jul	1800	73°51.0'	163°15.0'	220	982.8466	27.1	42.2
30	6	Jul	2200	73°52.5'	163°12.0'	228	982.8494	28.7	44.3
D61-31	7	Jul	0200	73°53.5'	163°07.0'	237	982.8520	30.5	46.8
32	7	Jul	0600	73°53.5'	162°59.0'	238	982.8525	31.0	47.3
33	7	Jul	1000	73°53.0'	162°53.0'	239	982.8496	28.5	44.9
34	7	Jul	1800	73°51.0'	162°40.0'	241	982.8453	25.8	42.3
35	7	Jul	2200	73°50.5'	162°34.0'	243	982.8436	24.5	41.2
D61-36	8	Jul	0200	73°49.0'	162°28.0'	244	982.8426	24.7	41.5
37	8	Jul	0600	73°48.0'	162°23.0'	245	982.8415	24.4	41.2
38	8	Jul	1000	73°47.5'	162°18.0'	246	982.8414	24.7	41.6
39	8	Jul	1800	73°45.0'	162°09.0'	248	982.8406	26.0	43.0
40	8	Jul	2200	73°44.5'	162°05.0'	250	982.8399	25.7	42.8
D61-41	9	Jul	0200	73°44.0'	161°58.0'	253	982.8398	26.0	43.3
42	9	Jul	0600	73°44.0'	161°53.0'	256	982.8392	25.4	42.9
43	9	Jul	1000	73°44.0'	161°52.0'	259	982.8398	26.0	43.7
44	9	Jul	1815	73°44.0'	161°51.0'	265	982.8404	26.6	44.8
45	9	Jul	2200	73°44.0'	161°50.0'	266	982.8405	26.7	44.9
D61-46	10	Jul	0200	73°44.0'	161°48.0'	272	982.8415	27.7	46.3
47	10	Jul	0600	73°46.5'	161°50.0'	277	982.8416	25.7	44.8
48	10	Jul	1000	73°48.0'	161°51.0'	283	982.8433	26.2	45.6
49	10	Jul	1830	73°49.0'	161°47.0'	293	982.8454	27.5	47.6
50	10	Jul	2200	73°50.0'	161°46.0'	296	982.8469	28.2	48.5

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

<u>Station</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (GMT)	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u> (m)	<u>Observed Gravity</u> (gals)	<u>Free Air Anomaly</u> (mgal)	<u>Bouguer Anomaly</u> $\rho=2.67$ (mgal)
D61-51	11	Jul	0200	73°51.0'N	161°44.0'W	299	982.8477	28.2	48.7
52	11	Jul	0600	73°52.0'	161°43.0'	300	982.8486	28.3	48.9
53	11	Jul	1000	73°52.5'	161°42.0'	302	982.8495	28.8	49.5
54	11	Jul	1800	73°53.5'	161°41.0'	305	982.8509	29.4	50.3
55	11	Jul	2200	73°53.0'	161°41.0'	347	982.8505	29.4	53.2
D61-56	12	Jul	0200	73°52.0'	161°40.0'	308	982.8494	29.1	50.2
57	12	Jul	0600	73°51.5'	161°39.0'	310	982.8490	29.1	50.4
58	12	Jul	1000	73°51.0'	161°38.0'	311	982.8486	29.1	50.4
59	12	Jul	1800	73°50.5'	161°35.0'	408	982.8423	23.2	51.2
60	12	Jul	2000	73°50.0'	161°31.0'	497	982.8356	16.9	51.0
D61-61	12	Jul	2200	73°50.0'	161°30.0'	502	982.8300	11.3	45.8
62	12	Jul	2400	73°50.0'	161°29.0'	506	982.8281	9.4	44.1
63	13	Jul	0200	73°50.0'	161°27.0'	511	982.8266	7.9	43.0
64	13	Jul	0400	73°50.0'	161°26.0'	515	982.8252	6.5	41.9
65	13	Jul	0600	73°49.5'	161°25.0'	520	982.8264	8.1	43.8
D61-66	13	Jul	0740	73°50.0'	161°24.0'	524	982.8286	9.9	45.9
67	13	Jul	1000	73°50.0'	161°23.0'	505	982.8312	12.5	47.2
68	13	Jul	1300	73°50.0'	161°22.0'	486	982.8327	14.0	47.4
69	13	Jul	1600	73°50.5'	161°22.0'	467	982.8319	12.8	44.9
70	13	Jul	1800	73°50.5'	161°23.0'	448	982.8319	12.8	43.6
D61-71	13	Jul	2015	73°51.0'	161°24.0'	440	982.8318	12.3	42.5
72	13	Jul	2200	73°51.0'	161°24.5'	432	982.8323	12.8	42.5
73	14	Jul	0200	73°47.0'	161°28.0'	424	982.8327	16.4	45.5
74	14	Jul	0600	73°44.0'	161°26.0'	440	982.8312	17.4	47.6
75	14	Jul	1000	73°42.0'	161°23.0'	456	982.8308	18.6	49.9
D61-76	14	Jul	1800	73°42.0'	161°18.0'	472	982.8273	15.1	47.5
77	14	Jul	2200	73°42.5'	161°17.0'	491	982.8258	13.2	46.9
78	15	Jul	0200	73°43.0'	161°15.0'	489	982.8234	10.4	43.9
79	15	Jul	0600	73°44.0'	161°16.0'	487	982.8184	4.6	38.0
80	15	Jul	1000	73°45.0'	161°18.0'	485	982.8155	.9	34.1
D61-81	15	Jul	1200	73°46.0'	161°20.0'	483	982.8159	.4	33.6
82	15	Jul	1600	73°45.0'	161°23.0'	480	982.8164	1.8	34.7
83	15	Jul	1800	73°45.0'	161°22.0'	477	982.8185	3.9	36.6
84	15	Jul	2200	73°44.5'	161°21.0'	475	982.8274	13.2	45.8
85	15	Jul	2400	73°44.5'	161°20.0'	473	982.8299	15.7	48.1
D61-86	16	Jul	0200	73°44.0'	161°19.0'	470	982.8304	16.6	48.8
87	16	Jul	0600	73°43.5'	161°18.0'	464	982.8299	16.5	48.3
88	16	Jul	1000	73°43.0'	161°18.0'	458	982.8326	19.6	51.0
89	16	Jul	1300	73°43.0'	161°18.0'	452	982.8335	20.5	51.5
90	16	Jul	1800	73°42.5'	161°17.0'	446	982.8327	20.1	50.7
D61-91	16	Jul	2200	73°42.0'	161°17.0'	440	982.8328	20.6	50.8
92	17	Jul	0200	73°41.5'	161°17.0'	434	982.8332	21.4	51.2
93	17	Jul	0600	73°41.0'	161°16.0'	428	982.8318	20.4	49.8
94	17	Jul	0710	73°40.5'	161°16.0'	423	982.8313	20.3	49.3
95	17	Jul	1000	73°40.0'	161°16.0'	418	982.8311	20.5	49.2
D61-96	17	Jul	1800	73°39.0'	161°15.5'	413	982.8318	22.0	50.4
97	17	Jul	2200	73°39.0'	161°15.5'	416	982.8312	21.4	50.0
98	18	Jul	0200	73°39.0'	161°15.5'	419	982.8317	21.9	50.7
99	18	Jul	0600	73°39.5'	161°15.5'	422	982.8320	21.8	50.8
100	18	Jul	1000	73°39.5'	161°15.5'	425	982.8310	20.8	50.0

APPENDIX I (con't)

ARLIS-II Gravity, 1 July 1961 to 8 October 1961

<u>Station</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (GMT)	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u> (m)	<u>Observed</u> <u>Gravity</u> (gals)	<u>Free Air</u> <u>Anomaly</u> (mgal)	<u>Bouguer</u> <u>Anomaly</u> $\rho=2.67$ (mgal)
D61-101	18	Jul	1800	73°40.0'N	161°15.5'W	428	982.8312	20.6	50.0
102	18	Jul	2200	73°40.0'	161°15.5'	448	982.8311	20.5	51.3
103	19	Jul	0200	73°40.5'	161°15.5'	468	982.8313	20.3	52.4
104	19	Jul	0600	73°41.0'	161°14.0'	487	982.8312	19.8	53.2
105	19	Jul	1000	73°41.5'	161°12.0'	507	982.8307	18.9	53.7
D61-106	19	Jul	1800	73°42.0'	161°06.0'	527	982.8310	18.8	55.0
107	19	Jul	2200	73°42.0'	161°03.0'	546	982.8296	17.4	54.9
108	20	Jul	0200	73°42.0'	161°00.5'	566	982.8292	17.0	55.8
109	20	Jul	0600	73°42.5'	161°01.0'	585	982.8288	16.2	56.3
110	20	Jul	1000	73°43.0'	161°01.0'	605	982.8264	13.4	54.9
D61-111	20	Jul	1800	73°43.5'	161°03.0'	625	982.8253	11.9	54.8
112	20	Jul	2200	73°44.0'	161°04.0'	594	982.8248	11.0	51.7
113	21	Jul	0200	73°44.5'	161°06.0'	557	982.8266	12.4	50.6
114	21	Jul	0600	73°45.0'	161°08.0'	520	982.8287	14.1	49.7
115	21	Jul	1000	73°45.0'	161°10.0'	483	982.8296	15.0	48.1
D61-116	21	Jul	1800	73°45.5'	161°13.0'	478	982.8326	17.6	50.4
117	21	Jul	2200	73°46.0'	161°15.0'	473	982.8331	17.6	50.1
118	22	Jul	0200	73°46.0'	161°17.0'	469	982.8329	17.4	49.6
119	22	Jul	0600	73°46.0'	161°19.0'	464	982.8332	17.7	49.6
120	22	Jul	1000	73°46.0'	161°21.0'	460	982.8331	17.6	49.2
D61-121	22	Jul	1830	73°46.0'	161°23.0'	450	982.8322	16.7	47.6
122	22	Jul	2200	73°46.0'	161°25.0'	512	982.8305	15.0	50.2
123	23	Jul	0200	73°46.0'	161°23.0'	574	982.8257	10.2	49.6
124	23	Jul	0600	73°46.5'	161°22.0'	636	982.8187	2.8	46.5
125	23	Jul	0815	73°46.5'	161°21.0'	701	982.8147	-1.2	47.0
D61-126	23	Jul	1000	73°47.0'	161°19.0'	876	982.8099	-6.4	53.8
127	23	Jul	1200	73°47.0'	161°17.0'	1051	982.8046	-11.7	60.5
128	23	Jul	1400	73°47.0'	161°15.0'	1226	982.7985	-17.8	66.4
129	23	Jul	1600	73°47.5'	161°13.0'	1410	982.7924	-24.3	72.5
130	23	Jul	1800	73°47.5'	161°10.0'	1470	982.7884	-28.3	72.6
D61-131	23	Jul	2000	73°48.0'	161°07.0'	1530	982.7864	-30.7	74.3
132	23	Jul	2200	73°49.0'	161°03.0'	1590	982.7844	-33.5	75.6
133	23	Jul	2400	73°49.5'	161°00.0'	1650	982.7825	-35.8	77.5
134	24	Jul	0200	73°50.0'	160°59.0'	1709	982.7819	-36.8	80.5
135	24	Jul	0400	73°50.5'	160°58.0'	1772	982.7830	-36.1	85.5
D61-136	24	Jul	0600	73°50.5'	160°56.0'	1834	982.7857	-33.4	92.5
137	24	Jul	0800	73°51.0'	160°53.0'	1896	982.7877	-31.8	98.3
138	24	Jul	1000	73°52.0'	160°51.0'	1958	982.7861	-34.2	100.2
139	24	Jul	1800	73°54.0'	160°48.0'	2193	982.7737	-48.2	102.3
140	24	Jul	2000	73°54.5'	160°47.0'	2020	982.7735	-48.8	89.8
D61-141	24	Jul	2200	73°55.0'	160°46.0'	1850	982.7746	-48.1	78.9
142	25	Jul	0200	73°56.0'	160°44.0'	1670	982.7912	-32.3	82.3
143	25	Jul	0400	73°57.0'	160°42.0'	1475	982.8008	-23.5	77.7
144	25	Jul	0600	73°58.0'	160°40.0'	1440	982.8045	-20.6	78.2
145	25	Jul	0800	73°59.0'	160°38.0'	1400	982.8066	-19.3	76.8
D61-146	25	Jul	1000	74°00.0'	160°36.0'	1340	982.8079	-18.8	73.1
147	25	Jul	1200	74°00.5'	160°33.0'	1250	982.8082	-18.9	66.9
148	25	Jul	1615	74°02.0'	160°30.0'	1160	982.8086	-19.7	59.9
149	25	Jul	1800	74°03.0'	160°26.0'	1070	982.8112	-17.9	55.5
150	25	Jul	2200	74°03.5'	160°22.0'	980	982.8188	-10.7	56.5

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

Station	Day	Month	Time (GMT)	Latitude	Longitude	Depth (m)	Observed Gravity (gals)	Free Air Anomaly (mgal)	Bouguer Anomaly $\rho=2.67$ (mgal)
D61-151	25	Jul	2400	74°04.0'N	160°18.0'W	890	982.8226	-7.3	53.8
152	26	Jul	0200	74°03.0'	160°14.0'	800	982.8287	-.4	54.5
153	26	Jul	0400	74°02.0'	160°10.0'	820	982.8312	2.9	59.2
154	26	Jul	0600	74°01.0'	160°06.0'	840	982.8279	.4	58.0
155	26	Jul	0800	74°00.0'	160°03.0'	863	982.8213	-5.4	53.8
D61-156	26	Jul	1000	73°59.0'	160°00.0'	880	982.8184	-7.5	52.9
157	26	Jul	1200	73°58.5'	160°00.0'	895	982.8188	-6.7	54.7
158	26	Jul	1415	73°59.0'	160°00.0'	910	982.8220	-3.9	58.5
159	26	Jul	1800	73°59.5'	159°59.0'	925	982.8194	-6.9	56.6
160	26	Jul	2000	74°00.0'	159°59.0'	940	982.8163	-10.4	54.1
D61-161	26	Jul	2200	74°00.5'	159°58.0'	950	982.8170	-10.1	55.1
162	26	Jul	2400	74°01.0'	159°58.0'	934	982.8209	-6.6	57.5
163	27	Jul	0200	74°01.5'	159°58.0'	917	982.8255	-2.4	60.5
164	27	Jul	0400	74°01.5'	159°57.0'	900	982.8293	1.4	63.1
165	27	Jul	0600	74°02.0'	159°56.0'	883	982.8307	2.4	63.0
D61-166	27	Jul	0800	74°03.0'	159°56.0'	866	982.8316	2.5	61.9
167	27	Jul	1000	74°03.5'	159°57.0'	849	982.8317	2.2	60.4
168	27	Jul	1820	74°06.0'	160°01.0'	832	982.8380	6.5	63.6
169	27	Jul	2200	74°06.5'	160°04.0'	815	982.8378	5.9	61.8
170	28	Jul	0200	74°07.0'	160°09.0'	785	982.8331	.8	54.7
D61-171	28	Jul	0600	74°08.0'	160°12.0'	755	982.8349	1.8	53.6
172	28	Jul	1000	74°09.0'	160°18.0'	710	982.8372	3.3	52.0
173	28	Jul	1820	74°11.0'	160°26.0'	610	982.8562	20.7	62.6
174	28	Jul	1925	74°11.0'	160°27.0'	600	982.8567	21.2	62.4
175	28	Jul	2000	74°11.0'	160°28.0'	590	982.8574	21.9	62.4
D61-176	28	Jul	2200	74°12.0'	160°29.0'	570	982.8607	24.4	63.5
177	29	Jul	0200	74°13.0'	160°27.0'	540	982.8756	38.5	75.6
178	29	Jul	0600	74°13.5'	160°26.0'	511	982.8770	39.5	74.6
179	29	Jul	1000	74°13.5'	160°22.0'	510	982.8750	37.5	72.5
180	29	Jul	1800	74°14.5'	160°20.0'	510	982.8805	42.2	77.2
D61-181	29	Jul	2200	74°16.0'	160°18.0'	520	982.8777	38.3	73.9
182	30	Jul	0200	74°17.0'	160°16.0'	527	982.8854	45.2	81.3
183	30	Jul	0600	74°17.5'	160°15.0'	534	982.8862	45.6	82.2
184	30	Jul	1000	74°18.5'	160°12.0'	540	982.8808	39.4	76.5
185	30	Jul	1800	74°20.0'	160°06.0'	550	982.8807	38.1	75.9
D61-186	30	Jul	2200	74°20.5'	160°04.0'	547	982.8724	29.4	67.0
187	31	Jul	0200	74°21.5'	160°04.0'	544	982.8778	34.0	71.4
188	31	Jul	0600	74°22.0'	160°03.0'	541	982.8858	41.6	78.8
189	31	Jul	1000	74°23.0'	160°08.0'	538	982.8862	41.3	78.2
190	31	Jul	1820	74°24.0'	160°14.0'	532	982.8932	47.5	84.0
D61-191	31	Jul	2200	74°24.0'	160°15.0'	549	982.8939	48.2	85.9
192	1	Aug	0200	74°23.5'	160°16.0'	566	982.8936	48.3	87.1
193	1	Aug	0600	74°22.5'	160°18.0'	583	982.8928	48.3	88.3
194	1	Aug	1000	74°22.0'	160°21.0'	600	982.8956	51.4	92.6
195	1	Aug	1600	74°22.0'	160°23.0'	608	982.8898	45.6	87.4
D61-196	1	Aug	1815	74°22.0'	160°23.0'	612	982.8906	46.4	88.4
197	1	Aug	2200	74°21.5'	160°24.0'	618	982.8922	48.4	90.9
198	2	Aug	0200	74°20.5'	160°26.0'	625	982.8888	45.8	88.7
199	2	Aug	0600	74°21.2'	160°28.0'	631	982.8850	41.5	84.8
200	2	Aug	1000	74°22.0'	160°30.0'	637	982.8891	44.9	88.7

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

<u>Station</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (GMT)	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u> (m)	<u>Observed</u> <u>Gravity</u> (gals)	<u>Free Air</u> <u>Anomaly</u> (mgal)	<u>Bouguer</u> <u>Anomaly</u> $\rho=2.67$ (mgal)
D61-201	2	Aug	1800	74°23.5'N	160°35.0'W	643	982.8910	45.7	89.8
202	2	Aug	2200	74°24.3'	160°37.0'	649	982.8943	48.3	92.9
203	3	Aug	0200	74°25.0'	160°40.0'	656	982.8945	48.0	93.0
204	3	Aug	0600	74°25.3'	160°40.0'	663	982.8923	45.6	91.1
205	3	Aug	1000	74°25.5'	160°41.0'	670	982.8927	45.8	91.8
D61-206	3	Aug	1800	74°26.0'	160°42.0'	680	982.8873	40.0	86.7
207	3	Aug	2200	74°26.3'	160°42.0'	687	982.8832	35.7	82.8
208	4	Aug	0200	74°26.5'	160°43.0'	787	982.8764	28.7	82.7
209	4	Aug	0400	74°26.7'	160°43.0'	888	982.8702	22.4	83.3
210	4	Aug	0600	74°26.8'	160°43.0'	989	982.8635	15.6	83.5
D61-211	4	Aug	0800	74°26.9'	160°43.0'	1080	982.8575	9.5	83.6
212	4	Aug	1000	74°27.0'	160°44.0'	1170	982.8526	4.5	84.8
213	4	Aug	1200	74°27.3'	160°44.0'	1260	982.8492	.9	87.4
214	4	Aug	1800	74°27.5'	160°45.0'	1350	982.8423	-6.2	86.5
215	4	Aug	2200	74°27.8'	160°45.0'	1449	982.8362	-12.5	87.0
D61-216	5	Aug	0215	74°28.0'	160°46.0'	1500	982.8329	-15.9	87.0
217	5	Aug	0600	74°28.3'	160°46.0'	1545	982.8314	-17.7	88.4
218	5	Aug	0800	74°28.4'	160°46.0'	1568	982.8313	-17.9	89.8
219	5	Aug	1000	74°28.5'	160°47.0'	1592	982.8311	-18.1	91.1
220	5	Aug	1800	74°29.0'	160°47.0'	1615	982.8324	-17.2	93.6
D61-221	5	Aug	2200	74°29.3'	160°48.0'	1618	982.8334	-16.5	94.6
222	6	Aug	0200	74°29.5'	160°48.0'	1622	982.8345	-15.5	95.8
223	6	Aug	0600	74°30.5'	160°54.0'	1625	982.8371	-13.7	97.8
224	6	Aug	1000	74°31.0'	160°56.0'	1632	982.8395	-11.7	100.3
225	6	Aug	1400	74°31.0'	160°58.0'	1638	982.8415	-9.7	102.7
D61-226	6	Aug	1800	74°31.5'	161°02.0'	1645	982.8435	-8.1	104.8
227	6	Aug	2200	74°32.0'	161°04.0'	1660	982.8453	-6.7	107.3
228	7	Aug	0200	74°32.0'	161°08.0'	1680	982.8467	-5.3	110.0
229	7	Aug	0600	74°32.0'	161°10.0'	1700	982.8484	-3.6	113.1
230	7	Aug	1000	74°32.0'	161°12.0'	1705	982.8498	-2.2	114.9
D61-231	7	Aug	1800	74°33.0'	161°21.0'	1715	982.8549	2.2	119.9
232	7	Aug	2200	74°34.0'	161°25.0'	1725	982.8567	3.2	121.6
233	8	Aug	0220	74°35.0'	161°29.0'	1735	982.8589	4.6	123.7
234	8	Aug	0600	74°35.0'	161°32.0'	1743	982.8873	33.0	152.6
235	8	Aug	1000	74°35.5'	161°36.0'	1750	982.8597	5.0	125.1
D61-236	8	Aug	1815	74°37.0'	161°49.0'	1775	982.8581	2.3	124.1
237	8	Aug	2300	74°38.0'	161°53.0'	1800	982.8576	1.0	124.5
238	9	Aug	0200	74°39.0'	161°56.0'	1825	982.8579	.5	125.8
239	9	Aug	0600	74°39.5'	162°00.0'	1850	982.8583	.5	127.5
240	9	Aug	1000	74°40.0'	162°00.0'	1848	982.8587	.6	127.4
D61-241	9	Aug	1800	74°41.5'	162°02.0'	1846	982.8583	-1.0	125.7
242	9	Aug	2300	74°43.0'	162°03.0'	1847	982.8581	-2.4	124.4
243	10	Aug	0200	74°44.0'	162°04.0'	1847	982.8583	-2.9	123.8
244	10	Aug	0600	74°45.0'	162°04.0'	1848	982.8582	-3.8	123.0
245	10	Aug	1000	74°46.0'	162°05.0'	1848	982.8580	-4.8	122.1
D61-246	10	Aug	1800	74°48.0'	162°04.0'	1849	982.8578	-6.5	120.4
247	10	Aug	2200	74°49.5'	162°03.0'	1850	982.8574	-8.0	118.9
248	11	Aug	0200	74°49.5'	162°03.0'	1849	982.8577	-7.7	119.2
249	11	Aug	0600	74°48.0'	162°10.0'	1847	982.8576	-6.7	120.1
250	11	Aug	1000	74°47.5'	162°14.0'	1846	982.8570	-6.9	119.8

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

Station	Day	Month	Time (GMT)	Latitude	Longitude	Depth (m)	Observed Gravity (gals)	Free Air Anomaly (mgal)	Bouguer Anomaly $\sigma=2.67$ (mgal)
D61-251	11	Aug	1825	74°47.0'N	162°17.0'W	1843	982.8567	-6.8	115.4
252	11	Aug	2200	74°46.0'	162°17.0'	1842	982.8569	-5.9	120.6
253	12	Aug	0200	74°45.0'	162°17.0'	1840	982.8563	-5.7	120.6
254	12	Aug	0600	74°44.0'	162°16.0'	1810	982.8571	-4.1	120.1
255	12	Aug	1000	74°43.0'	162°16.0'	1780	982.8578	-2.7	119.5
D61-256	12	Aug	1800	74°41.5'	162°16.0'	1750	982.8598	.5	120.6
257	12	Aug	2200	74°40.5'	162°15.0'	1725	982.8605	2.0	120.4
258	13	Aug	0200	74°39.5'	162°17.0'	1700	982.8606	2.8	119.5
259	13	Aug	0600	74°38.5'	162°19.0'	1675	982.8623	5.3	120.3
260	13	Aug	1000	74°38.0'	162°21.0'	1645	982.8618	5.2	118.1
D61-261	13	Aug	1810	74°36.5'	162°25.0'	1595	982.8614	6.0	115.4
262	13	Aug	2200	74°35.5'	162°28.0'	1575	982.8603	5.6	113.7
263	14	Aug	0200	74°34.0'	162°32.0'	1550	982.8598	6.3 _p	112.7
264	14	Aug	0600	74°33.0'	162°33.0'	1525	982.8593	6.6	111.2
265	14	Aug	1000	74°32.5'	162°32.0'	1500	982.8595	7.2	110.1
D61-266	14	Aug	1800	74°31.0'	162°28.0'	1460	982.8598	8.6	108.8
267	14	Aug	2200	74°30.5'	162°25.0'	1453	982.8601	9.3	109.0
268	15	Aug	0200	74°30.5'	162°24.0'	1447	982.8589	8.1	107.4
269	15	Aug	0600	74°31.0'	162°23.0'	1440	982.8578	6.6	105.5
270	15	Aug	1000	74°31.5'	162°22.0'	1439	982.8576	6.0	104.8
D61-271	15	Aug	1800	74°32.5'	162°24.0'	1445	982.8571	4.8	103.9
272	15	Aug	2200	74°33.0'	162°26.0'	1460	982.8576	4.9	105.1
273	16	Aug	0200	74°33.5'	162°27.0'	1475	982.8579	4.8	106.0
274	16	Aug	0600	74°35.0'	162°29.0'	1492	982.8587	4.4	106.8
275	16	Aug	1000	74°36.0'	162°31.0'	1508	982.8591	4.0	107.5
D61-276	16	Aug	1800	74°34.0'	162°32.0'	1525	982.8590	5.5	110.2
277	16	Aug	2200	74°33.5'	162°33.0'	1517	982.8588	5.7	109.8
278	17	Aug	0225	74°32.0'	162°32.0'	1510	982.8572	5.2	108.9
279	17	Aug	0600	74°31.0'	162°30.0'	1503	982.8561	4.9	108.1
280	17	Aug	1000	74°29.0'	162°26.0'	1496	982.8560	6.4	109.1
D61-281	17	Aug	1800	74°29.5'	162°23.0'	1475	982.8549	4.9	106.1
282	17	Aug	2200	74°30.0'	162°22.0'	1477	982.8546	4.9	105.6
283	18	Aug	0200	74°30.5'	162°24.0'	1480	982.8545	3.7	105.3
284	18	Aug	0600	74°30.0'	162°24.0'	1482	982.8541	3.7	105.4
285	18	Aug	1000	74°29.0'	162°23.0'	1485	982.8541	4.5	106.4
D61-286	18	Aug	2020	74°27.5'	162°22.0'	1490	982.8534	4.9	107.2
287	18	Aug	2200	74°27.0'	162°20.0'	1463	982.8527	4.6	105.0
288	19	Aug	0200	74°25.0'	162°19.0'	1434	982.8521	5.6	104.0
289	19	Aug	0600	74°23.0'	162°18.0'	1408	982.8511	6.2	102.8
290	19	Aug	1000	74°22.0'	162°18.0'	1382	982.8507	6.5	101.4
D61-291	19	Aug	1800	74°19.5'	162°22.0'	1365	982.8505	8.3	102.0
292	19	Aug	2200	74°20.0'	162°28.0'	1322	982.8512	8.6	99.3
293	20	Aug	0200	74°20.0'	162°33.0'	1280	982.8511	8.5	96.4
294	20	Aug	0600	74°20.0'	162°36.0'	1237	982.8519	9.3	94.2
295	20	Aug	1010	74°19.5'	162°39.0'	1195	982.8523	10.1	92.1
D61-296	20	Aug	2200	74°19.5'	162°49.0'	1110	982.8539	11.7	87.9
297	21	Aug	0200	74°19.5'	162°57.0'	1060	982.8555	13.3	86.1
298	21	Aug	0600	74°19.5'	163°00.0'	1010	982.8571	14.9	84.2
299	21	Aug	1000	74°19.5'	163°04.0'	940	982.8594	17.2	81.7
300	21	Aug	1800	74°19.0'	163°14.0'	800	982.8651	23.3	78.2

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

Station	Day	Month	Time (GMT)	Latitude	Longitude	Depth (m)	Observed Gravity (gals)	Free Air Anomaly (mgal)	Bouguer Anomaly $\rho = 2.67$ (mgal)
D61-301	21	Aug	2200	74°18.5'N	163°18.0'W	720	982.8676	26.2	75.6
302	22	Aug	0200	74°18.0'	163°24.0'	640	982.8675	26.5	70.4
303	22	Aug	0600	74°18.0'	163°30.0'	550	982.8714	30.4	68.1
304	22	Aug	1000	74°18.0'	163°37.0'	505	982.8739	32.9	67.5
305	22	Aug	1800	74°18.5'	163°50.0'	415	982.8797	38.3	66.8
D61-306	22	Aug	2200	74°18.5'	163°56.0'	403	982.8749	33.5	61.2
307	23	Aug	0200	74°19.0'	164°02.0'	390	982.8684	26.6	53.4
308	23	Aug	0600	74°19.0'	164°06.0'	378	982.8694	27.6	53.5
309	23	Aug	1000	74°19.5'	164°09.0'	374	982.8674	25.2	50.9
310	23	Aug	1800	74°21.0'	164°16.0'	382	982.8649	21.5	47.7
D61-311	23	Aug	2200	74°21.0'	164°20.0'	386	982.8634	20.0	46.5
312	24	Aug	0245	74°21.5'	164°22.0'	390	982.8616	17.8	44.6
313	24	Aug	0600	74°22.0'	164°26.0'	394	982.8618	17.6	44.7
314	24	Aug	1000	74°21.0'	164°27.0'	398	982.8604	17.0	44.3
315	24	Aug	1800	74°20.0'	164°31.0'	390	982.8596	17.0	43.8
D61-316	24	Aug	2200	74°22.0'	164°34.0'	386	982.8590	14.8	41.3
317	25	Aug	0300	74°24.0'	164°38.0'	381	982.8571	11.4	37.5
318	25	Aug	0600	74°24.5'	164°39.0'	378	982.8584	12.3	38.2
319	25	Aug	1730	74°26.5'	164°47.0'	381	982.8573	9.6	35.8
320	25	Aug	2200	74°27.5'	164°48.0'	382	982.8551	6.6	32.9
D61-321	26	Aug	0210	74°30.5'	164°50.0'	384	982.8549	4.1	30.5
322	26	Aug	0630	74°32.0'	164°50.0'	385	982.8551	3.1	29.6
323	26	Aug	1000	74°35.0'	164°50.0'	393	982.8562	1.9	28.9
324	26	Aug	1830	74°40.0'	164°46.0'	410	982.8579	-2	27.9
325	26	Aug	2200	74°42.0'	164°41.0'	418	982.8572	-2.5	26.2
D61-326	27	Aug	0225	74°44.0'	164°43.0'	426	982.8580	-3.2	26.0
327	27	Aug	0630	74°45.5'	164°45.0'	435	982.8583	-4.1	25.8
328	27	Aug	1000	74°46.0'	164°47.0'	440	982.8582	-4.6	25.6
329	27	Aug	1800	74°48.5'	164°50.0'	450	982.8590	-5.7	25.2
330	27	Aug	2200	74°50.5'	164°56.0'	455	982.8596	-6.6	24.6
D61-331	28	Aug	0200	74°52.0'	165°01.0'	460	982.8596	-7.7	23.8
332	28	Aug	0600	74°53.0'	165°06.0'	465	982.8603	-7.8	24.1
333	28	Aug	1000	74°55.0'	165°08.0'	470	982.8618	-7.8	24.4
334	28	Aug	1730	74°59.0'	165°10.0'	500	982.8688	-3.8	30.5
335	28	Aug	2200	75°00.0'	165°12.0'	515	982.8698	-3.6	31.7
D61-336	29	Aug	0200	75°01.5'	165°18.0'	525	982.8714	-3.1	32.9
337	29	Aug	0600	75°02.0'	165°22.0'	540	982.8743	-6	36.5
338	29	Aug	1000	75°04.0'	165°21.0'	555	982.8742	-2.2	35.9
339	29	Aug	1745	75°07.0'	165°20.0'	559	982.8739	-4.8	33.6
340	29	Aug	2325	75°08.5'	165°21.0'	562	982.8722	-7.6	31.0
D61-341	30	Aug	0200	75°09.0'	165°25.0'	564	982.8718	-8.4	30.3
342	30	Aug	0600	75°10.0'	165°28.0'	567	982.8734	-7.5	31.4
343	30	Aug	1000	75°11.5'	165°32.0'	563	982.8718	-10.2	28.4
344	30	Aug	1745	75°14.0'	165°39.0'	553	982.8752	-8.7	29.3
345	30	Aug	2200	75°15.5'	165°44.0'	547	982.8768	-8.2	29.3
D61-346	31	Aug	0200	75°17.5'	165°48.0'	543	982.8760	-10.5	26.8
347	31	Aug	0600	75°19.5'	165°51.0'	537	982.8768	-11.2	25.7
348	31	Aug	1000	75°21.5'	165°52.0'	535	982.8745	-15.0	21.8
349	31	Aug	1830	75°25.0'	165°53.0'	530	982.8711	-20.9	15.4
350	31	Aug	2200	75°26.5'	165°56.0'	527	982.8714	-21.7	14.4

APPENDIX I (con't)

ARLIS -II Gravity, 1 July, 1961 to 8 October, 1961

Station	Day	Month	Time (GMT)	Latitude	Longitude	Depth (m)	Observed Gravity (gals)	Free Air Anomaly (mgal)	Bouguer Anomaly $\rho = 2.67$ (mgal)
D61-351	1	Sep	0200	75°28.5'N	165°57.0'W	524	982.8691	-25.5	10.5
352	1	Sep	0600	75°30.5'	165°57.0'	521	982.8671	-29.0	6.8
353	1	Sep	1000	75°32.0'	166°03.0'	525	982.8674	-29.8	6.3
354	1	Sep	1800	75°36.0'	166°11.0'	533	982.8773	-22.8	13.8
355	1	Sep	2000	75°36.5'	166°14.0'	509	982.8804	-20.1	14.9
D61-356	1	Sep	2200	75°37.5'	166°15.0'	485	982.8858	-15.4	17.9
357	2	Sep	0000	75°38.5'	166°17.0'	461	982.8946	-7.3	24.3
358	2	Sep	0100	75°39.0'	166°18.0'	449	982.8992	-3.1	27.7
359	2	Sep	0200	75°39.5'	166°19.0'	437	982.9031	.5	30.5
360	2	Sep	0300	75°40.0'	166°20.0'	425	982.9057	2.7	31.9
D61-361	2	Sep	0400	75°40.5'	166°20.0'	413	982.9065	3.1	31.5
362	2	Sep	0500	75°41.0'	166°21.0'	401	982.9075	3.8	31.3
363	2	Sep	0600	75°41.5'	166°21.0'	390	982.9081	4.0	30.8
364	2	Sep	0800	75°42.5'	166°21.0'	386	982.9100	5.2	31.7
365	2	Sep	1000	75°44.0'	166°21.0'	382	982.9137	7.8	34.0 ~
D61-366	2	Sep	1200	75°45.0'	166°21.0'	376	982.9178	11.2	37.0
367	2	Sep	1310	75°46.0'	166°20.0'	373	982.9194	12.1	37.7
368	2	Sep	1800	75°50.0'	166°18.0'	359	982.9220	11.8	36.4
369	2	Sep	2200	75°53.0'	166°14.0'	346	982.9225	10.1	33.9
370	3	Sep	0000	75°53.5'	166°12.0'	340	982.9245	11.8	35.1
D61-371	3	Sep	0200	75°55.0'	166°14.0'	333	982.9266	12.8	35.7
372	3	Sep	0400	75°56.0'	166°16.0'	327	982.9283	13.8	36.3
373	3	Sep	0600	75°57.0'	166°18.0'	319	982.9300	14.8	36.7
374	3	Sep	1000	75°59.0'	166°20.0'	318	982.9325	15.9	37.7
375	3	Sep	1900	76°03.5'	166°21.0'	318	982.9412	21.4	43.2
D61-376	3	Sep	2200	76°06.0'	166°22.0'	320	982.9431	21.5	43.5
377	4	Sep	0200	76°08.0'	166°25.0'	323	982.9464	23.4	45.6
378	4	Sep	0600	76°09.5'	166°31.0'	326	982.9484	24.4	46.7
379	4	Sep	1000	76°11.0'	166°39.0'	330	982.9517	26.6	49.3
380	4	Sep	1800	76°14.5'	166°54.0'	336	982.9591	31.6	54.6
D61-381	4	Sep	2200	76°15.5'	166°59.0'	375	982.9645	36.3	62.0
382	5	Sep	0200	76°18.0'	167°03.0'	415	982.9710	41.0	69.5
383	5	Sep	0600	76°19.5'	167°11.0'	455	982.9740	43.0	74.2
384	5	Sep	1000	76°21.0'	167°20.0'	495	982.9722	40.1	74.1
385	5	Sep	1800	76°25.0'	167°40.0'	1050	982.9400	5.2	77.2
D61-386	5	Sep	2000	76°25.5'	167°43.0'	1175	982.9397	4.5	85.2
387	5	Sep	2200	76°26.0'	167°46.0'	1375	982.9385	3.0	97.4
388	6	Sep	0200	76°28.0'	167°53.0'	1525	982.9358	-1.1	103.6
389	6	Sep	0600	76°29.5'	167°59.0'	1625	982.9357	-2.2	109.3
390	6	Sep	1000	76°31.0'	168°06.0'	1725	982.9377	-1.2	117.2
D61-391	6	Sep	1800	76°33.0'	168°11.0'	1900	982.9370	-3.3	127.1
392	6	Sep	2200	76°34.0'	168°13.0'	1950	982.9380	-3.0	130.8
393	7	Sep	0200	76°35.5'	168°17.0'	2000	982.9388	-3.2	134.1
394	7	Sep	0600	76°36.5'	168°20.0'	2052	982.9405	-2.2	138.6
395	7	Sep	1000	76°37.0'	168°23.0'	2073	982.9419	-1.1	141.1
D61-396	7	Sep	1800	76°37.5'	168°38.0'	2115	982.9453	1.9	147.1
397	7	Sep	2200	76°38.0'	168°51.0'	2127	982.9486	4.9	150.9
398	8	Sep	0200	76°39.0'	168°53.0'	2139	982.9503	5.9	152.7
399	8	Sep	0600	76°39.5'	168°53.0'	2153	982.9517	7.0	154.7
400	8	Sep	1000	76°40.5'	168°52.0'	2165	982.9533	7.9	156.5

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

<u>Station</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (GMT)	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u> (m)	<u>Observed</u> <u>Gravity</u> (gals)	<u>Free Air</u> <u>Anomaly</u> (mgal)	<u>Bouguer</u> <u>Anomaly</u> $\rho = 2.67$ (mgal)
D61-401	8	Sep	1800	76°40.0'N	169°00.0'W	2184	982.9541	9.0	158.9
402	8	Sep	2200	76°39.5'	169°05.0'	2187	982.9540	9.3	159.4
403	9	Sep	0200	76°39.5'	169°07.0'	2190	982.9545	9.8	160.1
404	9	Sep	0600	76°39.5'	169°16.0'	2192	982.9540	9.3	159.7
405	9	Sep	1000	76°39.0'	169°26.0'	2195	982.9533	8.9	159.6
D61-406	9	Sep	1800	76°38.5'	169°30.0'	2196	982.9521	8.0	158.8
407	9	Sep	2200	76°38.0'	169°32.0'	2197	982.9517	8.0	158.8
408	10	Sep	0200	76°37.0'	169°33.0'	2198	982.9504	7.4	158.2
409	10	Sep	0600	76°35.5'	169°35.0'	2200	982.9488	6.8	157.8
410	10	Sep	1000	76°34.0'	169°37.0'	2197	982.9472	6.2	157.0
D61-411	10	Sep	1830	76°29.0'	169°40.0'	2190	982.9425	4.9	155.2
412	10	Sep	2200	76°28.0'	169°35.0'	2184	982.9400	3.1	153.0
413	11	Sep	0200	76°27.0'	169°25.0'	2178	982.9374	1.2	150.7
414	11	Sep	0600	76°26.0'	169°19.0'	2172	982.9348	-.7	148.4
415	11	Sep	1000	76°25.5'	169°17.0'	2166	982.9334	-1.8	146.9
D61-416	11	Sep	1800	76°24.5'	169°25.0'	2155	982.9298	-4.7	143.2
417	11	Sep	2200	76°24.0'	169°31.0'	2155	982.9289	-5.2	142.7
418	12	Sep	0200	76°23.5'	169°39.0'	2155	982.9257	-8.1	139.8
419	12	Sep	0600	76°23.0'	169°46.0'	2155	982.9235	-9.9	138.0
420	12	Sep	1000	76°23.0'	169°55.0'	2155	982.9222	-11.2	136.7
D61-421	12	Sep	1800	76°21.5'	170°10.0'	2155	982.9184	-14.0	133.9
422	12	Sep	2200	76°21.5'	170°15.0'	2151	982.9163	-16.1	131.5
423	13	Sep	0200	76°20.5'	170°24.0'	2147	982.9156	-16.1	131.2
424	13	Sep	0600	76°19.5'	170°32.0'	2143	982.9135	-17.5	129.6
425	13	Sep	1000	76°19.0'	170°39.0'	2139	982.9122	-18.5	128.3
D61-426	13	Sep	1800	76°16.5'	170°52.0'	2130	982.9111	-17.8	128.4
427	13	Sep	2200	76°16.0'	170°58.0'	2132	982.9098	-18.8	127.5
428	14	Sep	0200	76°15.0'	171°03.0'	2134	982.9092	-18.7	127.8
429	14	Sep	0600	76°15.0'	171°11.0'	2137	982.9074	-20.5	126.2
430	14	Sep	1000	76°15.0'	171°20.0'	2138	982.9050	-22.9	123.9
D61-431	14	Sep	1900	76°14.0'	171°35.0'	2140	982.8996	-27.6	119.3
432	14	Sep	2200	76°14.0'	171°42.0'	2134	982.8992	-28.0	118.5
433	15	Sep	0200	76°13.5'	171°50.0'	2128	982.8979	-28.9	117.1
434	15	Sep	0600	76°13.0'	171°56.0'	2122	982.8973	-29.2	116.5
435	15	Sep	1000	76°13.0'	172°03.0'	2122	982.8936	-32.9	112.8
D61-436	15	Sep	1800	76°12.0'	172°12.0'	2122	982.8933	-32.5	113.2
437	15	Sep	2200	76°11.0'	172°18.0'	2116	982.8922	-32.9	112.3
438	16	Sep	0200	76°09.5'	172°21.0'	2110	982.8929	-31.1	113.7
439	16	Sep	0600	76°08.0'	172°23.0'	2103	982.8928	-30.2	114.2
440	16	Sep	1000	76°07.5'	172°24.0'	2096	982.8927	-29.9	113.9
D61-441	16	Sep	1800	76°07.0'	172°33.0'	2084	982.8939	-28.4	114.7
442	16	Sep	2200	76°07.0'	172°40.0'	2090	982.8960	-26.3	117.2
443	17	Sep	0200	76°06.0'	172°43.0'	2095	982.8978	-23.8	120.0
444	17	Sep	0600	76°05.5'	172°46.0'	2100	982.8991	-22.1	122.0
445	17	Sep	1000	76°05.5'	172°49.0'	2105	982.9002	-21.0	123.5
D61-446	17	Sep	1900	76°05.5'	172°57.0'	2115	982.9021	-19.1	126.0
447	17	Sep	2200	76°05.5'	172°59.0'	2115	982.9033	-17.9	127.2
448	18	Sep	0200	76°05.5'	173°01.0'	2114	982.9042	-17.0	128.1
449	18	Sep	0600	76°05.5'	173°04.0'	2113	982.9044	-16.8	128.2
450	18	Sep	1000	76°05.5'	173°08.0'	2112	982.9053	-15.9	129.0

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

<u>Station</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (GMT)	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u> (m)	<u>Observed</u> <u>Gravity</u> (gals)	<u>Free Air</u> <u>Anomaly</u> (mgal)	<u>Bouguer</u> <u>Anomaly</u> $\rho = 2.67$ (mgal)
D61-451	18	Sep	1900	76°05.5'N	173°11.0'W	2110	982.9073	-13.9	130.9
452	18	Sep	2200	76°05.5'	173°15.0'	2110	982.9083	-12.9	131.9
453	19	Sep	0200	76°05.5'	173°18.0'	2110	982.9093	-11.9	132.9
454	19	Sep	0600	76°05.5'	173°21.0'	2110	982.9252	4.0	148.8
455	19	Sep	1600	76°05.0'	173°24.0'	2110	982.9262	5.3	150.1
D61-456	19	Sep	1800	76°05.0'	173°27.0'	2110	982.9265	5.6	150.4
457	20	Sep	0300	76°05.5'	173°30.0'	2115	982.9239	2.7	147.8
458	20	Sep	0800	76°05.5'	173°34.0'	2117	982.9269	5.7	151.0
459	20	Sep	1800	76°06.0'	173°38.0'	2123	982.9249	3.3	149.0
460	21	Sep	0200	76°05.5'	173°40.0'	2125	982.9205	-.7	145.1
D61-461	21	Sep	1000	76°03.5'	173°43.0'	2126	982.9157	-4.1	141.8
462	21	Sep	1800	76°03.0'	173°47.0'	2129	982.9069	-12.6	133.6
463	21	Sep	2300	76°02.5'	173°51.0'	2131	982.9047	-14.4	131.9
464	22	Sep	0700	76°02.0'	173°56.0'	2135	982.9000	-18.8	127.8
465	22	Sep	2000	76°04.0'	174°07.0'	2140	982.8997	-20.5	126.4
D61-466	22	Sep	2300	76°05.0'	174°11.0'	2148	982.8995	-21.4	126.1
467	23	Sep	0600	76°07.0'	174°16.0'	2160	982.9063	-16.0	132.3
468	23	Sep	1900	76°07.5'	174°24.0'	2184	982.9067	-15.9	134.0
469	23	Sep	2300	76°07.5'	174°29.0'	2186	982.9069	-15.7	134.3
470	24	Sep	0200	76°07.5'	174°34.0'	2188	982.9087	-13.9	136.2
D61-471	24	Sep	0600	76°08.0'	174°36.0'	2190	982.9080	-15.0	135.3
472	24	Sep	1000	76°07.0'	174°40.0'	2192	982.9075	-14.8	135.7
473	24	Sep	1800	76°05.0'	174°48.0'	2195	982.9072	-13.7	137.0
474	24	Sep	2200	76°05.0'	174°50.0'	2197	982.9073	-13.6	137.2
475	25	Sep	0200	76°05.5'	174°53.0'	2200	982.9070	-14.2	136.8
D61-476	25	Sep	0600	76°07.0'	174°58.0'	2202	982.9068	-15.5	135.7
477	25	Sep	1000	76°08.5'	175°00.0'	2205	982.9076	-15.7	135.6
478	25	Sep	2000	76°10.5'	175°00.0'	2209	982.9089	-15.8	135.8
479	25	Sep	2200	76°11.0'	175°00.0'	2211	982.9093	-15.8	136.0
480	26	Sep	0200	76°12.5'	175°02.0'	2213	982.9099	-16.2	135.6
D61-481	26	Sep	0600	76°13.0'	175°04.0'	2215	982.9105	-16.0	136.0
482	26	Sep	1000	76°14.0'	175°04.0'	2216	982.9107	-16.5	135.6
483	26	Sep	1800	76°16.0'	175°05.0'	2218	982.9124	-16.2	136.0
484	26	Sep	2200	76°18.0'	175°05.0'	2219	982.9122	-17.8	134.5
485	27	Sep	0200	76°19.5'	175°03.0'	2220	982.9135	-17.5	134.9
D61-486	27	Sep	0600	76°22.0'	175°00.0'	2215	982.9155	-17.2	134.8
487	27	Sep	1000	76°24.0'	174°58.0'	2210	982.9172	-16.9	134.8
488	27	Sep	1900	76°26.0'	174°53.0'	2100	982.9200	-15.5	128.6
489	27	Sep	2200	76°26.5'	174°51.0'	2195	982.9205	-15.4	135.3
490	28	Sep	0200	76°26.5'	174°49.0'	2193	982.9208	-15.1	135.5
D61-491	28	Sep	0600	76°26.5'	174°46.0'	2191	982.9202	-15.7	134.7
492	28	Sep	1000	76°25.0'	174°46.0'	2190	982.9203	-14.5	135.8
493	28	Sep	1800	76°24.5'	174°57.0'	2187	982.9202	-14.3	135.8
494	28	Sep	2200	76°24.0'	175°06.0'	2185	982.9211	-13.0	136.9
495	29	Sep	0200	76°24.0'	175°09.0'	2175	982.9222	-11.9	137.3
D61-496	29	Sep	0600	76°24.0'	175°11.0'	2160	982.9231	-11.0	137.2
497	29	Sep	1000	76°24.5'	175°15.0'	2145	982.9243	-10.2	137.0
498	29	Sep	1800	76°27.0'	175°20.0'	2110	982.9270	-9.2	135.6
499	29	Sep	2200	76°28.0'	175°22.0'	2095	982.9284	-8.5	135.3
500	30	Sep	0200	76°30.0'	175°21.0'	2089	982.9300	-8.3	135.1

APPENDIX I (con't)

ARLIS-II Gravity, 1 July, 1961 to 8 October, 1961

<u>Station</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (GMT)	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u> (m)	<u>Observed Gravity</u> (gals)	<u>Free Air Anomaly</u> (mgal)	<u>Bouguer Anomaly</u> $\rho = 2.67$ (mgal)
D61-501	30	Sep	0600	76°31.5'N	175°19.0'W	2087	982.9319	-7.4	135.9
502	30	Sep	1000	76°33.5'	175°17.0'	2085	982.9335	-7.2	135.9
503	30	Sep	1800	76°35.5'	175°13.0'	2080	982.9354	-6.6	136.1
504	30	Sep	2200	76°37.0'	175°08.0'	2077	982.9369	-6.1	136.4
505	1	Oct	0200	76°38.5'	175°00.0'	2075	982.9377	-6.4	136.1
D61-506	1	Oct	0600	76°40.0'	174°54.0'	2070	982.9382	-6.9	135.2
507	1	Oct	1000	76°40.5'	174°48.0'	2065	982.9391	-6.3	135.4
508	1	Oct	1800	76°41.0'	174°38.0'	2055	982.9401	-5.7	135.4
509	1	Oct	2200	76°39.5'	174°36.0'	2050	982.9394	-5.3	135.4
510	2	Oct	0200	76°38.0'	174°35.0'	2045	982.9386	-5.1	135.2
D61-511	2	Oct	0600	76°36.8'	174°32.0'	2040	982.9381	-4.8	135.2
512	2	Oct	1000	76°36.5'	174°34.0'	2035	982.9363	-6.4	133.3
513	2	Oct	1815	76°34.5'	174°38.0'	2025	982.9349	-6.4	132.5
514	2	Oct	2200	76°34.0'	174°40.0'	2120	982.9341	-6.9	138.6
515	3	Oct	0200	76°33.0'	174°41.0'	2108	982.9336	-6.7	138.0
D61-516	3	Oct	0600	76°32.2'	174°43.0'	2095	982.9325	-7.3	136.5
517	3	Oct	1000	76°32.0'	174°44.0'	2082	982.9331	-6.5	136.4
518	3	Oct	1800	76°31.0'	174°46.0'	2056	982.9329	-6.0	135.1
519	3	Oct	2200	76°31.0'	174°48.0'	2043	982.9319	-7.0	133.2
520	4	Oct	0200	76°30.5'	174°51.0'	2030	982.9323	-6.3	133.0
D61-521	4	Oct	0600	76°30.5'	174°53.0'	2017	982.9315	-7.1	131.3
522	4	Oct	1000	76°30.5'	174°57.0'	2004	982.9313	-7.3	130.2
523	4	Oct	1800	76°30.5'	175°06.0'	1978	982.9334	-5.2	130.6
524	4	Oct	2200	76°31.0'	175°10.0'	1965	982.9336	-5.3	129.5
525	5	Oct	0200	76°31.0'	175°13.0'	1956	982.9334	-5.5	128.7
D61-526	5	Oct	0600	76°31.5'	175°15.0'	1952	982.9333	-6.0	128.0
527	5	Oct	1000	76°32.0'	175°16.0'	1948	982.9328	-6.8	126.9
528	5	Oct	1800	76°33.0'	175°17.0'	1940	982.9329	-7.4	125.7
529	5	Oct	2200	76°33.0'	175°18.0'	1935	982.9328	-7.5	125.3
530	6	Oct	0215	76°33.5'	175°19.0'	1930	982.9319	-8.8	123.7
D61-531	6	Oct	0600	76°34.0'	175°20.0'	1933	982.9316	-9.4	123.3
532	6	Oct	1000	76°34.0'	175°21.0'	1936	982.9323	-8.7	124.2
533	6	Oct	1800	76°34.0'	175°22.0'	1942	982.9329	-8.1	125.2
534	6	Oct	2200	76°34.0'	175°22.0'	1945	982.9335	-7.5	126.0
535	7	Oct	0200	76°34.0'	175°21.0'	1949	982.9327	-8.3	125.5
D61-536	7	Oct	0600	76°34.0'	175°21.0'	1951	982.9334	-7.6	126.3
537	7	Oct	1000	76°34.0'	175°20.0'	1953	982.9337	-7.3	126.7
538	7	Oct	1800	76°34.5'	175°20.0'	1957	982.9343	-7.0	127.3
539	8	Oct	0615	76°34.5'	175°19.5'	1958	982.9330	-8.3	126.0
540	8	Oct	1000	76°34.5'	175°19.0'	1958	982.9333	-8.0	126.3

APPENDIX II

MAGNETIC OBSERVATIONS, 1 July, 1961 to 4 October, 1961

<u>Day</u>	<u>Month</u>	<u>Time</u> (AST)	<u>F</u> <u>Gamma</u>	<u>K-Indices</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (AST)	<u>F</u> <u>Gamma</u>	<u>K-Indices</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (AST)	<u>F</u> <u>Gamma</u>	<u>K-Indices</u>
1	Jul	0810	57,260	4	12	Jul	1400	57,190	3	22	Jul	2000	57,230	4
1		1156	260	2	12		1600	210	3	22		2215	210	4
1		1557	240	3	12		1800	260	3	22		2400	180	4
1		1958	140	3	12		2000	250	3	23		0200	220	4
1		2400	160	5	12		2400	190	3	23		0400	260	3
2		0900	57,260	6	13		0300	57,280	4	23		0600	57,480	3
2		1200	200	3	13		0800	300	5	23		0800	410	3
2		1600	220	3	13		1015	500	5	23		1000	230	5
2		2015	260	3	13		1200	380	3	23		1200	230	3
2		2400	160	3	13		1600	340	4	23		1400	220	3
3		0820	57,240	4	13		2000	57,200	4	23		1600	57,320	3
3		1200	200	2	13		2400	340	4	23		1800	270	2
3		1600	230	2	14		0815	620	3	23		2000	100	2
3		2000	260	4	14		1200	400	2	23		2200	180	2
3		2400	200	5	14		1600	200	3	23		2400	220	1
4		0800			14		2000	56,870	2	24		0800	57,280	5
4		0830	57,260	4	14		2045	57,030	1	24		1000	210	7
4		1155	360	5	14		2400	240	1	24		1200	180	4
4		1555	280	3	15		0200	240	1	24		1600	080	4
4		2000	020	4	15		0600	400	3	24		1800	56,950	4
4		2400	57,160	4	15		0800	57,500	3	24		2000	57,020	4
5		0800	320	4	15		1200	500	2	24		2200	080	4
5		1200	240	4	15		1400	210	2	24		2400	110	4
5		1600	280	3	15		1600	56,940	3	25		0200	220	4
5		2000	260	4	15		2000	57,160	1	25		0800	220	3
5		2400	57,160	6	15		2400	57,150	2	25		1200	57,210	2
6		0750	660	4	16		0300	220	3	25		1400	190	2
6		0801	560	5	16		0800	400	3	25		1600	260	2
6		1200	200	3	16		1200	140	1	25		1800	210	5
6		1600	290	2	16		1600	220	1	25		2000	260	5
6		2000	57,200	2	16		2000	57,160	1	25		2200	57,250	5
6		2400	185	3	16		2400	200	1	25		2400	280	7
7		0800	320	5	17		0800	340	4	26		0200	280	7
7		1200	220	4	17		1200	080	2	26		0800	260	4
7		1600	260	3	17		1600	56,960	1	26		1000	320	5
7		2000	57,220	4	17		7000	57,040	0	26		1200	57,400	4
7		2355	100	3	17		2400	160	2	26		1400	400	4
8		0800	300	3	18		0800	58,000	3	26		1600	340	4
8		1200	160	4	18		1200	57,420	2	26		1800	260	4
8		1600	180	3	18		1600	100	2	26		2000	200	4
8		2000	57,110	4	18		2000	57,250	3	26		2200	57,170	5
8		2400	180	3	18		2400	260	3	26		2400	480	4
9		0815	180	4	19		0800	250	3	27		0825	380	5
9		1200	170	4	19		1200	230	3	27		1200	170	4
9		1600	200	4	19		1600	220	3	27		1600	240	3
9		2000	57,000	3	19		2000	57,040	4	27		2000	57,160	4
9		2400	56,900	4	19		2400	200	4	27		2400	200	5
10		0830	57,200	5	20		0800	190	4	28		0815	340	4
10		1200	160	2	20		1200	100	3	28		0930	270	4
10		1600	160	3	20		1600	080	3	28		1000	360	4
10		2000	57,170	4	20		2000	57,070	4	28		1200	57,310	3
10		2400	140	4	20		2400	160	4	28		2000	280	3
11		0800	300	4	21		0810	560	5	28		2400	260	4
11		1205	160	3	21		1200	200	3	29		0800	420	4
11		1600	210	1	21		1600	260	2	29		1150	340	3
11		2000	57,200	4	21		2000	57,080	3	30		0005	57,240	2
11		2400	165	4	21		2400	160	5	30		0800	305	2
12		0800	260	5	22		0830	240	4	30		1200	230	2
12		1000	180	3	22		1200	220	3	30		1600	230	2
12		1200	160	2	22		1600	240	2	30		2000	260	1

APPENDIX II (con't)

MAGNETIC OBSERVATIONS, 1 July, 1961 to 4 October, 1961

Day	Month	Time (AST)	F		K-Index	Day	Month	Time (AST)	F		K-Index	Day	Month	Time (AST)	F		K-Index
			Gamma						Gamma						Gamma		
30	Jul	2400	57,220		2	10	Aug	2400	57,360		0	23	Aug	1200	57,080		4
31		0825	460		6	11		0820	720		1	23		1645	080		4
31		1200	420		4	11		1200	260		1	23		2000	080		3
31		1600	520		4	11		1600	390		1	23		2400	080		5
31		2000	510		5	11		2010	310		1	24		0800	140		6
31		2400	57,540		7	11		2400	57,380		4	24		1200	57,020		3
1	Aug	0600	610		5	12		0800	400		3	24		1700	100		3
1		0815	600		4	12		1200	360		1	24		2000	080		3
1		1200	560		4	12		1600	380		0	24		2400	020		5
1		1600	560		3	12		2000	400		1	25		0730	100		4
1		2000	57,360		3	12		2400	57,360		4	25		1200	57,010		3
1		2400	520		5	13		0810	340		2	25		1610	070		4
2		0800	730		3	13		1200	300		3	25		2025	000		4
2		1200	640		3	13		1600	300		3	25		2400	060		6
2		1600	750		3	13		2000	320		3	26		0830	100		2
2		2000	57,580		3	13		2400	57,260		2	26		1200	57,040		2
2		2400	620		6	14		0800	520		3	26		1625	110		3
3		0800	800		3	14		1200	280		4	26		2030	050		2
3		1200	620		3	14		1550	290		3	26		2400	100		1
3		1600	470		2	14		2000	290		5	27		0800	160		1
3		1800	57,510		3	14		2400	57,260		4	27		1200			1
3		2000	320		3	15		0800	420		5	27		1250	57,120		1
3		2200	310		4	15		1200	280		3	27		1600	080		2
3		2400	400		5	15		1600	320		4	27		2000	090		2
4		0200	420		3	15		2000	300		4	27		2400	110		1
4		0800	57,400		5	15		2400	57,310		2	28		0730	57,000		3
4		1200	360		2	16		0800	340		4	28		1200	080		1
4		1600	400		2	16		1200	300		4	28		1600	180		2
4		2000	350		3	16		1620	330		3	28		2010	320		4
4		2400	300		6	16		2000	320		4	28		2400	360		5
5		0800	57,600		3	16		2400	57,320		6	29		0745	57,140		4
5		1200	480		2	17		0800	360		5	29		1320	120		4
5		1600	510		3	17		1200	220		4	29		1600	56,970		2
5		2000	540		4	17		1600	320		4	29		2000	57,660		3
5		2400	500		4	17		2000	310		5	29		2400	280		4
6		0400	57,600		6	17		2400	57,320		6	30		0745	57,260		4
6		0800	660		5	18		1015	260		5	30		1200	230		3
6		1200	580		4	18		1200	270		4	30		1600	160		4
6		1600	610		4	18		1600	280		3	30		2000	020		4
6		2000	640		3	18		2000	140		4	30		2400	080		5
6		2400	57,600		6	18		2400	57,230		5	31		0830	57,460		2
7		0800	600		6	19		0800	260		5	31		1200	320		2
7		1200	560		4	19		1200	250		3	31		1600	420		2
7		1620	590		4	19		1600	260		3	31		2000	360		4
7		2000	470		4	19		2000	270		1	31		2400	490		5
7		2400	57,480		6	19		2405	57,240		4	1	Sep	0800	57,560		6
8		0815	560		5	20		1200	230		2	1		1000	580		6
8		1300	390		4	20		1600	260		2	1		1200	460		4
8		1600	400		4	20		2000	260		2	1		1400	290		4
8		2000	310		6	20		2400	220		2	1		1500	220		4
8		2400	57,390		5	21		0800	57,260		3	1		1600	57,160		4
9		0800	510		4	21		1200	220		4	1		1700	140		4
9		1245	380		3	21		1600	220		4	1		1800	120		4
9		1600	450		4	21		2000	220		4	1		1900	170		4
9		2000	300		3	21		2400	180		3	1		2000	210		4
9		2400	57,400		6	22		0800	57,200		4	1		2200	57,150		6
10		0800	700		5	22		1200	140		5	1		2400	260		6
10		1200	400		2	22		2000	150		4	2		0200	330		6
10		1600	550		2	22		2400	080		6	2		0300	350		6
10		2000	400		1	23		0800	120		4	2		0800	240		6

APPENDIX II (con't)

MAGNETIC OBSERVATIONS, 1 July, 1961 to 4 October, 1961

<u>Day</u>	<u>Month</u>	<u>Time</u> (AST)	<u>F</u> <u>Gamma</u>	<u>K-Indices</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (AST)	<u>F</u> <u>Gamma</u>	<u>K-Indices</u>	<u>Day</u>	<u>Month</u>	<u>Time</u> (AST)	<u>F</u> <u>Gamma</u>	<u>K-Indices</u>
2	Sep	1200	57,240	5	13	Sep	2000	57,220	3	26	Sep	2400	57,980	6
2		1400	380	5	13		2400	280	2	27		0900	58,140	3
2		1600	340	4	14		0900	320	3	27		1200	060	2
2		1800	290	5	14		1200	220	2	27		1600	070	1
2		2000	220	5	14		1600	160	3	27		2000	030	2
2		2400	57,330	7	14		2000	57,140	4	27		2400	58,020	4
3		0900	340	7	14		2400		6	28		0800	120	5
3		1200	180	6	14		2410	100	6	28		1200	160	3
3		1600	240	4	15		0800	120	3	28		1600	340	2
3		2000	300	6	15		1200	140	2	28		2000	360	2
3		2400	57,200	7	15		1600	57,210	3	28		2400	58,420	6
4		0800	200	5	15		2000	240	2	29		0800	660	5
4		1200	140	3	15		2400	210	4	29		1200	520	4
4		1600	110	2	16		0800	340	3	29		1600	380	2
4		2000	480	3	16		1200	270	3	29		2000	160	2
4		2400	57,080	5	16		1600	57,280	3	29		2400	57,900	5
5		0800	120	7	16		2000	120	3	30		0800	58,010	4
5		1000	190	6	16		2400	280	1	30		1200	100	3
5		1200	080	3	17		0900	450	3	30		1600	57,860	
5		1600	140	3	17		1200	380	3	30		2000	830	
5		2000	57,240	5	17		1600	57,420	2	30	Oct	2400	57,900	
5		2400	400	6	17		2000	400	1	1		0800	840	
6		0800	440	5	17		2400	340	3	1		1200	750	
6		1200	400	4	18		0900	460	2	1		1600	700	
6		1600	420	3	18		1200	380	3	1		2000	730	
6		2000	57,420	3	18		1600	57,410	3	1		2400	57,780	
6		2400	400	6	18		2000	420	4	2		0815		
7		0800	540	3	19		0600	480	5	2		1200	58,020	
7		1200	560	3	19		0800	480	5	2		1600	050	
7		1600	590	3	19		1700	480	4	2		2000	150	
7		2000	57,610	4	19		2200	57,280	3	2		2400	58,190	
7		2400	600	5	20		0800	580	2	3		0800	360	
8		0800	640	4	20		1600	420	2	3		1200	280	
8		1200	620	3	20		2400	400	1	3		1600	260	
8		1600	620	2	21		0800	420	6	3		2000	320	
8		2000	57,600	3	21		1300	57,400	3	3		2400	58,140	
8		2400	580	3	21		2100	420	5	4		0800	57,860	
9		0810	600	4	22		0900	560	5	4		1200	640	
9		1200	480	3	22		1300	580	5	4		1600	700	
9		1600	500	3	22		2000	660	4	4		2000	740	
9		2000	57,500	4	23		0900		3	4		2400	57,800	
9		2400	500	5	23		1300		3					
10		0830	560	2	23		1600		2					
10		1200	500	1	23		1700	57,800	2					
10		1600	590	2	23		2000	820	2					
10		2000	510	2	23		2400	57,860	1					
10		2400	520	7	24		0800	58,020	3					
11		0800	680	1	24		1200	57,970	2					
11		1200	550	3	24		1600	840	1					
11		1600	320	4	24		2000	740	3					
11		2000	140	4	24		2400	57,780	4					
11		2400	200	7	25		1000	840	3					
12		0800	280	5	25		1200	800	2					
12		1200	180	5	25		1600	800	3					
12		1600	240	3	25		2000	750	3					
12		2000	57,180	3	25		2400	57,280	5					
12		2400	220	4	26		0800	900	5					
13		0800	470	5	26		1200	660	3					
13		1200	300	3	26		1600	810	3					
13		1600	320	4	26		2000	690	2					

