

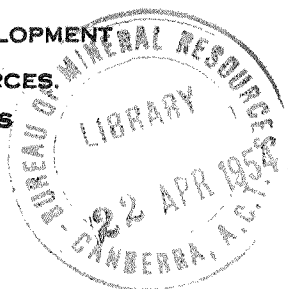
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**COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS**



GEOPHYSICAL OBSERVATORY REPORT

VOL. 2

No. 2

FEBRUARY

1954

*Issued under the authority of Senator The Hon. W. H. Spooner,
Minister for National Development*

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DEPARTMENT OF NATIONAL DEVELOPMENT

Minister - SENATOR The HON. W. H. SPOONER

Secretary - H. G. RAGGATT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

P. B. NYE - Director

J. M. RAYNER - Deputy Director

This Report was prepared in the Geophysical Section:

R. F. THYER - Chief Geophysicist

L. S. PRIOR - Supervising Geophysicist

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Unless otherwise stated all times are given in
Greenwich Mean Time.

The terminology used in this report is that accepted by
international convention. Should further information be
required, explanation can be obtained by applying to:-

Chief Geophysicist,
Bureau of Mineral Resources,
Geology and Geophysics,
485 Bourke Street,
Melbourne, C.1.
AUSTRALIA.

CONTRIBUTING OBSERVATORIESWATHEROO MAGNETIC OBSERVATORY

Geographic Latitude	30°19'S	Longitude	115°53'E
Geomagnetic Latitude	-41.8°	Longitude	185.6°

Instruments

Magnetic Equipment - Askania pattern Magnetometer No.508810.
 D.T.M. C.I.W. Earth Inductor No.2.
 Eschenhagen pattern D,H,Z, recording variometers, normal sensitivity, 20mm/hour recorder.
 La Cour pattern D,H,Z, recording variometers, normal sensitivity quick run (180mm/hour) recorder.

Ionospheric Equipment - C.S.I.R.O. pattern 1-16Mc/s
 Sweep time 2 minutes.

TOOLANGI MAGNETIC OBSERVATORY

Geographic Latitude	37°32'S	Longitude	145°28'E
Geomagnetic Latitude	-46.7°	Longitude	220.8°

Instruments

Askania pattern Magnetometer No.508813.
 Schulze Earth Inductor No.49.
 La Cour pattern D,H,Z, recording variometers, normal sensitivity 15mm/hour recorder.

MACQUARIE ISLAND MAGNETIC OBSERVATORY

Geographic Latitude	54°30'S	Longitude	158°57'E
Geomagnetic Latitude	-61°	Longitude	243°

Instruments

La Cour pattern QHMs Nos.177,178,179.
 La Cour pattern BMZ No.64.
 La Cour pattern D,H,Z, recording variometers low sensitivity 15mm/hour recorder.

HEARD ISLAND MAGNETIC OBSERVATORY

Geographic Latitude	53°02'S	Longitude	73°22'E
Geomagnetic Latitude	-61°	Longitude	1-9°

Instruments

La Cour pattern QHMs Nos.172,173,174.
 La Cour pattern BMZ No.62.
 La Cour pattern D,H,Z, recording variometers low sensitivity 15mm/hour recorder.

MAGNETIC K-INDICES FOR FEBRUARY - WATHEROO

Range for lower limit of K=9 is 350 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	3	4	4	3	5	4	2	2	27
2	2	3	2	3	4	3	1	2	20
3	2	1	4	4	3	3	2	2	21
4	3	4	3	1	1	2	1	1	16
5	3	4	3	2	2	2	3	2	21
6	2	4	2	1	1	0	0	2	12
7	2	3	3	0	0	1	2	2	13
8	3	3	1	0	2	1	2	2	14
9	3	4	3	1	2	4	2	2	21
10	2	3	3	1	2	1	3	2	17
11	2	2	1	2	1	3	4	3	18
12	3	1	1	0	1	1	1	1	09
13	1	2	3	3	2	2	0	2	15
14	1	1	1	3	2	3	3	3	17
15	2	4	3	5	6	6	3	2	31
16	3	2	2	2	4	4	4	4	25
17	4	3	4	5	5	4	4	3	32
18	2	3	2	4	2	3	4	1	21
19	3	3	4	2	3	3	3	2	23
20	2	4	2	2	2	3	1	2	18
21	3	2	3	3	4	4	5	5	29
22	4	4	3	3	5	3	3	4	29
23	4	3	3	2	2	5	3	4	26
24	3	2	3	3	4	3	3	2	23
25	3	3	3	2	3	3	2	3	22
26	3	2	4	5	4	4	4	4	30
27	4	2	3	4	3	5	2	5	28
28	4	3	3	2	4	4	1	2	23

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR FEBRUARY

WATHEROO - Declination 2° 46.9' west.
 Horizontal Intensity 24862 gammas.
 Vertical Intensity -52150 gammas.

MAGNETIC K-INDICES FOR FEBRUARY - TOOLANGI

Range for lower limit of K=9 is 500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	3	3	4	X	X	X	X	X	XX
2	3	2	2	4	4	2	2	2	21
3	3	2	4	4	4	3	2	3	25
4	3	3	3	2	3	2	2	2	20
5	2	2	2	2	2	2	3	2	17
6	2	3	2	2	1	1	1	2	14
7	2	2	2	1	0	1	3	3	14
8	3	2	2	1	3	2	3	3	19
9	3	3	3	2	3	4	3	2	23
10	3	4	3	2	3	1	2	2	20
11	3	3	2	2	2	3	3	3	21
12	3	3	2	1	2	1	2	1	15
13	2	1	2	X	X	X	X	X	XX
14	X	X	X	X	X	X	X	X	XX
15	3	4	4	5	6	6	3	3	34
16	4	3	2	2	4	4	3	4	26
17	4	3	3	5	5	5	3	3	31
18	2	2	2	4	3	3	3	4	23
19	2	3	4	3	3	3	2	3	23
20	2	3	2	2	3	3	2	2	19
21	2	2	3	3	4	4	5	4	27
22	4	4	4	4	5	3	4	3	31
23	4	4	3	3	3	5	3	4	29
24	3	1	2	4	3	3	2	3	21
25	3	3	1	2	3	3	3	2	20
26	3	2	4	5	4	4	3	3	28
27	3	3	5	4	3	5	2	3	28
28	4	3	3	3	3	3	2	2	23

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR FEBRUARY

TOOLANGI - Declination 9° 52.3' east.
Horizontal Intensity 22755 gammas.
Vertical Intensity -56424 gammas.

C O R R I G E N D U M

Preliminary mean value of vertical intensity
for January 1954 is -56426 gammas.

MAGNETIC K-INDICES FOR FEBRUARY - MACQUARIE ISLAND

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	2	5	6	4	6	7	4	2	36
2	3	3	3	6	7	5	2	2	31
3	2	2	4	6	6	3	1	2	26
4	2	2	3	3	3	3	1	0	17
5	1	2	2	2	3	2	2	2	16
6	1	2	1	2	2	0	0	1	09
7	1	2	1	1	0	1	1	2	09
8	2	2	1	1	5	2	2	2	17
9	1	2	2	1	4	4	4	1	19
10	2	2	4	3	5	2	2	1	21
11	2	2	1	3	2	4	4	2	20
12	1	1	2	2	3	1	1	1	12
13	1	1	3	6	4	3	1	1	20
14	1	1	1	6	5	6	3	2	25
15	1	5	4	7	7	7	4	3	38
16	3	3	3	2	6	8	4	3	32
17	4	4	4	7	7	7	4	2	39
18	2	2	3	6	6	5	5	1	30
19	1	2	5	4	5	4	2	2	25
20	1	1	1	3	4	3	1	1	15
21	2	2	2	5	7	7	7	4	36
22	3	5	5	6	6	6	4	3	38
23	4	4	3	6	5	7	4	3	36
24	2	1	3	6	6	2	2	3	25
25	2	2	1	3	4	4	3	2	21
26	2	2	5	7	5	5	5	4	35
27	3	4	6	6	6	7	3	2	37
28	4	3	3	4	4	4	2	3	27

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR FEBRUARY

MACQUARIE ISLAND - Declination 24°17.3' east.
Horizontal Intensity 13321 gammas.
Vertical Intensity -64515 gammas.

MAGNETIC K-INDICES FOR FEBRUARY - HEARD ISLAND

Range for lower limit of K=9 is 1000 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	2	2	3	3	5	6	3	5	29
2	4	4	1	3	4	3	2	4	25
3	5	3	3	4	4	2	3	4	28
4	3	3	1	1	2	3	3	1	17
5	2	0	1	2	1	3	3	3	15
6	2	2	1	1	1	0	1	X	XX
7	X	2	1	1	1	0	3	2	XX
8	3	2	2	1	2	0	4	3	17
9	1	1	2	2	2	3	3	1	15
10	2	1	2	1	2	2	4	3	17
11	5	3	1	1	2	4	5	4	25
12	2	1	2	1	1	0	2	3	12
13	3	1	X	X	X	X	X	X	XX
14	X	0	2	3	2	3	4	3	XX
15	3	4	4	4	6	6	5	4	36
16	6	2	2	2	3	5	6	7	33
17	3	X	X	X	X	X	X	X	XX
18	X	2	2	3	2	4	6	3	XX
19	1	1	3	2	2	3	4	3	19
20	3	0	1	2	2	2	2	2	14
21	2	1	1	2	3	7	8	7	31
22	6	4	4	3	4	3	5	6	35
23	5	3	2	2	3	6	6	5	32
24	4	1	2	2	4	3	5	4	25
25	3	1	2	2	2	3	4	3	20
26	3	2	2	5	3	5	X	X	XX
27	X	2	2	4	4	4	3	6	XX
28	5	2	2	3	3	4	3	2	24

+

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR FEBRUARY

HEARD ISLAND - Declination 50°16.5' west.
Horizontal Intensity 18482 gammas.
Vertical Intensity -47250 gammas.

PRINCIPAL MAGNETIC STORMS AT WATHEROO DURING FEBRUARY

<u>Began at</u> <u>d h m</u>	<u>Ended at</u> <u>d h</u>	<u>Intensity</u>	<u>Maximum</u> <u>K-Index</u>
15 03 00	16 03	Moderately severe	6
16 13 30	17 24	Moderate	5
21 10 30	24 01	Moderate	5
26 06 00	28 18	Moderate	5

SUDDEN COMMENCEMENTS AT WATHEROO DURING FEBRUARY

<u>Day</u>	<u>Time</u> <u>h m</u>	<u>Type</u>
09	15 14	Polar Sudden Commencement

PRINCIPAL MAGNETIC STORMS AT TOOLANGI DURING FEBRUARY

<u>Began at</u> <u>d h m</u>	<u>Ended at</u> <u>d h</u>	<u>Intensity</u>	<u>Maximum</u> <u>K-Index</u>
15 02 33	17 22	Moderately severe	6
21 10 02	28 18	Moderate	5

SUDDEN COMMENCEMENTS AT TOOLANGI DURING FEBRUARY

<u>Day</u>	<u>Time</u> <u>h m</u>	<u>Type</u>
08	12 46	Polar Sudden Commencement
09	14 29	Polar Sudden Commencement
13	09 57	Polar Sudden Commencement
15	15 40	Polar Sudden Commencement
23	15 46	Polar Sudden Commencement
24	10 42	Polar Sudden Commencement

IONOSPHERIC DATA - WATHEROOMEDIAN HOURLY VALUES

120° Mean Time	<u>h'F1</u> Km	<u>h'F2</u> Km	<u>h'F2</u> Km	<u>foE</u> Mc/s	<u>foF1</u> Mc/s	<u>foF2</u> Mc/s	<u>fEs</u> Mc/s	<u>MUF</u> <u>3000</u> Mc/s	<u>M3000</u>
00		350	290			3.6	2.7	10.0	2.9
01		330	270			3.5	3.2	10.7	3.0
02		310	270			3.4	3.6	10.8	3.1
03		300	250			3.4	3.4	10.9	3.2
04		320	260			3.0	3.2	10.1	3.0
05		320	260			2.8	2.5	8.6	3.0
06		300	260	1.6		3.4	2.8	10.9	3.2
07	245	300	290	2.3	3.5	4.0	3.5	12.1	3.3
08	240	290	300	2.6	3.8	4.9	3.5	18.0	3.3
09	220	*	*	2.9	4.0	*	3.8	*	*
10	210	*	*	3.2	4.0	*	3.9	*	*
11	*	*	320	3.3	*	6.3	4.0	*	*
12	200	340	350	3.3	4.2	5.8	3.9	17.5	3.0
13	*	360	375	3.3	4.3	5.6	4.0	16.8	3.0
14	*	340	330	3.3	4.2	6.4	4.3	19.2	3.0
15	230	320	320	3.2	4.0	6.0	3.8	19.0	3.1
16	235	300	290	3.0	4.0	6.1	3.8	19.8	3.2
17	230	300	280	2.6	3.8	5.7	3.9	18.6	3.2
18	250	280	280	2.2	3.3	5.2	3.5	17.0	3.3
19		290	250			4.3	2.9	13.6	3.2
20		300	250			4.1	3.2	13.0	3.2
21		320	260			3.8	2.8	11.7	3.1
22		340	270			3.5	2.4	10.4	2.9
23		340	280			3.5	2.6	10.2	2.9

* Denotes insufficient values.

IONOSPHERIC DATA - WATHEROOSUMMARY SPORADIC E

120° Mean Time	Percentage of time above			Median in Mc/s	No. of Obs.
	7 Mc/s	5 Mc/s	3 Mc/s		
00	-	-	45	2.7	22
01	-	-	67	3.2	21
02	-	-	81	3.6	21
03	-	-	62	3.4	21
04	-	-	59	3.2	22
05	-	-	27	2.5	22
06	-	-	38	2.8	21
07	-	5	75	3.5	20
08	-	10	75	3.5	20
09	7	21	100	3.8	14
10	8	15	100	3.9	13
11	-	7	100	4.0	14
12	7	20	100	3.9	15
13	7	33	100	4.0	15
14	-	27	100	4.3	11
15	-	42	100	3.8	12
16	7	20	100	3.8	15
17	-	19	86	3.9	21
18	-	5	71	3.5	21
19	-	-	50	2.9	20
20	-	-	55	3.2	20
21	-	-	48	2.8	21
22	-	-	38	2.4	21
23	-	5	33	2.6	21

- Indicates zero percentage.

PROVISIONAL SUMMARY OF AURORAE FOR FEBRUARY

Reported by and published through the courtesy of the
Australian National Antarctic Research Expedition.

HEARD ISLAND

<u>Day</u>	<u>Cloud</u> <u>Cover</u>	<u>First</u> <u>Seen</u> h m	<u>Time of</u> <u>Maximum</u> h m	<u>Last</u> <u>Seen</u> h m	<u>Time</u> <u>End</u> h m	<u>Intensity</u>	<u>Remarks</u>
11	1	17 55	18 15		19 30	2	