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

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GEOPHYSICAL OBSERVATORY REPORT

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No. 3

MARCH

1955

*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

J. C. DOOLEY - 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 A.F. TILLOTT, Observer in Charge.

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.
 Exchenhagen 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 I.B. EVERINGHAM,
Observer in Charge.

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

Instruments

Ruska pattern Magnetometer No.4813.
 Schulze Earth Inductor No.49.
 La Cour pattern D,H,Z, recording variometers, normal sensitivity 15mm/hour recorder.

MACQUARIE ISLAND MAGNETIC OBSERVATORY P.E. MANN,
Observer in Charge.

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.

MAGNETIC K-INDICES FOR MARCH - WATHEROO

Range for lower limit of K=9 is 350 gammas

<u>Day</u>	<u>K-Indices</u>				<u>K-Indices</u>				<u>K-Sum</u>
1	2	2	2	0	1	0	1	1	09
2	2	1	3	1	0	0	0	0	07
3	2	3	2	1	0	0	0	0	08
4	2	2	1	1	0	1	1	2	10
5	2	2	1	2	2	3	2	2	16
6	3	2	1	2	3	3	2	2	18
7	3	2	3	3	1	4	5	3	24
8	2	1	2	3	2	4	3	1	18
9	2	2	2	3	3	5	5	3	25
10	3	4	4	4	4	3	3	2	27
11	3	3	3	4	4	3	1	1	22
12	4	3	3	3	3	3	2	2	23
13	2	2	1	1	2	3	3	2	16
14	3	3	1	2	3	3	3	3	21
15	3	3	3	3	2	1	2	2	19
16	3	4	2	1	0	3	3	3	19
17	2	2	3	3	3	3	1	2	19
18	2	1	4	3	3	4	4	2	23
19	2	0	2	1	0	2	2	0	09
20	2	2	3	1	0	0	1	3	12
21	2	2	1	2	1	1	2	2	13
22	1	2	3	5	5	5	3	2	26
23	3	3	3	1	3	3	5	4	25
24	4	3	2	2	3	1	1	2	18
25	2	2	2	2	1	2	2	2	15
26	2	2	4	3	4	2	1	2	20
27	2	2	2	4	4	2	1	1	18
28	2	1	3	2	1	1	0	1	11
29	2	1	0	0	0	0	0	0	03
30	2	3	2	2	3	1	3	4	20
31	5	4	(5)	4	4	5	4	4	35

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR MARCH

WATHEROO - Declination $2^{\circ} 44.9'$ west.
Horizontal Intensity 24860 gammas.
Vertical Intensity -52179 gammas.

MAGNETIC K-INDICES FOR MARCH - TOOLANGI

Range for lower limit of K=9 is 500 gammas

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

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR MARCH

TOOLANGI - Declination 9° 58.2' east.
Horizontal Intensity 22756 gammas.
Vertical Intensity -56427 gammas.

MAGNETIC K-INDICES FOR MARCH - MACQUARIE ISLAND

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	0	1	1	1	2	1	0	0	6
2	1	2	1	2	1	1	0	0	8
3	0	1	1	0	0	1	0	0	3
4	0	0	0	0	0	1	1	1	3
5	1	2	1	3	3	4	1	2	17
6	3	2	2	5	4	4	2	2	24
7	3	4	4	7	1	6	5	4	34
8	1	3	4	5	4	5	5	1	28
9	2	3	3	6	6	5	6	3	34
10	2	3	5	6	6	5	3	3	33
11	2	4	4	7	7	4	1	1	30
12	3	3	4	5	7	5	3	3	33
13	1	2	2	3	4	4	3	2	21
14	2	2	1	3	3	3	4	3	21
15	2	3	5	4	4	1	3	3	25
16	1	3	2	3	1	4	2	2	18
17	3	3	4	7	6	4	1	1	29
18	2	2	4	6	6	6	4	2	32
19	1	1	1	1	1	1	0	0	6
20	1	1	2	1	1	1	0	2	9
21	3	1	1	3	1	0	1	1	11
22	1	1	4	5	7	7	3	2	30
23	2	1	2	1	2	5	5	5	23
24	2	3	4	5	5	3	1	0	23
25	1	1	1	4	2	4	2	1	16
26	1	3	5	5	6	5	0	1	26
27	1	3	1	7	5	3	2	0	22
28	1	1	2	4	3	1	0	1	13
29	1	1	1	2	1	1	0	0	7
30	1	0	0	2	5	4	3	3	18
31	5	5	6	6	7	6	4	2	41

PRELIMINARY MEAN VALUES OF THE MAGNETIC ELEMENTS FOR MARCH

MACQUARIE ISLAND - Declination 24°37.0' east.
Horizontal Intensity 13328 gammas.
Vertical Intensity -64506 gammas.

PRINCIPAL MAGNETIC STORMS AT WATHEROO DURING MARCH

<u>Began at</u> d h m	<u>Ended at</u> d h	<u>Intensity</u>	<u>Maximum</u> <u>K-Index</u>
22 09	22 19	Moderate	5
30 18 30	31 20	Moderate	5

SUDDEN COMMENCEMENTS AT WATHEROO DURING MARCH

<u>Day</u>	<u>Time</u> h m	<u>Type</u>
7	20 24	Polar Sudden Commencement

PRINCIPAL MAGNETIC STORMS AT TOOLANGI DURING MARCH

<u>Began at</u> d h m	<u>Ended at</u> d h	<u>Intensity</u>	<u>Maximum</u> <u>K-Index</u>
30 10 35	Record incomplete from 09 20 hrs. on 31st.		

SUDDEN COMMENCEMENTS AT TOOLANGI DURING MARCH

<u>Day</u>	<u>Time</u> h m	<u>Type</u>
11	11 45	Polar Sudden Commencement

C O R R I G E N D U MSUDDEN COMMENCEMENTS AT WATHEROO DURING JANUARY

<u>Day</u>	<u>Time</u> h m	<u>Type</u>
11	12 19	Polar Sudden Commencement
17	03 25	Storm Sudden Commencement

IONOSPHERIC DATA - WATHEROOMEDIAN HOURLY VALUES

120° Mean Time	<u>h'F1</u> Km	<u>h_pF2</u> Km	<u>h'F2</u> Km	<u>f_oE</u> Mc/s	<u>f_oF1</u> Mc/s	<u>f_oF2</u> Mc/s	<u>fEs</u> Mc/s	<u>MUF</u> <u>3000</u> Mc/s	<u>M3000</u>
00		330	260			3.6	2.0	10.7	3.0
01		330	270			3.5	2.6	10.6	3.0
02		310	250			3.5	2.2	11.3	3.0
03		300	250			3.5	2.0	11.2	3.2
04		300	240			3.2	1.6	10.8	3.2
05		315	250			3.0	1.3	9.6	3.1
06		300	250	⌘		3.2	1.4	10.2	3.2
07	⌘	250	240	1.8	⌘	4.3	2.1	14.8	3.5
08	230	270	280	2.4	3.8	5.0	2.8	17.0	3.3
09	210	260	300	2.8	4.2	5.4	3.8	18.0	3.3
10	200	270	290	3.0	4.3	5.8	3.8	19.0	3.4
11	200	300	320	3.2	4.4	6.0	3.7	19.0	3.2
12	200	310	320	3.2	4.4	6.5	3.6	19.9	3.1
13	200	305	310	3.3	4.4	6.5	3.7	20.3	3.1
14	200	310	300	3.2	4.4	6.6	3.7	21.0	3.1
15	220	300	300	3.0	4.2	6.8	3.6	21.7	3.2
16	220	290	280	2.8	4.0	6.7	3.7	22.2	3.3
17	230	270	260	2.3	3.6	6.5	3.5	21.2	3.4
18	⌘	260	240	1.8	⌘	6.0	1.9	20.8	3.5
19		260	220	⌘		5.0	1.4	18.0	3.4
20		280	220			4.0	E	13.1	3.3
21		310	250			3.9	E	11.6	3.0
22		320	250			3.6	E	10.6	3.0
23		330	260			3.5	E	10.4	3.0

⌘ Denotes insufficient numerical values.

E Denotes median below lower frequency limit of recorder.

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	-	-	26	2.0	31
01	-	-	37	2.6	30
02	-	-	37	2.2	30
03	-	-	27	2.0	30
04	-	-	23	1.6	30
05	-	-	10	1.3	30
06	-	-	17	1.4	30
07	-	-	13	2.1	30
08	-	4	(48)	2.8	27 (2G)
09	-	10	(83)	3.8	30 (1G)
10	7	10	(97)	3.8	29 (1G)
11	-	15	(85)	3.7	27 (4G)
12	7	11	(86)	3.6	28 (4G)
13	-	10	(79)	3.7	29 (6G)
14	-	7	(93)	3.7	29 (2G)
15	-	7	(83)	3.6	29 (5G)
16	-	3	(86)	3.7	29 (2G)
17	-	7	59	3.5	29
18	-	3	28	1.9	29
19	-	4	21	1.4	28
20	-	-	6	E	31
21	-	-	3	E	31
22	-	-	10	E	31
23	-	-	19	E	31

- Indicates zero percentage.

() Indicates doubtful.

(G) Denotes $fEs < foE \geq 3.0$ Mc/s.

E Denotes median below lower frequency limit of recorder.

PROVISIONAL SUMMARY OF AURORAE FOR MARCH

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

MACQUARIE ISLAND

<u>Day</u>	<u>Began</u>	<u>First</u>	<u>Minimum</u>	<u>Geomagnetic</u>	<u>Intensity</u>	<u>Last</u>	<u>Ended</u>
		<u>Seen</u>	<u>Latitude</u>		<u>and Form</u>	<u>Seen</u>	
			Degrees	Time			
	h m	h m		h m		h m	h m
2	10 40		65	12 30	1 HA		14 00
20	10 30		64	12 00	2 RB	16 00	
21		10 10	63	12 00	2 HA	16 00	
24	09 30		60	11 40	3 DS		17 40
25		10 10	60	10 30	2 DS	18 10	
26		09 00	60	11 30	3 HA		17 20
27		11 30	Unknown			14 50	
29	09 30		64	11 00	2 HA	12 30	