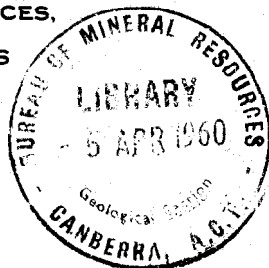


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COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS



GEOPHYSICAL OBSERVATORY REPORT

VOL. 7

No. 10

OCTOBER

1959

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

DEPARTMENT OF NATIONAL DEVELOPMENT

Minister - SENATOR The HON. W. H. SPOONER

Secretary - H. G. RAGGATT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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This Report was prepared in the Geophysical Branch:

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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 & Geophysics,
203 Collins Street,
MELBOURNE, C.1.
A U S T R A L I A.

CONTRIBUTING OBSERVATORIESTOOLANGI MAGNETIC OBSERVATORY J.R. Cleary, Observer-in-Charge

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

Instruments

Ruska magnetometer No.4813
 Schulze earthinductor No.49
 La Cour QHMs Nos.288, 289, 290
 La Cour BMZ No.119
 La Cour D, H & Z recording variometers
 Sensitivity : D 1.16 min/mm
 H 4.6 Y/mm
 Z 4.4 Y/mm
 Recording speed : 15 mm/hour

GNANGARA MAGNETIC OBSERVATORY P.M. McGregor, Observer-in-Charge

Geographic Latitude 31°47'S Longitude 115°57'E
 Geomagnetic Latitude -43.2° Longitude 185.8°

Instruments

C.I.W. field magnetometer and theodolite earthinductor No.7
 Askania magnetometer No.508810
 Askania earthinductor No.5111081
 La Cour QHMs No.291, 292, 293
 La Cour BMZ No.120
 La Cour D, H & Z recording variometers
 Standard instrument : Sensitivity : D 0.9 min/mm
 H 3.2 Y/mm
 Z 5.4 Y/mm
 Recording speed : 15 mm/hour
 Rapid-run instrument: Sensitivity : D 1.0 min/mm
 H 4.5 Y/mm
 Z 1.5 Y/mm
 Recording speed : 180 mm/hour
 Askania (Eschenhagen type) H variometer with visual recorder
 Sensitivity : 3 Y/mm
 Recording speed : 20 mm/hour

CONTRIBUTING OBSERVATORIES

MACQUARIE ISLAND MAGNETIC OBSERVATORY R. Hollingsworth,
Observer-in-Charge

Geographic Latitude $54^{\circ}30'S$ Longitude $158^{\circ}57'E$
Geomagnetic Latitude -60.7° Longitude 243.0°

Instruments

La Cour QHMs Nos. 177, 178, 179

La Cour BMZ No. 64

Kew Pattern magnetometer No. 158

La Cour D, H & Z recording variometers

Sensitivity : D 0.9 min/mm
H 12.5 Y/mm
Z 14.1 Y/mm

Recording speed : 15 mm/hour

MAWSON MAGNETIC OBSERVATORY M. Kirton, Observer-in-Charge

Geographic Latitude $67^{\circ}36'S$ Longitude $62^{\circ}53'E$
Geomagnetic Latitude -73.2° Longitude 103.1°

Instruments

La Cour QHMs Nos. 300, 301, 302

La Cour BMZ No. 62

La Cour D, H & Z recording variometers

Sensitivity : D 0.8 min/mm
H 9.9 Y/mm
Z 10.3 Y/mm

Recording speed : 15 mm/hour

Bar fluxmeter magnetometer N-S, E-W and vertical components

CONTRIBUTING OBSERVATORIES

WILKES MAGNETIC OBSERVATORY R. Underwood, Observer-in-Charge

Geographic Latitude 66°15'S Longitude 110°35'E
Geomagnetic Latitude -77.2° Longitude 179.2°

Instruments

C.I.W. field magnetometer and theodolite earthinductor No.28
 Ruska D. H & Z recording variometers

Standard instrument : Sensitivity : D 11.3 min/mm
H 24.2 Y/mm
Z 24.7 Y/mm

Recording speed : 20 mm/hour

Rapid-run instrument: Sensitivity : D 1.2 min/mm
H 5.2 Y/mm
Z 5.7 Y/mm

Recording speed : 240 mm/hour

PORT MORESBY MAGNETIC OBSERVATORY J.A. Brooks,
Observer-in-Charge

Geographic Latitude 9°24.'5S Longitude 147°09.'1E
Geomagnetic Latitude -18.7° Longitude 218.0°

Instruments

La Cour QHMs Nos. 187, 188, 189

La Cour BMZ No. 68

La Cour D, H & Z recording variometers

Sensitivity : D 0.9 min/mm
H 6.1 Y/mm
Z 7.1 Y/mm

Recording speed : 15mm/hour

MAGNETIC K-INDICES FOR OCTOBER - 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	4	5	5	4	4	4	31
2	3	5	4	3	2	1	2	1	21
3	1	3	4	4	4	5	5	4	30
4	5	4	5	4	5	2	3	3	31
5	3	3	2	2	4	4	4	3	25
6	4	4	5	6	5	4	4	4	36
7	3	3	2	4	2	1	2	3	20
8	3	3	2	3	1	3	2	1	18
9	1	2	2	1	1	2	3	0	12
10	1	1	2	1	0	2	1	1	09
11	0	1	0	0	0	0	2	1	04
12	1	1	1	0	2	2	2	1	10
13	2	2	2	2	2	2	2	2	16
14	3	3	2	4	3	3	3	3	24
15	3	3	3	2	3	3	3	3	23
16	2	2	1	0	0	1	2	1	09
17	3	3	4	4	3	3	3	3	26
18	4	4	5	5	4	4	2	3	31
19	3	3	2	3	2	1	3	3	20
20	3	3	3	2	1	0	0	0	12
21	1	1	1	1	1	3	2	3	13
22	4	5	3	3	3	4	2	2	26
23	3	2	3	4	1	0	0	0	13
24	1	2	2	2	3	1	2	3	16
25	3	4	4	5	3	3	2	3	27
26	3	3	4	4	5	5	3	3	30
27	3	3	4	4	2	3	2	1	22
28	1	3	3	1	2	1	0	0	11
29	1	1	1	1	3	1	0	3+	11
30	3	3	4	3	4	4	5	4	30
31	3	3	3	6	5	4	4	4	32

MAGNETIC K-INDICES FOR OCTOBER - GNANGARA

Range for lower limit of K=9 is 350 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	2	-	-	5	5	5	4	5	XX
2	4	4	4	3	2	2	1	2	22
3	0	1	5	3	4	4	5	5	27
4	4	3	4	4	6	3	4	3	31
5	4	3	3	2	5	4	4	4	29
6	-	-	-	5	6	5	5	5	XX
7	3	4	3	4	2	1	2	3	22
8	3	4	3	3	3	3	1	2	22
9	-	-	-	1	1	2	4	3	XX
10	2	2	1	1	1	4	2	3	16
11	2	2	2	1	1	1	3	2	14
12	3	2	3	1	2	2	2	3	18
13	3	2	3	1	2	1	0	2	14
14	2	2	2	4	3	2	4	3	22
15	3	3	2	2	3	3	3	4	23
16	2	1	0	0	0	1	2	2	08
17	1	2	3	4	3	3	3	4	23
18	5	4	4	5	4	5	4	4	35
19	3	3	2	3	1	3	3	3	21
20	2	2	2	2	1	0	0	0	09
21	1	1	1	0	0	3	1	3	10
22	4	4	3	4	3	4	2	3	27
23	3	2	3	4	1	0	0	0	13
24	1	1	2	2	3	2	1	3	15
25	3	3	3	4	3	2	2	2	22
26	3	4	4	4	6	5	2	3	31
27	4	3	4	3	3	3	0	2	22
28	1	1	2	0	2	1	1	0	08
29	1	1	0	1	3	1	1	4	12
30	5	3	3	2	3	4	4	5	29
31	3	2	3	6	5	4	5	5	33

MAGNETIC K-INDICES FOR OCTOBER - MACQUARIE ISLAND

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>				<u>K-Indices</u>				<u>K-Sum</u>
1	4	6	6	6	5	6	4	4	41
2	3	6	6	6	5	2	2	2	32
3	2	5	7	6	6	5	6	5	42
4	5	6	6	6	6	6	4	3	42
5	5	5	3	4	6	5	6	4	38
6	5	7	7	6	5	6	4	4	44
7	3	3	3	6	4	1	2	3	25
8	2	3	1	4	4	4	1	1	20
9	1	2	2	3	2	3	1	1	15
10	1	1	1	1	1	1	1	1	09
11	1	2	1	1	1	0	1	1	08
12	0	1	0	0	1	2	2	2	08
13	1	1	1	1	0	1	1	1	07
14	3	2	3	6	5	3	3	2	27
15	3	3	3	4	5	4	2	3	27
16	2	1	1	0	0	1	1	1	07
17	1	2	4	5	5	3	3	4	27
18	4	5	5	7	6	5	4	3	39
19	4	5	3	6	3	1	2	2	26
20	2	3	4	3	2	0	0	0	14
21	1	1	1	0	2	1	1	3	10
22	3	3	5	5	5	5	3	3	32
23	4	4	4	7	2	0	1	0	22
24	1	1	4	-	-	-	-	-	-
25	4	5	5	7	5	4	2	3	35
26	3	5	5	5	8	7	3	2	38
27	3	5	4	6	4	3	1	0	26
28	1	3	2	4	2	0	0	0	12
29	1	2	2	3	3	2	1	2	16
30	4	3	3	1	4	4	3	4	26
31	3	4	3	8	7	6	6	5	42

MAGNETIC K-INDICES FOR OCTOBER - MAWSON

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>				<u>K-Sum</u>				
1	6	6	6	6	5	4	5	6	44
2	3	7	6	3	2	2	2	3	28
3	3	5	4	3	4	5	7	7	38
4	5	7	5	5	5	4	4	6	41
5	6	6	4	3	4	4	6	5	38
6	6	5	6	6	5	5	7	7	47
7	3	5	3	4	3	2	4	7	31
8	3	4	3	2	3	2	3	4	24
9	4	4	3	1	2	3	5	5	27
10	3	3	2	1	1	4	4	4	22
11	3	2	2	0	1	1	5	5	19
12	4	3	2	1	2	3	5	5	25
13	3	2	2	2	1	1	1	2	14
14	3	3	3	4	4	2	5	5	29
15	5	5	4	4	3	4	6	6	37
16	3	3	3	1	1	2	5	4	22
17	3	4	4	4	4	3	5	5	32
18	5	6	5	5	4	6	7	7	45
19	4	5	3	3	6	6	6	4	37
20	-	-	3	3	3	2	3	2	-
21	2	2	2	1	3	2	4	4	20
22	5	4	4	4	3	5	5	5	35
23	6	5	3	4	2	2	2	1	25
24	2	3	3	3	3	3	3	4	24
25	4	6	4	4	4	4	3	6	35
26	4	6	6	4	6	5	4	6	41
27	3	4	4	4	3	4	3	4	29
28	3	2	2	2	2	1	2	3	17
29	3	3	1	2	2	2	2	3	18
30	6	4	4	3	3	3	3	4	32
31	4	4	4	5	4	4	6	6	37

MAGNETIC K-INDICES FOR OCTOBER - WILKES

Range for lower limit of K=9 is 2500 gammas

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

MAGNETIC K-INDICES FOR JANUARY 1959 - PORT MORESBY

Range for lower limit of K=9 is 300 gammas

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

MAGNETIC K-INDICES FOR SEPTEMBER AND OCTOBER - PORT MORESBY

Range for lower limit of K=9 is 300 gammas

Sept
1959K-Indices

1	-	3+4	3	3	3	4	-
2	5	4	-	-	-	-	-
3	4	4	4	4	3	-	-
4	5	4	5	6	5	5	4
5	3	3	3	3	3	3	4
6	5	4	3	3	3	3	3
7	3	3	3	3	3	3	3
8	4	3	3	3	3	3	3
9	3	3	3	3	3	3	3
10	4	3	3	3	3	3	3
11	3	4	3	3	3	3	4
12	4	3	3	3	3	3	3
13	3	3	3	3	3	3	5
14	4	4	3	3	3	3	3
15	4	3	3	3	3	3	4
16	3	3	3	3	3	3	3
17	4	3	3	4	3	3	3
18	4	3	3	3	3	4	5
19	4	5	4	4	3	3	4
20	3	5	3	5	5	4	4
21	5	5	5	5	5	4	4
22	5	6	4	5	6	3	4
23	3	3	3	3	3	3	3
24	3	3	3	3	4	4	3
25	3	3	3	3	4	5	3
26	4	4	3	4	4	3	3
27	3	3	3	3	3	4	3
28	3	3	3	3	3	4	3
29	4	3	3	3	3	3	3
30	4	3	3	4	4	3	4
31							

Oct
1959K-Indices

1	3	5	4	6	5	3	3	4
2	4	5	5	3	3	3	3	3
3	4	4	4	3	3	5	4	4
4	5	4	3	3	6	3	3	4
5	4	3	3	3	3	3	3	3
6	4	5	4	5	4	4	3	3
7	3	3	3	4	3	3	3	3
8	3	3	3	3	3	3	3	3
9	3	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3	3
11	3	3	3	3	3	3	3	3
12	3	3	3	3	3	3	3	3
13	3	3	3	3	3	3	3	3
14	3	3	3	3	3	3	3	3
15	3	3	3	3	3	3	3	3
16	3	3	3	3	3	3	3	3
17	3	3	3	4	3	3	3	3
18	5	3	5	4	3	4	3	4
19	3	3	3	3	3	3	3	3
20	4	3	3	3	3	3	3	3
21	3	3	3	3	3	3	3	3
22	4	5	3	4	3	3	3	3
23	3	3	4	3	3	3	3	3
24	3	3	4	4	3	3	3	3
25	4	4	4	4	4	3	3	3
26	4	4	3	4	4	5	4	3
27	3	3	4	4	3	3	3	3
28	3	3	3	3	3	3	3	3
29	3	3	3	3	3	3	3	3
30	6	4	3	3	3	4	5	4
31	4	3	4	5	5	5	4	4

PRINCIPAL MAGNETIC STORMS AT TOOLANGI DURING OCTOBER

date	storm time		sudden commencements			act-iv-ity	max. activity 0 to 9			Ranges		
	begin	end	type	amplitudes			3-hr per.	K	D	H	Z	
				D	H							Z
Oct	h m	d h			Y	Y						
01	0425	0212					m	01 4,5	5	21	105	66
								02 2	5			
03	0728	0415					m	03 6,7	5	20	143	70
								04 1,3,5	5			
05	1202	0715					ms	06 4	6	24	156	81
17	0622	1820					m	18 3,4	5	19	115	42
29	2347		ssc a	> 23	a			31 4	6			
Nov		0516						01 5	6	29	179	88
								02 5	6			

a - not recorded

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA AT TOOLANGI DURING OCTOBER

Day	Time		Type	Sense of Movement			Remarks
	h	m		H	D	Z	
03	07	42	ssc B	-	-	-	
04	04	06	si B	-	-	-	
05	16	02	ssc B	-	-	-	
22	16	04	bs B	-	-	-	
30	06	27	ssc* B	+	*	+	

PRINCIPAL MAGNETIC STORMS AT GNANGARA DURING OCTOBER

date	storm time		sudden commencements				act-iv-ity	max. activity			Ranges				
	begin	end	type	amplitudes				0 to 9							
				D	H	Z		3-hr	K	D				H	Z
	h	m	d	h				day	per.		K	D	H	Z	
05	12	03	07	02	ssc	-1	+3	-6	m	no record			0127	-	0853 on 6
17	03	09	19	06	ssc	-1	0	-1	m	18	1,4,6	5	22	91	167
29	23	48			ssc*	-6*	+20	-15*	ms	still in progress			2359	Oct	31st

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA AT GNANGARA DURING OCTOBER

Day	Time		Type	Sense of Movement			Remarks
	h	m		H	D	Z	
05	12	03	ssc C	+	-	-	
09	19	21	bs A	+	+	+	
17	03	09	ssc C	-	-	-	
21	16	06	si A	-	-	-	
22	00	52	si A	+	-	-	
23	10	13	b A	-	-	-	
29	23	48	ssc* A	+	*	*	

NOTE: No record 0313 - 0813 1st
 0127 - 0853 6th
 0223 - 0742 9th

PRINCIPAL MAGNETIC STORMS AT PORT MORESBY DURING SEPTEMBER AND OCTOBER

date	storm time		sudden commencements			act-iv-ity	max. activity 0 to 9			Ranges				
	begin	end	type	amplitudes			day	3-hr per.	K	D	H	Z		
				D	H								Z	
	h m	d h		Y	Y	Y					Y	Y	Y	
Sept 03	- -	0500				ms								
						Record missing	3rd	15-24h	G.M.T.					
							4th	02-06h	G.M.T.					
20	03..	2218				m		22	2,5	6	9	204	103	
Oct						n i l								

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA AT PORT MORESBY DURING
SEPTEMBER AND OCTOBER

Day	Time		Type		Sense of Movement			Remarks
	h	m			H	D	Z	
Sept								
25	16	06	bp	C	+	+	+	
26	11	46	bp	B	+	-	+	
27	15	45	bp	B	+	+	+	
			No record	1st 05-06,			22-24	
				2nd 06-23				
				3rd 15-24				
				4th 02-06				
				12th 10-24				
				23rd 06-24				
Oct								
01	12	06	bp	B	+		+	
07	10	32	bp	B	+	-	+	
08	15	06	bp	B	+		+	
22	16	03	bp	B	+	-	+	
24	12	40	bp	C	+		+	
26	14	23	bp	B	+	-	+	
29	23	47	ssc*	B	+	-*	+	
31	11	29	bp	A	+	-	+	
			No record	19th 14-24				
				08-24				