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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

VOL. 9

No. 12

DECEMBER

1961

*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

J. M. RAYNER - Director

This Report was prepared in the Geophysical Branch;

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

CONTRIBUTING OBSERVATORIESGNANGARA 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

Askania magnetometer No.508810

Askania earthinductor No.5111079

La Cour QHMs No.291, 292, 293

La Cour BMZ No. 120

Eschenhagen D, H & Z recording variometers

Sensitivity	:	D 1.07 min/mm
		H 2.2 Y/mm
		Z 5.0 Y/mm

Recording speed	:	20 mm/hour
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Askania (Eschenhagen type) D variometer with visual recorder

Sensitivity	:	3 Y/mm
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Recording speed	:	20 mm/hour
-----------------	---	------------

La Cour rapid run variometers are being installed

MACQUARIE ISLAND MAGNETIC OBSERVATORY R.J.S. Cooke, Observer in Charge

Geographic Latitude	54°30'S	Longitude	158°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

Normal sensitivity	:	D 0.9 min/mm
		H 12.5 Y/mm
		Z 14.1 Y/mm

Recording speed	:	15 mm/hour
-----------------	---	------------

Low sensitivity	:	D 2.3 min/mm
		H 63 Y/mm
		Z 59 Y/mm

Recording speed	:	15 mm/hour
-----------------	---	------------

CONTRIBUTING OBSERVATORIESMAWSON MAGNETIC OBSERVATORY R.J. Hollingsworth, Observer in Charge

Geographic Latitude 67°36'S Longitude 62°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

Normal sensitivity : D 0.8 min/mm
 H 9.9 Y/mm
 Z 10.3 Y/mm

Recording speed : 15 mm/hour

Low sensitivity : D 2.4 min/mm
 H 52 Y/mm
 Z 51 Y/mm

Recording speed : 15 mm/hour

Bar fluxmeter magnetograph H, D, Z components

Recording speed : 5 mm/minute

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

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

Instruments

La Cour QHMs Nos. 187, 188, 189

La Cour BMZ No. 68

Askania declinometer No. 580333

Askania earthinductor No. 5111081

La Cour D, H & Z recording variometers

Standard instrument : Sensitivity : D 0.9 min/mm
 H 5.6 Y/mm
 Z 7.2 Y/mm

Recording speed : 15 mm/hour

Rapid-run instrument: Sensitivity : D 0.6 min/mm
 H 1.8 Y/mm
 Z 3.0 Y/mm

Recording speed : 180 mm/hour

CONTRIBUTING OBSERVATORIESTOOLANGI MAGNETIC OBSERVATORY C.A. van der Waal, 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 QMHs 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

WILKES MAGNETIC OBSERVATORY W.M. Burch, 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
 La Cour QHMs Nos.492, 493, 494
 La Cour BMZ No.236

Ruska D, H & Z recording variometers

Standard instrument : Sensitivity	:	D 10.6 min/mm
		H 24 Y/mm
		Z 24 Y/mm

Recording speed	:	20 mm/hour
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Rapid-run instrument: Sensitivity	:	D 1.3 min/mm
		H 5.3 Y/mm
		Z 6.3 Y/mm

Recording speed	:	240 mm/hour
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M A W S O NMAGNETIC K-INDICES - DECEMBER 1961

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	2	3	6	6	7	4	4	5	37
2	5	5	4	6	6	7	6	6	45
3	7	8	7	5	5	4	6	7	49
4	3	4	2	3	3	4	2	5	26
5	4	3	3	1	3	6	5	4	29
6	4	5	3	3	5	6	5	4	35
7	3	3	3	4	5	1	1	1	21
8	3	2	2	3	1	1	1	3	16
9	3	2	2	3	2	2	4	3	21
10	2	3	1	4	4	4	5	6	29
11	5	4	4	3	5	5	5	5	36
12	5	5	2	2	2	2	1	1	20
13	2	1	1	2	2	3	3	5	19
14	4	3	2	1	1	1	2	5	19
15	4	4	2	3	3	3	3	6	28
16	3	4	2	2	3	2	2	4	22
17	4	4	1	2	2	2	3	4	22
18	4	4	2	2	0	0	1	3	16
19	2	2	1	1	1	2	2	2	13
20	3	4	2	2	2	3	3	4	23
21	3	5	2	2	1	2	2	4	21
22	3	3	1	3	3	3	4	3	23
23	4	5	3	3	5	3	2	6	31
24	4	5	2	3	4	4	4	4	30
25	2	2	1	2	1	2	1	4	15
26	3	3	2	2	3	3	3	4	23
27	4	4	4	4	4	3	2	3	28
28	4	4	3	5	5	4	5	5	35
29	6	5	3	3	3	4	3	6	33
30	4	5	4	4	5	5	5	4	36
31	4	3	3	3	3	3	5	4	28

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1961	H	D	Z
	Y	°	Y
December	18350	60 18.6W	-48670

W I L K E SMAGNETIC K-INDICES - DECEMBER 1961

Range for lower limit of K=9 is 2500 gammas

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

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1961	H	D	Z
	Y	°	Y
December	9256	84 32.9W	-64917

MACQUARIE ISLAND

MAGNETIC K-INDICES - DECEMBER 1961

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	1	2	5	6	8	6	5	4	37
2	4	3	3	7	7	7	6	7	44
3	5	6	7	6	7	5	2	2	40
4	2	3	3	3	4	5	1	1	22
5	1	1	2	0	2	7	4	2	19
6	2	3	0	3	6	7	5	1	27
7	1	1	2	7	6	0	0	1	18
8	0	0	0	0	0	0	0	0	00
9	1	1	2	4	2	0	0	1	11
10	1	2	0	5	4	2	2	2	18
11	2	3	6	5	5	5	5	3	34
12	1	3	1	1	3	0	0	1	10
13	1	0	0	0	0	2	0	1	04
14	0	1	0	1	0	0	0	2	04
15	1	2	2	4	4	2	0	2	17
16	1	1	1	2	2	1	0	1	09
17	1	2	0	2	1	0	0	0	06
18	0	0	0	0	0	1	0	0	01
19	1	1	0	0	0	0	0	0	02
20	0	1	2	2	2	0	0	0	07
21	1	1	1	1	0	0	1	1	06
22	0	1	0	1	4	3	1	0	10
23	0	3	3	4	6	3	1	2	22
24	2	2	1	4	5	5	0	2	21
25	0	0	0	1	1	0	0	1	03
26	1	1	1	1	2	0	0	2	08
27	3	3	3	6	5	1	1	2	24
28	2	2	2	7	7	7	2	2	31
29	3	3	2	5	4	2	1	3	23
30	3	3	2	6	5	6	1	1	27
31	1	1	2	3	3	2	3	2	17

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1961	H	D	Z
	Y	°	Y
December	13234	25 52.0E	-64345

T O O L A N G IMAGNETIC K-INDICES - DECEMBER 1961

Range for lower limit of K=9 is 500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	3	3	5	4	6	6	4	5	36
2	4	5	4	5	5	5	5	5	38
3	4	4	5	5	5	3	2	3	31
4	2	2	1	2	2	3	1	1	14
5	1	2	2	0	3	4	2	2	16
6	4	4	2	2	4	4	4	2	26
7	4	2	3	4	4	1	1	2	21
8	3	1	2	2	0	1	1	1	11
9	2	3	2	2	1	1	1	1	13
10	1	2	1	3	2	2	2	2	15
11	2	2	3	3	2	2	3	1	18
12	1	2	1	1	2	2	1	1	11
13	2	1	1	1	1	1	1	2	10
14	2	2	2	1	1	1	1	3	13
15	2	3	2	2	2	1	1	3	16
16	2	2	2	1	1	1	0	2	11
17	2	2	2	1	0	1	1	1	10
18	1	2	1	0	0	0	0	1	05
19	1	1	1	0	0	2	0	1	06
20	2	2	3	1	1	0	0	0	09
21	2	2	2	1	0	0	2	2	11
22	2	2	1	1	3	2	2	1	14
23	2	2	3	2	3	2	1	3	18
24	3	2	2	2	3	3	1	1	17
25	2	2	2	1	0	0	0	1	08
26	3	3	1	0	1	1	1	2	12
27	4	3	3	3	3	1	3	2	22
28	2	3	3	5	5	5	3	3	29
29	3	2	2	3	3	2	2	3	20
30	2	3	2	3	3	3	1	1	18
31	2	1	1	2	2	2	3	2	15

T O O L A N G IPRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1961 H D Z
 Y ° Y
 December 22640 10 21.1E -56413

PRINCIPAL MAGNETIC STORMS - DECEMBER 1961

date	storm time		sudden commencements				act-iv-ity	max. activity			Ranges		
			0 to 9										
	begin	end	type	amplitudes				3-hr day	per.	K	D	H	Z
				D	H	Z							
	h m	d h											
01	0300	0314	...	..	..	..	ms	1	5,6	6	35	209	116

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - DECEMBER 1961

Day	Time		Type		Sense of Movement			Remarks
	h	m			H	D	Z	
05	13	59	ssc*	B	+	*	+	
05	16	25	bps	B	+	-	+	
05	16	25	pt	B				
07	11	28	bp	B	+	-	+	
09	09	27	pt	B				
10	09	38	pt	B				
16	11	48	pt	B				
17	10	25	pt	C				
18	11	36	pt	B				
19	04	24	pt	B				
19	12	35	pt	B				
20	10	08	pt	B				
20	16	06	pt	B				
22	12	54	pt	B				
22	13	05	bp	C	+	-	+	
24	15	09	bp	B	+	+	+	
25	07	25	pt	C				
25	10	44	pt	B				
27	00	58	ssc	B	+	-	+	
29	10	25	bps	B	+	-	+	
29	13	13	pt	B				
30	06	31	pt	B				
30	09	05	pt	C				
30	11	22	pt	C				
31	11	06	pt	B				

G N A N G A R AMAGNETIC K-INDICES - DECEMBER 1961

Range for lower limit of K=9 is 350 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	2	2	4	5	6	5	6	4	34
2	5	5	4	5	5	6	5	6	41
3	4	3	5	5	5	1	1	2	26
4	2	1	2	2	2	3	1	2	15
5	1	1	1	0	3	5	2	2	15
6	3	3	2	2	4	5	4	3	26
7	2	2	3	4	4	0	0	1	16
8	1	1	2	2	1	1	0	0	08
9	2	3	2	2	1	1	2	1	14
10	1	2	1	3	3	3	3	2	18
11	2	2	3	3	2	3	4	2	21
12	1	2	1	1	1	2	0	1	09
13	1	1	1	2	1	1	1	2	10
14	1	2	1	1	1	1	1	4	12
15	2	3	2	2	2	1	1	3	16
16	1	1	1	1	2	1	1	2	10
17	1	1	1	1	1	1	0	1	07
18	1	1	1	1	1	0	1	1	07
19	1	1	0	0	1	3	0	1	07
20	1	1	2	1	1	0	1	1	08
21	2	0	2	2	0	0	1	2	09
22	1	1	0	1	2	2	1	1	09
23	1	1	3	2	3	2+	-	-	--
24	4	1	1	2	3	3	1	1	16
25	1	1	1	1	0	0	0	1	05
26	1	1	1	1	0	1	1	2	08
27	4	3	3	1	2	2	1	2+	18+
28	-	-	3	5	5	5	3	3+	--
29	-	-	-	-	-	-	-	-	--
30	-	3	2	4	2	4	1	2	--
31	3	2	2	2	2	2	3	3	19

G N A N G A R APRELIMINARY MONTHLY MEAN VALUES

Based on 5 selected quiet days

1961 H ° D Z
 Y ' Y
 December 23963 2 53.3W -53490

PRINCIPAL MAGNETIC STORMS - DECEMBER 1961

date	storm time		sudden			act-iv-ity	max. activity			Ranges			
			commencements				0 to 9						
	begin	end	type	amplitudes			3-hr	per.	K				
				D	H					Z			
	h m	d h					day				D	H	Z
01	06..	0319	...	..	..	..	ms	1	5,7	6	23	153	187
28	07..		...	..	..	..		2	6,8				

No record 27th 2322 to 28th 0511
 28th 2320 to 30th 0225

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - DECEMBER 1961

Day	Time		Type		Sense of Movement			Remarks
					D	H	Z	
	h	m						
05	13	59	ssc*	A	+	+	+	
13	15	28	pt	B				
18	11	35	pt	B				
18	12	17	pt	B				
18	13	15	pt	B				
18	13	50	pt	B				
19	12	35	pt	B				
19	15	06	pt	B				
20	16	11	pt	B				
21	16	00	pt	B				
23	14	50	pt	B				
25	10	53	pt	B				
27	00	56	si	B				

No record 23rd 1552 - 2325
 27th 2322 to 28th 0511
 28th 2320 to 30th 0225

P O R T M O R E S B YMAGNETIC K-INDICES - DECEMBER 1961

Range for lower limit of K=9 is 300 gammas

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

P O R T M O R E S B YPRINCIPAL MAGNETIC STORMS - DECEMBER 1961

date	storm time		sudden commencements			act-iv-ity	max. activity			Ranges			
	begin	end	type	amplitudes			0 to 9			D	H	Z	
				D	H		Z	day	3-hr per.				K
01	h m	d h											
	04..	0313	...	..	..	..	m	1	5	6	10	218	78

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - DECEMBER 1961

Day	Time		Type		Sense of Movement			Remarks
	h	m			H	D	Z	
01	06	27	pt	B				
01	13	01	si	B				
01	20	08	pt	C				
03	08	43	bp	C	+	-	+	
05	14	00	si					
05	15	17	pt	B				
05	16	16	pt	B				
07	11	30	pt	C				
09	09	31	pt	B				
09	10	54	bp	B	+	0	+	
09	17	31	pt	B				
09	18	35	bp	C	+	0	+	
10	09	40	pt	C				
10	10	25	pt	B				
10	10	50	bp	C	+	0	+	
10	16	20	pt	B				
11	08	28	bp	B	+	-	+	
13	15	32	pt	B				
13	16	18	pt	C				
13	18	42	pt	B				
13	20	55	pt	B				
13	21	32	pt	B				
14	22	20	pt	B				
15	11	59	bp	B	+	-	+	
15	21	48	pt	B				
16	11	48	pt	B				
16	22	06	pt	C				
17	13	17	pt	B				
18	11	36	pt	B				
18	13	15	pt	B				
19	04	24	pt	B				
19	12	35	pt	B				
19	13	36	pt	C				
19	15	06	pt	B				
20	10	08	pt	B				
20	16	06	pt	B				

Continued on the next page

P O R T M O R E S B YSUDDEN COMMENCEMENTS AND OTHER PHENOMENA - DECEMBER 1961 CONTD.

<u>Day</u>	<u>Time</u> h m	<u>Type</u>	Sense of Movement			<u>Remarks</u>
			<u>H</u>	<u>D</u>	<u>Z</u>	
21	16 01	pt C				
21	19 19	pt C				
22	12 53	pt B				
22	14 16	pt B				
22	15 06	pt B				
23	13 52	pt B				
23	16 09	pt B				
23	18 10	pt B				
24	12 13	bp B	+	0	+	
24	14 43	bp B	+	(0)	+	
25	10 41	pt B				
27	00 56	si A				
28	09 51	pt B				
28	10 22	bp B	+	0	+	
29	13 11	pt B				
30	11 20	bp B	+	(-)	+	