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

GEOPHYSICAL
OBSERVATORY REPORT

VOL. 11

No. 5

MAY

1963

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*Issued under the authority of
Senator The Hon. Sir William Spooner, KCMG, MM
Minister for National Development*

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DEPARTMENT OF NATIONAL DEVELOPMENT

Minister - Senator The Hon. Sir WILLIAM SPOONER, KCMG, MM

Secretary - Sir HAROLD RAGGATT, CBE

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

J.M. RAYNER - Director

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 OBSERVATORIES

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

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 γ /mm
		Z 5.0 γ /mm
Recording speed	:	20 mm/hour

Askania (Eschenhagen type) H variometer with visual recorder

Sensitivity	:	3 γ /mm
Recording speed	:	20 mm/hour

La Cour rapid run variometers are being installed

MACQUARIE ISLAND MAGNETIC OBSERVATORY

P.J. Gregson, 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

Standard instrument : Sensitivity	:	D 2.3 min/mm
		H 24 γ /mm
		Z 21 γ /mm
Recording speed	:	15 mm/hour

Rapid-run instrument: Sensitivity

	:	D 1.1 min/mm
		H 5.4 γ /mm
		Z 6.4 γ /mm
Recording speed	:	180 mm/hour

CONTRIBUTING OBSERVATORIES

MAWSON MAGNETIC OBSERVATORY

I.E. Black, 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 0.9 min/mm
	H 9.4 Y/mm
	Z 10.0 Y/mm

Recording speed :	15 mm/hour
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Low sensitivity :	D 2.4 min/mm
	H 51 Y/mm
	Z 50 Y/mm

Recording speed :	15 mm/hour
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Bar fluxmeter D magnetograph

Recording speed :	5 mm/minute
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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 0.4 min/mm
	H 2.9 Y/mm
	Z 3.1 Y/mm

Recording speed :	15 mm/hour
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Rapid-run instrument: Sensitivity :	D 0.4 min/mm
	H 1.4 Y/mm
	Z 0.7 Y/mm

Recording speed :	180 mm/hour
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CONTRIBUTING OBSERVATORIES

TOOLANGI 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 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

WILKES MAGNETIC OBSERVATORY

R. Whitworth, 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
Rapid-run instrument: Sensitivity	:	D 1.3 min/mm
		H 5.3 Y/mm
		Z 6.3 Y/mm
Recording speed	:	240 mm/hour

M A W S O N

MAGNETIC K-INDICES - MAY 1963

Range for lower limit of K=9 is 1500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	6	7	5	5	3	4	4	7	41
2	5	5	6	5	4	5	6	6	42
3	4	4	4	4	5	4	5	6	36
4	6	5	5	5	3	4	5	6	39
5	5	5	4	4	2	4	5	4	33
6	5	5	4	3	3	2	5	4	31
7	3	3	3	2	2	2	4	5	24
8	6	4	4	3	3	2	3	6	31
9	4	4	5	4	3	2	6	7	35
10	5	6	5	5	3	5	6	6	41
11	5	5	4	4	4	3	6	6	37
12	5	4	4	3	3	3	7	5	34
13	6	6	6	5	4	3	5	6	41
14	6	6	5	4	4	2	3	6	36
15	5	4	4	2	2	2	4	5	28
16	4	3	1	1	1	0	3	4	17
17	3	3	3	2	3	3	3	3	23
18	3	2	1	0	2	1	3	1	13
19	0	0	2	2	1	3	5	5	18
20	5	4	3	2	1	1	1	2	19
21	2	2	1	0	1	1	6	5	18
22	1	2	1	1	1	1	1	2	10
23	0	2	1	2	1	1	1	1	09
24	0	1	1	0	0	0	0	1	03
25	1	1	2	1	3	2	5	3	18
26	5	5	2	2	2	2	5	5	28
27	5	2	3	1	1	1	3	5	21
28	4	6	6	5	3	2	5	4	35
29	6	7	5	4	3	3	3	2	33
30	5	6	6	3	3	4	5	2	34
31	2	2	2	3	3	3	5	6	26

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1963	H	D	Z
	Y	°	Y
May	18352	60 43.8	-48569

W I L K E S

MAGNETIC K-INDICES - MAY 1963

Range for lower limit of K=9 is 2500 gammas

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

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1963	H	D	Z
	Y	°	Y
May	9232	85 38.3	-64857

MACQUARIE ISLAND

MAGNETIC K-INDICES - MAY 1963

Range for lower limit of K=9 is 1500 gammas

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

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1963	H	°	D	Z
	Y		I	Y
May	13198	26	07.8	-64315

T O O L A N G I

MAGNETIC K-INDICES - MAY 1963

Range for lower limit of K=9 is 500 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	5	4	4	4	4	4	1	2	28
2	3	3	3	4	3	3	2	3	24
3	2	3	3	1	2	3	1	3	18
4	3	4	5	5	3	3	1	2	26
5	3	2	3	3	2	3	1	1	18
6	2	3	2	1	2	2	2	1	15
7	1	1	1	3	1	1	1	1	10
8	2	3	3	3	3	3	2	2	21
9	2	3	3	3	3	1	3	2	20
10	3	2	3	3	2	3	2	2	20
11	3	3	2	3	3	2	2	1	19
12	2	2	2	2	2	3	2	2	17
13	3	5	3	5	4	2	2	2	26
14	3	3	3	4	2	1	1	1	18
15	1	2	3	2	2	1	1	1	13
16	2	0	0	0	0	0	0	0	02
17	0	1	2	3	2	1	1	1	11
18	0	1	0	0	1	1	1	0	04
19	0	0	1	1	1	2	1	2	08
20	2	2	2	1	1	1	1	0	10
21	0	1	0	0	1	0	2	1	05
22	0	2	0	1	2	1	0	0	06
23	1	1	1	1	0	0	1	0	05
24	1	1	0	0	1	1	0	0	04
25	2	1	1	2	2	2	2	1	13
26	2	1	1	1	1	1	1	1	09
27	1	2	1	1	1	1	3	2	12
28	2	3	3	3	1	1	1	1	15
29	3	4	3	2	2	1	2	1	18
30	3	3	4	3	1	1	1	1	17
31	0	1	1	2	3	2	3	2	14

T O O L A N G I

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1963	H Y	D °	Z Y
May	22593	10 26.2E	-56389

PRINCIPAL MAGNETIC STORMS - MAY 1963

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										
April														
30	0800						30	7	5					
May		0216				m	01	1	5	17	116	49		

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - MAY 1963

Day	Time h m	Type	Sense of Movement		
			H	D	Z
06	13 17	pt C			
07	09 53	bp C	+	-	+
08	13 17	bp B	+	-	+
11	11 53	bp B	+	-	+
11	12 29	bp B	+	-	+
13	04 38	bps A	-	-	-
13	10 06	bps B	+	-	+
13	10 49	bps A	+	-	+
14	08 51	bps A	+	-	+
19	15 20	pt C			
20	12 32	pt C			
21	19 05	bp C	-	+	
22	12 40	pt B			
23	07 42	pt C			
23	08 40	pt B			
24	14 22	pt A			
27	12 27	pt B			
30	05 59	bp B	-	+	-
30	10 28	pt B			

G N A N G A R A

MAGNETIC K-INDICES - MAY 1963

Range for lower limit of K=9 is 350 gammas

<u>Day</u>	<u>K-Indices</u>								<u>K-Sum</u>
1	5	4	4	4	4	4	2	4	31
2	3	3	3	4	4	4	2	4	27
3	2	3	3	2	3	3	2	3	21
4	4	3	4	5	2	4	2	2	26
5	3	3	2	2	1	4	1	1	17
6	2	3	2	1	2	2	3	2	17
7	1	1	1	2	1	1	2	2	11
8	2	1	2	2	2	2	2	3	16
9	2	3	3	3	3	1	3	3	21
10	2	2	3	2	2	3	3	3	20
11	3	2	2	3	4	2	3	3	22
12	2	1	2	2	3	3	3	2	18
13	2	4	3	5	5	3	3	3	28
14	2	3	3	5	2	2	1	2	20
15	1	2	2	2	2	0	2	2	13
16	2	2	1	1	0	0	0	0	06
17	0	1	2	3	2	2	2	1	13
18	0	1	2	1	1	1	1	0	07
19	0	1	1	1	1	2	1	2	09
20	3	2	2	1	0	1	0	0	09
21	0	0	0	0	1	1	4	1	07
22	0	1	1	1	2	1	0	0	06
23	0	1	1	1	1	0	1	0	05
24	1	0	0	0	1	0	0	0	02
25	1	2	2	3	3	3	3+	2	19+
26	2	2	1	0	1	1+	2+	2	11+
27	1	1	1	1	1	2	3	2	12
28	3	3	3	3	2	1	2	2	19
29	4	5	3	2	2	1	2	1	20
30	2	3	4	3	1	0	2	1	16
31	0	1	1	3	4	2	3	3	17

G N A N G A R A

PRELIMINARY MONTHLY MEAN VALUES

Based on 5 selected quiet days

1963	H Y	° Y	D !	Z Y
May	23934	2	52.3W	53494

PRINCIPAL MAGNETIC STORMS - MAY 1963

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	
	h m	d h		D	H	Z							
April													
30	1522		ssc	+1	+12	+10 ms	30	7	6	21	90	105	
May		0412											

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - MAY 1963

Day	Time h m	Type	Sense of Movement		
			H	D	Z
05	16 59	bp A	+	+	+
06	14 30	pt B			
07	17 23	pt B			
08	13 17	bp B	+	-	-
11	20 16	bps A		+	+
21	18 02	pt A			
21	19 03	bps A	+	+	+
24	14 21	pt A			
31	12 35	b A	+	+	+

NOTE No record 26th 1600-1900

P O R T M O R E S B Y

MAGNETIC K-INDICES - MAY 1963

Range for lower limit of K=9 is 300 gammas

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

P O R T M O R E S B Y

PRELIMINARY MONTHLY MEAN VALUES

Based on 10 selected quiet days

1963	H Y	°	D '	Z Y
May	36388		06 06.4E	-22937

PRINCIPAL MAGNETIC STORMS - MAY 1963

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
April													
30	1522		sc	+0.3	+18	+14	m	30	7	5	4.5	108	45
May		0219						01	1	5			
27	1605	3012	..				m	29	2	5	4.7	116	42

SUDDEN COMMENCEMENTS AND OTHER PHENOMENA - MAY 1963

<u>Day</u>	<u>Time</u> h m	<u>Type</u>	Sense of Movement		
			H	D	Z
02	22 18	ssc B	+	0	+
03	16 08	bp C	+	+	+
04	08 42	bp B	+	(-)	+
08	13 18	bp C	+	?	+
09	04 12	si C	+	+	+
11	12 28	bp B	+	?	+
13	10(48)	bp B	+	-	+
14	08 50	bp B	+	-	+
18	11 54	bp C	+	?	+
24	14 22	pg A			
27	20 27	si B			
30	04 45	bp B	-	+	-
31	12 24	bp B	+	+	+

P O R T M O R E S B Y

RAPID-RUN MAGNETOGRAMS - pc

MAY - 1963

Day	Whole phenomenon			Special Intervals				
	Time of		Quality	Time of		Quality	Largest oscillation	
	begin	end		begin	end		period	range

01	00-09	Disturbed	
02	1600	22..	B
03	0000	11..	C
03	1700	23..	B
07	02..	07..	C
07	16..	22..	C
09	15..	24..	B
10	15..	24..	B
11	00..	07..	B
11	16(58)	2400	B
12	0000	07..	B
12	17..	24..	B
13	05..	09..	C
13	17(30)	24..	B
14	00..	09..	C
14	1830	23..	B
15	00..	10..	B
16	19..	23..	B
18	1845	23..	B
21	1953	2135	B
22	0054	05..	B
22	19..	21(45)	B
26	1750	21(15)	B
28	1910	23..	B
29	0745	1140	B
29	1750	21..	B
29	Record faulty 1940 to 2400		
30	00..	07..	B
30	00-07 fairly disturbed		
30	17..	2250	B
30	No record after 2250		
31	00..	05..	B
31	19..	23..	C

P O R T M O R E S B Y

RAPID-RUN MAGNETOGRAMS - pt

MAY - 1963

Day	Whole phenomenon			Individual series of oscillation				
	Time of		Quality	Time of		Quality	Largest oscillation	
	begin	end		begin	end		period	range
							sec. gammas	
01	00-09	Disturbed						
01	1209	1330	B	1236	1240	B		
02	0700	0735	B	0728	--	B		
02	0845	--	B					
02	1113	1205	B					
02	1320	1340	B					
03	1204	1214	B					
03	1520	1655	B	1542	1550	B		
				1605	1620	B		
				1647	1655	B		
04	1224	1247	B					
04	13(22)		B					
04	1554		B					
04	1815		B	1836		B		
				1855		B		
				1907	1922	A	30	1
05	0824		B					
05	1630	1717	B	1703		B		
05	2246	2254	B					
06	0245	0254	B					
06	1106	1113	B					
06	2055	2152	B	2132	--	B		
06	23..	2307	B					
07	0854	1033	B	0913	--	B		
				0927	--	B		
				1014	--	B		
07	1723	1802	B					
07	2132		B					
08	0446	0642	B					
08	1155	1214	B					
08	1317	1339	B					
08	1406	1436	B	1431	--	B		
08	1750	1855	B					
08	1951	21..	B	2026	--	B		
08	2235	2316	B					
09	1238	1243	B					
10	0126	0154	B					
10	1301	1335	B					
11	1155	12(40)	B	1230	12(40)	B		
11	1517	1525	B					

CONTD.

P O R T M O R E S B Y

RAPID-RUN MAGNETOGRAMS - pt

MAY - 1963

Day	Whole phenomenon			Individual series of oscillation				
	Time of		Quality	Time of		Quality	Largest oscillation	
	begin	end		begin	end		period	range
							sec. gammas	
12	1007	1114	B	1030		B		
				1044		B		
				1054		B		
				1110	1114	B		
12	1535	1603	B					
13	00-05	No record						
13	0822	0825	A				60	4
13	0952	1016	A	1006		A	60	7
13	1045		B					
13	1336	14(50)	B					
15	1855	2045	B					
17	1641	18..	B	1656	--	B		
				1716	--	B		
17	2225	2310	B	2300	--	B		
18	00-09	record faulty						
18	14(50)	1457	B					
19	02(40)	0250	B					
19	1524	1607	B					
20	1130	1310	B					
21	0110	0125	B					
21	1905	1917	A				90	2.5
22	0624	0825	B	0651	0735	B		
				0801	--	B		
22	1239	13..	B					
23	0302	0425	B	0319	--	B		
24	1417	1535	B	1424	--	A	180	2.5
25	2045	21(45)	B					
27	0153	0245	B	0220		B		
				0238		B		
27	0423	0549	B					
27	1301	13(20)	B					
27	1506	1514	B					
27	1755	18(52)	B					
28	04-07	Disturbed						
28	0741	0850	B	0803	0806	B		
28	1125	1210	B	1136	--	B		
29	00-06	Disturbed						
29	1435	15..	B					
30	00-07	Fairly disturbed						
30	0725	07(50)	B					

CONTD.

P O R T M O R E S B Y

RAPID-RUN MAGNETOGRAMS - pt

MAY - 1963

Day	Whole phenomenon			Individual series of oscillation				
	Time of		Quality	Time of		Quality	Largest oscillation	
	begin	end		begin	end		period	range

sec. gammas

31	1218	1251	B					
31	1525	1555	B	1538	--	B		
				1550	1555	B		
31	1615	1715	B	1710	--	B		