

Cape Geological Survey Office,
Department of Mines,
Union of South Africa.

SEISMOLOGICAL BULLETIN.

JAN 1958

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

<u>Stations</u>	<u>Pretoria (Pret)</u>	<u>Grahamstown (Gram)</u>	<u>Pietermaritzburg (Piet)</u>	<u>Kimberley (Kim)</u>
Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka shale.	Soft Ecca shale.	Dolerite boulders embedded in decayed dolerite.
Height:	1350 m.	558 m.	656 m.	1321 m.
Instrument:	Benioff S.P. vertical.	Benioff S.P. vertical with short & long period recorders.	Benioff S.P. vertical.	Benioff S.P. vertical.
Seismo. Officer:	The Director.	The Professor of Physics.	The Professor of Physics.	Rev. Br. T.N. Purcell.
Observer:	Mr. T.E. Dicker.	Mr. A.R. Scanlen.	Mr. W.L. Mouton.	Rev. Br. H.F. McGreevy.
Institution:	Geological Survey Office.	Rhodes University.	Natal University.	Christian Brothers College.

Notes: "Earth tremors" originating in the mining district of the Witwatersrand are recorded several times daily by the Pretoria station, and less frequently by the others. These are not dealt with in this bulletin.

Data are occasionally reported herein by courtesy of the Union Observatory, Johannesburg, which operates a 200 kg. Wiechert Horizontal seismograph. This station is called J, and is at 26° 10.9'S., 28° 04.5'E., height 1806 metres.

All times given are G.M.T.

The supervision of this network and bulletin is at present in the hands of the undersigned, to whom all inquiries should be addressed.

Address:
Geophysical Research Institute,
University of the Witwatersrand,
Johannesburg, S. Africa.

H.O. Cliver
H.O. Cliver.
Seismological Officer.

JANUARY, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
2	✓ Kim	(e)iP	02 18 57		68°	USCGS H = 02 08 15 36½°N 22°E Off South coast of Greece.
2	✓ Pret	i	12 44 12			
2	✓ Kim	iP	22 48 09		88°	USCGS H = 22 35 29 11½°N 60½°W N.E. of Trinidad.
2	✓ Gram	i	23 04 28	C		
3	✓ Pret	i	13 15 46			
3	✓ Gram	e	17 54 10			
		i	12			
	Kim	i	20	R		
5	✓ Kim	i	01 33 51	C		
6	✓ Piet	iP	02 06 17	R	75°	USCGS H = 01 54 30
	✓ Kim	iP	33	R	78°	37½°N 71°E
	✓ Gram	iP	47		81°	Hindu Kush
6	✓ Piet	i	22 01 05	C		
	✓ Kim	e	03 09			
7	✓ Kim	iP	06 17 18		80°	USCGS H = 06 05 08 39°N 70°E Tadzik USSR.
9	✓ Piet	iP	17 52 25		90°	USCGS H = 17 39 24
	✓ Kim	iP	33		92°	44½°N 85°E Sinkiang Province, China.
10	✓ Kim	ePKP ₁	13 57 06		154°	USCGS H = 13 37 14 52°N 171°W Fox Is.
		i	40			
10	✓ Kim	i	17 39 52			
11	✓ Kim	i	05 46 40			
11	✓ Pret	i	11 13 45			
11	✓ Gram	iPKP	13 37 37	C	126°	USCGS H = 13 18 47 23½°S 177°W Tonga Is reg.
	✓ Kim	i	48	R		
12	✓ Kim	i	02 59 26			
12	✓ Pret	i	11 17 14			
12	✓ Pret	e	13 44 42			
12	✓ Kim	iP	15 07 56		84°	USCGS H = 14 55 09 31½°N 41°W Atlantic Ocean.
13	✓ Piet	iPKP ₁	00 21 55		151°	USCGS H = 00 02 24
	✓ Kim	iPKP ₁	22 00		153°	52½°N 177°E
	✓ Gram	iPKP ₁	08		155°	Rat Is.
13	✓ Kim	iPKP	03 13 34		126°	USCGS H = 02 54 36 h=100 km. 11°S 166°E Santa Cruz Is.
13	✓ Piet	iP	20 26 02	C	72°	USCGS H = 20 14 27
	✓ Pret	iP	03	C	71°	11½°N 92½°E
	✓ Kim	iP	25		76°	Andaman Is.
	✓ Gram	iP	28		76°	
14	✓ Kim	iPKP ₁	01 53 41	C	153°	USCGS H = 01 33 55 31½°N 178½°W Rat Is. h=100 km.
14	✓ Kim	iPKP	06 13 55		126°	USCGS H = 05 54 48 22°S 175°W Tonga Is.
14	✓ Kim	iPKP	07 38 36		118°	USCGS H = 07 20 25 29°S 179°W h=350 km. Kermadec Is.
15	✓ Kim	i	11 25 43	C		
15	✓ Kim	iP	19 27 14		86°	USCGS H = 19 14 29
	✓ Pret	iP	31		91°	16½°S 71½°W Mag. 7
	✓ Piet	iP	36	R	92°	Southern Peru.
15	✓ Pret	i	19 31 28			
15	✓ Kim	iPKP	22 34 45	C	122°	USCGS H = 22 15 44 13½°S 167°E New Hebrides Is.
16	✓ Kim	iPKP	11 22 34	R	122°	USCGS H = 11 03 32 14°S 167°E New Hebrides.
16	✓ Pret	i	13 12 07			

JAN. 1958 (Contd.)

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Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
16	Kim	i	15 06 36	R		
17	Kim	eP	07 27 55		82°	USCGS H = 07 15 38
		i	28 01			52°S 139½°E Antarctic Ocean
17	Pret	i	12 06 36			
17	Gram	e	17 03 04			
	Kim	i	28			
17	Piet	i	20 15 02	R		
	Gram	e	43			
		i	16 49			
	Kim	e	16 08			
		i	10			
18	Kim	i	11 04 09			
18	Kim	iP	15 21 04		32°	USCGS H = 15 14 26
	Gram	eP	16		33°	29°S 13°W North of
	Piet	iP	49		36°	Tristan da Cunha.
19	Pret	i	01 32 30			
19	Kim	iP	14 21 24		100°	USCGS H = 14 07 23
	Gram	eP	28		102°	Mag. 7½ 8½°S 79½°W Nr. coast of Ecuador
19	Piet	i	14 26 (02)			
19	Kim	iP	14 57 27		100°	USCGS H = 14 53 24
						8½°S 79½°W. Nr. coast of Ecuador Mag. 6¾.
19	Kim	i	17 01 46			
20	Gram	iP	02 32 05		79°	USCGS H = 02 19 53
	Kim	iP	10		81°	30½°S 71½°W
	Piet	iP	30		86°	Northern Chile
20	Kim	iP	10 08 02	R	81°	USCGS H = 09 55 44
	Piet	iP	23	C	84°	30½°S 71½°W N. Chile
22	Kim	e	21 53 00			
22	Kim	iPKP	23 51 17	C	143°	USCGS H = 23 31 43
						54°N 170°E Komandorskie Is.
23	Kim	e	02 53 09			
		i	56 20			
23	Kim	i	05 42 32			
23	Piet	i	06 07 30			
23	Kim	iP	13 48 27		94°	USCGS H = 13 35 03
						65°N 6½°E Off W. Coast of Norway.
24	Piet	ePKP	06 13 14		139°	USCGS H = 05 53 58
		i	30			Mag. 6½ 56½°N 163°E Nr. E. Coast of Kam- chatka.
24	Gram	iP	06 51 45		16°	USCGS H = 06 48 06
	Kim	iP	52 47		22°	49°S 32°E ± 300 mls. S.W. Prince Edward Is.
24	Kim	iPKP	18 23 08		143°	USCGS H = 18 03 32
	Gram	iPKP	16		146°	54°N 170°E Komandorskie Is.
24	Pret	iPKP	23 37 04		148°	USCGS H = 23 17 29
	Kim	iPKP	11		150°	60°N 152°W Kenai
	Gram	ePKP	21		156°	Peninsular, Alaska
		i	44			Mag. 6½ h=60 km.
25	Kim	i	21 33 10	R		
25	Kim	i	21 49 03			
26	Kim	i	12 41 47	C		
27	Kim	iP _n	06 36 56			
		iP ₁	37 39			
		iS ₁	56			
27	Piet	iP _n	20 23 32			
		iS _n	48			

A.A. ATTRIDGE

14th March, 1958 .

SEISMOLOGICAL BULLETIN.

FEB 1958

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Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka shale.	Soft Ecca shale.	Dolerite boulders embedded in decayed dolerite.
Height:	1350 m.	558 m.	656 m.	1321 m.
Instrument:	Benioff S.P. vertical.	Benioff S.P. vertical with short & long period recorders.	Benioff S.P. vertical.	Benioff S.P. vertical.
Seismo. Officer:	The Director.	The Professor of Physics.	The Professor of Physics.	Rev. Br. T.W. Purcell.
Observer:	Mr. T.E. Dicker.	Mr. A.R. Scanlen.	Mr. W.L. Mouton.	Rev. Br. H.F. McGreevy.
Institution:	Geological Survey Office.	Rhodes University.	Natal University.	Christian Brothers College.

Notes: "Earth tremors" originating in the mining district of the Witwatersrand are recorded several times daily by the Pretoria station, and less frequently by the others. These are not dealt with in this bulletin.

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All times given are G.M.T.

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Address:
Geophysical Research Institute,
University of the Witwatersrand,
Johannesburg, S. Africa.

H.O. Cliver
H.O. Cliver.
Seismological Officer.

Correction to Sept., 1957, Bulletin.

On Page 236, line 10, date should read 4 and not 5.

On Page 236, line 17, date should read 4 and not 5.

FEBRUARY, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
1.	✓ Kim	(e)i	16 22 -			
2	✓ Kim	(e)i	08 26 07			
2	✓ Kim	i	15 56 17	R		
3	✓ Gram	e	19 38 07			
4	✓ Kim	i	18 46 47			
4	✓ Gram	e	21 44 52			
5	✓ Kim	e	07 46 20			
	✓	i	48 25			
	✓ Pret	i	46 25			
6	✓ Kim	ePP	02 00 (44)		103°	USCGS H = 01 42 09
	✓	i	01 (33)			24½°N, 122½°E, nr. N.E. coast of Formosa.
6	✓ Kim	iS _n	12 13 (03)			
	✓	iP ₁	56			
	✓	iS ₁	14 28			
7	✓ Kim	iP	23 37 (04)	C	97°	USCGS H = 23 23 30
	✓					31½°N 104°E Szechwan Province, China.
8	✓ Piet	(e)i	10 30 39			
8	✓ Kim	e	23 33 (46)			
	✓	i	34 (26)			
	✓ W	e	34 01			
	✓ Pret	i	36 26			
10	✓ Piet	iP	18 54 48		210 km.	South African 'Quake.
	✓ Gram	iS	55 14			H = 18 54 10
	✓	iP	55 14		430 km.	29° 20' S
	✓	iS	55 58			28° 10' E
	✓ Kim	iP	55 (05)		350 km.	Basutoland.
	✓	iS	(41)			
11	✓ Piet	iP	15 51 29		210 km.	South African 'Quake.
	✓	iS	51 56			H = 15 50 52
	✓ Kim	eP	51 48		350 km.	29° 20' S
	✓	iS	52 25			28° 10' E
	✓ Pret	eP	52 40		435 km.	Basutoland.
	✓	iS	53 26			
12	✓ W	e	10 28 58			
12	✓ Piet	i	18 28 37	R		
	✓ Kim	i	29 11			
	✓ W	i	33	R		
13	✓ W	ePKP ₁	00 03 34		151°	USCGS H = 23 45 45
	✓	i	38			52°N 175°W
	✓ Gram	ePKP ₁	35		157°	Andreanof Is.
	✓	i	04 09			Mag. 6
	✓ Piet	iPKP ₂	42	R	152°	
	✓ Kim	iPKP ₂	03 44		154°	
13	✓ Gram	e	02 25 31			
13	✓ Piet	iPKP ₂	04 38 15	C	151°	USCGS H = 04 18 19
	✓					50°N 178°W Andreanof Is.
13	✓ Gram	(e)i	22 30 33			
14	✓ Kim	i	02 08 (08)			
15	✓ Gram	i	07 43 33	C		
16	✓ Piet	i	05 30 07	C		
	✓ Kim	i	(17)	R		
✓ 17	✓ Pret	iP	05 30 18		75°	USCGS H = 05 18 35
	✓					35½°N 70°E Hindu Kush h = 200 km.
17	✓ Pret	i	05 39 32			
17	✓ W	i	06 30 16			
17	✓ Pret	i	12 33 11			

(Contd)

FEB. 1958 (Contd)

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Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
18	Kim	i	13 57 44			
19	Piet	iP	19 37 06		75°	USCGS H = 19 25 21
	Pret	iP	27		78°	8°S 108°E
	Kim	iP	33		80°	
	W	iP	38 13	C	88°	Nr. S. coast of Java.
21	Kim	iP	03 31 (25)		90°	USCGS H = 03 18 25 16°S 74½°W Off Coast of Peru.
22	Kim	i	08 40 (56)			
22	W	ePKP ₁	11 10 13		152°	USCGS H = 50½°N 175°W Andreanof Is. Mag. 6¼.
		i	17			
	Kim	iPKP ₁	16	R	154°	
	Piet	iPKP ₁	19		152½°	
	Pret	iPKP ₁	42		151°	
	Gram	iPKP ₁	50		156°	
22	Kim	iPKP ₁	13 41 48		154°	USCGS H = 13 21 48 50½°N 175°W Andreanof Is.
22	Piet	(e)iPKP ₁	17 24 56		152½°	USCGS H = 17 05 00
	Kim	(e)iPKP ₂	25 11		154°	51¼°N 174½°W
	Pret	iPKP ₂	14		151°	Andreanof Is.
22	Kim	i	19 54 (28)			
23	Kim	(e)i	01 33 (01)			
25	Gram	iP	08 25 36	R	72°	USCGS H = 08 14 48
	Pret	iP	52		80°	27½°S 63°W
	Kim	iP	26 38	C	76°	Santiago del Estero Prov Argentine h=600 km.
	Piet	iP	27 11		80°	
	W	iP	14	R	72°	
23	Gram	(e)iPKP	09 30 35		124°	USCGS H = 09 12 20 28½°N 139½°E Bonin Is. region h = 400 km.
23	Kim	iPKP	11 06 43	R	123°	USCGS H = 10 47 40 24°N 141½°E Volcano Is.
24	Kim	i	01 40 (18)	C		
25	Kim	i	01 16 (04)			
25	Kim	i	05 36 (01)	R		
26	Kim	iPKP	00 36 (17)	R	120°	USCGS H = 00 18 05 3½°S 152½°E New Ireland h = 400 km.
26	W	e	16 33 55			
	Kim	i	34 11	R		
	Piet	(e)i	32	C		
26	Kim	iPKP	17 09 59	C	139°	USCGS H = 16 50 46 50°N 155½°E Kurile Is.

A. A. Attridge

11th April, 1958.

MAR 1958

Geological Survey Office,
Department of Mines,
Union of South Africa.

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Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vertical and horizontal.	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical.
Seismo. Officer:	The Director.	Professor of Physics.	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. W.L. Mouton	Rev. Br. H.F. McGreevy	Mr. J.A. Meyer.
Institution	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office.

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H.O. Oliver

H.O. Oliver.
Seismological Officer.

MARCH, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
1	Kim	iP	09 37 18	R	64°	USCGS H = 09 26 46
	Gram	iP	40		67°	28°N 54½°E S. Iran
1	Kim	iPKP	16 35 10		132°	USCGS H = 16 16 01 17°S 17°W Tonga Is. region. h=100 km.
3	Pret	i	10 39 41			
3	Pret	i	12 58 58			
3	Kim	i	14 58 43	C		
3	Kim	iPKP	16 37 45	C	143½°	USCGS H = 16 18 17
	Gram	iPKP ₁	55	C	147°	55½°N 166½°E Mag. 6½ Komandorskie Is.
3	Kim	(e)iPKP	17 52 12		143°	USCGS H = 17 32 47
	Gram	iPKP ₁	24		147°	55½°N 166°E Komandorskie Is.
4	Kim	e	09 20 (16)			
8	Wind	iP	20 22 04		76°	USCGS H = 20 10 23
	Gram	(e)iP	12		77°	33½°S 70°W Central Chile. h=100 km.
	Kim	iP	19	R	78°	USCGS H = 08 07 30
9	Kim	iPKP ₁	08 27 28	R	152°	51½°N 178½°W Andreanof Is.
9	Kim	iPKP	10 41 09	R	115°	USCGS H = 10 22 25
	Wind	iPKP	24		123°	Kermadec Is. region h=60 km. Mag. 6¼.
9	Kim	i	10 44 28			
10	Kim	(e)i	00 30 16			
11	Pret	iP	00 40 05		107°	USCGS H = 00 25 56
	Piet	eP	44 19		106°	25½°N 125°E Ryukyu h=60 km. Mag. 7
		i	40 17			
		i	36			
		i	44 28			
	Gram	eP	40 37		111°	
		i	44 39			
		i	55 40			
	Wind	ePKP	44 41		115°	
		i	52			
11	Kim	i	14 18 06	C		
11	Kim	i	22 18 04	C		
12	Wind	e	15 45 45			
		e	59 27			
		i	41			
15	Kim	iP	06 38 16		69°	USCGS H = 06 27 00 40°N 20½°E. Albania/ Greece border.
15	Gram		12 03 44			
	Kim		54			
	Pret	i	04 01			
17	Kim	(e)i	15 28 20			
18	Kim	iPKP ₁	22 39 58		154°	USCGS H = 22 20 02 50½°N 173°W Fox Is. foreshock.
19	Pret	i	13 27 40			
20	Pret	iPKP ₁	01 57 52		150°	USCGS H = 01 38 04
	Wind	ePKP ₁	53		152°	51°N 173°W Fox Is. region.
		i	55			
	Piet	ePKP ₁	54		152°	
		i	58 03			
	Kim	iPKP ₁	57 58		154°	
	Gram	ePKP ₁	58 02		157°	
		i	35			
20	Gram	e	23 07 38			

MARCH, 1958 (Contd.)

<u>Date</u>	<u>Station</u>	<u>Phase</u>	<u>G. M. T.</u> <u>h. m. s.</u>	<u>C/</u> <u>R</u>	<u>Arc</u> <u>Distance</u>	<u>Remarks.</u>
22	Pret	iP	10 23 30		80 $\frac{1}{2}$ °	USCGS H = 10 11 27
	Kim	iP	24 04		84°	23 $\frac{1}{2}$ °W 94 $\frac{1}{2}$ °E
	Gram	iP	07		86°	Burma/Pakistan border
	Wind	iP	23		87 $\frac{1}{2}$ °	
22	Piet	iP	11 19 21		74°	USCGS H = 11 07 47
	Gram	iP	38		79°	35 $\frac{1}{2}$ °N 67°E Afghanistan.
23	Gram	i	02 25 22	C		
	Piet	(e)i	57			
	Kim	i	26 28			
23	Kim	ePKP ₁	20 33 10		† 154°	USCGS H = 20 13 07
		i	20			Andreanof Is.
25	Kim	i	09 13 24			
	Wind	e	(02)			
		i	(19)			
25	Pret	i	09 15 26			
	Piet	(e)i	17 20			
	Gram	e	21 41			
25	Kim	i	21 47 17			
26	Pret	i	03 35 30			
28	Piet	iP	04 20 59	C	76°	USCGS H = 04 09 30
	Kim	iP	21 10		79°	36 $\frac{1}{2}$ °N 71°E Hindu Kush h=200 km.
28	Piet	i	11 17 53	C		
28	Pret	iP	12 17 32		75°	USCGS H = 12 06 24
	Wind	iP	18 03		79°	37°N 71°E
	Kim	iP	03		79°	Hindu Kush
	Gram	iP	19		82°	h=200 km.
30	Pret	i	14 48 49			
	Wind	i	49 23			
	Piet	e	50 (42)			
		i	(45)			

A.A. Attridge

28th May, 1958.

Geological Survey Office,
Department of Mines,
Union of South Africa.

APR 1958

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Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vertical and horizontal.	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical.
Seismo. Officer:	The Director.	Professor of Physics.	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. W.L. Mouton	Rev. Br. H.F. McGreevy	Mr. J.A. Meyer.
Institution	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office.

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All times given are G.M.T.

The supervision of this network and bulletin is at present in the hands of the undersigned, to whom all inquiries should be addressed.

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Johannesburg,
South Africa.

H.O. Oliver

H.O. Oliver.
Seismological Officer.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
3	✓ Kim	i	10 05 03			
5	✓ Kim	e	19 36 31			
6	✓ Kim	e	01 35 26			
		i	34			
6	✓ Kim	e	01 40 27			
	✓ Wind	i	43 (59)			
		e	35 42			
	✓ Piet	i	41 06			
		e	40 40			
	✓ Pret	i	43 47			
7	✓ Pret	i	15 50 00			
	✓ Wind	e	06			
	✓ Kim	e	12			
		i	15			
	✓ Piet	i	14			
8	✓ Gram	i	26	C		
	✓ Wind	iPKP ₁	14 24 42		152°	USCGS H = 14 05 28
	✓ Piet	iPKP ₁	44	C	153°	Fox Is.
	✓ Kim	iPKP ₁	49		155°	
9	✓ Pret	iP _{cP}	04 46 14		+ 62°	USCGS H = 04 36 22
	✓ Piet	iP	53	R	+ 62°	Nr. S.W. coast of Iran
	✓ Kim	iP	47 00	R	+ 64°	
9	✓ Kim	i	06 35 05	R		
9	✓ Kim	i	13 30 49	C		
9	✓ Wind	i	19 56 03			
10	✓ Wind	i	13 20 28			
10	✓ Kim	ePKP	23 30 35		+ 123°	USCGS H = 23 12 47
		i	37			4 ¹ / ₂ °S 107°W About 1000 mls. west of Galapagos Is. Mag. 6
11	✓ Piet	i	00 30 37			
11	✓ Pret	i	12 54 04			
11	✓ Wind	ePKP ₁	17 46 43		150 ¹ / ₂ °	USCGS H = 17 27 00
						52°N 174°W Andreanof Is.
11	✓ Wind	ePKP ₁	18 14 36		150 ¹ / ₂ °	USCGS H = 17 54 43
						Andreanof Is.
11	✓ Wind	i	18 28 37			
11	✓ Wind	ePKP	23 30 30		139°	USCGS H = 23 11 19
	✓ Gram	i	40			48°N 152 ¹ / ₂ °E Kurile Is.
	✓ Gram	e	35			Mag. 6 ¹ / ₂ .
		i	42			
12	✓ Wind	e	00 31 20			
13	✓ Gram	iPKP ₁	09 27 11	R	148°	USCGS H = 09 07 24
						66°N 156°W Alaska
						Mag. 6 ³ / ₄ .
13	✓ Pret	i	14 03 16			
14	✓ Wind	iP	21 46 03		97°	USCGS H = 21 32 28
						1°N 79 ¹ / ₂ °W Nr. coast Ecuador Mag. 7
15	✓ Wind	e	22 32 34			
		i	34 23			
16	✓ Kim	i	18 31 52			
16	✓ Pret	i	22 32 11			
18	✓ Wind	e	19 18 43			
19	✓ Wind	i	01 09 45			
20	✓ Wind	i	21 23 12			
	✓ Kim	i	27	R		

APRIL, 1958 (Contd).

<u>Date</u>	<u>Station</u>	<u>Phase</u>	<u>G. M. T.</u> <u>h. m. s.</u>	<u>C/</u> <u>R</u>	<u>Arc</u> <u>Distance</u>	<u>Remarks.</u>
21	Pret	i(P)	22 48 54		76°	USCGS H = 22 37 18
	Piet	iP			74°	4 $\frac{1}{2}$ °S 104°E Sunatra
	Gram	iP	49 16	C	78°	Mag. 6 $\frac{1}{2}$.
	Kim	iP		C	79°	
	Wind	iP	50 00		86°	
22	Kim	(e)i	19 42 51	R		
22	Kim	i	22 22 31	C		
	Wind	e				
			35			
25	Wind	ePKP ₁	19 23 16		151°	USCGS H = 19 03 18
						52°N 171°W Fox Is.
27	Piet	iPKP ₁	19 23 48		154°	USCGS H = 19 03 50
						52 $\frac{1}{2}$ °N 169°W Fox Is.
28	Wind	eP	12 00 33		87°	USCGS H = 11 47 40
	Kim	iP			92°	11°S 74°W Mag. 6 $\frac{1}{2}$.
	Gram	(e)iP			95°	Peru
	Piet	iP	01 13		92°	
30	Kim	i	22 39 45	C		

A.A. ATTRIDGE

20.6.58

MAY 1958

Geological Survey Office,
Department of Mines,
Union of South Africa.

SEISMOLOGICAL BULLETIN.

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<u>Stations</u>	<u>Pretoria (Pret)</u>	<u>Grahamstown (Gram)</u>	<u>Pietermaritz- burg (Piet)</u>	<u>Kimberley (Kim)</u>	<u>Windhoek (Wind)</u>
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Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. W.L. Mouton	Rev. Br. H.F. McGreevy	Mr. J.A. Meyer.
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Johannesburg,
South Africa.

H.O. Oliver

H.O. Oliver.
Seismological Officer.

MAY, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
1	Kim	i	00 47 22			
	Gram	e	(28)			
		i	47			
	Pret	i	32			
	Wind	e	54			
		i	48 13			
1	Gram	e	07 59 19			
3	Wind	eP	01 37 02		70°	USCGS H = 20 18 20 37°N 21½°E Nr. West Coast of Greece
		i	32			
3	Kim	i	14 41 43			
3	Gram	i	20 29 28			
5	Wind	iP	06 35 32		15°	USCGS H = 06 31 39
	Pret	iP	56		16°	9½°S 27½°E
	Kim	iP	36 04	R	19°	Belgian Congo
	Piet	iP	14	C	20°	
	Gram	iP	50	C	23½°	
7	Kim	(e)i	10 41 47			
7	Pret	i	12 09 18			
8	Wind	iP	12 52 18		77°	USCGS H = 12 40 46
	Kim	iP	39	C	81°	h=200 km Mag. 6½
	Gram	iP	39	R	80°	24°S 67°W Salta Prov.
	Piet	(e)iP	53 05		86°	Argentine.
8	Kim	(e)i	14 44 58	C		
9	Wind	iP	02 50 54		60°	USCGS H = 02 40 49
	Kim	iP	51 28	C	66°	37°N 27½°E
	Piet	(e)iP	(37)		66°	Dodecanese Is.
	Gram	iP	59		70°	
9	Wind	iP	04 51 41		72°	USCGS H = 04 40 20
	Gram	iP	56	R	75°	31°S 65½°W
	Kim	iP	58	C	75°	Cordoba - La Roja Prov.
	Piet	iP	52 22	R	80°	Argentine h=100 km. Mag. 6¾.
10	Kim	iPKP ₁	23 14 13		146°	USCGS H = 22 54 40
	Piet	iPKP ₂	17		145°	65°N 152½°W Central
	Gram	iPKP ₁	31	C	150°	Alaska Mag. 6½.
10	Gram	iP	23 24 41			
		iS	52		Δ =80 km	Small South African earthquake
11	Kim	iPKP ₁	05 43 27		146°	USCGS H = 05 23 54
	Piet	iPKP ₂	30		145°	65°N 152½°W Central
	Gram	ePKP ₁	41		150°	Alaska. Mag. 6½
		i	45			
11	Piet	e	05 55 19			
		i	56 33			
11	Piet	i	08 44 38			
	Kim	i	45 19	C		
11	Kim	i	14 03 42	R		
11	Wind	e	17 05 32			
12	Kim	i	18 49 26			
	Wind	i	40			
15	Kim	i	04 19 00			
15	Wind	iPKP ₁	04 44 42		151°	USCGS H = 04 24 50
	Piet	iPKP ₁	45		152°	51½°N 173½°W
	Kim	iPKP ₁	49	C	155°	Andreanof Is.
15	Kim	iPKP ₁	10 02 48	C	125°	USCGS H = 09 43 46 13°S 166½°E New Hebrides Is.
15	Kim	i	22 45 18	C		
16	Wind	(e)i	00 23 59			
	Kim	i	24 05			

(Contd.)

MAY, 1958. (Contd.)

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
16	Gram	i	22 36 18	C		
16	Kim	i	23 37 06	C		
17	Kim	iPKP ₁	15 58 03	C	153°	USCGS H = 15 38 20
	Wind	iPKP ₁	11		150°	51°N 179°W Andreanof Is.
17	Kim	i	16 54 24			
18	Kim	iPKP	12 40 10		125°	USCGS H = 12 21 18
						13°S 167°E New Hebrides aftershock Mag. 6 $\frac{3}{4}$.
19	Pret	i	15 03 02			
19	Kim	i	15 57 34	R		
20	Kim	(e)i	00 00 20			
20	Pret	i	22 57 10			
22	Kim	i	15 01 26	C		
23	Pret	i	18 52 45			
25	Pret	iPKP ₁	00 54 58		149°	USCGS H = 00 35 23
	Piet	iPKP ₁	55 16		151°	51°N 177°W
	Kim	iPKP ₁	20		153°	Andreanof Is.
25	Kim	i	07(44) -			
25	Pret	iPKP ₁	15 13 53		149°	USCGS H = 14 54 30
	Piet	iPKP ₁	14 23		151°	51°N 177°W
	Gram	iPKP ₂	51		157°	Andreanof Is.
25	Gram	eP	21 25 28		100°	USCGS 3°S 77°W h=100 km.
		i	39			Ecuador-Peru border
26	Pret	i	11 16 37			Mag. 6 $\frac{1}{2}$. H = 21 11 45
						USCGS H = 10 56 30
						53°N 169 $\frac{1}{2}$ °W Fox Is.
						Mag. 5 $\frac{1}{2}$.
26	Pret	i	12 40 43			
27	Wind	e	15 23 17			
27	Kim	iP	18 38 12		65°	USCGS H = 18 27 23
						36 $\frac{1}{2}$ °N 27 $\frac{1}{2}$ °E Dodecanese Is.
27	Pret	i	22 17 13			
28	Wind	e	16 11 52			
30	Pret	iPKP ₁	18 23 (45)		151°	USCGS H = 18 04 50
	Wind	iPKP ₁	18 24 46		151°	52 $\frac{1}{2}$ °N 169°W
	Kim	iPKP ₁	47		155°	Fox Is.
	Piet	iPKP ₁	53		153°	Mag. 6 $\frac{3}{4}$.
31	Kim	iPKP ₂	19 51 31		125°	USCGS H = 19 32 30
						15°S 169°E
						New Hebrides Is. Mag. 7 $\frac{1}{2}$.

A. A. ATTRIDGE.

16 JUL 1958

JUN 1953

Geological Survey Office,
Department of Mines,
Union of South Africa.

SEISMOLOGICAL BULLETIN.

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H.O. Oliver

H.O. Oliver.
Seismological Officer.

JUNE, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
✓ 1	✓ Kim	iPKP ₂	18 41 03	C	148°	USCGS H = 18 21 17 60 $\frac{1}{2}$ °N 143 $\frac{1}{2}$ °W Alaska
1	✓ Wind	eP	19 59 06		75°	USCGS H = 19 47 05
	✓ Kim	iP	31		80°	19°S 64 $\frac{1}{2}$ °W S. Bolivia
✓ 3	✓ Kim	iPKP	19 50 51		140°	USCGS H = 19 31 52 15°S 168°E New Hebrides Is. Mag. 6 $\frac{1}{4}$
4	✓ Piet	iPKP ₂	14 49 52	R	152°	USCGS H = 14 29 50
	✓ Kim	iPKP ₂	50 03		154°	52 $\frac{1}{2}$ °N 167°W Fox Is. Mag. 6 $\frac{1}{4}$.
5	✓ Pret	i	08 56 56			
6	✓ Pret	i	07 14 34			
8	✓ Kim	i	21 20 (20)			
9	✓ Kim	ePKP ₂	16 19 (01)		154°	USCGS H = 15 59 00 52 $\frac{1}{2}$ °N 168°W Fox Is.
✓ 10	✓ Pret	iP	07 14 16		61°	USCGS H = 07 04 02 30 $\frac{1}{2}$ °N 51 $\frac{1}{2}$ °E W. Iran.
12	✓ Pret	iPKP ₁	21 12 33		149°	USCGS H = 20 52 57
	✓ Wind	iPKP ₂	50		150°	53°N 167°W
	✓ Piet	iPKP ₂	13 00		152°	Fox Is.
	✓ Kim	iPKP ₂	03		153°	
	✓ Gram	iPKP ₂	35		157°	
15	✓ Pret	i	11 20 02			
15	✓ Gram	i	15 12 36	R		
	✓ Kim	i	12 45			
	✓ Wind	i	52			
15	✓ Piet	ePKP	15 14 27		124°	USCGS H = 14 54 37 18°S 178 $\frac{1}{2}$ °W
	✓ Kim	iPKP	34		130°	Fiji Is.
	✓ Pret	iPKP	15 29		129°	h = 600 km.
	✓ Wind	iPKP	45		128°	Mag. 6 $\frac{1}{4}$
15	✓ Kim	e	16 19 (43)			
		i	20 43			
✓ 16	✓ Wind	e	19 13 33			
✓ 17	✓ Wind	e	19 29 08			
18	✓ Pret	i	02 12 56			
18	✓ Pret	i	18 30 43			
19	✓ Kim	iPKP	05 37 (27)		136°	USCGS H = 05 18 00 49 $\frac{1}{2}$ °N 156°E Kurile Is. Mag. 6 $\frac{1}{2}$
19	✓ Pret	i	08 30 23			
19	✓ Pret	i	12 39 08			
✓ 19	✓ Wind	eP	18 15 22		89°	USCGS H = 18 02 15 52 $\frac{1}{2}$ °S 140°E South of Tasmania.
20	✓ Pret	i	22 39 52			
23	✓ Pret	i	06 12 14			
✓ 24	✓ Piet	iP	00 21 00		77°	USCGS H = 00 09 18
	✓ Pret	iP	14		80°	8 $\frac{1}{2}$ °S 112°E
	✓ Kim	iP	26		82°	Nr. S. Coast of Java
	✓ Wind	iP	22 04		90°	h=200 km.
24	✓ Pret	i	03 00 52			
24	✓ Wind	e	05 00 56			
✓ 24	✓ Kim	i	06 48 10			
24	✓ Pret	i	16 50 30			
✓ 25	✓ Wind	i	01 25 04			
✓ 25	✓ Wind	ePKP	09 55 (33)		122°	USCGS H = 09 36 30 Mag. 6 $\frac{1}{2}$ 3°S 144 $\frac{1}{2}$ °E Nr. Coast of New Guinea.
25	✓ Wind	i	23 12 39			
25	✓ Kim	i	46			
26	✓ Wind	i	00 06 59			
	✓ Kim	i	07 00			
	✓ Pret	i	04			

JUNE, 1958 (Contd.)

<u>Date</u>	<u>Station</u>	<u>Phase</u>	<u>G. M. T.</u> <u>h. m. s.</u>	<u>C/</u> <u>R</u>	<u>Arc</u> <u>Distance</u>	<u>Remarks.</u>
26	✓ Pret	i	00 23 40			
26	✓ Kim	iPKP	04 57 (26)		138°	USCGS H = 04 38 12 54½°N 159½°E Kamchatka Mag. 6½
	✓ Piet	iPKP	33		134°	
26	✓ Piet	i	05 00 54			
26	✓ Pret	i	12 37 15			
27	✓ Pret	i	13 02 11			
27	✓ Pret	i	16 06 56			
28	✓ Pret	i	01 33 50			
28	✓ Pret	i	07 39 47			
28	✓ Wind	i	11 58 28			
28	✓ Pret	i	14 00 12			
28	✓ Pret	i	14 36 42			
28	✓ Pret	i	14 38 23			
28	✓ Wind	i	17 13 24			
	✓ Pret	i	15 11			
	✓ Kim	(e)i	18			
	✓ Gram	i	16 23			
	✓ Piet	i	18 (56)			
29	✓ Pret	i	22 57 00			
30	✓ Pret	iP	08 52 29		61°	USCGS H = 08 42 33 36½°N 27½°E Dodecanese Is.
	✓ Kim	iP	53 14		65°	
	✓ Gram	iP	43		69°	
30	✓ Pret	i	15 13 58			

A.A. ATTRIDGE.

14th August, 1958.

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H.O. Oliver

H.O. Oliver.
Seismological Officer.

JULY, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
1	Wind	iPKP ₁	06 12 57		152°	USCGS H = 05 53 07
	Piet	iPKP ₂	59	C	151°	51½°N 176½°W
	Kim	iPKP ₁	13 03	R	153°	Andreanof Is.
	Gram	(e)iPKP ₂	25	R	156°	Mag. 6
2	Gram	iPKP	05 06 23		123°	USCGS H = 04 48 03
	Kim	iPKP	33	C	127°	18°S 177°W Fiji Is. h=350 km.
2	Wind	e	09 53 34			
3	Piet	iPP	05 52 03	R	32°	USCGS H = 05 45 07
	Gram	(e)iPP	36		35°	18°S 66°E
	Kim	(e)iPP	42		35°	Mascarene Is. region.
3	Kim	i	06 45 51	R		USCGS H = 06 27 44 28½°S 179°E Kermadec Is. region h=± 400 km. Mag. 6¼.
3	Kim	(e)i	10 06 05			
5	Piet	i	06 46 33	R		
7	Kim	iPKP ₂	13 57 53	C	149°	USCGS H = 13 38 00 50½°N 179½°E Andreanof Is.
8	Kim	i	06 50 (15)			
		i	53 10	R		
8	Piet	i	22 50 34			
8	Gram	i	22 52 15	R		USCGS H = 22 48 36
	Piet	i	26	C		Mag. 6 43°S 41½°E
	Wind	e	54 38			Indian Ocean N.E. of Prince Edward Is.
9	Gram	i	01 11 45			
	Piet	i	58			
10	Wind	(e)iPKP	06 35 27		143°	
	Piet	iPKP ₁	45		151°	
	Gram	(e)iPKP ₁	50		154°	
	Kim	i	(39 10)		149°	
10	Kim	i	08 17 54			
10	Kim	i	09 15 55			
10	Wind	i	15 07 23			
	Gram	i	09 51			
11	Wind	iP	19 22 31		79°	USCGS H = 19 10 20
	Gram	iP	53	C	83°	21°S 69°W
	Kim	iP	54	R	83½°	N. Chile. Mag. 6½
16	Kim	i	00 48 52	R		
16	Kim	iPKP ₂	02 07 28	C	153°	USCGS H = 01 47 20
16	Kim	(e)iPKP ₂	04 12 48	C	153°	51½°N 176½°W Andreanof Is. USCGS H = 03 52 39, 51½°N 176½°W. Andreanof Is.
16	Wind	e	22 02 09			
		i	22			
	Kim	(e)i	22			
	Piet	i	34			
	Gram	i	03 14	R		
17	Kim	iP	05 48 15	C	69°	USCGS H = 05 37 06 40½°N 23°E. N. Greece
17	Wind	e	19 22 06			
	Kim	(e)i	11			
	Piet	i	14			
17	Kim	i	19 49 23			
	Piet	i	30			
17	Wind	i	21 19 13			
	Piet	i	16	C		
	Kim	i	19	R		
	Gram	i	43	R		

(CONTD)

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Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
17	Kim	e	21 30 13			
	Piet	i	25	R		
18	Wind	i	00 59 11			
	Piet	i	12			
	Kim	(e)i	16			
19	Gram	i	39	R		
	Piet	iPKP ₂	17 43 14	R	151°	USCGS H = 17 23 20
	Wind	(e)iPKP ₂	14		152°	51½°N 176°W
	Kim	iPKP ₂	18		153°	Andreanof Is.
	Gram	iPKP ₂	41		156°	
19	Gram	e	18 30 40			
20	Gram	i	11 02 08			
	Piet	i	50			
	Wind	i	04 07			
20	Kim	iP	11 55 58	R	80°	USCGS H = 11 43 57
	Piet	iP	56 15		85°	31½°S 71°W
	Wind	i	40			Central Chile.
21	Wind	iPKP ₂	14 57 07		151°	USCGS H = 14 37 18
	Kim	iPKP ₂	08	R	152°	51½°N 178°W
	Piet	iPKP ₂	08	C	150°	Andreanof Is.
	Gram	(e)iPKP ₂	34	R	155°	Mag. 6¼
22	Kim	(e)iPKP ₁	05 28 39		154°	USCGS H = 05 08 40
24	Wind	ePKP ₁	13 27 54		152°	51°N 176°W Andreanof Is
	i	i	58			USCGS H = 13 08 05
	Piet	iPKP ₁	28 03		153°	52½°N 170°W
26	Piet	iP	06 17 41		16°	Fox Is.
	Gram	iP	48		16°	USCGS H = 06 13 50
	Kim	iP	18 31	R	20°	40°S 45½°E
	Wind	iP	20 02		30°	South Indian Ocean
26	Wind	iP	17 48 30		83°	USCGS H = 17 37 09
	Kim	iP	56		88°	13½°S 69°W h=650 km.
	Gram	iP	58	R	89°	Peru-Bolivia border
	Piet	iP	49 19		94°	Mag. 7½.
26	Wind	e	18 30 49			
	Kim	i	31 00	R		
27	Gram	e	17 25 (28)			USCGS H = 17 19 03
	Kim	iP	42		32°	28½°S 62°E South Indian Ocean.
28	Wind	eP	15 33 48		31°	
	i	i	34 14			
29	Piet	i	03 00 27	C		
29	Kim	(e)i	13 16 38			
29	Wind	iP	21 46 22		47°	USCGS H = 21 37 25
	Kim	iP	47 25	R	57°	4°N 26½°W Atlantic Ocean.
31	Kim	iPKP ₁	02 45 54	C	154°	USCGS H = 02 26 23
	i	i	46 05			51½°N 174½°W
	Wind	iPKP ₁	15		153°	Andreanof Is.
	Piet	iPKP ₁	(29)		152°	
31	Wind	i	03 25 39			

A.A. ATTRIDGE

12th September, 1958.

[AUG 1958

Geological Survey Office,
Department of Mines,
Union of South Africa.

SEISMOLOGICAL BULLETIN.

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

<u>Stations</u>	<u>Pretoria (Pret)</u>	<u>Grahamstown (Gram)</u>	<u>Pietermaritzburg (Piet)</u>	<u>Kimberley (Kim)</u>	<u>Windhoek (Wind)</u>
Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vertical and horizontal.	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical.
Seismo. Officer:	The Director.	Professor of Physics.	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. W.L. Mouton	Rev. Br. H.F. McGreevy	Mr. J.A. Meyer.
Institution	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office.

Notes: "Earth tremors" originating in the mining district of the Witwatersrand are recorded several times daily by the Pretoria station, and less frequently by the others. These are not dealt with in this bulletin.

Data are occasionally reported herein by courtesy of the Union Observatory, Johannesburg, which operates a 200 kg. Wiechert Horizontal seismograph. This station is called J, and is at 26° 10.9'S., 28°04.5'E., height 1806 metres.

All times given are G.M.T.

The supervision of this network and bulletin is at present in the hands of the undersigned, to whom all inquiries should be addressed.

Address:

Geophysical Research Institute,
University of the Witwatersrand,
Johannesburg,
South Africa.

H.O. Oliver

H.O. Oliver.
Seismological Officer.

AUGUST, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
1	Kim	e	11 14 17			
		i	21 45			
	Piet	(e)i	59			
	Gram	(e)i	(45)			
2	Wind	(e)i	01 27 15			
2	Piet	e	23 02 03			
		i	36			
6	Wind	iP	10 01 58	R	73°	USCGS H = 09 51 24 24½°S 63°W h=550 Km Salta Prov. Argentine
6	Gram	iPKP	21 28 17		125°	USCGS H = 21 09 09
	Wind	ePKP	37		140°	17°S 173°W Tonga Is. Mag. 6¼.
		i	45			
11	Piet	i	09 35 53	R		
11	Gram	iP	20 38 14		76°	USCGS H = 20 26 22 3°S 100½°E off coast of Sumatra.
12	Piet	(e)iP	19 38 42		95°	USCGS H = 19 25 05
	Gram	iP	49		99°	0° 126½°E
	Wind	ePKP	43 42		108°	Molucca Passage
13	Wind	e	20 10 52			
		i	11 14			
14	Wind	iP	11 37 08		66°	USCGS H = 11 27 00 34½°N 48°E. Iran
14	Wind	iPKP ₁	15 14 59		151°	USCGS H = 14 55 10
	Piet	iPKP ₁	15 05		153°	52°N 175°W Andreanof Is
	Gram	iPKP ₁	21		158°	Mag. 6½.
14	Wind	iP	15 36 57	R	65°	USCGS H = 15 26 19
	Kim	iP	37 13		68°	34°N 47½°E Iran
	Gram	iP	38		71°	
14	Kim	i	23 38 25			
15	Gram	iPKP ₁	20 14 35		145°	USCGS H = 19 55 39
	Wind	ePKP ₁	59		141°	53°N 160½°E Nr. East coast of Kamchatka.
		i	15 04			USCGS H = 22 29 17
15	Piet	(e)iP	22 42 30		94°	1½°N 125°E
	Gram	iP	38		98°	Celebes h=200 km.
	Wind	eP	43 19		107°	Mag. 7
		i	29			
16	Wind	iPKP ₁	13 37 43		151°	USCGS H = 13 17 52
	Gram	iPKP ₁	38 15		157°	51½°N 176°W Andreanof Is
16	Wind	iP	19 24 19		65°	USCGS H = 19 13 45
	Kim	iP	40	R	68°	34½°N 48°E
	Gram	(e)iP	25 03		72°	Iran
17	Kim	ePKP ₁	09 28 29		154°	USCGS H = 09 08 35
		i	34			51½°N 176°W
	Piet	iPKP ₁	29		151°	Andreanof Is.
	Gram	iPKP ₂	57		157°	
17	Kim	e	11 10 39			
		i	51	C		
17	Kim	e	11 36 15			
		i	22			
17	Kim	e	12 40 09			
17	Kim	e	19 39 42			
17	Kim	iPKP	21 29 46		112°	USCGS H = 21 11 09 35½°S 179½°W Kermadec Is. region
19	Kim	i	00 04 26			
19	Piet	ePKP ₁	16 26 13		151°	USCGS H = 16 06 18
		i	21			51½°N 175½°W
	Kim	ePKP ₁	16		154°	Andreanof Is.
		i	28			

AUG. (Contd)

<u>Date</u>	<u>Station</u>	<u>Phase</u>	<u>G. M. T.</u> <u>h. m. s.</u>	<u>C/</u> <u>R</u>	<u>Arc</u> <u>Distance</u>	<u>Remarks.</u>
21	Gram	i	00 24 35			
	Kim	i				
	Piet	i				
21	Kim	i	03 24 41			
21	Kim	i	04 22 30			
21	Kim	i	12 39 08			
21	Kim	i	21 17 48			
24	Gram	i	04 35 58			
25	Kim	i	13 45 54	C		
27	Wind	iP	15 26 39		61°	USCGS H = 15 16 35
	Kim	iP	27 19	R	67°	38°N 20½°E
	Gram	iP	50		72°	Nr. West coast of Greece
29	Kim	iPKP	12 43 26		125°	USCGS H = 12 24 23
						14½°S 167°E Mag. 6
						New Hebrides Is.
31	Gram	iPKP ₁	23 19 31		151°	USCGS H = 23 00 16
	Kim	iPKP ₁	53	R	147°	63°N 144½°W Central Alaska.

A.A. APPRIDGE.

3 OCT 1958

[SEP 1958

Geological Survey Office,
Department of Mines,
Union of South Africa.

SEISMOLOGICAL BULLETIN.

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

Stations	Pretoria (Pret)	Grahamstown (Gram)	Pietermaritz- burg (Piet)	Kimberley (Kim)	Windhoek (Wind)
Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vert- ical and horizontal.	Benioff S.P. vert- ical with short and long period recorders.	Benioff S.P. vert- ical	Benioff S.P. vert- ical	Benioff S.P. vertical.
Seismo. Officer:	The Director.	Professor of Physics.	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. W.L. Mouton	Rev. Br. H.F. McGreevy	Mr. J.A. Meyer.
Institution	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office.

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All times given are G.M.T.

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University of the Witwatersrand,
Johannesburg,
South Africa.

H.O. Oliver

H.O. Oliver.
Seismological Officer.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
3	Wind	iP	03 52 08		40°	USCGS H = 03 44 24
	Kim	iP	53 19	R	50°	0°, 18°W
	Pret	iP	31		51°	Atlantic Ocean.
	Gram	iP	46	C	53°	
	Piet	iP	55	R	55°	
4	Kim	iPKP ₁	07 18 35	C	150°	USCGS H = 06 58 52 51½°N 173°E Rat Is. Aleutian Is.
4	Kim	(e)i	13 11 29			
4	Kim	i	17 17 14			
4	Kim	iP	22 02 52		80°	USCGS H = 21 51 08
	Wind	eP	58		76°	33½°S 69½°W Chile-
	Gram	iP	03 06		78°	Argentine border Mag. 7
	Piet	iP	32		84°	
	Pret	iP	38		83°	
5	Kim	iP	03 53 25	R	78°	USCGS H = 03 41 22 Chile-Argentine border
8	Piet	iPKP	05 44 19		137°	USCGS H = 05 25 37
	Kim	iPKP	55		139°	53½°N 159°E Nr. E. coast of Kamchatka
8	Kim	iP	22 36 19	R	79°	USCGS H = 22 24 55 34°S 70°W Chile-
						Argentine border
9	Kim	iPKP ₁	22 43 15		148°	USCGS H = 22 23 37 54°N 171°E Near Is. Aleutian Is.
10	Wind	e	12 42 37			
11	Kim	i	01 11 44			
14	Kim	i	14 20 23			
14	Piet	iP	21 39 47	R	40°	USCGS H = 21 31 42
	Kim	iP	40 20		44°	8½°S 67°E
	Gram	iP	24		45°	Chagos archipelago region.
15	Piet	iP	19 57 50		91°	USCGS H = 19 45 40
	Kim	iP	58 10		96°	2½°N 120½°E Celebes Sea
	Wind	eP	20 00 (37)		104°	Mag. 6¼ h = 600 km.
15	Kim	i	21 14 52	C		
17	Kim	i	03 43 51			
17	Piet	i	20 46 (36)			
18	Kim	iP	14 51 29		61°	USCGS H = 14 51 40, ½°N 30°W Mid-Atlantic Ocean.
18	Piet	i	21 04 33	C		
	Kim	i	45			
	Wind	i	05 00	C		
20	Kim	i	17 28 20	R		
22	Kim	iPKP	19 24 25		114°	USCGS H = 19 05 44
	Wind	iPKP	41		122°	33½°S 177½°W Kermadec Is. region Mag. 6¼
24	Kim	iPKP ₂	04 04 05		149°	USCGS H = 03 44 14
	Piet	iPKP ₂	22		150°	59½°N 143½°W Gulf of Alaska. Mag. 6¼.
25	Piet	iP	07 04 39		75°	USCGS H = 06 54 00 36½°N 70°E Hindu Kush h = 200 kms.
25	Wind	iP	07 30 30	R	73°	USCGS H = 07 20 02
	Kim	iP	31 24		82°	9°N 39½°W
	Gram	iP	42		85°	Atlantic Ocean
	Piet	iP	55		87°	Mag. 6½.
27	Wind	ePKP	14 14 13		143°	USCGS H = 13 55 02 15°S 174°W Samoa Is region. h=150 km.

A.A. ATTRIDGE.

3rd December, 1958.

DECEMBER, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Distance	Remarks
1	✓ Piet	iP	09 41 47		80°	USCGS H = 09 29 43 57°S 147°E S.W. of Macquarie Is. Antarctic Ocean Mag. 6 $\frac{1}{4}$.
	✓ Kim	iP	42 08	R	83°	
1	✓ Wind	ePKP ₁	18 07 08		156°	USCGS H = 17 47 15 53°N 165 $\frac{1}{2}$ °W Mag. 6 $\frac{1}{2}$ Fox Is.
	✓ Piet	i	15			
	✓ Kim	iPKP	26	R	156°	
	✓ Kim	(e)iPKP ₁	36		161°	
2	✓ Wind	e	08 59 (07)			
	✓ Kim	i	40	R		
3	✓ Kim	i	17 20 03			
	✓ Wind	e	39			
7	✓ Wind	iPKP	12 51 51		128°	USCGS H = 12 32 40 50S 151 $\frac{1}{2}$ °E New Britain Mag. 6 $\frac{1}{2}$.
8	✓ Wind	ePKS	14 23 20		131°	USCGS H = 14 00 47 7°S 155 $\frac{1}{2}$ °E Solomon Is.
9	✓ Gram	iP	11 28 (24)		43 $\frac{1}{2}$ °	USCGS H = 11 20 17 55 $\frac{1}{2}$ °S 27 $\frac{1}{2}$ °W Sandwich Is. region.
	✓ Kim	iP	43	C	46°	
	✓ Wind	(e)iP	50		47°	
	✓ Piet	iP	29 04	R	49°	
11	✓ Gram	iP	14 49 (04)	C	79°	USCGS H = 14 37 42 23 $\frac{1}{2}$ °S 65°W Jujuy Province, Argent- ine, h=200 km. Mag. 6
	✓ Wind	iP	12	R	75°	
	✓ Kim	iP	35	R	79°	
	✓ Piet	iP	59		84°	
12	✓ Gram	iPKP	15 35 (54)		113°	USCGS H = 15 18 42 27 $\frac{1}{2}$ °N 125 $\frac{1}{2}$ °E East China Sea. h=250 km. Mag. 6 $\frac{3}{4}$.
	✓ Piet	iPKP	36 45		108°	
	✓ Kim	iPKP	55		112°	
	✓ Wind	iPKP	37 03		117°	
20	✓ Wind	iPKP ₁	01 15 24	R	153°	USCGS H = 00 55 34 52°N 175°W Andreanof Is.
	✓ Piet	iPKP ₁	27	C	152°	
	✓ Kim	iPKP ₁	31		154°	
20	✓ Piet	iP	01 24 36	R	80°	USCGS H = 01 12 30 9 $\frac{1}{2}$ °S 112 $\frac{1}{2}$ °E Off S. Coast of Java.
	✓ Gram	iP	(52)	R	83°	
	✓ Kim	iP	25 02	C	85°	
	✓ Wind	iP	(42)	C	92 $\frac{1}{2}$ °	
21	✓ Wind	iP	15 53 43	C	91°	USCGS H = 15 40 40 11°S 111°E South of Java
23	✓ Wind	eP	15 53 23		65°	USCGS H = 15 43 00 34 $\frac{1}{2}$ °N 47°E. Iran. USCGS H = 06 25 06 22 $\frac{1}{2}$ °S 11° W S. Atlantic Ocean.
	✓ Kim	iP	54 (33)		68°	
25	✓ Wind	e	06 30 38			
	✓ Kim	iP	40		26°	
28	✓ Piet	iP	10 58 36		80°	USCGS H = 10 46 27 30 $\frac{1}{2}$ °N 85°E S. Tibet
	✓ Kim	iP	42	C	84°	
	✓ Wind	iP	59 01		85°	
	✓ Gram	(e)iP	(03)		85°	
29	✓ Kim	i	00 09 52	R		
29	✓ Kim	iPKP ₁	06 27 30	R	154°	USCGS H = 06 07 34 51°N 179°E Andreanof Is
29	✓ Wind	iPKP ₁	08 03 58		152°	USCGS H = 07 44 10 51 $\frac{1}{2}$ °N 179 $\frac{1}{2}$ °E Mag. 6 $\frac{1}{2}$ Andreanof Is.
	✓ Piet	iPKP ₁	58		151°	
	✓ Kim	iPKP ₁	59		154°	
	✓ Gram	(e)iPKP ₁	04 04		156°	
29	✓ Wind	iPKP ₁	08 15 03		152°	USCGS H = 07 55 14 51 $\frac{1}{2}$ °N 179°E Andreanof Is
	✓ Kim	iPKP ₁	08	R	158°	
29	✓ Piet	i	08 20 03	R		
29	✓ Kim	iPKP ₁	08 26 12	R	152°	USCGS H = 08 06 15 51°N 179°E Andreanof Is
29	✓ Kim	i	08 28 28	C		
29	✓ Kim	iPKP ₁	19 45 23	R	152°	USCGS H = 19 25 30 51°N 179 $\frac{1}{2}$ °E Andreanof Is.

A.A. ATTRIDGE.

8th December, 1958.

1958

 Geological Survey Office,
 Department of Mines,
 Union of South Africa.

SEISMOLOGICAL BULLETIN 07 1958

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Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vert- ical and horizontal.	Benioff S.P. vert- ical with short and long period recorders.	Benioff S.P. vert- ical	Benioff S.P. vert- ical	Benioff S.P. vertical.
Seismo. Officer:	The Director.	Professor of Physics.	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge
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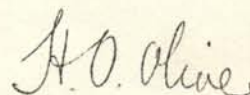
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 Johannesburg,
 South Africa.



H.O. Oliver.
Seismological Officer.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
3	Wind	iP	03 52 08		40°	USCGS H = 03 44 24
	Kim	iP	53 19	R	50°	0°, 18°W
	Pret	iP	31		51°	Atlantic Ocean.
	Gram	iP	46	C	53°	
	Piet	iP	55	R	55°	
4	Kim	iPKP ₁	07 18 35	C	150°	USCGS H = 06 58 52 51½°N 173°E Rat Is. Aleutian Is.
4	Kim	(e)i	13 11 29			
4	Kim	i	17 17 14			
4	Kim	iP	22 02 52		80°	USCGS H = 21 51 08
	Wind	eP	58		76°	33½°S 69½°W Chile-
	Gram	iP	03 06		78°	Argentine border Mag. 7
	Piet	iP	32		84°	
	Pret	iP	38		83°	
5	Kim	iP	03 53 25	R	78°	USCGS H = 03 41 22 Chile-Argentine border
8	Piet	iPKP	05 44 19		137°	USCGS H = 05 25 37
	Kim	iPKP	55		139°	53½°N 159°E Nr. E. coast of Kamchatka
8	Kim	iP	22 36 19	R	79°	USCGS H = 22 24 55 34°S 70°W Chile-
						Argentine border
9	Kim	iPKP ₁	22 43 15		148°	USCGS H = 22 23 37 54°N 171°E Near Is. Aleutian Is.
10	Wind	e	12 42 37			
11	Kim	i	01 11 44			
14	Kim	i	14 20 23			
14	Piet	iP	21 39 47	R	40°	USCGS H = 21 31 42
	Kim	iP	40 20		44°	8½°S 67°E
	Gram	iP	24		45°	Chagos archipelago region.
15	Piet	iP	19 57 50		91°	USCGS H = 19 45 40
	Kim	iP	58 10		96°	2½°N 120½°E Celebes Sea
	Wind	eP	20 00 (37)		104°	Mag. 6¼ h = 600 km.
15	Kim	i	21 14 52	C		
17	Kim	i	03 43 51			
17	Piet	i	20 46 (36)			
18	Kim	iP	14 51 29		61°	USCGS H = 14 51 40, ½°N 30°W Mid-Atlantic Ocean.
18	Piet	i	21 04 33	C		
	Kim	i	45			
	Wind	i	05 00	C		
20	Kim	i	17 28 20	R		
22	Kim	iPKP	19 24 25		114°	USCGS H = 19 05 44
	Wind	iPKP	41		122°	33½°S 177½°W Kermadec Is. region Mag. 6¼
24	Kim	iPKP ₂	04 04 05		149°	USCGS H = 03 44 14
	Piet	iPKP ₂	22		150°	59½°N 143½°W Gulf of Alaska. Mag. 6¼.
25	Piet	iP	07 04 39		75°	USCGS H = 06 54 00 36½°N 70°E Hindu Kush h = 200 kms.
25	Wind	iP	07 30 30	R	73°	USCGS H = 07 20 02
	Kim	iP	31 24		82°	9°N 39½°W
	Gram	iP	42		85°	Atlantic Ocean
	Piet	iP	55		87°	Mag. 6½°.
27	Wind	ePKP	14 14 13		143°	USCGS H = 13 55 02 15°S 174°W Samoa Is region. h=150 km.

A.A. ATTRIDGE.

3rd December, 1958.

SEISMOLOGICAL BULLETIN. **1 NOV 1958**

The data herewith give the results from a network of seismographs intended particularly for the study of earthquakes occurring in or near South Africa. This bulletin, however, is prepared regularly and will be sent to interested organisations on request.

<u>Stations</u>	<u>Pretoria (Pret)</u>	<u>Grahamstown (Gram)</u>	<u>Pietermaritzburg (Piet)</u>	<u>Kimberley (Kin)</u>	<u>Windhoek (Wind)</u>
Lat.:	25°45.2'S.	33°18.6'S.	29°37.2'S.	28°45.1'S.	22°34'S.
Long.:	28°11.4'E.	26°34.5'E.	30°23.8'E.	24°46.8'E.	17°06'E.
Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka Shale	Soft Ecca Shale	Dolerite boulders embedded in decayed dolerite	Mica Schist.
Height:	1350 m.	558 m.	656 m.	1321 m.	1728 m.
Instrument:	Willmore S.P. vertical and horizontal.	Benioff S.P. vertical with short and long period recorders.	Benioff S.P. vertical	Benioff S.P. vertical	Benioff S.P. vertical.
Seismo. Officer:	The Director.	Professor of Physics.	Professor of Physics	Rev. Br. T.N. Purcell	Officer in Charge
Observer:	Mr. T.E. Dicker	Mr. A.R. Scanlen	Mr. W.L. Mouton	Rev. Br. H.F. McGreevy	Mr. J.A. Meyer.
Institution	Geological Survey Office	Rhodes University	Natal University	Christian Brothers College	Weather Office.

Notes: "Earth tremors" originating in the mining district of the Witwatersrand are recorded several times daily by the Pretoria station, and less frequently by the others. These are not dealt with in this bulletin.

Data are occasionally reported herein by courtesy of the Union Observatory, Johannesburg, which operates a 200 kg. Wiechert Horizontal seismograph. This station is called J, and is at 26° 10.9'S., 28°04.5'E., height 1806 metres.

All times given are G.M.T.

The supervision of this network and bulletin is at present in the hands of the undersigned, to whom all inquiries should be addressed.

Address:

Geophysical Research Institute,
University of the Witwatersrand,
Johannesburg,
South Africa.

H.O. Oliver

H.O. Oliver.
Seismological Officer.

NOVEMBER, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Distance	Remarks.
1	Kim	i	12 54 57			
1	Kim	iPKP	16 09 40		124°	U.S.C.G.S. H = 15 50 10 17½°S 168°E New Hebrides Is. aftershock.
2	Wind	i	11 04 40			
	Piet	i	43	C		
	Kim	(e)i	45			
3	Wind	i	14 49 06	R		
4	Gram	(e)i	02 02 31			
4	Kim	i	08 47 29			
4	Kim	i	11 18 29			
	Wind	e	23 34			
		i	24 45			
	Piet	(e)i	23 44			
4	Kim	e	22 15 33			
4	Kim	e	23 53 (55)			
5	Kim	i	02 30 02	C		
6	Gram	i	15 (48) 12			
6	Kim	i	20 41 15			
6	Gram	(e)iPKP	23 17 14		136°	USCGS H = 22 58 10 44½°N 148½°E
	Piet	(e)iPKP	16			Kurile Is. Mag 8¼
	Wind	(e)iPKP	17		137°	h = 100 km.
6	Kim	e	23 24 29			
		i	25 18			
6	Wind	e	23 58 22			
8	Wind	e	09 42 14			
	Kim	i	42 20 ✓			
	Gram	i	28 ✓			
8	Kim	e	10 44 05			
		i	45 16			
8	Wind	e	16 43 22			
8	Wind	e	17 23 29			
8	Kim	i	19 48 42			
	Gram	i	51			
	Wind	i	49 16			
11	Kim	iP	22 50 20		88°	USCGS H = 22 37 46 22°S 69°W Nr. coast of Northern Chile
12	Piet	iPKP	20 42 39		131½°	USCGS H = 20 23 26 44½°N 149°E
	Kim	(e)iPKP	41		135°	Kurile Is. Mag. 7
	Gram	(e)iPKP	49		136½°	
	Wind	(e)iPKP	51		137°	
13	Kim	ePKP	04 23 50		134°	USCGS H = 04 04 37 44½°N 148°E
		i	55			Kurile Is.
	Gram	(e)iPKP	50		135°	USCGS H = 16 16 25 9°N 93½°E
13	Kim	iP	16 27 16	C	75°	Nicobar Is.
	Gram	iP	15	R	76°	
	Wind	iP	44	R	81°	
15	Wind	e	05 52 (51)			
18	Kim	iPKP ₁	08 05 15		154°	USCGS H = 07 45 20 52½°N 179°E
18	Kim	iPKP ₁	08 16 26		155°	Andreanof Is. USCGS H = 07 56 31 51½°N 178½°E Aleutian Is. aftershock.
18	Kim	i	08 19 43			USCGS H = 07 59 45 Aleutian Is. after- shock.

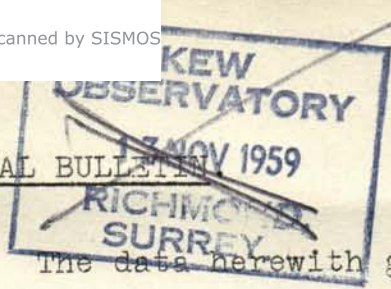
Contd./.....

NOV. 1958 (Contd.)

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
19	Wind	i	01 45 33	R		
	Gram	i	54	R		
	Piet	i	46 19			
19	Kim	iPKP ₁	15 21 58	C	152°	USCGS H = 15 02 15
	Piet	iPKP ₁	22 00	R	150°	60½°N 150½°W h=60 km
	Gram	iPKP ₁	08		154°	Kenai Peninsular, Alaska.
20	Kim	iPKP	05 55 57		143°	USCGS H = 05 36 33 52°N 159½°E Off East coast of Kamchatka.
20	Kim	i	10 13 18			
20	Wind	e	11 47 13			
20	Kim	i	22 09 29			
20	Wind	iPKP ₁	23 23 28	R	152½°	USCGS H = 23 03 40
	Piet	iPKP ₁	30		151°	52°N 177°W
	Kim	iPKP ₁	36	R	154°	Andreanof Is.
22	Kim	iP	00 16 51	C	84°	USCGS H = 00 04 20 10½°S 112½°E South of Java.
22	Wind	e	14 49 28			
		i	48			
	Kim	e	51 49			
		i	52 43			
23	Wind	iPKP	22 39 18		152½°	USCGS H = 22 19 23
	Piet	iPKP	20		152°	51°N 175½°W
	Kim	(e)iPKP	38		155°	Andreanof Is.
	Gram	iPKP	50		157°	
23	Piet	iPKP	23 57 27		152°	USCGS H = 23 37 30
	Kim	iPKP	31		155°	51½°N 174½°W Andreanof Is.
	Gram	iPKP	57		157°	
24	Gram	iP	06 59 31	C	64°	USCGS H = 06 48 57
	Kim	iP	49	R	68°	57½°S 62½°W
	Wind	iP	56		68°	Drake Passage
26	Gram	i	01 35 40			
26	Kim	i	11 03 02	R		
27	Kim	i	15 11 14			
29	Wind	e	03 32 19			
		i	35 10			
30	Kim	iPKP	01 51 49		124°	USCGS H = 01 32 41 32°N 137½°E Mag.6 Honshu.

A.A. ATTRIDGE

30/12/58.



Geological Survey Office,
Department of Mines,
Union of South Africa.

Dec 1958

SEISMOLOGICAL BULLETIN

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Lithologic foundation:	Weathered Shale (Pretoria series).	Dwyka shale.	Soft Ecca shale.	Dolerite boulders embedded in decayed dolerite.
Height:	1350 m.	558 m.	656 m.	1321 m.
Instrument:	Benioff S.P. vertical.	Benioff S.P. vertical with short & long period recorders.	Benioff S.P. vertical.	Benioff S.P. vertical.
Seismo. Officer:	The Director.	The Professor of Physics.	The Professor of Physics.	Rev. Br. T.N. Purcell.
Observer:	Mr. T.E. Dicker.	Mr. A.R. Scanlen.	Mr. W.L. Mouton.	Rev. Br. H.F. McGreevy.
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Geophysical Research Institute,
University of the Witwatersrand,
Johannesburg, S. Africa.

H.O. Cliver
H.O. Cliver.
Seismological Officer.

DECEMBER, 1958.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
1	Kim	iPKP ₁	06 22 11	R	146 $\frac{1}{2}$ ⁰	USCGS H = 06 02 30 Mag. 5-6 32 $\frac{1}{2}$ ⁰ N 115 $\frac{1}{2}$ ⁰ W California- Mexico Border
1	Kim	i	13 35 18			
4	Kim	i	10 34 42			
5	Kim	i	04 10 34			
9	Kim	i	10 31 38	C		
10	Piet	iP	03 55 20		78 ⁰	USCGS H = 03 43. 33
	Kim	iP			81 ⁰	37 ⁰ N 71 ⁰ E
	Gram	iP			84 ⁰	Hindu Kush
10	Kim	iP	07 16 00	C	111 ⁰	USCGS H = 07 02 59 h=300 km. Mag. 6 $\frac{3}{4}$ 37 ⁰ S 176 $\frac{1}{2}$ ⁰ E Off N. Island, New Zealand
10	Wind	i	07 21 16	R		
10	Wind	i	07 31 36			
11	Kim	(e)i	10 04 42			
11	Kim	i	12 32 59			
13	Kim	i	01 36 34			
13	Gram	eP	09 15 07		41 ⁰	USCGS H = 09 07 30
	Kim	iP		C	44 ⁰	55 $\frac{1}{2}$ ⁰ S 22 ⁰ W Sandwich Is. region.
	Wind	eP			45 ⁰	
13	Kim	i	13 11 48			
15	Kim	iPKP	12 59 17		118 ⁰	USCGS H = 12 40 27 31 ⁰ S 177 $\frac{1}{2}$ ⁰ W Kermadec Is.
15	Piet	i	18 49 38			
	Kim	i				
16	Kim	i	03 04 14			
17	Kim	e	02 45 48			
		i				
18	Kim	iPP	07 44 46		104 ⁰	USCGS H = 07 26 16 18 ⁰ N 120 $\frac{1}{2}$ ⁰ E Near N Coast of Luzon, Philippines.
19	Wind	iP	11 27 07		84 $\frac{1}{2}$ ⁰	USCGS H = 11 14 40
	Kim	iP		C	90 ⁰	16 ⁰ S 72 ⁰ W S. Peru h=100 km.
19	Piet	iPKP ₁	18 56 16		152 $\frac{1}{2}$ ⁰	USCGS H = 18 36 23
	Kim	iPKP ₁			155 ⁰	51 $\frac{1}{2}$ ⁰ N 177 $\frac{1}{2}$ ⁰ W Andreanof Is.
20	Gram	iP	21 25 34		+ 88 ⁰	USCGS H = 21 12 05
	Kim	iP		R	- 90 ⁰	Sumbawe Is.
21	Piet	iP	05 59 16		87 ⁰	USCGS H = 05 46 26
	Kim	iP			90 ⁰	44 $\frac{1}{2}$ ⁰ N 81 ⁰ E Western Sinkiang, China.
23	Kim	i	09 15 29			
25	Gram	ePKP	08 24 20		117 ⁰	USCGS H = 08 05 33
	Kim	iPKP		R	120 ⁰	5 $\frac{1}{2}$ ⁰ S 151 $\frac{1}{2}$ ⁰ E
	Wind	ePKP			128 ⁰	New Britain Mag. 6 $\frac{3}{4}$
25	Kim	i	08 34 42			
26	Kim	i	06 08 34	R		
27	Kim	i	23 53 16			
28	Piet	iP	05 46 28		76 ⁰	USCGS H = 05 34 36
	Kim	iP			80 ⁰	29 $\frac{1}{2}$ ⁰ N 80 ⁰ E Western
	Gram	iP			82 $\frac{1}{2}$	Nepal -India border
28	Kim	i	11 45 48	C		
29	Gram	iP	22 50 19		77 ⁰	USCGS H=22 38 22 2 $\frac{1}{2}$ ⁰ N
	Kim	iP		R	78 ⁰	99 ⁰ E N. Sumatra
31	Gram	iPKP	02 04 01		120 ⁰	USCGS H = 01 45 52
	Kim	iPKP			124 ⁰	23 ⁰ S 178 $\frac{1}{2}$ ⁰ W
	Wind	ePKP			132 ⁰	Tonga Is. region h=400 km.
		i	07 17			