

JAN 1959

Geological Survey Office,
Department of Mines,
Union of South Africa. 1959

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 (Kin)	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.

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.

JANUARY, 1959.

- 267 -

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
✓ 1	Bulawayo	i	03 24 16			
✓ 1	Wind	e	12 16 20			
✓ 1	Kim	(e)i	14 28 08	R		
✓ 2	Kim	e	01 25 11			
		i	16			
✓ 3	Kim	iP	11 30 50	C	93°	USCGS H = 11 17 38 14½°S 75½°W Nr. coast of Peru.
✗ 4	Piet	e	01 46 -			
✓ 4	Kim	iP	03 29 03	C	84°	USCGS H = 03 16 36
✓ 4	Wind	(e)iP	43		101°	10°S 11½°E South of Java
✓ 4	Pret	e	04 06 08			
✓ 4	Kim	e	(39)			
		i	07 18			
✗ 4	Gram	i	21 17 14			
✗ 5	Kim	i	07 25 09	C		
✓ 5	Gram	iPKP	10 05 28	R	118°	USCGS H = 09 46 42
✓ 5	Kim	iPKP	37	R	122°	22°S 171½°E.
✓ 5	Pret	ePKP	37		123°	Loyalty Is. Mag. 6¼
✓ 5	Wind	iPKP	55		131°	
✓ 6	Pret	eP	14 59 55		75°	USCGS H = 14 48 03
✓ 6	Gram	iP	15 00 01		77°	105½°E 7½°S
✓ 6	Kim	iP	11	R	79°	South of Java.
✓ 6	Wind	iP	49	R	86°	
✗ 7	Wind	i	01 46 21	C		
✗ 7	Kim	i	10 09 02			
✓ 8	Kim	iP	01 46 59	C	95°	USCGS H = 01 33 48 15½°N 61°W Windward Is. Mag. 6¼ h=100 km.
✗ 8	Pret	i	12 43 06			
✗ 9	Kim	iPKP	21 10 45		120°	USCGS H = 20 52 07 14°N 90½°W Gautemala- El Salvador border h=150 km.
✗ 13	Wind	iP	20 47 33		77°	USCGS H = 20 35 54
✗ 13	Kim	iP	46	R	80°	34½°S 71°W Central Chile h=100 km.
✓ 15	Kim	iPKP	21 38 29	R	123°	USCGS H = 21 20 26 25½°S 180° S. of Fiji Is. h=500 km. Mag. 6½
✗ 15	Wind	e	23 15 (45)			
✓ 16	Wind	iPKP ₁	01 51 09		153°	USCGS H = 01 31 22
✓ 16	Kim	iPKP ₁	18	R	156°	52½°N 171°W
✓ 16	Pret	iPKP ₁	19		152°	Fox Is.
✓ 16	Piet	iPKP ₁	20	R	154°	
✓ 16	Kim	(e)i ₁	17 11 36	R		
✓ 16	Pret	e	23 14 19			
✗ 16	Pret	i	23 16 12			
✓ 18	Kim	iPKP	22 41 33	C	128°	USCGS H = 22 23 15
✓ 18	Gram	iPKP	44	R	124°	19°S 178°W Fiji Is. Mag. 6¼ h=450 km.
✓ 22	Kim	iPKP	05 29 32		128°	USCGS H = 05 10 25 34°N 142°E Nr. coast of Honshu Mag. 7
✗ 23	Pret	i	09 58 03.			
✗ 23	Wind	e	10 00 (39)			
✓ 23	Kim	i	10 33 23			
✓ 24	Pret	i	08 03 39			
✓ 24	Kim	i	44			
✓ 24	Gram	i	46	R		
✗ 24	Kim	i	12 23 52			
✓ 24	Kim	i	20 01 14			
✓ 24	Gram	i	18			

(Contd.) /

Jan. 1959 (Contd)

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
24	✓ Wind	iP	20 06 35		73°	USCGS H = 19 55 14
✓	✓ Kim	iP	07 25		82°	37½°N 24½°W
✓	✓ Pret	iP	25		82°	Azores
✓	✓ Piet	iP	49		85½°	Mag. 6½
✓	✓ Gram	iP	50		86½°	
✓ 28	✓ Gram	iP	10 16 39	R	85°	USCGS H = 10 04 10
✓	✓ Wind	iP	41	R	84°	32½°S 79°W
✓	✓ Kim	iP	54		86°	Juan Fernandez
✓	✓ Piet	iP	17 12		90°	Mag. 6¼.
✗ 29	✓ Kim	i	20 17 42			
✓ 29	✓ Pret	i	20 41 17			
✓	✓ Wind	i	19	R		
✓	✓ Kim	i	26			
✗ 29	✓ Pret	i	21 18 07			
✗ 29	✓ Wind	(e)i	22 18 10	C		
✗ 29	✓ Kim	i	22 48 07	R		
✗ 30	✓ Kim	(e)i	01 45 19			
30	✓ Gram	iP	16 28 02		83°	USCGS H = 16 15 58
30	✓ Kim	iP	04	R	84°	26½°S 71°W nr. coast of Chile h=100 km.
30	✓ Kim	i	18 27 41	C		USCGS H = 18 09 02. 31°S 179°W Kermadec Is.

12th March, 1959.

A.A. Attridge.

Copies 4/5

FEB 1959

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.

CORRECTION TO JANUARY, 1959.

Delete the following:

Date	Station	Phase	G. M. T.		
			h.	m.	s.
1	Bulawayo	i	03	24	16

FEBRUARY, 1959.

Date	Station	Phase	G. M. T.			C/R	Arc Distance	Remarks.
			h.	m.	s.			
1	X Pret	i	02	39	20			
1	X Pret	iP	03	24	46		74°	USCGS H = 03 13 26 36 ¹ / ₂ °N 71°E Hindu Kush h = 200 Km.
	X Kim	iP		25	13	R	79°	
1	X Kim	i	04	26	21			
2	X Pret	i	04	22	-			
4	X Kim	e	13	59	45			
	X Kim	i	14	00	47			
5	X Pret	iPKP ₁	01	24	29		151°	USCGS H = 01 04 43 57 ¹ / ₂ °N 157 ¹ / ₂ °W
	X Kim	iPKP ₁			30		155°	
	X Piet	iPKP ₁			37	R	153°	Alaska Peninsula
6	X Wind	(e)i	14	52	46	C		
	X Kim	i			50			
	X Piet	i			54	R		
6	X Pret	i	14	59	18			
7	X Wind	iP	09	50	24		98°	USCGS H = 09 36 51 4°S 81 ¹ / ₂ °W Near Coast of N. Peru. Mag. 7 ¹ / ₂
	X Kim	i			53			
7	X Pret	i	09	54	34			
	X Piet	i			55 43			
7	X Kim	iPcP	16	57	16		59°	USCGS H = 16 45 35 6 ¹ / ₂ °S 113°E Near N. coast of Java h=600 km.
7	X Kim	e	23	49	36			
	X Kim	i			50 41			
7	X Kim	i	23	55	23	R		
9	X Pret	iPKP ₁	05	02	23		150°	USCGS H = 04 42 33 50 ¹ / ₂ °N 177 ¹ / ₂ °W Andreanof Is
	X Piet	iPKP ₁			27		152°	
10	X Kim	i	13	33	29			
11	X Pret	i	09	55	23			
	X Kim	e			56 (35)			
	X Kim	i			58 42			
11	X Pret	i	16	48	57			
12	X Kim	i	20	00	48			
13	X Wind	e	13	10	54			
13	X Kim	e	13	18	31			
	X Kim	i			19 21			
14	X Piet	iP	22	38	27	R	86°	USCGS H = 22 25 50 28°N, 97°E East Pakistan
	X Kim	iP			44		90°	
15	X Gram	e	04	07	24			
	X Kim	i			29			
	X Kim	i			48			
15	X Wind	i	04	08	07			
	X Piet	i			09			
15	X Gram	i	04	50	35			
	X Kim	i			59			
	X Piet	e			51 15			
	X Kim	i			21			
	X Wind	e			15			
	X Kim	i			28			
16	X Piet	i	12	23	05			
17	X Wind	e	12	22	54			USCGS H = 12 03 05
	X Kim	i			57	C		51 ¹ / ₂ °N 171°W
	X Kim	i			23 01			Fox Is. Mag. 6 ¹ / ₄

Feb. 1959 (Contd.)

- 270 -

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
17	X Kim	iPKP ₁	16 10 27		157°	USCGS H = 15 50 29 56°N 158½°W Alaska Peninsula.
18	X Kim	e	14 (31 34)			
	X	i	38 37			
	X Wind	e	33 30			
	X		36 06			
20	✓ Gram	iP	04 24 58	R	81°	USCGS H = 04 12 54
	✓ Piet	iP	25 23		86°	30½°S 71°W Central Chile Mag. 6½, h=100 km.
20	X Wind	e	11 04 56			
20	X Wind	e	17 38 06			
22	Wind	iP	03 43 09	C	89°	USCGS H = 03 30 38 28½°N 91½°E S.E. Tibet.
22	X Wind	i	04 17 31	R		
23	✓ Kim	iPKP	10 50 23		141°	USCGS H = 10 31 07 53½°N 158½°E Kamchatka
23	✓ Kim	ePKP	16 24 15		140°	USCGS H = 16 04 48 50°N 157°E Kurile Is.
24	X Kim	i	11 39 30			
25	X Kim	i	13 31 03			
26	X Kim	e	13 19 15			
		i	47			
27	✓ Kim	iPKP	21 15 14		117°	USCGS H = 20 56 30 27½°N 129°E Ryukya Is.
28	✓ Kim	ePKP ₁	01 51 57		156°	USCGS H = 01 32 22 53°N 168°W Fox Is.
		i	52 11			
28	X Kim	e	21 51 54			
28	X Kim	i	22 41 42			

A. A. Attridge

15th April, 1959.

Copied 4/8

MAR 1959

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.

MARCH, 1959.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
1	✓ Kim	ePKP	17 06 31		106°	USCGS H = 16 49 13 1/2°S 134 1/2°E Nr. N. Coast of New Guinea, h=100 Km Mag. 7.
	✓ Wind	ePKP	07 01 54		114°	
1	✗ Kim	e	17 18 36			
		i	44			
2	✗ Kim	i	00 49 45			
2	✗ Kim	e	12 33 24			
2	✓ Piet	iP	16 03 04		76°	USCGS H = 15 51 38 37°N 70 1/2°E Hindu Kush h=200 km.
	✓ Wind	iP	14		78°	
	✓ Kim	iP	16	R	78°	
	✓ Gram	iP	31	C	82°	
	✗ Piet	i	03 11 40			
3	✗ Kim	e	15 34 45			
		i	35 18	C		
4	✗ Kim	e	00 34 35			
		i	44			
5	✓ Kim	iP	23 07 33		76°	USCGS H = 22 55 28 2°N 98°E Sumatra
6	✗ Gram	i	03 44 29			
	✗ Piet	i	45 16			
		i	48 11			
	✗ Kim	i	45 35			
9	✗ Kim	e	13 38 44			
		i	40 21			
10	✓ Pret	iP	17 50 53			Probably Central Africa
		i	51 13			
		iS	52 45			
	✓ Kim	iP	51 41			
		iS	54 10			
		i	56 12			
	✓ Wind	(e)iP	51 46	C		
		e	55 24			
	✓ Piet	eP	52 (40)			
		eS	55 (10)			
	✓ Gram	eP	52 (38)			
11	✗ Kim	i	06 40 52			
12	✓ Kim	ePKP	01 48 00		122°	USCGS H = 01 29 07 17°N 145°E Caroline Is. Mag. 6.
13	✗ Kim	i	00 45 21			
13	✗ Kim	i	10 33 10			
13	✓ Kim	eP	19 18 33		± 64°	USCGS H = 19 08 00 Mediterranean Sea near Crete.
17	✓ Kim	iPKP	08 44 04		115°	USCGS H = 08 25 22 27 1/2°N 130°E Ryukyu Mag. 6
17	✓ Kim	iP	13 07 13	C	46°	USCGS H = 12 58 57 57°S 25°W Sandwich Is.
	✓ Wind	eP	23		48°	
17	✗ Kim	i	15 12 08			
19	✗ Kim	iPKP ₁	09 57 16	C	149°	USCGS H = 09 37 53 61 1/2°N 148°W S. Alaska h=100 km.
20	✓ Pret	e	15 57 56			
21	✓ Kim	iPKP	04 45 29	R	128°	USCGS H = 04 27 21 19°S 178°W Fiji Is. h=550 km.
21	✗ Kim	iPKP ₂	19 57 20	C	± 152°	USCGS H=19 37 08 53 1/2°N 165°W Unimak Is. region
23	✓ Kim	iPKP ₂	07 30 08		148°	USCGS H=07 10 22 40°N 118°W W. Nevada Mag. 6 1/2
25	✗ Kim	i	02 43 04			
28	✓ Kim	i	20 05 09			USCGS H=19 47 07 20°S 178 1/2°W Fiji Is. Mag. 6 h=600 km.

Copied H.S.

APR 1953

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. Scanlan	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.

APRIL, 1959.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
1 ✓	Kim. ✓	iP	00.45.38	C	72°	USCGS H = 00.34.18
	Piet. ✓	iPcP	47.00		75°	27½°N, 21°W. Canary Islands. Mag. 6¼.
1 X	Kim.	iP	14.21.39		60°	USCGS H = 14.11.30; 48°S, 98½°E. Indian Ocean.
1 ✓	Kim.	iPkP ₁	18.38.25		155°	USCGS H = 18.18.28. 40°N, 120°W California Mag. 8
3 X	Pret.	e	14.51.57			
5 ✓	Kim.	iP	10.59.36	C	76°	USCGS H = 10.47.52, 44°N 7°E South East France.
6 X	Pret.	e	10.57.38			
6 ✓	Kim.	iP	14.25.37		91°	USCGS H = 14.12.36. 10°S, 120½°E. Sumba I. Mag. 6¼
8 ✓	Kim.	iPKP	01.41.24		116°	USCGS H = 01.23.26.32½°S 179½°E. h = + 400 km. Mag. 6¼ Kermadec Is.
8 ✓	Gram.	iP	11.55.(44)		71½°	USCGS H = 11.44.25
	Wind.	iP	58		74°	50½°S., 73°W
	Kim.	iP	58	R	74°	South Chile/Argentine Border
9 ✓	Pret.	eP	56.23		78°	
	Pret.	iP	06.25.(34)		43½°	USCGS H = 06.18.30
	Gram.	iP	26.27		42°	36°S., 76°E.
	Kim.	iP	45	R	45°	Indian Ocean, + 1000 mls north of Kerguelen I.
	Piet.	iP	27.(06)		40°	
	Wind.	eP	52		54°	
		i	57			
10 ✓	Kim.	iPKP	06.05.23	R	122½°	USCGS H = 06.47.34 25°S, 178½°E. South of Fiji Is. h = + 600 km.
12 X	Wind.	i	13.48.19	R		
12 X	Kim.	i	07.23.08	R		
12 ✓	Kim.	iPKP	10.13.41	R	125°	USCGS H = 09.54.51. 17½°N 95°W.
	Gram.	iPKP	45	R	126°	h = + 100 km. Mag. 6¼ Mexico.
12 ✓	Kim.	(e)i	21.13.(27)			USCGS H = 20°54' Mag. 6¼
	Wind.	e	47			15½°S, 173°W, Samoa Is. region.
13 X	Piet.	i	07.41.18	R		
13 X	Piet.	i	09.44.(09)			
13 ✓	Kim.	iP	18.44.24	C	83½°	USCGS H = 18.31.57; 23°N, 93½°E; India Burma border.
13 X	Pret.	i	21.03.29			
14 X	Kim.	i	06.32.14	C		USCGS H = 06.19.46. N. Chile
14 ✓	Wind.	(e)iPKP	07.39.59.	R	146°	USCGS H = 07.20.38 57½°N., 155° W. Alaska Peninsula
	Kim.	iPKP	07.40.11		153°	h = 60 km.
14 X	Wind.	iPn	09.39.03			
		iSn	40.30			
		i	41.13			
		iS ₁	47			
		i	44.12			

/cont.

April 1959 (Cont.) - 273 -

Date	Station	Phase	G.M. T. h. m. s.	C/ R	Arc Distance.	Remarks
X	Pret.	i	39.40			
	Kim.	e	40.11			
		i	40.19			
14 X	Kim.	i	14.23.21			
15 X	Pret.	i	13.05.15			
15 X	Pret.	i	14.16.20			
15 X	Kim.	iPKP ₁	17.22.43		157°	USCGS.H=17.02.45 51°N. 177°W. Andreanof Is.
15 ✓	Kim.	iPKP ₁	19.30.46	C	142°	USCGS.H=19.11.20.54°N. 160½°E. N.E. coast of Kamchatka
16 ✓	Kim.	iPKP	16.32.42		120°	USCGS H = 16.13.56 12½°N, 143°E. h=100km Marcana Is. region Mag. 6½.
17 X	Piet.	iP iS	11.11.38 48		Δ=90km	Small S.African earthquake.
18 X	Wind.	(e)i	06.30.27			
18 ✓	Kim.	iPKP	06.36.46		122½°	USCGS.H=06.17.51 4½°S 154°E. New Ireland region.
18 X	Wind	e	16.59.(19)			
19 ✓	Wind.	ePKP ₂	15.23.00		145°	USCGS.H= 15.03.26 58°N, 152½°W. Near Kodiak I. Alaska.
19 ✓	Kim.	iPKP ₁	18		153°	
19 X	Wind.	e	17.28.59			
21 X	Frot.	i	07.49.13			
21 X	Wind.	e	41			
22 ✓	Pret.	iPKP ₁	11.14.27		151°	USCGS.H= 10.55.05
22 ✓	Wind.	ePKP ₁	40		150°	54°N., 167°W.
22 ✓		i	44	C		Fox Is.
22 ✓	Kim.	iPKP ₁	52		154°	
22 ✓	Kim.	e	20.40.15			
23 X		i	21			
23 X	Wind.	e	12.29.44			
24 X	Wind.	i	18.07.04	R		
24 X	Kim.	iPKP	18.16.18	R=	118°	USCGS.H = 17.57.58
24 X	Gram.	iPKP	38		114°	31°S. 178°W.
24 X	Piet.	e	17.(34)			Kermadec Is. Mag. 7
25 X	Pret.	i	00.10.06			
25 X	Wind.	i	00.26.52			
25 X	Kim.	iP	00.37.27		67°	USCGS. H = 00.36.40 37°S. 28½°E. Turkey
25 X	Wind.	iP	01.15.53	C	60°	USCGS.H = 01.05.37. Dodecanese Is.
25 X	Kim.	i	02.16.28	R		
26 X	Pret.	e	13.39.30			
26 X	Kim.	e	13.41.(13)			
26 X	Pret.	eP	20.54.00		106°	USCGS H.=20.40.38
26 X	Kim	iP	52		110°	25°N., 122½° E.
26 X	Wind.	ePKP	58.(25)		115°	Near N.E. coast Formosa.
26 X	Gram.	(e)PKP	56		110°	h= 150 km. Mag. 7½
26 X	Gram	i	21.10.19			
27 X	Pret.	e	05.46.12			
27 X	Gram	iP	10.01.44		98°	USCGS H=09.48.09 7°S. 129°E.
28 X	Kim.	iP	55		100°	Banda Sea. Mag. 6½
28 X	Kim.	iPKP	11.28.23	C	122°	USCGS.H=11.09.30 15°N 93°W. Mexico- Gautemela border Mag 6½
28 X	Kim.	i	15.38.08	C		

/Cont.

April, 1959 (Cont.)

<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>
28	Wind.	e	17.28.16			
28	Wind	ePKP ₁	17.30.(49)		152°	USCGS. H = 17.11.15
		i	31.(10)			52°N. 173° W.
	Kim.	iPKP ₂	25	C	155 $\frac{1}{2}$ °	Andreanof Is.
29	Kim.	iP	00.34.10		65°	USCGS. H = 00.23.50.28°W
						55°E. S. Iran.
29	Pret.	e	10.35.11.			
30	Kim.	iP _c P	13.34.08	R	45 $\frac{1}{2}$ °	USCGS. H = 13.25.35
	Wind.	iP	11	R	46 $\frac{1}{2}$ °	55 $\frac{1}{2}$ ° S. 26° W.
	Piet.	iP	35.22		48°	Sandwich Is.

A. A. ATTRIDGE.

22nd June, 1959.

Copied HPS

MAY 1959

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.

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.

MAY, 1959.

- 275 -

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
1	Wind. Kim.	eP iP	08.34.53 35.07	R R	70° 71°	USCGS. H = 08.23.57 36½°N. 52°E. Near N.E. coast of Iran.
1	X Pret.	i	13.34.35			
2	X Kim.	i	14.58.43			
2	X Wind.	e	16.58.02			
3	X Pret.	e	23.37.26			
4	X Pret.	e	00.50.38			
4	Kim.	e	07.32.17	C		USCGS. H=07.15.42. 52½° N, 159½°E. Near coast of Kamchatka. Mag. 8. h= 60 km.
	Wind.	e	33.56		141°	
	Piet.	iPKP	13			
		i	54			
		i	35.57		138°	
		i	36.10			
	Pret.	ePKP	34.53		136°	
	Gram.	iPKP ₁	35.06		144°	
	J.	ePP	37.41		137°	
4	X Kim.	i	08.11.13			
4	X Kim.	i	08.19.42			
4	X Wind.	e	15.34.45			
4	X Pret.	e	16.30.51			
	Kim.	i	31.02	R		
	Piet.	e(i)	34.23			
4	Kim.	i	17.30.15	C		
	Piet.	i	32.01			
5	Wind.	e	10.13.43			
5	Kim.	iPcP	11.52.17.	R	78°	USCGS. H=11.40.08 34½°N. 71½°E. Afghanistan USCGS. H=19.04.16. 53°N. 159°E. Kamchatka after shock. Mag. 6
5	Kim.	ePKP	19.23.41		142°	
		i	49	R		
6	X Kim	iPKP ₂	08.04.49	R	155½°	USCGS. H=07.44.25. 51½°N 176°W. Andreanof Is.
6	X Kim.	i	14.12.22	C		
6	Kim.	iPKP	17.47.30		130°	USCGS. H=17.29.26. 18°S 179°W. Fiji Is. h= 600 km.
7	X Kim.	e	13.53. (54)			
		i	11.54.20			
8	Kim	iPKP	11.54.07		142°	USCGS. H=11.34.50 53½°N, 160½°E. Near east coast of Kamchat- ka. Mag. 6. h=60 km.
9	X Kim	i	04.15.56	C		
11	Kim	i	15.16.48	R		
11	Kim.	ePKP	16.48.09		142°	USCGS. H=16.28.49. Kamchatka.
		i	16			
12.	Gram	ePKP ₁	05.16.57		149°	USCGS. H=04.57.35 54½°N, 168°E, Komandar- skie Is. Mag. 6½.
		i	17.14			
	Kim.	ePKP ₁	17. (10)		145°	
		i	(15)			
12	Wind.	iP	09.58.35		75°	
	Kim.	iP	.57	R	79°	USCGS. H=09.46.51 23½°S, 64½°W. Salta Province, Argentine.
	Gram.	iP	56		79°	
	Pret.	iP	59.22		83°	
	Piet.	iP	10.00.24		84°	Mag. 6½.
12	Wind.	eP	10.25.28		76°	USCGS. H=10.14.00
	Kim.	iP	53	R	80°	20½°S, 63½°W. Bolivia.
12	Pret.	iPKP ₁	22.00.12		151°	USCGS. H=21.40.22
	Kim.	iPKP ₁	21		154°	51½°N, 177°W.
	Piet.	iPKP ₂	01.16		152°	Andreanof Is.
12	X Kim.	i	22.11.18	C		
12	Pret.	ePKP	22.19.27		151°	USCGS. H=21.59.56.
	Kim.	iPKP ₁	55	C	154°	51½°N, 177°W. Andrea- nof Is. Mag. 6

/continued

May, 1959 (continued)

- 276 -

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks.
14	X Pret.	i	06.20.07			
14	Wind.	ePcP	06.46.49		60°	USCGS.H=06.35.57, 35 ¹⁰ N,
	Kim.	iPcP	47.15		65 ¹⁰	24 ¹⁰ E, Crete. Mag. 6 ³ / ₄
	Piet.	i	48.39			
15	X J.	e	00.35.00			
15	X Wind.	e	09.13.40			
15	X Wind.	e	09.37.20			
16	Kim.	iPKP	06.35.13	C	124°	USCGS.H=06.16.23, 4 ¹⁰ S,
	Wind.	ePKP	56		132°	153 ¹⁰ E. New Britain.
						Mag. 6 ³ / ₄ , h= 60 km.
18	Wind.	iPKP ₁	07.43.48	C	152°	USCGS.H=07.43.54, 52 ¹⁰ N
	Kim.	iPKP ₁	54	R	155°	173 ¹⁰ E. Near Is. Aleutians.
19	X Pret.	e	11.21.27			
		i	49			
19	X Wind.	e	11.38.52			
19	X Wind.	iP	12.16.13		Δ=40	Small S.A. quake.
		is	17		km.	
19	Pret.	iP	15.28.25		71°	USCGS H=15.17.44, 33°N,
	Piet.	i	30.07			68 ¹⁰ E, E. Afghanistan.
19	X Wind.	e	16.22.05			Probably a small S.A. quake.
20	X Wind.	e	10.47.14			
20	X Wind.	e	13.10.18			
20	Wind.	eP	20.00.15		71°	USCGS H=19.49.12. 41 ¹⁰ N.
	Pret.	iP	16	C	72°	42°E, Georgia, U.S.S.R.
21	X Pret.	e	02.26.(25)			
21	Pret.	iPKP ₁	07.11.00	R	153°	USCGS.H=06.51.40. 52 ¹⁰ N.
						170 ¹⁰ W, Fox. Is.
21	Wind.	iP	11.46.21	R	+77°	USCGS.H= 11.34.23, Chile-
	Kim.	iP	38	C	+80°	Argentine Border.
	Pret.	eP	47.01		+85°	h=60 km. Mag. 6
23	X Kim.	e	11.11.29			
23	X Kim.	i	21.27.37			
24	X Pret.	i	10.02.22			
24	Kim.	iP	11.40.46		85°	USCGS.H=11.28.18. 26 ¹⁰ N
	Wind.	iP	41.01		88°	90 ¹⁰ E. Bhutan-Indian
	Pret.	i	55			border.
24	Wind.	ePKP	19.36.23		119°	USCGS.H=19.17.40, 17 ¹⁰ N,
	Kim.	iPKP	37		126°	97°W. Cexaca, Mexico,
	Gram.	iPKP	40	C	129°	h=100 km. Mag. 6 ³ / ₄ .
	Pret.	e	37.46			
		i	58			
	Piet.	i	40.16			
24	X Pret.	(e)i	21.05.41			
26	X Kim.	i	07.31.27	C		
26	X Kim.	i	21.54.39			
29	Kim.	i	10.59.36.			

A.A.ATTRIDGE.

11th August, 1959.

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.

Copied 4/95

JUNE, 1959.

- 277 -

DATE	STATION	PHASE	G. M. T. h. m. s.	C/ R	ARC DISTANCE	REMARKS.
1	Pret.	i	11.21.46			<i>corrections in beginning of July 4/95</i>
X	Kim.	i	24.59			
		i	25.48			
		i	26.38			
X	Piet.	e	26(14)			
X	Gram.	e	28.20			
		i	29.29			
1	Pret.	e	18.01.51			
		i	06.03			
	Wind.	e	04.54			
	Kim.	e	06.16			
		i	08.03			
	Piet.	e	08.43			
2	Kim	iPKP	03.42.14		126°	USCGS.H=03.23.12, 25°S, 176°W. Tonga Is. region.
2	Kim.	iPKP	04.11.03	R	126°	USCGS.H=03.52.06, 25½°S, 176°W. Tonga Is. region.
2	Wind.	iP	05.54.03		76°	USCGS.H=05.42.26, 43°S, 72°W. Chile-Argentine border. h= + 150 km
	Kim.	iP	09	C	77°	
	Piet	iP	55.27	C	80°	
4	Pret.	i	12.49.30			USCGS.H=12.31.26, 59½°N
	Kim.	iPKP ₂	51.34	C	151°	153° W. Cook Inlet. h = 100 km.
	Piet	i	52.36			
7	Pret.	e	13.48.18			USCGS. H= 13.39.48, ½° N
	Kim.	iP	33		51°	18°W. Atlantic Ocean.
	Gram.	iP	58		55°	
8	Kim.	i	22.16.18	C		
9	Gram.	iP	23.17.09	R	35°	USCGS. H = 23.10.46
	Kim.	eP	22		38°	59°S, 7½° W. 500 mls.S.W. of Bouvet Is.
		i	29			
10	Wind.	i	04.25.28	R		USCGS. H= 04.16.03
	Pret	i	(28)21			36°N. 23°E. Crete.
13	Kim	i	17.23.46			
14	Pret.	i	00.22.40			USCGS.H= 00.11.57.
	Wind.	iP	23.56	R	79°	20½°S, 68°W. S.W. Bolivia. Mag. 7½
		i	24.29			
	Kim.	iP	24.21	C	84°	
	Gram.	iP	24.21	R	83°	
14	Wind.	iP	15.03.17		150 km	H=15.02.52
		iS	32			21°10'S; 17°00' E.
	Kim.	iP	05.20		1150 km	Otjiwarongo District S.W. Africa,
		iSn	07.10			
	Pret.	eP _n	05.36		1250km	Felt in Otjiwarongo District.
		iS _n	07.40			
		iS ₁	08.41			South African Earthquake.
	Gram.	(e)P _n	09(09)			
		iS _n	10.40			
14	Kim.	i	21.08.13			
15	Kim.	i	09.06.12	R		
16	Kim.	i	06.32.14			
16	Kim.	iPKP ₁	15.03.52	C	155°	USCGS.H=14.43.45, 51°N, 177°W. Andreanof Is.
17	Kim.	iPKP	21.04.45.	C	127°	USCGS. H= 20.46.03, 12½°S, 167½°E, Santa Cruz Is. h = 200 km
18	Kim.	i	05.22.17	C		
18	Kim.	ePKP	15.50.51		141°	USCGS.H=15.31.25, 54°N, 160° E.
		i	57			
	Gram	ePKP	50.55		143°	Near E. coast of Kamchatka. Mag. 6½.
		i	51.02			
	Pret.	ePKP	51.04		136°	
		i	54.15			

/continued

June, 1959 (continued) - 278 -

DATE	STATION	PHASE	G. M. T. h. m. s.	C/ R	ARC DISTANCE	REMARKS.
18	Kim.	ePKP i	16.18.03 08		141°	USCGS.H=15.58.38, 54° N. 161° E. Near E. coast of Kamchatka. Mag. 6 $\frac{3}{4}$.
19	Pret.	e i	12.04.33 11.33			
	Wind.	e	10.17			
	Kim.	e i	11.32 12.51			
20	Wind.	i	20.02.27 37			
21	Pret.	e	23.41.36			
23	Kim.	iPKP ₁	14.54.51		150°	USCGS.H= 14.35.02, 39° N. 119° W. W. Nevada, Mag. 6 $\frac{3}{4}$.
26	Kim.	i	14.04.18			
27	Pret.	e	03.47.00			
27	Wind.	i	18.23.16 24.51			
27	Kim.	e i	19.18.38 23.01			
	Gram.	i	18.47 22.50			
27	Wind.	e	19.51.49			
28	Gram.	i	19.56.27	R		
	Kim.	i	38.	C		
	Wind.	e	57.14			
28	Kim.	i	20.12.53	C		
29	Kim.	e i	09.41.20 34			
29	Kim.	e	13.47.20			
30	Kim.	e	05.33.34			
30	Kim.	i	02.45.47	C		

A.A. Attridge.

8th September, 1959.

1959
RICHMOND,
SURREY.

SEISMOLOGICAL BULLETIN.

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

JUL 1959

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.

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.

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
<u>Correction to June 1959 bulletin:</u>						
			delete from June 1	Pret. 11.21.46		
			to June 1	Gram. 11.29.29		
and substitute:-						
Junel	Pret	iP	11.24.16	560 km		
		iS	25.08			
	Kim.	iP _n	24.51	850 km		South African Earthquake
		i	26.26			H = 11.23.00
		iS ₁	27.08			21°20'S; 27°00' E.
	Wind	eP ₁	25.14	1020 km		Bechuanaland Protectorate
		e	26.54			
		eS ₁	27.43			
	Piet.	e	28.45			
	Gram.	e	29.29			

JULY.

2	Kim.	i	10.52.19		R	
2	Gram.	e	16.00.56			
	Pret.	i	17.02.37			
		i	03.15			
	Kim.	e	03.28			
		i	40			
	Wind	e	04.14			
3	Kim	e	01.01.01			
		i	03			
3	Kim.	e	04.09.56			
		i	10.25			
✓ 3	Kim	iPKP ₁	05.41.07	154°		USCGS.H=05.21.13, 58½°N 152°W. Kodiak Is. region
3	Piet	e	09.29.39			
3	Gram	iPKP	18.14.05	123°		USCGS.H=17.55.29, 16°S. 172½°E. New Hebrides Is. region. mag.6½. h=200 km
	Kim	iPKP	15	129°	C	
	Wind	ePKP	15.16	140°		
4	Kim	iPKP	05.13.07	124°	C	USCGS.H=04.54.14, 24½° S. 177°W, Tonga Is.region. h = + 100 km.
6	Wind	iP	09.20.43	72°		USCGS.H=09.10.17, 26½°S 61½°W. Chaco Province, Argentina. Mag 6¾. h = 600 km
		i	22.19			
	Pret	iP	20.59	80°		
	Gram	iP	21.04	76°		
	Kim.	iP	21.05	76°		
		i	24.13			
6	Pret	i	09.30.04			
		iP	34.05	80°		USCGS H. = 09.23.27, 26½°S 61½°W. Chaco Province, Argentina. Mag. 7, h = 600 km
	Wind	iP	33.55	72°		
		i	35.30			
	Gram	iP	34.15	76°		
	Kim	iP	35.16	76°		
		i	37.24			
6	Pret	i	09.43.47			
6	Kim	i	12.01.36			
7	Kim	i	16.50.17			
9	Pret	eP	16.17(04)	88°		USCGS.H= 16.05.18, 20½°S. 68° W. Chile- Bolivia border, Mag. 6¾, h = 100 km
		i	32			
	Wind	iP	15	79°	R	
	Gram	iP	38	83°	C	
	Kim	iP	40	84°	R	

July, 1959 (continued) ... 280 ...

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
9	Pret	i	16.27(54)			
10	Kim	iP	04.24.17	85°		USCGS. H= 04.11.40, 19°S. 69°W. Chile-Bolivia border.
11	Gram	iP	12.09.39	44°	C	USCGS.H=12.01.36
	Kim	iP	10.04	47°	R	36° S. 78° E.
	Wind	eP	11.15	56°		Indian Ocean. Mag. 6 $\frac{1}{4}$.
12	Kim	iPKP	00.42.46	129°	C	USCGS.H=00.24.22, 19 $\frac{1}{2}$ °S 177 $\frac{1}{2}$ ° W. Fiji Is. region h = + 400 km. Mag. 6 $\frac{1}{4}$.
13	Wind	iPKP ₁	12.48.33	153°	C	USCGS.H= 12.28.45
	Kim	iPKP ₁	38	156°	C	52° N. 172 $\frac{1}{2}$ ° W.
	Gram	ePKP ₁	42	159°		Andreanof Is.
		i	49.04		C	Mag. 6 $\frac{1}{2}$.
	Pret	iPKP ₂	12	152°		
	Piet	ePKP ₂	36	154°		
		i	44		C	
14	Pret	ePKP ₁	09.00.35	152°		USCGS. H= 08.40.48, 51 $\frac{1}{2}$ °N 172°W. Fox Is.
14	Pret	iPKP ₁	11.53.35	151°		USCGS.H=11.33.42, 56°N,
	Kim	iPKP ₁	41	154°	R	159°W, Alaska Peninsula
16	Wind	ePKP ₁	15.37.19	152°		USCGS.H=15.17.27, 50 $\frac{1}{2}$ °N
	Kim	iPKP ₁	25	154°	C	177°W. Andreanof Is. region
	Piet	i	(38.20)			
16	Gram	i	19.25(27)			
		i	27.31			
	Wind	e	28.18			
18	Kim	i	13.18.20		C	
18	Piet	(e)iP	20.08.04	98°		USCGS.H=19.54.45, 15 $\frac{1}{2}$ °N
	Kim	iP	44	103°		120 $\frac{1}{2}$ °E. Luzon, Philippines Mag. 6 $\frac{3}{4}$
18	Wind	e	20.12.15			
19	Wind	eP	03.54.05	87°		USCGS H=03.42.02, 6 $\frac{1}{2}$ ° S 105°E. Sunda Strait.
19	Wind	iP	15.18.13	84°	C	USCGS H=15.06.10. 15°S.
	Kim	iP	43	89°	C	70 $\frac{1}{2}$ °W. Peru, Mag. 7 h = 200 km.
19	Wind	i	15.19.10			
	Kim	i	32			
	Piet	i	20.02		C	
20	Kim	iP	02.52.48	84°	C	USCGS.H= 02.40.13. 6°S.
	Wind	iP	53.23	87°	R	110°E. Java Sea.
20	Gram	i	12.55.36			
20	Gram	e	16.22.18			
20	Kim	iPKP	17.11.33	124°		USCGS.H=16.53.38, 23 $\frac{1}{2}$ °S 179°E. Fiji Is. region h = +600 km.
20	Kim	i	18.23.59			
20	Kim	i	19.52.31			
21	Wind	e	18.09.58			
22	Pret	ePKP	19.42.11	133°		USCGS.H=19.24.17, 53°N. 153°E. Sea of Okhotsh.
		i	28			h = 650 km.
	Kim	(e)iPKP	19.42.12	137°		
	Wind	ePKP	14	137°		
	Gram	iPKP	(17)	140°		
	Piet	iPKP	(42.23)	134°		
22	Piet	i	19.45.48			
22	Kim	ePKP	23.21.16	120°		USCGS.H=23.02.27, 5°S, 152 $\frac{1}{2}$ °E. New Britain h = 60 km.
		i	26			
23	Kim	i	11.15.58		R	

/continued

July, 1959 (continued)			... 281 ...	ARC	C/	REMARKS
DATE	STATION	PHASE	G. M. T. h. m. s.	DISTANCE	R	
23	✓ Gram Kim	ePKP iPKP	15.15.32 40	121° 125°		USCGS H=14.56.45, 24½°S 176°W, Tonga Is. region h = 60 km, Mag. 5¼.
23	Kim	i	17.16.24			
24	✓ Kim	iP	16.30.09	87°	R	USCGS H=16.17.30, 24½°N 94½°E, India-Burma border
	✓ Wind	eP	25	90°		
24	✓ Gram	iP	23.11(05)	44°		USCGS H=23.03.08, 56½°S
	✓ Kim	iP	32	47°	C	28½°W. Sandwich Is.
	✓ Wind	iP	39	47°		
	✓ Pret.	iP	12.12	51°		
27	Kim	i	20.55.12			
28	Kim	i	11.04.01		R	
	Wind	i	13			
28	Kim	i	21.21.56			
31	Pret	i	17.56.52			
31	✓ Pret	eP	20.04.(41)	77°		USCGS H=19.53.02, 38½°N 70°E. Tadzhik, U.S.S.R.
	✓ Kim	iP	05.07	81°		
31	✓ Pret.	i	21.35(48)			

A.A. Attridge

15th October, 1959.

Sup. Kopied Kew. 9/5
 AUG 1959
 39 ✓

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

~~RICHMOND~~
~~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.

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, 1959.

- 282 -

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
1	Kim	e	10.12.49			
		i	13.14		C	
	Gram	i	14		R	
1	Kim	(e)i	12.19.23			
5	Pret	i	02.31.05			
5	Kim	e	02.39(00)			
	Wind	e	43.40			
7	Pret	iPKP ₁	11.03.21	151°		USCGS H=10.43.32, 56°N
	Kim	iPKP ₁	29	155°	C	154°W, Kodiak I. region Mag. 5 $\frac{3}{4}$
7	Wind	iPKP ₁	22.05.06	149°	R	USCGS H=21.45.26, 56 $\frac{1}{2}$ °N
	Pret	iPKP ₁	16	151°		154°W, Kodiak I.
	Kim	iPKP ₁	24	155°		
9	Pret	e	11.26.17			
		i	28.05			
9	Kim	e	11.40(52)			
9	Pret	e	18.54.35			
		i	55.33			
	Kim	e	59(00)			
10	Pret	(e)iPPP00	00.55.03	85°		USCGS H=00.36.35, 55 $\frac{1}{2}$ °S 146°E, Indian Ocean, South of Australia.
11	Kim	iPKP	22.08.44	125°	R	USCGS H=21.49.42, 11°S. 161° E. Solomon Is. region
12	Pret.	i	04.07.59	11°		USCGS H=04.05.20
	Kim	i	08.05	15°	C	15°S. 28°E.
	Wind	i	08	14°		Northern Rhodesia
		i	09.00			
	Piet	iS	11.-14	15°		See amended times on 1 st page Sept
		S	11.56			
	Gram	i	09.03	19°		
12	Kim	ePKP	10.17.38	131°		USCGS H.=09.58.22, 16 $\frac{1}{2}$ °S 177 $\frac{1}{2}$ °W, Fiji Is. region Mag. 6 $\frac{1}{2}$
12	Pret	iP	18.31.31	230 km		South African earthquake
	Kim	iPn	32.16	570 km		H = 18.30.56 26°00' S, 30°30' E
		iP ₁	33			Carolina District, Trans- vaal. Felt at Ermelo, Bethal and Carolina.
		iSn	33.39			
	Gram	iPn	32.54	900 km		
		iP ₁	33.18			
13	Kim	(e)i	15.50.50			
14	Pret	e	03.37.10			
14	Kim	e	05.29(03)			
14	Wind	iP	05.57.00	104 km		Small SA earthquake in S.W. Africa 21°58'S, 16° 10' E.
		iS	13			
16	Wind	e	16.03.18			
			05.32			
	Pret	e	03.25			
	Kim	e	05.03			
		i	06.27			
	Gram	e	09 -			
16	Pret	i	16.31.35			
		i	59			
17	Kim	i	02.44.26			
	Pret	e	38			
17	Pret	ePKP	21.23.13	122°		USCGS H=21.04.40, 7 $\frac{1}{2}$ ° S
	Kim	iPKP	38	123°		156°E, Solomon Is.
	Wind	ePKP	59	132°		Mag. 7 $\frac{1}{4}$.
17	Wind	i	21.26.56			

/continued

August, 1959 (cont.)

- 283 -

DATE	STATION	PHASE	G. M. T.			ARC DISTANCE	C/ R	REMARKS.
			h.	m.	s.			
18	Pret	(e)i	06	55	50	144°	USCGS H=06.37.13, 14½°N, 111°W, Yellowstone Park Wyoming, U.S.A. Mag. 7.1	
	Wind	iPKP		56	36	135°		
	Kim	iPKP			37	144°		
	Gram	iPKP ₂			56	147°		
18	Kim	iPKP ₂	08	15	48	144°	R USCGS H=07.56.18, 45°N, 110½°W, Yellowstone aftershock, Mag. 6½	
18	Kim	i	15	27	(31)			
18	Gram	i	15	55	26			
19	Kim	i	12	44	48			
20	Kim	eP	12	28	27	43°	USCGS H=12.20.08, 29°S 78° E, Indian Ocean.	
20	Pret	(e)i	21	43	18			
21	Gram	iP	08	15	16	81°	USCGS H=08.03.15, 50½°S 139½°E, Indian Ocean South of Australia Mag. 6	
	Kim	iP			35	85°		
	Wind	eP		16	24	94°		
21	Kim	i	08	17	35		C	
	Gram	i			36		C	
	Piet	e			40			
	Wind	e		18	44			
21	Gram	iP	09	49	50	81°	USCGS H=09.37.49, 50½°S 140°E, Indian Ocean South of Australia.	
	Kim	iP			13	85°		
	Wind	eP		51	00	94°		
22	Kim	i	02	12	20			
22	Kim	iP	21	39	33	86½°	R USCGS H =21.28.02, 17½°S 69½°W, Peru-Chile border h = 150 km	
23	Kim	iP	22	32	39	70½°	USCGS H =22.21.30, 35½°N 3°W, Mediterranean Sea, N. of Spanish Morocco.	
	Gram	iP		33	09	75°		
24	Wind	e	01	31	36			
	Kim	i			42		C	
	Piet	e			56			
	Gram	(e)i			58			
24	Pret	e(i)	20	07	(19)			
	Kim	e		10	11			
		i			11	32		
24	Kim	e	21	48	(44)			
		i			48			
	Pret	e		50	(21)			
25	Kim	iP	12	36	44	+ 82°	R USCGS H=12.24.18 Northern Chile	
25	Kim	iP	18	04	02	82°	C USCGS H=17.51.49, 27½°S 71°W, N. Chile	
26	Kim	iPKP	08	44	32	125°	USCGS H=08.25.30, 18°N, 94½°W, Vera Cruz, Mexico, Mag. 6½.	
	Gram	iPKP			35	127°		
26	Kim	iPKP ₂	10	47	37	153°	USCGS H=10.27.41, 51°N, 132°W, South of Queen Charlotte Is.	
	Pret.	ePKP ₂		48	02	152°		
	Gram	ePKP ₂			05	158°		
26	Kim	i	11	00	42		R	
27	Kim	e	13	49	10			
27	Pret	eP	00	05	26	88°	USCGS H=23.53.10, 15°N, 96°E, Northern Burma	
	Kim	eP		06	03	85°		
28	Kim	iPKP ₁	12	27	19	152°	USCGS H=12.07.44, 63½°N 149°W, Central Alaska.	
30	Pret	iP	21	53	17	46°	USCGS H=21.45.07, 36½°S 78½°E, Indian Ocean.	
31	Kim	i	05	53	29		C	
31	Wind	i	16	24	53			

Open A/S

SEP 1959

OCT 1959

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.

SEPTEMBER, 1959.

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
------	---------	-------	----------------------	-----------------	---------	----------

Correction to August Bulletin:

Delete: 12 Pret. i 04.07.59 to Gram. i 04.09.03
and substitute:

Aug. 12	Pret	iPn	04.07.59	1230 km		
		iS ₁	10.05			
✓	Wind	iPn	08.05	1280 km	H= 04.05.20	
		iS ₁	11.14		15° S. 26°30' E.	
	Kim	iP _n	08.35	1580 km	Northern Rhodesia	
		iS _n	10.50		Felt over wide area in	
	Piet	iP _n	08.49	1630 km	Rhodesia. Slight damage	
		iS ₁	11.36		reported.	
	Gram	i	09.03			

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS
1	Wind	iP	11.48.12	64°		USCGS.H=11.37.42, 41½°N
	Pret	eP	36	68°		20° E. Albania.
	Kim	iP	52	71°		
	Gram	iP	49.21	75½°	R	
2	Kim	iPKP	08.22.46	153°		USCGS.H=08.03.00, 60°N, 151°W, Kenoi Peninsula
2	Wind	e	11.40.05			
3	Pret	eP	06.40.57	93°		USCGS.H=06.27.30. 4½°S.
	Kim	eP	57	95°		122° E. Celebes Is.
4	Kim	iP	18.36.07	50°		USCGS.H=18.26.41
	Pret	eP	23	53°		10°S, 24°W.
	Gram	iP	30	53°	C	Atlantic Ocean
	Piet	iP	44	55°		
4	Kim	iP	23.34.47	77°		USCGS.H=23.22.56, 47° S 75°W, Near coast of S. Chile.
5	Kim	iP	07.12.48	83°		USCGS.H=07.00.26, 62°S, 156°E, Ballemy Is. region.
5	Kim	i	12.03.56			
		i	04.02			
5	Kim	i	16.37.00			
		i	06			
5	Kim	iPKP ₁	21.31.56	153°		USCGS.H=21.12.02. 51½°N 179½°E. Rat.Is.
5	Kim	iPKP ₁	21.48.36	153½°		USCGS.H=21.28.42, 51°N 179½°E, Rat Is.
5	Kim	iPKP ₁	22.13.15	+153°		USCGS H= 21.53.22, Rat Is. region.
5	Kim	ePKP	23.25.21	128°		USCGS H=23.05.00, 18°S 178½°E, Fiji Is. h=550 km
6	Pret	e	01.25.44			
6	Piet	e	03.33.21			Probably local seismic disturbances.
		i	34.01			
		i	14			
6	Pret	iP	05.42.46			
		iS	43.07			
8	Piet	(e)iP	13.17.33	+290		USCGS.H= 13.12.04.
	Pret	iP	18.04	732°		S. Atlantic Ocean, 700 mls
	Kim	iP	18.34	728°	C	east of Bouvet Is.
8	Pret	Traces	18.27.30			

/continued.....

September, 1959 (continued)

- 285 -

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
8 ✓	Gram	e	19.27(21)			
	Piet	(e)i	28.31			
	Kim	i	36		C	
	Pret	e	29.04			
8 ✓	Gram	eP	20.26(33)	48°		USCGS.H=20.18.37, 58½°S
	Kim	iP	57	47°		24½°W. Sandwich Is.
9 X	Pret	i	16.58.27			
	Kim	i	55			
10 ✓	Kim	iPKP	05.53.59	122°	R	USCGS.H=05.35.04, 6½°S.
		i	54.12			154½°E, Solomon Is.
12 ✓	Kim	iP	01.53.19	83°	C	USCGS.H=01.41.03, 20°S
						68°W, S.W. Bolivia
						h = + 150 km
12 ✓	Piet	iP	21.31.29	75°	R	USCGS H = 21.19.57
	Kim	iP	39	78°	R	36°N, 71°E, <i>See</i>
	Pret	iP	48	74°		Hindu Kush
	Gram	iP	54	81°	C	h = + 200 km.
14 X	Pret	e	01.05.-			
14 ✓	Kim	iPKP	13.34.50	125°	C	USCGS H = 13.15.49
						24°S, 176½°W, Tongo Is.
						Mag. 6.
14 ✓	Pret	e	14.27.58			USCGS H = 14.09.39
		iPKP	28.11	122°		28½°S, 177°W.
	Gram	iPKP	23	116°	R	Kermadec Is.
	Kim	iPKP	32	121°	R	Mag. 7¼ - 8
	Piet	ePKP	46	118°		
14 X	Kim	i	15.17.34		R	
14 ✓	Kim	iPKP	17.25.07	121°	R	USCGS.H=17.06.15,
						29°S, 176½°W, Kermadec Is.
						aftershock.
14 ✓	Gram	ePKP	22.42.41	118°		USCGS.H=22.23.42
	Kim	iPKP	45	121°	R	28½°S, 177°W, Kermadec Is
						aftershock. Mag. 6½.
15 ✓	Gram	ePKP	06.18(30)	118°		USCGS H. = 05.59.42, 28½°S
	Kim	iPKP	33	121°		177°W, Kermadec Is. after-
						shock, Mag. 6¼.
15 ✓	Pret	e	11.23.05			
	Gram	i	22			
	Kim	i	31		R	
15 X	Kim	i	13.57.35		C	
15 ✓	Kim	iPKP	14.04.40	122°		USCGS.H=13.46.17, 29°S
						177°W. Kermadec Is.
16 ✓	Pret	eP	05.24(18)	67°		USCGS.H=05.13.50
	Kim	iP	35	66°		35½°N, 26°E. Near coast
						of Crete.
16 ✓	Kim	e	16.15.57			
17 ✓	Kim	ePKP	21.43.08	118°		USCGS.H=21.24.27, 13½°N
						88½°W. San Salvador
						h = + 60 km
17 ✓	Kim	ePKP ₂	22.34.24	146°		USCGS.H=22.14.40, 30½°N
						114°W, Gulf of California
						Mag. 5¼.
18 ✓	Kim	iP	12.09.30	46°	C	USCGS H=12.01.11.
	Pret	(e)iP	36	50°		57½°S, 24°W.
	Piet	iP	52	49°	C	Sandwich Is.
19 X	Gram	i	01.49.23			
	Kim	i	23			
19 X	Kim	e	15.45.39			
19 X	Pret	e	16.12.06			
	Kim		42			
19 X	Kim	i	18.36.17			
20 X	Kim	i	23.29.42			
21 X	Kim	iPKP ₂	16.36.02	148°		USCGS.H=16.16.19, 62½°N
						159°W. S.W. Alaska.

September, 1959 (continued) - 286 -

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
22	X Pret	e	09.27.54			
		i	28(29)			
22	X Kim	i	09.57.13			
23	X Wind	e	00.45.34			
24	X Kim	i	00.27.14		R	
24	X Kim	(e)i	02.55.16			
25	X Pret	i	08.52.46			
26	Kim	i	08.40.57		R	
	Wind		41.01			
26	✓ Pret	iP	10.30.29	88°		USCGS.H=10.18.20, 22°S.
	✓ Kim	iP	30	83°	C	68½°W. Chile, h= ± 150 km
27	✓ Gram	iP	10.33.59	99°	R	USCGS.H = 10.20.18, 5½°S 129½°E, Banda Sea.
27	X Gram	e	10.45.32			
29	X Pret	e	08.04.46			
		i	06.26			
	X Kim	i	05.55			
		i	08.03			
	X Wind	e	09.58			
29	X Kim	(e)i	09.05.43			
29	X Kim	i	14.30.16			
29	✓ Kim	iPKP	15.50.51	121°		USCGS.H= 15.31.57, 29°S 176½°W, Kermadec Is. Mag. 6½.
29	X Wind	e	19.04.05			
		i	57			
29	X Pret	e	19.09.28			
		i	10.13			
30	✓ Kim	iPKP	20.45.00	124°		USCGS.H=20.25.58, 18°S 168°E, New Hebrides Is. Mag. 6½.

A.A. Attridge.

4th December, 1959.

OCTOBER, 1959.

- 287 -

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
2	Kim	i	15.32(27)			
2	Kim	i	19.29(27)			
3	Kim	i	21.51.10			
4	Kim	iP	11.05.19	82°		USCGS.H=10.53.27, 31°S 70°W. San Juan Province Argentina, h = 150 km.
4	Kim	(e)i	22.12.31			
4	Kim	i	22.32.32			
7	Wind	i	08.39.13		R	
	Kim	iP	41.43	71½°	R	USCGS.H = 08.30.41
	Piet	iP	42.02	72°	R	41°N, 20°E, Albania.
	Pret	iPcP	07	68°		
7	Kim	(e)i	14.36.37			
8	Kim	iPKP	00.22.23	127°		USCGS.H=00.03.28, 19°S 169°E. New Hebrides Is.
8	Pret	iPKP ₁	02.54.16	153°		USCGS.H = 02.35.20
	Kim	ePKP ₁	55.09	157°		52½° N, 171°W. Fox Is.
		i	22			Aleutian Is.
	Wind	iPKP ₁	14	155°		
	Piet	ePKP ₁	19	155°		
		i	31			
9	Kim	i	22.22.42		R	
12	Pret	(e)iP	03.33.06	74°		USCGS.H= 03.21.52
	Kim	eP	40	77°		2°N. 98½°E. Near coast of Sumatra
		i	52			
	Wind	eP	34.23	83°		
12	Kim	iP	03.56.05	86°		USCGS.H=03.43.44, 19°S 68½°W. Northern Chile- Bolivia border.h=150 km
12	Kim	e	15.39.52			
		i	40.01			
12	Pret	i	14.23(01)			Local traces
		i	24(01)			
14	Pret	e	00.45.16			
14	Kim	ePKP ₁	08.20.49.	157°		USCGS.H= 08.01.04
		i	56			51½°N. 176°W. Andreanof Is.
	Pret	ePKP ₁	51	153°		
14	Kim	i	11.02.28		C	
15	Piet	iP	06.28.38	92°		USCGS.H=06.15.32
	Pret	eP	(54)	95°		½°N. 120½°E. Celebes
	Kim	iP	56	96°	C	Mag. 6½.
15	Wind	e	13.21.42			
15	Kim	(e)i	14.02.40			
15	Kim	e	14.37.16			
		i	25		C	
15	Kim	i	16.34.02		C	
16	Pret	e	01.26.17			San Juan Province, Argen- tina. h = + 100 km.
17	Piet	iPKP ₁	20.47.23	151°		USCGS.H=20.27.35. 60°N. 138½°W. Yukon-British Columbia border.
19	Gram	iP	16.03.37	46°		USCGS.H= 15.55.30
	Kim	iP	55	48°	C	54½° S. 29°W. Sandwich Is. region.
	Wind	i	57			
		iP	04.19			
	Piet	i	04.15			
24	Pret	(e)i	23.25.30			
24	Piet	eP	23.52.46	82°		USCGS.H=23.40.34
	Kim	iP	54	84°	R	41½° N. 70°E. Kazakh USSR.
25	Pret	e	12.32.-			
	Pret	i	41.42			

/continued.....

October, 1959 (Continued) - 288 -

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
25	✓ Pret	iP	16.08.00	68°		USCGS.H= 15.57.51, 39°N 42°E. Eastern Turkey.
	Wind	eP	39	68°		
	Kim	iP	09.01	72°		
25	Kim	i	18.45(02)		C	
26	✓ Kim	(e)i	07.44.15			
26	✓ Kim	i	10.51.44			
	✓ Pret	e	54			
27	✓ Pret	iPKP	07.11.23	132°		USCGS.H=06.52.50. 45½°N 151°E. Kunile Is. h=+100 km. Mag. 6½
	Wind	ePKP	56	138°		
	Piet	iPKP	59	132°		
	Gram	iPKP	12.04	138°		
27	✓ Wind	e	07.14.43			
29	✓ Kim	ePKP	14.38.26	120°		USCGS.H= 14.19.51. 29½°S 176½°W. Kermadec Is. h = + 60 km. Mag. 5½
		i	43			
29	✓ Kim	i	14.58.26			
30	✓ Kim	iPKP	04.19.28	127°		USCGS.H= 04.00.26. 66°N. 136½°E. Vakutz U.S.S.R.
30	Kim	i	08.33.27		C	
30	Kim	i	09.26.54		R	
30	Kim	iP	11.36.25	+47°	R	USCGS H= 11.27.33. Sandwich Is. region. USCGS.H= 13.58.25. 23½°S. 175½°W. Tonga Is region.
30	✓ Kim	i	14.17(30)			
31	✓ Kim	iPKP	04.44(55)	131°		
31	✓ Pret	ePP	04.48.42	132½°		USCGS H = 04.27.12, 16½°S. 178°W. Fiji Is. Mag. 6½. h = + 450 km.

A.A. Attridge.

4th December, 1959.

Copied 1/5

NOV 1959

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.

NOVEMBER, 1959.

- 289 -

DATE	STATION	PHASE	G. M. T. h. m. s.	ARC DISTANCE	C/ R	REMARKS.
1	Kim	i	15.18.00			
2	Wind	e	09.06.30			
2	Kim	i	12.22(35)		C	
2	Kim	i	12.32(50)		R	
3	Kim	i	09.51.24		C	
	Piet	i	59		C	
	Gram	i	52(13)		R	
	Pret	i	41			
5	Kim	i	01.26.30			
5	Wind	e	12.09.32			
	Pret	i	(50)			
5	Wind	e	12.12.28			
6	Pret	i	02.43.07			
6	Kim	iPKP	12.02.11	126°	C	USCGS.H=11.43.06, 24°S 174½°W, Tonga Is. region
6	Kim	i	12.32.05			
7	Kim	iP	02.43.07	70°		USCGS.H=02.32.07, 36½°N 2½°E. Near coast of Algeria
7	Piet	i	15.26.03			
	Kim	i	34		C	
7	Kim	iPKP	22.35.36	127°		USCGS.H=22.18.15, 23½°S, 175½°W, Tonga Is. region Mag 6¼.
8	Pret	iPKP	14.14.28	126°		USCGS.H=13.54.55, 44°N 140½°E, near west coast of Hokkaido, Japan, Mag 6½
8	Piet	i	14.32.57			
11	Kim	i	14.02.04		C	
12	Kim	i	18.35.50			
14	Kim	(e)i	11.23.30			
15	Kim	i	10.02.13			
	Pret	e	03.45			
		i	53			
		i	04.42			
		i	51			
15	Pret	iP	10.37.11	80°		USCGS.H=10.25.03, 38°N, 74½°E. Tadzhik, U.S.S.R.
	Piet	iP	23	82°	R	
	Kim	iP	32	84°		
	Wind	iP	34	84°	C	
15	Wind	iP	17.18.53	62°	R	USCGS.H=17.08.41, near west coast of Greece Mag. 6¾.
	Kim	iP	19.34	68°	C	
	Piet	iP	43	70°		
	Pret	iPcP	48	61°		
	Gram	iPcP	51	73°	R	
16	Pret	e	00.36.26			
16	Gram	iP	01.11(06)	78°	R	USCGS.H=00.59.22, 35°S, 70°W, Chile-Argentine border, h=100 km.
	Pret	iP	12.10	84°		
16	Kim	iP	10.31.06	57°	R	USCGS.H=10.21.17, 1°N, 26½°W, Mid Atlantic Ocean Mag. 6½.
16	Wind	e	11.30.02			
18	Kim	i	22.38.39			
19	Wind	iPKP	11.27.32	126°	R	USCGS.H=11.08.32, 5½°S, 146°E, near N.E. coast of New Guinea Mag. 7
19	Pret	i	11.29.12			
21	Pret	i	20.09.08			
22	Wind	e	16.27.17			
22	Pret	e	19.21.10			
22	Kim	iPKP	19.52.33	127°	C	USCGS.H=19.34.35, 21½°S, 178½°W, Fiji Is. region h = + 550 km.

/continued.....

November, 1959(continued). - 290 -

<u>DATE</u>	<u>STATION</u>	<u>PHASE</u>	<u>G. M. T.</u> h. m. s.	<u>ARC</u> <u>DISTANCE</u>	<u>C/</u> <u>R</u>	<u>REMARKS.</u>
23	X Kim	i	03.17.33			
26	✓ Pret	(e)iP	07.18.16	76°		USCGS.H=07.06.19, 5½°S, 102½°E, near coast of Sumatra, Mag. 6½.
26	✓ Pret	e	23.20.47			
		i	23(23)			
	✓ Gram	e	21.10			
		i	12			
28	X Pret	i	12.44.58			
28	✓ Gram	i	12.47.09			
	✓ Piet		34			
28	✓ Pret	iPKP	22.58.49	127°		USCGS.H=12.34.53, 28½°S, 71°W, Chile, Mag. 6½. USCGS.H=22.39.15, 13°S, 167½°E. New Hebrides Is.
30	✓ Piet	iPKP ₁	15.38.28	153°	R	USCGS.H= 15.18.37, 59½°N
	✓ Gram	ePKP ₁	36	157°		152°W, Kenoi Peninsula
	✓ Pret	iPKP ₂	39.18	148°		Alaska.
30	X Gram	e	19.07.15			

A.A. Attridge

15th January, 1960.

Open 4/3

DEC 1959

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>Pietermaritz- burg (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°54'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.

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.

DECEMBER, 1959.

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance	C/ R	Remarks.
1	Kim	e	12.20.11 43 56 21.10			
1	Wind	eP	12.48.56	62°		USCGS.H=12.38.48, 38°N 21½°E, Near West Coast of Greece.
	Pret	(e)i	49.32			
	Kim	iP	37	68°	R	
1	Kim	e	15.50(11)			
2	Wind	e	05.12.41			
2	Pret	(e)iP	09.47.10	95°		USCGS.H=09.34.00, 1°S, 123°E, Celebes Is. Mag.6¾
2	Pret	(e)i	10.56.03			
2	Pret	(e)i	15.34.07			
3	Kim	i	22.46.01 04			
3	Wind.	i	23.12.28			
5	Pret	e	01.03.28			
5	Pret	(e)i	01.25.43			
5	Kim	i	01.58.50			
	Pret	i	58 59.36			
5	Pret	e	02.22.06			
7	Pret	i	15.25.12			
8	Kim	iP	13.01.43	+65°	C	USCGS.H=12.50.45, South- ern Iran. USCGS.H=13.33.59, 42°N 44½°E. Georgia USSR.
8	Pret	i	13.45.02			
	Kim	i	24			
8	Pret	i	21.41.34			
13	Pret	e	02.35(35)			
13	Wind	e	06.34.14			
	Pret	(e)i	20			
14	Kim	eP	18.12.15	105°		USCGS.H=17.58.31, 5°N, 126°E, Near South coast of Mindanao h=150 km.
14	Kim	i	18.27.47		C	
14	Pret	(e)iPKP ₁	22.20.19	147°		USCGS.H=22.00.50, 52½°N, 168°W. Fox Is. Mag. 6.
	Kim	iPKP ₁	(38)	157°	R	
	Wind	iPKP ₁	45	153°		
	Piet	(e)iPKP ₂	53	155°		
14	Pret	i	23.29.58			
	Gram	iP	30.04	47°	C	USCGS.H= 23.21.56 59½°S. 31°W.
	Kim	iP	15	50°	R	
	Wind	iP	41	51°	R	Sandwich Is. Mag. 7
	Piet	iP	42	52°	C	
14	Kim	i	23.59.44		R	
15	Wind	i	04.24.33		R	
15	Kim	iP	10.59.38	80°	R	USCGS.H=10.47.42, 37°N, 70°E, Hindu Kush.
15	Gram	iP	12.23.58	41°	C	
	Pret	iP	24.20	48°		USCGS.H=12.15.45, 59°S. 24°W. Sandwich Is.
	Kim	iP	26	44°	R	
15	Piet	i	19.47.23			
	Kim	i	(30)		R	
	Pret	(e)i	48.25			
17	Kim	i	16.30.58		R	
18	Wind	iPKP ₁	16.44.42	154°	R	USCGS.H=16.24.50, 53°N, 168°W.
	Pret	iPKP ₁	45	152°		
	Kim	iPKP ₁	(50)	156°	C	Fox Is, Mag. 6½.
	Piet	iPKP ₁	51	154°		
	Gram	iPKP ₂	45.27	160°		

/continued.....

December, 1959 (continued). - 292 -

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance	C/ R	Remarks.
21	Kim	ePKP	10.39.29	122°		USCGS.H = 10.20.33; 27½°S
		i	31			176°W. Kermadec Is. Mag 6
21	Piet	iP	11.28.01	50°		USCGS.H=11.19.14, 14°N
	Kim	iP	10	52°		52°E. Gulf of Aden.
	Gram	(e)iP	36	55°		Mag. 6¼.
	Pret	i	(29.53)			
21	Kim	i	12.18.11			
21	Kim	(e)i	12.38.12			
22	Kim	i	00.18.32			
22	Pret	i	00.38(53)			
22	Kim	i	11.39.13		C	
23	Kim	iPKP ₁	04.08.59	156°	R	USCGS.H=03.49.00, 56½°N
						158°W. Alaska Peninsula
23	Kim	iP	09.39.54	69°		USCGS.H= 09.28.56, 38°N
						14½°E. Near north coast
						of Sicily.
23	Kim	e	14.20.26			
24	Pret	(e)i	07.23.07			
	Kim	i	24.45			
25	Kim	i	01.20.22		C	
25	Pret	(e)i	09.57.17			
25	Wind	iP	10.30.36	77°		USCGS.H=10.18.35,
	Kim	iP	57	82°	C	25½°S, 67°W. Mag. 6¼.
	Gram	iP	58	82°	R	Chile-Argentine border.
26	Piet	(e)i	12.20.52			
	Kim	i	21.50			
	Wind	e	22.23			
26	Pret	iPKP ₁	18.38.22	148°		USCGS.H=18.19.10.
	Kim	iPKP ₁	58	151°		59½°N, 151½°W. Kenoi
	Piet	(e)iPKP ₁	39.04	152°	R	Peninsular, Alaska
26	Kim	iPKP	22.22.26	142°		USCGS.H=22.02.35, 53°N
						160°E, Kamchatka foreshock
27	Kim	iP	05.33.42	66°	C	USCGS.H=05.22.39, 35°N.
	Pret	e	42			26°E. Near east coast of
						Crete
27	Kim	ePKP	12.14.21	142°		USCGS.H=11.54.48, 52½°N
						160°E, Kamchatka foreshock
27	Wind	iP	12.49.34	74°		USCGS.H=12.39.09, 28°S
	Piet	iP	48	82°		63°W, Santiago del Estero
	Kim	iP	54	77°	C	Province, Argentine
	Gram	iP	58	77°	R	h= 650 km.
27	Pret	i	14.46.28			
27	Piet	(e)iPKP	16.12.22	138°		USCGS.H=15.52.55, 56°N
	Pret	(e)iPKP	47	136°		162½°E. Kamchatka.
27	Piet	e	19.51.04			
28	Kim	iPKP	07.39.58	143°		USCGS.H=07.20.32, Mag 6½
						52½°N, 160°E. Near east
						coast of Kamchatka.
28	Pret	(e)i	07.43.25			
28	Kim	iP	10.15.27	83°	C	USCGS.H=10.03.08, 22½°S.
						67½°W. Chile-Bolivia
						border. h=100 km.
28	Kim	(e)iPKP	13.24.02	143°		USCGS.H=13.04.30, 52½°N
						160°E, Near east coast of
						Kamchatka. Mag. 6.
28	Kim	e	14.32.04			
		i	19		C	
30	Pret	i	06.49.59			
31	Pret	(e)i	23.20.17			

A.A. ATTRIDGE.

19th February, 1960.