

July 1956

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>
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.

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

H.O. Oliver
H.O. Oliver.
Seismological Officer.

0 SEP 1956

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance	C or R	Remarks
Omitted from June Bulletin, 1956:						
26	Kim	iP	09 10 27)	230 km.		H = 09 09 52
		iS	10 52)			30°S. 26½°E.
	Gram	eP	09 10 46)	370 km.		Smithfield G.F.S.
		iSn	11 23)			

JULY, 1956.

2	Kim ✓	(e)i ✓	04 45 42			
3	(Pret ✓	eP ✓	10 29 18	77°		USCGS H = 10 17 57
	(Kim ✓	(e)iP ✓	30 13	82°		28°N. 84½°E.
						Nepal.
3	Kim ✓	iP ✓	23 37 19 ✓	78°	R ✓	USCGS H = 23 26 17
	Pret ✓	iP ✓	28 ✓	75°		36½°N. 71°E. h=
	Piet ✓	iP ✓	42 ✓	76°		250 km. Hindu
						Kush.
	Gram ✓	iP ✓	38 06 ✓	82°		
		i ✓	39 02 ✓			
4	Kim ✓	iPKP1 ✓	00 58 12 ✓	127°	R ✓	USCGS H = 00 39 55
						18°S. 178½°W.
						Fiji Is. H = 250
						Kn. USCGS H =
						03 04 14 7°S.
						155½°E. Solomon Is.
4	Kim ✓	iP ✓	11 20 37 ✓	82°	C ✓	USCGS H = 11 08 28
	Piet ✓	iP ✓	57 ✓	86°		31°S. 71°W.
	Pret ✓	iP ✓	58 ✓	86°	R ✓	Central Chile.
4	Kim ✓	i ✓	12 30 01 ✓			
	Pret ✓	e ✓	37 52 ✓			
		i ✓	53 ✓			
5	Kim ✓	iPKP1 ✓	13 20 40 ✓	148°		USCGS H = 13 01 05
						63½°N. 151½°W.
						Alaska.
7	Kim ✓	i ✓	19 15 49 ✓			
9	Pret ✓	iP ✓	03 22 04 ✓	64°	C ✓	USCGS H = 03 11 39
	Kim ✓	iP ✓	22 ✓	67°	C ✓	37°N. 26°E. Mag. 8
	Piet ✓	iP ✓	30 ✓	68°	R ✓	Aegean Sea.
	Gram ✓	iP ✓	52 ✓	72°	C ✓	
9	Pret ✓	iP ✓	03 34 27 ✓	64°	C ✓	USCGS H = 03 24 05
	Kim ✓	iP ✓	46 ✓	67°	C ✓	Aegean aftershock.
	Piet ✓	iP ✓	51 ✓	68°		
	Gram ✓	iP ✓	35 15 ✓	72°		
9	Gram ✓	i ✓	04 44 34 ✓			Small.
9	Kim ✓	(e)iP ✓	06 29 54 ✓	67°	C ✓	USCGS H = 06 19 07
						Aegean Sea after-
						shock.
9	Kim ✓	iP ✓	06 33 31 ✓	67°	R ✓	USCGS H = 06 22 49
						37°N. 25½°E.
						Aegean Sea after-
						shock.
9	Kim ✓	i ✓	07 47 10 ✓			
9	Kim ✓	(e)iPKP ✓	10 14 41 ✓	104°		USCGS H = 09 56 13
						20°N. 73°W. Mag.
						6½. Nr. coast of
						Haiti.
9	Kim ✓	i ✓	11 41 32 ✓			
9	Kim ✓	(e)i ✓	19 52 57 ✓			
9	Kim ✓	iP ✓	20 21 09 ✓	67°	C ✓	USCGS H = 20 10 15
						Aegean Sea after-
						shock.

Date	Station	Phase	G. C. T. h. m. s.	Arc Distance	C or R	Remarks
10	Kim	iP ✓	03 12 11	67°	R ✓	USCGS H = 03 01 27 37°N. 26°E. Aegean Sea aftershock.
10	Kim	ePKP ✓ i ✓	18 15 19 32	1140°	C	USCGS H = 17 56 03 Marshall Is.
10	Pret Kim	iP ✓ iP ✓	22 19 53 20 14	75°		USCGS H = 22 08 23 36°N. 71½°E. h = 100 km. Hindu Kush.
10	Pret	e ✓ i ✓	22 39 58 41 54			
	Piet	e(i) ✓	40(07)			
	Kim	e ✓	42 44			
11	Pret Kim	i ✓ i ✓	18 56 07 36		C C	
12	Pret	e ✓	03 07 00			
12	Kim	i ✓	12 20 56		R ✓	
12	Kim	iP ✓	15 13 21	85°	C ✓	USCGS H = 15 01 17
	Pret	iP ✓	29	82°	C ✓	23°N. 94°E.
	Piet	i ✓	32	82°		Central Burman.
	Gram	iP ✓	56	86°	C ✓	
12	Kim	i ✓	15 19 16			
13	Kim	iP ✓	13 48 01	86°	C ✓	USCGS H = 13 36 03
	Pret	eP ✓	48	90°		27°S. 70°W. h = 100 Km. N. Chile.
13	Piet	iP ✓ iS ✓	14 12 25) 38)	120 km.		South African
	Gram	eP ₁ ✓ eSn ✓ iS ₁ ✓	13 21) 50) 14 07	440 km.		H = 14 12 04 30°20'S. 29°40'E. Kokstad District. Natal border.
	Kim	iS ₁ ✓	14 27	510 km.		
	Pret	eS ₁ ✓	14 34	540 km.		
14	Kim	iP ✓	17 21 51	83°	R	USCGS H = 17 09 30
	Pret	eP ✓	43	84°		17°N. 45½°W. W. Atlantic Ocean.
15	Kim	i ✓	02 52 33			
16	Kim	i ✓	05 28 30			
	Gram	i ✓	51			
16	Pret	eP ✓ i ✓	15 19 20 ✓ 33 ✓	83°		USCGS H = 15 07 06
	Piet	iP ✓	35 ✓	83°		23½°S. 96°N.
	Kim	iP ✓	39 ✓	85°		Central Burman.
	Gram	iP ✓	(51) ✓	87°		
16	Gram	iP ✓	20 49 53 ✓	87°	R	USCGS H = 20 40 23
	Kim	iP ✓	50 32 ✓	86°	C	24°N. 96°E. Burma aftershock.
16	Pret	iPKP ₁ ✓	21 53 49	148°		USCGS H = 21 34 00
	Kim	iPKP ₁ ✓	52	155°	C	Andreanof Is.
	Piet	iPKP ₁ ✓	55	150°	C	Aleutian Is.
	Gram	iPKP ₂ ✓	54.04	155°	R	
17	Piet	iP ✓	07 46 36 ✓	93°	R ✓	USCGS H = 07 34 07
	Pret	iP ✓	43 ✓	97°	C ✓	7°S. 126½°E. Mag.
	Gram	iP ✓	43 ✓	97°	C ✓	6½. Banda Sea.
	Kim	iP ✓	45 ✓	98°		
18	Kim	iPKP ✓	00 46 20 ✓	120°	R ✓	USCGS H = 00 27 27
						5°S. 151°E. New Britain.
18	Piet	iP ✓	06 32 50 ✓	95°	R ✓	USCGS H = 06 19 15
	Pret	iP ✓	33 01 ✓	100°	R ✓	5°S. 130°E. Mag.
	Gram	iP ✓	01 ✓	100°	C ✓	7½. Banda Sea.
	Kim	iP ✓	10 ✓	101°		
19	Gram	e ✓ i ✓	01 06 35 37			

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance	C or R	Remarks
19	Pret	i ✓	12 06 30			
20	Kim	i	06 50 57 ✓		R	
20	Pret	i	07 51 18 ✓			
21	Kim ✓	eP	00 18 16 ✓	57°		USCGS H = 00 08 31 1°N. 26°W. Mid Atlantic Ocean.
21	Pret ✓	ePKP ₂	15 11 18 ✓	128°		USCGS H = 14 51 06 50½°N. 147½°E. h = 600 km. Sea of Okhotsk.
	Kim	i	27 ✓			
	Kim	iPKP ₂		130°		
21	Kim ✓	iPKP	15 40 14	121°	C	USCGS H = 15 21 20 22½°S. 172½°E. Loyalty Is. region.
21	Pret ✓	iP	15 43 60 ✓	65°	C	USCGS H = 15 32 25
	Piet ✓	iP	11 ✓	65°	C	23°N. 70°E. Mag. 6½
	Kim ✓	iP	26 ✓	69°	C	Western India.
22	Gram ✓	iP	09 37 36 ✓	86°		USCGS H = 09 25 08
	Kim ✓	iP	36 ✓	86°	C	19°S 69°W. h = 100 km. Northern Chile. Mag. 6½.
23	Kim ✓	e	14 50 44			
27	Kim ✓	(e)i	16 01 23			Small.
28	Piet ✓	iP	02 33 58)	120 km.		S. African probably Kokstad District.
		iS	34 11)			
29	Pret ✓	ePn	12 07 18)			H = 12 06 08
		eSn	08 11)	530 km.		Probably Mozambique.
		eSl	32)			
	Kim ✓	ePn	12 08 07)			
		eSn	09 46)	1000 km.		
		iSn	10 41)			
30	Kim ✓	iP	05 51 38 ✓	67°		USCGS H = 05 41 01 Aegean Sea after- shock.
30	Pret ✓	(e) iP	09 25 21 ✓	64°	C	USCGS H = 09 15 00
	Kim ✓	iP	35 ✓	67°		Aegean Sea after- shock.
	Gram	(e) iP	26 09 ✓	72°		
30	Kim ✓	(e) i	09 51 25 ✓			
30	Pret ✓	eP	10 50 17 ✓	64°		USCGS H = 10 39 56
	Kim ✓	(e) iP	35 ✓	67°		Aegean Sea after- shock.
30	Kim ✓	i	12 08 34			
	Pret ✓	e	19 36 22			
31	Pret ✓	e	06 40 58			
	Kim	(e) i	06 (43) 13			
31	Pret ✓	i	13 46 45		R	Small.
28	Kim	e ✓	08 03 10			
28	Kim ✓	(e) i	14 08 58			Small.
29	Pret ✓	iP	07 23 35 ✓	58°	R	USCGS H = 07 13 44
	Gram ✓	iP	53 ✓	60°		9°S. 85½°E.
	Kim ✓	iP	58 ✓	61°	R	E. Indian Ocean.

A.A. ATTRIDGE.

Aug 1956

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11 OCT 1956

AUGUST, 1956.

Date	Station	Phase	G. M. T.			Arc Distance	C or R	Remarks
			h.	m.	s.			
1	Gram. ✓ Kim	iP iP	07	09	35 38	79° 80°	C C	USCGS H = 06 57 09 28½°S, 71½°W. Central Chile.
3	✓ Kim	(e)i	04	30	07 ✓			
3	✓ Kim	(e)i	05	47	23 ✓			
3	✓ Kim	e	12	01	50 ✓			
3	✓ Pret	e	12	29	57			
3	✓ Kim	i	17	45	55		R	
3	✓ Pret	e	17	46	26			
3	✓ Pret	i	17	47	16			
4	✓ Pret	e	13	50	58			
7	✓ Kim	iP	00	42	08	±86°	C	USCGS H = 00 29 04 Southern Burma.
9	✓ Pret	e	21	19	23			
9	✓ Kim	ePKP	25	19	12	133°		USCGS H = 23 00 42 15°S, 176°W. Mag. 6½
	✓ Gram	iPKP			20	127°		Samoa Is. region
	✓ Pret	ePKP			19	134°		h = 250 km.
	✓ Piet	iP			34	129°		
10	✓ Piet	e	13	37	30		C	
12	✓ Kim	i	00	13	57			
12	✓ Kim	ePKP	17	18	35	125°		USCGS H = 16 59 33 34°N, 138°E. Mag. 6½ Near S.E. coast of Honshu, Japan.
14	✓ Gram	iPP	02	54	37 ✓	±15½°	R	USCGS H = 02 50 30 Prince Edward Is. region. Southern Indian Ocean.
	✓ Piet	iPP		55	19	±18°		
	✓ Kim	iPP			24		C	
	✓ Pret	iPP			52			
15	✓ Pret	iP	05	31	42	74°		
	✓ Pret	iP			54	76°	C	
	✓ Gram	iP		32	06	78°	C	
	✓ Kim	iP			11	80°	C	
15	✓ Pret	iP	11	04	27	94°	C	USCGS H = 10 51 19 ½°N, 125°E. h = 150 km. N. Celebes Is. USCGS H = 12 02 54 43½°N, 16½°E. Nr. coast of Yugoslavia. USCGS H = 13 12 10 46°W, 151°E. Mag. 6½. Kurile Is.
15	✓ Pret	iP	12	14	08	69°	R	USCGS H = 08 10 25 51°N, 176°W. Andreanof Is., Aleutian Is.
15	✓ Pret	ePKP	13	31	(26)	131°		
16	✓ Pret	ePKP ₁	08	30	12	151°		
	✓ Piet	iPKP ₁			21	152°		
	✓ Kim	ePKP ₁			(22)	154°		
18	✓ Kim	i	17	06	13			
19	✓ Kim	e	05	36	(18)			
19	✓ Pret	e	18	29	(02)			
20	✓ Kim	e	15	27	06			
22	✓ Pret	eP	19	52	45	±84°		USCGS H = 19 40 15 Northern Assam.
	✓ Piet	iP			(49)	±84°		
	✓ Gram	eP			57	±89°		
	✓ Kim	iP		53	08	±88°		
23	✓ Kim	iP	14	01	04	87°		USCGS H = 13 48 30 15°S, 68°W. Mag. 6½ Bolivia. h = 100 km.

Date	Station	Phase	G. C. T. h. m. s.	Arc Distance	C or R	Remarks
24	✓ Pret	ePKP ₁	04 47 01	143°		USCGS H = 04 27 35
	✓ Piet	iPKP ₂	09	144°		53°N. 172½°E. Mag.
	✓ Kim	iPKP ₂	14	146°	C	6½. Near Is;
	✓ Gram	iPKP ₁	20	150°	R	Aleutian Is.
24	✓ Kim	(e)iPKP ₂	05 09 40	146°		USCGS H = 04 50 00
						53½°N. 172½°E. Near
						Is. Aleutian Is.
24	✓ Kim	(e)i	09 18 47		R	Small.
24	✓ Kim	(e)i	10 22 43			
24	✓ Kim	(e)i	12 39 08			Small.
24	✓ Pret	iPKP ₁	19 34 47	151°	C	USCGS H = 19 14 55
	✓ Kim	iPKP ₁	54	155°		52°N. 170½°W. Fox Is.
						Aleutian Is.
26	✓ Kim	i	20 26 43			
27	✓ Kim	iPKP ₁	18 20 32	145°	C	USCGS H = 18 01 01
	✓ Gram	iPKP ₁	43	151°	C	64°N. 150°W. h =
						60 km. Central
						Alaska.
29	✓ Kim	ø	12 18 05			
30	✓ Pret	iPKP ₁	04 44 17	151°	R	USCGS H = 04 24 24
	✓ Kim	(e)iPKP ₁	23	154°		54°N. 164°W. Mag. 6
						Ummak Is. Aleutian
						Is.
31	✓ Kim	i	15 49 28			

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H.O. Cliver
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 Seismological Officer.

6 NOV 1956

SEPTEMBER, 1956.

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1	✓ Pret	e	17 46 (44)			
	✓ Kim	e	(49 35)			
1	✓ Pret	iPKP ₁	18 16 31	151°	C	USCGS H = 17 53 36 54°N. 163½°W. Unimak I. region, Alaska.
	✓ Kim	iPKP ₁	37	155°	C	
3	✓ Kim	i	21 40 06			
	✓ Pret	e	33			
		i	37			
5	✓ Pret	(e)i	03 48 02		C	
	✓ Kim	e	35			
6	✓ Kim	e	00 16 21			
6	✓ Pret	eP	11 57 01	±62°	R ✓	USCGS H = 11 46 35 Dodecanese Is. region. USCGS H = 12 58 45 37°N. 26½°E. Dodecanese Is.
	✓ Kim	iP	14	±65°		
6	✓ Kim	iP	13 09 18	66°		
6	✓ Kim	i	17 41 58		R	
8	✓ Kim	e	22 06 (56)			
10	Pret	iP	12 43 12	75°	R	USCGS H = 12 31 34 1°N. 100°E. Central Sumatra.
	Kim	iP	29	78°	C	
10	✓ Pret	(e)i	16 10 39		R	
11	✓ Kim	i	00 10 44			
11	✓ Kim	iPKP	02 51 44	129°		USCGS H = 02 32 28 16½°S. 178°E. Fiji Is. Mag. 6¼.
11	✓ Kim	iPKP	21 23 12	138°		USCGS H = 21 03 56 49½°N. 155°E. Mag. 6¼. N. Kurile Is.
	✓ Pret		12	133°		
12	✓ Pret	e	10 42 45			
12	✓ Kim	i	17 18 59			
15	✓ Kim	iP	07 51 27	84°	R ✓	USCGS H = 07 39 04 20°S. 69°W. Mag. 6½ N. Chile h = 100 km.
	✓ Gram	iP	30	84°		
	✓ Pret	eP	48	88°		
		i	52 15			
16	✓ Kim	i	02 56 24			
	✓ Pret	e	55			
16	✓ Pret	iP	08 48 14	72°	C ✓	USCGS H = 08 37 22 34°N. 69½°E.
	✓ Piet	iP	25	74°		
	✓ Kim	iP	49 07	76°	R ✓	Afghanistan Mag. 6¼.
	✓ Gram	iP	23	78°		
17	✓ Pret	e(i)	04 32 36			
	✓ Kim	i	39			
17	✓ Pret	iP	20 30 07	71°	C ✓	USCGS H = 20 19 07 5½°N. 95°E. h = 150 km. Nr. N. coast of Sumatra.
	✓ Kim	iP	28	75°		
17	✓ Kim	i	22 44 40			
	✓ Pret	e(i)	46 15			
19	✓ Pret	iP	23 59 27	80°		
20	✓ Kim	iP	00 00 15	84°	R	USCGS H = 23 47 35 22°N. 94½°E. h = 100 km. Central Burma.
20	✓ Kim	i	11 15 37			
20	✓ Pret	ePKP	22 11 21	136°	R ✓	USCGS H = 21 52 01 51½°N. 159½°E. Mag. 6¼. Nr. S. coast of Kamchatka.
	✓ Kim	(e)iPKP	27	141°		
20	✓ Kim	i	23 05 25			
20	✓ Gram	e	12 58			

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			h.	m.	s.			
21	✓ Kim	iP	19	22	44	76°	C	USCGS H = 19 11 59 26 $\frac{1}{2}$ °S. 63°W. Santiago del Estero Province, Argentine. h = 600 km.
	✓ Gram	iP			46	76°	C	
	✓ Pret	iP			23 07	80°	C	
23	✓ Kim	i	02	29	12		C	
23	✓ Kim	i	20	41	41		R	
24	✓ Gram	i	10	29	40			
24	✓ Pret	iP	10	31	59	72°	R	USCGS H = 10 20 38 34°N. 69°E. Afghanistan.
	✓ Piet	iP			32 12	74°	R	
	✓ Kim	iP			22	76°	R	
24	✓ Kim	i	21	08	12		R	
26	✓ Pret	iPKP ₁	14	06	17	145°	C	USCGS H = 13 46 52 52°N. 176°E. h = 100 km. Rat I; Aleutian Is. Small.
	✓ Piet	iPKP ₁			25	146°	C	
	✓ Kim	iPKP ₁			30	149°		
28	✓ Kim	i	06	36	49		C	
29	✓ Kim	i	09	25	26		R	
29	✓ Kim	i	11	39	05		R	
29	✓ Kim	i	15	34	53			
29	✓ Kim	i	21	39	46		C	
29	✓ Pret	iPKP	23	39	40	122°	C	USCGS H = 23 20 52 35 $\frac{1}{2}$ °N. 140°E. h = 60 km. Central Honshu, Japan. Mag. 7.
	✓ Piet	iPKP			42	121°	R	
	✓ Kim	iPKP			50	125°	C	
30	✓ Piet	i	19	20	06			
	✓ Pret	e			50			
	✓ Kim	i			55		C	

A .A. ATTRIDGE.

TOBER 1956

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

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

30 DEC 1956

OCTOBER, 1956.

Date	Station	Phase	G. M. T. h. m. s.	Arc Distance	C or R	Remarks
1	✓ Piet	e	14 08 02			
	✓ Kim	i	09		R	
1	✓ Kim		14 50 34		R	
2	✓ Kim	ePKP	15 15 38	141°		USCGS H = 14 56 26
		i	50		C	53°N. 159°E. h = 60
	✓ Pret	(e)iPKP	42	137°		km. Near S.E. coast of Kamchatka. Mag. 6½.
		i	19 12			
	✓ Gram	iPKP	15 46	137°	R	
	✓ Piet	iPKP	48	143°		
3	✓ Gram	iP	08 31 06	83°	R	USCGS H = 08 18 46
	✓ Kim	iP	07	84°		20°S. 69½°W. h = 100
	✓ Pret	iP	27			km. N. Chile Mag. 6½.
5	✓ Kim	i	17 41 52			
5	✓ Gram	iPKP	22 02 00	121°	R	USCGS H = 21 43 16
	✓ Kim		07	125°	R	14°S. 167½°E. h = 100
						km. New Hebrides Is.
7	✓ Kim	iPKP	21 46 44	125°		USCGS H = 21 27 50
						13°S. 167°E. h = 100
						km. New Hebrides Is.
9	✓ Kim	i	06 28 43			
10	✓ Pret	iP	15 43 03	74°	R	USCGS H = 15 31 39
	✓ Gram	iP	10	79°	C	28½°N. 77½°E. N.
	✓ Piet	iP	11	74°	C	India.
	✓ Kim	iP	27	77°	C	
11	✓ Gram	iPKP	02 43 (36)	136°		USCGS H = 02 24 33
	✓ Pret	(e)iPKP	38	131°		46°N. 150½°E. Mag. 7½
	✓ Kim	iPKP	39	135°		Kurile Is. h = 100
	✓ Piet	iPKP	39	131°	R	km.
11	✓ Kim	iPKP ₁	17 08 45	155°		USCGS H = 16 48 46
	✓ Piet	iPKP ₁	53	158°		40½°N. 126½°W. Off
	✓ Gram	iPKP ₁	57	157°		Cape Mendocino, Cali-
	✓ Pret	(e)iPKP ₁	57	156°	R	fornia. Mag. 6.
12	✓ Kim	iP	02 50 49	91°	R	USCGS H = 02 37 43
					R	15°S. 74½°W. Mag. 6½
						Nr. coast of Central
						Peru.
12	✓ Kim	ePKP	12 41 (41)	131°		USCGS H = 12 22 48
	✓ Pret	ePKP	47	127°		42½°N. 144½°E. Nr.
						coast of Hokkaido,
						Japan, Mag. 6½.
12	✓ Pret	e	21 13			
12	✓ Kim	i	21 16 (40)			
13	✓ Kim	iP	08 32 32	77°		USCGS H = 08 21 02
	✓ Pret	iP	39	73°	C	36½°N. 71°E. Hindu
	✓ Piet	iP	51	78°	R	Kush, Afghanistan.
	✓ Gram	iP	33 27	80°		
13	✓ Kim	e(i)PKP	15 31 20	138°		USCGS H = 15 12 25
						49½°N. 156°E. N.
						Kurile Is.
13	✓ Kim	iPKP	19 12 30	117°		USCGS H = 18 54 06
						5°S. 149½°E. h =
						150 km. New Britain.
13	✓ Kim	e	21 21 59.5			
	✓ Gram	e	22 (05)			
	✓ Piet	e	23 48			Possibly S.African.
	✓ Pret	e	25 02			Details in later
14	✓ Gram	i	11 09 37			Bulletin.
	✓ Kim	i	58		R	
	✓ Piet	i	10 04		R	
	✓ Pret	i	30		R	
15	✓ Pret	e	06 49 15		R	
	✓ Kim	e	(50 06)			

Date	Station	Phase	G. C. T. h. m. s.	Arc Distance	C or R	Remarks
✓16	✓ Pret	e	12 23 17			
✓17	✓ Kim	e	06 14 (06)			
		i	15 27			
.18	✓ Pret	e	20 12 (55)			
		i	13 13		R	
19	✓ Kim	i	12 18 34		R	
	✓ Pret	e	37			
19	✓ Pret	iPKP ₂	21 07 12	145°	R	USCGS H = 20 47 33
	✓ Piet	iPKP ₁	17	147°		52°N. 177°E. Mag. 6 $\frac{3}{4}$
	✓ Kim	iPKP ₁	22	150°	R	Rat Is. Aleutian Is.
	✓ Gram	iPKP ₁	28	152°		
19	✓ Pret	iPKP ₁	21 47 28	145°	R	USCGS H = 21 27 47
	✓ Kim	iPKP ₂	39	150°		52°N. 177°E. Rat
						Is. aftershock.
.19	✓ Pret	ePKP ₁	21 57 26	145°		Small. USCGS H = 21
						37 45. Rat Is.
						aftershock.
21	✓ Kim	i	08 36 34			
	✓ Pret	e	37 30			
	✓ Gram		49		R	
22	✓ Kim	iPKP ₁	07 45 39	150°		USCGS H = 07 26 15
	✓ Pret	ePKP ₂	57	145°		52°N. 177°E. Rat
						Is., Aleutians.
23	✓ Kim	i	02 00 53			
.23	✓ Pret	iP	08 54 52	99°		USCGS H = 08 41 22
						13 $\frac{1}{2}$ °N. 120 $\frac{1}{2}$ °E. h =
						100 km. Mindoro Is.
						Philippines Is.
						USCGS H = 08 41 22
						13 $\frac{1}{2}$ °N. 120 $\frac{1}{2}$ °E. h =
						100 km. Mindoro Is.
						Philippines Is.
24	✓ Gram	ePKP	15 00 25	117°		USCGS H = 14 42 11
	✓ Kim	iPKP	54	115°	C	12°N. 87°W. Mag. 7 $\frac{1}{2}$
			51			Near coast of
						Nicaragua.
	✓ Pret	ePKP	58	118°		
	✓ Piet		01 18	117°		Small.
24	✓ Kim	i	15 11 38		C	
25	✓ Gram	i	11 51 54			
	✓ Kim		52 26		C	
	✓ Pret		53 01		C	
26	✓ Kim	iPKP	03 06 05	127°	C	USCGS H = 02 47 00
						17 $\frac{1}{2}$ °S. 176°E. Fiji
						Is.
26	✓ Kim	iPKP	23 09 24	123°	C	USCGS H = 22 50 24
						14° 167°E. Mag. 6 $\frac{1}{2}$.
						New Hebrides Is.
28	✓ Kim	iPKP	03 47 13	116°	R	USCGS H = 03 28 41
	✓ Piet	iPKP	24	113°		32°S. 179°W. Mag. 7.
	✓ Pret	ePKP	(24)	118°		Kermadec Is.
28	✓ Pret	e	03 57 59			
	✓ Kim	i	58 06			
28	✓ Pret	e	10 23 58			
29	✓ Kim	i	07 07 42			
29	✓ Kim	iP	07 48 38	65°		Small.
						USCGS H = 07 34 57
						Dodecanese Is.
29	✓ Kim	iP	15 55 32	96°	C	USCGS H = 15 42 08
		i	53		C	8 $\frac{1}{2}$ °S. 77°W. h =
	✓ Gram	eP	34	96°	C	60 km. Central
	✓ Pret	(e)iP	56 10	98°	R	Peru.
30	✓ Pret	e	09 43 (16)			
	✓ Kim	e	14 38			
		i	46 04			
30	✓ Kim	i	10 09 59			
31	✓ Pret	iP	14 13 42	58°	R	USCGS H = 14 03 38
	✓ Piet	iP	14 01	66°	C	26 $\frac{1}{2}$ °N. 54 $\frac{1}{2}$ °E. Mag.
	✓ Kim	iP	10	63°	R	6 $\frac{3}{4}$. S. Iran.
	✓ Gram	iP	30	65°	C	

<u>Date</u>	<u>Station</u>	<u>Phase</u>	<u>G. C. T.</u> <u>h. m. s.</u>	<u>Arc</u> <u>Distance</u>	<u>C</u> <u>or</u> <u>R</u>	<u>Remarks</u>
31	✓ Pret	iP	14 32 21.5	58°	R	USCGS H = 14 22 19 27°N. 54½°E. S. Iran aftershock.
	✓ Piet	iP	40	65°	C	
	✓ Kim	iP	53	64°		
	✓ Gram	iP	33(08)	66°		
31	✓ Kim	i	19 01 49			
	✓ Kim	iP	22 31 30	(64°)	R	USCGS H = 22 21 15 N.E. India.
31	✓ Kim	i	23 43 15		R	
Nov. 1	✓ Pret	eP	06 02 33	59°		USCGS H = 05 52 37 27½°N. 53½°E. S. Iran aftershock.

A.A. ATTRIDGE.

1956

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

SEISMOLOGICAL BULLETIN.

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 Johannesburg, S. Africa.

H.O. Oliver
 H.O. Oliver.
 Seismological Officer.

1 JAN 1957

NOVEMBER, 1956.

Date	Station	Phase	G. M. T. h. m. s.	C/ R	Arc Distance	Remarks
2	✓ Pret	iP	16 15 16	C	65°	USCGS H = 16 04 30 39°N. 23°E. Near E. coast of Greece.
	✓ Kim	iP	34	C	68°	
3	✓ Kim	i	16 15 11			Small.
3	✓ Kim	iPKP	18 19 57	C	123°	USCGS H = 18 02 04 24°S. 180°E. S. of Fiji Is. h=500 km.
4	✓ Gram	i	06 24 34	C		
6	✓ Kim	i	14 31 29			
6	✓ Piet	iPKP ₁	23 33 55	C	151°	USCGS H = 23 14 26 52°N. 176°W. Andreanof Is.
	✓ Pret	iPKP ₂	34 07	R	149°	
	✓ Kim	iPKP ₁	17	C	153°	
7	✓ Pret	e	10 28 26			
8	✓ Kim	i	13 24 55			
9	✓ Gram	i	13 25 01			
	✓ Pret	e	03			
		i	12	R		
10	✓ Pret	e	14 53 41			
10	✓ Pret	i	15 53 08	C		
		i	40			
	✓ Kim	i	28	C		
		i	59			
11	✓ Kim	iPKP	03 31 48		123°	USCGS H = 03 13 47 Fiji Is. h=650 km.
12	✓ Pret	i	07 36 51	C		
13	✓ Piet	i	03 31 22			
	✓ Kim	i	50	C		
	✓ Gram	i	32 41			
13	✓ Kim	iP	10 07 08	R	74°	USCGS H = 09 55 30 48½°S. 124°E. Indian Ocean. ± 1000 miles S. of Australia.
	✓ Pret	eP	08		76°	
14	✓ Pret	iP	01 02 57	R	73°	USCGS H = 00 51 36 36°N. 71°E. h = 200 km.
	✓ Piet	iP	58	C	74°	
	✓ Kim	iP	03 16	R	77°	Hindu Kush.
	✓ Gram	iP	26		80°	
14	✓ Kim	i	18 18 15	C		Small.
16	✓ Pret	e	06 42 52			
	✓ Kim	i	43 02	C		
16	✓ Pret	e	14 14 08			
	✓ Kim	i	35	R		
	✓ Gram	i	57	R		
16	✓ Kim	iP	22 14 45	R	85°	USCGS H = 22 02 19 18°S. 69°W. h = 150 km. Peru- Bolivia-Chile region.
17	✓ Kim	i	10 03 34	C		
	✓ Pret	e	04 07			
17	✓ Pret	ePKP ₁	20 47 06		149°	USCGS H = 20 27 15 Queen Charlotte Is. region, Alaska
		i	10	C		
	✓ Kim	(e)iPKP ₁	09		150°	
	✓ Piet	iPKP ₂	20		145°	Mag. 6½.
	✓ Gram	(e)iPKP ₂	30		154°	
18	✓ Piet	i	07 38 29			
18	✓ Kim	i	09 38 36	C		
21	✓ Kim	iPKP	07 52 32	C	128°	USCGS H = 07 33 28 38°N. 142°E. h = 60 km. Near coast of Honshu, Japan.

Date	Station	Phase	G. C. T. h. m. s.	C/ R	Arc Distance	Remarks
21	✓ Kim	i	13 26 26			
24	✓ Gram	iP	02 08 24	C	83°	USCGS H = 01 51 06 22½°S. 67°W. h = 150 km. Argentina- Bolivia border.
	✓ Kim	iP	25	R	83°	
24	✓ Kim	i	15 47 20	C		
24	✓ Kim	i	16 11 35			
25	✓ Piet	i	02 05 35	R		
	✓ Kim	i	06 15	R		
25	Pret	iPKP ₂	11 44 54	C	149°	USCGS H = 11 24 59 54°N. 164°W. Unimak Is. region.
25	✓ Piet	i	11 56 01	C		
	✓ Kim	i	41			
25	✓ Kim	iP	14 27 47	R	87°	USCGS H = 14 15 05 17°S. 72°W. Near coast of S. Peru.
25	✓ Kim	i	18 26 36			
26	✓ Kim	iP	19 02 07		81°	USCGS H = 18 49 56 26°S. 70½°W. h = 100 km. N. Chile.
	✓ Gram	iP	07	C	80°	
	✓ Piet	iP	26		85°	
27	✓ Pret	i	19 59 47			
	✓ Kim	i	51			Small.
28	✓ Piet	iPKP	19 46 00		135°	USCGS H = 19 27 11 49½°N. 155°E. N. Kurile Is. Mag. 7.
	✓ Kim	ePKP	22		138°	
		i	35	C		
	✓ Pret	(e)iPKP	30		135°	
	✓ Gram	ePKP	(43)			
29	✓ Gram	i	04 23 02	C		
	✓ Kim	i	22	R		
	✓ Piet	i	36			
29	✓ Pret	ePKP	09 34 14		122°	USCGS H = 09 15 20 27°N. 141°E. Bonin Is. Mag. 7.
29	✓ Kim	e	11 44 25			
		i	47 27	R		
29	✓ Kim	e	12 12 41			
		i	50			
30	✓ Gram	i	19 42 18	R		
	✓ Kim	i	23	C		
	✓ Piet	i	44			

A.A. ATTRIDGE.

1956

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

12 FEB 1957

DECEMBER, 1956.

Date	Station	Phase	G. M. T.			C/ R	Arc Distance	Remarks
			h.	m.	s.			
Omitted from October Bulletin:-								
Oct. 23	Kim	ePn	21	21	58.5		390km.	
		iP ₁		22	07			
		iSn			37.5			H = 21 21 03
		iS ₁			49.5			31°20'S.
	Gram	iPn	21	22	06		440 km.	22°10'E.
					(13.5)			Loxton Dist., Cape.
		iSn			51			South African earth-
		iS ₁	23	04	5			quake.
<hr/>								
Dec. 1.	✓ Kim	iP	21	38	03		88°	USCGS H = 21 24 54 17½°S. 72½°W. Off coast of S. Peru.
2	✓ Kim	i	02	38	10	R		
2	✓ Pret	i	04	19	52	C		
	✓ Kim	i		20	25			
2	✓ Pret	i	13	50	16	C		
3	✓ Gram	i	03	49	17			
	✓ Kim				50			
3	✓ Pret	iPKP ₁	07	40	01		151°	USCGS H = 07 20 08
	✓ Kim	iPKP ₁			08		155°	53½°N. 169°W. Mag.
	✓ Gram	iPKP ₂			40		158°	6½. Fox Is.
								Aleutian Is.
3	✓ Pret	iPKP ₁	08	04	20		152°	USCGS H = 07 44 55
		i		06	34			52½°N. 169°W. Fox
								Is. aftershock.
4	✓ Kim	iP	10	21	14		94°	USCGS H = 10 07 54
								45½°N. 106°W. S.
								Pacific Ocean.
4	✓ Pret	iPKP ₁	11	01	33	C	151°	USCGS H = 10 42 10
	✓ Kim	iPKP ₁		02	10		155°	53°N. 169°W. Fox
								Is. aftershock.
4	✓ Kim	iPKP	23	20	16		120°	USCGS H = 23 01 35
	✓ Gram	iPKP		21	17		123°	15°N. 92°W. Mag. 6.
								Guatemala. h =
								150 km.
								Small.
5	✓ Pret	e	22	35	32			
6	✓ Kim	i	22	48	41			
8	✓ Gram	i	03	40	49			
	✓ Kim				51	C		
8	✓ Pret	iPKP ₁	16	30	10	R	149°	USCGS H = 16 10 27
	✓ Piet	iPKP ₁			17	C	150°	51°N. 179½°W. Mag.
	✓ Kim	iPKP			20	R	152°	6½. Andreanof Is.
	✓ Gram	iPKP ₂			29		155°	Aleutian Is.
9	✓ Pret	iPKP ₂	05	39	00		151°	USCGS H = 05 19 06
								53°N. 169°W. Fox Is.
								aftershock.
10	✓ Kim	iP	23	27	29		±80°	USCGS H = 23 15 00
	✓ Gram	iP			30	R	±85	Argentine-Chile
								border.
11	✓ Pret	e	17	01	15			Small.
	✓ Kim	i			47	C		
12	✓ Pret	e	12	34	45			Small.
13	✓ Kim	iPKP ₂	13	35	(18)		146°	USCGS H = 13 15 37
								31°N. 115°W. Mag. 6.
								Lower California.
14	✓ Gram	i	15	08	12			
	✓ Kim	i			11			
	✓ Bret	(e)i			17			

Date	Station	Phase	G. M. T.			C/ R	Arc Distance	Remarks
			h.	m.	s.			
15	✓ Pret ✓ Kim	iPKP iPKP	17	43	04 12	R	125° 125°	Small. USCGS H = 17 24 24, 13°S, 167½°E. Mag. 6½. New Hebrides Is. h = 150 km.
16	✓ Kim	iPP	02	00	11		104°	USCGS H = 01 41 52 6½°N. 78°W. Mag. 6½. Nr. W. coast of Colombia.
18	✓ Gram ✓ Kim ✓ Piet ✓ Pret	iPcP iPcP iPcP iPcP	02	43	25 27 44 55	R C C	80° 81° 85° 85°	USCGS H = 02 31 00 25½°S. 68½°W. Mag. 7½. Chile-Argentine border.
18	✓ Pret	(e)i	18	03	04			USCGS H = 19 20 00
18	✓ Piet ✓ Gram ✓ Pret ✓ Kim	iP iP iP iP	19	27	38 52 28 06 16	R C	40° 42° 43° 45°	USCGS H = 19 20 00 36°S. 77°E. South Indian Ocean.
19	✓ Kim ✓ Pret	iPKP ePKP	01	37	25 29		139° 134°	USCGS H = 01 18 10 51½°N. 157°E. S. Kamchatka.
21	✓ Pret	e	03	39	15			USCGS H = 08 58 55
21	✓ Pret ✓ Kim	iPKP ₁ iPKP ₁	09	17	52 18 47	C	151° 153°	USCGS H = 08 58 55 51°N. 131°W. Mag. 6½. Queen Charlotte Is.
22	✓ Kim	iPKP	22	56	59		119°	USCGS H = 22 38 12 29½°S. 177°W. Kermadec Is.
22	✓ Kim	iPKP	23	31	37		125°	USCGS H = 23 12 35 33½°N. 139°E. Honshu aftershock.
23	✓ Kim	i	06	29	17	C		
23	✓ Pret ✓ Gram ✓ Kim	iPKP iPKP iPKP	08	56	16 19 22	R C	122° 125° 125°	USCGS H = 08 37 26 22°N. 144½°E. Mag. 6½. Marianas Is. region. h = 100 km.
25	✓ Kim ✓ Pret ✓ Piet	iP eP iP	09	46	32 36 56	C C	90° 89° 93°	USCGS H = 09 33 37 48½°N. 28°W. Mag. 6½. N. Atlantic Ocean.
26	✓ Kim	iP	07	46	46		84°	USCGS H = 07 34 18 9½°S. 112°E. Off coast of Java.
26	✓ Kim	iPKP	08	05	29		127°	USCGS H = 07 46 24 10°S. 166°E. Santa Cruz Is.
26	✓ Kim	i	19	59	55			
27	✓ Kim ✓ Gram ✓ Piet ✓ Pret	iPKP iPKP iPKP iPKP	00	32	35 37 51 53	R R	124° 121° 121° 125°	USCGS H = 00 14 15 24°S. 177°W. Mag. 7½. Tonga Is. region.
27	✓ Pret ✓ Kim	eP iP	10	18	25 44	C	63° 66°	USCGS H = 10 08 15 37°N. 29°E. W. Turkey.
28	✓ Kim	(e)iPP	14	43	14		105	USCGS H = 14 24 45 38°S. 167½°E. Mag. 6½. Nr. coast of N. Island, N.Z. h=150 km.
29	✓ Kim	i	12	08	38			
29	✓ Kim	iPKP	20	41	15		+127°	USCGS H = 20 22 12 Tonga Is. Mag. 6½.
30	✓ Pret ✓ Piet ✓ Kim	iP iP iP	22	11	20 25 43	C R	81° 81° 85°	USCGS H = 21 59 16 24°N. 94½°E. India-Burma border.