7/65

SEISMOLOGICAL BULLETIN FOR MALAWI, RHODESIA AND ZAMBIA

The following stations contribute records for analysis and publication in this Bulletin:

BROKEN HILL (BHA):	14° 26.8' S; 28° 28.1' E; Alt. 1206 m.
Litho. foundation:	Dolomite and shales of the Middle Katanga System.
Authority:	Zambia Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
BULAWAYO (BUL):	20° 08.6' S; 28° 36.8' E; Alt. 1341 m.
Litho. foundation:	Hornblend schists of the Bulawayan System.
Authority:	Rhodesia Meteorological Service.
Instruments:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
	WWSS Station: SP magnification 100,000. LP magnification 1,500.
CHILEKA (CLK):	15° 40.8' S. 34° 58.6' E: Alt. 781 m.
Litho. foundation:	Charnockitic granulites of the Basement Complex.
Authority:	Malawi Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
KARIBA (KRB):	16° 31.6' S; 28° 47.7' E; Alt. 805 m.
Litho. foundation:	Quartzite of the Umkondo Syatem overlying gneiss of the Basement Complex.
Authority:	Central African Power Corporation.
Instrument:	Vertical Willmore one-second seismograph. Nominal magnification 20,000.
Analysis Centre:	Goetz Observatory, Meteorological Service, P. O. Box 562, Bulawayo, Rhodesia.

LIST OF RECORDED PHASES: 1 to 7 JUL 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
01	BUL	eP	05	07	33			0.6		Distant
	BHA	eP			45			0.4		
01	BHA	eP	07	35	50			1.0	3.4	
		iS		36	31					
02	BHA	iP	04	34	51	C		4.0	1.3	
		iS		35	09					
	~~BUL~~	~~eS~~		~~36~~				0.5		
02	BHA	eP	12	34	34			0.8		
02	BHA	eP	16	47	28			1.5		
02	BUL	iP'	21	18	11	C	0.8	20.0		Distant
		~~e~~			~~34~~					
	BHA	eP'			51			3.5		
03	BUL	iPg	13	51	29	C		0.6	0.8	
		iSg			38					
		iSn			42					
~~04~~	~~BUL~~	~~eP~~	~~00~~	~~30~~				0.6		
04	BHA	eP	01	22	10			1.0		
04	BHA	ePn	01	39	39			3.0		Rift Valley?
		iPg		41	10					
		iS			55					
04	BUL	ePn	17	27	46			5.0	2.6	N Transvaal?
		iSn		28	19					
		iSg			27					
	~~BHA~~	~~e~~		~~30~~				0.5		
05	BUL	eP	10	20	00			1.2		
05	BUL	eP	11	02	00			0.5		
05	BUL	eP	20	00	28			0.6		
06	BUL	eP''	03	23	17		1.0	0.4		Distant
06	BHA	iP	03	28	00	C	0.8	1.1		Distant
	BUL	eP			39		0.8	2.0		
06	BHA	eP	06	39	11			1.5	2.1	Kariba?
		eS			38					
06	BHA	eP	06	58	17			1.3	2.2	Kariba?
		eS			45					
06	BUL	iP	14	58	59	R		0.6		Distant
06	BUL	iP''	18	54	36	R		1.8		Distant
	BHA	iP''			39	R	1.0	2.0		
~~06~~	~~BUL~~	~~e~~	~~22~~	~~57~~	~~35~~			0.4		
07	BUL	iP	12	20	09	C		0.4		Distant
	BHA	iP			33	R		0.6		
07	BHA	eP	18	37	42			1.5	2.0	Zanbesi valley
		eS		38	08					
	BUL	eP			13			0.4	4.2	
07	BUL	iP	23	11	41	R		0.6		Distant
	BHA	iP			44	R		0.6		

LIST OF RECORDED PHASES: 8 to 15 JUL 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
08	BUL	iP	04	10	27	D		0.4		Distant
	BHA	iP			31	D		0.3		
~~08~~	~~BUL~~	~~e~~	~~23~~	~~41~~				0.5		
09	BHA	eP	08	17	22			0.6	1.6	
		eS			44					
09	BUL	eP	09	30	41			1.0	2.6	26.6E 18.2S
		eS		31	14					
	BHA	eP			04			0.4	4.2	
09	BUL	eP	15	50	48			0.8	1.1	
		eS		51	01					
10	BHA	eP	00	40	39			1.6	2.3	Kafue Valley?
		eS		41	08					
	BUL	eP		41	(20)			0.4	5.2	
~~10~~	~~BUL~~	~~i~~	~~17~~	~~28~~	~~59~~					
	~~BHA~~	~~i~~		~~29~~	~~21~~					
11	BUL	iPn	04	01	31	D		2.5	5.6	Witwatersrand
		eSn		02	39					
		eSg		03	09					
	BHA	eP		02	46			0.2	11.0	
~~11~~	~~BUL~~	~~e~~	~~18~~	~~19~~				0.4		
12	BUL	ePn	01	33	13			1.3	3.5	Kariba?
		eSn		34	04					
		eSg			23					
12	BUL	eP	05	06	29			0.5		
12	BUL	ePn	07	24	27			2.8	4.1	
		eSn		25	20					
		eSg			38					
12	BUL	eP	12	18	24			0.5		
12	BUL	iP	14	09	46	D		1.0		Distant
~~12~~	~~BUL~~	~~i~~	~~18~~	~~34~~	~~38~~	~~R~~		0.4		
13	BUL	ePn	08	15	09			9.5	9.7	
		eSn		17	01					
		eSg		18	04					
13	BUL	eP?	15	04	36			0.5		
14	BHA	eP	10	18	05			0.2		
14	BUL	eP	15	56	06			1.0	8.8	Mocambique Channel
		eS		57	48					
	BHA	eP		56	51			0.2	12.1	
14	BUL	iP"	18	15	29	D	1.1	0 6		Distant
14	BHA	iP	18	22	21	D		4.0	2.8	Kariba?
		eS			56					
14	BUL	iP	18	26	18	C		1.7		Distant
~~15~~	~~BUL~~	~~e~~	~~03~~	~~07~~				0.4		
15	BHA	eP	13	08	54			0.4	1.9	
		eS		09	19					
15	BHA	eP	13	29	27			1.1	1.9	
		eS			52					
~~15~~	~~BUL~~	~~e~~	~~14~~	~~24~~				0.6		
15	BHA	iP	18	46	01	C		0.3		Distant
	BUL	iP			02	C		0.6		

LIST OF RECORDED PHASES: 16 to 23 OCT 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
16	BUL	eP	13	14	02			0.4	6.7	
		iS		15	20					
~~17~~	~~BUL~~	~~e~~	~~02~~	~~12~~	~~28~~		1.0	4.0		Distant
		~~i~~			~~35~~					
17	BHA	eP	03	20	23			0.8	2.0	
		eS			49					
17	BUL	eP	05	26	52			2.4	1.9	
		iS		27	16					
17	BUL	ePn	11	19	02			1.5	2.1	
		iPg			10					
		iPn			30					
		iSg			35					
17	BUL	iPn	12	27	59		0.6	5.5	5.5	Witwatersrand
		iSn		29	06					
		iSg			33					
	KRB	iPn		28	51			4.0	8.8	
		iSg		31	25					
	BHA	ePn		29	17			1.4	10.7	
		eSn		31	19					
		iSg.		32	33					
18	BHA	eP	03	20	12			0.7	2.0	
		eS			38					
~~18~~	~~BUL~~	~~i~~	~~09~~	~~36~~	~~21~~	C	0.6	0.5		Distant
~~18~~	~~BUL~~	~~e~~	~~22~~	~~03~~	~~03~~		1.0	0.6		Distant
		~~i~~			~~44~~					
	~~KRB~~	~~e~~			~~44~~			0.5		
18	BHA	ePn	22	06	10			2.5	3.5	
		ePg			20					
		iSn			54					
		iSg		07	09					
	KRB	e(S)			20			1.4		
18	BHA	eP	23	05	32			1.7	1.4	
		iS			51					
18	BHA	ePn	23	21	11			5.0	4.2	
		iSn		22	05					
		iSg			25					
	KRB	eS		23	08			4.0		
18	BHA	ePn	23	58	45			1.4	3.0	
		iSn		59	19					
		iSg			34					
19	KRB	iP	03	44	14			15.0	0.2	Kariba
	BHA	iP			47			5.0	2.2	
		iS		45	15					
	BUL	ePn			01		0.4	1.1	3.2	
		iPg			15					
		iSn			43					
		iSg			54					
19	BHA	eP	05	18	47			1.3	4.0	
		iS		19	35					
	~~KRB~~	~~e~~			~~30~~			1.2		

LIST OF RECORDED PHASES: 16 to 23 OCT 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
19	BUL	ePn	07	43	54			1.5	2.1	
		iSg		44	26					
19	BUL	iS	14	13	26			2.5		
19	KRB	e	22	15	12			1.0		
20	KRB	iP	13	51	03			10.0	0.3	Kariba
		iS			08					
20	BUL	ePn	14	21	24			1.0	5.8	Witwatersrand
		eSn		22	32					
		iSg		23	05					
	KRB	ePn		22	09			1.0	9.0	
		iSg		24	51					
20	KRB	iP	15	48	42			8.0	0.1	Kariba
		iS			44					
	BHA	eP		49	22			1.1	2.2	
		iS			49					
20	KRB	eP	17	35	28			1.7	0.1	Kariba
		iS			30					
21	KRB	eP	12	16	21			2.0	0.2	Kariba
		iS			25					
21	BHA	iP	12	24	12			8.0	1.2	
		iS			29					
	KRB	iP		24	25			8.0	2.1	
		iS			52					
22	KRB	eP	07	07	38			2.1	0.1	Kariba
		iS			40					
22	KRB	eP	09	32	19			2.4	0.2	Kariba
		iS			22					
23	BHA	i	00	38	26		0.8	1.2		Distant?
23	BUL	eP	06	16	39			1.2	0.7	
		iS			51					
23	BUL	i	06	20	26	C	0.9	10.6		Distant
		i			38					
23	BUL	i	07	06	26	C	1.2	0.6		Distant
23	BUL	ePn	10	21	28		0.7	3.5	5.8	
		iSn		22	35					
		iSg		23	11					
	BHA	ePn		21	29			1.7	6.5	
		iSn		22	45					
		iSg		23	25					
23	BHA	eP	12	01	26			3.0	0.4	
		iS			31					
23	BHA	iP	13	00	39			1.2	1.8	
		iS		01	03					
23	BUL	i	15	47	29	C	1.0	0.6		Distant
		e			52					
	BHA	i			44	C		1.1		
		e		48	01					
		e			07					
23	BUL	e	16	25	14		1.0	0.4		Distant?

LIST OF RECORDED PHASES: 24 to 31 OCT 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
24	BUL	eP	10	32	55			1.5	1.1	
		iS		33	11					
~~24~~	~~BUL~~	~~i~~	~~14~~	~~45~~	~~34~~	R	1.1	1.1		Distant
	~~BHA~~	~~i~~			36		1.0	1.1		
25	BHA	eS	04	04	56			2.5		
25	BUL	eS	04	08	23			0.6		
25	BHA	iPn	06	38	59			2.0	11.3	
		iSn		41	06					
		iSg		42	27					
25	BHA	ePn	13	44	48			1.6	11.1	
		iSn		46	56					
		iSg		48	12					
25	BHA	eP	14	08	45			1.8	2.9	
		iS		09	21					
~~25~~	~~BUL~~	~~i~~	~~15~~	~~40~~	~~29~~	R	1.0	1.1		Distant
		~~i~~			~~44~~					
~~25~~	~~BUL~~	~~i~~	~~19~~	~~02~~	~~38~~	R	1.0	1.0		Distant
					50					
25	BHA	iP'	22	52	56	C	1.0	3.4		Distant
		iPP		54	15					
		iPKKP	23	03	13					
		i(PS)			54					
	BUL	iP'	22	53	51		1.0	2.7		
		iPP		54	30					
~~26~~	~~KRB~~	~~e~~	~~12~~	~~28~~	~~10~~			1.2		Distant?
	~~BHA~~	~~e~~			~~12~~			0.4		
26	BUL	eP	22	24	06			0.7	2.8	
		eS			41					
27	BHA	iP	00	13	13			4.0	2.7	
		iS			35					
27	BUL	eP	11	13	53			8.5	5.6	Witwatersrand
		iSn		15	01					
		iSg			32					
	BHA	iPn		15	12			1.3	10.8	
		eSn		17	16					
		iSg		18	27					
	KRB	iSg		17	24			4.2		
28	BHA	eP	10	08	04			1.2	1.3	
		iS			22					
28	BUL	ePn	12	14	01			1.6	4.2	N. Traansvaal?
		eSn			49					
		iSg		15	13					
	KRB	eS		17	12			1.1		
28	KRB	iP	19	56	39			33.0	0.1	Kariba
	BHA	iP		57	16			3.3	2.3	
		iS			45					
	BUL	eP			37			1.4	3.7	
		iS		58	22					
29	KRB	eP	10	27	30			3.0	0.2	Kariba
		iS			35					

LIST OF RECORDED PHASES: 16 to 23 JUL 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
16	BHA	eP	08	11	29			1.4	3.0	Kariba?
		eS		12	06					
16	BUL	eP?	10	35	04			0.5		
~~16~~	~~BUL~~	~~e~~	~~10~~	~~53~~				0.5		
~~16~~	~~BUL~~	~~e~~	~~11~~	~~31~~				0.3		
	BHA	eP		32	33			0.2		
16	BUL	eP"	13	36	08			0.3		Distant
	BHA	eP"			15			0.3		
16	BHA	eP	13	46	30			0.6	2.5	
		eS		47	02					
16	BUL	iP"	22	52	20	R	0.7	0.5		Distant
	BHA	iP"			27	R		0.5		
17	BHA	eP	05	13	39			2.0	1.1	
		eS			53					
~~17~~	~~BUL~~	~~e~~	~~13~~	~~06~~	~~38~~			0.3		
17	BUL	iP"	13	18	13	R		0.4		Distant
	BHA	eP"			(28)			0.2		
17	BUL	ePg	15	40	36			0.7	0.9	
		eSg			47					
		eSn			50					
17	BUL	iP'	18	41	08	C	0.9	1.2		Distant
18	BHA	iPn	11	29	28	R		2.0	3.2	
		eSn		30	08					
		eSg			14					
	BUL	eP			34			0.3	7.8?	
19	BUL	eP'	07	54	34			0.3		Distant
19	BUL	ePn	10	55	55			0.9	2.5	
		iSn		56	26					
		iSg			37					
~~19~~	~~BUL~~	~~e~~	~~13~~	~~01~~	~~58~~			0.2		Distant
~~20~~	~~BUL~~	~~i~~	~~07~~	~~54~~	~~06~~	C	0.7	0.5		Distant
20	BUL	eP	12	41	12			0.4		
20	BUL	eP'	20	31	05			0.3		Distant
21	BUL	eP	00	25	06			0.3		
21	BUL	eP"	03	10	53			0.2		Distant
21	BUL	eP	15	31				1.3		
		iS		32	27					
22	BUL	eP	15	31	44			0.7	3.5	Kariba?
		iS		32	27					
23	BHA	eP	13	52	52			3.0	5.6	
		iS		53	58					
	BUL	eS		55	27			0.5	9.1?	
23	BUL	eP	15	01	24			0.6		
23	BHA	iP?	20	13	(30)			7.0		Distant
	BUL	iP		14	08	R	0.6	3.0		

16	BHA	eP	13	51	29			0.4		

LIST OF RECORDED PHASES: 24 to 31 OCT 1965

Date	Stn	Phase	G h	M m	T s	R/C	T s	DA mm	Dist deg	Remarks
29	KRB	iP	12	44	39			12.0	0.2	Kariba
		iS			42					
29	BHA	iPn	16	41	18			9.0	2.3	
		iPg			23					
		iSn			46					
		iSg			53					
	KRB	eP			37			6.5	3.2	
		iSg		42	19					
	BUL	e		43	19			0.5		
		e(S)		44	00					
29	BHA	i	21	19	22	R	1.0	1.5		Distant
	BUL	e			24			1.0		(Longshot)
	KRB	e			27			2.0		
30	BHA	iPn	03	05	26			1.7	3.7	
		iSn		06	10					
		iSg			29					
30	BUL	iPn	07	44	36			1.4	0.8	
		iSn			45					
		iSg			49					
30	BHA	eSn	16	48	22			1.6		
		iSg		49	07					
31	BUL	i	14	00	39	R	1.1	1.1		Distant
		e		01	08					
	BHA	e		00	52			0.8		
31	BUL	e	17	34	37					Distant
	KRB	e			38			1.1		
	BHA	e			43			0.5		

OCT 1965

CLK not operating.

Date	G h	M m	T s	Epicentre, remarks	Mag	Stations
01	00	22				BHA
01	08	52	06	USCGS 50.1N 178.3E	6.3	BHA BUL KRB
01	13	22	29	USCGS 20.0S 174.4E	6.2	BHA BUL
01	22	38	34	8.2° from BUL		BUL
01	22	34	26	USCGS 60.7S 24.9W	6.0	BHA BUL KRB
02	00	39				BHA BUL
02	06	46	14	3.6° from BHA		BHA KRB
02	08	31	54	USCGS 5.9S 104.0E	5.2	BHA BUL KRB
02	09	10	05	1.7° from BHA		BHA
02	13	08	39	4.9° from BHA		BHA BUL KRB
02	22	40	48	Kariba		BHA KRB
02	23	23	26	Kariba		KRB
03	05	12	23	USCGS 38.2S 48.4E	5.5	BHA BUL KRB
03	10	46	17	USCGS 52.6N 170.6W	5.3	BUL
03	14	45	27	USCGS 49.5N 156.5E	5.9	BHA BUL KRB
03	16	14	55	USCGS 42.9S 75.4W	6.0	BHA BUL KRB
03	20	23				BUL
03	20	25				BUL
04	11	37	28	Kariba		KRB
05	14	00	18	Kariba		KRB
05	15	51	18	USCGS 5.2N 96 0E	4.6	BHA
05	23	08	53	11.6° from BHA 16.1° from BUL		BHA BUL KRB
05	23	30	19	USCGS 8 0S 118.6E	4.7	BUL
05	23	59				BUL
06	09	31				BHA
06	13	21				BHA
06	15	35	04	USCGS 36.5N 70.2E	5.2	BHA BUL KRB
06	16	32	35	0.6° from BHA		BHA BUL
06	22	41	29	USCGS 36.3N 70.9E	4.9	BUL
07	03	26				BHA
07	03	35	59	USCGS 12.6N 114.5E	5.9	BHA BUL KRB
07	14	06	09	USCGS 52.2N 169.5W	4.6	BUL
07	16	31	26	Kariba		KRB
07	20	11	17	Kariba		KRB
07	21	57				BUL
08	00	24	14	2.4° from BUL		BHA BUL
08	01	50				BUL
08	02	24				BUL
08	14	00				BUL
08	14	21				BUL

OCT 1965

Date	G M T h m s	Epicentre, Remarks	Mag	Stations
08	15 00 27	1.7° from BUL		BUL
08	15 21 05	USCGS 6.1S 103.8E	5.7	BUL
08	15 47			BHA KRB
08	16 02 39	USCGS 52.2N 174.8W	4.1	BUL
08	16 32 31	USCGS 51.4N 173.9W	5.1	BHA BUL
09	09 37 03	Kariba		KRB
09	11 29			BUL
09	11 40			BUL
09	15 51			BUL
09	16 17			BUL
09	17 22 24	Kariba		BHA KRB
09	23 28 54	Kariba		BHA
10	00 35 58	USCGS 51.9N 175.3W	5.4	BUL
10	07 58 47	Kariba		KRB
10	12 01			KRB
10	17 28			BUL
10	17 35 10	USCGS 59.1S 24.8W	5.7	BHA BUL
11	07 00 13	5.7° from BHA		BHA BUL
11	19 00 12	Kariba		KRB
12	00 04 34	6.6° from BHA		BHA
12	13 10 41	1.9° from BHA		BHA
12	13 40 56	USCGS 56.3N 153.7W	5.3	BUL
13	17 37 48	5.4° from BUL		BUL
14	14 18	5° from BUL		BUL
14	15 55 58	3.9° from BHA		BHA KRB
15	09 33			BHA BUL
15	14 18 40	USCGS 14.4N 93.7E	5.3	BHA BUL KRB
15	15 23 41	Kariba		KRB
16	13 12 20	6.7° from BUL		BUL
17	01 53 43	USCGS 8.0S 155.9E	5.5	BUL
17	03 01 47	2.0° from BHA		BHA
17	05 26 18	1.9° from BUL		BUL
17	11 18 44	2.1° from BUL		BUL
17	12 26 34	Witwatersrand		BHA BUL KRB
18	03 19 36	2.0° from BHA		BHA
18	09 36			BUL
18	21 50 04	USCGS 1.1S 127.9E		BUL KRB
18	22 05 14	3.5° from BHA		BHA KRB
18	23 05 05	1.4° from BHA		BHA
18	23 20 05	4 2° from BHA		BHA KRB
18	23 57 05	3.0° from BHA		BHA

OCT 1965

Date	G h	M m	T s	Epicentre. Remarks	Mag	Stations
19	03	44	10	Kariba		BHA BUL KRB
19	05	17	43	4.0° from BHA		BHA KRB
19	07	43	17	2.1° from BUL		BUL
19	14	13				BUL
19	22	15				KRB
20	13	50	57	Kariba		KRB
20	14	19	55	Witwatersrand		BUL KRB
20	15	48	40	Kariba		BHA KRB
20	17	35	48	Kariba		KRB
21	12	16	17	Kariba		KRB
21	12	23	48	1.2° from BHA 2.1° from KRB		BHA KRB
22	07	07	57	Kariba		KRB
22	09	32	13	Kariba		KRB
23	00	38				BHA
23	06	16	25	0.7° from BUL		BUL
23	06	00	48	USCGS 53.8N 165.5W	5.5	BUL
23	06	53	33	USCGS 29.4S 71.6W	5.5	BUL
23	10	19	58	5.8° from BUL 6.5° from BHA		BHA BUL
23	12	01	18	0.4° from BHA		BHA
23	13	00	07	1.8° from BHA		BHA
23	15	34	47	USCGS 32.4S 71.3W	5.1	BHA BUL
23	16	25				BUL
24	10	32	33	1.1° from BUL		BUL
24	14	45				BHA BUL
25	04	04				BHA
25	04	08				BUL
25	06	36	13	11.3° from BHA		BHA
25	13	42	05	11.1° from BHA		BHA
25	14	07	57	2.9° from BHA		BHA
25	15	20	50	USCGS 53.6N 164.6W	4.4	BUL
25	18	43	03	USCGS 53.2N 164.7W	4.8	BUL
25	22	34	24	USCGS 44.2N 145.3E	6.2	BHA BUL
26	12	15	08	USCGS 24.4S 70.2W	5.2	BHA KRB
26	22	23	20	2.8° from BUL		BUL
27	00	12	28	2.7° from BHA		BHA
27	11	12	27	Witwatersrand		BHA BUL KRB
28	10	07	38	1.3° from BHA		BHA
28	12	12	55	N. Transvaal		BUL KRB
28	19	56	37	Kariba		BHA BUL KRB
29	10	27	26	Kariba		KRB
29	12	44	35	Kariba		KRB

OCT 1965

Date	G h	M m	T s	Epicentre, Remarks	Mag	Stations
29	16	40	39	2.3° from BHA 3.2° from KRB		BHA BUL KRB
29	21	00	00	USCGS 51.4N 179.1E. Operation Longshot		BHA BUL KRB
30	03	04	26	3.7° from BHA		BHA
30	07	44	20	0.8° from BUL		BUL
30	16	45				BHA
31	13	47	37	USCGS 24.9S 69.0W	5.4	BHA BUL
31	17	24	06	USCGS 14.2S 95.2E	5.4	BHA BUL KRB

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11/65

SEISMOLOGICAL BULLETIN FOR MALAWI, RHODESIA AND ZAMBIA

The following stations contribute records for analysis and publication in this Bulletin:

BROKEN HILL (BHA):	14° 26.8' S; 28° 28.1' E; Alt. 1206 m.
Litho. foundation:	Dolomite and shales of the Middle Katanga System.
Authority:	Zambia Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
BULAWAYO (BUL):	20° 08.6' S; 28° 36.8' E; Alt. 1341 m.
Litho. foundation:	Hornblend schists of the Bulawayan System.
Authority:	Rhodesia Meteorological Service.
Instruments:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
	WWSS Station: SP magnification 100,000. LP magnification 1,500.
CHILEKA (CLK):	15° 40.8' S. 34° 58.6' E: Alt. 781 m.
Litho. foundation:	Charnockitic granulites of the Basement Complex.
Authority:	Malawi Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
KARIBA (KRB):	16° 31.6' S; 28° 47.7' E; Alt. 805 m.
Litho. foundation:	Quartzite of the Umkondo System overlying gneiss of the Basement Complex.
Authority:	Central African Power Corporation.
Instrument:	Vertical Willmore one-second seismograph. Nominal magnification 20,000.

Analysis Centre: Goetz Observatory, Meteorological Service, P. O. Box 562, Bulawayo, Rhodesia.

LIST OF RECORDED PHASES: 1 to 7 NOV 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
01	BHA	iP	03	13	12			1.3	2.1	
		iS			39					
01	BUL	iP	03	15	32			5.0	1.8	
		iS			56					
01	BUL	iP'	18	21	14		0.8			Distant
	KRB	iP'			20	R	1.0	1.1		
		iPP		23	52					
	BHA	eP'		21	25			0.7		
		iPP		23	59					
		iSKP		24	39					
02	KRB	iP'	01	10	05			1.0		Distant
	BHA	iP'			10	R	1.0	2.0		
02	BUL	iP'	02	13	32		0.9	1.5		Distant
	BHA	eP'			36			1.0		
02	KRB	iP	03	02	01			4.5	0.1	Kariba
		iS			03					
03	BUL	i(P)	01	51	30	R	1.0	5.0		Distant
		iPP		53	39					
		iPPP		55	30					
		iPS	02	01	14					
		iSSS		08	15					
		iP'P'		18	33					
	BHA	i(P)	01	51	37	R	1.0	1.8		
		iPPP		56	10					
		iPS	02	01	17					
		iSSS		08	13					
		iP'P'		18	29					
		iP'P'		20	08					
	KRB	i(P)	01	51	43	R	1.0	4.0		
03	BUL	iP'	16	53	46		1.1	1.1		Distant
	KRB	iP'			46		1.0	3.2		
	BHA	iP'			50	C	1.0	1.6		
		e		57	50					
04	KRB	e	06	59	50			0.9		
04	KRB	eP	08	17	42			4.0	0.2	Kariba
		iS			46					
04	BUL	e	14	10	37			0.7		Distant
	BHA	e		11	14			0.9		
04	BUL	e	20	26	11			0.5		Distant
	BHA	e			48			0.3		
05	KRB	iP	13	02	06			5.0	0.1	Kariba
05	BHA	i	14	20	24	R	0.9	1.2		Distant
05	BHA	e	19	29	48			1.0		
	KRB	e		31	17			1.0		
07	KRB	iP	08	19	24			6.0	0.1	Kariba
		iS			26					
	BHA	e(S)		20	21			0.4		
07	BHA	e	17	37	15			0.5		Distant?
07	BUL	i	23	26	24	R	1.1	2.4		Distant
		i			33					

LIST OF RECORDED PHASES: 08 to 15 NOV 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
08	KRB	iP	06	51	58			3.5	0.2	Kariba
		iS		52	02					
08	BUL	iP	13	34	41			2.4	0.7	
		iS			53					
08	KRB	iP	22	28	45			2.2	0.1	Kariba
		iS			46					
09	BUL	ePn	01	30	10			30.0	5.3	
		iPg			32					
		iSn		31	11					
		iSg			43					
	KRB	iP		30	12	C	0.9	5.5	5.5	
		iS		31	17					
	BHA	iPn		30	29			13.5	6.4	
		iSn		31	46					
		iSg		32	23					
09	KRB	iP	02	46	27			3.0	0.1	Kariba
		iS			28					
~~09~~	~~BUL~~	~~e~~	~~04~~	~~26~~	~~30~~			0.6		Distant
	~~KRB~~	~~e~~			~~41~~			1.5		
		~~e~~		~~29~~	~~36~~					
	~~BHA~~	~~e~~		~~26~~	~~51~~			1.3		
09	KRB	eP	09	47	46			2.6	0.1	Kariba
		iS			48					
09	KRB	eP	12	25	57			4 0	0.1	Kariba
		iS			59					
09	BUL	e	~~16~~	~~10~~	~~42~~			0.6		
		iS	16	11	11					
~~09~~	~~BUL~~	~~e~~	~~22~~	~~13~~	~~54~~			0.3		Distant
~~10~~	BUL	e	~~10~~	~~12~~	~~51~~			0.3		Distant
~~10~~	BUL	e	~~13~~	~~00~~	~~26~~			0.4		Distant
10	BUL	eP	13	27	15			0.3	4.2	
		iS		28	06					
10	KRB	iP	15	52	48			7.5	0.3	Kariba
		iS			52					
	BHA	eP		53	18			1.4	2.0	
		eS			44					
11	BUL	e	00	51	~~46~~			0.3		Distant?
		i		~~52~~	13					
11	BUL	i	01	51	55	R	1.2	1.3		Distant
		i		~~52~~	~~10~~					
	~~KRB~~	i			01	R	0.9	1.4		
		i			07					
	BHA	e			02			0.2		
11	BUL	e		~~03~~	~~04~~	15		0.3		Distant
11	BUL	e		~~09~~	~~05~~	~~12~~		0.6		Distant
11	KRB	eP	10	41	35			2.5	0.1	Kariba
		iS			37					
11	KRB	eP	11	24	53			5.2	0.2	Kariba
		iS			56					

LIST OF RECORDED PHASES: 08 to 15 NOV 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
11	BUL	e(S)	15	21	53			1.0		
11	KRB	eP	15	34	05			1.5	0.3	Kariba
		iS			09					
~~11~~	~~BUL~~	~~e~~	~~23~~	~~08~~	~~57~~			0.3		Distant
	~~BHA~~	~~i~~		09	18			0.7		
12	BHA	eP	08	23	53			3.0	2.9	
		iS		24	29					
~~12~~	~~BUL~~	~~e~~	18	11	09			0.6		Distant
12	BUL	ePn	21	42	53			3.0	5.4	
		eSn		43	57					
		iSg		44	28					
~~13~~	~~BUL~~	~~e~~	03	00	56			0.3		Distant
13	BHA	iP	04	45	54	C		10.0		Distant
	KRB	iP		46	01	C	1.0	15.0		
		iPcP			16					
	BUL	iP			17	C	1.1	10.0		
~~13~~	~~BUL~~	~~e~~	~~06~~	~~24~~	~~21~~			0.5		Distant
13	BUL	eP	08	30	33			1.3	4.7	
		eS		31	29					
	KRB	~~e~~			24			2.0		
		iSg	08	32	01					
	BHA	e(S)			46			0.5		
13	BUL	iPn	13	48	37			1.3	5.8	
		eSn		49	45					
		iSg		50	18					
13	BUL	iP	18	12	20	C	1.0	5.0		Distant
		~~i~~			~~39~~					
	KRB	iP	18	12	28	C		9.0		
		~~i~~			~~46~~					
	BHA	iP	18	12	32			3.0		
		~~i~~			~~45~~					
		~~i~~		~~13~~	~~10~~					
13	BHA	eP	21	52	31			6.1	6.2	Northern Zambia
		iS		53	43					
	KRB	iS			35	C	1.0	3.0		
	BUL	i(S)		56	32			1.0		
14	BHA	eP	00	43	40			4.0	3.0	
		iS		44	17					
14	BHA	eP	01	01	06			2.5	3.0	
		eS			42					
14	BHA	iP	02	12	15			1.5		
		iS			42					
15	BHA	iP	11	27	34			1.2		Distant
	KRB	iP			40	D	1.0	2.8		
	BUL	iP			45	C	1.0	1.9		
15	KRB	iP	20	23	23			3.0	0.1	Kariba
		iS			24					

LIST OF RECORDED PHASES: 16 to 23 NOV 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
16	BHA	iP'	01	14	08	C	0.9	2.6		Distant
		iPP			21					
	KRB	iP'			16	C	0.7	7.3		
	BUL	iP'			37	C	0.9	5.6		
		iPP			53					
~~16~~	~~BHA~~	~~i~~	~~15~~	~~36~~	~~57~~	C		1.6		Distant
		e		~~40~~	~~07~~					
	~~KRB~~	~~i~~		~~37~~	~~06~~	C	1.1	2.0		
	~~BUL~~	~~i~~			16	C	1.2	1.0		
		e		~~40~~	~~19~~					
17	KRB	iP	01	36	48			13.0	0.1	Kariba
	BHA	iP		37	22			3.0	2.1	
		iS			49					
	BUL	ePn			45			1.6	2 9	
		eSn		38	20					
		iSg			34					
17	KRB	iP	06	21	12			1.5	0.1	Kariba
		iS			14					
17	KRB	eP	08	51	27			2.0	0.3	Kariba
		iS			31					
~~17~~	~~BHA~~	~~e~~	~~10~~	~~47~~	~~22~~			1.5		
17	BUL	ePn	11	21	37			0.8	6.0	Witwatersrand
		eSn		22	48					
		iSg		23	23					
17	BHA	i(S)	12	39	44			1.1		
17	BHA	iP	13	29	19			5.0	2.0	
		iS			45					
18	BHA	iPn	07	29	05			7.2	6.9	S Lake Tanganyika
		iSn		30	25					
		iSg		31	02					
	KRB	ePn		29	21			2.1	8.8	
		eSn		31	02					
		eSg		32	00					
	BUL	iPn		30	06			1.2	11.5	
		iSn		32	18					
		iSg		33	37					
18	BHA	iPn	08	46	14			5.1	6.2	N Zambia
		iSn		47	30					
		iSg		48	09					
	KRB	ePn		46	28			1.9	8.2	
		eSn		48	05					
		iSg			56					
	BUL	ePn		47	10			1.0	11.5	
		eSn		49	20					
		eSg		50	42					
18	KRB	iP	09	06	01			4.0	0.1	Kariba
		iS			03					
18	KRB	iP	15	19	57			10.0	0.1	Kariba
	BHA	eP		20	29			3.4	1.9	
		iS			54					
	BUL	eP			56			1.2	4.1	
		iS		21	45					

LIST OF RECORDED PHASES: 24 to 31 JUL 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R/C	T s	DA mm	Dist deg	Remarks
24	BHA	iP	18	07	57	C		0.4		Distant
	BUL	iP		08	25	C	0.8	0.6		
25	BHA	iP	03	51	56	R		1.5		Distant
	BUL	iP			59	R	0.9	1.0		
~~25~~	~~BUL~~	~~e~~	~~22~~	~~31~~	~~(30)~~			0.3		
	BHA	eP		33	48			1.0		
26	BHA	eP	00	47	36			1.1	4.7	N. Zambia
		eS		48	32					
	BUL	eS		51	(10)			0.2	11.	
26	BUL	eP	02	05	13			0.8		
	~~BHA~~	~~e~~			~~(50)~~			0.3		
26	BHA	eP	13	37	15			0.8	3.4	NW Zambia
		eS			57					
	BUL	eS		40	(09)			0.2	9.	
~~27~~	~~BHA~~	~~e~~	~~10~~	~~45~~	~~(10)~~			0.6		
27	BHA	iPn	13	08	31	R		3.0	6.8	N Zambia
		iSn		09	50					
		eSg		10	35					
	BUL	eP		11	(10)			0.2	14.	
27	BHA	iP	16	37	37	R		3.0	2.0	Kariba
		eS		38	03					
	BUL	eP			02			0.6	3.7?	
28	BUL	eP	20	32	31			0.8		
28	BHA	iP	22	40	28	R		3.8		Distant
	BUL	iP			29	R	0.7	1.5		
29	BUL	iP	09	47	59	C	0.8	13.0	18.?	
	BHA	eP		48	50			1.5	16.?	
		~~e~~		~~51~~	~~49~~					
29	BUL	1P'	12	39	59	C		0.3		Distant
29	BUL	iP	15	28	14	R	0.7	0.5		
29	BUL	ePn	17	40	08			0.8	0.8	
		eSg			15					
30	BUL	iP?	19	11	32	R	0.7	0.8		
	BHA	eP?			48			0.4		
31	BHA	eP	18	35	05			1.2	4.5	
		eS			58					
31	BUL	iP	19	13	22	C	0.7	0.4		Distant
31	BHA	eP?	21	56	49			0.6		
	BUL	iP		57	04	R		0.5		

LIST OF RECORDED PHASES: 16 to 23 NOV 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
18	BUL	e	17	30	36			0.7		Distant
	KRB	e			39	R	0.8	1.0		
	BHA	e			43					
18	KRB	eP	18	39	00			4.0	0.1	Kariba
		iS			02					
18	BUL	e	20	18	28			2.4		Distant
		i			48					
		i		21	36					
	BHA	i		18	44			2.0		
		i		21	51					
		e		28	01					
	KRB	i		18	53					
		e		21	47					
18	BHA	iP'	22	17	15	C	0.9	1.9		Distant
	KRB	eP'			18		1.0	1.5		
	BUL	iP'			23	C	1,0	1.7		
		eSKP		20	46					
18	BUL	e	22	28	46		1.2	1.1		Distant
19	KRB	eP	10	24	21			3.5	0.3	Kariba
		iS			25					
19	BUL	e	14	34	14			1.1		Distant
19	KRB	ePn	17	30	48			7.2	7.4	Central Malawi
		iSn		32	22					Felt MM IV at Mzimba
		iSg		33	02					11.9S 33.6E
	BUL	ePn		31	24			19.0	9.8	
		iSn		33	16					
		iSg		34	19					
20	BUL	i	15	18	59	C	1.0	3.8		Distant
	KRB	i		19	00			2.7		
	BHA	i			06	C	1.0	2.1		
21	KRB	iP	03	59	16			10.0	1.2	Kafue - Zambesi
		iS			34					Valleys
	BHA	iP			19	C		15.0	1.8	
		iS			42					
	BUL	ePn	04	00	00			1.2	4.6	
		eSn			55					
		eSg		01	19					
21	BUL	iP'	10	45	20	C	1.1	2.2		Distant
		iSKP		49	23					
		e		55	48					
	KRB	iP'		45	26	C	1.0	3.0		
		iSKP		49	31					
	BHA	iP'		45	26	C		1.5		
		iSKP		49	33					
21	BUL	eP	21	01	43			2.5	1.2	
		eS		02	00					
	KRB	e(S)		02	54			1.0		
22	BUL	iP'	12	08	19	C	1.0	4.2		Distant
		ePP		09	20					
	KRB	iP'		08	52	C	1.2	4.5		
	BHA	iP'		09	06	C		2.0		
		ePP		10	28					
22	BUL	e	14	19	53			0.9		Distant

LIST OF RECORDED PHASES: 16 to 23 NOV 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
~~22~~	~~BHA~~	~~e~~	~~20~~	~~44(43)~~				0.5		Distant
		~~e~~		~~48~~	~~21~~					
	~~KRB~~	~~e~~		~~44~~	~~48~~			0.5		
	BUL	e			53			1.0		
23	BUL	e	01	30	57			1.1		Distant
	~~KRB~~	~~e~~			59			1.1		
	BHA	e		31	01			0.4		
23	BHA	e	02	54	51			1.3		
23	BUL	eP	03	17	(34)			1 2	5 9	Witwatersrand
		eSn		18	41					
		eSg		19	19					
	KRB	e(S)		20	08			0.9		
23	KRB	iP	13	15	57			11.0	0.1	Kariba
	BHA	iP		16	31			7.0	1.8	
		iS			55					
	BUL	ePn			53			2.5	2.8	
		iSn		17	27					
		eSg			39					
23	KRB	iP	16	29	48	C	0.9	1.5		Distant?
~~23~~	~~BUL~~	~~e~~	~~23~~	~~50~~	~~59~~			1.0		

LIST OF RECORDED PHASES: 24 to 30 NOV 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
24	KRB	eP	09	23	46			6.0	0.4	Kariba
		iS			51					
	BHA	eP		24	16			2.1	2.0	
		iS			43					
24	KRB	eP	12	07	22			2.0	0.1	Kariba
		iS			23					
~~24~~	~~KRB~~	~~i~~	~~15~~	~~18~~	~~01~~	C	1.0	1.2		Distant
	~~BHA~~	~~i~~			02	C		1.0		
	~~BUL~~	~~e~~			~~04~~					
24	BHA	e(S)	17	25	50			0.9		
~~24~~	~~BUL~~	~~e~~	~~21~~	~~47~~	~~24~~					Distant?
~~25~~	~~BUL~~	~~e~~	~~02~~	~~16~~	~~21~~					Distant?
25	BHA	iPn	06	30	52			6.5	2.5	
		iPg			59					
		iSn		31	23					
		iSg			30					
	KRB	iPn			12	C	0.3	4.5	4.5	
		iSn		32	10					
		iSg			30					
	BUL	eP		31	53				(6.8)	
25	KRB	iP	10	33	05	R		3.0	0.3	Kariba
		iS			09					
25	BUL	eP	21	33	12					
	BHA	e(S)		41	07			0.6		
26	BHA	iPn	08	40	14	R		31.0	10.8	Northern Angola
		eSn		42	14					
		iSg		43	28					
	KRB	ePn		40	37		0.6	20.0	12.3	
		iSg		44	12					
	BUL	ePn		41	17			8.2	15.2	
		eSn		44	09					
		iSg		45	54					
27	~~BUL~~	~~e~~	~~01~~	~~48~~	~~27~~			0.6		Distant
		~~e~~			~~41~~					
	~~BHA~~	~~e~~			~~31~~			0.3		
		~~e~~			~~45~~					
27	BUL	e	12	20	46	C	0.8	1.0		Distant
	~~KRB~~	~~e~~			~~47~~			1.0		
	BHA	e			53			0.5		
28	BHA	iPn	03	41	19			6.5	5.5	Northern Zambia
		iSn		42	24					Felt Chitipa
		iSg			56					9.7S 33.3E
	BUL	ePn			12			1.1	10.7	MM V
		eSn		44	14					
		eSg		45	26					
	KRB	eSn		42	55			3.4	7.0	
		iSg		43	40					
~~28~~	~~BUL~~	~~e~~	~~04~~	~~09~~	~~13~~		0.9	1.7		Distant
	~~KRB~~	~~e~~			~~24~~		0.9	2.1		
	~~BHA~~	~~e~~			~~33~~		1.0	2.0		

LIST OF RECORDED PHASES: 24 to 30 NOV 1965

Date	Stn	Phase	G h	M m	T s	R/C	T s	DA mm	Dist deg	Remarks
28	BHA	iP'	05	34	57	R	1.0	1.6		Distant
		iPP		35	14					
	KRB	iP'	05	34	11	R	0.7	2.0		
		iPP			28					
	BUL	eP'	05	34	38		0.7	3.0		
		iPP			54					
28	BHA	iP	14	23	59			1.0	1.5	
		iS		24	20					
28	BHA	i	21	43	14			1.1		Distant
		i			30					
	BUL	e			18			3.3		
		i			45					
29	BUL	e	03	20	46			0.3		Distant
29	BUL	eP	10	09	25			1.0	0.8	
		iS			36					
29	BUL	i	14	00	19			1.1		Distant
		e		01	28					
	BHA	i		00	21			0.7		
30	BUL	e	11	55	00		0.8	0.9		Distant
	BHA	e			30			1.5		

NOV 1965

CIK not operating.

Date	G h	M m	T s	Epicentre, Remarks	Mag CGS	Stations
01	03	12	36	2.1° from BHA		BHA
01	03	15	00	1.8° from BUL		BUL
01	18	03	10	USCGS 24.1S 178.9E	5.6	BHA BUL KRB
02	00	49	13	USCGS 23.7S 179.8E	5.4	BHA KRB
02	01	54	51	USCGS 5.1S 151.7E	5.6	BHA BUL
02	03	01	59	Kariba		KRB
03	01	39	03	USCGS 9.1S 71.4W	6.2	BHA BUL KRB
03	16	41	06	USCGS 4.7S 126.6E	5.7	BHA BUL KRB
04	06	59				KRB
04	08	17	38	Kariba		KRB
04	14	02	51	USCGS 47.2S 10.6W	5.6	BUL
04	20	16	48	USCGS 57.9S 24.8W	4.6	BHA BUL
05	13	02	04	Kariba		KRB
05	19	29				BHA KRB
07	08	19	22	Kariba		BHA KRB
07	17	37				BHA
07	23	16	46	USCGS 53.6N 164.5W	4.5	BUL
08	06	51	54	Kariba		KRB
08	13	34	27	0.7° from BUL		BUL
08	22	28	43	Kariba		KRB
09	01	28	48	Northern Bechuanaland		BHA BUL KRB
09	02	46	25	Kariba		KRB
09	04	22	58			BHA BUL KRB
09	09	47	44	Kariba		KRB
09	12	25	55	Kariba		KRB
09	16	10				BUL
09	22	13				BUL
10	10	12				BUL
10	12	47	37	USCGS 21.0S 69.0W	4.8	BUL
10	13	26	09	4.2° from BUL		BUL
10	15	52	42	Kariba		BHA KRB
11	00	49	06	Witwatersrand		BUL
11	01	32	59	USCGS 22.8S 172.6E	5.4	BHA BUL KRB
11	02	51	25	USCGS 60.7S 154.0E	5.1	BUL
11	08	46	35	USCGS 18.4S 177.7W	4.9	BUL
11	10	41	33	Kariba		KRB
11	11	24	49	Kariba		KRB
11	15	19	00	Witwatersrand		BUL
11	15	33	59	Kariba		KRB
11	22	49	58	USCGS 28.4S 176.5W	4.9	BHA BUL

NOV 1965

Date	G h	M m	T s	Epicentre, Remarks	Mag CGS	Stations
12	08	23	03	2.9° from BHA		BHA
12	17	52	24	USCGS 30.5N 140 2E	6.6	BUL
12	21	41	30	5.4° from BUL		BUL
13	03	00				BUL
13	04	33	53	USCGS 43,8N 87.8E	6.3	BHA BUL KRB
13	06	14	25	USCGS 26.2N 65.1E	5.2	BUL
13	08	29	19	4.7° from BUL		BHA BUL KRB
13	13	47	08	5.8° from BUL		BUL
13	17	59	42	USCGS 29.4S 68.1W	5.9	BHA BUL KRB
13	21	50	56	Northern Zambia		BHA BUL KRB
14	00	42	50	3.0° from BHA		BHA
14	01	00	16	3.0° from BHA		BHA
14	02	11	38	2.1° from BHA		BHA
15	11	18	50	USCGS 0.3S 18.7W	5.6	BHA BUL KRB
15	20	23	21	Kariba		KRB
16	01	03	56	USCGS 36.4N 71.2E	5.5	BHA BUL KRB
16	15	24	43	USCGS 31.0N 41.5W	6.0	BHA BUL KRB
17	01	36	46	Kariba		BHA BUL KRB
17	06	21	10	Kariba		KRB
17	08	51	21	Kariba		KRB
17	10	47				BHA
17	11	20	05	6 0° from BUL		BUL
17	12	39				BHA
17	13	28	46	2.0° from BHA		BHA
18	07	27	20	Southern Lake Tanganyika		BHA BUL KRB
18	08	44	39	Southern Lake Tanganyika		BHA BUL KRB
18	09	05	59	Kariba		KRB
18	15	19	55	Kariba		BHA BUL KRB
18	17	17	23	USCGS 7.1S 129.5E	5.4	BHA BUL KRB
18	18	38	58	Kariba		KRB
18	20	00	19	USCGS 18.8S 177.9W	5.6	BHA BUL KRB
18	21	58	12	USCGS 53.9N 160.7E	6.0	BHA BUL KRB
18	22	08	46	USCGS 53.1N 161.9W	5.3	BUL
19	10	24	15	Kariba		KRB
19	14	34				BUL
19	17	28	56	Central Malawi Felt MM IV at Mzimba 11.9S 33.6E		BUL KRB
20	15	05	39	USCGS 7.3S 129.2E	6.1	BHA BUL KRB
21	03	58	52	Kafue/Zambesi Valley		BHA BUL KRB
21	10	31	50	USCGS 6.1S 130.4E	6.3	BHA BUL KRB
21	21	01	19	1.2° from BUL		BUL KRB

NOV 1965

Date	G h	M m	T s	Epicentre	Remarks	Mag CGS	Stations
22	12	01	44	USCGS 52.1S 15.7E		5.5	BHA BUL KRB
22	14	19					BUL
22	20	25	30	USCGS 51.3N 179.8W		5.9	BHA BUL KRB
23	01	17	31	USCGS 3.0N 124.8E		5.6	BHA BUL KRB
23	03	16	04	Witwatersrand			BUL KRB
23	13	15	55	Kariba			BHA BUL KRB
23	16	29					KRB
23	23	50					BUL
24	09	23	38	Kariba			BHA KRB
24	12	07	20	Kariba			KRB
24	15	06	54	USCGS 0.2S 97.3E		5.2	BHA BUL KRB
24	17	25					BHA
24	21	47					BUL
25	02	06	29	USCGS 37.6N 36.6E		4.8	BUL
25	06	30	10				BHA BUL KRB
25	10	32	59	Kariba			KRB
25	21	33					BHA BUL
26	08	37	35	7.4S 20.0E			BHA BUL KRB
27	01	29	49	USCGS 6.1S 148.5E		5.8	BHA BUL
27	12	01	52	USCGS 9.7S 159.7E		6.3	BHA BUL KRB
28	03	39	54	9.6S 31.1E	~~Felt MM V at Chitipa 9.7S 33.3E~~		BHA BUL KRB
28	03	56	46	USCGS 45.6S 72.4W		5.8	BHA BUL KRB
28	05	26	06	USCGS 36.1N 27.7E		5.9	BHA BUL KRB
28	14	23	31	1.5° from BHA			BHA
28	21	31	47	USCGS 4.9S 103.2E		5.9	BHA BUL
29	03	01	15	USCGS 52.9N 168.9W		4.6	BUL
29	10	09	09	0.8° from BUL			BUL
29	13	47	17	USCGS 0.0 123.4E		5.4	BHA BUL
30	11	50	03	USCGS 28.0S 5.5E		4.5	BHA BUL

12/65

SEISMOLOGICAL BULLETIN FOR MALAWI, RHODESIA AND ZAMBIA

The following stations contribute records for analysis and publication in this Bulletin:

BROKEN HILL (BHA):	14° 26.8' S; 28° 28.1' E; Alt. 1206 m.
Litho. foundation:	Dolomite and shales of the Middle Katanga System.
Authority:	Zambia Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
BULAWAYO (BUL):	20° 08.6' S; 28° 36.8' E; Alt. 1341 m.
Litho. foundation:	Hornblend schists of the Bulawayan System.
Authority:	Rhodesia Meteorological Service.
Instruments:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
	WWSS Station: SP magnification 100,000. LP magnification 1,500.
CHILEKA (CLK):	15° 40.8' S. 34° 58.6' E. Alt. 781 m.
Litho. foundation:	Charnockitic granulites of the Basement Complex.
Authority:	Malawi Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
KARIBA (KRB):	16° 31.6' S; 28° 47.7' E; Alt. 805 m.
Litho. foundation:	Quartzite of the Umkondo Syatem overlying gneiss of the Basement Complex.
Authority:	Central African Power Corporation.
Instrument:	Vertical Willmore one-second seismograph. Nominal magnification 20,000.
Analysis Centre:	Goetz Observatory, Meteorological Service, P. O. Box 562, Bulawayo, Rhodesia.

LIST OF RECORDED PHASES: 1 to 7 DEC 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
01	BUL	iPn	07	37	54			5.1	6.4	
		iSn		39	09					
		iSg			48					
	KRB	ePn		38	16		0.7	3.4	8.1	
		eSn		39	49					
		iSg		40	44					
	BHA	iP		38	42			2.3	9.8	
		iS		40	34					
01	BUL	ePn	08	30	00			2.0	6.4	
		eSn		31	16					
		eSg			54					
	KRB	ePn		30	23			2.0	8.1	
		eSn		31	57					
		eSg		32	51					
	BHA	e(S)		33	(16)			0.9		
01	BUL	eP'	10	38	53		1.0	0.7		Distant
01	BUL	eP	13	51	05			2.6	3.8	
		eS			51					
01	BUL	e	17	18	30			0.8		Distant
02	KRB	iP	00	40	43	R		2.0	0.1	Kariba
		iS			45					
02	BUL	i	00	49	17			1.3		Distant
		e		50	09					
	BHA	e		49	22			0.3		
02	BUL	e	10	29	14			1.1		Distant
	KRB	e			27		1.0	0.7		
	BHA	e			33			0.3		
02	BUL	e	13	27	34			0.8		Distant
02	BUL	e	23	57	(30)			0.3		Distant
	BHA	e			44	R		0.8		
03	BUL	e	15	31	49			0.9		Distant
		i		32	41					
	KRB	e			12	R	1.0	1.2		
		i			34					
		e		37	14					
	BHA	e		32	17			0.6		
	CLK	e			45			0.7		
		e		33	11					
03	CLK	i	21	27	48	C	1.0	1.1		Distant
	BHA	i		28	03	C	1.0	1.2		
	KRB	i			13	C	1.0	2.5		
	BUL	i			34	C	1.1	1.5		
03	BUL	iS	23	12	53			1.5		
	KRB	eS		15	37		1.0	1.0		
04	BHA	eP'	02	31	10			0.6		Distant
	KRB	eP'			16			0.9		
	CLK	eP'			16			0.3		
	BUL	iP'			27	R	1.0	2.6		
		eSKP		34	50					
04	KRB	iP	02	49	08			3.0	0.7	Kariba
		iS			17					
04	KRB	iP	03	20	45	C		5.0	0.1	Kariba
		iS			46					

LIST OF RECORDED PHASES: 1 to 7 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
04	KRB	iP	10	40	54			4.0	0.1	Kariba
		iS			56					
04	KRB	eP	13	28	09			3.0	0.1	Kariba
		iS			11					
04	KRB	iP	21	31	50			7.0	0.1	Kariba
	BHA	eP		32	27			0.8		
		eS			50					
05	BHA	eP	00	04	54			1.2	5.5	N. Zambia/Malawi Border Region
		eS		05	59					
	CLK	eP		05	02			1.0	5.6	
		eS		06	07					
	KRB	e(S)		06	(39)			1.0		
05	CLK	ePn	14	57	34			4.8	6.4	S. Kenya
		eSn		58	49					
		eSg		59	29					
	BHA	iPn		58	39			2.0	11.4	
		eSn	15	00	49					
		eSg		02	15					
	BUL	ePn	14	59	11		0.8	0.6	13.5	
		eSn	15	01	43					
		eSg		03	22					
	KRB	e(S)		02	(41)			1.3		
05	CLK	i	22	12	46	R		0.9		Distant
		i		13	11					
	BHA	i			09	R	1.0	2.6		
		i			34					
	KRB	i			13	R	1.0	1.8		
		i			38					
	BUL	i			25	R	1.1	1.1		
		i			51					
06	BUL	i	00	43	36	R	1.1	0.6		Distant
06	KRB	iP	05	01	29			7.5	0.1	Kariba
	BHA	eP			54			0.6		
		eS		02	18					
06	BHA	e	11	53	52			0.9		Distant
		e		56	53					
	BUL	e		54	05			0.5		
		e		57	01					
	KRB	e		54	09			1.2		
		e		57	(10)					
	CLK	e		54	27			0.7		
		e		57	50					
07	BUL	eP	04	42	16			0.6	4.1	
		eS		43	06					
07	BUL	e	11	04	15			0.6		Distant
	KRB	e			48		0.9	0.7		
07	BHA	eP	18	26	41			0.9	5.5	N. Zambia/Malawi Border Region
		eSn		27	45					
		eSg		28	18					
	CLK	e(Sn)		27	56			1.1	(5.7)	
		iSg		28	29					
07	BUL	i	21	30	54	C	1.0	1.7		Distant
	KRB	e		31	23			1.7		
	BHA	e			42			0.8		
	CLK	e		32	20			0.3		

EPICENTRE DATA

BUL

JUL 1965

CLK and KRB not operating.

Date	G h	M m	T s	Epicentre, Remarks	Mag	Stations
01	04	54	52	USCGS 23.3S 67.8W	5.1	BHA BUL
01	07	34	55	3.4° from BHA		BHA
02	04	34	25	15.7S 27.8E		BHA BUL
02	12	34				BHA
02	16	47				BHA
02	20	58	40	USCGS 53.1N 167.7W	6.6	BHA BUL
03	13	51	13	0.8° from BUL		BUL
04	00	30				BUL
04	01	21				BHA
04	01	39	00	Probably Rift Valley		BHA
04	17	27	02	N. Transvaal		BHA BUL
05	10	19				BUL
05	11	02				BUL
05	20	00				BUL
06	03	04	20	USCGS 22.6S 172.9E	5.9	BUL
06	03	18	45	USCGS 38.7N 22.6E	5.9	BHA BUL
06	06	38	15	Probably Kariba		BHA
06	06	57	19	Probably Kariba		BHA
06	14	49	31	USCGS 59.6S 26.2W	5.2	BUL
06	18	36	47	USCGS 4.5S 155.1E	6.5	BHA BUL
06	22	57				BUL
07	12	08	34	USCGS 49.7S 117.1E	5.3	BHA BUL
07	18	37	07	Zambesi valley		BHA BUL
07	23	00	07	USCGS 6.9S 105.6E	5.8	BHA BUL
08	03	58	51	USCGS 6.8S 105.5E	5.1	BHA BUL
08	23	40				BUL
09	08	16	52	1.6° from BHA		BHA
09	09	29	57	26.6E 18.2S		BHA BUL
09	15	50	26	1.1° from BUL		BUL
10	00	39	59	2.3° from BHA. 5 2° from BUL		BHA BUL
10	17	28		Teleseism?		BHA BUL
11	04	00	05	Witwatersrand		BHA BUL
11	18	18				BUL
12	01	32	17	Kariba?		BUL
12	05	06				BUL
12	07	23	22	4.1° from BUL		BUL
12	12	17				BUL
12	13	57	15	USCGS 28.4S 68.2W	5.7	BUL
12	18	34				BUL
13	18	12	45	9.7° from BUL. Felt N. Malawi		BUL

LIST OF RECORDED PHASES: 1 to 7 DEC 1965

Date	Stn	Phase	G h	M m	T s	R/C	T s	DA mm	Dist deg	Remarks
07	BUL	e	22	37	43			0.7		Distant
		e		38	30					
	KRB	e		37	43			0.8		
	BHA	e			45			0.5		

LIST OF RECORDED PHASES: 8 to 15 DEC 1965

KRB not operating after 10 DEC.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
08	BUL	eP	05	24	54			0.9	2.9	NW Rhodesia
		iS		25	43					
	BHA	eS			(20)			0.2		
	KRB	eS		26	23			1.2		
08	BUL	eP	12	53	04			1.0	4.5	
		iS			58					
08	BUL	iP'	18	23	50	C	0.8	1.2	115	USCGS 37.1S 177.5E
	CLK	eP'			52			0.2	116	
	KRB	eP'			55			1.0	119	
	BHA	iP'			59	R	1.0	1.2	122	
09	BUL	eP	00	54	33		1.0	0.8	4.0	
		iS		55	22					
09	BUL	iP	02	58	03	C	0.7	4.0	25	USCGS 43.5S 39.0E
	CLK	eP			33		0.8	0.2	28	
	KRB	eP			34	R	0.7	5.0	29	
	BHA	iP			54	R	1.0	1.5	32	
09	BUL	eP'	06	26	(50)			0.3	131	USCGS 17.3N 100.0W
	KRB	eP'			55		0.7	1.0	131	
	BHA	iP'			56	C		0.3	131	
09	BUL	eP	10	32	53			0.7	2.6	
		iS		33	26					
09	BUL	e	13	30	54		1.1	1.0		Distant
		i		33	34					
	BHA	e		31	03			0.3		
	CLK	e			05			0.2		
		e		33	34					
09	KRB	e	18	29	10			1.0		
09	BHA	i	20	37	43	C	1 0	1.0		Distant
	KRB	e			46			1.0		
	BUL	e		38	02		1.0	0.5		
10	KRB	iP	09	22	37			1.5	0.2	Kariba
		iS			40					
10	KRB	iP	17	40	24	C		3.2	0.3	Kariba
		iS			28					
10	BUL	i	22	12	20	C	0.8	0.6		Distant
	CLK	i			20		0.8	0.2		
	BHA	i			26	R	0.9	0.8		
		e		15	46					
11	BUL	iP'	00	19	27	C	0.8	0.4	122	USCGS 4.4S 155.0E
	BHA	iP'			31	C	1.0	0.9	124	
11	BHA	iP	01	02	37	R		1.0	1.5	
		iS			57					
11	BHA	eP	01	57	35			1.0	2.9	15S 31E
		iS		58	11					
	CLK	eP		57	48			0.4	3.8	
		eS		58	35					
11	BUL	i	03	52	09	C	0.9	0.4		Distant
	BHA	e			19			0.3		
11	BHA	eP	12	09	53			2.0	1.6	
		eS		10	15					

LIST OF RECORDED PHASES: 16 to 23 DEC 1965

KRB not operating

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
16	BHA	eP	03	27	17			4.0	2.2	16.6S 28.8E
		iS			45					
	BUL	eP			43			0.5	3.6	
		eS		28	27					
	CLK	eS		29	29			0.2	6.2	
~~16~~	~~CLK~~	~~e~~	~~10~~	~~19~~	~~(45)~~			0.2		Distant
	~~BUL~~	~~e~~			50		1.0	0.5		
	~~BHA~~	~~e~~		~~20~~	~~(18)~~			0.4		
~~16~~	~~BHA~~	~~e~~	~~19~~	~~34~~	~~(34)~~			0.3		Distant
	~~BUL~~	~~i~~			39	R	1.2	1.0		
	~~CLK~~	~~e~~			45			0.6		
16	~~BUL~~	~~i~~	22	59	13	R	0.8	0.5		Distant
	~~BHA~~	~~i~~			15	R	0.9	0.3		
16	CLK	e	23	20	19			0.6		
		i			30					
16	BHA	eP	23	22	40			4.0	6.1	9S 32E
		eSn		23	52					
		eSg		24	26					
	CLK	eP		22	53			1.4	7.1	
		iS		24	16					
	BUL	e(S)			58			0.5		
16	~~CLK~~	~~i~~	23	27	36	C	1.0	0.5		Distant
	~~BUL~~	~~i~~			38	C	1.1	1.3		
	~~BHA~~	~~i~~			53	R	1.0	1.4		
17	BHA	eP	18	19	34			3.0	1.2	
		iS			50					
17	BHA	eP	12	57	49			1.3	1.7	
		eSn		58	10					
		iSg			15					
17	BHA	iPn	18	59	01			4.0	8.6	2S 32E
		iPg			47					
		iSn	19	00	39					
		iSg		01	37					
	CLK	iP	18	59	10	D		1.6	9.6	
		iS	19	01	05					
	BUL	e(P)		00	06			0.7		
17	~~BUL~~	~~e~~	21	37	49			0.3		Distant
18	BUL	ePn	06	07	09			1.1	0.6	
		eS*			18					
		iSn			21					
18	BHA	eP	10	41	43			2.0	1.6	
		iS		42	05					
18	CLK	eP	15	10	43			1.8	1.0	
		iS			57					
19	~~BUL~~	~~i~~	20	34	47	C	1.0	0.4		Distant
	~~BHA~~	~~e~~		35	34			1.0		
19	~~CLK~~	~~i~~	22	14		C	0.7	0.8		Distant
	~~BUL~~	~~i~~			56	R	0.7	1.1		
	~~BHA~~	~~i~~		15	17		1.0	1.5		
20	~~CLK~~	~~e~~	00	18				0.3		Distant
	~~BUL~~	~~i~~			23	C	1.0	0.6		

LIST OF RECORDED PHASES: 16 to 23 DEC 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
20	BUL	eP	09	01	53			1.2	5.6	
		iSn		03	00					
		iSg			30					
20	BHA	eP	15	41	37			1.5	6.0	
		iSn		42	46					
		iSg		43	28					
21	CLK	e	14	30				0.4		
	BHA	eP			06			2.0	10.2	
		eSn		32	02					
		eSg		33	13					
	~~BUL~~	~~e~~		~~31~~				0.5		
21	BUL	i	~~18~~	~~08~~	~~44~~	R	0.9	0.4		Distant
		i		11	38					
	CLK	e		08	54			0.2		
		e		11	38					
	BHA	e		08	(55)			0.5		
		i		11	52					
22	CLK	i	00	47	51	R	0.8	0.2		Distant
	BHA	i			53	R	0.8	0.3		
	BUL	e		48				0.5		
22	CLK	e	01	05	04		1.0	0.3		Distant
	BHA	i			30	C	0.8	0.8		
	BUL	i			31	C	0.9	1.0		
22	BUL	e	14	17	32			0.4		
	BHA	i			55	C	0.6	0.6		
22	CLK	eSn	17	02	29			1.0	4.0	Eastern Zambia
		eSg			50					
	BHA	iSn			41			1.0	4.5	
		eSg		03	06					
22	BHA	i(S)	18	54	42			0.7		
22	CLK	e	20	00	(35)			0.6		Distant
		i		03	25					
		i		04	18					
	BHA	e		00	37		1.0	1.0		
		i		03	19					
		i		04	09					
	BUL	e		00	45		0.9	2.0		
		i		03	24					
		i			53					
		i		04	25					
23	BUL	eP	06	03	57			2.0	0.7	
		iS		04	07					
23	BUL	eP	12	45	57			1.3	5.6	
		eSn		47	03					
		eSg			35					
23	BUL	eP	17	48	14			13.	3.9	21.2S 32.5E
		iSn		49	02					
		iSg			19					
	CLK	e(P)		48	51			1.8	6.2	
	BHA	iP		49	14			3.7	7.8	
		iSn		50	44					
		iSg		51	35					

LIST OF RECORDED PHASES: 16 to 23 DEC 1965

Date	Stn	Phase	G h	M m	T s	R/C	T s	DA mm	Dist deg	Remarks
23	BHA	i	21	06	52	R	1.0	0.3		Distant
		i		10	21					
	CLK	e		06	55		0.9	0.2		
		i		10	26					
	BUL	i		06	55	R	1.0	0.3		
		i		10	38					

LIST OF RECORDED PHASES: 24 to 31 DEC 1965

KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
24	BUL	iP	05	35	34	C		3.0	0.1	
		iS			35					
~~24~~	~~BUL~~	~~e~~		09	32(39)			0.2		
24	CLK	e(S)	09	34	00			0.3		
24	BUL	eP	11	00	08			1.0	9.7	
		iS		02	20					
	BHA	e(S)		03				0.2		
	CLK	e(S)		04				0.2		
24	CLK	ePg	11	51	24			2.2	0.5	
		iPn			28					
		iSg			30					
		eSn			36					
25	BUL	epP	03	15	53			1.0	133	18.0S 179.2W
		iP'		16	07					
		~~iSKP~~		~~18~~	~~39~~					
		~~ePKS~~		~~19~~	39					
	~~BHA~~	~~epP~~		~~16~~	~~04~~		1.0	0.7	137	
	CLK	eP'			05			0.3	132	
~~25~~	~~BUL~~	~~i~~	~~12~~	~~04~~	~~40~~	~~C~~	1.0	0.8		Distant
	~~CLK~~	~~e~~			41		0.9	0.2		
	~~BHA~~	~~i~~			57	R	1.0	1.3		
25	~~BHA~~	~~i~~	~~19~~	~~38~~	~~52~~	R	1.0	1.0		Distant
		~~i~~		~~41~~	~~40~~					
	~~CLK~~	~~e~~		~~38~~	~~54~~			0.2		
		~~i~~		~~41~~	~~25~~					
	~~BUL~~	~~i~~		~~38~~	~~54~~	C	0.8	1.2		
		~~i~~		~~41~~	30					
26	CLK	eP'	04	11	49			0.3	114	5.5S 151.4E
	BUL	eP'			51			0.9	119	
	BHA	eP'			54		0.6	0.8	120	
~~26~~	~~BUL~~	~~i~~	~~18~~	~~26~~	~~19~~	R	1.2	0.3		Distant
	~~BHA~~	~~i~~			~~36~~	R	0.9	0.9		
27	CLK	iPg	01	52	21	C	0.5	0.8	0.7	
		ePn			24					
		iSg			32					
		eSn			35					
27	BHA	eP	03	26	33			0.7	10.4	
		iSn		28	30					
		iSg		29	50					
	~~CLK~~	~~e~~			~~27~~			0.2		
	~~BUL~~	~~e(S)~~			~~32~~			0.2		
27	BUL	e(S)	03	41	(50)			0.6		
28	BHA	eP	11	33	12			9.0	12.5	2S 29E
		iSn		35	36					
		iSg		36	59					
	CLK	eP		33	43			4.5	14.8	
		iSn		36	28					
		iSg		38	07					
	BUL	eP		34	27			2.0	18.5	
		iSn		37	59					
		iSg		39	54					

LIST OF RECORDED PHASES: 24 to 31 DEC 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
28	BHA	e(S)	16	54				2.0		
	BUL	e(S)		56				0.3		
28	BHA	e	20	51	10			0.2		Distant
	BUL	i			12	R	1.0	0.6		
29	BHA	eP	12	17	09			1.0	2.1	
		iS			36					
29	CLK	eP	14	52	21			2.8	3.7	12.4S 33.6E
		iSn		53	05					
		iSg			27					
	BHA	eP		52	48		1.0	2.9	5.4	
		iSn		53	49					
		iSg		54	24					
	BUL	eP		53	39			0.8	9.1	
		eSn		55	23					
		iSg		56	24					
29	CLK	iP	15	38	19	C		1.8	0.9	
		iS			30					
29	BUL	i	18	58	34	R	0.9	0.9		Distant
	BHA	e			39			0.3		
29	CLK	eP	19	59	17			2.6	0.7	
		iSg			26					
		iSn			31					
30	BHA	e	02	26	00			0.4		Distant
	CLK	e			00			0.3		
	BUL	i			06	C	0.9	5.5		
30	BUL	i	06	29	08	C	0.8	2.8		Distant
	BHA	e			17			0.2		
31	CLK	i	02	38	41	C	0.6	0.5		Distant
	BHA	i		39	18	R	1.0	3.0		
	BUL	i			21	R	0.8	1.5		
31	BHA	eP	04	17	03			1.6	3.1	
		iSn			41					
		iSg			56					
	CLK	e(S)			(33)			0.8		
31	CLK	i	19	56	28	C	1.0	0.2		Distant
	BUL	i			51	R	0.9	1.2		
	BHA	i			57	C	1.1	0.4		

DEC 1965

KRB not operating, from 10 DEC.

Date	G h	M m	T s	Epicentre, Remarks	Mag CGS	Stations
01	07	36	16	22S 35E	4.1	BHA BUL KRB
01	08	28	22	22S 35E	3.7	BHA BUL KRB
01	10	29	58	USCGS 24.0N 5.1E	5.0	BUL
01	13	48	54	Witwatersrand		BUL
01	17	09	06	USCGS 42.0S 87.9E	5.2	BUL
02	00	36	30	USCGS 16.4S 69.6W	5.2	BHA BUL
02	00	40	41	Kariba		KRB
02	10	16	27	USCGS 31.3S 68.5W	4.6	BHA BUL KRB
02	13	27				BUL
02	23	38	13	USCGS 15.3S 173.1W	5.5	BHA BUL
03	15	21	23	USCGS 47.4S 100.0E	5.5	BHA BUL CLK KRB
03	21	17	34	USCGS 36.3N 69.5E	5.5	BHA BUL CLK KRB
03	23	09	42	Witwatersrand		BUL KRB
04	02	11	50	USCGS 51.3N 170 6W	5.5	BHA BUL CLK KRB
04	02	48	54	Kariba		KRB
04	03	20	43	Kariba		KRB
04	10	40	52	Kariba		KRB
04	13	28	07	Kariba		KRB
04	21	31	48	Kariba		BHA KRB
05	00	03	29	11S 32E	3.1	BHA CLK KRB
05	14	55	56	10S 38E	4.1	BHA BUL CLK KRB
05	22	01	28	USCGS 23.3N 94.5E	5.5	BHA BUL CLK KRB
06	00	24	05	USCGS 53.5N 164.3W	4.1	BUL
06	05	01	27	Kariba		BHA KRB
06	11	34	54	USCGS 18.9N 107.1W	5.9	BHA BUL CLK KRB
07	04	41	11	BUL 4.1°		BUL
07	11	04				BUL KRB
07	18	25	16	11S 32E		BHA CLK
07	21	25	34	USCGS 43.4S 38.5E	5.0	BHA BUL CLK KRB
07	22	19	15	USCGS 6.4S 146.3E	6.4	BHA BUL KRB
08	05	24	06	BUL 3°		BHA BUL KRB
08	12	50	42	Witwatersrand		BUL
08	18	05	26	USCGS 37.1S 177.5E	5.8	BHA BUL CLK KRB
09	00	52	12	Witwatersrand		BUL
09	02	52	44	USCGS 43.5S 39 0E	5.3	BHA BUL CLK KRB
09	06	07	49	USCGS 17.3N 100 0W	6.0	BHA BUL KRB
09	10	30	24	Witwatersrand		BUL
09	13	12	55	USCGS 18.0S 178.2W	5.6	BHA BUL CLK
09	18	29				KRB

DEC 1965

Date	G h	M m	T s	Epicentre, Remarks	Mag CGS	Stations
09	20	26	04	USCGS 27.5N 92.5E	5.3	BHA BUL KRB
10	09	22	33	Kariba		KRB
10	17	40	18	Kariba		KRB
10	21	53	17	USCGS 11.4S 166.2E	5.8	BHA BUL CLK
11	00	01	28	USCGS 4.4S 155.0E	5.1	BHA BUL
11	01	02	08	BHA 1.5°		BHA
11	01	56	48	15S 31E		BHA CLK
11	03	40	42	USCGS 27.6S 63.1W	4.1	BHA BUL
11	12	09	23	BHA 1.6°		BHA
11	17	02				BHA
12	07	20	54	USCGS 27.9S 177.9W	4.9	BHA BUL
12	13	53	22	BHA 3.0°		BHA BUL
12	15	00		Distant		BHA BUL CLK
12	16	40	14	USCGS 23.3S 175.5W	5.0	BHA BUL
12	19	25	09	USCGS 50.3N 149.5E	4.9	BHA BUL
12	22	35	59	USCGS 29.3S 60.6E	5.3	BHA BUL CLK
13	05	45	13	USCGS 44.1N 150.2E	5.4	BUL
13	10	52	09	USCGS 44.7N 150.1E	5.7	BHA CLK
13	12	03	09	BHA 2.0°		BHA
13	15	08	27	USCGS 56.1S 27.6W	5.2	BHA CLK
13	22	04	14	BHA 0.8°		BHA
13	22	30	09	14.2S 27.4E		BHA CLK
14	02	00				CLK
14	14	29		Distant		BHA CLK
14	22	38	23	BHA 1.8°		BHA
15	04	43	47	USCGS 22.2N 94.6E	5.3	BHA BUL CLK
15	08	22	22	USCGS 0.0 123.7E	5.9	BHA BUL CLK
15	23	03	48	Witwatersrand		BUL
15	23	05	21	USCGS 7.5N 82.2W	6.0	BHA BUL CLK
16	03	26	42	16.6S 28.8E		BHA BUL CLK
16	10	09	23	USCGS 47.4S 99.7E	5.6	BHA BUL CLK
16	19	34		Distant		BHA BUL CLK
16	22	46	30	USCGS 22.4S 68.5W	5.5	BHA BUL
16	23	06	42	USCGS 22.4S 68.5W	5.5	BHA BUL CLK
16	23	20				CLK
16	23	21	06	9S 32E		BHA BUL CLK
17	08	19	10	BHA 1.2°		BHA
17	12	57	18	BHA 1.7°		BHA
17	18	56	52	2S 32E		BHA BUL CLK
17	21	19	05	USCGS 27.6S 178.0W	4.7	BUL

DEC 1965

Date	G h	M m	T s	Epicentre, Remarks	Mag CGS	Stations
18	06	06	55	BUL 0.6°		BUL
18	10	41	14	BHA 1.6°		BHA
18	15	10	22	CLK 1.0°		CLK
19	20	34		Distant		BHA BUL
19	22	06	33	USCGS 32.2S 78.8E	5.8	BHA BUL CLK
20	00	08	15	USCGS 40.2N 24.8E	5.3	BUL CLK
20	09	00	27	Witwatersrand		BUL
20	15	40	05	BHA 6.0°		BHA
21	14	27	36	6S 34E		BHA BUL CLK
21	17	50	10	USCGS 19.1S 177.6W	5.1	BHA BUL CLK
22	00	28	46	USCGS 52.4N 160.5E	5.1	BHA BUL CLK
22	00	52	56	USCGS 6.6N 124.1E	5.6	BHA BUL CLK
22	14	09	07	USCGS 32.2S 79.0E	5.5	BHA BUL
22	17	00	37	Eastern Zambia		BHA CLK
22	18	54				BHA
22	19	41	23	USCGS 58.4N 153.0W	6.5	BHA BUL CLK
23	06	03	44	BUL 0.7°		BUL
23	12	44	32	Witwatersrand		BUL
✓ 23	17	47	14	21.2S 32.5E	3.6	BHA BUL CLK
23	20	47	37	USCGS 60.5N 141.0W	5.4	BHA BUL CLK
24	05	35	32	BUL 0.1°		BUL
24	09	32				BUL CLK
24	10	58	04	Southern Mozambique Channel		BHA BUL CLK
24	11	51	14	CLK 0.5°		CLK
25	02	57	58	USCGS 18.0S 179.2W	5.5	BHA BUL CLK
25	11	44	04	USCGS 23.4S 180.0	4.9	BHA BUL CLK
25	19	20	45	USCGS 18.1S 179.2W	5.4	BHA BUL CLK
26	03	53	17	USCGS 5.5S 151.4E	6.0	BHA BUL CLK
26	18	05	39	USCGS 23.8S 180.0	5.2	BHA BUL
27	01	52	07	CLK 0.7°		CLK
27	03	24	00	BHA 10.4°		BHA BUL CLK
27	03	39				BUL
✓ 28	11	30	09	2S 29E	5.0	BHA BUL CLK
28	16	54				BHA BUL
28	20	32	25	USCGS 27.8N 141.8E	5.9	BHA BUL
29	12	16	33	BHA 2.1°		BHA
✓ 29	14	51	24	12.4S 33.6E	3.4	BHA BUL CLK
29	15	38	00	CLK 0.9°		CLK
29	18	39	47	USCGS 6.6S 155.0E	5.4	BHA BUL
29	19	59	03	CLK 0.7°		CLK

JUL 1965

CLK and KRB not operating.

Date	G h	M m	T s	Epicentre, Remarks	Mag	Stations
13	15	04				BUL
14	10	17				BHA
14	15	53	54	S Mocambique Channel		BUL BHA
14	17	55	51	USCGS 52.6N 168.6 W	5.3	BUL
14	18	21	34	Kariba?		BHA
14	18	13	21	USCGS 0.1S 122.8E	5.3	BUL
15	13	08	20	1.9° from BHA		BHA
15	13	29	07	1.1° from BHA		BHA
15	14	24				BUL
15	18	33	30	USCGS 7.7N 123.8E	5.8	BHA BUL
16	08	10	39	Kariba?		BHA
16	10	34				BUL
16	10	52				BUL
16	11	31				BHA BUL
16	13	17	06	USCGS 11.8S 166.0E	5.1	BHA BUL
16	13	45	48	2.5° from BHA		BHA
16	13	51				BHA
16	22	33	16	USCGS 11.8S 166.1E	4.6	BHA BUL
17	05	13	17	1.1° from BHA		BHA
17	12	59	11	USCGS 27.2S 177.6E	5.4	BHA BUL
17	15	40	18	0.9° from BUL		BUL
17	18	21	33	USCGS 54. 8N 161.5W	4.6	BUL
18	11	28	36	BHA 3.2° · BUL 7.8°		BHA BUL
19	07	35	01	USCGS 54.1N 163.4W	4.4	BUL
19	10	55	13	2.5° from BUL		BUL
20	07	54		Teleseism?		BUL
20	12	41				BUL
20	20	11	42	USCGS 53.9N 166.6W	5.3	BUL
21	00	25				BUL
21	02	51	39	USCGS 20.8S 175.8W	5.7	BUL
21	15	31				BUL
22	15	30	48	Kariba?		BUL
23	13	51	26	5.6° from BHA; 9°? from BUL		BHA BUL
23	15	01				BUL
23	20	10	29	USCGS 10.1S 41.1E	4.1	BHA BUL
24	17	57	42	USCGS 36.4N 71.2E	4.9	BHA BUL
25	03	40	40	USCGS 2.0N 99.3E	5.3	BHA BUL
25	22	31				BHA BUL
26	00	46	22	N. Zambia		BHA BUL
26	02	05				BHA BUL

DEC 1965

Date	G h	M m	T s	Epicentre, Remarks		Mag CGS	Stations
30	02	06	31	USCGS	54.1N 164.3W	5.6	BHA BUL CLK
30	06	16	04	USCGS	16.8S 71.2W	5.7	BHA BUL
31	02	27	52	USCGS	0.8N 100.2E	5.2	BHA BUL CLK
31	04	16	13	BHA	3.1°		BHA CLK
31	19	43	46	USCGS	9.6S 123.5E	5.2	BHA BUL CLK

JUL 1965

CIK and KRB not operating.

Date	G h	M m	T s	Epicentre, Remarks	Mag	Stations
26	13	36	20	NW Zambia		BHA BUL
27	10	45				BHA
27	13	07	47	N Zambia		BHA BUL
✓ 27	16	37	02	16.4S 28.4E; Kariba		BHA BUL
28	20	32				BUL
28	22	29	05	USCGS 2.2S 101.8E	5.8	BHA BUL
29	09	45	02	BHA 16°; BUL 18°		BHA BUL
29	12	20	23	USCGS 51.0N 171.5W	5.5	BUL
29	17	39	50	0.8° from BUL		BUL
30	19	11				BHA BUL
31	18	34	54	4.5° from BHA		BHA
31	19	01	09	USCGS 32.8N 93.0E	4.4	BUL
31	21	56				BHA BUL

MM IV tremor felt at Cholo (16° 09' S, 35° 13' E) at $23^h\ 45^m$ on the 26th.

8/65

SEISMOLOGICAL BULLETIN FOR MALAWI, RHODESIA AND ZAMBIA

The following stations contribute records for analysis and publication in this Bulletin:

BROKEN HILL (BHA):	14° 26.8' S; 28° 28.1' E; Alt. 1206 m.
Litho. foundation:	Dolomite and shales of the Middle Katanga System.
Authority:	Zambia Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
BULAWAYO (BUL):	20° 08.6' S; 28° 36.8' E; Alt. 1341 m.
Litho. foundation:	Hornblend schists of the Bulawayan System.
Authority:	Rhodesia Meteorological Service.
Instruments:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
	WWSS Station: SP magnification 100,000. LP magnification 1,500.
CHILEKA (CLK):	15° 40.8' S. 34° 58.6' E; Alt. 781 m.
Litho. foundation:	Charnockitic granulites of the Basement Complex.
Authority:	Malawi Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
KARIBA (KRB):	16° 31.6' S; 28° 47.7' E; Alt. 805 m.
Litho. foundation:	Quartzite of the Umkondo Syatem overlying gneiss of the Basement Complex.
Authority:	Central African Power Corporation.
Instrument:	Vertical Willmore one-second seismograph. Nominal magnification 20,000.
Analysis Centre:	Goetz Observatory, Meteorological Service, P. O. Box 562, Bulawayo, Rhodesia.

LIST OF RECORDED PHASES: 1 to 7 AUG 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R/C	T s	DA mm	Dist deg	Remarks
~~01~~	~~BUL~~	~~i~~	~~15~~	~~16~~	~~42~~	R	0.9	0.6		Distant?
	~~BHA~~	~~i~~		~~17~~	~~07~~	R		0.3		
01	BHA	eP	20	21	13	D		0.8		Distant
	BUL	iP			32	C	0.9	1.0		
02	BUL	iP"	00	03	17	R	0.9	0.7		Distant
	BHA	iP"			29	D		0.9		
~~02~~	~~BUL~~	~~i~~	~~06~~	~~43~~	~~(32)~~	C	1.0	0.4		Distant
02	BUL	eP	10	46	50			1.5	2.3	Kariba?
		iS		47	23					
	BHA	eP			36			0.5	1.7	
		eS			58					
02	BUL	iP	13	33	07	D	1.2	0.5		Distant
	BHA	eP			31			0.5		
03	BHA	iP	11	37	01	C		2.0	1.9	
		iS			27					
03	BHA	iP	13	47	50	D		4.0		
		iS		48	12					
04	BHA	iP	07	52	07	C		4.8	2.1	Kariba
		iS			34					
	BUL	eP			32			1.4	3.6	
		iS		53	16					
05	BUL	eP"	00	26	33		0.7	2.5		Distant
	BHA	eP"			38			4.0		
~~05~~	~~BHA~~	~~e~~	~~00~~	~~36~~	~~49~~			0.6		
05	BHA	e	~~06~~	~~46~~	~~(30)~~			1.0		Distant
	~~BUL~~	~~e~~		47						
~~05~~	~~BHA~~	~~i~~	~~19~~	~~57~~	~~17~~	R		0.3		Distant
	~~BUL~~	~~i~~			~~23~~	R	1.0	0.3		
~~06~~	~~BUL~~	~~e~~	~~02~~	~~07~~	~~43~~		1.2	0.3		Distant
06	BUL	eP	02	24	08			0.7	2.7	
		iS			42					
06	BHA	ePn	06	59	12			9.0	10.5	
		iSn	07	01	12					
		eSg		02	23					
06	BHA	eP	08	16	03			1.0		
07	BHA	eP	00	32	08			1.4	1.9	
		eS			33					
07	BHA	eP	02	18	33			1.1	2.1	Kariba?
		eS		19	00					
	BUL	eP		18	48			0.3		
07	BHA	iP	05	13	53	D		1.8	1.4	
		iS		14	12					
	~~BUL~~	~~e~~		~~15~~	~~34~~			0.2	4.8?	
07	BHA	ePg	10	43	27			1.0	0.2	
		eSg			30					
		ePn			32					
		eSn			39					

LIST OF RECORDED PHASES: 8 to 15 AUG 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
08	BHA	iPn	01	33	21	R		11.0	5.7	Lake Mweru
		ePg			46					
		iSn		34	28					
		iSg		35	02					
	BUL	iPn		34	35	C	0.6	0.8	11.0	
		eSg		37	56					
~~08~~	~~BUL~~	~~i~~	~~06~~	~~44~~	~~47~~	C	0.9	0.9		Distant
	~~BHA~~	~~i~~			~~58~~			0.2		
08	~~BUL~~	~~i~~	~~13~~	~~08~~	~~51~~	R	0.9	0.8		Distant
08	BHA	eP	21	09	55			0.4		
09	BHA	eP	00	50	24			2.2	2.3	Kariba.
		eS			54					
	BUL	iP			43			0.6	3.7	
		eS		51	22					
09	BHA	eP	00	55	27			1.2	2.7	Kariba
		eS		56	01					
	BUL	iP		55	48			0.4	3.3	
		eS		56	28					
09	BHA	eP	00	57	39			2.2	2.4	Kariba
		eS		58	10					
	BUL	iP		57	59			0.7	3.2	
		eS		58	37					
09	BUL	ePn	02	16	37			4.0	3.4	19.5S 32.2E Felt MM IV at Chisengu 19.9S 32.9E
		ePg			48					
		iSn		17	18					
		iSg			35					
	BHA	ePn			15			1.9	6.1	
		iSn		18	28					
		eSg		19	04					
09	BUL	iP	23	25	13	R	1.0	0.3		Distant
	BHA	eP			28					
10	BHA	iP	10	31	09	C		1.5	2.1	
		iS			36					
10	BHA	iP	12	06	44			4.0	2.2	Kariba
		eS		07	11					
	BUL	ePn		07	(10)			0.6		
		eSn			41					
		eSg			52					
10	BHA	eP	12	30						) Coincident events.
	BUL	eP		33						) Analysis not
10	BHA	eP	12	32						) possible.
	BUL	eP		36						
10	BUL	eP	20	00	35			0.4	1.6	
		eS			56					
~~11~~	~~BUL~~	~~e~~	~~03~~	~~29~~	~~07~~		1.1	0.2		Distant
11	BHA	ePn	03	37	52			4.5	7.1	S. Lake Tanganyika
		iPg		38	22					
		iSn		39	13					
		iSg		40	00					
	BUL	eSn		41	23			0.8	12.	
		eSg		42	48					

LIST OF RECORDED PHASES: 8 to 15 AUG 1965

CLK and KRB not operating

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
~~11~~	~~BUL~~	~~e?~~	~~03~~	~~59~~	~~48~~					
11	BUL	iP"	04	00	00		0.9	1.4		Distant
	BHA	~~e?~~	~~03~~	~~59~~	~~51~~					
		iP"	04	00	08		0.8	2.0		
		iSKP		03	33					
11	BUL	eP	15	50	06			0.8	5.0	
		eS		51	05					
11	BUL	iP"	20	11	30	C	0.8	1.1		Distant
	BHA	~~e?~~			~~36~~					
		eP"	20	11	44			1.0		
		iSKP		15	13					
11	BUL	iP	20	32	58	C	0.8	0.6		
	BHA	eP		33	08			0.8	19.1	
		iS		36	38					
11	BUL	iP"	22	50	51	C	0.8	2.1		Distant?
	BHA	iP"			55		0.8	1.9		
		iSKP		54	30			2.2		
11	BUL	iS?	23	14	05			1.0		
~~11~~	~~BUL~~	~~i~~	~~23~~	~~17~~	~~53~~	C	1.0	0.4		Distant
	BHA	i		18	07	C		1.0		
12	BHA	ePn	03	33	47		0.8	19.0	10.8	
		iSn		35	56					
		iSg		36	57					
	BUL	eP		35	03		0.9	2.5	16.4	
		iS		38	14					
12	BUL	~~e?~~	~~08~~	~~20~~	~~32~~		0.6	0.2		Distant
		iP"			44			1.5		
	BHA	iP"			51	C		1.5		
		iSKP		24	16					
12	BUL	iP"	13	15	57	D	1.0	0.5		Distant
		~~i?~~		~~16~~	~~10~~					
	BHA	eP"		15	59			0.4		
		~~i?~~		~~16~~	~~13~~					
12	BUL	eP"	18	23	54		0.9	1.0		Distant
	BHA	eP"		24	05			0.4		
12	BUL	eS?	22	36	28			0.3		
	~~BHA~~	~~e~~		~~36~~	~~(34)~~					
13	BUL	eP"	12	59	13		1.0	0.2		Distant
		~~i?~~			~~37~~					
	BHA	eP"	12	59	15		0.9	0.3		
		~~i?~~			~~44~~					
		iSKP	13	03	13					
13	BUL	iS?	13	48	23			1.0		
13	BUL	ePg	15	15	28			0.5	0.5	
		iSg			35					
13	BUL	eP"	18	15	36		1.0	0.3		Distant
13	BUL	eP"	22	16	18		0.9	0.3		Distant
14	BUL	iP"	13	37	10	D	0.9	0.4		Distant
	BHA	eP"			19			0.3		
14	BHA	iP	20	27	21	D		2.0	1.4	
		iS			40					

LIST OF RECORDED PHASES: 8 to 15 AUG 1965

CLK and KRB not operating

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
15	BHA	iP	06	10	06			0.3		
	BUL	iP			34	C	0.8	0.4		
15	BUL	iP	16	22	12	C		0.4	1.8	
		iS			36					

LIST OF RECORDED PHASES: 16 to 23 AUG 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
~~16~~	~~BUL~~	~~i~~	~~08~~	~~49~~	~~17~~			0.3		
	~~BHA~~	~~e~~		~~50~~	~~27~~			0.4		
16	BHA	iPn	10	11	05	R		2.4	2.1	26.5S 28.4E
		iSn			32					
		iSg			37					
	BUL	ePg			30			1.0	3.7	
		eSn		12	01					
		eSg			13					
16	BHA	iP	12	45	16	R		1.0		Distant
	BUL	iP			26	R	1.0	3.0		
16	BHA	iPn	13	45	55	C		4.5	2.1	
		iSn		46	22					
	BUL	eP			12			1.2	4.5	
		iS		47	06					
~~16~~	~~BUL~~	~~i~~	~~13~~	~~52~~	~~18~~			1.2		Start lost
		~~i~~		~~56~~	~~38~~					
~~16~~	~~BUL~~	~~e~~	~~22~~	~~03~~	~~11~~			0.4		
~~17~~	~~BUL~~	~~i~~	~~08~~	~~40~~	~~40~~	R		0.3		
~~17~~	~~BUL~~	~~e~~	~~10~~	~~29~~	~~45~~			0.3		
17	BUL	~~e?~~	~~10~~	~~45~~	~~27~~					
		iP		46	20		1.0	1.0		Distant
		iSKS		56	20					
	BHA	~~e?~~		~~46~~	~~05~~					
		iP			14		1.1	9.0		
		iSKS		56	13					
~~17~~	~~BUL~~	~~e~~	~~12~~	~~59~~	~~39~~			0.3		
17	BHA	iP	13	03	47	R		2.5		
	~~BUL~~	~~e~~			~~54~~			0.3		
17	BUL	iP'	13	35	42	R	0.9	0.4		Distant
17	BUL	iP	14	21	04	C	0.8	0.3		Distant
18	BHA	ePn	00	02	49			7.0	9.2	N Lake Tanganyika
		iSn		04	25					
		iSg		05	25					
	BUL	eP		04	03			1.5	15.4	
		iSn		06	55					
		iSg		08	47					
~~18~~	~~BUL~~	~~e~~	~~07~~	~~40~~	~~41~~			0.5		
~~18~~	~~BUL~~	~~e~~	~~13~~	~~35~~	~~21~~		0.8	0.2		
~~18~~	~~BUL~~	~~i~~	~~14~~	~~05~~	~~02~~	C	0.8	0.4		
~~18~~	~~BUL~~	~~i~~	~~15~~	~~10~~	~~36~~	R	0.9	0.4		
~~19~~	~~BUL~~	~~i~~	~~02~~	~~49~~	~~17~~	C	1.0	0.2		
19	BHA	e	03	34	12			0.2		
~~19~~	~~BHA~~	~~e~~	~~04~~	~~25~~	~~23~~			0.5		
19	BHA	ePn	05	36	26			2.5	1.1	
		iSn			40					
		iSg			43					
19	BUL	ePg	06	53	23			0.7	0.2	
		iSg			25					
~~19~~	~~BUL~~	~~e~~	~~08~~	~~37~~	~~37~~		0.7	0.3		

LIST OF RECORDED PHASES: 16 to 23 AUG 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
19	BHA	e	13	19	31			0.3	2.0?	
		i			57					
19	BUL	eP	13	25	02			0.3	1.3	
		iS			19					
19	BUL	i	13	28	41	C	0.8	0.6		
19	BUL	eP	14	09	14			0.6	1.0	
		iS			27					
19	BHA	e	16	12	17			0.6		
19	BUL	iP"	20	05	18	C	0.8	0.3		Distant
20	BHA	e	02	00	00			0.7		
20	BHA	i	02	25	16	R		0.8		
20	BHA	eP	04	48	39			2.6	2.0	
		iS		49	13					
20	BUL	eP	04	54	56			1.2	2.0	
		iS		55	22					
20	BUL	iP	06	07	48	C		1.2		Distant
		iSKS		17	53					
	BHA	Lost								
		iSKS		18	00					
20	BUL	iPg	09	54	55	C	0.8	1.2	6.1	Witwatersrand
		iSn		55	37					
		iSg		56	15					
	BHA	e		55	48			0.3	12.	
20	BUL	iP	11	42	20	C		0.6	3.8	
		iS		43	06					
20	BUL	eP	17	44	(17)			0.4	4.3?	
		eS		45	09					
20	BHA	i	18	35	26	C		0.5		
20	BUL	e?	21	40	33			1.2		Distant
		iP"	21	[illegible]	56		1.0			
		iSKP		44	15					
	BHA	eP"		41	00			0.8		
		iSKP		44	33					
21	BHA	e	03	37	51			0.3		
	BUL	i		38	26	R	0 8	0.7		
21	BUL	iP	11	10	08	C		0.2	10.1	
		iS		12	03					
21	BUL	iP	15	15	54	C	1.1	0.8		Distant
	BHA	iP			55	R		0.5		
21	BHA	e	19	36	33			0.8		
	BUL	e		37	03			0.3		
21	BHA	eP	20	36	02			2.0	2.8	
		iS			37					
	BUL	eP			04			0.5	5.0	
		iS			23					
22	BHA	e	10	58	21			0.2		
	BUL	e			39		1.0	0.2		
22	BUL	e	11	35	37			0.3		

LIST OF RECORDED PHASES: 16 to 23 AUG 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
22	BUL	eP	16	14	13			0.6	1.7	
		iS			36					
22	BHA	eP	17	57	47			1.6	2.3	
		iS		58	16					
	BUL	eP			15			0.6	3.3	
		iS			56					
23	BHA	iP	03	57	12	C		1.0	1.9	
		iS			37					
23	BHA	iP	13	10	37			0.5	2.2	
		iS		11	05					
~~23~~	~~BUL~~	~~e~~	~~14~~	~~18~~	~~26~~			0.8		Distant
	~~BHA~~	~~e~~			~~27~~					
~~23~~	~~BHA~~	~~i~~	~~20~~	~~05~~	~~04~~	R		1.1		Distant
	~~BUL~~	~~i~~			~~06~~	C	1.1	1.0		

LIST OF RECORDED PHASES: 24 to 31 AUG 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
24	BUL	ePn	04	51	27			1.2	5.8	
		eSn		52	36					
		iSg		53	09					
	BHA	eS		52	52			0.2		
24	BUL	i	07	25	30	R	0.9	0.6		Distant
		i		28	30			2.1		
24	BHA	eP	20	12	44			1.2	5.8	
		eSn		13	52					
		iSg		14	28					
	BUL	eS		16	22			0.5		
25	BHA	ePn	09	51	08			1.0	3.9	
		ePg			21					
		iSg		52	12					
	BUL	e			05			0.2		
25	BHA	iP	23	58	35			8.0	2.5	
		iS		59	06					
	BUL	iPn			46	C		0.4	6.1	
		eSn	00	01	09					
		iSg			55					
26	BUL	eP	10	34	24			0.8	1.2	
		iS			40					
26	BUL	e	12	03	42			0.6		
26	BHA	eP	12	54	12			0.7	1.3	
		eS			40					
26	BUL	ePn	21	25	03			0.7	2.2	
		iSn			32					
27	BHA	iP	03	58	15			0 9	1.9	
		iS			40					
27	BHA	e	09	01	23			1.1		
27	BUL	eP	13	59	04			2.0	4.4	
		iS			57					
	BHA	e			48			1.3		
		iS	14	00	16					
27	BUL	eP	14	20	33			1.0	6.0	
		iSn		21	44					
		iSg		22	18					
27	BHA	eP	16	52	39			1.9	5.9	
		eS		53	49					
	BUL	eS		56	22					
27	BHA	iPn	18	41	27	R		7.5	5.6	10.0S 32.0E. Felt MM III at Abercorn 08.9S 31.3E
		iPg			51					
		iSn		42	32					
		iSg		43	08					
	BUL	iPn		42	38	R		0.3	10.7	
28	BHA	ePn	01	05	(34)			2.6	2.8	
		ePg			43					
		iSn		06	09					
		iSg			20					
28	BHA	eP	01	58	07			3.2	5.5	
		iS		59	12					

LIST OF RECORDED PHASES: 24 to 31 AUG 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
28	BHA	eP	16	21	01			1.0	2.3	
		eS			31					
28	BHA	eP	21	37	51			1.6	3.0	
		eS		38	28					
29	BHA	iP	11	06	56	C		1.1	2.1	
		iS		07	23					
29	BHA	iP	14	54	27	R		10.	2.1	Kariba
		iS			54					
	BUL	ePn			44			3.1	3.3	
		iPg			56					
		iSn		55	24					
		iSg			35					
30	BHA	eP	00	35	07			2.3	2.6	
		eS			40					
30	BUL	iP	15	17	13			1.0	0.9	
		iS			25					
31	BHA	ePn	01	32	26			4.2	11.8	
		iSn		34	39					
		iSg		36	02					

AUG 1965

CLK and KRB not operating.

Date	G h	M m	T s	Epicentre Remarks	Mag	Stations
01	15	16		Distant		BHA BUL
01	20	09	18	USCGS 32.6N 93.3E	5.3	BHA BUL
01	23	44	28	USCGS 32.5S 178.9W	5.8	BHA BUL
02	06	43		Distant		BUL
02	10	46	06	Probably Kariba		BHA BUL
02	13	19	55	USCGS 56.2S 158.2E	6.7	BHA BUL
03	11	36	27			BHA
03	13	47	19			BHA
04	07	51	31	Kariba		BHA BUL
05	00	07	51	USCGS 5.3S 151.7E	6.3	BHA BUL
05	00	36		Distant		BHA
05	06	47		Distant		BHA BUL
05	19	49	48	USCGS 7.8S 68.1E	5.2	BHA BUL
06	01	58	41	USCGS 0.5S 19.6W	5.1	BUL
06	02	23	22	2.7° from BUL		BUL
06	06	56	33	BHA 10.5°, Lwiro 6°		BHA
06	08	16				BHA
07	00	31	34	BHA 1.9°		BHA
07	02	17	57	Probably Kariba		BHA BUL
07	05	13	27	BHA 1.4°, BUL 4.8°		BHA BUL
07	10	43	23	BHA 0.2°		BHA
08	01	31	56	Lake Mweru	5.0	BHA BUL
08	06	31	57	USCGS 20.3S 68.4W	5.3	BHA BUL
08	12	49	23	USCGS 51.9N 175.3W	5.1	BUL
08	21	09				BHA
09	00	49	44	Kariba		BHA BUL
09	00	54	42	Kariba		BHA BUL
09	00	57	01	Kariba		BHA BUL
09	02	15	42	19.5S 32.2E. MM IV at Chisengu, 19.9S 32.9E		BHA BUL
09	23	12	18	USCGS 28.6S 71.0W	5.3	BHA BUL
10	10	30	32	BHA 2.1°		BHA
10	12	06	06	Kariba		BHA BUL
10	12	30	)	Coincident events? Lwiro 10°		BHA BUL
10	12	32	)			
10	20	00	05	BUL 1.6°		BUL
11	03	10	07	USCGS 15.5S 166.9E	4.8	BUL
11	03	36	02	S. Lake Tanganyika?		BHA BUL
11	03	40	56	USCGS 15.4S 166.9E	6.3	BHA BUL
11	15	49	48	BUL 5.0°. Witwatersrand?		BUL
11	19	52	30	USCGS 15.7S 167.1E	5.6	BHA BUL

AUG 1965

Date	G h	M m	T s	Epicentre	Remarks	Mag	Stations
11	20	28	?				BHA BUL
11	22	31	49	USCGS 15.8S 167.2E		6.4	BHA BUL
11	23	14					BUL
11	23	17		Distant			BHA BUL
12	03	31	16	USCGS 3.5S 29.4E		4.9	BHA BUL
12	08	01	43	USCGS 15.9S 167.5E		6.3	BHA BUL
12	12	57	10	USCGS 5.3S 152.2E		5.9	BHA BUL
12	18	04	56	USCGS 16.0S 167.4E		5.3	BHA BUL
12	22	36					BHA BUL
13	12	40	08	USCGS 15.9S 166.8E		5.6	BHA BUL
13	13	47					BUL
13	15	15	18	BUL 0.5°			BUL
13	17	56	28	USCGS 16.6S 167.6E		5.4	BUL
13	20	57	39	USCGS 6.4S 148.5E		5.2	BUL
14	13	18	06	USCGS 11.5S 166.3E		5.6	BHA BUL
14	20	26	54	BHA 1.4°			BHA
15	05	59	48	USCGS 36.4N 71.1E		4.8	BHA BUL
15	16	21	40	BUL 1.8°			BUL
16	08	49					BHA BUL
16	10	10	29	26.5S 28.4E			BHA BUL
16	12	36	23	USCGS 0.6S 19.9W		6.1	BHA BUL
16	13	45	19	BHA 2.1° BUL 4.5°			BHA BUL
16	13	52					BUL
16	22	03					BUL
17	08	40					BUL
17	10	29					BUL
17	10	35	04	USCGS 5.3N 96.2E		5.3	BHA BUL
17	12	59					BUL
17	13	03					BHA BUL
17	13	16	13	USCGS 52.0N 175.2W		4.9	BUL
17	14	02	19	USCGS 15.2N 92.1W		4.9	BUL
18	00	00	32	N. Lake Tanganyika			BHA BUL
18	07	40					BUL
18	13	35					BUL
18	14	05					BUL
18	15	10		Distant			BUL
18	02	49		Distant			BUL
19	03	34					BHA
19	04	25					BHA
19	05	36	04	BHA 1.1°			BHA
19	06	53	19	BUL 0.2°			BUL
19	08	37					BUL

AUG 1965

Date	G h	M m	T s	Epicentre, Remarks	Mag	Stations
19	13	18	55	BHA 2.0°?		BHA
19	13	24	36	BUL 1.3°		BUL
19	13	28				BUL
19	14	08	54	BUL 1.0°		BUL
19	16	12				BHA
19	19	47	23	USCGS 30.3N 138.4E	5.2	BUL
20	02	00				BHA
20	02	25				BHA
20	04	48	03	BHA 2.0°		BHA
20	04	54	20	BUL 2.0°		BUL
20	05	54	50	USCGS 5.7S 128.6E	6.2	BHA BUL
20	09	52	53	Witwatersrand		BHA BUL
20	11	41	19	BUL 3.8°		BUL
20	17	43	09	BUL 4.3°?		BUL
20	21	21	51	USCGS 22.9S 176.3W	6.2	BHA BUL
21	03	37				BHA BUL
21	11	09	38	BUL 10.1°		BUL
21	15	04	18	USCGS 5.9S 104.2E	5.5	BHA BUL
21	19	36				BHA BUL
21	20	35	20	BHA 2.8° BUL 5.0°		BHA BUL
22	10	58		Distant		BHA BUL
22	11	35				BUL
22	16	13	42	BUL 1.7°		BUL
22	17	57	07	16.8S 28.4E		BHA BUL
23	03	56	38	BHA 1.9°		BHA
23	13	09	59	BHA 2.2°		BHA
23	14	18		Distant		BHA BUL
23	19	46	03	USCGS 16.3N 95.8W	6.7	BHA BUL
24	04	49	58	BUL 5.8°		BHA BUL
24	07	25		Distant		BUL
24	20	11	15	BHA 5.8°		BHA BUL
25	09	50	02	BHA 3.9°		BHA BUL
25	23	57	54	BHA 2.5° BUL 6.1°		BHA BUL
26	10	34	00	BUL 1.2°		BUL
26	12	03				BUL
26	12	53	47	BHA 1.3°		BHA
26	21	24	25	BUL 2.2°		BUL
27	03	57	41	BHA 1.9°		BHA
27	09	01		Distant?		BHA
27	13	57	54	BUL 4.4°		BHA BUL
27	14	19	01	BUL 6.0°		BUL

9/65

SEISMOLOGICAL BULLETIN FOR MALAWI, RHODESIA AND ZAMBIA

The following stations contribute records for analysis and publication in this Bulletin:

BROKEN HILL (BHA):	14° 26.8' S; 28° 28.1' E; Alt. 1206 m.
Litho. foundation:	Dolomite and shales of the Middle Katanga System.
Authority:	Zambia Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
BULAWAYO (BUL):	20° 08.6' S; 28° 36.8' E; Alt. 1341 m.
Litho. foundation:	Hornblend schists of the Bulawayan System.
Authority:	Rhodesia Meteorological Service.
Instruments:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
	WWSS Station: SP magnification 100,000. LP magnification 1,500.
CHILEKA (CLK):	15° 40.8' S. 34° 58.6' E; Alt. 781 m.
Litho. foundation:	Charnockitic granulites of the Basement Complex.
Authority:	Malawi Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
KARIBA (KRB):	16° 31.6' S; 28° 47.7' E; Alt. 805 m.
Litho. foundation:	Quartzite of the Umkondo Syatem overlying gneiss of the Basement Complex.
Authority:	Central African Power Corporation.
Instrument:	Vertical Willmore one-second seismograph. Nominal magnification 20,000.
Analysis Centre:	Goetz Observatory, Meteorological Service, P. O. Box 562, Bulawayo, Rhodesia.

LIST OF RECORDED PHASES: 1 to 7 SEP 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
01	BUL	i	05	06	11	R	1.1	1.0		Distant
	BHA	i			21	R		1.4		
01	BHA	eP	10	11	51			1.0	2.5	
		iSn		12	21					
		eSg			31					
01	BHA	iP	13	13	48	D		0.6	2.0	
		iS		14	14					
01	BHA	ePg	21	32	41			0.8	1.3	
		eSn		33	08					
		eSg			18					
02	BUL	eP	00	18	25			2.0	2.2	
		iS			53					
	BHA	eSn		20	55			0.3	7.	
		eSg		21	50					
02	BUL	ePn	00	55	14			1.2	5.3	
		iSg		56	48					
02	BUL	eP	01	47				1.1		
		iS			26					
	BHA	eP		50				1.0		
		eS		51	17					
02	BUL	iPn	18	23	19	C		4.5	6.4	Witwatersrand
		iSn		24	34					
		iSg		25	26					
	BHA	iPn		24	34	D		1.2	11.7	
		iSn		26	47					
		iSg		28	06					
03	BUL	i	05	53	51	R	0.8	2.1		Distant
	BHA	i		54	04	C		0.5		
03	BHA	eP	18	53	12			8.5	1.8	
		iS		53	35					
	BUL	ePn		53	26			2.0	3.8	
		iPg		53	37					
		iSn		54	08					
		iSg			22					
03	BUL	i	21	57	41	R	0.7	1.0		Distant
	BHA	i			45	R		0.6		
04	BUL	i	08	08	20	C	0.7	1.2		Distant
04	BHA	eP'	14	52	03		1.1	2.0		Distant
		iPP		54	49					
	BUL	iP'		52	14	D	1.0	1.6		
		iPP		55	32					
05	BHA	eP	09	55	25			1.5	3.6	
		iS		56	09					
05	BHA	iP	10	52	19	C		3.0	3.0	
		iS			56					
	BUL	eP		54				0.3		
		eS		55(41)						
07	BUL	eP	11	18	31			0.4	1.2	
		iS			48					
07	BHA	e	19	14	46			0.8		
07	BUL	i(S)	21	02	46			0.5		

LIST OF RECORDED PHASES: 8 to 15 SEP 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
08	BUL	eP	09	13	31			2.0	3.6	
		iS		14	15					
	BHA	eSg		15	33			1.0	6.3	
		iSn		16	11					
08	BUL	i	11	36	07	R	1.0	1.4		Distant
09	BHA	eP	13	04	58			1.0	1.4	
		iS		05	18					
10	BUL	eP	14	44				0.9		
		iS		45	03					
10	BUL	i	21	36	44	R	0.7	0.9		Distant
		i		38	26					
	BHA	i		37	32	R		0.7		
10	BHA	eP	22	45	22			1.5	2.2	Kariba
		iS			50					
	BUL	eP			(35)			0.6	3.5	
		eS		46	33					
11	BHA	iP	03	14	24	C		1.0	1.9	
		iS			49					
11	BUL	i	07	11	48	C	0.8	3.1		Distant
		i		13	11					
	BHA	i		11	51	R	0.9	1.8		
		i		13	21					
11	BHA	iP	13	03	26	R		1.0	1.9	
		iS			52					
11	BUL	eP	14	23	40			2.0	0.8	
		iS			52					
11	BUL	e	14	38				1.2		Distant?
		i		41	(22)					
12	BUL	i	08	58	56	C	0.9	1.2		Distant
	BHA	i		59	02	R	0.9	1.5		
12	BHA	e	09	26	11			0.6		
12	BHA	eP	13	04	18			0.5	1.9	
		eS			43					
12	BHA	eP	15	39	34			1.1	2.5	
		eS		40	06					
12	BHA	eP	20	05	(07)			1.0	1.8	
		eS			31					
12	BHA	i	22	10	27	R	0.9	3.1		Distant
		i		12	21					
		i		16	49					
	BUL	i		10	33	R	1.1	3.0		
		i		12	23					
13	BHA	eP	13	10	54			0.9	1.9	
		eS		11	20					
13	BHA	eP	21	53	09			2.0	1.6	
		eS			31					
14	BUL	ePn	12	40	20			2.2	5.8	
		eSn		41	29					
		iSg		42	01					
	BHA	i		41	36	R		0.5		

LIST OF RECORDED PHASES: 8 to 15 SEP 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
14	BHA	iP	13	11	42	C		1.2	1.9	
		iS		12	07					
~~15~~	~~BUL~~	~~i~~	~~02~~	~~02~~	~~12~~	C	0.7	0.5		Distant
15	BUL	eP	05	29	13			0.9	5.7	
		iSn		30	20					
		iSg			49					
15	BHA	iP	12	47	05	R		2.0	2.1	N. Kariba
		iS			33					
	BUL	eP			31			0.6	3.8	
		iS		48	16					
~~15~~	~~BUL~~	~~i~~	~~13~~	~~27~~	~~34~~	R		0.4		Distant?
15	BUL	i	13	41	30	C	0.8	1.0		Distant
		i		45	22					
~~15~~	~~BHA~~	~~e~~	~~15~~	~~40~~				0.3		
15	BHA	iP	16	17	58			1.7	1.9	
		iS		18	23					

LIST OF RECORDED PHASES: 16 to 23 SEP 1965

CLK and KRB not operating

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
16	BHA	e	09	40				0.6		
16	BUL	i	14	03	38	C	1.0	0.6		Distant
16	BHA	iP	15	58	46	R		1.3	1.9	
		iS		59	11					
16	BHA	iP	23	35	22	R		1.5	3.0	
		iS			59					
	BUL	iP			57	R		0.5	3.7	
		iS		36	42					
17	i	BUL	01	33	18	R	1.0	0.5		Distant
17	BUL	iPn	07	14	37	C	0.9		5.4	Witwatersrand
		iSn		15	44					
		iSg		16	10					
	BHA	eP		15	42			2.1	11.	
		iSn		17	59					
		iSg		19	09					
17	BUL	e	11	28				0.3		Distant?
17	BHA	eP	15	50				0.9		
		iS		51	33					
17	BHA	iP	16	09	04	R		1.1	1.9	
		iS			29					
17	BHA	i	16	40	02	R		1.0		Distant
		i		41	06					
	BUL	i		40	06	R	1.1	1.5		
		i		41	29					
17	BUL	e	19	47	08		0.7	0.5		Distant?
17	BHA	e	20	43	15			0.6		Distant
		i			55					
17	BHA	e	23	08(13)				0.4		Distant
18	BHA	eP	16	25	53			25.0	2.	
		i(S)		26	25					
	BUL	iPn			49	R		5.0	5.9	
		iSn		28	00					
		iSg			33					
18	BHA	iP	19	43	52	R		1.5		
19	BHA	i	08	58	40	R		1.3		Distant
		i		59	15					
	BUL	e		58				0.8		
		i		59	17					
20	BHA	eP	10	55	03			5.0	8.9	
		iSn		56	43					
		iSg		57	44					
20	BHA	e	14	16				0.7		
		i		17	55					
21	BHA	i(P)	01	52	18	R	1.0	0.9		Distant
		i		56	37					
	BUL	i(P)	01	52	28	R	0.9	1.1		
		i		56	37					
21	BHA	eP	21	44	17			2.1	7.8	
		eSn		45	44					
		eSg		46	40					

LIST OF RECORDED PHASES: 16 to 23 SEP 1965

Date	Stn	Phase	G h	M m	T s	R/C	T s	DA mm	Dist deg	Remarks
22	BHA	i	04	36	43	R	0.9	1.7		Distant
	BUL	i			55	R	1.1	0.9		
22	BUL	i	20	20	33	R	1.1	0.8		Distant
	BHA	i			36	R		0.8		
22	BUL	e	22	26	48		1.0	1.0		Distant
		i		28	11					
23	BUL	iP	01	47	33	C		2.5	6.0	Witwatersrand
		iSn		48	40					
		iSg		49	11					
	BHA	eP		48	48			0.6	11.0	
		eS		52	09					
23	BUL	e	09	23	27		1.1	0.4		Distant
23	BHA	eP	10	12	31			1.0	2.0	
		eS			57					
	BUL	eS		13	(40)			0.3		
23	BHA	e(S)	10	22	41			1.0		
23	BHA	eP	12	57	51			1.2	4.0	
		eS		58	40					
23	BUL	e	15	54	07		0.7	0.2		Distant?
23	BHA	e	23	24				0.9		Distant?

LIST OF RECORDED PHASES: 24 to 30 SEP 1965

CLK and KRB not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
24	BHA	i	20	49	17	C	0.8	3.0		Distant
		i			38					
	BUL	i			24	C	1.0	0.4		
25	BUL	eP	03	45	24			4.0	2.7	
		iS			59					
	BHA	eP		46	(20)			1.5	6.4	
		eSn		47	31					
		eSg		48	12					
26	BUL	i	21	44	02	C	1.3	5.0		Distant
	BHA	i			33	R	1.0	2.3		
27	BUL	e	14	38	(19)			0.5		Distant?
		i			46					
28	BHA	iPn	05	14	54	C		14.0	5.8	
		iSn		16	04					
		iSg			36					
	BUL	eP			06		1.0	1.2	10.8	
		eSn		18	06					
		iSg		19	22					
28	BUL	e	05	25	39		1.0	0.6		Distant?
	BHA	e			51			0.4		
28	BHA	ePn	10	09	23			6.0	3.9	
		ePg			40					
		iSn		10	10					
		iSg			24					
	BUL	eP			(27)		0.7	0.7	7.7	
		eSn		11	46					
		eSg		12	32					
28	BUL	e	11	27	04		0.9	0.6		Distant
	BHA	e			37			0.3		
28	BUL	eP	16	31	15			1.1	8.	
		iS		32	49					
28	BHA	e(S)	22	54	44			0.7		
29	BUL	eP	03	44	38			0.9	2.2	
		eSn		45	03					
		eSg			09					
29	BHA	eP	03	50	54			0.6	1.5	
		eS		51	14					
29	BUL	i	05	16	18	C	0.8	1.5		Distant
	BHA	e			54			0.9		
		e		17	35					
29	BHA	e	06	28	21			0.6		Distant
	BUL	i			41	C	0.9	1.1		
29	BUL	i	14	08	55	C	1.1	1.2		Distant
29	BHA	e	21	26	57			0.5		Distant
	BUL	e		27	(53)			0.3		

SEP 1965

CIK and KRB not operating.

Date	G h	M m	T s	Epicentre, Remarks	Mag	Stations
01	04	47	35	USCGS 34 6S 179.6E	6.2	BHA, BUL
01	10	11	09	BHA 2.5°		BHA
01	13	13	13	BHA 2.0°		BHA
01	21	32	01	BHA 1.3°		BHA
02	00	17	47	BHA 7.° , BUL 2.2°		BHA BUL
02	00	53	48	Witwatersrand		BUL
02	01	44		Witwatersrand?		BHA BUL
02	18	21	41	S. Transvaal		BHA BUL
03	05	42	25	USCGS 27.6S 63.0W	4.5	BHA BUL
03	18	52	40	16.3S 28.4E		BHA BUL
03	21	38	54	USCGS 5.2S 153.7E	5.9	BHA BUL
04	07	48	45	USCGS 52.0N 170.4W	5.2	BUL
04	14	32	48	USCGS 58.2N 152.6W	6.1	BHA BUL
05	09	54	28	BHA 3.6°		BHA
05	10	51	29	BHA 3.0°		BHA BUL
07	11	18	07	BUL 1.2°		BUL
07	19	08	35	LWI 7.2°		BHA
07	20	59		S. Transvaal		BUL
08	09	12	33	BHA 6.3°, BUL 3.6°		BHA BUL
08	11	16	34	USCGS 55.7N 155.4W	5.4	BUL
09	13	04	31	BHA 1.4°		BHA
10	14	41		S. Transvaal		BUL
10	21	36				BHA BUL
10	22	44	44	Kariba		BHA BUL
11	03	13	50	BHA 1.9°		BHA
11	06	53	01	USCGS 5.3S 153.0E	6.3	BHA BUL
11	13	02	52	BHA 1.9°		BHA
11	14	23	24	BUL 0.8°		BUL
11	14	37				BUL
12	08	40	13	USCGS 6.3S 151.6E	6.2	BHA BUL
12	09	26				BHA
12	13	03	44	BHA 1.9°		BHA
12	15	38	51	BHA 2.5°		BHA
12	20	04	35	BHA 1.8°		BHA
12	22	02	34	USCGS 6.4S 70.8E	6.1	BHA BUL
13	13	10	20	BHA 1.9°		BHA
13	21	52	40	BHA 1.6°		BHA
14	12	38	50	BUL 5.8°		BHA BUL
14	13	11	08	BHA 1.9°		BHA

SEP 1965

Date	G M T h m s	Epicentre, Remarks	Mag	Stations
15	01 49 28	USCGS 27.8S 69.8W	4.7	BUL
15	05 27 45	BUL 5.7°		BUL
15	12 46 29	N. Kariba		BHA BUL
15	13 27			BUL
15	13 21 57	USCGS 52.1N 170.6W	4.4	BUL
15	15 40			BHA
15	16 17 24	BHA 1.9°		BHA
16	09 40			BHA
16	13 50 12	USCGS 7.1N 126.5E	6.0	BUL
16	15 58 12	BHA 1.9°		BHA
16	23 34 32	BHA 3.0° BUL 3.7°		BHA BUL
17	01 13 45	USCGS 54.2N 162.7W	4.6	BUL
17	07 13 06	Witwatersrand		BHA BUL
17	11 13 56	USCGS 1.4S 77.6W	6.0	BUL
17	15 50			BHA
17	16 08 30	BHA 1.9°		BHA
17	16 21 22	USCGS 36.3N 141.1E	5.8	BHA BUL
17	19 47			BUL
17	20 43			BHA
17	23 08			BHA
18	16 25 20	BHA 2.° BUL 5.9°		BHA BUL
18	19 43			BHA
19	08 47 49	USCGS 0.9S 99.7E	5.3	BHA BUL
20	10 52 50	5.8S 29.5E	5.1	BHA
20	14 16			BHA
21	01 38 30	USCGS 29.1N 128.2E	6.0	BHA BUL
21	21 42 19	Lake Tanganyika	4.5	BHA
22	04 24 48	USCGS 20.8N 99.3E	5.5	BHA BUL
22	20 01 49	USCGS 5.4S 151.5E	6.5	BHA BUL
22	22 08 01	USCGS 36.4N 141.3E	5.6	BUL
23	01 46 01	Witwatersrand		BHA BUL
23	09 18 13	USCGS 41.1S 43.0E	4.3	BUL
23	10 11 56	BHA 2.0°		BHA BUL
23	10 22			BHA
23	12 56 47	BHA 4.0°		BHA
23	15 53			BUL
23	23 24			BHA
24	20 38 08	USCGS 5.2N 96.1E	5.2	BHA BUL
25	03 44 39	BHA 6.4° BUL 2.7°		BHA BUL
26	21 33 54	USCGS 54.8S 38.2W	6.3	BHA BUL

SEP 1965

Date	G h	M m	T s	Epicentre, Remarks	Mag	Stations
27	14	35		S. Transvaal?		BUL
28	05	13	25	N. border Zambia		BHA BUL
28	05	06	37	USCGS 28.0S 178.1W	5. 2	BHA BUL
28	10	08	22	BHA 3.9° BUL 7 .7°		BHA BUL
28	11	17	29	USCGS 59.4S 27.1W		BHA BUL
28	16	29	(14)	S. Transvaal?		BUL
28	22	54				BHA
29	03	43	57	BUL 2.2°		BUL
29	03	50	26	BHA 1.5°		BHA
29	05	06	52	USCGS 59.2S 25.3W	5.4	BHA BUL
29	06	28				BHA BUL
29	14	08				BUL
29	21	26				BHA BUL

P.W.S.
23.9.65

SEISMOLOGICAL BULLETIN FOR MALAWI, RHODESIA AND ZAMBIA

10/65

The following stations contribute records for analysis and publication in this Bulletin:

BROKEN HILL (BHA):	14° 26.8' S; 28° 28.1' E; Alt. 1206 m.
Litho. foundation:	Dolomite and shales of the Middle Katanga System.
Authority:	Zambia Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
BULAWAYO (BUL):	20° 08.6' S; 28° 36.8' E; Alt. 1341 m.
Litho. foundation:	Hornblend schists of the Bulawayan System.
Authority:	Rhodesia Meteorological Service.
Instruments:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
	WWSS Station: SP magnification 100,000. LP magnification 1,500.
CHILEKA (CLK):	15° 40.8' S. 34° 58.6' E; Alt. 781 m.
Litho. foundation:	Charnockitic granulites of the Basement Complex.
Authority:	Malawi Meteorological Service.
Instrument:	Three-component Willmore one-second seismograph. Nominal magnification 20,000.
KARIBA (KRB):	16° 31.6' S; 28° 47.7' E; Alt. 805 m.
Litho. foundation:	Quartzite of the Umkondo Syatem overlying gneiss of the Basement Complex.
Authority:	Central African Power Corporation.
Instrument:	Vertical Willmore one-second seismograph. Nominal magnification 20,000.
Analysis Centre:	Goetz Observatory, Meteorological Service, P. O. Box 562, Bulawayo, Rhodesia.

LIST OF RECORDED PHASES: 1 to 7 Oct 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
01	BHA	e	00	22	25			0.5		Distant?
01	BHA	e	09	11	27			2.4		Distant
	BUL	i			29	C	0.7	2.4		
	KRB	i			50	R	1.0	2.5		
01	BUL	i	13	40	33	C	1.1	1.6		Distant
		e		42	42					
	BHA	i		40	42			1.5		
		i		43	18					
01	BUL	eP	22	40	37			1.4	8.2	
		iS		42	12					
01	BUL	i(P')	22	43	52	C	0.9	4.9		Distant
	KRB	e		44	12			1.1		
	BHA	e			28	R	1.2	1.8		
02	BUL	i	00	39	39	C	1.1	0.9		Distant
	BHA	i		40	33	C	1.0	1.0		
02	BHA	iP	06	47	12			2.0	3.6	
		iS			56					
	KRB	iP		48	13	R		1.2		
02	KRB	e	08	42	48			1.2		Distant
	BUL	i		43	30	R	1.0	1.0		
	BHA	e			31			0.7		
02	BHA	iP	09	10	36			1.4	1.7	
		iS			58					
02	BHA	ePn	13	09	55			4.2	4.9	
		iSn		10	52					
		iSg		11	21					
	KRB	eS		12	12			2.5		
	BUL	eS			13(31)			0.8		
02	KRB	iP	22	40	50			6.0	0.1	Kariba
		iS			52					
	BHA	eP		41	06			1.4	2.1	
		iS			33					
02	KRB	iP	23	23	28			3.0	0.1	Kariba
		iS			30					
03	BUL	e	05	17	45		1.2	1.8		Distant
	BHA	e		18	27		1.6	1.2		
	KRB	e			31		1.7	0.7		
03	BUL	i(P')	11	05	51	C	0.8	2.0		Distant
03	BHA	i	15	04	26			1.1		Distant
	BUL	e			34			1.0		
		e		06	45					
	KRB	e		04	49		0.6	1.0		
03	BUL	i	16	27	37	R	1.0	2.0		Distant
		i			46					
		e		30	42					
	BHA	i		27	56	R		4.5		
		i		28	04					
	KRB	i			11	R	1.0	7.0		
		i			16					
03	BUL	e	20	23	(41)			0.3		Distant?

LIST OF RECORDED PHASES: 1 to 7 OCT 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
03	BUL	i	20	25	26	C	1.1	1.1		Distant
		i		29	57					
04	KRB	eP	11	37	34			5.0	0.3	Kariba
		iS			38					
05	KRB	iP	14	00	20			4.5	0.1	Kariba
		iS			22					
05	BHA	i	16	02	16	R	1.0	1.5		Distant
05	BHA	ePn	23	11	43		1.0	6.0	11.6	
		eSn		13	51					
		eSg		15	16					
	KRB	eP		12	24			4.0		
	BUL	iP			47	C	0.6	0.8	16.1	
		eSn		14	46					
		eSg		17	(47)					
05	BUL	i	23	42	43	R	0.5	1.0		Distant
05	BUL	i	23	59	49	C		0.8		Distant
06	BHA	e	09	31	06			1.0		
06	BHA	e	13	21	22		1.0	1.0		Distant?
06	BHA	e	15	45	16			0.4		Distant
	KRB	e			44		0.8	1.6		
	BUL	i			46	R	0.9	1.0		
06	BHA	eP	16	32	47		1.0	1.2	0.6	
		iS			56					
	BUL	e(S)		36	24			0.5		
06	BUL	e	22	52	14			0.4		Distant
07	BHA	e	03	26	18			0.6		Distant?
07	BHA	i	03	48	56	C	0.7	0.9		Distant
	BUL	i		49	02	C	1.1	1.1		
	KRB	e			16	C	1.0	1.4		
07	BUL	i	14	25	45	C	1.2	1.0		Distant
07	KRB	eP	16	31	28	R	0.4	3.0	0.1	Kariba
		iS			30					
07	KRB	eP	20	11	19			4.0	0.1	Kariba
		iS			21					
07	BUL	e	21	57				0.2		

LIST OF RECORDED PHASES: 8 to 15 OCT 1965

CLK not operating.

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
08	BUL	iP	00	24	55	C		0.9	2.4	
		iSn		25	27					
		eSg			34					
	BHA	e		26	36					
08	BUL	i	01	50	44	C	1.6	0.5		Distant
08	BUL	eP	02	24						
		eS			39					
08	BUL	e(P)	14	00	(50)			0.3		
		e(S)		01	21					
08	BUL	e	14	21	04			0.7		
08	BUL	eP	15	00	58			1.2	1.7	
		iS		01	09					
08	BUL	e	15	32	40			0.4		Distant
08	BHA	i	15	47	12		1.0	1.1		Distant
		i			27					
08	KRB	e	15	49	18			0.7		Distant
08	BUL	i	16	22	09	R	1.0	0.7		Distant
08	BUL	i	16	52	04	R	1.0	1.9		Distant
	BHA	e		53	30			0.4		
09	KRB	iP	09	37	05			1.2	0.1	Kariba
		iS			07					
09	BUL	e	11	29	59			0.6		Distant
09	BUL	e	11	40	59			0.4		
09	BUL	e	15	51	03			0.3		Distant?
		e			27					
09	BUL	e	16	17	58			0.4		
09	KRB	iP	17	22	32	C		1.4	0.4	Kariba
		iS			37					
	BHA	eP			44			0.7	2.2	
		iS		23	12					
09	BHA	e(P)	23	29	32			1.0	2.2	Kariba
		iS		30	00					
10	BUL	i	00	55	27	R	1.0	0.7		Distant
10	KRB	iP	07	58	55	C	0.2	6.0	0.4	Kariba
		iS		59	00					
10	KRB	i	12	01	34	R	0.6	1.1		
10	BUL	e(S)	17	28	47			1.6		
10	BUL	i	17	35	10	R		1.2		Distant
	BHA	i			44	R		1.0		
11	BHA	ePn	07	01	41		1.0	1.1	5.7	
		iSn		02	45					
		iSg		03	22					
	BUL	e		01	(44)			0.3		
11	KRB	iP	19	00	14		0.3	2.0	0.1	Kariba
		iS			16					

LIST OF RECORDED PHASES: 8 to 15 OCT 1965

Date	Stn	Phase	G h	M m	T s	R C	T s	DA mm	Dist deg	Remarks
12	BHA	ePn	00	06	16		1.0	1.4	6.6	
		iSn		07	30					
		iSg		08	15					
12	BHA	eP	13	11	15			1.0	1.9	
		eS			40					
12	BUL	i	14	00	31	R	1.0	0.8		Distant
		i		02	23					
13	BUL	ePn	17	39	12	C	0.4	1.2	5.4	
		eSn		40	19					
		iSg			48					
14	BUL	e(Sn)	14	20	39		0.7	1.0	(5.)	
		iSg		21	08					
14	BHA	iP	15	57	00		1.0	1.7	3.9	
		iS			47					
	KRB	eP		58	03			2.0	(4.2)	
		eS			54					
15	BUL	e	09	33	(15)			0.3		Distant?
	BHA	i			39		1.0	1.2		
15	BHA	i	14	29	56	R	1.0	1.1		Distant
	BUL	iP'		30	06	R	1. 1	6.6		
	KRB	i			14	C	0.9	1.0		
15	KRB	iP	15	23	43	C		2.0	0.1	Kariba
		iS			45					
