

PEA OCT 1969 No. 43

11

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

21 NOV 1969

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RABAUl	RAB	From: 22 OCT 1969 To: 28 OCT 1969
RABAUl HARBOUR NETWORK	WAN	From: 22 OCT 1969 To: 28 OCT 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 22 OCT 1969 To: 28 OCT 1969
KERAVAT	KET	From: 22 OCT 1969 To: 27 OCT 1969
ESA 'ALA	ESA	From: 22 OCT 1969 To: 28 OCT 1969
TABELE	TBL	From: 23 SEP 1969 To: 9 OCT 1969
AGENAHAMBO	AGE	From: To:
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

.....

STATION PERSONNEL

RAB Central Observatory, Rabaul

- Volcanologist-in-Charge G. W. D'ADDARIO
- Volcanologist R. F. HEMING
- Seismologist M. MANCINI
- Seismogram Readers C.M. LEES, D. COOK
- Senior Technical Officer ... N. O. MYERS
- Technical Officers R. J. CONWAY
J. MATHISEN
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- Volcanological Assistants .. L. TOPUE, V. KAITA,
F. DIRA, B. TALAI,
M. SALAIAU, C. MATUPIIT
- Technical Assistant P. DAIMBARI

KET Keravat Outstation

Observer (part-time) .. J. BART

TBL Tabele Observatory

Observer M. GAIAM

ESA Faa'ala Observatory

Observer E. Ravian

AGE Agenahambo Outstation

Observer (part-time) .. B. Kirke

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the Staff under the direction of the Volcanologist-in-Charge, from whom additional information and photocopies of seismogram records from all stations may be obtained on request.

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P. O. Box 386
RABAUL. T.P. & N.G.

PEA OCT '69 No. 43

T	A	GM	Dis	H	Remarks
sec	mm				

RABAU

22nd October, 1969 RAB: Strong microseismic activity throughout the day.

KOA	iPZ	055942.0			d				Overlapping traces.
TAV	iPZ	43.6			d				
RAL	iPZ	43.6			d	3½°	055849		
	eSZ	060026							
SUL	iPZ	055944.0			u				
WAN	iPZ	44.3			d				
RAB	ePZ	44½			d	3½°	055849	M _L =6.0	
	eSE/	060027							
VUL	iPZ	055944.5			d				
KET	iPE	45.8	0.5	5.0	u	3½°	055851		
	iSN	060028.4							
RAL	iPZ	071221.7			d				
TAV	iPZ	21.7		120.0	d				
VUL	iP!Z	21.9		100.0	d				
SUL	iPZ	21.9			d				
KET	iPE	22.1							
WAN	iPZ	22.1			d				
RAB	iP!Z	22.5		78.0	d	¾°	071207		
	iSEh	33.2							
KOA	ePZ	58		120.0	d				
ESA	iPZ	1320.1	0.5	4.0	d	5¼°	071204		
	iSZ	1419.0							
TBL	ePZ	09	0.5	1.0	d				
TAV	iP!Z	093551.5			d				
RAL	iPZ	51.7	1.0	20.4	d	½°	093539		
	iSZ	3600.5							
SUL	iPZ	3551.9	0.3	3.6	d				
WAN	iP!Z	52.1	0.2	11.4	d	¾°	093538		
	iSZ	3602.4							
RAB	iPZ	3552.4	0.4	25.0	d	¾°	093539	M _L =3.9	
	iSNa	3602.0							
VUL	iPZ	3552.7	0.4	8.5	d	¾°	093539		
	iSZ	3603.0							
KET	ePE	3554.0	0.4	4.6	u	¾°	093538		
	iSN	3605.6							
WAN	ePZ	105334	0.6	1.0	d				
VUL	iPZ	34 34.1							
TAV	iPZ	35.0	0.4	1.0	u				
RAB	iPZ	35.2	0.4	2.1	u				Regional
RAL	iPZ	35.6	0.5	1.4	u				
KET	ePZ	35.6			u				
RAB	eZ/	123918			-				Traces
RAB	eZ/	124420			-				Traces

22.10.

071207 Solomon Sea M_L=5.2
Epicentre: 05.0°S
152.75°E Azimuth from
Hbr. Network (Rabaul)
N125° ± 20°.

T	A	GM	Dist	H	Remarks
sec	mm				

22nd October, 1969 continued.

TAV	iPZ	131149.9	0.3	1.4	u			
RAB	iPZ	50.0	0.4	3.4	u			Distant
WAN	iPZ	50.1	1.0	5.3	d			
RAL	iPZ	50.3	0.7	6.1	d			
VUL	iPZ	132037.8	0.4		u			
WAN	iPZ	38.6	0.3	1.0	u			
RAL	iPZ	39.2			u			
TAV	iPZ	39.2	0.5	1.0	u			
RAB	iPZ	39.3	0.4	3.4	u			Regional
RAB	eZ/	140203			+			Traces
RAL	ePZ	173056½						
VUL	ePZ	58			d			
RAB	iPZ	58.4			d	¼°	173152	
	iSE	3103.6						
RAB	ePZ/ eE/ eLqZ/ eLrZ/	231515 1625 3217 5055			d			Teleseism
RAL	iPZ	233533.2			d	¾°	233518	
	iSZ	44.0						
TAV	iPZ	33.2			d	¾°	233518	
	iSZ	44.4						
WAN	iPZ	33.7	0.3	5.5	d	¾°	233520	
	iSZ	44.0						
RAB	iPZ	33.9	0.5	4.0	d	¾°	233519	M _L =4.2
	iSEa	45.0						
VUL	iPZ	33.9	0.3	19.0	u	1°	233516	
	iSZ	47.0						
KET	ePN	35			u	1¼°	233516	
	iSE	49.0						

23rd October, 1969.

KET: Z component unavailable for study.

RAB	ePZ/ eSE/	025643 030030			d	20°	025215	
KET	ePN iSE	071346 1414.0	2.0	3.7	d	2¼°	071309	
VUL	iPZ	1348.9	0.8	10.1	d			
TAV	iPZ	49.2		10.9	d			
RAL	iPZ	49.5	1.0	5.8	d			
RAB	ePZ iSNa	50 1411.0	0.5	6.0	d	1¾°	071322	M _L =3.8
RAB	ePZ eSNa	152248 51	0.4	3.2	d			Local

T	A	GM	Dist	H	Remarks
sec	mm				

24th October, 1969

RAB: Strong microseismic activity from 0000 to 0900 hours.
 KET: Z component unavailable for study.

TAV	iPZ	002114.7			d			
RAL	iPZ	15.0			d			
SUL	iPZ	15.1	0.4		d			
WAN	iPZ	15.2			d			
RAB	iPZ	15.5			d	½°	002103	M _L = 4.9
	iSE/	25.0						
VUL	iPZ	16.2			d			
KET	iPE	18.6	0.5		d	½°	002105	
	iSE	28.4						
KOA	iPZ	59.0	0.2	6.4	d			
VUL	iPZ	005410.4	0.8	11.7	d			
RAL	iPZ	10.5	0.8	6.0	u			
TAV	iPZ	12.0	0.4	17.0	u			
WAN	iPZ	12.0	.	2.0	u			
RAB	iPZ	12.2	0.5	9.0	u	2°	005340	M _L = 4.7
	iSNa	36.1						
KET	iPE	12.4	0.4	10.0	u			
KOA	iPZ	17.0	0.4	18.0	u	2½°	005340	
	iSZ	46.0						
RAB	eZ/	090910			-			Traces
TAV	iPZ	123200.0	0.3	3.5	d	1°	123141	
VUL	iPZ	00.0	0.4	3.8	d	1¼°	123139	
	iSZ	15.5						
RAB	iPZ	01.0	0.5	2.0	u	1¼°	123140	M _L = 3.5
	iSN	17.1						
RAB	ePZ/	214857	0.5	1.5	u	40°	214138	
	eSN/	5444						

25th October, 1969.

RAB: Strong microseismic activity throughout the day.
 KET: Records unavailable for study.

RAB	eZ/	052722			+			Traces
RAB	eZ/	122546			+			Traces
VUL	iPZ	170017.8	0.5	5.0	d			
WAN	iPZ	18.5			u			
RAL	ePZ	18½			u			
TAV	ePZ	19			u			
RAB	iPZ	19.0	0.5	4.0	u	(2°)	1659(47)	M _L = 4.3
	e(S)E	43½						
SUL	ePZ	19½	0.4	2.0	u			
RAB	iPZ	203745.3	0.5	3.5	d			
TAV	ePZ	46			d			

T	A	GM	PEA	OCTOBER	1969	No. 43
sec	mm		DIST	H		REMARKS

26th October, 1969.

KET: Records unavailable for study from 0000 - 2200 hrs.

TAV	ePZ	003043			d	1 $\frac{3}{4}$ ^o	003015	
	iSZ	3104.0						
VUL	ePZ	3043			d			
RAL	ePZ	3 ⁰ 44			d			
WAN	ePZ	3045			d			
RAB	ePZ	45	0.7	3.0	u	1 $\frac{3}{4}$ ^o	003017	M _L = 3.9
	iSNa	3106						
RAB	ePZ/	035210			d	41 ^o	034432	100 kms.
	eSE/	5929						Deep
ESA	ePZ	5242			d			
RAB	i(P)Z	050024.3	0.9	1.9	u	(1 $\frac{3}{4}$ ^o)	0459(55)	M _L = 4.5
	iSNa	46.4						
VUL	iPZ	27.0			d	1 $\frac{1}{4}$ ^o	050004	
	iSZ	44						
WAN	ePZ	29			u	1 $\frac{1}{4}$ ^o	050006	
	iSZ	47.0						
TAV	ePZ	29			d	1 $\frac{1}{4}$ ^o	050006	
	iSZ	47.0						
VUL	ePZ	064448			d			
TAV	iPZ	49.0	0.9	2.4	d			
RAB	iPZ	49.0	0.4	5.0	u	5 ^o	064336	
	iSN/	4546						
ESA	ePZ	4346	0.8	3.9	d			
TAV	iPZ	082710.9			d			
VUL	iPZ	10.9	0.4	8.0	u			
RAL	iPZ	11.0	0.7	1.0	d			
RAB	iPZ	11.0	0.5	7.0	d	1 $\frac{1}{2}$ ^o	062648	M _L = 4.6
	iSE	29.0						
WAN	iPZ	11.5			d			
SUL	ePZ	12			d			
KOA	ePZ	25			d			
VUL	iPZ	093146.2			u			
TAV	iPZ	46.9	0.4	6.1	u			
RAL	iPZ	47.0	0.8	5.0	u			
RAB	ePZ	48	0.3	3.0	u	1 $\frac{1}{2}$ ^o	093125	M _L = 3.3
	eSEa	3206						
RAL	ePZ	161129			u	1 $\frac{1}{4}$ ^o	161108	
	iSZ	45.0						
TAV	ePZ	29			d	1 $\frac{1}{4}$ ^o	161108	
	eSZ	45						
RAB	ePZ	30			u	1 $\frac{1}{4}$ ^o	161107	M _L = 3.6
	iSEa	47						
WAN	ePZ	30			u	1 $\frac{1}{4}$ ^o	161107	
	iSZ	47						

				T	A	GM	PEA	OCTOBER 1969	No. 43
				sec	mm		DIST	H	REMARKS
<u>26th October, 1969</u> continued									
VUL	ePZ	161130	0.3	5.0	d	1½°		161105	
	iSZ	49							
RAB	eZ/	163320			-				Traces
VUL	ePZ	180747			u				
RAB	iPZ	47.0	1.0	5.0	d	1½°		180723	M _L = 3.5
	iSE	0805.0							
WAN	iPZ	0748.0			u				
TAV	iPZ	48.1	1.7	2.0	u				
ESA	ePZ	0815	0.3	1.0	d	4¼°		180710	
	iSN	0905.1							
RAB	ePZ/ eSE/	192421 3121			u	48°		191547	Deep
VUL	iPZ	200111.3	0.5	7.7	d	1¼°		200053	
	iSZ	25.0							
TAV	iPZ	11.8	0.4	5.1	d				
RAL	iPZ	12.0	0.7	5.0	u				
WAN	ePZ	12			u	1¼°		200052	
	eSZ	27							
RAB	ePZ	12	0.5	3.0	u	1¼°		200052	M _L = 3.5
	iSN	28.0							L
ESA	ePZ	213208.5	0.3	0.3	d				
RAB	ePZ/ eSE/	38 3605			u	18½°		212827	Normal Depth
TAV	ePZ	214008			u				
VUL	iPZ	08.0	0.4	4.7	d				
RAL	ePZ	08½	0.7	5.0	u				
RAB	ePZ	09	0.9	2.0	u	2¼°		213932	M _L = 4.4
	iSE	37.0							
RAB	iPZ	235045.0	0.3	4.0	u	½°		235034	M _L = 3.5
	iSNa	53.0							
WAN	iPZ	45.0	0.2	2.0	u	¾°		235033	
	iSZ	54.0							
RAL	iPZ	45.2	0.6	4.0	u	¾°		235031	
	iSZ	55.0							
TAV	iPZ	45.8	0.4	6.0	u	¾°		235034	
	iSZ	55.0							
VUL	iPZ	47.0	0.4	4.0	u	¾°		235031	
	iSZ	47.2							
KET	iPN	48.9	0.4	5.0	d	½°		235037	
	iSE	57.6							
<u>27th October, 1969</u> KET: Z component unusable for study.									
KET	iPN	062654.6	0.2	2.0	d	1½°		062632	
	iSN	2711.3							

			T	A	GM	PEA	OCTOBER 1969	No. 43
			sec	mm		DIST	H	REMARKS
<u>27th October, 1969</u> continued								
VUL	iPZ	062656.0	0.5	4.6	d	1½°	062632	
	iSZ	2714.0						
WAN	iPZ	2656.6		1.2	u	1½°	062633	
	iSZ	2715.0						
TAV	iPZ	2656.8	0.3	2.2	u			
RAL	iPZ	57.0			u			
RAB	iPZ	57.0	0.5	3.2	d	1½°	062632	M _L = 4.2
	iSN	2716.0						
VUL	iPZ	072848.4	0.3	2.1	u	2½°	072810	
	iSZ	2917.0						
TAV	iPZ	2849.0			d	2¼°	072813	
	iSZ	2916.0						
KET	iPN	2849.4	0.4	0.7	d	(1¾°)	0728(22)	
	i(S)N	2910.4						
RAL	iPZ	2850.2	0.7	1.3	d	2¼°	072813	
	iSZ	2918.0						
RAB	e(P)Z	2852½				(1¾°)	0728(23)	M _L = 3.7
	iSN	2914.0						
WAN	iPZ	083044.0		2.0	u	½°	083034	
	iSZ	51.0						
RAB	iPZ	44.6	0.5	4.0	d	¼°	083037	M _L = 3.2
	iSN _a	51.0						
SUL	iPZ	44.6	0.3	1.0	d			
RAL	iPZ	44.9	0.5	3.2	d	¼°	083038	
	iSZ	49.3						
TAV	iPZ	45.0		1.8	u	¼°	083039	
	iSZ	50.0						
VUL	iPZ	45.8	0.3	2.0	u			
	iSZ	50.2						
KET	iPN	46.2	0.5	1.4	d	½°	083035	
	iSE	54.2						
PAB	ePKPZ/	083054			u	120°	081219	Shallow
	iSPZ/	4132.0LZ20.0		14.0				shock
	iSSN/	4835.0LN18.0		13.5				M _S = 6.5
	elqZ/	091247 LE20.0		6.0				
RAB	iPZ	100002.0	2.0	7.0				
RAL	iPZ	02.0		2.0	d			
TAV	iPZ	02.0		2.0	d			
VUL	iPZ	02.7	0.3	5.0	d			
KET	epN	04½			d	3¼°	095925	
	iSN	41.4						
RAL	iPZ	100038.4	0.4	2.0	d			
RAB	iPZ	38.6	0.5	2.5	d			
VUL	iPZ	39.0			d			
TAV	iPZ	39.2				¼°	100033	
	iSZ	44.0						

		T	A	GM	PEA	OCTOBER 1969	No. 43
		sec	mm		DIST	H	REMARKS
<u>27th October, 1969</u> continued							
VUL	iPZ	121516.9	0.7	2.5	d		
TAV	iPZ	17.0	0.5	1.7	d	2¼°	121441
	iSZ	44.0					
RAL	iPZ	17.2	0.7	1.8	d	2¼°	121442
	iSZ	44.5					
KET	iPN	36.0		3.0	(u)		
RAB	ePZ	17½		1.0		2½°	121438
	iSE	47.2					M _L = 4.6
WAN	ePZ	17½					
SUL	ePZ	18					
KOA	iPZ	36.0		3.0	(u)		
VUL	iPZ	125646.0	0.3	2.0	u		
TAV	iPZ	46.5		1.0	d	2¼°	125612
	iSZ	5712.5					
KET	iPN	5646.5	0.4	1.5	d		
RAL	iPZ	47.0	0.8	2.1	u	2¼°	125613
	iSZ	5713.0					M _L = 4.7
RAB	iPZ	5647.0	0.5	1.6	d	2½°	125609
	iSE	5716.0					M _L = 4.7
WAN	iPZ	5649.0				2½°	125608
	iSZ	5717.0					
SUL	iPZ	5647.2				2½°	125609
	iSZ	5716.3					
VUL	iPZ	134308.6	0.6	2.0	d		
RAB	iPZ	12.4	0.5	3.3	d		Harmonic tremor
KET	ePN	140447½					
VUL	iPZ	48.0	0.4	1.2	d		
RAB	ePZ	48½					
DISTANT							
VUL	iPZ	184402.8	0.6	5.0	d	2°	184330
	iSZ	28.0					
TAV	iPZ	03.1	0.3	6.0	d	2¼°	184327
	iSZ	30.0					
RAB	iPZ	03.4	0.7	4.0	u	2°	184333
	iSE	26.2					M _L = 4.8
WAN	iPZ	03.5	0.6	2.0	d	2¼°	184327
	iSZ	31.0					
RAL	iPZ	03.6	0.8	3.0	d	2°	184332
	iSZ	28.0					
KET	iPN	03.8	0.8	4.8	u	2°	184333
	iSN	26.4					
SUL	iPZ	04.0	0.4	1.0	d	2°	184331
	iSZ	29.3					
KOA	iPZ	16.2	0.8	15.0	d	2¾°	184334
	iSZ	48.0					
ESA	ePZ	43	0.3	0.7	d	4¾°	184333
	iSN	4536.9					

			T	A	GM	PEA	OCTOBER 1969	No. 43
			sec	mm		DIST	H	REMARKS
<u>27th October, 1969</u> continued								
VUL	iPZ	192242.0				1½°	192216	
	iSZ	2402.0						
TAV	iPZ	2243.0	0.5	1.0	u	1½°	192219	
	iSZ	2401.0						
RAL	iPZ	2243.3	0.9	0.8	u	1½°	192218	
	iSZ	2402.0						
RAB	ePZ	2244				1½°	192220	M _L = 3.7
	iSE	2402.0						
KOA	iPZ	2244.0		22.0	d	1½°	192218	
	iSZ	2404.0						
KET	iPN	2245.7		2.0	d			
KET	ePN	194615½				1½°	194548	
	eSN	4736½						
VUL	iPZ	4616.5	0.8	6.0	d	1½°	194553	
	iSZ	34.0						
SUL	iPZ	16.6	0.4	2.0	u			
RAL	iPZ	17.0		4.0	d	1¼°	194557	
	iSZ	31.8						
TAV	iPZ	17.2	0.7	2.3	u	1°	194600	
	iSZ	30.0						
WAN	iPZ	17.5		9.0	d	1¼°	194556	
	iSZ	33.0						
RAB	iPZ	17.6	0.6	15.0	d	1¼°	194556	M _L = 4.1
	iSE	34.0						
ESA	ePZ	44½	0.2	0.4	d	¾°	194546	
	iSN	4729.0						
KOA	ePZ	4654			u	¾°	194542	
	eSZ	4749						

28th October, 1969 X

KET: Records unavailable for study.

RAB	iPZ	1149(58.6)		20.0	d	¾°		Felt at Rabaul III-IV. ✓
	iSEh	5008.1						Felt at Doilene V; Lassul Bay V. Harbour Network Azimuth = N 300° ± 20°. Epicentre co-ordinates 4° S., 151½° E. M _L = 5.0
WAN	iPZ	4958.7		120.0	d			
RAL	iPZ	59.1		100.0	d			
SUL	iPZ	59.2		80.0	d			
VUL	iPZ	59.3		90.0	d			
TAV	iPZ	59.4		90.0	d			
KOA	ePZ	5059		45.0	d			
ESA	ePZ	5113.3	0.2	0.3	d	5¼°	114948	
	eSZ	5219						

28.10

				PEA	OCTOBER 1969		No. 43	
T	A	GM	DIST	H		REMARKS		
sec	mm							
<u>28th October, 1969</u> continued								
WAN	iPZ	115437.6		7.0	d	$\frac{3}{4}^{\circ}$	115424	
	eSZ	48						
RAB	ePZ	(38.0)	0.5	17.4	d	$\frac{1}{2}^{\circ}$	115427	$M_L = 4.1$
	iSEh	46.2						
VUL	iPZ	38.4		13.0	d	$\frac{3}{4}^{\circ}$	115423	
	iSZ	49.0						
SUL	ePZ	38½						
RAL	ePZ	38½						
TAV	ePZ	39			d			
WAN	iPZ	120630.4	0.3	4.0	d	$\frac{3}{4}^{\circ}$	120617	
	iSZ	40.3						
TAV	iPZ	30.4	0.4	1.8	d			
RAB	iPZ	30.8	0.5	3.9	d	$\frac{3}{4}^{\circ}$	120617	$M_L = 4.0$
	iSE	41.0						
VUL	iPZ	31.2	0.5	2.8	d	$\frac{3}{4}^{\circ}$	120616	
	iSZ	41.8						
WAN	iPZ	121407.4	0.5	2.8	d			
RAB	iPZ	07.6	0.5	8.6	d	$\frac{3}{4}^{\circ}$	121354	$M_L = 3.7$
	iSN/	17.3						
RAL	iPZ	07.9	0.3	4.3	d			
VUL	iPZ	08.1	0.5	6.4	d			
WAN	iPZ	121650.1	0.2	22.0	d			
RAB	iPZ	50.2	0.3	50.0	d	$\frac{3}{4}^{\circ}$	121636	$M_L = 4.6$
	iSEh	1700.0					Felt at Rabaul I-II; Doilene III.	
SUL	iPZ	50.5	0.4	7.0	d			
RAL	iPZ	50.6		35.0	d			
VUL	iPZ	50.9	0.5	20.7	d			
TAV	iPZ	51.0	0.3	15.4	d			
KOA	iPZ	1750.2		3.0	u			
WAN	iPZ	125445.1	0.4	1.0	d			
RAB	iPZ	45.8	0.5	3.8	u	$\frac{1}{2}^{\circ}$	125434	$M_L = 3.7$
	iSN	55.0						
RAL	iPZ	46.0	0.2	2.4	u			
VUL	iPZ	46.1	0.5	3.0	d			
WAN	iPZ	125618.0	0.4	1.5	d			
RAB	iPZ	18.1	0.5	2.0	d	$\frac{3}{4}^{\circ}$	125603	$M_L = 3.0$
	iSE	28.8						
RAL	iPZ	18.9	0.2	1.8	u			
VUL	iPZ	18.9	0.5	1.6	d			
VUL	iPZ	125750.3	0.5	1.8	u			
RAB	iPZ	50.8	0.5	2.8	u	$\frac{3}{4}^{\circ}$	125736	$M_L = 3.0$
	iSE	5801.6						

X

		T	A	GM	PEA DIST	OCTOBER 1969 H	No. 43 REMARKS
		sec	mm				
<u>28th October, 1969</u> continued							
WAN	iPZ	141306.4	0.3	1.5	d		
RAB	iPZ	06.5	0.5	5.9	d	$\frac{3}{4}^{\circ}$	141251
	iSE	17.7					$M_L = 3.4$
RAL	iPZ	06.9	0.2	1.6	d		
VUL	iPZ	07.0	0.4	2.8	d		
RAB	iPZ	141710.8	0.5	1.4	d	$\frac{3}{4}^{\circ}$	141656
	iSE	21.4					$M_L = 3.0$
WAN	iPZ	10.8	0.3	1.0	d		
RAL	iPZ	11.0	0.2	1.0	d		
VUL	iPZ	11.3	0.5	1.5	d		
WAN	iPZ	142534.3	0.4	2.3	d		
RAB	iPZ	34.5	0.5	3.0	d	$\frac{3}{4}^{\circ}$	142521
	iSE	44.6					$M_L = 3.3$
RAL	iPZ	34.9	0.3	1.0	d		
VUL	iPZ	35.0	0.5	2.8	d		
*** See Page 11 for omission.							
RAB	iPZ	154430.4	0.5	2.3	u	$\frac{3}{4}^{\circ}$	154415
	iSE	41.4					$M_L = 3.2$
WAN	iPZ	30.4	0.4	0.6	u		
VUL	iPZ	31.1	0.5	1.3	u		
RAB	iPZ	154936.0	0.5	8.4	d	$\frac{3}{4}^{\circ}$	154921
	iSE	47.0					$M_L = 3.2$
WAN	iPZ	36.0	0.3	1.1	d		
RAL	iPZ	36.5	0.2	3.0	d		
VUL	iPZ	36.7	0.5	2.8	d		
	iSZ	48.8					
TAV	iPZ	37.0			u		
RAB	iPZ	180755.3	0.5	1.9	u	$\frac{1}{2}^{\circ}$	180743
	iSN	0804.3					$M_L = 3.1$
VUL	iPZ	55.8	0.5	1.0	d		
RAL	iPZ	56.0		1.3	u		
WAN	iPZ	214530.6		1.5	u		
RAB	iPZ	31.0	0.5	4.0	u	$\frac{3}{4}^{\circ}$	214516
	iSE	41.9					$M_L = 3.5$
VUL	iPZ	31.7	0.5	3.9	u	$\frac{3}{4}^{\circ}$	214518
	iSZ	42.0					

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T	A	GM	Dist	H	Remarks
sec	mm				

*** Shocks omitted from 28th October, 1969

RAB	iPZ	144049.6	0.4	4.6	d	$\frac{3}{4}^{\circ}$	144036	$M_L=3.2$
	iSE/	4100.4						
WAN	iPZ	49.6	0.4	1.3	d			
VUL	iPZ	50.4	0.4	1.0	d			
RAB	iPZ	153227.1	0.5	4.0	d	$\frac{3}{4}^{\circ}$	153212	$M_L=3.5$
	iSE	37.9						
WAN	iPZ	27.0	0.4	3.9	d			
RAL	iPZ	27.5		2.9	d			
VUL	iPZ	27.6	0.5	4.0	d	$\frac{3}{4}^{\circ}$	153212	
	iSZ	38.6						
TAV	iPZ	27.9	0.4	1.5	d			
WAN	iPZ	154236.5	0.3	2.0	d			
RAB	iPZ	36.9	0.4	2.4	d	$\frac{3}{4}^{\circ}$	154222	$M_L=3.5$
	iSE	48.0						
RAL	iPZ	37.0	0.2	3.1	d			
VUL	iPZ	37.2	0.5	2.8	d	$\frac{3}{4}^{\circ}$	154222	
	iSZ	48.0						

T	A	GM	PEA	OCTOBER	1969	No. 43
sec	mm		DIST	H		REMARKS

TABELE

23rd - 28th September, 1969

TBL Nil recorded.

29th September, 1969

TBL ePZ	160425	0.5	2.1	d	Distant
TBL ePZ	162345	0.8	1.0	u	"

30th September, - 1st October, 1969

TBL Nil recorded.

2nd October, 1969

TBL ePZ	221626½	0.5	1.0	u	Teleseism
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3rd - 9th October, 1969

TBL Nil recorded.

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(G.W. D'ADDARIO)
SENIOR RESIDENT GEOLOGIST(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABAU.

5.11.69

PEA NOV 1969 No. 11

28 NOV 1969

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RABAUl	RAB	From: 29 OCT 1969 To: 4 NOV 1969
RABAUl HARBOUR NETWORK	WAN	From: 29 OCT 1969 To: 4 NOV 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 29 OCT 1969 To: 4 NOV 1969
KERAVAT	KET	From: 29 OCT 1969 To: 4 NOV 1969
ESA 'ALA	ESA	From: To:
TABELE	TBL	From: To:
AGENAHAMBO	AGE	From: To:
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

.....

STATION PERSONNEL

RAB Central Observatory, Rabaul.

Senior Resident Geologist (V).....G.W. D'ADDARIO
Seismologist.....M.G. MANCINI
Seismogram Readers.....C.M. LEES, D. COOK
Senior Technical Officer.....N.O. MYERS
Technical Officers.....R.J. CONWAY
 J. MATHISEN
 J. CARTER
Volcanological Assistants.....L. TOPUE, V. KAITA
 F. DIRA
Trainee Volcanological Assistants.....B. TALAI, M. SALAIAU
 C. MATUPIT
Technical Assistant.....P. DAIMBARI
Clerk.....J.A. ALCOCK
Typiste.....T. LOW

KET Keravat Outstation

Observer (part-time).....J. BART

TBL Tabele Observatory

Observer.....M GAIAM

ESA Esa'ala Observatory

Observer.....E. RAVIAN

AGE Agenahambo Observatory

Observer (part-time).....B. KIRKE

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist, from whom additional information and photocopies of seismogram records from all stations may be obtained on request.

Please address all communications to:-

Senior Resident Geologist(V),
Central Observatory,
P. O. Box 386,
RABAU,
T.P. & N.G.

SEISMOGRAM STATIONS

<u>Station</u>	<u>Code</u>	<u>South Latitude</u>	<u>East Longitude</u>	<u>Elev. (m)</u>	<u>Foundation</u>
NEW GUINEA:					
Rabaul	RAB	04°11'28.6"	152°10'11.4"	183.5	Basalt Flow
Wanliss Street	WAN*	04°11'39.6"	152°10'32.5"	25.0	Basalt Flow
Sulphur Creek	SUL*	04°13'09.8"	152°11'33.3"	8.5	Unconsolidated Volcanic Ash
Rabalanakaia	RAL*	04°13'13.0"	152°12'07.0"	91.0	" "
Tavurvur	TAV*	04°13'52.18"	152°13'12.99"	30.83	Andesite Flow
Taviliu	VUL*	04°16'58.2"	152°08'44.6"	332.2	Unconsolidated Volcanic Ash
Keravat	KET	04°19'59.1"	152°02'10.7"	16.9	Alluvium
Kobuan	KOA	06°13'26.91"	155°37'08.30"	65.33	Andesite Flow
Tabele	TBL	04°06'04.67"	145°00'41.37"	179.5	Basalt Flow
Cape Hoskins	DAW	05°33'-----	150°28'-----	250	Pumice & sands
Waris	WAA	04°07'00"	145°06'00"	48.0	Lapilli Tuff
Piva	PIV	06°12'00"	155°03'30"	60.0	Alluvium
Cape Gloucester	LAG	04°27'20"	148°26'00"	24.0	Lapilli Tuff
Ulamona	ULA	04°59'24.0"	151°16'30.0"	17.0	Lapilli Tuff
PAPUA:					
Agenahambo	AGE	08°48'49"	148°05'56"	303.0	Unconsolidated Volcanic Ash
Esa'ala	ESA	09°44'18.2"	150°48'50.7"	46.4	Granite Gneiss
* RABAUl HARBOUR NETWORK					

STATION INSTRUMENTATION

<u>Station & Instruments</u>	<u>Comp.</u>	<u>To.</u>	<u>Tg.</u>	<u>Trace Speed</u> <u>mm/min.</u>	<u>Approx. Relative Mag.</u> <u>at TO=1.0s</u>	<u>Approx. Damping</u>
NEW GUINEA:						
RABAUl CENTRAL OBSERVATORY, RABAUl						
World-Wide Standard System	Z	1.0	0.74	60	12,500	Critical
	N.E	1.0	.0.74	60	6,250	"
	Z/N/E/	15.0	100.0	15	750	"
Benioff VR 14.7Kg.	Zh	1.0	0.02	180+	4,000	"
+ Recording is triggered by the onset of any earthquake with pre-determined minimum amplitude. Recorder is stopped automatically by hour break pulse.						
Omori 15Kg.	No	3.6	-	24	12	10.1 Air
Omori 15Kg.	Eo	3.8	-	24	10	10.1 Air
Wood Anderson Torsion	Na Ea	0.8	-	60	2,800	Critical
RABAUl HARBOUR NETWORK: Relative magnification at WAN, SUL and VUL is reduced by half between 0800 - 1600 hrs.(LT) from Monday to Friday inclusive.						
WAN ^o)	Z	1.0	0.02	60	11,400	Critical
SUL ^o) Benioff VR	Z	1.0	0.02	60	2,850	"
RAL ^o) 14.7 Kg.	Z	1.0	0.02	60	11,400	"
VUL ^{oo})	Z	1.0	0.02	60	11,400	"
TAV ^o)	Z	1.0	0.02	60	11,400	"

Station and Instrumentation

RABAUH HARBOUR NETWORK (continued)

- ° Signals from these stations are telemetered by land line to Helicorders (Geotech Mod. 2484) at the Central Observatory.
- °° Signals from this station are telemetered via VHF to its Helicorder at the Central Observatory.

.....

	<u>Comp.</u>	<u>To.</u>	<u>T_{gap}</u>	<u>Trace Speed</u> mm/min.	<u>Approx. Relative Mag.</u> at T ₀ =1.0 s.	<u>Approx. Damping</u>
<u>KET KERAVAT OUTSTATION</u>						
Benioff 50Kg	Z	1.2	0.2	15	20% sensitivity	Critical
Benioff 50Kg.	N, E	1.2	0.2	15	10% sensitivity	"

.....

KOA KOBUAN C.R.A. STATION

Willmore Mark II	Z	1.0	-	25	39,800	"
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FIELD STATIONS: ULA Ulamona, PIV Piva, WAA Waris, LAG Cape Gloucester, DAW Cape Hoskins.

Willmore Portable	Z	0.6	0.25	60	10,000	Underdamped
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N.B. - These field stations consist of a permanent building in which instruments are installed when necessary.

Details of emergency field stations within the Territory will be listed when in operation.

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PEI TABELLE OBSERVATORY

Benioff VR 107.5Kg	Z	1.0	0.2	60	1,350	Critical
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PAPUA:

ESA ESA'ALA OBSERVATORY

Benioff VR 107.5Kg.	Z	1.0	0.2	15	38,000	"
Benioff VR 107.5 Kg.	Z	1.0	0.2	15	18,000	"
Benioff VR 107.5Kg.	Z/N/E/	1.0	60.0	30	50% sensitivity	"

.....

AGE AGENAHAMBO STATION

Willmore Portable	Z	0.6	0.25	60	3,000	Underdamped
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Relative magnification curves of seismograph systems installed in the stations controlled by the Rabaul Central Observatory are listed once a month in the PEA.

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VR - Variable Reluctance.

MC - Moving Coil.

REVIEWED AUG. 1969

V.

PRESENTATION OF DATA

All times are reduced to Greenwich Mean Time (GMT), which is 10 hrs. behind Eastern Standard Time.

At RAB and Harbour Network, the time signal is marked every minute on each seismogram record from the Observatory crystal chronometer. Second marks from radio signal VNG (Australia) are recorded on the World-Wide Standard System S.P.-N component only according to the W.W.S.S. programme at six hour intervals. Primary time is provided by W.W.S.S. equipment. Secondary time at RAB and Harbour Network and primary time at KOA is provided by a Labtronic crystal chronometer with the accuracy of ± 5 ms. per day compared with VNG (Australia) with the aid of a chronoscope.

At TBL and AGE the time signal is derived from a spring driven chronometer (Mercer) and marked each minute on records. Time accuracy is determined by comparison with signals from WWVH daily. Linear correction is applied to the daily drift.

On all seismogram records time increases from left to right and the time break is upward.

At RAB* and Harbour Network the recording drum of each seismograph is driven by a 110VAC 60Hz synchronous motor. The 110VAC is frequency-regulated by a crystal chronometer.

(*The Omori recording drum is driven by a non-regulated 50Hz frequency supply).

At ESA, KOA and KET power for recorder motors is frequency regulated by a crystal chronometer at 50Hz. Power for AGE and TBL and field stations is supplied by a 50Hz free running oscillator.

Direction of Motion

Upward direction of ground motion corresponds to upward traces motion on vertical seismogram records. Direction of component of ground motion to North or East corresponds to upward trace motion on horizontal seismogram records.

Vertical trace motion from impulsive onset of longitudinal waves of compressional or dilatational ground movement is indicated by "u" or "d" accompanied by N, S, E, or W as per trace motion amplitude on horizontal seismogram records, to represent vectorially the direction of ground motion. "+" or "-" indicates upward or downward motion of the ground respectively, from a wave not known to be of longitudinal type.

Accuracy of Readings

When readings are given with a decimal figure, they are to 1/10 of a second, other readings have been made to the nearest half second.

Readings from the Harbour Network are entered in the PEA only for earthquakes with an impulsive beginning.

Crustal Phases

Px, Sx, Crustal phases, other than Pn and Sn for local and near earthquakes.

Felt Intensity

Information on maximum intensities of shocks reported felt is included. Intensities are given in Roman numerals based on the Modified Mercalli scale of 1931.

REVIEWED JAN. '69

VI

Determination of Epicentres

Where no source is cited, the determination of Epicentral distance and origin time for local and regional earthquakes is carried out at the Central Observatory, Rabaul, from the S-P travel times, assuming a normal depth of the focus.

Geographical Designation of Epicentres

The regional names which follow the coordinates of epicentres located at the Central Observatory are meant only to supplement the coordinates and normally follow well-known geographical rather than geological features. Use is made of the full degree blocks according to the method defined by E.A. Flinn and E.R. Engdahl in "A PROPOSED BASIS FOR GEOGRAPHICAL AND SEISMIC REGIONALIZATION", Seismic Data Laboratory Report No. 101, UID Inc., Alexandria, Virginia, 1964, adopted by the U.S.C.G.S. for computer requirements.

Magnitude Definition and Determination

M_L - Local Magnitude (Richter, 1935) is calculated from the recorded trace amplitude of the Wood-Anderson torsion seismographs of stated physical constants (installed at the Observatory in November, 1967).

Maximum trace amplitude (0 to peak) expressed in millimetres and is measured directly on both components. Magnitude is determined independently and the arithmetic mean taken. M_L values are given to the tenths of a unit.

The station correction factor is assumed to be zero until better known.

M_S - Surface Wave Magnitude (Gutenberg & Richter, 1956) is calculated from the amplitude (in microns) of surface waves of period near 20 seconds for shallow distant earthquakes with the Prague formula.

$$M_S = \log\left(\frac{A}{T}\right) + 1.66 \log \quad + 3.3.$$

M_B - Body Wave Magnitude is calculated from the ratio of Amplitude over Period for body waves on S.P.Z. of the World Wide Seismograph System only when depth is known.

m - Unified Magnitude (Gutenberg & Richter, 1956) has the following relation to M_L , M_S and M_B .

$$m = 1.7 + 0.8 M_L - 0.01 M_L^2.$$

$$m = M_B \text{ (without correction).}$$

$$m = 2.5 + 0.63 M_S \text{ or } m = 2.9 + 0.59 M_S.$$

Local Magnitude of earthquakes recorded at RAB with clear S-P interval is tabulated on a Day-Distance (in Central Angle Degrees) graph which is added to the PEA monthly.

Symbols

- i - impulsive and sharply defined beginning of a phase.
- e - emergent and poorly defined beginning of a phase.
- T - Period in seconds.
- A - Peak to Trough trace amplitude in millimetres.
- GM - Ground motion.
- Dist - Epicentral distance in central angle degrees.
- H - Origin time.
- h - Focal depth in kilometres.
- CBM - Confused by Microseisms.

REVIEWED JAN 69

WII

Remarks.

- | | |
|-----------|--|
| Local | -Typical signature of an earthquake with epicentre within $0,9^{\circ}$. |
| Near | -Typical signature of an earthquake with epicentre between $0,9^{\circ}$ and 9° . |
| Distant | -Typical signature of an earthquake with epicentre between 9° and 45° . |
| Teleseism | -Typical signature of an earthquake with epicentre more than 45° . |
| Traces | -Any recorded disperse waves or very weak unknown earthquake phases. |

Local and Near earthquakes will be classified Regional, and Distant earthquakes will be grouped with Teleseisms if sheer waves and their reflections are unidentifiable.

G.W.D. ADDARIO

WOLCANOLOGIST-IN-CHARGE.

Central Observatory,
Rabaul. 23.1.69.

CLASSIFIED TOTAL OF EARTHQUAKES RECORDED

	RAB	WAN	SUL	RAL	TAV	VUL	KET	KOA	TBL	ESA	AGE
LOCAL 0.9°											
NEAR 0.9°- 9°	50	22	8	18	19	21	19	1	X	1	*
REGIONAL	153	87	34	93	89	100	63	25	X	2	*
DISTANT 9°-45°	37	49	26	55	72	71	25	33	X	3	*
	28	2	1	2	1	3	4	X	*		*
TELESEISM 45°	11	X	X	X	X	X	X	X	*	1	*
TRACES	24	X	X	X	X	X	X	X	*	1	*
	24	X		X	X	X	X	1	*		*

LEGEND:

OBSERVATORIES

RAB - Rabaul Central (W.W.S.S.)

ESA - Esa'ala

TBL - Tabele

RABAUl INNER NETWORK

WAN - Wanliss Street

SUL - Sulphur Creek

RAL - Rabalanakaia

TAV - Tavurvur

VUL - Taviliu

RABAUl OUTER NETWORK

KET - Keravat

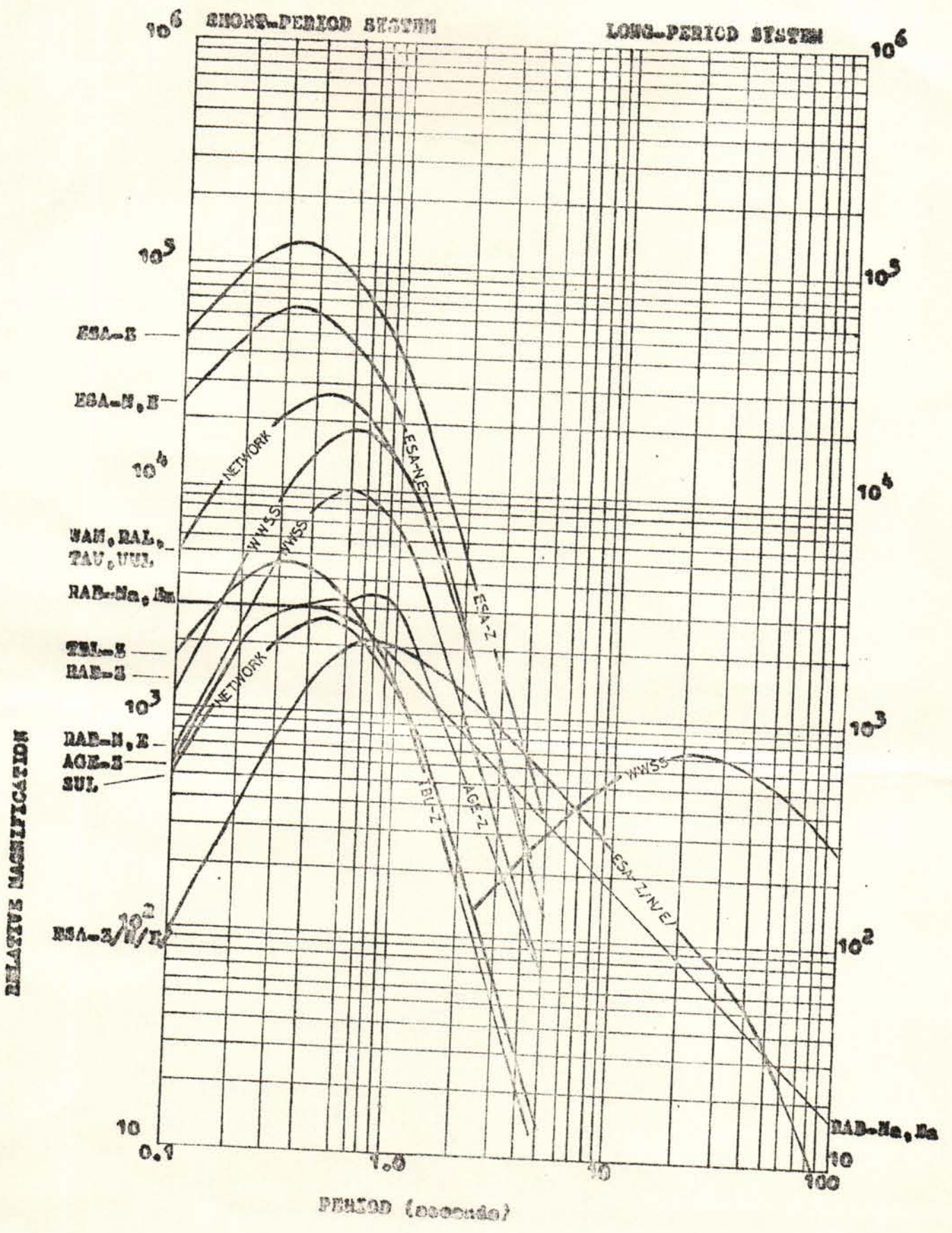
STATIONS

AGE - Agenahambo

KOA - Kobuan

X - Nil Recorded

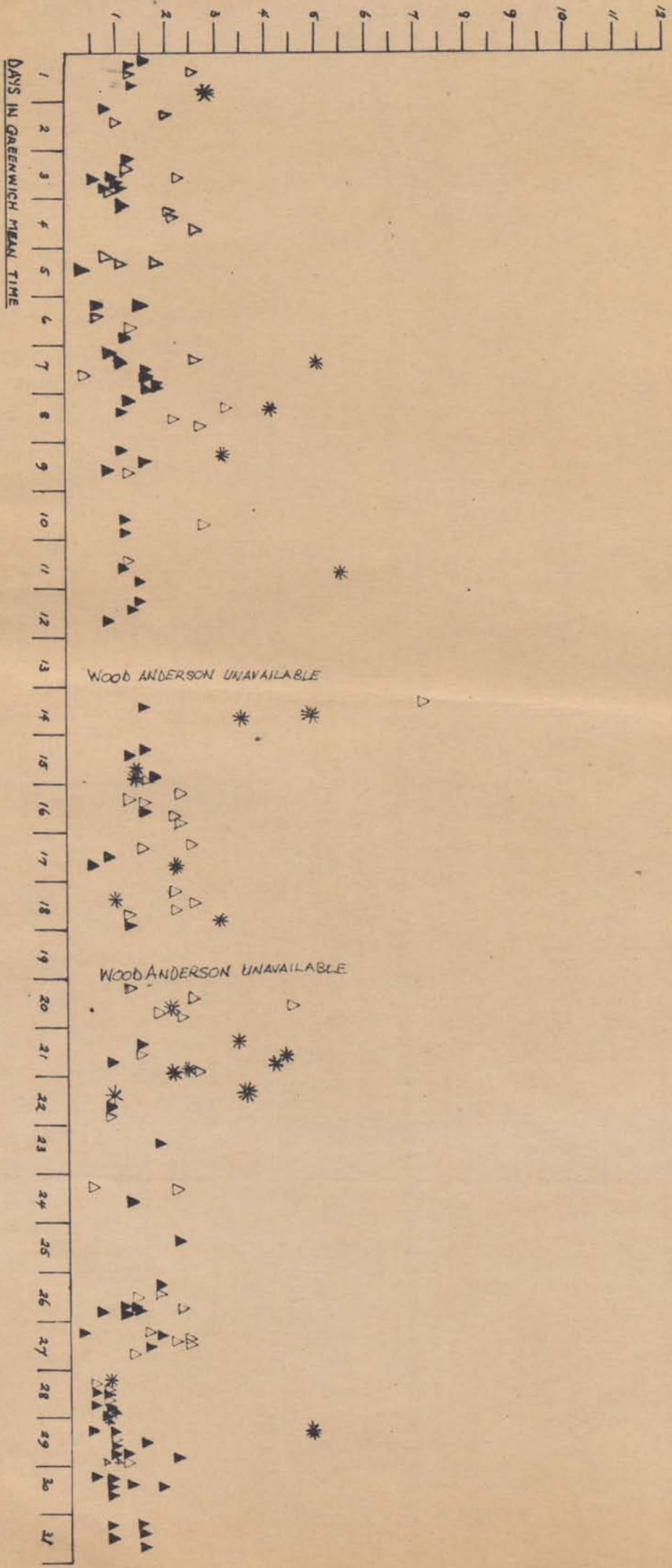
* - Analysis delayed in previous month.



FREQUENCY RESPONSE CURVES OF THE INSTRUMENTS

MAGNITUDE OF REGIONAL EARTHQUAKES WITH A CLEAR S-P INTERVAL
OCTOBER, 1969.

DISTANCE IN CENTRAL ANGLE DEGREES FROM RABAU



LOCAL MAGNITUDE M_L

- 2.0 - 2.9 Δ
- 3.0 - 3.9 \blacktriangle
- 4.0 - 4.9 \triangle
- 5.0 - 5.9 $*$
- 6.0 - 6.9 $*$
- 7.0 - 7.9 ∇

- Δ^2 2 EARTHQUAKES AT 4.0 - 4.9 IN QUICK SUCCESSION
- \blacktriangle^4 4 EARTHQUAKES AT 3.0 - 3.9 IN QUICK SUCCESSION

WOOD ANDERSON UNAVAILABLE

WOOD ANDERSON UNAVAILABLE

PEA NOVEMBER 1969 No. 44
 DIST H REMARKS
 T A GM
 sec mm

RABAUL
29th October, 1969

RAB: Series of harmonic disturbance between 0500 - 0600 hrs. (G.M.T.).

Station	Component	Time	T	A	GM	Phase	Dist	Remarks
			sec	mm				
TAV	iPZ	045329.0	29.0	0.5	u	$4\frac{3}{4}^{\circ}$	045217	
	eSZ	5424						
VUL	iPZ	5329.1		1.0	d	$4\frac{3}{4}^{\circ}$	045218	
	eSZ	5424						
RAL	ePZ	5329½			d			
RAB	ePZ	30	0.4	2.1	d	$4\frac{3}{4}^{\circ}$	045218	$M_L = 5.8$
	eSE/	5424½						
WAN	ePZ	5330						
KOA	ePZ	32						
KET	ePZ	32½			d			
RAB	ePZ	061006		2.0	u	$\frac{3}{4}^{\circ}$	060951	$M_L = 3.2$
	iSE	17.1						
WAN	iPZ	06.1			u	$\frac{3}{4}^{\circ}$	060951	
	eSZ	17						
RAL	iPZ	06.4			d			
VUL	iPZ	06.8	0.3	2.0	u	$\frac{3}{4}^{\circ}$	060953	
	iSZ	17.2						
KET	eSE	16						
TAV	eSZ	18½						
KET	ePZ	064826				$\frac{3}{4}^{\circ}$	064812	
	eSE	36						
RAB	iPZ	26.8	0.2	40.0	d	$\frac{1}{2}^{\circ}$	064816	$M_L = 3.3$
	iSNE	34.5						
WAN	iPZ	26.8		3.2	d			
RAL	iPZ	27.0			d			
TAV	iPZ	27.4	0.4		d			
RAB	eZ/	071258			+			Traces
KET	ePZ	075344			(u)			
RAB	iPZ	45.0	0.3	7.0	u	$\frac{3}{4}^{\circ}$	075331	$M_L = 4.0$
	iSE	54.8						
WAN	ePZ	45			u	$\frac{3}{4}^{\circ}$	075331	
	iS	54.5						
RAL	ePZ	45½			u	$\frac{3}{4}^{\circ}$	075333	
	eSZ	54½						
VUL	iPZ	45.6	0.5	7.2	d	$\frac{3}{4}^{\circ}$	075331	
	eSZ	56½						
SUL	ePZ	46			u	$\frac{3}{4}^{\circ}$	075332	
	eSZ	55½						
TAV	iPZ	46.3			u			
WAN	iPZ	083416.7	0.2	4.0	d	$\frac{3}{4}^{\circ}$	083404	
	eSZ	26						
RAB	iPZ	17.0	0.2	40.0	d	$\frac{3}{4}^{\circ}$	083403	$M_L = 3.7$
	eSE	26½						

T A GM
sec mm

29th October, 1969 continued

KET	ePZ	083417	0.4	2.8	d	$\frac{3}{4}^{\circ}$	083403	
	eSE	26½						
RAL	iPZ	17.1		11.0	d	$\frac{3}{4}^{\circ}$	083405	
	eSZ	26½						
VUL	iPZ	17.5	0.1	6.3	d	$\frac{3}{4}^{\circ}$	083402	
	eSZ	28						
SUL	ePZ	17½						
TAV	iPZ	17.6	0.3		d			
KET	ePZ	100015½			u	$1\frac{1}{2}^{\circ}$	095953	
	iSN	32.8						
VUL	iPZ	17.0	0.5	4.1	u	$1\frac{1}{2}^{\circ}$	095952	
	iSZ	35.8						
RAB	ePZ	18		1.3	d	$1\frac{1}{2}^{\circ}$	095952	
	iSE	38.0						
RAL	ePZ	18				$1\frac{3}{4}^{\circ}$	095950	
	eSZ	38½						
WAN	iPZ	18.1			d	$1\frac{1}{2}^{\circ}$	095953	
	iSZ	37.5						
TAV	ePZ	19			d			
KET	iPZ	150910.4			d	$1\frac{1}{2}^{\circ}$	150844	
	iSE	30.0						
VUL	iPZ	11.5	0.5	3.4	d			
RAB	iPZ	12.0	0.8	2.9	d	$1\frac{1}{2}^{\circ}$	150846	$M_L = 3.6$
	iSE	31.8						
WAN	ePZ	12				$1\frac{1}{2}^{\circ}$	150846	
	eSZ	32						
RAL	ePZ	12				$1\frac{1}{2}^{\circ}$	150846	
	eSZ	32						
TAV	ePZ	12		0.9	d	$1\frac{1}{2}^{\circ}$	150846	
	eSZ	32						
KOA	ePZ	51½		3.9	u			
RAB	eiPZ	154241½	0.5	2.4	d	$\frac{3}{4}^{\circ}$	154228	$M_L = 3.5$
	iSE	51.8						
KET	iPZ	41.9	0.5	1.0	u	$\frac{3}{4}^{\circ}$	154230	
	eSE	50½						
WAN	iPZ	42.0	0.5	2.0	d	$\frac{3}{4}^{\circ}$	154228	
	iSZ	52.0						
SUL	iPZ	42.8			u	$\frac{3}{4}^{\circ}$	154228	
	iSZ	53.8						
RAL	iPZ	42.8			d	$\frac{3}{4}^{\circ}$	154228	
	iSZ	54.0						
VUL	iPZ	42.9	0.3	3.0	d	$\frac{3}{4}^{\circ}$	154229	
	iSZ	52.5						
TAV	ePZ	43		1.0	d	1°	154227	
	eSZ	55						

T A GM
 sec mm

29th October, 1969 continued

T	A	GM	PEA DIST	H	REMARKS
sec	mm				
RAB	ePZ eSE	155629 39½		d	¾° 155614 M _L = 3.0
RAL	ePZ	29			
VUL	ePZ eSZ	30 39½	0.3	0.5	u ¾° 155616
WAN	eSZ	39½			
RAL	iPZ iSZ	161133.8 43.0			u ¾° 161122
TAV	iPZ iSZ	34.0 43.0	0.3	11.9	u ¾° 161122
SUL	iPZ eSZ	34.2 44			d ¾° 161120
WAN	iPZ iSZ	34.5 44.0			u ¾° 161121
RAB	iPZ iSN	34.8 44.0	0.5	10.1	u ¾° 161123 M _L = 3.8
VUL	iPZ eSZ	34.8 44			u ¾° 161123
KET	iPZ	35.8			u
KOA	iPZ	1214.5		3.1	d
RAL	iPZ	162309.0	0.5	2.0	u
TAV	iPZ	09.0	0.8	1.0	u
RAB	ePZ	09½		2.0	d
WAN	ePZ	09½			d
VUL	iPZ	10.9	0.7	1.0	d
SUL	i(P)Z	12.0	0.6	1.6	u
RAB	eZ/	165314			- Traces
KET	ePZ	170008½	0.5	1.0	d
VUL	iPZ	10.9	0.4	4.1	d
RAB	iPZ	11.4	0.7	8.0	d
WAN	iPZ	11.6	0.3	7.0	d
RAL	iPZ	11.8		4.3	d
SUL	iPZ	12.0	0.5	2.2	d
TAV	iPZ	12.0	0.5	6.4	d
WAN	ePZ eSZ	170853 0904½			1° 170837
KET	ePZ iSE	0853 0903.4			u ¾° 170839
RAL	ePZ eSZ	0853½ 0905			d 1° 170837
RAB	iPZ iSE	0853.6 0904.4		3.0	u ¾° 170839 M _L = 2.9

		T	A	GM	PEA	NOVEMBER 1969	No. 44
		sec	mm		DIST	H	REMARKS
<u>29th October, 1969</u> continued							
VUL	iPZ	170853.9	0.3	2.0	d	1°	170838
	iSZ	0906.0					
TAV	ePZ	0854			d		
SUL	ePZ	54					
VUL	iPZ	171253.1	0.3	4.0	d	1°	171238
	iSZ	1306.5					
KET	iPZ	1253.4			u	1°	171235
	iSE	1307.0					
TAV	ePZ	1253½		9.0	d	1°	171236
	eSZ	1306					
RAL	iPZ	1253.9			d	1°	171235
	eSZ	1308					
SUL	ePZ	1254			d		
RAB	ePZ	55	0.5	1.3	u	1°	171237
	iSNE	1308.0					M _L = 3.4
WAN	ePZ	1255				1°	171236
	eSZ	1308½					
KOA	iPZ	25.0		1.5	d		
RAL	iP!Z	185828.9			d	1°	185811
	iSZ	41.5					
TAV	iP!Z	29.0	0.5	90.0	d	1°	185811
	eSZ	41½					
SUL	iPZ	29.1	0.4	5.8	d	1°	185812
	eSZ	42½					
WAN	iP!Z	29.4		15.3	d	1°	185812
	iSZ	42.5					
RAB	iP!Z	29.5		40.0	d	1°	185812
	iSE	42.3					M _L = 4.1
VUL	iP!Z	30.0	0.1	21.0	d	1°	185814
	eSZ	42					
KET	iPZ	30.8			d		
KOA	iPZ	5902.0			d		
KET	iPZ	193142.9	0.3	0.6	d	¾°	193129
	iSE	53.0					
RAB	ePZ	43			d	¾°	193128
	iSE	54.0					M _L = 3.1
WAN	ePZ	43		1.0	d	¾°	193128
	iSZ	54.0					
VUL	iPZ	43.5	0.5	1.0	u		
RAL	iPZ	43.5			d	¾°	193128
	eSZ	54½					
SUL	ePZ	43½			u	1°	193127
	eSZ	55					
TAV	ePZ	44			d		
KET	iPZ	205357.6			d	¾°	205344
	eSE	5408					

			T	A	GM	PEA	NOVEMBER 1969	No. 44
			sec	mm		DIST	H	REMARKS
<u>29th October, 1969</u> continued								
RAB	iPZ	205358.0	0.2	25.0	d	$\frac{3}{4}^{\circ}$	205343	$M_L = 3.9$
	iSE	5409.0						
WAN	iPZ	5358.0		3.0	d	$\frac{3}{4}^{\circ}$	205343	
	eSZ	5408½						
RAL	iPZ	5358.6			d			
VUL	iPZ	59.0		3.2	d		Overlapping traces.	
TAV	ePZ	59			d	$\frac{3}{4}^{\circ}$	205344	
	eSZ	5409½						
KOA	ePZ	213818½			d	$1\frac{1}{4}^{\circ}$	213758	
	eSZ	33						
KET	e(P)Z	31½				$2\frac{1}{4}^{\circ}$	213756	
	eSE	58						
VUL	ePZ	32½			d	2°	213759	
	iSZ	57.0						
RAL	ePZ	33			d	2°	213801	
	iSZ	56.9						
RAB	iPZ	33.2	0.6	1.9	d	2°	213801	$M_L = 3.9$
	iSE	57.0						
TAV	iPZ	33.5		3.5	d	2°	213803	
	eSZ	56½						
WAN	eSZ	57						
<u>30th October, 1969</u>								
RAB: Series of harmonic disturbances between 0500 - 0600 hrs.								
KET: Records unavailable for study.								
TAV	ePZ	045651½			d	$\frac{3}{4}^{\circ}$	045638	
	eSZ	5701½						
RAL	iPZ	5652.3			u	$\frac{3}{4}^{\circ}$	045638	C.B.M.
	eSZ	5702						
RAB	e(P)Z	5655			u	$\frac{1}{2}^{\circ}$	045644	$M_L = 3.6$
	iSN	5703.0						
TAV	iPZ	084320.1			d	$\frac{3}{4}^{\circ}$	084308	
	eSZ	29½						
RAL	ePZ	20½				$\frac{3}{4}^{\circ}$	084308	C.B.M.
	eSZ	30						
WAN	ePZ	21				$\frac{3}{4}^{\circ}$	084307	
	eSZ	31						
RAB	ePZ	21½	0.3	2.0	d	$\frac{3}{4}^{\circ}$	084309	$M_L = 3.6$
	iSN	31.0						
VUL	iPZ	21.8			u	$\frac{3}{4}^{\circ}$	084307	
	iSZ	32.6						
TAV	iPZ	105232.5		17.0	d	$\frac{1}{2}^{\circ}$	105221	
	eSZ	41						
RAL	iPZ	32.5		3.0	d			

PEA NOVEMBER 1969 No. 44
 DIST H REMARKS

T A GM
 sec mm

30th October, 1969 continued

Station	Type	Time	T (sec)	A (mm)	GM	Dist	H	Remarks
WAN	iPZ	105232.9			d	3/4°	105219	
	eSZ	43						
SUL	ePZ	33			u	1/2°	105222	
	eSZ	41						
RAB	iPZ	33.1	0.5	2.0	d	3/4°	105219	M = 3.9
	iSE	42.7						
VUL	iPZ	33.7		1.0	d	3/4°	105220	
	eSZ	44						
VUL	iPZ	115319.0			u			
TAV	ePZ	20 1/2			u			
RAL	ePZ	20 1/2	0.7	1.2	u			
RAB	iPZ	20.6			d	1 3/4°	115251	M _L = 3.8
	iSN	42.9						
WAN	iPZ	20.9			u	2°	115249	
	eSZ	45						
RAB	ePZ	130034 1/2						Traces
TAV	ePZ	150456						
VUL	ePZ	57			u			
RAL	ePZ	57				1 1/4°	150436	
	eSZ	0513						
RAB	ePZ	0457 1/2			u	1 1/4°	150435	M _L = 3.9
	iSE	0515						
WAN	iPZ	170625.1		7.0	d	3/4°	170611	
	eSZ	35						
RAB	iPZ	25.6	0.5	6.0	d	3/4°	170612	M _L = 3.7
	iSN	35.5						
RAL	iPZ	25.7			d	(1°)	1706(09)	
	e(S)Z	38						
VUL	iPZ	26.0			d			
TAV	iPZ	26.0			d			
RAB	eZ	171850						Traces
VUL	ePZ	175411			u			
RAB	iPZ	12.8		1.0	d			Regional
TBL	ePZ	183957	0.4	1.0	d			
WAN	ePZ	4132						
RAB	ePZ	32 1/2			d	10 1/4°	183906	
	e(S)N/	4326						
VUL	ePZ	32 1/2			d			
TAV	ePZ	33			d			
RAL	ePZ	33			d			
SUL	ePZ	33 1/2						

30.10
 183906
 Shallow epicentre;
 Co-ordinates 2 1/4° S.,
 142 1/2° E. Bismarck Sea.

T A GM
sec mm

30th October, 1969 continued

KOA ePZ 184224 u

31st October, 1969

KET: Records unavailable for study.

VUL	iPZ	010851.6		12	u	1¼°	010829½	
	eSZ	0908						
WAN	iPZ	0852.4	0.3	4.0	u	1½°	010828½	
	eSZ	0910½						
RAB	ePZ	0852½	0.4	1.5	u	1½°	010828	M _L = 3.4
	iSE	0911						
TAV	ePZ	0852½			u			
RAL	ePZ	53		1.8	u	1½°	010829	
	eSZ	0911						
RAB	iPZ	015753.8	0.4	2.2	u	¾°	015739½	M _L = 3.0
	iSE	5804.0						
RAL	ePZ	5754	0.2	1.3	u			
VUL	iPZ	54.3	0.5	3.0	u			
TBL	ePZ	015644	0.5	1.0		5°	015529	
	eSZ	5742						
RAB	ePZ	5817		1.0	u	9¼°	015554	
	eSE	020008						
TBL	ePZ	030229	0.4	1.0	d			
RAB	ePZ/	0341			u	10¾°	030107	Shallow
	eN/	58						
	e(S)N/	0541						
	eQZ/	0600						
VUL	ePZ	043051			d			
RAB	ePZ	52½			d	1½°	043026½	M _L = 3.5
	eSE	3112						
RAL	ePZ	3052½	0.8	5.0	d			
TAV	iPZ	53.0	0.3	7.0	u			
KOA	ePZ	56½	0.5	3.0	d			
TBL	ePZ	043126½	0.5	1.0	u			
RAL	ePZ	3201						
RAB	iPZ	02.0	0.8	2.4	d	10°	042937	Shallow M _L = 5.7 M _B = 6.0
	e(S)N/	3355						
	eQZ/	3404						
TAV	ePZ	3204			d			
KOA	ePZ	47½						
RAB	eZ/	070415			-			Traces
KOA	ePZ	073240		5.0	d			

T A GM
sec mm

31st October, 1969 continued

ESA	ePZ	073306½	0.7	0.3	d	26½°	072741	
	eS	3745						
WAN	ePZ	3317½	2.0	1.3				
RAL	ePZ	17½	1.0	2.0	u			
RAB	ePZ	18	1.1	1.2	d	26°	072757	M _L = 6.7
	eSN/	3742						M _B = 5.2
	eQZ/	4124						Intermediate depth.
VUL	ePZ	3318	1.0	3.5	d			
TAV	iPZ	18.3	1.0	3.0	d			
RAB	iZ	0733	0.4	3.0				Man made disturbance-
	FZ	40						Pile driving.
WAN	ePZ	112622½		2.0	d	¾°	112607	
	eSZ	33½						
RAB	eiPZ	23.0	0.5	2.4	u	¾°	112610	M _L = 3.1
	iSN	32.5						
RAL	ePZ	23			d			
VUL	iPZ	23.4	0.3	5.0	d	1°	112607½	
	eSZ	35						
RAB	ePZ	114310½	0.8	1.2	u	61°	112259	Shallow
	eZ	27						M _L = 6.6
	ePcPZ/	4654						M _B = 5.6
	eSN/E/	5124						M _S = 6.2
	eSSN/	5530						
	eSSSE/	5740						
	eQZ/	120059						
	eRZ/	1107						
	LZ/	20.0	20.0	27.0				
	LN/	20.0	20.0	14.5				
	LE/	20.0	20.0	22.0				
TAV	ePZ	4311.3	1.0	0.5	d			
RAL	ePZ	11½	1.0	1.0	d			
VUL	ePZ	12	1.0	1.0	d			
KOA	ePZ	16		2.0	d			
ESA	ePZ	43	0.9	0.9	d	58°		
	iS	5138						
VUL	iPZ	193249.0	0.3	39.0	d	1¼°	193228½	
	eSZ	3304½						
TAV	iPZ	3249.0	0.2	26.0	d			
RAL	iPZ	49.4		3.0	u	1¼°	193228	
	eSZ	3305½						
RAB	ePZ	3249½	0.4	2.8	d	1½°	193225	M _L = 3.6
	iSE	3307.8						
WAN	ePZ	3250			u			
KOA	iPZ	225205		3.0	d	1°	225147	
	eSZ	18						

T	A	GM	PEA	NOVEMBER	1969	No. 44
sec	mm		DIST	H		REMARKS

1st November, 1969

RAB and KET: Microseismic activity between 0100 - 1200 hrs. (G.M.T.)

KOA	ePZ	025416				u			
TAV	iPZ	35.5				d	$\frac{3}{4}^{\circ}$	025422	
	iSZ	45.0							
VUL	ePZ	35½				d	1°	025418	
	iSZ	48.0							
RAL	ePZ	36				d	$\frac{3}{4}^{\circ}$	025424	
	iSZ	45.3							
RAB	ePZ/	112211				u			
ESA	ePZ	14				d	$30\frac{1}{2}^{\circ}$	111606	
	eSN	2718							
RAB	ePZ/	112544				u	77°	111440	Shallow shock
	ePPPZ/	3027							
	eSN/	3523							
	eLqZ/	5352							
KOA	ePZ	122041				d	$2\frac{1}{4}^{\circ}$	122008	
	eSZ	2106							
VUL	iPZ	2046.8	0.4	2.8		d	$2\frac{3}{4}^{\circ}$	122005	
	iSZ	2121							
KET	ePZ	2047				u	$3\frac{1}{4}^{\circ}$	121958	
	eSN	2124							
RAL	iPZ	49.5	0.9	4.0		d	$2\frac{3}{4}^{\circ}$	122007	
	eSZ	2122							
RAB	ePZ	2050	0.7	1.5		u	$2\frac{1}{2}^{\circ}$	122009	$M_L = 4.5$
	iSN	2121.0							
TAV	ePZ	2050	0.4	9.0		d	$2\frac{1}{2}^{\circ}$	122012	
	iSZ	2119							
WAN	ePZ	2052				u	$2\frac{1}{2}^{\circ}$	122014	
	eSZ	2121							
RAL	ePZ	133215				d	$1\frac{1}{4}^{\circ}$	133156	
	eSZ	29							
WAN	ePZ	16				u	$1\frac{1}{4}^{\circ}$	133156	
	eSZ	31							
VUL	ePZ	16				u	$1\frac{1}{4}^{\circ}$	133154	
	eSZ	32							
VUL	iPZ	180046.8	1.0	12.0		d	2°	180016	
	iSZ	0110.0							
RAB	iPZ	0047.0	0.6	4.0		u	$2\frac{1}{4}^{\circ}$	180014	$M_L = 4.5$
	iSNa	0112.0							
KET	iPZ	0047.0	0.1	2.8		d	$2\frac{1}{4}^{\circ}$	180014	
	eSN	0112							
TAV	iPZ	0047.0	0.8	6.0		u			
RAL	ePZ	47							
WAN	iPZ	47.3	0.5	2.0		u			

T	A	GM	PEA	NOVEMBER	1969	No.44
SEC	mm		DIST	H		REMARKS

1st November, 1969 continued

SUL	ePZ	180048					u
KOA	ePZ	0101					u
KET	iPZ	210932.0	1.5	5.2			u
RAB	ePZ	33					d
	eSE/	1024			4½°	210826	M _L = 4.9
SUL	ePZ	0933					u
WAN	ePZ	34					u
TAV	ePZ	34	2.0	4.0			d
VUL	iPZ	34.0	2.0	12.9			d
RAL	iPZ	35.0					u
ESA	ePZ	39	0.2	0.5			d
KOA	ePZ	1021					u

2nd November, 1969

RAB: Series of harmonic disturbance between 0445 - 0515 hrs.

KET: Microseismic disturbance throughout the day.

KET	iPZ	002423.2					d
VUL	iPZ	24.9			2¼°	002351	d
	eSZ	51					
WAN	ePZ	25½			2°	002354	u
	eSZ	49					
TAV	iPZ	25.9	1.0				d
RAB	iPE	26½			1¾°	002356	u
	iSN	49.2					
RAL	ePZ	26½					
RAB	iPZ/	021037.0			1¾°	021009	u
	iSN/	58.0					
RAL	iPZ	37.1	1.2		2°	021005	d
	iSZ	1101.0					
TAV	ePZ	1037					u
VUL	iPZ	37.3	0.2	14.1			u
WAN	ePZ	37½			2°	021006	d
	eSZ	1101½					
SUL	ePZ	1038			1¾°	021009	d
	iSZ	1100.0					
KET	iPZ	1038.8					d
KOA	ePZ	48			2¾°	021006	u
	eSZ	1120					
TAV	ePZ	021924			1¾°	021858	
	eSZ	44					
RAL	ePZ	25					u

PEA NOVEMBER 1969 No. 44
 DIST H REMARKS
 T A GM
 sec mm

2nd November, 1969 continued

RAB	ePZ	021926			d	1 $\frac{3}{4}$ $^{\circ}$	021858	M _L = 3.6
	iSE	46.5						
WAN	ePZ	26 $\frac{1}{2}$						
KOA	ePZ	36 $\frac{1}{2}$			u			
TAV	iPZ	040816.0			d	$\frac{3}{4}$ $^{\circ}$	040801	
	iSZ	27.0						
RAL	iPZ	16.2		11.2	d	$\frac{3}{4}$ $^{\circ}$	040801	
	iSZ	27.4						
WAN	iPZ	16.5			d	1 $^{\circ}$	040800	
	iSZ	28.0						
SUL	ePZ	16 $\frac{1}{2}$				$\frac{3}{4}$ $^{\circ}$	040801	
	eSZ	27 $\frac{1}{2}$						
RAB	iPZ	16.9			d	1 $^{\circ}$	040801	M _L = 4.2
	iSE	29.0						
VUL	ePZ	17						
KET	iPZ	17.5			u	1 $^{\circ}$	040759	
	eSN	31						
KOA	ePZ	50			u	3 $\frac{1}{4}$ $^{\circ}$	040800	
	eSZ	0928						
KET	iPZ	041839.9			d			Regional
VUL	iPZ	41.0		5.0	d			
WAN	ePZ	42 $\frac{1}{2}$			d			
RAL	ePZ	43 $\frac{1}{2}$			d			
TAV	iPZ	44.0	0.5	2.0	u			
SUL	ePZ	44						
RAB	iPZ	44.2	0.6	3.0	u			
TAV	iPZ	123309.9		1.0	u	1 $^{\circ}$	123254	
	iSZ	22.0						
WAN	iPZ	10.5	0.2	1.1	u	1 $^{\circ}$	123254	
	iSZ	22.8						
VUL	iPZ	10.5	0.2	3.0	u			
RAL	ePZ	11			u	$\frac{3}{4}$ $^{\circ}$	123256	
	iSZ	22.2						
RAB	ePZ	12			d	$\frac{3}{4}$ $^{\circ}$	123257	M _L = 4.1
	iSE	23.2						
SUL	ePZ	12				$\frac{3}{4}$ $^{\circ}$	123257	
	eSZ	22.8						
KET	iPZ	12.8	0.3	1.0	d		123255	
	iSN	25.9						
KOA	ePZ	24						
RAB	ePZ	130127 $\frac{1}{2}$			d	1 $^{\circ}$	130110	M _L = 3.4
	iSN	41.0						
WAN	iPZ	28.0			u	1 $^{\circ}$	130110	
	iSZ	40.5						

			T	A	GM	PEA	NOVEMBER	1969	No. 44
			sec	mm		DIST	H		REMARKS
<u>2nd November, 1969</u> continued									
RAL	iPZ	130128.0	0.3	3.1	u	1°		130109	
	eSZ	42							
TAV	iPZ	28.0		2.0	u	1°		130109	
	iSZ	41.9							
VUL	iPZ	29.8		3.1	u				
KET	ePZ	30½							
TAV	iPZ	141442.9		2.0	u	1¼°		141422	
	iSZ	59.0							
VUL	ePZ	43			u				
RAL	ePZ	43.5			u	1¼°		141421	
	iSZ	1500.5							
RAB	ePZ	1444	0.6	0.2	d	1½°		141420	M _L = 3.5
	iSN	1402.0							
WAN	ePZ	1444			u	1½°		141420	
	eSZ	1502							
KET	iPZ	1444.0			u	1¼°		141423	
	iSN	1500.0							
KET	ePZ	175505			d	1½°		175441	
	iSN	22.5							
VUL	ePZ	05½			d	1¼°		175438	
	iSZ	26.0							
RAB	ePZ	06			d	1¼°		175437	M _L = 4.2
	iSN	28.0							
TAV	ePZ	06½			u				
WAN	ePZ	07			u	1¼°		175439	
	iSZ	28.0							
RAL	iPZ	07.1		0.9	d	1¼°		175439	
	iSZ	28.5							
RAB	iPKPZ/ iSSN/ eLqZ/	184314 5920.7 191518			u	111°		182454	Deep
DAW	iPZ	221743.0			d				
VUL	iPZ	57.0			u				
RAL	iPZ	57.2	0.2	17.4	u				
TAV	iPZ	57.2			u				
SUL	ePZ	57½							
WAN	iPZ	57.6		16.7	u	1¼°		221736	
	eSZ	1814							
RAB	iPZ	1757.6	0.4	9.0	u	1¼°		221736	M _L = 4.1
	iSNa	1814.0							

3rd November, 1969

KET: Very strong microseismic activity throughout the day;
N/S and E/W records unreadable.

T A GM
 sec mm

3rd November, 1969 continued

		T	A	GM				
		sec	mm					
RAL	ePZ	012848.0	0.7	2.3	d			Regional
WAN	ePZ	48			u			
RAB	iPZ	48.4	0.7	2.0	d			
TAV	iPZ	48.8	0.5	1.9	u			
RAL	iPZ	065234.0	0.9	2.0	u			Regional
TAV	iPZ	34.0	0.7	1.0	u			
VUL	iPZ	34.0	0.6	2.4	u			
WAN	ePZ	34½			u			
RAB	iPZ	35.0	0.9	4.0	u			
TAV	iPZ	072907.2	0.2	6.4	d	1°	072851	
	iSZ	19.0						
RAL	iPZ	07.7	0.9	2.3	u.	1°	072851	
	iSZ	19.8						
WAN	ePZ	08			u	1°	072850	
	iSZ	21.0						
RAB	iPZ	08.1	0.2	1.8	d	1°	072851	M _L = 3.3
	iSN	21.0						
VUL	iPZ	08.4	0.5	1.4	d	1°	072852	
	iSZ	20.0						
KET	iPZ	10.3		2.4	u	¾°	072852	
	eSZ	24						
RAB	ePZ	083246½	1.0	2.4	d			Distant
RAL	iPZ	46.7	0.8	2.0	d			
WAN	ePZ	47			u			
TAV	iPZ	47.0	1.0	1.7	u			
VUL	iPZ	47.1	1.0	1.1	u			
RAB	ePZ/	084415			+			Traces
WAN	iPZ	101407.0	0.4	1.0	d	2¾°	101324	
	eSZ	39½						
KET	ePZ	07½				2½°	101327	
	iSZ	39.0						
WAN	iPZ	08.0	0.5	0.6	u	3°	101323	
	iSZ	41.5						
RAB	iPZ	08.1	0.5	4.0	u	2¾°	101325	M _L = 4.2
	iSN	41.0						
RAL	iPZ	08.2	0.4	1.0	d			
TAV	iPZ	08.6			d			
RAB	ePZ/	120722½			u			Teleseism
KOA	ePZ	121332						
RAB	ePZ	1430						Regional

T	A	GM
sec	mm	

3rd November, 1969 continued

VUL	iPZ	134520.5	0.6	1.0	d		
RAL	ePZ	21					
TAV	ePZ	21½					
RAB	ePZ	22					
WAN	ePZ	22					
KOA	iPZ	165542.5		52.0	d		
VUL	iPZ	57.5	0.4	1.2	d	¾°	165508
	iSZ	5635.0					
TAV	iPZ	5557.8		1.0	u	3°	165511
	iSZ	5634.2					
RAB	iPZ	5558.2	0.8	1.3	u	¾°	165510
	iSN	5635					M _L = 6.3
WAN	iPZ	5558.4			u	¾°	165509
	iSZ	5636.6					
RAL	ePZ	5558½			d	¾°	165509
	iSZ	5636.0					
KET	ePZ	5558½				¾°	165510
	iSZ	5635.8					
SUL	ePZ	00.0				3°	165515
	iSZ	34.4					
KET	iPZ	181209.0		1.4		½°	181144
	iSZ	28.0					
RAB	iPZ	11.7	0.4	2.0	d	¾°	181144
	iSE	33.0					M _L = 4.3
WAN	iPZ	11.8			u	¾°	181144
	iSZ	33.0					
VUL	iPZ	11.8	0.6	8.6	d	½°	181146
	iSZ	30.5					
RAL	ePZ	12				¾°	181144
	iSZ	33.0					
SUL	iPZ	12.2			u	¾°	181144
	iSZ	33.5					
TAV	iPZ	12.3	0.6	2.0	d	¾°	181145
	eSZ	33					
KOA	ePZ	48				¾°	181144
	eSZ	1337					
TAV	iP!Z	182051.2		71.1	u		
RAL	iPZ	51.5			d		
SUL	iPZ	51.9			d		
RAB	iP!Z	52.0	0.3	23.0	u		
	iSEh	53.7					
WAN	iP!Z	52.0	0.2	29.0	u		
VUL	iPZ	52.1	0.4	14.5	u		
KET	iPZ	54.6	0.3	1.0	d		

					PEA NOVEMBER 1969	No. 44		
					DIST	H	REMARKS	
	T	A	GM					
	sec	mm						
<u>3rd November, 1969</u> continued								
VUL	iPZ	223045.0		3.0	u			
RAL	iPZ	45.2			u			
TAV	iPZ	45.6	0.4	1.0	u			
RAB	iPZ	46.0	0.4	2.0	d	3°	223001	M _L = 4.9
	iSE	3120.0						
WAN	iPZ	47.0	0.3	2.6	u			
<u>4th November, 1969</u>								
RAB: Strong microseismic activity throughout the day.								
TAV	iPZ	005526.6			u			Regional
TAV	iPZ	022836.6	0.3	1.9	d			
VUL	iPZ	36.7			u	1½°	022814	
	iSZ	55.8						
KET	e(P)Z	030402½			u			
VUL	iPZ	03.1	0.5	8.4	d			
TAV	iPZ	03.6		17.4	u			
RAL	iPZ	03.8	0.7	9.1	u	1½°	030339	
	iSZ	22.7						
RAB	eIPZ	04	0.5	3.2	d	1½°	030338	M _L = 4.6
	eSN	24						
SUL	iPZ	04.4			d	1½°	030338	
	iSZ	24.4						
WAN	iPZ	04.5		5.4	u	1¾°	030337	
	iSZ	25.0						
TAV	iPZ	033409.8			u			
VUL	iPZ	10.0			d	¾°	033354	
	iSZ	22.3						
RAB	ePZ	11			d	1°	033353	
	eSZ	24						
VUL	iPZ	081148.5			u	¼°	081141	
	iSZ	54.8						
RAL	ePZ	50			d			
TAV	ePZ	51			d			
RAB	ePZ	105302.5	1.4	1.4	u			Regional
RAB	iPZ	121530.4			d			"
KET	iPZ	134851.6			u			
VUL	iPZ	52.4			d			
TAV	iPZ	52.7	0.4	18.5	d	1¼°	134831	
	iSZ	4909.0						
RAL	iPZ	4852.7	0.4	15.5	d	1¼°	134831	
	iSZ	4909.0						



T	A	GM	PEA NOVEMBER 1969	No. 44
sec	mm		DIST H	REMARKS

4th November, 1969 continued

WAN	iP!Z	134852.8		10.8	d			
RAB	i!PZ	53.1			d	1¼°	134831	
	iSN	4907.6						
SUL	i!PZ	4853.1	0.4	6.1	d			
WAN	iPZ	145637.6		3.4	u			
RAB	iPZ	37.8	0.5	4.0	u	½°	145628	M _s = 2.9
	iSN	44.6						
RAL	iPZ	38.2			u	½°	145629	
	iSZ	45.5						
TAV	iPZ	38.5			u			
VUL	iPZ	39.0	0.4	2.3	u			
RAB	eZ/	154302			+			Traces
VUL	iPZ	173009.8			u			Regional
RAB	iPZ	184446.2	0.8	1.0	u			"
RAB	ePZ	220956½	0.7	2.2	d			Distant

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G.W. D'ADDARIO
SENIOR RESIDENT GEOLOGIST(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABAU.

13.11.69

12 JAN 1970

PEA NOV 1969 No. 45

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RABAUl	RAB	From: 4 NOV 1969	
		To: 11 NOV 1969	
RABAUl HARBOUR NETWORK	WAN	From: 4 NOV 1969	
		To: 11 NOV 1969	
	SUL		
	RAL		
	TAV		
	VUL		
KOBUAN	KOA	From: 4 NOV 1969	
		To: 11 NOV 1969	
KE RAVAT	KET	From: 4 NOV 1969	
		To: 11 NOV 1969	
ESA 'ALA	ESA	From: 28 AUG ^{APR} 1969	16 AUG 1969
		To: - 4 MAY 1969	28 AUG 1969
TABELE	TBL	From:	
		To:	
AGENAHAMBO	AGE	From:	
		To:	
WARIS	WAA	Not operational	
ULAMONA	UMA	Not operational	
PIVA	PIV	Not operational	

.....

STATION PERSONNEL

RAB Central Observatory, Rabaul.
 Senior Resident Geologist (Volcanology).....G.W. D'ADDARIO
 Seismologist.....M.G. MANCINI
 Geologist (Volcanology).....R.A. DAVIES
 (Commenced 12thNov.)
 Seismogram Reader.....C.M. LEES, J.C. DAVIES
 Senior Technical Officer.....N.O. MYERS
 Technical Officers.....R.J. CONWAY
 J. MATHISEN
 J. CARTER
 Volcanological Assistants.....L. TOPUE, V. KAITA
 F. DIRA
 Trainee Volcanological Assistants.....C. MATUPIT
 Technical Assistant.....P. DAIMBARI,
 M. SALAIAU
 Clerk.....D. COOK
 (Commenced 11thNov.)
 Typiste.....T. LOW
 Vacation Student.....A. YAUIEB

KET Keravat Outstation
 Observer (part-time).....J. BART

TBL Tabale Observatory
 Observer.....M. GAIAM

ESA Esa'ala Observatory
 Observer.....E. RAVIAN

AGE Agenahambo Observatory
 Observer (part-time).....B. KIRKE

DAW Hoskins field station
 Observer.....B. TALAI

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist(V), from whom additional information and photocopies of seismogram records from all stations may be obtained on request. Please address all communications to:-

Senior Resident Geologist(V),
 Central Observatory,
 P. O. Box 386,
RABAU,
 T.P.N.G.

T	A	GM	PEA NOVEMBER 1969	No. 45
sec	mm		DIST H	REMARKS

RABAU
4th October, 1969.

RAB	ePZ	220956½	0.7	2.2	d	
	RAL	iPZ	56.0	2.4	u	
	VUL	iPZ	56.0	0.7	2.4	d
	WAN	iPZ	56.4		u	
	TAV	ePZ	56½	0.6	2.4	d
RAB	iPZ	234606.0	0.4	2.4	u	
	RAL	iPZ	06.0	2.1	u	
	KET	ePZ	06.2	0.4	1.8	u
	TAV	iPZ	06.4		u	
	VUL	iPZ	06.8	0.8	3.1	u

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N.B.
..... Due to shortage of personnel only P phases will be read
and entered on PEA for November, 1969.

T A GM
sec mm

RABAU

5th November, 1969

RAB: Strong microseismic activity throughout the day.

KOA	iPZ	013032.9		23.5	u
KET	ePZ	3129			d
TAV	ePZ	30	0.5	1.4	d
VUL	iPZ	30.1			
RAB	iPZ	32.0	0.5	2.1	u
WAN	ePZ	32½			u
TAV	iPZ	014918.0		2.0	d
RAL	ePZ	19			
RAB	ePZ	19½			d
RAB	ePZ	042308			u
TAV	ePZ	08½	0.2	6.0	d
RAL	ePZ	08½			u
TAV	iPZ	055349.4	0.3	4.4	d
RAB	ePZ	50.4	0.5	2.2	u
WAN	iPZ	50.8			u
RAL	iPZ	51.0			d
VUL	iPZ	52.6	0.4	3.4	u
KET	iPZ	083553.0	0.3	1.0	d
VUL	ePZ	55.			u
RAL	ePZ	56			
WAN	iPZ	56.2	0.1	0.3	d
RAB	ePZ	56½			u
TAV	iPZ	57.3			u
WAN	iPZ	091918.4	0.2	1.5	u
RAB	iPZ	18.9	0.5	2.0	u
RAL	iPZ	19.0			u
TAV	iPZ	19.5		1.0	u
VUL	iPZ	20.0	0.2	3.0	u
KET	iPZ	20.7			d
WAN	iPZ	095224.8	0.4	1.6	u
RAB	iPZ	25.4	0.4	3.1	u
RAL	iPZ	25.5			u
TAV	iPZ	26.0		1.0	u
VUL	iPZ	26.6	0.4	2.9	u
TAV	iPZ	111327.1	0.8	11.4	d
VUL	iPZ	27.2		14.4	d
RAL	iPZ	27.8			u

T A GM
sec mm

5th November, 1969 continued

RAL	iPZ	111328.0	0.3	1.4	d
KET	iPZ	28.3	0.3	5.2	u
RAB	iPZ	28.4	0.5	3.3	d
SUL	iPZ	28.6			u
KOA	ePZ	59			d
KET	iPZ	112033.0	0.4	1.0	d
VUL	iPZ	33.6		3.9	u
WAN	iPZ	33.9			u
RAL	ePZ	34			
TAV	iPZ	34.1	0.3	2.7	u
RAB	iPZ	34.3	0.3	2.9	u
WAN	iPZ	115434.2	0.5	2.2	u
RAB	ePZ	34½	0.4	2.7	u
RAL	iPZ	34.8			u
TAV	iPZ	35.1		1.0	u
VUL	iPZ	36.1	0.3	2.4	u
KET	iPZ	36.8	0.2	1.0	d
RAB	iPZ	133220.0	0.3	3.3	d
WAN	ePZ	20½			d
RAL	ePZ	21			
TAV	iPZ	21.3		0.9	u
VUL	iPZ	22.1	0.2	2.0	u
WAN	iPZ	134046.7	0.4	36.2	u
RAB	i!PZ	47.1			u
SUL	iPZ	47.4	0.4	6.7	d
RAL	iPZ	47.4			u
TAV	i!PZ	47.7	0.2	24.4	u
VUL	iPZ	48.5	0.4		u
KET	iPZ	48.8	0.3	u	u
WAN	iPZ	140104.2		23.0	u
RAB	i!PZ	04.4	0.4		u
SUL	iPZ	04.7	0.6	5.1	u
RAL	iPZ	04.7		26.6	u
TAV	iPZ	05.0	0.3	14.4	u
VUL	iPZ	05.7	0.4	32.8	u
KET	iPZ	06.1	0.3	5.7	d
RAB	iPZ	144044.9	0.5	1.7	u
WAN	iPZ	45.0			d

T	A	GM	PEA	NOVEMBER	1969	No. 45
sec	mm		DIST	H		REMARKS

5th November, 1969 continued

RAL ePZ	144045½				
TAV iPZ	45.9		0.7		u
VUL iPZ	46.8	0.2	1.1		d
KOA ePZ	180702				d
RAL iPZ	07.7				d
WAN ePZ	08				d
RAB iPZ	08.0	1.1	0.6		u

6th November, 1969

RAL and TAV unserviceable from 0200 hours.

KET: Unavailable for study.

RAB ePZ/	021636				
RAB iPZ	032604.8	0.6	2.5		u
VUL ePZ	05		2.0		d
KOA ePZ	14½		2.0		d
RAB ePZ	033528	0.5	3.0		u
WAN ePZ	28		1.6		u
VUL ePZ	28½		1.0		u
VUL ePZ	041728½		29.0		u
WAN iPZ	28.9		2.0		d
SUL ePZ	29½	0.3	3.0		d
RAB iPZ	29.9	0.7	9.0		u
KOA iPZ	41½	0.5	4.0		u
VUL ePZ	051218		2.0		d
RAB iPZ	22.8	0.5	2.0		d
KOA ePZ	32	0.5	2.0		u
KOA iPZ	063426½		120.0		u
RAB iPZ	31.0		40.0		d
WAN iPZ	31.0	1.0	12.0		d
SUL ePZ	31	0.8	4.0		u
VUL iPZ	31.4		27.0		d
RAB iPZ	091120.2	0.4	1.2		d
VUL iPZ	122926.8				u
RAB ePZ	27½	0.5	2.6		u
WAN ePZ	27.6		1.2		d
VUL iPZ	134712.3	0.8	6.0		u

Distant
Record
fogged.

T	A	GM	PEA NOVEMBER 1969	No. 45
sec	mm		DIST H	REMARKS

6th November, 1969 continued

RAB	ePZ	134713½	0.5	0.8	d		
	KOA	iPZ	42		2.0	d	
	WAN	iPZ	161536.8		1.5	d	
RAB	iPZ	37.2	0.3	4.5	d		
	VUL	ePZ	37½	0.7	1.4	d	
RAB	ePZ	181215½	0.4	0.3	d		
	KOA	ePZ	20		2.0	d	
	VUL	iPZ	184311.7	0.3	8.0	u	
	WAN	ePZ	12.2		2.0	u	
RAB	ePZ	12.6	0.5	3.2	u		
RAB	ePZ	200351	0.3	1.2	d		
RAB	ePZ	203025	0.7	1.0	d	63°	Intermediate depth.
		LZ/	20.0	5.2			
		LN/	20.0	2.7			
		LE/	19.0	2.5			

7th November, 1969

RAB: Very strong microseismic activity between 0000 - 1000 hrs.(GMT).
 WAN, SUL and RAL unavailable from 0000 - 0700 hours.
 TAV: Records unavailable.

	VUL	iPZ	005927.0	0.4	5.7	u	
RAB	iPZ	29.0	0.3	5.0	u		
	KET	iPZ	050225.8			d	
	VUL	iPZ	27.0			u	
RAB	iPZ	28.0	0.3	6.0	d		
	KOA	iPZ	0301.0			u	
	VUL	iPZ	050820.9			d	
RAB	ePZ	22	0.3	4.0	d		
	RAL	ePZ	134834			u	
	WAN	ePZ	34.			d	
RAB	iPZ	34.2	1.2	7.0	d		
	VUL	iPZ	35.0	0.7	8.0	d	
	SUL	ePZ	35½			u	
	KOA	ePZ	4903			d	
	RAL	i!PZ	182522.0			d	
	WAN	i!PZ	22.2			d	
	VUL	i!PZ	22.4			d	
	SUL	iPZ	22.5			d	

T A GM
sec mm

7th November, 1969 continued

KET	iPZ	182522.5				u	
RAB	i!PZ	22.8				d	
KOA	iPZ	59.0				d	
VUL	ePZ	184714½					Deep
RAB	ePZ	15				d	
VUL	iPZ	185444.3	0.8	3.0		d	In coda of preceding shock.
RAL	ePZ	45				d	
RAB	iPZ	45.0	0.5	2.0		d	
KOA	ePZ	5502					
VUL	iPZ	203433.0	0.7	4.0		u	
WAN	iPZ	33.8	0.4	0.5		d	
RAL	ePZ	34					

8th November, 1969

RAB: microseismic activity between 0000 - 1240 hrs.(G.M.T.)

TAV: Not available for study.

KET	iPZ	014606½				u	
RAB	iPZ	08.1	0.8	2.0		d	
KOA	ePZ	22	1.0	9.0		d	
TBL	ePZ	020714	0.6	1.0		u	
RAB	iPZ	19.8	0.6	3.7		u	
KET	iPZ	022710.0	0.2	2.5		d	
RAB	iPZ	13.0	0.6	3.0		d	
RAB	iPZ	044133.4		4.0		d	
KET	iPZ	064335.0				d	
VUL	iPZ	37.0	0.3	4.0		d	
WAN	ePZ	37					
RAB	iPZ	38.5	0.5	3.6		(u)	
RAL	ePZ	38½					
TBL	iPZ	175402.0	0.3	2.0		u	
RAB	ePZ	46½					
KET	ePZ	46½					
WAN	ePZ	47					
RAL	ePZ	47					
VUL	iPZ	48.8	0.7	1.3		d	
SUL	ePZ	49½					

T A GM
sec mm

8th November, 1969 continued

RAB	iZ	2058	0.6	2.0		Man made disturbance.
	FZ	2100				
RAB	iZ	2115	0.6	2.0		" " "
	FZ	2116				
ESA	ePZ	215944	0.2	0.5	d	
RAL	ePZ	220014				
VUL	ePZ	16				
KET	ePZ	18½				
SUL	ePZ	18½				
RAB	ePZ	19			u	
WAN	ePZ	19				
KOA	ePZ	56			u	
RAB	iPZ	225507	0.5	1.1	(d)	Regional
ESA	ePZ	233123	1.0	1.0	u	
VUL	iPZ	24.0	0.8	1.0	u	
WAN	iPZ	24.2	1.0	1.0	d	
RAB	iPZ	24.3	0.9	2.0	u	"
KET	iPZ	24.6	0.9	4.9	d	
RAL	iPZ	25.0	0.9	1.0	d	
SUL	ePZ	26				
KOA	iPZ	57.0			u	

9th November, 1969

TAV: Not available for study.

RAB	ePZ	001427			d	Distant
VUL	ePZ	27			u	
ESA	ePZ	011450	0.9	0.5	d	
KET	iPZ	50.9	0.7	1.0	d	
RAB	iPZ	51.0	1.3	2.0	d	Regional
VUL	iPZ	51.0	1.0	0.8	d	
RAL	iPZ	51.4	0.9	1.0	d	
WAN	iPZ	51.4	0.8	0.8	d	
SUL	iPZ	51.7	0.8	1.0	d	
RAB	iPZ	012733.0	0.8	2.8	u	"
WAN	iPZ	33.0	0.4	1.0	d	
VUL	iPZ	33.0	0.7	1.4	d	
RAL	iPZ	33.1	0.8	1.5	d	
KET	iPZ	33.1	0.7	2.1	d	

PEA NOVEMBER 1969 No. 45
 DIST H REMARKS

9th November, 1969 continued

		T	A	GM	
		sec	mm		
KOA	iPZ	091123.2	0.7	23.0	d
ESA	iPZ	50.0	1.0	6.4	d
RAL	iPZ	1205.0	0.6	1.3	u
VUL	iPZ	05.1	0.9	4.0	u
RAB	iPZ	05.4	0.7	1.7	u
WAN	ePZ	05½			u
KET	iPZ	06.0	0.8	2.0	u
SUL	ePZ	07			u
WAN	iPZ	214808.1	0.5	11.8	d
RAB	iPZ	08.7			d
RAL	iPZ	08.7	0.8	25.0	d
SUL	iPZ	08.8	0.2	6.8	d
VUL	iPZ	10.0	0.8	10.0	d
KOA	ePZ	51			d
VUL	iPZ	221911.4	0.6	3.2	u
RAL	iPZ	225021.8			u
VUL	iPZ	22.6			d

10th November, 1969

RAB: Seismic activity throughout the day, very strong between 0000 - 0700 hours (G.M.T.)

RAB	eZ/	054228			+	Traces
TAV	iPZ	061736.6		4.7	u	
RAL	iPZ	36.9			d	
SUL	ePZ	37			d	
WAN	ePZ	38			d	
RAL	iPZ	062146.5			d	
TAV	iPZ	46.8			d	
SUL	iPZ	46.9			d	
WAN	iPZ	47.0			d	
RAB	iPZ	47.4			d	
VUL	iPZ	48.2			u	
KET	iPZ	48.2	0.3	1.2	u	
TAV	iPZ	081657.9			u	
SUL	ePZ	58				
RAL	iPZ	58.2			u	
KET	iPZ	090005.4	0.2	0.6	d	
VUL	iPZ	07.0	0.4	2.1	u	

T A GM
sec mm

10th November, 1969 continued

			T	A	GM	
			sec	mm		
RAB	iPZ	090008.2	0.5	2.0	u	
	WAN iPZ	08.4	0.4	2.7	d	
	SUL iPZ	08.5	0.4	2.0	d	
	RAL iPZ	08.8			d	
	TAV iPZ	09.0		1.8	u	
	KOA iPZ	27.0			u	
RAB	iPZ	092549.0	0.5	1.6	d	
	WAN iPZ	49.1	0.5	1.0	u	
	RAL iPZ	49.3	0.4	1.1	d	
	TAV iPZ	49.6		3.0	d	
	VUL ePZ	50½			d	
	TAV iPZ	133129.0	0.4	2.6	u	
	VUL iPZ	29.6	0.6	2.5	u	
RAB	iPZ	30.0	0.6	1.5	u	
	KET iPZ	30.2	0.4		u	
	KOA iPZ	48.3		3.0	u	
	TAV iPZ	150407.2			u	
	RAL ePZ	07½			d	
RAB	ePZ	08			u	
	KET ePZ	09½			d	
	KET iPZ	154459.4	1.0	1.2	u	
	VUL iPZ	4501.0	0.7	4.2	u	
	WAN iPZ	01.0			u	
RAB	ePZ	01½	1.2	6.7	d	
	TAV iPZ	02	1.3	3.2	d	
	RAL ePZ	02			d	
	SUL ePZ	02½			d	
	TAV iPZ	164057.0			d	
	VUL ePZ	59.9			d	
RAB	ePZ	4100			d	
	KET ePZ	00				
	RAL ePZ	00½			u	
	WAN ePZ	01.0			d	
	KOA ePZ	05		1.7	u	
RAB	eZ/	183656			+	Traces
	TAV iPZ	200121.4			d	
	VUL iPZ	21.8	0.4	1.4	u	
	RAL iPZ	22.0			u	
	KET iPZ	22.2			d	
RAB	iPZ	23.0			u	

T	A	GM	PEA NOVEMBER 1969	No. 45
sec	mm		DIST H	REMARKS

10th November, 1969 continued

WAN ePZ	200123½			u
KOA ePZ	33			u
TAV iPZ	203028.2	0.3	3.1	d
VUL iPZ	28.8	0.5	1.2	u
VUL iPZ	234440.0	0.4	4.0	u
WAN iPZ	41.0			u
RAL iPZ	41.1			u
RAB ePZ	42	0.5	7.0	u
TAV ePZ	42			u

11th November, 1969

RAB ePZ	084735			d	
TAV iPZ	35.0	0.4	2.8	u	
RAL ePZ	36	0.3	1.5	u	
VUL iPZ	36.0	0.4	4.0	u	
VUL iPZ	152427.1	0.8	39.0	u	
RAL iPZ	27.8	0.8	33.0	u	Azimuth from Rabaul N 215°
SUL iPZ	28.0	0.4	13.0	u	
TAV ePZ	28	0.7	53.0	u	
WAN iPZ	28.0	0.3	20.0	u	Felt Rabaul -
RAB iPZ	28.2			u N.E.	Intensity III - IV; 04°10'S, 152°10'E.
ESA iPZ	57.0			d	
TBL iPZ	2539.5	0.5	4.0	d	
VUL iPZ	221755.1	0.5	27.0	u	
WAN iPZ	55.5	0.5	20.1	u	
TAV iPZ	55.8	0.5		u	
RAL iPZ	56.0	0.5	22.0	u	
RAB iPZ	56.0	0.7	20.0	u	
TAV iPZ	234933.4	0.4	1.4	d	
RAL ePZ	33½			d	
VUL ePZ	34				
TAV ePZ	235720½				
VUL iPZ	21.5	0.3	1.1	d	

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T A GM
sec mm

28th April, 1969

ESA: Records unavailable for study.

29th April, 1969

ESA iPZ 103242.0

30th April, 1969

Nil Recorded

1st May, 1969

ESA ePZ	115814½	0.9	1.8	d			Distant
ESA ePZ	181247			d	4¾°	181136	
eSE/	1341½						

2nd May, 1969

ESA ePZ	162021	0.3	0.8	d	10½	161728	
iSN/	2219						

3rd May, 1969

ESA iPZ	104316.0			d	5½°	104255	
eSE/	4418½						

4th May, 1969

ESA ePZ	120722	0.3	0.5	d	3°	120626	
iSE/	0807						
ESA ePZ	124159½	1.0	1.0	d	22°	123709½	
eSN/	4445½						
ESA eiPZ	151800	0.8	6.0	u			Distant
ESA iPZ	172425.0	1.0	2.0	d			"
ESA ePZ	195259	0.4	0.7	d			Teleseism

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T	A	GM	PEA NOVEMBER 1969	No. 45
sec	mm		DIST H	REMARKS

16th October, 1969

ESA: Nil recorded.

17th, 18th, 19th October, 1969

ESA Record unavailable for study.

20th October, 1969

ESA iPZ	101934.0	0.4	1.8	u	2¼°	101901
iSN/	2001.0					

21st October, 1969

ESA iPZ	144321.0	0.5	4.0	u	7°	144147
iSE/	4438.0					

ESA ePZ	175732.	0.3	1.9	d	3½°	175638
iSN	5813.1					

ESA ePZ	184920.7					184810
iSE/	5013.0					

ESA iPZ	210431.0				69°	
eSN/	1320					

ESA ePZ	211459	0.9	1.0	d		Regional
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22nd October, 1969

ESA iPZ	060020.2	0.5	6.0	u	6½°	055854
iSN/	0134.0					

ESA iPZ	071320.1	0.5	4.0	d	5¼°	071203
iSE	1419.0					

ESA ePZ	230452½	1.0	1.0	d		Teleseism
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23rd October, 1969

ESA ePZ	025649½			d	19½°	025219
eSE/	030013					

ESA ePZ	131644	0.2	0.8	d	2½°	131605
iSE/	1713.0					

24th October, 1969

ESA ePZ	165404.5	0.2	1.3	d	4¾°	165251
iSE/	58.0					

ESA iPZ	214801.4	0.8	7.0	d	25°	214252
eSN/	5306					

25th October, 1969

ESA iPZ	085105.9	0.1	0.8	u	4½°	084957
iSN/	59.0					

T	A	GM	PEA NOVEMBER 1969	No. 45
sec	mm		DIST H	REMARKS

25th October, 1969 continued

ESA ePZ iSN/	203732 3806.1	0.7	2.9	u	2 $\frac{1}{4}$ ^o	203647
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26th October, 1969

ESA e(P)Z e(S)E/	035242 040324			d		Deep
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ESA ePZ eSN/	064446 5300	0.8	3.9	d	63 ^o	
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ESA ePZ iSN	180815 0909.1	0.3	1.3	d	4 $\frac{3}{4}$ ^o	180704
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ESA e(P)Z	213208 $\frac{1}{2}$	0.3	0.3	d		Distant
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27th October, 1969

ESA ePZ iSN/	184443 4536.9	0.3	0.7	d	4 $\frac{3}{4}$ ^o	184332
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ESA iPZ iSN/	194644.5 4729.0	0.2	0.4	d	3 $\frac{1}{4}$ ^o	194547
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28th October, 1969

ESA ePZ eSN/	115113.3 5219	0.2	0.3	d	6 ^o	114948
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(G.W. D'ADDARIO)
Senior Resident Geologist(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABAU.

19.11.69

PEA NOV 1969 NO. 46.

2 DEC 1969

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RABAUl	RAB9	From: 12 NOV 1969 To: 18 NOV 1969
RABAUl HARBOUR NETWORK	WAN	From: 12 NOV 1969 To: 18 NOV 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 12 NOV 1969 To: 18 NOV 1969
KERAVAT	KET	From: 12 NOV 1969 To: 18 NOV 1969
ESA 'ALA	ESA	From: To:
TABELE	TBL	From: 13 OCT 1969 To: 7 NOV 1969
AGENAHAMBO	AGE	From: To:
CAPE HOSKINS	DAW	From: To:
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

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T A GM
sec mm

RABAU
12th November, 1969

Rab and Harbour Network switched on Secondary Chronometer due to faulty W.W.S.S. chronometer.

RAB Very strong microseismic activity throughout the day.

KET Z component record partly fogged.

VUL	iPZ	014843.5			d
RAB	ePZ	44			d
TAV	iPZ	44.1	0.2	1.2	d
RAL	iPZ	44.9	0.4	1.5	u
VUL	ePZ	043750½			d
TAV	ePZ	52½			d
RAL	ePZ	52½			d
RAB	ePZ	53			
KOA	ePZ	052827½			d
TAV	ePZ	40			d
RAL	ePZ	41			d
RAB	ePZ	42			u
VUL	iPZ	063537.7			d
RAL	ePZ	39½			d
TAV	iPZ	38.6	0.2	7.9	u
RAB	ePZ	40			
WAN	ePZ	074541		2.0	u
RAB	ePZ	41½	0.3	3.8	d
TAV	ePZ	42			d
RAL	ePZ	42½			d
VUL	iPZ	075617.9	0.3	1.8	d
TAV	iPZ	18.0		15.0	d
RAB	ePZ	18½			
RAL	ePZ	18½			u
TAV	ePZ	084049½			d
VUL	ePZ	50			u
RAL	ePZ	51½			u
TAV	iPZ	113005.9		5.0	d
RAL	iPZ	06.0		1.0	u
RAB	ePZ	07		2.0	
VUL	iPZ	07.3		1.0	u
KOA	ePZ	42½		1.2	d
KET	iPZ	132141.3	0.5	21.4	d
VUL	iPZ	42.2	0.2	20.0	d
TAV	iPZ	43.0	0.2	29.0	d

T	A	GM	PEA NOVEMBER 1969	No. 46
sec	mm		DIST H	REMARKS

12th November, 1969 continued

RAL	iPZ	132143.2	1.0	21.8	d
RAB	iPZ	43.5	0.3	3.1	d
WAN	iPZ	44.0			u
SUL	iPZ	44.0	0.5	8.0	u
KOA	ePZ	2213			
KOA	iPZ	135319.0			u
VUL	iPZ	135518.0	0.8	22.0	u
KET	iPE	18.6			d
RAL	iPZ	19.0	0.8	16.7	d
TAV	iPZ	19.0	0.2	21.0	d
RAB	iPZ	19.4	0.7	2.8	d
SUL	iPZ	19.8	0.7	6.8	u
WAN	ePZ	20			
KOA	ePZ	49		4.9	d
KET	iPZ	151302.3	0.5	19.0	d
VUL	iPZ	02.7	0.7	29.8	d
TAV	iPZ	03.2			u
WAN	iPZ	03.6	0.5	1.8	d
RAB	iPZ	03.8	0.8	6.0	d
RAL	iPZ	03.9	0.6	12.5	d
SUL	iPZ	04.1	0.6	13.0	u
KOA	ePZ	32			d
KET	iPZ	154109.6	1.0	17.0	d
VUL	iPZ	12.0			d
WAN	iPZ	12.9	0.3	12.1	d
RAB	iPZ	13.0	0.7	37.6	d
SUL	iPZ	13.0	0.5	4.7	d
RAL	iPZ	13.1	0.6	12.6	d
TAV	iPZ	13.2	1.0	24.5	d
ESA	iPZ	14.0		15.0	d
TBL	iPZ	19.0	0.4	1.0	d
KOA	iPZ	51			
KET	iPZ	162039.2	0.6	5.1	d
VUL	iPZ	40.5	0.6	11.0	u
TAV	iPZ	40.9	0.7	8.2	d
WAN	ePZ	41½			
RAB	iPZ	41.7	0.3	1.2	(u) Local

Felt at Rabaul INT. III - IV
 04°10'S, 152°10'E;
 Kilenge INT. III - IV
 05°30'S, 148°20'E.

T A GM
sec mm

12th November, 1969 continued

RAL	iPZ	162041.7	0.7	5.0	u	
SUL	iPZ	41.8	0.5	2.1	u	
VUL	iPZ	175356.0	0.3	7.0	d	
RAB	iPZ	56.9	0.5	3.0	d	Local
WAN	iPZ	57.0		1.4	d	
RAL	iPZ	57.0	0.6	1.0	d	
TAV	iPZ	57.0	0.3	1.0	u	
SUL	ePZ	57½				
RAB	ePZ/	191938	LZ/20.0	19.0		Distant
			LN/20.0	13.0		
			LE/20.0	08.0		
KOA	iPZ	46.0	0.5	6.0	u	
ESA	iPZ	2018.2	0.2	3.0	u	
VUL	iPZ	193430.4	0.2	2.0	d	
RAB	ePZ	31			d	
WAN	ePZ	33½				
TAV	ePZ	36				
KOA	ePZ	3501			u	
KET	iPZ	202918.0	0.8	3.0	u	
TAV	iPZ	19.5	0.2	6.0	u	
VUL	iPZ	19.8	0.1	3.8	u	
RAL	iPZ	19.9	0.7	3.0	u	
WAN	iPZ	20.2	0.7	1.1	u	
RAB	iPZ	20.6				
KET	iPE	205419.0			d	
TAV	iPZ	23.0	0.7	32.1	d	
RAB	ePZ	23½	0.8	33.6	d	
WAN	iPZ	23.7	1.0	25.0	d	
RAL	iPZ	23.8	1.0	37.0	d	
SUL	iPZ	24.1	0.7	25.0	d	
KOA	ePZ	53			u	
ESA	iPZ	5507.0	0.2	0.2	d	
VUL	iPZ	221940.5	0.2	14.9	d	
TAV	iPZ	41.0	0.2	12.0	d	
RAL	iPZ	41.5	1.0	4.0	d	
RAB	iPZ	41.9			d	
WAN	ePZ	42			u	

13th November, 1969

WAN ePZ 024305 d

T	A	GM(
sec	mm	

13th November, 1969 continued

RAB	ePZ	024306			d	
	VUL	ePZ	06	1.0	7.4	d
	TAV	iPZ	06.0	0.3	18.0	d
	RAL	ePZ	07.0			u
	KOA	iPZ	18.0	1.0	43.0	d
RAB	iPZ/	050947				d
RAB	iPZ	081032.7	0.6	2.0		u
RAB	eZ/	085050				+
						Traces
	KET	iPZ	095146.0	02.	13.0	d
	VUL	iPZ	47.5	0.4	4.2	u
	SUL	ePZ	47½			u
	RAL	ePZ	48	0.8	5.0	u
	TAV	iPZ	48.0			u
	WAN	ePZ	48			u
RAB	ePZ/	48½	0.5	7.0		u
	KOA	ePZ	5215			u
	KET	iPZ	101459.9	0.2	12.5	u
	VUL	iPZ	1500.1	0.7	20.0	u
	TAV	iPZ	01.0	0.8	13.0	u
	RAL	iPZ	01.3	1.8	10.0	u
	WAN	ePZ	01.4			u
RAB	eiPZ	01.6	0.5	17.0		u
	SUL	ePZ	02			u
	KOA	ePZ	29			d
	VUL	iPZ	120220.4	0.7	3.2	d
RAB	iPZ	21.0	0.5	7.0		d
	TAV	ePZ	22			u
	KOA	iPZ	131343.0	0.2	31.0	u
RAB	ePZ/	1517				u
	VUL	ePZ	162918			d
	TAV	iPZ	21.8			d
RAB	iPZ	21.8				u
	VUL	ePZ	202844			d
RAB	ePZ	45				u
	VUL	ePZ	210221			u
	TAV	ePZ	21			d

T	A	GM	PEA	NOVEMBER	1969	No. 46
sec	mm		DIST	H		REMARKS

13th November, 1969 continued

RAL	ePZ	210221				d
RAB	ePZ	22				d

14th November, 1969

RAB: Strong microseismic activity between 0400 - 0700 hrs. (G.M.T.).

TAV	ePZ	000610½		1.0		d
RAB	ePZ	12				
RAL	ePZ	12				d
VUL	ePZ	12	0.5	1.2		d
KOA	ePZ	23				d
TAV	ePZ	040226				u
RAB	ePZ	27	0.7	2.0		d
WAN	ePZ	27½				u
RAL	iPZ	27.9	0.6	2.0		d
TAV	ePZ	072434				d
RAB	ePZ	34½		5.3		d
WAN	ePZ	34½				d
RAL	ePZ	34½				d
VUL	ePZ	34½		3.8		d
KOA	e(P)Z	074342				d
ESA	iPZ	4408.3	0.3	31.0		
TAV	ePZ	15½				d
SUL	ePZ	16	0.8	1.1		d
RAL	iPZ	16.4	1.0	2.0		u
VUL	ePZ	16½				d
RAB	ePZ	17	1.0	5.0		d
WAN	ePZ	17				
KET	ePZ	17				d
WAN	ePZ	074646	1.0			d
RAL	ePZ	46				
TAV	ePZ	46				
RAB	ePZ	47	1.1	3.0		u
VUL	iPZ	47.7	0.7	2.3		d
KET	ePZ	48				u
VUL	ePZ	074900½				u
SUL	ePZ	00½				u
WAN	iPZ	00.9				u
RAL	iPZ	00.9				d
RAB	iPZ	01.2	0.2	2.0		d
TAV	iPZ	01.7		9.4		d

T A GM
sec mm

14th November, 1969 continued

WAN	iPZ	074906.1				u	
RAB	iPZ	07.5	0.2	26.0		u	
TAV	iPZ	075013.9	1.0			d	
RAB	ePZ	14				d	
WAN	ePZ	14				d	
VUL	ePZ	14½				u	
RAL	iPZ	15.0				u	
KET	ePZ	15½				d	
KOA	ePZ	112727				u	
VUL	iPZ	2823.4	0.4	0.8		u	
TAV	iPZ	23.8	0.5			d	
RAL	ePZ	24					
WAN	ePZ	25				d	
RAB	ePZ	26				d	
KET	ePZ	26½				u	
RAB	eZ/	164528				-	Traces
KET	ePZ	172153				d	
VUL	ePZ	54½				d	
WAN	ePZ	55				u	
RAL	ePZ	55				u	
RAB	ePZ	56				u	
KOA	ePZ	56					
TAV	ePZ	56½					
KET	ePZ	181758½				u	
VUL	iPZ	1800.5		5.0		u	
WAN	ePZ	01½				d	
RAB	iPZ	01.8				u	
WAN	ePZ	184233				u	
RAB	ePZ	33½	0.6	1.0		u	Distant
RAL	ePZ	33½				d	
TAV	ePZ	34				u	
RAB	iPZ	235115.1	0.5	3.0		u	
VUL	iPZ	15.1	0.5	3.2		u	

15th November, 1969

RAL	iPZ	014521.0				d	
VUL	iPZ	21.7	0.4	5.8		d	
RAB	iPZ	21.8	0.4			d	
KET	iPZ	21.8				u	

T A GM
sec mm

15th November, 1969 continued

	T	A	GM		
	sec	mm			
VUL ePZ	042232.8	0.4	1.2	d	
DAW eiPZ	062212½			u	
VUL ePZ	41.8		2.0	d	Regional
VUL ePZ	071616			d	
KET iPZ	080403.6	0.4	10.6	u	
VUL iPZ	04.6	0.8	16.0	u	
RAL iPZ	05.0			d	
SUL ePZ	05.0			d	
WAN iPZ	05.0			d	
RAB iPZ	05.4	0.8	12.5	u	
TAV iPZ	05.4			d	
DAW iPZ	06½			(d)	
ESA iPZ	50.0	0.5	1.0	u	
TAV ePZ	091114.0			d	
RAL ePZ	15.0			u	
VUL iPZ	15.5	0.6	3.4	u	
RAB iPZ	19.0			u	
KET ePZ	122535.2			u	
VUL ePZ	35.8			u	
RAL ePZ	36.0			u	
TAV ePZ	36			u	
RAB iPZ	36.8			u	
DAW ePZ	173320½			u	
KET iPZ	39.8			u	
VUL iPZ	41.7		8.8	u	
TAV ePZ	42			u	
RAL ePZ	42		0.8	u	
WAN iPZ	42.4		5.2	u	
RAB iPZ	42.8	0.5	0.6	d	
VUL iPZ	224112.7	0.4	9.8	u	
RAB ePZ	13				Regional
WAN ePZ	13				
TAV ePZ	13½			d	
RAL iPZ	13.7	0.6	1.0	u	
TAV iPZ	224543.0	0.4	2.3	d	
RAL iPZ	43.1	0.6	2.0	d	
WAN iPZ	43.5	0.7	6.0	u	
RAB iPZ	43.7	0.6	6.0	d	
VUL iPZ	43.9	0.4	10.0	d	

T A GM
 sec mm

15th November, 1969 continued

SUL ePZ 224544

16th November, 1969

Observatory primary time restored on 16th at 0000hrs. (G.M.T.).

KOA ePZ	054033				
VUL iPZ	4116.1	0.4	2.0	d	
TAV ePZ	17½				
WAN ePZ	19			d	
RAB iPZ	19.4			d	
RAL iPZ	20.0	0.4	1.9	u	
SUL ePZ	21				
KET iPZ	22.0	0.4	2.0	d	
ESA ePZ	35½	0.2	0.2	u	
KOA ePZ	054412			u	
KET ePZ	56			d	
TAV iPZ	56.1	0.7	4.8	u	
VUL iPZ	56.4	0.8	6.1	u	
RAB iPZ	56.5	0.8	1.2	d	
WAN iPZ	56½			d	
RAL iPZ	57.0	0.6	1.1	u	
SUL ePZ	57			d	
ESA ePZ	4515	1.2	1.0	d	
DAW iPZ	061613½		30.0	d	
KET iPZ	19.3			d	
VUL iPZ	20.3			d	
RAL iPZ	21.0	1.0	25.3	d	
TAV iPZ	21.0	0.8	42.0	d	
WAN iPZ	21.1	0.9	31.0	d	
SUL iPZ	21.1			d	
RAB iPZ	21.5	1.0	36.0	d	
ESA iPZ	56.0	0.5	1.5	d	
KOA ePZ	58			u	
KOA ePZ	115255				
VUL ePZ	56½			u	
TAV ePZ	57½				
RAL iPZ	5300			d	
RAB iPZ	01.0			u	
WAN iPZ	01.9			d	
SUL ePZ	02				

T A GM
sec mm

16th November, 1969 continued

KET	ePZ	115304.0							d
DAW	iPZ	121934							(d)
KET	iPZ	2006.3							(d)
VUL	iPZ	08.4							d
RAB	iPZ	09.0	0.7	1.2					d
RAL	iPZ	09.0							u
WAN	iPZ	09.1	0.5	2.1					u
TAV	iPZ	09.4	0.8	1.0					u
SUL	ePZ	10							d
TAV	iPZ	152222.9							d
RAL	ePZ	23							d
WAN	ePZ	23½							
SUL	ePZ	23½							d
VUL	iPZ	23.9		5.0					u
RAB	iPZ	24.0	0.4	1.5					u
KET	iPZ	25		2.0					d
TAV	ePZ	162748							u
RAL	ePZ	48½							
RAB	ePZ	49	0.6	1.0					d
WAN	ePZ	49							d
RAB	eZ/	164144½							+
									Traces
TAV	iPZ	171106.0		5.5					d
RAL	iPZ	06.5	0.3	1.0					u
VUL	ePZ	07.0	0.2	2.0					d
RAB	ePZ	07	0.5	1.1					u
WAN	ePZ	07							u
TAV	iPZ	180012.5	0.4	1.0					u
VUL	ePZ	13½							
RAL	ePZ	14							
RAB	ePZ	15							
									Teleseism
WAN	ePZ	15							
DAW	iPZ	185508½							u
KET	ePZ	36½							
RAB	iPZ	38.0	0.4	2.0					d
VUL	iPZ	38.1	0.5	1.0					d
WAN	iPZ	38.2	0.4	1.0					d
TAV	ePZ	38½							d
RAL	ePZ	39							d
TBL	ePZ	201008	0.5	2.0					d

			PEA NOVEMBER 1969		No. 46	REMARKS
T	A	GM	DIST	H		
sec	mm					
<u>16th November, 1969</u> continued						
ESA	ePN	201013	0.2	0.1	u	
KET	iPZ	17.2	0.4	7.0	u	
VUL	iPZ	19.0	0.3	4.0	d	
WAN	iPZ	19.5	0.4	8.0	d	
RAB	iPZ	20.0	0.3	31.0	d	Felt Kilenge INT. II - III 05°30'S, 148°20'E; Siassi (Umboi Is.) INT. V approx. 05°53'S, 147°03'E; Fingshafen INT. IV 06°34'S, 147°51'E. X
RAL	iPZ	20.0	0.9	10.0	d	
SUL	iPZ	20.2	0.6	7.8	u	
TAV	iPZ	20.2	0.6	15.8	d	
KOA	iPZ	59.2			u	
TAV	iPZ	230925.0	0.4	1.1	d	
VUL	iPZ	27.0	0.4	1.8	d	
RAL	ePZ	27½			u	
KOA	ePZ	36½				
VUL	iPZ	231405.4	0.5	4.4	u	
TAV	ePZ	06	0.3	3.7	d	
RAL	iPZ	07.3	0.2		d	
WAN	ePZ	07½				
RAB	ePZ	08		2.0	d	
KOA	ePZ	25½		2.4	d	
<u>17th November, 1969</u>						
RAB:	Strong microseismic activity between 0000 - 0800 hrs. (G.M.T.).					
KET:	Very strong microseismic activity throughout the day.					
KOA	iPZ	014314.0			d	
RAL	iPZ	57.4			u	
VUL	iPZ	57.5	0.4	1.8	u	
TAV	ePZ	57½			d	
RAB	ePZ	58			d	
RAB	eZ/	035903½			+	Traces
TAV	iPZ	070317.4	0.3	4.1	d	
RAL	iPZ	17.8			d	
VUL	e(P)Z	19			d	
TAV	iPZ	090527.4	0.3	6.5	u	
RAL	iPZ	28.0			u	
VUL	iPZ	30.0			d	

T A GM
sec mm

17th November, 1969 continued

T	A	GM	PEA NOVEMBER 1969		No. 46
sec	mm		DIST	H	REMARKS
KET ePZ	090535				(d)
KET ePZ	094835½				d
VUL iPZ	36.0				u
TAV ePZ	37				
VUL iPZ	111532.0	0.3	1.0		u
TAV iPZ	32.0		2.0		u
RAL ePZ	33				u
TAV iPZ	123716.3	0.2	2.5		d
RAL iPZ	16.8				d
VUL iPZ	17.4				u
RAB ePZ	18				u
TAV iPZ	124116.4		4.0		d
RAL iPZ	16.5				u
RAB ePZ	17				d
WAN ePZ	17				u
VUL iPZ	17.7				u
VUL iPZ	125007.4	0.3	1.5		u
TAV iPZ	07.8	0.4			d
SUL ePZ	08	0.4			d
RAB ePZ	08½				d
WAN ePZ	08½				
KET ePZ	08½				d
RAL ePZ	09	0.3	1.1		d
RAB eZ/	131217½				+
RAB iZ	1313	0.5	2.0		
FZ	1318				Traces
RAL iZ	1313	0.5	1.0		Harmonic disturbance
FZ	1318				" "
SUL iZ	1313	0.5	1.0		" "
FZ	1318				" "
WAN iZ	1313	0.5	1.0		" "
FZ	1318				" "
KET ePZ	134917				u
TAV eiPZ	18				u
VUL iPZ	18.6	0.3	1.6		u
RAL iPZ	18.7				u
RAB ePZ	20		1.0		u
KOA iPZ	35.2				(d)
RAB ePZ	144712½				u

T A GM
sec mm

17th November, 1969 continued

VUL	iPZ	144712.6	0.4		u	
TAV	ePZ	13			u	
VUL	eiPZ	145212			u	
KET	ePZ	12			u	
TAV	iPZ	12.3			u	
RAB	ePZ	12½			u	
SUL	ePZ	12½			u	
WAN	iPZ	13.0			u	
RAL	iPZ	13.4		2.2	u	
KET	ePZ	180007½			d	
RAB	ePZ	12			d	Distant
RAB	eZ/	180105			-	Traces
TAV	iPZ	185955.4	02.	4.0	d	
RAL	ePZ	55½			u	
RAB	ePZ	56			u	
VUL	ePZ	56½			u	

18th November, 1969

RAB	e(P)Z/024020				u	Distant
RAB	eZ/	053314			-	Traces
RAB	ePZ	091027	0.4	0.5	u	
TAV	ePZ	27.2	0.2	1.2	u	
RAL	ePZ	27.7	0.4	1.2	u	
VUL	ePZ	28.1	0.7	1.1	u	
KOA	ePZ	39		1.5	u	
KET	ePZ	164221.1	0.5	4.8	u	
VUL	iPZ	21.7	0.5	6.0	d	
RAL	iPZ	21.8	0.5		d	
WAN	ePZ	21.8	0.4	0.4	u	
RAB	iPZ	21.9	0.7	1.2	u	
TAV	iPZ	22	0.4	7.0	d	
SUL	ePZ	22.3	0.7	1.0	u	
RAB	ePZ/	205241			u	Distant
KET	iPZ	174057.0			u	
VUL	iPZ	57.4	0.5	7.0	u	
TAV	iPZ	57.8	0.5	8.8	u	
RAL	iPZ	58	0.8	23.0	u	

T	A	GM	PEA NOVEMBER 1969	No. 46
<u>sec</u>	<u>mm</u>		DIST H	REMARKS

18th November, 1969 continued

SUL	iPZ	174058	0.4	4.0	u
RAB	iPZ	58	0.8	16.8	u
WAN	iPZ	58.2	0.1	7.0	u
DAW	eiPZ	4107	0.5	1.0	d
KOA	iPZ	23	0.5	2.3	u

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(G.W. D'ADDARIO)
Senior Resident Geologist(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABUL.

26.11.69

TABELE

Records faulty due to electrical plant from 19th - 25th.

13th October, 1969

TBL ePZ	070131½	0.4	1.0	u	Near
TBL iPZ	200931.8	0.5	1.3	d	

14th October, 1969

TBL iPZ	010647.5	0.5	7.1	d	
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15th October, 1969

TBL iPZ	021306.5	0.4	1.0	u	Regional
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16th October, 1969

TBL NIL RECORDED

17th October, 1969

TBL NIL RECORDED

18th October, 1969

TBL NIL RECORDED

19th October, 1969

TBL NIL RECORDED

20th October, 1969

TBL NIL RECORDED

21st October, 1969

TBL NIL RECORDED

22nd October, 1969

TBL iPZ	071409.0	0.4	1.0	d	Near
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23rd October, 1969

TBL ePZ	112331			u	"
TBL IZ	1533	0.5	3.0		Continuous tremor due to the flooding in the creek.
FZ	1652				

T	A	GM	PEA NOVEMBER 1969	No. 46
sec	mm		DIST H	REMARKS

24th October, 1969

TBL NIL RECORDED

25th October, 1969

TBL iPZ 160214.9 0.4 1.0 d

26th October, 1969

TBL NIL RECORDED

27th October, 1969

TBL NIL RECORDED

28th October, 1969

TBL NIL RECORDED

29th October, 1969

TBL NIL RECORDED

30th October, 1969

TBL iPZ 125850.6 0.5 3.0 d

TBL iPZ 175228.0 0.4 4.0 u

TBL ePZ 183957 0.4 1.0 d

31st October, 1969

TBL ePZ 015644 0.5 1.0 d

TBL ePZ 030229 0.4 1.0 d

TBL ePZ 043126½ 0.4 1.0 u

1st November, 1969

TBL NIL RECORDED

2nd November, 1969

TBL iPZ 070752.1 0.5 9.3 u

Regional

TBL iPZ 071208.8 0.8 2.0 u

3rd November, 1969

TBL IZ 0012 0.6 3.5 Continuous tremor
FZ 0214

T	A	GM	PEA NOVEMBER 1969	No. 46
sec	mm		DIST H	REMARKS

4th November, 1969

TBL	iPZ	121327.5	0.5	2.3	d
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5th November, 1969

TBL		NIL	RECORDED		
-----	--	-----	----------	--	--

6th November, 1969

TBL		NIL	RECORDED		
-----	--	-----	----------	--	--

7th November, 1969

TBL		NIL	RECORDED		
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PEA NOV 1969 NO. 47

12 DEC 1969

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RABAUl	RAB	From: 19 NOV 1969 To: 25 NOV 1969
RABAUl HARBOUR NETWORK	WAN	From: 19 NOV 1969 To: 25 NOV 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 19 NOV 1969 To: 25 NOV 1969
KERAVAT	KET	From: 19 NOV 1969 To: 25 NOV 1969
ESA 'ALA	ESA	From: 25 NOV 1969 To:
TABELE	TBL	From: To:
AGENAHAMBO	AGE	From: To:
HOSKINS	DAW	From: 19 NOV 1969 To: 25 NOV 1969
KIMBE	GAB	From: 19 NOV 1969 To: 22 NOV 1969
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

STATION PERSONNEL

RAB	<u>Central Observatory Rabaul.</u>	
	Senior Resident Geologist (Volcanology).....	G.W. D'ADDARIO
	Seismologist.....	M.G. MANCINI
	Geologist (Volcanology).....	R.A. DAVIES
	Seismogram Readers.....	C.M. LEES J.C. DAVIES
	Senior Technical Officer.....	N.O. MYERS
	Technical Officers.....	R.J. CONWAY S.J. MATHISEN J.E. CARTER
	Volcanological Assistants.....	L. TOPUE, V. KAITA F. DIRA
	Trainee Volcanological Assistants.....	C. MATUPIIT
	Technical Assistants.....	M. SALAIAU
	Clerk.....	D. COOK
	Typiste.....	T. LOW
	Vacation Students.....	A. YAUIEB P. BARIS P.M. LEITAO
KET	<u>Keravat Outstation</u>	
	Observer (part-time).....	J. BART
TBL	<u>Tabele Observatory</u>	
	Observer.....	M. GAIAM
ESA	<u>Esa'ala Observatory</u>	
	Observer.....	E. RAVIAN
AGE	<u>Agenahambo Observatory</u>	
	Observer (part-time).....	B. KIRKE
DAW	<u>Hoskins Field Station</u>	
	Observer.....	R. TATAI
GAB	<u>Kimbe Field Station</u>	
	Observer.....	P. DAIMBARI

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist (V), from whom additional information and photocopies of seismogram records from all stations may be obtained on request. Please address all communications to:-

Senior Resident Geologist (V)
 Central Observatory,
 P. O. Box 386,
RABAU
 T.P.N.G..

T	A	GM	DIST	H	REMARKS
sec	mm				

Keravat Delayed KET records.

28th October, 1969,

KET iP!Z	114958.6				d
KET iPZ	120630.4	0.3	1.0		u
KET iPZ	121417.6	0.2	1.4		u
KET iPZ	121649.6	0.4	4.2		d
KET iPZ	125445.8	0.3	0.6		u
KET iPZ	141307.2	0.2	0.8		u
KET iPZ	142533.8	0.3	0.4		u
KET ePZ	144049	0.3	0.2		d
KET iPZ	153226.8	0.2	1.4		u
KET ePZ	154236.4	0.4	0.4		d

30th October, 1969.

KET ePZ	105235	0.8	0.4		d
KET iPZ	115318.8	0.1	0.4		u
KET ePZ	130032½	1.3	0.6		d
KET ePZ	150458	0.4	0.4		u
KET iPZ	170625.4	0.2	1.8		u
KET ePZ	175410	1.4	1.2		u

31st October, 1969.

KET ePZ	030342	0.8	2.4		d
KET iPZ	043052	0.4	3.1		d
KET iPZ	073320.0	1.0	2.0		u
KET ePZ	114313	1.2	1.0		d

6th November, 1969.

KET iPZ	041728.2	0.3	2.6		u
KET iP!Z	063432.2				d
KET iPZ	134713.4				d

T A GM
sec mm

RABAU
19th November, 1969

TAV	ePZ	061530	0.4	1.2	d
RAB	ePZ	30½	0.4	0.6	d
RAL	ePZ	33	0.3	1.2	d
RAL	iPZ	172917½			
TAV	iPZ	17.8			
VUL	iPZ	17.9	0.4	9.0	d
RAB	iPZ	18.4	0.4	1.0	u
KET	ePZ	18½	0.3	1.4	u
SUL	iPZ	18.8			u
WAN	iPZ	19			d
DAW	ePZ	42	0.4	0.8	u
TAV	iPZ	185913.0	0.2	3.2	u
SUL	iPZ	13.0	0.3	2.8	d
RAB	ePZ	13½	0.5	0.4	u
VUL	iPZ	13.0	0.3	2.8	d
KET	ePZ	13½			d
KOA	ePZ	26			u
DAW	iPZ	29	0.4	1.8	d
KOA	iPZ	203854			d
DAW	iPZ	57½			d
KET	iPZ	3900.8			
VUL	iPZ	02.0			d
WAN	iPZ	03.0	0.3	8.4	u
TAV	iPZ	03.1	0.4	11.2	u
RAL	iPZ	03.2	0.5	12.5	u
SUL	iPZ	03.6	0.3	1.8	d
RAB	iPZ	03.8			u

20th November, 1969.

KET	iPZ	060337.0			u
VUL	iPZ	37.4	0.8	8.6	d
TAV	iPZ	38.0	0.6	4.8	u
RAL	iPZ	38.8	0.5	12.0	u
RAB	iPZ	39.0	0.5	4.0	u
KET	ePZ	095544	0.5	4.0	d
RAL	ePZ	44½	0.5	0.7	d
WAN	ePZ	44½			
VUL	iPZ	44.7	0.6	1.1	d
RAB	iPZ	44.8	0.5	2.5	d
TAV	iPZ	45.0	0.7	0.9	d
KOA	ePZ	5606½			d

Regional

Regional

			T sec	A mm	GM	DIST	H	REMARKS
<u>21st November, 1969,</u>								
TBL	ePZ	021439	0.4	1.0				d
DAW	ePZ	1515½						d
ESA	ePZ	20	0.7	0.5				u
RAL	ePZ	26						d
TAV	ePZ	27						d
KET	ePZ	27						d
RAB	ePZ	27½	1.0	2.0				u
WAN	ePZ	28						d
VUL	ePZ	29						d
KOA	ePZ	50	0.3	1.0				d
DAW	ePZ	024333½						u
RAB	ePZ	4450						d
TAV	ePZ	50						d
VUL	ePZ	50						d
RAL	ePZ	51½						u
WAN	ePZ	52						d
TAV	ePZ	040956						d
RAL	iPZ	56.5						u
RAB	ePZ	57	0.7	3.0				d
RAB	ePZ	070757						d
RAL	ePZ	58						d
VUL	iPZ	59.0	0.4	3.0				u
TAV	iPZ	59	0.4	4.7				d
RAB	ePZ	072940						d
WAN	ePZ	40						u
RAL	ePZ	41						u
TAV	ePZ	42	0.9	1.2				u
VUL	ePZ	42						u
DAW	ePZ	51						d
ESA	ePZ	3047	0.7	0.6				u
KOA	ePZ	3120						u
TAV	iPZ	073434.5	0.2	3.0				d
VUL	iPZ	34.5	0.3	5.1				d
RAL	ePZ	34½						u
WAN	iPZ	35.0						d
RAB	ePZ	35	0.5	2.0				d
RAB	ePZ/	082804						u
RAB	ePZ	092522						d

Teleseism

			T	A	GM	DIST	H	REMARKS
			sec	mm				
<u>21st November, 1969. contd.</u>								
RAB	ePZ	124514						d
	VUL ePZ	15						u
	VUL iPZ	150105.5						d
RAB	iPZ	06.0	1.0	2.0				u
	WAN ePZ	06						u
	RAL ePZ	06	0.7	3.0				d
	TAV iPZ	06.5						d
	DAW iPZ	46.4						u
	TAV iPZ	171349.5						d
	VUL iPZ	49.5	0.7	4.0				d
RAB	ePZ	50	0.3	1.2				u
	WAN ePZ	50						d
	RAL ePZ	50	0.7	3.0				d
	KOA iPZ	1402						d
	VUL iPZ	202913.0	0.9	14.0				u
	RAL iPZ	14.0	0.8	6.7				u
	SUL ePZ	14						d
	WAN iPZ	14.1	0.8	2.5				u
RAB	iPZ	14.2	0.7	4.8				u
	TAV iPZ	14.2		19.7				d
	KET iPZ	14.5	0.8	7.0				u
	DAW ePZ	22½						u
	VUL iPZ	204540.0	0.4	2.0				u
	WAN iPZ	41.0	0.7	2.0				u
	RAL iPZ	41.0	0.5	9.0				u
	SUL ePZ	41	0.4	6.0				d
	TAV ePZ	41	0.5	24.5				u
RAB	iPZ	41.2	0.5	3.0				u
	DAW ePZ	49½						u

22nd November, 1969.

RABAUL. Strong microseismic activity between 0550-0728 hrs. (G.M.T.)

RAL	ePZ	013456						(d)
	TAV iPZ	57.4	0.2	4.5				d
RAB	ePZ	57½	0.3	0.8				d
	VUL iPZ	58.0	0.4	2.5				d
RAB	iZ	0236	0.3	2.0				Ship moving in harbour.
	FZ	0239						
RAB	ePZ	083827						d
	VUL ePZ	28						d

			T	A	GM	DIST	H	REMARKS
			sec	mm				
<u>22nd November, 1969. contd..</u>								
RAB	iPZ	101540.5						u
	TAV	iPZ	40.5	0.2	2.4			(u)
	VUL	iPZ	40.5		2.4			u
	VUL	iPZ	140644.7	0.4	8.2			d
	TAV	iPZ	44.8	0.4	7.3			d
	WAN	ePZ	45					u
	KET	iPZ	45.1	0.3	4.0			u
RAB	iPZ	45.8	0.5	3.5				u
	DAW	ePZ	150654½	0.4	0.4			u
	GAB	ePZ	55	0.4	0.2			d
	ESA	iPZ	0704.7	0.6	4.8			d
	VUL	ePZ	16½	0.7	0.6			d
	KET	ePZ	17	0.4	0.3			d
RAB	iPZ	17.6	0.7	4.0				u
	TAV	iPZ	17.7		1.0			u
	RAL	iPZ	18.0	0.9	2.0			u
	KOA	iPZ	45.0		1.0			d
	VUL	iPZ	152721.0	0.6	2.8			d
	KET	iPZ	21.0	0.3	3.0			u
	TAV	eiPZ	21	0.5	3.8			d
	RAL	iPZ	22.0	0.6	9.0			d
RAB	ePZ	23						Regional
RAB	ePZ	193449½						d
	VUL	ePZ	50					d
RAB	iPZ	210507.0	0.5	1.0				d
	VUL	iPZ	223534.0	0.5	2.9			u
	TAV	iPZ	34.1	0.4	3.7			u
	RAL	eiPZ	35	0.5	4.1			u
RAB	iPZ	35.8	0.4	1.4				d
								Regional
RAB	iPZ	231958.0	0.6	8.0				d
	RAL	iPZ	58.0	0.6	5.3			u
	WAN	ePZ	58½	0.8	5.2			u
	TAV	iPZ	58.6	1.0	8.2			u
	VUL	iPZ	58.8	0.7	1.4			d
	KET	iPZ	2003.0	1.3	4.0			u
	DAW	ePZ	03½	1.1	0.6			u
	TBL	ePZ	05	0.5	1.0			u
	KOA	iPZ	09.0	1.2	15.1			u
	GAB	ePZ	10½	0.2	1.4			d

			T sec	A mm	GM	DIST	H	REMARKS
<u>23rd November, 1969.</u>								
TAV	iPZ	032331.8	0.3	2.3	u			
VUL	iPZ	31.9	0.7	1.0	u			
RAL	iPZ	33.2	0.5	8.8	u			
RAB	iPZ	33.5	0.5	2.4	d			
SUL	iPZ	34.0			d			
KET	iPZ	34.4	0.3	1.6	d			
KOA	iPZ	44.5	0.7		u			
KOA	iPZ	035712.1	0.5	12.1	d			
RAL	iPZ	060906.5	0.2	3.6	d			
VUL	ePZ	07	0.4	3.6	d			
TAV	iPZ	06.6	5.2	2.8	u			
WAN	iPZ	07.0			d			
RAB	ePZ	07	0.5	1.8	d			
KOA	iPZ	15.5	0.7	20.0	u			
VUL	iPZ	062944.3	0.4	5.5	u			
WAN	iPZ	44.4			d			
TAV	iPZ	45.0			u			
DAW	iPZ	45.9	0.6	3.5	u			
RAB	ePZ	46	0.4	2.4	d			
DAW	iPZ	064546.3	0.5	1.9	u			
VUL	iPZ	53.3	0.5	3.3	d			
TAV	iPZ	54.0	0.4		d			
WAN	iPZ	54.7			d			
RAB	eiPZ	54			u			
DAW	iPZ	065406.5			d			
RAB	KET eZ/	072944						
	iPZ	082635.6	0.2	3.8	d			Traces
VUL	iPZ	36.4	0.4		d			
DAW	iPZ	36.5	0.5	0.8	d			
RAL	iPZ	37.5	0.6	2.0	u			
WAN	iPZ	37.5	0.4	1.5	u			
TAV	iPZ	37.7	0.4	1.2	u			
RAB	iPZ	38.0	0.4	4.0	u			
KOA	iPZ	085726.0		35.0	u			
TAV	iPZ	39.2	0.4	1.6	u			
VUL	iPZ	39.2	0.4	1.2	u			
KET	iPZ	39.7	1.0	1.0	d			
RAL	ePZ	42	0.7	1.4	u			
RAB	iPZ	40.2	0.7		u			
DAW	iPZ	45.4	0.6	1.0	u			
DAW	iPZ	112455.5	0.3	1.5	d			

		T	A	GM	DIST	H	REMARKS
		sec	mm				
<u>23rd November, 1969. contd.</u>							
TAV	iPZ	131903.7	0.2	2.5			d
RAL	iPZ	04.0	0.4	3.7			d
WAN	iPZ	04.3	0.5	2.8			u
RAB	iPZ	04.6	0.5	5.0			d
VUL	iPZ	04.8	0.4	13.0			d
SUL	iPZ	05.0	0.4	2.0			u
KET	iPZ	05.6	0.3	4.0			
DAW	iPZ	150427.5	0.4	2.0			d
VUL	iPZ	193929.0	0.5	1.6			d
TAV	iPZ	29.0	0.5	1.6			u
WAN	iPZ	32.0	0.7				d
SUL	iPZ	32.1					u
RAL	iPZ	32.8	0.7	9.3			d
RAB	iPZ	32.8					d
KET	iPZ	33.6	0.9	2.2			u
DAW	iPZ	34.3	0.5	1.0			u
VUL	iPZ	215053.5	0.4	2.4			u
RAL	iPZ	55.7	0.3	1.1			u
TAV	iPZ	55.8	0.3	1.5			u
RAB	iPZ	55.8	0.5	2.0			u
RAB	iPZ	224736.0	0.5	1.5			d
TAV	iPZ	37.0	0.4	11.3			d
RAL	iPZ	37.6	0.8	5.4			u
VUL	iPZ	38.8	0.5	15.0			u
TAV	iPZ	231031.0					u
RAB	iPZ	30.5	0.5	2.0			d
RAL	iPZ	31.0					d
VUL	iPZ	32.0	0.6	1.5			u
<u>24th November, 1969.</u>							
RAL	iPZ	023702.8	1.0	2.8			u
VUL	iPZ	03.2	0.7	2.8			d
TAV	iPZ	03.5	0.8	4.9			d
RAB	ePZ	03½	0.5	1.0			d
KOA	ePZ	15					
RAL	iPZ	034331.0					u
TAV	iPZ	31.2					u
WAN	iPZ	31.2	0.5	42.0			u
SUL	iPZ	31.5	0.8				u

		T.	A	GM	DIST	H	REMARKS
		Sec	mm				
<u>24th November, 1969. contd..</u>							
RAB	iPZ	034331.7		96.0	u		
	VUL iPZ	32.0			u		
	DAW iPZ	59½	0.4	2.0	d		
	KOA iPZ	4407½			u		
	TAV i(P)Z	131238.2		2.2	u		
	RAL ePZ	38.8	0.8	2.0	u		
	VUL iPZ	39.1	0.7	2.0	d		
	TAV iPZ	172118.6	0.9	6.2	u		
	VUL iPZ	19.2	0.4	4.8	u		
	RAL iPZ	19.9	0.9	5.8	d		
	KET ePZ	21			d		
RAB	iPZ	21.4	0.5	3.5	u		
	KOA ePZ	213622½		23.0	d		
	TAV ePZ	55½	1.2	5.4	d		
	VUL iPZ	56.2	1.2	15.7	d		
	RAL iPZ	56.2	1.2	6.6	d		
	KET iPZ	56.3			u		
	DAW ePZ	3706			d		
	RAL iPZ	222514.6	0.5	1.4	u		
	TAV iPZ	15	0.3	1.0	u		
RAB	ePZ	17	0.5	2.5	u		
<u>25th November, 1969.</u>							
	KOA iPZ	035108.0		38.0	d		
	TAV iPZ	41.5	0.2	4.0	d		
	VUL ePZ	42	0.3	3.0	d		
	RAL iPZ	42.4	0.3	2.0	d		
RAB	ePZ	43½	0.4	1.0	d		
	TBL ePZ	075249	0.5	1.5	d		
	KOA iPZ	5320.0		2.0	u		
	VUL iPZ	43.9	0.3	6.0	d		
	WAN ePZ	44			d		
	TAV iPZ	44.0	0.2	5.0	u		
	RAL ePZ	44	0.5	0.8	u		
RAB	ePZ	44	0.5	1.0	d		
	KET ePZ	46	0.3	1.0	d		
	TAV iPZ	143347.0			d		
	SUL iPZ	47.0	0.3	4.0	d		
	RAL iPZ	47.4		35.0	d		
RAB	iPZ	47.5	0.3	27.0	d		
	WAN iPZ	47.8	0.2	7.5	d		
	VUL iPZ	48.1	0.2	13.0	d		

	T	A	GM	DIST	H	REMARKS
	sec	mm				
<u>25th November, 1969. contd.</u>						
KET eiPZ	143350	0.2	6.0			d
KOA iPZ	3430.0	0.3	3.0			d
KOA iPZ	174015					u
TAV ePZ	56	0.3	1.0			d
VUL ePZ	56	0.5	0.8			
RAL ePZ	56	0.6	0.8			d
RAB ePZ	56	0.5	0.5			u
KET ePZ	4103	0.5	0.4			u
TAV iPZ	182442.8	0.2	2.5			d
WAN ePZ	43					
RAB ePZ	43	0.3	0.5			
RAL iPZ	43		0.5			u
VUL ePZ	44.5	0.3	1.0			
TAV iPZ	204036.7	0.3	2.0			d
WAN ePZ	37	0.3	0.5			u
VUL iPZ	37.2	0.3	2.0			d
RAB iPZ	37.2	0.3	2.0			d
RAL iPZ	37.8	0.5	2.0			d
SUL ePZ	38	0.3	1.0			d
KET iPZ	38.8	0.2	2.8			d
KOA iPZ	55.0	0.3	10.0			d
VUL ePZ	215416	1.0	0.5			d
RAB ePZ	16	0.4	1.0			u
RAL ePZ	17	0.5	2.0			d
WAN ePZ	18	0.3	0.2			d
TAV ePZ	18	1.0	1.0			d
KOA ePZ	5502		2.0			d
RAL ePZ	223133					u
WAN iPZ	33.0	0.4	1.0			d
RAB eiPZ	33½	0.3	5.0			u
VUL iPZ	33.6	0.4	16.0			u
SUL iPZ	34.0	0.4	2.5			u
KOA iPZ	43.6		25.0			d
BSA ePZ	3220½	0.2	1.0			d

25th November, 1969

RAB ePZ	234922	0.6	7.0			u
VUL ePZ	22					u

T	A	GM	DIST	H	REMARKS
sec	mm				

25th November, 1969 contd.

RAL ePZ	234922	0.6	4.3	d	
TAV ePZ	22	0.6	1.5	d	
WAN ePZ	22	0.6	1.4	d	

.....

G.W. D'ADDARIO
SENIOR RESIDENT GEOLOGIST(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABAU.

1.12.69

PEA NOV 1969 NO. 48.

19 DEC 1969

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RABAUl	RAB	From: 26 NOV 1969 To: 02 DEC 1969
RABAUl HARBOUR NETWORK	WAN	From: 26 NOV 1969 To: 02 DEC 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 26 NOV 1969 To: 02 DEC 1969
KERAVAT	KET	From: 26 NOV 1969 To: 02 DEC 1969
ESA'ALA	ESA	From: 29 OCT 1969 To: -5 NOV 1969
TABELE	TBL	From: To:
AGENAHAMBO	AGE	From: 16 OCT 1969 To: 13 NOV 1969
HOSKINS	DAW	From: 27 NOV 1969 To:
KIMBE	GAB	From: To:
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

STATION PERSONNEL

RAB	<u>Central Observatory Rabaul.</u>	
	Senior Resident Geologist (Volcanology).....	G.W. D'ADDARIO
	Seismologist.....	M.G. MANCINI
	Geologist (Volcanology).....	R.A. DAVIES
	Seismogram Readers.....	C.M. LEES J.C. DAVIES
	Senior Technical Officer.....	N.O. MYERS
	Technical Officers.....	R.J. CONWAY S.J. MATHISEN J.E. CARTER
	Volcanological Assistants.....	L. TOPUE, V. KAITA F. DIRA
	Trainee Volcanological Assistants.....	C. MATUPIIT
	Technical Assistants.....	M. SALAIAU
	Clerk.....	D. COOK
	Typiste.....	T. LOW
	Vacation Students.....	A. YAUIEB P. BARIS P.M. LEITAO
KET	<u>Keravat Outstation</u>	
	Observer (part-time).....	J. BART
TBL	<u>Tabele Observatory</u>	
	Observer.....	M. GAIAM
ESA	<u>Esa'ala Observatory</u>	
	Observer.....	E. RAVIAN
AGE	<u>Agenahambo Observatory</u>	
	Observer (part-time).....	B. KIRKE
DAW	<u>Hoskins Field Station</u>	
	Observer.....	B. TALAI
GAB	<u>Kimbe Field Station</u>	
	Observer.....	P. DAIMBARI

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist (V), from whom additional information and photocopies of seismogram records from all stations may be obtained on request. Please address all communications to:-

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 Central Observatory,
 P. O. Box 386,
RABAU
 T.P.N.G..

PEA NOVEMBER 1969 NO. 48
 T A GM DIST H REMARKS
 sec mm

AGENAHAMBO

16th October, 1969

AGE Nil Recorded

17th October, 1969

AGE Nil Recorded

18th October, 1969

AGE iPZ 162024½ d Near

19th - 23rd October, 1969

AGE Nil Recorded

24th October, 1969

AGE ePZ 131624 0.3 1.0 d Regional

25th - 30th October, 1969

AGE: No records available.

1st - 3rd November, 1969

AGE Nil Recorded

4th November, 1969

AGE iPZ 020552 0.3 1.3 u Regional

5th-10th November, 1969

AGE Nil Recorded

11th November, 1969

AGE iPZ 152500½ u Regional

12th November, 1969

AGE ePZ 180600 d Near

13th November, 1969

AGE iPZ 121114½ 0.4 1.9 d Near

.....

T A GM
sec mm

RABAU
26th November, 1969

Harbour Network: Wood Anderson power failure from 0548 - 0558 hrs.

		T	A	GM		
		sec	mm			
VUL	ePZ	012531	0.4	0.6	d	
TAV	ePZ	31	0.4	1.0	d	
RAL	ePZ	31	0.5	0.8	d	
RAB	ePZ	31½	1.5	1.0	d	
KOA	iPZ	33.8	0.3	3.0	d	
KET	ePZ	40	0.4	3.2	d	
WAN	iPZ	020050.4	0.4	2.0	u	
RAL	iPZ	50.6		2.0	u	
TAV	ePZ	51	0.2	1.5	u	
RAB	ePZ	51½	0.5	2.0	u	Quarry blast.
VUL	ePZ	025033	0.3	1.4	d	
WAN	iPZ	33.4		2.0	u	
RAB	ePZ	33½	0.4	3.0	u	
KET	iPZ	33.6	0.4	1.6	u	
SUL	ePZ	34		1.0	d	
RAL	ePZ	34		2.0	d	
TAV	ePZ	34	0.3	0.5	d	
RAB	ePZ	122714	0.4	2.0	u	
VUL	ePZ	14	0.3	0.4	d	
RAL	ePZ	14			d	
TAV	ePZ	14			d	
WAN	ePZ	14		0.6	u	
KET	ePZ	20½	0.5	2.2	u	
RAB	iPZ	124021.0	0.5	1.0	d	
WAN	ePZ	21	0.2	1.0	u	
SUL	ePZ	21		0.3	d	
TAV	iPZ	21		0.5	u	
VUL	ePZ	21.3	0.3	0.4	d	
RAL	ePZ	21½	0.2	0.4	u	
KET	eIPZ	25	0.5	2.0	d	
TBL	ePZ	124601	0.5	6.0	u	
RAB	ePZ	4732½	1.0	1.0	u	
VUL	ePZ	32½	0.6	1.0	u	
RAL	ePZ	33	1.0	0.6	d	
WAN	ePZ	33	0.7	0.2	u	
TAV	ePZ	34	0.6	0.3	u	
KET	ePZ	35	1.0	1.2	d	
ESA	ePZ	124727½	0.2	0.3	d	

T A GM
sec mm

26th November, 1969 (continued)

KOA	iPZ	124751.0	1.0	1.5	d
RAB	ePZ	4834	1.5	2.5	d
WAN	ePZ	36	0.2	1.2	u
VUL	ePZ	36	0.6	2.0	d
TAV	ePZ	36			d
KET	ePZ	36	1.4	1.4	d
RAL	ePZ	37	1.0	1.0	d
KOA	ePZ	143106	1.0	1.5	u
ESA	ePZ	31½	1.0	1.8	d
VUL	ePZ	49	1.0	1.0	d
RAL	ePZ	49	1.0	0.8	u
TAV	ePZ	49½	1.0	0.8	d
RAB	ePZ	50	2.0	1.7	u
KET	ePZ	50½	1.4	1.0	u
TAV	iPZ	165149.4	0.2	1.5	u
RAL	ePZ	50	1.0	1.2	d
WAN	ePZ	51			d
RAB	ePZ	51	0.5	0.8	d
KET	ePZ	51			d
KOA	ePZ	53	1.0	0.3	d
KOA	iPZ	191424.0	0.3		u
WAN	ePZ	24			d
RAB	ePZ	25	0.5	0.5	d
VUL	ePZ	25	0.5	0.5	d
RAL	ePZ	25	0.6	1.0	d
TAV	iPZ	25.5	0.3	3.0	u
KET	eiPZ	192220	0.6	2.4	u
WAN	eiPZ	20.3		2.0	d
RAB	iPZ	20.8	0.4	4.0	d
RAL	iPZ	21.0		2.0	d
TAV	ePZ	21	0.2		u
VUL	iPZ	21.2	0.3	2.0	u
SUL	eiPZ	21.2		1.0	u
KOA	iPZ	213616.0			d
TAV	ePZ	46		1.5	u
RAL	ePZ	47	0.6	1.2	u
RAB	ePZ	47	0.6	0.8	u
RAB	iPZ	220230.8	0.4	1.6	d

T A GM
sec mm

26th November, 1969 continued

VUL ePZ	220231				d
WAN ePZ	31	0.3			d
TAV ePZ	33	0.4	0.7		u

27th November, 1969

RAB: Very strong microseismic activity throughout the day.

RAL iPZ	000512.4	0.2	4.0		d
TAV iPZ	12.7	0.5			d
VUL iPZ	13.6	0.4	2.6		d
RAB ePZ	14½	0.4			d
KOA iPZ	031156.0	0.8	4.0		u
ESA ePZ	1212	0.8	0.8		
DAW ePZ	38	0.9	1.0		d
RAB ePZ/	39				u
TAV iPZ	042703.2	0.9	2.0		u
VUL iPZ	03.4		3.0		u
RAB iPZ	03.4	0.5	1.6		u
KET iPZ	063109.6	0.3	2.3		d
VUL iPZ	10.2				d
RAL iPZ	10.4	0.4	4.0		d
WAN iPZ	10.8	0.3	2.0		d
TAV iPZ	10.9	0.4	7.4		d
RAB iPZ	11.0	0.4	10.5		d
DAW iPZ	12.6				d
KOA iPZ	26.3	0.4			u
ESA ePZ	58	(0.1)	0.2		u
DAW iPZ	111553.0				d
KET iPZ	1604.4	0.4	4.0		d
SUL ePZ	04.5	0.5	1.6		d
VUL ePZ	05.6				d
WAN iPZ	06.0	0.4	4.2		d
RAL iPZ	06.0	1.0	5.8		d
TAV ePZ	06.1	0.4	4.0		d
RAB iPZ	06.5	0.5	2.4		d
ESA ePZ	23	0.1	0.1		d
KOA iPZ	33.1				d
KOA iPZ	111705.7	0.7	11.0		u
RAB eZ/	132011½				+ Traces
KOA iPZ	180332.4		43.0		d
ESA ePZ	0429	0.2	0.9		u

In coda of preceding shock
Traces

T A GM
sec mm

27th November, 1969 continued

TAV	iPZ	180429.6	0.5	5.1	d
RAB	iPZ	30.0	0.8	1.2	u
VUL	iPZ	30.7	0.4	4.5	u
KET	iPZ	31.4	0.6	0.6	d
DAW	iPZ	33.0	0.5	1.6	d
DAW	ePZ	180830½	0.8	0.8	d
KOA	iPZ	185646.0	0.5	7.0	d
ESA	ePZ	5742		0.4	d
TAV	iPZ	192331.9		7.0	d
RAL	ePZ	32.0			d
WAN	ePZ	33			d
VUL	ePZ	33½			d
RAB	ePZ	34			d
KOA	iPZ	193741.8	0.8		d
RAB	ePZ	194347			d
RAB	ePZ/	195235			u
ESA	ePZ	195923½			d
DAW	ePZ	47½	0.8	0.9	d
DAW	iPZ	204455½	0.5	4.0	u
ESA	ePZ	4511½	0.2	0.9	d

Teleseism

"

28th November, 1969

DAW: Z lamp off at 0600 hrs. (G.M.T.).

WAN	iPZ	052130.7	0.3	2.0	d
TAV	iPZ	31.0			u
VUL	iPZ	31.4			u
RAB	iPZ	31.5	0.4	5.0	d
RAL	iPZ	31.6			u
KET	ePZ	33	0.3	2.0	d
TAV	iPZ	092602.0			u
RAL	iPZ	02.5		6.0	d
WAN	iPZ	02.6		1.8	d
RAB	iPZ	03.1	0.6	6.0	d
VUL	ePZ	03½	0.5	0.5	d
ESA	iPZ	135149.0	0.9		
TAV	ePZ	5204½			d
VUL	ePZ	05½	0.6	0.6	d

T A GM
sec mm

28th November, 1969 continued

WAN ePZ	135205½				d
RAB ePZ	06	1.2	1.8		d
RAL ePZ	06				d
KET ePZ	10	1.0	2.8		d
KOA ePZ	16	0.6	2.0		d
VUL ePZ	141749				d
RAB ePZ	49½	0.8	0.5		d
KET ePZ	49½	1.0	2.0		u
RAL ePZ	50				d
TAV ePZ	50				d
RAL ePZ	161711½		2.2		d
WAN iPZ	11.5	0.6	1.2		d
TAV iPZ	11.6	0.5	2.0		d
RAB iPZ	11.8	0.5	2.2		d
SUL iPZ	12.0	0.4	d		
VUL ePZ	12½	0.5	2.0		u
KET iPZ	14				d
RAB ePZ	170204½	0.4	1.2		d
WAN ePZ	05				u
RAL ePZ	05				u
VUL ePZ	05½				u
TAV ePZ	06				d
SUL ePZ	06				d

29th November, 1969

KET: Z, unserviceable mass jammed from 0556-2202 hrs.
N/S, " " " " " 0600-1200 hrs. E/W C.B.M.

RAL iPZ	075734.4	02.	2.7		d
RAB ePZ	34½				d
SUL ePZ	34½				u
VUL ePZ	34½				u
TAV iPZ	34.7	0.3	1.8		d
WAN ePZ	35				u
RAL ePZ	082150				
TAV ePZ	50				
WAN ePZ	50½				d
RAB ePZ	51		2.0		d
VUL iPZ	104146.7	0.1	3.2		u
TAV iPZ	46.8	0.2	2.0		d

T A GM
sec mm

29th November, 1969 continued

RAL	iPZ	104147.0	0.3	3.2	u
RAB	ePZ	47		2.0	u
SUL	iPZ	47.2	0.3	1.1	u
WAN	ePZ	47½			(u)
TAV	iPZ	161102.8		2.0	d
VUL	iPZ	02.9		1.9	d
RAL	ePZ	03			d
VUL	iPZ	162944.2	0.2	2.0	u
WAN	iPZ	45.0		1.0	d
SUL	ePZ	45			d
RAL	ePZ	45			
RAB	iPZ	45.3	0.4	2.0	d
TAV	ePZ	45½			d
RAL	ePZ	165752½	0.8	1.0	u
TAV	iPZ	53.8	0.8	2.0	u
KOA	iPZ	182312.2		12.9	d
RAL	iPZ	2410.0	0.5	2.7	u
TAV	ePZ	10			u
RAB	ePZ	11½			d
WAN	ePZ	11½			d
VUL	ePZ	11½	0.5	2.0	d
RAB	eZ/	192506			+
TAV	iPZ	193323.9		6.0	d
RAL	iPZ	24.0	0.2	1.9	u
TAV	iPZ	210130.7			d
RAL	iPZ	30.8		2.0	u
KOA	ePZ	222519			d

Traces

30th November, 1969

KET: Strong microseismic activity between 0549-2210 hrs. (G.M.T.).

RAL	iPZ	232930.1	0.3	8.0	u
TAV	iPZ	30.8	0.4	24.0	d
VUL	iPZ	31.4	0.3	14.4	d
VUL	iPZ	001152.5	0.5	2.4	d
TAV	iPZ	52.5			u
RAB	iPZ	52.9	0.5	3.1	u
WAN	iPZ	53.0	0.6	1.0	u

T	A	GM
sec	mm	

30th November, 1969 continued

SUL	iPZ	001154.0			d
RAL	iPZ	54.0	0.4	2.0	u
KOA	ePZ	1231½			(d)
KET	ePZ	055911½			u
RAL	iPZ	12.1			u
TAV	iPZ	12.2			d
VUL	iPZ	12.5			d
WAN	iPZ	13.0		1.0	d
RAB	ePZ	13½	0.5	3.2	d
TAV	ePZ	110616½		2.6	d
VUL	iPZ	18.0		1.0	d
RAL	ePZ	19			d
KOA	i!PZ	185159.6			d
RAB	iPZ/	5254.0	0.5	0.3	u
TAV	iPZ	54.0			d
VUL	iPZ	54.4	0.5	2.5	d
RAL	iPZ	(56.0)		1.0	d
RAB	ePZ	191524	0.4	2.0	d
WAN	iPZ	24.0		0.5	d
TAV	iPZ	25.0	0.5	0.8	d
VUL	iPZ	25.0	0.3	1.0	d
VUL	iPZ	200050.3	0.2	7.1	d
RAL	iPZ	50.4	0.4	3.3	d
TAV	iPZ	50.6	0.3	13.0	d
SUL	iPZ	51.0	0.4	1.2	u
RAB	iPZ	51.0	0.4	3.2	d
WAN	iPZ	51.1	0.8	2.0	u
KET	iPZ	51.6	0.1	3.2	u
RAB	ePZ/	213225½			+

Traces

1st December, 1969

RAL	iZ	0429	0.2	1.4	
	FZ	0434			
					Harmonic disturbance.
TAV	iPZ	023514.5		38.0	d
SUL	ePZ	14½	0.4	2.0	d
RAL	iPZ	14.7	0.3	15.0	d
RAB	iPZ	15.0			d
WAN	iPZ	15.0		6.0	d

			PEA NOVEMBER 1969		NO. 48		
			T	A	GM	DIST H	REMARKS
			sec	mm			
<u>1st December, 1969</u> continued							
VUL	iPZ	023515.5	0.3	5.6	d		
KOA	iPZ	48.4			d		
KOA	i!PZ	091126			d		Felt Barapinang (Kieta) INT. I - II; 06°15', 155°40'.
VUL	ePZ	1215½	0.3	0.8	u		
TAV	ePZ	16			u		
RAL	ePZ	17		0.4	d		
RAB	ePZ	18			d		
VUL	iPZ	160837.8	0.4	2.2	d		
RAL	ePZ	38			u		
WAN	ePZ	38½	0.3	1.2	u		
RAB	ePZ	39	0.8	2.0	u		
TAV	ePZ	39		0.8	u		
TAV	eiPZ	163340	0.4	0.4	u		
VUL	eiPZ	40½	0.4	0.8	u		
RAL	ePZ	40½	1.0	0.4	d		
SUL	ePZ	42	0.4	1.0	u		
WAN	ePZ	42½	0.3	0.8	u		
RAB	eiPZ	42.8	0.5	3.6	d		
KET	iPZ	45.0	0.2	1.1	u		
KOA	iPZ	50.6			d		
VUL	eiPZ	172438	0.3	0.4	d		
TAV	eiPZ	38	0.4	0.5	d		
RAL	eiPZ	39			d		
RAB	eiPZ	41	0.6	1.0	u		
SUL	ePZ	41	0.3	0.4	d		
WAN	ePZ	41			u		
KOA	iPZ	42.3	0.3	10.0	d		
KET	iPZ	42.8	0.2	0.8	d		
KOA	i!PZ	175016.2			d		
TAV	ePZ	5112	0.6	1.0	u		
VUL	ePZ	12½	0.4	0.5	u		
RAL	ePZ	13	0.6	0.4	u		
WAN	ePZ	14			u		
RAB	ePZ	14½			u		
VUL	iZ	2203	0.3	1.5			Harmonic disturbance.
	FZ	2212					
KOA	ePZ	223321½	1.4	1.2	d		
TAV	eiPZ	29	1.0	4.2	u		

T A GM
sec mm

1st December, 1969 continued

RAL eiPZ	223329½	1.0	7.0	u
RAB eiPZ	30	1.0	9.0	u
VUL iPZ	30.0	0.7	2.6	u

2nd December, 1969

RAL iPZ	044912.5			u
VUL iPZ	12.8	0.3	8.0	u
RAB iPZ	14.0			u
TAV iPZ	14.5	0.5	2.5	d
KOA iPZ	110515.6			d
TAV iPZ	150136.3			u
RAL iPZ	36.6			d
KET iPZ	36.6			d
WAN iPZ	36.8			u
SUL iPZ	36.8			
RAB iPZ	37.0	0.4	5.8	u
VUL iPZ	37.6			u
TAV iPZ	151436.0			u
VUL iPZ	36.8			d
RAL iPZ	36.8			d
SUL iPZ	36.9			u
RAB eiPZ	151658.5			u
WAN iPZ	59.0			d
RAL iPZ	59.0			d
KET iPZ	59.4			u
SUL iPZ	1700.0			d
VUL iPZ	02.0			d
TAV iPZ	02.0			d
RAB iPZ	173049.5			d
WAN iPZ	49.6			d
KET iPZ	49.7			d
RAL iPZ	49.8	1.2	2.2	d
VUL iPZ	50.0			d
TAV iPZ	50.0	1.0	2.0	d
ESA iPZ	3136.0	0.5	0.8	d
KOA iPZ	46.8			d
KET iPZ	180253.6	0.9	1.6	d
RAB iPZ	54.0	0.8	4.2	u

T A GM
 sec mm

2nd December, 1969 continued

RAL	iPZ	180254.0	0.8	2.8	u
WAN	iPZ	54.4	0.8	2.4	d
VUL	iPZ	54.5	0.8	2.5	d
SUL	iPZ	54.5			d
TAV	iPZ	54.8	0.9	2.0	d
ESA	ePZ	0307.0	0.4	0.9	u
KOA	iPZ	27.0			d
ESA	ePZ	194834	0.1	0.9	d
KET	iPZ	4927.0			u
VUL	iPZ	28.8	0.5	6.5	d
WAN	iPZ	29.5	0.8	9.6	u
RAB	iPZ	30.0	0.8	7.0	d
RAL	iPZ	30.0	0.6	5.8	u
TAV	iPZ	30.1	0.5	1.5	d
SUL	iPZ	30.8			d
RAB	iPZ	211159.0			u
WAN	iPZ	59.2			u
RAL	iPZ	59.8			u
SUL	iPZ	59.8			u
TAV	iPZ	59.9			u
VUL	iPZ	1201.0			u
KET	iPZ	212123.4			u
RAB	iPZ	27.4			u
WAN	iPZ	27.4		7.2	u
RAL	iPZ	28.0			u
TAV	iPZ	28.5			u
VUL	iPZ	29.0	0.5	7.2	u

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T	A	GM			
sec	mm				

ESA'ALA

29th October, 1969

28/2350 - 29/0200, 0502-0612 hrs. (GMT) man made disturbance.

T = 0.1; A = 1.0 - 2.0

ESA ePZ	110402	0.2	0.2	(d)	
ESA ePZ	164541½	0.9	0.7	d	Distant
ESA ePZ	170015½	0.1	1.0	u	

30th October, 1969

29/2223 - 30/0719, 2225-2227 hrs. (GMT) man made disturbance.

T = 0.1 - 0.2; A = 0.1 - 0.2

ESA ePZ	171737			d	(Distant)
ESA iPZ	183046.1			u	
ESA ePZ	184147½	1.1	1.6	d	

31st October, 1969

30/2200 - 31/0700 hrs (GMT) man made disturbance.

T = 0.1 - 0.2; A = 0.1 - 0.3

ESA ePZ	070845½	1.0	1.4		
ESA ePZ	073306½	0.7	0.3	d	
ESA ePZ	073927				Distant
ESA ePZ	114348	0.9	0.9	d	

1st November, 1969

ESA ePZ	112214			d	
ESA ePZ	210939½	0.2	0.5	d	

2nd November, 1969

ESA ePZ	011126½			u	
ESA ePZ	190106½	0.6	0.7	d	Teleseism
ESA ePZ	225726			d	Regional

3rd November, 1969

ESA iPZ	045835.9	0.4	1.0	d	
ESA ePZ	165628½	0.6	2.8		

4th November, 1969

ESA ePZ	040203½	0.5	3.2	d	Distant
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T	A	GM	PEA NOVEMBER 1969	NO. 48
			DIST H	REMARKS
<u>sec</u>	<u>mm</u>			

4th November, 1969 (continued)

ESA ePZ	085832½	1.0	1.4	u	Regional
ESA ePZ	134939½	0.3	0.4	d	
ESA ePZ	220955½	1.0	0.9	d	
ESA ePZ	234551½	0.3	1.0	d	

5th November, 1969

ESA ePZ	013126½	0.5	1.0	d
ESA iPZ	020013.0	0.2	1.5	u
ESA ePZ	061306½	0.2	0.8	d
ESA ePZ	161630½	0.2	4.0	d
ESA ePZ	180730½	1.0	1.0	d



(G.W. D'ADDARIO)

SENIOR RESIDENT GEOLOGIST(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABAU.

8.12.69

PEA DEC 1969 NO. 49

5 JAN 1970

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RAB	RAB	From: 03 DEC 1969 To: 08 DEC 1969
RABAUl HARBOUR NETWORK	WAN	From: 03 DEC 1969 To: 08 DEC 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 03 DEC 1969 To: 08 DEC 1969
KERAVAT	KET	From: 03 DEC 1969 To: 08 DEC 1969
ESA'ALA	ESA	From: 13 NOV 1969 To: 24 NOV 1969
TABELE	TBL	From: 08 NOV 1969 To: 06 DEC 1969
AGENAHAMBO	AGE	From: To:
HOSKINS	DAW	From: 25 NOV 1969 To: 01 DEC 1969
KIMBE	GAB	From: 23 NOV 1969 To: 02 DEC 1969
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

STATION PERSONNEL

RAB	<u>Central Observatory, Rabaul.</u>	
	Senior Resident Geologist (Volcanology).....	G.W. D'ADDARIO
	Geologist (Volcanology).....	W.D. PALFREYMAN (since 3/12/69)
	Seismologist.....	M.G. MANCINI
	Geologist.(Volcanologist).....	R.A. DAVIES
	Seismogram Readers.....	C.M. LEES J.C. DAVIES
	Senior Technical Officer.....	N.O. MYERS
	Technical Officers.....	R.J. CONWAY S.J. MATHISEN J.E. CARTER
	Volcanological Assistants.....	L. TOPUE, F. DIRA, V. KAITA
	Trainee Volcanological Assistants.....	C. MATUPIT
	Technical Assistants.....	M. SALAIAU
	Clerk.....	D. COOK
	Typiste.....	T. LOW
	Vacation Students.....	A. YAUIEB, P. BARIS, P.M. LEITAO, K. MAGARI.
KET	<u>Keravat Outstation</u>	
	Observer (part-time).....	J. BART
TBL	<u>Tabele Observatory</u>	
	Observer.....	M. GAIAM
ESA	<u>Esa'ala Observatory</u>	
	Observer.....	E. RIVIAN
AGE	<u>Agenahambo Observatory</u>	
	Observer (part-time).....	B. KIRKE
DAW	<u>Hoskins Field Station</u>	
	Observer.....	B. TALAI
GAB	<u>Kimbe Field Station</u>	
	Observer.....	P. DAIMBARI

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist(V), from whom additional information and photocopies of seismogram records from all stations may be obtained on request. Please address all communications to:-

Senior Resident Geologist(V),
Central Observatory,
P. O. Box 386,
RABAU,
T.P. & N.G.

T	A	GM	PEA	DECEMBER	1969	NO. 49	
SEC	mm		DIST	H			REMARKS

RABAUL

3rd December, 1969

KET: Z not available; E/W and N/S unreadable.

WAN	iPZ	043817.0				u			
RAB	iPZ	17.2	0.4			u	¼°	043809	M _L = 4.0
	iSEh	23.8							
RAL	iPZ	17.2	0.4			u	½°	043808	
	iSZ	23.7							
SUL	iPZ	17.4	0.5	4.2		u	½°	043808	
	iSZ	25.2							
TAV	iPZ	17.9	0.4	11.6		u	½°	043806	
	iSZ	26.6							
VUL	iPZ	18.5	0.5	20.4		u			
WAN	iPZ	070208.0	0.4	11.6		u	½°	070158	
	iSZ	15.0							
TAV	iPZ	08.0	0.4	4.8		u			
RAB	iPZ	08.4	1.0	13.8		u	½°	070158	M _L = 3.5
	iSEa	15.5							
VUL	iPZ	08.4	0.4	10.8		u	½°	070158	
	iSZ	17.6							
RAL	iPZ	08.7				u			
WAN	iPZ	093610.0	0.2	5.9		u	¼°	093601	
	iSZ	17.0							
RAB	iPZ	10.2	0.4	7.0		u	¼°	093601	M _L = 3.2
	iSE	16.8							
RAL	iPZ	10.3				u			
TAV	iPZ	10.8	0.6	3.0		u			
VUL	iPZ	143216.0	0.5	2.8		d			
WAN	iPZ	16.6	0.9	5.2		d			
RAB	iPZ	16.8	0.8	11.8		d			
RAL	iPZ	16.8	0.9	4.8		d			
GAB	iPZ	43.4	0.5	17.0		u			
KOA	iPZ	52.0				d			
WAN	iPZ	153536.0		1.0		u			
VUL	iPZ	36.2	0.6	2.4		u	1¾°	153510	
	iSZ	56.0							
RAB	iPZ	36.7	0.6			u	1¾°	153509	M _L = 3.6
	iSE	57.8							
RAL	iPZ	36.7				u			
GAB	ePZ	40½	0.3	0.5		u			
KOA	iPZ	3614.0				d			
TAV	iPZ	154351.2				d			
RAL	iPZ	51.4	0.4			d			

T	A	GM	PEA DECEMBER 1969	NO. 49	
sec	mm		DIST	H	REMARKS

3rd December, 1969 continued

WAN	iPZ	154351.8			d			
RAB	iPZ	52.2	0.6		d	¾°	154338	M _L = 3.2
	iSN	4402.0						
VUL	iPZ	4352.2			d		154335	
	iSZ	4405.0						
TAV	iPZ	161147.5	0.5	4.5	d			
VUL	iPZ	47.5	1.0	7.4	d			
RAB	iPZ	48.5	0.5	0.3	d	2°	161117	M _L = 3.9
	iSN	1212.2						
RAL	iPZ	1148.6	0.9	5.0	d			
WAN	iPZ	49.5			d			
TAV	iPZ	205515.0	0.9		d			
RAL	iPZ	15.2			d			
WAN	iPZ	15.2	1.0	31.0	d			
RAB	iPZ	15.8	0.8	16.8	d	1°	205455	M _L = 4.6
	iSN/	31.0						
SUL	iPZ	15.8			u	1¼°	205454	
	iSZ	32.5						
GAB	iPZ	33.6	0.3	1.4	d			
KOA	iPZ	48.0			u			
GAB	iPZ	234906.7			u			

4th December, 1969

RAB	ePZ	030708½	0.5	1.0	u	25°	030149	M _L = 6.1
	eSE/	1135						M _B = 6.1
RAL	ePZ	0709	1.0	1.4	u			
TAV	ePZ	09½	1.0	0.8	u			
VUL	ePZ	10.	1.0	0.8	u			
KOA	iPZ	45.0			d			
VUL	iPZ	080142.0		3.4	d	1¼°	080119	
	iSZ	58.5						
TAV	ePZ	42			d	1½°	080118	
	iSZ	59.9						
RAL	ePZ	43			d			
RAB	ePZ	43½	0.5	2.9	d	1½°	080120	M _L = 3.6
	iSN	0201.0						
RAB	ePZ	085840	1.2	3.4	d	47°	085024½	M _B = 5.7
	eSN/	090521						
	eSSN/	0847						
	eLqZ/	1046½						
	eLrZ/	1630½						
WAN	iPZ	085840.0	1.0	2.1	d			
RAL	iPZ	40.2	1.0	3.6	d			

T A GM
sec mm

4th December, 1969 continued

			T sec	A mm	GM				
TAV	iPZ	085840.4	1.0	1.6	d				
KET	iPZ	40.4	1.0	0.8	d				
VUL	iPZ	40.9	0.9	5.4	d				
KOA	iPZ	5901	0.3	17.0	u				
VUL	iPZ	102618.4	0.4	2.2	d	2½°	102538		
	iSZ	48.8							
KET	iPZ	18.6	0.2	1.4	d		102638		
	iSE	47.0							
RAB	ePnZ	20	0.5	1.0	u	2½°	102541	M _L = 4.0	
	iP*Z	21.4							
	iSnE	49.5							
	iS*E	51.1							
SUL	iPZ	21.2	0.5	3.0	d				
RAL	iPZ	21.6	0.2	2.6	d	2½°	102541		
	iSZ	52.4							
TAV	iPZ	22.0	0.3	1.8	d	2½°	102540		
	iSZ	54.2							
VUL	iPZ	111004.6	0.3	1.2	d				
	iZ	06.6							
RAB	ePZ	05	0.5	0.5	d	3°	110920	M _L = 3.8	
	iZ	08.4							
	iSN	38.6							
KET	ePZ	05	0.4	1.0	d	2¾°	110922		
	iSE	37.8							
RAB	ePZ	113838	0.8	2.0	u				
WAN	ePZ	38	0.9	1.0	u				
RAL	iPZ	38.5	0.8		u				
TAV	iPZ	38.8	0.9	1.0	u				
VUL	ePZ	39			u				
TAV	ePZ	133520½			d	1¼°	133558		
	iSZ	37½							
VUL	iPZ	21.0	0.2	2.4	d	1¼°	133500		
	iSZ	37.0							
RAL	ePZ	21½	0.3	0.4	d	1½°	133456		
	iSZ	41							
KET	ePZ	22	0.4	0.4	d	1¼°	133501		
	iSE	37.6							
RAB	iPZ	22.4	0.5	1.2	d	1½°	133458½	M _L = 3.3	
	iSN	40.0							
VUL	iPZ	133902.0			u				
RAB	ePZ	02½		3.3	d	2¼°	133828	M _L = 3.7	
	iSN	28.2							
WAN	ePZ	02½	1.0		d	2¼°	133828		
	eSZ	28½							
RAL	ePZ	03	0.3	1.0	d				

4th December, 1969 continued

TAV	iPZ	140918.5	0.3	3.9	u	1¼°	140856	
	iSZ	35.0						
VUL	iPZ	18.7		2.6	u	1¼°	140856	
	eSZ	36						
WAN	ePZ	19			u	1½°	140855	
	eSZ	37						
RAL	ePZ	19			d	1¼°	140858	
	eSZ	34½						
RAB	ePZ	19½	0.5	1.6	d	1½°	140856	M _L = 3.3
	iSN	37.4						
GAB	i!PZ	51			u			
TAV	iPZ	150654.6	0.2	1.0	d	½°	150644	
	iSZ	0703.0						
RAL	iPZ	0655.0			d			
RAB	iPZ	55.1	0.4	4.6	d	¾°	150643	M _L = 2.6
	iSN	0704.2						
VUL	iPZ	0655.8	0.3	5.2	d			
KET	iPZ	57.4	0.3	2.0	u	½°	150646	
	iSE	0705.3						
RAB	ePZ	202707	0.5	2.1	d			
WAN	ePZ	07	0.5	0.9	d			
RAL	ePZ	07						
TAV	ePZ	07½			d			
VUL	iPZ	08.2	0.5	2.0	d			

5th December, 1969

KET: N.S. component not available for study.
 GAB: No minute breaks on records.

RAB	eZ/	032859			+			Traces
VUL	iPZ	041749.5			d			
TAV	iPZ	49.6			d	1¼°	041726	
	iSZ	1807.5						
SUL	iPZ	1750.2	0.4	2.0	d	1¼°	041727	
	iSZ	1807.5						
RAL	iPZ	1750.5			d			
WAN	iPZ	50.5			d	1½°	041724	
	iSZ	1810.4						
RAB	iPZ	1750.5	0.5	3.0	d	1¾°	041723½	M _L = 4.4
	iSN	1810.8						
KET	ePZ	1751			u	1½°	041726	
	iSZ	1810						
KOA	iPZ	1810.0			d			
RAB	eZ/	082957			+			Traces
WAN	iPZ	085412.0			u			

					PEA DECEMBER 1969		NO. 49	
T	A	GM	DIST	H			REMARKS	
sec	mm							
<u>5th December, 1969</u> continued								
RAB	iPZ	085412½	0.5	5.0	u	¼°	085404½	M _L = 2.8
	iSN	18.5						
TAV	iPZ	12½			u	¼°		
	iSZ	18.0						
RAL	iPZ	12.8			d			
VUL	iPZ	14.0			u	½°	085103	
	iSZ	22.2						
KET	ePZ	16.0						
RAB	eZ/	140903			-			Traces
KET	iPZ	155035.5			d	1¼°	155013½	
	iSZ	52.0						
TAV	iPZ	35.8		4.0	d	1¼°	155013	
	iSZ	53.0						
VUL	iPZ	35.9			u	1¼°	155012	
	iSZ	52½						
WAN	iPZ	36.5			d	1¼°	155014½	
	iSZ	53.8						
RAB	iPZ	37.2	0.6	10.0	u	1½°	155013	M _L = 4.3
	iSE	55.4						
SUL	iPZ	37.4	0.5	3.0	d	1½°	155014	
	iSZ	55.2						
RAL	iPZ	37.6			d	1¼°	155014	
	iSZ	55.0						
KOA	ePZ	5134.5			d			
TAV	iPZ	165454.4			d	½°	165444	
	iSZ	5502.0						
WAN	iPZ	5454.6			d	½°	165444½	
	iSZ	5502.0						
RAL	iPZ	5454.8			d			
SUL	iPZ	54.9		2.2	d			
RAB	iPZ	55.0	0.4	9.0	d	½°	165445	M _L = 2.8
	iSE	5502.4						
VUL	iPZ	5455.8			d			
KET	e(P)Z	56.8			d			
VUL	iPZ	170136.0			u	1¼°	170115½	
	iSZ	52.0						
KET	iPZ	36.4			u	1½°	170115	
	eSE	52½						
TAV	iPZ	36.5			d	1¼°	170115	
	iSZ	52.5						
RAL	iPZ	37.2			d			
SUL	iPZ	37.5						
WAN	iPZ	38.0			u	1¼°	170115	
	iSZ	55.2						
RAB	iPZ	38.0	0.5	6.0	u	1¼°	170115½	M _L = 4.0
	iSN	55.0						

				PEA DECEMBER 1969		NO. 49	
T	A	GM	DIST	H	REMARKS		
sec	mm						
<u>5th December, 1969</u> continued							
KET	iPZ	183826.0					u
VUL	iPZ	28.0		4.0			u
WAN	iPZ	28.8					d
RAB	iPZ	29.5	0.4	4.0	2¼°	183751	M _L = 3.9
	iSN	58.3					
VUL	iPZ	235747.5		4.8			u
WAN	ePZ	47.5	0.3	1.0			d
TAV	ePZ	48.0					u
RAL	ePZ	48.0					
KET	ePZ	48.5	0.2	1.4			u
RAB	iPZ	49.4	0.5	4.0	1½°	235725½	M _L = 4.1
	iSN	5807.0					

6th December, 1969

KET: N/S not available for study.

VUL	iPZ	004750.0	0.3	12.0			d
RAL	iPZ	51.5		1.4			d
KET	iPZ	51.5	0.2	5.0			d
TAV	ePZ	51½		0.5			d
RAB	ePZ	51½	0.5	2.8	2°	004718	M _L = 4.8
	iSN	4817.0					
WAN	iPZ	51.8		5.0			u
TAV	eiPZ	061413	0.7	8.0			u
RAL	ePZ	13					u
VUL	iPZ	13.3		52.0			u
KET	eiPZ	13.8					u
RAB	iPZ	14.0	1.0	12.0	2°	061342	M _L = 5.3
	iSN	38.0					
SUL	ePZ	14	0.5	2.0			d
WAN	eiPZ	14	0.7	5.0			u
KOA	ePZ	23½					u
GAB	iPZ	30.1					d
VUL	iPZ	063548.7	0.3	10.0	1¼°	063527½	
	iSZ	3603.5					
TAV	iPZ	3548.8	0.3	9.0	1°	063529½	
	eSZ	3603					
RAB	iPZ	3549.0	0.6	2.0	1¼°	063527½	M _L = 3.8
	iSN	3605.0					
RAL	ePZ	3549					u
SUL	ePZ	49	0.5	2.0			d
WAN	iPZ	49.3	0.6	3.6			d
KET	ePZ	49½					u

					PEA DECEMBER 1969		NO. 49	
T	A	GM	DIST	H	REMARKS			
sec	mm							
<u>6th December, 1969</u> continued								
RAB	ePZ	204837	0.6	0.5	u	1°	204820	M _L = 3.2
	eSN	49½						
VUL	iPZ	37.2	0.5	2.0	u			
KET	iPZ	37.4			u			
RAL	ePZ	37½			d			
TAV	ePZ	38	0.5	0.2	d			
KOA	ePZ	4913			d			
KET	ePZ	211311	0.3	1.6	u			
VUL	eiPZ	12.0	0.3	4.5	u			
WAN	iPZ	12.8		1.0	d			
TAV	ePZ	13	0.4	0.2	d			
RAL	ePZ	13			d			
RAB	ePZ	13	0.6	1.8	d	1½°	211246	M _L = 3.2
	eSN	33½						
RAL	ePZ	211406	0.6	1.0	d			
TAV	iPZ	06.1	0.4	2.8	d			
VUL	iPZ	06.4		8.0	u			
RAB	ePZ	06½	0.5	0.8	d	1°	211336	M _L = 3.2
	eSN	30						
<u>7th December, 1969</u>								
KET: N/S not available for study; Z disconnected 0424. hrs. (G.M.T.).								
RAL	ePZ	040017		4.0	d			
RAB	ePZ	17	1.0	4.0	u	22°	035557	M _L = 6.2
	ePcPZ/ eSN/	0412 08						M _B = 5.3
Depth 125 km.								
VUL	ePZ	0019.0	0.6	2.8	u			
TAV	ePZ	20.0	0.9	1.0	u			
WAN	ePZ	072153½		2.0	u			
TAV	iPZ	53.6		5.5	d	1¼°	072133½	
	eSZ	2208.6						
RAB	ePZ	2154	0.5	1.2	u	1¼°	072132	M _L = 3.6
	eSN	2209½						
RAL	ePZ	2154		4.0				
VUL	iPZ	54.2	0.8	4.0	u	1¼°	072131	
	iSZ	2211.0						
WAN	ePZ	084509½	0.9		u			
RAB	eiPZ	09.6	0.5	8.8	u			
RAL	iPZ	09.9	0.9		u			
VUL	iPZ	10.0	0.9	13.0				
TAV	ePZ	10	0.8		d			
SUL	ePZ	10½			u			

T	A	GM	PEA DECEMBER 1969	NO. 49
sec	mm		DIST H	REMARKS

7th December, 1969 continued

GAB ePZ	084530	0.4	0.3	d			
GAB i!PZ	111353.6			d			
VUL iPZ	1411.9	0.8	2.0	u			
TAV ePZ	12½	0.9	4.0	u			
RAB ePZ	13	0.8	2.0	u			
RAL ePZ	13	1.0	3.0	u			
WAN iPZ	13.0		3.0	d			
TAV iPZ	125502.2			d			
VUL iPZ	02.3			d			
RAL ePZ	02½			d			
SUL iPZ	03.2	0.8	3.0	u			
RAB iPZ	03.2	0.8	13.0	d	1¼°	125442	M _L = 4.4
	eSN	19.5					
GAB ePZ	22½	0.3	0.3	u			
TAV ePZ	154009		5.0	u			
VUL ePZ	09½	0.8	1.5	u			
RAL ePZ	10	1.0	4.0				
RAB eiPZ	11½	0.9	2.2	d	3°	154029	M _L = 4.5
	eSN/	44.5					
VUL iPZ	154459.0	0.4	2.9	u	2°	154428	
	eSZ	4522.5					
WAN ePZ	00		2.0	u			
RAL ePZ	00		3.0				
RAB ePZ	00	0.7	4.5		2°	154427	M _L = 4.3
	iSN	25.2					
RAB ePZ	215225½	0.9	2.0	u	31°	213612	M _B = 5.5
	eSN/	5720					
RAL ePZ	223437½	1.0	1.8	u			
VUL ePZ	37.6	1.0	9.0	u			
RAB ePZ	38	1.0	5.0	u			Distant
TAV ePZ	38½	1.0	1.0	u			
GAB iPZ	03.2			d			

8th December, 1969

RAB: Microseismic activity between 0000-0735 hrs.(G.M.T.)

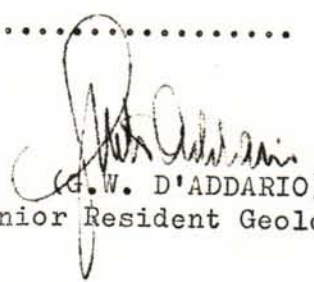
KEP: Z component disconnected and N/S not available for study.

TBL ePZ	050833	0.4	1.0	d			
WAN iPZ	0939	0.3	1.0	u			
RAL iPZ	40.5	0.8	2.1	u			
VUL iPZ	40.5	0.6	1.1	d			
TAV ePZ	40½	0.8	1.0	u			

						PEA DECEMBER 1969	NO. 49	
T	A	GM	DIST	H			REMARKS	
sec	mm							
<u>8th December, 1969.</u> continued								
RAB	iPZ eSE/ eSSE/	050940.7 1450 1721	0.8	11.0	u	31°	050335	M _L = 6.2 M _B = 6.2
KET	iPE	0943.2	1.2	4.7	d			C.B.M.
KOA	iPZ	1013.0	0.8	11.0	u			
KOA	ePZ	060805						
TAV	iPZ	09.4			d			
VUL	ePZ	09½	0.1	1.0	(u)			
KET	iPZ	09.6	1.0	(6.0)	u			C.B.M.
RAL	ePZ	10½	0.6	1.2	d			
RAB	ePZ eSE	11 47	0.5	2.0	d	3°	060724	M _L = 4.4
RAB	iPZ	071020.1	0.3	1.5	d	1°	071003	M _L = 3.7
TAV	ePZ iSZ	21 35.0			d	1°	071002	
RAL	ePZ	21½						
VUL	iPZ iSZ	22.5 34.5	0.3	2.0	u	1°	071006	
KOA	iPZ eSZ	55.6 1133½		4.3	u	3¼°	071006	
VUL	iPZ	094328.0	0.5	2.0	d			
RAB	ePZ	28	0.7	4.1	u			
KOA	ePZ eSZ	58 4438½			u	3½°	094304	
RAB	e(P)Z eSE	103716½ 23½	0.4	2.8	u	½°	103707	M _L = 3.1
RAL	iPZ	16.9	0.5	3.0	u			
TAV	iPZ	17		1.0	(u)			
VUL	iPZ iSZ	17.8 26.0	0.4	2.0	u	½°	103706½	
VUL	iPZ	110904.0	0.4	2.0	d			
TAV	iPZ	04.9	0.2	3.0	d			
RAL	iPZ	05.0	0.8	2.2	d			
RAB	eiPZ eSE	05 22	0.5	0.4	u	1¼°	110842	M _L = 3.4
WAN	ePZ	05						
KET	iPZ	06.2	0.3	1.6	(d)			
VUL	ePZ	180819½	0.4	1.0	d			
KET	ePE	19½	0.3	3.0	u			
RAB	ePZ iSN	21 39.3	0.4	1.7	(u)	1½°	180757	M _L = 3.3
VUL	iPZ iSZ	182508.2 23.1	(0.1)	37.8	d	1°	182448	

8th December, 1969 continued

RAL	iPZ	182508.8	0.4	31.1	d	1°	182448	
	iSZ	24.0						
TAV	iPZ	08.8	0.2	47.0	d	1°	182450	
	iSZ	22.5						
WAN	iPZ	09.0	0.3	23.0	d	1°	182451	
	iSZ	22.0						
SUL	iPZ	09.0	0.2	14.0	d	1°	182451	
	iSZ	22.0						
KET	iPE	09.0	0.4	9.9	d	1°	182453	
	iSE	21.0						
RAB	iPZ	09.7	1.6	40.7	d	1°	182451	M _L = 4.5
	iSNa	23.6						
KOA	ePZ	39		7.3	d			
TAV	iPZ	191452.0	0.1	3.0	d	1°	191436	
	eSZ	1503½						
RAL	ePZ	1453			d	¾°	191439	
	eSZ	1503						
RAB	iPZ	1453.3	0.4	1.1	d	¾°	191438	M _L = 3.4
	iSE	1504.1						
VUL	ePZ	1453½						
KET	ePZ	55						
KOA	iPZ	212203.5			d			
KET	iPE	212332.0	0.6	2.2	u			
VUL	iPZ	32.1	0.6	1.0	d			
RAB	iPZ	32.4	0.6	1.1	d			Regional
RAL	iPZ	33.0	0.5	1.3	d			
TAV	ePZ	33½			(u)			
RAB	iZ	2016	0.4	2.0				Harmonic disturbance
	FZ	2017						
RAB	iZ	2031	0.7	2.1			"	"
	FZ	2035						
RAB	iZ	2056	0.3	2.5			"	"
	FZ	2057						

.....

 (G.W. D'ADDARIO)
 Senior Resident Geologist(V)

CENTRAL OBSERVATORY,
RABAUL.

16.12.69

T A GM
sec mm

GARBUNA

22nd November, 1969

GAB iPZ 232010.5 0.5 1.4 d

23rd November, 1969

GAB iPZ 193940.0 0.2 0.6 d

GAB iPZ 215023.2 d

24th November, 1969

GAB Unreadable

25th November, 1969

GAB ePZ 215351 0.7 0.6 d

GAB iPZ 223157.1 0.3 1.2 u

26th November, 1969

GAB ePZ 124704 1.0 0.7 u

GAB ePZ 143203 0.6 u

27th November, 1969

GAB iPZ 063116.0 d

GAB iPZ 111557.4 d

28th November, 1969

GAB Unreadable

29th November, 1969

GAB ePZ 182417½ 0.4 0.6 d

30th November, 1969

GAB: Records unavailable.

1st December, 1969

GAB: Nil Recorded.

2nd December, 1969.

GAB ePZ 180244½ 0.6 0.4 u

GAB iPZ 194856.8 d

ESA'ALA

13th November, 1969

ESA ePZ	095217½	0.9	0.6	d	
ESA ePZ	101531½	0.5	0.6	u	Regional
ESA iPZ	120230.0	0.3	5.0	u	
ESA ePZ	131431½	0.3	0.4	d	

14th November, 1969

ESA iPZ	074408.3	0.3	3.2	d	
ESA ePZ	134342½	0.2	2.5	u	

15th November, 1969

ESA iPZ	080450.0	0.5	1.2	u	
ESA iPZ	224140.0			d	

16th November, 1969

ESA ePZ	054135½	0.2	0.2	u	
ESA ePZ	054515½	0.2	1.2	d	
ESA ePZ	061656	0.5	1.5	d	
ESA ePZN	201013½	0.2	0.1	u	

17th November, 1969

ESA ePZ	014858½	0.1	0.2	d	
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18th November, 1969

ESA ePZ	174137½	0.2	0.3	u	
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19th November, 1969

NIL RECORDED

T	A	GM	DIST	H	REMARKS
sec	mm				

20th Novemver, 1969

ESA ePZ	095543½	0.8	0.5	d	Teleseism
ESA ePZ	105615½	0.5	0.7	d	Distant
ESA ePZ	1145(03½)			d	
ESA ePZ	235823	0.9	1.6	u	Teleseism

21st November, 1969

ESA ePZ	021520½	0.7	0.5	u	
ESA ePZ	073047	0.7	0.7	u	Distant
ESA ePZ	123142	0.6	0.8	u	

22nd November, 1969

ESA iPZ	150704.7	0.6	2.8	d	
ESA ePZ/	193435½			(u)	
ESA iPZ/	232035.2	1.0	6.0	u	Distant

23rd November, 1969

ESA ePZ	233421			d	In coda of preceding shock.
ESA ePZ	085727½	0.8	0.9	u	
ESA ePZ	085727½	0.8	0.9	u	
ESA ePZ	193932½	0.3	1.0	u	

24th November, 1969

ESA e(P)Z	034439½	0.1	0.2	d	
ESA eiPZ	213650			d	

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T	A	GM	PEA	DECEMBER	1969	NO. 49
sec	mm		DIST	H		REMARKS

TABELE8th November, 1969

TBL ePZ	014708½	0.5	1.0	d		Distant
TBL iPZ eSZ	020716 51	0.5	1.0	u	3° 020630	

9th November, 1969

TBL iPZ eSZ	175404 43	0.2	1.5	u	3¼° 175313	
TBL ePZ	215914½	0.4	1.0	d		(Near)

10th November, 1969

TBL ePZ	194806			u		"
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11th November, 1969

TBL eiPZ e(S)Z	154327 4412	0.4	2.5	u	(4°) 0142(28)	
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12th November, 1969

NIL RECORDED

13th November, 1969

TBL iPZ	154119			d		"
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14th - 15th November, 1969

NIL RECORDED

16th November, 1969

TBL ePZ	003429½	0.2	1.0	u		Regional
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17th November, 1969

TBL ePZ	201007½	0.5	2.0	d		Near
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18th - 19th November, 1969

NIL RECORDED

20th November, 1969

TBL iPZ eSZ	150257½ 0319½	0.5	1.0	d	1¼° 150228	
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T	A	GM	PEA DECEMBER 1969	NO. 49
sec	mm		DIST H	REMARKS

21st November, 1969

TBL ePZ	165610½	0.5	1.0	u	5½°	165446	
eSZ	5715½						
TBL ePZ	005120	0.4	3.0	d	2¾°	005038	
eSZ	52						
TBL iPZ	021438½	0.5	1.0	d			Near

22nd November, 1969

NIL RECORDED

23rd November, 1969

TBL ePZ	232005½	0.4	1.0	u			(Distant)
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24th November, 1969

NIL RECORDED

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TABELE

25th November, 1969

TBL Nil recorded.

26th November, 1969

TBL iPZ 215249 0.5 1.5 d ($5\frac{1}{4}^{\circ}$) 2151(24)
 e(S)Z 5355

27th November, 1969

TBL iPZ 124601 0.5 6.0 u $1\frac{1}{2}^{\circ}$ 124536
 eSZ 20

28th November, 1969

TBL Nil recorded.

29th November, 1969

TBL ePZ 135045 $\frac{1}{2}$ 0.5 1.0 u Near

30th November, 1969

TBL iPZ 051223 $\frac{1}{2}$ 0.4 5.0 d $1\frac{1}{4}^{\circ}$ 051202
 iSZ 39 $\frac{1}{2}$

1st December, 1969

TBL iPZ 183654 $\frac{1}{2}$ 0.4 3.0 u $1\frac{1}{2}^{\circ}$ 183629
 iSZ 3713 $\frac{1}{2}$

TBL iPZ 191427 $\frac{1}{2}$ $1\frac{3}{4}^{\circ}$ 191400
 eSZ 48 $\frac{1}{2}$

2nd December, 1969

TBL Nil recorded.

3rd December, 1969

TBL ePZ 180155 0.5 2.0 d Near

TBL iPZ 231911 0.4 10.6 u Regional

4th December, 1969

TBL Nil recorded

5th December, 1969

TBL iPZ 092610 0.3 1.1 d Local

6th December, 1969

TBL iPZ Nil recorded. 0.4 1.2 d $1\frac{1}{4}^{\circ}$ 070120
 eSZ

T	A	GM	PEA DECEMBER 1969	NO. 49
sec	mm		DIST H	REMARKS

7th December, 1969

TBL ePZ	070144	0.4	2.2	d	1½°	070120	
eSZ	0202						

8th December, 1969

TBL ePZ	223304½	0.5	17.0	u			Regional
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TBL ePZ	050833	0.5	2.5	d			"
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T	A	GM	PEA DECEMBER 1969	NO. 49
sec	mm		DIST H	REMARKS

HOSKINS
25th November, 1969

DAW iPZ	174107	0.4	1.3	u
DAW ePZ	215354	0.8	1.0	u
DAW iPZ	223152½	0.5	3.1	d

26th November, 1969

DAW ePZ	012545½	0.5	1.0	u
DAW ePZ iZ	124707½ 13	0.8	1.0	d
DAW ePZ	143157	0.8	1.3	u
DAW iPZ	220230			

30th November, 1969

DAW iPZ	185301			u
DAW iPZ	191458.0			u

1st December, 1969

Lamp off at 0000 hours.

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PEA DEC 1969 NO.50

5 JAN 1970

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RAB	RAB	From: 09 DEC 1969 To: 15 DEC 1969
RABAUl HARBOUR NETWORK	WAN	From: 09 DEC 1969 To: 15 DEC 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 09 DEC 1969 To: 15 DEC 1969
KERAVAT	KET	From: 09 DEC 1969 To: 15 DEC 1969
ESA'ALA	ESA	From: 06 NOV 1969 To: 12 NOV 1969
TABELE	TBL	From: To:
AGENAHAMBO	AGE	From: To:
HOSKINS	DAW	From: To:
KIMBE	GAB	From: To:
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

STATION PERSONNEL

RAB	<u>Central Observatory, Rabaul.</u>	
	Senior Resident Geologist (Volcanology).....	G.W. D'ADDARIO
	Seismologist.....	M.G. MANCINI
	Geologist (Volcanology).....	W.D. PALFREYMAN (since 3/12/69)
	Geologist (Volcanology).....	R.A. DAVIES
	Seismogram Readers.....	C.M. LEES J.C. DAVIES
	Senior Technical Officer.....	N.O. MYERS
	Technical Officers.....	R.J. CONWAY S.J. MATHISEN J.E. CARTER
	Volcanological Assistants.....	L. TOPUE, V. KAITA F. DIRA
	Trainee Volcanological Assistants.....	C. MATUPIIT
	Technical Assistants.....	M. SALAIAU
	Clerk.....	D. COOK
	Typiste.....	T. LOW
	Vacation Students.....	A. YAUIEB, P. BARIS P.N. LEITAO, K. MAGARI
KET	<u>Keravat Outstation</u>	
	Observer (part-time).....	J. BART
TBL	<u>Tabele Observatory</u>	
	Observer.....	M. GAIAM
ESA	<u>Esa'ala Observatory</u>	
	Observer.....	E. RAVIAN
AGE	<u>Agenahambo Observatory</u>	
	Observer (part-time).....	B. KIRKE
DAW	<u>Hoskins Field Station</u>	
	Observer.....	B. TALAE
GAB	<u>Kimbe Field Station</u>	
	Observer.....	P. DAIMBARI

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist (V), from whom additional information and photocopies of seismogram records from all stations may be obtained on request. Please address all communications to:-

Senior Resident Geologist(V),
Central Observatory,
P. O. Box 386,
RABAU,
T.P.N.G.

Happy Christmas



FROM RABAUL

CENTRAL

OBSERVATORY

T	A	GM	PEA	DECEMBER	1969	NO. 50
sec	mm		DIST	H		REMARKS

ESA'ALA
6th November, 1969

ESA iPZ	041805.0	0.5	1.1	u		(Distant)
ESA ePZ	063506	0.4	1.0	d	7½°	063316
eSN/	3631					
ESA ePZ	203103	0.6	0.3	d		Distant

7th November, 1969

ESA ePZ	050259			u		Regional
ESA ePZ	134904	0.8	1.9	d		Distant
ESA iPZ	182622.1	0.5	4.8	u	N.E.	
iSN	2727.8				5¾°	182503
ESA ePZ	184721.5	1.0	1.3	d	25°	184203
eSN/	5115					Depth 50 km.

8th November, 1969

Between 07/2326 - 08/0455 hrs. - man made disturbances; (T = 0.1 - 0.1½, A = 0.1-3.8 - 4.2).

ESA iPZ	014548.5			d	18½°	014138
eSN/	4915½					
eLrZ/	5039½					
ESA iPZ	022701.7			u		Regional
ESA ePZ	175442	0.8	2.4	d	5½°	175320
iSE/	5546.2					
ESA ePZ	215944.7	0.2	0.5	d	(34°)	2153(00)
i(S)N/	220502.2					
ESA ePZ	222842½	0.9	0.4	d		Deep
ESA ePZ	225506½	0.9	0.9	u		Teleseism
ESA ePZ	233122	1.0	1.0	u	31°	232509
eSE/	3611					

9th November, 1969

ESA ePZ	011449½	0.9	0.5	d	(30°)	0108(44)
e(S)N/	1920½					
ESA ePZ	012731½	0.9	0.9	d		Distant
ESA iPZ	023418.7	0.2	1.2	d	2¼°	023342
iSN/	44.6					
ESA iPZ	091149.6	1.0	6.4	d	S.E.	
iSE/	1525.6				21°	090710

T	A	GM	PEA DECEMBER 1969	NO. 50
sec	mm		DIST H	REMARKS

10th November, 1969

Between 09/2223 - 10/0707 hrs. - man made disturbances; (T= 0.1, A = 0.1 - 2.0 - 2.2).

ESA ePZ	045037	0.2	0.3	d	2¼°	045003	
iSE	5103.6						
ESA ePZ	154452		0.5	u	13°	154203	
eSE/	4806						
eLrZ/	41						
ESA ePZ	171315	0.7	0.8	u			Distant

11th November, 1969

Between 10/2203 - 11/0202 hrs, 11/0302 - 11/0918 hrs. - man made disturbances; (T= 0.1, A = 0.1 - 7.2 - 8.0).

ESA iPZ	152457.0		2.5	u N.E.			
iSE/	2541.5				3¾°	152359½	
ESA iPZ	201433.3	0.1	0.7	u	2¼°	201355	
iSN	1501.0						

12th November, 1969

ESA iPZ	154114.0		15.0	d N.W.			
iSN/	4201.0				4°	154013	
ESA ePZ	184722	0.2	0.5	d	2½°	184644	
eSN/	51						
ESA iPZ	192018.2	1.0	3.0	u	75°		
eSE/	2936						
ESA ePZ	205507	0.2	0.2	d	4½°	205400½	
eSE/	58						

T	A	GM	PEA DECEMBER 1969	NO. 50
sec	mm		DIST H	REMARKS

RABAU

KET: Z component disconnected.

9th December, 1969

TAV	ePZ	035831	0.2	3.6	d	1¼°	035810	
	iSZ	47.0						
VUL	ePZ	31	0.4	4.8	d			
KET	e(P)E	33		7.0	u			
WAN	iPZ	092930.0		14.0	u	½°	092921	
	iSZ	37.0						
RAB	iPZ	30.5	0.5	32.8	u	½°	092921	M _L = 4.0
	iSNa	37.0						
RAL	iPZ	31.0		24.0	u			
SUL	ePZ	31	0.4	3.0	u			
TAV	iPZ	31.3		9.2	u	½°	092920	
	iSZ	39.0						
VUL	iPZ	32.0		31.0	u			
KET	e(P)E	33		7.0	u			
TAV	ePZ	122248			d	¾°	122234	
	eSZ	59						
RAL	ePZ	49			d			
RAB	ePZ	49½	0.5	1.0	u	¾°	122234	M _L = 3.7
	iSE	2300.9						
WAN	iPZ	122523.4		2.0	u			
RAB	iPZ	23.5	0.4	6.1	u	½°	122514	M _L = 3.4
	iSE	30.5						
TAV	iPZ	24.0		3.0	u	½°	122513	
	iSZ	32.0						
RAL	ePZ	24		5.0	u			
VUL	iPZ	24.6	0.5	6.0	u	½°	122513	
	iSE	33.0						
KET	e(P)E	25½	0.5	4.0	d			
TAV	iPZ	124829.5	0.3	6.0	d	1½°	124805	
	iSZ	47.0						
RAL	iPZ	30.0	0.7	3.0	u			
VUL	ePZ	30	0.3	5.2	d	1¾°	124803	
	eSZ	51						
RAB	ePZ	30.5	0.5	2.0	d	(1½°)	1248(04)	M _L = 3.7
	i(S)E	50.5						
KET	ePZ	33			d			

10th December, 1969

KET: Z component discontinued.

RAB	ePZ	001537	1.0	2.0	u	27½°	001005	
	eSE/	2002						

			PEA DECEMBER 1969		NO. 50				
T	A	GM	DIST	H	REMARKS				
sec	mm								
<u>10th December, 1969.</u> (continued)									
KOA	ePZ	001609	1.0	2.5	u				
KOA	iPZ	003314.0		6.0	u				
TAV	iPZ	3433.2			u				
RAL	iPZ	33.4	0.8	8.0	u	$\frac{3}{4}^{\circ}$	003418		
	eSZ	45							
VUL	iPZ	33.6	0.4	7.4	u	$\frac{3}{4}^{\circ}$	003418		
	iSZ	45.0							
RAB	iPZ	34.0	0.4	8.0	u	$\frac{3}{4}^{\circ}$	003419		
	iSE	45.0							
KET	iPE	34.6	0.3	3.8	d				
RAB	e(P)Z	052443	0.6	1.0	d	$2\frac{1}{4}^{\circ}$	052406		
	eSN/	2511					Bismarck Sea.		
RAB	ePZ	054109 $\frac{1}{2}$	1.0	3.2	u	$3\frac{1}{4}^{\circ}$	054020		
	iSN/	48.0					Epicentre co-ordinates		
							149 $\frac{1}{2}^{\circ}$ E, 02 $\frac{3}{4}^{\circ}$ S New		
							Ireland Region.		
KET	ePZ	10	1.5	10.0	d				
VUL	eiPZ	10.4	1.0	4.0	d	3°	054020		
	i(S)Z	47.0							
TAV	ePZ	11.4			d				
TBL	ePZ	27	0.5	1.0					
KOA	ePZ	4202 $\frac{1}{2}$		0.8	d				
RAB	ePZ	061249 $\frac{1}{2}$	1.0	3.0	u	$3\frac{3}{4}^{\circ}$	061151		
	eSN/	1334					Bismarck Sea.		
RAB	eSN/	071623					" "		
RAB	eSN/	072307					" "		
RAB	eSN/	082835					" "		
RAB	eSN/	102501					" "		
VUL	ePZ	172159			d				
TAV	eiPZ	55.2	0.2	17.5	d	$1\frac{1}{4}^{\circ}$	172135		
	eSZ	2210 $\frac{1}{2}$							
SUL	ePZ	2156			d				
RAL	ePZ	56	0.2		u				
RAB	ePZ	56 $\frac{1}{2}$	0.7	4.5	u	$1\frac{1}{4}^{\circ}$	172136		$M_L = 3.8$
	iSE	2212.5							
KET	ePE	2156 $\frac{1}{2}$	0.2	5.6	u	$1\frac{1}{4}^{\circ}$	172136 $\frac{1}{2}$		
	iSE	2210.6							
KET	iPE	191649.8	0.3	1.0	u	$1\frac{1}{4}^{\circ}$	191630		
	iSE	1705.0							
VUL	ePZ	1651 $\frac{1}{2}$			d	$1\frac{1}{4}^{\circ}$	191629 $\frac{1}{2}$		
	e(S)Z	1708							
RAL	ePZ	1652			d				
RAB	iPZ	52.5	0.3	3.2	d	$1\frac{1}{4}^{\circ}$	191630		$M_L = 3.8$
	iSEa	1710.0							

10.12

T	A	GM	DIST	H	REMARKS
sec	mm				

10th December, 1969 (continued)

TAV	ePZ	191653	0.5	0.8	d		
KOA	iPZ	195724.0	1.0		d		
RAB	ePZ/ iSN/	5813 200132		3.4	d	18°	195408
SUL	ePZ	5814			d		
VUL	ePZ	14½	1.0	1.0	d		
RAL	iPZ	14.8	0.8	3.0	u		
KET	ePZ	15	1.5	2.0	d		
TAV	ePZ	15	1.0	2.0	d		
RAB	ePZ/ eSN/	215558 220116			d	35°	214920½
KOA	iPZ	234341.0			d		
VUL	iPZ iSZ	4435.4 4615.8	0.4	13.0	d	8¾°	234228
RAL	iPZ	4435.6	0.4	2.9	d		
RAB	iPZ iSN	36.0 4615.0	0.4	3.1	d	8¾°	234229

11th December, 1969

KET: Z component disconnected.

RAB	eZ/	005329			-		Traces
VUL	ePZ	005808	0.4	0.6	d		
RAL	ePZ	09	0.6	1.8	u		
RAB	ePZ	09½	0.5	1.1	u		
VUL	iPZ eSZ	104116.4 38			u	1¾°	104047
TAV	iPZ iSZ	16.4 38.5	0.5	1.2	u	1¾°	104047
RAL	iPZ	16.8	0.7	6.6	u		
RAB	iPZ iSE	17.0 39.1	0.6	3.4	d	1¾°	104048 M _L = 4.1
WAN	iPZ	17.0		1.1	d		
SUL	ePZ	17	0.5	1.0	d		
KET	iPN iSE	17.1 36.4	0.3	1.8	u	1½°	104052
RAB	eZ/	111104			+		Traces
TAV	iPZ eSZ	183837.8 47			d	¾°	183825½
RAL	iPZ iSZ	37.9 47.6		4.9	d	¾°	183824
WAN	iPZ iSZ	38.0 48.4		1.1	d	¾°	183824



PEA DECEMBER 1969 NO. 50
 DIST H REMARKS
 T A GM
 sec mm

11th December, 1969 (continued)

RAB	iPZ	183838.6	0.3	2.4	u	$\frac{3}{4}^{\circ}$	183824	$M_L = 3.2$
	iSN	49.4						
VUL	iPZ	39.0		2.8	u			
KOA	ePZ	191609			d	$1\frac{1}{4}^{\circ}$	191548	
	eSZ	15						
VUL	e(P)Z	37½	0.5	0.5	d			
RAL	ePZ	38½	0.8	1.6	d			
RAB	ePZ	39½	0.5	0.6	d	$2\frac{3}{4}^{\circ}$	191556	$M_L = 3.3$
	eSN	1712						
TAV	iPZ	210741.5			d	$1\frac{1}{4}^{\circ}$	210721	
	eSZ	56						
VUL	ePZ	41½			d			
RAL	iPZ	42.0	0.2	6.4	u	$1\frac{1}{4}^{\circ}$	210722	
	eSZ	57						
KET	iPE	42.5	0.5	3.2	d	$1\frac{1}{4}^{\circ}$	210722	
	iSE	57.3						
RAB	iPZ	42.6	0.4	3.0	u	$1\frac{1}{4}^{\circ}$	210721	$M_L = 3.6$
	iSN	58.6						
WAN	iPZ	42.8			u			
TAV	iPZ	211223.0		10.0	d	$1\frac{1}{4}^{\circ}$	211203	
	eSZ	38						
VUL	ePZ	23			d	$1\frac{1}{4}^{\circ}$	211203	
	eSZ	37½						
RAL	iPZ	23.8			u	$1\frac{1}{4}^{\circ}$	211204	
	iSZ	39.0						
WAN	ePZ	24½	0.6		d			
RAB	iPZ	24.8	0.7	2.9	d	$1\frac{1}{4}^{\circ}$	211203	$M_L = 3.4$
	eSN	40½						
KET	iPE	25.0	0.7	2.0	u	1°	211206	
	eSE	39						

12th December, 1969

KET: N/S and E/W unreadable, microseismic activity.

RAB	iPZ	005618.4	0.5	4.5	u	$\frac{1}{4}^{\circ}$	005611½	$M_L = 2.6$
	iSN	24.2						
TAV	iPZ	19.0	0.4	1.2	u	$\frac{1}{4}^{\circ}$	005613	
	iSZ	24.0						
RAL	ePZ	19½			u			
VUL	ePZ	20	0.4	2.1	u	$\frac{1}{2}^{\circ}$	005610	
	eSZ	27½						
RAB	eZ/	015050			-			Traces
VUL	ePZ	011802	0.5	4.0	d	$2\frac{3}{4}^{\circ}$	011710½	
	iSZ	35						
KET	ePZ	02	1.0	5.0	u	$(2\frac{1}{2}^{\circ})$	0117(22½)	
	e(S)Z	32						

T	A	GM				
sec	mm					

12th December, 1969 (continued)

WAN	iPZ	011803.0	0.5	1.0	u			
TAV	iPZ	03.0	0.4	1.2	u			
RAL	ePZ	03	0.5	1.0	u			
RAB	iPZ	03.4	0.5	3.0	u	2¼°	011720	M _L = 5.1
	iSN	36.2						
TAV	iPZ	013652.0			d			
VUL	iPZ	52.0			d			
RAL	ePZ	52½	0.5	14.0	d	1¼°	013631	
	iSZ	3708.5						
RAB	ePZ	3652½	0.3	8.0	d	1¼°	013629½	M _L = 4.0
	iSN	3709.5						
WAN	iPZ	3652.8		1.5	d			
KET	iPZ	54.0		10.0	d			
RAB	ePZ	053104.0	0.5	4.6	d	2½°	053024½	M _L = 4.3
	iSE	34.0						
DAW	ePZ	053044			d			Regional
RAB	ePZ/	085109			u			Distant
VUL	ePZ	125516½		10.9	u	1½°	125452	
	eSZ	35						
TAV	iPZ	17.0	0.4	5.0	d	(1¼°)	1254(54)	
	i(S)Z	34.0						
RAB	ePZ	17	0.8	1.0	u	1½°	125450½	M _L = 3.5
	eSN	37						
RAL	ePZ	17½			u			
WAN	ePZ	18		1.5	u			
KET	ePZ	18	0.5	3.0	u			
RAB	eZ/	132755			u			Traces
	eQZ/	4011						
WAN	iPZ	182719.4	0.2	7.0	u	½°	182708	
	iSZ	28.2						
TAV	ePZ	19½	0.4	7.0	d			
RAB	iPZ	19.8	0.5	3.1	u	½°	182708½	M _L = 3.8
	iSE	28.0						
RAL	ePZ	20		10.2	u			
VUL	iPZ	21.0			u			
KET	iPZ	22.8		6.0	u			
KOA	ePZ	182955			u	1¼°	182927½	
	eSZ	3016						
VUL	e(P)Z	15½	0.4	2.0	d			
TAV	e(P)Z	15½	0.3	1.0	u			
RAL	ePZ	16	0.6	3.0	u			
WAN	ePZ	18		2.0	u			

T A GM PEA DECEMBER 1969 NO. 93
sec mm DIST H REMARKS

12th December, 1969 (continued)

RAB	ePZ	182918½	0.4	2.4	u	3°	182932	M _L = 4.8
	iSE	53.2						
	KET ePZ	19			u			
RAB	iPZ	184029.3	0.4	11.5	u	½°	184018	M _L = 5.7
	iSN	37.4						
	WAN iPZ	29.3	0.2	11.5	u	½°	184018	
	iSZ	37.9						
	SUL ePZ	29½		1.0	u			
	RAL iPZ	29.6	0.6	16.5	u			
	TAV iPZ	30.0	0.5	16.6	u	¾°	184017	
	iSZ	39.8						
	VUL iPZ	31.0		19.1	u			
	KET ePZ	31½	0.5	9.0	u			
RAB	iPZ	185851.0	0.4	3.0	u	½°	185840	M _L = 3.2
	iSN	59.0						
	WAN iPZ	51.0	0.2	4.0	u			
	RAL iPZ	51.5			u			
	TAV iPZ	51.6		5.0	u			
	VUL iPZ	52.6		7.0	u			
	KET ePZ	53½	0.5	5.0	u			

13th December, 1969

RAB: Strong microseismic activity between 0339-0521 hrs. (G.M.T.).
KET: " " " " whole day.

RAB	iPZ	020239.8	1.0	1.2	u			Near
	RAL ePZ	023814½			u	3°	023729	
	iSZ	49.6						
RAB	iPZ	15.0	0.6	1.4	d	2½°	023734	M _L = 4.3
	iSN	46.2						
	WAN ePZ	15				2½°	023734	
	iSZ	46.0						
	TAV ePZ	16½			d			
RAB	iZ	0329	0.6	3.0				Harmonic disturbance
	FZ	0332						
RAB	ePZ/ iSE/	040928½ 1352½			u	25°	040409	
	KET ePZ	0929½	1.5	1.9	d			
	KOA ePZ	1000			u			
RAB	ePZ/	044554			+			Traces
	VUL iPZ	054939.0	0.4	3.0	u	1½°	054916	
	eSZ	56						
RAB	iPZ	41.0	0.5	2.0	d	1½°	054916	
	iSN	59.5						

T A GM
sec mm

13th December, 1969 (continued)

			T	A	GM		
			sec	mm			
KET	iPZ	112708.4	0.5	0.7	d		
RAB	ePZ	10½	0.5	1.3	(a)		
TAV	ePZ	10½					
VUL	iPZ	11.0	0.3	3.0	u		
RAL	ePZ	11½	0.7	2.0	u		
TBL	iPZ	135100	0.5	9.0	u		
VUL	iPZ	5206.0	0.4	1.0	u		
RAB	ePZ	07	0.4	1.0	u		
SUL	iPZ	195250.0	0.2	1.3	u		
TAV	iPZ	51.5	0.3	3.0	u		
VUL	i!PZ	51.7			d		
RAL	iPZ	52.0	0.4	1.2	u		
KET	ePZ	52.5			d		
RAB	ei(P)Z	52.7		1.4	(u)		
TAV	iPZ	203949.4	0.6	1.1	d	1°	203932
	iSZ	4002.6					
VUL	iPZ	3949.7	(0.3)	(2.0)	d	1°	203932
	iSZ	40(02.2)					
SUL	iPZ	3950.0	0.4	1.1	u		
WAN	ePZ	50		3.0	u	1°	203932
	iSZ	4003.2					
RAL	ePZ	3950	0.7	2.8	u	1°	203932
	iSZ	4002.5					
KET	iPZ	3950.2	0.3	5.8	d		
	iSE	4003.8					
RAB	iPZ	3950.7	0.4	4.1	u	1°	203932
	eSN	4003½					
VUL	ePZ	214212½			d		
TAV	ePZ	16½			d		
RAB	ePZ	17½			d		
KET	iPZ	215211.0	0.5	1.3	u		
VUL	ePZ	12	1.0	1.5	d		
RAB	iPZ	12.2	1.0	2.0	u	5°	
	eSN/	5310					
KET	ePZ	233257			d	(2°)	233257
	i(S)Z	33(21)					
VUL	iPZ	3258.7	0.5	9.0	u	2°	233257
	iSZ	3324					
RAB	ePZ	3259	0.5	5.0	d		233257
	eSN	3324					
RAL	iPZ	3259.5			d	2°	233257
	eSZ	3323½					
TAV	ePZ	3259½	1.5		d	2°	233257
	eSZ	3325					

13th December, 1969 (continued)

WAN ePZ 233259½ 0.2 3.4 d

14th December, 1969

TAV, SUL and RAL: No power between 1009 - 2150 hrs.

TBL	ePZ	024634	0.5	1.8	d			
RAL	e(P)Z	47(40)	0.8	5.4	d			
WAN	iPZ	40.5	0.7	3.0	d			
RAB	ePZ	40½	1.0	10.0	d	27°	024208	M _L = 6.5
	eSN/ eScPZ	5157 5442					Depth 100 km.	M _B = 6.0
VUL	ePZ	4740½	0.5	9.7	d			
TAV	iPZ	41.0	0.5	3.1	d			
KET	ePZ	41						
KOA	iPZ	4813.0		2.0	d			
WAN	iPZ	042738.0		2.2	u	¾°	042723	
	iSZ	49.0						
TAV	iPZ	38.5		5.0	d	¾°	042723	
	iSZ	47.5						
RAL	iPZ	38.8		2.0	d	¾°	042724	
	iSZ	48.3						
RAB	ePZ	39	0.5	1.0	d	¾°	042724	M _L = 3.6
	iSE	50.						
VUL	ePZ	40		.	u	¾°	042725	
	iSZ	51.0						
KET	ePZ	41½	0.2	0.8		¾°	042726	
	eSZ	53.						
RAB	eZ/	052642			+			Traces
KOA	iPZ	055250.0			d			
WAN	ePZ	5327.0			d	¾°	055230	
	eSZ	5411.0						
TAV	ePZ	5327			u	¾°	055230	
	eSZ	5410½						
RAL	ePZ	5327½	0.3		u	¾°	055231	
	iSZ	5410.0						
RAB	ePZ	5328			d	¾°	055230½	M _L = 5.3
	iSE	5412						
KET	ePZ	5331	0.3	1.6	u	4°	055231	
	eSZ	5415½						
TAV	iPZ	084112.6	0.3	1.4	u	1¾°	084045	
	eSZ	34						
RAL	iPZ	13.5	0.6	3.4	d			
RAB	ePZ	14	0.5	1.6	d	2°	084044	M _L = 4.2
	eSZ	37						

T A GM
sec mm

15th December, 1969 (continued)

T	A	GM	DIST	H	REMARKS
sec	mm				
VUL ePZ	001718.1				
TAV ePZ	18.8				
TBL ePZ	003743	0.4	1.0	d	
RAB eSN/	4056				Bismarck Sea.
RAB ePZ	011553.4	0.3	2.2	d	1/2° 011545 M _L = 2.6
	eSN 59.6				
KOA ePZ	1619	0.5	0.5	u	
KET ePZ	035106.7			d	2 1/4° 035031
	eSE 33 1/2				
RAL ePZ	07 1/2			u	
TAV iPZ	08.3			u	1 3/4° 035040 1/2
	eSZ 30				
VUL ePZ	08.7			u	1 3/4° 035041
	iP*Z 11.1				
	eZ 18.2				
	eSZ 30.1				
RAB iPZ	09.9	0.6	3.2	d	2° 035036 M _L = 4.7
	eSN 35.5				
WAN ePZ	11			d	
VUL ePZ	062234	0.5	2.6	d.	
RAB iPZ	34.8	0.5	3.0	d	3° 062148 1/2 M _L = 4.4
	iSN 2311.1				
RAL iPZ	2235.0	0.2	0.8	d	
TAV ePZ	35 1/2			d	
RAB eZ/	071817			+	Traces
RAB eZ/	084610			+	"
KET iPZ	130050.0		4.0	u	1 1/4° 190027
	eSE 0107				
VUL iPZ	0050.4	0.5	3.0	u	
TAV iPZ	51.4			d	
RAL ePZ	51 1/2	0.7	1.4	u	
WAN ePZ	52	0.35	1.4	d	1 1/4° 190029 1/2
	eSZ 0109.0				
SUL ePZ	0052 1/2			u	1 1/2° 190028 1/2
	eSZ 0110 1/2				
RAB ePZ	0052 1/2	0.3	2.5	d	1 1/2° 190028 1/2 M _L = 3.6
	iSN 0110.5				
RAB ePZ	133054	0.4	0.8	d	4 1/4° 132950 M _L = 4.5
	eSE 3143				
VUL ePZ	3054 1/2	0.5	1.0	u	
RAB eZ/	140612			+	Traces
KET iPZ	170931.8	0.3	14.0	d	3/4° 170917
	iSE 42.6				

T	A	GM	PEA DECEMBER 1969	NO. 50
sec	mm		DIST H	REMARKS

15th December, 1969 (continued)

VUL	iPZ	170932.0								
					u					
TAV	iPZ	32.0	0.3	2.2	d	1°	170915			
	eZ	32.9								
RAL	ePZ	32½	0.7	8.0	u					
SUL	iPZ	32.6		1.0	u					
WAN	ePZ	32.6	0.1	3.8	d	¾°	170917			
	eSZ	44								
RAB	iPZ	33.0	0.4	4.0	d	¾°	170920			
	iSN	42.4								M _L = 3.3
KOA	ePZ	1011	0.6	0.8	u					
TAV	ePZ	175851.1	0.1	1.8	u	¾°	175836			
	eSZ	5902.0								
KET	iPZ	5851.2								
VUL	ePZ	51.3								
RAL	ePZ	51.7								
WAN	ePZ	51.9	0.2	1.0	u	1°	175835½			
	eSZ	5903.8								
SUL	ePZ	5852	0.4	0.4	u					
RAB	iPZ	52.1	0.3	1.6	d	1°	175835½			
	eSE	5904.2								M _L = 3.3

W.D. Palfreyman

(W.D. PALFREYMAN)
A/Senior Resident Geologist(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABAUL.

23.12.69

PEA DEC 1969 NO. 51.

20 JAN 1970

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RAB	RAB	From: 16 DEC 1969 To: 22 DEC 1969
RABAUl HARBOUR NETWORK	WAN	From: 16 DEC 1969 To: 22 DEC 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 16 DEC 1969 To: 22 DEC 1969
KERAVAT	KET	From: 16 DEC 1969 To: 22 DEC 1969
ESA'ALA	ESA	From: 24 NOV 1969 To: 07 DEC 1969
TABELE	TBL	From: To:
AGENAHAMBO	AGE	From: To:
HOSKINS	DAW	From: 16 DEC 1969 To: 22 DEC 1969
KIMBE	GAB	From: To:
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational

STATION PERSONNEL

RAB	<u>Central Observatory, Rabaul.</u>	
	Senior Resident Geologist (Volcanology).....	G.W. D'ADDARIO
	Seismologist.....	M.G. MANCINI
	Geologist (Volcanology).....	W.D. PALFREYMAN (since 3/12/69)
	Geologist (Volcanology).....	R.A. DAVIES
	Seismogram Readers.....	C.M. LEES J.C. DAVIES
	Senior Technical Officer.....	N.O. MYERS
	Technical Officers.....	R.J. CONWAY S.J. MATHISEN J.E. CARTER
	Volcanological Assistants.....	L. TOPUE, V. KAITA F. DIRA
	Trainee Volcanological Assistants.....	C. MATUPIIT
	Technical Assistants.....	M. SALAIAU
	Clerk.....	D. COOK
	Typiste.....	T. LOW
	Vacation Students.....	A. YAUIEB, P. BARIS P.M. LEITAO, K. MAGARI
KET	<u>Keravat Outstation</u>	
	Observer (part-time).....	J. BART
TBL	<u>Tabele Observatory</u>	
	Observer.....	M. GAIAM
ESA	<u>Esa'ala Observatory</u>	
	Observer.....	E. RAVIAN
AGE	<u>Agenahambo Observatory</u>	
	Observer (part-time).....	B. KIRKE
DAW	<u>Hoskins Field Station</u>	
	Observer.....	B. TALAI
GAB	<u>Kimbe Field Station</u>	
	Observer.....	P. DAIMBARI

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist (V), from whom additional information and photocopies of seismogram records from all stations may be obtained on request. Please address all communications to:-

Senior Resident Geologist(V),
Central Observatory,
P. O. Box 386,
RABAU,
T.P.N.G.

T	A	GM	PEA	DECEMBER	1969	NO. 51
sec	mm		DIST	H		REMARKS

RABAU

RAB & KET: Strong microseismic activity throughout the day.
 DAW: Records unavailable.

16th December, 1969

TAV	iPZ	005114.6	0.2	5.0	u	¾°	005059½	
	iSZ	25.0						
RAL	iPZ	14.7	0.7	3.0	d	¾°	005059½	
	iSZ	25.5						
WAN	ePZ	15	0.4	1.0				
RAB	iPZ	15.2	0.4	2.0	u	¾°	005100	M _L =3.2
	iSZ	26.0						
VUL	ePZ	15½			u			
KET	iPZ	054737.2	0.2	1.8	d			
VUL	ePZ	38	0.4	4.0	d	2¼°	054701½	
	iSZ	4805.8						
TAV	ePZ	4738	0.3	5.0	d	2¼°	054703	
	iSZ	4804.5						
WAN	ePZ	4738½	0.2	1.0		2¼°	054701	
	eSZ	4807						
RAB	ePZ	4739	0.4	2.3	d	2°	054705	M _L = 4.1
	eSE	4805						
RAL	ePZ	4739½	0.5	3.0	u	2°	054706	
	eSZ	4804						
KOA	iPZ	4743.0	0.3	10.5	d	2½°	054704	
	iSZ	4812.5						
RAB	ePZ/	153233½						Teleseism
RAL	ePZ	155825½	0.8	2.0	d	1°	155809	
	iSZ	37.4						
TAV	ePZ	25½	0.3	8.0	d	¾°	155810	
	iSZ	37.0						
VUL	iPZ	26.0			d	¾°	155811	
	iSZ	37.0						
WAN	iPZ	26.5		2.0	u	1°	155808	
	iSZ	40.0						
KET	ePZ	26			d	1°	155808	
	iSE	40.3						
SUL	iPZ	26.6			u	1°	155809	
	iSZ	39.0						
RAB	iPZ	26.8	0.5	4.0	d	1°	155809	M _L = 3.6
	iSE	40.0						
KOA	i(P)Z	5904.0		4.0	(d)			
VUL	iPZ	181150.0	0.5	1.0	d			
TAV	ePZ	51				1½°	181124	
	eSZ	1211½						
RAL	ePZ	1153				(1½°)	1811(19)	
	e(S)Z	1211						

16th December, 1969 continued

RAB	e(P)Z	181153½				(1½°)	1811(19½)	M _L = 3.8
	e(S)E	1212						
KOA	iPZ	04.0	0.3	9.0	u	2¼°	1811(28½)	
	i(S)Z	31.0						
KOA	ePZ	183327				1½°	183302	
	iSZ	46.0						
VUL	ePZ	56	0.9	3.1	d			
RAL	ePZ	56						
WAN	ePZ	56½						
RAB	ePZ	56½	1.0	2.0	d			
TAV	ePZ	57	1.0	2.0	d			

17th December, 1969

RAB:	Very strong microseismic activity throughout the day.							
RAB	eZ/	025718				+		Traces
RAB	ePZ/	073434				d	21°	072950
	iSN/	3805½						
DAW	ePZ	3441	0.6	1.0	d			
VUL	iPZ	081247.5		1.7	u	1¼°	081226	
	iSZ	1303.8						
WAN	ePZ	1248				d	1½°	081226
	eSZ	1306						
KET	ePZ	1248				d		
DAW	iPZ	48.7	0.5	0.8	u			
RAL	ePZ	49½				d	1½°	081224
	eSZ	1308						
RAB	iPZ	1249.8	0.3	1.4	u	1¼°	081227	M _L = 3.5
	iSE	1306.4						
TAV	ePZ	1250				d		
RAB	eZ/	092156				-		Traces
VUL	iPZ	092922.7				u		
	iSZ	27.0						
TAV	iPZ	22.9	0.2	.4	u	¼°	092916	
	iSZ	28.0						
RAL	ePZ	23.0				u		
WAN	ePZ	24				d		
RAB	iPZ	24.4	0.4	3.2	d	¼°	092918	M _L = 1.7
	iSE	29.0						
VUL	iPZ	183729.4	0.6	3.1	d	1°	183711	
	iSZ	43.6						
KET	ePZ	29½				u	1¼°	183708
	iSE	45.0						

T	A	GM	PEA DECEMBER 1969	NO. 51
sec	mm		DIST H	REMARKS

17th December, 1969 continued

TAV	iPZ	183729.7	0.2	4.2	d	1°	183711	
	eSZ	44						
RAL	iPZ	30.0	0.5	8.2	u	1¼°	183710	
	eSZ	45						
SUL	ePZ	30½	0.4	0.6	u	1¼°	183710	
	eSZ	45½						
WAN	ePZ	30½	0.4	1.0	u	1¼°	183710	
	eSZ	45½						
RAB	iPZ	30.6	0.5	2.9	d	1¼°	183709	M _L = 3.4
	iSE	46.5						
KET	iPZ	204850.4	0.2	6.0	d			
VUL	ePZ	50½						
RAB	eiPZ	50.7	0.3	4.1	d			Regional
RAL	iPZ	50.7	0.2	2.0	u			
WAN	iPZ	50.8	0.2	1.3	u			
TAV	iPZ	50.8	0.2	1.0	d			
DAW	ePZ	52	1.0	1.1	d			

18th December, 1969

KET: N/S and E/W light off from 0840 - 2223 hrs. (G.M.T.).

WAN	iPZ	023131.0	0.3	4.4	d			
RAL	iPZ	31.0	0.5	14.3	d			
VUL	iPZ	31.0	0.2	6.0	d	1¼°	023101½	
	iSZ	53.2						
TAV	iPZ	31.0	0.3	4.5	d			
RAB	iPZ	31.2	0.5	14.6	d	1¼°	023102	M _L = 2.8
	iSE	53.3						
DAW	iPZ	42.0			d			
KOA	ePZ	3207						
KOA	i!PZ	052236	0.2	36.0	d	1°	052220	
	eSZ	48						
RAB	ePZ/	061815			u	21°	061338	
	eSE/	2204						
	eE/	2402						
	eQZ/	2940						
WAN	i!PZ	075819.8	0.2	48.6	u			Local
SUL	ePZ	20						
RAB	iPZ	20.1	0.5	11.0	u			"
	iSN	24.3						
RAL	iPZ	20.2						
TAV	iPZ	20.8			u			
VUL	ePZ	21			u	¼°	075815½	
	eSZ	25.7						

18th December, 1969 continued

TAV	iPZ	124909.0	0.5	1.5	d	1½°	124842	
	eSZ	29½						
VUL	iPZ	09.3	0.4	5.2	d			
RAB	iPZ	09.8	0.5	1.3	u	1½°	124842½	M _L = 4.1
	iSE	30.4						
KET	ePZ	10½						
RAL	ePZ	11			u	1¾°	124842	
	eSZ	33						
KOA	iPZ	13	0.4	2.2	d	2°	124840	
	eSZ	38½						
DAW	iPZ	29.5			d			
KOA	iPZ	082418.6	0.1	5.3	d	1°	082401	
	eSZ	32						
WAN	iPZ	134033.7	0.9	2.0	d			
RAB	iPZ	34.0	0.9	4.5	d			Distant
SUL	ePZ	34						
RAL	ePZ	34	0.5	5.5	d			
TAV	iPZ	34.2	0.7	4.6	d			
VUL	iPZ	34.8	0.5	4.2	d			
DAW	iPZ	42.7		1.5	u			
KET	ePZ	134134	1.4	3.0	d			
RAB	ePZ/ eSN/	134144 4726			d	33°	133513	
KOA	iPZ	4152.8	0.8	32.5	d			
VUL	iPZ	160259.2			d			
SUL	ePZ	0300½		0.2	d			
WAN	iPZ	00.5		0.5	d	2½°	160228½	
	iSZ	24½						
RAB	iPZ	00.6	0.7	3.0	u	2¼°	160227	M _L = 5.2
	iSE	26.2						
KET	iPZ	00.6	0.5	2.4	d			
KOA	ePZ	06		2.5	d	2½°	160227	
	eSZ	35½						
DAW	ePZ	16½		0.5	u			
DAW	iPZ	185217.0						
RAB	iPZ	38.2	0.4	1.6	d	2¾°	185157	M _L = 4.6
	iSN	5309.6						
VUL	ePZ	5238½	0.3	0.8	d	2¾°	185157	
	iSZ	5309.6						
WAN	iPZ	5239.4	1.3	2.0	u	2½°	185159	
	eSZ	5310						
TAV	iPZ	5240.3	0.5	3.0	d			

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DIST H REMARKS

19th December, 1969

T	A	GM	PEA DECEMBER 1969		NO. 51	REMARKS
sec	mm		DIST	H		
KOA	iPZ	004520.0				
			7.0			u
VUL	iPZ	033919.4				
	eSZ	37	4.0		1½°	033856
TAV	ePZ	20				
			0.4			u
RAL	ePZ	20	1.0			
			3.0			u
WAN	ePZ	21				
	eSZ	39½	2.4		1½°	033856½
RAB	iPZ	21	0.5			
	iSN	39.4	4.0		1½°	033857
RAB	ePZ/	044537				
						u
KET	ePZ	072539½	0.2	10.0		d
WAN	iPZ	43.9	0.2	5.0		u
RAL	ePZ	44				
			2.0			u
RAB	iPZ	44.8	0.6	3.4		d
	iSE	46.2				
						Local
TAV	ePZ	45				
						d
WAN	iPZ	080013.2		110.0		u
SUL	iPZ	13.3		6.0		u
RAB	iPZ	13.4	0.3	8.0	¼°	080006
	iSN	19.2				
						M _L = 2.8
RAL	iPZ	13.7	0.2	14.0		u
TAV	iPZ	14.2	0.2	11.5		u
VUL	iPZ	15.0		4.0		d
RAB	eZ/	082337				
						-
						Traces
KOA	iPZ	121545.2		130.0		d
KET	iPZ	1617.8	1.0	2.0	3°	121532½
	iSE	52				
RAL	ePZ	18	1.4	2.5		u
VUL	iPZ	18.4		11.0		u
RAB	ePZ	18½	1.5	1.5	3¼°	121529½
	iSNa	55.8				
						M _L = 6.3 ✓
WAN	ePZ	18½	1.5	1.0		u
TAV	ePZ	18½	1.0	2.8		u
SUL	ePZ	19½				u
DAW	iPZ	33.0				

Felt Barapinang INT. III-IV
Co-ordinates 06°13'S,
155°38'E.
Felt Rabaul INT. II
Co-ordinates 04°11'S,
152°10'E.
Felt Piva INT. IV
Co-ordinates 06°12'S,
155°03'E.
Epicentre co-ordinates
06½°S, 154½°E;
Solomon Islands Region.

19th December, 1969 continued

TAV	iPZ	122244.6	0.2	6.0	u	$\frac{3}{4}^{\circ}$	122230	
	iSZ	55						
RAL	ePZ	45	0.1	3.0	d	$\frac{3}{4}^{\circ}$	122230 $\frac{1}{2}$	
	eSZ	55 $\frac{1}{2}$						
WAN	ePZ	45				$\frac{3}{4}^{\circ}$	122229 $\frac{1}{2}$	
	eSZ	56 $\frac{1}{2}$						
RAB	iPZ	45.3	0.4	0.8	u	1°	122229 $\frac{1}{2}$	$M_L = 3.2$
	iSN	57.0						
VUL	iPZ	46.2			u			
DAW	iPZ	125230.0			u			
KET	iPZ	38.2	0.2	2.0	u	$1\frac{3}{4}^{\circ}$	125209 $\frac{1}{2}$	
	iSN	5300.0						
VUL	ePZ	5240.0			d			
TAV	ePZ	40 $\frac{1}{2}$	0.5	0.4	d			
SUL	iPZ	40.8		1.0	u			
WAN	ePZ	41		8.0	u			
RAL	iPZ	41.2	0.5	5.5	u			
RAB	iPZ	41.5	0.5	14.5	u	2°	125210	$M_L = 4.0$
	iSN	5304.9						
KOA	iPZ	162926.4		120.0	d			
TAV	ePZ	03 $\frac{1}{2}$	0.5	4.2	d			
	eP*Z	06 $\frac{1}{2}$						
VUL	iPZ	03.8		9.0	u			
RAL	ePZ	04 $\frac{1}{2}$		2.5	u			
KET	iPZ	04.6			d	$3\frac{1}{2}^{\circ}$	162909 $\frac{1}{2}$	
	eSN	46 $\frac{1}{2}$						
WAN	ePZ	05	1.0	1.0	u	$3\frac{1}{2}^{\circ}$	162911	
	eSZ	46						
RAB	ePZ	05.2			u	$3\frac{1}{2}^{\circ}$	162910 $\frac{1}{2}$	$M_L = 6.3$
	eSEh	47						
SUL	ePZ	06			u			
DAW	iPZ	17.5			u			
KOA	iPZ	184814.2		54.0	d			
TAV	ePZ	38 $\frac{1}{2}$			u			
VUL	ePZ	39			d			
RAL	ePZ	39 $\frac{1}{2}$	0.3	0.4	u			
KET	ePZ	39 $\frac{1}{2}$	0.5	1.0	d	3°	184752	
	eSN	4915 $\frac{1}{2}$						
RAB	ePZ	4840	0.5	2.0	d	$2\frac{3}{4}^{\circ}$	184756	
	iSN	4913.8						

19.12
 $M_L = 6.3$
 Felt Piva INT. IV
 Co-ordinates $06^{\circ}12'S$,
 $155^{\circ}03'E$.
 Felt Barapinang INT. IV
 Co-ordinates $06^{\circ}13'S$,
 $155^{\circ}38'E$.
 Epicentre co-ordinates
 $06\frac{1}{2}^{\circ}S$, $154\frac{3}{4}^{\circ}E$.
 Solomon Islands Region.

PEA DECEMBER 1969 NO. 51
 DIST H REMARKS

19th December, 1969 continued

	T	A	GM				
	sec	mm					
TAV iPZ	212706.4	0.3	2.0	u	1¼°	212643½	
eSZ	23½						
VUL iPZ	06.7	0.5	3.0	d			
RAL ePZ	07	0.3	1.0	u			
RAB ePZ	07½			d	1½°	212643	M _L = 3.4
iSN	25.9						

20th December, 1969

RAB iPZ	042357.0			u	¾°	042343	M _L = 3.4
iSE	2407.0						
WAN iPZ	2357.0			u			
RAL iPZ	57.0			u			
SUL iPZ	57.0			u			
TAV iPZ	57.2			u			
VUL iPZ	58.1			u			
DAW iPZ	062959			d			
KET i(P)Z	3010.4			d	2°	062938½	
iSZ	34.4						
VUL iPZ	12.0						
RAB iPZ	12.5	0.4	3.0	d	1¼°	062944	M _L = 3.8
iSN	34.2						
WAN iPZ	13.4			d			
RAL iPZ	13.4						
TAV iPZ	15.0						
KOA iPZ	42.8	1.2	1.5	d			
TAV i!PZ	094051.7			d			
RAL i!PZ	51.8			d			
SUL i!PZ	52.0			d	½°	094043	
i!SZ	4100						
WAN i!PZ	4052.1			d			
RAB i!PZ	52.5			d	S.E. ½°	094042	M _L = 4.9
iSEh	4100.3						
VUL i!PZ	4052.9			d			
KET i!PZ	54.0			d			
DAW i!PZ	4119.5						
KOA i!PZ	33.6	0.8	100.0	d	2¾°	094037	
iSZ	4217						
KOA iPZ	111503.8	0.8	4.0	d	1¼°	111435½	
iSZ	30						
RAL iPZ	15.4	0.5	5.2	u			
TAV iPZ	15.5			u			
WAN iPZ	15.5			u			

20.12
 M_L = 4.9
 Felt Rabaul INT.III-IV
 duration 15 sec.
 Co-ordinates 04°11'S
 152°10'E
 Epicentre co-ordinates
 04¼°S;
 152½°E.
 New Britain Region.

20th December, 1969 continued

RAB	iPZ	111516.0	0.5	10.6	u		
	SUL ePZ	16			u		
	VUL iPZ	16.0			u		
	KET iPZ	16.2	0.4	1.2	u		
	DAW iPZ	131014½					
	KET ePZ	18.0			u		
	VUL iPZ	19.0			u		
RAB	ePZ	19			u		
	WAN ePZ	19			u		Regional
	RAL iPZ	19.2			u		
	TAV iPZ	19.5			u		
	KOA ePZ	47	1.0	3.5	u		
	KET iPZ	131126.6			d	1¼°	131054
	iSE	48.0					
	VUL iPZ	29.0			d		
	WAN iPZ	29.8			d		
RAB	iPZ	30.0			d	1¼°	131055
	iSE	56.6					M _L = 4.5
	RAL iPZ	30.0			d		
	TAV iPZ	30.0			d		
	SUL iPZ						
	KOA ePZ	1203			d		
	VUL iPZ	154710.0			d		
	KET iPZ	10.2			u	1¼°	154651
	iSE	24.2					
	TAV iPZ	10.5			u		
	WAN iPZ	11.0	0.4	3.0	d	1¼°	154650
	iSZ	27.0					
	RAL iPZ	11.2			u		
	SUL ePZ	11½			d		
RAB	ePZ	11½	0.6	3.8	d	1¼°	154651
	iSN	26.5					M _L = 2.8
	KOA iPZ	58.0	28.0		d		
	TAV iPZ	173153.5			d	½°	173142
	iSZ	3201.0					
	RAL iPZ	3153.5			d	½°	173143
	iSZ	3202.0					
	WAN iPZ	3153.8			d	½°	173142
	iSZ	3203.0					
	SUL iPZ	3154.2			d		
RAB	iPZ	54.4	0.6	6.0	d	¾°	173144
	iSN	3203.8					M _L = 3.0
	VUL iPZ	3155.0			d		

						PEA DECEMBER 1969	NO. 51	
T	A	GM	DIST	H	REMARKS			
sec	mm							
<u>20th December, 1969</u> continued								
KET	iPZ	173155.5	0.6		u	¾°	173140	
	iSE	3207.2						
RAB	iPZ	234437.4	0.3	7.6	u	¼°	234431	
	eSN	42.5						
WAN	i!PZ	234436.8			u			
RAB	iPZ	37.0	0.3	14.0	u	¾°	234424	M _L = 3.8
	iSE	46.6						
SUL	i!PZ	37.2			u	¾°	234423½	
	eSZ	47						
RAL	i!PZ	37.4		21.0	u			
TAV	iPZ	37.8		12.2	u			
VUL	iPZ	38.5	0.2	6.0		¾°	234425½	
	iSZ	48.0						
KET	e(P)Z	40½	0.3	1.4	u			
<u>21st December, 1969</u>								
WAN	ePZ	002403½			d			
RAB	iPZ	03.7	0.8	2.4	d			
TAV	ePZ	04	1.0	0.8	d			
VUL	ePZ	04	0.4	2.4	d			
RAL	ePZ	04	0.8	1.0	d			
KET	ePZ	06	0.8	1.0	d			
KOA	ePZ	45½	0.8	3.0	d			
RAB	iPZ	003636.6	0.6	0.8	d			Distant
WAN	ePZ	37	0.4	0.6	u			
KET	ePZ	37	0.8	1.4	u			
VUL	ePZ	37½	0.5	2.6	u			
RAL	ePZ	37½	0.6	1.0	u			
TAV	ePZ	38½	0.6	0.6	d			
TAV	iPZ	003851.0	1.0	1.8	u			
VUL	iPZ	51.0	0.8	2.4	u			
RAL	ePZ	51	0.8	2.6	u			
WAN	ePZ	51			u			
RAB	iPZ	51.2	0.9	1.6	u			Distant
KET	ePZ	55			u			
WAN	i!PZ	044035.5			u	¼°	044028	
	iSZ	41.2						
RAB	iPZ	35.8	0.4	6.0	u	¼°	044029	M _L = 3.1
	iSN	41.0						
RAL	i!PZ	36.0		16.4	u			
SUL	iPZ	36.0			u	¼°	044029	
	eSZ	41½						
TAV	i!PZ	36.4		14.4	u	¼°	044030	
	iSZ	41.5						

T A GM
sec mm

21st December, 1969 continued

VUL	iPZ	044037.2		4.8	u	1/4°	044031		
	iSZ	42.0							
DAW	iPZ	072156.9	0.4	2.5	d				Distant
KOA	ePZ	2218			d				
KET	ePZ	22	1.0	1.4	d				
WAN	ePZ	22 1/2	0.4	3.8	d				
VUL	iPZ	22.8	0.8	5.2	u				
RAB	iPZ	23.2	0.5	3.4	d				
TAV	ePZ	23 1/2			d				
RAL	ePZ	23 1/2	0.8	3.0	d				
KOA	i!PZ	084945			d				
VUL	ePZ	5032	0.6	1.2					
TAV	ePZ	34	0.5	0.5	u	4 1/2°	084927		
	eSZ	5125 1/2							
KET	ePZ	5034	0.4	0.6	u	4 3/4°	0849(24 1/2)		
	e(S)N	5128							
WAN	ePZ	5034	0.4	0.4	u				
RAL	ePZ	34 1/2			d	4 1/4°	084930 1/2		
	eSZ	5123 1/2							
RAB	iPZ	5035.2	0.4	0.5	u	4 1/4°	084930 1/2		M _L = 5.0
	iSE	5125.6							
DAW	ePZ	5043	0.4	0.3					
DAW	iPZ	095859.0			d				
KET	i!PZ	5906.2		20.0	d	2°	095834		
	iSN	30.5							
VUL	eiPZ	07.0	0		d				
TAV	ePZ	07 1/2	0.4	18.4	d	2 1/2°	095832		
	eSZ	34 1/2							
RAL	eiPZ	08.0	0.4	12.0	d	2 1/2°	095832		
	eSZ	34 1/2							
SUL	ePZ	08	0.4	1.4	d	2 1/4°	095831		
	eSZ	36							
WAN	ePZ	08 1/2	0.3	18.0	d	2 1/4°	095833		
	eSZ	34 1/2							
RAB	iPZ	09.0	0.4	14.0	d	2°	095836		M _L = 4.8
	iSE	34.0							
KOA	iPZ	32.0		4.4	d	3 1/2°	095837		
	iSZ	100014.0							
RAB	ePZ	102522	0.4	0.6	u	3 1/2°	102429		M _L = 4.2
	eSN	2602 1/2							
RAL	ePZ	2522	1.0	0.6	d				
TAV	ePZ	22 1/2	1.2	0.6	u				
WAN	ePZ	22 1/2			u				
VUL	ePZ	23			u				

21st December, 1969 continued

KET	ePZ	102523	1.4	0.6	u	3½°	102429½	
	eSN	04						
DAW	ePZ	24½	0.8	1.1	d			
RAB	eZ/	103114			+			Traces
KET	ePZ	134708	0.3	0.4	d	1¼°	134646	
	iSN	24.5						
VUL	i!PZ	09.2		19.4	d	1¼°	134647	
	iSZ	26.0						
RAL	iPZ	09.4	0.7	3.2	d			
WAN	iPZ	09.4	0.2	6.5	d	1¼°	134648	
	iSZ	25.5						
SUL	ePZ	09½	0.2	0.4	u			
TAV	ePZ	09½	0.4	1.0	d	1½°	134646½	
	eSZ	27						
RAB	iPZ	09.8	0.4	0.3	d	1¼°	134648	M _L = 3.5
	iSN	26.0						
DAW	iPZ	20.5	0.4	2.1	d			
KOA	ePZ	49		3.0	d			
RAB	iPZ	153945.7	0.7	3.0	d			Distant
KET	i!PZ	194350.8			d	1¼°	194329	
	iSN	07.0						
RAB	ePZ	52	0.4	2.4	d	1½°	194326½	M _L = 4.4
	iSE	12.0						
VUL	i!PZ	52.2			d	1½°	194327½	
	iSZ	10.5						
TAV	ePZ	52½	0.4	2.6	d	1½°	194324½	
	iSZ	13.0						
SUL	ePZ	52½				1½°	194326½	
	eSZ	12						
RAL	iPZ	53.0	0.5	2.0	d			
WAN	ePZ	53	0.2	4.0	d	1½°	194327½	
	iSZ	12						
DAW	ePZ	55½	0.5	0.6	d			

22nd December, 1969

KOA	ePZ	005935½			d			
TAV	iPZ	42.8	0.2	1.9	d			
KOA	ePZ	013033½		67.4	u			
RAL	iPZ	53.2	0.7	5.9	u	1¼°	013025	
	iPgZ	57.5						
	eSZ	3114½						
	eSgZ	27						
TAV	ePZ	3053½			u	2°	013023	
	eSZ	3116						
	eSgZ	27						

T A GM
sec mm

22nd December, 1969 continued

RAB	iPZ	013054.0	0.5	2.8	u	1 $\frac{1}{4}$ ^o	013025	M _L = 4.4
	iPgZ	57.9						
	iSE	3116.4						
	iSgE	30.0						
VUL	iPZ	3054.0	0.4	8.0	d			
WAN	ePZ	54						
	ePgZ	58						
DAW	eiPZ	3115	0.8	1.4	d			
TAV	iPZ	024937.0	0.3	1.9	d	1 $\frac{1}{2}$ ^o	024911	
	eSZ	57						
VUL	iPZ	37.1	0.2		d			
KET	ePZ	37 $\frac{1}{2}$			d			
RAL	iPZ	37.9	0.4	3.2	d			
RAB	ePZ	38	0.2	2.9	d	1 $\frac{3}{4}$ ^o	024910	M _L = 3.8
	iSN	58.7						
VUL	iPZ	030156.9			d			
TAV	ePZ	57			d	1 ^o	030139	
	eSZ	0210						
KET	iPZ	0157.4			d			
RAB	iPZ	57.5	0.1		d	1 ^o	030140	M _L = 4.6
	eSN/	0210						
WAN	iPZ	0157.5	0.3		d			
RAL	ePZ	57 $\frac{1}{2}$			d	1 ^o	030140	
	eSZ	0210 $\frac{1}{2}$						
KOA	ePZ	31		8.0	d			
KOA	ePZ	034418 $\frac{1}{2}$		12.0	d			
KET	iPZ	19.9	0.4	1.6	u			
TAV	iPZ	20.0		8.6	d			
VUL	iPZ	20.0	0.1	2.1	d			
RAL	ePZ	20			d			
RAB	iPZ	21.1	0.5	4.6	d	3 $\frac{1}{2}$ ^o	034327	M _L = 6.1
	eSN/	4502						
WAN	ePZ	4421 $\frac{1}{2}$			d			
RAB	iPZ	084353.3	1.1	1.7	u			Distant
WAN	ePZ	53 $\frac{1}{2}$	1.0	1.2	u			
VUL	ePZ	53 $\frac{1}{2}$	0.9	1.4	u			
RAL	iPZ	54.0	0.8	1.0	u			
RAB	eZ/	091020			-			Traces
RAB	eZ/	113730			+			"
RAB	iPZ	115747.0	0.5	1.0	u	2 ^o	115714	M _L = 3.6
	iSE	5811.5						
WAN	ePZ	5747 $\frac{1}{2}$	0.2	1.4		2 ^o	115716	
	eSZ	5811 $\frac{1}{2}$						

T A GM PEA DECEMBER 1969 NO. 51
 sec mm DIST H REMARKS

22nd December, 1969 continued

RAL	ePZ	115748				u	2°	115716	
	iSZ	5811.8							
TAV	ePZ	5748					2°	115718	
	iSZ	5811.2							
KET	iPZ	5748.4	0.4	1.0		d			
VUL	ePZ	49				u			
TAV	iPZ	123937.9	0.1	4.2		u	1¼°	123917	
	iSZ	53.8							
KET	iPZ	37.9	0.2	1.0		d	1¼°	123918	
	iSE	53.3							
RAL	ePZ	38		1.8		d			
VUL	ePZ	38	0.4	3.3		u			
WAN	ePZ	39					1¼°	123919	
	iSZ	54.0							
RAB	iPZ	39.4	0.5	1.0		d	1¼°	123918	
	iSN	55.6							
KET	iPZ	131317.0				u	1¾°	131249	
	eSE	38							
VUL	iPZ	18.4		0.9		d	2°	131247	
	iZ	19.0							
	iSZ	42.0							
RAB	ePZ	19½				u	2°	131248	M _L = 4.2
	iZ	20.7							
	iSN	43.2							
WAN	ePZ	19½				d	2°	131248	
	iSZ	43.2							
TAV	iPZ	20.0		1.1		u			
RAL	iPZ	20.1	0.3	4.1		u	2°	131250	
	iSZ	43.1							
TAV	iPZ	174311.5	0.2	57.8		d	1°	174255	
	eSZ	23							
RAL	iPZ	11.5	0.3	18.0		d	1°	174255	
	eSZ	23							
WAN	iPZ	12.2	0.2	18.0		d	¾°	174257	
	iSZ	23.5							
RAB	iPZ	12.4	0.4	18.0		d	1°	174256	M _L = 4.6
	eSN	24							
VUL	iPZ	12.8	0.2	15.1		d	1°	174256½	
	eSZ	24½							
KET	iPZ	13.8	0.2			d			
KOA	ePZ	47		2.8		u	3°	174301	
	eSZ	22							
RAB	eZ/	202350				+			Traces
RAB	eZ/	210408				+			"

(W.D. PALFREYMAN)
 A/Senior Resident Geologist(V)

PEA DECEMBER 1969 NO. 51
DIST H REMARKS

T	A	GM				
sec	mm					

ESA'ALA

24th November, 1969

ESA ePZ	230400½	0.9	1.0	u		Distant
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25th November, 1969

ESA iPZ	003829.6	0.7	1.1	u		"
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ESA ePZ	045443½	0.6	0.3	u		"
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ESA iPZ	215425.0	0.5	1.2	d		
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ESA iPZ	223225.7	0.3	0.7	d	5°	22311½
iSE	3322.5					

26th November, 1969

ESA ePZ	124734½	0.3	0.6	u		Regional
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ESA iPZ	124824.6	0.7	2.4	u	19°	
iSN/	5155.0					
i(Lr)Z/	5321½					

ESA ePZ	143137½	1.4	1.6	d	19½°	
iSN/	3512					

ESA eZ	233217			+		Traces
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27th November, 1969

ESA ePZ	031216	0.8	0.4	d		
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ESA ePZ	063204	0.6	0.4	u	4½°	063055
iSN	57.2					

ESA ePZ	111629	0.4	0.2	u	2¾°	111544
iSN	1703.6					

ESA iPZ	180432.6	0.3	1.1	u	5¼°	180315
iSN	0531.5					

ESA ePZ	185745	0.4	0.4	d		
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ESA ePZ	195218	0.7	0.3	u		
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ESA ePZ	195930	0.8	0.2	u		
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ESA eiPZ	204514½	0.3	0.6	d	4¼°	204412
iZ	15.0					
iSN	4602.4					

28th November, 1969

ESA iPZ	132139.2			u		Local
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ESA iPZ	135152.9	0.9	7.0	d	21°	
iSN/	5537.0					

PEA DECEMBER 1969 NO. 51
 DIST H REMARKS

T A GM
 sec mm

28th November, 1969 continued

ESA eZ 141730 - Traces

29th November, 1969

ESA ePZ 182414½ u 5° 182259
 iSN 2512.2

30th November, 1969

Z & E/W components unserviceable.

ESA iPE 001205.8 0.4 1.4 u 4° 001104
 iSN/ 52.9

ESA ePE 055704 0.5 0.3 d 3¼° 055616
 iSN/ 41.2

ESA iPE 121436.0 0.3 2.0 d Local

ESA ePE 185255½ d 5¼° 185138
 iSE/ 5356.0

1st December, 1969

ESA ePZ 200719½ 0.5 0.3 d 2½° 200639
 iSN 50.6

ESA ePZ 205340½ 0.3 0.6 d Regional

ESA iPZ 223341.7 0.8 1.2 u

2nd December, 1969

ESA ePZ 173136½ 1.1 0.7 d

ESA eiPZ 180307 0.4 0.4 d 29½° 175702
 iZ 08.2
 iSN/ 0758.5

ESA iPZ 194833.8 0.2 0.8 d 3½° 194739
 iSE 4915.6

3rd December, 1969

ESA iPZ 143154.5 1.6 d Regional

ESA ePZ 205601 0.2 0.2 d 4¼° 205457
 iSE 50.6

4th December, 1969

ESA iPZ 085917.4 0.8 1.6 d Distant

5th December, 1969

ESA Nil recorded

PEA DECEMBER 1969 NO. 51
 DIST H REMARKS

T	A	GM	DIST	H	REMARKS
sec	mm				

6th December, 1969

ESA iPZ	004824.8	0.4	1.2	d	3¼°	004736	
iSN	4901.8						
ESA iPZ	061448.4	0.2	1.0	u			Regional
ESA iPZ	183559.9	0.4	1.6	u	5¼°	183442	
iSN	3659.6						

7th December, 1969

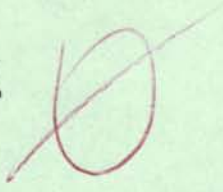
ESA ePZ	035951½			d			Distant
ESA iPZ	111429.8	0.4	1.0	d	3½°	111336	
iSN	1510.4						
ESA iPZ	133729.0	0.6	4.2	d			Distant
ESA i!PZ	200453.1			u			Local

W.D. PALFREYMAN
 A/Senior Resident Geologist(V)

CENTRAL OBSERVATORY,
RABAUL.

31.12.69

PEA DEC 1969 NO. 52



20 JAN 1970

TERRITORY OF PAPUA AND NEW GUINEA
GEOLOGICAL AND VOLCANOLOGICAL BRANCH

VOLCANOLOGICAL BRANCH

PRELIMINARY EARTHQUAKE ANALYSIS
RABAUl CENTRAL OBSERVATORY

RAB	RAB	From: 23 DEC 1969 To: 29 DEC 1969
RABAUl HARBOUR NETWORK	WAN	From: 23 DEC 1969 To: 29 DEC 1969
	SUL	
	RAL	
	TAV	
	VUL	
KOBUAN	KOA	From: 23 DEC 1969 To: 29 DEC 1969
KERAVAT	KET	From: 23 DEC 1969 To: 29 DEC 1969
ESA'ALA	ESA	From: 08 DEC 1969 To: 14 DEC 1969
TABELE	TBL	From: To:
AGENAHAMBO	AGE	From: To:
HOSKINS	DAW	From: 23 DEC 1969 To: 29 DEC 1969
KIMBE	GAB	From: To:
WARIS	WAA	Not operational
ULAMONA	UMA	Not operational
PIVA	PIV	Not operational



STATION PERSONNEL

RAB	<u>Central Observatory, Rabaul.</u>	
	Senior Resident Geologist (Volcanology).....	G.W. D'ADDARIO
	Seismologist.....	M.G. MANCINI
	Geologist (Volcanology).....	W.D. PALFREYMAN (since 3/12/69)
	Geologist (Volcanology).....	R.A. DAVIES
	Seismogram Readers.....	C.M. LEES J.C. DAVIES
	Senior Technical Officer.....	N.O. MYERS
	Technical Officers.....	R.J. CONWAY S.J. MATHISEN J.E. CARTER
	Volcanological Assistants.....	L. TOPUE, V. KAITA F. DIRA
	Trainee Volcanological Assistants.....	C. MATUPIIT
	Technical Assistants.....	M. SALAIAU
	Clerk.....	D. COOK
	Typiste.....	T. LOW
	Vacation Students.....	A. YAUIEB, P. BARIS P.M. LEITAO, K. MAGARI
KET	<u>Keravat Outstation</u>	
	Observer (part-time).....	J. BART
TBL	<u>Tabele Observatory</u>	
	Observer.....	M. GAIAM
ESA	<u>Esa'ala Observatory</u>	
	Observer.....	E. RAVIAN
AGE	<u>Agenahambo Observatory</u>	
	Observer (part-time).....	B. KIRKE
DAW	<u>Hoskins Field Station</u>	
	Observer.....	B. TALAI
GAB	<u>Kimbe Field Station</u>	
	Observer.....	P. DAIMBARI

The Rabaul Preliminary Earthquake Analysis (PEA) is produced by the staff under the direction of the Senior Resident Geologist (V), from whom additional information and photocopies of seismogram records from all stations may be obtained on request. Please address all communications to:-

Senior Resident Geologist (V),
Central Observatory
P. O. Box 306,
RABAU,
T.P.N.G.

RABAU

From 22nd SUL unserviceable.

23rd December 1969

TAV	iPZ	001904.5	0.3	1.5	d	1½°	001839	
	iSZ	24.0						
VUL	iPZ	04.7	0.7	3.0	d			
RAL	ePZ	05		3.0	d			
KET	iPZ	05.4			u			
RAB	iPZ	05.5	0.5	2.1	d	1½°	001838	M _L = 4.0
	iSN	26.2						
KET	iPZ	081053.0			d			
VUL	iPZ	54.0		3.0	d			
RAB	iPZ	55.0	0.4	3.0	d	1½°	081029	M _L = 4.6
	iSN	1115.0						
RAL	iPZ	1055.0	0.5	5.0	u			
TAV	iPZ	55.0		4.5	u			
DAW	eiPZ	55		1.8	u			
	iZ	56						
WAN	iPZ	55.7	0.7	10.8	u			
VUL	ePZ	090334½	0.4	3.0	u			
TAV	iPZ	35.0	0.5	3.0	d	1½°	090309	
	iSZ	54.5						
WAN	ePZ	35	0.2	2.0	u			
RAL	ePZ	35	0.5	2.0	d			
RAB	iPZ	35.7	0.5	3.5	d	1½°	090309	
	iSN	56.4						
KET	iPZ	35.7	0.4	2.0	u	1½°	090309	
	iSZ	56.2						
DAW	ePZ	53	0.5	1.0	d			
RAL	ePZ	133313	0.7	5.0	u			
TAV	ePZ	13	1.0	3.0	u			
WAN	ePZ	13		4.0	u			
KET	ePZ	13½	1.3	2.4	u			
RAB	ePZ	14	0.6	6.8	u	64°	132246	M _B = 6.4
	eSE/	4140						
VUL	ePZ	3314	0.7	2.6	u			
RAB	ePZ	141453			u	45°	140643	
	eSN/	2028						
RAL	ePZ	54			u			
TAV	ePZ	54			d			
VUL	ePZ	54			u			
KOA	iPZ	163721	0.5	6.9	u			
VUL	e(P)Z	3822			u			

23rd December, 1969 continued

TAV	e(P)Z	163822½							
									d
RAB	iPZ	23.0	0.5	1.5	d	6°	163655		M _B = 6.4
	iSE	3931.3							
KET	iPZ	3823.6	0.7	1.2	u				
RAL	iPZ	24.0			d				

24th December, 1969

RAB:	Power failure between 2238 - 2241 hrs. (G.M.T.)								
	Very strong microseismic activity between 0200 - 1100 hrs. (GMT)								
RAB	eZ/	022026							+ Traces
KOA	i!PZ	043130.0			d				
DAW	iPZ	3233.5	0.3	1.0	d				
RAL	ePZ	115940½	0.5	1.1	d				
TAV	iPZ	41.0	0.2	0.9	u				
VUL	iPZ	41.0			d	(1°)	1159(22)		
	e(S)Z	55							
RAB	iPZ	41.4	0.2	2.5	d	1¼°	115921		M _L = 3.2
	iSN	56.6							
TAV	iPZ	141701.7		4.2	d	1¼°	141634		
	eSZ	22½							
VUL	iPZ	02.0	0.5	1.0	d				
RAL	ePZ	02			u	1¼°	141633		
	eSZ	23½							
RAB	ePZ	02½	0.5	1.8	d	1¼°	141633		M _L = 3.8
	iSN	24½							
KET	ePZ	02½	0.5	1.0	d				
KOA	ePZ	12		8.0	d	2½°	141633		
	eSZ	42							
KET	iPZ	144245.5	0.3	8.0	d	1½°	144222		
	eSE	4303							
VUL	iPZ	4246.0	0.4	1.2	d				
TAV	iPZ	46.4		5.0	d	1¼°	144224		
	eSZ	4303½							
RAB	ePZ	4246½	0.5	2.0	d	1½°	144223		M _L = 3.9
	iSN	4304.5							
RAL	ePZ	4246½		6.0	d				
WAN	ePZ	47		3.3	u				
DAW	iPZ	4301.7	0.4	0.8	u				
TAV	iPZ	144618.5		4.7	d	1¼°	144558		
	eSZ	33½							
RAL	ePZ	18½			u	1¼°	144558		
	eSZ	33½							

T A GM
sec mm

24th December, 1969 continued

WAN	ePZ	144619		1.0	u	1¼°	144559	
	iSZ	33.8						
VUL	ePZ	19		3.0	d	1¼°	144558	
	eSZ	35						
RAB	iPZ	19.3	0.5	3.5	u	1¼°	144559	M _L = 4.0
	iSN	34.0						
KET	ePZ	20	0.8	14.0	d	1¼°	144558	
	iSE	36.6						
KET	e(P)Z	151302½	0.5	11.0	u	(1¼°)	1512(42)	
	iSE	18.0						
RAB	ePZ	04	0.5	6.0	u	1¼°	151241	M _L = 3.8
	iSN	21.4						
VUL	ePZ	04			u			
WAN	iPZ	04		6.3	u	1¼°	151243	
	iSZ	20.0						
RAL	ePZ	04			u	1¼°	151243	
	eSZ	20						
TAV	ePZ	04½			u	1½°	151239	
	eSZ	23						
DAW	iPZ	12.0			d			
KOA	ePZ	43		6.4	d			
RAB	ePZ	195800	0.4	3.8	u	¼°	195758	M _L = 2.8
	iSN	05.5						
WAN	iPZ	00.5			d			
RAL	iPZ	01.0		5.5	u			
TAV	ePZ	01		2.5	u			
VUL	iPZ	02		2.1	u			
	eSZ	05½						
DAW	iPZ	211725.5						
VUL	iPZ	27.2		3.0	d	1¼°	211759	
	eSZ	48½						
RAL	iPZ	28.0	0.5	1.0	u			
RAB	ePZ	28	0.5	2.0	u	1¼°	211759	M _L = 3.8
	iSN	49.5						
RAB	iPZ	215346.2	0.4	3.2	u	¼°	215340	M _L = 2.3
	iSN	51.0						
WAN	i!PZ	225035.3	0.3	23.5	u			
	iSZ	39.0						
RAB	i!PZ	35.6	0.3	52.0	u		Local	
	iSNa	40.2					5 after shocks incoda.	
RAL	i!PZ	35.8		32.0	u			
	iSZ	40.6						
TAV	i!PZ	36.2		17.0	u			
	iSZ	41.8						
VUL	i!PZ	37.0		23.8	u			
KOA	ePZ	5139½		1.2	u			

T	A	GM	PEA	DECEMBER	1969	NO. 52	REMARKS
sec	mm		DIST	H			

24th December, 1969 continued

RAB	ePZ	231956	0.5	2.0	u	¼°	231949	M _L = 2.4
	iSN	2001.5						
WAN	iPZ	1956.4						
RAL	iPZ	56.8	0.2	4.0	u	¼°	231950	
	iSZ	2002.0						
TAV	iPZ	1957.2	0.3	1.4	u	¼°	231949	
	iSZ	2003.4						
VUL	ePZ	1958	0.5	1.2	u			
RAB	iPZ	234846.2	0.5	3.5	u	¼°	234839½	M _L = 2.2
	iSN	51.4						
WAN	iPZ	46.2	0.4	1.6	u			
RAL	iPZ	46.8	0.2	4.2	u			
	iSZ	51.6						
TAV	iPZ	47.0	0.2	2.0	u	¼°	234839½	
	iSZ	52.6						
VUL	iPZ	48.0	0.7	2.0	u	¼°	234841½	
	iSZ	53.0						
RAB	iPZ	235946.0	0.5	3.0	u	¼°	235939½	M _L = 2.1
	iSE	51.0						
RAL	iPZ	46.5	0.2	3.2	u			
	iSZ	51.0						
TAV	iPZ	46.6	0.3	1.4	u			
	iSZ	51.0						
VUL	iSZ	54.0						

25th December, 1969

DAW:	Unreadable.							
RAL	iPZ	013721.8						d
TAV	i!PZ	21.8		40.0				d
	iSZ	22.5						
WAN	ePZ	22						d
RAB	ePZ	22½	0.5	7.4	d			Local
	eSE	23½						
VUL	ePZ	22½			d			
TAV	i(P)Z	0137(37.0)						
	i(S)Z	(38.4)						
RAL	i(P)Z	(37.2)			u			
	i(S)Z	(39.4)						
RAB	ePZ	37½			u			Local
	iSE	38.4						
WAN	ePZ	37½			d			
	iSZ	38.6						
VUL	e(P)Z	(38½)			d			
KOA	i!PZ	051701.2		68.0				
TAV	iPZ	095045.8	0.3	2.4	u	½°	095033½	
	iSZ	54.8						

						PEA	DECEMBER	1969	NO. 52	
T	A	GM	DIST	H	REMARKS					
sec	mm									
<u>25th December, 1969</u> continued										
RAB	e(P)Z iSZ	0950(46) 57			d	$\frac{3}{4}^{\circ}$	0950(31)		$M_L = 3.3$	
RAL	iPZ iSZ	46.2 55.0			d	$\frac{1}{2}^{\circ}$	095034 $\frac{1}{2}$			
WAN	e(P)Z iSZ	(46 $\frac{1}{2}$) 57.0				$\frac{3}{4}^{\circ}$	0950(32)			
VUL	iPZ iSZ	47.1 56.0	0.4	2.2	d	$\frac{1}{2}^{\circ}$	095034 $\frac{1}{2}$			
TAV	iPZ iSZ	103700.5 14.2	0.3	3.7	d	1°	103642			
RAL	iPZ iSZ	00.6 16.7		1.0	d	$1\frac{1}{4}^{\circ}$	103639			
VUL	iPZ	01.4		2.6	d					
WAN	iPZ iSZ	01.5 16.5	0.4	1.4	u	$1\frac{1}{4}^{\circ}$	103641 $\frac{1}{2}$			
RAB	ePZ eSE	02 16 $\frac{1}{2}$	0.4	1.5	u	1°	103642 $\frac{1}{2}$		$M_L = 3.8$	
KET	iPZ iSE	02.5 18.0	0.3	6.6	d	$1\frac{1}{4}^{\circ}$	103642			
KOA	iPZ	29.4	0.4	33.6	d					
TAV	iPZ iSZ	104350.1 4410.5		7.0	d	$1\frac{3}{4}^{\circ}$	104323			
RAL	ePZ iSZ	4350 $\frac{1}{2}$ 4410.0	0.4	2.6	d	$1\frac{1}{2}^{\circ}$	104324 $\frac{1}{2}$			
WAN	iPZ	4350.8		1.6	u					
VUL	iPZ iSZ	51.0 4411.5	0.5	7.4	d	$1\frac{3}{4}^{\circ}$	104324			
RAB	ePZ iSN	4351 4413.0	0.4	3.2	u	$1\frac{3}{4}^{\circ}$	104322		$M_L = 4.3$	
KET	iPZ iSE	4351.8 4411.0	0.2	0.8	u					
KOA	iPZ iSZ	08.5 40.0	0.5	5.2	d	$2\frac{3}{4}^{\circ}$	104327			
TAV	iPZ iSZ	122242.4 2303.8	0.3	20.4	u	$1\frac{3}{4}^{\circ}$	122214 $\frac{1}{2}$			
RAL	ePZ eSZ	2242 $\frac{1}{2}$ 2304 $\frac{1}{2}$	0.6	3.4	u	$1\frac{3}{4}^{\circ}$	122213 $\frac{1}{2}$			
WAN	ePZ	2243	0.5	0.4	d					
VUL	iPZ e(S)Z	43.2 23(06)	0.6	2.0	d	$1\frac{3}{4}^{\circ}$	1222(13 $\frac{1}{2}$)			
RAB	iPZ iSN	2243.6 2305.4	0.5	2.2	d	$1\frac{3}{4}^{\circ}$	122215		$M_L = 3.7$	
KET	ePZ iSZ	2244 2306.4				$1\frac{1}{2}^{\circ}$	122218 $\frac{1}{2}$			
RAL	iPZ iSZ	124107.4 12.2		1.6						
TAV	ePZ iSZ	07 $\frac{1}{2}$ 13.5		0.6	d					

25th December, 1969 continued

RAB	ePZ	124108	0.4	1.8	u				Local
	eSE	11½							
VUL	ePZ	08½			u				
WAN	ePZ	08½	0.4	0.4	u				
WAN	iPZ	124139.8	0.4	1.4	u				
	i(S)Z	(43.5)							
RAB	ePZ	40	0.5	2.4	u	¼°	124133½		M _L = 2.1
	iSN	45.0							
RAL	iPZ	40.4	0.2	4.4	u				
	iSZ	45.0							
VUL	e(P)Z	(40½)	0.6	1.0	u	¼°	124132		
	eSZ	47							
TAV	iPZ	40.6	0.2	2.4	u	¼°	124132½		
	iSZ	46.6							
KET	ePZ	42			u	½°	124131½		
	eSE	49½							
KET	ePZ	132202			d				
	iSE	05.2							
VUL	ePZ	02½	0.3	0.6	d				
	iSZ	07.0							
TAV	ePZ	03	0.6	0.4					
	eSZ	07½							
WAN	e(P)Z	03½			d				
RAL	ePZ	03½		1.0					
	iSZ	08.5							
RAB	ePZ	05½			(u)				
KET	iPZ	145353.0	0.6	2.4	d	(2½°)	1453(13)		
	i(S)E	54(23.0)							
TAV	ePZ	5355	0.4	2.0	u				
VUL	iPZ	55.4	0.4	6.0	u				
WAN	ePZ	56	0.4	5.0	u				
RAB	ePZ	56	0.5	9.4	u	3°	145308		M _L = 4.5
	iSN	5432.6							
RAL	ePZ	5356	0.7	3.5	u				
KOA	iPZ	5433.2		2.4	u	5½°	145310		
	iSZ	37.0							
WAN	e(P)Z	1518(48½)	0.4	0.8	d				
	e(S)Z	(52)							
RAL	iPZ	48.8	0.2	2.4	u				
	iSZ	53.6							
TAV	ePZ	49		0.8	u				
	iSZ	53.5							
RAB	iPZ	50.0	0.5	2.4	d				Local
	iSN	53.4							
VUL	iPZ	50.0	0.4	1.0	u				
KET	ePZ	51½	0.6	0.4	d				
	iSE	54.2							

					PEA DECEMBER 1969		NO. 52
T	A	GM	DIST	H	REMARKS		
sec	mm						
<u>25th December, 1969</u> continued							
KET	ePZ	153642	0.3	0.6	d	1¼°	153621½
	eSE	57½					
RAL	ePZ	42		1.0	d		
WAN	ePZ	42½	0.3	2.0	d	1°	153624½
	eSZ	56					
VUL	ePZ	43	0.4	0.8	d	1°	153624
	iSZ	57					
RAB	iPZ	43.2	0.3	1.4	d	1°	153625½
	iSE	56.4					M _L = 3.4
TAV	ePZ	44	0.4	0.4	d	1¼°	153623½
	i(S)Z	(59½)					
TAV	i!PZ	202213.4				½°	202202
	iSZ	21.5					
RAL	i!PZ	13.4		40.5	d	½°	202202
	iSZ	21.5					
WAN	i!PZ	13.8	0.3	6.0	d	¾°	202201
	iSZ	23.0					
VUL	i!PZ	14.4		18.0			
RAB	i!PZ	14.5				½°	202203
	iSN	23.2					M _L = 4.5
KET	i!PZ	16.4	0.4	8.4	d	¾°	202201½
	i!SZ	27.4					
KOA	ePZ	56		9.0	d		
KOA	ePZ	215203½	1.5	21.0	d		
WAN	iPZ	11.2	0.9	3.0	d		Distant
RAL	iPZ	11.5	0.9	7.9	d		
VUL	ePZ	11½	1.0		d		
TAV	ePZ	11½			d		
RAB	iPZ	11.8			d		
KET	ePZ	13½	1.0	3.2	d		
TAV	ePZ	221400½		5.9	d	2°	221330
	eSZ	23½					
WAN	ePZ	01			u		
VUL	iPZ	01.1	0.5	3.1	d	2°	221328
	iSZ	26.0					
RAL	iPZ	01.1			d	2°	221331
	eSZ	24					
RAB	iSN	27.5					
KOA	iPZ	10.4		17.0	d		
	eSZ	42½					
KOA	i!PZ	222454.0			d		Local
TAV	ePZ	224554½	0.5	1.1	d		Distant
WAN	iPZ	54.9	0.5	1.2	d		"
RAL	iPZ	55.0	0.5	3.0	u		"
RAB	iPZ	55.0	0.4	4.0	d		"

25th December, 1969 continued

KOA ePZ	225038	1.0	7.5	d		
RAL iPZ	45.0	0.8	4.0	d		
VUL ePZ	45					
TAV ePZ	45			d		
RAB ePZ	45½					Distant
WAN iPZ	45.8	0.9	2.0	u		

26th December, 1969

RAB and KET: Very strong microseismic activity throughout the day.

DAW: No record.

KOA iPZ	025256.8			d		
TAV ePZ	5353½			d		
	5456					
RAL ePZ	5354½			u		
	5456½					
VUL iPZ	5355.9			u		
WAN iPZ	56.8			u		
RAB ePZ	57			u	4¼°	025245 M _L = 5.5
	iSE 5451.7					
	iN 56.1					
VUL ePZ	083038			d		
RAB iPZ	39.0	0.6	2.0	d		
WAN iPZ	39.0	0.7	1.0	d		
TAV ePZ	39	0.4	0.9	u		
RAL ePZ	090324					
TAV ePZ	24			d		
KET ePZ	24			u		
WAN ePZ	24½			d		
RAB iPZ	25.0	0.2	3.0	u	¼°	090319 M _L = 3.6
	iSE 30.0					
VUL ePZ	25			d		
RAL iPZ	105342.0			d		
VUL ePZ	42			u		
TAV ePZ	42			u		
WAN ePZ	42½			u		
RAB ePZ	42½			u		
RAB eZ/	151938			-		Traces
KET iPZ	163411.3	0.2	2.9	d	2¼°	163337
	eSE 37					
VUL ePZ	12		1.0	d	2¼°	163335
	eSZ 40					

T	A	GM	PEA	DECEMBER	1969	NO. 52
sec	mm		DIST	H		REMARKS

26th December, 1969 continued

RAB	iPZ	163414.0	0.2	5.0	d	2¼°	163337	M _L = 4.8
	iSN	41.5						
WAN	ePZ	14	0.1	2.8	d	2¼°	163337	
	eSZ	42						
RAL	ePZ	14			d	2¼°	163337	
	eSZ	42						
TAV	iPZ	14.2			d	2½°	163336	
	eSZ	43						
KOA	ePZ	45			u			
KET	ePZ	165127½			d			
WAN	ePZ	28½			u			
VUL	ePZ	28½			d			
RAB	iPZ	28.9	0.1	1.4	d	½°	165118	M _L = 2.9
	iSE	37.0						
RAL	ePZ	29			u			
TAV	ePZ	29½			u			
KET	iPZ	172038.3	0.2	2.0	u	1°	172019½	
	eSE	52½						
TAV	iPZ	39.2	0.1	3.1	u	1¼°	172019	
	iSZ	54.2						
VUL	iPZ	39.3		2.2	d	1°	172020½	
	eSZ	53½						
RAL	ePZ	39½	0.6	7.3	u			
RAB	iPZ	39.9	0.5	2.7	d	1¼°	172019	M _L = 3.5
	eSE	55½						
WAN	ePZ	40	0.4	1.1	d	1¼°	172020	
	eSZ	55						
RAL	iPZ	202309.4	0.5	2.9	u			
RAB	ePZ	09½	0.5	5.0	d			
VUL	ePZ	09½			d			
WAN	ePZ	09½	0.4	1.5	d			
TAV	ePZ	09½			u			

27th December, 1969

WAN	iPZ	004810.1			u			
RAB	iPZ	10.5	0.5	12.0	u	¾°	004757	
	iSE	20.1						
RAL	iPZ	10.8			u			
TAV	iPZ	11.2			d			
VUL	iPZ	11.9			d			
DAW	iPZ	023020.0		5.0	d			
VUL	ePZ	34	0.3	0.6	u			
RAL	ePZ	36½	0.8	1.0	d			

					PEA DECEMBER 1969		NO. 52	REMARKS
T	A	GM	DIST	H				
sec	mm							
<u>27th December, 1969</u> continued								
TAV	ePZ	023036½	0.3	0.5	d			
WAN	ePZ	36½			u			
RAB	iPZ	37.0	0.4	2.1	u	1¾°	023007	M _L = 2.0
	i(S)E	3100.0						
KET	iPZ	38.6			d			
RAB	eZ/	092343			-			Traces
RAL	ePZ	101515	0.6	1.0	u			
RAB	ePZ	16	0.6	1.2	u			(Regional)
KET	e(P)Z	111542½			d			C.B.M.
TAV	iPZ	42.8	0.2	4.0	u	1¾°	111512	
	iSZ	1605.4						
VUL	iPZ	1543.0	0.3	7.0	u	1¾°	111512	
	iSZ	1608.0						
RAL	iPZ	1543.0	0.4	7.0	u	1¾°	111513	
	iSZ	1606.0						
RAB	ePZ	1543	0.4	1.0	u	1¾°	111511	M _L = 4.2
	iSN	1607.6						
WAN	ePZ	1544	0.3	1.0	d	1¾°	111514	
	iSZ	1607.0						
KOA	ePZ	1552			u			
KET	ePZ	112935	1.0	0.6	d			
VUL	ePZ	36	0.2	0.5	u			
RAB	ePZ	38½			d			Teleseism
TAV	ePZ	115848½	1.0	0.6	u			
RAL	ePZ	49	1.0	1.2	u			
RAB	ePZ	49	0.5	1.0	u			
RAB	ePZ	132920½	0.5	2.0	u			
TAV	ePZ	20½	0.5	0.7	d			
RAL	ePZ	22	0.7	1.0	u			
VUL	ePZ	23	0.5	0.5	d			
RAL	ePZ	142243½			u	9½°	142027	
	eSZ	2429						
TAV	ePZ	2244	0.4	1.0	d	9½°	142028	
	eSZ	2430						
RAB	iPZ	2244.4	0.4	2.3	d	9½°	142028	M _L = 5.7
	eSE	2430						M _B = 5.3
TAV	ePZ	160154	0.2	0.3	d	5°	160040	
	iSZ	0250.7						
VUL	ePZ	55	0.2	0.4	d			
KET	e(P)Z	56			d			
RAL	e(P)Z	57	1.0	0.8	d			
RAB	eZ	58			u			

					PEA DECEMBER 1969		NO. 52		
T	A	GM	DIST	H	REMARKS				
sec	mm								
<u>27th December, 1969</u> continued									
RAL	ePZ	172525	0.4	0.5	d				
TAV	iPZ	25.1	0.4	2.0	d	3½°	172433		
	iSZ	2605.6							
RAB	eZ	2528			d				
DAW	iPZ	175559.5			d				
KET	ePZ	5626	0.6	0.2	d				
VUL	iPZ	27.5	0.4	2.2	d				
RAB	ePZ	28	0.7	0.9	u			M _L = 3.2	
RAL	ePZ	28	0.6	0.8	d				
TAV	ePZ	28	0.7	0.5	u				
KET	iPZ	211345.6	0.3	4.0	d				
VUL	iPZ	46.3	0.2	5.0	u				
TAV	iPZ	46.8	0.3	2.0	d				
RAL	iPZ	46.9	0.4	2.3	u				
RAB	ePZ	47	0.7	1.2	u	1°	211329	M _L = 3.0	
	iSN	59.8							
WAN	iPZ	213023.5			u				
RAB	iPZ	24.0	0.2	2.8	d	¼°	213016	M _L = 2.5	
	iSE	30.0							
RAL	iPZ	24.3			d				
TAV	iPZ	24.7			d				
<u>28th December, 1969</u>									
RAB	eZ/	014214			+			Traces	
RAB	eZ/	044647			u				
RAB	ePZ	050145½	1.4	0.8	u				
VUL	iPZ	084517.8	0.4	1.2	u				
KET	iPZ	17.8	1.0	5.0	d	1½°	084453½		
	iSE	36.0							
TAV	iPZ	18.4	0.2	3.0	u				
RAL	iPZ	18.9	0.7	4.0	u				
RAB	ePZ	19	0.5	2.0	d	1¾°	084452	M _T = 3.5	
	eSN	38½							
WAN	iPZ	19.5	0.7	0.8	u	1½°	084453½		
	eSZ	39							
KOA	ePZ	100829		3.0	u				
VUL	ePZ	0927½	0.6	0.7	u				
RAB	ePZ	29	1.4	0.5	d	16°	100549	M _B = 4.4	
	eSE/	1230							
KET	iPZ	110816	0.2	8.0	u	¾°	110800½		
	iSE	27.5							

T	A	GM
sec	mm	

28th December, 1969 continued

VUL	iPZ	110817.4	0.4	8.0	u			
RAL	iPZ	18.2	0.5	2.0	u	1°	110800	
	eSZ	31½						
RAB	ePZ	18½	0.7	4.0	u	1°	110800	M _L = 4.0
	iSE	32						
TAV	ePZ	18½		0.2	d			
WAN	ePZ	18½	0.5	1.5	u	1°	110801	
	iSZ	31.8						
KET	iPZ	154341.6		21.0	u	1½°	154316	
	iSE	00.5						
VUL	iPZ	42.5	0.5	8.0	u	1¾°	154315	
	eSZ	4403½						
WAN	iPZ	4342.8	0.3	1.5	u			
RAB	eIPZ	43.0	0.5	10.5	u	1¾°	154315	M _L = 3.7
	iSE	4404.3						
TAV	iPZ	4343.0		2.0	u			
RAL	iPZ	43.0	0.7	3.0	u			
KOA	ePZ	4424		7.0	u			
KET	iPZ	170627.5	0.3	7.0	u	¾°	170612	
	iSE	38.6						
RAB	ePZ	27½	0.6	0.3	u	1°	170608½	M _L = 3.4
	eSN	41½						
VUL	iPZ	28.1	0.5	3.0	d			
WAN	iPZ	171219.4	0.3	17.0	u			
RAB	iPZ	19.8	0.4	36.0	u	¾°	171215	M _L = 2.7
	eSNa	24½						
RAL	iPZ	19.9	0.7	16.0	u			
TAV	iPZ	20.3	0.5	12.0	u			
VUL	iPZ	20.8		12.5	u			
KET	iPZ	21.6	0.4	5.5	u	½°	171210	
	eSE	30						
TAV	iPZ	204218.4	0.4	5.0	u	1°	204159	
	eSZ	33						
RAL	ePZ	18½		1.2	u	1¾°	204158½	
	eSZ	33½						
WAN	ePZ	19		0.6	d	1°	204200	
	eSZ	33½						
RAB	ePZ	19½	0.5	2.0	d	1¾°	204159	M _L = 4.1
	iSN	34.8						
VUL	ePZ	20		0.2	u			
RAB	iPZ	223606½	0.8	0.6	u	2½°	223526	M _L = 4.2
	eSN	35½						

29th December, 1969

TAV	iPZ	011129.0			d			
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T	A	GM
sec	mm	

29th December, 1969 continued

RAL ePZ	011129½		4.0	d			
RAB ePZ	30	0.4	6.0	u			
WAN ePZ	30			u			
VUL ePZ	30½			d			
KET ePZ	30½						
TAV ePZ	025601	0.2	5.8	d	1½°	025538	
eSZ	18						
VUL ePZ	02	0.4	4.5	u	1½°	025537	
eSZ	21						
RAL ePZ	02	0.1	1.3		1½°	025539	
eSZ	20						
WAN ePZ	02		1.0		1½°	025537	
eSZ	21						
RAB e(P)Z	03.0	0.6	1.6	d			
KOA ePZ	18.0						
WAN iPZ	074417.7	0.1	18.5	u	¼°	074409	
eSZ	24						
RAL iPZ	18.0	0.1	36.5	u			
TAV iPZ	18.6	0.1	3.0	d	¼°	074409	
eSZ	25						
RAB iPZ	18.3	0.1	4.0	u	¼°	074409	M _L = 2.7
iSN	25.0						
KET ePZ	081030½	0.3	1.2	u			
VUL iPZ	31.2	0.6	1.4	u			
RAB ePZ	31½	0.6	7.8	u	2¼°	080956	M _L = 4.2
WAN ePZ	32	0.7	2.0	u			
RAL ePZ	32	0.8	3.0	u			
TAV ePZ	32	0.6	3.0	u	2¼°	080956	
eSZ	58½						
KET ePZ	101827½			d			
KOA ePZ	38½	0.2		d	2¼°	101802½	
iSZ	1906.0						
VUL ePZ	1828	0.4	21.0	d	1½°	101801	
eSZ	48						
RAL ePZ	28	0.1		u	1½°	101802	
iSZ	47.1						
iZ	51.0						
WAN ePZ	28½	0.2		u	1½°	101803	
iSZ	47.8						
RAB e(P)Z	29	0.5	10.0	u	1½°	101804	
iSN	47.8						
RAB ePZ	141518	0.7	5.0	d			
TAV ePZ	18	0.4	3.0	d			
RAL ePZ	18	0.7	4.6	d			
WAN ePZ	18			d			
KET ePZ	18			d			

29th December, 1969 continued

VUL ePZ	141518½			
KOA ePZ	205119½			d
KET i!PZ	20.8			u
VUL i!PZ	23.3			u
WAN i!PZ	23.7	0.3	30.5	u
RAB i!PZ	23.8	0.4	69.5	u
RAL i!PZ	24.0	0.4	48.0	u
TAV iPZ	24.4	0.3	59.0	u
RAB ePZ	222450½	0.6	34.0	

T A GM
sec mm

ESA: Records from 25th November to 7th December unavailable for study.

ESA 'ALA

8th December, 1969

ESA ePZ 050945 0.9 1.5 u 36° 050249
eSN/ 1508

ESA ePZ 094327 0.3 (0.3) u Regional

9th December, 1969

ESA ePZ 033024 0.7 0.5 d "

10th December, 1969

ESA ePZ 000018½ 0.2 0.2 u "

ESA ePZ 234440½ 0.9 7.0 d (Regional)

11th December, 1969

ESA ePZ 004931 u Distant

ESA i!PZ 131525.3 u Local

12th December, 1969

ESA ePZ 003308 d Teleseism

ESA ePZ 133559½ . . d Distant

13th December, 1969

ESA ePZ 040932½ 1.0 1.9 u 3¾° 040836
iSN/ 1017.0

ESA ePZ 214449 0.9 1.0 d

14th December, 1969

ESA ePZ 024744 0.9 1.0 u 28° 024156 Depth 100 km.
iSN/ 5215.0
iSSN/ 5308.0
iScP 5539

ESA iPZ 055347 0.5 2.1 u 4¾° 055234
iSE/ 5443


(W.D. PALFREYMAN)
A/Senior Resident Geologist(V)

CENTRAL VOLCANOLOGICAL OBSERVATORY,
RABAU.

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