



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
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BANGLADESH

GENERAL INFORMATION

Operated by: Bangladesh Meteorological Department (BMD)

Dacca, Bangladesh.

Address: Meteorological Complex, Agargaon,
Dhaka-17, Bangladesh.

Telephone: 311032, 318917

Cable: METEOR DACCA

Telex:

Address to obtain record: Geophysical Observatory, Ambagan,
Chittagong, Bangladesh.

Data published: No publication.

N.B. Prior to 1971, before independence of Bangladesh, the station CHT
was operated by Pakistan Meteorological Department.



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>SITE INFORMATION</u>															
2																
3	Code	Station Name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Foundation								
4																
5		Chittagong														
6		(Patenga)	22° 16'	91° 49'	5	1954	Temporary	} Alluvium								
7		(Nasirabad)	22° 21'.5	91° 49'	15	1957	Temporary									
8	CHT	(Ambagan)	22° 21'	91° 49'	35	1961	open									
9	<u>INSTRUMENTATION</u>															
10																
11	Code	Instrument & component	Operated from to		To	Tg	Damping	Vo or Vmax	Record type	Remarks						
12																
13																
14	CHT	Spreng-	} Z N E	1957	1979	} in use	1.7	1.7	critical	5200	} Photo-graphic	Timing:				
15		nether SP		1957			1.8	1.8	do	5700		Invar Pe-				
16				1957			1.5	1.5	do	3600		ndulum				
17		Willmore	} Z N	1957	1960		1.0	0.25	do	6600		Electric				
18				1957	1960		7.0	7.0	do	6600		Master				
19										Clock ad-						
20										justed by						
										BBC time						
										signal.						



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3	<u>GENERAL INFORMATION</u>															
4																
5	Operated by: Department of Meteorology and Hydrology,															
6	Ministry of Transport and Communications,															
7	Socialist Republic of the Union of Burma.															
8	Address: Department of Meteorology and Hydrology,															
9	Kaba-Aye Pagoda Road,															
10	Rangoon, Burma.															
11	Telephone: 60824															
12	Cable: BAMETEORS															
13	Telex:															
14	Address to obtain records: As above.															
15	Data published:															
16																
17																
18																
19																
20																



NO.	SITE INFORMATION							
	Code	Station name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Foundation.
1	RAN	Rangoon	16.89 53° 24'	96.18 10° 48'	14	19	open	ZSC c.
2	MND	Mandalay	22.00 00° 56' 5"	96.10 06° 53' 4"	93		open	ZSC c.
3	(AKY)	Akyab.	20.17	92.89			open.	
4	W731	Taungoo	18° 55' 8"	96° 27' 1"				Listed in Wood (1942).



NO.	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80							
1	<u>INSTRUMENTATION</u> Kats. = Katsushima							
2								
3	Code	Instrument, Component	Date started	Date dis- continued	To	To	Magni- fication	Recording
5	RAN	Kats.						
6		SP EMS						
7	MND							
8	(AKY)							
9	W731							
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								



TODAI

PROBLEM- INDIA-A

DATA SHEET

SEMI FINAL

BY- PAGE- 1 OF 18

No. nos page
1849

(by the data)
Corrected sheets returned
from Dr. Srivastava on May
10, 1983.

NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
1																	INDIA
2																	IMD Network
3																	
4																	<u>GENERAL INFORMATION</u>
5																	Operated by: India Meteorological Department (IMD)
6																	Address: India Meteorological Department,
7																	The Director General of Meteorology,
8																	Lodi Road, New Delhi - 110003 India.
9																	Telephone: 611305, 618241
10																	Telex: 312494
11																	Cable: DIRGENMET.
12																	Address to obtain records: As above.
13																	Data published: Indian Weather Review for the period Jan. 1903 - Dec. 1937.
14																	Indian Seismological Bulletin for the period Jan. 1938 - till date.
15																	Monthly Bulletin for the period -----
16																	
17																	Catalogue of Indian Earthquakes for (1) 1700-1970 (by Tandon A.
18																	N. and Srivastava, N.H. in the first chapter of the book entitled
19																	"Earthquake Engineering", Sarita Prakashan, Meerut.
20																	(2) 1839-1900 "New Catalogue of Earthquakes for Peninsular India,
																	by Srivastava H.N. and Ramachandran, K.S., Mausam, 1983. (In press) (Under publication)



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
1	W074	} Bombay §			18° 54'		72° 49'		6	{ 1899.							
2	BOM				18° 9000		72° 8167			{ 1940.		open					Deccan Trap
3	W099	} Calcutta §			22° 32'		88° 20'		6	{ 1898.							
4	CAL				22° 5333		88° 3333			{ 1940.		open					Alluvium 1915. 03 (Wood, 1942)
5	CHA	Chatra (Nepal)			26° 50'		87° 10'		161	1952.		open					Sandstone
6																	
7	DLH	Dalhousie			32° 32' 30"		75° 58' 00"		1960			c.					River Valley Project. Temporary obs.
8																	
9	W172	} Dehra Dun			30° 19'		78° 03'		682	{ 1912.07							
10	DDI				30° 3167		78° 0500			{ 1953.		open					Gravel
11	GOA	Goa §			15° 29'		73° 49'		58	1964.01		open					Laterite
12	GOV	Govalcot			17° 32' 24"		73° 29' 18"		1			c.					CWP Res. Station Network
13																	
14	HOW	Howrah-WWSSN			22° 25' 00"		88° 18' 33"		3			closed.					Operated by Bengal Eng. Col.
15	HYD	Hyderabad-old			17° 26'		78° 27'		528			1967.12					cf HYB/NCRI
16																	
17	IMP	Imphal			24° 47'		93° 56'		802	1977.05		open					Shales
18	W322	Jugga Row										+					
19	JWA	Jwalamukhi			31° 52'		76° 20'					c.					River Valley Project Temporary obs.
20	JMU	Jammu			32° 42'		75° 00'			1982.05.01		open					Conglomerates



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	KAD	Karad			17° ^{18'} 30'00"		74° ^{11'} 18'33"		582	1970.01		open				Amygdaloidal Basalt
2																
3	W355 } KOD	Kodai kanal			10° ^{14'} 23'33"		77° ^{28'} 46'67"		2345	{ 1900.01.12 1932.		open				Rock
4	KOD		ditto WWSSN		"		"		"	1963.		open				
5																
6	KNI	Koyna Nagar			17° ^{23'48"} 39'67"		73° ^{45'00"} 75'00"		630			c.				CWP Res. Station Network
7	KKR	Kurukshetra			29° ^{57'48"} 96'33"		76° ^{49'30"} 82'50"		257	1974.01.		open				operated by Kurukshetra Univ.
8																
9	(LKP)	Lekhapani			27° ^{20'} 33'33"		96° ^{04'} 06'67"		106	1977.05		open				Gravel & sand
10																
11	MDR _a	Madras-old								1898.		1899	^{moved} to KOD			
12	MDR	Madras			13° ^{00'} 00'00"		80° ^{011'} 18'33"		15	1952		open				
13	MAH	Mahableshwar			17° ^{53'24"}		73° ^{39'00"}		1382			c.				CWP Res. Station Network
14	MEE	Meerut-ISC			28° ^{55'} 91'67"		77° ^{40'} 66'67"		220	1967.10		1972.03				Alluvium
15	MEE _a	Meerut-IMD			28° ^{59'} 98'33"		77° ^{042'} 70'00"		220			(74 → Sohna)				
16																
17	MUK	Mukerian			31° ^{57'} 95'00"		75° ^{037'} 61'67"					c.				River Valley Project Temporary obs.
18	NDI _a	New Delhi-old								1942		1959.				
19	NDI	New Delhi -			28° ^{41'} 68'33"		77° ^{13'} 21'67"		230	1959.		} open				Massive quartzite
20			ditto-wwssn		"		"		"	1963						



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	(PTH)	Pithoragarh	29° 35'	80° 13'	1.667	1987.08.27	open									
2																
3	P00	Poona	18° 32'	73° 51'	560	1949	} open	Decan Trap								
4		ditto-WWSSN	"	"	"	1963										
5	PBA	Port Blair (Andaman Is.)	11° 40'	92° 43'	79	1957	open	Sabsoil rock								
6																
7	R0H	Rohtak	28° 54'	76° 36'	220		c.	Local seismicity Temporary st.								
8	STA	Satara	17° 41' 42"	74° 00' 00"	665		c.	CWP Res. Station Network								
9																
10	SEH.	Sehore	23° 10'	77° 05'	52	1959.07	open	Alluvium								
11																
12	SHL	Shillong.	25° 34'	91° 53'	1600	1952.	open	Quartzite-								
13		ditto-WWSSN	"	"	"	1963.	open	sandstone								
14	SHIO	ditto-	"	"	"	1978	open									
15																
16	W675	Simla-old				1905.06		1917.09.								
17	SML	Simla-new	31° 06'	77° 11'		1917.10.01		1927.								
18	SMIa	Simla-temporary														
19	SNP	Sonepat	28° 59'	77° 00'	220		c.	River Valley Project Temporary obs. Local seismicity Temporary st.								
20	SRR	Stinagar	34° 06'	74° 51'		1982.05.02	open									



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>Remarks</u>															
2																
3	1. Code in ^{with *} \longleftrightarrow is already registered for other stations and should be changed.															
4	2. Code in () is not yet registered in ISC and NEIS/USGS.															
5	3. Code W025 etc. is for the stations No. 25 etc in Wood (1942).															
6	4. § Alternate station names.															
7	Bombay: Colaba Calcutta: Alipore Goai Panjim															
8	5. c. closed after ISC (1978)															
9	+ closed already in 1942 after Wood (1942)															
10																
11																
12																
13																
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NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>Address of the Officers Incharge at each station:</u>															
2																
3	AGT: Seismic Unit, Meteorological Office, Civil Aerodrome, Agartala, West Tripura															
4	AGR: Seismic Unit, Hydrogen Factory, Agra, U.P.															
5	AJM: Seism. Obs., 2KH/11, Shastri Nagar, Ajmer, Rajasthan.															
6	BRC*: Seism. Obs., Kothi Hukam Singh, Barihat, Bahraich, U.P.															
7	BHK: Seism. Obs., Highway Tunnel, E.L. 1360, Bhakra Dam.															
8	B.H.J: Seism. Obs., Outside Patwadi Naka, Kodai Road, Bhuj Kutch, Gujrat.															
9	BOK: Seism. Obs., P.O. Bokaro Thermal, Distt: Giridih, Bihar.															
10	BOM: Regional Meteorological Centre, Colaba, Bombay -5.															
11	CAL: " " " " , Alipur, Calcutta -700027.															
12	CHA: Seism. Obs., Via Jogbani, P.O. Chatra, Distt: Sohara-925002, NEPAL.															
13	DDI: " " , Survey of India Office, East Canal Road, Dehra Dun, U.P.															
14	GOA: " " , Goa, Pnjim.															
15	IMP: Seismic Unit, Meteorological Office, Civil Airport, Imphal, Manipur.															
16	KRD: Seism. Obs., Industrial Training Institute, P.O. Karad, Distt. Satra Maha-															
17	rastra.															
18	KOD: Meteorological Unit, Indian Institute of Astrophysics, Kodaikanal - 3.															
19	LKP: Seism. Obs., P.O. Tirap Gate, Lekhapani, Assam.															
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	MDR: Seismic Unit, Forecasting Office, Meenambakam Airport, Madras, Tamil Nadu.															
2	MEE: Seism. Obs., Meerut, U.P.															
3	NDI: Seism. Div., Director General of Meteorology, Lodi Road, New Delhi-110003.															
4	PTH: Seism. Obs., Vill:- Bajiti near Degree College, Pithoragarh-262501, U.P.															
5	POO: Seism. Unit, Meteorological Office, Ganeshkhind Road, Pune-5, Maharashtra.															
6	PBA: Seism. Obs., Shadipur P.O., Port Blair, Andaman Island.															
7	SEH: Seism. Obs., P.W.D. Rest House, P.O. Sehore, M.P.															
8	SHL: Central Seism. Obs., Meathe Home, Shillong-79305, Meghalaya.															
9	TRD: Seismic Unit, Meteorological Centre, Observatory Hill, Trivandrum, Kerala.															
10	TUR*: Seism. Obs., Hawakhana Survey Training School, P.O. Tura, Distt. Garo Hills,															
11	Meghalaya.															
12	VAR: Seism. Obs., Dept. of Geophysics, Banaras Hindu University, Varanasi, U.P.															
13	VIS: Seism. Obs., Andhra University Campus, P.O. Waltair, Visakhapatnam, A.P.															
14																
15	<u>Remarks for the station codes used.</u>															
16	1) Codes <BRC> for Bahraich and <TUR> for Tura are already used for Barley Canyon															
17	(New Mexico, USA) and for Turbat (Uzbekistan, USSR).															
18	2) Codes BHJ for Bhuj, LKP for Lekhapani and PTH for Pithoragarh are not used															
19	by other stations by 1978 but not yet registered with ISC and/or NEIS.															
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	GōA	IMD EM	Z	1964.01	in use	1.5	0.5	15K	Photo paper							
2		Sprengn. MS	N	1964.01	in use	7.6	7.6	5K	Photo paper							
3		Sprengn. MS	E	1964.01	in use	7.9	7.9	5K	Photo paper							
4	HYD	Milne-Shaw	NE		1967.12	12.	—	250	Photo paper							
5	IMP	IMD EM	Z	1977.05	in use	1.5	0.5	25K	Photo paper							
6	JMU	SS-1 Ranger	Z	1982.05	in use	1.0	—		Ink record.							
7	KAD	IMD EM	Z	1970.01	in use	1.6	0.5	30K	Photo paper							
8		W-A	N	1970.01	in use	0.8	—	1000	Photo paper							
9		W-A	E	1970.01	in use	0.8	—	1000	Photo paper							
10	KōD	Milne	E	1899.												
11		Milne-Shaw		1932.	1978.	12.0	—	250	Photo paper							
12		Benioff SP	Z	1963	in use	1.0	0.74	50K	Photo paper							
13		Benioff SP	N	1963	in use	1.0	0.75	50K	Photo paper							
14		Benioff SP	E	1963	in use	1.0	0.75	50K	Photo paper							
15		Sprengn. LP	Z	1963	in use	15.0	101.0	1500	Photo paper							
16		Sprengn. LP	N	1963	in use	14.9	100.0	1500	Photo paper							
17		Sprengn. LP	E	1963	in use	15.1	99.0	1500	Photo paper							
18																
19	JWA	HES														
20	KKR	IMD EM														

WWSSN



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	(LKP)	IMD	EM	Z	1977.05	in use		1.5	0.5		10K	Photo paper				
2		W-A		N	1977.05	in use		0.8	-		900	Photo paper				
3		W-A		E	1977.05	in use		0.8	-		900	Photo paper				
4	MDR ^a	Milne		E	1898	1899						Photo paper				moved to KOD
5	MDR	Sprengn.	MS	Z	1952.	in use		1.53	1.56			Photo paper				
6		Sprengn.	MS	E	1952	in use		7.3	7.3		5000	Photo paper				
7	MEE	IMD	EM	Z	1967.10	1972.03		1.5	1.6		4800	Photo paper				
8	MUK	HES	EM	ZNE	1967.10			1.5	1.6			Photo film				
9	NDI ^a	Omori-Ewing		N	1942.08	1954.		28.0	-		30	Smoked paper				
10		Milne-Shaw		N	1942.08	1974.		12.0	-		250	Photo paper				
11																
12	NDI	W-A		N, E	1951.	in use		0.8	-		1000	Photo paper				5K
13		Sprengn.	MS	E	1962.	in use		7.6	7.6		5000	Photo paper				
14		Beni off	SP	Z	1963	in use		4.0	0.75		50K	Photo paper				
15				N	1963	in use		1.0	0.75		50K	Photo paper				
16				E	1963	in use		1.0	0.75		50K	Photo paper				
17		Sprengn.	LP	Z	1963	in use		15.0	99.0		1500	Photo paper				
18				N	1963	in use		15.0	99.0		1500	Photo paper				
19				E	1963	in use		15.0	100.0		1500	Photo paper				
20		S-13		Z	1978	in use		1.0	----			Heat sensi- tive paper				

WWSSN



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	PTH	IMD EM	Z	1981.08		in use		1.0		0.2	25K	Photopaper				
2																
3	P $\bar{O}\bar{O}$	Milne-Shaw		1949		1963		12.0		—	250	Photo paper				
4		W-A		1949		1963		4.0		—	1100	Photo paper				
5		Sprengn. MS	Z	1949		1963		1.5		1.5		Photo paper				
6		Benioff	SP Z	1963		in use		1.0		0.75	50K	Photo paper				
7		Benioff	SP N	1963		in use		1.0		0.75	50K	Photo paper				
8		Benioff	SP E	1963		in use		1.0		0.75	50K	Photo paper				
9		Sprengn. LP	Z	1963		in use		15.0		100.0	1500	Photo paper				
10		Sprengn. LP	N	1963		in use		15.0		100.0	1500	Photo paper				
11		Sprengn. LP	E	1963		in use		15.0		100.0	1500	Photo paper				
12																
13	PBA	Milne-Shaw	E	1963.01		c.		12.0		—	250	Photo paper				
14		W-A	N	1957.07		in use		2.0		—	795	Photo paper				
15		W-A	E	1957.07		in use		0.8		—	800	Photo paper				
16		Sprengn. MS	E	1958.07		c.		7.4		7.3	4270	Photo paper				
17		Benioff	SP Z	1963.02		in use		1.4		1.3		Photo paper				
18	R \bar{O} H	IMD EM										Photo paper				
19	SEH	IMD EM	Z	1959.07		in use		1.6		1.6	5000	Photo paper				
20		W-A	E	1959.07		in use		0.8		—	950	Photo paper				

WNSSN



NO.	S.M.I.	H.E.S.	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SHL	W-A			N	1952		in use	0.8	—		700	Photo paper				
2		W-A			E	1952		in use	0.8	—		900	Photo paper				
3		Sprengm. MS			E	1958		in use	6.9	7.0		5000	Photo paper				
4		Beni off	SP		Z	1963		in use	1.0	0.76		200K	Photo paper				
5					N	1963		in use	1.0	0.74		200K	Photo paper				
6					E	1963		in use	1.0	0.79		200K	Photo paper				
7		Sprengm. LP			Z	1963		in use	15.0	100.0		3000	Photo paper				
8					N	1963		in use	15.0	100.0		3000	Photo paper				
9					E	1963		in use	14.8	99.6		3000	Photo paper				
10	SH. IO	SR0	SP		ZNE	1978		in use	1.0	---		100K	Digital & analogue MT				
11		SR0	LP		ZNE	1978		in use	25.0	---		20K	Digital & analogue MT				
12	TRD	Sprengm. MS			E	1966.08		in use	7.8	7.8		2500	Photo paper				
13		IMD EM			Z	1973		in use	1.5	0.5		10K	Photo paper				
14																	
15	TUR	IMD EM			Z	1975.06		in use	1.5	0.5		10K	Photo paper				
16																	
17	VAR	W-A			N	1968.03		in use	0.8	—		1000	Photo paper				
18		IMD EM			Z	1968.03		in use	1.6	1.6		4500	Photo paper				
19		IMD EM			E	1968.03		in use	1.6	1.6		3400	Photo paper				
20	SNP SRR	IMD EM			Z	1982.05		in use	1.0	0.2		50K	Photo paper				
	T0C	W-A			NE	1954		in use	0.8				Photo paper				

WWSSN



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	VIS	W-A		N	1961		in use	0.8	—		920	Photopaper				
2		W-A		E	1961		in use	0.8	—		900	Photopaper				
3		IMD EM		Z	1961		in use	1.6	0.5		25K	Photopaper				
4		Sprengn. MS		E	1961		in use	6.8	6.8		5000	Photopaper				
5		Sprengn. LP		Z	1980.05		in use	15.0	100.0		1500	Photopaper				
6	VIZ	W-A		NE			1961	0.8	—			Photopaper				

7 System Response Curves are not available for AGR, BOK, BOM, CAL, CHA, DDI, MDR and PBA.

9 Timing System: WWSSN standard Timing System is used at KOD, NDI, POO and SHL.

10 IMD Eclipse Clock is used at AJM, BHK, BOK, ~~BOM~~, CAL, CHA, DDI, GOA, KRQ,
11 LKP, MEE, PTH, PBA, SEH, ^(SRR)TRD, VAR, and VIS. BOM Crystal chronometer, too.

12 Crystal clock is used at ^(BOM)BRC and BHJ. Chronometer is used at AGT
13 ,IMP and TUR. Electric Clock is used at MDR.

15 Abbreviations for the instruments:

16 Accel.: Accelerograph, HES: Hagiwara Electromagnetic Seismograph,

17 IMD EM: IMD Electromagnetic Seismograph, MS: Microseismograph,

18 Sprengn.: Sprengnether, § 13

19 SRQ: Seismological Research Observatory Borehole Seismograph,

20 W-A: Wood-Anderson Seismograph, W-L: Wilson-Lamson Seismograph.



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>Instruments used at WOS2 (Barrackpur), at BOM for 1907-1940, at CAL for 1915-</u>															
2	<u>1940, at DLH, at DDI for 1912-1953, at HYD, at W322 (Jugga Row), at</u>															
3	<u>JWA, at Kodaikanal (W355-KOD) for 1900-1932, at KNI, at KKR, at</u>															
4	<u>Madras-old prior to 1952, at MAH, at MUK, at ROH, at STA, at Simla</u>															
5	<u>old and new, at SNP, at TEZ, at TOC, and at VIZ are unknown.</u>															
6																
7	HES v DLH JWA MUK SMI → Beas-Pandoh Dams River Valley Project.															
8	WA TEZ TOC VIZ															
9	IMD EM KKR ROH SNP → Delhi Region Seismicity Mobile Seismogr.															
10	Milne Shaw BOM (1907-1940), CAL (1915-1940), KOD (1900-1932)															
11	Madras-old (-1952)															
12	Omori DDI (1912-1953) Simla-old															
13	Microseismogr. VIZ															
14																
15	GOV. KNI, MAH, STA → Central Water and Power Research Station, Pune.															
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3																
4	<u>GENERAL INFORMATION</u>															
5																
6	Operated by: Bhabha Atomic Research Centre (B.A.R.C.)															
7	Address: Seismic Array Station, B.A.R.C.,															
8	Gauribidanur, Kolar District,															
9	Karnataka State, India.															
10	Telephone: 62 Gauribidanur (Karnataka State), India.															
11	Telex: 011 2817															
12	Cable:															
13	Address to obtain records: The Director, Bhabha Atomic Research Centre,															
14	Trombay, Bombay-400085, India.															
15	Att. Head, Seismology Section, II Floor, Modular Lab., B.A.R.C.															
16	Data published:															
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SITE INFORMATION															
2																
3	Code	Station name	Latitude	Longitude	Elev.	Date	Date	Foundation								
4			N	E	m	opened	closed									
5	GBA	Gauribidanur	13° 36' 15"	77° 26' 10"	686	1965.10	open	Archean								
6		Seismic Array	6042	4361				rocks								
7																
8																
9																
10	<u>Short History</u>															
11																
12	L-shaped SPZ array of 10 elements set up with AM recording by end of 1965.															
13	Array size extended to 20 elements in Jan. 1968, and a triangular array of 3															
14	elements of LPZ system established in Sept. 1968. All recording made on analog															
15	magnetic tape till 1979. Digital recording of 1/2" wide of 9 track magnetic															
16	tape introduced for SP in 1980. Hard copy of records for selected events															
17	obtained on heat sensitive paper.															
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>INSTRUMENTATION</u>															
2																
3																
4	Code	Seismometers	T_0	Recordings	Date	Date	Magnifica-									
5			s		started	discont-	tion									
6						inued										
7	GBA	20-elements	1.0	1) Analog Magnetic Tape	1965.10	in use	180K for a									
8		L-shape SPZ		1" tape, 24 tracks with			single cha-									
9		array (aper-		time channel.			nnel									
10		ture 25 km)		2) Digital Magnetic Tape	1980.01	in use										
11		with Willmore		1/2" tape, 9 tracks,												
12		MK-II SP Z		800 bpi for SP.												
13																
14		3-elements	20.1	Analog Magnetic Tape	1968.09	in use	5K for a									
15		triangular		1" tape, ___ tracks			single cha-									
16		LPZ array (with other slow phe-			nnel									
17		aperture 25		nomena such as atom-												
18		km) with Geo-		spheric pressure.												
19		tech S-11 LP														
20		Z														



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>Timing system</u>															
2																
3	UKAEA 5 MHz crystal clock.															
4																
5																
6	<u>System response curves</u>															
7																
8	Fig. 1 for SP and Fig. 2 for LP arrays.															
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

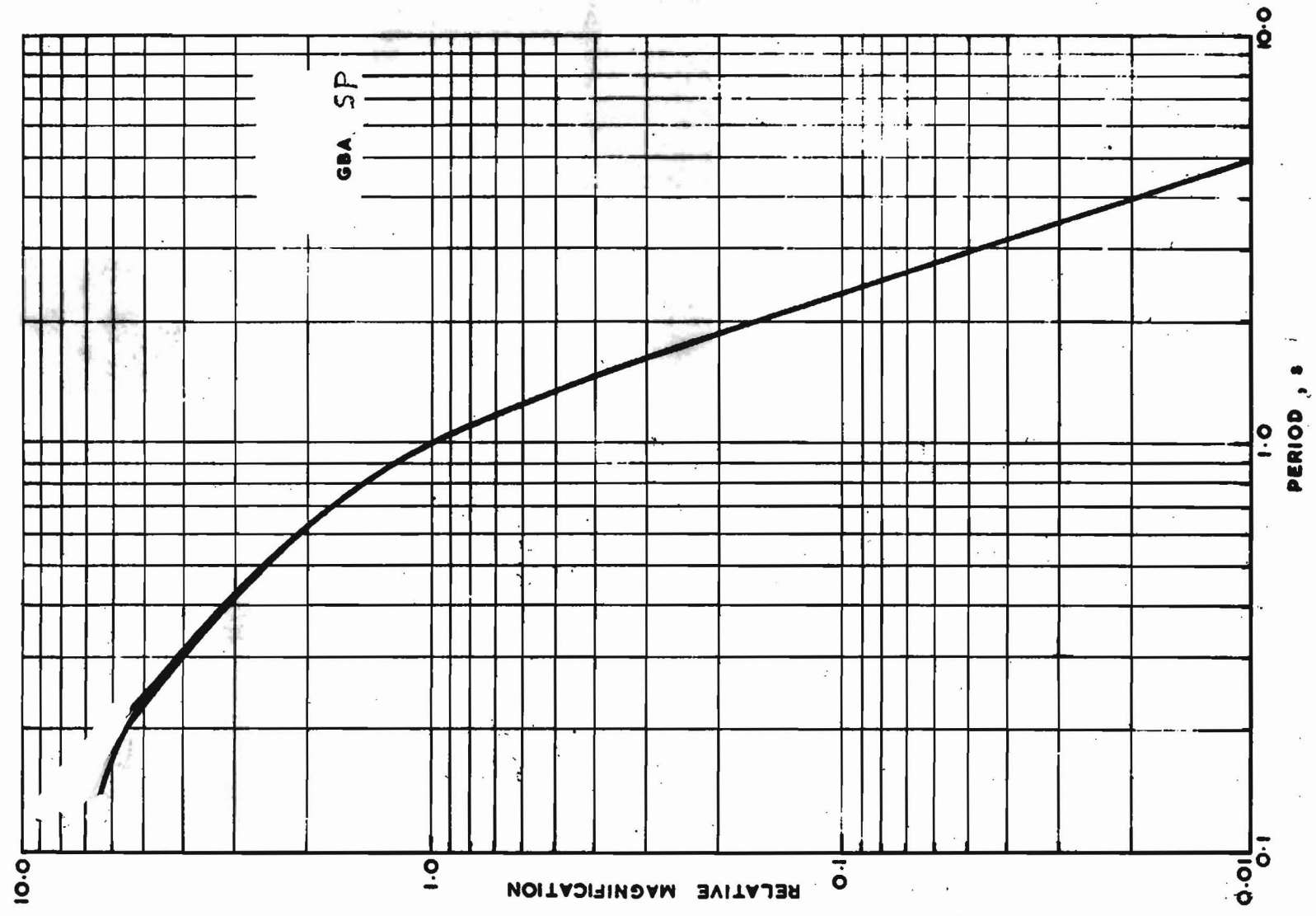


FIGURE 1. MAGNIFICATION: SHORT PERIOD ARRAYS

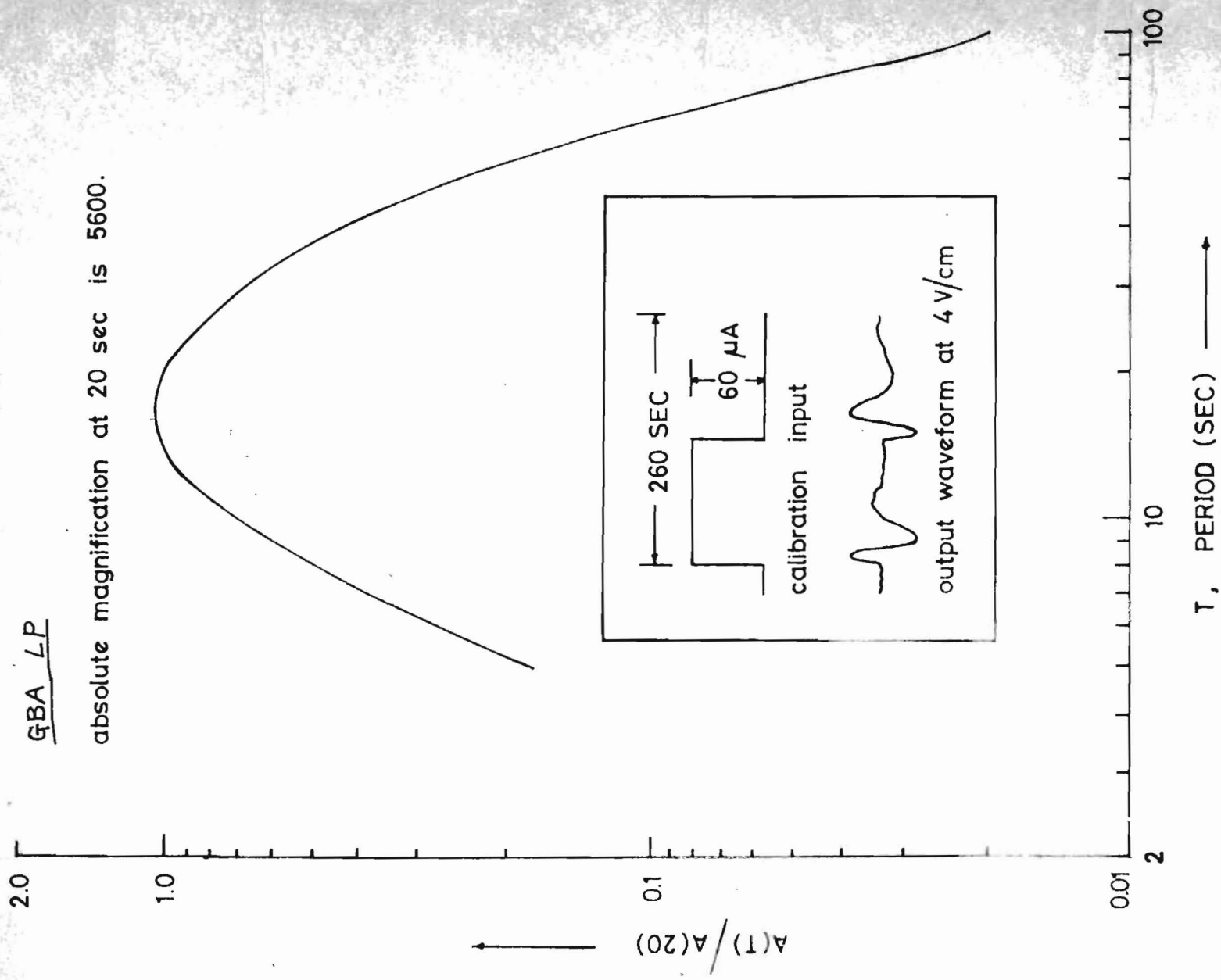


FIG: 2 OVERALL SYSTEM DISPLACEMENT RESPONSE



TODAI

DATA SHEET

SEMI-FINAL/SEP 1982

FINAL 83/1/20, 83/5/82

PROBLEM-INDONESIA-A

BY-

PAGE- 1 OF 14

NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3																
4																
5																
6																
7																
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10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

INDONESIA

MGI Network

GENERAL INFORMATION

Operated by: Meteorological and Geophysical Agency (MGA)*
Address: Meteorological and Geophysical Agency (MGA)
Department of Communications,
Jl. Arief Rahman Hakim No. 3, P.O. Box: 3540 JKT,
Jakarta, Indonesia.

Telephone: (021) 375508

Cable: KPMG

Telex: 45331 METEO JKT

Address to obtain records: As above.

Data published:

* Prior to April 1980 known as Meteorological and Geophysical Institute (MGI).



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	PSI	Parapat*	2° 41' 29" N	98° 55' 09"	987	1976.01.	open	Volcanics								
2			(2.6914)	(98.9192)												
3	PPI	Padang Panjang	0° 27' 08" S	100° 23' 21"	784	1976.01	open	Plutonics								
4			(0.4522)	(100.3892)												
5			0° 75' S	100.65		1976	open	ST								
6	WS44	Padang	0° 56" 4 S	100° 22'		1906 (ST)										
7			(0.9400)	(100.3667)												
8	KSI	Kepahyang * §	3° 39' 05" S	102° 35' 09"	517	1978.03.09	open	Volcanics								
9	BGI	Bengkulu ST §	3.65 S	102.58	-			Temporary site for KSI								
10			Bengkulu ISC §	3° 39' 00" S	102° 39' 00"	0			open							
11	KKD	Korintji-Dempo	3° 42' S	102° 56'	-											
12			(3.7000)	(102.9333)												
13	CLI	Kotabumi	4.84675	104.8750	-	1982.02.09	open	ST								
14																
15	SLS	{ Soengi Langka	5° 24' S	105° 13'	240	1971.09.05	c.	SLS = W684								
16	(W684)		Sungai Langka	(5.4000)	(105.2167)	-	1929(?) (ST)		-1940	ST						
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	3) <u>Bali</u>															
2																
3	DNP	Denpasar	$8^{\circ} 39' 38''$ S (8.6606)	$115^{\circ} 12' 45''$ (115.2125)	50	1967.09 (ST)	open	Alluvium								
4		(Kahang-Kahang)			$8^{\circ} 39'$ 8.21327	$115^{\circ} 13'$ 115.36286	15		open	ISC						
5	(KHK)	Karangasem	8.35305	115.6079		1981.06	open	ST								
6	4) <u>Sumba</u>															
7																
8	WSI	Wainapu	$9^{\circ} 40' 38''$ S (9.6772)	$120^{\circ} 18' 34''$ (120.3094)	12	1976.02	open	Coral reef								
9					$9^{\circ} 42'$ S (9.7000)	$120^{\circ} 18'$ (120.3000)	400		open	ISC						
10			9.69 S 120.31				open	ST								
11	5) <u>Flores</u>															
12	NUA	Nuabosi						closed	ISC							
13	6) <u>Timor</u>															
14	KUP	Kupang	$10^{\circ} 10'$ S (10.1667)	$123^{\circ} 35' 12''$ (123.5867)	52	1929 (ST)	1970	Neogene Sedi- mentary rock								
15	KUG	Kupang	$10^{\circ} 10'$ S (10.1667)	$123^{\circ} 35' 12''$ (123.5867)	52	1971.08	open									
16	KUPT	Kupang	$10^{\circ} 09' 36''$ S (10.1600)	$123^{\circ} 35' 39''$ (123.5942)	52	1976.02	open	same as above								

N.B. Although Soetardjo (ST) reported that Kupang was opened in 1929, Wood¹⁾ did not list Kupang. KUP and KUG were used for the same station prior to 1971 and after 1971 respectively.



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
1	7) <u>Kalimantan (Borneo)</u>																
2																	
3	BKB	Balikpapan	$1^{\circ}17'$	S	$116^{\circ}50'$			3	1976.03	open	Neogene						
4			{ (1.2833)		{ (116.8333)												
			1.29	S	116.83	E				open	ST						
5	8) <u>Sulawesi (Celebes)</u>																
6																	
7	MKS	Ujung Pandang §	$5^{\circ}04'$	S	$119^{\circ}38'$			28	1969.11	open	Alluvium						
8			{ (5.0667)		{ (119.6333)												
9			$0^{\circ}53'24''$	S	$119^{\circ}49'48''$			-	1980.09	open	Mezozoic						
10	PCI	Palu	{ (0.8900)		{ (119.8300)												
			$0^{\circ}56'$	S	$119^{\circ}53'$					open	ISE						
			{ (0.9330)		{ (119.8833)												
			0.50	S	119.54					open	ST						
12	MNI	^a Manado	$1^{\circ}27'$	N	$124^{\circ}50'$			120	1974.03	open	Volcanics						
13			{ (1.4500)		{ (124.8300)												
14	9) <u>Moluccas</u>																
15	WO22	Ambon §	$3^{\circ}42'$	S	$128^{\circ}10'$				{ 1905 (ST)								
			{ (3.7000)		{ (128.1667)				{ 1924.10 (WOOD)								
16	AAI			$3^{\circ}41'53''$	S	$128^{\circ}10'00''$			80	1975.03	open	Volcanics.					
				{ (3.6981)		{ (128.1667)											
17	AMÖ		2.70	S	128.30				1975.03		ST						
			3.61	S	128.63					open	ST						
18	TLĒ	Tual	$5^{\circ}37'48''$	S	$132^{\circ}45'36''$				1981.06	open							
			{ (5.6300)		{ (132.7600)												
19			$5^{\circ}36'$	S	$132^{\circ}48'$					open	ISE						
			{ (5.6000)		{ (132.8000)												
20			5.68	S	132.60					open	ST						



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	10) Irian Jaya (Irian Barat = West New Guinea)															
2																
3	SWI	Sorong		$\left\{ \begin{array}{l} 0^{\circ} 51' S \\ (0.8500) \\ 0^{\circ} 53' S \\ (0.8833) \\ \hline 0.83 S \end{array} \right.$	$\left\{ \begin{array}{l} 131^{\circ} 17' 24'' \\ (131.2900) \\ 131^{\circ} 18' \\ (131.3000) \\ \hline 131.25 \end{array} \right.$	Not yet operated										
4			open						ISC							
5			open						ST							
6																
7																
8	JAY	Jayapura *		$\left\{ \begin{array}{l} 2^{\circ} 30' S \\ (2.5000) \end{array} \right.$	$\left\{ \begin{array}{l} 140^{\circ} 40' \\ (140.6667) \end{array} \right.$	400	1972.02	open		Crystalline						
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2	a) *Alternate spellings:															
3	Denpasar - Denpasar															
4	Kepahyang - Kepahiang															
5	Padan Panjang - Padang Pandjang															
6																
7																
8																
9	b) § Alternate names:															
10	Ambon - Amboina															
11	Ujung Pandang - Makasar															
12	Karang asem - Kahang Kahang															
13																
14																
15																
16																
17																
18																
19																
20																



NO.	INSTRUMENTATION									
	Code	Instrument Component	Date started	Date dis-continued	To	Tg	Magnification at 1Hz	Magnification at 3Hz	Recording	
1	SPS-1 KIN: Kinematics Ranger. SS-1. Sprengn: Sprengmeter									
2										
3										
4										
5										
6	1) <u>Sumatera (Sumatra)</u>									
7										
8	BSI	SPS-1 KIN Z	78.03.24	in use	1.0	--	20.4K	56.0K (144K)	Pen and ink	
9										
10	W447	Wiechert NE	29.07.24	±40.					Smoked paper	
11										
12	MED	Sprengn. Z	56.01.	74.10	1.5		3K		Photo paper	
13		Sprengn. N	56.01.	74.10	1.5		3K		" "	
14		Sprengn. E	56.01.	74.10	1.5		3K		" "	
15										
16	TSI	Sprengn. Z	74.10	in use	1.3	1.3	3K		Photo paper	
17		Sprengn N	74.10	in use	1.6	1.6	3K		" "	
18		Sprengn. E	74.10	in use.	18.6	18.6	3K		" "	
19		SPS-1 KIN Z	77.08.06	in use	1.0	--	10.0K	28.5K (28K)	Pen and ink	
20										

() by ST: Soetardjo (1982)



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	2.) <u>Jawa (Java)</u>															
2																
3	TNG	Sprengn.	Z	62.12.	in use	1.2	1.2				3K			Photo paper		
4		Sprengn.	N	62.12	in use	1.5	1.5				3K			" "		
5		Sprengn.	E	62.12	in use	19.2	19.2				3K			" "		
6		SPS-1 KIN	Z	75.10	in use	1.0	--				2.3K	7K (1K)		Pen and ink.		
7																
8	DJA.	Ewing	H	1891												
9		Milne	H	1898												
10		Rebeu-Ehler		1898												
11		Bosch		1898												
12		Wiechert	{ N	08.06.06	1943 80.08	3.9	--				137			Smoked paper		
13			{ E	do. 08.06.06	do. 80.08	3.15	--				157			" "		
14		Wiechert	Z	28.10.19 (26 by ST)	80.08	7.0	--				300			" "		
15	LEM	Benioff	SP Z	64.10	in use	1.0	0.7				25K			Photo paper		
16		"	SP N	64.10	in use	1.0	0.8				25K			" "		
17		"	SP E	64.10	in use	1.0	0.72				25K			" "		
18		Sprengn.	LP Z	64.10	in use	14.7	100.				V _{max}	750 (20s)		" "		
19		"	LP N	64.10	in use	15.3	100.				V _{max}	750 (20s)		" "		
20		"	SP E	64.10	in use	15.0	100.				V _{max}	750 (20s)		" "		



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	LEM	SPS-1 KIN	Z	81,		in use			1.0	--		28K	72K	Pen and ink		
2																
3	MLB.	Splinder Hoyer		11.07.		45.										
4	(W432)															
5	SJI	SPS-1 KIN	Z	76.12		in use			1.0	--		21K	56K.	Pen and ink		
6													(225K)			
7	(KRR)	SPS-1 KIN	Z	72.07		in use			1.5	1.5		3K.		Pen and ink		
8																
9	TRT	SPS-1 KIN	Z	75.11		in use			1.0	--		39K	116K	Pen and ink		
10													(113K)			

Instrument at MAJ is unknown.

3) Bali

15	DNP	Sprengn.	Z	67.09.		in use			1.3	1.3		3K		Photo paper		
16		"	N	67.09		in use			1.6	1.6		3K		" "		
17		"	E	67.09		in use			18.6	18.6.		3K		" "		
18		SPS-1 KIN	Z	81.07		in use			1.0	--		39K	112.5K	Pen and ink		
19																
20	(KHK)	SPS-1 KIN	Z			in use			1.0	--				Pen and ink		
													(112K)			



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	4) <u>Sumba</u>															
2																
3	WSI	SPS-1 KIN	Z	76.02.	in use.	1.0	--	21K	56K (25K)	Pen and ink						
4																
5	5) <u>Flores</u>															
6																
7	NUA															
8																
9	6) <u>Timor</u>															
10																
11	KUP	Wiechert		29.	40.			—	Smoked paper							
12	KUG	Sprengn.	Z	68.	in use	0.9	0.9	3K	Photo paper							
13			N	68.	in use	1.6	1.6	3K	" "							
14			E	68.	in use	16.2	16.2	3K	" "							
15																
16	KUPT	SPS-1 KIN	Z	76.02.	in use.	1.0	--	9.5K	28K (30K)	Pen and ink						
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	7) <u>Kalimantan (Borneo)</u>															
2																
3	BKB.	SPS-1 KIN	Z	76.03	in use	1.0	--	4.6K	14.5K (7K)	Pen and ink						
4																
5	8) <u>Sulawesi (Celebes)</u>															
6																
7	MKS	Sprengn.	Z	69.11	in use	1.8	1.8	3K	Photo paper							
8		"	N	69.11	in use	10.7	10.7	3K	" "							
9		"	E	69.11	in use	19.7	19.7	3K	" "							
10		SPS-1 KIN	Z	75.11	in use	1.0	--	9.7K	29K (30K)	Pen and ink						
11																
12	PCI	SPS-1 KIN	Z	80.09	in use	1.0	--	39K	112.5K (112K)	Pen and ink						
13																
14	MNI	Sprengn.	Z	74.03	in use	1.5	1.5	3K	Photo paper							
15		"	N	74.03	in use	1.6	1.6	3K	" "							
16		"	E	74.03	in use	1.4	1.4	3K	" "							
17		SPS-1 KIN	Z	76.05	in use	1.0	--	9.5K	29K (33K)	Pen and ink						
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	9) <u>Molucca</u>															
2																
3	W022	Bosch		05.												
4		Wiechert		29(?)	40.											
5																
6			Z	75.03	in use		1.1	1.0				3K				Smoked paper
7	AM0	Sprengn.	N	75.03	in use		14.2	14.0				3K				" "
8			E	75.03	in use		14.1	14.0				3K				" "
9	AAI	SPS-1 KIN	Z	75.12	in use		1.0	--				19K	54K (54K)			Pen and ink
10																
11	TLE	SPS-1 KIN	Z	81.06	in use		1.0	--					(28K)			Pen and ink
12																
13	10) Irian Jaya (Irian Barat = West New Guinea)															
14																
15	SWI	SPS-1 KIN	Z				1.0	--								Pen and ink
16													(56K)			
17	JAY		Z	72.02	in use		1.75	1.75				3K				Photo paper
18		Sprengn.	N	72.02	in use		1.9	1.9				3K				" "
19			E	72.02	in use		14.0	14.0				3K				" "
20		SPS-1 KIN	Z	75.11	in		1.0	--				39K	112.5K (98K)			Pen and ink



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3	<u>GENERAL INFORMATION</u>															
4																
5	Operated by:		Volcanological Survey of Indonesia													
6	Address:		Volcanological Survey of Indonesia,													
7			Jalan Diponegoro 57,													
8			Bandung, Indonesia													
9	Telephone:		73205-8													
10	Cable:		KDV Bandung Indonesia													
11	Telex:															
12	Address to obtain records:		As above													
13	Data published:															
14																
15																
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SITE INFORMATION															c. closed after ISC
2																
3	Code	Station name	Latitude	Longitude	Elev.	Date	Date	Foundation and								
4		(Volcano)			m.	opened	closed	Remarks.								
5	1) Sumatera (Sumatra)															
6	BPLa	Ratu Palano	0° 26' S	100° 30.46' E	1325	1978.										
7		(Marapi).														
8	TLNa	Batu Berjang	0° 58.42' S	100° 40.77' E	1450	1979	Temporary.									
9		jang (Talang)														
10	TLN	Talang-ISC	1° 00' S	100° 30' E	-		c.									
11																
12	2) Jawa (Java)															
13	TPIJa	Tangkubanpa-	6° 46' S	107° 36' E	2023	1969										
14		rahu (ibid) *														
15	DIE	Karangtengah	7° 12' S	109° 54' E	2032	1975	c.									
16		(Dieng)														
17	MRPa	Babadan	7° 31.55' S	110° 24.6' E	1279	1969										
18		(Merapi)														
19	MRPb	Plawangan	7° 35' S	110° 25.9' E	1296	1971										
20		(Merapi)														
	MRP	Merapi-ISC	7° 24' S	110° 16' E	-		c.									



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	AGUB	Budakeling		8° 20.5' S	115° 30.5' E		408	1979								
2		(Agung)														
3																
4	4) Flores															
5	EBUa	Ekawolo		8° 48.5' S	121° 11' E		810	1971								
6		(Ebulobo)														
7	IYAa	Tewejangga		8° 22 ⁵³ .5' S	121° 38' E		15	1975								
8		(Iya)														
9	KOLA	Kolorongo		8° 45.5' S	121° 50' E		860	1980								
10		(Kelimutu)														
11	IBLa	Harubala		8° 20.5' S	123° 15.5' E		150	1980								
12		Arusala														
13		(Ile Boleng)														
14																
15	5) Sulawesi (Celebes)															
16	MHWA	Kakaskasen		1° 24' 54" N	124° 34' 17" E		815	1971								
17		(Mahawu)														
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>INSTRUMENTATION.</u>															
2																
3	Code	Instrument		Date	Date	T_0	T_g	V_{max}	Recording, Timing and							
4		Type & Comp.		started	stopped	sec	sec		other remarks							
5	1) Sumatera															
6	BPLa	EM-Hosaka	Z	1978		1.0	---	4K								
7																
8	TLNa	EM-Hosaka	Z	1979		1.0	---	4K								
9																
10	TLN															
11																
12	2) Jawa															
13	TPJa	EM-Hosaka	Z	1969		1.0	---	4K								
14																
15	DIE	EM-Hosaka	Z	1975		1.0	---	4K								
16																
17	MRPa	EM-Hosaka	3Z			1.0	---	4K-10K	Tripartite net							
18																
19	MRPb	Wiechert	NE			2.25	---	200.	No timing system							
20		EM-Hosaka	Z			1.0	---	4K								



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	MRP															
2	BND															
3	KELa	MC.	NE	1973				2.25	—	200						
4		EM-Hosaka	3Z	1973				1.0	---	4K-10K						
5	KEL															
6	SMRa	EM-Hosaka	3Z	1980				1.0	---	4K-10K						
7																
8	SMRb	Mainka	NE	1969				2.85	—	175						
9	SMR															
10	LAM	EM-Hosaka	Z	1978				1.0	---	4K						
11	GED															
12	KIJ	EM-Hosaka	Z	1975				1.0	---	4K						
13																
14	3) Bali															
15	AGUa	EM-Hosaka	Z	1981				1.0	---	3K-10K						
16																
17	AGUb	Wiechert	NE	1979				2.5	—	100						
18																
19	4) Flores.															
20	EBUa	EM-Hosaka	Z	1971				1.0	---	3K						



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3																
4	GENERAL INFORMATION															
5																
6	Operated by :		Meteorological and Geophysical Agency (MGA)*													
7	Address:		Meteorological and Geophysical Agency (MGA)													
8			Department of Communications													
9			Jl. Arief Rahman Hakim No. 3, P.O. Box 3540 JKT.													
10			Jakarta, Indonesia													
11	Tele phone		(021)-375508													
12	Cable		KBMG													
13	Telex		45331 METEO JKT													
14	Address to obtain record:		As above													
15	Data published:															
16																
17																
18																
19																
20																

* Prior to April 1980 known as Meteorological and Geophysical Institute (MGI).



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80		
1	<u>SMAC-B AKASHI STATIONS</u>																	
2																		
3	Code	Station: Bldg., Construction				Lat. of	Floor	S	Freq.	Foundation	Date							
4		Place				Long.	insta.	mm/g	Hz		opened							
5	ANBJ	Wisma Nusantara SC-30 story,				6° 20 S	29 FL	25	10.0	Alluvium	1973							
6		Jl. M.H. Thamrin-Jakarta				106° 80 E												
7	ABSA	Bendungan Sempor RC-1 story,				7° 25 S	1 FL	25	10.0	Sandstone	1972							
8		Gombong-Jawa, Tengan				109° 25 E												
9	AKRA	Bendungan Karangates RC-1				8° 12 S	1 FL	25	10.0	Alluvium	1972.07							
10		story				112° 46 E												
11	N.B. RC: Reinforced concrete, SC: Steel concrete.																	
12																		
13	<u>SMA-1 KINEMATICS STATIONS</u>																	
14	S: Sensitivity, L: Lateral (mostly EW), V: Vertical, T: Transverse (mostly NS)																	
15	Code	Station: Bldg., Construction				Lat. and	Floor	S	Freq.	Foundation	Date							
16		Place.				Long.	insta.	mm/g	Hz		opened							
17	ARHC	DPMB ¹⁾ RC- 2 story				6° 9 15	2 FL	L 16.9	27.3	Alluvium	1977.11							
18		Jl. Tamansari-Bandung				107° 60 E		V 17.0	26.8									
19								T 17.5	27.2									
19	ARHL	Lab. DPMB - RC - 1 story				6° 9 3 S	1 FL	L 18.4	25.6	Alluvium	1977.11							
20		Jl. Turangga-Bandung				107.63 E		V 17.0	26.3									
								T 17.5	25.9									



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	ASMB	Stasiun Meteorologi RC 1,					5° 25S	1Fl.	L 17.7	26.0	Younger Qu-					1981.10
2		Branti-Tanjung Karang					105° 18E		V 20.4	24.8	arterary					.24
3	ASKD	Stasiun Klimatologi RC 2					6° 50S	1Fl.	L 19.8	25.7	Pleistocene					1981.10
4		Dermaga - Bogor					106° 75E		V 20.1	25.2						.29
5	ATNG	Stasiun Geofisika RC 1 story					6° 17S	1Fl.	L 17.3	26.7	Alluvium					1981.10
6		Jl. Tanah Tinggi - Tangerang					106.63E		V 17.2	26.0						.29
7	ASMC	Stasiun Meteorologi RC 1					6° 23S	1Fl.	L 17.4	26.4	Alluvium					1981.10
8		Budiarto Curung					106.65E		V 18.8	25.1						.29
9	ASRR	RC 1 story					8° 20S	1Fl.	L 16.8	27.6	Alluvium					1981.11
10		Seririt-Bali					114° 93E		V 19.3	25.1						.89
11	AKRK	Stasiun Geofisika RC 1 story					8° 12S	1Fl.	L 18.0	25.6	Alluvium					1981.10
12		Karangates					112.46E		V 17.5	26.8						.30
13	AJJI	Stasiun Geofisika RC 1 story					7° 73S	1Fl.	L 18.1	26.2	Recent					1981.10
14		Sawah					111.77E		V 18.0	26.3	volcanics					.30
15	ABMS	Stasiun Meteorologi RC 1					8° 22S	1Fl.	L 18.0	25.4	Alluvium					1981.11
16		Banyuwangi					114.38E		V 18.2	25.6						.01
17	ABWI	Bendungan Wlingi Raya RC 1					8° 10S	1Fl.	L 16.5	26.0	Younger Qu-					1981.11
18		Jawa Timur					112.30E		V 19.1	25.8	arterary					.10
19	ABSI	Bendungan Selorejo RC 1					8° 10S	1Fl.	L 16.6	26.7	do.					1981.11
20		Jawa Timur					112.96E		V 18.0	26.7						.11



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
1	AKHK					RC 1		8°36S	1FL	L 17.9	25.4		Recent		1981.11		
2		Kahang-Kahang Bali						115.61E		V 20.5	25.6		volcanics		.07		
3	ATRT					Stasiun Geofisika RC 1		7°70S	1FL	L 18.3	26.4		Volcanics		1981.10		
4		Tretes						112.64E		V 20.5	24.6		/older Qu.		.31		
5	AMSC					Stasiun Meteorologi RC 1		7°73S	1FL	L 18.1	24.8		Recent		1981.11		
6		Cilacap						109.20E		V 17.7	26.5		volcanics		.08		
7	AKLI					Stasiun Geofisika RC 1		4°85S	1FL	L 19.4	18.0		do.		1982.02		
8		Kota Bumi Lampung						104.86E		V 16.6	18.8				.06		
9	ABSB					Bendungan Sampeyan Jati RC 1			1FL	L 17.6	25.8		Younger Qu-		1982.01		
10		Jawa Timur								V 20.2	24.5		arternary		.		
11	AUMS					Stasiun Meteorologi RC 1		5°60S	1FL	L 17.6	26.3		Breccia &		1982.03		
12		Hasanuddin-Ujung Pandang						119.55E		V 18.1	26.4		volcanics		.09		
13						Gandasoli RC 1		6°97S	1FL	L 18.8	17.9		Recent		1982.02		
14		Sukabumi-Jawa Barat						106.95E		V 18.5	18.5		volcanics		.		
15	ABWS					Bendungan Wonogiri RC 1		7°82S	1FL	L 18.6	17.9		Granit		1982.08		
16		Jawa Tengah						110.88E		V 18.5	18.5				.13		
17	ABSG					Bendungan Sempor RC 1		7°25S	1FL	L 17.2	18.4		Sandstone		1982.08		
18		Gambong-Jawa Tengah						109.26E		V 17.3	18.7				.16		
19	ATBJ					Gedung Tira Jakarta RC 7		6°20S	1FL	L 17.9	26.0		Alluvium		1982.08		
20		Jl. Rasuna Said-Jakarta						106.80E		V 18.6	25.3				.		
										T 16.9	27.3						



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	APFM	Pelabuhan Ferry Merak RC 1					5° 55'S	1 Fl	L 17.4	18.7	Alluvium	1982.12				
2		-Jawa Barat					105° 58'E		V 46.8	19.1		.07				
3	ARBD	Kantor DPU RC 1					6° 36'S	1 Fl	L 17.1	26.5	Upper Miocene	1982.12				
4		Rangkas Bitung - Jawa Barat					106° 25'E		V 16.7	27.2		.07				
5	AMSA	Menara Suar RC 1					6° 08'S	1 Fl	L 18.0	25.5	Alluvium	1982.12				
6		Anyer Kidul - Jawa Barat					105° 88'E		V 16.5	26.3		.05				
7	AWSI	Stasiun Geofisika RC 1					9° 69'S	1 Fl	L 18.5	25.1	Coral reef	1982.11				
8		Waingapu - Sumba					120° 31'E		V 18.4	25.9		.11				
9	ABPS	Bendungan Benteng RC 1					3° 80'S	1 Fl	L 16.8	26.8	Breccia & volcanics	1982.09				
10		Pinnang - Sulawesi Selatan					119° 66'E		V 18.7	25.9		.13				
11	AMKS	Stasiun Geofisika RC 1 Tan					5° 03'S	1 Fl	L 19.8	24.2	do.	1982.03				
12		Ujung Pandang - Sulawesi Sela					119° 03'E		V 19.6	25.6		.09				
13	TSI	Stasiun Geofisika RC 1					3° 55'S	1 Fl	L 18.4	26.0	Alluvium	1977.11				
14		Tuntungan - Medan (closed)					98° 68'E		V 18.2	26.0		-80.03				
15	AJB	Pembangunan Jaya Ancol RC 1					6° 20'S	1 Fl	L 17.1	26.5	Alluvium	1977.11				
16		Jakarta (closed)					106° 80'E		V 16.7	27.2		03-80.12.07				
17	LEM	Stasiun Geofisika RC 1					6° 83'S	Pier	L 18.0	26.0	Volcanics	1977.11				
18		Lembang (closed)					107° 62'E	of 1 Fl	V 18.0	26.0		08-80.12.05				
19	1) DPMB: Direktorat Penelitian Masalah Banungan 2) DPU:															
20	3) PLN: Perusahaan Listrik Negara															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
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IRAN

BHRC Strong Motion Network

GENERAL INFORMATION

Operated by: Building and Housing Research Center (BHRC)

Ministry of Housing and Urban Development (MHUD)

Address: P.O. Box 31-1882, Tehran, Iran.

Telex: 212117-MHUD-BHRC

Telephone:

This network includes

250 sets of SMA-1 Strong Motion Accelerographs and 300 sets of Seismoscopes among which 100 are installed and operating.

The network started in 1973.

Seismoscopes are either WS-1 Wilmot Seismoscope of Kinematics, USA, or ARDETA-100, Arak Machinery Plants Inc., Iran, with 2 pendulums.

 $T_0 = 0.5s$ and $0.75s$.

Coordinates of 184 stations installed up to the end of Jan. 1976 are given below:

Set. No.	STATION	No. S.N.	LONGITUDE	LATITUDE
1	ABDELI	1778	52 39 20	31 10 36
2	ABADJI	2078	48 17 5	30 20 11
3	ABAKHO	2091	53 17 13	31 10 54
4	ABBASABAD	2058	56 25 18	36 21 36
5	ABHAR	2064	49 11 02	36 08 47
6	AHAR	1438	47 05 11	38 23 05
7	AHKOH	2105	51 16 33	28 53 03
8	AHMARZ	1544	48 40 44	31 19 35
9	ALIGODARZ	2076	49 41 36	33 23 47
10	AMOL	1536	52 21 02	36 28 14
11	AMAR	1441	55 16 02	30 51 05
12	AMARAK	2087	53 41 49	33 18 04
13	ANDIJSSEK	1545	43 21 15	32 27 54
14	ANAR	1769	49 37 50	35 05 50
15	APDASUJ	1449	48 16 48	38 15 20
16	APDSEMAN	1771	52 21 56	33 22 46
17	APDARAK	1770	53 58 38	32 15 49
18	ASPARA	1443	48 51 54	38 25 57
19	AVAJ	2108	59 13 56	34 34 46
20	AZNA	2079	49 17 14	33 27 55
21	BAJGIHAN	1800	58 25 03	37 36 49
22	BANDEH	1759	45 56 02	35 59 35
23	BAZMIH	2054	60 11 57	27 41 49

STATION	N ^o , S ⁿ	LONGITUDE	LATITUDE
24 BAN	2055	58 21 02	29 05 29
25 BANDAR - SEAR	2057	54 02 52	36 52 54
26 BALIKAN - GUNAWA	2104	50 30 55	29 34 05
27 BANDAR - ABDAS	1013	56 16 49	27 11 13
28 BANDAR - MANGAN	2096	52 03 04	27 50 03
29 BANDAR - LENCOR	1803	54 54 33	26 33 23
30 BANDAR - TAHORI	2068	52 20 49	27 40 00
31 BANDAR - BOUSHEER	1549	50 49 50	28 59 19
32 BEBAHAN	1546	50 14 22	30 35 43
33 BEISHAR	1430	53 30 50	36 41 49
34 BIDAR	1056	47 30 20	35 52 25
35 BIRIAND	1442	59 12 50	32 52 50
36 BOINHAERA	996	50 03 55	35 46 12
37 BOMALAN	1548	51 12 22	29 15 52
38 BONSUSD	1542	48 45 24	33 53 47
39 BOUSHEER	2065	57 25 36	33 52 39
40 BOINURD	1025	57 19 16	37 28 13
41 BROJEN	2112	51 17 24	31 58 07
42 OHRAPAN	2059	59 31 10	36 23 01
43 DAMAB	1787	54 32 38	28 45 08
44 DAINAN	2072	50 25 00	32 58 36
45 DAKSHAN	1451	54 19 56	36 08 59
46 DAIKGAN	1798	59 09 25	37 26 44

SECTION	S.N.	LONGITUDE	LATITUDE
47 DASHTE - BAYAZ	1146	58 49 05	34 02 50
48 DAMAVAND	1000	52 04 05	35 43 05
49 DEHROK	1792	57 30 18	33 19 05
50 DEHRID	1785	53 10 10	30 36 45
51 DEHROAN	1805	47 16 01	32 41 19
52 DOGONBADAN	1760	50 47 19	30 21 12
53 DOROUD	999	49 04 01	33 28 59
54 ESPAHAN	1784	51 34 28	32 39 35
55 ESTARAYEN	2063	57 17 49	37 04 40
56 ESMALKHOSHTE	1007	53 28 35	36 28 22
57 FAROJ	1555	58 12 58	37 13 30
58 FARHANI	1553	59 51 23	35 42 54
59 FARJAN	2115	50 34 00	32 15 33
60 FASA	1781	53 35 26	28 45 40
61 FERDOVS	1539	58 09 48	34 01 05
62 FERDOZ - ABAD	1006	52 34 08	28 50 36
63 FERDOZKUH	1101	52 46 09	35 45 00
64 GAHSHAR	2070	51 19 01	36 07 28
65 GABRSAR	1016	52 20 22	35 13 14
66 GIRAN	2124	57 27 20	37 53 27
67 GON ZAD	2060	55 09 22	37 15 00
68 GORGAN	1019	54 25 16	36 49 27
69 GHAREN	1541	59 11 35	33 43 43
70 GHARBI - SHIMIN	1776	45 34 53	34 30 57

STATION	S.N.	LONGITUDE	LATITUDE
71 QALQIN	1025	50 00 15	35 16 13
72 GHESEK	1779	55 16 22	26 57 42
73 GHEK	1735	53 01 59	28 27 45
74 GHOJAN	2062	58 30 00	37 06 02
75 GHOK	1554	50 53 07	34 38 43
76 GHOWEE	1749	47 48 18	35 10 13
77 HAJIABAD	2055	55 56 28	28 29 43
78 HANADAN	997	48 30 49	34 47 54
79 HASHTGAR	1756	48 55 30	37 48 30
80 HENDJAN	1557	49 42 49	30 14 11
81 HELLEH	2107	50 52 44	28 50 11
82 ILAN	1787	46 25 26	33 38 23
83 IRANSHAR	1452	60 41 20	27 15 50
84 JAHON	1000	53 33 54	28 29 48
85 JIROFT	2125	57 44 13	28 40 15
86 JOFA	1423	45 35 08	38 57 16
87 KAHNOJ	2110	57 41 58	27 56 52
88 KASER	1018	58 37 49	34 08 47
89 KANDAVAR	1752	47 57 33	34 30 16
90 KASAJ	1017	50 59 12	35 47 34
91 KASHAN	1775	51 26 43	33 59 03
92 KASHGAR	1440	55 27 41	35 13 59
93 KAYSPOON	1010	51 39 15	29 37 05

	STATION	S.N.	LONGITUDE	LATITUDE
94	HERMAN	1012	57 04 41	30 17 34
95	KERMANSHAH	998	47 03 55	34 13 39
96	KOMPLEH	2095	52 26 17	32 42 48
97	KONARK	1144	60 23 45	25 21 29
98	KYABAR	1538	53 32 31	36 14 11
99	KHAF	1799	60 08 09	34 33 57
100	KHASH	1454	61 12 51	28 13 18
101	KHOMAIN	2067	50 04 23	33 46 35
102	KHANSAR	2073	50 19 12	33 13 13
103	KHOND	2113	53 26 09	27 53 27
104	KHOPAN - ABAD	1753	48 21 03	33 29 21
105	KOUHANG	2075	50 07 15	32 27 57
106	KHOZ	1142	44 56 25	38 32 30
107	KOMARDANHER	2114	51 23 28	29 32 19
108	LARA	1005	54 20 10	27 41 05
109	JORDEJAN	1066	50 48 54	31 30 41
110	NAHABAD	1807	45 42 59	36 45 33
111	MAHALLAT	1789	50 27 14	33 55 06
112	MAKOJ	1447	44 31 30	39 18 09
113	MALAYER	1751	48 49 27	34 17 44
114	MARASHAH	1763	46 14 05	37 25 27
115	MARAND	1439	45 56 02	38 25 57
116	MARAGHEH	1785	52 43 16	29 50 17

STATION	S.N.	LONGITUDE	LATITUDE
117 MAHAJEN - ENJEN	1793	55 56 16	37 54 43
118 MARIYAN	1757	46 08 04	35 30 09
119 MASAD	1021	59 36 18	35 17 13
120 MASHAD (EL)	2056	59 36 18	36 17 13
121 (CEMENTPLANT)	1768	59 50 12	36 02 27
122 MASJED - SOLEIMAN	1545	49 18 21	31 55 52
123 HERRAN	1806	46 09 04	33 07 00
124 MESHKIN - ENJEN	1801	47 39 04	38 24 34
125 MIANSE	1002	47 42 58	37 25 16
126 MIANDAB	1436	46 05 44	36 58 14
127 MINAB	1433	57 04 41	27 06 34
128 MARRADEN	1762	45 23 15	36 57 13
129 MASHAN	1025	50 44 22	31 56 36
130 MASHAND	1750	48 22 15	34 11 43
131 MAJEN	1782	53 05 24	32 51 54
132 MALANZ	2052	51 56 39	33 31 05
133 NIKSHAH	2051	60 12 52	26 13 05
134 NEISABOOD	1795	58 47 50	36 12 09
135 NOSHAR	1552	51 46 20	36 33 03
136 PARSABAD	1804	47 55 26	39 38 54
137 POLIGZ	1554	52 02 50	35 50 57
138 FARSAJAN	1435	56 07 30	30 24 35
139 FASHI	1450	49 35 45	37 16 45

SERIAL NO.	No. of SHEETS	INSCRIPTION	LATITUDS
140	1145	45 04 15	37 33 02
141	1014	51 26 08	35 35 57
142	2116	57 41 54	37 54 27
143	1766	49 25 07	36 48 33
144	2037	55 33 42	33 01 05
145	1555	51 54 42	35 44 19
146	2069	59 37 40	34 58 30
147	1457	50 17 22	37 08 05
148	1445	57 40 35	36 12 42
149	1890	61 10 26	36 38 45
150	1764	47 31 32	37 56 13
151	2123	61 15 27	26 37 46
152	1431	62 19 55	27 22 18
153	1730	49 03 16	30 33 03
154	1755	47 00 04	35 19 13
155	1537	53 03 02	36 33 55
156	1775	50 21 16	35 01 05
157	1761	46 19 06	36 14 11
158	2061	59 13 51	33 19 46
159	1448	53 23 50	35 34 19
160	1302	55 46 26	29 26 53
161	1754	46 31 47	34 06 53

STATION	S.N.	LENGTH	LATITUDE
162 SHANDASORI	1772	50 53 57	35 43 38
163 SHEKOCN	1003	44 45 57	38 11 48
164 SHALZ	1024	52 51 47	36 27 42
165 SH. HODS - HOND	1551	50 51 08	32 19 35
166 SH. HREDA	1771	51 51 02	32 03 00
167 SH. HROD	1444	54 56 49	36 24 07
168 SH. HJAVAR	1767	50 53 08	36 49 11
169 SHAH - TANGH	2109	59 26 56	35 57 57
170 SH. HALEID	2080	49 24 47	33 55 54
171 SH. HROD	1009	52 38 06	29 35 11
172 SHEWAN	1540	57 54 32	37 23 29
173 SH. HKS	1794	56 56 39	33 35 03
174 SH. HAKS	1141	46 17 49	38 04 52
175 SH. HAN	1758	47 06 03	36 24 03
176 SH. HROD	2095	50 01 18	34 41 35
177 SH. HROD	1791	60 46 08	34 44 11
178 SH. HAN (KO)	1533	51 24 03	35 14 29
179 SH. HAN (ZI)	1536	51 20 00	35 41 37
180 SH. HAN (AB)	1534	51 25 02	35 41 00
181 SH. HAN (PR)	1002	51 21 02	35 42 10
182 SH. HAN (SH)	1452	51 30 05	35 45 00
183 SH. HAN (SH)	1011	51 27 03	35 47 19
184 SH. HAN (P.O)	1803	51 27 03	35 47 19



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>SITE INFORMATION</u>															
2																
3																
4	Code	Station Name	Latitude	Longitude	Elev.	Date opened	Date closed	Remarks								
5			N	E	m											
6	KER	Kermanshah	34° 21' 08"	47° 06' 21"	1310	1965.05	open									
7	SEF (MJI)	Manjil	36° 45'	49° 23'	234	1963.08	do.									
8	MSH	Mashad-old	36° 18' 40"	59° 35' 16"	987	1965.09.15	1975.09.06	WWSSN								
9	MHI	Mashad-new	36° 18' 30"	59° 28' 18"	1150	1975.09.15	open									
10	MAIÖ	Mashad-SRÖ	36° 18' 30"	59° 28' 18"	1150	1975.10.	do.									
11	SHI	Shiraz	29° 38' 40"	52° 31' 34"	1595	1963.10.01	do.	WWSSN								
12	TAB	Tabriz	38° 04' 03"	46° 19' 36"	1430	1965.08.15	do.	WWSSN								
13	IR1	ILPA-1	35° 24' 58".3	50° 41' 19".5	1347	1975.12.20	open									
14	IR2	do. -2	35° 39' 46".1	50° 53' 51".5	1172	do.	do.									
15	IR3	do. -3	35° 28' 34".0	51° 01' 25".5	1106	do.	do.									
16	IR4	do. -4	35° 14' 19".3	50° 54' 04".2	1373	do.	do.									
17	IR5	do. -5	35° 12' 46".2	50° 34' 52".0	1350	do.	do.									
18	IR6	do. -6	35° 28' 25".2	50° 25' 32".2	1540	do.	do.									
19	IR7	do. -7	35° 42' 10".1	50° 36' 32".0	1305	do.	do.									
20	CRS	do. -CRS	35° 45' 10".1	51° 23' 19".6	1462	do.	do.	Central Re-cording station								
	TEH	Tehran	35° 46' 16"	51° 05' 23' 08"	1360											



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	MHI	Benioff SP	Z	1975.10.	in use				1.0	0.75						
2	/WSSN	do.	N	do.	do.				1.0	0.75						
3		do.	E	do.	do.				1.0	0.75						
4		Sprengn. LP	Z	do.	do.				15	100.						
5		do.	N	do.	do.				15	100.						
6		do.	E	do.	do.				15	100.						
7																
8	MAIŌ	GEOTECH-Model		1975.10.	in use											
9	/SRŌ	3600 broadband														
10		bore-hole sei-														
11		smometer	ZNE													
12																
13	SHI	Benioff SP	Z	1963.10.01	in use				1.0	0.75						
14	/WSSN	do.	N	do.	do.				1.0	0.75						
15		do.	E	do.	do.				1.0	0.75						
16		Sprengn. LP	Z	do.	do.				15.	100.						
17		do.	N	do.	do.				15.	100.						
18		do.	E	do.	do.				15.	100.						
19		Electro-mag-	Z	1959.09.26	in use				1.1	0.45						
20		netic	N	do.	do.				1.1	0.45						
			E	do.	do.				49.1	0.455						



TODAI

DATA SHEET

SEMI FINAL

IRAN - C

PROBLEM- IRAN, SNFU

BY-

PAGE- 1 OF 3

NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3	<u>GENERAL INFORMATION</u>															
4																
5	Operated by: Ferdowsi University (FU)															
6	(prior to 1974. known as Mashad University).															
7	Address: Department of Geophysics, School of Sciences,															
8	Ferdowsi University, Mashad, Iran.															
9	Telephone: 051-32021															
10	Telex:															
11	Cable:															
12	Address to obtain records: As above.															
13	Data published: Bulletin of SNFU (Seismographic Network of Ferdowsi University)															
14	for the years, 1975, 1976, 1977, 1978.															
15																
16																
17																
18																
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NO.	SITE INFORMATION							
	Code	Station Name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Foundation
6	MUI	SNFU Center	36° 18' 42"	59° 36' 18"	1000	1972.01	open	
7	KHI	Kakhek	34° 08' 36"	58° 38' 30"	1600	1971.04.	open	Metamorphic shale & sis.
8	SHD	Shahrud	36° 26'	54° 56' 30"	1500	1975.03.	open	Limestone
9	TGI	Taghi Ghambar	32° 57' 48"	59° 11' 36"	1800	1975.05.	open	Andesite
10	KAH	Kahak	36° 24' 30"	56° 48'	1230	1975.03	1976.08	Ultra basic
11	DRI	Doruneh	35° 18'	57° 10' 48"		1975.12	1977.03	do,
12	KHB	Khabushan	37° 19'	58° 17' 12"	1400	1977.04	1978.09	Limestone
13	GZK	Gazkuh	37° 15' 06"	58° 22' 06"	1250	1979.06	open	
14	ZRG	Zerg	33° 24' 42"	57° 13' 24"	1700	1978.09		
15	NAJ	Najafi Mashad	36° 16' 24"	59° 32' 30"		1980.05	open	



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	INSTRUMENTATION															
2																
3																
4	T _o T _g S															
5																
6	MUI	Benioff	SP Z	1972.01	in use	1.0	--	4.5-18X10 ³	Pen and ink							
7	KHI	MEO 800	Z	1971.04	do.	1.0	--	do.	Smoked paper							
8	SHD	do.		1975.03	do.	1.0	--	do.	do.							
9	TGI	do.		1975.05	do.	1.0	--	do.	do.							
10	KAH	do.		1975.03	closed	1.0	--	do.	do.							
11	DRI	do.		1975.12	do.	1.0	--	do.	do.							
12	KHB	do.		1977.04	do.	1.0	--	do.	do.							
13	GZK	do.		1979.06	in use	1.0	--	do.	do.							
14	ZRG	do.		1978.09	1981.09	1.0	--	do.	do.							
15	NAJ	do.		1980.05	in use	1.0	--	do.	do.							
16																
17																
18																
19																
20																



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IRAN-D

DATA SHEET

SEMI-FINAL

PROBLEM- IRAN, AEOI.

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PAGE- 1 OF 11

NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
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IRAN.

AEO Networks.

GENERAL INFORMATION

Operated by: Atomic Energy Organization of Iran (AEOI)
Seismological Division

Address: P.O. Box ~~14-1673~~ 12-1198
Tehran, Iran.

Telephone: 666780 - 666783

Telex:

Cable:

Address to obtain records: As above.

Data published: The Bulletin of the Seismographic Networks
of Bushehr, Isfahan and Tehran regions.

AEO Networks consist of 1) Bushehr Radio-Telemeter Array, 2) Isfahan MEQ-800 Array, 3) Tehran MEQ-800 Array and 4) Dam Site MEQ-800 Array. In near future two more 8-station telemetry arrays in Azarbaijan and East Tehran regions will be established.



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SITE INFORMATION															
2																
3	1) <u>Bushehr Array</u>															
4																
5	Code	Station name	Latitude	Longitude	Elev.	Date	Date	Foundation								
6			N	E	m	opened	closed									
7	ARA	Ahram	28° 51' 1	51° 18' 0	230	1977.09.15	open	Limestone								
8	BÖR	Borazjan	29° 13' 0	51° 21' 0	400	1977.09.08	open	Limestone								
9	BUS	Bushehr	28° 52' 0	50° 52' 9	2	1977.09.26	open	Alluvium								
10	KRQ	Jazirehye- Kharq	29° 15' 1	50° 18' 45	70	1977.09.20	1980.01.14	Limestone								
11																
12	KIA	Khiat Zar	29° 34' 0	50° 59' 0	200	1977.09.09	1982.11.01	Sandstone								
13	LWH	Lavar-Kangar	28° 23' 0	51° 15' 0	600	1977.09.24	open	Sandstone								
14	LAV	Lavar-Rishr- gholam	28° 36' 0	51° 35' 9	290	1977.09.23	1980.01.14	Limestone								
15																
16	ZAD	Zardakiolia	29° 15' 9	50° 56' 8	10	1977.09.15	1980.01.14	Alluvium								
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SITE INFORMATION															
2																
3	2) Isfahan Array															
4																
5	Code	Station name	Latitude	Longitude	Elev.	Date	Date	Foundation								
6			N	E	m	opened	closed									
7	S, A, D.	Shah Abbad D.	32° 43' 83	50° 44' 97	2120	1977.08.03	open	Limestone & shale								
8	S, A,	Jozdan	32° 36' 00	51° 50' 16	1575	1977.10.20	1978.11.30	Massive Limestone								
9	S, C,	Haidar Abad	32° 14' 50	52° 20' 83	1600	1977.10.20	1978.12.26	Massive Limestone								
10	S, D.	Shahzadeh Ali Akbar	32° 07' 92	51° 55' 83	1760	1977.10.20	1978.12.26	Thin-bedded Limestone								
11																
12	S, E,	Mabarakeh	32° 21' 33	51° 35' 62	1700	1977.10.19	1978.12.29	Calcareous shist-Marls								
13	S, H,	Ziefra	32° 54' 93	52° 16' 92	2120	1978.07.27	1978.12.27	Limestone								
14	S, F,	Jafar Abad	32° 59' 14	51° 32' 90	1685	1977.11.06	1978.07.06	Limestone								
15	S, G,	Site	32° 23' 40	52° 17' 90	1520	1978.07.06	1978.07.24	Alluvium								
16	S, B,	Janamazeh	32° 30' 66	52° 05' 66	1530	1977.10.26	1977.12.21	Conglomerates								
17	N1	Kolah Ghazi	32° 23' 80	52° 00' 00	1700	1976.08.01	1977.10.10	} Calcareous shist-Marls								
18	N2	Mobarakeh	32° 21' 33	51° 35' 62	1700	1976.08.01	1977.10.19									
19	N3	Ariashahr	32° 30' 98	51° 18' 57	2200	1976.08.01	1977.10.20									
20	N4	Bahram 1	32° 45' 80	51° 27' 50	2000	1976.07.31	1977.06.09	Sandstone								



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	N4B	Bahram 2	32° 47' 46"	51° 27' 41"	2400	1977.06.10	1977.10.20	Sandstone								
2	N5	Habib Abad	33° 00' 53"	51° 56' 53"	2000	1976.07.31	1977.07.25	Calcareous shist-Marls								
3	N6	Pir Bakran 1	32° 48' 30"	52° 30' 33"	2100	1976.08.02	1976.09.17	Andesite								
4	N7	Koh Payeh	32° 28' 20"	51° 31' 50"	1900	1976.09.18	1976.12.09	Calcareous shist-Marls								
5	N8	Pir Bakran 2	32° 47' 46"	51° 27' 41"	2400	1977.06.10	1977.10.20	Sandstone								
7	S. A. D. (Shah Abbad Dam) is also called Z. D. D (Zayandeh Roud Dam).															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SITE INFORMATION															
2																
3	3) <u>Tehran Array</u>															
4																
5	Code	Station name	Latitude	Longitude	Elev.	Date	Date	Foundation								
6			N	E	m	opened	closed									
7	AKD	Amir-Kabir Dam	35° 57' 02	51° 05' 00	1766	1977.07.30	1982.11.12	Granodiorite								
8	LTD	Latyan Dam	35° 45' 50	51° 42' 35	1580	1983.02.16	open	Calcareous breccia								
9	FPD	Latyan Dam-f	35° 47' 30	51° 40' 37	1520	1977.08.31	1983.02.10	Calcareous breccia								
10	T3	Tochal	35° 34' 54	51° 42' 06	1679	1977.01.24	1978.05.18	Marly Limestone								
11	T3b	Tochal -b	35° 32' 46	51° 41' 00	1150	1978.05.18	1978.12.27	Limestone & gypsum								
12	S4b	Saveh -b	35° 30' 44	51° 06' 50	1200	1977.11.26	1978.12.30	Microdiorite								
13	S4	Saveh	35° 31' 90	51° 11' 45	1335	1977.01.24	1977.11.26	Alluvium								
14	K1	Karaj	35° 51' 35	51° 02' 20	1777	1977.01.25	1977.07.27	Diorite								
15	L2	Lashkarak	35° 50' 08	51° 36' 26	2140	1977.01.25	1977.08.25	Siltstone								
16	A5	Amir Abad	35° 43' 75	51° 22' 71	1640	1977.02.23	1977.12.10	Alluvium								
17																
18																
19																
20																



NO.	Code	Station Name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Foundation
1	<u>SITE INFORMATION</u>							
2								
3	<u>4) Dam Site Stations</u>							
4								
7	MND	Minab Dam	27° 08' 48"	57° 05' 66"	40	1977.08.10	open	Sandstone
8	DZD	Dez Dam	32° 40' 00"	48° 22' 50"	625	1977.09.18	1980.06.08	Conglomerates
9	MMD	Mil-o-Moghan	39° 25' 80"	47° 22' 30"	145	1977.09.28	1982.07.21	Loos
10	LRD	Lar Dam	35° 51' 00"	52° 03' 88"	2300	1978.02.26	1982.12.23	Limestone
11	DDD	Dorouzdgan D.	30° 08' 50"	52° 03' 50"	1835	1977.08.05	1981.08.03	Limestone
12	ZRD	Zarrineh Roud	36° 24' 60"	46° 30' 30"	1475	1977.08.31	1980.04.27	Granite
13	KAD	Karun Dam	32° 03' 00"	49° 36' 00"	500	1980.04.30	1983.01.09	Limestone
14	VGD	Vo shmgir Dam	37° 12' 34"	54° 44' 24"	12	1980.02.20	1978.05.23	Loos
15	GFD	Jiroft Dam	28° 50' 40"	57° 28' 23"	1325	1977.11.26	1978.01.17	Limestone
16	RM	Ramsar	36° 52' 05"	50° 39' 05"	20	1977.07.17	1979.05.21	Alluvium
17	KA	Karun	30° 39' 80"	48° 21' 85"	5	1977.12.30	1979.09.09	Alluvium
18	GFD	Jiroft	28° 50' 40"	57° 28' 23"	1325	1981.05.19	open	Limestone
19	VGD2	Alagol Dam	37° 15' 50"	54° 41' 62"	0	1981.12.12	open	Loos



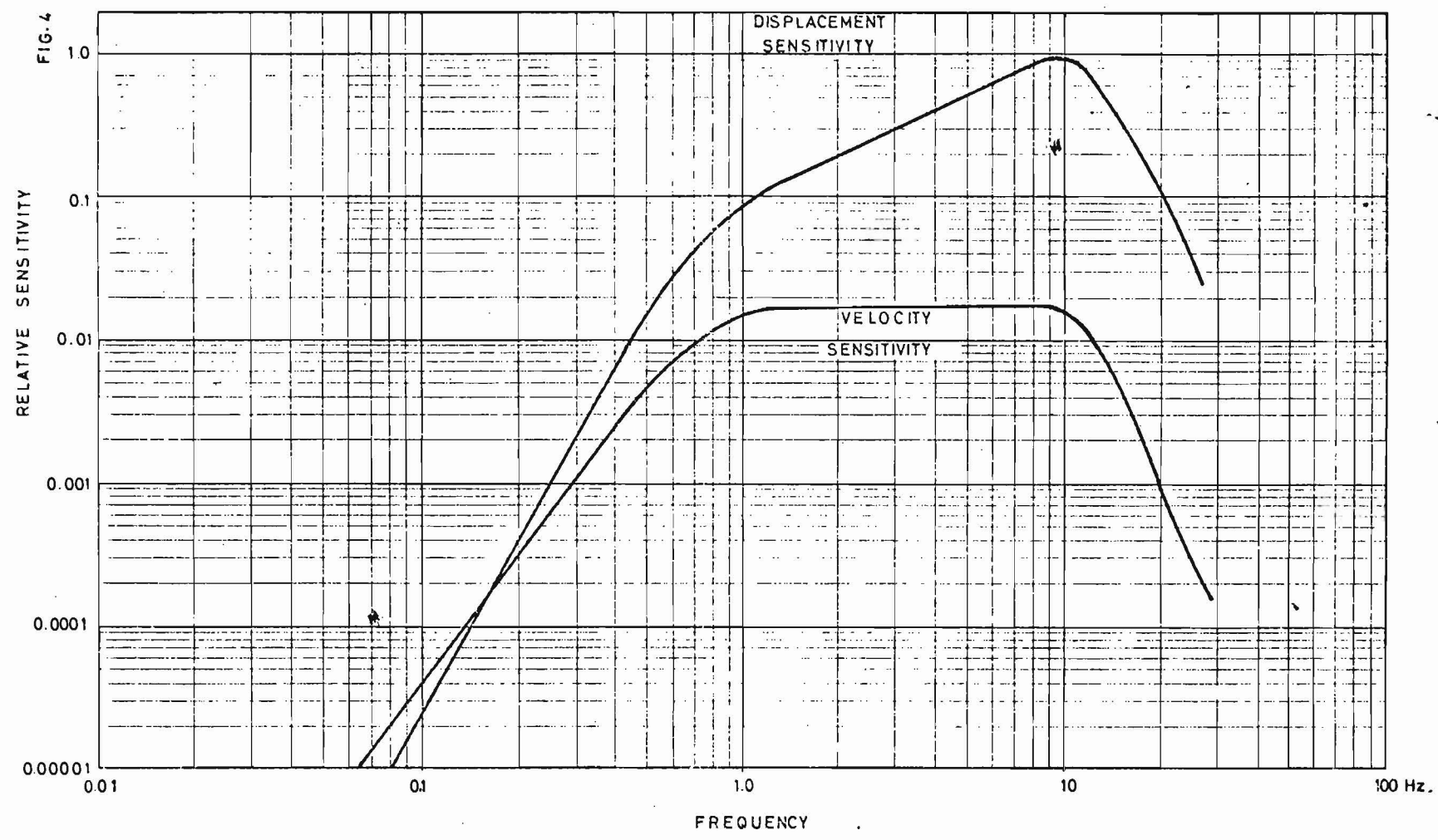
NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>INSTRUMENTATION</u>															
2																
3	1.) Busher Array															
4	Radio-linked telemetry system manufactured by Sprengnether Co.															
5	Seismometer: Mark Products L-4C, $T_0=1.0s$, Vertical component,															
6	Mass=1.1kg, Coil Resistance=3.6Kohms, Critical Damping R=1Kohms.															
7	Amplifier: Sprengnether AS-110															
8	FM Subcarrier Oscillator: Sprengnether VCO															
9	VHF Radio Transmitter and Receiver															
10	Discriminator: Sprengnether TC-20															
11	Visible Recorder: Sprengnether VR-60															
12	Timing System: Sprengnether TS-250 Digital Timing System adj-															
13	usted by BBC or Indian Broadcasting Station.															
14	Relative Frequency Characteristics of magnification and velo-															
15	city sensitivity are given in the annexed figure.															
16	Gain at each station is as follows:															
17	ARA	66	BOR	66	BUS	60	KRQ	54								
18	KIA	66	LVH	52.1	LAV	73.9	ZAD	58.7								
19																
20	BUS has been operating on MEQ-800 recorder since June 18, 1962.															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	2) Isfahan Array stations															
2	3) Tehran Array stations															
3	4) Dam Site Stations															
4	} are all equipped with Sprengnether MEQ-800 smoked															
5	paper portable seismic recording system.															
6	Seismometer: L-4C, $T_0 = 1.0$ sec, Mass = 1.1 kg, Coil Resistance = 3.6 Kohm,															
7	critical Damping resistor 1 Kohm.															
8	Sensitivity characteristics are given in the annexed figure.															
9																
10	Gain at each station is - as follows:															
11	2) Isfahan Array															
12	S.A.D. 72 S.A. 78 S.C. 78 S.D. 72 S.E. 78															
13	S.F. 78 S.G. 66 S.H. 72 S.B. 72 N1 84															
14	N2 84 N3 84 N4 78 N4B 78 N5 84															
15	N6 90 N7 66 N8 78															
16	3) Tehran Array															
17	AKD 72 LTD 72 FPD 96 T3 78 T3B 78															
18	S4B 72 S4 72 K1 90 L2 84 A5 66															
19	4) Dam Site Stations															
20	MND 72 DZD 66 MMD 72 LRD 72 DDD 78															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1			ZRD	78	KAD	60	VGD	66	GFD	72	RM	78				
2			KA	72	GFD	72	VGD2	66								
3	10															
4																
5																
6																
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BUSHEHR TELEMETRY ARRAY

INSTRUMENTATION

Earthquakes are recorded by the Sprengnether MEQ-800 smoked paper portable seismic system recorder.

The seismometer used in the network is the model L-4C. It is a vertical shortperiod seismometer with a mass of 1.1 Kg and an undamped natural period of 1 Sec, with a 3.6 K resistance and a critical damping resistor of 1 K.

Total recorder displacement, velocity and acceleration response at maximum gain are shown in Fig.1.

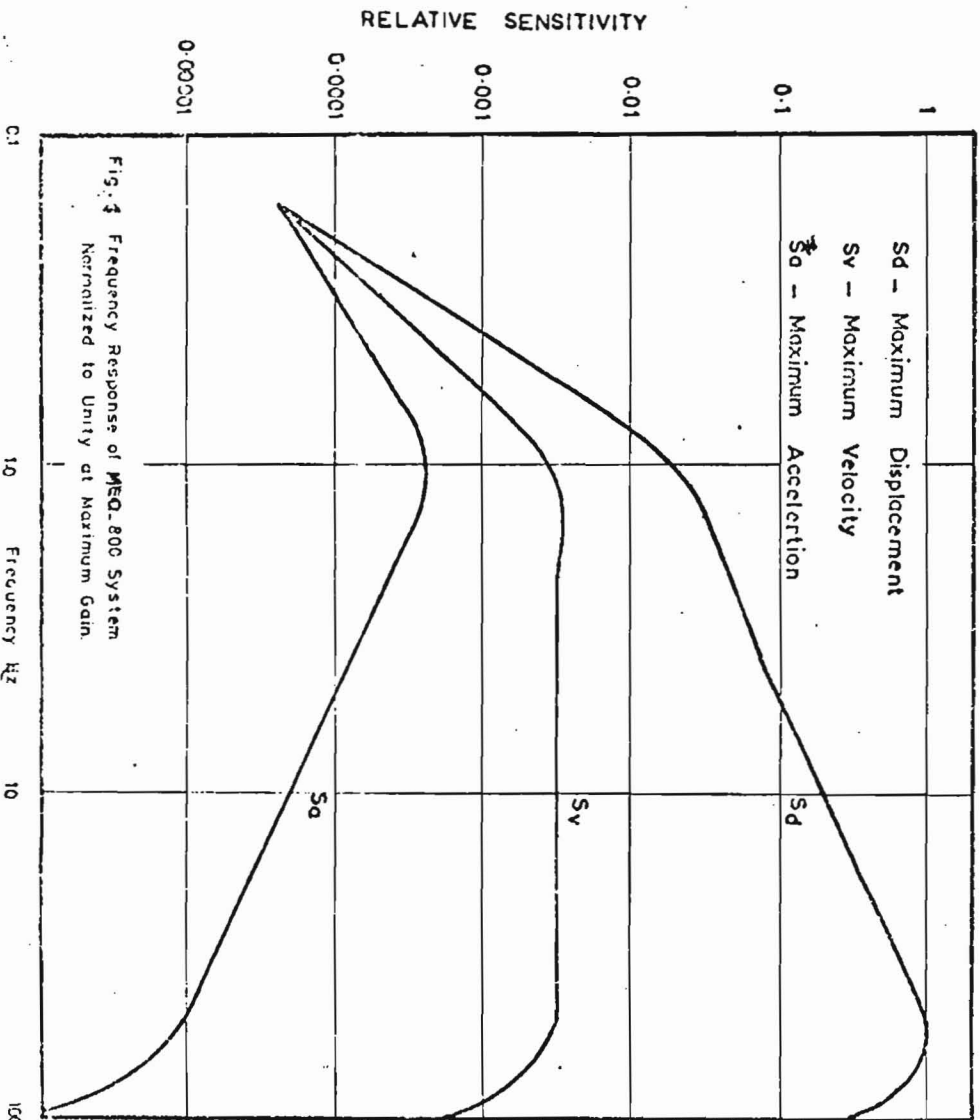


Fig. 1 Frequency Response of MEQ-800 System Normalized to Unity at Maximum Gain.



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PROBLEM-IRAQ - A

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NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3																
4	<u>GENERAL INFORMATION</u>															
5																
6	Operated by: The Seismological Unit, Council for Scientific Research															
7																
8	Address: P.O. Box 255, Baghdad 255,															
9	Iraq.															
10	Telephone: 776-4301, 776-0023															
11	Telex: 2187 IK															
12	Cable: BATHILMI IK.															
13	Address to obtain records: As above.															
14	Data published: Monthly Bulletins of Preliminary Seismogram Readings.															
15																
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>SITE INFORMATION</u>															
2																
3	Code	Station Name	Latitude	Longitude	Elev.	Date	Date dis-	Foundation								
4			N	E	m	started	continued									
5																
6	BHD	Baghdad	33° 16' 28"	44° 23' 09"	32	79.07	open	Alluvium								
7	MSL	Mosul	36.3	43.1	242	81.07	open	Sandstone (Mi.)								
8	SLY	Sulaimaniya	35.6	45.5				Limestone (Cr.)								
9	RTB	Rutba	33.1	40.3				Limestone (Ju.)								
10	BSR	BSR	30.6	47.8				Alluvium								
11																
12	<u>Remarks</u> 1) MSL, SLY, RTB, BSR are suggested codes, awaiting final confirmation by															
13	NEIS-ISC.															
14	2) SLY and RTB are under construction and BSR is under design.															
15	3) Coordinates are approximate ($\pm 0.1^\circ$) except BHD.															
16	4) Elevations are not available except BHD.															
17	5) Mi.: Miocene, Cr.: Cretaceous, Ju.: Jurassic.															
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	INSTRUMENTATION															
2																
3	Code	Seismometer	Date	Date	T_0	T_g	V at	Recording	Remarks							
4		Component	start	end			T_0									
5																
6	BHD	Willmore } Z	79.07	in use	10.0	---	1600	Ink	1)							
7		MK-III A LP } N, E		in use	10.0	---	960	"	1)							
8		Willmore } Z	79.07	in use	1.0	---	80	"								
9		MK-III A SP } N, E		in use	1.0	---	40	"								
10		Willmore } Z	81.05	in use	1.5	---	1280	Thermal	2)							
11		MK-III A MP														
12		SV-1 } Z	81.03	in use	5.0	---	4379	Ink	3)							
13		SH-1 } N, E	81.03	in use	5.0	---	2194	"	3)							
14																
15	MSL	Willmore } Z	81.07	in use	1.5	---	6400	Ink	2)							
16		MK-III A LP														
17		SV-1 MP } Z	81.07	in use	5.0	---	8737	Ink	3)							
18		SH-1 MP } N, E	81.07	in use	5.0	---	8737	"	3)							
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>Remarks:</u> 1) Willmore MK-III A electronically modified to T_0 10.0 sec.															
2	2) Willmore MK-III A electronically modified to T_0 10.0 sec with															
3	Wood-Anderson characteristics.															
4	3) Kinematics intermediate period or medium period (MP) system with															
5	Wood-Anderson characteristics.															
6																
7	<u>Timing System:</u> Receiver: Grundig Satellite.															
8	Generator: Lennartz 8500 up with quartz oscillator (TCXO).															
9																
10	<u>Response curves and seismograms:</u> Available on request to address above.															
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
1																	<u>MALAYSIA</u>
2																	
3	<u>GENERAL INFORMATION</u>																
4																	
5	Operated by:		Malaysian Meteorological Service														
6																	
7	Address:		Malaysian Meteorological Service														
8																	
9																	
10																	
11																	
12	Telephone:		569422, 569620														
13	Telex:		MA 37243, METEOR KUALA LUMPUR														
14																	
15	Address to obtain records:		As above.														
16																	
17																	
18																	
19	N.B., ISC Bulletin lists stations at Penang (PNN) and Singapore (SING), which have																
20	never existed after Malaysian Met. Service and Met. Service Singapore re-																
	spectively.																



NO.	SITE INFORMATION							
1	Code	Station Name	Latitude (deg. N)	Longitude (deg. E)	Elev. (m)	Date opened	Date closed	Foundations
2	IPM	Ipoh	04° 34' 52" 4.5811	101° 01' 37" 101.0269	247	1979 1979.05.26	open	Granite
3	KGM	Kluang	02° 00' 54" 2.0150	103° 19' 02" 103.3172	103	1975	open	Granite
4	KKM	Kota Kinabalu	06° 02' 43" 6.2119	116° 12' 38" 116.2106	830	1976	open	Sandstone
5	KLM	Kuala Lumpur	03° 06' 3.1000	101° 39' 101.6500	46	1975	open	Granite
6	KSM	Kuching				} Proposed but not yet open.		
7	TSM	Tawau						
8	INSTRUMENTATION							
9	Code	Seismometer Type	Comp.	Pen. Galv. To Tg	Type of recording	Magnif. at To (Vmax)	Remarks	
10	IPM	Kinematics Ranger SS-1	Z	100 --	Pen and ink	75K (225K at 0.33s)		



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	KGM	Kinematics		Z	1.0	--	Pen and ink	18.75K (
2		Ranger SS-1						56K/0.33s)								
3	KKM	Kinematics		Z	1.0	--	Pen and ink	38K(1.12K								
4		Ranger SS-1						at 0.33s)								
5	KLM	Kinematics		Z	1.0	--	Pen and ink	2.8K(7K								
6		Ranger SS-1						at 0.33s)								
7		Kinematics		NEZ	25HZ	--	Photo film			Full scale 0.25g						
8		SMA-1														
9	KSM															
10																
11	TSM															
12																
13																
14																
15																
16																
17																
18																
19																
20																



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NEPALGENERAL INFORMATION

Operated by: Department of Mines and Geology (DMG),
Ministry of Industry and Commerce

Address: Department of Mines and Geology
Lainchaur, Kathmandu, Nepal

Telephone: 13541, 13540, 11395.

Telegram: Khaniada, Kathmandu

Telex:

Address to obtain records: As above

Data published:

Future Plan: DMG is planning to install a National Network within the next few years. Karnali Project Seismological Network will be installed within a few months and after the installation it will be handed-over to DMG.



TODAI

DATA SHEET

PROBLEM-

BY-

PAGE- 2 OF 3

NO.	Code	Station Name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Foundation
1	SITE INFORMATION							
2								
3								
4								
5								
6	PKI	Phulcho ki	27.571	85.409	2743	1978.11.13	open	Limstone
7	DMN	Daman	27.609	85.106	2225	1980.04	open	Granite
8	KKN	Kakoni	27.790	85.280	1920	1980.04	open	Granite
9	CHA	Chatra	26.8333	87.1667	161	cf. IMD Network, INDIA (p.)		
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

DATA SHEET

SHEET 3 OF 3
DATE

TITLE

PROGRAMMER

INSTRUMENTATION

Code	Instr. Compon.	Date started	Date dis-continued	To	V at To	Recording Method
PKI	ZM400 Z	78.11.13	in use	1.0	500K, 31K	Radio-telemetered to DMN, Katmandu and recorded by SEFRAM 5ch. ink-pen recorder with paper speed 2.5mm/sec and MT event recorder for PKI.
DMN	ZM400 Z	80.04.	in use	1.0	250K	
KKN	ZM400 Z	80.04.	in use	1.0	500K, 31K	
CHA.	operated by India Meteorological Department. cf. INDIA, IMB Network, p. .					

Timing: crystal clock checked with NPL, Delhi, India

System response curves: available from the stations.



TODAI

DATA SHEET

SEMI-FINAL

82/8/86

PROBLEM- PAKISTAN - A

CORRECTED BY SEP 12 LETTER
" " SEP 18 "

WAPDA Tarbela Dam Network
PMD

BY- PAGE- 1 OF 14

NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	PAKISTAN															
2	1) PMD Network															
3																
4	<u>GENERAL INFORMATION</u>															
5																
6	Operated by: Pakistan Meteorological Department (PMD)															
7	Address: Director,															
8	Geophysical Centre, PMD, P.O. Box No.2,															
9	Brewery Road, Quetta, Pakistan.															
10	Telephone: 081-74103, 081-71198.															
11	Telex:															
12	Telegram: GEOPHYSICS QUETTA (PAKISTAN)															
13	Data published: Seismological Bulletins: 1964, 12. -															
14	Provisional Readings: 1980, 02 ⁰⁵ -															
15																
16																
17																
18																
19																
20																



NO.	Code	Station name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Foundation
1	<u>SITE INFORMATION</u>							
2								
3								
4								
5								
6								
7	QUEa	Quetta - old	30° 12' 5"	67° 12' 1"	1791	1951.12.	54.05.10	Mountain Fan-gravels
8	QUE	Quetta - new (WWSSN)	30° 11' 18"	66° 57' 00"	1721	1954.05.11	open	Cretaceous Limestone
9								
10	PES	Peshawar - old	34° 00' 18"	71° 32' 54"	-	-	closed	Not under PMD.
11	PSH	Peshawar	33° 36' 13".5	71° 26' 02".8	456	1976.01	open	Metamorphic rock
12								
13	LAH	Lahore	31° 33'	74° 20'	210	1952.10	open	Alluvium
14								
15	KARa	Karachi - old	24° 50'	67° 02'	30	1957.03	66.01	Alluvium
16	KAR	Karachi - new	24° 56' 00"	67° 08' 36"	34	1966.01	open	Alluvium
17								
18	NIL	Nilore (WWSSN)	33° 39' 00"	73° 15' 06"	536	1969.03	open	Cretaceous Sandstone
19								
20	WRS	Warsak Dam	34° 09'	71° 25'	343	1957.05	81.08.30	Pebble, Sand, River terrace



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2	<u>Brief History</u> : Quetta is the central station which started in a store-room of a															
3	hotel in Dec. 1951 ^{on experimental and training basis} and later (May, 1952) shifted to a temporary															
4	site (Quetta-old) where it worked up to May, 1954. After completi-															
5	on of the vault the Observatory was again shifted to its permanent															
6	site (Quetta-new) in May, 1954 and is working there since then.															
7	<u>Auxiliary stations</u> Lahore, Karachi and Warsak were established															
8	in June ^{Oct.} 52, March 57 and May 57 respectively.															
9	<u>NWSSN</u> seismographs were received at Lahore in August 62 and later															
10	(March 69) shifted to Nilore.															
11	Peshawar became 5th auxiliary station in June ^{Jan.} 76.															
12	<u>Data</u> from all stations are collected in the Central Station Quetta															
13	and Provisional Readings and Bulletins are prepared and distri-															
14	buted from the Central Station Quetta.															
15	<u>Future Plan</u> : It is contemplated to equip all the auxiliary stations with more															
16	sensitive instruments in future. Nilore is being shifted to a new															
17	site shortly. Karachi is proposed to shift away from sea effect															
18	to equip with more sensitive seismographs. <u>Telemetry System</u> is															
19	being planned for Peshawar. <u>New stations</u> at Khuzdar and Gilgit															
20	will be opened in near future.															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3																
4																
5	<u>INSTRUMENTATION</u>															
6																
7	Code	Instrument and Component	Date start	Date end	To	Tg	Vmax	Recording method	Remarks.							
8																
9																
10	QUEa	Milne-Shaw NE	51.12	54.05	10.0	—	350	Photo-paper	Data prior to 5-2.04 not available.							
11		Sprengn. SP ZNE	52.11	54.05	1.9	1.9	ca. 5K	" "								
12		Willmore ZE	54.01	54.05	1.0	0.25	ca 4K	" "								
13																
14	QUE	Milne-Shaw E	54.05	57.06	10.0	—	350	photo-paper								
15				57.07	61.12	12.0	—	250		" "						
16		Willmore ZNE	54.05	61.12	1.0	0.25	ca 4K	" "								
17		Sprengn. MP N	54.05	56.12	21.6	21.6	—	" "								
18		E	54.05	56.12	22.7	22.6	—	" "								
19		Sprengn. MP N	57.01	62.06	15.3	15.3	15000	" "								
20		E	57.01	62.06	15.8	15.8	16000	" "								



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1		Sprengn. SP	N	57.01	62.06	1.8	1.8	4500	Photo-paper							
2			E	57.01	62.06	1.8	1.8	4800	"	"						
3			Z	57.01	62.06	1.8	1.8	5500	"	"						
4		Sprengn. SP	Z	62.08	in use	1.9	1.9	5500	"	"						
5			N	62.08	in use	1.9	1.9	4500	"	"						
6		Sprengn. LP	Z	62.08	in use	30.1	100.0	3000	"	"						} From 81.11.01 to 82.08.15 V _{max} = 1500
7			N	62.08	in use	30.3	100.0	3000	"	"						
8			E	62.08	in use	30.2	100.0	3000	"	"						
9		Benioff SP	Z	62.08	in use	1.0	0.77	100K	"	"						} Before 83 . 88.16 V _{max} = 200K
10			N	62.08	in use	1.0	0.76	100K	"	"						
11			E	62.08	in use	1.0	0.77	100K	"	"						
12																
13	PES															
14	PSH	Benioff SP	ZNE	76.01	in use	1.0	0.06	250K	Photo-paper and visible records							
15																
16	LAH	Milne-Shaw	NE	52.10	54.12											} Data prior to 1965.06 not availa- ble. } WWSS moved to NIL 69.03 ⁰
17		Sprengn. SP	Z	54.12	in use	1.8	1.8	4900	Photo-paper							
18			N	54.12	in use	1.7	1.7	4200	"	"						
19			E	54.12	in use	1.6	1.6	4100	"	"						
20		Sprengn. LP	ZNE	62.08	69.03	30.0	100.0	710	"	"						
		Benioff SP	ZNE	62.08	69.03	1.0	0.75	6250	"	"						



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	KAR a	Sprengn. SP	ZNE	57.03	66.01	1.8	1.8	ca	5K	Photo-paper						
2	KAR	Sprengn. SP	Z	66.01	in use	1.8	1.8	5890	"	"						
3			N	66.01	in use	1.8	1.8	4700	"	"						
4			E	66.01	in use	1.4	1.4	4700	"	"						
5																
6	NIL	Benioff SP	Z	69.03	in use	1.0	0.75	100K	Photo-paper							
7			N	69.03	in use	1.0	0.72	100K	"	"						
8			E	69.03	in use	1.0	0.78	100K	"	"						
9		Sprengn. LP	ZNE	69.03	in use	30.0	100.0	.15K	"	"						
10																
11																
12																
13	WRS	Sprengn. SP	ZN	57.05	81.08	2.0	2.0	4000	Photo-paper							
14																
15																
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>Timing System</u> QUE: Contactor unit BC-608-A for Milne-Shaw and Invar Pendulum															
2	Master Clock corrected by BBC time signals. From August 1962															
3	WWSS timing system corrected by ATA time signals.															
4	PSH: An electronic timing system.															
5	LAH: Invar Pendulum Master Clock corrected by BBC time signals and															
6	WWSS timing system corrected by ATA time signals.															
7	KAR: Invar Pendulum Master Clock and Ts-100 Crystal Clock correct-															
8	ed by BBC time signals.															
9	NIL: WWSS timing system.															
10	WRS: Invar Pendulum Master Clock corrected by BBC time signals.															
11																
12	<u>Response Curves</u> : Available only for WWSSN instruments.															
13																
14																
15																
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	PAKISTAN															
2	2) WAPDA Mangla Dam Network.															
3																
4	<u>GENERAL INFORMATION</u>															
5	Operated by: Water and Power Development Authority (WAPDA) with															
6	technical assistance from Pakistan Met. Dept. (PMD).															
7	Address: Officer in charge, Seismic Observatory,															
8	D-17, New Mirpur, Azad Kashmir, Pakistan.															
9	Telephone:															
10	Address to obtain records: As above.															
11	Data published: Data collected at Mirpur Observatory are included in															
12	the Provisional Readings and Final Bulletins of PMD, Quetta.															
13																
14	<u>SITE INFORMATION</u>															
15																
16	Code	Station	Latitude	Longitude	Elev.	Date	Date	Foundation								
17		Name	N	E	m	opened	closed									
18	MNL	Mangla	33° 08' 50"	73° 45' 00"	436	1965.08	open	Fan gravels								
19		Jari	33° 07' 04"	73° 50' 48"	330	1967.05	open	Old gravels								
20	B	Baral	33° 05' 50"	73° 36' 58"	313	1967.07	open	Fan gravels								



NO. 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

INSTRUMENTATION

Code	Instrument and component	Date started	Date ended	T_0 s	T_g	V_{max}	Recording method	Remarks
MNL	Willmore Z, E	56.08	in use	1.0	0.25	5000	photo-paper	
Batal	Willmore Z, N	67.07	in use	1.0	0.25	1700	" "	
Jari	Willmore Z, N	67.05	in use.	1.0	0.25	17000	" "	

Timing System: Crystal clock Ts-100 adjusted by BBC time signal.

Response curves: Not available.

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
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16																
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18																
19																
20																

PAKISTAN -

3) WAPDA Tarbela Dam Network

GENERAL INFORMATION

Operated by: Water and Power Development Authority (WAPDA)
Address: General Manager and Project Director, Tarbela Dam Project
, District Abbottabad, Pakistan.
Telephone: 68941, 68942 Rawalpindi Exchange
Telex: 5841 TAMS PK.
Cables: TAMSENG TARBELA DAM ^{PROJECT} HAZARA PAKISTAN

Address to obtain records: Same as above.

Data published: Earthquake Report (From 1993 to date)
(Distributed only internally within WAPDA)



NO.	Code	Station Name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Foundation
1	SITE INFORMATION 1) <u>Telemeter Seismic Network</u>							
2								
3	TAP*	Tarbela	34° 04'.94 7)	72° 42'.94 7)	537	1973.08	open	
6	SIP	Shinkhari	34° 28'.00 12)	73° 17'.95 12)	1448	1973.08.24	open	
7	BGP	Bagra	33° 58'.45 3)	73° 04'.09 11)	(777) 785	1973.07.25	open	
8	DBP	Darband	34° 22'.74 11)	72° 52'.16 10)	711	1973.06.05	open	
9	CHP**	Chanarkot	34° 01'.36 4)	72° 46'.40 8)	1206	1973.07.10	open	
10	SWP	Swabi-	34° 07'.82 8)	72° 50'.99 9)	493	1973.09.10	open	
11		Maira						
12	RBP	Right Ba-	34° 04'.23 6)	72° 40'.23 5)	368	1973.08.06	open	
13		nk House						
14	AMP**	Ambar	34° 03'.30 5)	72° 24'.90 3)	364	1973.08.05	open	
15	CBP	Campbell-	33° 43'.95 1)	72° 13'.81 1)	338	1974.08.22	open	
16		pur						
17	NTP	Nathian	34° 19'.63 10)	72° 23'.15 2)	(686) 692	1973.09.19	open	
18	UTP	Utla	34° 16'.13 9)	72° 41'.80 6)	1400	1975.08.12	open	
19	QIP	Qibla-	33° 54'.65 2)	72° 36'.06 4)	400	1974.05.10	open	
20		Bandi						

* Central Recording Station (CRS) ³⁵, Elevation ⁵ in parenthesis is given by ISC, ⁷⁰

** Relay Station.



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>INSTRUMENTATION</u>															
2																
3	1) <u>Telemeter Seismic Network</u>															
4																
5	a) 11 Remote Transmitting Stations at SIP, BGP, DBP, CHP, SWP, RBP, AMP, CBP, NTP, UTP and QIP are															
6	equipped with:															
7	1 Vertical component, short period ($T_0=1$ sec) seismometer (Geo-Space HS10 1/B),															
8	amplifier, FM modulator (subcarrier freq. ^{1020, 2380 and 3060} 1700 KHZ) and transmitter (radio freq. 400															
9	160.1, 160.3, 160.4, 160.5, 160.7, 160.8, 165.8 and 165.9 MHz),															
10	powered by 12 volts batteries recharged by Solar Pannels															
11	b) Central Recording Station (CRS) at Tarbela Dam Site (TAP) equipped with:															
12	Receivers, Demodulators and 20 channel Recorder (Teledyne Geotech Develocorder															
13	RF-400, consuming 160 feet film per day with recording speed 3mm/min) with															
14	timing system (Teledyne Geotech Model 76-110). All power at CRS is taken															
15	directly or indirectly from a set of 12 volts batteries continuously recharged															
16	recharged by 115 volts AC local power.															
17																
18	c) System response curves are available from Tarbela Seismic Observatory															
19	through General Manger and Project Director, Tarbela Dam Project.															
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	2) <u>Strog Motion Accelerographs</u>															
2																
3	a) Right Bank: <u>SMAC-B</u> $T_0=0.1s$, Sensitivity: 25 gal/mm, Record range: 0.01-1.0 g															
4	Damping: critical, ZNE															
5	Recording: Scratch on waxed paper. 20s-3min duration.															
6	Timing: 1sec time marks. No absolute time.															
7	Power supply: 12VDC dry cells.															
8	Starter: Built-in vertical pendulum															
9	b) Left Bank: <u>SMAC-B2</u> $T_0=0.1s$, Sensitivity: 12.5 gal/mm, Record range: 0.006-0.5 g															
10	Damping: critical, ZNE															
11	Recording: Scratch on waxed paper. 20s-3min duration															
12	Timing: 1sec time marks. No absolute time															
13	Power supply: 12VDC dry cells.															
14	Starter: Built-in vertical pendulum															
15	c) Main Em- bankment: <u>Teledyne FB-103B</u> $T_0=0.10s$, Sensitivity 2.50 V/g, Range: 0.005-0.5 g															
16	(MC/A2-A3)															
17	Damping: critical															
18	Recording: KODAK Direct Print Paper/Type 1895. 20 sec.															
19	Timing: Full-width 0.01 to 10 sec intervals															
20	Power Supply: ± 11 to 14 VDC															
	Starter: Teledyne Geotech Omnitri trigger unit/Model SP-215C															
	(Installed with MC/A3)															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3																
4	<u>GENERAL INFORMATION</u>															
5																
6	Operated by: Philippine Institute of Volcanology (PIV)															
7	National Science and Technology Authority.															
8	Address: Philippine Institute of Volcanology															
9	5th Floor, Hizon Bldg.,															
10	29, Quezon Avenue, Quezon City, Philippines.															
11	Telephone: 60-38-03															
12	Telex:															
13	Cable:															
14	Address to obtain records: As above.															
15	Data published: COMVOL Letter, 1966-1980.															
16																
17																
18	N.B. Until 1981 Philippine Institute of Volcanology (PIV) was ^{known as} Commission on															
19	Volcanology (COMVOL) under National Science and Development Board.															
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>INSTRUMENTATION</u>															
2																
3	Station	Instrument Component	To	Tg	V at To	Recording	Remarks									
4																
5	V1, V2, V3, } V4, V5, V6, } V7, V10, V11 }	Hosaka ZNE	1.0	---	5K	Smoked paper										
6																
7																
8	V9	Hosaka ZE	1.0	---	5K	Smoked paper										
9																
10	V8, V10A, } V11A, V12 }	Ranger Z	1.0	---	5K	Smoked paper	Portable System									
11																
12	V2, V5	Geotech ZNE	?	---	?	?	To be telemetered by 1981.									
13																
14																
15	Timing system : SEIKO Crystal Timer, controlled by a miniature quartz, Type 952T7.															
16	Response curves : See the attached copy.															
17																
18																
19																
20																



NO. 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

1 SHORT HISTORY

2

3 The development of all volcanological observatories started after the destruct-
4 ive eruption of Hibok-Hibok in 1952. To avoid or minimize the loss of life and
5 property in such natural calamity continuous strenuous research was carried out
6 in the field of volcanology, in order to predict in advance impending volcanic
7 eruption, hence, volcanological observatories were established, namely: V1, V2, V9
8 in 1966, V6 in 1967, V4, V5, V11 in 1968 and V7 in 1969. In 1978, when Bulusan and
9 Cantalon Volcanoes erupted and due to its frequent tantrums, additional stations
10 were established, namely V8 and V10 in 1978 and V3, V10A, V11A and V12 in 1980.

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NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
-----	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

PHILIPPINES

PAGASA Network

GENERAL INFORMATION

Operated by: Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), Ministry of Defense.

Address: 1424 Quezon Avenue, Quezon City, Metro Manila, 3008, Philippines
and/or Geophysical Observatory, Diliman, Quezon City,
Metro Manila 3004, Philippines.

Telephone: PAGASA: (2) 98-06-61 ~ 65, 98-06-71 ~ 75.
Geophys. Obs.: (2) 97-44-77.

Telex: 42021 PAGASA PM

Cables: WEATHER MANILA

Address to obtain records: As above.

Data published: 1) Philippine Monthly Bulletin, 1900-1940. (PAGASA does not keep the Bulletins for 1905 and 1912-1926)
2) Manila Final Seismic Bulletin
3) Monthly Phase Data Report, Vol. I (1981), Vol. II (1982).
4) Significant Philippine Earthquakes, 1949-1959 and 1960-1965.
5) Catalogue of Philippine Earthquakes, Sept. 1975 - Dec. 1980.

N.B. PAGASA was known as Weather Bureau, which was established in 1949 under Ministry of Commerce and Industry, taking over the routine services of Jesuit Manila Observatory.



NO.	Code	Station Name	Latitude N	Longitude E	Elev. m	Date opened	Date closed	Remarks
1	<u>SITE INFORMATION</u>							
3	1) Data from H.O. Wood (1942), 2) Data from Bull. ISC, §: Alternate name (cf. N.B.)							
7	BAP	Basco	20° 27' 40" 20.4611	121° 58' 121.9667	10	1971.01	1971.04 ²⁾	} Temporary st. cf. N.B.
8	BBP	Basco						
10	PIP	Pasguin	18° 19' 36" 18.3267	120° 36' 120.6000	10	1976.07	Open	
12	TGP	Tuguegaro	17° 41' 17.6833	121° 45' 121.7500	10	1977.02	1979.03.	} Relocated from CVP closed 6 mon- ths in 1980.
13	CVP	Callao Caves	17° 36' 17.6000	121° 41' 121.6833	6	1976.05	1977.02	
14						1979.03	open	
16	SZP	Santa	17° 29' 17.4833	120° 24' 120.4000	30	1979.04	open	
18	MSP	Mt. Sto. Tomas §	16° 20' 16.3333	120° 34' 120.5667	2240	1975.07	1979.12	
19	BAF	Baguio/PAGASA	16° 25' 16.4167	120° 36' 120.6000	1500	1973. 1980.04	1976. open	
20	BAG	Baguio/Ateneo	16° 24' 39" 16.4108	120° 34' 47" 120.5797	1507	1909	open	} cf. Manila Obs. Network



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SBP	Subic			14° 50'			120° 17'								
2					8333			2833								
3	INF	Infanta			14° 45'			121° 38' 48"	5	1969.		1978.				
4					7500			6467								
5	MANa.	Manila- old			14° 37'			120° 58' 7"	3	1844		1941(?)		} Operated by Jesuit Obs.		
6	MAN	Diliman §			6167			9783, 11	70	1949.		open				
7					39' 43" 2			04' 36" 7								
8		Bagac			14° 32'			120° 28'	15	1974.11		1978.01		Temporary st.		
9					5333			4667								
10	TAY	Tayabas			14° 02'			121° 35'	3	1970.		open				
11					0333			5833								
12	AMB-T	Ambulong / Taal			14° 03' 5"			121° 59'	50	1968.		1970.		} Temporary st. to monitor Taal volcano. 1)		
13	AMB	Ambulong §			0583			9833	10	{ 1912.07		1957				
14					14° 05'			121° 03'		{ 1970.		open				
15		Tigaon			0833			0500								
16					13° 36'			123° 28'		1915.05		?		cf. Manila 1) Obs. Network		
17	PGP	Pto Galera			13° 30' 00"			120° 59' 12"	15	1977.05		open		Replace ABP		
18	ABP	Abra de Ilog			5000			9533	10	1976.02		1977.05		Move to PGP		
19					13° 27' 00"			043' 48"								
20					4500			7300								



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80																																																																																																																																																																																									
1	LEG	} Legaspi	13° 08'	1333	123° 44'	7333	19	{ 1969.	1971.06	} Same station																																																																																																																																																																																															
2	LGP		1975.09	open	3												4		Irosin	12° 43'	7167	124° 02'	0333	1919.05			1) cf. Manila Obs. Network	5											6	CNP	Catarman	12° 30'	5000	124° 37'	6167	3	1980.	open		7	PAP	Pandan	11° 43'	7167	122° 07'	1167	3	1977.04	open		8	PLP	Palo	11° 15'	2500	125° 00'	0000	5	1975.09	open		9	ILÖ	Iloilo	10° 42'	7000	122° 39'	5667	2	1974,	1975	Temporary st.	10											11	CCP	Cebu	10° 23'	3833	123° 57'	95	5	1982.01	open		12	CCPa	Cebu-old	10° 20' 40"	3444	123° 54' 50"	9139	36	1978.06	1982.01		13											14	PPR	Pto Princesa	09° 44'	7333	118° 43'	7167	2	1977.06	open		15											16	MAM	Mambajao	09° 15'	2500	125° 36'	6000		1917.03		1) { cf. Manila Obs. & PIV Networks	17											18	BTN	Butuan	08° 56'	9333	125° 32'	5333	2	{ 1915.05 1) 1976.01	1976.04	? cf. Manila Obs. Temporary st.	19											20	CGP ÖMP	} Cagayan de Oro	08° 48'	8000	124° 36'	6000	50	1977.09
3																																																																																																																																																																																																									
4		Irosin	12° 43'	7167	124° 02'	0333	1919.05			1) cf. Manila Obs. Network																																																																																																																																																																																															
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6	CNP	Catarman	12° 30'	5000	124° 37'	6167	3	1980.	open																																																																																																																																																																																																
7	PAP	Pandan	11° 43'	7167	122° 07'	1167	3	1977.04	open																																																																																																																																																																																																
8	PLP	Palo	11° 15'	2500	125° 00'	0000	5	1975.09	open																																																																																																																																																																																																
9	ILÖ	Iloilo	10° 42'	7000	122° 39'	5667	2	1974,	1975	Temporary st.																																																																																																																																																																																															
10																																																																																																																																																																																																									
11	CCP	Cebu	10° 23'	3833	123° 57'	95	5	1982.01	open																																																																																																																																																																																																
12	CCPa	Cebu-old	10° 20' 40"	3444	123° 54' 50"	9139	36	1978.06	1982.01																																																																																																																																																																																																
13																																																																																																																																																																																																									
14	PPR	Pto Princesa	09° 44'	7333	118° 43'	7167	2	1977.06	open																																																																																																																																																																																																
15																																																																																																																																																																																																									
16	MAM	Mambajao	09° 15'	2500	125° 36'	6000		1917.03		1) { cf. Manila Obs. & PIV Networks																																																																																																																																																																																															
17																																																																																																																																																																																																									
18	BTN	Butuan	08° 56'	9333	125° 32'	5333	2	{ 1915.05 1) 1976.01	1976.04	? cf. Manila Obs. Temporary st.																																																																																																																																																																																															
19																																																																																																																																																																																																									
20	CGP ÖMP	} Cagayan de Oro	08° 48'	8000	124° 36'	6000	50	1977.09	open	} Same station.																																																																																																																																																																																															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	M.P.P	Mt. Pasi an - old	07° 53' 50"	07° 53' 50"	126° 01' 05"	126° 01' 05"	1130	1975.09	1980.01	Data from 2)						
2	PPH	Mt. Pasi an - new	07° 51'	07° 51'	126° 11' 24"	126° 11' 24"	1980.10	open								
3																
4																
5																
6	N. B. 1) BAP and BBP, temporary stations in Bag ^{aco} ac, were never operated satis-															
7	factorily, due to lack of power supply.															
8	BTN, ILO, MAM and SBP were also temporarily operated but no good re-															
9	cords were obtained. PAGASA consider better to exclude the above cited															
10	temporary stations from the list. They are listed only for historical															
11	interest. (given in Bull. ISC)															
12	2) Coordinates for CGP closed (8° 28' N, 124° 40' E) and PPR (9° 49' N, 118° 42' E) are not for															
13	the seismometer vaults but for the weather station offices in the re-															
14	spective cities, Cagayan de Oro and Pto Princessa.															
15	Coordinates given in Bull. ISC for BAP (20° 27' 44" N, 121° 38' 10.3" E) and BBP (20° 30' N, 122° 00'															
16	E) are incorrect.															
17	§ Mt. Sto. Tomas : Baguio															
18	Ambulong : Tanauan															
19	Diliman : Manila / PAGASA.															
20																



NO.	Code	Instrument & component	Date started	Date stopped	To	S (volt /kine)	V _{max}	Recording method and remarks
1	<u>INSTRUMENTATION</u>							
2	Abbreviations for the instrument types. GT: Geotech, RG: Ranger of Kinematics							
3	(KM), SPR: Sprengnether, BEN: Benioff.							
4								
5	BAP							
6	BBP							
7	PIP	GT S-13	Z	1976.07	in use	1.0	56K	Pen and ink
8	TGP	SP KM ?		1977.02	79.03	1.0	28K	Pen and ink
9	CVP	RG SS-1	Z	1976.05	in use	1.0	225K	Pen and ink
10	SZP	GT S-13	Z	1979.04	in use	1.0	56K	Pen and ink
11	MSP	GT S-13	Z	1975.07	79.12	1.0	56K	{ Pen and ink. Move to BAF
12	BAF		?	1973.	76.			
13		GT S-13	Z	1980.04	in use	1.0		Pen and ink. From MSP
14		Hosaka MPZNE		1980.04	in use	5.0	3.0	400K Smoked paper



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	BAG	cf. Ateneo University Network														
2																
3	SBP															
4																
5	INF	Hosaka MPZNE	1969.	78.	5.0	3.0	400K	Smoked paper								
6																
7																
8	MAN	SPR	ZNE	1949	63.	8.0	Photo paper									
9		BEN SP	ZNE	1962.11	75.	1.0	Tg 0.75	12.5K	photo paper } WWSSN							
10		SPR LP	ZNE	1962.11	75.	15.0	Tg 100	750	Photo paper							
11		GT S-13	Z		in use	1.0		14K	Pen and Ink							
12		RG SS-1	Z	1975.06	in use	1.0		14K	Pen and Ink							
13																
14																
15	Biagac	GT S-13	Z	} 1974.11	78.01	1.0	Pen and ink From MSP									
16		Hosaka MPZNE				5.0	3.0	400K	Smoked paper							
17																
18	TAY	Hosaka MPZNE	1970	in use	5.0	3.0	400K	Smoked paper								
19																
20	AMB-T	Hosaka MPZNE	1968	70.	5.0	3.0	400K	Smoked paper								



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	AMB	Wieckert		1912.07	1957					—						Smoked paper
2		Hosaka MPZNE		1970	in use	5.0		3.0		400K						Smoked paper.
3																
4																
5																
6	PGP	RG SS-1	Z	1977.05	in use	1.0				112.5K						Pen and ink From ABP
7	ABP	RG SS-1	Z	1976.02	77.05	1.0		3.3		112.5K						Pen and ink To PGP
8																
9	LEG	Hosaka MPZNE		1969	71.	5.0		3.0		400K						Smoked paper
10	LGP	GT S-13	Z	1975.09	in use	1.0				56K						Pen and ink
11																
12																
13																
14	CNP	RG SS-1	Z	1980.	in use	1.0				28K						Pen and ink
15																
16	PAP	RG SS-1	Z	1977.04	in use	1.0				112.5K						Pen and ink
17																
18	PLP	RG SS-1	Z	1975.09	in use	1.0				225K						Pen and ink
19																
20	ILO	GT S-13	Z	1974.	75.	1.0				7K						Pen and ink.



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	CCP	GT S-13			1982.01	in use	1.0			112.5K		Pen and ink				
2	CCPa	GT S-13 Hosaka MPZNE			1978.06	82.01	1.0			14K		Pen and ink.				
3																
4	PPR	GT S-13	Z		1977.06	in use	1.0			112.5K		Pen and ink				
5																
6	BTN															
7																
8	CGP OMP	} GT S-13	Z		1977.09	in use	1.0			22.5K		Pen and ink				
9																
10	MPP	RG SS-1	Z		1975.09	80.01	1.0			112.5K		Pen and ink TO PPH				
11	PPH	RG SS-1	Z		1980.10	in use	1.0			112.5K		Pen and ink From MPP				
12																

Timing Systems

Sprengnether TS-250 for CNP, CVP, MAN, MPP, PAP, PGP and PLP.

Teledyne TG-110 for CCP, MSP, PPR.

UN (South East Asia Seismology Program) - Clock for CGP, LGP, MAN, PIP and SZP.

WWSSN Model 8684 for WWSSN at MAN (Diliman, Manila)

Magnification Curve of UN Specification seismographs (RG SS-1 and GT S-13) is given in the attached figure.

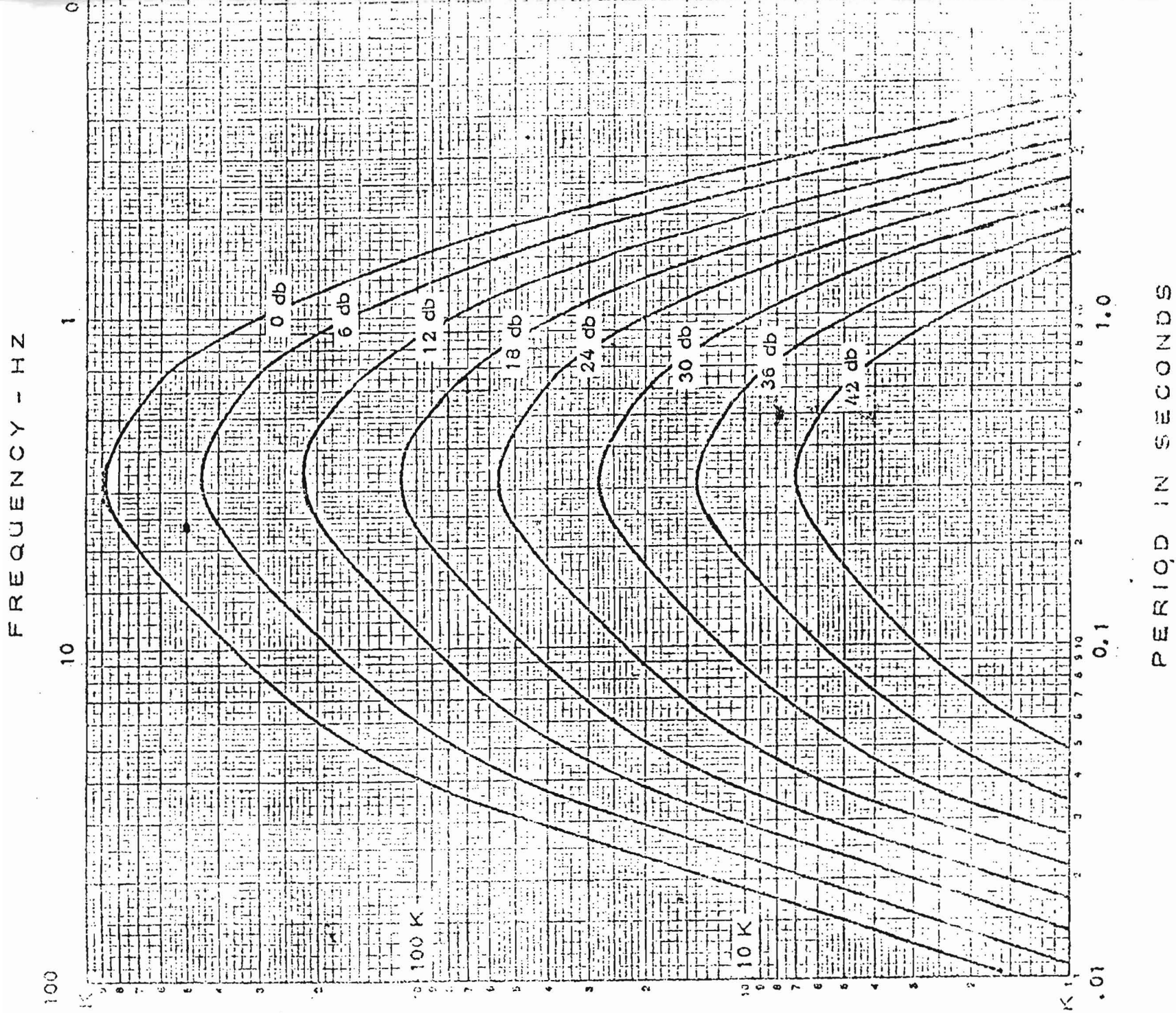


Figure 1. Magnification curve of "Unesco Specifications" seismographs used in the Philippine Seismograph Network



NO.	Code	Location	In-str.	Date installed	Remarks
1					
2					
3	2) <u>Visayas and Mindanao Area</u>				
4					
5					
6					
7					
8	-				
9	ILO**	Iloilo City	TD	79.04.24	Alluvium
10	DVO*	Davao City	KM	79.06.01	Alluvium
11	(CGO)	Cagayan de Oro	KM	79.06.03	Alluvium
12	BTN**	Butuan City	KM	80.07.07	Alluvium
13	PLP**	Palo, Leyte	KM	80.07.10	Volcanic Tuff
14	- *	Maasin, S. Leyte	KM	80.07.04	Relocated to the Geothermal Plant site of Phil. Nat. Oil Co. at Tongonan, Ormoc City, S. Leyte.
15					
16					
17					
18					
19					
20					



NO. 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

3) National Irrigation Administration (NIA)

(owned by NIA but maintained by PAGASA)

Code	Location	In-str.	Date in-stalled	Remarks
PDA*	NIA, Nueva Ecija	KM	78.03.17	Rock-tunnel
PDC*	" " "	KM	78.03.17	Fill
(PDE)	" " "	KM	78.03.17	Fill

~~4) Northern Luzon Area.~~

Code	Location	In-str.	Date in-stalled	Remarks
- *		KM		
- *		KM		

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3																
4	<u>GENERAL INFORMATION</u>															
5																
6	Operated by: Manila Observatory															
7																
8	Address: In the campus of Ateneo University, Diliman, Quezon City.															
9	P.O. Box 1231, Manila 2800, Philippines.															
10																
11	Telephone: 99-94-17, 97-83-49															
12	Telex:															
13	Cable:															
14	Address to obtain records: As above.															
15	Data published:															
16																
17																
18																
19																
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	SITE INFORMATION															
2	1) Data by H. Wood (1942) 2) Data by Bull. ZSC (1978)															
3																
4	Code	Station name	Latitude N	Longitude E	Elev. -m	Date opened	Date closed	Foundation								
6	BAG	Baguio	16° 24' 39"	120° 34' 47"	1507	1909. ¹⁹⁵¹	open	{ Mirador limestone								
8	MANa	Manila-old.	14° 34' 7"	120° 58' 7"	3	1865 (1888?)	1941 (?)									
9	QCP	Quezon City	14° 38' 13.3"	121° 04' 37.5"	58	1962.09	open	{ Coralline recent limestone								
11		Tigaon	13° 36'	123° 28'		1915.05	1)									
12		Irosin	12° 43'	124° 02'		1919.05	1)									
13		Mambajao	09° 15'	125° 36'		1917.03	1)									
14	MAM	Mambajao	09° 15'	125° 43'			closed	2)								
15	BTN	Butuan	08° 56'	125° 32'		1915.05	1)									
17	DAV	Davao	07° 05' 16"	125° 34' 29"	85	1964.08.24	open	{ Volcanic tuff								
20																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
1	INSTRUMENTATION																
2																	
3																	
4	Code	Instrument Component	Date started	Date dis-continued	To	Tg or S(V/kine)	V at To										
6	BAG	Wiechert. NE	1909.	1944.				} Smoked paper.									
7		Wiechert Z															
9		Benioff 310 Z	1952.	1962.09					} Photo paper (moved to QCP).								
10		Sprengn. SP NE								1.0	2.0	5220					
11		Sprengn. LP Z								1.5	1.5	500					
12		Sprengn. LP NE								19.	14.	1500					
13		Sprengn. SP Z	15.	17.	1500												
14		Sprengn. SP NE	64.03.31 (WWSSN)	in use					} Photo paper								
15	Sprengn. LP Z	1.0						0.75		25000							
16	Sprengn. LP NE	1.0						0.75		25000							
18	MANa	Wiechert NE															
19		Wiechert Z	} Smoked paper.														
20																	



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>SHORT HISTORY</u>															
2																
3	BAG: A seismic station at Mirador since 1909 (see Repetti's history). It was															
4	under the direction of Fr. William Repetti, S.J. from 1928, Dec., until the															
5	outbreak of World War II. In 1952 the present vault was completed and obser-															
6	vation began with Fr. Charles Depperman, S.J., as Director of the Observatory															
7	and Fr. Bernard F. Doucette, S.J., as Chief of the Division. Fr. James J. Hennessey															
8	, S.J. was Director of the Manila Observatory from 1957 to 1971.															
9	Fr. Sergio S. Su, S.J., has been chief of the Seismic Division since 1965.															
10	Seismic records from 1952 to 1962 are still available, but do not have exact															
11	calibration indicated on the records. Seismic records from 1962 to present															
12	(as WWSSN station) have been filmed regularly at WDC-A.															
13																
14	DAV: Since 24 August 1964 as WWSSN station.															
15																
16	QCP: Not a WWSSN station. But P & S readings have been regularly sent to USGS (
17	formerly USCGS) since about 1966 (date uncertain).															
18																
19	Note on Station Manila: Under the administration of the Manila Observatory (Je-															
20	suit) till outbreak of the World War II. After the War under PAGASA. Present															
	site (Diliman) is at least 10 km from pre-War site.															



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80			
1	QCP	Benicoff 310 Z								1.0	2.0	5220	} Visual recording, (moved from BAG except recorder).						
2		Sprengn. SP N								1.5	1.4	500							
3		Sprengn. SP E					} 62.09.	} in use				1.5						1.5	500
4		Sprengn. LP Z										19.						14.	1500
5		Sprengn. LP N										15.						17.	1500
6		Sprengn. LP E										15.						17.	1500
7																			
8	Tigao																		
9	Irosin																		
10	MAM																		
11	BTN																		
12																			
13	DAV	Sprengn. SPZNE					} 64.08.24	} in use				1.0	0.75	25000	} Photo paper.				
14		Sprengn. LPZNE (WWSSN)										15.	100.	3000.					

Timing System for BAG and DAV is WWSSN Model 8684 and for QCP is home-made clock-relay-radio system.

Response curves of WWSSN instruments should be referred to WWSSN Manual.



TODAI

DATA SHEET

SEMI FINAL

PROBLEM- PHILIPPINES - D

BY-

PAGE- 1 OF 3

NO. 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

PHILIPPINES.

NPC Network.

GENERAL INFORMATION

Operated by: Geophysics Section, Geology and Geotechnics Division,
National Power Corporation (NPC)

Address: Corner of Quezon Ave. and BIR Road, Diliman, Quezon City
Metro Manila, Philippines. (P. O. Box 10183)

Geology Laboratory, Nuclear Project Village,
Bagac, Bataan, Philippines.

Telephone: 921-3541, 921-3551, 921-3561.

Telex: 7420120

Cable: NAPOCOR Manila

Address to obtain records: As above.

Data published:

20

25 30 35 40 45 50 55 60 65 70 75 80



NO.								
1	<u>SITE INFORMATION</u>							
2								
3	Code	Station	Latitude	Longitude	Elev.	Date	Date	Foundation
4			N	E	m	opened	closed	
5	Bataan PNPP Network							
6	BTP	Batelco	14° 41' 27.4"	120° 30' 54.1"	32	1980.08.	open	} Quarter- nary Vol- canics.
7	LYP	Liyang	14° 38' 00.2"	120° 29' 06.4"	101	1980.08.	open	
8	BNP	Banawang	14° 37' 07.8"	120° 24' 49.1"	71	1980.08.	open	
9	MNP	Morong	14° 40' 47.3"	120° 16' 41.8"	12	1980.08.	open	
10								
11								
12	<u>INSTRUMENTATION</u>							
13								
14	Station	Seismometer	To	Sensitivity	Sensitivity	T at	Remarks	
15				volt/kine	kine/cm	2Hz		
16								
17	Batelco	OKI WS-1102 Z	1.02	1.65	2.15×10^{-3}	5479	} T(R). LTDR TROS	
18		N	0.99	0.45	2.46×10^{-3}	5106		
19		E	0.97	0.43	2.27×10^{-3}	4615		
20								



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80				
1	Li yang		OKI WS-1101 Z			1.01		1.57		2.29×10^{-3}		5479	T(R)							
2																				
3	Banawang		OKI WS-1102 Z			1.00		1.53		2.32×10^{-3}		5420	} T(R)							
4			N			0.99		0.43		2.22×10^{-3}		5669								
5			S			1.02		0.45		2.23×10^{-3}		5637								
6																				
7	Morong		OKI WS-1101 N.			0.98		1.55		2.34×10^{-3}		5360	T(R)							
8																				
9																				

R(T): Telemetered by radio.

LTDR: Continuous recording (3 channels) by OKI Long Term Ink-recording Drum WX-1009.

TROS: Triggered SAN-EI 8K10 Rectilinear Thermal-writing Oscillograph (8 channels)



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3	<u>GENERAL INFORMATION</u>															
4																
5	Operated by: Department of Meteorology															
6	Address: Department of Meteorology															
7	Buddhaloka Mawatha,															
8	Colombo 7, Sri Lanka.															
9	Telephone: 94846, 94847, 94848															
10	Telegram:															
11	Telex:															
12	Address to obtain records: As above.															
13	Data published: Annual Reports of the Department of Meteorology.															
14	19 - 19 .															
15	Milne horizontal seismograph records for 1909-1926 are not avail-															
16	lable. Records of Milne-Shaw seismography are available, except															
17	a few lost during the war time. (after 1927)															
18																
19																
20																



TODAI

DATA SHEET

PROBLEM-

BY-

PAGE- 2 OF 2

NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	<u>SITE INFORMATION</u>															
2																
3	Code	Station	Latitude	Longitude	Elev.	Date	Date	Foundation								
4		Name	N	E	m	opened	closed									
5																
6	COC	Colombo	06.9050	79.8694	7	1909.07	open	Sandy loam and sandstone								
7																
8																
9	<u>INSTRUMENTATION</u>															
10																
11	Code	Instrument & Component	Date started	Date dis-continued	To	V at	Recording	Remarks								
12						To	Method									
13																
14	COC	Milne H	1909.07	1926.12.	16~		Photo paper	Sensitivity 0.5" of arc per mm								
15		Milne-Shaw E	1927.01.	in use	18	12	250	Photo paper								
16																
17	Timing System: "Synchronome" Electric Clock synchronised.															
18																
19																
20																



NO. 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

THAILAND

GENERAL INFORMATION

Operated by:

Meteorological Department

Address:

Meteorological Department
612 Sukumvit Road
Bangkok 11, Thailand

Telephone:

3910178, 3910189

CABLE: METEOR BANGKOK

Telex:

72004 MET BK TH

Address to obtain records:

As above.

Data published:

SITE INFORMATION

Code	Station Name	Latitude (deg. N)	Longitude (deg. E)	Elev. (m)	Date opened	Date closed	Foundation
CHG	Chiang Mai	18.9900	98.9769	416	1963.03.	open	Granite

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1	CHTO	--do--		--do--		--do--		316	1977.06.	open		--do--				
2																
3	SNG	Songkhla		7.1733		100.6200		4	1965.10.	open		--do--				
4																
5	BDT	Bhumibol Dam		17.2333		99.0500		154	1976.01.12.	open		--do--				
6																
7	LPT	Lampang		18.2167		99.5500		560	1976.02.24.	1978.08.25.		Sandstone				
8																
9	PCT	Pak Chong		14.7150		101.4267		360	1978.10.10.	open		--do--				
10																

INSTRUMENTATION

Code	Seismometer			Galv.	Type of recording	V _{max} (at T)	Remarks
	Type	Comp.	T ₀	T _g			
CHG	Benioff SP	N, E, Z	1.0	0.75	Photo paper	200K	WSSN
	Sprengnether LP	N, E, Z	15.	100.	--do--	3K	
CHTO	SRO Borehole	Z	1.0	----	Helicorder	200K	SRO
	Model 3600	N, E, Z	25.0	----	Magnetic tape	40K	



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	
1	SING	Beni off SP	N, E, Z	1.0	0.75	Photo paper	25K	} WWSSN									
2		Sprengnether LP	N, E, Z	15.0	100.	-- do --	1.5K										
4	B:DT	Kinematics SS-1	Z	1.0	----	Pen and ink	225K	} T_{max} at $T=0.33s$, SPS-1 or UNESCO Type SP Seismograph									
6	LPT	Kinematics SS-1	Z	1.0	----	Pen and ink	450K										
8	PCT	Kinematics SS-1	Z	1.0	----	Pen and ink	450K										
10	<u>Timing System</u> :																
	1) Systron-Donner Digital Clock Model 8110 for SRO.																
	2) Sprengnether TS-250 for UNESCO specification for BDT, LPT, PCT.																
	3) WWSSN Standard for WWSSN at CHG and SNG																



NO.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1																
2																
3	<u>GENERAL INFORMATION</u>															
4																
5	Operated by: Geophysical Observatory															
6	National Centre for Scientific Research.															
7	Address: GL-NCSR Nghia Do,															
8	Tu Lien, Hanoi,															
9	S.R. Vietnam															
10	Telephone: 52380															
11	Telex:															
12	Cable:															
13	Address to obtain records: As above.															
14	Data published:															
15																
16																
17																
18																
19																
20																



NO.	SITE INFORMATION							
	Code	Station Name	Latitude N	Longitude E	Elev m	Date opened	Date closed	Foundation
5	BGV	Bac-giang	21° 17' 6" .2933	106° 13' 7" .2283	15	1967.04	open	Sandstone (Jurassic)
7	DLV	Da-lat	11° 56' 6" .9433	108° 29' 2" .4867	1575	1981.01	open	Sandstone
9	HBV*	Hoa-binh	20° 49' 5" .8250	105° 21' 1" .3577	30	1972.04	open	Sandstone
11	NHA	Nha-trang	12° 12' 6" .2100	109° 12' 7" .2117	5	1957.06	open	Ryolithe
13	PLV	Phu-lien	20° 48' 3" .8050	106° 37' 7" .6283	90	1924.	open x	Quaternary
15	SPV	Sapa	22° 20' 1" .3350	103° 49' 9" .8317	1570	1961	1979.02 x	Sandstone
17	TQV	Tuyen-quang	21° 49' 7" .8283	105° 12' 5" .2083	35	1975.07	open	Quaternary

x PLV was closed from 1944 to 1957, because of the war. SPV was closed from 1972 to 1974 for repair and in 1979 completely destroyed by Chinese aggression.

* HBV is used for Harrisonburg (U.S.A) and should be changed. " 65 " 70 75 80



NO.	Code	Instrument and Component	T ₀ sec	T _g sec	V at T ₀	Method of recording	Date started	Date discontinued, Remarks	
1	<u>INSTRUMENTATION</u>								
5	BGV	Kharin N	0.96	0.29	39000	} Photo paper	1967.04	in use.	
6			E	0.98	0.30				55000
7			Z	1.00	0.20				30000
9	DLV	CM-3 N	1.2	0.3	20000	} Photo paper	1981.01	in use	
10			E	1.2	0.3				20000
11			Z	1.2	0.3				20000
13	(HBV)	Kharin N	1.0	0.32	23670	} Photo paper	1972.04	in use with gal- vanometer GK-VII	
14			E	1.0	0.32				24400
15			Z	1.0	0.32				29400
17	NHA	Labroust N	0.91	0.35	59350	} Photo paper	1957.06	1962.	
18			-APX E	0.95	0.35				55964
19			Z	1.05	0.35				53431
20		Benioff SP N							



NO.											
1	(WWSSN)	E							} Photo paper	} 1962.	} Destroyed in the war (when?)
2		Z									
3	Sprengn. LP	N							} Photo paper	} 1962.	} Destroyed in the war (when?)
4	(WWSSN)	E									
5		Z									
6	Sprengn. LP		12.0	1.2					Photo paper	1980.	in use with gal-
7		?									vanometer GK-VII
8											
9											
10	PLV										
11	Mechanical										
12	(Wiechert?)									1924.	1944.
13	SB-57	N	7.0	0.5	2649				} Photo paper	} 1957.	} 1977
14	(Polish)	E	7.0	0.5	2855						
15		Z	7.0	0.5	1079						
16										1977.	1979.
17											
18											
19	SKD										in use with gal-
20	(Soviet)									1979	vanometer GK-VII

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重西序誌
 PRINTED MATTER

アジア地震観測所要覽
 SEA MAIL

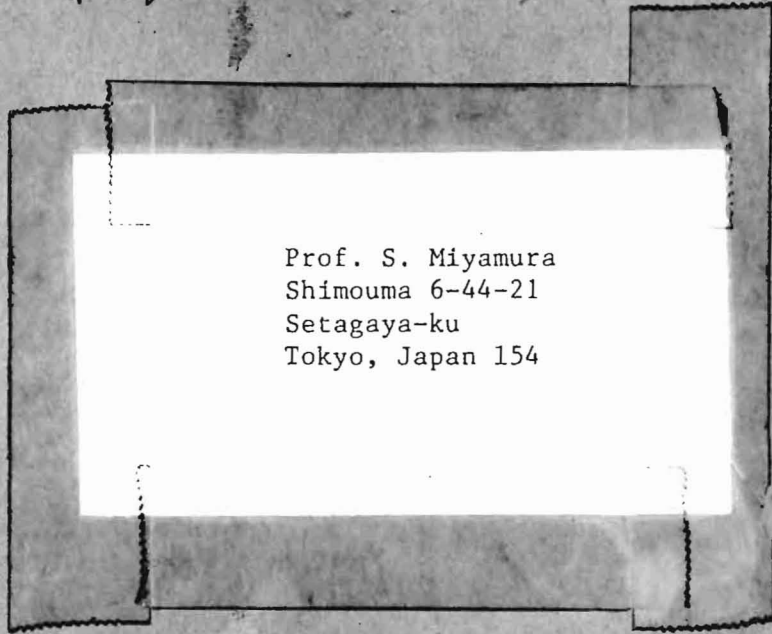
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渡田部
 (阿部, 経尾)

Seism. Stations.

ASIA (2)

Afganistan	1 ✓	PAKISTAN	14
Bangladesh	2	Philippina (PAGSA)	12
Burma	3	" (Manda)	4
India (IMD)	18	" (PIV)	4
" (SBA)	6	" (NPC)	3
Indo. esia (MGA)	14	Sri Lanka	2
" (MGP/SM)	6	Thailand	3
" (V.S.)	9	Vietnam	5
Iran (IGTU)	5		143
" (AEO)	11		
" (SNFU)	3		
" (BHRC/SM)	8		
Iraq	4		
Malaysia	3		
Nopal	3		



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 Shimouma 6-44-21
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