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STRONG-MOTION RECORDS
No.6 (1971)

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STRONG-MOTION EARTHQUAKE RECORDS
FROM

PUBLIC WORKS IN JAPAN(1971)

土木構造物における強震記録(1971)

MARCH 1973

昭和48年3月

THE PUBLIC WORKS RESEARCH INSTITUTE
MINISTRY OF CONSTRUCTION

建設省土木研究所

TM-82.FI- 7.F-221

PUBLICATIONS ON STRONG-MOTION RECORDS

The Public Works Research Institute has published the following reports on strong-motion earthquake records reproduced in full size. In the reports there are three kinds of series, ANNUAL REPORT, SPECIAL REPORT, and SUMMARIZED REPORT.

(I) ANNUAL REPORT: These reports are series of general ones published annually and contain almost all strong-motion records obtained during the period indicated in the title of each report.

- No. 1 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (1961-1966), Technical Memorandum of P. W. R. I., No. 217, December, 1966.
- No. 2 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (1967), Technical Memorandum of P. W. R. I., No. 341, February, 1968.
- No. 3 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (1968), Technical Memorandum of P. W. R. I., No. 430, April, 1969.
- No. 4 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (1969), Technical Memorandum of P. W. R. I., No. 641, March, 1970.
- No. 5 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (1970), Technical Memorandum of P. W. R. I., No. 718, March, 1972.

(II) SPECIAL REPORT: These reports are series of special ones on specified earthquakes or quake swarms published immediately after each quake. Usually these records are also contained in ANNUAL REPORT, but sometimes they are not contained.

- No. 1 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (THE MATSUSHIRO QUAKE SWARM, DECEMBER 9, 1965-FEBRUARY 28, 1966, THE OCHIAI BRIDGE), Technical Memorandum of P. W. R. I., No. 163, April, 1966.
- No. 2 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (THE MATSUSHIRO QUAKE SWARM, MARCH 1 - JUNE 22, 1966, THE OCHIAI BRIDGE), Technical Memorandum of P. W. R. I., No. 194, July 1966.
- No. 3 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (THE MATSUSHIRO QUAKE SWARM, JUNE 25 - DECEMBER 1, 1966, THE OCHIAI BRIDGE), Technical Memorandum of P. W. R. I., No. 254, March, 1967.
- No. 4 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (THE MATSUSHIRO QUAKE SWARM, MAY 27 - OCTOBER 23, 1966, THE SUSOBANA DAM), Technical Memorandum of P. W. R. I., No. 263, March, 1967.

No. 5 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (THE MATSUSHIRO QUAKE SWARM, OCTOBER 8, 1966 - FEBRUARY 2, 1967, THE CHIKUMAGAWA EMBANKMENT), Technical Memorandum of P. W. R. I., No. 236, March 1967.

(III) SUMMARIZED REPORT: These reports are series of summarized reports on especially major strong-motion records published occasionally (mostly every four years). These records are extracted from both ANNUAL REPORTS and SPECIAL REPORTS.

No. 1 STRONG-MOTION EARTHQUAKE RECORDS FROM PUBLIC WORKS IN JAPAN (1961 - 1971), expected to be published in 1973.

REFERENCES

The following references are available for utilization and evaluation of the records

- 1) Earthquake Resistant Structure Section: "Digitized Data of Strong-Motion Earthquake Records (No. 1)", (in Japanese)
Technical Memorandum of the Public Works Research Institute, No. 317, March, 1968.
- 2) Earthquake Resistant Structure Section: "Digitized Data of Strong-Motion Earthquake Records (No. 2)", (in Japanese)
Technical Memorandum of the Public Works Research Institute, No. 318, 1968.
- 3) Structure Section: "Examination on the Characteristics of a SMAC-B2 Accelerograph and an Underground Seismograph", (in Japanese)
Technical Memorandum of P. W. R. I., No. 399, March, 1968.
- 4) Eiichi Kuribayashi, Toshio Iwasaki. "Observed Earthquake Responses of Bridges", 4th WCEE, Chile, January, 1969.
- 5) Earthquake Resistant Structure Section: "Digitized Data of Strong-Motion Earthquake Records (No. 3)", (in Japanese)
Technical Memorandum of the Public Works Research Institute, No. 461, May, 1969.
- 6) Earthquake Resistant Structure Section: "Digitized Data of Strong-Motion Earthquake Records (No. 4), expected to be published in 1973.

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STRONG-MOTION EARTHQUAKE RECORDS
FROM
PUBLIC WORKS IN JAPAN(1971)

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THE PUBLIC WORKS RESEARCH INSTITUTE
MINISTRY OF CONSTRUCTION

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Abstract

This memorandum reports strong-motion earthquake records of ground motions and responses of engineering structures such as highway bridges, tunnels, dams, and embankments administrated by Ministry of Construction, Public Corporations, Hokkaido Development Bureau and Regional Governments.

The photographs of major record traces of strong earthquakes occurred in and around Japan in 1971 are reproduced in full size. Also the maximum amplitudes of all seismograph records are presented.

Preface

Strong-motion earthquake record is most helpful to establish reasonable design methods of structures subjected to earthquake motions.

In 1960 the Public Works Research Institute proposed a recommendation to the Ministry of Construction on project of survey of ground motions and structural responses during strong-motion earthquakes. In response to the recommendation the Ministry gave the approval. Since then the project has obliged it to install instruments, to consult the way of installing and instrumentation, and to analyze and publish the records obtained.

Total number of SMAC type accelerographs (three component accelerometer) operated is one hundred and sixty eight and total number of the accelerometers is five hundred and four. Meantime, total number of electro-magnetic type accelerometers is two hundred and forty six.

Several reports reproducing record traces in full size have already published as shown inside front cover of this report. And some analyses have been done and these typical reports are shown in References.

The present report reproduces strong-motion seismograph records obtained from public works in Japan--such as highway bridges, tunnels, dams, and embankments--and on grounds near the structures during the year of 1971, and summarizes their maximum acceleration values.

The structures which served strong-motion seismographs are administrated by Ministry of Construction, Public Corporations, Hokkaido Development Bureau and Regional Governments.

March 1973

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Acknowledgements

The present network of strong-motion instrumentation on public works in Japan is due to efforts of the staff of the Public Works Research Institute that have installed the instruments and serviced instrumentation since 1960. The purchase of the instruments has been a cooperative effort of the Regional Construction Bureaus of the Ministry of Construction, Regional Governments throughout Japan, Public Corporations (such as Japan Highway, Tokyo Expressway, Hanshin Expressway, and Water Resources Development), and Hokkaido Development Bureau under the general direction of the Public Works Research Institute.

We should mention the skill and care which has been put into the design and fabrication of the instruments by the members of SMEOC (Strong-Motion Earthquake Observation Committee established in 1951 in Japan) and the manufacturing companies.

The members dealing with field work made notable contributions to the success of the surveys.

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Table 1. Strong-Motion Seismograph Stations for SMAC-Type Accelerographs,
Including Station Expected in Future

as of March, 1972

Station Number	Station (Name of Structure)	Number of Instruments	Seismograph Type	Location	Year & Month Installed
101	Shinkatsushika Bridge	2 (Ground 1, Pier 1)	SMAC-B2	Matsudo-City, Chiba-Pref.	1966-3
102	Yoneyama Ōhashi "	3 (Ground 1, Pier 2)	" "	Kashiwazaki-City, Niigata-Pref.	66-2, 66-5
103	Ajigawa Ōhashi "	3 (" 1, " 2)	" "	Benten-Chō, Minato-Ku, Ōsaka	1963-3
104	Shintonegawa "	2 (Ground 1, Pier 1)	SMAC-B2	Kurihashi-Chō, Saitama-Pref.	1967-2
105	Masaki Ōhashi "	2 (" 1, " 1)	SMAC-E2	Otobe, Tarō-Chō, Shimohei-Gun, Iwate-Pref.	1971-2
106	Soka "	2 (Ground 1, Pier 1)	SMAC-B2	Soka-City, Saitama-Pref.	1968-3
107	Ōiso "				*
108	Himekawa "				*
109	Kisogawa "				*
110	Hijiyama "				*
111	Mimitsu "				*
112	Kinokawa Ōhashi "	2 (Ground 1, Pier 1)	SMAC-B2	Wakayama-City, Wakayama-Pref.	1967-3
113	Heiwa "	2 (" ")	SMAC-B2, D	Waga-Gun, Waga-Chō, Iwate-Pref.	69-3, 70-3
114	Amagasaki "	2 (" ")	SMAC-B2, C2	Amagasaki-City, Hyōgo-Pref.	1963-3
115	Sakuragawa "				*
201	Oya "	2 (Ground 1, Pier 1)	SMAC-B2	Aizuwakamatsu-City, Fukushima-Pref.	1965-3
202	Uonuma "	2 (" ")	" "	Ojiya-City, Niigata-Pref.	1965-12
203	Yokokurasawa "	2 (" ")	" "	Yokokura, Sakae-Mura, Nagano-Pref.	1965-10
204	Shinyawata "	2 (" ")	" "	Chita-Chō, Aichi-Pref.	1965-11
205	Ishiseto "	2 (" ")	" "	Nojiri-Chō, Miyazaki-Pref.	1965-3
206	Omigawa Ōhashi "				*
207	Takatsu "	2 (Ground 1, Pier 1)	SMAC-B2	Masuda-City, Shimane-Pref.	1967-3
208	Turusaki "				*
301	Yūhei "	2 (Ground 1, Pier 1)	SMAC-B2	Jumonji-Chō, Akita-Pref.	1966-12
302	Kaihoku "	2 (" ")	" "	Ishinomaki-City, Miyagi-Pref.	1966-3
303	Kahoku "	2 (" ")	" "	Sagae-City, Yamagata-Pref.	1965-3
304	Date "	2 (" ")	" "	Date-Chō, Fukushima-Pref.	1965-10
305	Minato Ōhashi "	2 (" ")	" "	Tsuiyama, Toyooka-City, Hyōgo-Pref.	1965-3
306	Myōken "	2 (" ")	" "	Nishisono-Chō, Izumo-City, Shimane-Pref.	66-3, 67-3
307	Godaisan "	2 (" ")	" "	Godaisan, Kōchi-City, Kōchi-Pref.	1966-3

Note: Stations with star-mark * are expected in future.

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Table 1. (Continued)

Station Number	Station (Name of Structure)	Number of Instruments	Seismograph Type	Location	Year & Month Installed
308	Itajima Bridge	2 (Ground 1, Pier 1)	SMAC-B2	Uwajima-City, Ehime-Pref.	1966-3
309	Otomo "	2 (" ")	" "	Otome, Mifune-Chō, Kumamoto-Pref.	1965-3
310	Hirai "	3 (Ground 1, Pier 2)	" "	Hirai, Edogawa-Ku, Tōkyō	1965-8
311	Toyohama Ōhashi Bridge	2 (Ground 1, Pier 1)	" "	Ise-City, Mie-Pref.	1966-9
312	Akagi "	2 (" ")	" "	Kumanogawa-Chō, Wakayama-Pref.	1966-9
313	Ishizuchi "	2 (" ")	" "	Ishizuchi, Komatsu-Chō, Ehime-Pref.	1967-3
314	Kiyokawa "	2 (" ")	" "	Kiyokawa, Tachikawa-Chō, Yamagata-Pref.	68-10, 69-3
315	Shimpō "				*
316	Tsugaru Ōhashi Bridge	2 (Ground 1, Pier 1)	SMAC-D	Nakazato-Chō, Aomori-Pref.	1970-3
317	Sezume Bridge	2 (" ")	SMAC-B2	Yamakawa-Chō, Tokushima-Pref.	1967-3
318	Shinden "				*
319	Shitoku Ōhashi Bridge	2 (" ")	SMAC-B2	Shitoku, Nakagawa-Mura, Nagano-Pref.	1966-12
320	Akkeshi Ōhashi "	2 (" ")	SMAC-E2	Akkeshi-Chō, Akkeshi-Gun, Hokkaidō	1971-11
401	Biwako Ōhashi "	1 (Box girder)	SMAC-B2	Katada-Chō, Shiga-Pref.	1964-9
402					*
501	Tōkyō Bay (Futtu Cape)	1 (Ground)	SMAC-B2	Futtu-Chō, Chiba-Pref.	1965-10
502	Kanmon Bridge	2 (Ground 2)	" "	Yamaguchi-Pref. & Fukuoka-Pref.	1965-10
503	Tōkyō Bay (Kannonzaki)	1 (Ground)	" "	Yokosuka-City, Kanagawa-Pref.	1967-3
601	Muromaki Dam	1 (Dam)	SMAC-B2	Yatsuo-Chō, Nei-Gun, Toyama-Pref.	1961-8
602	Yokoyama "	2 (Rock 1, Dam 1)	" "	Fujihashi-Mura, Gifu-Pref.	1964-6
603	Sarutani "	1 (Ground)	SMAC-A	Ōtō-Mura, Yoshino-Gun, Nara-Pref.	1958-3
604	Amagase "	1 (Dam)	SMAC-B2	Ujikaneido, Uji-City, Kyōto-Pref.	1964-8
605	Susobana "	2 (Rock 1, Dam 1)	SMAC-B2, D	Konabe, Nagano-City, Nagano-Pref.	66-5, 69-12
606	Tsuruta "	2 (Ground 1, Dam 1)	SMAC-D	Tsuruta-Chō, Kagoshima-Pref.	1968-12
607	Kanayama "				*
608					*
609					*
610	Koshiibu "	2 (Rock 1, Dam 1)	SMAC-D	Nakagawa-Mura, Nagano-Pref.	1968-12
611	Saigawa "				*
612	Kimigano "				*

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Table 1. (Continued)

Station Number	Station (Name of Structure)	Number of Instruments	Seismograph Type	Location	Year & Month Installed
613					*
614					*
701	Yodogawa Embankment	2 (Ground 1, Emb. 1)	SMAC-B2	Shin-Machi, Hirakata-City, Ōsaka-Pref.	1966-3
702	Tōkyō "				*
703	Sekiya Diversion Weir	2 (Ground 1, Dam 1)	SMAC-E2	Niiura-Town, Niigata-City, Niigata-Pref.	1971-11
704	Okayama Embankment				*
705					*
801	Ariake Sea Embankment	1 (Ground)	SMAC-B2	Daijugarami, Higashiyoka-Chō, Saga-Pref.	1965-8
802	Aomori				*
803	Toyama				*
804	Kanazawa				*
805	Okayama				*
806					*
901	P. W. R. I., Chiba Branch	1 (Ground)	SMAC-B2	Anagawa, Chiba-City, Chiba-Pref.	62-3 (67-3)
902	Nishiarai Bridge	3 (Ground 1, Pier 2)	" "	Nishiarai-Chō, Adachi-Ku, Tōkyō	1962-3
903	Shōwa Ōhashi "	2 (" Pier 1)	" "	Niigata-City, Niigata-Pref.	1965-1
904	Shintenryugawa "	2 (" ")	" "	Toyoda-Mura, Iwate-Gun, Shizuoka-Pref.	1964-12
905	Ochiai "	3 (Ground 2, ")	" "	Nagano-City, Nagano-Pref.	1965-12
906	P. W. R. I., Kashima	1 (Ground)	" "	Kashima-Gun, Ibaragi-Pref.	1967-3
907	Taira Bridge	2 (Ground 1, Pier 1)	" "	Taira, Iwaki-City, Fukushima-Pref.	1968-1
908	Honjō "				*
909	Miyako				*
910	Hachinohe				*
911	Takamatsu				*
912	Miyazaki				*
1001					*
1002	Fujikawa Bridge	2 (Ground 1, Pier 1)	SMAC-B2	Fuji-City, Shizuoka-Pref.	1967-3
1003	Hamanako "	2 (" ")	SMAC-D	Inase-Gun, Shizuoka-Pref.	68-12, 69-3
1004	Sakaigawa "	2 (" ")	SMAC-B2	Uenohara-Chō, Yamanashi-Pref.	1967-3

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Table 1. (Continued)

Station Number	Station (Name of Structure)	Number of Instruments	Seismograph Type	Location	Year & Month Installed
1005	Ubakubo Bridge	2 (Ground 1, Pier 1)	SMAC-B2	Ubakubo, Hino-City, Tōkyō	1967-3
1006	Tsurukawa "	2 (" ")	" "	Uenohara-Chō, Yamanashi-Pref.	1967-3
1007	Toyokawa Bridge	2 (" ")	" "	Ichinomiya-Chō, Hoi-Gun, Aichi-Pref.	1968-3
1008	Urato "	3 (Ground 1, Pier 2)	SMAC-E2	Urato-Town, Kōchi-City, Kōchi-Pref.	1972-3
1009	Sakawagawa "	2 (Ground 1, Pier 1)	SMAC-D	Ashigarakami-Gun, Kanagawa-Pref.	1969-3
1101	Meguro-Ku Ōhashi (Route 3)	2 (" ")	SMAC-E2	Aobadai, Meguro-Ku, Tōkyō	1972-1
1102	Suginamiku Shimotakaidō (Route 4)	3 (Ground 1, Pier 2)	" "	Shimotakaidō, Suginami-Ku, Tōkyō	1972-1
1103	Sumidaku Tsutsumidoori (Route 6)	2 (Ground 1, Pier 1)	" "	Tsutsumidoori, Sumida-Ku, Tōkyō	1972-1
1104					*
1105					*
1106					*
1107					*
1108	Ichinohashi Bridge	2 (Ground 1, Pier 1)	SMAC-B2	Azabu, Minato-Ku, Tōkyō	1967-7
1109	Haneda Undersea Tunnel	3 (Ground 1, Tunnel 2)	" "	Ōmoriminami-Chō, Ōta-ku, Tōkyō	1968-2
1201	Nishiyokobori Bridge	2 (Ground 1, Pier 1)	SMAC-B2	Minamisumiya-Machi, Minami-Ku, Osaka	1965-3
1202	Ikue-Chō, Asahi-Ku				*
1203	Minamitsumori Bridge	2 (" ")	SMAC-D	Tsumori-Chō, Nishinari-Ku, Osaka	1970-3
1301	Civil Engineering Research Institute				moved
1302	Chiyoda Bridge	3 (Ground 1, Pier 2)	SMAC-B2	Makubetsu-Chō, Nakagawa-Gun, Tokachi	1966-11
1303	Shin-ishikari "	2 (Ground 1, Pier 1)	" "	Tsuishikari, Ebetsu-City, Ishikari	67-8, 68-11
1304	Otanoshike "	2 (" ")	" "	Otanoshike, Kushiro-City, Kushiro	1967-10
1305	Horoman "	2 (" ")	" "	Horoman, Samani-Chō, Samani-Gun, Hidaka	1967-12
1306	Asahikawa "	2 (" ")	" "	Kamui-Chō, Asahikawa-City, Kamikawa	68-11, 69-3
1307	Shichihō "	2 (" ")	" "	Yunosato, Shiriuchi-Chō, Kamiiso-Gun, Oshima	1968-11
1308	Ishikarikakō "	3 (Ground 1, Pier 2)	" "	Yasuba, Ishikari-Chō, Ishikari-Gun, Ishikari	1970-3
1309	Muine "	2 (Ground 1, Pier 1)	SMAC-D	Jōzankei, Sapporo-City, Ishikari	1969-10
1310	Syari "	2 (" ")	SMAC-D, E2	Toyokura, Syari-Chō, Syari-Gun, Abashiri	1970-1
1311	Isoya "	2 (" ")	SMAC-D	Minato-Town, Isoya-Gun, Shiribeshi, Hokaido	1970-11

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Table 1. (Continued)

Station Number	Station (Name of Structure)	Number of Instruments	Seismograph Type	Location	Year & Month Installed
1312	Toukei Bridge	1 (Ground)	SMAC-E2	Mashike-Town, Mashike-Gun, Hokaido	1971-11
1401	Tonegawa Estuary Dam	2 (Ground 1, Dam 1)	SMAC-D	Tonosyō-Chō, Katori-Gun, Chiba-Pref.	1969-3
1501	Iwaya	1 (Ground)	SMAC-B	Iwaya, Awaji-Chō, Tsuna-Gun, Hyōgo-Pref.	1962-10
1502	Akashi	1 (1st Floor)	SMAC-B2	Hitomaru-Chō, Akashi-City, Hyōgo-Pref.	"
1503	Omishima	1 (Ground)	SMAC-B	Kamiura-Town, Koshichi-Gun, Ehime-Pref.	1971
1504	Naruto	1 (")	" "	Tosadomariura, Naruto-Chō, Naruto-City, Tokushima	1963-3
1505	Bannosu	1 (")	" "	Kawasaki-Town, Sakaide-City, Kagawa-Pref.	1971-8
1506	Takamatsu	1 (")	" "	Hamano-Cho, Takamatsu-City, Kagawa-Pref.	"

Table 4. Number of Strong-Motion Seismograph Stations
and that of Instruments in Relation to the Variety of Structures
Operated as of March, 1972

Variety of Structure		Number of Stations		Number of Instruments		
		SMAC	Electro- Magnetic- type Seismograph	Number of SMAC		Number of Components of Electro- Magnetic- type Seismograph
				Ground	Struc- ture	
Bridge		65	8	66	71	65
Tunnel		1	-	1	2	-
Dam	Concrete	7	12	5	6	112
	Fill-type	-	3	-	-	21
Embank- ment	River	3	3	2	4	25
	Coast	-	-	-	-	-
Future Structure Site		9	5	9	-	36
Others		2	1	2	-	9
Total		87	32	85	83	268

別表 所有者別・会計別にみた強震計台数

1972.3

所有者 会計	一 会	般 計	道 特	路 会	海 特	岸 会	治 特	水 会	都 県	公 団	北海 道 開 発 局	合 計
地 方 建設局	-	-	24	-	1	-	13	-	-	-	-	38
土 木 研究所	(8)	(6)	-	-	-	-	-	-	-	-	-	(14)
都 県	-	-	-	-	-	-	-	-	52	-	-	52
5 公団	-	-	-	-	-	-	-	-	-	41	-	41
北海道 開発局	-	-	-	-	-	-	-	-	-	-	23	23
合 計	8	30	1	13	52	41	23	168				

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Table 2. Strong-Motion Seismograph Stations with Electro-Magnetic Type Seismographs

as of March, 1972

Station Number	Station (Name of Structure)	Number of Components	Location	Year Installed
01	Yuda Dam	6, (Accelerometer)	Waga-Chō, Waga-Gun, Iwate-Pref.	1965
02	Minase "	6, (")	Minase-Mura, Okachi-Gun, Akita-Pref.	1963
03	Narugo "	8, (Displacementmeter)	Narugo-Chō, Tamazukuri-Gun, Miyagi-Pref.	1957
04	Kawamata "	10, (Accelerometer)	Kuriyama-Mura, Shioya-Gun, Tochigi-Pref.	1964
05	Muromaki "	12, (9 Acc. and 3 Disp.)	Yatsuo-Chō, Nei-Gun, Toyama-Pref.	1961
06	Sasaogawa "	10, (4 Acc. and 6 Disp.)	Nishitani-Mura, Ōno-Gun, Fukui-Pref.	1966
07	Yokoyama "	12, (7 Acc. and 5 Disp.)	Fujihashi-Mura, Ibi-Gun, Gifu-Pref.	1962
08	Amagase "	12, (Accelerometer)	Ujikaneido, Uji-City, Kyōto-Pref.	1964
09	Sarutani "	5, (2 Acc. and 3 Disp.)	Ōtō-Mura, Yoshino-Gun, Nara-Pref.	1957
10	~~Ayakita "~~	~~6, (Accelerometer)~~	~~Suki-Mura, Nishimorokata-Gun, Miyazaki-Pref.~~	1961 Δ
11	Shinkatsushika Bridge	6, (3 Acc. and 3 Earth-pressure)	Matsudo-City, Chiba-Pref.	1967
12	Suruga "	6, (Accelerometer)	Minamiabe, Shizuoka-City, Shizuoka-Pref.	1959
13	~~Yoshida "~~	~~6, (")~~	~~Toyohashi-City, Aichi-Pref.~~	1959 Δ
14	~~Honshu-shikoku (Tarumi)~~	~~16, (")~~	~~Tarumi-Ku, Kobe-City, Hyogo-Pref.~~	1972 Δ
15	~~" " (Shamijima)~~	~~3, (")~~	~~Sakaide-City, Kagawa-Pref.~~	1962 Δ
16	Biwako Ohashi Bridge	6, (2 Acc. and 4 Disp.)	Katada-Chō, Shiga-Pref.	1963
17	Wakato "	18, (Accelerometer)	Wakamatsu-Ku, Kitakyushu-City, Fukuoka-Pref.	1961
18	Ariake-Sea Embankment (Ōyano Jima)	3, (")	Ōyanō-Cho, Amakusa-Gun, Kumamoto-Pref.	1963
19	Toyokawa "	8, (4 Acc. and 4 Disp.)	Toyohashi-City, Aichi-Pref.	1966
20	Tonegawa "	9, (6 Acc. and 3 Disp.)	Kurihashi-Chō, Saitama-Pref.	1968
21	Ōtagawa "	8, (4 Acc. and 4 Disp.)	Hiroshima-City, Hiroshima-Pref.	1965
22	Nagano (Under ground)	9, (Accelerometer)	Nagano-City, Nagano-Pref.	1966
23	~~Hirai Bridge~~	~~8, (5 Acc. and 3 Earth-pressure)~~	~~Hirai, Edogawa-Ku, Tokyo~~	1967 Δ
24	Shijushida Dam	9, (Accelerometer)	Shimokuriyagawa, Morioka-City, Iwate-Pref.	1967
25	Onomichi Bridge	11, (")	Mukaihigashi-Chō, Mitsugi-Gun, Hiroshima-Pref.	1968
26	Saigawa Dam	10, (")	Futamatahin-Machi, Kanazawa-City, Ishikawa-Pref.	1968
27	Yahagi "	13, (")	Asahi-Mura, Higashikamo-Gun, Aichi-Pref.	1970-3
28	Futtu Cape (Under ground)	9, (")	Futtu-Chō, Kimitsu-Gun, Chiba-Pref.	1970-2
29	Ukishima Park (")	12, (")	Ukishima-Chō, Kawasaki-City, Kanagawa-Pref.	1970-3
30	Kamafusa Dam	6, (")	Kawasaki-Chō, Shibata-Gun, Miyagi-Pref.	1970-3
31	Akkeshi Ohashi Bridge	10, (")	Akkeshi-Chō, Akkeshi-Gun, Kushiro	1971-3
32	Kannonzaki (Under ground)	9, (")	Hashirimizu, Yokosuka-City, Kanagawa-Pref.	1971-3

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Station Number	Station (Name of Structure)	Number of Components	Location	Year Installed
33	Bekkai Bridge (Under ground)	6, (Accelerometer)	Bekkai, Bekkai-Village, Nemuro-Cicho, Hokkaido	1971
34	Shizunai " (")	6, (")	Sizunai-Town, Hidaka-Cicho, Hokkaido	1971
35	Koori Dam (")	6, (")	878, Kimitsu-Gun, Chiba-Pref.	1972
36	Matsubarashimouke Dam	8, (")	Kurobuchi, Oguni-Town, Aso-Gun, Kumamoto-Pref.	1971
37	Ajigawa Dam	3, (")	Higashino, Ena-City, Gifu-Pref.	1972
38	Shiniinogawa Bridge	6, (")	Kahoku-Town, Monou-Gun, Miyagi-Pref.	1972
39	Sakaisuido Bridge	11, (")	Sakaiminato-City, Tottori-Pref.	1972

Note: Stations with delta-mark Δ are out of operation.

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Table 3. Number of Strong-Motion Seismograph Stations
and that of Instruments in Relation to the Groups Defined by Sponsorship

Operated as of March, 1972

Group (Administrative Sponsor)	Type Period	Strong-Motion Accelerograph, SMAC										Electro-Magnetic Type Seismograph	
		Number of Station	Number of Instruments									Number of Station	Number of Instruments
			before 1963	1964	1965	1966	1967	1968	1969	1970	1971		
I	First National Highway Section, Road Bureau (道路局国道一課)	9	5	0	3	6	2	1	1	2	0	20	3 15A 3E
II	Second National Highway Section, Road Bureau (道路局国道二課)	6	0	4	6	2	0	0	0	0	0	12	0
III	Local Road Section, Road Bureau (道路局地方道課)	18	0	6	12	13	0	2	2	0	2	37	1 10A
IV	Toll Road Section, Road Bureau (道路局有料道路課)	1	0	1	0	0	0	0	0	0	0	1	1 2A 4D
V	Planning Section, Road Bureau (道路局企画課)	3	0	0	3	1	0	0	0	0	0	4	3 30A
VI	Development Section, River Bureau (河川局開発課)	7	4	1	0	1	0	4	1	0	0	11	16 111A 25D
VII	River Improvement Section, River Bureau (河川局治水課)	2	0	0	2	0	0	0	0	0	2	4	2 8A 8D
VIII	Seacoast Section, River Bureau (河川局海岸課)	1	0	0	1	0	0	0	0	0	0	1	1 3A
IX	Public Works Research Institute (土木研究所)	7	4	4	2	2	2	0	0	0	0	14	2 15A 3D
X	Japan Highway Public Corporation (日本道路公団)	8	0	0	0	8	2	4	0	0	3	17	3 40A
XI	Tokyo Expressway Public Corporation (首都高速道路公団)	5	0	0	0	0	5	0	0	0	7	12	0 0
XII	Hanshin Expressway Public Corporation (阪神高速道路公団)	2	0	2	0	0	0	0	2	0	0	4	0 0
XIII	Hokkaido Development Bureau (北海道開発局)	11	1	0	0	3	4	5	6	2	2	23	2 12
XIV	Water Resources Development Corporation (水資源開発公団)	1	0	0	0	0	0	2	0	0	0	2	0 0
XV	Honshu-Shikoku Bridge Authority (本州四国連絡橋公団)	6	6	0	0	0	0	0	0	0	0	6	0 0
Total		87	20	18	29	36	15	18	12	4	16	168	34 246A, 3E, 40D

Note 1) Each SMAC has three accelerometers (One Vertical and two Horizontal).

2) A, E and D in the extremely right column mean Accelerometers, Earth-pressure-meters and Displacement-meters, respectively.

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Fig. 1 Sites of Strong-Motion Seismograph Stations for SMAC-Type Accelerographs
- Observation Network of Ground Motions and Earthquake Responses of
Highway Bridges, Tunnels, Dams, and Embankments -

as of March, 1972

Legend

- Station Operated as of March, 1971
- Station Expected in future

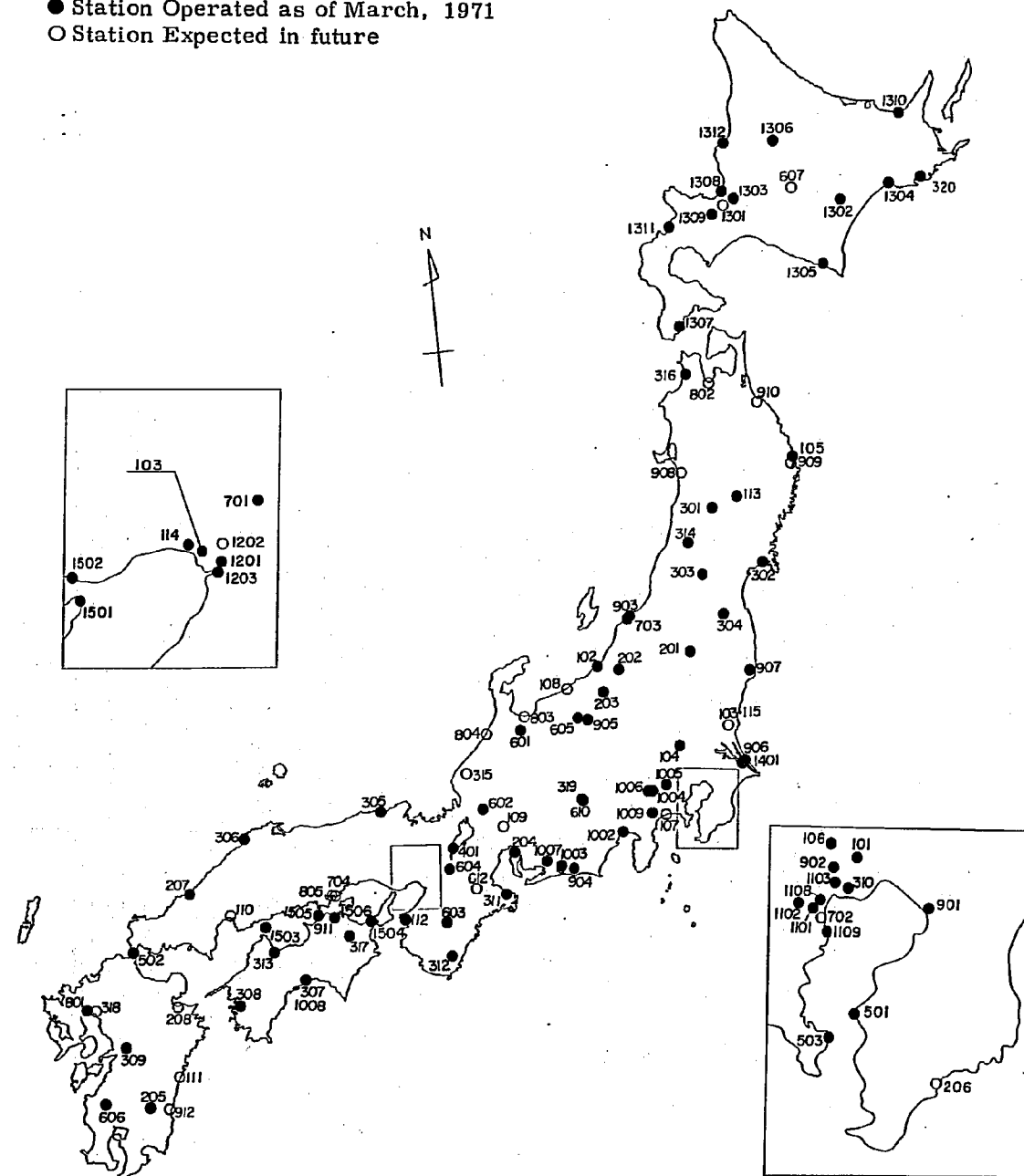


表 1 SMAC型強震計配置計画一覧表

建設省土木研究所 (1972.3.31現在)

区	観測所名	型式	台数	設置箇所	県名	維持管理	設置年月	区	観測所名	型式	台数	設置箇所	県名	維持管理	設置年月
1. 国道一環								B. 海岸一環							
101	新基橋	SMAC-B2	2	地盤・橋脚	千葉	首都圏道	41-3	801	羽田港	SMAC-B2	1	地盤	佐賀	筑後川工事	40-6
102	米山大橋	"	1	地盤・橋脚	新潟	長岡工事	41-3	802	青森	"	1	地盤	青森	"	"
103	安治川大橋	"	3	地盤・橋脚	大阪	大阪国道工事	36-3	803	山形	"	1	地盤	山形	"	"
104	新利根川橋	SMAC-B2	2	地盤・橋脚	埼玉	宇都宮国道	42-2	804	金沢松任	"	1	地盤	石川	"	"
105	真崎大橋	"	2	地盤・橋脚	岩手	三陸国道	46-2	805	岡山	"	1	地盤	岡山	"	"
106	草加	SMAC-B2	2	地盤・橋脚	埼玉	大宮国道	43-3	806							
107	大磯	"	2	地盤・橋脚	神奈川			9. 土木研究所							
108	越前川橋	"	2	地盤・橋脚	新潟			901	土研千歳支所	SMAC-B2	1	地盤	千葉	土研(千葉)	42-3
109	木曾川橋	"	2	地盤・橋脚	岐阜			902	西新井橋	"	3	地盤・橋脚	東京	"	37-3
110	秋山橋	"	2	地盤・橋脚	山形			903	昭和橋	"	2	地盤・橋脚	新潟	"	40-1
111	美津橋	"	2	地盤・橋脚	宮崎			904	新大橋	"	2	地盤・橋脚	静岡	"	39-12
112	紀ノ川大橋	SMAC-B2	2	地盤・橋脚	和歌山	和歌山工事	42-3	905	高合橋	"	3	地盤・橋脚	長野	"	40-12
113	平和橋	"	2	地盤・橋脚	岩手	岩手工事	41-3	906	土研試験所	"	1	地盤	茨城	鹿島試験所	42-3
114	尾崎高瀬橋	"	2	地盤・橋脚	兵庫	兵庫国道	38-3	907	平大橋	"	2	地盤・橋脚	福島	土研(千葉)	43-1
115	長川橋	"	2	地盤・橋脚	茨城			908	本庄大橋	"	2	地盤・橋脚	秋田	"	"
116								909	宮古市	"	2	地盤・橋脚	岩手	"	"
2. 国道二環								910	八戸市	"	2	地盤・橋脚	青森	"	"
201	小谷橋	SMAC-B2	2	地盤・橋脚	福島	会津若松建設	40-3	911	高松市	"	2	地盤・橋脚	香川	"	"
202	魚沼橋	"	2	地盤・橋脚	新潟	小千谷土木	40-12	912	宮崎市	"	2	地盤・橋脚	宮崎	"	"
203	横倉大橋	"	2	地盤・橋脚	長野	飯山建設	40-10	913							
204	新八幡橋	"	2	地盤・橋脚	愛知	半田土木	40-11	10. 日本道路公団							
205	石巻大橋	"	2	地盤・橋脚	宮城	小森土木	40-3	1001	東名富士川橋	"	2	地盤・橋脚	静岡	静岡局	42-3
206	小見川大橋	"	2	地盤・橋脚	千葉			1002	東名名古屋橋	SMAC-D	2	地盤・橋脚	山梨	八王子局	42-3
207	高津大橋	SMAC-B2	2	地盤・橋脚	島根	益田土木	42-3	1003	堀川橋	SMAC-B2	2	地盤・橋脚	東京	"	42-3
208	鶴崎大橋	"	2	地盤・橋脚	大分			1004	久保橋	"	2	地盤・橋脚	山梨	"	42-3
209								1005	久保橋	"	2	地盤・橋脚	山梨	"	42-3
3. 地方道環								1006	鶴川橋	"	2	地盤・橋脚	山梨	"	42-3
301	雄平橋	SMAC-B2	2	地盤・橋脚	秋田	雄勝土木	41-12	1007	東名豊川橋	"	2	地盤・橋脚	愛知	名古屋局	43-3
302	開北橋	"	2	地盤・橋脚	宮城	石巻土木	41-3	1008	蒲戸大橋	SMAC-E2	3	地盤・橋脚	高知	高知局	46-5
303	河北橋	"	2	地盤・橋脚	山形	寒河江建設	40-3	1009	東名白川橋	SMAC-D	2	地盤・橋脚	神奈川	"	44-3
304	伊達橋	"	2	地盤・橋脚	福島	保原土木	40-10	1010							
305	港大橋	"	2	地盤・橋脚	兵庫	豊岡土木	40-3	11. 首都高速道路公団							
306	砂見橋	"	2	地盤・橋脚	鳥取	出雲土木	41-3	1101	目黒区大橋1丁目	SMAC-E2	2	地盤・橋脚	3号線	工務部	47-1
307	五台山橋	"	2	地盤・橋脚	高知	高知土木	41-3	1102	目黒区大橋2丁目	"	3	地盤・橋脚	4号線	"	47-1
308	飯島橋	"	2	地盤・橋脚	愛媛	宇和島土木	41-3	1103	墨田区大橋1丁目	"	2	地盤・橋脚	6号線	"	47-1
309	乙女橋	"	2	地盤・橋脚	熊本	矢部土木	40-3	1104							
310	平井大橋	"	3	地盤・橋脚	東京	第5建設	40-8	1105							
311	豊後大橋	"	2	地盤・橋脚	三重	伊勢土木	41-9	1106							
312	赤木橋	"	2	地盤・橋脚	和歌山	新宮土木	41-9	1107							
313	石鏡橋	"	2	地盤・橋脚	愛媛	丹原土木	42-3	1108	一ノ橋高架橋	SMAC-B2	2	地盤・橋脚	2号線	工務部	42-7
314	清川橋	"	2	地盤・橋脚	山形	庄内支庁	42-10	1109	羽田高松トンネル	"	3	地盤・橋脚	1号線	"	43-2
315	新保橋	"	2	地盤・橋脚	福井			1110							
316	津軽大橋	SMAC-D	2	地盤・橋脚	青森	五所川原土木	45-3	1111							
317	新田橋	SMAC-B2	2	地盤・橋脚	徳島	川島土木	42-3	12. 阪神高速道路公団							
318	新田橋	"	2	地盤・橋脚	福岡			1201	西横濱高架橋	SMAC-B2	2	地盤・橋脚	1号線	管理保全課	40-5
319	西港大橋	SMAC-B2	2	地盤・橋脚	長野	伊那建設	41-12	1202	旭区生江町	"	2	地盤・橋脚	3号線	"	"
320	厚岸大橋	SMAC-E2	2	地盤・橋脚	北海道	北海道庁	46-11	1203	南津守高架橋	SMAC-D	2	地盤・橋脚	4号線	管理保全課	45-3
4. 有料道路環								1204							
401	琵琶湖大橋	SMAC-B2	1	橋脚	滋賀	大津土木	39-9	1205							
402								13. 北海道開発局							
403								1301	土木試験所	"	0	地盤・橋脚	石狩	開発局	42-12
5. 道路企画環								1302	千代田橋	SMAC-B2	3	地盤・橋脚	十勝	"	41-11
501	東京湾(富津側)	SMAC-B2	1	地盤・橋脚	千葉	東京湾岸道路	40-10	1303	新石狩大橋	"	2	地盤・橋脚	石狩	"	41-11
502	関門架橋	"	2	地盤・橋脚	福岡	北九州国道	40-10	1304	大栗毛橋	"	2	地盤・橋脚	札幌	"	42-10
503	東京湾(観音側)	"	1	地盤・橋脚	神奈川	東京湾岸道路	42-3	1305	祝賀橋	"	2	地盤・橋脚	日高	"	42-12
504								1306	旭川大橋	"	2	地盤・橋脚	石狩	"	43-11
6. 開港環								1307	七條橋	"	2	地盤・橋脚	渡島	"	43-12
601	室敷ダム	SMAC-B2	1	堤防・橋脚	富山	富山支所(県)	36-8	1308	石狩河口橋	"	3	地盤・橋脚	石狩	"	43-3
602	横山ダム	"	2	堤防・橋脚	岐阜	(県)	37-7	1309	無意根大橋	SMAC-D	2	地盤・橋脚	"	"	44-10
603	狭谷ダム	SMAC-A	1	堤防・橋脚	岐阜	(県)	33-3	1310	斜里大橋	SMAC-D2	2	地盤・橋脚	"	"	45-3
604	天ヶ瀬ダム	SMAC-B2	1	堤防・橋脚	京都	(県)	39-8	1311	樽谷橋	SMAC-D	2	地盤・橋脚	後志	"	45-11
605	花田ダム	"	2	堤防・橋脚	長野	(県)	41-12	1312	湯沢橋	SMAC-E2	1	地盤・橋脚	"	"	46-11
606	鶴田ダム	SMAC-D	2	堤防・橋脚	鹿児島	(県)	42-12	1313							
607	金山ダム	"	1	堤防・橋脚	北海道	(建設)		1314							
608								14. 水資源開発公団							
609								1401	利根川河口堤	SMAC-D	2	地盤・堤防	千葉	河口堤管理所	44-3
610	小沢ダム	SMAC-D	2	堤防・橋脚	長野	管理所(建設)	43-12	1402							
611								1403							
612	君ヶ野ダム	"	1	堤防・橋脚	三重			15. 本州四国連絡橋公団							
613								1501	岩屋	SMAC-B	1	地盤・橋脚	兵庫	本四公団	37-10
7. 治水環								1502	明石	"	1F	地盤・橋脚	"	"	"
701	淀川堤防	SMAC-B2	2	堤防・本体	大阪	淀川工事	41-3	1503	大三島	"	B	地盤・橋脚	愛媛	"	38-3
702	東京湾南堤	"	1	堤防・本体	東京			1504	島門	"	"	地盤・橋脚	徳島	"	38-3
703	関分分水堤	SMAC-E2	2	堤防・本体	新潟	信濃川下流工事	46-11	1505	香ノ州	"	"	地盤・橋脚	香川	"	38-3
704	岡山山	"	1	堤防・本体	岡山			1506	高松	"	1F	地盤・橋脚	"	"	"
705								1507							

設置年月欄が空白の場合は未設置である。

Fig. 2 Sites of Strong-Motion Seismograph Stations for Electro-Magnetic Type Seismographs
- Observation Network of Ground Motions and Earthquake Responses of Highway Bridges, Dams, and Embankments -
as of March, 1972

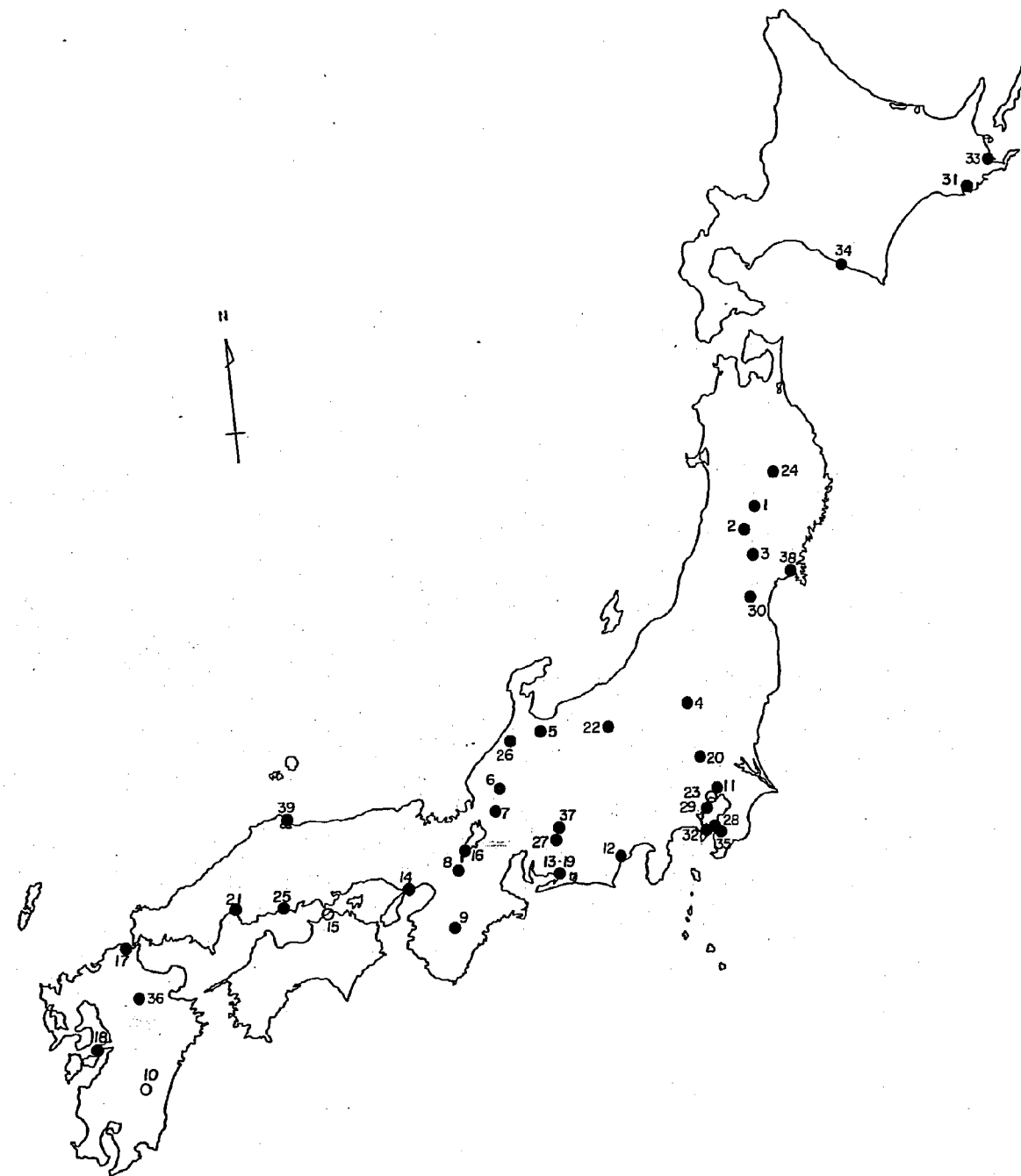


表-2 電磁式強震計設置位置一覧表

昭和47年3月

番号	観測所名	成分数	維持管理	設置年
1	湯田ダム	6	東北地建湯田ダム管理所	1965
2	皆瀬ダム	6	秋田県皆瀬ダム管理事務所	1963
3	鳴子ダム	8	東北地建鳴子ダム管理所	1957
4	川俣ダム	10	関東地建川俣ダム管理所	1964
5	室牧ダム	12	富山県室牧ダム管理事務所	1961
6	笹生川ダム	10	福井県笹生川ダム管理事務所	1966
7	横山ダム	12	中部地建横山ダム管理所	1962
8	天ヶ瀬ダム	12	近畿地建天ヶ瀬ダム管理支所	1964
9	猿谷ダム	5	近畿地建猿谷ダム管理所	1957
10	△綾北ダム	6	宮崎県綾北ダム管理事務所	1961
11	新葛飾橋	6	関東地建首都圏道工事事務所	1967
12	駿河大橋	6	中部地建静岡県道工事事務所	1959
13	△吉田大橋	6	中部地建名古屋県道工事事務所	1959
14	本州四国・垂水(地中)	16	本州四国連絡橋公団	1972
15	△" (砂弥島)	3	土木研究所	1962
16	琵琶湖大橋	6	滋賀県大津土木事務所	1963
17	若戸大橋	18	日本道路公団	1961
18	有明海堤切堤(大矢野島)	3	九州地建熊本工事事務所	1963
19	豊川放水路堤防	8	中部地建豊橋工事事務所	1966
20	利根川堤防	9	土木研究所	1968
21	太田川堤防	8	中国地建太田川工事事務局	1965
22	長野(落合橋付近地中)	9	土木研究所	1966
23	△平井大橋	8	東京都第五建設事務所	1967
24	四十四田ダム	12	東北地建四十四田ダム管理所	1967
25	尾道大橋	11	日本道路公団	1968
26	厚川ダム	10	石川県厚川ダム管理事務所	1968
27	矢作ダム	13	中部地建矢作ダム管理所	1970
28	富津岬(地中)	9	関東地建東京湾岸道路調査事務所	1970
29	浮島公園(地中)	12	"	1970
30	釜房ダム	6	東北地建釜房ダム管理所	1970
31	厚岸大橋	10	北海道庁	1971
32	観音崎(地中)	9	関東地建東京湾岸道路調査事務所	1971
33	別海橋(地中)	6	北海道開発局	1971
34	静内橋(地中)	6	"	1971
35	郡ダム(地中)	6	千葉県開発庁	1972
36	松原下釜ダム	8	九州地建松原下釜ダム管理所	1971
37	阿木川ダム	3	阿木川ダム調査事務所	1972
38	新飯野川橋	6	東北地建仙台工事事務所	1972
39	境水道大橋	11	日本道路公団	1972

△印の観測所は観測休止中。

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Table 5. Number of Records Obtained from Stations with Strong-Motion Accelerographs, SMAC in 1971

Station Number	Station	Number of Instruments		Total Number of Records			Number of Records Printed in this Report		
		Ground	Structure	Ground	Structure	Total	Ground	Structure	Total
101	Shinkatsushika Bridge	1	1	6	0	6	2	0	2
102	Yoneyama Bridge	1	2	1	2	3	1	2	3
104	Shintonegawa Bridge	1	1	3	2	5	2	1	3
105	Masaki Bridge	1	1	1	1	2	1	1	2
112	Kinokawa Bridge	1	1	1	0	1	1	0	1
113	Wagagawa Bridge	1	1	1	1	2	0	0	0
114	Amagasaki Bridge	1	1	1	0	1	1	0	1
202	Uonuma Bridge	1	1	1	1	2	1	1	2
203	Yokokurasawa Bridge	1	1	1	1	2	1	1	2
204	Shinyawata Bridge	1	1	5	4	9	2	1	3
205	Ishiseto Bridge	1	1	0	1	1	0	1	1
302	Kaihoku Bridge	1	1	3	0	3	2	0	2
303	Kahoku Bridge	1	1	3	0	3	1	0	1
304	Date Bridge	1	1	7	7	14	7	7	14
305	Minato Bridge	1	1	1	0	1	1	0	1
311	Toyohama Bridge	1	1	1	1	2	1	1	2
312	Akagi Bridge	1	1	1	1	2	1	1	2
319	Shitoku Bridge	1	1	1	1	2	1	1	2
501	Tokyo Bay (Futtu Cape)	1	0	15	0	15	1	0	1
503	Tokyo Bay (Kannonzaki)	1	0	1	0	1	1	0	1
701	Yodogawa Embankment	1	1	1	1	2	1	1	2
901	P. W. R. I. Chiba Branch	1	0	5	0	5	3	0	3
902	Nishiarai Bridge	1	2	1	4	5	1	3	4
903	Showa Bridge	1	1	1	1	2	1	1	2
904	Shintonegawa Bridge	1	1	3	4	7	1	1	2
905	Ochiai Bridge	2	1	2	4	6	2	4	6
906	P. W. R. I. Kashima Branch	1	0	2	0	2	2	0	2
907	Taira Bridge	1	1	15	6	21	6	3	9
1001	Ajigawa Bridge	1	1	0	1	1	0	1	1
1004	Sakaigawa Bridge	1	1	1	1	2	1	1	2
1006	Tsurukawa Bridge	1	1	1	1	2	1	1	2
1401	Tonegawa Estuary Dam	1	1	1	0	1	1	0	1
Total		33	30	87	46	133	48	34	82

(Note) Each instrument has 3 components: 1 vertical and 2 horizontal.

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Table 6. In 1971 Earthquake Origins

Earthquake Number	Earthquake Time and Date				Location of Epicenter				Magnitude	Maximum Intensity	Record Number
	Year	Month	Day	Time	Epicentral Region	Longitude	Latitude	Depth			
71001	1971	1	3	19:11	S off Izu Pen	138°39'	33°36'	50	5.5	III: Mishima	503-Gr-15
71002	1971	1	5	06:09	Off S Coast of Aichi Pref.	137°10'	34°26'	40	6.1	IV: Nagoya	114-Gr-8, 319-P-5, 112-Gr-23, 701-E-8, 305-Gr-6, 701-Gr-7, 311-Gr-6, 904-Gr-4, 311-P-7, 904-P-3 319-Gr-5,
71003	1971	1	6	15:04	Off Ibaraki Pref.	141°09'	36°22'	40	5.5	IV: Mito	304-Gr-24, 906-Gr-11, 304-P-29, 907-Gr-47 902-P9-23,
71004	1971	1	7	02:40	Northern Chiba Pref.	140°16'	35°43'	80		III: Tokyo	902-P9-24
71005	1971	1	11	04:47	Off Fukushima Pref.	141°22'	37°00'	50	4.1	I: Fukushima	907-Gr-48, 907-A-15
71006	1971	1	29	15:35	SW Ibaraki Pref.	139°47'	36°03'	90		II: Tokyo	101-Gr-13, 501-Gr-53
71007	1971	2	3	16:50	SE Yamanashi Pref.	138°57'	35°27'	20	4.2	II: Mishima	904-Gr-5, 904-P-4
71008	1971	2	7	01:49	Off Ibaraki Pref.	141°01'	35°53'	40	4.5	II: Choshi	501-Gr-54
71009	1971	2	9	18:44	E off Miyakejima	140°14'	34°07'	40	4.7	II: Hachijojima	501-Gr-55
71010	1971	2	12	00:17						II: Wakayama	204-Gr-10, 204-P-5
71011	1971	2	13	05:06						III: Wakayama	204-Gr-11, 204-P-6
71012	1971	2	26	04:27	SW Niigata Pref.	138°21'	37°08'	00	5.5	IV: Takada	102-Gr-16, 203-Gr-27 102-P-5, 203-P-29 102-FL-2, 903-Gr-7 202-Gr-15, 903-P-14 202-P-10,
71013	1971	3	10	15:46	Central Kyoto Pref.	135°31'	35°04'	00		I: Kyoto	1001-P2-2
71014	1971	3	12	15:01	Western Shizuoka Pref.	137°55'	34°46'	00	3.9	II: Hamamatsu	204-Gr-12, 904-P-5 204-P-7,
71015	1971	3	18	15:24	Coast of Fukushima Pref.	141°02'	37°15'	60	3.9	II: Fukushima	304-Gr-25, 907-Gr-49 304-P-30,
71016	1971	3	20	10:13	Near Matsushiro	138°12'	36°34'	10	4.2	IV: Nagano	905-B-267, 905-C-120 905-A-427,
71017	1971	3	22	07:18	Northern Aichi Pref.	137°04'	35°05'	40	4.9	III: Nagoya	204-Gr-13, 904-Gr-6, 204-P-8, 904-P-6
71018	1971	3	22	19:40	Off Fukushima Pref.	142°03'	37°17'	10	5.4	III: Fukushima	101-Gr-14, 304-P-31, 304-Gr-26, 907-Gr-50

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Table 6. (Continued)

Earthquake Number	Earthquake Time and Date				Location of Epicenter				Magnitude	Maximum Intensity	Record Number
	Year	Month	Day	Time	Epicentral Region	Longitude	Latitude	Depth			
71019	1971	3	26	01:20	Off Miyagi Pref.	142°15'	38°24'	40	5.5	III: Onahama	302-Gr-24, 501-Gr-56, 303-Gr-16, 907-Gr-51 304-Gr-27,
71020	1971	3	26	17:10	Off Miyagi Pref.	142°09'	38°27'	30	3.8	I: Ofunato	907-Gr-52
71021	1971	4	5	03:39	Off Miyagi Pref.	142°12'	38°21'	50	6.0	III: Sendai	101-Gr-15, 304-P-32, 302-Gr-25, 907-Gr-53, 303-Gr-17, 907-A-16 304-Gr-28,
71022	1971	4	5	04:30	S Coast of Wakayama Pref.	135°29'	33°33'	00	4.0	III: Shionomisaki	312-Gr-2, 312-P-1
71023	1971	5	25	22:00	SE off Miyazaki Pref.	131°30'	31°20'	00	5.8	IV: Miyazaki	205-P-21
71024	1971	6	3	20:04	Off Fukushima Pref.	141°09'	37°05'	50	4.5	II: Chiba	907-Gr-54, 907-A-17
71025	1971	6	13	13:06	Off Ibaraki Pref.	140°58'	36°14'	40	5.3	III: Chiba	501-Gr-57, 907-Gr-55
71026	1971	6	21	07:57	SW Ibaraki Pref.	139°48'	36°11'	60	4.9	III: Mito	104-Gr-19, 501-Gr-58
71027	1971	7	5	09:38	E off Chiba Pref.	140°32'	35°23'	10	4.5	III: Chiba	501-Gr-59, 901-Gr-46
71028	1971	7	8	02:41	Off Ibaraki Pref.	141°20'	36°49'	50	4.7	II: Fukushima	304-P-33, 907-Gr-56, 304-Gr-29
71029	1971	7	23	07:07	Eastern Yamanashi Pref.	138°58'	35°33'	10	5.3	III: Yokohama	101-Gr-16, 1004-Gr-2, 104-Gr-20, 1004-P-2, 104-P-11, 1006-Gr-3, 501-Gr-60, 1006-P-1 901-Gr-47,
71030	1971	7	27	08:08	Southern Ibaraki Pref.	140°08'	35°56'	80		III: Tokyo	101-Gr-17, 902-Gr-27, 501-Gr-61, 902-P7-46 901-Gr-48,
71031	1971	7	29	15:21	Off Fukushima Pref.	141°44'	37°06'	60	4.3	I: Fukushima	501-Gr-62
71032	1971	7	30	20:55	Off Ibaraki Pref.	141°19'	36°36'	40	4.6	I: Mito	907-Gr-57
71033	1971	7	31	16:08	SW Ibaraki Pref.	139°54'	36°13'	70		I: Utsunomiya	907-Gr-58
71034	1971	8	2	16:25	Off Erimomisaki	143°42'	41°14'	60	7.0	V: Urakawa	105-Gr-1, 303-Gr-18, 105-P-1, 304-P-34, 113-Gr-1, 501-Gr-63, 113-P-2, 907-Gr-59 302-Gr-26,
71035	1971	8	12	04:02	Northwestern Chiba Pref.	140°05'	35°45'	60	4.8	III: Tokyo	101-Gr-18, 901-Gr-49 501-Gr-14,
71036	1971	8	26	19:23	Central Wakayama Pref.	135°18'	33°59'	10	4.1	II: Wakayama	204-Gr-14
71037	1971	9	2	17:06	F off Chiba Pref.	140°30'	35°06'	70		III: Katsuura	501-Gr-65

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Table 6. (Continued)

[illegible]

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Table 7. Strong-Motion Seismograph Results

Earthquake Number	Ground					Structure					A Remarks Column					
	Page	Record Number	Max. Amplitude (gals)			Page	Record Number	Max. Amplitude (gals)								
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B						
101. Shinkatsushika Bridge																
71006		101-Gr-13	1.6	*	1.9											
71018		101-Gr-14	3.1	*	3.8											
71021		101-Gr-15	3.1	*	2.5											
71029		101-Gr-16	2.5	*	1.9											
71030	27	101-Gr-17	6.3	1.6	6.3											
71035	30	101-Gr-18	5.0	1.6	6.3											
Earth-quake Number	Ground					Structure (Pier)					Structure (Foundation Level)					A Remarks Column
	Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			
			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B	
102. Yoneyama Bridge																
71012	28	102-Gr-16	106.3	36.3	115.6	29	102-P-5	73.1	26.3	27.5	30	102-FL-2	36.3	25.6	57.5	
Earthquake Number	Ground							Structure			A Remarks Column					
	Page	Record Number	Max. Amplitude (gals)			Page	Record Number	Max. Amplitude								
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B						
104. Shintonegawa Bridge																
71026	31	104-Gr-19	24.4	10.0	11.9											
71029		104-Gr-20	2.8	2.5	3.1		104-P-11	2.5	*	3.1						
71038	31	104-Gr-21	9.4	3.1	10.6	32	104-P-12	8.8	1.6	6.3						
105. Masaki Bridge																
71034	86	105-Gr-1	32.8	17.9	25.3	89	105-P-1	26.3	11.9	41.7						
112. Kinokawa Bridge																
71002	32	112-Gr-23	7.5	3.1	7.5											

*: Not measurable

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Table 7. (Continued)

Earthquake Number	Ground					Structure					A Remarks Column
	Page	Record Number	Max. Amplitude (gals)			Page	Record Number	Max. Amplitude (gals)			
			Hori. A	Vertical	Bori. B			Hori. A	Vertical	Hori. B	
113. Wagagawa Bridge											
71034		113-Gr-1	*	*	*		113-P-2	*	*	*	
114. Amagasaki Bridge											
71002	33	114-Gr-8	23.1	2.5	11.9						
202. Uonuma Bridge											
71012	34	202-Gr-15	81.3	12.5	68.1	35	202-P-10	57.5	20.6	121.6	
203. Yokokurasawa Bridge											
71012	36	203-Gr-27	37.5	20.0	26.3	37	203-P-29	56.3	23.6	74.4	
204. Shinyawata Bridge											
71010		204-Gr-10	*	*	*		204-P-5	3.4	*	5.6	
71011		204-Gr-11	*	*	*		204-P-6	3.1	*	4.7	
71014		204-Gr-12	*	*	*		204-P-7	1.6	*	3.8	
71017	38	204-Gr-13	23.8	6.3	12.5	39	204-P-8	23.8	3.1	11.9	
71036	38	204-Gr-14	4.4	3.1	5.0						
205. Ishiseto Bridge											
71023						40	205-P-21	6.3	2.2	5.0	
302. Kaihoku Bridge											
71019		302-Gr-24	3.1	1.3	3.8						
71021	40	302-Gr-25	6.9	3.1	11.3						
71034	41	302-Gr-26	13.1	3.1	7.5						
303. Kahoku Bridge											
71019		303-Gr-16	*	*	*						
71021	42	303-Gr-17	6.3	*	3.1						
71034		303-Gr-18	4.7	*	3.1						

*: Not measurable

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Table 7. (Continued)

Earthquake Number	Ground					Structure					A Remarks Column
	Page	Record Number	Max. Amplitude (gals)			Page	Record Number	Max. Amplitude (gals)			
			Hori. A	Vertical	Bori. B			Hori. A	Vertical	Hori. B	
304. Date Bridge											
71003	41	304-Gr-24	3.8	*	3.1	43	304-P-29	7.5	3.1	11.3	
71015	44	304-Gr-25	3.8	*	3.1	44	304-P-30	10.6	3.1	13.8	
71018	45	304-Gr-26	6.3	3.1	4.7	45	304-P-31	3.8	2.5	9.4	
71019	46	304-Gr-27	8.9	3.8	3.1						
71021	47	304-Gr-28	20.0	3.1	11.9	48	304-P-32	10.0	3.1	25.6	
71028	46	304-Gr-29	7.5	3.1	11.3	49	304-P-33	11.3	2.8	9.4	
71034						50	304-P-34	5.6	*	6.9	
71038	51	304-Gr-30	12.5	3.1	12.5	52	304-P-35	11.3	2.5	20.6	
305. Minato Bridge											
71002	53	305-Gr-6	12.5	7.5	11.3						
311. Toyohama Bridge											
71002	54	311-Gr-6	130.0	36.9	123.8	55	311-P-7	246.3	46.3	261.3	
312. Akagi Bridge											
71022	50	312-Gr-2	11.5	3.1	12.5	56	312-P-1	6.3	*	13.8	
319. Shitoku Bridge											
71002	56	319-Gr-5	12.5	3.8	11.9	57	319-P-5	67.5	3.8	25.0	

*: Not measurable

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Table 7. (Continued)

Earthquake Number	Ground					Structure					A Remarks Column
	Page	Record Number	Max. Amplitude			Page	Record Number	Max. Amplitude			
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B	
501. Tokyo Bay (Futtu Cape)											
71006		501-Gr-53	*	*	*						
71008		501-Gr-54	*	*	*						
71009		501-Gr-55	*	*	*						
71019		501-Gr-56	*	*	*						
71025		501-Gr-57	*	*	*						
71026		501-Gr-58	*	*	*						
71027		501-Gr-59	*	*	*						
71029	58	501-Gr-60	16.9	3.1	6.9						
71030		501-Gr-61	1.6	*	2.5						
71031		501-Gr-62	*	*	*						
71034		501-Gr-63	0.6	*	1.0						
71035		501-Gr-64	0.6	0.6	1.6						
71037		501-Gr-65	2.5	*	0.9						
71038		501-Gr-66	*	*	*						
71040		501-Gr-67	*	*	*						
503. Tokyo Bay (Kannonzaki)											
71001	59	503-Gr-15	5.0	2.5	5.0						
Earthquake Number	Ground					Structure (Embankment)					A Remarks Column
	Page	Record Number	Max. Amplitude (gals)			Page	Record Number	Max. Amplitude (gals)			
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B	
701. Yodogawa Embankment											
71002	60	701-Gr-7	18.8	*	14.4	61	701-E-8	18.1	5.6	23.8	

*: Not mesurable

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Table 7. (Continued)

Earthquake Number	Ground					Structure					A Remarks Column					
	Page	Record Number	Max. Amplitude (gals)			Page	Record Number	Max. Amplitude (gals)								
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B						
901. P. W. R. I. , Chiba Branch																
71027	59	901-Gr-46	6.9	3.1	10.9											
71029	62	901-Gr-47	19.4	2.5	18.8											
71030		901-Gr-48	5.0	0.9	5.0											
71035		901-Gr-49	6.3	3.8	6.9											
71040	62	901-Gr-50	9.4	3.1	6.9											
Earth-quake Number	Ground					Structure (Crest of Pier 7)					Structure (Crest of Pier 9)					A Remarks Column
	Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			
			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B	
902. Nishiarai Bridge																
71003											63	902-P9-23	5.6	2.5	6.9	
71004												902-P9-24	2.5	*	*	
71030	64	902-Gr-27	11.3	5.0	17.5	65	902-P7-46	10.0	6.3	7.5						
71040						63	902-P7-47	8.1	2.5	6.3						
Earthquake Number	Ground					Structure					A Remarks Column					
	Page	Record Number	Max. Amplicate (gals)			Page	Record Number	Max. Amplicate (gals)								
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B						
903. Showa Bridge																
71012	66	903-Gr-7	6.3	3.1	4.1	67	903-P-14	13.8	4.4	37.5						
904. Shintenryugawa Bridge																
71002	68	904-Gr-4	23.1	13.1	36.9	69	904-P-3	41.3	5.0	40.6						
71007		904-Gr-5	5.6	2.5	3.1		904-P-4	7.8	2.5	5.6						
71014							904-P-5	*	*	1.3						
71017		904-Gr-6	1.9	*	2.5		904-P-6	1.3	*	3.1						

*: Not measurable

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Table 7. (Continued)

Earth-quake Number	Ground (Ochiai Bridge)					Structure (Crest of Pier 11)					Ground (Nagano City)					A Remarks Column
	Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			
			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B	
905. Ochiai Bridge																
71016	66	905-B-267	61.9	8.1	19.4	70	905-A-427	50.0	5.9	30.6	71	905-C-120	26.3	4.7	29.4	.
71042	72	905-B-268	37.5	16.3	75.0	73	905-A-428	76.3	15.0	36.3	74	905-C-121	48.8	13.8	47.5	
Earthquake Number	Ground					Structure					A Remarks Column					
	Page	Record Number	Max. Amplitude (gals)			Page	Record Number	Max. Amplitude (gals)								
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B						
906. P.W.R.I., Kashima Experiment Laboratory																
71003	70	906-Gr-11	6.9	0.6	6.3											
71040	75	906-Gr-12	55.6	12.5	137.5											
907. Taira Bridge																
71003	76	907-Gr-47	10.6	6.9	14.4											
71005		907-Gr-48	6.9	4.1	3.1		907-A-15	*		1.3	5.0					
71015		907-Gr-49	*	1.6	0.6											
71018		907-Gr-50	3.8	3.8	3.4											
71019	77	907-Gr-51	6.9	3.8	4.4											
71020		907-Gr-52	*	*	*											
71021	78	907-Gr-53	20.0	6.3	25.0	77	907-A-16	12.5		3.1	15.0					
71024	79	907-Gr-54	19.4	3.8	4.4	79	907-A-17	3.1		1.3	2.5					
71025		907-Gr-55	3.1	2.2	6.3											
71028		907-Gr-56	5.0	3.1	*											
71032		907-Gr-57	3.1	2.8	4.4											
71033		907-Gr-58	2.5	3.8	3.1											
71034	80	907-Gr-59	8.1	8.8	6.9											
71038	81	907-Gr-60	4.9	25.0	31.3	82	907-A-18	12.5		12.5	16.3					
71039		907-Gr-61	1.6	1.3	2.8		907-A-19	6.3		3.1	3.4					
71041							907-A-20	6.9		3.1	5.9					

*: Not measurable

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Table 7. (Continued)

Earth-quake Number	Ground					Structure (Crest of Pier 1)					Structure (Crest of Pier 2)					A Remarks Column
	Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			Page	Record Number	Max. Amp. (gals)			
			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B			Hori. A	Vert.	Hori. B	
1001. Ajigawa Bridge																
71013											82	1001-P2-2	3.8	1.9	22.5	
Earthquake Number	Ground					Structure					A Remarks Column					
	Page	Record Number	Max. Amplitude			Page	Record Number	Max. Amplitude								
			Hori. A	Vertical	Hori. B			Hori. A	Vertical	Hori. B						
1004. Sakaigawa Bridge																
71029	83	1004-Gr-2	41.9	9.4	*	84	1004-P-2	56.3	13.8	95.6						
1006. Tsurukawa Bridge																
71029	83	1006-Gr-3	68.8	18.8	67.5	85	1006-P-1	61.3	42.5	196.9						
1401. Tonegawa Estuary Dam																
71040	92	1401-Gr-1	107.5	19.4	102.8											

*: Not measurable

TM-82.FT-7.F-252

Fig. 3 71002 OFF COAST OF AICHI PREF.

STATION NAME OF STRUCTURE	RECORD NUMBER	MAX. AMPLITUDE (GALS)			EARTHQUAKE TIME AND DATE
		HORI. A	VERTICAL	HORI. B	
KINDAKAWA BRIDGE	112 GR-1	23	7.5	3.1	1971.01.05.08.09
AMAGASAKI BRIDGE	114 GR-1	8	23.1	2.5	
MINATO BRIDGE	305 GR-1	6	12.5	7.5	LOCATION OF EPICENTER
TOYOHAMA BRIDGE	311 GR-1	6	130.0	36.9	
TOYOHAMA BRIDGE	311 PI-1	7	246.3	48.3	LO=137 10 LA= 34 26
SHITOKU BRIDGE	319 GR-1	5	12.5	3.8	
SHITOKU BRIDGE	319 PI-1	5	67.5	3.8	DEPTH, MAGNITUDE 40.0 KM, M= 6.1
YODOGAWA EMBANKMENT	701 GR-1	7	18.8	0.0	
YODOGAWA EMBANKMENT	701 ES-1	6	18.1	5.6	(* E.Q. CENTER)
SHINTENRYUGAWA BRIDGE	904 GR-1	4	23.1	13.1	

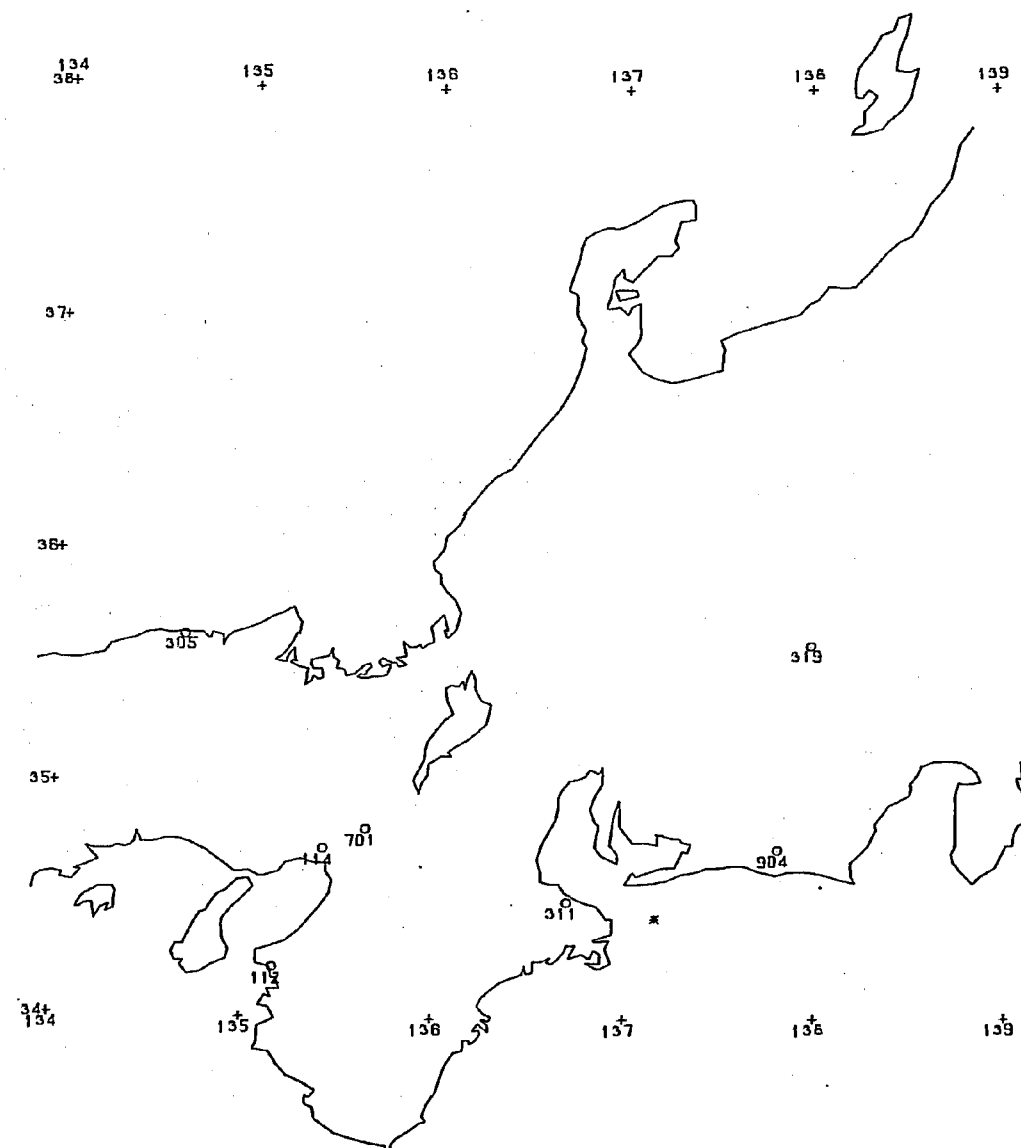
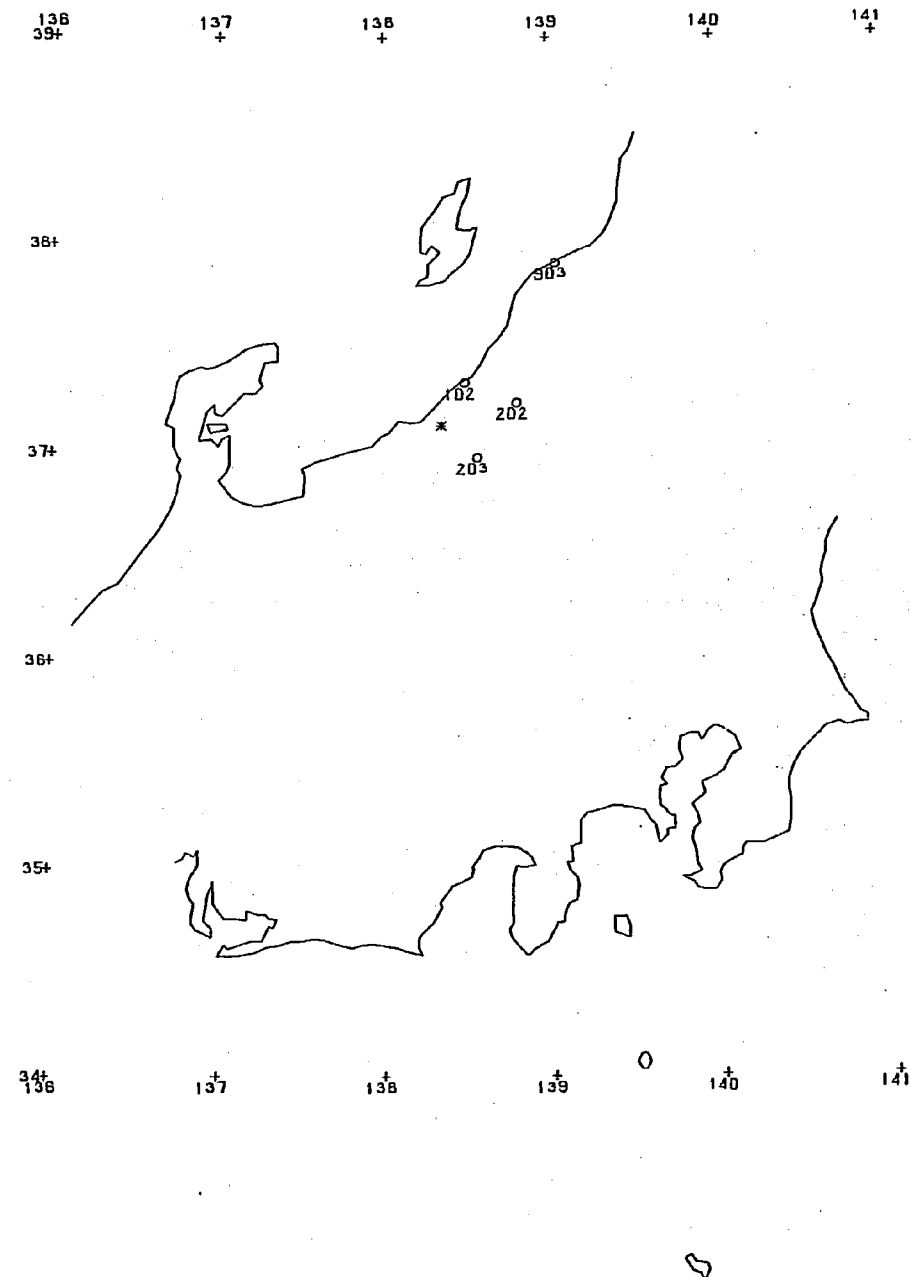


Fig. 4 71012 SW NIIGATA PREF.

STATION NAME OF STRUCTURE	RECORD NUMBER	MAX. AMPLITUDE (GALS)			EARTHQUAKE TIME AND DATE
		HORI. A	VERTICAL	HORI. B	
YONEYAMA BRIDGE	102 GR-1	18	106.3	36.3	19 1.02.26.04.27
YONEYAMA BRIDGE	102 PI-1	5	73.1	26.3	
YONEYAMA BRIDGE	102 PI-2	2	36.3	25.6	LOCATION OF EPICENTER
UDNUMA BRIDGE	202 GR-1	15	81.3	12.5	
UDNUMA BRIDGE	202 PI-1	10	57.5	20.6	LO=138 21 LA= 37 8
YOKOKURASAWA BRIDGE	203 GR-1	27	37.5	20.0	
YOKOKURASAWA BRIDGE	203 PI-1	29	56.3	23.8	DEPTH, MAGNITUDE 9.0 KM, M= 5.5
SHOWA BRIDGE	903 GR-1	7	6.3	3.1	
SHOWA BRIDGE	903 PI-1	14	13.8	4.4	(* E.Q. CENTER)



TM-82.FT-7.F-253

Fig. 5 71021 OFF MIYAGI PREF.

STATION NAME OF STRUCTURE	RECORD NUMBER	MAX. AMPLITUDE (GALS)			EARTHQUAKE TIME AND DATE
		HORI. A	VERTICAL	HORI. B	
SHINKATSUSHIKA BRIDGE	101 GR-1 15	3.1	0.0	2.5	1971.04.05.03.39
KAIHOKU BRIDGE	302 GR-1 25	6.9	3.1	11.3	
KAHOKU BRIDGE	303 GR-1 17	6.3	0.0	3.1	
DATE BRIDGE	304 GR-1 28	20.0	3.1	11.9	LOCATION OF EPICENTER LO=142 12 LA= 38 21
DATE BRIDGE	304 PI-1 32	10.0	3.1	25.7	
TAIRA BRIDGE	907 GR-1 53	20.0	6.3	25.0	
TAIRA BRIDGE	907 AB-1 16	12.5	3.1	15.0	DEPTH, MAGNITUDE 50.0 KM, M= 6.0 (* E.Q. CENTER)

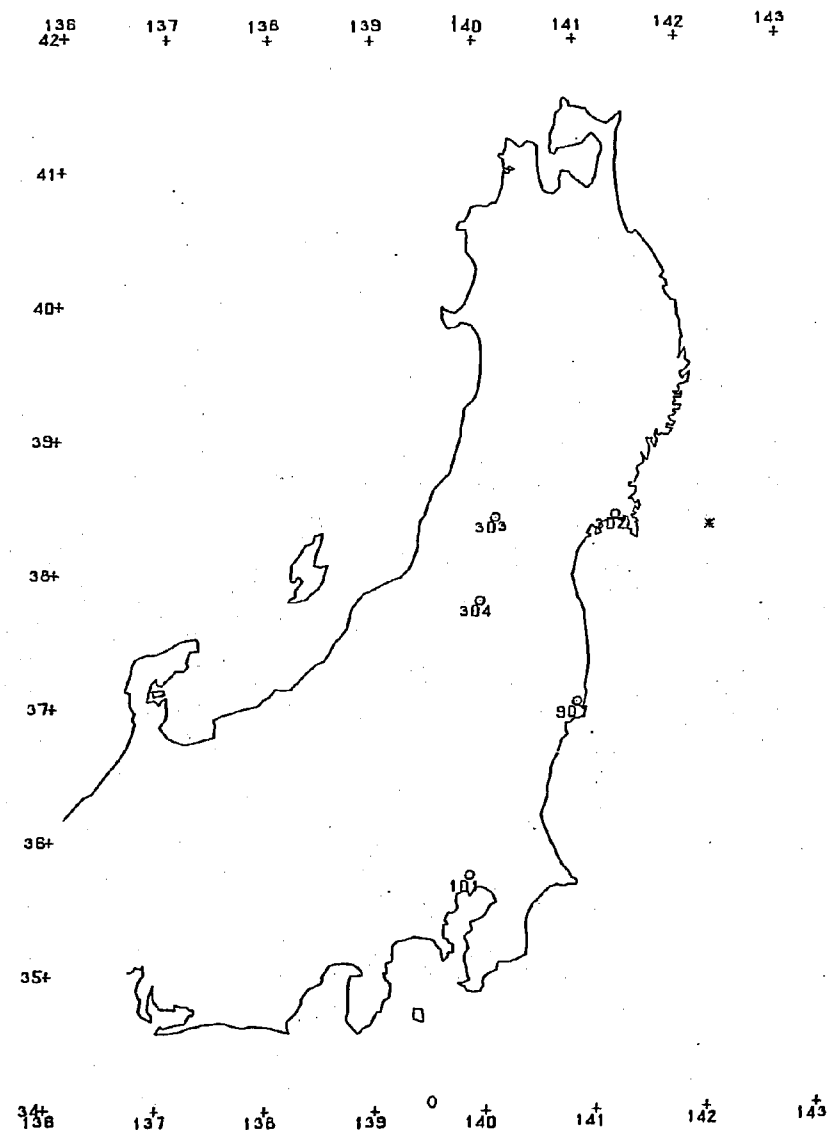
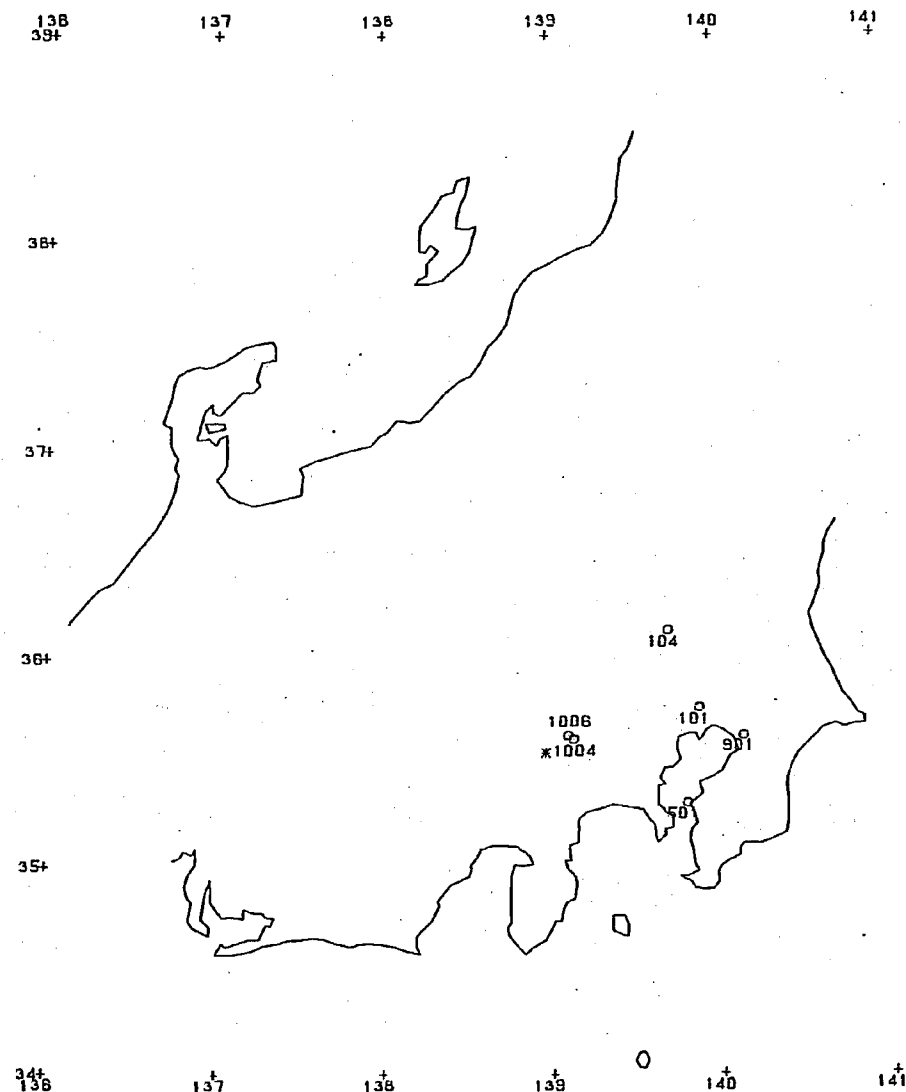


FIG. 6 71029 EASTERN YAMANASHI PREF.

STATION NAME OF STRUCTURE	RECORD NUMBER	MAX. AMPLITUDE (GALS)			EARTHQUAKE TIME AND DATE
		HORI. A	VERTICAL	HORI. B	
SHINKATSUSHIKA BRIDGE	101 GR-1 16	2.5	0.0	1.9	1971.07.23.07.07
SHINTONEGAWA BRIDGE	104 GR-1 20	2.8	2.5	3.1	
TOKYO BAY (FUTTU CAPE)	501 GR-1 60	16.9	3.1	6.9	
P.W.R.I. CHIBA-BRANCHI	901 GR-1 47	19.4	2.5	18.8	LOCATION OF EPICENTER LO=136 58 LA= 35 33
CHUD-HIGHWAY SAKAIGAWA*B	1004 GR-1 2	41.9	8.4	0.0	
CHUD-HIGHWAY SAKAIGAWA*B	1004 PI-1 2	56.3	13.8	95.6	
CHUD-HIGHWAY TSURUKAWA*B	1006 GR-1 3	68.8	18.8	67.5	DEPTH, MAGNITUDE 10.0 KM, M= 5.3 (* E.Q. CENTER)
CHUD-HIGHWAY TSURUKAWA*B	1006 PI-1 1	81.3	42.5	196.9	



TM-82.FT-7.F-254

Fig. 7 71034 OFF ERIMOMISAKI.

STATION NAME OF STRUCTURE	RECORD NUMBER	MAX. AMPLITUDE (GALS)			EARTHQUAKE TIME AND DATE
		HORI. A	VERTICAL	HORI. B	
MASAKI BRIDGE	105 GR-1 1	32.8	17.9	25.3	1971.08.02.16.25
MASAKI BRIDGE	105 PI-1 1	26.8	11.9	41.7	
HEIWA BRIDGE	113 GR-1 1	0.0	0.0	0.0	LOCATION OF EPICENTER
HEIWA BRIDGE	113 PI-1 2	0.0	0.0	0.0	
KAIHOKU BRIDGE	302 GR-1 26	13.1	3.1	7.5	LD=143 42 LA= 41 14
KAIHOKU BRIDGE	303 GR-1 18	4.7	0.0	3.1	
DATE BRIDGE	304 PI-1 34	5.6	0.0	6.9	DEPTH, MAGNITUDE
TOKYO BAY(FUTTU CAPE)	501 GR-1 63	0.6	0.0	0.0	
TAIRA BRIDGE	907 GR-1 59	6.1	6.6	6.9	(* E.Q. CENTER)

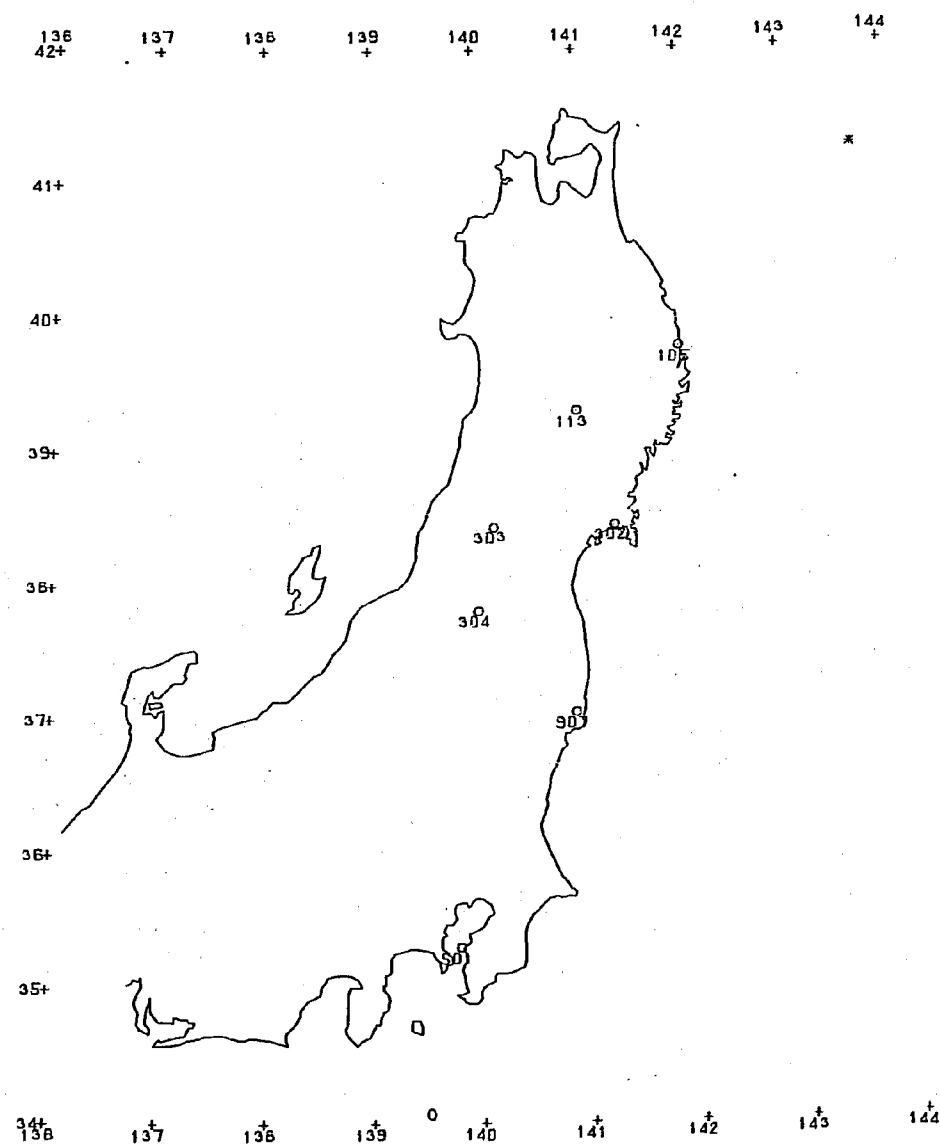
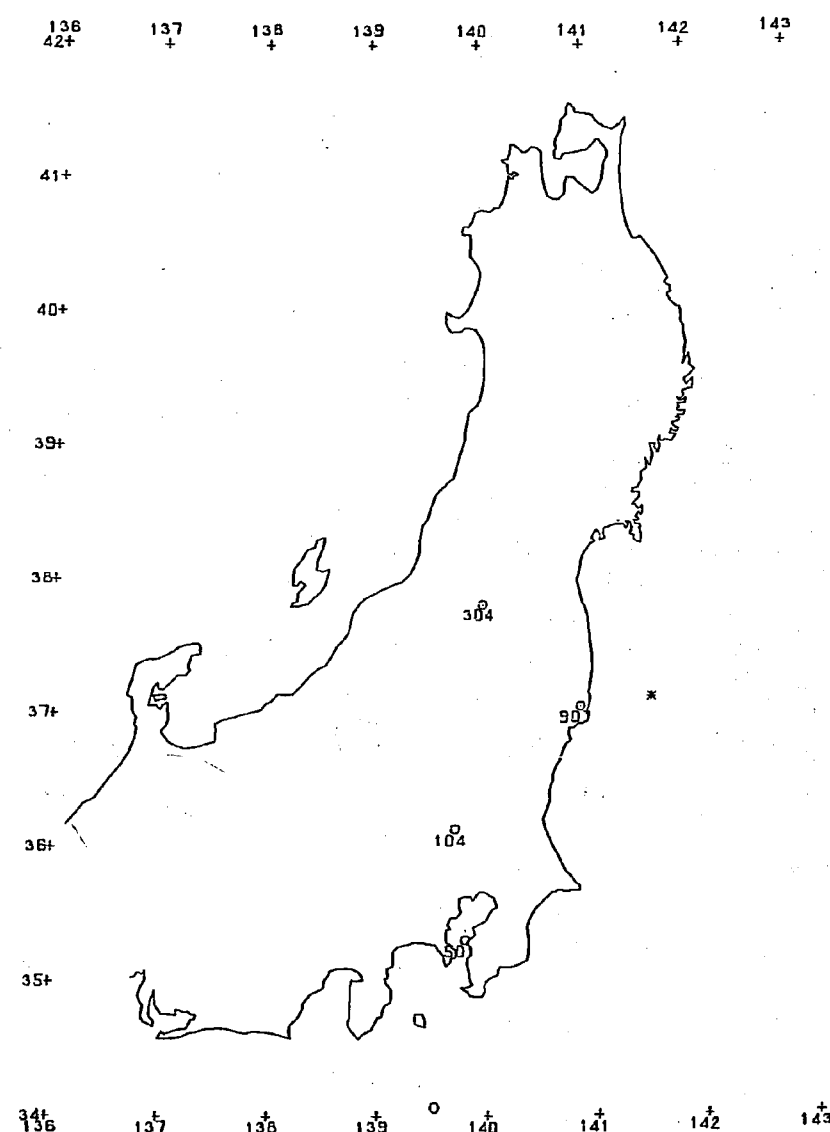
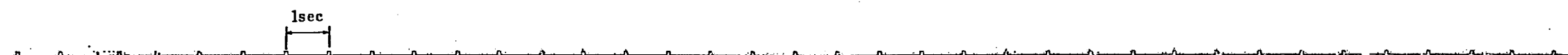


Fig. 8 71038 OFF FUKUSHIMA PREF.

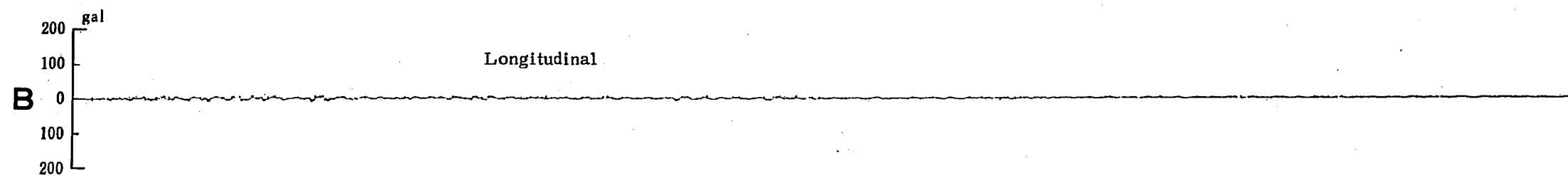
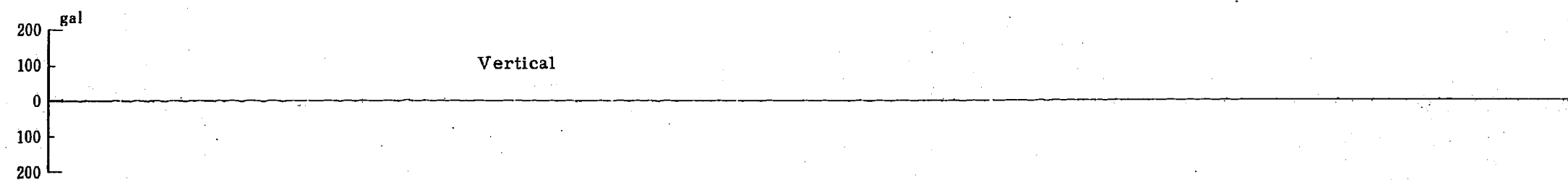
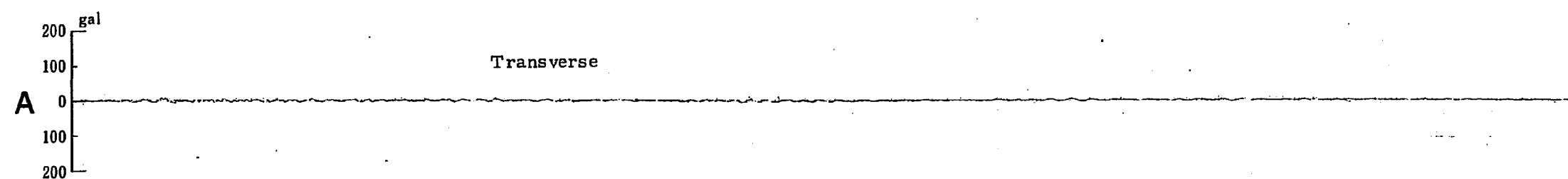
STATION NAME OF STRUCTURE	RECORD NUMBER	MAX. AMPLITUDE (GALS)			EARTHQUAKE TIME AND DATE
		HORI. A	VERTICAL	HORI. B	
SHINTONEGAWA BRIDGE	104 PI-1 12	8.8	1.6	6.3	1971.09.08.16.25
SHINTONEGAWA BRIDGE	104 GR-1 21	9.4	3.1	10.6	
DATE BRIDGE	304 GR-1 30	12.5	3.1	12.5	LOCATION OF EPICENTER
DATE BRIDGE	304 PI-1 35	11.3	2.5	20.6	
TOKYO BAY(FUTTU CAPE)	501 GR-1 66	0.0	0.0	0.0	LD=141 35 LA= 37 7
TAIRA BRIDGE	907 GR-1 60	41.9	25.0	31.3	
TAIRA BRIDGE	907 AB-1 18	12.5	15.5	16.3	DEPTH, MAGNITUDE
					40.0 KM, M= 5.5
					(* E.Q. CENTER)



TM-82.FT-7.F-255



Shinkotsushika Bridge 101-Gr-17
1971. 7. 27 08:08

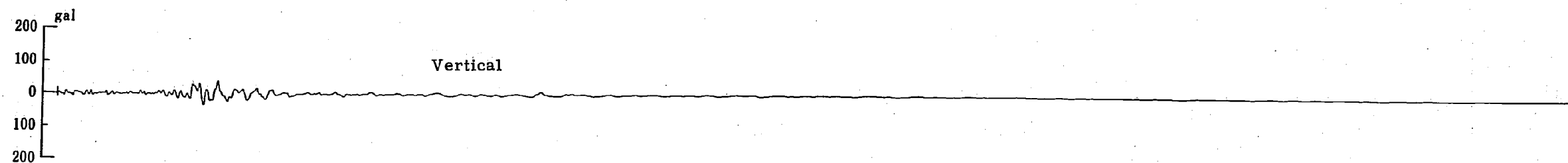
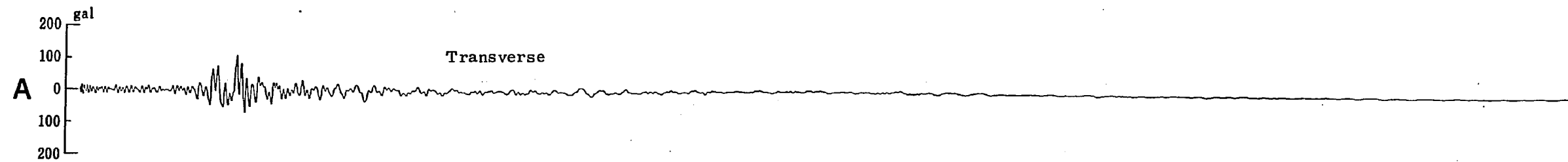


TM-82.FI- 7.F-256

28

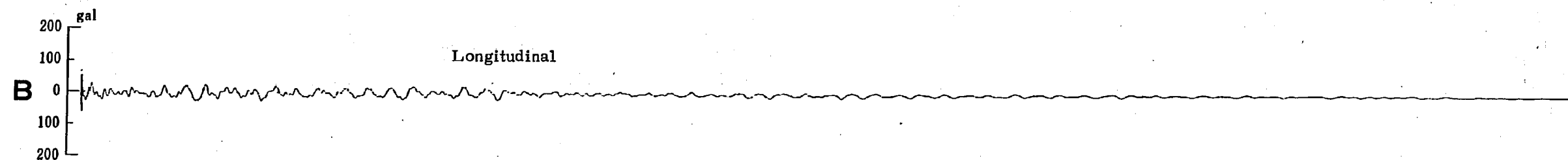
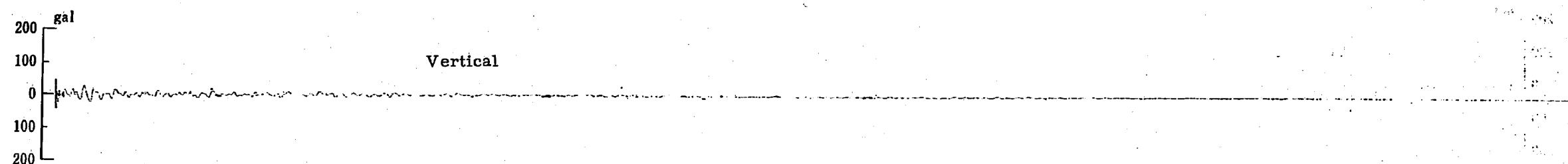
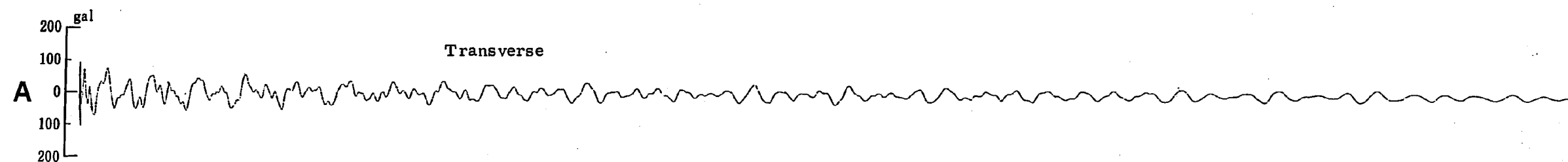
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Yoneyama Bridge 102-Gr-16
1971. 2. 26 04:27



TM-82.FT- 7.F-257

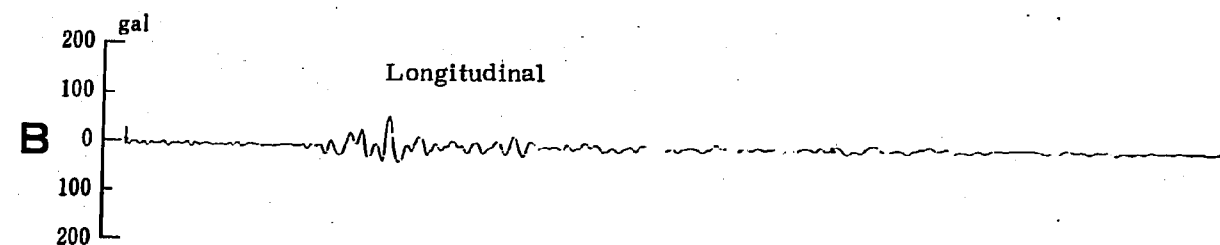
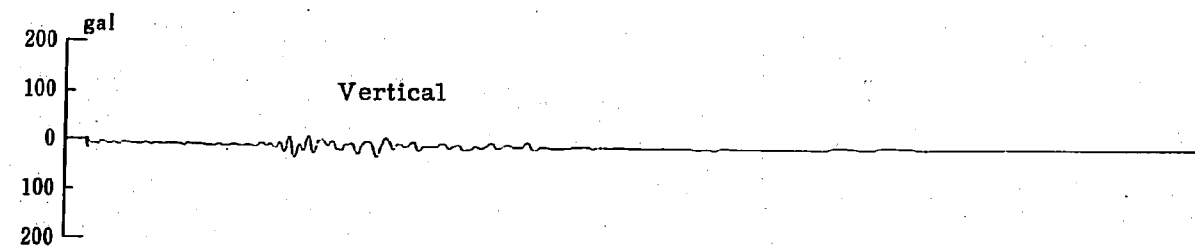
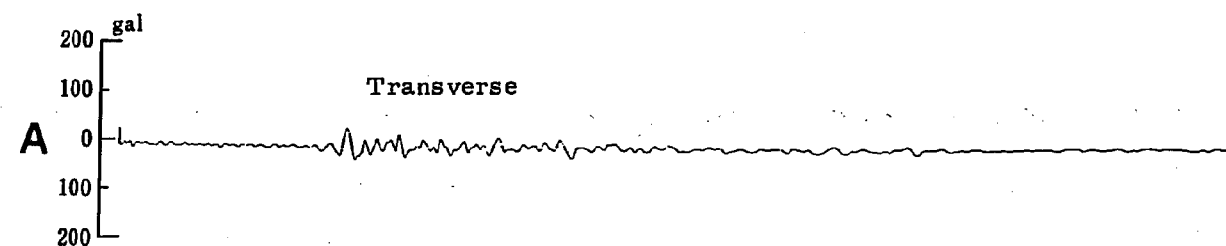
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Yoneyama Bridge 102-P-5
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TM-82.FT- 7.F-258

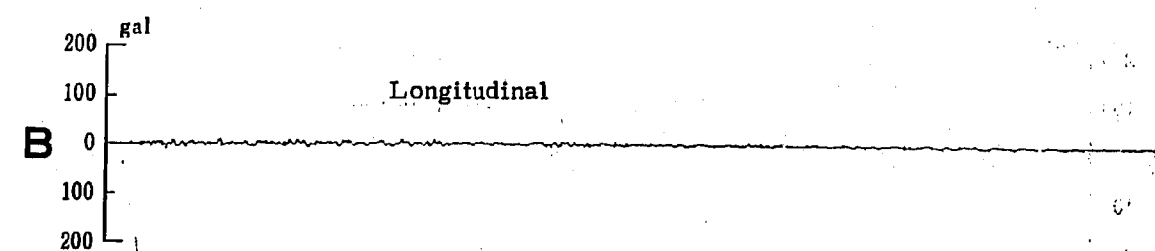
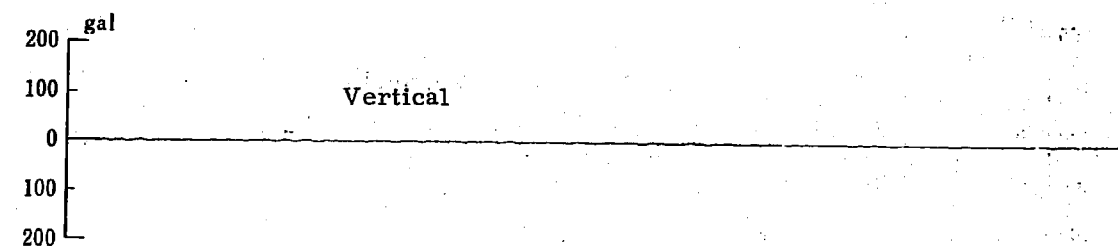
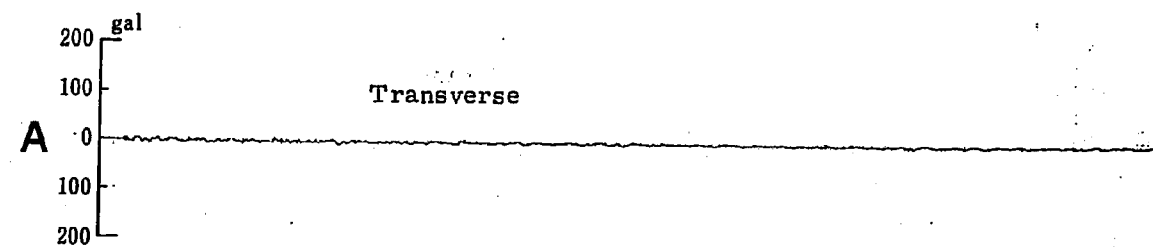
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Yoneyama Bridge 102-FL-2
1971. 2. 26 04:27

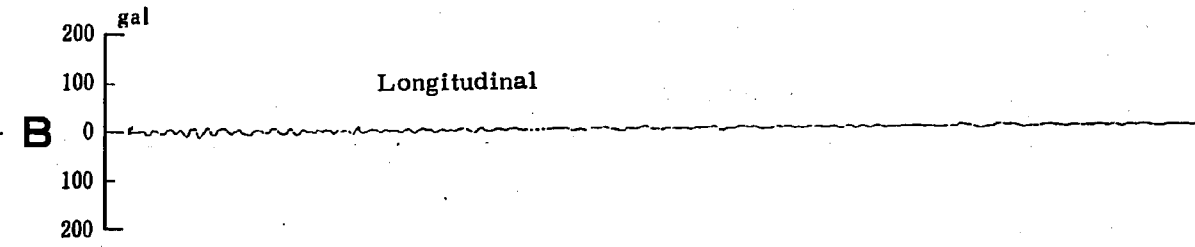
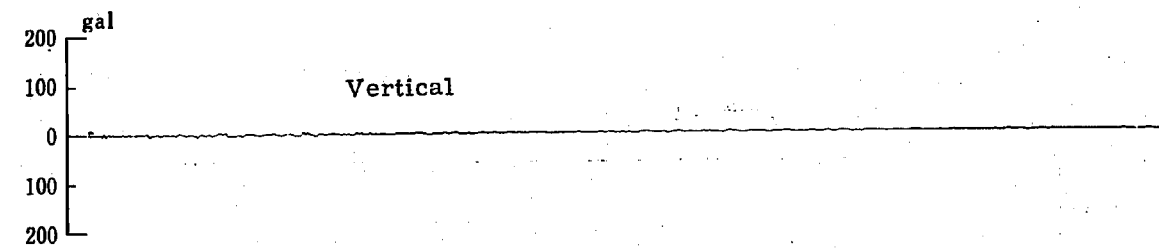
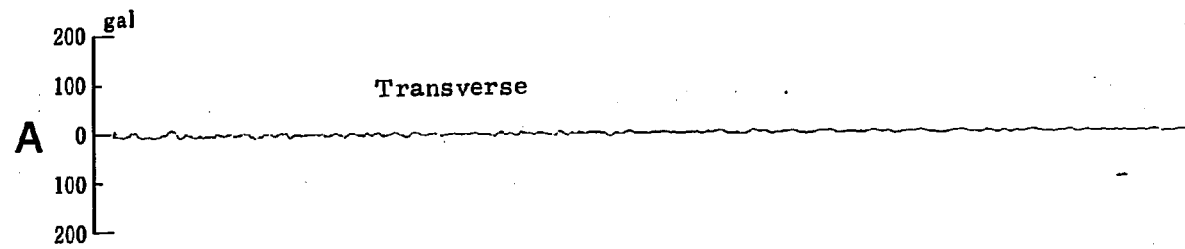
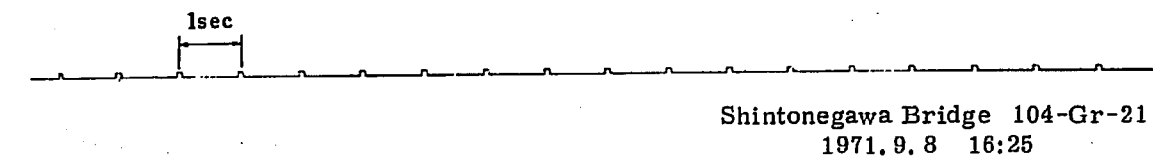
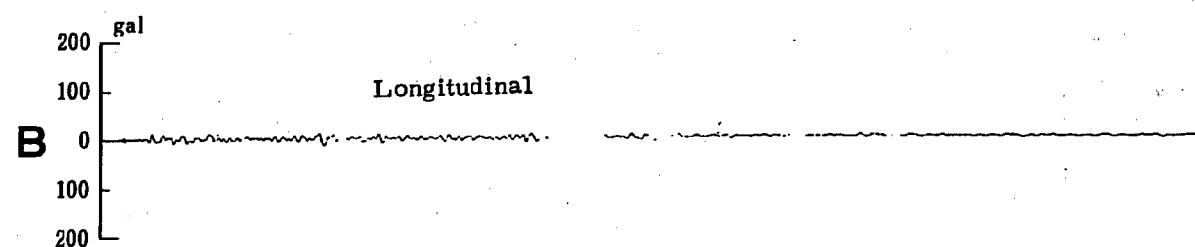
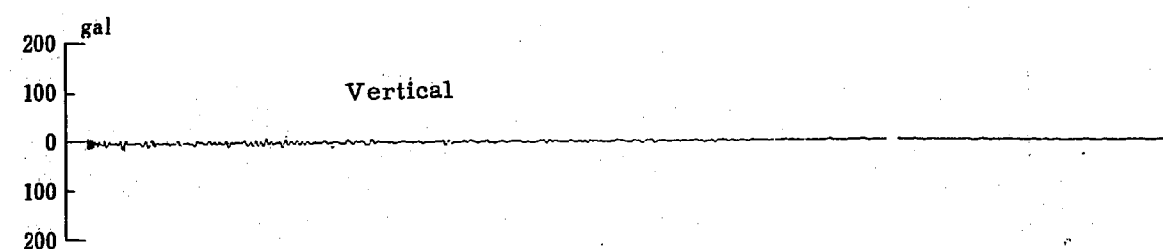
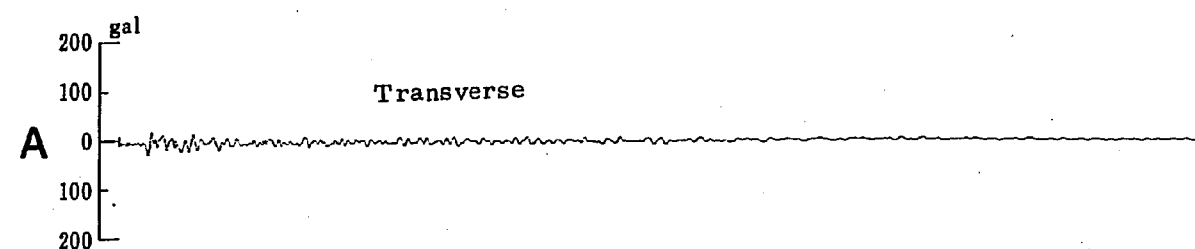
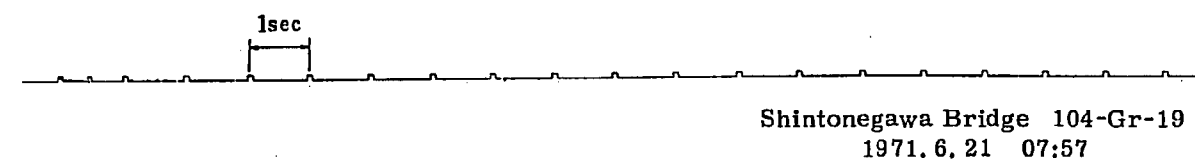


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Shinkotsushika Bridge 101-Gr-18
1971. 8. 12 04:02



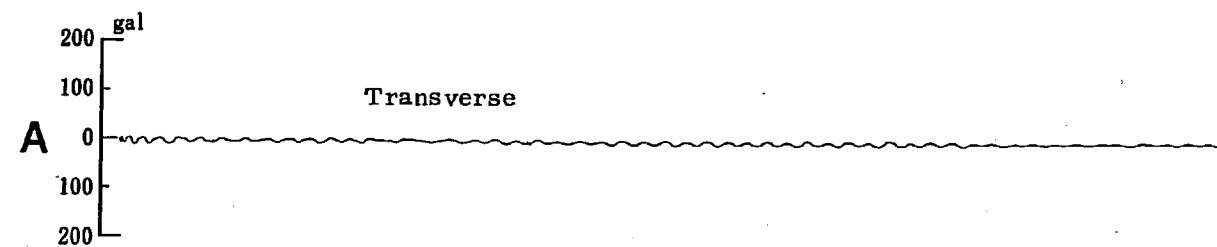
TM-82.FT- 7.F-259



TM-82.FT- 7.F-260

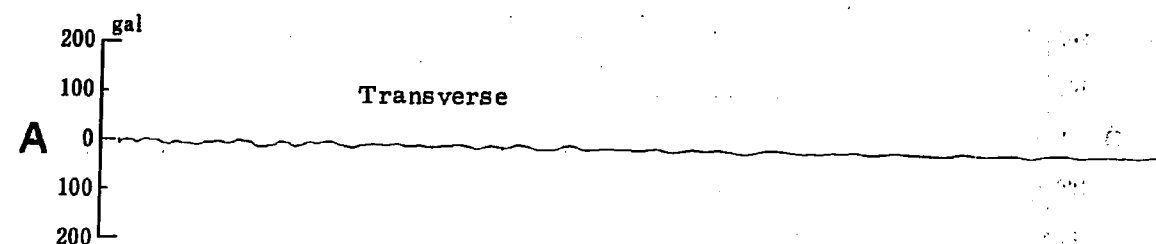
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Shintonegawa Bridge 104-P-12
1971. 9. 8 16:25



1sec

Kinokawa Bridge 112-Gr-23
1971. 1. 5 06:09



200 gal
100
0
100
200

Vertical

200 gal
100
0
100
200

Vertical

200 gal
100
0
100
200

Longitudinal

200 gal
100
0
100
200

Longitudinal

TM-82.FT- 7.F-261

1sec

Amagasaki Bridge 114-Gr-8
1971.1.5 06:09

200 gal
100
0
100
200

Transverse

200 gal
100
0
100
200

Vertical

200 gal
100
0
100
200

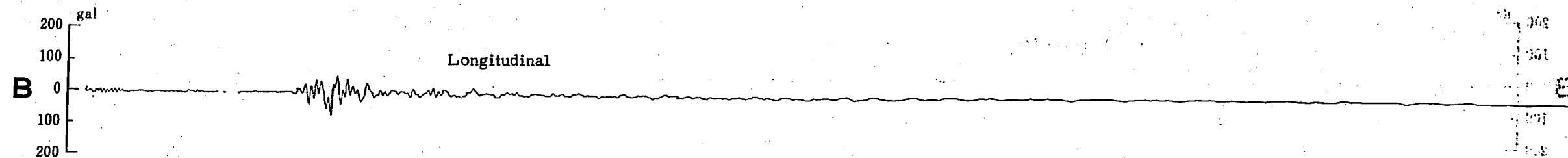
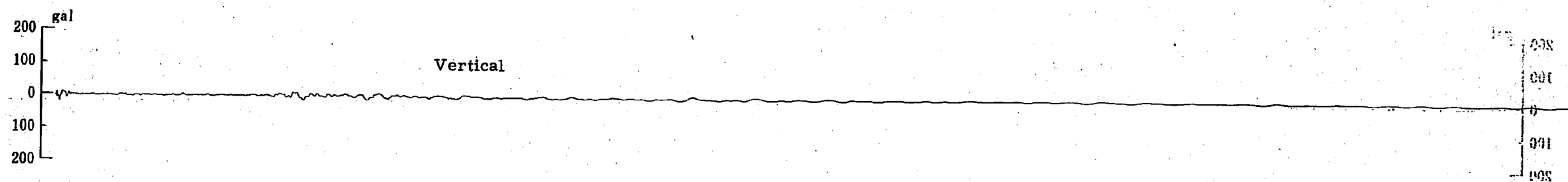
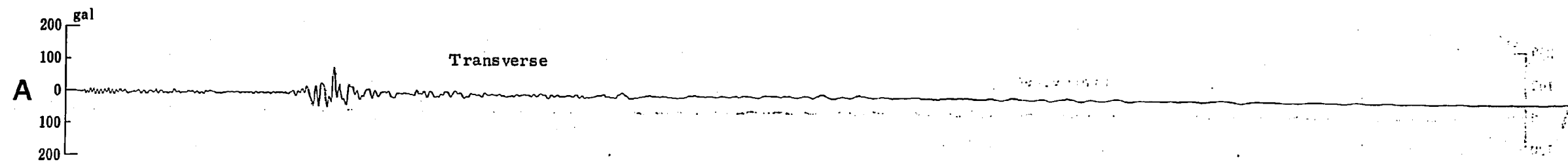
Longitudinal

TM-82.FT- 7.F-262

34

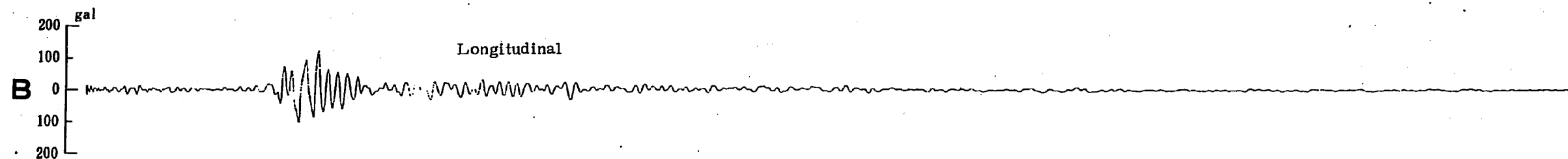
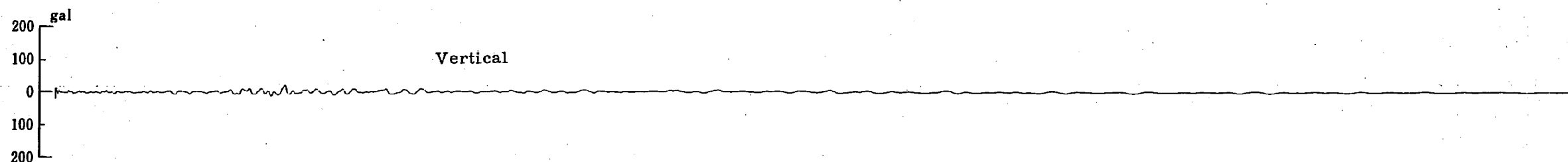
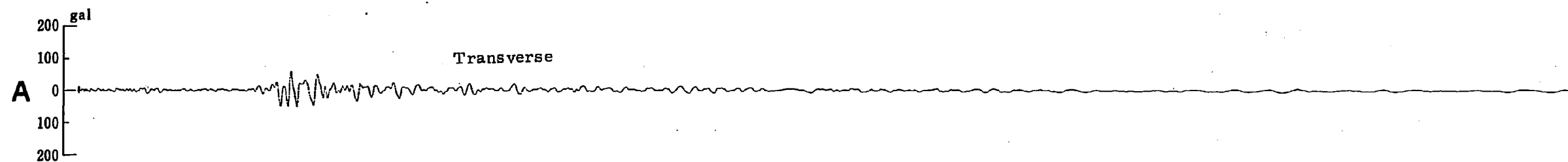
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Uonuma Bridge 202-Gr-15
1971. 2. 26 04:27



TM-82.FT- 7.F-263

1sec

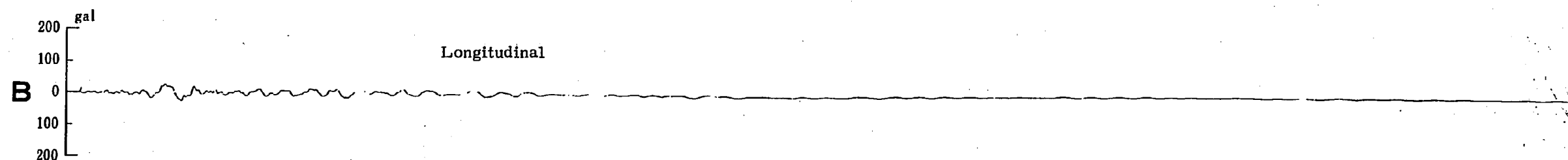
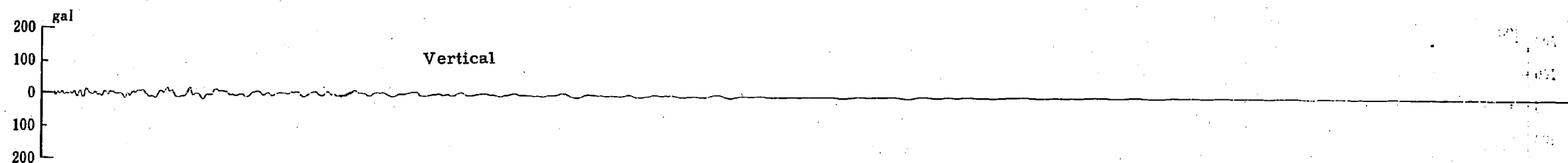
Uonuma Bridge 202-P-10
1971. 2. 26 04:27

TM-82.FI- 7.F-264

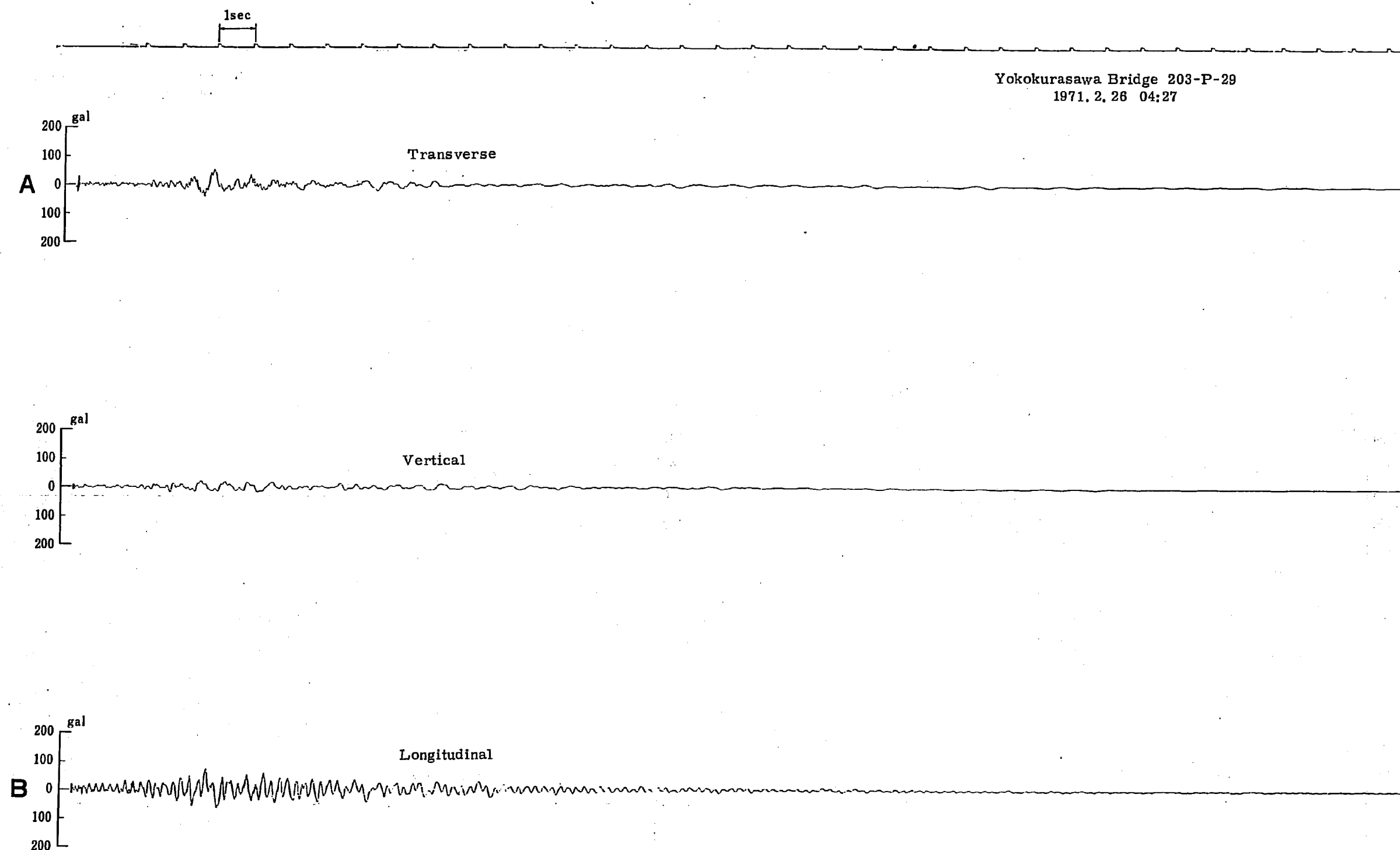
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1sec

Yokokurasawa Bridge 203-Gr-27
1971.2.26 04:27



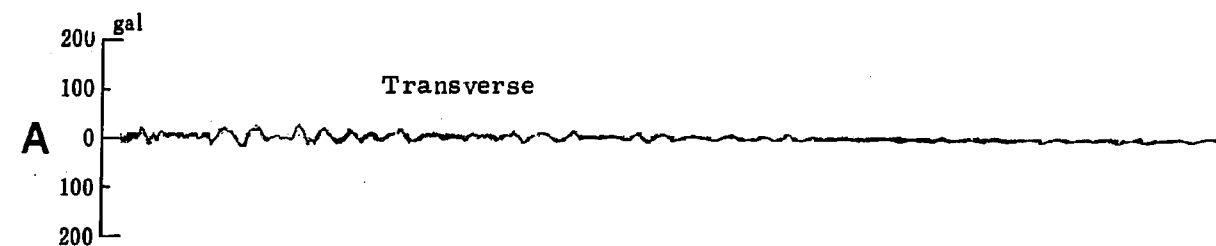
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TM-82.FT- 7.F-266

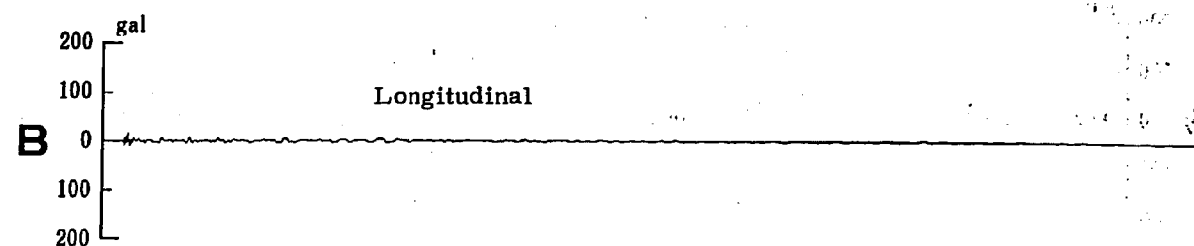
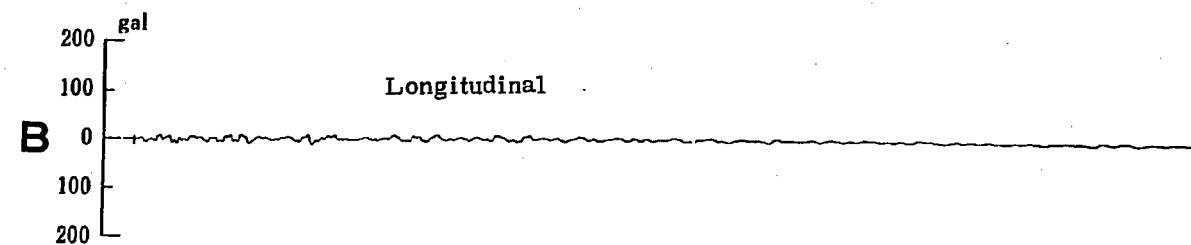
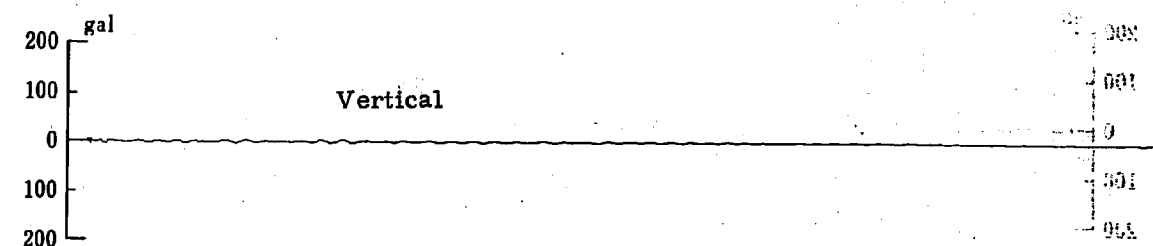
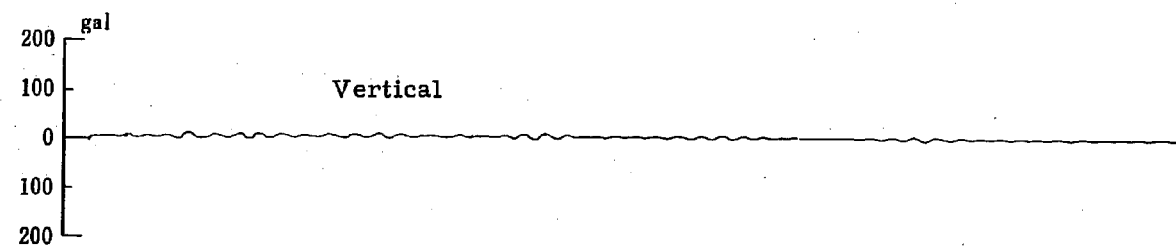
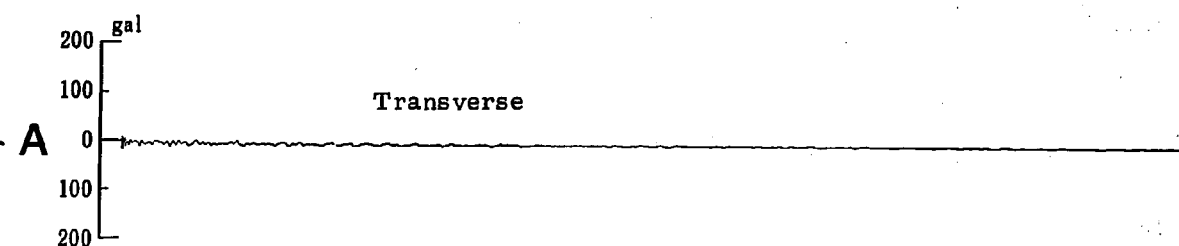
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Shinyawata Bridge 204-Gr-13
1971. 3. 22 07:18



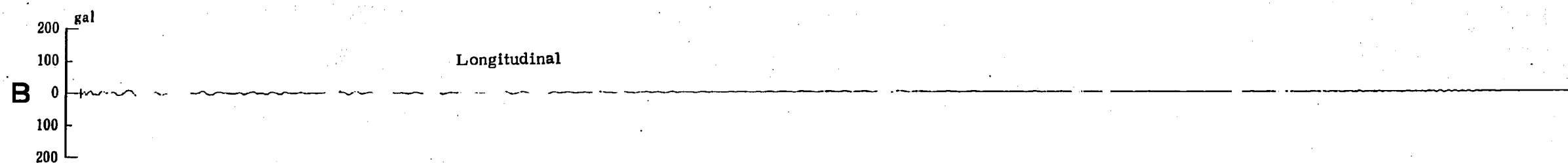
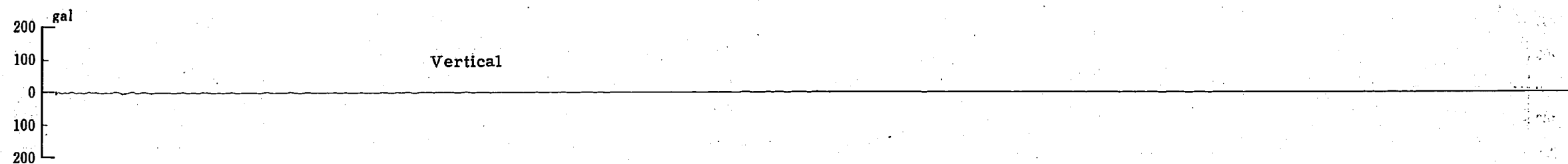
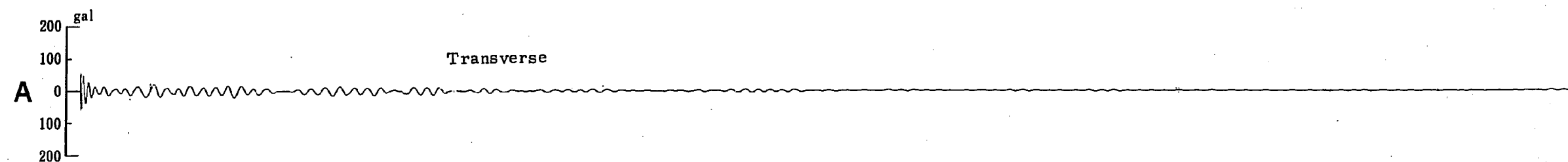
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Shinyawata Bridge 204-Gr-14
1971. 8. 26 19:23



TM-82.FT- 7.F-267

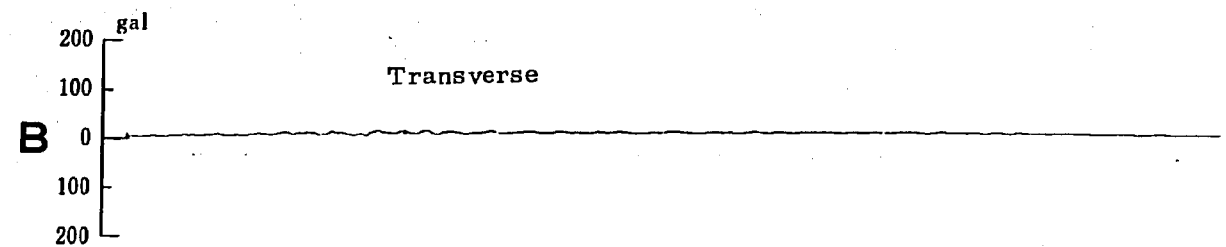
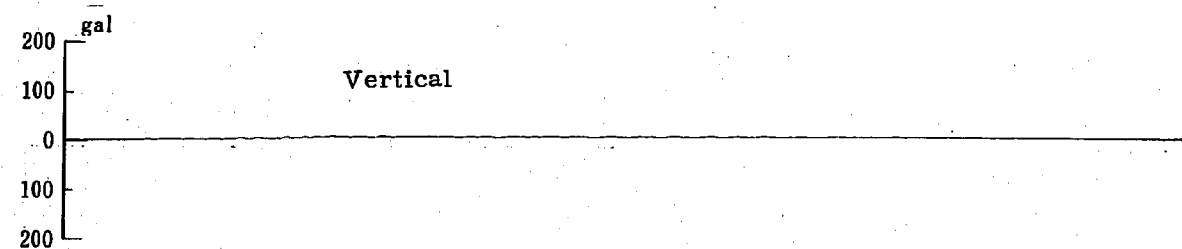
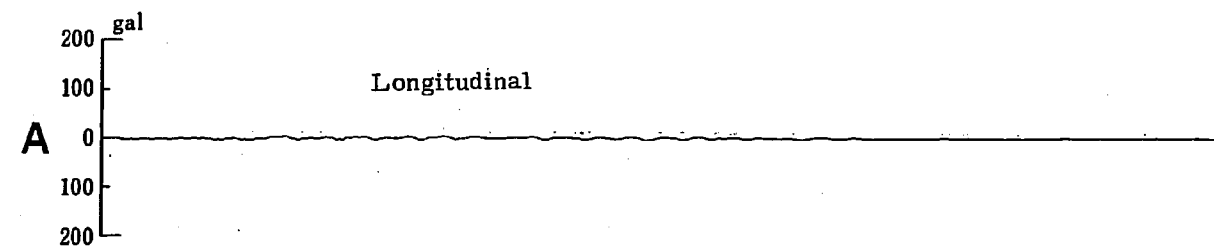
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Shinyawata Bridge 204-P-8
1971.3.22 07:18

TM-82.FT- 7.F-268

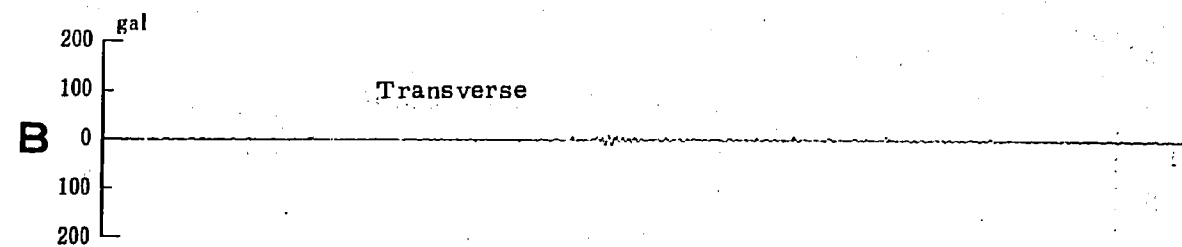
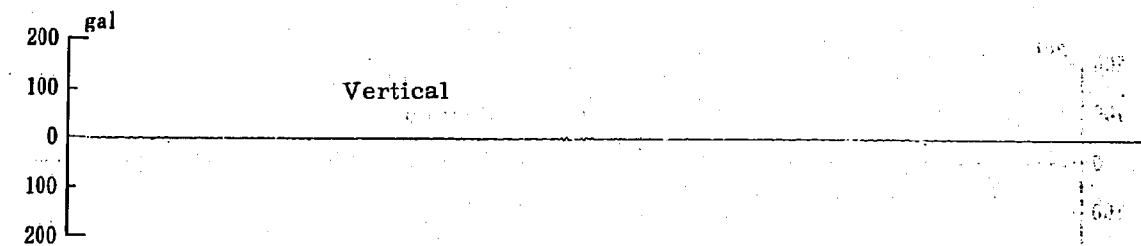
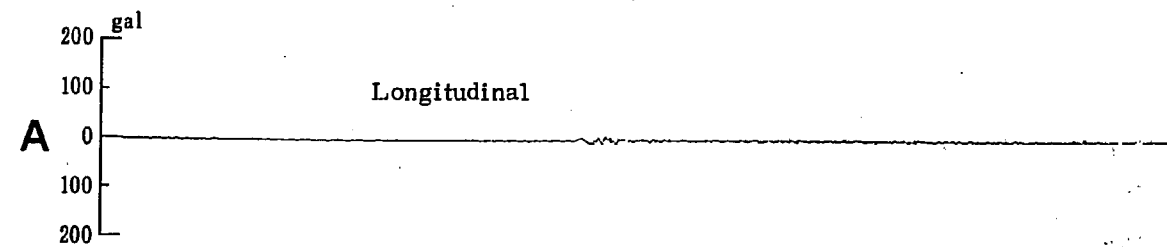
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Ishiseto Bridge 205-P-21
1971. 5. 25 22:00

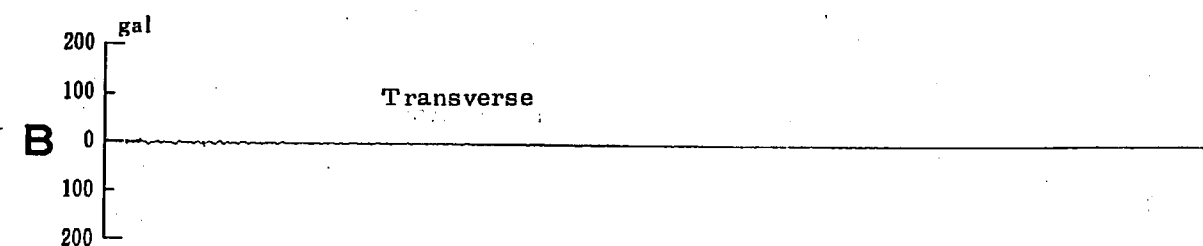
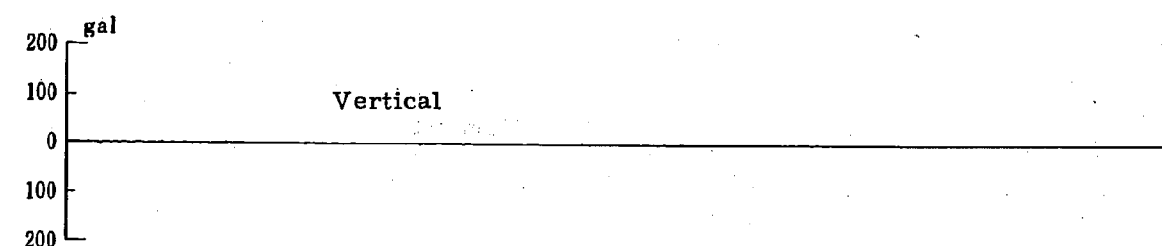
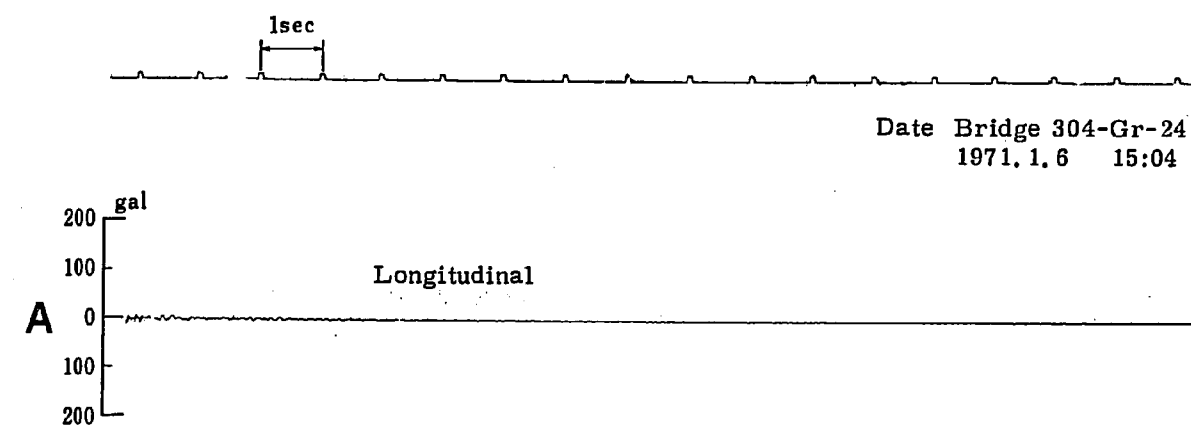
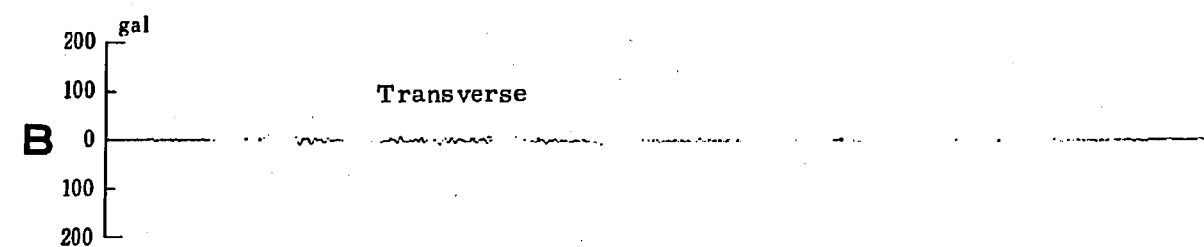
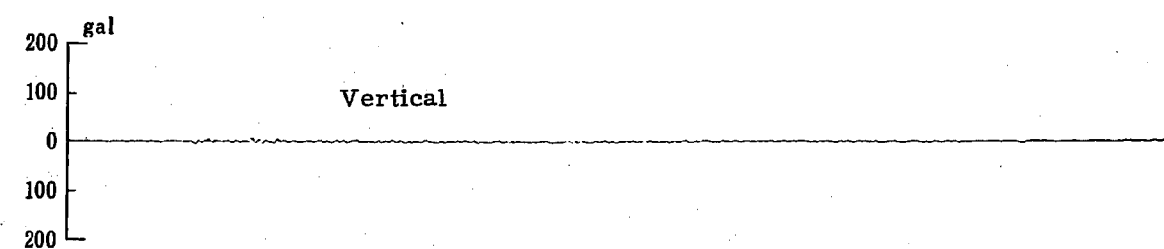
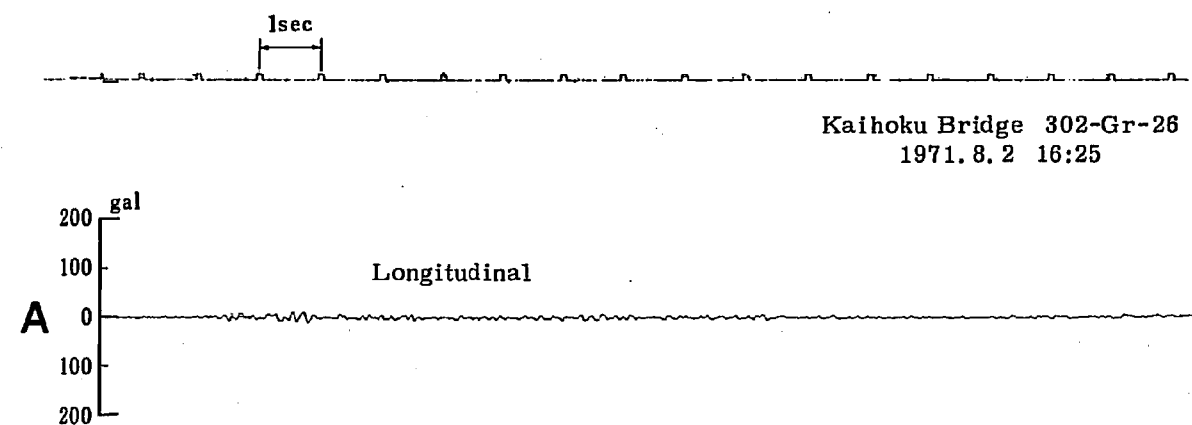


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Kachoku Bridge 302-Gr-25
1971. 4. 5 03:39



TM-82.FT- 7.F-269

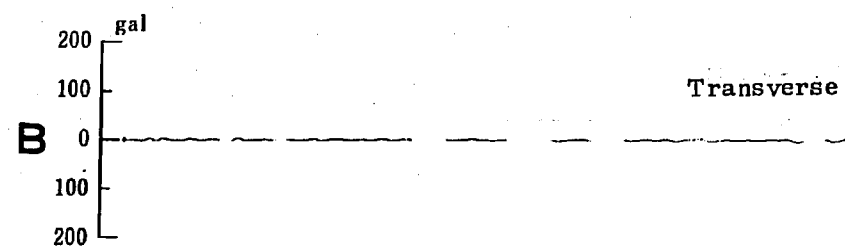
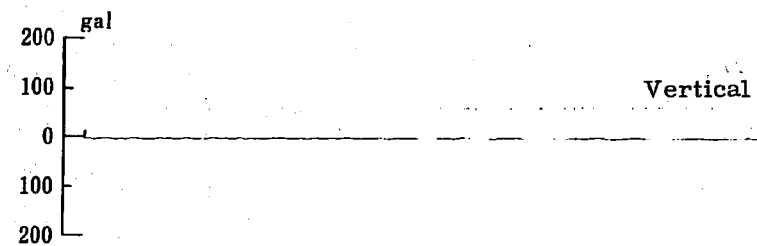
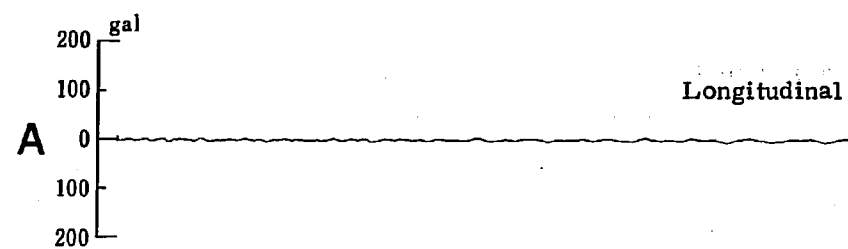


TM-82.FT- 7.F-270

42

1sec

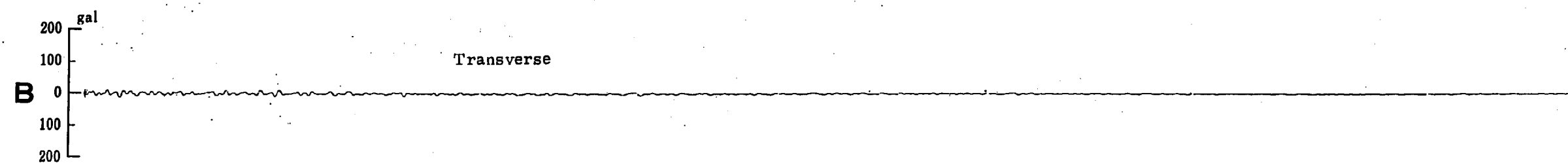
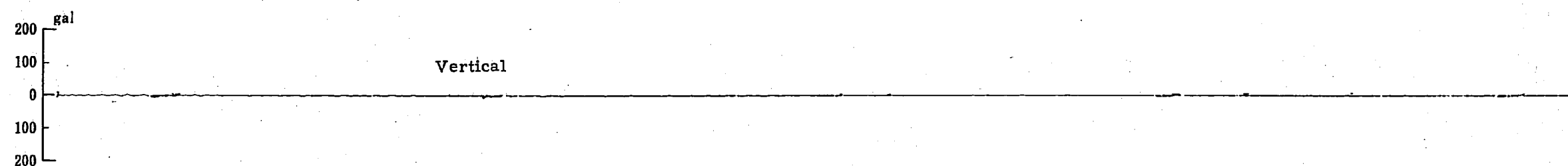
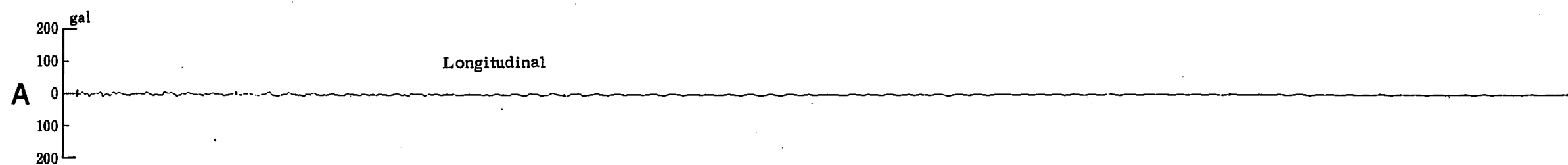
Kahoku Bridge 303-Gr-17
1971. 4. 5 03:39



TM-82.FT-7.F-271

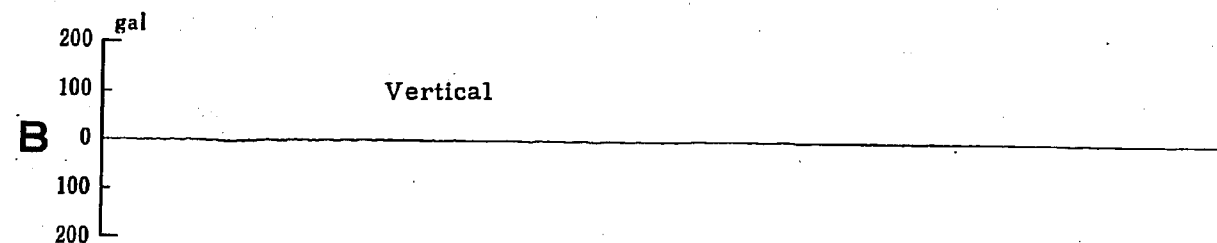
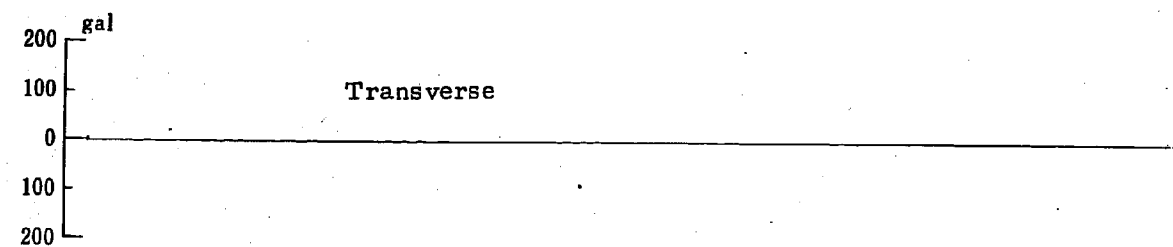
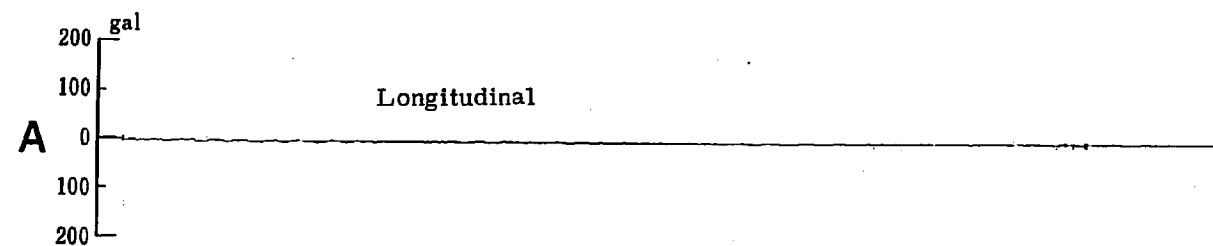
1sec

Date Bridge 304-P-29
1971. 1. 6 15:04

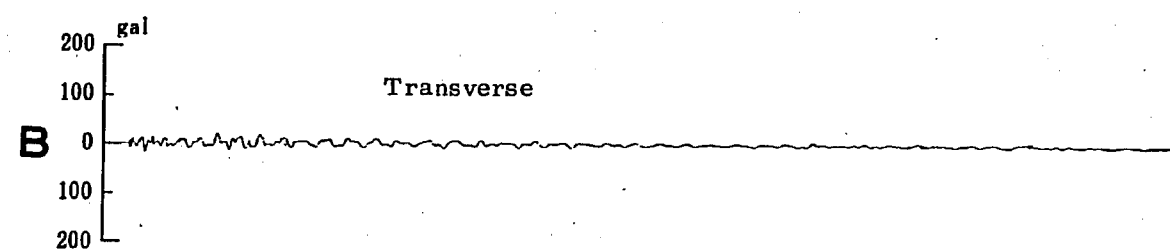
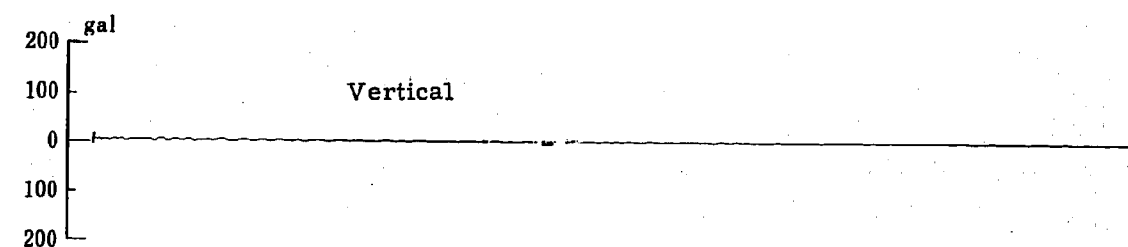
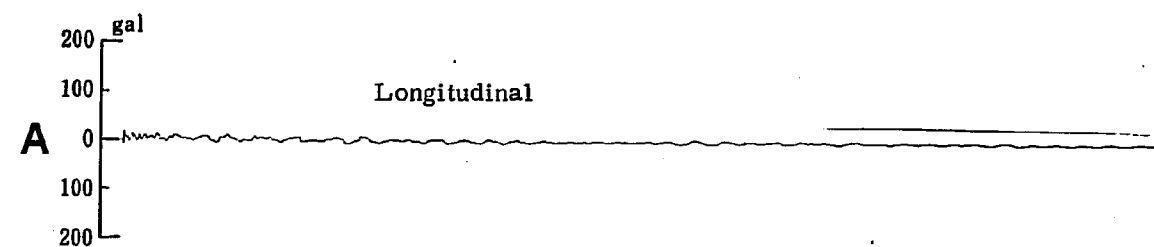


TM-82.FT- 7.F-272

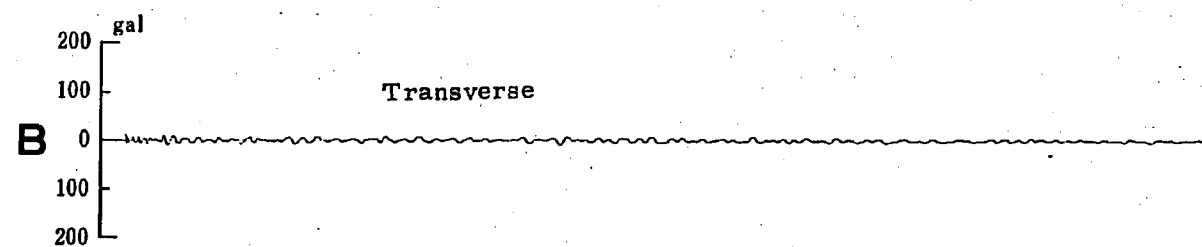
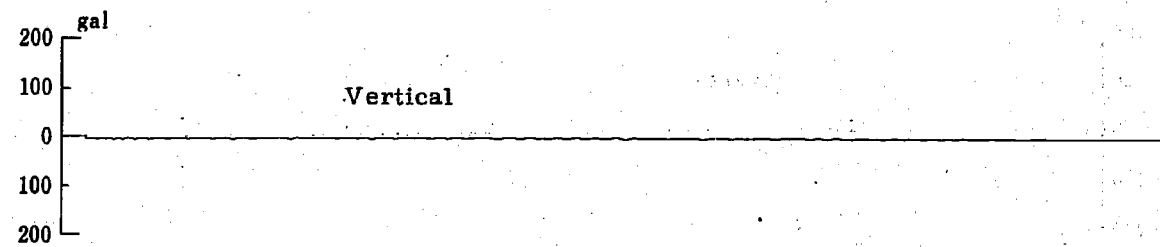
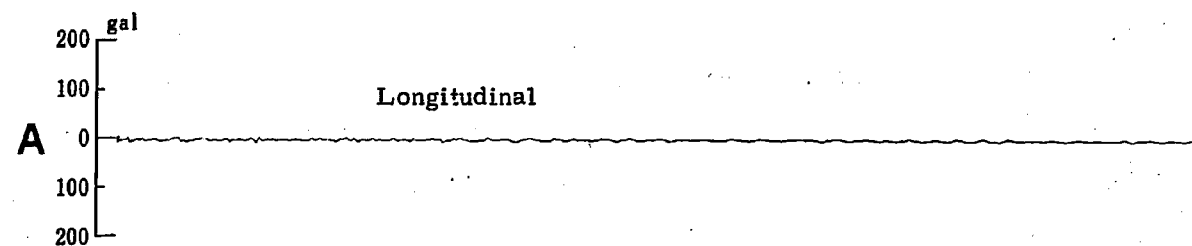
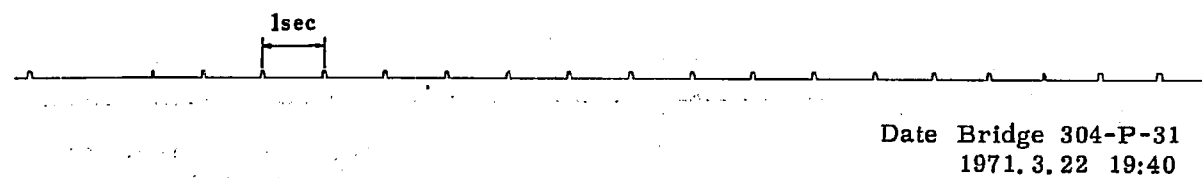
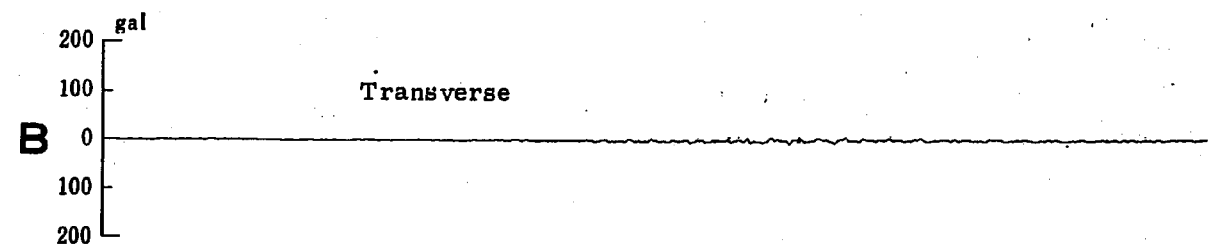
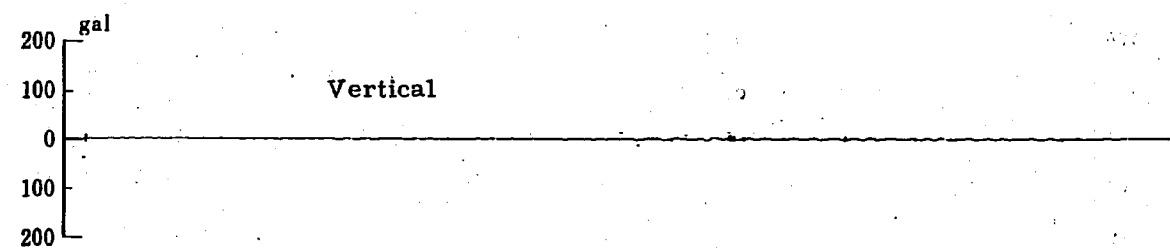
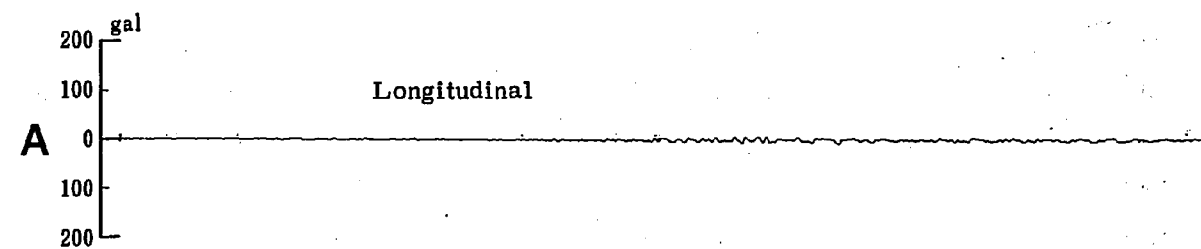
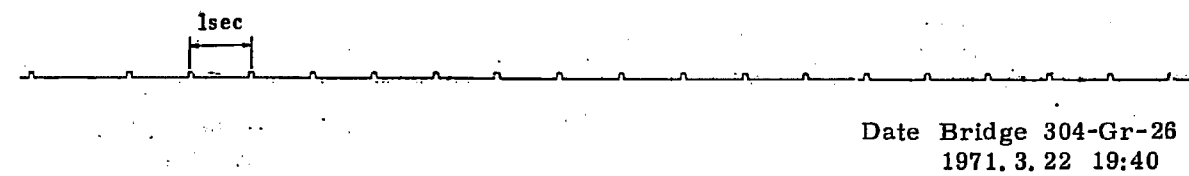
1sec

Date Bridge 304-Gr-25
1971.3.18 15:24

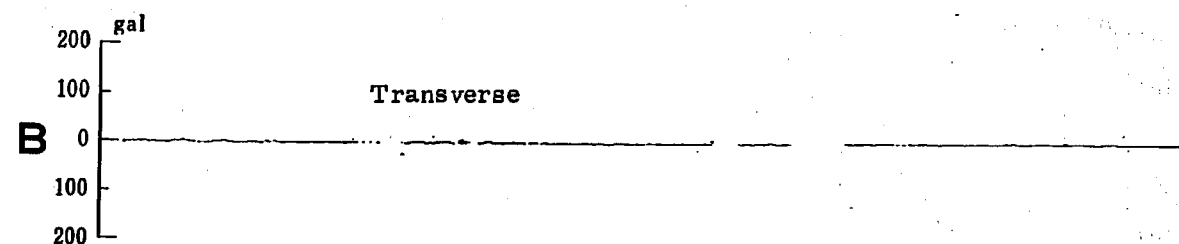
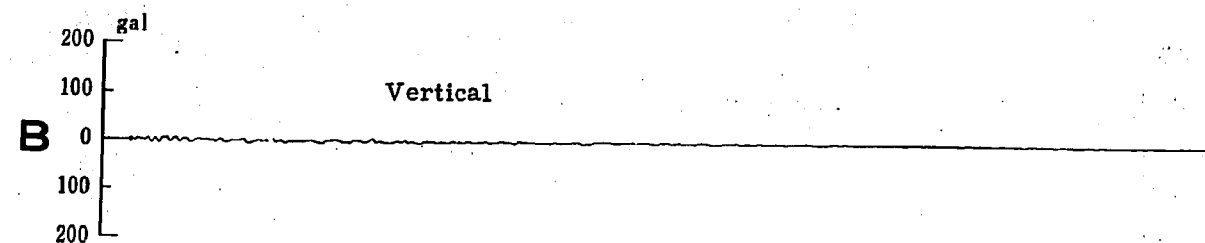
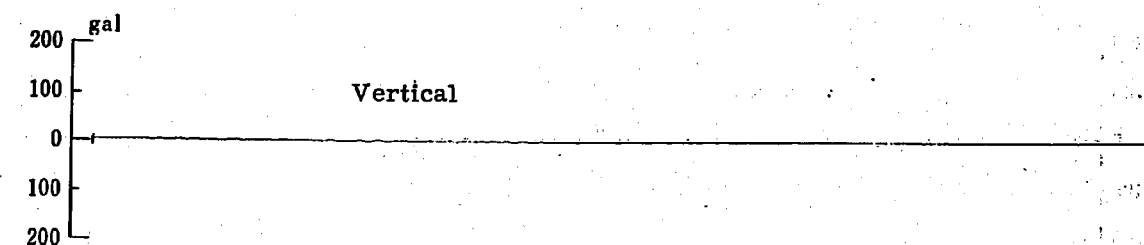
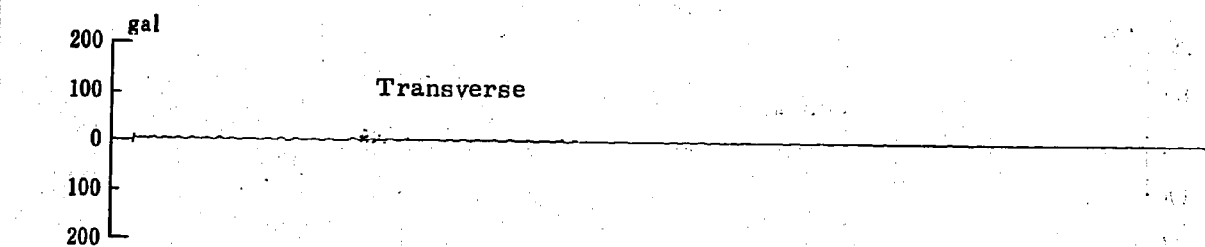
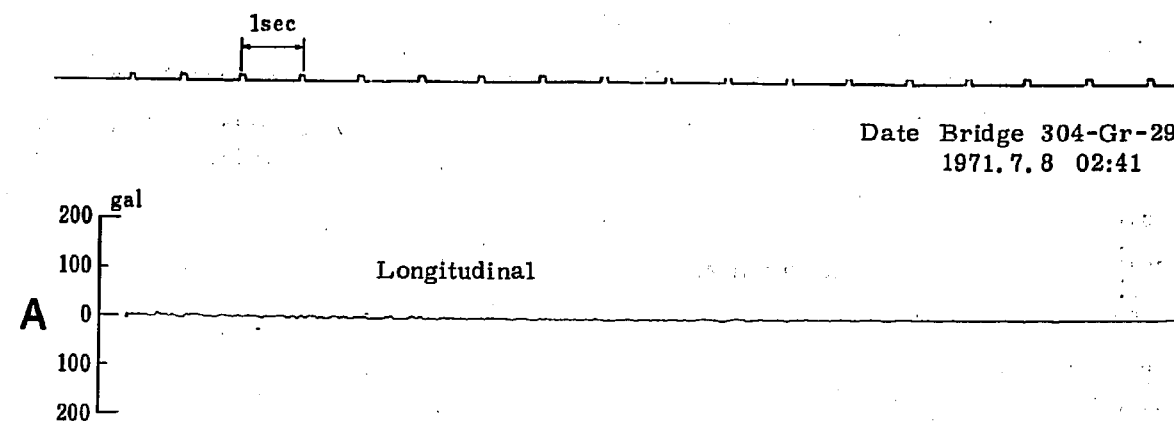
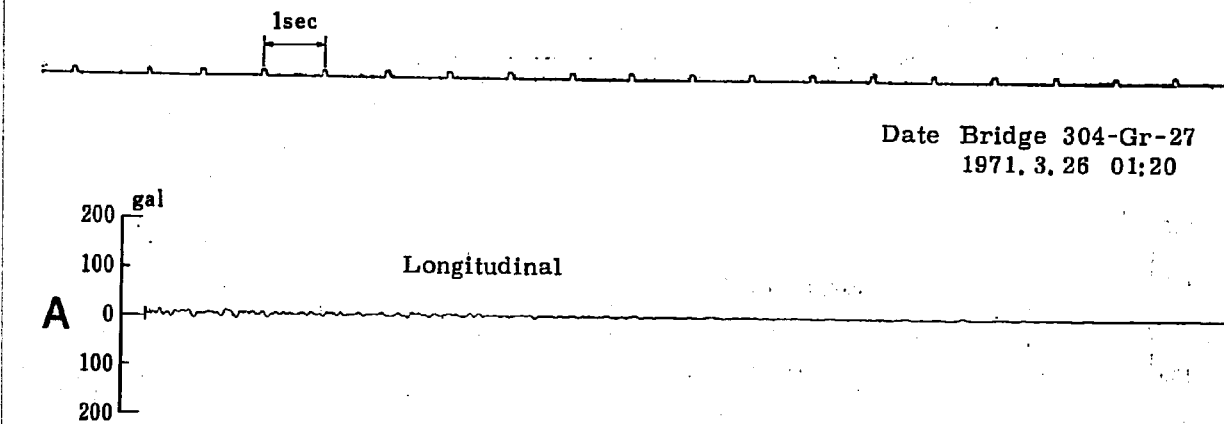
1sec

Date Bridge 304-P-30
1971.3.18 15:24

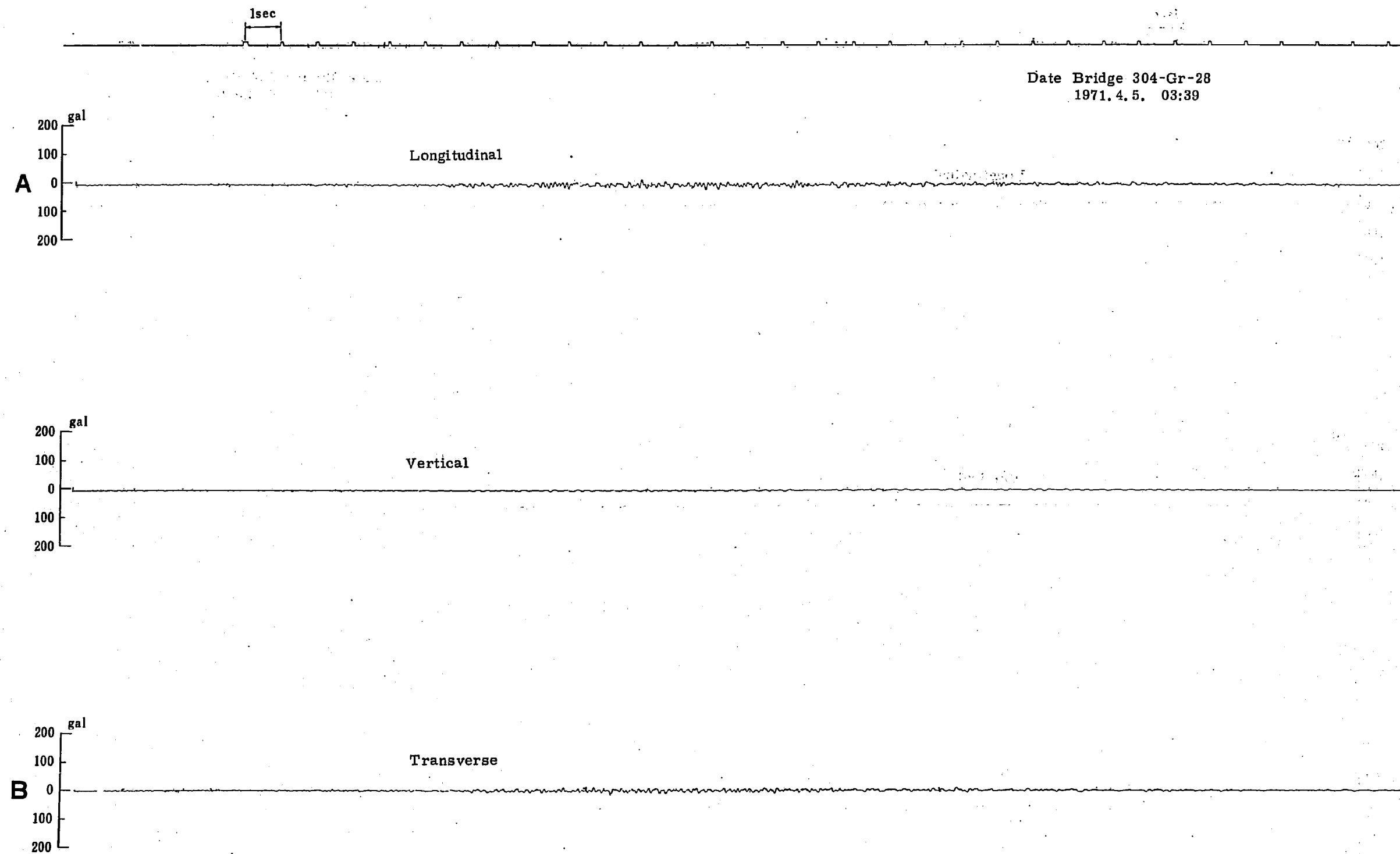
TM-82.FT- 7.F-273



TM-82.FT- 7.F-274



TM-82.FT- 7.F-275

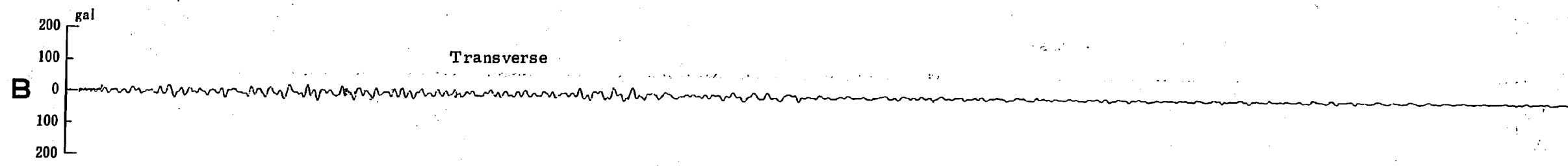
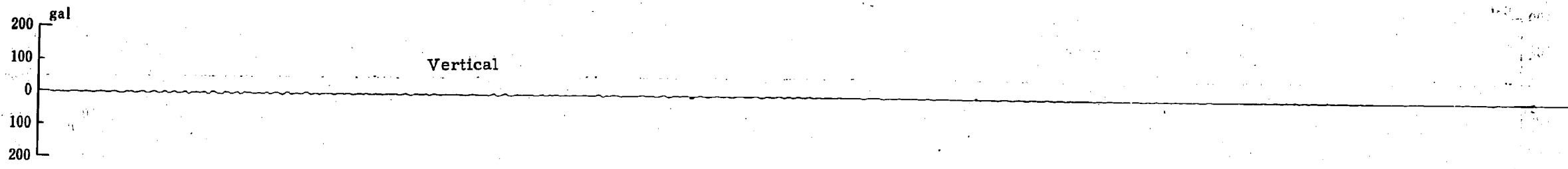
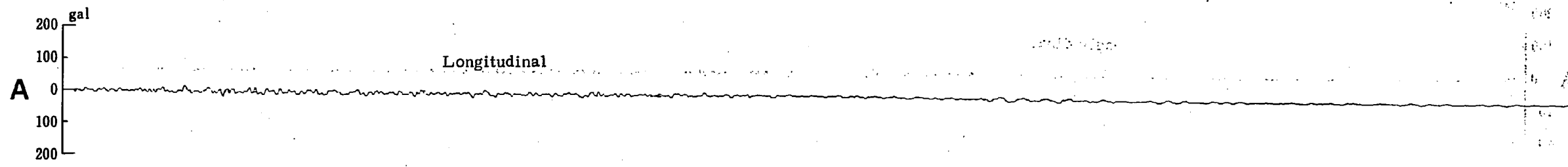


TM-82.FT- 7.F-276

1sec

200 gal
100
0
100
200

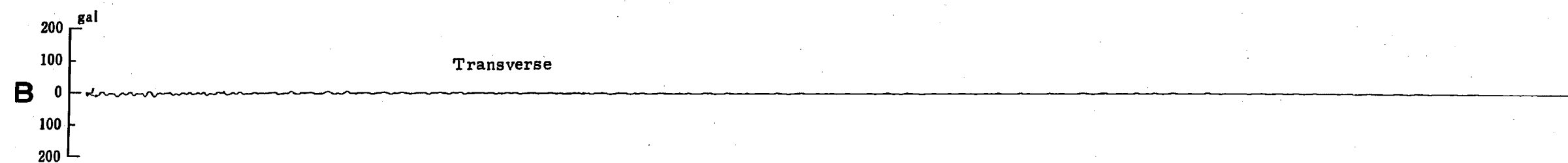
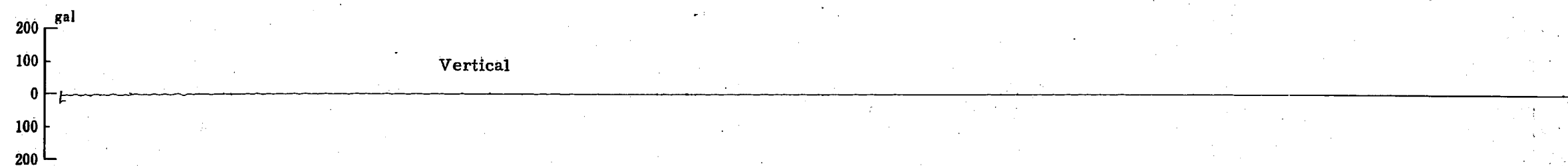
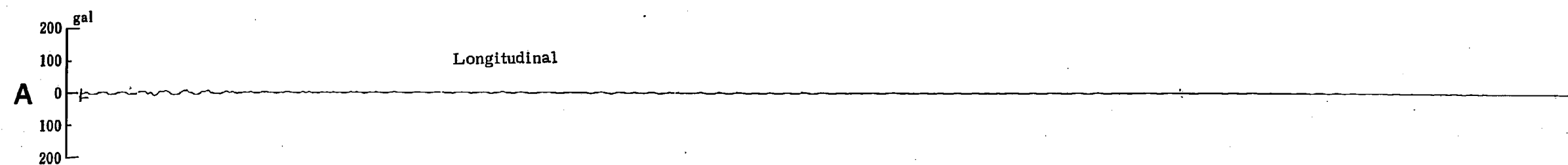
Date Bridge 304-P-32
1971. 4. 5 03:39



TM-82.FT- 7.F-277

1sec

Date Bridge 304-P-33
1971.7.8. 02:41

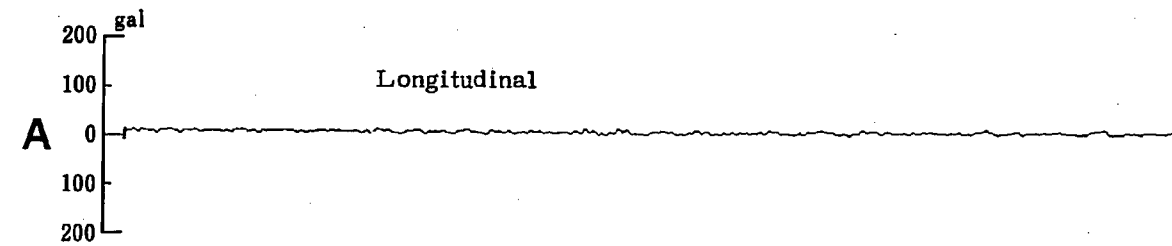


TM-82.FT- 7.F-278

50

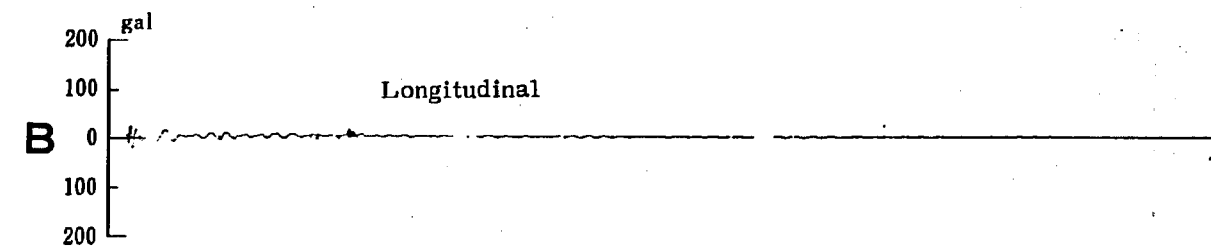
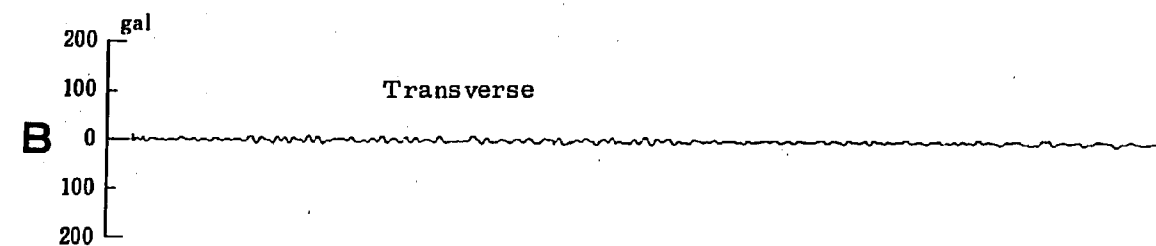
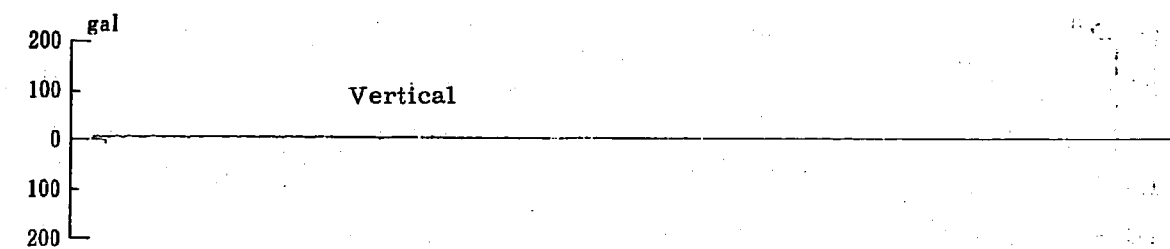
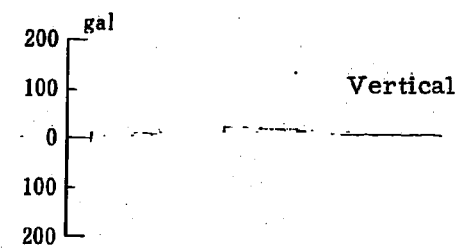
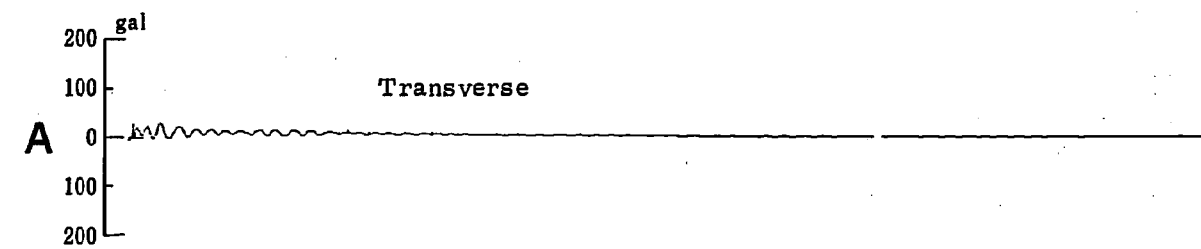
1sec

Date Bridge 304-P-34
1971. 8. 2 16:25

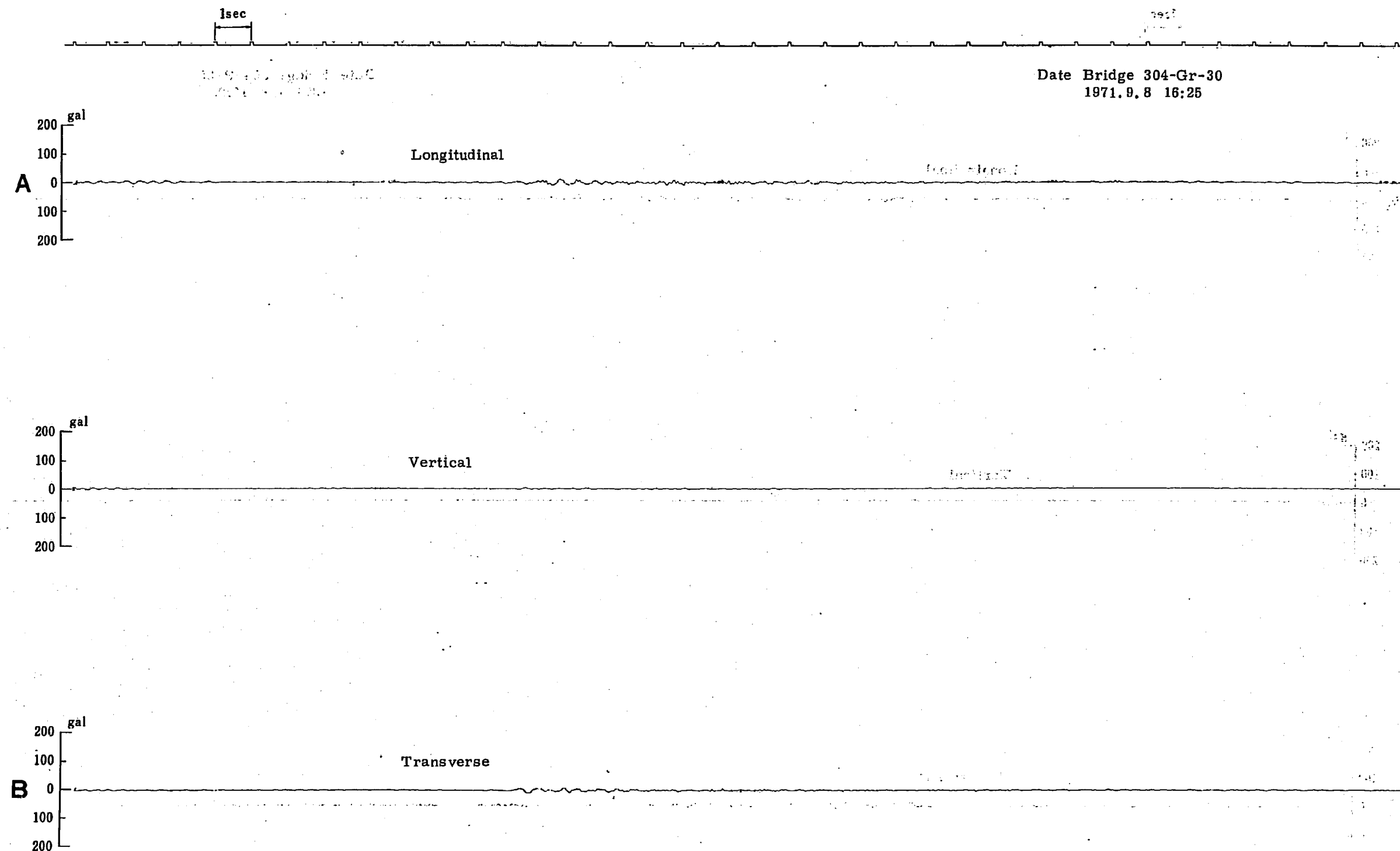


1sec

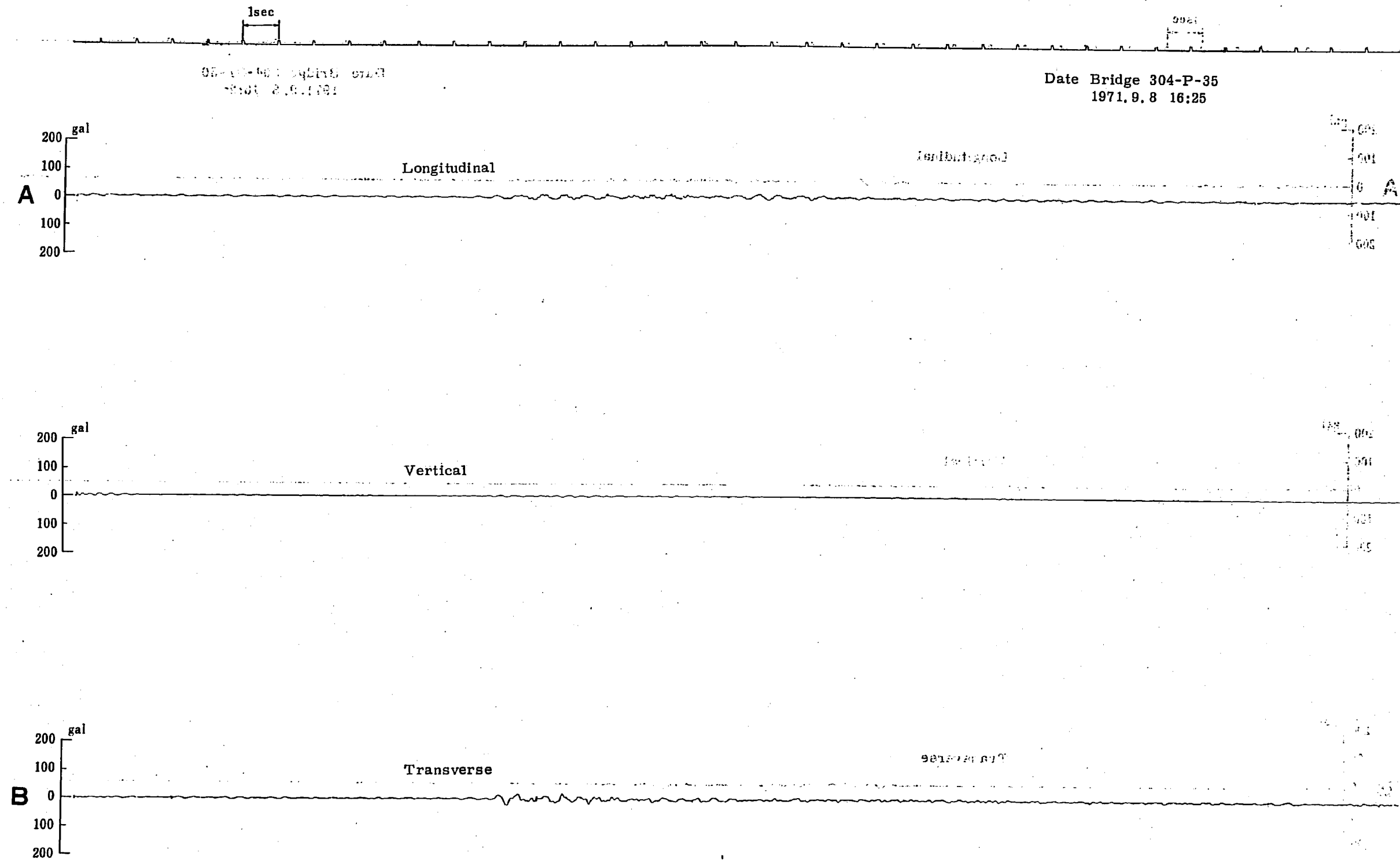
Akagi Bridge 312-Gr-2
1971. 4. 5 04:30



TM-82.FT- 7.F-279



TM-82.FT-7.F-280



1941.8.2.1000-
84446-104-50

Date Bridge 304-P-35
1971.9.8 16:25

Longitudinal

Isolated and

62,604

401

...-16

4401

015

132, 000

1991

123

45

Vertical

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

Transverse

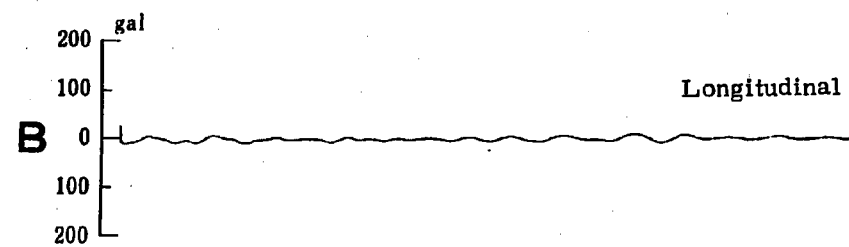
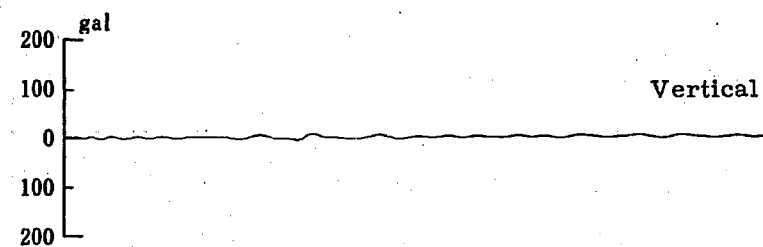
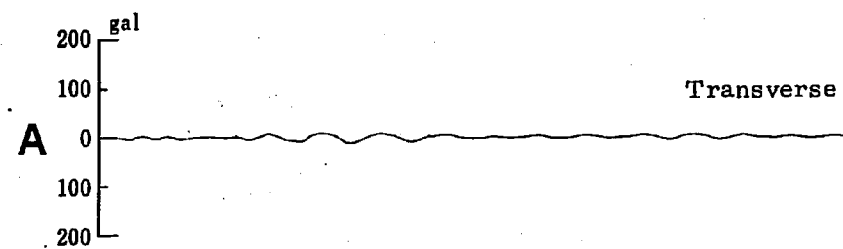
981574 RPT

100

TM-82.FT-7.F-281

1sec

Minato Bridge 305-Gr-6
1971.1.5 06:09

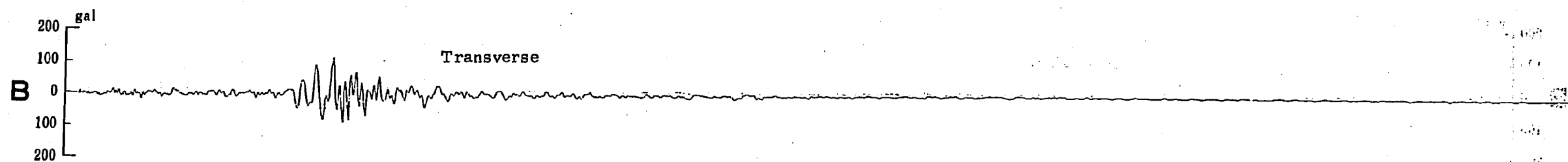
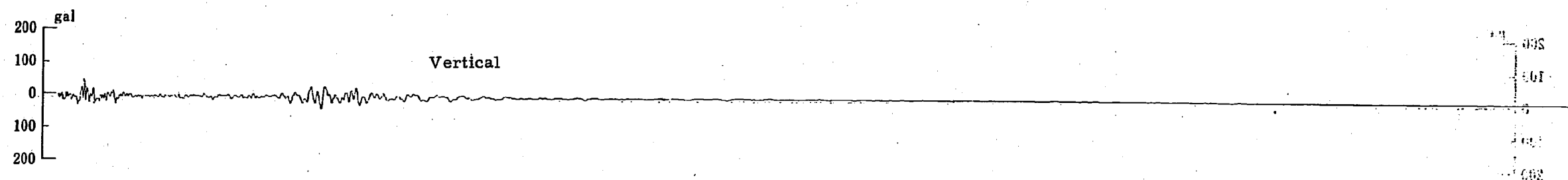
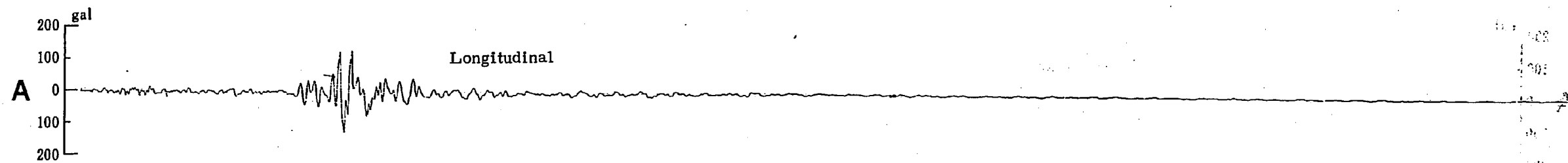


TM-82.FT- 7.F-282

54

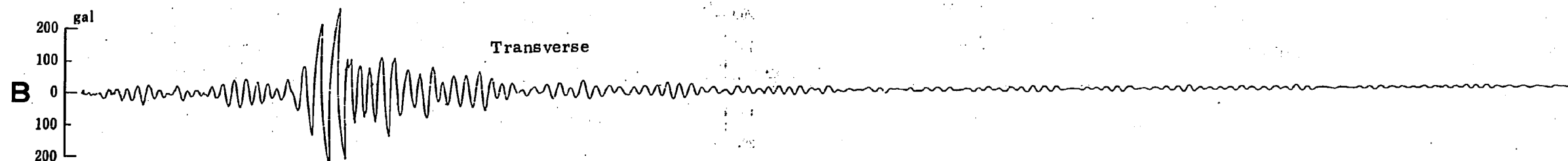
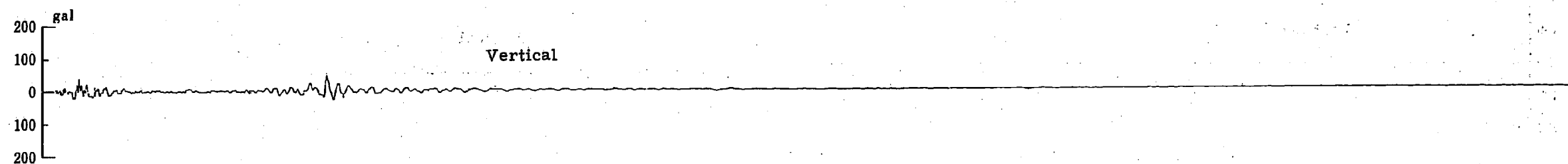
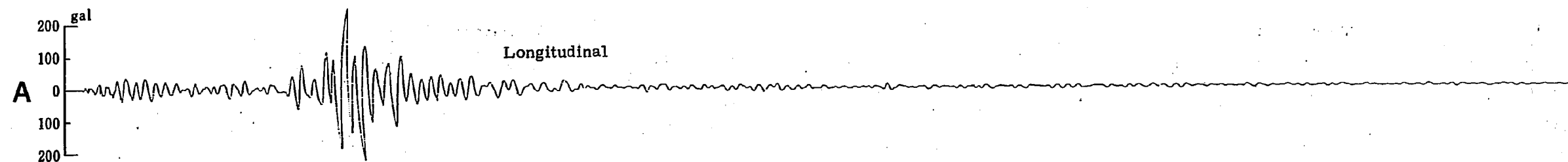
1sec

Toyoma Bridge 311-Gr-6
1971. 1. 5 06:09



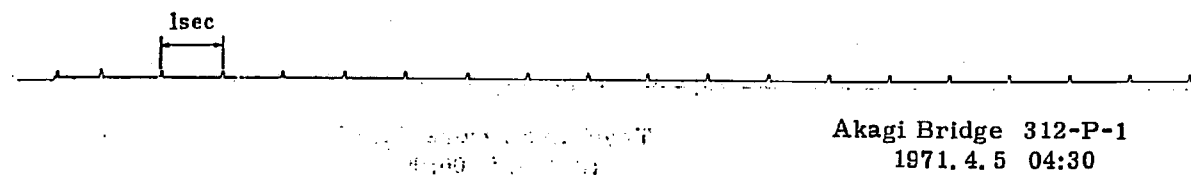
TM-82.FT- 7.F-283

1sec

Toyohama Bridge 311-P-7
1971.1.5 06:09

TM-82.FT- 7.F-284

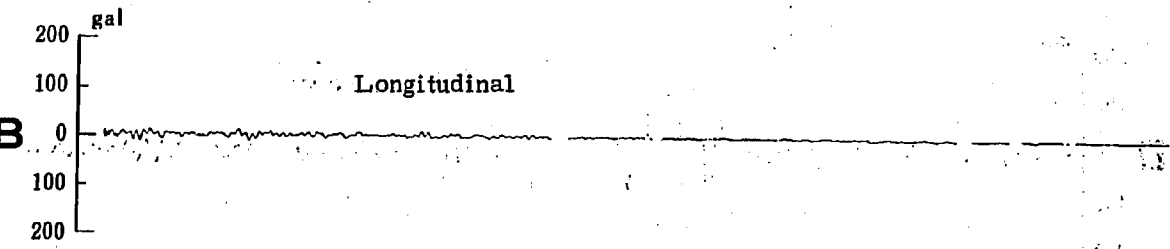
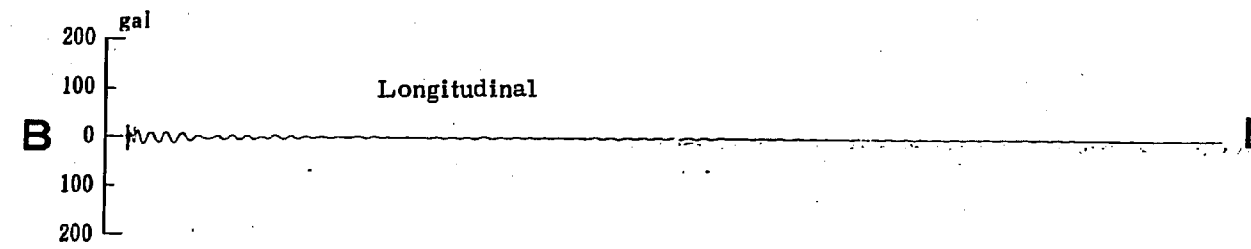
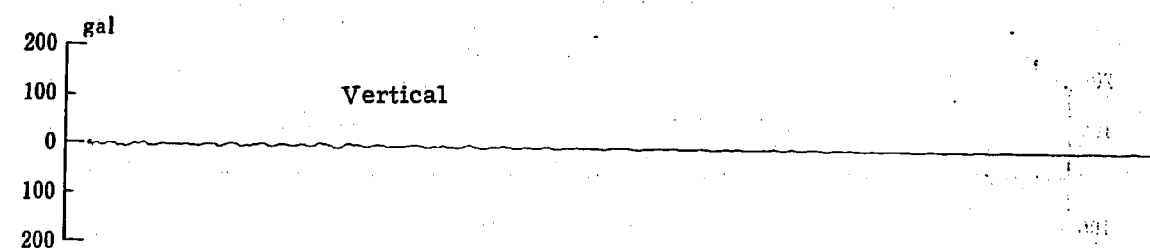
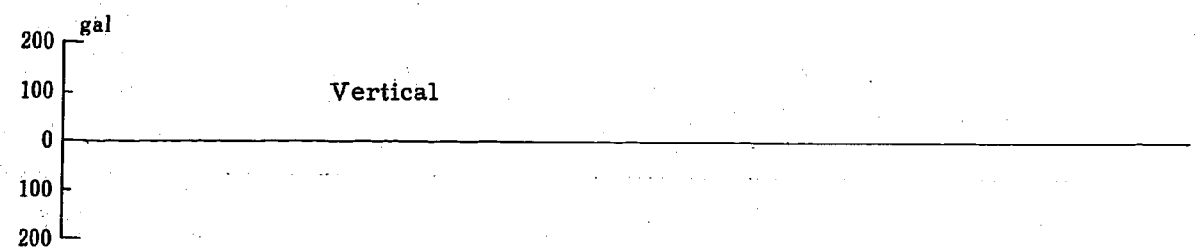
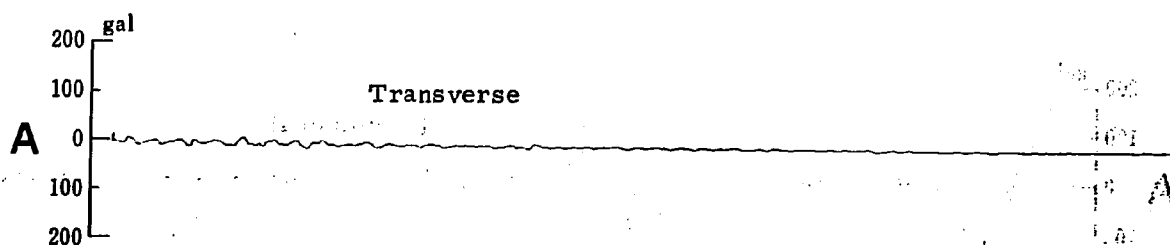
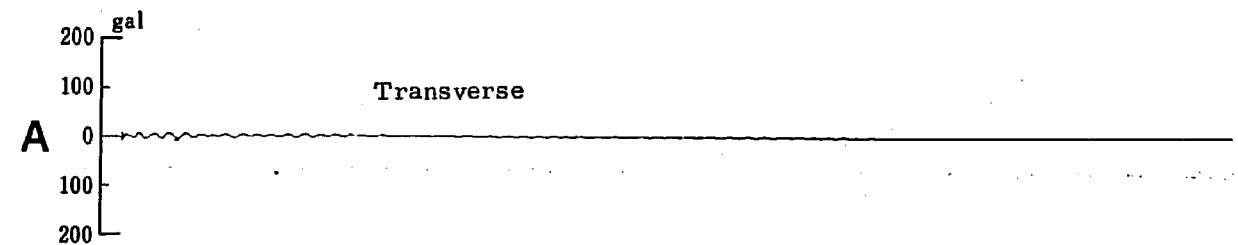
56



Akagi Bridge 312-P-1
1971.4.5 04:30

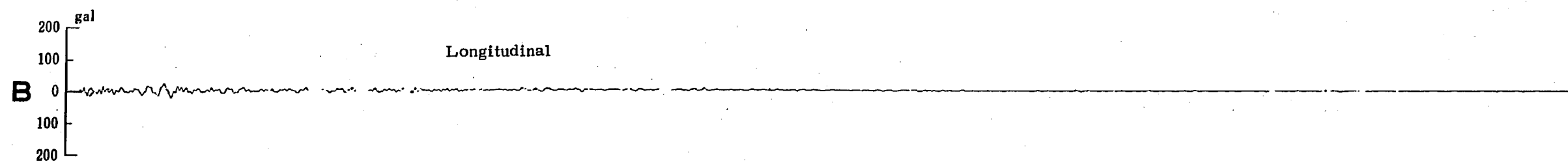
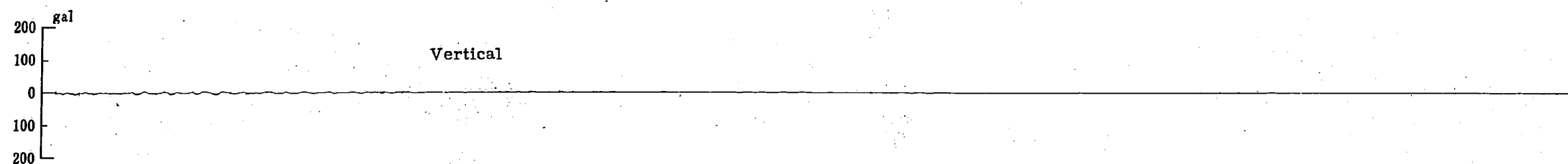
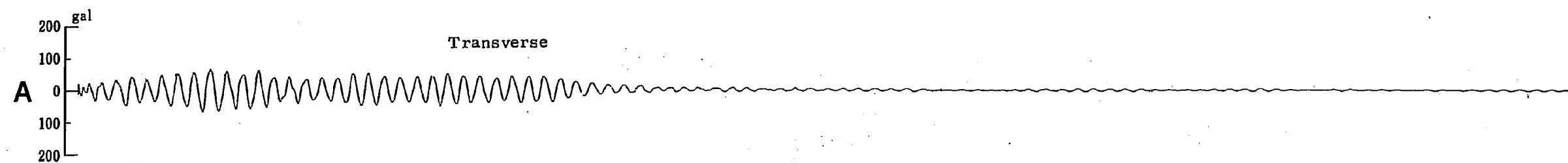


Shitoku Bridge 319-Gr-5
1971.1.5 06:09



TM-82.FT-7.F-285

1sec

Shitoku Bridge 319-P-5
1971.1.5 06:09

TM-82.FT- 7.F-286

58

1sec

Tokyo Bay (Futtu Cape) 501-Gr-60
1971. 7. 23 07:07

200 gal
100
0
100
200

A

N-S

200 gal
100
0
100
200

Vertical

200 gal
100
0
100
200

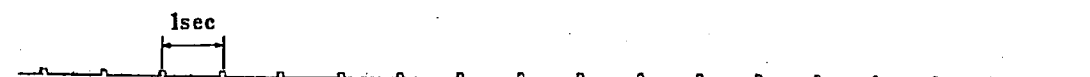
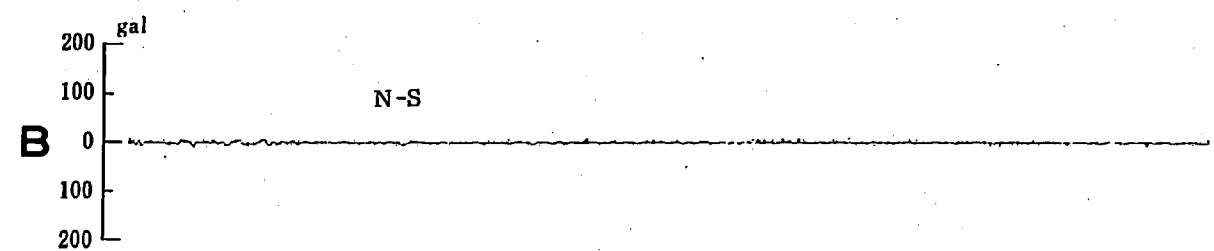
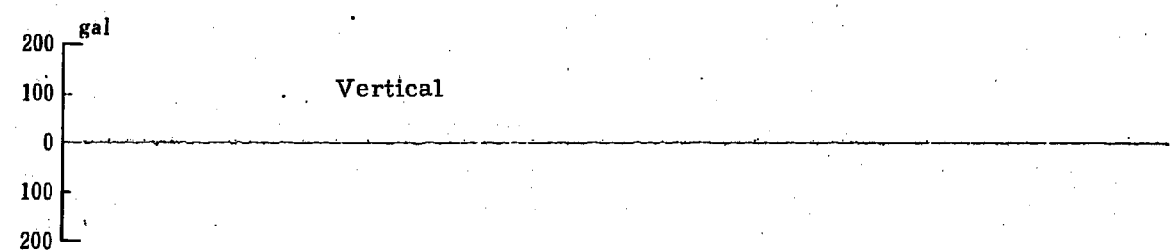
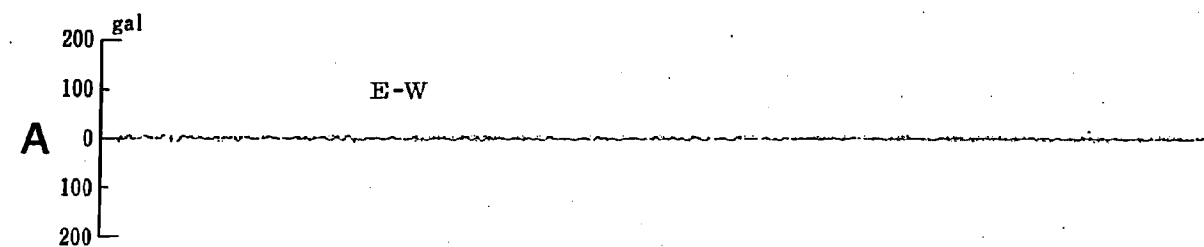
B

E-W

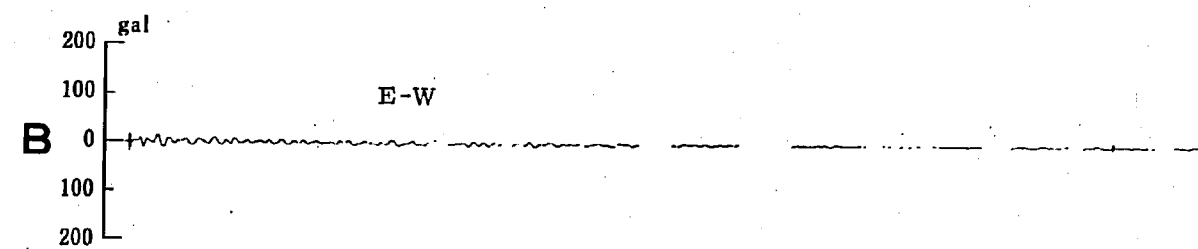
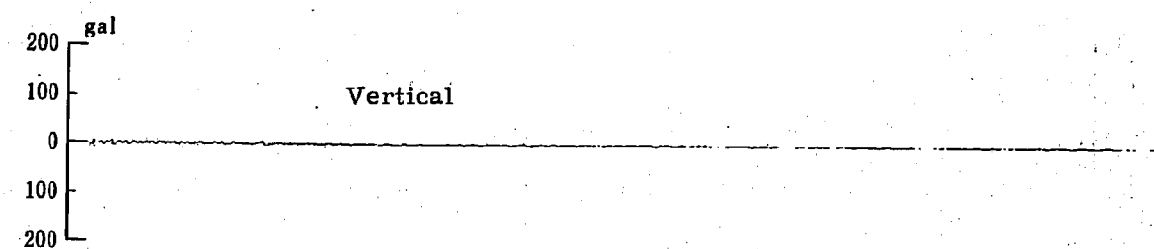
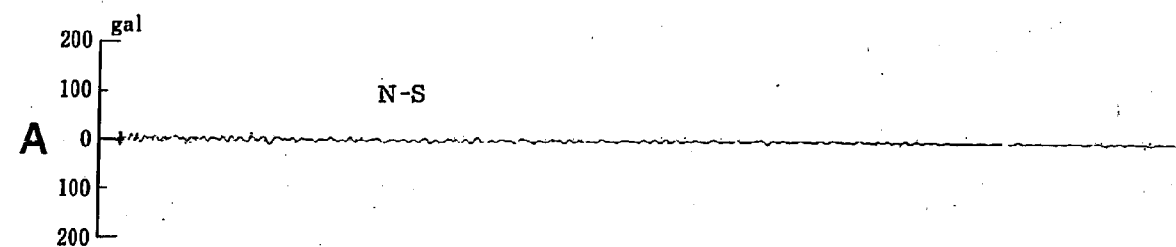
TM-82.FT- 7.F-287



Tokyo Bay (Kannonzaki) 503-Gr-15
1971.1.3 19:11



P.W.R.I. Chiba Branch 901-Gr-46
1971.7.5 09:38

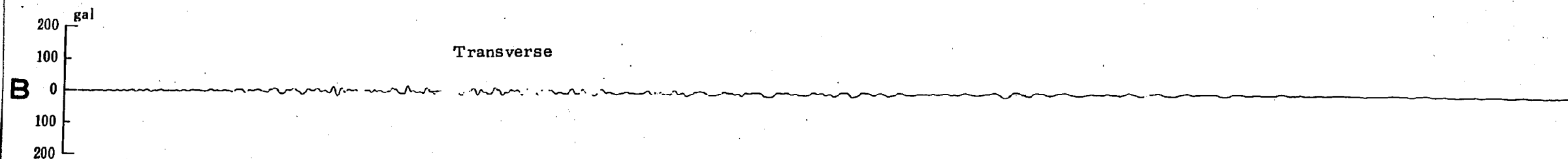
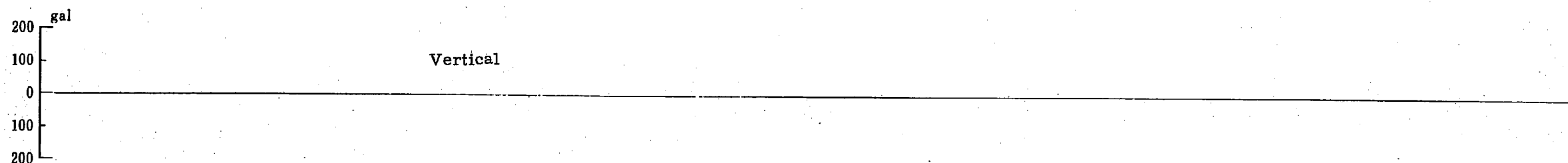
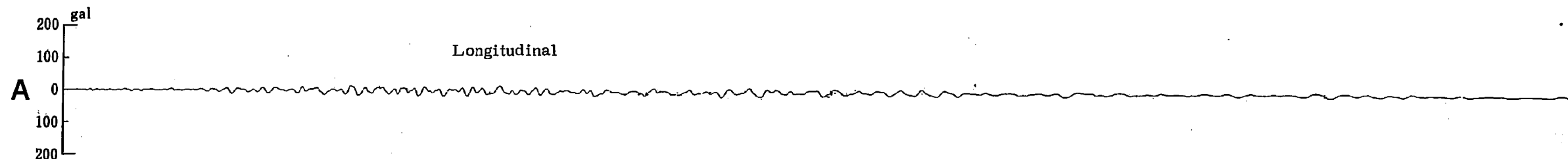


TM-82.FT- 7.F-288

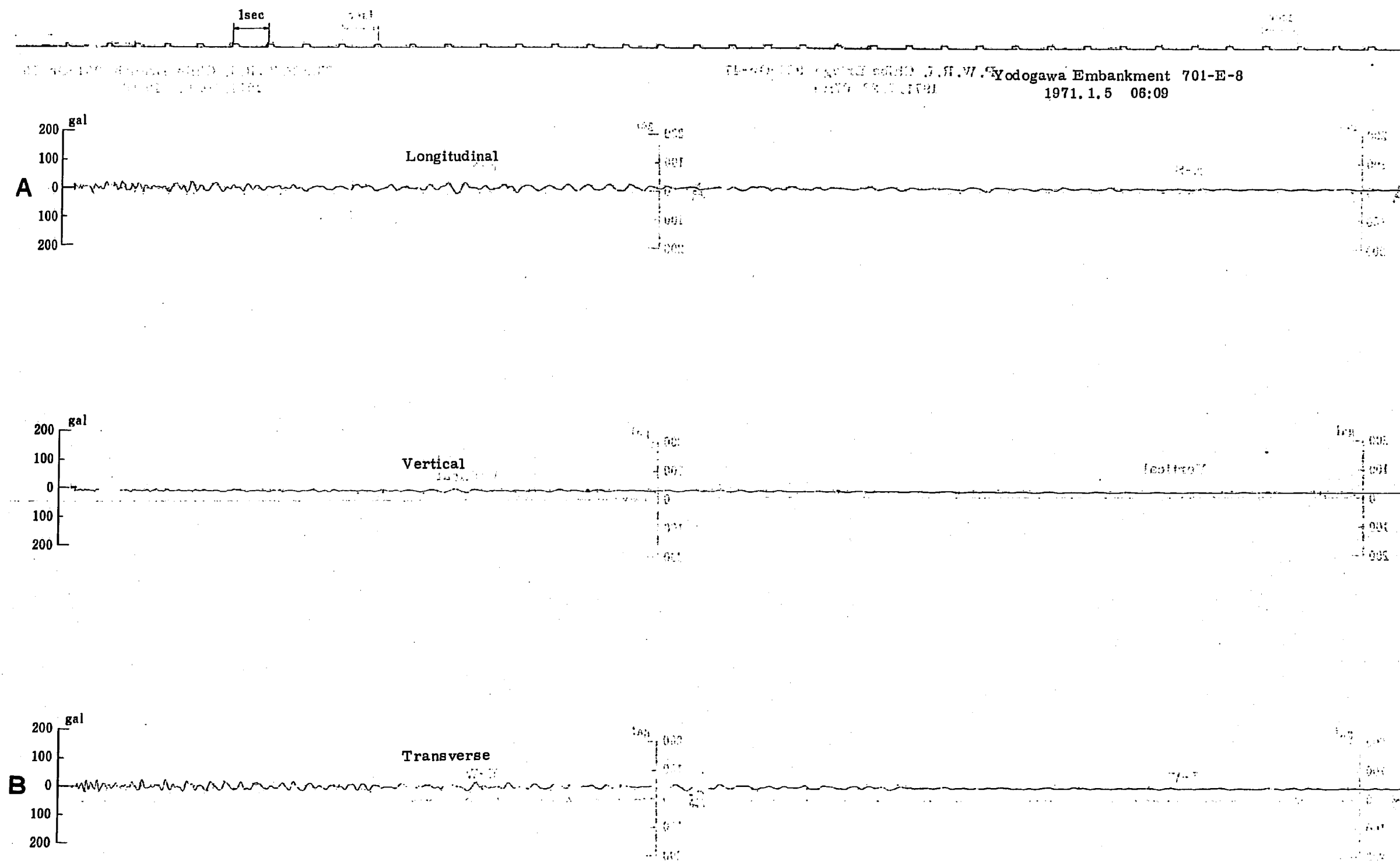
60

1sec

Yodogawa Embankment 701-Gr-7
1971.1.5 06:09



TM-82.FT- 7.F-289



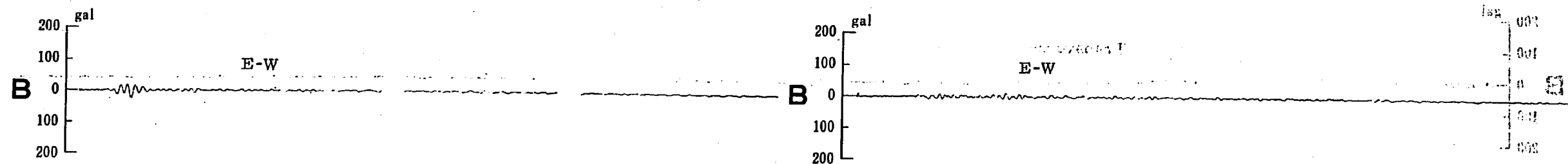
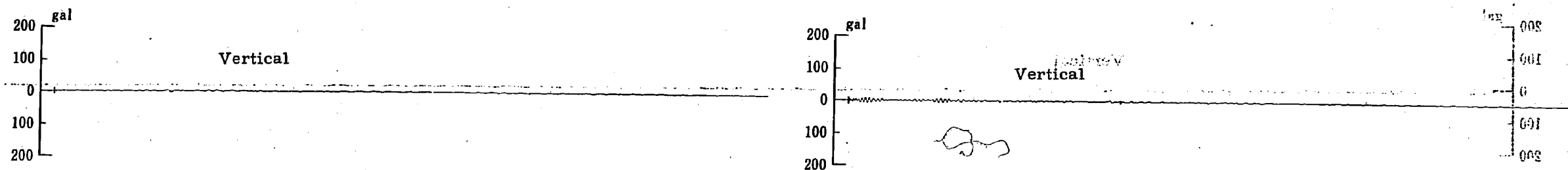
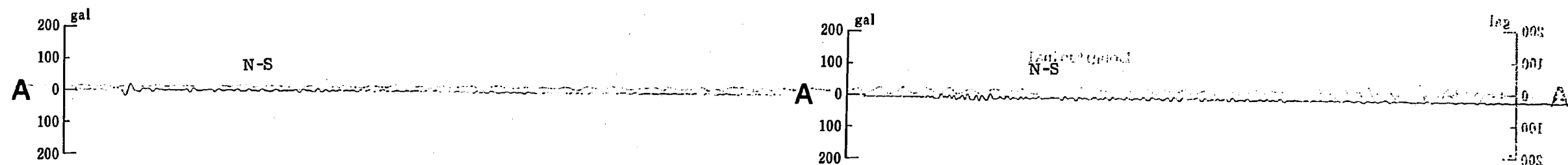
TM-82.FT-7.F-290

1sec

P.W.R.I. Chiba Bridge 901-Gr-47
1971. 7. 23 07:07

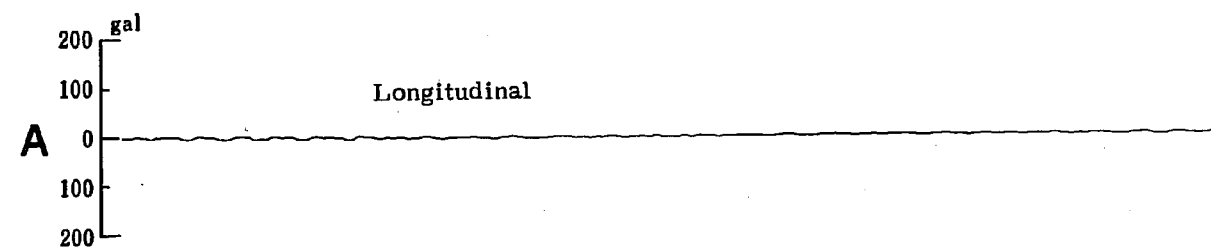
1sec

The P.W.R.I. Chiba Branch 901-Gr-50
1971. 10. 11 19:16

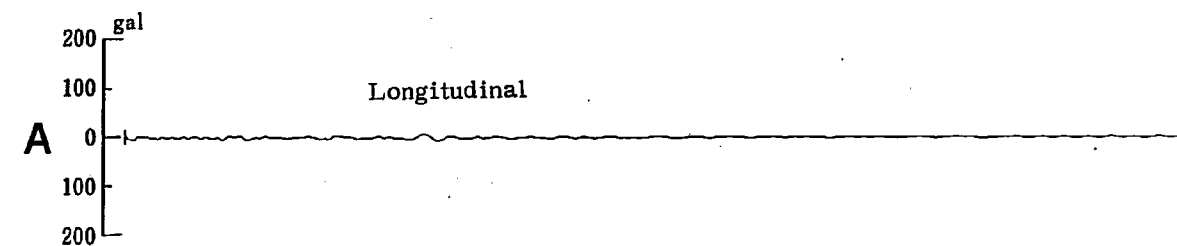


TM-82.FT- 7.F-291

1sec

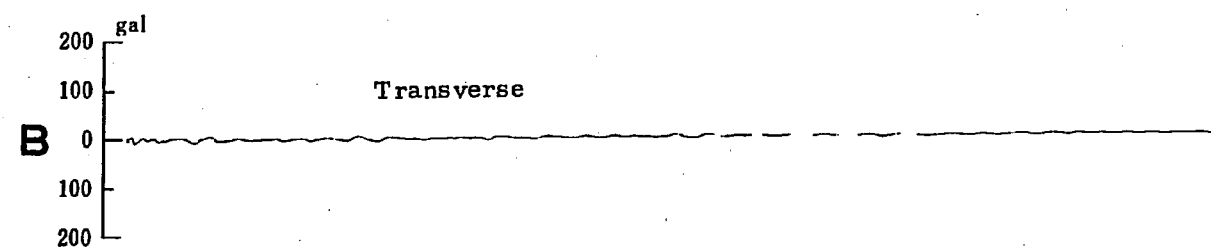
Nishiarai Bridge 902-P₉-23
1971. 1. 6 15:04

1sec

Nishiarai Bridge 902-P₇-47
1971. 10. 11 19:16

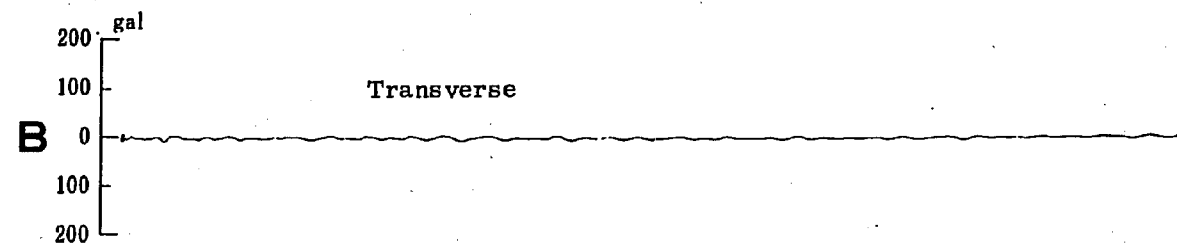
200 gal
100
0
100
200

Vertical



200 gal
100
0
100
200

Vertical

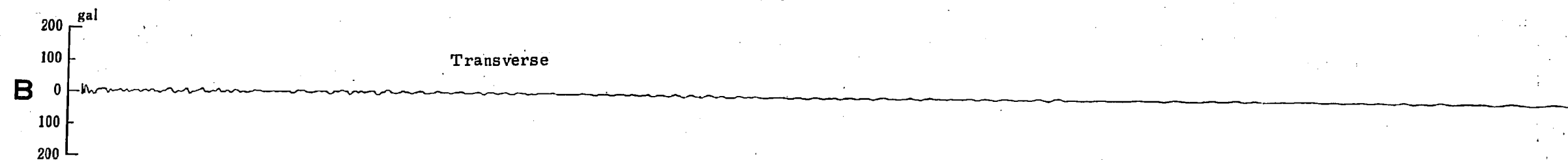
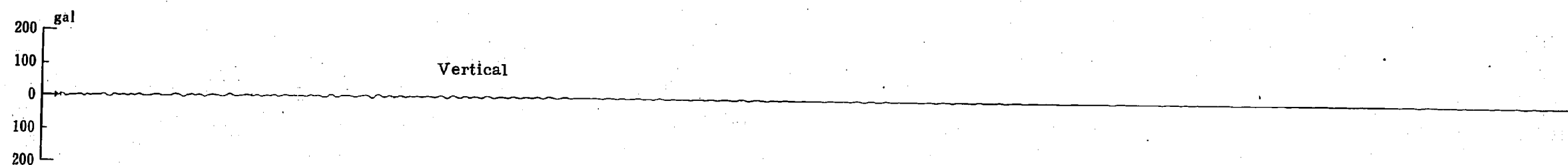
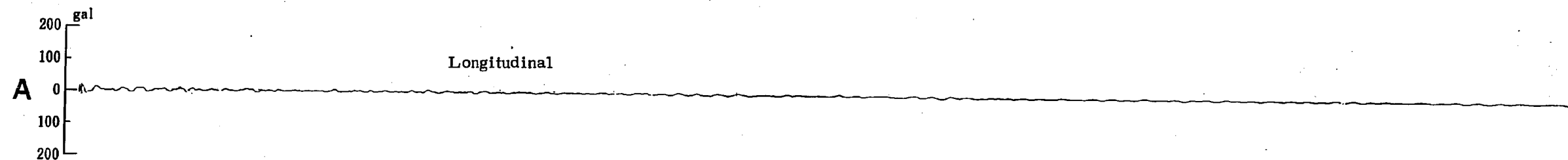


TM-82.FT- 7.F-292

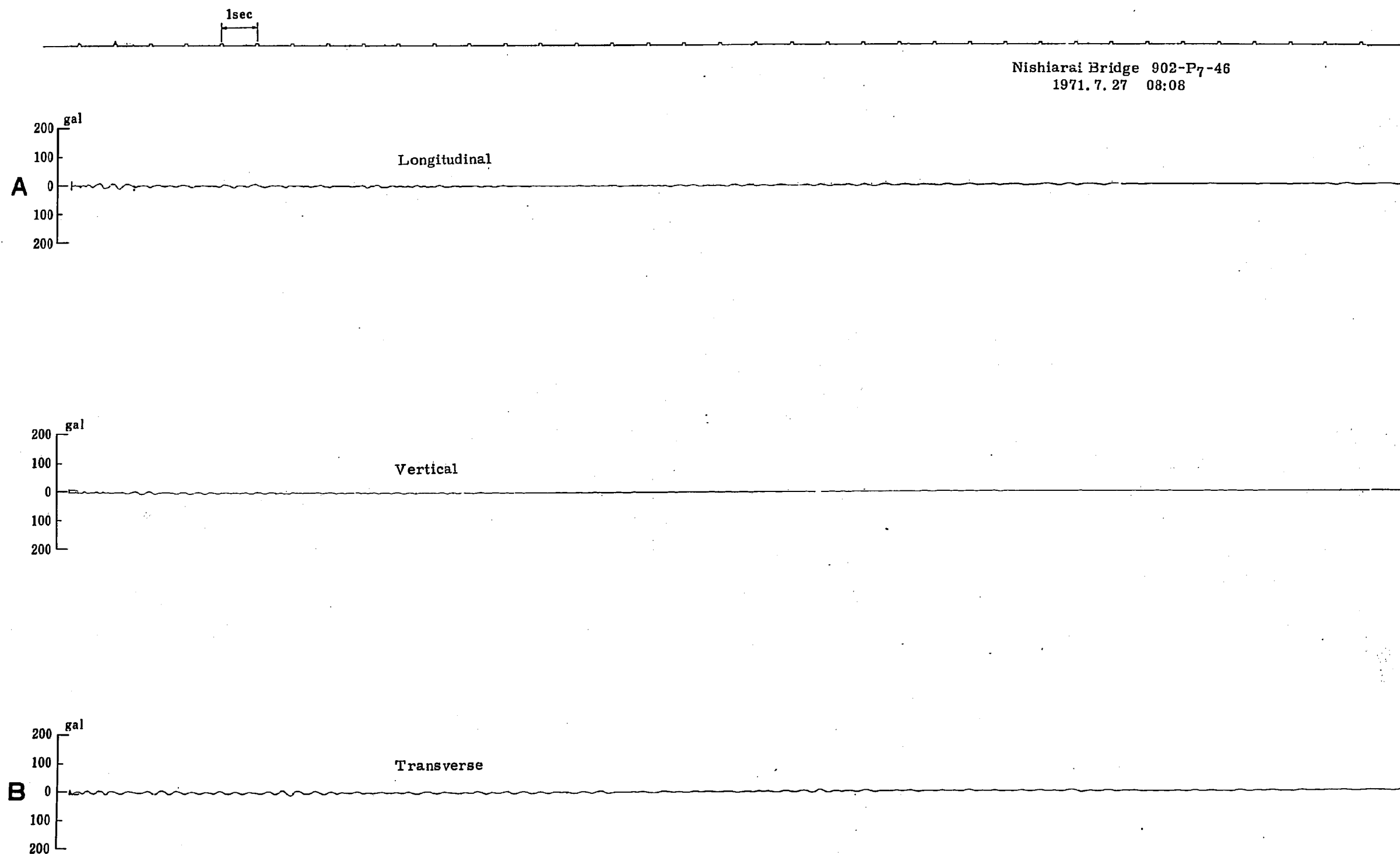
64

1sec

Nishiarai Bridge 902-Gr-27
1971.7.27 08:08



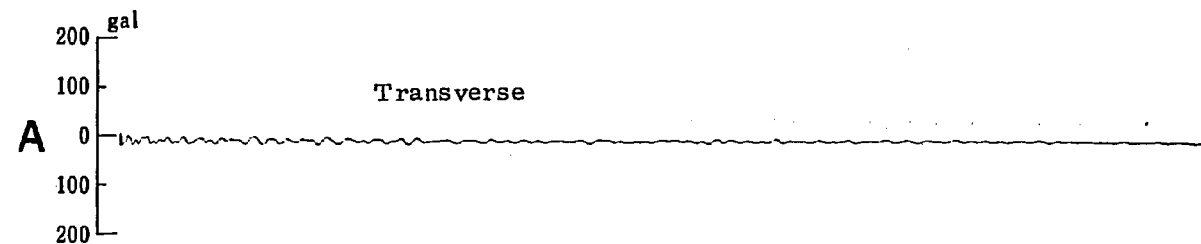
TM-82.FT- 7.F-293



TM-82.FT-7.F-294

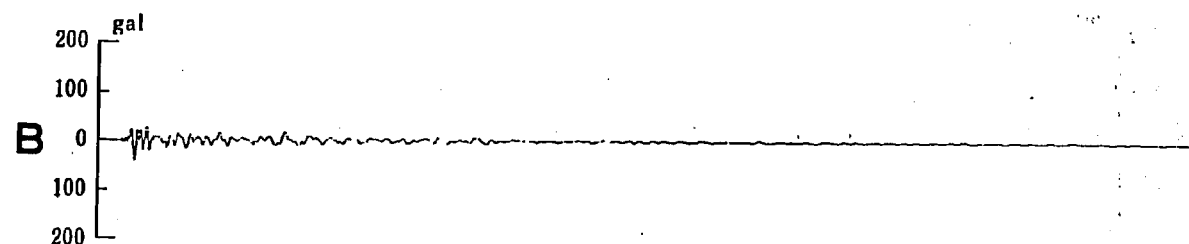
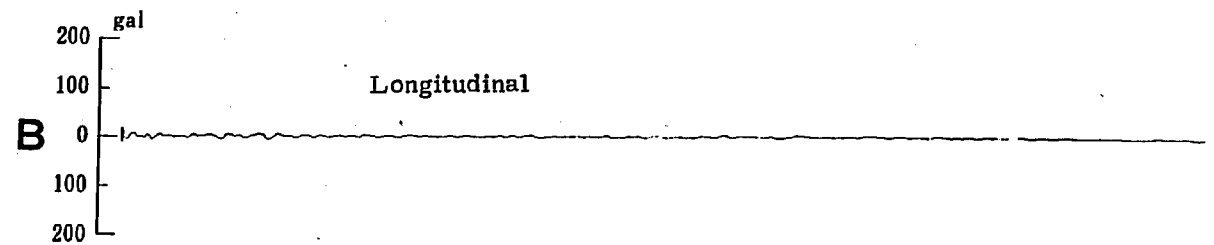
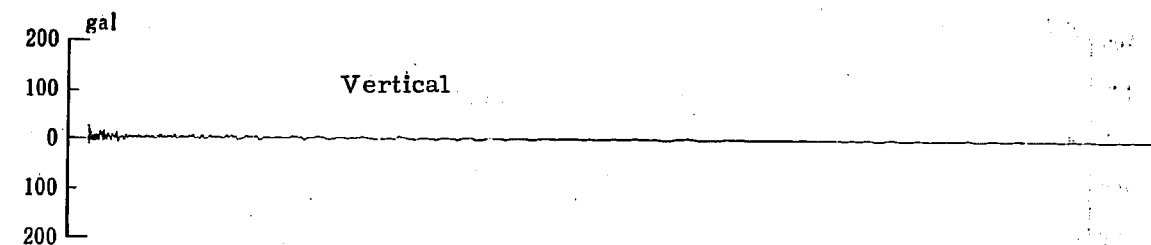
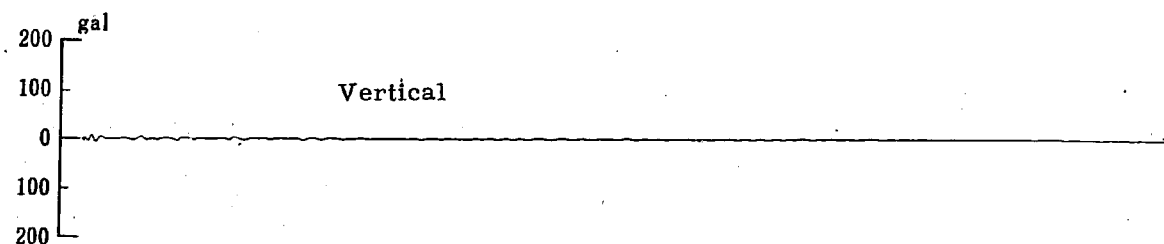
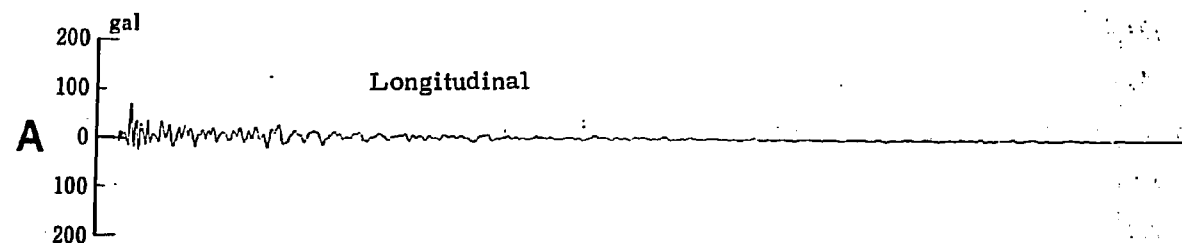
1sec

Showa Bridge 903-Gr-7
1971. 2. 26 04:27

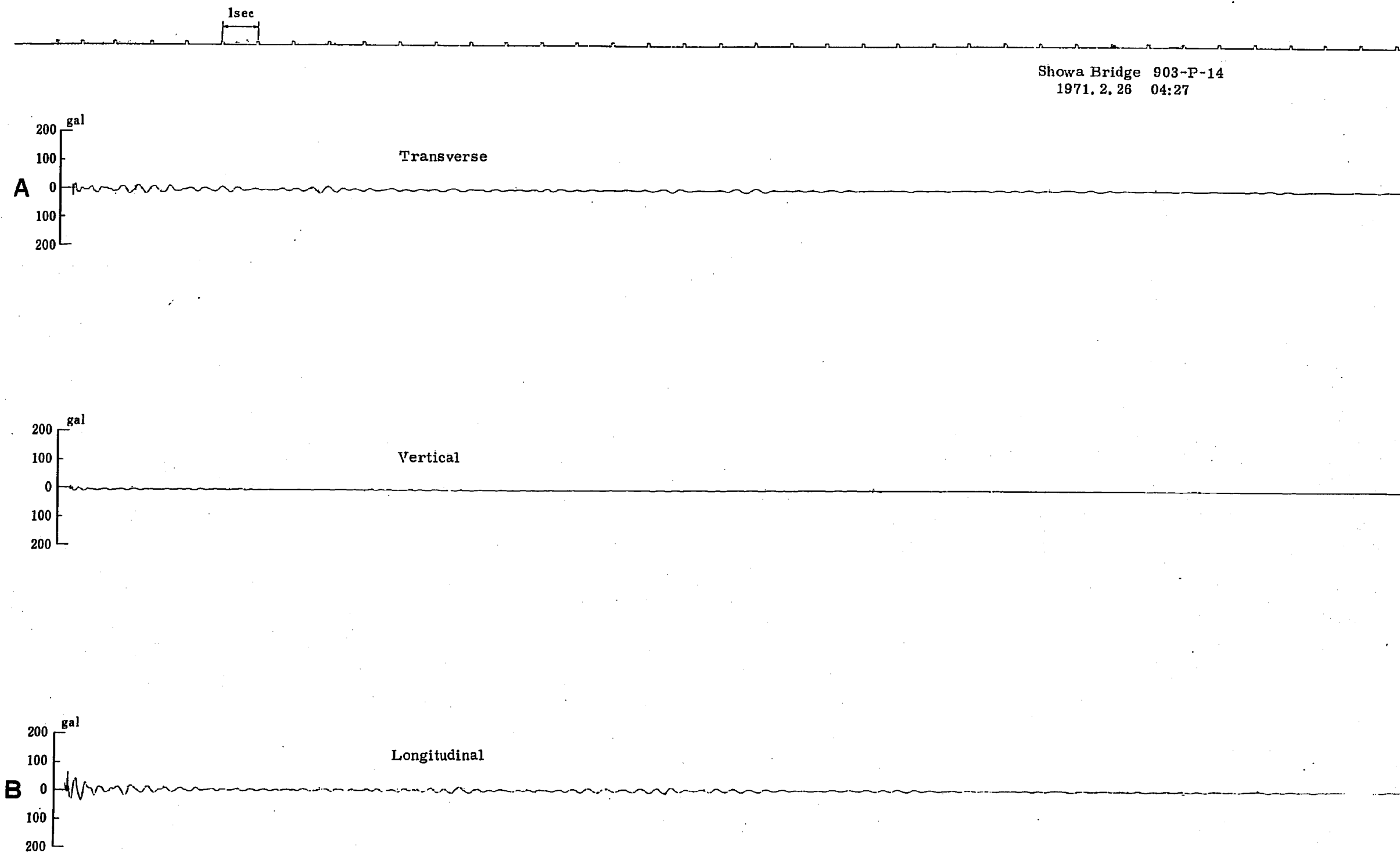


1sec

Ochiai Bridge 905-B-267
1971. 3. 20 10:13



TM-82.FT- 7.F-295

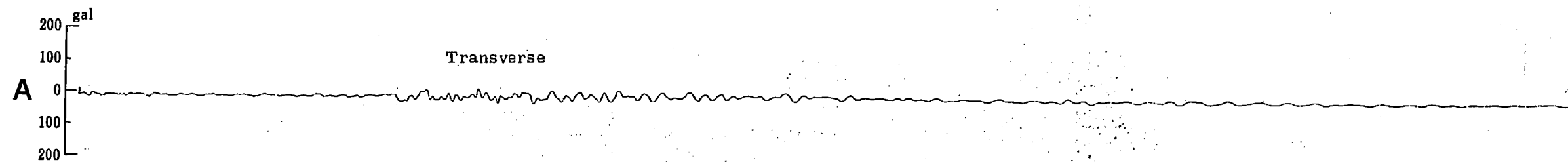


TM-82.FT- 7.F-296

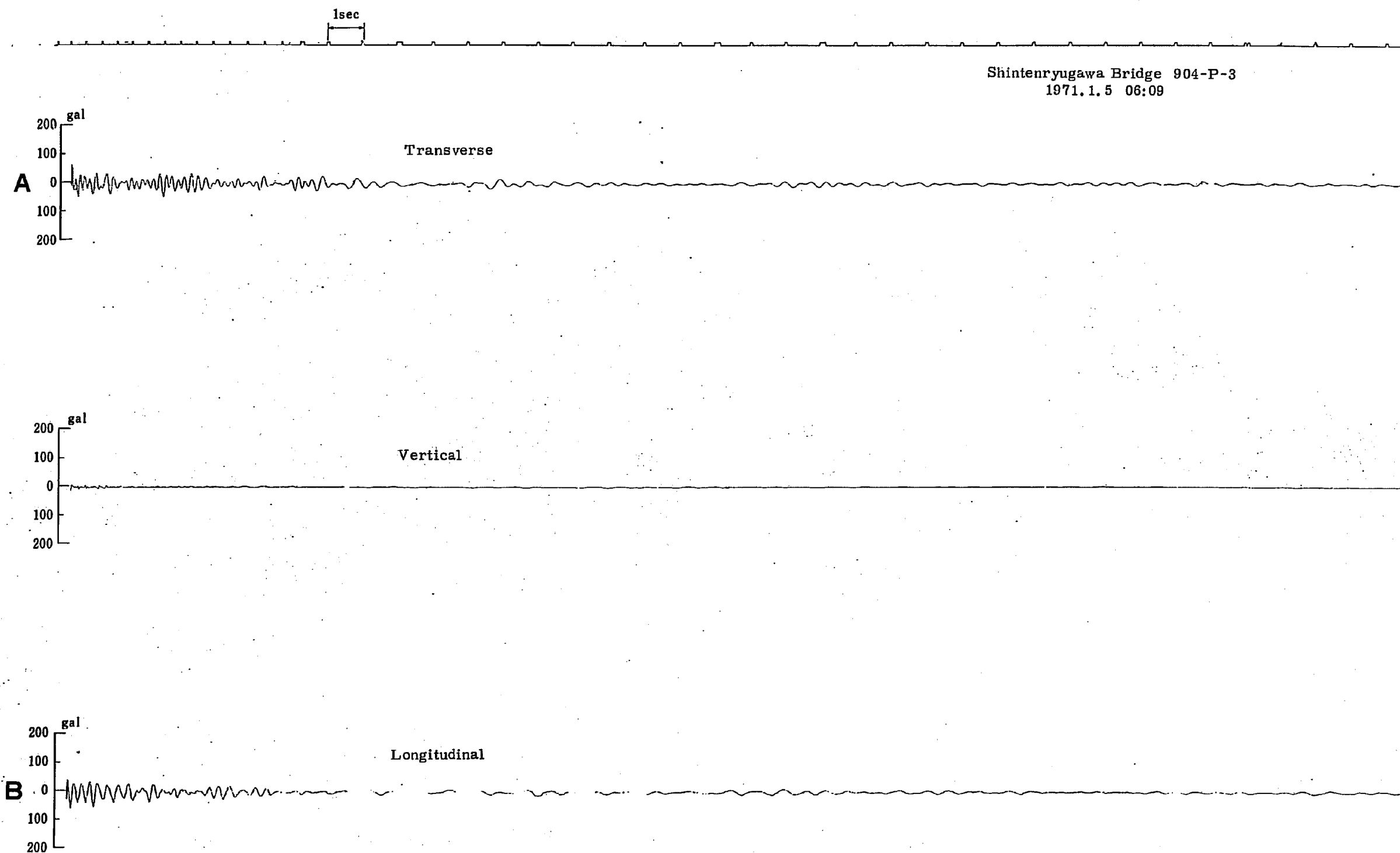
68

1sec

Shintenryugawa Bridge 904-Gr-4
1971.1.5 06:09



TM-82.FT- 7.F-297

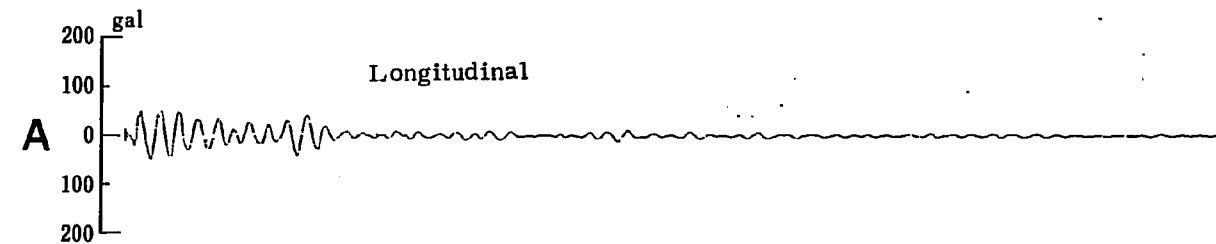


TM-82.FT- 7.F-298

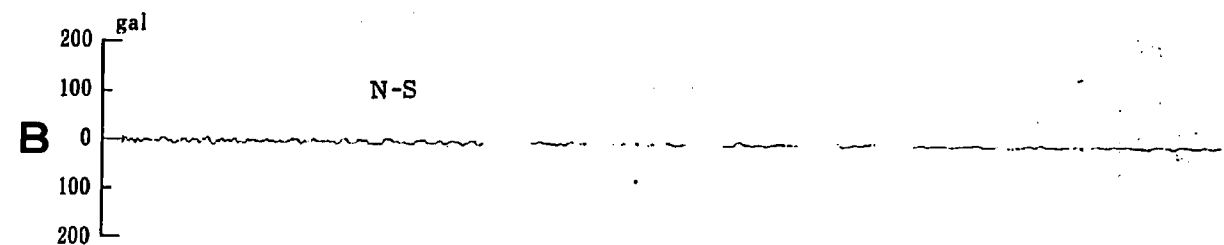
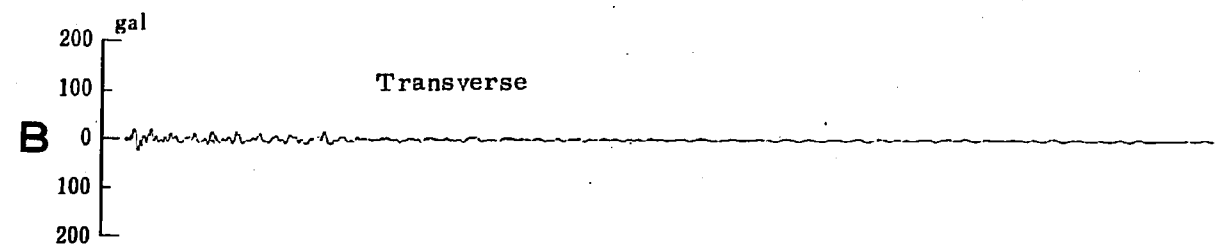
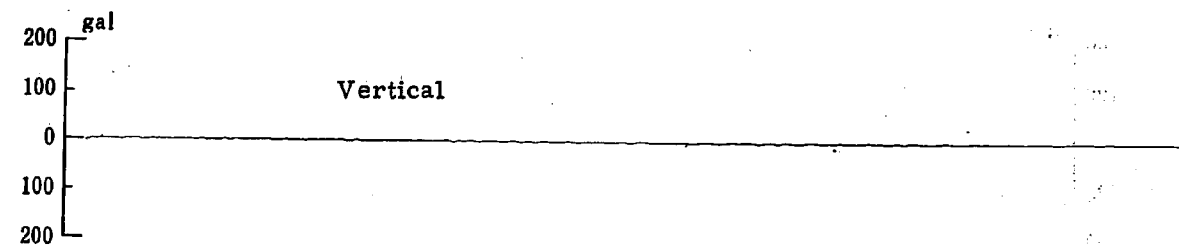
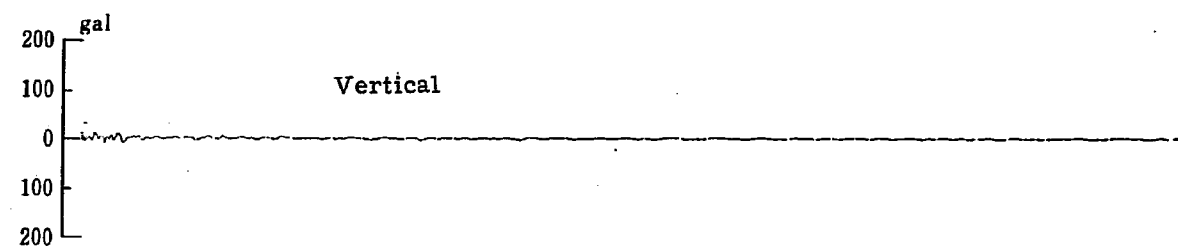
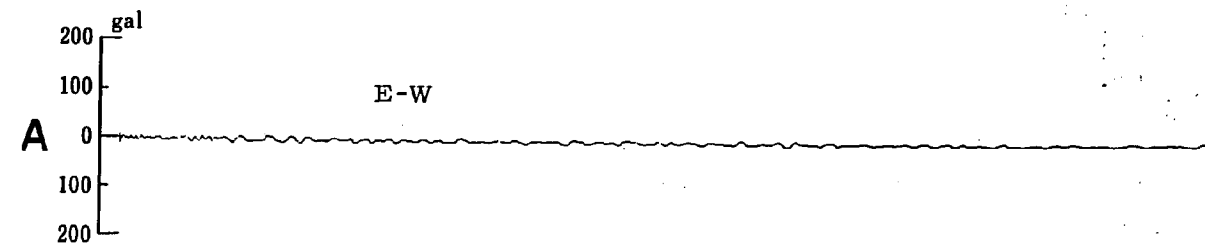
70



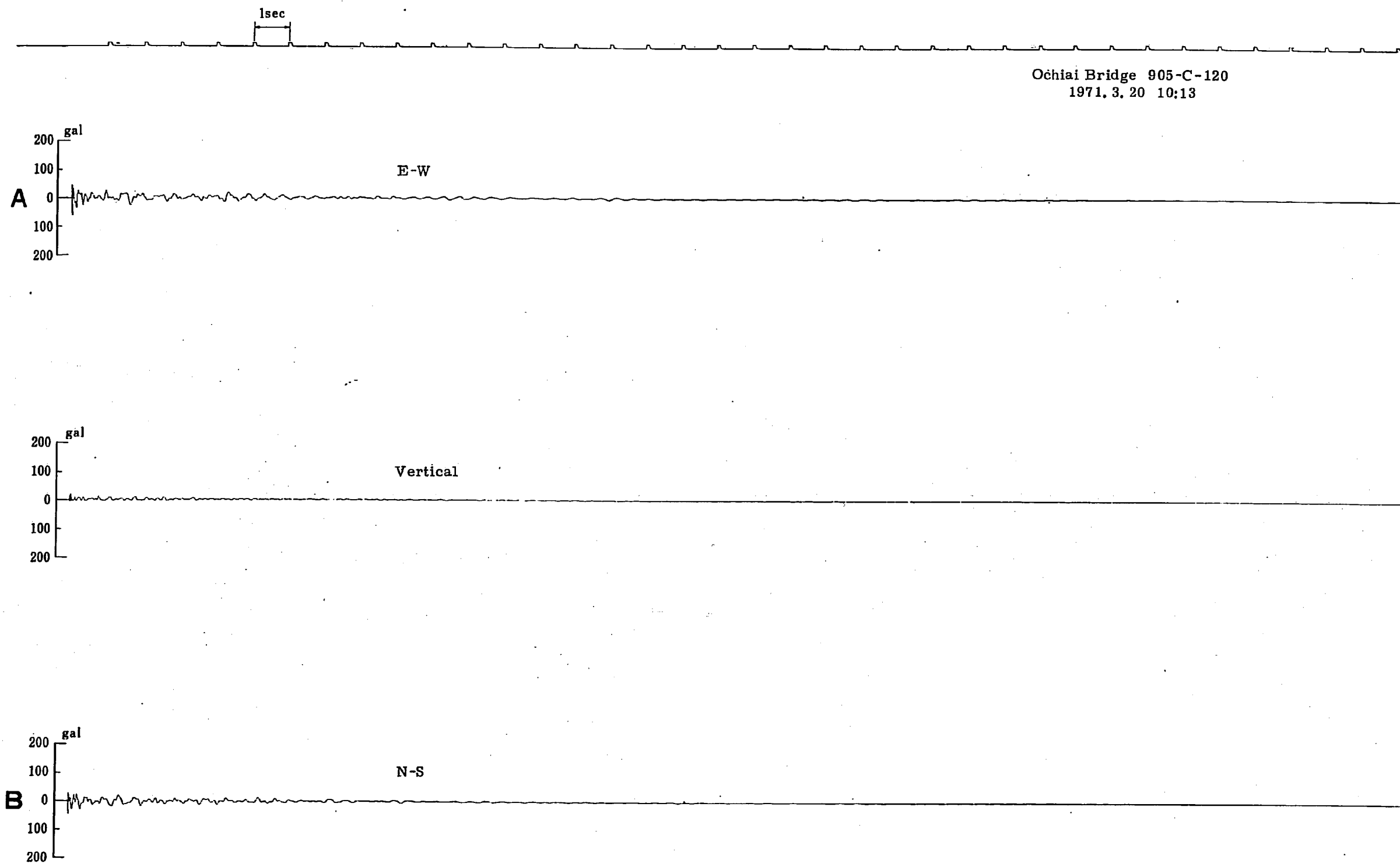
Ochiai Bridge 905-A-427
1971. 3. 20 10:13



The Public Works Research Institute,
Kashima Experiment Laboratory. 906-Gr-11

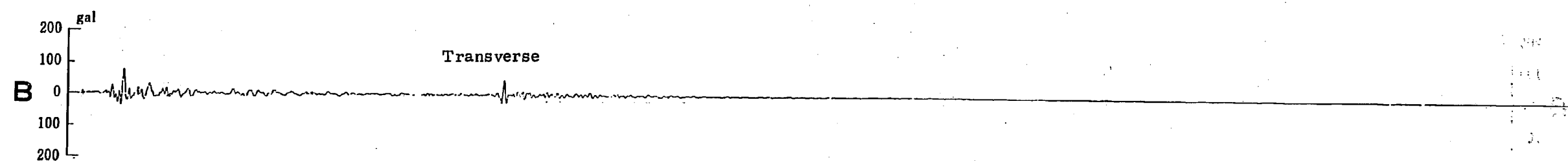
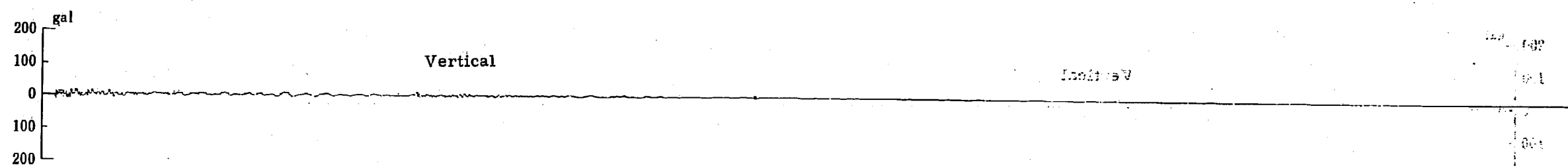


TM-82.FT- 7.F-299



TM-82.FT- 7.F- 300

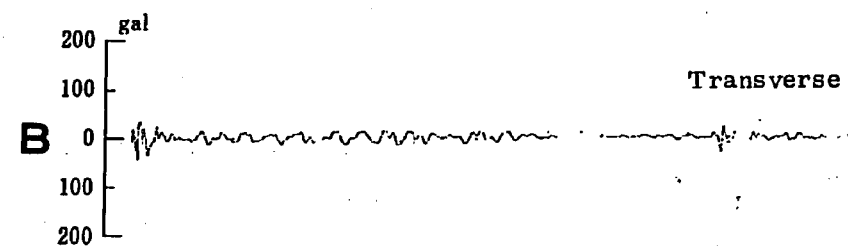
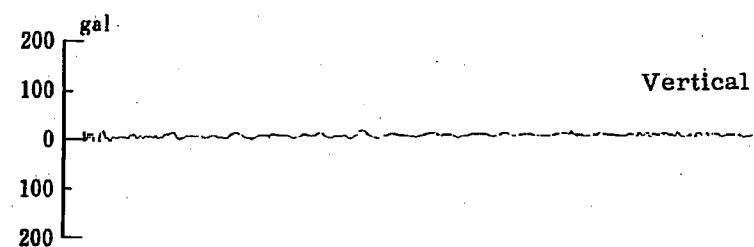
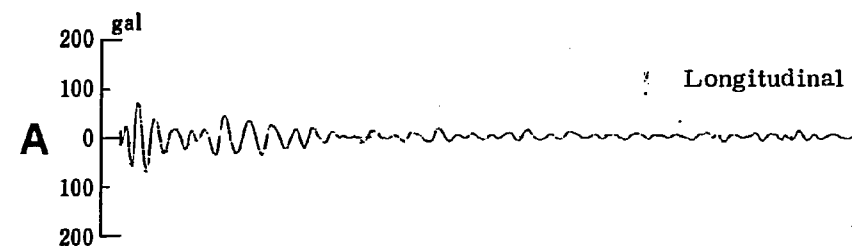
1sec

Ochiai Bridge 905-B-268
1971.11.10 17:37

TM-82.FT- 7.F- 301

1sec

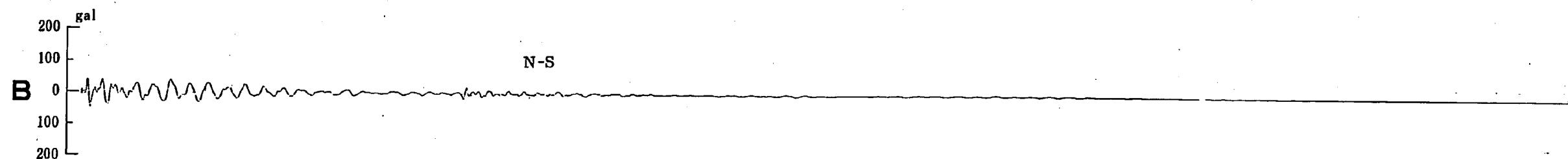
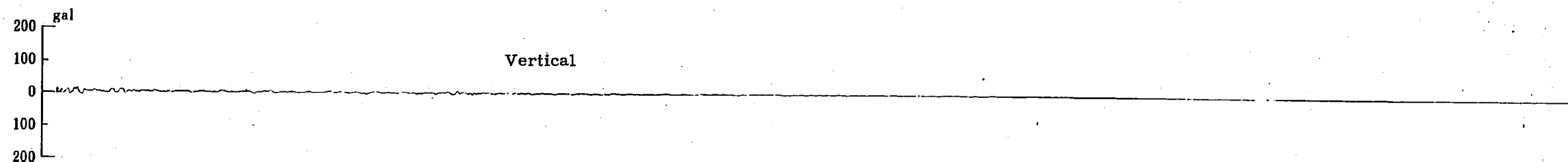
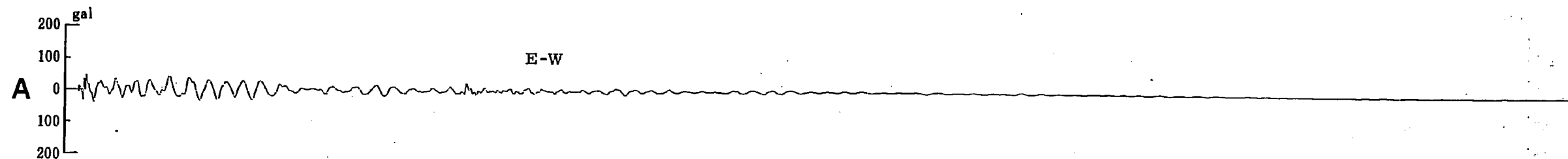
Ochiai Bridge 905-A-428
1971. 11. 10 17:37



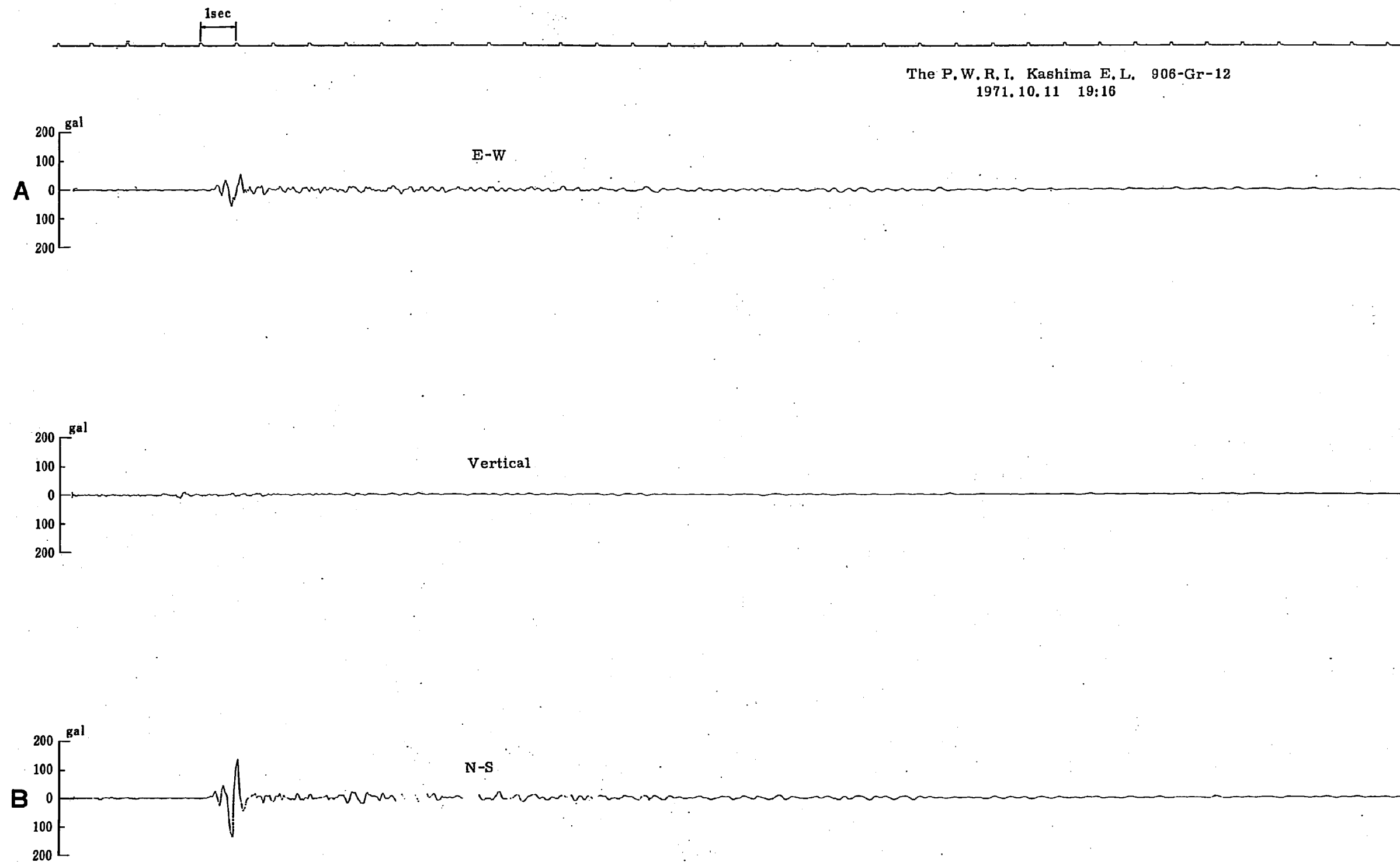
TM-82.FT- 7.F-302

1sec

Ochiai Bridge 905-C-121
1971.11.10 17:37



TM-82.FT- 7.F- 303

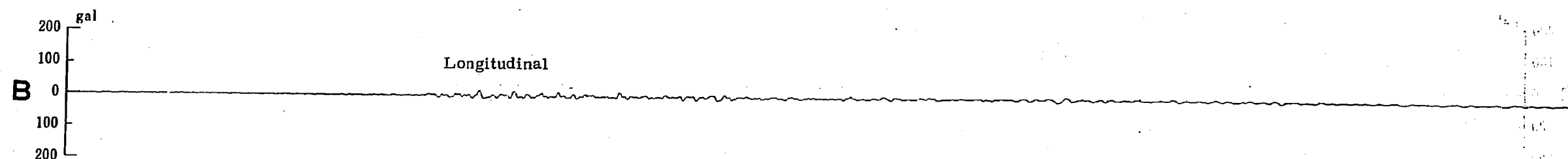
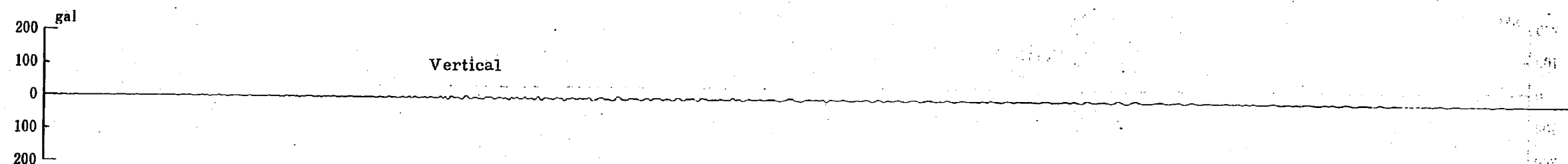
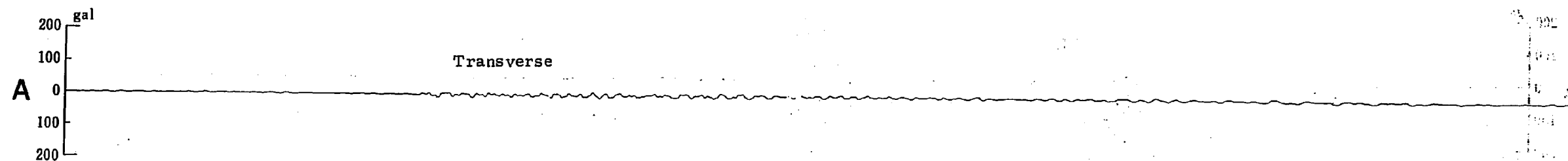


TM-82.FT- 7.F- 304

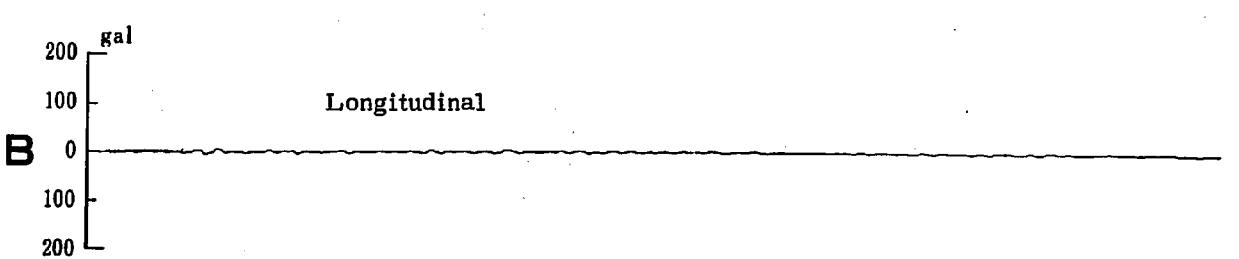
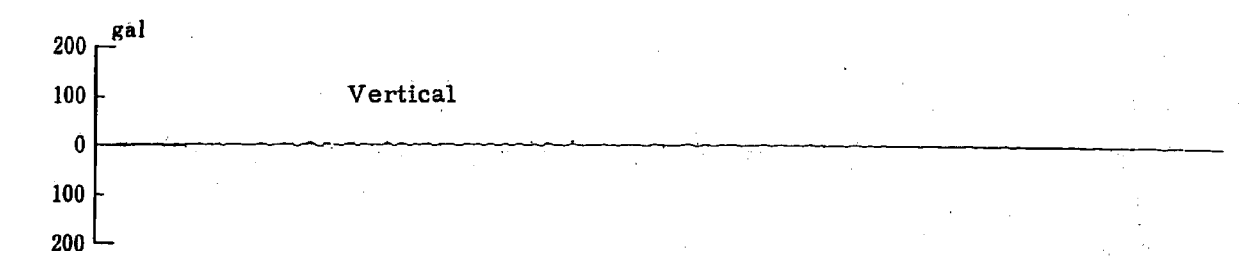
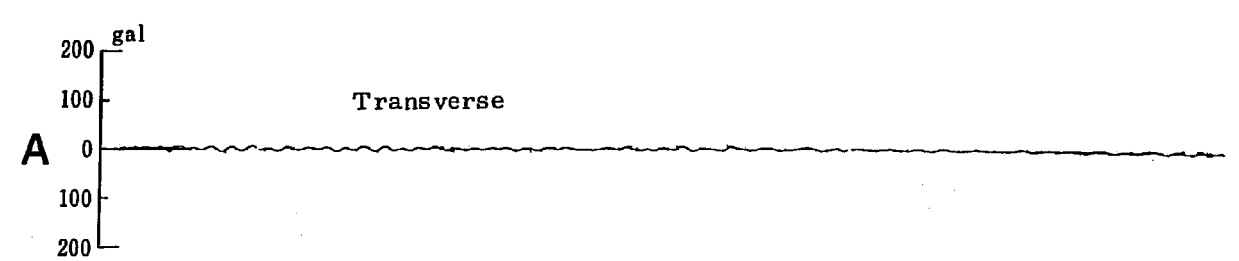
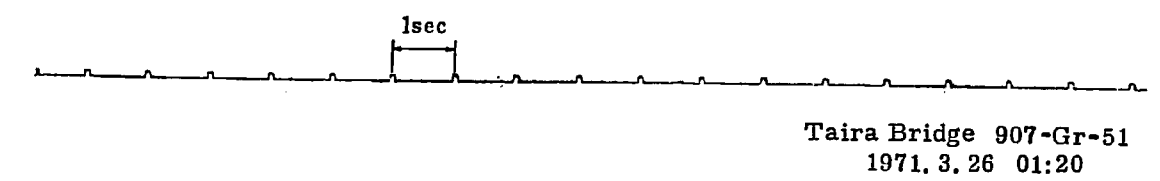
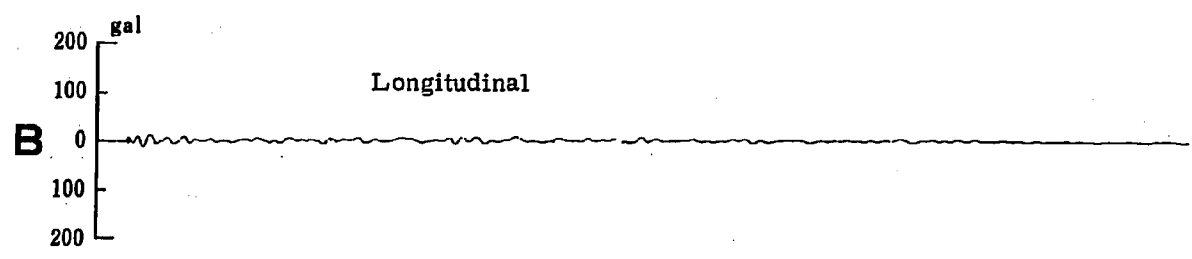
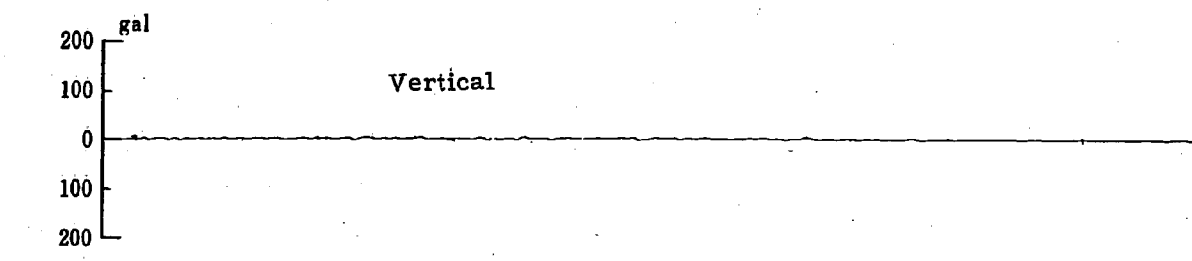
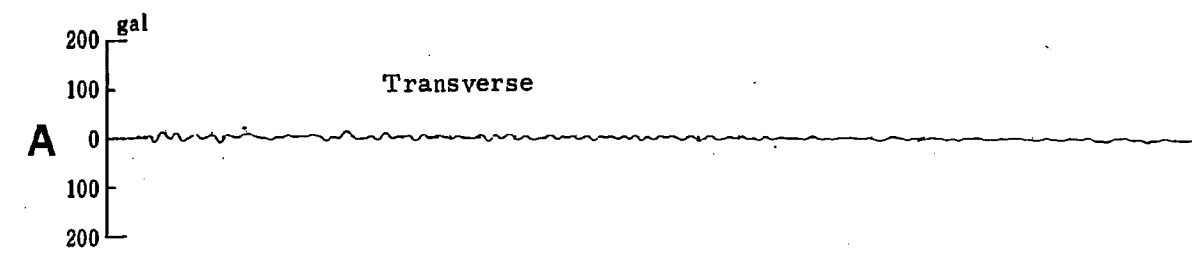
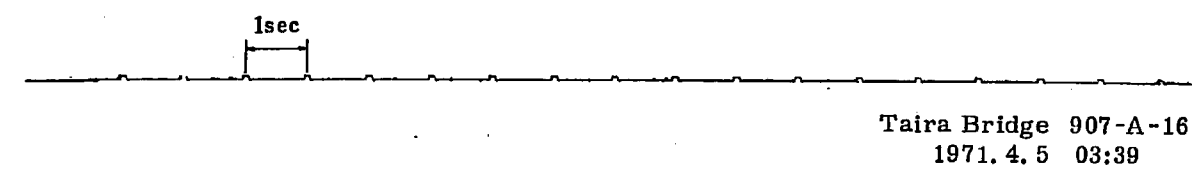
76

1sec

Taira Bridge 907-Gr-47
1971. 1. 6 15:04



TM-82.FT- 7.F- 305



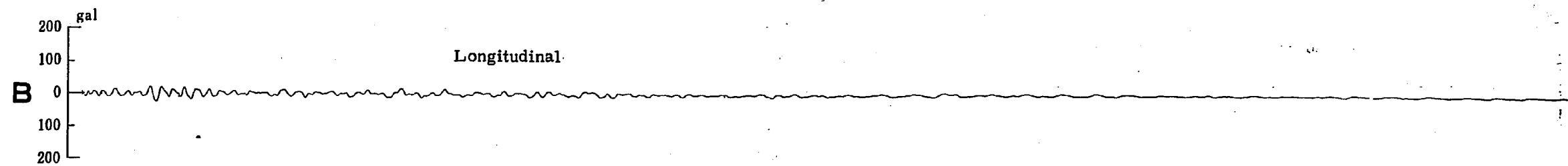
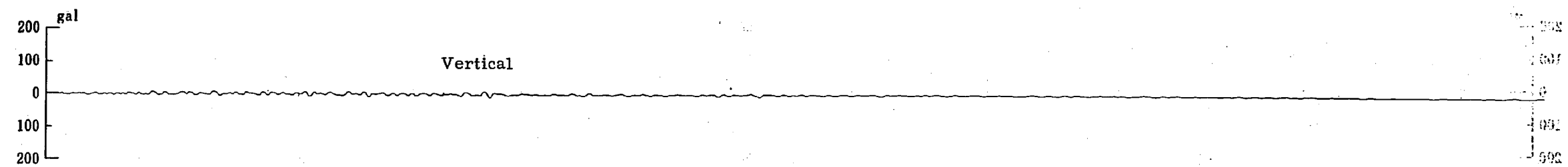
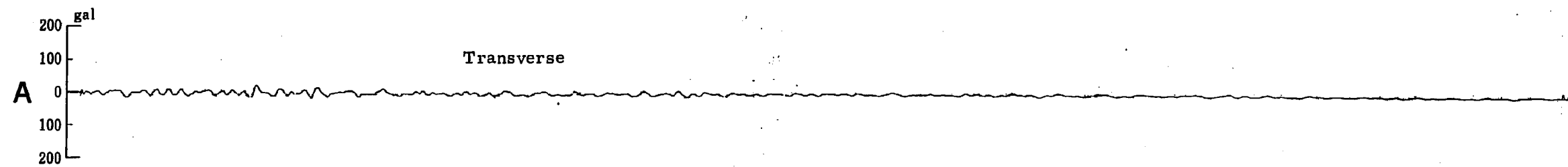
TM-82.FT- 7.F- 306

78

1sec

Taira Bridge 907-Gr-53

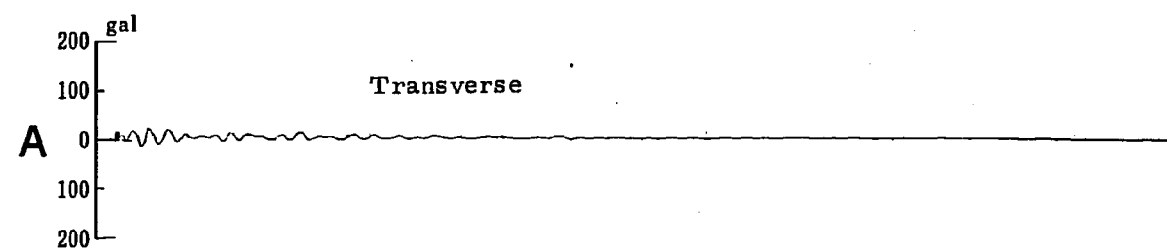
1971.4.5 03:39



TM-82.FT- 7.F- 307

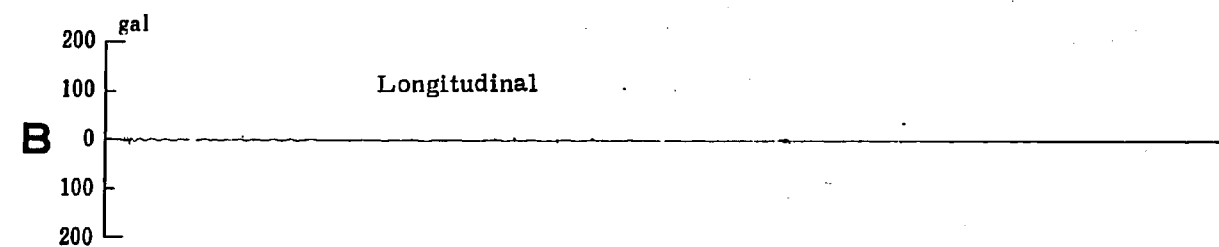
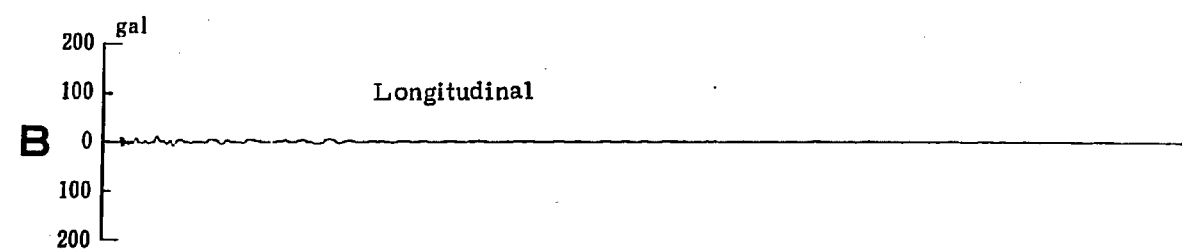
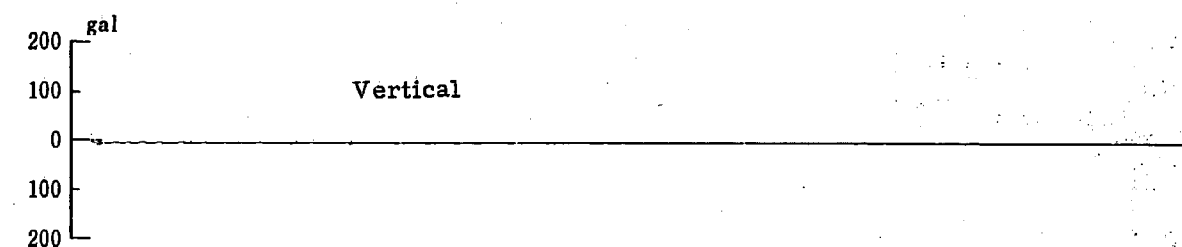
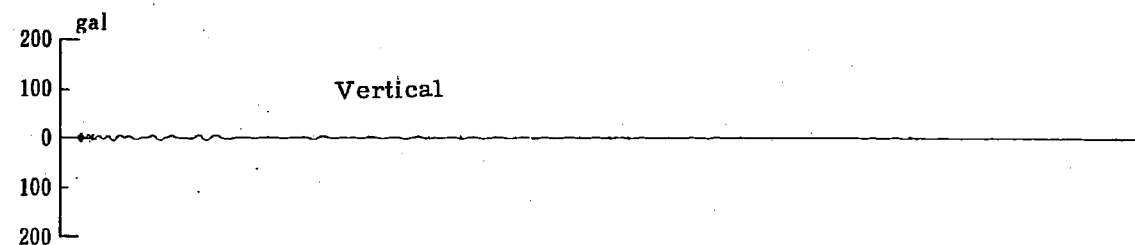
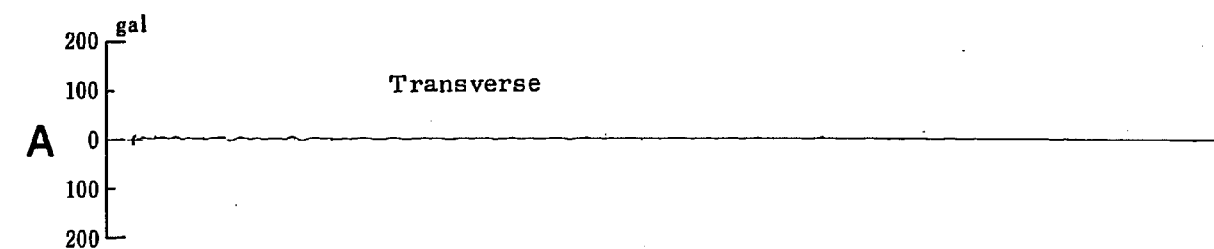
1sec

Taira Bridge 907-Gr-54
1971.6.3 20:04



1sec

Taira Bridge 907-A-17
1971.6.3 20:04

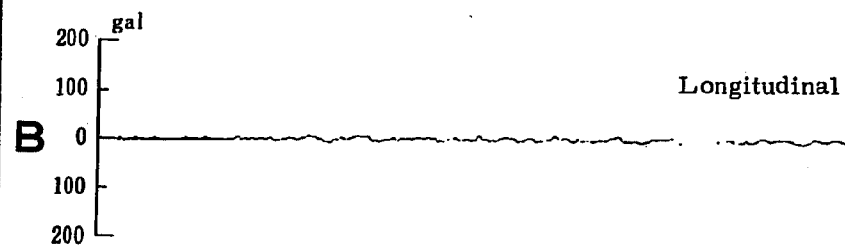
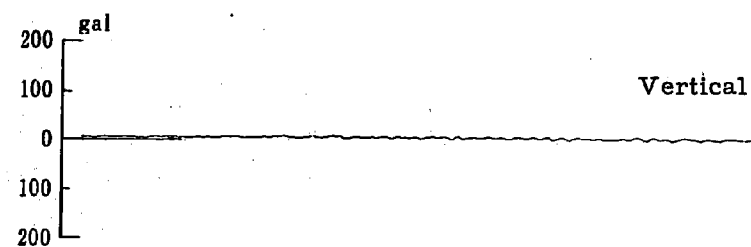


TM-82.FT- 7.F- 308

80

1sec

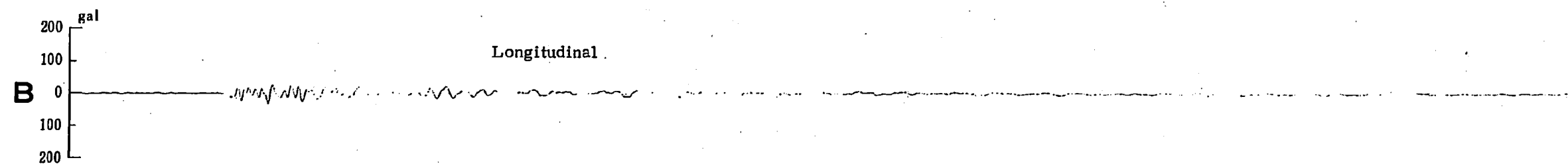
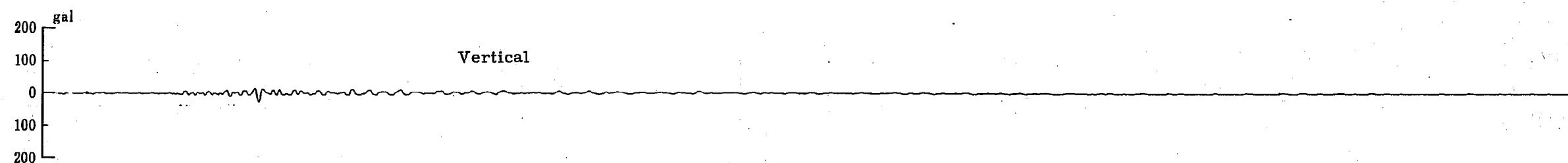
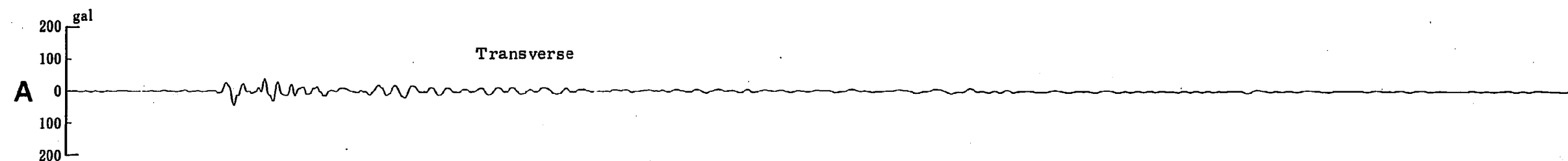
Taira Bridge 907-Gr-59
1971.8.2 16:25



TM-82.FT- 7.F- 309

1sec

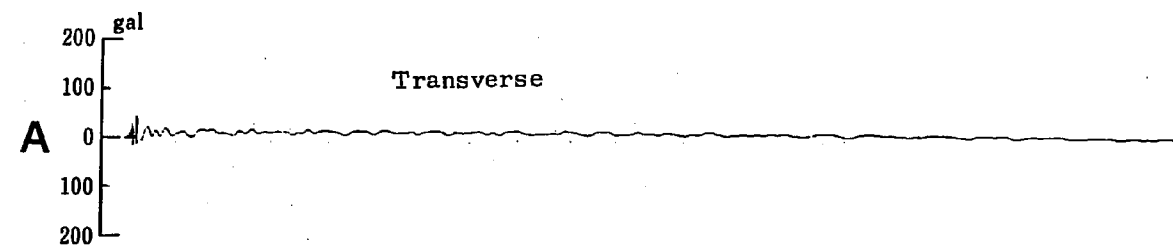
Taira Bridge 907-Gr-60
1971.9.8 16:25



TM-82.FT- 7.F- 310

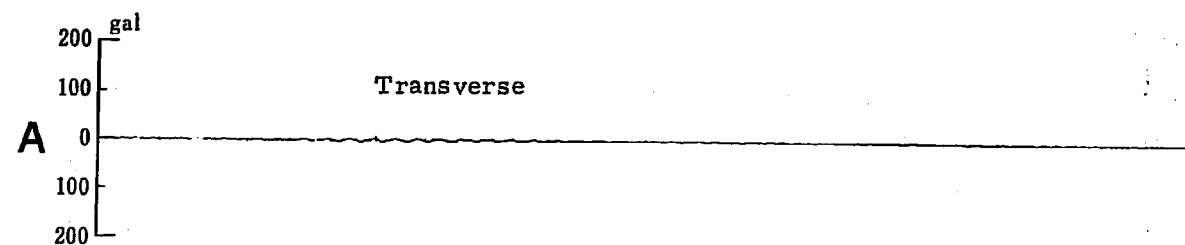
1sec

Taira Bridge 907-A-18
1971.9.8. 16:25



1sec

Ajigawa Bridge 1001-P₂-2
1971.3.10 15:46



200 gal

100
0
100
200

Vertical

200 gal
100
0
100
200

B

Longitudinal

200 gal

100
0
100
200

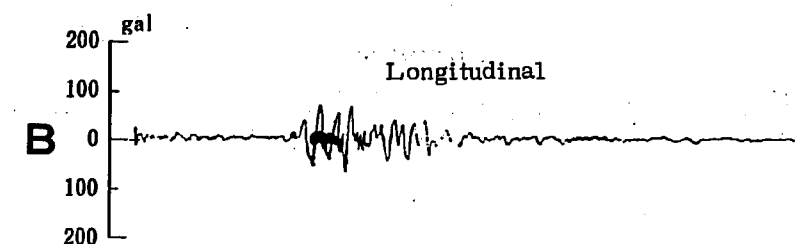
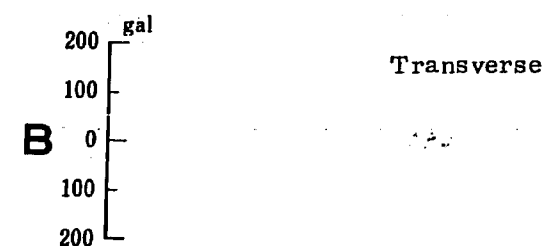
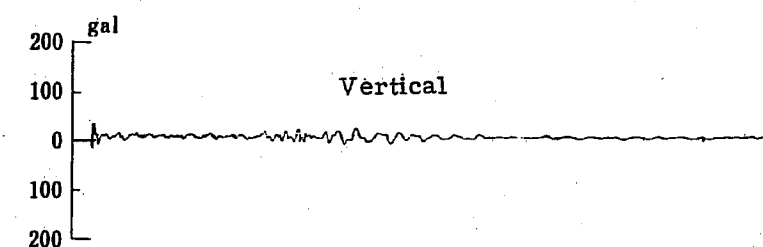
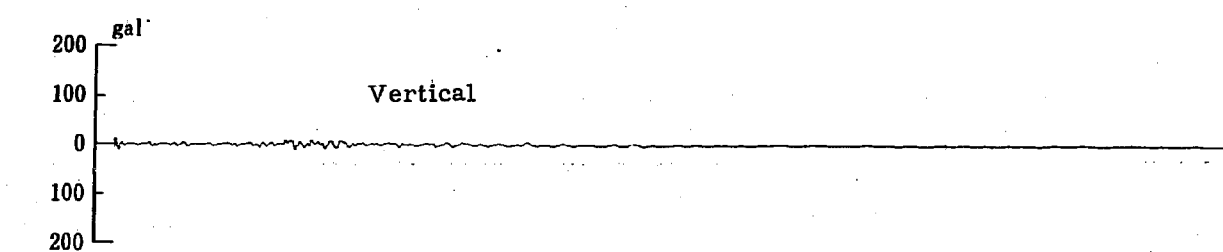
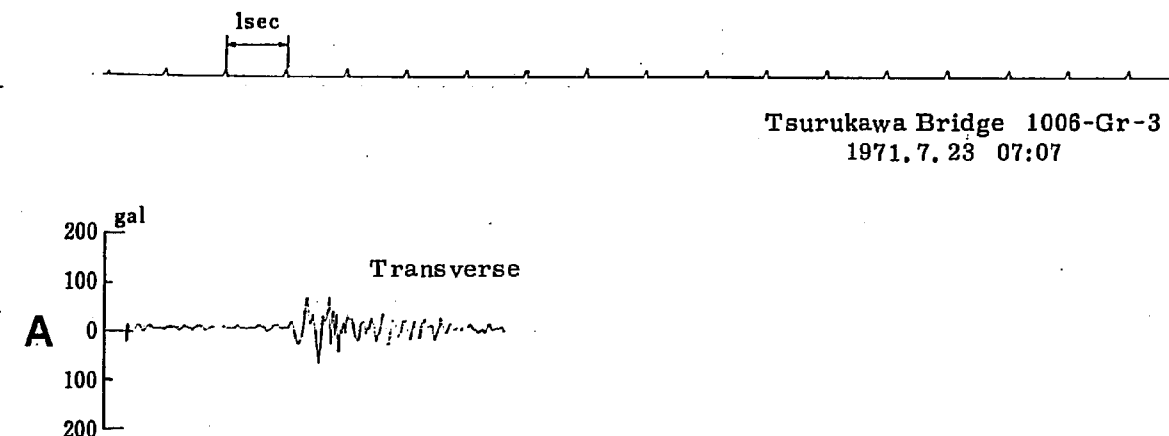
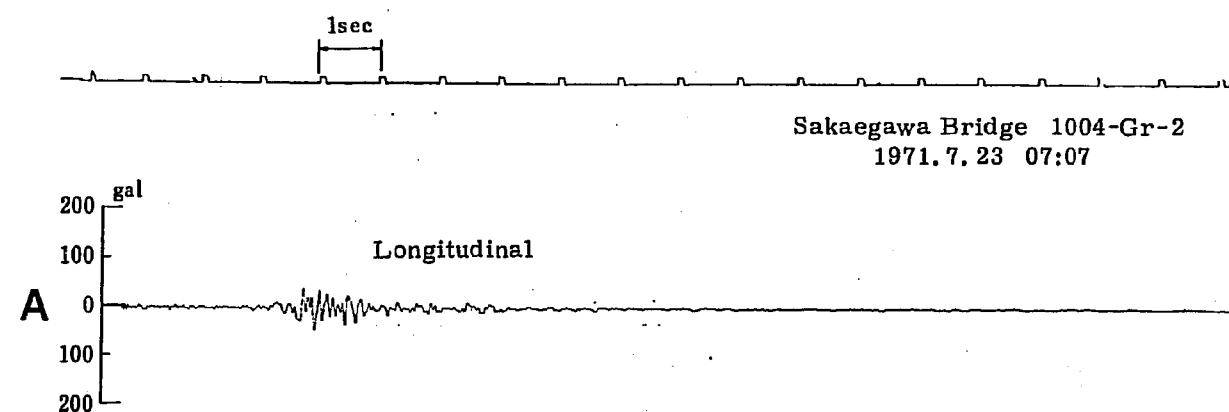
Vertical

200 gal
100
0
100
200

B

Longitudinal

TM-82.FT- 7.f-311

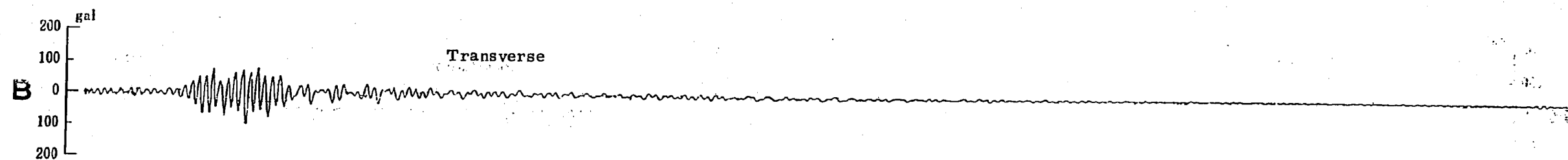
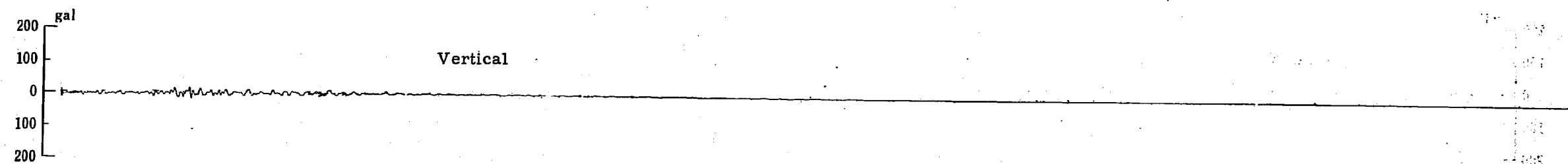
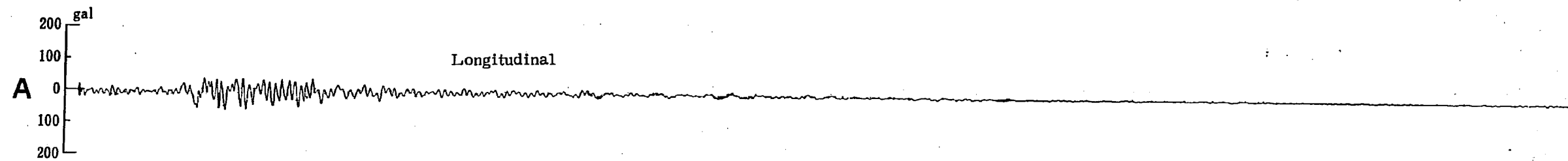


TM-82.FT- 7.F- 312

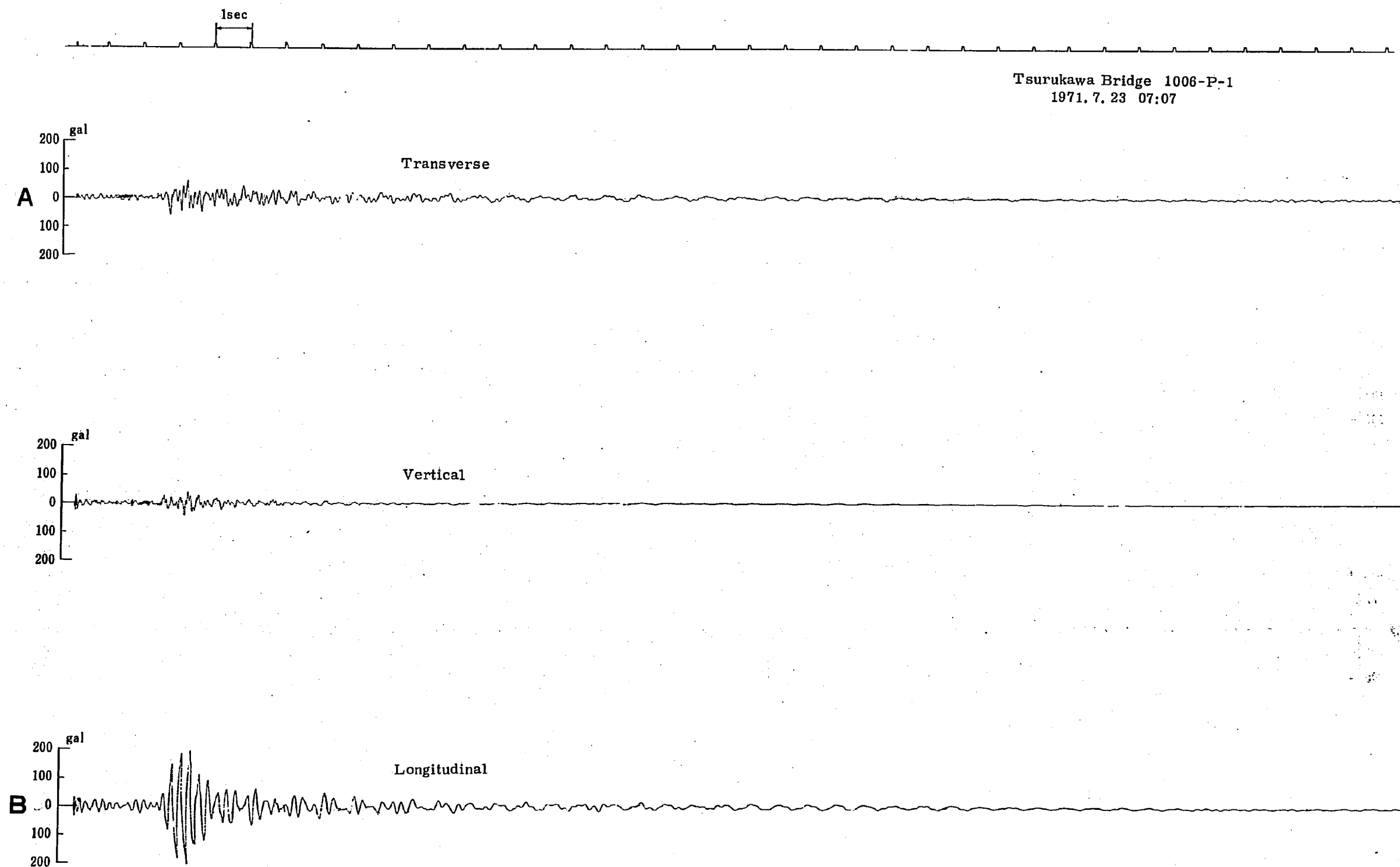
84

1sec

Sakaegawa Bridge 1004-P-2
1971.7.23 07:07

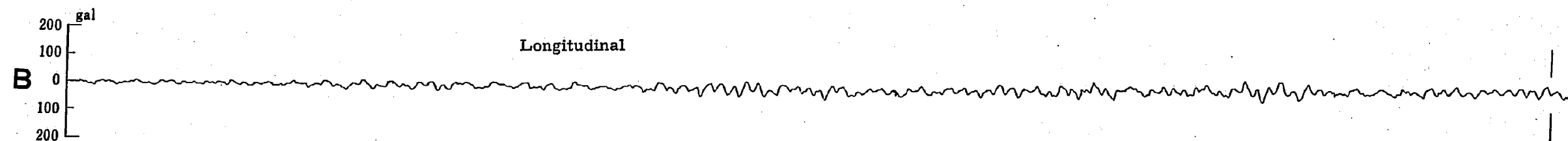
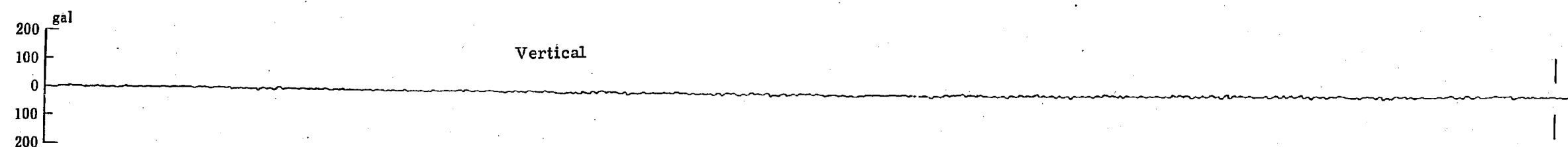
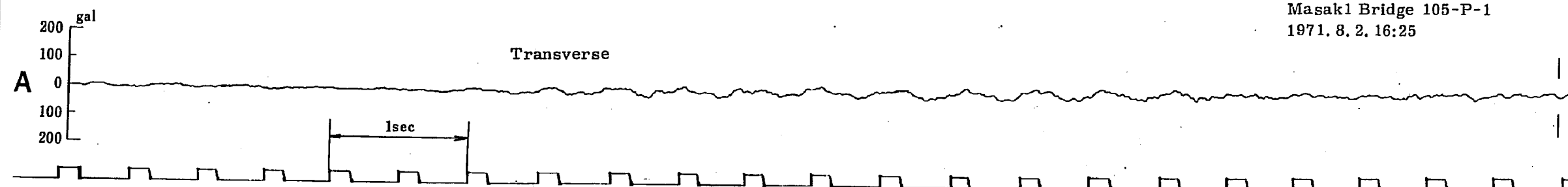


TM-82.FT- 7.F- 313

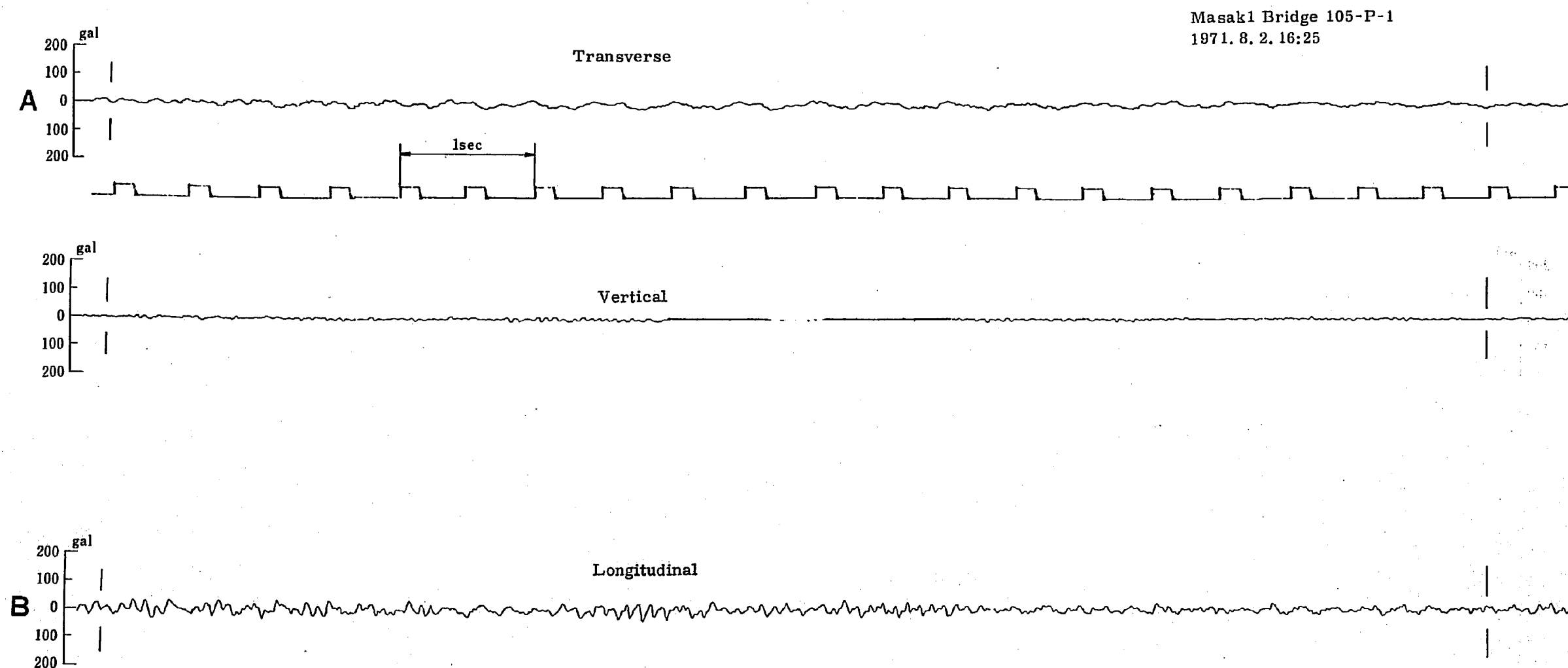


TM-82.FT- 7.F- 314

Masaki Bridge 105-P-1
1971. 8. 2. 16:25



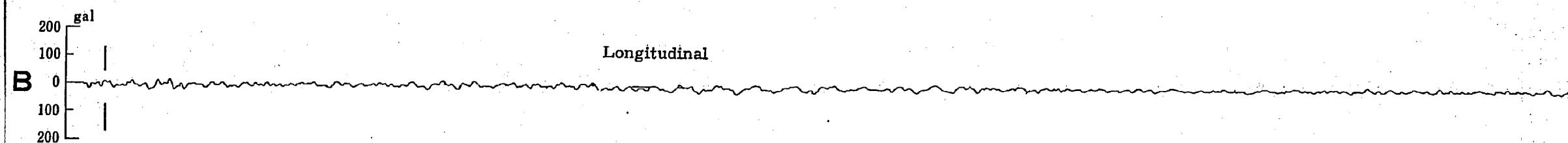
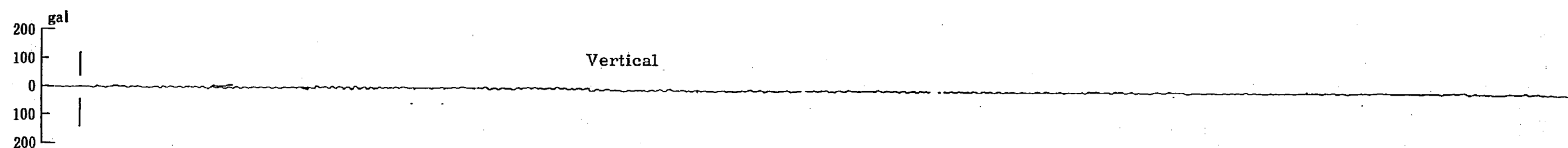
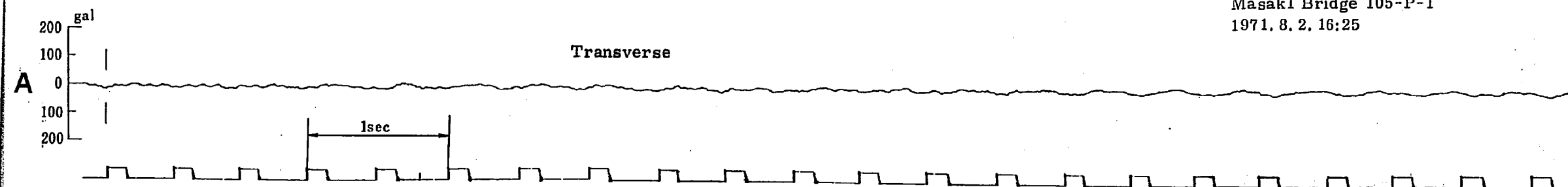
TM-82.FT- 7.F- 315



TM-82.FI-7.F-316

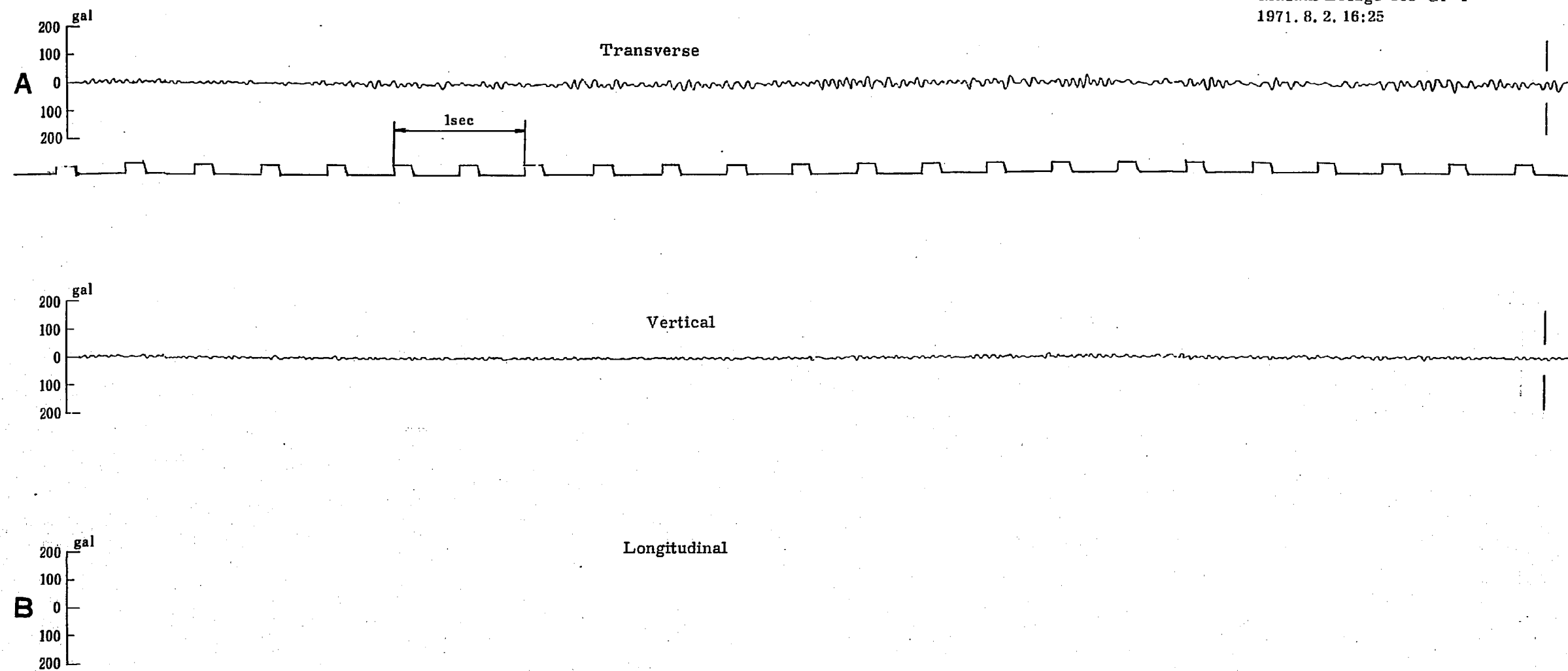
88

Masaki Bridge 105-P-1
1971. 8. 2. 16:25



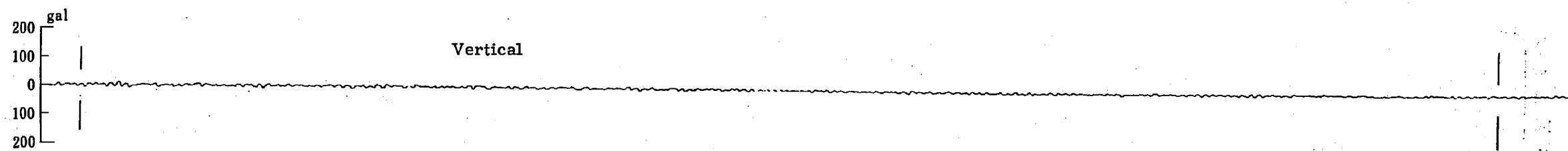
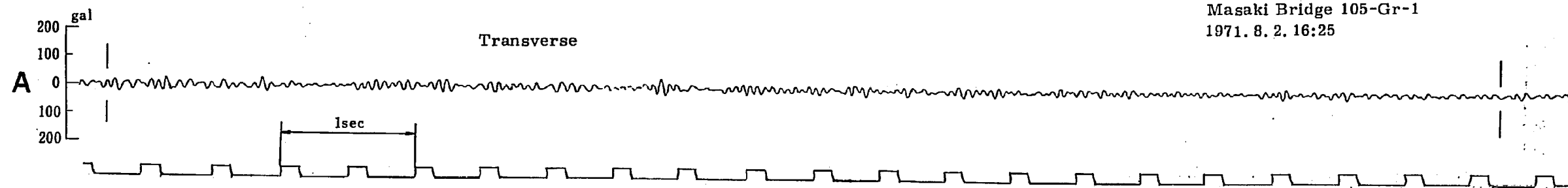
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Masaki Bridge 105-Gr-1
1971. 8. 2, 16:25



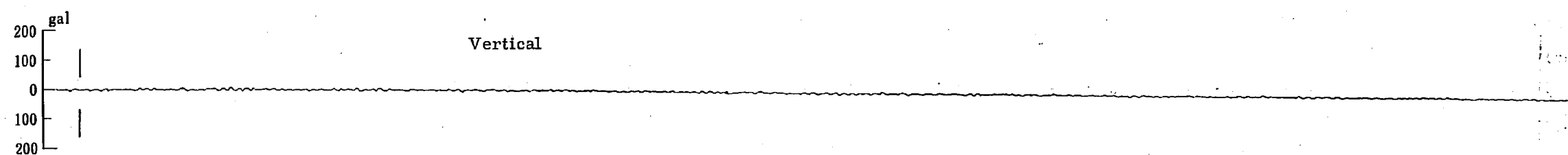
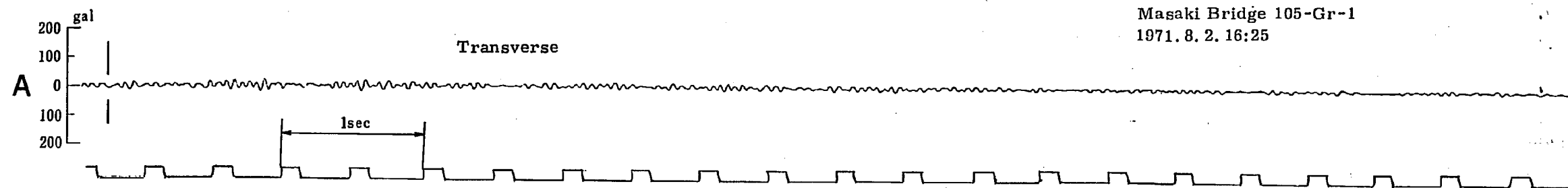
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Masaki Bridge 105-Gr-1
1971. 8. 2. 16:25



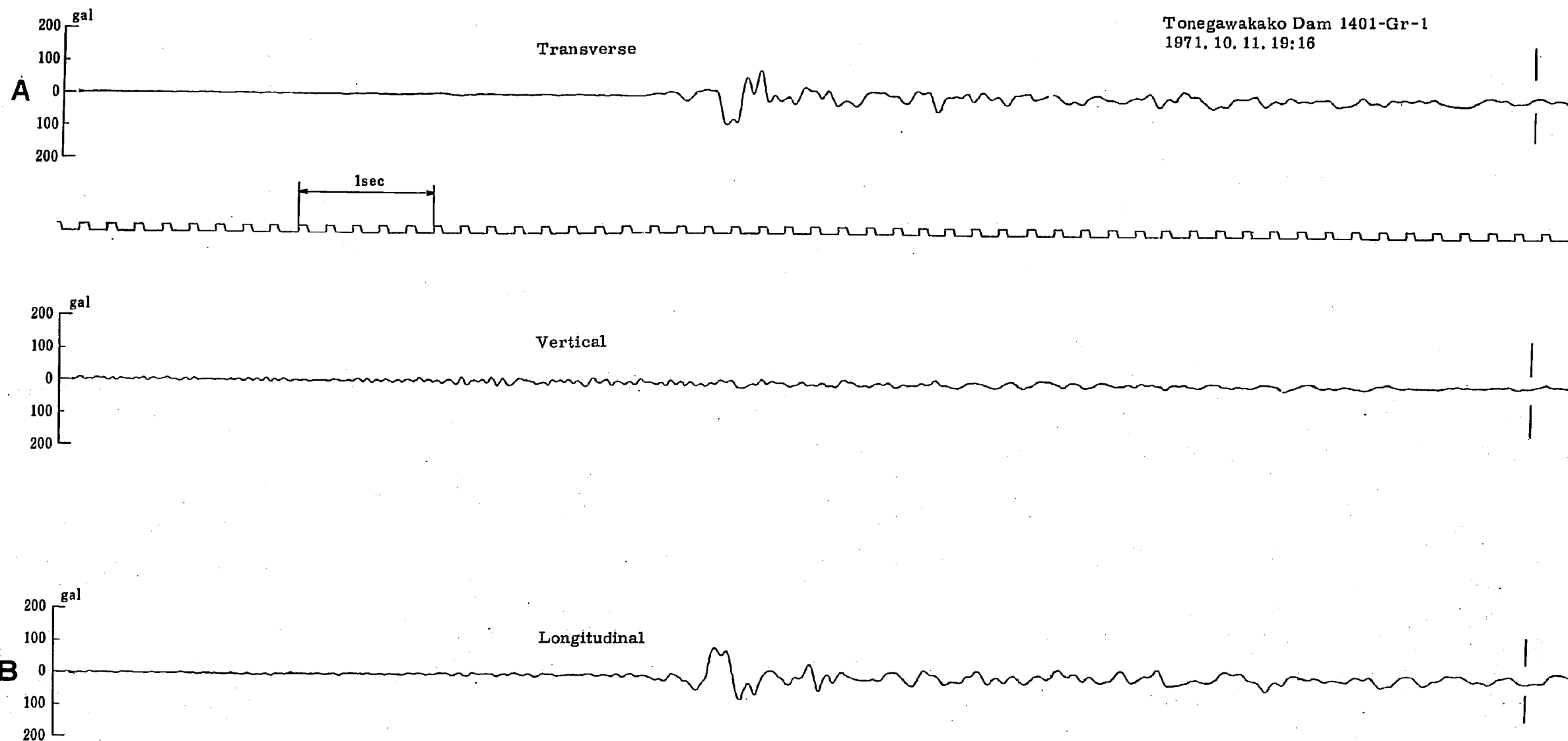
TM-82.FT- 7.F- 319

Masaki Bridge 105-Gr-1
1971. 8. 2. 16:25



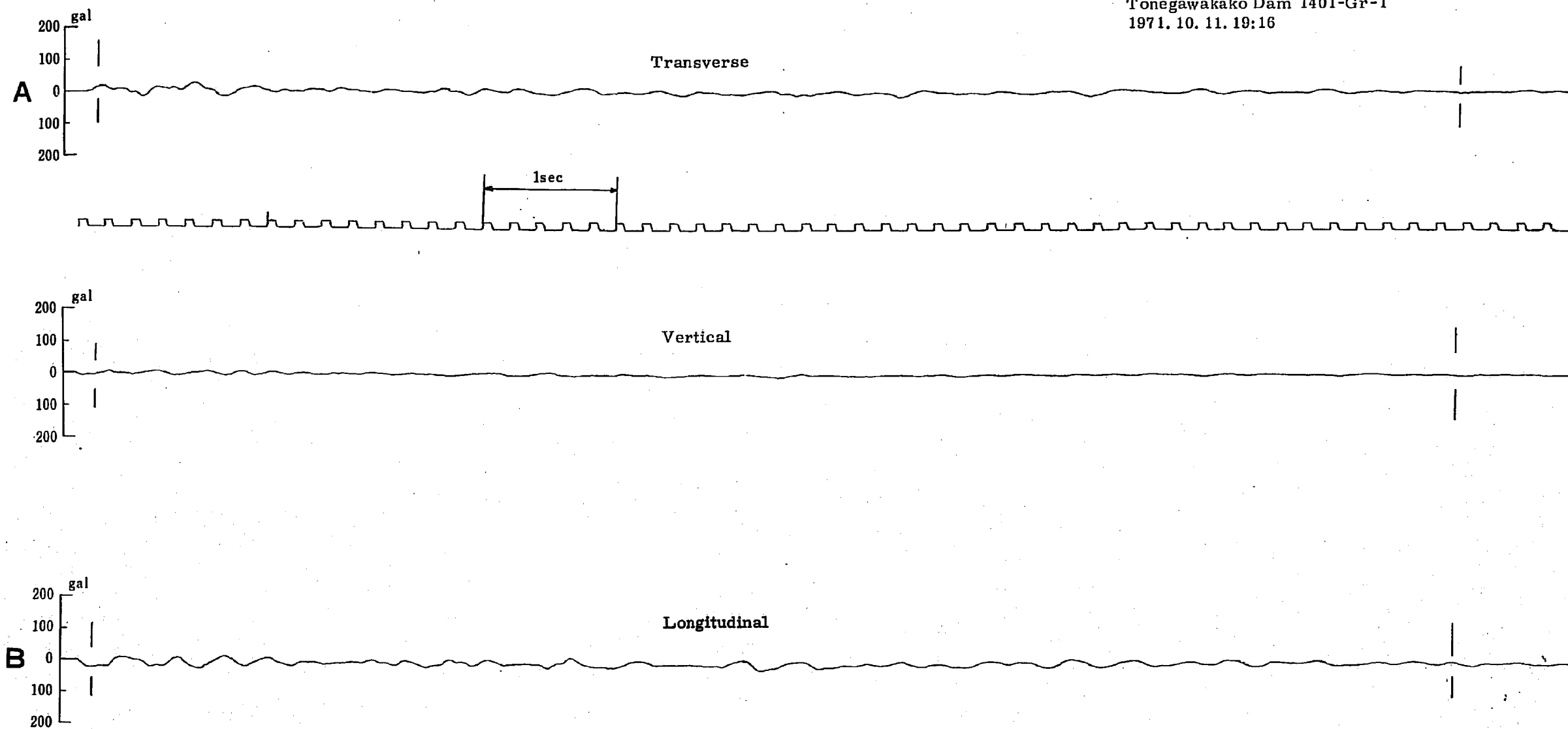
TM-82.FT- 7.F- 320

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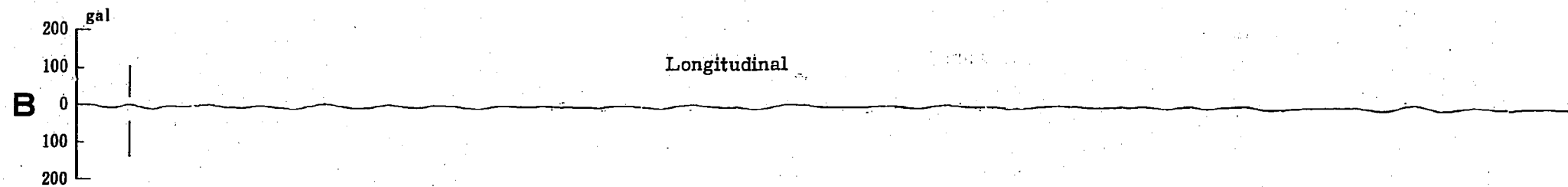
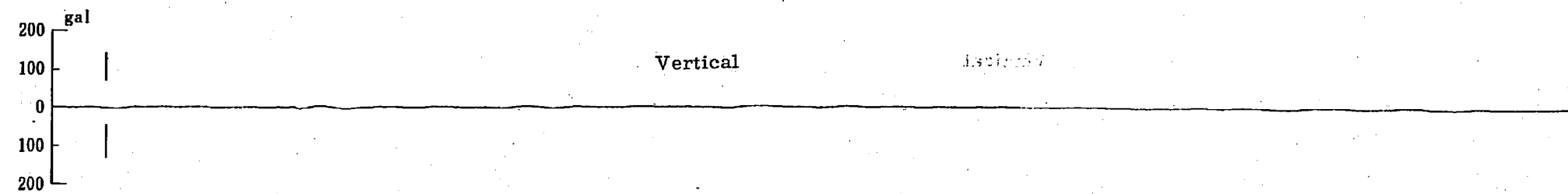
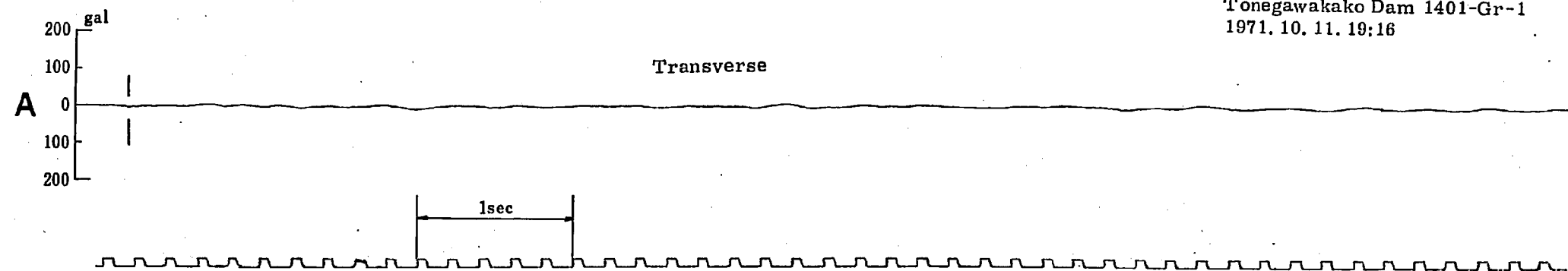
TM-82.FT- 7.F- 321

Tonegawakako Dam 1401-Gr-1
1971. 10. 11. 19:16



TM-82.FT- 7.F- 322

Tonegawakako Dam 1401-Gr-1
1971. 10. 11. 19:16



TM-82.FT- 7.F- 323

土木構造物における強震記録
(1971)

土木研究所資料第815号
昭和48年3月(1973)

栗林栄一, 岩崎敏男
若林 進, 若月高晴

キーワード: 強震記録

要 旨 この報告は, 土木構造物およびその近傍地盤に設置
した強震計により昭和46年1月から同年12月ま
での間に得られた記録を原寸大に複写印刷し, 各記録の最大
値等を表にまとめたものである。



郵便はがき

2 8 0 - □ □

十円切手
をはいて
下さい

建設省土木研究所
振動研究室 御中

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四丁目十二番五二号

No. _____

No. _____

配布先氏名

配布先住所

TM-82.FT-

7.F-

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土木研究所資料第 815 号 部

上記のとおり受領しました。

所 属（住所）

氏 名 印



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7.F-

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