Annex 1

This annex lists all 321 stations of the International Monitoring System, with their geographical coordinates as currently (late 2007) available. The rightmost column shows the deviations (*Dev*) from the Treaty locations. A dash (–) in this column indicates that the station has no coordinates listed in the Treaty, or that station installation has not started and the eventual station location has not been established. The annex also lists current information on the 16 radionuclide laboratories.

Primary Seismic Stations

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
PS01	Paso Flores	Argentina	3C	40.7 S	70.6 W	0
PS02	Warramunga, NT	Australia	Array	19.9 S	134.3 E	0
PS03	Alice Springs, NT	Australia	Array	23.7 S	134.0 E	0
PS04	Stephens Creek, NSW	Australia	3C	31.9 S	141.6 E	0
PS05	Mawson, Antarctica	Australia	3C	67.6 S	62.9 E	0
PS06	La Paz	Bolivia	3C	16.3 S	68.1 W	0
PS07	Brasilia	Brazil	3C	15.6 S	48.0 W	0
PS08	Lac du Bonnet, Man.	Canada	3C	50.2 N	95.9 W	0
PS09	Yellowknife, N.W.T.	Canada	Array	62.5 N	114.6 W	0
PS10	Schefferville, Quebec	Canada	3C	54.8 N	66.8 W	0
PS11	Bangui	Central African Republic	3C	5.2 N	18.4 E	0
PS12	Hailar	China	3C	49.5 N	119.8 E	23
PS13	Lanzhou	China	3C	36.0 N	103.7 E	14
PS14	El Rosal	Colombia	3C	4.9 N	74.3 W	0
PS15	Dimbokro	Côte d'Ivoire	3C	6.7 N	4.9 W	0
PS16	Luxor	Egypt	Array	26.0 N	33.5 E	50
PS17	Lahti	Finland	Array	61.4 N	26.1 E	0
PS18	Tahiti	France	3C	17.6 S	149.6 W	0

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
PS19	Freyung	Germany	Array	48.8 N	13.7 E	11
PS20	TBD*	TBD	TBD			0
PS21	Tehran	Iran (Islamic Republic of)	3C	35.9 N	51.1 E	29
PS22	Matsushiro	Japan	Array	36.5 N	138.2 E	0
PS23	Makanchi	Kazakhstan	Array	46.8 N	82.3 E	23
PS24	Kilimambogo	Kenya	3C	1.1 S	37.3 E	11
PS25	Songino	Mongolia	Array	47.8 N	106.4 E	37
PS26	Torodi	Niger	Array	13.1 N	1.7 E	–
PS27	Hamar	Norway	Array	60.8 N	10.8 E	0
PS28	Karasjok	Norway	Array	69.5 N	25.5 E	0
PS29	Pari	Pakistan	Array	33.7 N	73.3 E	–
PS30	Villa Florida	Paraguay	3C	26.3 S	57.3 W	0
PS31	Wonju	Republic of Korea	Array	37.5 N	127.9 E	0
PS32	Khabaz	Russian Federation	3C	43.7 N	42.9 E	0
PS33	Zalesovo	Russian Federation	Array	53.9 N	84.8 E	0
PS34	Norilsk	Russian Federation	3C	69.3 N	87.5 E	39
PS35	Peleduy	Russian Federation	Array	59.6 N	112.6 E	0
PS36	Petropavlovsk-Kamchatskiy	Russian Federation	Array	53.1 N	157.7 E	7
PS37	Ussuriysk	Russian Federation	Array	44.2 N	132.0 E	0
PS38	Haleban	Saudi Arabia	Array	23.4 N	44.5 E	–
PS39	Boshof	South Africa	3C	28.6 S	25.3 E	29
PS40	Sonseca	Spain	Array	39.7 N	4.0 W	0
PS41	Chiang Mai	Thailand	Array	18.5 N	98.9 E	35
PS42	Kesra	Tunisia	3C	35.7 N	9.3 E	55
PS43	Keskin	Turkey	Array	39.7 N	33.6 E	72
PS44	Alibeck	Turkmenistan	Array	37.9 N	58.1 E	0
PS45	Malin	Ukraine	Array	50.7 N	29.2 E	34
PS46	Lajitas, TX	United States of America	Array	29.3 N	103.7 W	0
PS47	Mina, NV	United States of America	Array	38.4 N	118.3 W	9
PS48	Pinedale, WY	United States of America	Array	42.8 N	109.6 W	0
PS49	Eielson, AK	United States of America	Array	64.8 N	146.9 W	0
PS50	Vanda, Antarctica	United States of America	3C	77.5 S	161.9 E	0

* TBD: To be determined

Auxiliary Seismic Stations

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
AS001	Coronel Fontana	Argentina	3C	31.6 S	68.2 W	0
AS002	Ushuaia	Argentina	3C	54.8 S	68.4 W	34
AS003	Garni	Armenia	3C	40.1 N	44.7 E	0
AS004	Charters Towers, QLD	Australia	3C	20.1 S	146.3 E	0
AS005	Fitzroy Crossing, WA	Australia	3C	18.1 S	125.6 E	0
AS006	Narrogin, WA	Australia	3C	32.9 S	117.2 E	0
AS007	Bariadhala, Chittagong	Bangladesh	3C	22.7 N	91.6 E	39
AS008	San Ignacio	Bolivia	3C	16.0 S	61.1 W	0
AS009	Lobatse	Botswana	3C	25.0 S	25.6 E	0
AS010	Pitinga	Brazil	3C	0.7 S	60.0 W	0
AS011	Riachuelo	Brazil	3C	5.8 S	35.9 W	173
AS012	Iqaluit, N.W.T.	Canada	3C	63.7 N	68.5 W	0
AS013	Dease Lake, B.C.	Canada	3C	58.4 N	130.0 W	0
AS014	Sadowa, Ont.	Canada	3C	44.8 N	79.1 W	0
AS015	Bella Bella, B.C.	Canada	3C	52.2 N	128.1 W	0
AS016	Resolute, Nunavut	Canada	3C	74.7 N	94.9 W	699
AS017	Inuvik, N.W.T.	Canada	3C	68.3 N	133.5 W	0
AS018	Easter Island	Chile	3C	27.1 S	109.3 W	15
AS019	Limon Verde	Chile	3C	22.6 S	68.9 W	0
AS020	Baijiatuan	China	3C	40.0 N	116.2 E	0
AS021	Kunming	China	3C	25.1 N	102.7 E	15
AS022	Sheshan	China	3C	31.1 N	121.2 E	0
AS023	Xian	China	3C	34.0 N	108.9 E	0
AS024	Rarotonga	Cook Islands	3C	21.2 S	159.8 W	0
AS025	Las Juntas de Abangares	Costa Rica	3C	10.3 N	85.0 W	0
AS026	Vranov	Czech Republic	3C	49.3 N	16.6 E	0
AS027	Søndre Strømfjord, Greenland	Denmark	3C	67.0 N	50.6 W	0
AS028	Arta Tunnel	Djibouti	3C	11.5 N	42.8 E	11
AS029	Kottamya	Egypt	3C	29.9 N	31.8 E	0
AS030	Furi	Ethiopia	3C	8.9 N	38.7 E	0
AS031	Monasavu, Viti Levu	Fiji	3C	17.7 S	178.1 E	11
AS032	Mont Dzumac	France	3C	22.1 S	166.4 E	10
AS033	Saul, French Guiana	France	3C	3.6 N	53.2 W	187
AS034	Masuku	Gabon	3C	1.7 S	13.6 E	0
AS035	SANAE Station, Antarctica	Germany/South Africa	3C	71.7 S	2.8 W	4
AS036	Anogia, Crete	Greece	3C	35.3 N	24.9 E	0
AS037	El Apazote	Guatemala	3C	15.0 N	90.7 W	22
AS038	Borgames	Iceland	3C	64.7 N	21.3 W	11
AS039	TBD	TBD	TBD			–
AS040	Lembang, Jawa Barat	Indonesia	3C	6.8 S	107.6 E	74
AS041	Jayapura, Irian Jaya	Indonesia	3C	2.5 S	140.7 E	0

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
AS042	Sorong, Irian Jaya	Indonesia	3C	0.9 S	131.3 E	0
AS043	Parapat, Sumatera	Indonesia	3C	2.7 N	98.9 E	0
AS044	Kappang, Sulawesi Selatan	Indonesia	3C	5.0 S	119.8 E	0
AS045	Baumata, Timur	Indonesia	3C	10.2 S	123.7 E	11
AS046	Kerman	Iran (Islamic Republic of)	3C	30.0 N	56.8 E	44
AS047	Shushtar	Iran (Islamic Republic of)	3C	32.1 N	48.8 E	52
AS048	Eilath	Israel	3C	29.7 N	35.0 E	15
AS049	Mount Meron	Israel	Array	33.0 N	35.4 E	46
AS050	Valguarnera, Sicily	Italy	3C	37.5 N	14.4 E	9
AS051	Ohita, Kyushu	Japan	3C	33.1 N	130.9 E	0
AS052	Kunigami, Okinawa	Japan	3C	26.8 N	128.3 E	0
AS053	Hachijojima, Izu Islands	Japan	3C	33.1 N	139.8 E	0
AS054	Kamikawa-asahi, Hokkaido	Japan	3C	44.1 N	142.6 E	0
AS055	Chichijima, Ogasawara	Japan	3C	27.1 N	142.2 E	0
AS056	Tel-Alasfar	Jordan	3C	32.2 N	36.9 E	74
AS057	Borovoye	Kazakhstan	Array	53.0 N	70.4 E	13
AS058	Kurchatov	Kazakhstan	Array	50.7 N	78.6 E	0
AS059	Aktyubinsk	Kazakhstan	3C	50.4 N	58.0 E	0
AS060	Ala-Archa	Kyrgyzstan	3C	42.6 N	74.5 E	0
AS061	Ambohidratompo	Madagascar	3C	18.6 S	47.2 E	54
AS062	Kowa	Mali	3C	14.5 N	4.0 W	0
AS063	Tepich, Quintana Roo	Mexico	3C	20.4 N	88.5 W	31
AS064	Colonia Cuauhtémoc Matias Romero, Oaxaca	Mexico	3C	17.1 N	94.9 W	113
AS065	La Paz, Baja California Sur	Mexico	3C	24.1 N	110.3 W	15
AS066	Midelt	Morocco	3C	32.8 N	4.6 W	0
AS067	Tsumeb	Namibia	3C	19.2 S	17.6 E	24
AS068	Everest	Nepal	3C	28.0 N	86.8 E	0
AS069	Rata Peaks, South Island	New Zealand	3C	43.7 S	171.1 E	28
AS070	Raoul Island	New Zealand	3C	29.3 S	177.9 W	11
AS071	Urewera, North Island	New Zealand	3C	38.3 S	177.1 E	0
AS072	Spitsbergen	Norway	Array	78.2 N	16.4 E	0
AS073	Jan Mayen	Norway	3C	71.0 N	8.5 W	13
AS074	Wadi Sarin	Oman	3C	23.2 N	58.6 E	65
AS075	Port Moresby	Papua New Guinea	3C	9.4 S	147.2 E	0
AS076	Keravat	Papua New Guinea	3C	4.3 S	152.0 E	150
AS077	Atahualpa	Peru	3C	7.0 S	78.4 W	44
AS078	Nana	Peru	3C	12.0 S	76.8 W	0

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
AS079	Davao, Mindanao	Philippines	3C	7.1 N	125.6 E	0
AS080	Tagaytay, Luzon	Philippines	3C	14.1 N	120.9 E	0
AS081	Muntele Rosu	Romania	3C	45.5 N	25.9 E	0
AS082	Kirov	Russian Federation	3C	58.6 N	49.4 E	0
AS083	Kislovodsk	Russian Federation	Array	44.0 N	42.7 E	0
AS084	Obninsk	Russian Federation	3C	55.1 N	36.6 E	0
AS085	Arti	Russian Federation	3C	56.4 N	58.6 E	0
AS086	Seymchan	Russian Federation	3C	62.9 N	152.4 E	0
AS087	Talaya	Russian Federation	3C	51.7 N	103.6 E	0
AS088	Yakutsk	Russian Federation	3C	62.0 N	129.7 E	0
AS089	Kuldur	Russian Federation	3C	49.2 N	131.8 E	215
AS090	Bilibino	Russian Federation	3C	68.0 N	166.4 E	0
AS091	Tiksi	Russian Federation	3C	71.6 N	128.9 E	0
AS092	Yuzhno-Sakhalinsk	Russian Federation	3C	47.0 N	142.8 E	0
AS093	Magadan	Russian Federation	3C	59.6 N	150.8 E	0
AS094	Zilim	Russian Federation	3C	53.9 N	57.0 E	0
AS095	Afiamalu	Samoa	3C	13.9 S	171.8 W	0
AS096	Dhaban Al-Janub	Saudi Arabia	3C	17.7 N	43.5 E	693
AS097	Babate	Senegal	3C	14.7 N	16.6 W	55
AS098	Honiara, Guadalcanal	Solomon Islands	3C	9.4 S	159.9 E	11
AS099	Sutherland	South Africa	3C	32.4 S	20.8 E	0
AS100	Pallekele	Sri Lanka	3C	7.3 N	80.7 E	99
AS101	Hagfors	Sweden	Array	60.1 N	13.7 E	0
AS102	Davos	Switzerland	3C	46.8 N	9.9 E	8
AS103	Mbarara	Uganda	3C	0.6 S	30.7 E	40
AS104	Eskdalemuir	United Kingdom of Great Britain and Northern Ireland	Array	55.3 N	3.2 W	0
AS105	Guam, Marianas Islands	United States of America	3C	13.6 N	144.9 E	0

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
AS106	Palmer Station, Antarctica	United States of America	3C	64.8 S	64.0 W	5
AS107	Tuckaleechee Caverns, TN	United States of America	3C	35.7 N	83.8 W	0
AS108	Piñon Flat, CA	United States of America	3C	33.6 N	116.5 W	0
AS109	Yreka, CA	United States of America	3C	41.7 N	122.7 W	0
AS110	Kodiak Island, AK	United States of America	3C	57.8 N	152.6 W	6
AS111	Albuquerque, NM	United States of America	3C	34.9 N	106.5 W	11
AS112	Attu Island, AK	United States of America	3C	52.9 N	173.2 E	35
AS113	Elko, NV	United States of America	3C	40.7 N	115.2 W	0
AS114	South Pole, Antarctica	United States of America	3C	89.9 S	145.0 W	4
AS115	Newport, WA	United States of America	3C	48.3 N	117.1 W	0
AS116	San Juan, PR	United States of America	3C	18.1 N	66.2 W	0
AS117	Santo Domingo	Venezuela (Bolivarian Republic of)	3C	8.9 N	70.6 W	0
AS118	Puerto la Cruz	Venezuela (Bolivarian Republic of)	3C	10.2 N	64.6 W	0
AS119	Lusaka	Zambia	3C	15.3 S	28.2 E	0
AS120	Matopos	Zimbabwe	3C	20.4 S	28.5 E	–

Radionuclide Stations

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
RN01	Buenos Aires	Argentina	Particulate and Noble Gas	34.5 S	58.5 W	72
RN02	Salta	Argentina	Particulate	24.8 S	65.4 W	98
RN03	Bariloche	Argentina	Particulate	41.1 S	71.2 W	8
RN04	Melbourne, VIC	Australia	Particulate and Noble Gas	37.7 S	145.1 E	49
RN05	Mawson, Antarctica	Australia	Particulate	67.6 S	62.9 E	17
RN06	Townsville, QLD	Australia	Particulate	19.2 S	146.8 E	0
RN07	Macquarie Island	Australia	Particulate	54.5 S	159.0 E	56

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
RN08	Cocos Islands	Australia	Particulate	12.2 S	96.8 E	31
RN09	Darwin, NT	Australia	Particulate and Noble Gas	12.4 S	130.9 E	22
RN10	Perth, WA	Australia	Particulate	31.9 S	116.0 E	0
RN11	Rio de Janeiro	Brazil	Particulate and Noble Gas	23.0 S	43.4 W	64
RN12	Recife	Brazil	Particulate	7.8 S	35.1 W	25
RN13	Edea	Cameroon	Particulate and Noble Gas	3.8 N	10.2 E	56
RN14	Sidney	Canada	Particulate	48.7 N	123.5 W	70
RN15	Resolute, NU	Canada	Particulate	74.7 N	95.0 W	3
RN16	Yellowknife, N.W.T.	Canada	Particulate and Noble Gas	62.5 N	114.5 W	0
RN17	St. John's N.L.	Canada	Particulate and Noble Gas	47.6 N	52.7 W	71
RN18	Punta Arenas	Chile	Particulate	53.1 S	70.9 W	20
RN19	Hanga Roa, Easter Island	Chile	Particulate and Noble Gas	27.1 S	109.3 W	89
RN20	Beijing	China	Particulate and Noble Gas	40.0 N	116.4 E	28
RN21	Lanzhou	China	Particulate	36.0 N	104.2 E	84
RN22	Guangzhou	China	Particulate and Noble Gas	23.1 N	113.3 E	11
RN23	Rarotonga	Cook Islands	Particulate	21.2 S	159.8 W	0
RN24	Isla Santa Cruz, Galápagos Islands	Ecuador	Particulate	0.7 S	90.3 W	127
RN25	Addis Ababa	Ethiopia	Particulate and Noble Gas	9.1 N	38.8 E	588
RN26	Nadi	Fiji	Particulate	17.8 S	177.4 E	25
RN27	Papeete, Tahiti	France	Particulate and Noble Gas	17.6 S	149.6 W	79
RN28	Pointe-à-Pitre, Guadeloupe	France	Particulate	16.3 N	61.5 W	95
RN29	Réunion	France	Particulate and Noble Gas	20.9 S	55.6 E	22
RN30	Port-aux-Français, Kerguelen	France	Particulate and Noble Gas	49.4 S	70.3 E	50
RN31	Kourou, French Guiana	France	Particulate and Noble Gas	5.2 N	52.7 W	81
RN32	Dumont dUrville, Antarctica	France	Particulate	66.7 S	140.0 E	78
RN33	Schauinsland/ Freiburg	Germany	Particulate and Noble Gas	47.9 N	7.9 E	0

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
RN34	Reykjavik	Iceland	Particulate	64.1 N	21.8 W	34
RN35	TBD	TBD	Particulate			–
RN36	Tehran	Iran (Islamic Republic of)	Particulate and Noble Gas	35.0 N	52.0 E	–
RN37	Okinawa	Japan	Particulate	26.5 N	127.9 E	0
RN38	Takasaki, Gunma	Japan	Particulate and Noble Gas	36.3 N	139.1 E	9
RN39	Kiritimati	Kiribati	Particulate	2.0 N	157.4 W	45
RN40	Kuwait City	Kuwait	Particulate	29.3 N	47.9 E	35
RN41	Misratah	Libyan Arab Jamahiriya	Particulate	32.5 N	15.0 E	–
RN42	Tanah Rata	Malaysia	Particulate	4.5 N	101.4 E	212
RN43	Nouakchott	Mauritania	Particulate and Noble Gas	18.1 N	15.9 W	117
RN44	Guerrero Negro, Baja California	Mexico	Particulate and Noble Gas	28.0 N	114.1 W	108
RN45	Ulaanbaatar	Mongolia	Particulate and Noble Gas	47.9 N	106.3 E	69
RN46	Chatham Island	New Zealand	Particulate and Noble Gas	43.8 S	176.5 W	22
RN47	Kaitaia	New Zealand	Particulate	35.1 S	173.3 E	0
RN48	Agadez	Niger	Particulate and Noble Gas	17.0 N	8.0 E	543
RN49	Spitsbergen	Norway	Particulate and Noble Gas	78.2 N	15.4 E	23
RN50	Panama City	Panama	Particulate and Noble Gas	9.0 N	79.5 W	16
RN51	Kavieng, New Ireland	Papua New Guinea	Particulate	2.6 S	150.8 E	100
RN52	Tanay	Philippines	Particulate	14.6 N	121.4 E	45
RN53	Ponta Delgada, São Miguel, Azores	Portugal	Particulate	37.7 N	25.7 W	43
RN54	Kirov	Russian Federation	Particulate	58.6 N	49.4 E	0
RN55	Norilsk	Russian Federation	Particulate and Noble Gas	69.3 N	87.5 E	39
RN56	Peleduy	Russian Federation	Particulate	59.6 N	112.6 E	0
RN57	Bilibino	Russian Federation	Particulate	68.0 N	166.4 E	0
RN58	Ussuriysk	Russian Federation	Particulate and Noble Gas	44.2 N	132.0 E	56
RN59	Zalesovo	Russian Federation	Particulate	53.9 N	84.8 E	0
RN60	Petropavlovsk-Kamchatskiy	Russian Federation	Particulate and Noble Gas	53.1 N	158.8 E	0

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
RN61	Dubna	Russian Federation	Particulate and Noble Gas	56.7 N	37.3 E	0
RN62	Marion Island	South Africa	Particulate and Noble Gas	46.9 S	37.8 E	76
RN63	Stockholm	Sweden	Particulate and Noble Gas	59.4 N	17.9 E	6
RN64	Dar es Salaam	United Republic of Tanzania	Particulate	6.8 S	39.2 E	92
RN65	Bangkok	Thailand	Particulate and Noble Gas	14.0 N	100.0 E	59
RN66	BIOT/Chagos Archipelago	United Kingdom of Great Britain and Northern Ireland	Particulate and Noble Gas	7.3 S	72.4 E	55
RN67	St. Helena	United Kingdom of Great Britain and Northern Ireland	Particulate	15.9 S	5.7 W	34
RN68	Tristan da Cunha	United Kingdom of Great Britain and Northern Ireland	Particulate and Noble Gas	37.1 S	12.3 W	11
RN69	Halley, Antarctica	United Kingdom of Great Britain and Northern Ireland	Particulate and Noble Gas	76.0 S	28.0 W	0
RN70	Sacramento, CA	United States of America	Particulate	38.7 N	121.4 W	0
RN71	Sand Point, Ak	United States of America	Particulate	55.2 N	160.5 W	39
RN72	Melbourne, FL	United States of America	Particulate	28.1 N	80.6 W	22
RN73	Palmer Station	United States of America	Particulate	64.8 S	64.1 W	34
RN74	Ashland, KS	United States of America	Particulate and Noble Gas	37.2 N	99.8 W	0
RN75	Charlottesville, VA	United States of America	Particulate and Noble Gas	38.0 N	78.4 W	35
RN76	Salchaket, AK	United States of America	Particulate	64.7 N	147.1 W	33
RN77	Wake Island	United States of America	Particulate and Noble Gas	19.3 N	166.6 E	0
RN78	Midway Islands	United States of America	Particulate	28.2 N	177.4 W	45

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
RN79	Oahu, HI	United States of America	Particulate and Noble Gas	21.5 N	158.0 W	0
RN80	Upi, Guam	United States of America	Particulate	13.6 N	144.9 E	11

Radionuclide Laboratories

Treaty No.	Location	State	Laboratory name
RL01	Buenos Aires	Argentina	National Board of Nuclear Regulation
RL02	Melbourne	Australia	Australian Radiation Protection and Nuclear Safety Agency
RL03	Seibersdorf	Austria	ARC Seibersdorf Research GmBH
RL04	Rio de Janeiro	Brazil	Institute of Radiation Protection and Dosimetry
RL05	Ottawa	Canada	Health Canada
RL06	TBD	China	TBD
RL07	Helsinki	Finland	Radiation and Nuclear Safety Authority
RL08	Bruyères-le-Châtel	France	Atomic Energy Commission
RL09	Yavne	Israel	Soreq Nuclear Research Center
RL10	Rome	Italy	Laboratory of the National Agency for the Protection of the Environment
RL11	Tokai	Japan	Japan Atomic Energy Research Institute
RL12	Christchurch	New Zealand	National Radiation Laboratory
RL13	Moscow	Russian Federation	Central Radiation Control Laboratory
RL14	Pelindaba	South Africa	Atomic Energy Corporation
RL15	Reading	United Kingdom of Great Britain and Northern Ireland	AWE Aldermaston
RL16	Richland	United States of America	Pacific Northwest National Laboratory

Hydroacoustic Stations

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
HA01	Cape Leeuwin, WA	Australia	Hydro-phone	34.3 S	115.2 E	14
HA02	Queen Charlotte Islands, B.C.	Canada	Hydro T-Phase	53.3 N	132.5 W	0

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
HA03	Juan Fernández Island	Chile	Hydrophone	33.6 S	78.8 W	11
HA04	Crozet Islands	France	Hydrophone	46.4 S	51.9 E	26
HA05	Guadeloupe	France	Hydro T-Phase	16.3 N	61.1 W	0
HA06	Socorro Island	Mexico	Hydro T-Phase	18.7 N	110.9 W	395
HA07	Flores	Portugal	Hydro T-Phase	39.4 N	31.2 W	14
HA08	BIOT/Chagos Archipelago	United Kingdom of Great Britain and Northern Ireland	Hydrophone	7.3 S	72.4 E	0
HA09	Tristan da Cunha	United Kingdom of Great Britain and Northern Ireland	Hydro T-Phase	37.1 S	12.3 W	21
HA10	Ascension	United Kingdom of Great Britain and Northern Ireland	Hydrophone	8.0 S	14.4 W	0
HA11	Wake Island	United States of America	Hydrophone	19.3 N	166.6 E	0

Infrasound Stations

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
IS01	Villa Traful	Argentina	Array	41.2 S	70.9 W	61
IS02	Ushuaia	Argentina	Array	54.6 S	67.3 W	63
IS03	Davis Base, Antarctica	Australia	Array	68.4 S	77.6 E	0
IS04	Shannon	Australia	Array	34.6 S	116.4 E	203
IS05	Hobart, TAS	Australia	Array	42.5 S	147.7 E	61
IS06	Cocos Islands	Australia	Array	12.2 S	96.8 E	24
IS07	Warramunga, NT	Australia	Array	19.9 S	134.3 E	0
IS08	La Paz	Bolivia	Array	16.2 S	68.5 W	44
IS09	Brasilia	Brazil	Array	15.6 S	48.0 W	0
IS10	Lac du Bonnet, Man.	Canada	Array	50.2 N	96.0 W	7
IS11	Cape Verde Islands	Cape Verde	Array	15.2 N	23.2 W	124
IS12	Bangui	Central African Republic	Array	5.2 N	18.4 E	–
IS13	Easter Island	Chile	Array	27.1 S	109.4 W	23
IS14	Robinson Crusoe Island	Chile	Array	33.6 S	78.8 W	177

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
IS15	Beijing	China	Array	39.6 N	115.9 E	45
IS16	Kunming	China	Array	25.3 N	102.7 E	35
IS17	Dimbokro	Côte d'Ivoire	Array	6.7 N	4.9 W	0
IS18	Qaanaaq, Greenland	Denmark	Array	77.5 N	69.3 W	112
IS19	Dijibouti	Djibouti	Array	11.5 N	43.2 E	40
IS20	Isla Santa Cruz, Galápagos Islands	Ecuador	Array	0.6 S	90.4 W	159
IS21	Marquesas Islands	France	Array	8.9 S	140.2 W	125
IS22	Port Laguerre, New Caledonia	France	Array	22.2 S	166.8 E	53
IS23	Kerguelen	France	Array	49.3 S	70.3 E	88
IS24	Tahiti	France	Array	17.8 S	149.3 W	39
IS25	Kourou, French Guiana	France	Array	5.2 N	52.9 W	22
IS26	Freyung	Germany	Array	48.9 N	13.7 E	0
IS27	Georg von Neumayer, Antarctica	Germany	Array	70.7 S	8.3 W	12
IS28	TBD	TBD	Array			–
IS29	Tehran	Iran (Islamic Republic of)	Array	35.7 N	51.4 E	–
IS30	Isumi	Japan	Array	35.3 N	140.3 E	80
IS31	Aktyubinsk	Kazakhstan	Array	50.4 N	58.0 E	0
IS32	Nairobi	Kenya	Array	1.3 S	36.8 E	0
IS33	Antananarivo	Madagascar	Array	19.0 S	47.3 E	31
IS34	Songino	Mongolia	Array	47.8 N	106.4 E	37
IS35	Tsumeb	Namibia	Array	19.2 S	17.6 E	24
IS36	Chatham Island	New Zealand	Array	43.9 S	176.5 W	11
IS37	Karasjok	Norway	Array	69.5 N	25.5 E	–
IS38	Rahimyar Khan	Pakistan	Array	28.2 N	70.3 E	–
IS39	Palau	Palau	Array	7.5 N	134.5 E	0
IS40	Keravat	Papua New Guinea	Array	4.3 S	152.0 E	25
IS41	Villa Florida	Paraguay	Array	26.3 S	57.3 W	0
IS42	Azores, Graciosa	Portugal	Array	39.0 N	28.0 W	256
IS43	Dubna	Russian Federation	Array	56.7 N	37.3 E	0
IS44	Petropavlovsk-Kamchatskiy	Russian Federation	Array	53.1 N	157.7 E	74
IS45	Ussuriysk	Russian Federation	Array	44.2 N	132.0 E	56
IS46	Zalesovo	Russian Federation	Array	53.9 N	84.8 E	0
IS47	Boshof	South Africa	Array	28.6 S	25.3 E	10

(continued)

Treaty No.	Station	State	Type	LAT	LON	Dev (km)
IS48	Kesra	Tunisia	Array	35.8 N	9.3 E	59
IS49	Tristan da Cunha	United Kingdom of Great Britain and Northern Ireland	Array	37.1 S	12.3 W	11
IS50	Ascension	United Kingdom of Great Britain and Northern Ireland	Array	7.9 S	14.4 W	16
IS51	Bermuda	United Kingdom of Great Britain and Northern Ireland	Array	32.3 N	64.7 W	38
IS52	BIOT/Chagos Archipelago	United Kingdom of Great Britain and Northern Ireland	Array	7.4 S	72.5 E	273
IS53	Fairbanks, AK	United States of America	Array	64.9 N	147.9 W	49
IS54	Palmer Station, Antarctica	United States of America	Array	64.8 S	64.1 W	1386
IS55	Windless Bight, Antarctica	United States of America	Array	77.7 S	167.6 E	140
IS56	Newport, WA	United States of America	Array	48.3 N	117.1 W	0
IS57	Piñon Flat, CA	United States of America	Array	33.6 N	116.5 W	0
IS58	Midway Islands	United States of America	Array	28.2 N	177.4 W	23
IS59	Hawaii, HI	United States of America	Array	19.6 N	155.9 W	63
IS60	Wake Island	United States of America	Array	19.3 N	166.6 E	–

Annex 2

This annex lists Chairpersons and Executive Secretaries of the CTBTO Preparatory Commission, Chairpersons, Focal Points and Friends of the Chair of Working Group A, as well as Chairpersons, Friends of the Chair, Program Coordinators and Task Leaders of Working Group B of the CTBTO Preparatory Commission from 1997 to date. The Chairpersons have been elected by the CTBTO Preparatory Commission. Focal Points, Friends of the Chair, Program Coordinators and Task Leaders have been named by the Chairperson of the respective Working Groups and are or have been exercising their functions on behalf of the Chairperson.

Chairpersons of the CTBTO Preparatory Commission

Task	Name	State signatory	Period
Chairing the CTBTO Preparatory Commission on behalf of the States Signatories	Amb. Jacob S. Selebi	South Africa	Nov 1996–May 1997
	Amb. Daniela Rozgonova	Slovakia	May–Dec 1997
	Amb. Affonso Celso de Ouro-Preto	Brazil	Jan–Jun 1998
	Amb. John P. G. Freeman	United Kingdom	Jul–Dec 1998
	Amb. Ban Ki-moon	Republic of Korea	Jan–Jun 1999
	Amb. Mokhtar Reguieg	Algeria	Jul–Dec 1999
	Amb. Pavel Vacek	Czech Republic	Jan–Jun 2000
	Amb. Olga Pellicer	Mexico	Jul–Dec 2000
	Amb. Jaap Ramaker	The Netherlands	Jan–Jun 2001
	Amb. R. I. Rhousdy Soeriaatmadja	Indonesia	Jul–Dec 2001
	Amb. Abdul Bin Rimdap	Nigeria	Jan–Jun 2002

(continued)

Task	Name	State signatory	Period
	Amb. Liviu Aurelian Bota	Romania	Jul–Dec 2002
	Amb. Javier Paulinich	Peru	Jan–Jun 2003
	Amb. Thomas Stelzer	Austria	Jul–Dec 2003
	Amb. Yukio Takasu	Japan	2004
	Amb. Taous Feroukhi	Algeria	2005
	Amb. Volodymyr Yelchenko	Ukraine	2006
	Amb. Ana Teresa Dengo	Costa Rica	2007
	Amb. Hans Lundborg	Sweden	2008

Executive Secretaries of the CTBTO Preparatory Commission

Task	Name	State signatory	Period
Executive Secretary of the CTBTO Preparatory Commission	Amb. Wolfgang Hoffmann	Germany	Mar 1997–Jul 2005
	Amb. Tibor Tóth	Hungary	Aug 2005...

Chairpersons of Working Group A

Task	Name	State signatory	Period
Chairing Working Group A on behalf of the States Signatories	Amb. Tibor Tóth	Hungary	1997–2005
	Amb. Patricia Espinosa Cantellano	Mexico	2005
	Amb. Abdul Bin Rimdap	Nigeria	2005...

Focal Points and Friends of the Chair of Working Group A

Task	Name	State signatory	Period
Focal Point on Advisory Group and related issues	Mr André Gué	France	1997
Focal Point on reduced assessment	Mr Donald Phillips	United States of America	1997
Focal Point/Friend of the Chair on model arrangements, taxation, privileges and immunities for the PrepCom and its	Mr Trevor Moore	United Kingdom	1997–2001

(continued)

Task	Name	State signatory	Period
officials, relationship agreement between the CTBTO PrepCom and the UN, post-certification costs of certain new auxiliary seismic stations and legal basis for post-certification costs			
Friend of the Chair on late payments	Ms Lucy Duncan	New Zealand	1998–1999
Friend of the Chair on legal procedures for dealing with alternate site locations and station names/codes	Mr Charles Oleszycki	United States of America	1998–2002
Friend of the Chair on post-certification costs of certain new auxiliary seismic stations	Ms Susan Coles	Australia	2001
Focal point on possible reduction of the annual number of sessions of the PrepCom and its subsidiary bodies from 2003 onwards	Mr Mohammad Daryaei	Iran (Islamic Republic of)	2002
Focal Point on the follow-up response of the PTS to the external evaluation of human resources issues in the PTS	Ms Tracy Roberts	United Kingdom	2002
Focal Point on status of on-site inspection inspectors and inspection assistants	Mr Bernard Bourges	France	2002–2004
	Mr Gustavo Gonzalez	Chile	2002
	Ms Maria Feliciana Ortigão	Brazil	2004–2006

Chairpersons of Working Group B

Task	Name	State signatory	Period
Chairing Working Group B on behalf of the States Signatories	Mr Ola Dahlman	Sweden	1997–2006
	Mr Hein Haak	The Netherlands	2006...

Friends of the Chair of Working Group B

Task	Name	State signatory	Period
Advising and assisting the Chairperson in the conduct of Working Group B business	Mr Hein Haak	The Netherlands	1997–2006
	Mr Svein Mykkeltveit	Norway	1997...
	Mr David A. McCormack	Canada	2006...

Program Coordinators of Working Group B

Major program	Name	State signatory	Period
International Monitoring System	Mr Shigeji Suyehiro	Japan	1997
	Mr John Alwyn Davies	United Kingdom	1997–2000
	Mr Ralph W. Alewine III	United States of America	2000–2002
	Mr Jay Zucca	United States of America	2003...
International Data Center	Mr Ralph W. Alewine III	United States of America	1997–2000
	Mr Ken Muirhead	Australia	2000–2001
	Mr Frode Ringdal	Norway	2001...
Communications	Mr Manfred Henger	Germany	1997
	Mr Artur Schechtman	Brazil	1997
	Mr Hans Frese	Germany	1998...
On-Site Inspection	Mr Vitaliy N. Shchukin	Russian Federation	1997...
Evaluation	Mr Bernard Massinon	France	1998–1999
	Ms Marilyn White	Canada	1999–2002
	Mr Hakim Gheddou	Algeria	2003
	Mr David A. McCormack	Canada	2004–2006
	Mr Hans Frese	Germany	2007...

Task Leaders of Working Group B

Task	Name	State signatory	Period
GSETT-3 and Other Ongoing Tests	Mr Robert Kleywegt	South Africa	1997
Quality Assurance	Mr Dominik Pacala	Slovakia	1997
Event Screening Criteria	Mr Ralph W. Alewine III	United States of America	1997
	Mr Wang Hong	China	1997
IMS Training Program	Mr Mohsen Ghafory-Ashtiany	Iran (Islamic Republic of)	1997
Plans for Certifying Stations	Mr Yves Caristan	France	1997

(continued)

Task	Name	State signatory	Period
Station Configuration for Infrasound and Hydroacoustic Stations	Mr Ken Muirhead	Australia	1997
Procedures for Cooperating National Facilities	Mr Peter Basham	Canada	1997
IMS Facilities Inventory	Mr Ken Muirhead	Australia	1997
Authentication	Mr Yves Caristan	France	1997–1998
	Mr Bernard Massinon	France	1999–2000
Model Agreements or Arrangements	Mr Ken Muirhead	Australia	1997–1999
Draft IMS Operational Manuals	Mr Peter Basham	Canada	1997
	Mr Malcolm Cooper	Australia	1998–2000
	Ms Victoria Oancea	Romania	1997...
Draft IDC Operational Manual	Mr Ralph W. Alewine III	United States of America	1997
	Mr David A. McCormack	Canada	2000–2006
	Ms Victoria Oancea	Romania	2007...
Draft OSI Operational Manual	Mr Vitaliy Shchukin	Russian Federation	1997
	Mr Arend J. Meerburg	The Netherlands	2001–2004
	Mr Malcolm Coxhead	Australia	2004...
Noble Gas Stations	Mr Antonio Oliveira	Argentina	1997–1998
Confidence Building Measures	Mr Ken Muirhead	Australia	1998–1999
Refinements to Station Coordinates	Mr Ken Muirhead	Australia	1998–2000
Radionuclide Issues/ Radionuclide Laboratories	Mr Antonio Oliveira	Argentina	1998–2004
	Mr Carlos Nollmann	Argentina	2001–2004
Science and Technology	Mr Mohsen Ghafory-Ashtiany	Iran (Islamic Republic of)	1998–2007
Reduced Assessments	Ms Lucy Duncan	New Zealand	1998–1999
	Mr Ryotaro Suzuki	Japan	2000–2001
	Mr Hideki Ishizuka	Japan	2001–2003
	Mr Kazuto Suda	Japan	2003–2007
	Mr Takeshi Koizumi	Japan	2007...
Confidentiality	Mr René Haug	Switzerland	1998–1999
	Mr Bernard Massinon	France	1999–2004
Testing and Certification	Mr Ken Muirhead	Australia	1999
Access to IMS Data and IDC Products	Mr Bernard Massinon	France	2000–2004

(continued)

Task	Name	State signatory	Period
Consultation and Clarification	Mr John Alwyn Davies	United Kingdom	2000–2004
Data and Products for Emergency Response	Mr Bernard Massinon	France	2005…
Technology Refreshment and Recapitalization	Mr Jay Zucca	United States of America	2005…
Performance Assessment	Mr David A. McCormack	Canada	2005–2006
	Mr Hans Frese	Germany	2007…
Testing and Provisional Operation	Mr Frode Ringdal	Norway	2005…
Issues Related to NDCs	Mr Mohsen Ghafory-Ashtiany	Iran (Islamic Republic of)	2005–2007
	Mr Frode Ringdal	Norway	2007
	Mr Norbert Opiyo-Akech	Kenya	2007…
Common Issues Related to IFE	Mr Vitaliy N. Shchukin	Russian Federation	2005…

Abbreviations and Acronyms

ABM	Anti-Ballistic Missile
ACS	Association of Caribbean States
AFTAC	Air Force Technical Applications Center (USA)
AG	Advisory Group (of the CTBTO Preparatory Commission)
ARPA	Advanced Research Projects Agency (USA)
BWC	Biological Weapons Convention
CBM	Confidence Building Measures
CCD	Conference of the Committee on Disarmament
CD	Conference on Disarmament
CIF	Capital Investment Fund (of the CTBTO Preparatory Commission)
CMR	Center for Monitoring Research (USA)
CNF	Cooperating National Facility
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
CWC	Chemical Weapons Convention
DARPA	Defense Advanced Research Projects Agency (USA)
DG	Director General
EC	Executive Council, of the CTBTO
ECMWF	European Centre for Medium-Range Weather Forecasts
ECS	Experts Communication System (of the CTBTO Preparatory Commission)
EIDC	Experimental International Data Center
EIF	Entry into Force (of the CTBT)
EMP	Electro-Magnetic Pulse
EMSC	European-Mediterranean Seismological Centre
ENCD	United Nations Eighteen Nation Committee on Disarmament
ES	Executive Secretary (of the CTBTO Preparatory Commission)
EU	European Union
FMCT	Fissile Material Cut-Off Treaty
FOI/FOA	Swedish Defence Research Agency
G77	Group of 77 (and China)
GCI	Global Communications Infrastructure
GPS	Global Positioning System
GSE	Group of Scientific Experts
GSETT-1	Group of Scientific Experts Technical Test No. 1
GSETT-2	Group of Scientific Experts Technical Test No. 2

GSETT-3	Group of Scientific Experts Technical Test No. 3
GTS	Global Telecommunication System
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
IDC	International Data Centre
IFE	Integrated Field Exercise
ILO	International Labour Organization
IMS	International Monitoring System
INGE	International Noble Gas Experiment
IPCC	Intergovernmental Panel on Climate Change
IRIS	Incorporated Research Institutions for Seismology
ISC	International Seismological Centre
JMA	Japan Meteorological Agency
KNMI	Royal Netherlands Meteorological Institute
kt	Kiloton of TNT
MAD	Mutual Assured Destruction
NAS	National Academy of Sciences (USA)
NASA	National Aeronautics and Space Agency (USA)
NCEP	National Centers for Environmental Prediction (USA)
NDC	National Data Center
NEIC	National Earthquake Information Center (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
NORSAR	Originally short for Norwegian Seismic Array, now the name of a research institute
NPT	Non-Proliferation Treaty
NTS	Nevada Test Site (USA)
OAU	Organization of African Unity
OPANAL	Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean
OPBW	Organisation for the Prohibition of Biological Weapons
OPCW	Organisation for the Prohibition of Chemical Weapons
OSI	On-Site Inspection
PIDC	Prototype International Data Center
PNE	Peaceful Nuclear Explosion
PNET	Peaceful Nuclear Explosion Treaty
PrepCom	Preparatory Commission for the CTBTO
PTBT	Partial (or Limited) Test Ban Treaty
PTS	Provisional Technical Secretariat (of the CTBTO Preparatory Commission)
REB	Reviewed Event Bulletin
RRR	Reviewed Radionuclide Report
RRW	Reliable Replacement Warhead
S&T	Science and Technology
SALT	Strategic Arms Limitation Talks
SNR	Signal-to-Noise Ratio
SOFAR	Sound Fixing and Ranging
SOSUS	Sound Surveillance System
SPT1	System-Wide Performance Test 1
TNT	Trinitrotoluene explosive

TS	Technical Secretariat
TTBT	Threshold Test Ban Treaty
UNDP	United Nations Development Programme
UNGA	United Nations General Assembly
UNIDO	United Nations Industrial Development Organisation
UNMOVIC	United Nations Monitoring Verification and Inspection Commission
USGS	U.S. Geological Survey
USSR	Union of Socialistic Soviet Republics
Vela	Name of US verification program
VIC	Vienna International Centre
WGA	Working Group A, of the CTBTO Preparatory Commission
WGB	Working Group B, of the CTBTO Preparatory Commission
WMO	World Meteorological Organization
WWSSN	World Wide Standard Station Network

References*

A/RES/50/64 (1995) UN General Assembly

A749/27 (1994) Official Records of the UN General Assembly

ACA (2007) US Arms Control Association, Nuclear Weapons: Who Has What at a Glance. http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat.asp

Adushkin VV, Khristoforov BD (1995) About the Control of the Underwater and Above Water Nuclear Explosions by Hydroacoustic Methods, Russian Academy of Sciences, Moscow Institute for Dynamics of Geospheres. http://stinet.dtic.mil/oai/oai? &verb=getRecord&metadataPrefix=html&identifier=ADP204516

Aki K, Richards PG (2002) Quantitative Seismology. 2nd ed. University Science Books

Atomic Archive (2007a) http://www.atomicarchive.com/Docs/Deterrence/BaruchPlan.shtml

Atomic Archive (2007b) http://www.atomicarchive.com/Treaties/Treaty7.shtml

Avenhaus R, Kremenyuk VA, Sjöstedt G (2002) Containing the Atom. Lexington Books

Bahavar M, Bowman JR, Israelsson HG, Kohl BC, North RG, O'Brian MS, Shields G (2006) Infrasound resources of the SMDC monitoring research program. In: Proceedings of the 28th Seismic Research Review: Ground-based nuclear explosion monitoring technologies. LA-UR-06-5471, Vol. 2, pp. 863–872. https://www.nemre.nnsa.doe.gov/prod/researchreview/2006/PAPERS/06-01.PDF

Bannister RW, Guthrie KM, Kay JS, Bold GES, Johns MD, Tan SM, Tindle CT (1993) ATOC- New Zealand receiver site survey and acoustic test. JASA 93(4):2380

Barker B, Clark M, Davis P, Fisk M, Hedlin M, Israelsson H, Khalturin V, Kim W-Y, McLaughlin K, Meade C, Murphy J, North R, Orcutt J, Powell C, Richards PG, Stead R, Stevens J, Vernon F, Wallace T (1998) Monitoring nuclear tests. Science 281:1967–1968

Barth K-H (2003) The Politics of Seismology. Nuclear Testing, Arms Control, and the Transformation of a Discipline. Social Studies of Science 33:743–781

BBC (2007) http://news.bbc.co.uk/1/hi/world/asia-pacific/2340405.stm

Becker A, Wotawa G, De Geer L-E, Seibert P, Draxler R, Sloan C, D'Amours R, Hort M, Glaab H, Heinrich P, Grillon Y, Shershakov V, Katayama K, Zhang Y, Stewart P, Hirtl M, Jean M,. Chen P (2007) Global backtracking of anthropogenic radionuclides by means of a receptor oriented ensemble dispersion modelling system in support of Nuclear-Test-Ban Treaty verification. Atmospheric Environment 41:4520

Beckett M (2007) Keynote Address; A World Free of Nuclear Weapons? Carnegie Endowment for International Peace. 25 June http://www.carnegieendowment.org/events/index.cfm?fa=eventDetail&id=1004&&prog=zgp&proj=znpp

Bidwai P, Vanaik A (2000) New Nukes: India, Pakistan and Global Disarmament. Signal Books

Bolt BA (1999) Earthquakes. Freeman

British Antarctic Survey (2007) http://www.antarctica.ac.uk/About_Antarctica/Treaty/

* The hyperlinks were accessed in January 2008

Brooks LF (2005) Brooks statement to Senate Armed Services Committee, April 4 http://www.nnsa.doe.gov/docs/congressional/2005/2005-04-04_Brooks_SASC_testimony.pdf
CCD/558 (1978) First Report of the Ad Hoc Group of Scientific Experts to Consider International Co-operative Measures to Detect and Identify Seismic Events. Conference of the Committee on Disarmament. 7 March, Geneva
CD/1089 (1991) Letter dated 91/07/09 from the head of the Swedish Delegation addressed to the Secretary-General of the Conference on Disarmament transmitting the text of a draft Comprehensive Test-Ban Treaty and its annexed protocols. Conference on Disarmament, Geneva
CD/1144 (1992) Report on the Group of Scientific Experts' Second Technical Test (GSETT-2): 6th report to the Conference on Disarmament of the Ad Hoc Group of Scientific Experts to Consider International Cooperative measures to detect and identify Seismic Events. 13 March, Geneva
CD/1212 (1993) Decision on agenda item 1 "Nuclear Test Ban" / adopted by the Conference on Disarmament at its 659th plenary meeting on 10 August 1993. Conference on Disarmament, Geneva
CD/1235 (1994) Letter dated 94/01/04 from the Permanent Representative of Australia to the United Nations for disarmament matters addressed to the President of the Conference on Disarmament transmitting the text of a working paper entitled "Comprehensive nuclear test ban". Conference on Disarmament, Geneva
CD/1238 (1994) Mandate for an Ad Hoc Committee under agenda item 1: "Nuclear test ban". Conference on Disarmament, Geneva
CD/1254 (1994) Report of the Ad Hoc Group of Scientific Experts to Consider International Cooperative Measures to Detect and to Identify Seismic Events to the Ad Hoc Committee on Nuclear Test Ban on International Seismic Monitoring and the GSETT-3 Experiment. 25 March, Geneva
CD/1364 (1995) Report of the Conference on Disarmament to the General Assembly of the United Nations. Conference on Disarmament. 26 September, Geneva
CD/1372 (1995) Progress Report to the Conference on Disarmament on the Forty-Second Session of the Ad Hoc Group of Scientific Experts to Consider International Measures to Detect and Identify Seismic Events. 21 December, Geneva
CD/1384 (1996) Draft comprehensive nuclear test ban treaty: Islamic Republic of Iran. Conference on Disarmament, Geneva
CD/1386 (1996) Comprehensive nuclear test ban treaty: model treaty text: Australia. Conference on Disarmament, Geneva
CD/1423 (1996) Report of the Ad Hoc Group of Scientific Experts to the Conference on Disarmament on the GSETT-3 experiment and its relevance to the seismic component of the comprehensive nuclear test-ban treaty international monitoring system 15 August, Geneva
CD/1427 (1996) Letter dated 96/08/22 from the Permanent Representative of Belgium addressed to the President of the Conference transmitting the text of a draft Comprehensive Nuclear-Test-Ban Treaty. Conference on Disarmament, Geneva
CD/43 (1979) Letter dated 25 July 1979 from the Chairman of the Ad Hoc Group of Scientific Experts to Consider International Co-operative Measures to Detect and Identify Seismic Events to the Chairman of the Committee on Disarmament transmitting the Second Report of the Ad Hoc Group. 25 July, Geneva
CD/448 (1984) Third report to the Conference on Disarmament of the Ad Hoc Group of Scientific Experts to Consider International Co-operative Measures to Detect and to Identify Seismic Events 9 March, Geneva
CD/756 (1987) Letter dated 87/06/08 from the representatives of Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Mongolia, Poland, Romania and the Union of Soviet Socialist Republics, addressed to the President of the Conference on Disarmament, transmitting the text of the "Basic provisions of a treaty on the complete and general prohibition of nuclear weapons tests". Conference on Disarmament, Geneva

CD/903 (1989) Fifth report to the Conference on Disarmament of the Ad Hoc Group of Scientific Experts to Consider International Co-operative Measures to Detect and to Identify Seismic Events: technical concepts for a global system for international seismic data exchange. 17 March, Geneva
CD/NTB/WP.224 (1995) International Monitoring System, Expert Group Report based on Technical Discussions held from 6 February to 3 March 1995. Conference on Disarmament, Geneva
CD/NTB/WP.269 (1995) International Monitoring System, Expert Group Report based on Technical Discussions held from 22 to 25 August 1995. Conference on Disarmament, Geneva
CD/NTB/WP.283 (1995) International Monitoring System, Report of the Expert Group based on Technical Discussions held from 4 through 15 December 1995. Conference on Disarmament, Geneva
CD/NTB/WP.330 (1996) Draft Comprehensive Nuclear Test-Ban Treaty: working paper/ Chairman of the Ad Hoc Committee on a Nuclear Test Ban. Conference on Disarmament, Geneva
CD/NTB/WP.330/Rev.2 (1996) Draft Comprehensive Nuclear Test-Ban Treaty / Chairman of the Ad Hoc Committee on a Nuclear Test Ban. Conference on Disarmament, Geneva
Clancy T (1984) The Hunt for Red October. US Naval Institute Press
CNS (2007a) http://cns.miis.edu/pubs/inven/pdfs/spnfz.pdf
CNS (2007b) http://cns.miis.edu/pubs/inven/pdfs/seanwfz.pdf
CNS (2007c) http://cns.miis.edu/pubs/inven/pdfs/aptanwfz.pdf
CNS (2007d) http://cns.miis.edu/pubs/inven/pdfs/atosuw.pdf
Condon EU (1943) Los Alamos Primer, available at: http://www.cfo.doe.gov/me70/manhattan/publications/LANLSerberPrimer.pdf
Convention on the Territorial Sea and Contiguous Zone (1958). http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_territorial_sea.pdf
Cox C (1999) PRC Theft of U.S. Thermonuclear Warhead Design Information, Ch. 2, available at http://www.house.gov/coxreport/
CTBT (1996) Comprehensive Nuclear-Test-Ban Treaty. http://www.ctbto.org/treaty/treaty_text.pdf
CTBT/PC-24/INF.9 (2005) Final report on the review of the organizational structure of the Provisional Technical Secretariat of the CTBTO Preparatory Commission. 22 April
CTBT/PTS/INF.872 (2007) CTBTO Medium Term Plan 2008–2012
CTBT/WGB-14/INF.3 (2000) Report of the External Evaluation Team on the International Data Center. 24 November
CTBT/WGB-17/INF.3 (2001) Report of the External Evaluation Team on the International Monitoring System. 21 December
CTBT/WGB-21/INF.5 (2003) Report on the External Evaluation of Major Programme 4: On-Site Inspection. 5 June
CTBTO Preparatory Commission (2005) Regulations and Rules of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, Second Edition June
CTBTO Preparatory Commission (2006) CTBT: Synergies with Science 1996–2006 and beyond. ISBN: 92-95021-34-7, CTBTO Preparatory Commission
CTBTO Preparatory Commission (2007a) http://www.ctbto.org/reference/legal_resources/prepcom_resolution.pdf
CTBTO Preparatory Commission (2007b) Potential civil and scientific applications of the CTBT verification technologies. http://www.ctbto.org/reference/outreach/civil_and_scientific_a_2007_afc_web.pdf
CTBTO UNGA (2000) Agreement to regulate the relationship between the United Nations and the Preparatory Commission of the CTBTO. UN General Assembly A/RES/54/280 30 June
D'Agostino TP (2006) Statement by Thomass P. D'Agostino, deputy Administrator for Defense, Programs National Nuclear Security Administration before the House Armed

Services Committee, Subcommittee on Strategic Forces, April 5, http://www.nnsa.doe.gov/docs/congressional/2006/2006-04-05_HASC_Transformation_Hearing_Statement_(DAgostino).pdf
Dahlen FA, Tromp J (1998) Theoretical Global Seismology. Princeton University Press
Dahlman O, Israelsson H (1977) Monitoring Underground Nuclear Explosions. Elsevier
De Geer L-E (1991) Observations in Sweden of Venting Underground Nuclear Explosions. Proceedings from the Symposium on Underground Nuclear Weapons Testing: Potential Environmental Impacts and Their Containment. Ottawa, Canada 23–24 April
De Geer L-E (2001) Comprehensive Nuclear-Test-Ban Treaty: relevant radionuclides. Kerntechnik 66(3):113–120
Decode Systems (2007) http://www.decodesystems.com/gps.html
Dewey J, Byerly P (2007) The early history of seismometry (to 1900) http://earthquake.usgs.gov/learning/topics/seismology/history/part13.php
DOE (2000) United States Nuclear Tests. July 1945 through September 1992. DOE/NV-209 (Rev. 15), December. http://www.fas.org/resource/08132004140930.pdf
DOE (2007) Plowshare Program. US Department of Energy, Nevada Operations Office. https://www.osti.gov/opennet/reports/plowshar.pdf
DOS (1999) The Stockpile Stewardship Program, U.S. Department of State http://www.state.gov/www/global/arms/factsheets/wmd/nuclear/ctbt/fs_991008_stockpile.html
Douglas A, Bowers D, Marshall PD, Young JB, Porter D, Wallis NJ (1999) Putting nuclear-test monitoring to the test. Nature 398:474–475
Ebeling C, Astiz L, Starovoit Y, Tavener N, Perez G, Given HK, Barrientos S, Yamamoto M, Hfaiedh M, Stewart R, Estabrook C (2002) Low noise results from IMS site surveys: A preliminary new high-frequency low noise model. EOS – Transactions of the American Geophysical Union 83(47), Fall Meeting Supplement, Abstract #S71A-1057
EMSC (2007) http://www.emsc-csem.org
Estabrooks S (2006) Getting back to work? The P6 initiative and informal debates in the Conference on Disarmament. The Ploughshares Monitor. Summer 2006, 27(2) http://www.ploughshares.ca/libraries/monitor/monj06e.pdf
FAS (1990) Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests. http://www.fas.org/nuke/control/ttbt/text/ttbt1.htm
FAS (2007) Federation of American Scientists. Nuclear Weapon Design http://www.fas.org/nuke/intro/nuke/design.htm
FAS abm (2007) http://www.fas.org/nuke/control/abmt/text/abm2.htm
FAS salt 1 (2007) http://www.fas.org/nuke/control/salt1/text/salt1.htm
FAS ttbt (2007) http://www.fas.org/nuke/control/ttbt/text/ttbt1.htm
Feffer J (2007) North Korean Nuclear Agreement: Annotated Foreign Policy in Focus. http://www.fpif.org/fpiftxt/3997
FOI (2006) Press release dated 19 December entitled 'FOI found radioactive xenon following explosion in North Korea'. Swedish Defence Research Agency http://www.foi.se/FOI/Templates/NewsPage____5412.aspx
Foster JS (2003) Panel FY 2003, Report to Congress of the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile. April 11 http://www.fas.org/main/content.jsp?formAction = 297&contentId = 256
Gitterman Y, Shapira A (2001) Dead Sea seismic calibration experiment contributes to CTBT monitoring. Seismological Research Letters 72:159–170
Glasstone S, Dolan PJ (1983) The Effects of Nuclear Weapons. United States Government Printing
Global Security (2005) Reliable Replacement Warhead http://www.globalsecurity.org/wmd/systems/rrw.htm
Global Security (2007) http://www.globalsecurity.org/wmd/intro/hydrodynamic.htm
Goldblat J (1988) Nuclear Weapon Tests: Prohibition or limitation? Oxford University Press

Goldblat J (2000) Nuclear Disarmament: Obstacle to Banishing the Bomb. I.B. Taunis
Goldblat J (2002) Arms Control. The new Guide to Negotiations and Agreements. Sage Publications Inc
Goldman J, Stein G (1997) The Cuban Missile crisis October 18–29, 1962 http://www.hpol.org/jfk/cuban/
Gossard EE, Hooke WH (1975) Waves in the Atmosphere: Atmospheric Infrasound and Gravity waves- their Generation and Propagation. ISBN 0-444-411968 Elsevier
Green PE, Frosch RA, Romney CF (1965) Principles of an experimental large aperture seismic array (LASA). Proceedings of the IEEE. Vol. 53/12 pp. 1821–1833
Gutenberg B (1946) Interpretation of Records obtained from the New Mexico Atomic Bomb Test, July 16, 1945. Bulletin of the Seismological Society of America 36:327–330
Hafemeister D (2007) Progress in CTBT monitoring since its 1999 Senate defeat. Science and Global Security 15:151–183
Hall LH (2007) http://www.ctbtcommission.org/hallpaper.htm
Hansen KA (2006) The Comprehensive Nuclear Test Ban Treaty. An Insider's Perspective. Stanford University Press, Stanford, California
Heeger D (1997) Signal Detection Theory. http://www.cns.nyu.edu/~david/sdt/sdt.html
Hobson D (2004) Remarks by Chairman David Hobson House Appropriations Subcommittee on Energy and Water Development, to the National Academy of Sciences Symposium on Post-Cold War US Nuclear Strategy: A Search for Technical and Policy common Ground August 11 http://www7.nationalacademies.org/cisac/
IAEA (1970) http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc140.pdf
IAEA (2007a) http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html
IAEA (2007b) http://www.iaea.org/Publications/Documents/Treaties//tlatelolco.html
ICBL (2007) http://www.icbl.org/
India Nuclear Update (2003) http://www.wisconsinproject.org/countries/india/nuke2003.htm
Inventors (2007) http://inventors.about.com/library/inventors/blseismograph2.htm
IPCC (2007) http://www.ipcc.ch/about/index.htm
IRIS (2007) http://www.iris.washington.edu
ISC (2007) http://www.isc.ac.uk
ISIS (2001) http://www.isis-online.org/publications/southafrica/03012001%20press%20release%20on%20flash.html
Issartel J-P, Baverel J (2003) Inverse transport for the verification of the Comprehensive Nuclear-Test-Ban Treaty. Atmospheric Chemistry and Physics 3:475–486. http://www.atmos-chem-phys.org/aco/3/475/
Jans W (2005) http://www.vertic.org/assets/WEBSITE%20-%20CTBT%20Seminar/Wolfgang%20Jans%20-%2022%20Sept%202005%20-%20NY%20CTBT.pdf
Jeanloz R (2000) Science-Based Stockpile Stewardship. Physics Today 53(12):44–50. http://www.physicstoday.org/pt/vol-53/iss-12/p44.html
Jeanloz R (2007) Comprehensive Nuclear Test Ban Treaty and U.S. Security. http://media.hoover.org/documents/Drell_Goodby_Schultz_Reykjavik_Revisited_55.pdf
JMA (2007) http://www.jma.go.jp/en/quake
Kim W-Y, Richards PG (2007) North Korean Nuclear Test: Seismic discrimination at low yield. EOS – Transactions of the American Geophysical Union 88(14):158, 161
Kimball D, Boese W (2003) Limited Test Ban Treaty turns 40 http://www.armscontrol.org/act/2003_10/LTBT.asp
Kværna T, Ringdal F (1999) Seismic threshold monitoring for continuous assessment of global detection capability. Bulletin of the Seismological Society of America 89:946–959
Kværna T, Ringdal F, Baadshaug U (2007) North Korea's nuclear test: The capability for seismic monitoring of the North Korean test site. Seismological Research Letters 78:487–497
Lawrence MW, Galindo Arranz M (2007) http://www.acoustics.org/press/135th/lawrence.htm
Lay T, Wallace TC (1995) Modern Global Seismology. Academic Press

Layton L (2007) Is it possible to test a nuclear weapon without producing radioactive fallout? http://science.howstuffworks.com/nuclear-test.htm
Le Pichon A, Blanc E, Hauchecorne A (eds.) (2009) Infrasound Monitoring for Atmospheric Studies. Springer
Massinon B (2004) Benefits of potential civil and scientific application of CTBT verification technologies. CTBTO Spectrum nr 4 July
Medalia J (2007) Nuclear Weapons: The reliable Replacement Warhead Program. CRS Report to Congress. Update February 8, 2007. Code RL 32929, Congressional Research Service
Medalia J (2008) Comprehensive Nuclear-Test-Ban Treaty: Issues and Arguments. Congressional Research Service Report for Congress. Order Code RL34394
Mikhailov VN (1996) USSR Nuclear Weapons Tests and Peaceful Nuclear Explosions. 1949 through 1990. The Ministry of the Russian Federation for Atomic Energy, the Ministry of Defence of the Russian Federation. RFNC-VNIIEF
MOD (2006) The Future of the United Kingdom's Nuclear Deterrent. Presented to the Parliament by the Secretary of State for Defence and the Secretary of State for Foreign and Commonwealth Affairs. December Cm 6994. http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/PolicyStrategyandPlanning/DefenceWhitePaper2006Cm6994.htm
NAS (2002) Technical issues related to the Comprehensive Nuclear Test Ban Treaty, Committee on Technical Issues Related to Ratification of the Comprehensive Nuclear Test Ban Treaty. National Academy of Sciences, National Academy Press, Washington DC, ISBN 0-309-08506-3 available at http://www.nap.edu
NASA (2007) Tectonic Plate Motion. http://cddis.nasa.gov/926/slrtecto.html
Nehru J (1954) http://www.indianembassy.org/policy/Disarmament/disarm2.htm
NEIC (2007) http://neic.usgs.gov/neis/station_book/
NEIC/USGS (2007) http://neis.usgs.gov/neis/gereral/magnitude_intensity.html
NOAA (2007a) http://www.pmel.noaa.gov/vents/acoustics.html
NOAA (2007b) http://oceanexplorer.noaa.gov/explorations/sound01/background/acoustics/media/sofar.html
Nordyke MD (2000) The Soviet Program for Peaceful Uses of Nuclear Explosions. September 1, Lawrence Livermore National Laboratory, USA. http://www.osti.gov/bridge/purl.cover.jsp?purl=/793554-ZAQEpq/native/
NRDC (2006) Natural Resources Defence Council, Press release. http://www.nrdc.org/media/pressreleases/061013.asp
NRDC (2007) Natural Resources Defence Council. Table of Indian and Pakistani Nuclear Tests 1975–2002. http://www.nrdc.org/nuclear/nudb/datab22.asp
NRDC Archive (2007) Natural Resources Defence Council. Archive of Nuclear data. http://www.nrdc.org/nuclear/nudb/datab15.asp
NSA (2006) The Vela Incident. Nuclear Test or Meteoroid? http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB190/index.htm
Office of Technology Assessment US Congress (1988) Seismic Verification of Nuclear Testing Treaties. NTIS PB 88-214853
Office of the Director of Intelligence (2006) Statement by the Director of National Intelligence on the North Korea nuclear test. ODNI News Release 19-06 dated 16 October, Washington, D.C. http://www.odni.gov/announcements/20061016_release.pdf
Office of the Press Secretary of the White House (1995) Document 10149
O'Hanlon M (2008) Resurrecting the Test-Ban Treaty. Survival 50:119–132
OPBW (2007) http://www.opbw.org
OPCW (2007) http://www.opcw.org
Operation Shakti (1998) http://nuclearweaponarchive.org/India/IndiaShakti.html
Ramaker J, Mackby J, Marshall PD, Geil R (2003) The Final Test. A history of the Comprehensive Nuclear-Test-Ban Treaty Negotiations. CTBTO Preparatory Commission. Vienna

Richards PG (2004) Precision Seismology – Applications and Comments. http://adsabs.harvard.edu/abs/2004AGUFM.S11D.01R
Richards PG, Kim W-Y (2007) Seismic signature. Nature Physics 3:4–6
Richards PG, Zavales J (1990) Seismic Discrimination of Nuclear Explosions, Annual Review of Earth and Planetary Sciences 18:257–286
Richards PG, Zavales J (1996) Seismological methods for monitoring a CTBT. The technical issues arising in early negotiations. http://www.ldeo.columbia.edu/~richards/early CTBThistory.html
Richter CF (1958) Elementary Seismology. Freeman
Ringbom A, Elmgren K, Lindh K (2007) Analysis of radioxenon in ground level air sampled in the Republic of South Korea on October 11–14, 2006. Swedish Defence Research Agency report FOI-R-2273-SE
Ringdal F, Kværna T (1989) A multichannel processing approach to real time network detection, phase association and threshold monitoring. Bulletin of the Seismological Society of America 79:1927–1940
Ringdal F, Kværna T (1992) Continuous seismic threshold monitoring. Geophysical Journal International 111:505–514
Saey PRJ, Bean M, Becker A, Coyne J, d'Amours R, De Geer L-E, Hogue R, Stocki TJ, Ungar RK, Wotawa G (2007) A long distance measurement of radioxenon in Yellowknife, Canada, in late October 2006. Geophysical Research Letters 34, L20802, doi:10.1029/2007GL030611
Schaper A (2007) The fizzling fervency of the Comprehensive Test Ban Treaty. In Bremer Mærli M and Lodgaard, S (eds.) Nuclear Proliferation and International Security. Routledge
Schmidt (2007) Ultra-Fast Nuclear Detonation Pictures. http://www.waynesthisandthat.com/abombs.html
Schwitters R et al. (2003) Requirements for ASCI, October 2003, The Mitre Cooperation http://www.fas.org/main/content.jsp?formAction=297&contentId=256
Serber R (1992) The Los Alamos Primer, University of California Press
Shalikashvili JM (2001) Findings and Recommendations Concerning the Comprehensive Nuclear-Test-Ban Treaty. 4 January http://www.fas.org/nuke/control/ctbt/text/shalictbt.htm
Shearer PM (1999) Introduction to Seismology. Cambridge University Press
Shultz GP, Perry WJ, Kissinger HA, Nunn S (2007) A world free of Nuclear Weapons. Wall Street Journal 4 January
Sokolski HD (2004) Getting MAD: Nuclear Mutual Assured Destruction, Its Origin and Practice. http://www.strategicstudiesinstitute.army.mil/Pubs/display.cfm?pubID=585
Springer D, Denny M, Healy J, Mickey W (1968) The Sterling experiment. Decoupling of seismic waves by a shot-generated cavity. Journal of Geophysical Research 73:5995–6012
Stein S, Wysession M (2003) An Introduction to Seismology, Earthquakes, and Earth Structure. Blackwell Publishing
Sterngold J (2007) Los Alamos Scientist criticizes federal approach to arsenal. San Francisco Chronicle 13 February http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/02/13/MNGI1O3N0G1.DTL
Strickland DA (1964) Report of the Conference of Experts to Study the Possibility of Detecting Violations of a Possible Agreement on Suspension of Nuclear Tests. Scientists as Negotiators: The 1958 Geneva Conference of Experts, Midwest Journal of Political Science 8(4):372–384
Stumpf W (1995) Birth and death of South African Nuclear Weapons Program. Atomic Energy Cooperation of South Africa Ltd http://www.fas.org/nuke/guide/rsa/nuke/stumpf.htm
Sublette C (2001) The Effects of Underground Explosions. http://nuclearweaponarchive.org/Library/Effects/UndergroundEffects.html

Sublette C (2007a) Nuclear Weapons Frequently Asked Questions. http://nuclearweaponarchive.org/Nwfaq/Nfaq10.html
Sublette C (2007b) Basic Principles of Staged Radiation Implosion. http://nuclearweaponarchive.org/Library/Teller.html
Subrahamanyam K (1999) A Strategic Overview. Embassy of India. http://www.indianembassy.org/press/New_Delhi_Press/August_1999/Strategic_Overview_August_09_1999.html
Surowiecki J (2005) The Wisdom of Crowds, Why the Many are Smarter Than the Few. Abacus
Sykes LR, Ekstrom G (1989) Comparison of Seismic and Hydrodynamic Yield Determinations for the Soviet Joint Verification Experiment of 1988. Proceedings of the National Academy of Sciences USA 86:3456–3460, May 1989 Geophysics http://www.pnas.org/cgi/reprint/86/10/3456
Top500 (2007) http://www.top500.org/
UNODA (1995) 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, 17 April – 12 May 1995, New York. http://disarmament2.un.org/wmd/npt/1995nptrevconf.html
US Department of State (2007) http://www.state.gov/t/ac/trt/5181.htm
USGS (2007a) http://www.earthquake.usgs.gov/research
USGS (2007b) http://www.earthquake.usgs.gov
Wall Street Journal (2007) The Wall Street Journal, February 22
Wallace TC (1998) The May 1998 India and Pakistan nuclear tests. Seismological Research Letters 69:386–393
Wisconsin Project (1996) Israel's Nuclear Weapons Capability: An Overview. http://www.wisconsinproject.org/countries/israel/nuke.html
Wotawa G, De Geer L-E, Denier P, Kalinowski M, Toivonen H, D'Amours R, Desiato F, Issartel J-P, Langer M, Seibert P, Frank A, Sloan C, Yamazawa H (2003) Atmospheric transport modelling in support of CTBT verification – overview and basic concepts. Atmospheric Environment 37:2529
Wüster J, Rivière F, Crusem R, Plantet J-L, Massinon B, Caristan Y (2000) GSETT-3: Evaluation of the detection and location capabilities of an experimental global seismic monitoring system. Bulletin of the Seismological Society of America 90:166–186
Zuccaro-Labellarte G, Fagerholm R (1996) Safeguards at research reactors, current practices, future directions. IAEA bulletin 38/4 http://f40.iaea.org/worldatom/Periodicals/Bulletin/Bull384/zuccaro.html

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