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| Publications issued in 1997 | 123 |

**SUMMARY OF ALLOCATION AND UTILIZATION OF REGULAR BUDGET RESOURCES
BY PROGRAMME AND MAJOR PROGRAMME**

| Programme/Major Programme | 1997 | 1997 | 1997 total expenditure | | Unused (over- expended) budget (2)-(3) (5) |
|--|---|--|------------------------|--|---|
| | budget GC(40)/10 (at AS 12.70) (1) | adjusted budget (at AS 12.04) (2) | amount (3) | % of adjusted budget (3)/(2) (4) | |
| NUCLEAR POWER AND FUEL CYCLE | | | | | |
| Nuclear power | 4 745 000 | 4 935 000 | 4 986 224 | 101.04% | (51 224) |
| Nuclear fuel cycle and waste technology | 5 158 000 | 5 359 000 | 5 187 842 | 96.81% | 171 158 |
| Comparative assessment of energy sources | 2 303 000 | 2 394 000 | 2 152 329 | 89.91% | 241 671 |
| Subtotal | 12 206 000 | 12 688 000 | 12 326 395 | 97.15% | 361 605 |
| NUCLEAR APPLICATIONS | | | | | |
| Food and agriculture | 10 720 000 | 11 940 000 | 11 067 031 | 92.69% | 872 969 |
| Human health | 5 793 000 | 6 000 000 | 5 990 315 | 99.84% | 9 685 |
| Marine environment, water resources and industry | 6 304 000 | 6 560 000 | 6 533 030 | 99.59% | 26 970 |
| Physical and chemical sciences | 8 651 000 | 8 928 000 | 8 869 500 | 99.34% | 58 500 |
| Subtotal | 31 468 000 | 33 428 000 | 32 459 876 | 97.10% | 968 124 |
| NUCLEAR, RADIATION AND WASTE SAFETY | | | | | |
| Nuclear safety | 5 506 000 | 5 750 000 | 5 778 618 | 100.50% | (28 618) |
| Radiation safety | 3 690 000 | 3 845 000 | 3 821 738 | 99.40% | 23 262 |
| Radioactive waste safety | 1 636 000 | 1 705 000 | 1 716 812 | 100.69% | (11 812) |
| Co-ordination of safety activities | 2 891 000 | 3 023 000 | 2 784 061 | 92.10% | 238 939 |
| Subtotal | 13 723 000 | 14 323 000 | 14 101 229 | 98.45% | 221 771 |
| NUCLEAR VERIFICATION AND SECURITY OF MATERIAL | | | | | |
| Safeguards | 78 191 000 | 81 796 000 | 81 845 023 | 100.06% | (49 023) |
| Security of material | 560 000 | 585 000 | 505 632 | 86.43% | 79 368 |
| Subtotal | 78 751 000 | 82 381 000 | 82 350 655 | 99.96% | 30 345 |
| MANAGEMENT OF TECHNICAL CO-OPERATION FOR DEVELOPMENT | | | | | |
| Management of technical co-operation for development | 12 379 000 | 12 983 000 | 12 974 114 | 99.93% | 8 886 |
| Subtotal | 12 379 000 | 12 983 000 | 12 974 114 | 99.93% | 8 886 |
| POLICY MAKING, CO-ORDINATION AND SUPPORT | | | | | |
| Executive management | 4 878 000 | 5 110 000 | 4 897 045 | 95.83% | 212 955 |
| Policy making organs | 7 065 000 | 7 402 000 | 7 545 880 | 101.94% | (143 880) |
| Legal activities, external relations and public information | 7 008 000 | 7 324 000 | 6 852 701 | 93.57% | 471 299 |
| Administration | 12 472 000 | 13 080 000 | 12 811 044 | 97.94% | 268 956 |
| General services | 22 525 000 | 23 717 000 | 23 281 477 | 98.16% | 435 523 |
| Information management and support services | 14 223 000 | 14 905 000 | 14 880 947 | 99.84% | 24 053 |
| Subtotal | 68 171 000 | 71 538 000 | 70 269 094 | 98.23% | 1 268 906 |
| Agency's programmes | 216 698 000 | 226 514 000 | 224 481 363 | 99.10% | 2 032 637 |
| Plus: reimbursable work for others | 5 294 000 | 5 551 000 | 6 235 641 | 112.33% | (684 641) |
| TOTAL regular budget | 221 992 000 | 232 065 000 | 230 717 004 | 99.42% | 1 347 996 |

**SUMMARY OF ALLOCATION AND UTILIZATION OF EXTRABUDGETARY RESOURCES
BY PROGRAMME AND MAJOR PROGRAMME**

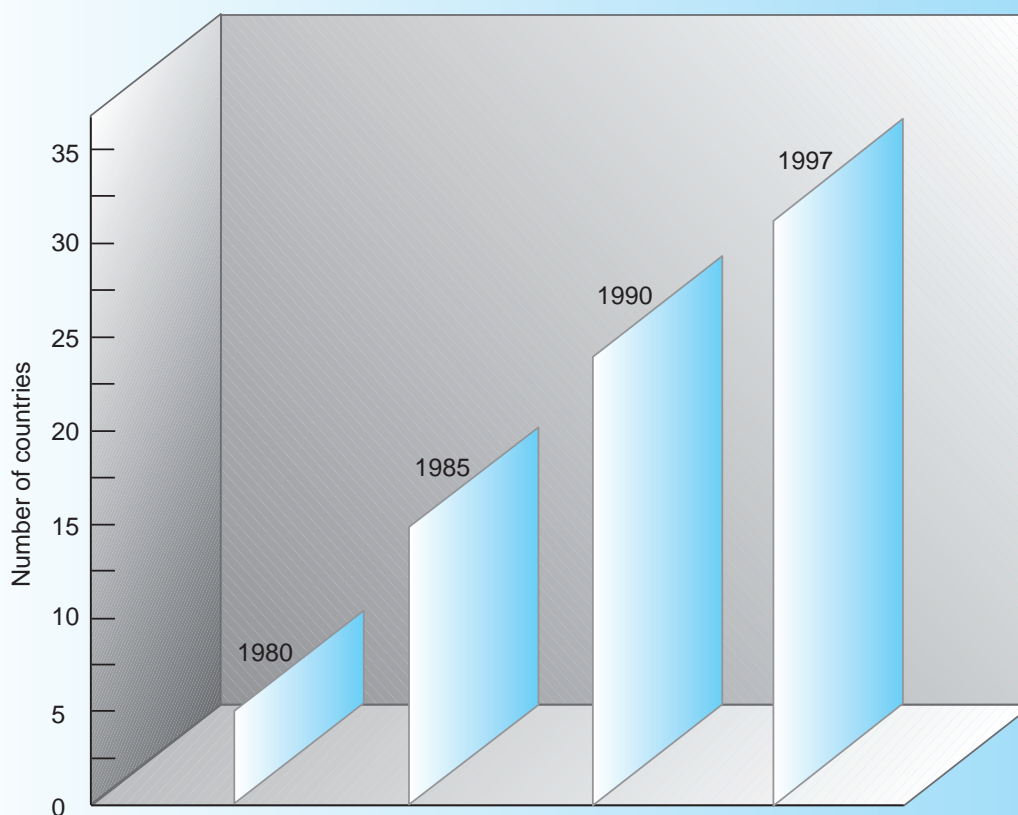
| Programme/Major Programme | Extrabudgetary budget (1) | Adjusted budget (2) | Total expenditure (3) | Unused balance as at 31 December 1997 (2)-(3) (4) |
|--|---------------------------------|---------------------------|-----------------------------|--|
| NUCLEAR POWER AND FUEL CYCLE | | | | |
| Nuclear power | 371 000 | 463 861 | 95 418 | 368 443 |
| Nuclear fuel cycle and waste technology | 738 000 | 848 390 | 618 181 | 230 209 |
| Comparative assessment of energy sources | 30 000 | 379 879 | 241 449 | 138 430 |
| Subtotal | 1 139 000 | 1 692 130 | 955 048 | 737 082 |
| NUCLEAR APPLICATIONS | | | | |
| Food and agriculture | 4 454 000 | 4 952 837 | 3 046 092 | 1 906 745 |
| Human health | 336 000 | 445 822 | 136 929 | 308 893 |
| Marine environment, water resources and industry | 1 790 000 | 3 862 061 | 2 242 045 | 1 620 016 |
| Physical and chemical sciences | | 200 731 | 100 241 | 100 490 |
| Subtotal | 6 580 000 | 9 461 451 | 5 525 307 | 3 936 144 |
| NUCLEAR, RADIATION AND WASTE SAFETY | | | | |
| Nuclear safety | 1 865 000 | 3 007 859 | 1 538 181 | 1 469 678 |
| Nuclear safety additional high priority activities | 212 000 | 212 000 | 212 000 | |
| Radiation safety | 1 117 000 | 1 291 223 | 676 612 | 614 611 |
| Radioactive waste safety | 220 000 | 261 121 | 73 097 | 188 024 |
| Co-ordination of safety activities | 142 000 | 609 134 | 316 721 | 292 413 |
| Subtotal | 3 556 000 | 5 381 337 | 2 816 611 | 2 564 726 |
| NUCLEAR VERIFICATION AND SECURITY OF MATERIAL | | | | |
| Safeguards | 3 073 000 | 13 954 620 | 4 226 872 | 9 727 748 |
| Safeguards additional high priority activities | 9 185 000 | 6 716 708 | 5 562 836 | 1 153 872 |
| Security of material | 1 189 000 | 2 103 749 | 1 024 886 | 1 078 863 |
| Subtotal | 13 447 000 | 22 775 077 | 10 814 594 | 11 960 483 |
| MANAGEMENT OF TECHNICAL CO-OPERATION FOR DEVELOPMENT | | | | |
| Co-ordination and control | 285 000 | 355 970 | 252 787 | 103 183 |
| Technical co-operation programmes | | 126 100 | 52 374 | 73 726 |
| Technical co-operation implementation | 184 000 | 247 204 | 138 378 | 108 826 |
| Subtotal | 469 000 | 729 274 | 443 539 | 285 735 |
| POLICY MAKING, CO-ORDINATION AND SUPPORT | | | | |
| Executive management | 3 663 000 | 3 057 812 | 2 427 292 | 630 520 |
| Policy making organs | | | | |
| Legal activities, external relations and public information | 540 000 | 1 211 537 | 583 155 | 628 382 |
| Administration | | 133 306 | 21 935 | 111 371 |
| General services | | | | |
| Information management and support services | | | | |
| Subtotal | 4 203 000 | 4 402 655 | 3 032 382 | 1 370 273 |
| Agency's programmes | 29 394 000 | 44 441 924 | 23 587 481 | 20 854 443 |

Note: Nuclear, Radiation and Waste Safety and Nuclear Verification and Security of Material are the only programmes which received extrabudgetary contributions in 1997 to partly finance additional high priority activities shown in GC(40)/10. The table excludes the FAO funded AGRIS project as it is not part of the Agency's 1997 Programme and Budget.

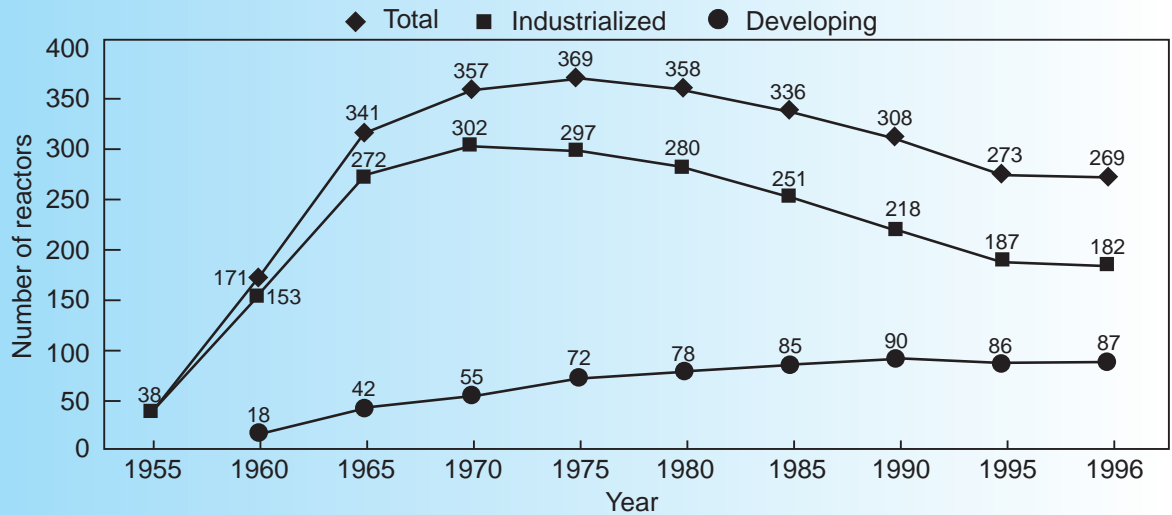
**TECHNICAL CO-OPERATION DISBURSEMENTS BY
AGENCY PROGRAMME IN 1997**
(in thousands of dollars)

| Programme | Total |
|--|-----------------|
| Nuclear power | 3 381.0 |
| Nuclear fuel cycle and waste technology | 2 863.7 |
| Comparative assessment of energy sources | 51.2 |
| Food and agriculture | 12 425.2 |
| Human health | 12 169.7 |
| Marine environment, water resources and industry | 8 074.7 |
| Physical and chemical sciences | 7 320.0 |
| Nuclear safety | 2 406.1 |
| Radiation safety | 6 843.6 |
| Radioactive waste safety | 475.6 |
| Co-ordination of safety activities | 956.3 |
| Safeguards | 55.0 |
| Security of material | 66.8 |
| Management of technical co-operation for development | 3 045.6 |
| Policy making, co-ordination and support | 650.7 |
| Total | 60 503.9 |

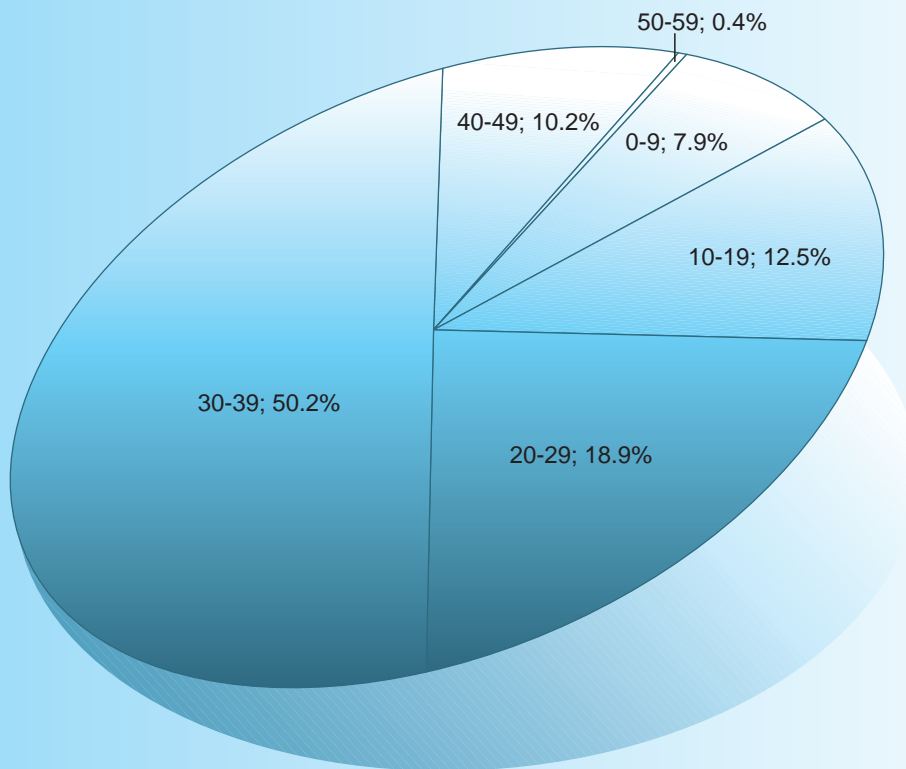
**NUMBER OF COUNTRIES COMMERCIALY APPLYING
FOOD IRRADIATION**



NUMBER OF OPERATING RESEARCH REACTORS IN INDUSTRIALIZED AND DEVELOPING COUNTRIES



AGE DISTRIBUTION OF RESEARCH REACTORS IN THE RESEARCH REACTOR DATABASE (RRDB): AGE AND PERCENTAGE



**INTERNATIONAL PEER REVIEW SERVICE (IPERS) ON PROBABILISTIC
SAFETY ANALYSIS REVIEWS, 1997**

| Review type | Country | Plant |
|-------------|-------------------|------------------------|
| Main review | Republic of Korea | Ulchin 3 and 4 |
| Main review | Australia | HIFAR research reactor |
| Main review | Bulgaria | Kozloduy |
| Main review | Slovenia | Krško |

**ENGINEERING SAFETY REVIEW SERVICES (ESRS) RELATED TO SITE AND
EXTERNAL HAZARDS, 1997**

| Country | Site/plant | Service |
|----------------|---|---|
| Armenia | Medzamor | (1) Finalization of terms of reference for seismic upgrading (2) Review of seismic capacity and upgrading (3) Review of seismic instrumentation |
| Bulgaria | Belene WWER-1000 | Final review of seismic input |
| China | Lianyungang WWER-100 | Workshop on seismic safety of WWER type nuclear power plants |
| Cuba | Juragua WWER | Workshop on site safety |
| Egypt | 22 MW MPR research reactor | Seismic safety review (from PSAR) |
| Indonesia | Muria | (1) Final review of volcanic hazard. (2) Review of geological, seismic and geotechnical aspects |
| Kazakhstan | 10 MW Alatau research reactor | Seismic safety reviews |
| Korea, Rep. of | Ulchin, units 3 and 4 PWR | Review of external event PSA |
| Morocco | Prototype 10 MW desalination plant Tantan | Site survey reviews |
| Romania | Cernavoda PHWR | External event PSA workshop |

OPERATIONAL SAFETY REVIEW TEAM (OSART) MISSIONS, 1997

| Type | Country | Location/nuclear power plant | Plant type |
|------|--------------------|------------------------------|--------------------------|
| O | China | Qinshan-1 | PWR 300 MW(e) |
| O | Mexico | Laguna Verde | BWR 675 MW(e) |
| O | Rep. of Korea | Yonggwang 1 and 2 | PWR 950 MW(e) |
| O | Argentina | Embalse | PHWR 650 MW(e) |
| FU | Lithuania | Ignalina | RBMK 1300 MW(e) |
| TV | Russian Federation | Novovoronezh-5 | WWER 1000 MW(e) |
| T | Kazakhstan | BN-350 | FBR 90 MW(e) |
| T | China | Qinshan; Daya Bay | PWR 300 MW(e); 944 MW(e) |

Type O: OSART mission; **Type FU:** OSART follow-up visit; **Type T:** technical exchange mission; **Type TV:** technical visit.

INTERNATIONAL NUCLEAR EVENT SCALE (INES) RATINGS REPORTED, 1997

| Level | Description | Number reported |
|-------------|------------------|-----------------|
| Below scale | Deviation | 12 |
| 1 | Anomaly | 16 |
| 2 | Incident | 15 |
| 3 | Serious incident | 2 |
| 4-7 | Accidents | 0 |

ASSESSMENT OF SAFETY SIGNIFICANT EVENTS TEAM (ASSET) SERVICES, 1997

| Type | Country | Location/nuclear power plant |
|------|--------------------|------------------------------|
| S | Russian Federation | Balakovo |
| Z | Russian Federation | Smolensk |
| S | Ukraine | Rovno |
| S | Bulgaria | Kozloduy |
| S | Romania | Cernavoda |
| Z | Russian Federation | Balakovo |
| Z | Ukraine | Rovno |
| S | Sweden | Ringhals |
| S | Kazakhstan | Aktau BN-350 |
| Z | Bulgaria | Kozloduy |

Type S: ASSET seminar; **Type Z:** peer review of self-assessment of plant operational events.

ASSESSMENT OF SAFETY CULTURE IN ORGANIZATIONS (ASCOT) SEMINAR, 1997

| Location | Country |
|----------|----------|
| Bohunice | Slovakia |

INTEGRATED SAFETY ASSESSMENT OF RESEARCH REACTORS (INSARR) MISSIONS, 1997

| Country | Site/plant |
|----------|---------------------|
| Ghana | GHARR-1 |
| Malaysia | Triga Puspati (RTP) |
| Peru | RP-10 |
| Thailand | TRR-1/M1 |

INTERNATIONAL REGULATORY REVIEW TEAM (IRRT) MISSIONS, 1997

| Mission type | Country |
|--------------|----------|
| Main review | Bulgaria |
| Pre-review | Pakistan |

**NUMBER OF STATES HAVING SIGNIFICANT NUCLEAR ACTIVITIES AT THE END
OF 1994, 1995, 1996 AND 1997**

| | Number of States | | | |
|--|------------------|-----------------|-----------------|-----------------|
| | 1994 | 1995 | 1996 | 1997 |
| States with safeguards applied under NPT or NPT/Tlatelolco agreements | 49 ^a | 53 ^a | 54 ^a | 54 ^a |
| States with safeguards applied under Tlatelolco agreements | 1 | 2 | 1 | 1 |
| States with safeguards applied pursuant to other comprehensive safeguards agreements | 2 | 3 | 3 | 3 |
| States with safeguards applied under INFCIRC/66/Rev.2-type agreements ^b | 6 | 5 | 5 | 5 |
| Nuclear weapon States with safeguards applied under voluntary offer agreements | 5 | 5 | 5 | 5 |
| States without any safeguards agreement in force | 5 | 1 | 1 | 1 |
| Total number of States with significant nuclear activities^c | 68 | 69 | 69 | 69 |

^a This excludes Iraq, where safeguards activities in 1997 continued to be subsumed under activities carried out pursuant to United Nations Security Council Resolution 687.

^b Some States with INFCIRC/66/Rev.2-type agreements under which the application of safeguards has not yet been suspended, although NPT or other comprehensive safeguards agreements have entered into force, are listed under NPT agreements only. Nuclear weapon States with INFCIRC/66/Rev.2-type agreements in force are not included. Safeguards are also applied to nuclear installations in Taiwan, China.

^c According to information available to the Agency for the year in question.

**SITUATION ON 31 DECEMBER 1997 WITH RESPECT TO THE CONCLUSION OF
SAFEGUARDS AGREEMENTS BETWEEN THE AGENCY AND NON-NUCLEAR-WEAPON
STATES IN CONNECTION WITH NPT**

| Non-nuclear-weapon States which have signed, ratified, acceded to or succeeded to NPT ^a | Date of ratification, accession or succession ^a | Safeguards agreement with the Agency | INFCIRC |
|--|--|--|-----------|
| (1) | (2) | (3) | (4) |
| Afghanistan | 4 February 1970 | In force: 20 February 1978 | 257 |
| Albania ^b | 12 September 1990 | | |
| Algeria | 12 January 1995 | In force: 7 January 1997 | 531 |
| Andorra | 25 June 1996 | | |
| Angola | 14 October 1996 | | |
| Antigua and Barbuda ^c | 1 November 1981 | In force: 9 September 1996 | 528 |
| Argentina ^d | 10 February 1995 | In force: 18 March 1997 | 435/Mod.1 |
| Armenia | 15 July 1993 | In force: 5 May 1994 | 455 |
| Australia | 23 January 1973 | In force: 10 July 1974 | 217 |
| Austria ^e | 27 June 1969 | Accession: 31 July 1996 | 193 |
| Azerbaijan | 22 September 1992 | | |
| Bahamas ^c | 10 July 1973 | In force: 12 September 1997 | 544 |
| Bahrain | 3 November 1988 | | |
| Bangladesh | 27 September 1979 | In force: 11 June 1982 | 301 |
| Barbados ^c | 21 February 1980 | In force: 14 August 1996 | 527 |
| Belarus | 22 July 1993 | In force: 2 August 1995 | 495 |
| Belgium | 2 May 1975 | In force: 21 February 1977 | 193 |
| Belize ^f | 9 August 1985 | In force: 21 January 1997 | 532 |
| Benin | 31 October 1972 | | |
| Bhutan | 23 May 1985 | In force: 24 October 1989 | 371 |
| Bolivia ^c | 26 May 1970 | In force: 6 February 1995 | 465 |
| Bosnia and Herzegovina ^g | 15 August 1994 | In force: 28 December 1973 | 204 |
| Botswana | 28 April 1969 | | |
| Brunei Darussalam | 25 March 1985 | In force: 4 November 1987 | 365 |
| Bulgaria | 5 September 1969 | In force: 29 February 1972 | 178 |
| Burkina Faso | 3 March 1970 | | |
| Burundi | 19 March 1971 | | |
| Cambodia | 2 June 1972 | | |
| Cameroon | 8 January 1969 | Signed: 21 May 1992 | |
| Canada | 8 January 1969 | In force: 21 February 1972 | 164 |
| Cape Verde | 24 October 1979 | | |
| Central African Republic | 25 October 1970 | | |
| Chad | 10 March 1971 | | |
| Chile ^h | 25 May 1995 | In force: 9 September 1996 | 476/Mod.1 |
| Colombia ⁱ | 8 April 1986 | | |
| Comoros | 4 October 1995 | | |
| Congo | 23 October 1978 | | |
| Costa Rica ^c | 3 March 1970 | In force: 22 November 1979 | 278 |
| Côte d'Ivoire | 6 March 1973 | In force: 8 September 1983 | 309 |
| Croatia | 29 June 1992 | In force: 19 January 1995 | 463 |
| Cyprus | 10 February 1970 | In force: 26 January 1973 | 189 |
| Czech Republic ^j | 1 January 1993 | In force: 11 September 1997 | 541 |
| Democratic People's Republic of Korea | 12 December 1985 | In force: 10 April 1992 | 403 |
| Democratic Republic of the Congo | 4 August 1970 | In force: 9 November 1972 | 183 |
| Denmark ^k | 3 January 1969 | In force: 21 February 1977 | 193 |
| Djibouti | 16 October 1996 | | |

SAFEGUARDS AGREEMENTS (cont.)

| Non-nuclear-weapon States which have signed, ratified, acceded to or succeeded to NPT ^a (1) | Date of ratification, accession or succession ^a (2) | Safeguards agreement with the Agency (3) | INFCIRC (4) |
|---|---|---|----------------|
| Dominica ^f | 10 August 1984 | In force: 3 May 1996 | 513 |
| Dominican Republic ^c | 24 July 1971 | In force: 11 October 1973 | 201 |
| Ecuador ^c | 7 March 1969 | In force: 10 March 1975 | 231 |
| Egypt | 26 February 1981 | In force: 30 June 1982 | 302 |
| El Salvador ^c | 11 July 1972 | In force: 22 April 1975 | 232 |
| Equatorial Guinea | 1 November 1984 | Approved by the Board, June 1986 | |
| Eritrea | 16 March 1995 | | |
| Estonia | 31 January 1992 | In force: 24 November 1997 | 547 |
| Ethiopia | 5 February 1970 | In force: 2 December 1977 | 261 |
| Fiji | 14 July 1972 | In force: 22 March 1973 | 192 |
| Finland ^l | 5 February 1969 | Accession: 1 October 1995 | 193 |
| Gabon | 19 February 1974 | Signed: 3 December 1979 | |
| Gambia | 12 May 1975 | In force: 8 August 1978 | 277 |
| Georgia | 7 March 1994 | Signed: 29 September 1997 | |
| Germany ^m | 2 May 1975 | In force: 21 February 1977 | 193 |
| Ghana | 5 May 1970 | In force: 17 February 1975 | 226 |
| Greece ⁿ | 11 March 1970 | Accession: 17 December 1981 | 193 |
| Grenada ^c | 19 August 1974 | In force: 23 July 1996 | 525 |
| Guatemala ^c | 22 September 1970 | In force: 1 February 1982 | 299 |
| Guinea | 29 April 1985 | | |
| Guinea-Bissau | 20 August 1976 | | |
| Guyana ^c | 19 October 1993 | In force: 23 May 1997 | 543 |
| Haiti ^c | 2 June 1970 | Signed: 6 January 1975 | |
| Holy See | 25 February 1971 | In force: 1 August 1972 | 187 |
| Honduras ^c | 16 May 1973 | In force: 18 April 1975 | 235 |
| Hungary | 27 May 1969 | In force: 30 March 1972 | 174 |
| Iceland | 18 July 1969 | In force: 16 October 1974 | 215 |
| Indonesia | 12 July 1979 | In force: 14 July 1980 | 283 |
| Iran, Islamic Republic of | 2 February 1970 | In force: 15 May 1974 | 214 |
| Iraq | 29 October 1969 | In force: 29 February 1972 | 172 |
| Ireland | 1 July 1968 | In force: 21 February 1977 | 193 |
| Italy | 2 May 1975 | In force: 21 February 1977 | 193 |
| Jamaica ^c | 5 March 1970 | In force: 6 November 1978 | 265 |
| Japan | 8 June 1976 | In force: 2 December 1977 | 255 |
| Jordan | 11 February 1970 | In force: 21 February 1978 | 258 |
| Kazakhstan | 14 February 1994 | In force: 11 August 1995 | 504 |
| Kenya | 11 June 1970 | | |
| Kiribati | 18 April 1985 | In force: 19 December 1990 | 390 |
| Korea, Republic of | 23 April 1975 | In force: 14 November 1975 | 236 |
| Kuwait | 17 November 1989 | | |
| Kyrgyzstan | 5 July 1994 | | |
| Lao People's Democratic Republic | 20 February 1970 | Signed: 22 November 1991 | |
| Latvia | 31 January 1992 | In force: 21 December 1993 | 434 |
| Lebanon | 15 July 1970 | In force: 5 March 1973 | 191 |
| Lesotho | 20 May 1970 | In force: 12 June 1973 | 199 |
| Liberia | 5 March 1970 | | |

SAFEGUARDS AGREEMENTS (cont.)

| Non-nuclear-weapon States which have signed, ratified, acceded to or succeeded to NPT ^a (1) | Date of ratification, accession or succession ^a (2) | Safeguards agreement with the Agency (3) | INFCIRC (4) |
|---|---|---|----------------|
| Libyan Arab Jamahiriya | 26 May 1975 | In force: 8 July 1980 | 282 |
| Liechtenstein | 20 April 1978 | In force: 4 October 1979 | 275 |
| Lithuania | 23 September 1991 | In force: 15 October 1992 | 413 |
| Luxembourg | 2 May 1975 | In force: 21 February 1977 | 193 |
| Madagascar | 8 October 1970 | In force: 14 June 1973 | 200 |
| Malawi | 18 February 1986 | In force: 3 August 1992 | 409 |
| Malaysia | 5 March 1970 | In force: 29 February 1972 | 182 |
| Maldives | 7 April 1970 | In force: 2 October 1977 | 253 |
| Mali | 10 February 1970 | | |
| Malta | 6 February 1970 | In force: 13 November 1990 | 387 |
| Marshall Islands | 30 January 1995 | | |
| Mauritania | 26 October 1993 | | |
| Mauritius | 25 April 1969 | In force: 31 January 1973 | 190 |
| Mexico ^c | 21 January 1969 | In force: 14 September 1973 | 197 |
| Micronesia, Federated States of | 14 April 1995 | | |
| Moldova, Republic of | 11 October 1994 | Signed: 14 June 1996 | |
| Monaco | 13 March 1995 | In force: 13 June 1996 | 524 |
| Mongolia | 14 May 1969 | In force: 5 September 1972 | 188 |
| Morocco | 27 November 1970 | In force: 18 February 1975 | 228 |
| Mozambique | 4 September 1990 | | |
| Myanmar | 2 December 1992 | In force: 20 April 1995 | 477 |
| Namibia | 2 October 1992 | | |
| Nauru | 7 June 1982 | In force: 13 April 1984 | 317 |
| Nepal | 5 January 1970 | In force: 22 June 1972 | 186 |
| Netherlands ^o | 2 May 1975 | In force: 21 February 1977 | 193 |
| New Zealand ^p | 10 September 1969 | In force: 29 February 1972 | 185 |
| Nicaragua ^c | 6 March 1973 | In force: 29 December 1976 | 246 |
| Niger | 9 October 1992 | | |
| Nigeria | 27 September 1968 | In force: 29 February 1988 | 358 |
| Norway | 5 February 1969 | In force: 1 March 1972 | 177 |
| Oman | 23 January 1997 | | |
| Palau, Republic of | 14 April 1995 | | |
| Panama ^{c,q} | 13 January 1977 | Signed : 22 December 1988 | |
| Papua New Guinea | 25 January 1982 | In force: 13 October 1983 | 312 |
| Paraguay ^c | 4 February 1970 | In force: 20 March 1979 | 279 |
| Peru ^c | 3 March 1970 | In force: 1 August 1979 | 273 |
| Philippines | 5 October 1972 | In force: 16 October 1974 | 216 |
| Poland | 12 June 1969 | In force: 11 October 1972 | 179 |
| Portugal ^f | 15 December 1977 | Accession: 1 July 1986 | 193 |
| Qatar | 3 April 1989 | | |
| Romania | 4 February 1970 | In force: 27 October 1972 | 180 |
| Rwanda | 20 May 1975 | | |
| St. Kitts and Nevis ^f | 22 March 1993 | In force: 7 May 1996 | 514 |
| St. Lucia ^f | 28 December 1979 | In force: 2 February 1990 | 379 |
| St. Vincent and the Grenadines ^f | 6 November 1984 | In force: 8 January 1992 | 400 |
| Samoa | 17 March 1975 | In force: 22 January 1979 | 268 |

SAFEGUARDS AGREEMENTS (cont.)

| Non-nuclear-weapon States which have signed, ratified, acceded to or succeeded to NPT ^a (1) | Date of ratification, accession or succession ^a (2) | Safeguards agreement with the Agency (3) | INFCIRC (4) |
|---|---|---|----------------|
| San Marino | 10 August 1970 | Approved by the Board, Feb. 1977 | |
| São Tome and Principe | 20 July 1983 | | |
| Saudi Arabia | 3 October 1988 | | |
| Senegal | 17 December 1970 | In force: 14 January 1980 | 276 |
| Seychelles | 12 March 1985 | | |
| Sierra Leone | 26 February 1975 | Signed: 10 November 1977 | |
| Singapore | 10 March 1976 | In force: 18 October 1977 | 259 |
| Slovakia ^s | 1 January 1993 | In force: 3 March 1972 | 173 |
| Slovenia | 7 April 1992 | In force: 1 August 1997 | 538 |
| Solomon Islands | 17 June 1981 | In force: 17 June 1993 | 420 |
| Somalia | 5 March 1970 | | |
| South Africa | 10 July 1991 | In force: 16 September 1991 | 394 |
| Spain | 5 November 1987 | Accession: 5 April 1989 | 193 |
| Sri Lanka | 5 March 1979 | In force: 6 August 1984 | 320 |
| Sudan | 31 October 1973 | In force: 7 January 1977 | 245 |
| Suriname ^c | 30 June 1976 | In force: 2 February 1979 | 269 |
| Swaziland | 11 December 1969 | In force: 28 July 1975 | 227 |
| Sweden ^t | 9 January 1970 | Accession: 1 June 1995 | 193 |
| Switzerland | 9 March 1977 | In force: 6 September 1978 | 264 |
| Syrian Arab Republic | 24 September 1969 | In force: 18 May 1992 | 407 |
| Thailand | 7 December 1972 | In force: 16 May 1974 | 241 |
| The Former Yugoslav Republic of Macedonia | 12 April 1995 | | |
| Togo | 26 February 1970 | Signed: 29 November 1990 | |
| Tonga | 7 July 1971 | In force: 18 November 1993 | 426 |
| Trinidad and Tobago ^c | 30 October 1986 | In force: 4 November 1992 | 414 |
| Tunisia | 26 February 1970 | In force: 13 March 1990 | 381 |
| Turkey | 17 April 1980 | In force: 1 September 1981 | 295 |
| Turkmenistan | 29 September 1994 | | |
| Tuvalu | 19 January 1979 | In force: 15 March 1991 | 391 |
| Uganda | 20 October 1982 | | |
| Ukraine ^u | 5 December 1994 | Signed: 21 September 1995 | |
| United Arab Emirates | 26 September 1995 | | |
| United Republic of Tanzania | 7 June 1991 | Signed: 26 August 1992 | |
| Uruguay ^c | 31 August 1970 | In force: 17 September 1976 | 157 |
| Uzbekistan | 7 May 1992 | In force: 8 October 1994 | 508 |
| Vanuatu | 24 August 1995 | | |
| Venezuela ^c | 26 September 1975 | In force: 11 March 1982 | 300 |
| Viet Nam | 14 June 1982 | In force: 23 February 1990 | 376 |
| Yemen, Republic of | 1 June 1979 | | |
| Yugoslavia ^v , Federal Republic of | 3 March 1970 | In force: 28 December 1973 | 204 |
| Zambia | 15 May 1991 | In force: 22 September 1994 | 456 |
| Zimbabwe | 26 September 1991 | In force: 26 June 1995 | 483 |

^a The information in columns (1) and (2) was provided to the Agency by depositary governments of NPT, and an entry in column (1) does not imply the expression of any opinion on the part of the Secretariat concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers. The table does not contain information relating to the participation of Taiwan, China, in NPT.

- b A sui generis comprehensive safeguards agreement with Albania entered into force on 25 March 1988 (INFCIRC/359).
- c The relevant safeguards agreement refers to both NPT and the Treaty of Tlatelolco.
- d An exchange of letters has taken place between Argentina and the Agency confirming that the safeguards agreement concluded between Argentina, Brazil, ABACC and the Agency for the application of safeguards which entered into force on 4 March 1994 (INFCIRC/435) satisfies the requirements of Argentina under Article III of the NPT to conclude a safeguards agreement with the Agency. The exchange of letters entered into force on the date of approval by the Board of Governors.
- e The application of safeguards in Austria under the NPT safeguards agreement INFCIRC/156, in force since 23 July 1972, was suspended on 31 July 1996, on which date the agreement of 5 April 1973 (INFCIRC/193) between the non-nuclear-weapon States of EURATOM, EURATOM and the Agency, to which Austria had acceded, entered into force for Austria.
- f An exchange of letters has taken place between this State and the Agency confirming that the NPT safeguards agreement concluded with the State satisfies the obligations of the State under Article 13 of the Treaty of Tlatelolco to conclude a safeguards agreement with the Agency.
- g The NPT safeguards agreement concluded with the Socialist Federal Republic of Yugoslavia (INFCIRC/204), which entered into force on 28 December 1973, continues to be applied in Bosnia and Herzegovina to the extent relevant to the territory of Bosnia and Herzegovina.
- h An exchange of letters has taken place between this State and the Agency confirming that the safeguards agreement concluded with the State pursuant to the Treaty of Tlatelolco satisfies the requirements of the obligations of the State under Article III of the NPT to conclude a safeguards agreement with the Agency. The exchange of letters entered into force on the date of approval by the Board of Governors.
- i A comprehensive safeguards agreement with Colombia concluded pursuant to the Treaty of Tlatelolco entered into force on 22 December 1982 (INFCIRC/306).
- j The NPT safeguards agreement concluded with the Czechoslovak Socialist Republic (INFCIRC/173), which entered into force on 3 March 1972, continued to be applied in the Czech Republic to the extent relevant to the territory of the Czech Republic until 11 September 1997, on which date the NPT safeguards agreement concluded with the Czech Republic entered into force.
- k The NPT safeguards agreement with Denmark (INFCIRC/176), in force since 1 March 1972, has been replaced by the agreement of 5 April 1973 between the non-nuclear-weapon States of EURATOM, EURATOM and the Agency (INFCIRC/193) but still applies to the Faroe Islands. Upon Greenland's secession from EURATOM as of 31 January 1985, the Agreement between the Agency and Denmark (INFCIRC/176) re-entered into force as to Greenland.
- l The application of safeguards in Finland under the NPT safeguards agreement INFCIRC/155, in force since 9 February 1972, was suspended on 1 October 1995, on which date the agreement of 5 April 1973 (INFCIRC/193) between the non-nuclear-weapon States of EURATOM, EURATOM and the Agency, to which Finland had acceded, entered into force for Finland.
- m The NPT safeguards agreement of 7 March 1972 concluded with the German Democratic Republic (INFCIRC/181) is no longer in force with effect from 3 October 1990, on which date the German Democratic Republic acceded to the Federal Republic of Germany.
- n The application of safeguards in Greece under the NPT safeguards agreement INFCIRC/166, provisionally in force since 1 March 1972, was suspended on 17 December 1981, on which date Greece acceded to the agreement of 5 April 1973 (INFCIRC/193) between the non-nuclear-weapon States of EURATOM, EURATOM and the Agency.
- o An agreement had also been concluded in respect of the Netherlands Antilles (INFCIRC/229). This agreement entered into force on 5 June 1975.
- p The NPT safeguards agreement with New Zealand (INFCIRC/185) also applies to Cook Islands and Niue.
- q A comprehensive safeguards agreement with Panama concluded pursuant to the Treaty of Tlatelolco entered into force on 23 March 1984 (INFCIRC/316).
- r The application of safeguards in Portugal under the NPT safeguards agreement INFCIRC/272, in force since 14 June 1979, was suspended on 1 July 1986, on which date Portugal acceded to the agreement of 5 April 1973 (INFCIRC/193) between the non-nuclear-weapon States of EURATOM, EURATOM and the Agency.
- s The NPT safeguards agreement concluded with the Czechoslovak Socialist Republic (INFCIRC/173), which entered into force on 3 March 1972, continues to be applied in Slovakia to the extent relevant to the territory of Slovakia.
- t The application of safeguards in Sweden under the NPT safeguards agreement INFCIRC/234, in force since 14 April 1975, was suspended on 1 June 1995, on which date the agreement of 5 April 1973 (INFCIRC/193) between the non-nuclear-weapon States of EURATOM, EURATOM and the Agency, to which Sweden had acceded, entered into force for Sweden.
- u A sui generis comprehensive safeguards agreement with Ukraine entered into force on 13 January 1995 (INFCIRC/462). This agreement will remain in force until superseded by the safeguards agreement concluded pursuant to the NPT.
- v The NPT safeguards agreement concluded with the Socialist Federal Republic of Yugoslavia (INFCIRC/204), which entered into force on 28 December 1973, continues to be applied in the Federal Republic of Yugoslavia to the extent relevant to the territory of the Federal Republic of Yugoslavia.

SITUATION ON 31 DECEMBER 1997 WITH RESPECT TO THE CONCLUSION OF
SAFEGUARDS AGREEMENTS BETWEEN THE AGENCY AND STATES PARTY TO THE
TREATY OF TLATELOLCO^a

| States party to the Treaty of Tlatelolco (1) | Date of becoming a party to the Treaty of Tlatelolco (2) | Safeguards agreement with the Agency (3) | INFCIRC (4) |
|--|--|--|-------------|
| Antigua and Barbuda ^b | 11 October 1983 | In force: 9 September 1996 | 528 |
| Argentina ^c | 18 January 1994 | In force: 18 March 1997 | 435/Mod.1 |
| Bahamas ^b | 26 April 1977 | In force: 12 September 1997 | 544 |
| Barbados ^b | 25 April 1969 | In force: 14 August 1996 | 527 |
| Belize ^d | 4 November 1994 | In force: 18 March 1997 | 532/Mod.1 |
| Bolivia ^b | 18 February 1969 | In force: 6 February 1995 | 465 |
| Brazil ^c | 30 May 1994 | In force: 10 June 1997 | 435/Mod.2 |
| Chile | 18 January 1994 | In force: 5 April 1995 | 476 |
| Colombia | 6 September 1972 | In force: 22 December 1982 | 306 |
| Costa Rica ^b | 25 August 1969 | In force: 22 November 1979 | 278 |
| Dominica ^d | 25 August 1993 | In force: 10 June 1997 | 513/Mod.1 |
| Dominican Republic ^b | 14 June 1968 | In force: 11 October 1973 | 201 |
| Ecuador ^b | 11 February 1969 | In force: 10 March 1975 | 231 |
| El Salvador ^b | 22 April 1968 | In force: 22 April 1975 | 232 |
| Grenada ^b | 20 June 1975 | In force: 23 July 1996 | 525 |
| Guatemala ^b | 6 February 1970 | In force: 1 February 1982 | 299 |
| Guyana ^b | 6 May 1996 | In force: 23 May 1997 | 543 |
| Haiti ^b | 23 May 1969 | Signed: 6 January 1975 | |
| Honduras ^b | 23 September 1968 | In force: 18 April 1975 | 235 |
| Jamaica ^b | 26 June 1969 | In force: 6 November 1978 | 265 |
| Mexico ^{b,e} | 20 September 1967 | In force: 14 September 1973 | 197 |
| Nicaragua ^b | 24 October 1968 | In force: 29 December 1976 | 246 |
| Panama ^f | 11 June 1971 | In force: 23 March 1984 | 316 |
| Paraguay ^b | 19 March 1969 | In force: 20 March 1979 | 279 |
| Peru ^b | 4 March 1969 | In force: 1 August 1979 | 273 |
| St. Kitts and Nevis ^d | 14 February 1997 | In force: 18 March 1997 | 514/Mod.1 |
| St. Lucia ^d | 2 June 1995 | In force: 12 June 1996 | 379/Mod.1 |
| St. Vincent and the Grenadines ^d | 11 May 1992 | In force: 18 March 1997 | 400/Mod.1 |
| Suriname ^b | 10 June 1977 | In force: 2 February 1979 | 269 |
| Trinidad and Tobago ^b | 27 June 1975 | In force: 4 November 1992 | 414 |
| Uruguay ^b | 20 August 1968 | In force: 17 September 1976 | 157 |
| Venezuela ^b | 23 March 1970 | In force: 11 March 1982 | 300 |
| In addition, there are the following safeguards agreements with States party to Additional Protocol I to the Treaty ^g : | | | |
| | Netherlands ^b | In force: 5 June 1975 | 229 |
| | United Kingdom | Approved by the Board, Sep.1992 | |
| | United States of America | In force: 6 April 1989 | 366 |

^a The information in columns (1) and (2) was provided by Mexico as depositary of the Treaty of Tlatelolco. In addition to the States listed in column (1), Cuba signed the Treaty on 25 March 1995.

^b The relevant safeguards agreement refers to both the Treaty of Tlatelolco and the NPT.

- ^c An exchange of letters has taken place between this State and the Agency confirming that the safeguards agreement concluded between Argentina, Brazil, ABACC and the Agency for the application of safeguards which entered into force on 4 March 1994 (INFCIRC/435) satisfies the requirements of this State under Article 13 of the Treaty of Tlatelolco to conclude a safeguards agreement with the Agency. The exchange of letters entered into force on the date of approval by the Board of Governors.
- ^d An exchange of letters has taken place between this State and the Agency confirming that the NPT safeguards agreement concluded with the State satisfies the obligations of the State under Article 13 of the Treaty of Tlatelolco to conclude a safeguards agreement with the Agency. The exchange of letters entered into force on the date of approval by the Board of Governors.
- ^e The application of safeguards under an agreement with Mexico in connection with the Treaty of Tlatelolco which entered into force on 6 September 1968 (INFCIRC/118) was suspended after the conclusion of an agreement with Mexico in connection with both the Treaty of Tlatelolco and NPT (INFCIRC/197).
- ^f A safeguards agreement pursuant to both the Treaty of Tlatelolco and NPT has been concluded with Panama; the agreement has not yet entered into force.
- ^g Additional Protocol I refers to States outside Latin America and the Caribbean which have de jure or de facto jurisdiction over territories which lie within the limits of the geographical zone established in the Treaty.

AGREEMENTS PROVIDING FOR SAFEGUARDS, OTHER THAN THOSE IN
CONNECTION WITH NPT OR THE TREATY OF TLATELOLCO, APPROVED BY THE
BOARD AS OF 31 DECEMBER 1997^a

| Party(ies) ^b | Subject | Entry into force | INFCIRC |
|---|--|-------------------|---------|
| (While the Agency is a party to each of the following agreements, only the State(s) party to them is (are) listed.) | | | |
| (i) Project agreements | | | |
| Argentina ^c | Siemens SUR-100 | 13 March 1970 | 143 |
| | RAEP reactor | 2 December 1964 | 62 |
| Chile ^d | Herald reactor | 19 December 1969 | 137 |
| Colombia ^d | Fuel for research reactor | 17 June 1994 | 460 |
| Democratic Republic of the Congo ^e | TRICO reactor | 27 June 1962 | 37 |
| | Fuel for research reactor | 20 September 1990 | 389 |
| Finland ^e | FIR-1 reactor | 30 December 1960 | 24 |
| | FINN subcritical assembly | 30 July 1963 | 53 |
| Ghana ^e | Research reactor and fuel therefor | 14 October 1994 | 468 |
| Greece ^e | GRR-1 reactor | 1 March 1972 | 163 |
| | | | |
| Indonesia ^e | Additional core-load for TRIGA reactor | 19 December 1969 | 136 |
| | Supply of enriched uranium | 15 January 1993 | 453 |
| | Supply of enriched uranium | 15 January 1993 | 454 |
| Iran, Islamic Republic of ^e | UTRR reactor | 10 May 1967 | 97 |
| Jamaica ^e | Fuel for research reactor | 25 January 1984 | 315 |
| Japan ^e | JRR-3 | 24 March 1959 | 3 |
| Malaysia ^e | TRIGA-II reactor | 22 September 1980 | 287 |
| Mexico ^e | TRIGA-III reactor | 18 December 1963 | 52 |
| | Siemens SUR-100 | 21 December 1971 | 162 |
| | Laguna Verde Nuclear Power Plant | 12 February 1974 | 203 |
| Morocco ^e | Fuel for research reactor | 2 December 1983 | 313 |
| Nigeria ^e | Research reactor and fuel therefor | 29 August 1996 | 526 |
| Pakistan | PRR reactor | 5 March 1962 | 34 |
| | Booster rods for KANUPP | 17 June 1968 | 116 |
| Peru ^e | Research reactor and fuel therefor | 9 May 1978 | 266 |
| Philippines ^e | PRR-1 reactor | 28 September 1966 | 88 |
| Romania ^e | TRIGA reactor | 30 March 1973 | 206 |
| | Experimental fuel elements | 1 July 1983 | 307 |
| Slovenia ^e | TRIGA-II reactor | 4 October 1961 | 32 |
| | Krško Nuclear Power Plant | 14 June 1974 | 213 |
| Spain ^e | Coral-I reactor | 23 June 1967 | 99 |
| Syrian Arab Republic ^e | Miniature neutron source reactor and enriched uranium | 18 May 1992 | 408 |
| Thailand ^e | Fuel for research reactor | 30 September 1986 | 342 |
| Turkey ^e | Subcritical assembly | 17 May 1974 | 212 |
| Uruguay ^e | URR reactor | 24 September 1965 | 67 |
| Venezuela ^e | RV-1 reactor | 7 November 1975 | 238 |
| Viet Nam ^e | Fuel for research reactor | 1 July 1983 | 308 |

SAFEGUARDS AGREEMENTS (cont.)

| Party(ies) ^b | Subject | Entry into force | INFCIRC |
|--|--|-------------------|---------|
| (ii) Unilateral submissions | | | |
| Algeria | Nur research reactor ^h | 9 April 1990 | 361 |
| | Es Salam research reactor ^h | 2 June 1992 | 401 |
| Argentina | Atucha Power Reactor Facility ^f | 3 October 1972 | 168 |
| | Nuclear material ^f | 23 October 1973 | 202 |
| | Embalse Power Reactor Facility ^f | 6 December 1974 | 224 |
| | Equipment and nuclear material ^f | 22 July 1977 | 250 |
| | Nuclear material, material, equipment and facilities ^f | 22 July 1977 | 251 |
| | Atucha II Nuclear Power Plant ^f | 15 July 1981 | 294 |
| | Heavy water plant ^f | 14 October 1981 | 296 |
| | Heavy water ^f | 14 October 1981 | 297 |
| Chile | Nuclear material ^g | 31 December 1974 | 256 |
| | Nuclear material ^g | 22 September 1982 | 304 |
| | Nuclear material ^g | 18 September 1987 | 350 |
| Cuba | Nuclear power plant and nuclear material | 5 May 1980 | 281 |
| | Zero power nuclear reactor and fuel therefor | 7 October 1983 | 311 |
| Democratic People's Republic of Korea | Research reactor and nuclear material therefor ^h | 20 July 1977 | 252 |
| India | Nuclear material, material and facilities | 17 November 1977 | 260 |
| | Nuclear power station | 27 September 1988 | 360 |
| | Nuclear material | 11 October 1989 | 374 |
| | All nuclear material subject to safeguards under INFCIRC/154 | 1 March 1994 | 433* |
| Pakistan | Nuclear material | 2 March 1977 | 248 |
| | Miniature neutron source reactor | 10 September 1991 | 393 |
| | Nuclear power reactor | 24 February 1993 | 418 |
| Spain | Nuclear material ^h | 18 June 1975 | 221 |
| | Vandellos Nuclear Power Plant ^h | 11 May 1981 | 292 |
| | Specified nuclear facilities ^h | 11 May 1981 | 291** |
| United Kingdom | Nuclear material | 14 December 1972 | 175 |
| Viet Nam | Research reactor and fuel therefor ^h | 12 June 1981 | 293 |

* Amended in 1994 to cover nuclear material supplied for use in the Tarapur Atomic Power Station (TAPS) which material is required by the supplier to be subject to safeguards. The amendment entered into force on 12 September 1994 (INFCIRC/433/Mod.1).

** Amended in 1985 to cover specified nuclear facilities. The amendment entered into force on 8 November 1985 (INFCIRC/291/Mod.1/Corr.1).

SAFEGUARDS AGREEMENTS (cont.)

| Party(ies) ^b | Subject | Entry into force | INFCIRC |
|---|--|-------------------|---------|
| (iii) Agreements concluded with nuclear weapon States on the basis of voluntary offers | | | |
| China | Nuclear material in facilities selected from list of facilities provided by China | 18 September 1989 | 369 |
| France | Nuclear material in facilities submitted to safeguards | 12 September 1981 | 290 |
| Russian Federation | Nuclear material in facilities selected from list of facilities provided by the Russian Federation | 10 June 1985 | 327 |
| United Kingdom | Nuclear material in facilities designated by the Agency | 14 August 1978 | 263 |
| United States of America | Nuclear material in facilities designated by the Agency | 9 December 1980 | 288 |
| (iv) Other comprehensive safeguards agreements | | | |
| Albania | All nuclear material and facilities | 25 March 1988 | 359 |
| Argentina/Brazil | All nuclear material in all nuclear activities | 4 March 1994 | 435 |
| Ukraine | All nuclear material in all peaceful nuclear activities | 13 January 1995 | 462 |
| (v) Other safeguards agreements | | | |
| Argentina ^f /United States of America ⁱ | | 25 July 1969 | 130 |
| Austria ^h /United States of America | | 24 January 1970 | 152 |
| Brazil/Germany ^h | | 26 February 1976 | 237 |
| Brazil ^f /United States of America ⁱ | | 31 October 1968 | 110 |
| Colombia/United States of America | | 9 December 1970 | 144 |
| India/Canada ^h | | 30 September 1971 | 211 |
| Iran, Islamic Republic of ^h /United States of America | | 20 August 1969 | 127 |
| Israel/United States of America | | 4 April 1975 | 249 |
| Japan ^h /Canada ^h | | 20 June 1966 | 85 |
| Japan ^h /France | | 22 September 1972 | 171 |
| Japan/United Kingdom | | 15 October 1968 | 125 |
| Korea, Republic of/United States of America | | 5 January 1968 | 111 |

SAFEGUARDS AGREEMENTS (cont.)

| Party(ies) ^b | Subject | Entry into force | INFCIRC |
|---|---------|-------------------|---------|
| Korea, Republic of ^h /France | | 22 September 1975 | 233 |
| Pakistan/Canada | | 17 October 1969 | 135 |
| Pakistan/France | | 18 March 1976 | 239 |
| Philippines ^h /United States of America | | 19 July 1968 | 120 |
| Portugal ^h /United States of America ⁱ | | 19 July 1969 | 131 |
| South Africa/United States of America | | 26 July 1967 | 98 |
| South Africa/France | | 5 January 1977 | 244 |
| Spain/Germany ^h | | 29 September 1982 | 305 |
| Spain ^h /United States of America ⁱ | | 9 December 1966 | 92 |
| Spain/Canada ^h | | 10 February 1977 | 247 |
| Sweden ^h /United States of America | | 1 March 1972 | 165 |
| Switzerland ^h /United States of America ⁱ | | 28 February 1972 | 161 |
| Turkey ^h /United States of America ⁱ | | 5 June 1969 | 123 |
| Venezuela ^h /United States of America ⁱ | | 27 March 1968 | 122 |

(vi) The Agency also applies safeguards under two agreements (INFCIRC/133 and INFCIRC/158) to the nuclear facilities in Taiwan, China. Pursuant to the decision adopted by the Board of Governors on 9 December 1971 that the Government of the People's Republic of China is the only government which has the right to represent China in the Agency, the relations between the Agency and the authorities in Taiwan, China, are non-governmental. The agreements are implemented by the Agency on that basis.

^a Safeguards agreements pursuant to the South Pacific Nuclear Weapon Free Zone Treaty (Rarotonga Treaty) are not separately listed with this compilation since the Treaty requires that safeguards by the Agency will be applied pursuant to safeguards agreements equivalent in scope and effect to an agreement required in connection with the NPT on the basis of the material reproduced in INFCIRC/153 (Corrected). As of 31 December 1997, all 11 States Party to the Treaty (Australia, Cook Islands, Fiji, Kiribati, Nauru, New Zealand, Niue, Papua New Guinea, Solomon Islands, Tuvalu and Samoa) were covered by safeguards agreements concluded pursuant to NPT.

^b An entry in this column does not imply the expression of any opinion whatsoever on the part of the Agency concerning the legal status of any country or territory or of its authorities or concerning the delimitation of its frontiers.

^c Agency safeguards required by this project agreement are implemented pursuant to the comprehensive safeguards agreement concluded between Argentina, Brazil, the ABACC and the Agency (INFCIRC/435).

^d Agency safeguards required by this project agreement are implemented pursuant to a safeguards agreement in connection with the Treaty of Tlatelolco covering the State indicated.

^e Agency safeguards required by this (these) project agreement(s) are implemented pursuant to an agreement in connection with NPT covering the State indicated.

^f Application of Agency safeguards under this agreement has been suspended in the State indicated. Safeguards are applied pursuant to the comprehensive safeguards agreement concluded between Argentina, Brazil, the ABACC and the Agency (INFCIRC/435).

^g Application of Agency safeguards under this agreement has been suspended in the State indicated as the State has concluded an agreement in connection with the Treaty of Tlatelolco.

^h Application of Agency safeguards under this agreement has been suspended in the State indicated as the State has concluded an agreement in connection with NPT.

ⁱ Application of Agency safeguards under this agreement has been suspended in the USA in order to comply with a provision of INFCIRC/228.

SITUATION ON 31 DECEMBER 1997 WITH RESPECT TO THE CONCLUSION OF
PROTOCOLS ADDITIONAL TO SAFEGUARDS AGREEMENTS

| State | Status of the Protocol | INFCIRC |
|----------------------|----------------------------|-----------|
| Armenia ¹ | Signed: 29 September 1997 | 455/Add.1 |
| Australia | In force: 12 December 1997 | 217/Add.1 |
| Georgia | Signed: 29 September 1997 | |
| Lithuania | Approved: 1 December 1997 | |
| Philippines | Signed: 30 September 1997 | |
| Poland | Signed: 30 September 1997 | |
| Uruguay | Signed: 29 September 1997 | |

¹ Pending entry into force of the Protocol, it is applied provisionally in this State.

APPROXIMATE QUANTITIES OF MATERIAL SUBJECT TO AGENCY SAFEGUARDS AT THE END OF 1997

| Type of material | Quantity of material (t) | | | |
|--|--|-------------------------|-----------------------|-----------------|
| | Comprehensive safeguards agreements ^a | INFCIRC/66 ^b | Nuclear weapon States | Quantity in SQs |
| Nuclear material | | | | |
| Plutonium ^c contained in irradiated fuel | 423.2 | 32.5 | 109.5 | 70 647 |
| Separated plutonium outside reactor cores | 13.1 | 0.1 | 44.5 | 7 206 |
| Recycled plutonium in fuel elements in reactor cores | 5.3 | 0.4 | 0 | 713 |
| HEU (equal to or greater than 20% ²³⁵ U) | 10.1 | 0.5 | 9.9 | 599 |
| LEU (less than 20% ²³⁵ U) | 38 862 | 2 683 | 7 736 | 13 702 |
| Source material ^d (natural or depleted uranium and thorium) | 74 556 | 4 183 | 29 908 | 7 381 |
| Non-nuclear material^e | | | | |
| Heavy water | 0 | 556 | 0 | 28 |
| Total significant quantities | | | | 100 276 |

^a Covering safeguards agreements pursuant to NPT and/or Treaty of Tlatelolco and other comprehensive safeguards agreements.

^b Excluding installations in nuclear weapon States; including installations in Taiwan, China.

^c The quantity includes an estimated 87 t (10 908 SQ) of plutonium in irradiated fuel, which is not yet reported to the Agency under the reporting procedures agreed to (the non-reported plutonium is contained in irradiated fuel assemblies to which item accountancy and C/S measures are applied).

^d This table does not include material within the terms of subparagraphs 34(a) and (b) of INFCIRC/153 (Corrected).

^e Non-nuclear material subject to Agency safeguards under INFCIRC/66/Rev.2-type agreements.

NUMBER OF FACILITIES UNDER SAFEGUARDS OR CONTAINING SAFEGUARDED MATERIAL ON 31 DECEMBER 1997

| Facility type | Number of facilities (number of installations) | | | |
|---|--|-------------------------|-----------------------|-------------------|
| | Comprehensive safeguards agreements ^a | INFCIRC/66 ^b | Nuclear weapon States | Total |
| Power reactors | 182 (219) | 11 (14) | 1 (1) | 194 (234) |
| Research reactors and critical assemblies | 150 (162) | 8 (8) | 1 (1) | 159 (171) |
| Conversion plants | 12 (12) | 1 (1) | 0 (0) | 13 (13) |
| Fuel fabrication plants | 38 (40) | 4 (4) | 0 (0) | 42 (44) |
| Reprocessing plants | 5 (5) | 1 (1) | 0 (0) | 6 (6) |
| Enrichment plants | 10 (10) | 0 (0) | 3 (3) | 13 (13) |
| Separate storage facilities | 60 (61) | 3 (3) | 8 (8) | 71 (72) |
| Other facilities | 71 (77) | 1 (1) | 1 (1) | 73 (79) |
| Subtotals | 528 (586) | 29 (32) | 14 (14) | 571 (632) |
| Other locations | 356 (445) | 3 (31) | 0 (0) | 359 (476) |
| Non-nuclear installations | 0 (0) | 1 (1) | 0 (0) | 1 (1) |
| Totals | 884 (1031) | 33 (64) | 14 (14) | 931 (1109) |

^a Covering safeguards agreements pursuant to NPT and/or Treaty of Tlatelolco and other comprehensive safeguards agreements; excludes locations in Iraq.

^b Excluding installations in nuclear weapon States; including installations in Taiwan, China.

FACILITIES UNDER AGENCY SAFEGUARDS OR CONTAINING SAFEGUARDED
MATERIAL ON 31 DECEMBER 1997

| Power reactors | | | | |
|---------------------------------------|------------------------------|-------------------------|------------------|----------------------------------|
| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
| Argentina | Atucha NPP | 1 | Lima | — |
| | Embalse NPP | 1 | Embalse | — |
| Armenia | Armenia NPP | 2 | Medzamor | — |
| Belgium | BR3-Mol | 1 | Mol | x |
| | DOEL-1 | 2 | Doel | x |
| | DOEL-3 | 1 | Doel | x |
| | DOEL-4 | 1 | Doel | x |
| | Tihange-1 | 1 | Tihange | x |
| | Tihange-2 | 1 | Tihange | x |
| | Tihange-3 | 1 | Tihange | x |
| Brazil | Admiral Alvaro Alberto | 1 | Angra dos Reis | x |
| Bulgaria | Kozloduy-I | 2 | Kozloduy | x |
| | Kozloduy-II | 2 | Kozloduy | x |
| | Kozloduy-III | 2 | Kozloduy | x |
| Canada | Bruce A | 4 | Tiverton | x |
| | Bruce B | 4 | Tiverton | x |
| | Darlington N.G.S. | 4 | Bowmanville | x |
| | Gentilly-2 | 1 | Gentilly | x |
| | Pickering G.S. | 8 | Pickering | x |
| | Point Lepreau G.S. | 1 | Point Lepreau | x |
| China | QSNPP | 1 | Hai Yan | x |
| Cuba | Juragua | 2 | Juragua | x |
| Czech Republic | EDU-1 | 2 | Dukovany | x |
| | EDU-2 | 2 | Dukovany | x |
| | Temelin | 2 | Temelin | — |
| Democratic People's Republic of Korea | Nyongbyon-1 | 1 | Nyongbyon | — |
| Finland | Loviisa | 2 | Loviisa | — |
| | TVO-1 | 1 | Olkiluoto | — |
| | TVO-2 | 1 | Olkiluoto | — |
| Germany | AVR | 1 | Jülich | — |
| | KWG Grohnde | 1 | Grohnde | — |
| | GKN-2 | 1 | Neckarwestheim | x |
| | RWE Biblis-A | 1 | Biblis | x |
| | RWE Biblis-B | 1 | Biblis | x |
| | KBR Brokdorf | 1 | Brokdorf | — |
| | KKB Brunsbüttel | 1 | Brunsbüttel | x |
| | KKE Emsland | 1 | Lingen | x |
| | KKG Grafenrheinfeld | 1 | Grafenrheinfeld | — |
| | KKI Isar-Ohu | 1 | Ohu bei Landshut | x |
| | KKI Isar-2 | 1 | Essenbach | x |
| | KKK Krümmel | 1 | Geesthacht | x |
| | RWE Mühlheim-Kärlich | 1 | Mühlheim-Kärlich | x |
| | GKN Neckarwestheim | 1 | Neckarwestheim | x |
| | KWO Obrigheim | 1 | Obrigheim | x |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
|--------------------|------------------------------|-------------------------|------------------------------|----------------------------------|
| Germany (cont.) | KKP Philippsburg-1 | 1 | Philippsburg | x |
| | KKP Philippsburg-2 | 1 | Philippsburg | — |
| | KRB II Gundremmingen B | 1 | Gundremmingen | x |
| | KRB II Gundremmingen C | 1 | Gundremmingen | x |
| | KKS Stade | 1 | Stade | x |
| | KKU Unterweser | 1 | Unterweser | x |
| | KWW Würgassen | 1 | Würgassen | x |
| | HKG-THTR 300 | 1 | Hamm | — |
| | KKW Greifswald 1 | 2 | Lubmin | — |
| | KKW Greifswald 2 | 2 | Lubmin | — |
| | KKW Greifswald 3 | 1 | Lubmin | — |
| | KKW Rheinsberg | 1 | Rheinsberg | x |
| Hungary | PAKS-I | 2 | Paks | x |
| | PAKS-II | 2 | Paks | x |
| India | RAPS | 2 | Rajasthan | x |
| | TAPS | 2 | Tarapur | x |
| Italy | ENEL-Latina | 1 | Borgo-Sabatino | x |
| | ENEL-Caorso | 1 | Caorso | x |
| | ENEL-Trino | 1 | Trino-Vercellese | x |
| Japan | Fugen | 1 | Tsuruga-shi, Fukui-ken | x |
| | Fukushima Dai-Ichi-1 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ichi-2 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ichi-3 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ichi-4 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ichi-5 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ichi-6 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ni-1 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ni-2 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ni-3 | 1 | Futaba-gun, Fukushima-ken | x |
| | Fukushima Dai-Ni-4 | 1 | Futaba-gun, Fukushima-ken | x |
| | Genkai-1 | 1 | Higashimatsura-gun, Saga-ken | x |
| | Genkai-2 | 1 | Higashimatsura-gun, Saga-ken | x |
| | Genkai-3 | 1 | Higashimatsura-gun, Saga-ken | x |
| | Genkai-4 | 1 | Higashimatsura-gun, Saga-ken | x |
| | Hamaoka-1 | 1 | Ogasa-gun, Shizuoka-ken | x |
| | Hamaoka-2 | 1 | Ogasa-gun, Shizuoka-ken | x |
| | Hamaoka-3 | 1 | Ogasa-gun, Shizuoka-ken | x |
| | Hamaoka-4 | 1 | Ogasa-gun, Shizuoka-ken | x |
| | Ikata-1 | 1 | Nishiuwa-gun, Ehime-ken | x |
| | Ikata-2 | 1 | Nishiuwa-gun, Ehime-ken | x |
| | Ikata-3 | 1 | Nishiuwa-gun, Ehime-ken | x |
| | Joyo | 1 | Higashi-gun, Ibaraki-ken | x |
| | Kashiwazaki-1 | 1 | Kashiwazaki-shi, Niigata-ken | x |
| | Kashiwazaki-2 | 1 | Kashiwazaki-shi, Niigata-ken | x |
| | Kashiwazaki-3 | 1 | Kashiwazaki-shi, Niigata-ken | x |
| | Kashiwazaki-4 | 1 | Kashiwazaki-shi, Niigata-ken | x |
| | Kashiwazaki-5 | 1 | Kashiwazaki-shi, Niigata-ken | x |
| | Kashiwazaki-6 | 1 | Kashiwazaki-shi, Niigata-ken | x |
| | Kashiwazaki-7 | 1 | Kashiwazaki-shi, Niigata-ken | x |
| | Mihama-1 | 1 | Mikata-gun, Fukui-ken | x |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
|--------------------|------------------------------------|-------------------------------|---------------------------|--|
| Japan (cont.) | Mihama-2 | 1 | Mikata-gun, Fukui-ken | x |
| | Mihama-3 | 1 | Mikata-gun, Fukui-ken | x |
| | Monju | 1 | Tsuruga-shi, Fukui-ken | x |
| | Ohi-1 and 2 | 2 | Ohi-gun, Fukui-ken | x |
| | Ohi-3 | 1 | Ohi-gun, Fukui-ken | x |
| | Ohi-4 | 1 | Ohi-gun, Fukui-ken | x |
| | Onagawa-1 | 1 | Oshika-gun, Miyaki-ken | x |
| | Onagawa-2 | 1 | Oshika-gun, Miyaki-ken | x |
| | Sendai-1 | 1 | Sendai-shi, Kagashima-ken | x |
| | Sendai-2 | 1 | Sendai-shi, Kagashima-ken | x |
| | Shika | 1 | Hakui-gun, Ishikawa-ken | x |
| | Shimane-1 | 1 | Yatsuka-gun, Shimane-ken | x |
| | Shimane-2 | 1 | Yatsuka-gun, Shimane-ken | x |
| | Takahama-1 | 1 | Ohi-gun, Fukui-ken | x |
| | Takahama-2 | 1 | Ohi-gun, Fukui-ken | x |
| | Takahama-3 | 1 | Ohi-gun, Fukui-ken | x |
| | Takahama-4 | 1 | Ohi-gun, Fukui-ken | x |
| | Tokai-1 | 1 | Tokai-Mura, Ibaraki-ken | x |
| | Tokai-2 | 1 | Tokai-Mura, Ibaraki-ken | x |
| | Tomari-1 | 1 | Fururu-gun, Hokkaido | x |
| Tomari-2 | 1 | Fururu-gun, Hokkaido | x | |
| Tsuruga-1 | 1 | Tsuruga-shi, Fukui-ken | x | |
| Tsuruga-2 | 1 | Tsuruga-shi, Fukui-ken | x | |
| Kazakhstan | BN-350 | 1 | Aktau | — |
| Korea, Republic of | Kori-1 | 1 | Pusan | x |
| | Kori-2 | 1 | Pusan | x |
| | Kori-3 | 1 | Pusan | x |
| | Kori-4 | 1 | Pusan | x |
| | Ulchin-1 | 1 | Ulchin | x |
| | Ulchin-2 | 1 | Ulchin | x |
| | Ulchin-3 | 1 | Ulchin | — |
| | Wolsong-1 | 1 | Kyongju | x |
| | Wolsong-2 | 1 | Kyongju | — |
| | Wolsong-3 | 1 | Kyongju | — |
| | Younggwang-1 | 1 | Younggwang | x |
| | Younggwang-2 | 1 | Younggwang | x |
| | Younggwang-3 | 1 | Younggwang | x |
| | Younggwang-4 | 1 | Younggwang | x |
| Lithuania | Ignalina NPP | 2 | Visaginas | — |
| Mexico | Laguna Verde 1 | 1 | Alto Lucero | x |
| | Laguna Verde 2 | 1 | Alto Lucero | x |
| Netherlands | Borssele | 1 | Borssele | x |
| | Dodewaard NPP | 1 | Dodewaard | x |
| Pakistan | KANUPP | 1 | Karachi | x |
| | Chasnupp-1 | 1 | Kundian | — |
| Philippines | PNPP-1 | 1 | Morong, Bataan | x |
| Romania | Cernavoda-1 | 1 | Cernavoda | — |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
|--------------------|------------------------------|-------------------------|-----------------------|----------------------------------|
| Slovakia | A1 | 1 | Bohunice | x |
| | EMO-1 | 2 | Mochovce | — |
| | V-1 | 2 | Bohunice | x |
| | V-2 | 2 | Bohunice | x |
| Slovenia | Krško | 1 | Krško | — |
| South Africa | Koeberg-1 | 1 | Cape Town | x |
| | Koeberg-2 | 1 | Cape Town | x |
| Spain | Almaraz-1 | 1 | Almaraz | — |
| | Almaraz-2 | 1 | Almaraz | — |
| | Asco-1 | 1 | Asco | — |
| | Asco-2 | 1 | Asco | — |
| | Cofrentes | 1 | Cofrentes | — |
| | José Cabrera | 1 | Almonazid de Zorita | — |
| | Santa María de Garona | 1 | Santa María de Garona | — |
| | Trillo-1 | 1 | Trillo | — |
| | Vandellos 1 | 1 | Vandellos | — |
| | Vandellos 2 | 1 | Vandellos | — |
| Sweden | Barsebäck 1 | 1 | Malmö | — |
| | Barsebäck 2 | 1 | Malmö | — |
| | Forsmark 1 | 1 | Uppsala | — |
| | Forsmark 2 | 1 | Uppsala | — |
| | Forsmark 3 | 1 | Uppsala | — |
| | Oskarshamn 1 | 1 | Oskarshamn | — |
| | Oskarshamn 2 | 1 | Oskarshamn | — |
| | Oskarshamn 3 | 1 | Oskarshamn | — |
| | Ringhals 1 | 1 | Göteborg | — |
| | Ringhals 2 | 1 | Göteborg | — |
| | Ringhals 3 | 1 | Göteborg | — |
| | Ringhals 4 | 1 | Göteborg | — |
| | Switzerland | KKB Beznau I | 1 | Beznau |
| KKB Beznau II | | 1 | Beznau | x |
| KKG Gösgen | | 1 | Gösgen-Däniken | x |
| KKL Leibstadt | | 1 | Leibstadt | x |
| KKM Mühleberg | | 1 | Mühleberg | x |
| Ukraine | Chernobyl NPP | 3 | Chernobyl | — |
| | Khmelnitski 1 | 1 | Neteshin | — |
| | Rovno 1 and 2 | 2 | Kuznetsovsk | — |
| | Rovno 3 | 1 | Kuznetsovsk | — |
| | South Ukraine 1 | 1 | Yuzhnoukrainsk | — |
| | South Ukraine 2 | 1 | Yuzhnoukrainsk | — |
| | South Ukraine 3 | 1 | Yuzhnoukrainsk | — |
| | Zaporozhe 1 | 1 | Energodar | — |
| | Zaporozhe 2 | 1 | Energodar | — |
| | Zaporozhe 3 | 1 | Energodar | — |
| | Zaporozhe 4 | 1 | Energodar | — |
| | Zaporozhe 5 | 1 | Energodar | — |
| | Zaporozhe 6 | 1 | Energodar | — |

SAFEGUARDED FACILITIES (cont.)

Research reactors and critical assemblies

| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
|--------------------|------------------------------|-------------------------|----------------|----------------------------------|
| Algeria | NUR Reactor | 1 | Algiers | x |
| | Es Salam research reactor | 1 | Ain Oussera | — |
| Argentina | Argentine reactor-1 | 1 | Constituyentes | — |
| | Argentine reactor-3 | 1 | Ezeiza | — |
| | Argentine reactor-4 | 1 | Rosario | — |
| | Argentine reactor-6 | 1 | Bariloche | — |
| | Argentine reactor-0 | 1 | Córdoba | — |
| | Argentine reactor-8 | 1 | Pilcaniyeu | — |
| Australia | HIFAR | 1 | Lucas Heights | x |
| | MOATA | 1 | Lucas Heights | x |
| Austria | ASTRA | 1 | Seibersdorf | — |
| | Siemens Argonaut Reactor | 1 | Graz | — |
| | Triga II | 1 | Vienna | — |
| Bangladesh | Atomic Energy Research Est. | 1 | Dhaka | x |
| Belarus | Sosny | 1 | Minsk | — |
| Belgium | BR1-CEN | 1 | Mol | x |
| | BR2-CEN-BRO2 | 2 | Mol | x |
| | CEN-Venus | 1 | Mol | x |
| | Thetis | 1 | Gent | x |
| Brazil | IEA-R1 | 1 | São Paulo | — |
| | RIEN-1 Argonaut RR | 1 | Rio de Janeiro | — |
| | IPR-RI-CDTN | 1 | Belo Horizonte | x |
| | IPEN Critical assembly | 1 | São Paulo | — |
| | Subcritical assembly | 1 | Recife | — |
| Bulgaria | IRT-2000 | 1 | Sofia | x |
| Canada | Biology, Chemistry, Physics | 2 | Chalk River | x |
| | McMaster | 1 | Hamilton | x |
| | NRU | 1 | Chalk River | x |
| | NRX | 1 | Chalk River | x |
| | Slowpoke-AECL | 1 | Ottawa | x |
| | Slowpoke-Dalhousie Univ. | 1 | Halifax | x |
| | Slowpoke-Ecole Polytechnique | 1 | Montreal | x |
| | Slowpoke-Kingston | 1 | Kingston | x |
| | Slowpoke-Saskatchewan | 1 | Saskatoon | x |
| | Slowpoke-Univ. of Toronto | 1 | Toronto | x |
| | Slowpoke-Univ. of Alberta | 1 | Edmonton | x |
| Chile | La Reina | 1 | Santiago | x |
| | Lo Aguirre | 1 | Santiago | x |
| China | HWRR | 1 | Beijing | x |
| Colombia | IAN-R1 | 1 | Bogotá | x |
| Czech Republic | LR-O | 1 | Øe¾ | x |
| | Univ. Training Reactor VR-1P | 1 | Prague | x |
| | VVR-S | 1 | Øe¾ | x |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
|---------------------------------------|------------------------------|-------------------------|-----------------------|----------------------------------|
| Democratic People's Republic of Korea | Critical Assembly | 1 | Bungang-Ri, Nyongbyon | x |
| | IRT | 1 | Bungang-Ri, Nyongbyon | x |
| Democratic Republic of the Congo | Triga II | 1 | Kinshasa | x |
| Denmark | DR-1 | 1 | Roskilde | x |
| | DR-3 | 1 | Roskilde | x |
| Egypt | RR-1 | 1 | Inshas | x |
| | MPR | 1 | Inshas | — |
| Finland | FIR 1 | 1 | Otaniemi | — |
| Germany | BER-2 | 1 | Berlin | x |
| | PTB | 1 | Braunschweig | x |
| | FH-Furtwangen | 1 | Furtwangen | x |
| | FRF-2 | 1 | Frankfurt | x |
| | FRM | 1 | Garching | x |
| | GKSS-FRG1&FRG2 | 2 | Geesthacht | x |
| | KFA-FRJ2 | 1 | Jülich | x |
| | SUR 100 | 1 | Bremen | x |
| | SUR 100 | 1 | Hannover | x |
| | SUR 100 | 1 | Kiel | x |
| | SUR 100 | 1 | Hamburg | x |
| | SUR 100 | 1 | Ulm | x |
| | SUR 100 | 1 | Stuttgart | x |
| | SUR 100 | 1 | Berlin | x |
| | SUR 100 | 1 | Aachen | x |
| | Tech. Univ. AKR | 1 | Dresden | x |
| | Tech. Hochschule ZLR | 1 | Zittau | x |
| | Triga | 1 | Mainz | x |
| MHH-Triga | 1 | Hannover | x | |
| DKFZ-Triga | 1 | Heidelberg | x | |
| VKT research reactor | 1 | Rosendorf | x | |
| Ghana | GHARR-1 | 1 | Legon-Accra | x |
| Greece | GRR-1 | 1 | Attiki | x |
| Hungary | Training reactor | 1 | Budapest | x |
| | WWR-S M 10 | 1 | Budapest | x |
| Indonesia | Gama | 1 | Yogyakarta | x |
| | MPR-30 | 1 | Serpong | x |
| | PPTN | 1 | Bandung | x |
| Iran, Islamic Republic of | TRR | 1 | Tehran | x |
| | HWZPR | 1 | Esfahan | — |
| | MNSR | 1 | Esfahan | x |
| Israel | IRR-1 | 1 | Soreq | x |
| Italy | AGN-201 | 1 | Palermo | x |
| | Poltec. | 1 | Milan | x |
| | RTS-1 | 1 | San Piero a Grado | x |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
|------------------------|------------------------------------|-------------------------------|----------------------------|--|
| Italy (cont.) | TAPIRO | 1 | Santa Maria di Galeria | x |
| | Triga-RC1 | 1 | Santa Maria di Galeria | x |
| | Triga-2 | 1 | Pavia | x |
| Jamaica | Centre for Nuclear Sciences | 1 | Kingston | x |
| Japan | DCA | 1 | Oarai-machi, Ibaraki-ken | x |
| | FCA | 1 | Tokai-Mura, Ibaraki-ken | x |
| | HTR | 1 | Kawasaki-shi, Kanagawa-ken | x |
| | HTTR | 1 | Higashi-gun, Ibaraki-ken | — |
| | JMTR | 1 | Higashi-gun, Ibaraki-ken | x |
| | JMTRCA | 1 | Higashi-gun, Ibaraki-ken | x |
| | JRR-2 | 1 | Tokai-Mura, Ibaraki-ken | x |
| | JRR-3 | 1 | Tokai-Mura, Ibaraki-ken | x |
| | JRR-4 | 1 | Tokai-Mura, Ibaraki-ken | x |
| | Kinki University reactor | 1 | Higashiosaka-shi, Osaka-fu | x |
| | KUCA | 3 | Osaka | x |
| | KUR | 1 | Sennan-gun, Osaka | x |
| | Musashi reactor | 1 | Kawasaki-shi, Kanagawa-ken | x |
| | NCA | 1 | Kawasaki-shi | x |
| | NSRR | 1 | Tokai-Mura, Ibaraki-ken | x |
| | Rikkyo University R.R. | 1 | Nagasaka, Kanagawa-ken | x |
| | TCA | 1 | Tokai-Mura, Ibaraki-ken | x |
| TODAI | 1 | Tokai-Mura, Ibaraki-ken | x | |
| TTR | 1 | Kawasaki-shi, Kanagawa-ken | x | |
| VHTRC | 1 | Tokai-Mura, Ibaraki-ken | x | |
| Kazakhstan | Kurchatov test reactor | 3 | Semipalatinsk | — |
| | WWR-K | 1 | Almaty | — |
| Korea, Republic of | Triga II and III | 2 | Seoul | x |
| | Kyunghee Univ. | 1 | Suwoon | x |
| | Hanaro | 1 | Taejon | — |
| Latvia | IRT | 1 | Riga | — |
| Libyan Arab Jamahiriya | IRT reactor | 1 | Tajura | x |
| Malaysia | Puspati | 1 | Bangi, Selangor | x |
| Mexico | Triga Mark III | 1 | Ocoyoacac | x |
| Netherlands | HOR | 1 | Delft | x |
| | HFR | 1 | Petten | x |
| | LFR | 1 | Petten | x |
| Norway | HBWR-Halden | 1 | Halden | x |
| | JEEP-II | 1 | Kjeller | x |
| Pakistan | PARR-1 | 1 | Rawalpindi | x |
| | PARR-2 | 1 | Rawalpindi | x |
| Peru | RP-0 | 1 | Lima | x |
| | RP-1O | 1 | Lima | x |
| Philippines | PRR-1 | 1 | Quezon City, Diliman | x |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Number of reactor units | Location | Subsidiary arrangements in force |
|----------------------------|--|-------------------------|------------------|----------------------------------|
| Poland | Agata and Anna | 2 | Świerk | x |
| | Ewa | 1 | Świerk | x |
| | Maria | 1 | Świerk | x |
| Portugal | RPI | 1 | Sacavem | x |
| Romania | Triga II | 1 | Pitești Colibași | x |
| | VVR-S | 2 | Magurele | x |
| Slovenia | Triga II | 1 | Ljubljana | — |
| South Africa | SAFARI-1 | 1 | Pelindaba | x |
| Sweden | Studsvik RR | 2 | Studsvik | — |
| Switzerland | AGN 211P | 1 | Basel | x |
| | Crocus | 1 | Lausanne | x |
| | Proteus | 1 | Würenlingen | x |
| | Saphir | 1 | Würenlingen | x |
| Syrian Arab Republic | MNSR | 1 | Damascus | x |
| Thailand | TRR-1 | 1 | Bangkok | x |
| Turkey | Çekmece Nuclear Research and Training Centre | 1 | Istanbul | x |
| | ITU-TRR Triga Mark II | 1 | Istanbul | x |
| Ukraine | Kiev RR | 1 | Kiev | — |
| | IR-100 RR | 1 | Sevastopol | — |
| Uruguay | Centro Investigaciones Nucleares | 1 | Montevideo | x |
| Uzbekistan | Photon | 1 | Tashkent | — |
| | WWR-SM | 1 | Tashkent | — |
| Venezuela | RV-I | 1 | Altos de Pipe | x |
| Viet Nam | Da Lat Research Reactor | 1 | Da Lat, Lam Dong | x |
| Yugoslavia Fed. Rep. of | RA-RB | 2 | Vinča | x |

SAFEGUARDED FACILITIES (cont.)

Conversion plants, including pilot plants

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|--------------------|--|-------------------------|--|
| Argentina | UF ₆ production facility | Pilcaniyeu | — |
| | UO ₂ conversion plant | Córdoba | — |
| Canada | CAMECO | Port Hope | x |
| Chile | Lab. exper. de conversión | Santiago | — |
| Japan | JCO conv. plant | Tokai-Mura, Ibaraki-ken | x |
| | Ningyo R&D | Tomata-gun, Okayama-ken | x |
| | PCDF | Tokai-Mura, Ibaraki-ken | x |
| Romania | UO ₂ powder fabrication plant | Feldioara | — |
| South Africa | Conversion plant | Pelindaba | x |
| | HEU-UF ₆ production plant | Pelindaba | x |
| Sweden | Ranstad Mineral | Ranstad | — |

SAFEGUARDED FACILITIES (cont.)

Fuel fabrication plants, including pilot plants

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|---------------------------------------|--|----------------------------|----------------------------------|
| Argentina | Experimental plant | Constituyentes | — |
| | Fuel fabrication plant | Ezeiza | — |
| | Fuel fabrication plant | Constituyentes | — |
| Belgium | BN-MOX | Dessel | x |
| | FBFC | Dessel | x |
| | FBFC MOX | Dessel | — |
| Brazil | Fuel fabrication plant | Resende | — |
| Canada | CRNL fuel fabrication | Chalk River | x |
| | Fuel fabrication facility | Chalk River | x |
| | GEC, Inc. | Toronto | x |
| | GEC, Inc. | Peterborough | x |
| | Zircatec | Port Hope | x |
| Chile | UMF | Santiago | — |
| Democratic People's Republic of Korea | Nuclear fuel fabrication plant | Nyongbyon | — |
| Denmark | Metallurgy | Roskilde | x |
| Egypt | FMPP | Inshas | — |
| Germany | Adv. Nuclear Fuels | Lingen | x |
| | NUKEM | Wolfgang | x |
| | Siemens Uran (two units) | Hanau | x |
| | Siemens MOX | Hanau | x |
| India | Ceramic fuel fab. assembly area | Hyderabad | x |
| | EFFP-NFC | Hyderabad | x |
| Indonesia | Experimental fuel element installation (IEBE) | Serpong | x |
| | Research reactor fuel element production installation (IPEBRR) | Serpong | x |
| Italy | Fabnuc | Bosco Marengo | x |
| Japan | JNF | Yokosuka-shi, Kanagawa-ken | x |
| | MNF | Tokai-Mura, Ibaraki-ken | x |
| | NFI (Kumatori-1) | Sennan-gun, Osaka | x |
| | NFI (Kumatori-2) | Sennan-gun, Osaka | x |
| | NFI Tokai | Tokai-Mura, Ibaraki-ken | x |
| | PPFF | Tokai-Mura, Ibaraki-ken | x |
| | PPFF | Tokai-Mura, Ibaraki-ken | x |
| Kazakhstan | Ulbinski Metallurgical Works | Kamenogorsk | — |
| Korea, Republic of | CANDU fuel fabrication plant | Taejon | x |
| | KNFFP | Taejon | x |
| Mexico | Fuel fabrication pilot plant | Ocoyacac | x |
| Romania | Romfuel | Pitești Colibasi | x |
| South Africa | MTR fuel fabrication | Pelindaba | x |
| | LEU fuel fabrication | Pelindaba | x |
| Spain | ENUSA fuel fabrication plant | Juzbado | — |
| Sweden | ABB | Västeras | — |

SAFEGUARDED FACILITIES (cont.)

Chemical reprocessing plants, including pilot plants

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|---------------------------------------|------------------------------|--------------------------|----------------------------------|
| Democratic People's Republic of Korea | Radiochemical Laboratory | Bungang-Ri, Nyongbyon | — |
| Germany | WAK | Eggenstein-Leopoldshafen | x |
| India | PREFRE | Tarapur | x |
| Italy | EUREx | Saluggia | x |
| | ITREC-Trisaia | Rotondella | x |
| Japan | Tokai reprocessing plant | Tokai-Mura, Ibaraki-ken | x |

In addition, the following R&D facilities and locations are associated with reprocessing technology:

| | | | |
|-----------|----------------------|-------------------------|---|
| Indonesia | RMI | Serpong | — |
| Japan | SCF | Tokai-Mura, Ibaraki-ken | x |
| | JAERI Tokai R&D | Tokai-Mura, Ibaraki-ken | x |
| | PNC Tokai R&D | Tokai-Mura, Ibaraki-ken | x |
| | Sumitomi Met. Mining | Tokai-Mura, Ibaraki-ken | x |

Enrichment plants, including pilot plants

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|--------------------|----------------------------------|--------------------------|----------------------------------|
| Argentina | Pilcaniyeu enrichment plant | Pilcaniyeu | — |
| Brazil | Enrichment plant (first cascade) | Resende | — |
| | Enrichment laboratory | Ipero | — |
| | PUEP | São Paulo | — |
| China | Shaanxi | Han Zhang | — |
| Germany | UTA-1 | Gronau | x |
| Japan | Uranium Enrichment Plant | Tomata-gun, Okayama-ken | x |
| | Rokkasho Enrichment Plant | Kamikita-gun, Aomori-ken | x |
| Netherlands | URENCO | Almelo | x |
| South Africa | Semi-commercial enrichment plant | Pelindaba | x |
| | MLIS enrichment plant | Valindaba | — |
| United Kingdom | URENCO E22 | Capenhurst | x |
| | URENCO A3 plant | Capenhurst | — |

In addition, the following R&D facilities and locations are associated with enrichment technology:

| | | | |
|-------------|-------------------------------|----------------------------|---|
| Brazil | Lab. for laser spectroscopy | São José dos Campos | — |
| | UF ₆ laboratory | Belo Horizonte | — |
| Germany | Urenco | Jülich | — |
| Japan | Asahi Chemical Industry | Hyuga-shi, Miyazaki-ken | x |
| | Communication Equipment Works | Tokai-Mura, Ibaraki-ken | x |
| | Hitachi laboratory | Hitachi-shi, Ibaraki-ken | x |
| | JAERI Tokai R&D | Tokai-Mura, Ibaraki-ken | x |
| | PNC Tokai R&D | Tokai-Mura, Ibaraki-ken | x |
| Netherlands | Toshiba R&D Centre | Kawasaki-shi, Kanagawa-ken | x |
| | Urenco | Almelo | x |
| | Ultra-centrifuge | Almelo | — |

SAFEGUARDED FACILITIES (cont.)

Separate storage facilities

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|---------------------------------------|-------------------------------------|-----------------------|----------------------------------|
| Argentina | Central store | Ezeiza | — |
| | Central store | Constituyentes | — |
| | Nuclear material store | Constituyentes | — |
| Australia | Vault storage | Lucas Heights | x |
| Belgium | Belgoprocess | Dessel | x |
| | Elbel | Beveren | — |
| | Wet Store | Tihange | — |
| Brazil | Aramar stores (2 units) | Ipero | — |
| | UF ₆ production facility | São Paulo | — |
| Bulgaria | Long term storage | Kozloduy | x |
| Canada | Nuclear material | Chalk River | x |
| | Spent fuel canister store | Chalk River | x |
| | Douglas Point dry storage | Tiverton | x |
| | Gentilly-1 | Gentilly | x |
| | Spent fuel storage | Chalk River | x |
| | AECL Research | Pinawa | x |
| | PUFDSF | Pickering | — |
| Czech Republic | Storage Škoda | Bolevec | x |
| | HLW store | Øe¼ | — |
| | ISFS Dukovany | Dukovany | — |
| Democratic People's Republic of Korea | Nuclear fuel storage | Bungang-Ri, Nyongbyon | — |
| Denmark | Risø Store | Roskilde | x |
| | Risø Waste | Roskilde | — |
| Finland | TVO-KPA store | Olkiluoto | — |
| France | Cogéma UP2 and UP3 | La Hague | x |
| Germany | Bundeslager | Wolfgang | — |
| | ANF UF ₆ Lager | Lingen | x |
| | KFA AVR BL | Jülich | — |
| | KFA AVR | Jülich | x |
| | BZA-Ahaus | Ahaus | — |
| | NCS-Lagerhalle | Hanau | — |
| | Gamma Services | Radeberg | — |
| | Urananlage | Ellweiler | x |
| | Energiewerke Nord GmbH | Lubmin | x |
| | Energiewerke Nord-ZLN | Lubmin | — |
| | Transportbehälterlager | Gorleben | — |
| | TR Halle 87 | Rosendorf | — |
| Kernmateriallager | Rosendorf | — | |
| Hungary | Central radionuclide store | Budapest | x |
| | MVDS | Paks | — |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|-----------------------------|------------------------------------|---------------------------|--|
| India | AFR | Tarapur | x |
| Italy | Compes. deposito | Saluggia | x |
| | Essor nuclear plant | Ispra | — |
| | Essor storage | Ispra | x |
| | Research centre | Ispra | — |
| Japan | KUFFS | Kyoto | x |
| | Fukushima Dai-Ichi SFS | Futaba-gun, Fukushima-ken | — |
| | N. S. Mutsu | Mutsu-shi, Aomori-ken | x |
| | RCTS | Kamikita-gun, Aomori-ken | — |
| | RSFS | Kamikita-gun, Aomori-ken | x |
| Kazakhstan | Ulbinski Thorium Storage | Kamenogorsk | — |
| Netherlands | Covra Store | Vlissingen | — |
| Pakistan | Hawks Bay depot | Karachi | x |
| Portugal | Inst. de Armazenagem | Sacavem | x |
| Russian Federation | Mashinostroitel'nyi Zavod | Ehlektrostal | — |
| Slovakia | AFRS | Bohunice | x |
| South Africa | Waste storage | Pelindaba | — |
| | Bulk storage facility | Pelindaba | x |
| | HEU storage vault | Pelindaba | x |
| | Thabana pipe store | Pelindaba | x |
| Spain | CIEM | Madrid | — |
| Sweden | Central long term storage | Oskarshamn | — |
| Switzerland | Diorit storage | Würenlingen | x |
| Ukraine | Chernobyl storage | Chernobyl | — |
| United Kingdom | Thorp R&S | Sellafield | x |
| | Special nuclear material store 9 | Sellafield | x |
| | Thorp Plutonium Store | Sellafield | — |
| United States of America | Pu storage vault | Hanford, WA | — |
| | Y-12 plant | Oak Ridge, TN | — |
| | Vault | Golden, CO | — |

SAFEGUARDED FACILITIES (cont.)

| Other facilities | | | |
|---------------------------------------|------------------------------------|--------------------------|----------------------------------|
| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
| Algeria | UDEC | Draria | — |
| | Es Salam reactor | Ain Oussera | — |
| Argentina | Alpha facility | Constituyentes | — |
| | Experimental UO ₂ plant | Cordoba | — |
| | Enriched uranium lab. | Ezeiza | — |
| | Fuel fabrication plant | Ezeiza | — |
| | Uranium powder fab. plant | Constituyentes | — |
| | Triple Altura Lab. | Ezeiza | — |
| Australia | Research Lab. | Lucas Heights | x |
| Belgium | IRMM-Geel | Geel | x |
| | CEN-Labo | Mol | x |
| | CEN-Waste | Dessel | — |
| | I.R.E. | Fleurus | x |
| | CEN-Lab. Pu | Mol | x |
| Brazil | Isotope laboratory | São Paulo | — |
| | Nuclear material lab. | Ipero | — |
| | Safeguards store | São Paulo | x |
| Czech Republic | Nuclear Fuel Inst. (UJP) | Zbraslav | x |
| | Research Laboratories | Øe¾ | x |
| Democratic People's Republic of Korea | Subcritical assembly | Pyongyang | x |
| Germany | KFA-heisse Zellen | Jülich | x |
| | KFK-heisse Zellen | Eggenstein-Leopoldshafen | x |
| | KFK-IHCH | Eggenstein-Leopoldshafen | x |
| | Siemens heisse Zellen | Karlstein | x |
| | KFA Lab. | Jülich | x |
| | Transuran | Eggenstein-Leopoldshafen | x |
| | VKT. Tec. ZTR | Rosendorf | x |
| Hungary | Institute of Isotopes | Budapest | x |
| Indonesia | RMI | Serpong | — |
| Iran, Islamic Republic of | LWSCR | Esfahan | x |
| | GSCR | Esfahan | x |
| Italy | CNEN-LAB. PU. | Santa Maria di Galeria | x |
| Japan | JAERI-Oarai R&D | Higashi-gun, Ibaraki-ken | x |
| | JAERI-Tokai R&D | Tokai-Mura, Ibaraki-ken | x |
| | Kumatori R&D | Sennan-gun, Osaka | x |
| | Mitsui Iwakuni-Ohtake | Kuga-gun, Yamaguchi | x |
| | Mitsui Toatsu | Takai-shi, Osaka-fu | x |
| | NDC Fuel Hot Lab. | Tokai-Mura, Ibaraki-ken | x |
| | NDC fuel laboratories | Tokai-Mura, Ibaraki-ken | x |
| | NERL, University of Tokyo | Tokai-Mura, Ibaraki-ken | x |
| | NFD | Higashi-gun, Ibaraki-ken | x |
| | NFI Tokai-2 | Tokai-Mura, Ibaraki-ken | x |
| | NRF Neutron Radiation Facility | Tsukuba-shi, Ibaraki-ken | x |

SAFEGUARDED FACILITIES (cont.)

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|--------------------------|--|----------------------------|--|
| Japan (cont.) | PNC FMF | Higashi-gun, Ibaraki-ken | x |
| | PNC IRAF | Higashi-gun, Ibaraki-ken | x |
| | PNC-Oarai R&D | Higashi-gun, Ibaraki-ken | x |
| | PNC-Tokai R&D | Tokai-Mura, Ibaraki-ken | x |
| | SCF | Tokai-Mura, Ibaraki-ken | x |
| | Showa-Kawasaki | Kawasaki-shi, Kanagawa-ken | x |
| | Sumitomo-Chiba | Sodegaura-shi, Chiba-ken | x |
| | Uranium Material Laboratory | Higashi-gun, Ibaraki-ken | x |
| Korea, Republic of | PIEF | Daejeon | x |
| | Acrylonitrile plant | Ulsan | — |
| | DFDF | Taejon | — |
| | HFFL | Taejon | — |
| | IMEF | Taejon | — |
| Netherlands | ECN and JRC | Petten | x |
| Norway | Research laboratories | Kjeller | x |
| Poland | Institute for Nuclear Chemistry and Engineering | Warsaw | — |
| | Institute of Nuclear Research | Świerk | x |
| South Africa | Decommissioned pilot enrichment plant | Pelindaba | — |
| | Decontamination and waste recovery | Pelindaba | — |
| | Hot Cell Complex | Pelindaba | x |
| | NU and DU metals plant | Pelindaba | — |
| Switzerland | EIR | Würenlingen | x |
| Turkey | Nuclear fuel pilot plant | Istanbul | x |
| Ukraine | Khmelnitski FF Storage | Neteshin | — |
| | KHFTI | Kharkov | — |
| | Rovno FF Storage | Kuznetsovsk | — |
| | South Ukraine Storage | Yuzhnoukrainsk | — |
| | Zaporozhe FF Storage | Energodar | — |
| | Sevastopol Naval Institute | Sevastopol | — |
| United States of America | B&W NNFD | Lynchburg, VA | — |

SAFEGUARDED FACILITIES (cont.)

Non-nuclear installations

| State ^a | Abbreviated name of facility | Location | Subsidiary arrangements in force |
|--------------------|------------------------------|--------------|----------------------------------|
| Cuba | Storage of equipment | Prov. Havana | — |

^a An entry in this column does not imply the expression of any opinion whatsoever on the part of the Agency concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers.

Note: The Agency was also applying safeguards in Taiwan, China, at six power reactors, five research reactors/critical assemblies, one uranium pilot conversion plant, two fuel fabrication plants, one storage facility and one R&D facility.

Locations in Iraq containing nuclear material which are under the responsibility of the IAEA Action Team under United Nations Security Council Resolution 687

| | |
|------------|---------------------------------|
| Location C | In the vicinity of Al Tuwaitiha |
|------------|---------------------------------|

ADDITIONAL SAFEGUARDS SUPPORT PROVIDED BY STATES

| States and organizations representing groups of States having formal support programmes | States having R&D contracts and test programmes |
|---|---|
| Argentina | Argentina |
| Australia | Austria |
| Belgium | Latvia |
| Canada | Pakistan |
| EURATOM | Russian Federation |
| Finland | |
| France | |
| Germany | |
| Hungary | |
| Japan | |
| Netherlands | |
| Russian Federation | |
| Sweden | |
| United Kingdom | |
| United States of America | |

MAIN EQUIPMENT AND ACTIVITIES IN SUPPORT OF SAFEGUARDS

| | 1996 | 1997 |
|---|--------|---------------------------|
| Gamma ray measurement systems | | Total in inventory |
| Low resolution systems | 79 | 78 |
| High resolution systems | 51 | 43 |
| Portable multichannel analysers | 175 | 263 |
| Detectors | 410 | 629 |
| Neutron measurement systems | | |
| Detection heads for active neutron measurements | 24 | 29 |
| Detection heads for passive neutron measurements | 34 | 32 |
| Neutron coincidence counting electronics | 95 | 92 |
| Spent fuel measurement systems | | |
| Cerenkov glow viewing devices | 84 | 87 |
| Spent fuel radiation measuring systems | 122 | 143 |
| Irradiated fuel measuring electronics | 66 | 67 |
| Other measurement systems | | |
| Physical properties devices | 134 | 134 |
| Optical surveillance systems | | |
| Photo cameras | 993 | 943 |
| Video single camera systems | 381 | 402 |
| Video multiple camera systems | 21 | 30 |
| Video review stations | 68 | 81 |
| Seals | | |
| In situ verifiable seals | 553 | 1350 |
| Radiation monitoring systems | 47 | 57 |
| Activities | | |
| Metal cap seals issued | 21 825 | 18 200 |
| Metal cap seals verified | 19 393 | 18 140 |
| Shipment of equipment and supplies | 525 | 618 |
| Hand carried transport of equipment and supplies | 408 | 552 |
| Shipment of reference material and chemicals to facilities | 158 | 161 |
| Shipment of inspection samples, radioactive material standards and contaminated items to SAL ^a | 183 | 243 |
| Procurement actions | 2 093 | 1 908 |

^a SAL: The Agency's Safeguards Analytical Laboratory.

CONVENTIONS NEGOTIATED AND ADOPTED UNDER THE AUSPICES OF THE AGENCY AND FOR WHICH THE DIRECTOR GENERAL IS THE DEPOSITARY (STATUS AND RELEVANT DEVELOPMENTS)

Agreement on the Privileges and Immunities of the IAEA (reproduced in document INFCIRC/9/Rev.1). During 1997 there was no change in the number of Parties to the Agreement. The number of Member States who have accepted the Agreement remains at 65.

Vienna Convention on Civil Liability for Nuclear Damage (reproduced in document INFCIRC/500). Entered into force on 12 November 1977. In 1997, 1 State ratified and 2 States signed the Convention. By the end of the year, there were 28 Parties and 14 signatories.

Convention on the Physical Protection of Nuclear Material (reproduced in INFCIRC/274/ Rev.1). Entered into force on 8 February 1987. In 1997, 2 States acceded to the Convention. By the end of the year, there were 58 Parties.

Convention on Early Notification of a Nuclear Accident (reproduced in INFCIRC/335): Entered into force on 27 October 1986. In 1997, 1 State ratified and 3 States acceded to the Convention. By the end of the year, there were 78 Parties.

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (reproduced in INFCIRC/336). Entered into force on 26 February 1987. In 1997, 1 State ratified and 2 States acceded to the Convention. By the end of the year, there were 74 Parties.

Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (reproduced in INFCIRC/402). Entered into force on 27 April 1992. Its status remained unchanged during 1997, with 20 Parties.

Convention on Nuclear Safety (reproduced in INFCIRC/449). Entered into force on 24 October 1996. In 1997, 9 States ratified and 1 State acceded to the Convention. By the end of the year, there were 41 Parties.

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (reproduced in INFCIRC/546). Opened for signature on 29 September 1997. By the end of 1997, 26 States had signed.

Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage. Opened for signature on 29 September 1997. By the end of 1997, 9 States had signed.

Convention on Supplementary Compensation for Nuclear Damage. Opened for signature on 29 September 1997. By the end of 1997, 9 States had signed.

Extension of the African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA) (reproduced in INFCIRC/377). Entered into force on 4 April 1995. In 1997, 1 State accepted. By the end of the year, there were 21 Parties.

Second Agreement to Extend the 1987 Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (RCA). Entered into force on 12 June 1997. By the end of 1997, there were 13 Parties.

CO-ORDINATED RESEARCH PROGRAMMES

(with year of start and completion)

| Nuclear power | | |
|---|------|------|
| Management of ageing of motor operated isolating valves | 1993 | 1997 |
| Outage coding system | 1997 | 1999 |
| Assuring the structural integrity of the reactor pressure vessel | 1996 | 1999 |
| Design and evaluation of heat utilization systems for the high temperature engineering test reactor | 1994 | 1999 |
| Heat transfer and afterheat removal for gas cooled reactors under accident conditions | 1993 | 1997 |
| Thermohydraulic relationships for advanced water cooled reactors | 1995 | 1998 |
| Intercomparison of analysis methods for seismically isolated nuclear structures | 1996 | 1999 |
| Harmonization and validation of fast reactor thermomechanical and thermohydraulic codes and relations using experimental data | 1996 | 1998 |
| Potential of thorium based fuel cycles to constrain plutonium and to reduce long term waste toxicities | 1995 | 2000 |
| Use of the thorium based fuel cycle in accelerator driven systems to incinerate plutonium and to reduce long term waste toxicities | 1996 | 1999 |
| Nuclear fuel cycle and waste management | | |
| Treatment of liquid effluents from mines and mills during and after operation | 1996 | 2001 |
| Degradation of zirconium alloys under stress and in a corrosive environment | 1993 | 1998 |
| High temperature on-line monitoring of water chemistry and corrosion (WACOL) | 1995 | 2000 |
| Modelling of the transport of radioactive substances in the primary circuit of water cooled reactors | 1996 | 2001 |
| Evaluation of the behaviour of spent fuel from nuclear power plants during long term storage to identify optimum storage conditions | 1997 | 2002 |
| Research and test reactor fuel clad monitoring, degradation and corrosion control during storage | 1995 | 2000 |
| Safety, environmental and non-proliferation aspects of the partitioning and transmutation of actinides and fission products | 1996 | 2000 |
| Ageing of materials in spent fuel storage facilities to identify and model ageing mechanisms | 1997 | 2001 |
| Combined methods of liquid radioactive waste treatment | 1997 | 2001 |
| Chemical durability and performance assessment of spent fuel and high level waste forms under simulated repository conditions | 1991 | 1997 |
| Long term behaviour of low and intermediate level waste packages under repository conditions | 1997 | 2001 |
| Extrapolation of short term observations to long time periods for the isolation of long lived radioactive waste | 1996 | 2000 |
| New methods and techniques for the optimization of decontamination for maintenance or decommissioning | 1994 | 1998 |
| Site characterization techniques used in environmental restoration | 1995 | 1999 |
| Decommissioning techniques for research reactors | 1997 | 2001 |

CO-ORDINATED RESEARCH PROGRAMMES (cont.)

Comparative assessment of energy sources

| | | |
|---|------|------|
| Case studies to assess and compare different energy sources in sustainable energy and electricity supply strategies | 1997 | 1999 |
| Comparative health and environmental risks of nuclear and other energy systems, using case studies | 1994 | 1998 |
| Formulation of approaches to compare the potential impacts of wastes from electricity generation technologies (FACTS) | 1997 | 2000 |

Food and agriculture

| | | |
|---|------|------|
| Use of nuclear techniques in the management of nitrogen fixing trees for enhancing soil fertility and soil conservation | 1990 | 1997 |
| Use of nuclear and related techniques for evaluating the agronomic effectiveness of phosphate fertilizers, in particular rock phosphates | 1993 | 1998 |
| Use of nuclear techniques for optimizing fertilizer application under irrigated wheat to increase the efficient use of nitrogen fertilizers and consequently reduce environmental pollution | 1994 | 1998 |
| Use of irradiated sewage sludge for enhancing soil fertility and reducing environmental pollution | 1995 | 1999 |
| Use of nuclear techniques in studies on organic matter management and nutrient turnover in soils for increased and sustainable agricultural production and environmental preservation | 1996 | 2001 |
| Use of isotopes for developing management practices to reduce soil erosion and increase crop production | 1996 | 2001 |
| Management of nutrients and water in rainfed arid and semi-arid areas for increasing crop production | 1997 | 2002 |
| Induced mutations in connection with biotechnology for crop improvement in Latin America | 1993 | 1998 |
| Induced mutations for sesame improvement | 1993 | 1998 |
| Induced mutations and other advanced technology for the production of crop mutants suitable for environmentally sustainable agriculture | 1993 | 1998 |
| In vitro techniques for the selection of radiation induced mutants adapted to adverse environmental conditions | 1993 | 1998 |
| Radioactively labelled DNA probes for crop improvement | 1994 | 1999 |
| Improvement of new and traditional industrial crops by induced mutations and related biotechnology | 1994 | 1999 |
| Cellular biology and biotechnology including mutation techniques for the creation of new and useful banana genotypes | 1994 | 1999 |
| Monitoring and surveillance of rinderpest in Africa: Phase III | 1998 | 2001 |
| Improvement of ruminant livestock productivity through the use of progesterone radioimmunoassay to increase the efficiency and quality of artificial insemination services | 1995 | 1999 |
| Use of immunoassay methods for improved diagnosis of trypanosomosis and monitoring of tsetse and trypanosomosis control programmes in Africa | 1994 | 1999 |

CO-ORDINATED RESEARCH PROGRAMMES (cont.)

| | | |
|---|------|------|
| Development of feed supplementation strategies for improving the productivity of dairy cattle on smallholder farms in Africa | 1994 | 1998 |
| Development, standardization and validation of nuclear based technologies for measuring microbial protein supply in ruminant livestock for improving productivity | 1996 | 2000 |
| Improved diagnosis of foot-and-mouth disease in South East Asia using enzyme linked immunoassay based technologies | 1995 | 1999 |
| Application of molecular techniques in animal disease diagnosis in developing countries | 1997 | 2001 |
| Monitoring of contagious bovine pleuropneumonia control programmes in Africa using enzyme immunoassays | 1997 | 2001 |
| Development of supplementation strategies for milk producing animals in tropical and subtropical environments | 1993 | 1997 |
| Use of enzyme linked immunoassay for epidemiology and control of foot-and-mouth disease and bovine brucellosis in Latin America | 1995 | 1997 |
| Evaluation of population suppression by irradiated Lepidoptera and their progeny | 1992 | 1998 |
| Enhancement of the sterile insect technique (SIT) through genetic transformation of arthropods using nuclear techniques | 1994 | 1999 |
| Development of female medfly attractant systems for trapping and sterility assessment | 1993 | 1998 |
| Medfly mating behaviour studies under field cage conditions | 1993 | 1999 |
| A molecular and genetic approach to improving sexing strains for field application in fruit fly SIT programmes | 1994 | 1999 |
| Genetic applications to improve SIT for tsetse control/eradication | 1997 | 2001 |
| Automation of tsetse fly mass rearing for use in SIT programmes | 1994 | 1999 |
| Improved attractants for enhancing the efficiency of tsetse fly suppression operations and barrier systems used in tsetse control/eradication campaigns | 1994 | 1999 |
| Irradiation as a quarantine treatment of mites, nematodes and insects other than fruit flies | 1992 | 1997 |
| Irradiation as a public health intervention measure to control cysticercosis/taeniasis and vibrio infection in Latin America (co-sponsored by PAHO) | 1993 | 1998 |
| Standardized methods to verify the absorbed dose of irradiated dried fruits and tree nuts | 1994 | 1998 |
| Integration of irradiation as a system for reducing post-harvest food losses in Africa | 1995 | 1999 |
| Development of shelf-stable and convenience food through high dose irradiation | 1996 | 2000 |
| Market development and trade in irradiated food in Asia | 1995 | 1999 |
| Use of nuclear and immunochemical methods for pesticide analysis | 1993 | 1998 |
| Impact of long term pesticide usage on soil properties using radiotracer techniques | 1995 | 1999 |
| Validation of thin layer chromatographic screening methods for pesticide residue analysis | 1996 | 2001 |
| Agroecological effects resulting from the use of persistent pesticides in Central America | 1993 | 1997 |
| Alternative methods to gas and high performance liquid chromatography for pesticide residue analysis in grain | 1997 | 2002 |

CO-ORDINATED RESEARCH PROGRAMMES (cont.)

| | | |
|---|------|------|
| Distribution, fate and effects of pesticides on biota in the tropical marine environment using radiolabelled tracers | 1993 | 1997 |
| Radionuclide transfer from air, soil and fresh water to the food chain of humans in tropical and subtropical environments | 1993 | 1997 |
| Human health | | |
| Local production and evaluation of primary reagents for the radioimmunoassay of alpha feto protein (AFP) | 1997 | 1999 |
| Diagnosis of blood borne infections using phosphorus-32 probes (Asia and Pacific region) | 1994 | 1997 |
| Diagnosis of Chagas disease and leishmaniasis (Latin America region) | 1994 | 1997 |
| Diagnosis of genetic disorders using radiotracers | 1995 | 1998 |
| Molecular typing of mycobacteria strains in multi-drug resistant tuberculosis | 1997 | 2000 |
| Radioimmunoassay of the prostate specific antigen (PSA) for the diagnosis and follow-up of prostatic cancer | 1995 | 1997 |
| Biological discrimination of hormone sensitive and insensitive breast cancer by radioimmunoassay | 1993 | 1997 |
| Standardization of iodine-131 treatment for hyperthyroidism with an intent to optimize radiation dose and treatment response | 1994 | 1998 |
| Efficacy and toxicity of rhenium-186 and/or samarium-153 radiopharmaceuticals in the treatment of painful skeletal metastases | 1994 | 1998 |
| Comparative evaluation of the efficacy and toxicity of oral phosphorus-32 and intravenous strontium-89 in the treatment of painful skeletal metastases | 1993 | 1997 |
| Diagnosis and management of patients with 'unexplained' back pain using bone SPECT | 1997 | 1999 |
| Study of the relationship between vesicoureteral reflux, pyelonephritis and renal scarring in children with recurrent urinary tract infection using nuclear medicine techniques | 1997 | 1999 |
| In vivo nuclear imaging for infection and inflammation | 1996 | 1998 |
| Evaluation of technitium-99m based radiopharmaceuticals in the diagnosis and management of breast cancer patients | 1997 | 1999 |
| Certification of quality of performance and preventive maintenance of nuclear medicine instruments for the Asia and Pacific region | 1994 | 1997 |
| Certification of quality of performance and preventive maintenance of nuclear medicine instruments in the Latin American region | 1994 | 1998 |
| Validation of personal computer interfacing with gamma cameras and application software for data processing of clinical studies | 1995 | 1998 |
| Radiation responsiveness criteria for human tumours as a determinant for therapeutic modality planning | 1993 | 1998 |
| Modern techniques in brachytherapy of cancer with special reference to the developing countries | 1993 | 1998 |
| Clinical application of radiosensitizers in cancer radiotherapy | 1994 | 2001 |
| Randomized clinical trial of radiotherapy combined with mitomycin C in the treatment of advanced head and neck tumours | 1994 | 2001 |

CO-ORDINATED RESEARCH PROGRAMMES (cont.)

| | | |
|---|------|------|
| Application of heavy charged particles in cancer radiotherapy | 1995 | 1998 |
| Quality assurance in radiotherapy for Latin America | 1995 | 1998 |
| Use of radiotherapy in advanced cancer | 1995 | 2001 |
| Regional hyperthermia combined with radiotherapy for locally advanced cancers | 1997 | 2000 |
| Characterization and evaluation of high dose dosimetry techniques for quality assurance in radiation processing | 1995 | 2000 |
| Development of a quality assurance programme for Secondary Standard Dosimetry Laboratories | 1996 | 1999 |
| Development of a quality assurance programme for radiation therapy dosimetry in developing countries | 1995 | 1998 |
| Dose determination with plane parallel ionization chambers in therapeutic electron and photon beams | 1996 | 1999 |
| Development of a code of practice for dose determination in photon, electron and proton beams based on measurement standards of absorbed dose to water | 1997 | 2000 |
| Evaluation of alanine-ESR dosimetry system for radiotherapy | 1998 | 2001 |
| Applied research on air pollution using nuclear related analytical techniques | 1992 | 1997 |
| Application of stable isotope tracer methods to studies of amino acid, protein, and energy metabolism in malnourished populations of developing countries | 1993 | 1998 |
| Comparative international studies of osteoporosis using isotope techniques | 1994 | 1998 |
| Development and application of isotopic techniques in studies of vitamin A nutrition | 1995 | 1999 |
| Isotopic evaluations of maternal and child nutrition to help prevent stunting | 1996 | 1999 |
| Isotopic evaluations in infant growth monitoring | 1998 | 2000 |
| Ingestion and organ content of trace elements of importance in radiological protection (RCA) | 1995 | 1999 |
| Applied research on air pollution using nuclear related analytical techniques in the Asia and Pacific region (RCA) | 1995 | 1999 |
| Assessment of levels and health effects of airborne particulate matter in mining, metal refining and metal working industries using nuclear and related analytical techniques | 1996 | 1999 |
| Validation and application of plants as biomonitors of trace element atmospheric pollution, analysed by nuclear and related techniques | 1997 | 2002 |
| Marine environment, water resources and industry | | |
| Irradiation treatment of water, wastewater and sludges | 1995 | 1998 |
| Use of radiation processing to prepare biomaterials for applications in medicine | 1995 | 1997 |
| Validation of protocols for corrosion and deposit evaluation in pipes by radiography | 1997 | 2000 |
| Modification of materials by ion treatment for industrial applications | 1996 | 1998 |
| Use of radiation processing for sterilization or decontamination of pharmaceuticals and pharmaceutical raw material | 1998 | 2000 |
| Radiation processing of indigenous natural polymers | 1998 | 1999 |
| Improvement of physical properties of radiation vulcanized natural rubber latex | 1998 | 2000 |

CO-ORDINATED RESEARCH PROGRAMMES (cont.)

Physical and chemical sciences

| | | |
|--|------|------|
| Establishment of an international reference data library of nuclear activation cross-sections | 1993 | 1997 |
| Measurement, calculation and evaluation of photon production data | 1993 | 1997 |
| Development of a reference input parameter library (RIPL) for nuclear model calculations of nuclear data (Phase I: starter file) | 1994 | 1997 |
| Radiative cooling rates for fusion plasma impurities | 1994 | 1997 |
| Collection and evaluation of reference data for thermomechanical properties of fusion reactor plasma facing materials | 1994 | 1997 |
| Development of reference charged particle cross-section database for medical radioisotope production | 1995 | 1998 |
| Atomic and plasma-wall interaction data for fusion reactor divertor modelling | 1995 | 1998 |
| Compilation and evaluation of photonuclear data for applications | 1996 | 1999 |
| Fission product yield data required for transmutation of minor actinide nuclear waste | 1997 | 2001 |
| Charge exchange cross-section data for fusion plasma studies | 1997 | 2001 |
| Development of computer based troubleshooting tools and instruments | 1996 | 1999 |
| Specialized software utilities for gamma ray spectrometry | 1997 | 2000 |
| Bulk hydrogen analysis, using neutrons | 1997 | 1999 |
| Analysis of research reactor transients | 1995 | 1998 |
| Application of MeV ion beams for development and characterization of semiconductor materials | 1997 | 2000 |
| Development of plasma heating and diagnostic systems in institutes in developing countries using small and middle scale devices | 1993 | 1997 |
| Engineering, industrial and environmental applications of plasma physics and fusion technologies | 1996 | 1999 |
| Plasma-material interaction data for mixed plasma facing materials in fusion reactors | 1997 | 2001 |
| Design and evaluation of heat utilization systems for the high temperature engineering test reactor | 1995 | 1998 |
| Validation of nuclear techniques for analysis of precious and rare metals in mineral concentrates | 1996 | 1999 |
| Nuclear analytical techniques in archaeological investigations | 1996 | 1999 |
| Optimization of production and quality control of radiotherapeutic radionuclides and radiopharmaceuticals | 1993 | 1997 |
| Development of agents for imaging a CNS receptor based on technitium-99m | 1996 | 1999 |
| Technitium-99m labelled peptides for imaging peripheral receptors | 1996 | 1999 |
| Optimization of synthesis and quality control procedures for preparation of fluorine-18 and iodine-123 labelled peptides | 1997 | 2000 |
| Development of kits for radioimmunoassays of tumour markers | 1997 | 2000 |
| Labelled biomolecules for targeted radiotherapy | 1997 | 2000 |

CO-ORDINATED RESEARCH PROGRAMMES (cont.)

| Nuclear safety | | |
|---|------|------|
| Management of ageing of the concrete containment building | 1992 | 1997 |
| Management of ageing of in-containment instrumentation and control cables | 1992 | 1998 |
| Benchmark study for seismic analysis and testing of WWER type nuclear power plants | 1993 | 1997 |
| Development of methodologies for optimization of surveillance testing and maintenance of safety related equipment at nuclear power plants | 1996 | 1999 |
| Round robin exercise on WWER-440 reactor pressure vessel weld metal irradiation embrittlement and annealing | 1996 | 1999 |
| Application of non-destructive testing and in-service inspection to research reactors | 1995 | 1998 |
| Validation of accident and safety analysis methodology | 1995 | 1998 |
| Collection and classification of human reliability data for use in probabilistic safety assessments | 1995 | 1997 |
| Investigation of methodologies for incident analysis | 1997 | 2000 |
| Radiation safety | | |
| Intercomparison of in vivo counting systems using a reference Asian phantom | 1995 | 1997 |
| Limitations of radioepidemiological assessments for stochastic radiation effects in relation to radiation protection | 1994 | 1997 |
| Radiation protection in diagnostic radiology in Asia and the Far East | 1994 | 1997 |
| Radiation protection in diagnostic radiology in eastern European countries | 1993 | 1997 |
| Regional personal dosimetry intercomparison | 1996 | 1998 |
| Intercomparison for individual monitoring of exposure from photon radiation | 1996 | 2000 |
| Intercomparison and biokinetic model validation of radionuclide intake assessment | 1997 | 2000 |
| Accident severity at sea during the transport of radioactive material | 1994 | 1997 |
| Assessment of the safety of uranium hexafluoride (UF ₆) transport packages in fires | 1992 | 1997 |
| Development of relevant accident data for quantifying risks associated with the transport of radioactive material | 1994 | 1997 |
| Development of radiological basis for the transport safety requirements for low specific activity material and surface contaminated objects | 1997 | 2001 |
| Radioactive waste safety | | |
| International programme on Biosphere Modelling and Assessment Methods (BIOMASS) | 1996 | 2000 |
| Improvement of safety assessment methodologies for near surface disposal facilities for radioactive waste (ISAM) | 1997 | 2000 |
| Radionuclide transfer to humans in tropical and subtropical environments | 1993 | 1997 |

TRAINING COURSES, SEMINARS AND WORKSHOPS IN 1997

(with location)

Nuclear power

| | |
|---|--------------------------|
| Interregional course on integrated energy and electricity planning for nuclear power development with emphasis on the ENPEP package | France |
| Regional (RCA) workshop on the WASP-IV computer model | Republic of Korea |
| Regional (West Asia) course on electricity system expansion planning with the WASP model | Syrian Arab Republic |
| National course on electricity and nuclear power planning with emphasis on the WASP model | Armenia |
| National course on electricity and nuclear power planning with emphasis on the WASP model | Saudi Arabia |
| National course on electricity demand forecasting for nuclear power planning (MAED) | Viet Nam |
| Workshop on economic evaluation of the pebble bed modular reactor | South Africa |
| Course on the BIDEVAL-3 software application | Turkey |
| Regional (RCA) workshop on economic and financial aspects of nuclear power programmes | Philippines |
| Regional course on quality assurance in nuclear power operation and maintenance | Finland |
| Regional course on management responsibilities in the training and qualification of nuclear power plant personnel | Germany |
| Workshop on nuclear power policy issues for decision makers | Indonesia |
| Regional workshop on maintenance of nuclear power plant instrumentation and control systems | Republic of Korea |
| National course on nuclear power plants with WWER-1000 type reactors | Islamic Republic of Iran |
| National seminar on systematic approach to training (SAT) principles for nuclear power plant management | Lithuania |
| Interregional course on instrumentation and control of nuclear power plants | Germany |
| Regional course on strengthening nuclear power project management | Spain |
| Regional (RCA) course on planning and implementation of nuclear power projects | Republic of Korea |
| Regional workshop on management of the utility regulatory interface | Romania |
| Regional workshop on outage management | Hungary |
| Regional workshop on basic elements of in-service inspection planning and implementation | Croatia |
| Regional workshop on performance demonstration of UT and ET systems | Croatia |
| Seminar on the role of top management in nuclear power plant personnel training | Armenia |
| Course on systematic approach to training | Armenia |
| Workshop simulation of advanced reactor characteristics | Headquarters |
| Simulation of advanced reactor characteristics | Egypt |
| Regional workshop on spreadsheet methodology for cogeneration/desalination economic evaluation | Morocco |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

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|--|--------------------------|
| Nuclear fuel cycle and waste technology | |
| Regional course on uranium resource inventories and ore resource calculations | China |
| Workshops/course on licensing fuel and fuel modelling codes for WWERs | Bulgaria; Czech Republic |
| National course on quality assurance of nuclear fuels | China |
| Interregional course on technical and administrative preparations required for shipment of research reactor spent fuel to its country of origin | USA |
| Workshops on the planning and management of decommissioning for WWER nuclear power plants | Belgium; Slovakia |
| Regional course on decontamination and decommissioning of research reactors and other small nuclear facilities | Romania |
| Regional workshop on waste inventory; waste characteristics and reference site candidates | China |
| Regional AFRA-1 workshop on developing waste management guidance documents | Zambia |
| Regional course in east Asia and the Pacific on management of low and intermediate level radioactive waste | Malaysia |
| Regional course on management of spent sealed radiation sources | Morocco |
| Comparative assessment of energy sources | |
| Workshop on exchange of experience in enhanced electricity planning incorporating comparative assessment into decision support studies | Brazil |
| National seminar/workshop on nuclear energy status and perspectives | Chile |
| Workshop on enhanced electricity system analysis and planning | USA |
| IAEA/CNNC seminar on 21st century nuclear energy development in China | China |
| National workshop on economic comparison of nuclear and conventional power plants | Viet Nam |
| Food and agriculture | |
| FAO/IAEA regional workshop on the use of nuclear techniques for increasing the efficiency of fertilizer nitrogen, biofertilizers and green manures in Latin America and the Caribbean region | Cuba |
| FAO/IAEA workshop on water balance and 'fertigation' for crop improvement | Cyprus |
| FAO/IAEA group training on water and soil sampling and analytical techniques (for young professional scientists) | Pakistan |
| FAO/IAEA national workshop on the contribution of nuclear techniques to improve the productivity and sustainability of agricultural systems | Argentina |
| FAO/IAEA group training on water and soil sampling and analytical techniques (for technicians) | Pakistan |
| FAO/IAEA regional workshop on the use of nuclear and related techniques for evaluating the agronomic effectiveness of phosphate fertilizers | Argentina |
| FAO/IAEA national course on the use of nuclear techniques in the integrated management of soil resources to increase agricultural productivity and sustainability | Mexico |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

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| FAO/IAEA regional workshop on water and nutrient balance utilizing nuclear techniques | Brazil |
| FAO/IAEA regional seminar for Latin America on nuclear techniques for optimizing the use of nutrients and water for maximizing plant productivity and environmental preservation | Brazil |
| FAO/IAEA regional workshop on water balance and fertigation for crop improvement | Lebanon |
| Group training on nitrogen-15 analytical techniques | Agency's Laboratories, Seibersdorf |
| FAO/IAEA interregional course on advances in technologies for induced mutations in crops | Agency's Laboratories, Seibersdorf |
| Workshop on the use of molecular techniques for mutant selection | Morocco |
| Regional (AFRA) workshop on planning of regional activities on development and evaluation of drought tolerant mutant germplasm of cereals and legumes | Morocco |
| Workshop on Bayoud toxin isolation and use in screening for disease resistance | Morocco |
| Regional (AFRA) course on in vivo and in vitro mutation techniques for improvement of seed propagated crops | Egypt |
| Regional (AFRA) workshop on planning regional activities in improvement and rehabilitation of traditional and neglected food crops through mutation techniques | South Africa |
| FAO/IAEA regional workshop on surveillance needs for the final eradication of rinderpest from Africa | Headquarters |
| FAO/IAEA regional workshop on guidelines for developing feed supplementation packages | Morocco |
| FAO/IAEA regional workshop on production of self-coating radioimmunoassay kits for measuring progesterone in livestock | Tunisia |
| FAO/IAEA regional workshop on support for rinderpest surveillance in west Asia | Jordan |
| FAO/IAEA regional course on the use of enzyme immunoassays in the diagnosis and monitoring of contagious bovine pleuropneumonia | South Africa |
| FAO/IAEA regional workshop on the use and applications of the FAO/IAEA self-coating radioimmunoassay kit and the ARCAL kit for progesterone determination | Mexico |
| FAO/IAEA interregional course on the use of nuclear based techniques for the determination of veterinary drug residues in livestock products | Cyprus |
| FAO/IAEA consultants meeting on approaches to veterinary drug residue testing in developing countries | Headquarters |
| FAO/IAEA national course on basic training on integrated New World Screwworm (NWS) control/eradication with emphasis on the sterile insect technique (SIT) | Jamaica |
| FAO/IAEA bi-national Chile-Peru course on quarantine procedures and treatments in support of the Mediterranean fruit fly eradication campaign in Tacna and Moquegua | Peru |
| FAO/IAEA regional Latin American course on the use of SIT in support of area wide integrated fruit fly control/eradication programmes | Mexico; Guatemala |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

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| FAO/IAEA regional course on the use of SIT and related methods for integrated, area wide fruit fly control/eradication in the Near East and the Mediterranean Basin | Portugal |
| FAO/IAEA regional African course on the use of the SIT in support of integrated area wide methods to combat tsetse and trypanosomiasis | United Republic of Tanzania |
| FAO/IAEA national course on methyl bromide fumigation technology for quarantine treatments against fruit flies | Argentina |
| FAO/IAEA national workshop in conjunction with SENASA on advances in research support for the national fruit fly programme | Argentina |
| FAO/IAEA workshop in conjunction with SENASA on area wide integrated control of fruit flies in the littoral citrus region | Argentina |
| FAO/IAEA/SIDA/OIRSA workshop on analytical quality assurance and control | El Salvador |
| FAO/IAEA/SIDA workshop on analysis of trace elements in food | Sweden |
| FAO/IAEA/SIDA workshop on implementation of quality control and assurance procedures in formulation analysis | Republic of Korea |
| FAO/IAEA/WHO (ICGFI) workshop on food irradiation process control for food inspectors | Canada |
| Human health | |
| National co-ordinators meeting on screening of newborns for thyroid deficiency | Jordan |
| National co-ordinators meeting on consolidated capability for tumour markers | Mauritius |
| Expert workshop on optimization of local production and distribution of primary reagents for radioimmunoassay in developing countries | China |
| Final meeting of national co-ordinators on diagnosis of hepatitis B and C by radioimmunoassay | China |
| Regional course on radioimmunosintigraphy for the detection and management of cancer | Cuba |
| Regional course on tumour marker assays | Morocco |
| First meeting of national co-ordinators on a thematic programme on health care: Radioimmunoassay of tumour markers for the detection and management of cancer | Sri Lanka |
| National course on radioimmunoassay | Ethiopia |
| Regional workshop on personal computer/gamma camera interface | Argentina |
| Regional workshop on preventive maintenance and repairs of gamma camera computer systems | Syrian Arab Republic |
| Regional workshop on preventive maintenance and repairs of gamma cameras | Ghana |
| Regional workshop on preventive maintenance protocols and repairs of gamma camera/computer systems | Colombia |
| Regional course on personal computer/gamma camera interfacing systems and clinical software | Slovenia |
| Regional workshop on upgrading of analog gamma cameras with IBM personal computers and relevant clinical software | Tunisia |
| Third working group meeting on gamma camera users' associations | Peru |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

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| Second meeting of the portable image processing (PIP) software users' group | Peru |
| Regional course on diagnosis of Chagas disease and leishmaniasis | Brazil |
| Regional course on molecular biology techniques and radionuclide tracers in the control of malaria and tuberculosis | South Africa |
| National project co-ordination meeting | Hungary |
| Seminar on the current status of radiotherapy in the world | USA |
| Regional course (RAW) on quality assurance in teletherapy and brachytherapy | Cyprus |
| Workshop (RAS) on delivery of curriculum for tissue bank operators | Austria |
| Workshop (RAS) on the total quality system in producing radiation sterilized tissue grafts in the Asia and Pacific region | Indonesia |
| Regional training course (RAS) on delivery of curriculum and tissue bank operators | Singapore |
| Regional training course (AFRA) on nursing for brachytherapy (English) | Egypt |
| Regional training course (AFRA) on nursing for brachytherapy (French) | Tunisia |
| Regional training course (AFRA) on quality assurance for therapy radiographers | Kenya |
| Workshop on postgraduate education | Pakistan |
| National course on quality assurance in radiation therapy dosimetry | China |
| Regional course on treatment planning and dosimetry in radiotherapy | Tunisia |
| Regional course on dosimetry in radiotherapy | Czech Republic |
| KFDA/IAEA course on dosimetry and quality assurance in radiation processing | Republic of Korea |
| Course on nuclear measurement techniques in environmental research and monitoring | USA |
| Course on methods in instrumental radioactivity monitoring and strontium-90 determination in environmental samples | Agency's Laboratories, Seibersdorf |
| Marine environment, water resources and industry | |
| MEDPOL course on trace metals | Monaco |
| MEDPOL course on chlorinated pesticides and PCBs | Monaco |
| Course for the Black Sea environment programme on the organization of a monitoring programme | Monaco |
| European course on determination of radionuclides in environmental samples | Germany |
| IOC/UNESCO–European Commission/MAST course on the collection and processing of marine geophysical and geological data for Black and Caspian Sea Member States | Russian Federation |
| Course on the use of radiotracers | Costa Rica |
| Regional workshop/co-ordination meeting on use of isotopes in groundwater resources development in arid and semi-arid regions of Africa | Mali |
| Regional group course on isotope geochemistry for exploitation of geothermal energy resources | Philippines |
| Regional workshop/co-ordination meeting on isotope hydrology techniques in water resources management | United Arab Emirates |
| Group fellowship training in isotope hydrology | Headquarters |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

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| Regional workshop on radiation sterilization of medical products | South Africa |
| Regional workshop on training of promoters of radiation processing applications | Tunisia |
| Regional course on radiation vulcanization of natural rubber latex | Indonesia |
| Regional workshop on procedures and modalities for the implementation of ISO codes in radiation sterilization | Ghana |
| Regional course (AFRA) on non-destructive testing techniques in industry | Kenya |
| Regional course (AFRA) for trainers and examiners in non-destructive testing techniques | South Africa |
| Regional workshop (RCA) on nuclear methods in monitoring wear and corrosion in industry | New Zealand |
| Regional workshop (RCA) on tracer technology in oil field studies for secondary and tertiary recoveries | China |
| Regional workshop (RCA) on nucleonic instrumentation | Australia |
| Physical and chemical sciences | |
| National course on energy dispersive X ray fluorescence | Zambia |
| National course on troubleshooting and maintenance of analog equipment | Sudan |
| Regional workshop on local area network installation, troubleshooting and administration | Kenya |
| Regional workshop on power conditioning and earthing systems for nuclear instruments | Zambia |
| National course on nuclear spectrometry and its instrumentation | Mongolia |
| Interregional course on radiation measurements for applications | Thailand |
| Interregional course on nuclear instrument maintenance | Slovenia |
| Regional course on nuclear instrumentation: Application of detectors and systems for nuclear measurements | Islamic Republic of Iran |
| Regional workshop on the design of radioimmunoassay equipment (ARCAL XIX) | Uruguay |
| Regional workshop on repair and maintenance of nuclear instruments with advanced technology (ARCAL XIX) | Brazil |
| Second national course on enhanced liquid scintillation counting | El Salvador |
| National course on nuclear instrument maintenance | Myanmar |
| Regional workshop (AFRA) for reactor operational personnel | Egypt |
| Regional workshop (RAS) on neutron scattering and applications | Indonesia |
| Regional course (AFRA) for reactor instrumentation personnel | Ghana |
| Regional workshop (RAW) on the use of accelerators in the characterization of air particulates | Jordan |
| Regional course on nuclear analytical techniques in water quality monitoring | Thailand |
| Regional course on nuclear analytical techniques in mineral exploration | Nigeria |
| Regional course on the production of monoclonal antibodies for in vitro assays | Cuba |
| Regional course on quality control of radiopharmaceuticals | Japan |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

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| Regional workshop (RCA) on the production, measurement and quality assurance of brachytherapy sources | India |
| Regional workshop (RCA) on the production of therapeutic radiopharmaceuticals | China |
| Training in methods in instrumental radioactivity monitoring and strontium-90 determination in environmental samples | Agency's Laboratories, Seibersdorf |
| Nuclear safety | |
| Interregional course on assessment of operational safety performance of nuclear power plants | USA |
| Interregional course on prevention and management of accidents in nuclear power plants | USA; Canada |
| Interregional course on managing safety aspects of nuclear power plant ageing through effective operation, inspection, monitoring and maintenance | Canada; USA |
| Regional course on regulatory control of nuclear power plants | Czech Republic |
| Regional course (AFRA) on probabilistic safety analysis and accident analysis | South Africa |
| Regional management workshop I: Good operational safety management | Headquarters |
| Regional workshop on a reliability database for probabilistic safety analysis | Slovak Republic |
| Regional workshop on codes and methods of accident analysis | Russian Federation |
| Regional workshop on safety analysis of plant modifications | Slovenia |
| Regional workshop on review of accident analysis for emergency operating procedures | Slovenia |
| Regional workshop for utilities on periodic safety review of nuclear power plants | Czech Republic |
| Regional course on inspection techniques | Slovenia |
| Regional regulatory workshop on periodic safety review of nuclear power plants | Hungary |
| Regional workshop on the review of incidents | Czech Republic |
| Regional workshop on operator training and licensing | Finland |
| Radiation safety | |
| Interregional course on the safe transport of radioactive material | USA |
| Interregional course on planning, preparedness and response for radiological emergencies | USA |
| Regional course on planning, organization and implementation of radiation protection at a national level | South Africa |
| Regional course on radiation protection and safety in medical practices | Uganda |
| Regional basic professional course on radiation protection | Syrian Arab Republic |
| Regional basic professional course on radiation protection | Germany |
| Regional course on radiation protection in medical practices | Poland |
| Post-graduate regional course on radiation protection and nuclear safety | Argentina |
| Regional workshop on harmonization of radiation and waste safety infrastructure | Slovak Republic |
| Regional seminar on regulatory control of radiation sources | Slovak Republic |
| Regional workshop on national regulatory infrastructure for radiation protection and source safety | Cyprus |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

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| Regional workshop on safety in the use, storage and disposal of radiation sources | Croatia |
| Regional seminar on regulatory control of radiation sources | Costa Rica |
| Regional seminar on notification, registration, licensing and control of radiation sources | Ethiopia |
| Regional seminar on upgrading national infrastructure: Radiation and waste safety | China |
| Regional workshop (AFRA) on legislation and regulations for radiation safety | United Republic of Tanzania |
| Regional workshop (AFRA) on regulatory compliance and enforcement of radiation safety | South Africa |
| Regional course (RCA) on biological dosimetry | Japan |
| Regional course (RCA) on recent developments in radiation protection | Japan |
| Regional workshop (RCA) on off-site emergency preparedness | Philippines |
| Regional course on optimization of radiological protection in the design and operation of nuclear power plants | Czech Republic |
| Regional 'train-the-trainers' course on medical education and interregional harmonization programme for nuclear accident preparedness | USA |
| Regional course on medical education and interregional harmonization programme for nuclear accident preparedness — Echo-I | Armenia |
| Regional workshop on IAEA guidance on developing an effective emergency capability and plan for nuclear and radiation accidents | Slovenia |
| Regional course on emergency planning and preparedness | Finland |
| Radioactive waste safety | |
| Interregional course on safety assessment methodologies for near surface radioactive waste disposal facilities | Spain |
| Regional workshop on safety assessment methodology for near surface disposal | Sweden |
| Regional workshop (RCA) on environmental sample analysis | Australia |
| Safeguards | |
| Seminar on nuclear science and technology for diplomats | Headquarters |
| Implementation of IAEA safeguards | Romania |
| Implementation of State Systems of Accounting and Control | USA |
| Security of material | |
| Physical protection of nuclear facilities and materials | Czech Republic; USA; Kazakhstan |
| Detection and response to illicit trafficking at borders (jointly with WCO) | Headquarters |
| Workshop on physical protection and illicit trafficking | Ukraine |

TRAINING COURSES, SEMINARS AND WORKSHOPS (cont.)

Policy making, co-ordination and support

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|--|------------|
| Information seminar on the general structure and legal concepts governing the peaceful uses of nuclear energy for the Commonwealth of Independent States (jointly with OECD/NEA and the European Commission) | Kazakhstan |
| Advanced seminar on the convergence of legislation in central and eastern Europe with the European Union and international law | Croatia |
| Workshop on nuclear liability legislation and insurance (jointly with OECD/NEA) | Latvia |
| Seminar on nuclear information management | Lithuania |
| Course on INIS electronic input and dissemination | Brazil |

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| Nuclear power | |
| Nuclear desalination of sea water | Proceedings Series |
| Nuclear power reactors in the world | Reference Data Series No. 2 |
| Operating experience with nuclear power plants in Member States | Annual publication |
| Energy and nuclear power planning using the IAEA's ENPEP computer package | IAEA-TECDOC-963 |
| Fuel performance and fission product behaviour in gas cooled reactors | IAEA-TECDOC-978 |
| High temperature gas cooled reactor technology development | IAEA-TECDOC-988 |
| Terms for describing new, advanced nuclear power plants | IAEA-TECDOC-936 |
| Status of advanced light water cooled reactor designs 1996 | IAEA-TECDOC-968 |
| Advances in heavy water reactor technology | IAEA-TECDOC-984 |
| Thermophysical properties of materials for water cooled reactors | IAEA-TECDOC-949 |
| Creep-fatigue damage rules for advanced fast reactor design | IAEA-TECDOC-933 |
| Acoustic signal processing for the detection of sodium boiling or sodium-water reaction in LMFRs | IAEA-TECDOC-946 |
| Exergetic cost evaluation of co-production plants for electricity and potable water | IAEA-TECDOC-942 |
| Non-electric applications of nuclear energy | IAEA-TECDOC-923 |
| Design approaches for heating reactors | IAEA-TECDOC-965 |
| Status report on actinide and fission product transmutation studies | IAEA-TECDOC-948 |
| Accelerator driven systems: Energy generation and transmutation of nuclear waste (status report) | IAEA-TECDOC-985 |
| Methodology for the economic evaluation of co-generation/desalination options: A user's manual | Computer Manual Series No. 12 |
| Comparative assessment of energy sources | |
| Energy, electricity and nuclear power estimates for the period up to 2015 | Annual publication |
| Sustainable development and nuclear power | Special publication |
| Nuclear fuel cycle and waste technology | |
| Planning and operation of low level waste disposal facilities | Proceedings Series |
| Design and construction of nuclear power plants to facilitate decommissioning | Technical Reports Series No. 382 |
| Characterization of radioactive waste forms and packages | Technical Reports Series No. 383 |
| Guidebook on destructive examination of water reactor fuel | Technical Reports Series No. 385 |
| Radioactive waste management technology: Status and trends | Special publication |
| Influence of water chemistry on fuel cladding behaviour | IAEA-TECDOC-927 |
| Issues and decisions for nuclear power plant management after fuel damage events | IAEA-TECDOC-935 |
| Further analysis of extended storage of spent fuel | IAEA-TECDOC-944 |
| Recycling of plutonium and uranium in water reactor fuel | IAEA-TECDOC-941 |

PUBLICATIONS (cont.)

| | |
|--|-------------------------------|
| Water reactor fuel element modelling at high burnup and its experimental support | IAEA-TECDOC-957 |
| Changes and events in uranium deposit development, exploration, resources, production and the world supply–demand relationship | IAEA-TECDOC-961 |
| Studies of fuels with low fission gas release | IAEA-TECDOC-970 |
| Environmental impact assessment for uranium mine, mill and in situ leach projects | IAEA-TECDOC-979 |
| Uranium exploration data and techniques applied to the preparation of radioelement maps | IAEA-TECDOC-980 |
| Nuclear fuel cycle and reactor strategies: Adjusting to new realities — Contributed papers | IAEA-TECDOC-990 |
| Treatment technologies for low and intermediate level waste from nuclear applications | IAEA-TECDOC-929 |
| Waste treatment and immobilization technologies involving inorganic sorbents | IAEA-TECDOC-947 |
| Inspection and testing in conditioning of radioactive waste | IAEA-TECDOC-959 |
| Technologies for in situ immobilization and isolation of radioactive wastes at disposal and contaminated sites | IAEA-TECDOC-972 |
| Experience in selection and characterization of sites for geologic disposal of radioactive waste | IAEA-TECDOC-991 |
| Closeout of uranium mines and mills: A review of current practices | IAEA-TECDOC-939 |
| Management of radioactive waste from nuclear applications | Training Courses Series No. 8 |
| Food and agriculture | |
| Environmental behaviour of crop protection chemicals | Proceedings Series |
| Evaluation of genetically altered medflies for use in sterile insect technique programmes | Panel Proceedings Series |
| Control of the Mediterranean fruit fly in the Near East region using the sterile insect technique | Special publication |
| Sewage sludge and wastewater for use in agriculture | IAEA-TECDOC-971 |
| Soils newsletter | |
| Improvement of basic food crops in Africa through plant breeding, including the use of induced mutations | IAEA-TECDOC-951 |
| Mutation breeding newsletter | |
| Application of an immunoassay method to improve the diagnosis and control of African trypanosomosis | IAEA-TECDOC-925 |
| Estimation of rumen microbial protein production from purine derivatives in urine | IAEA-TECDOC-945 |
| Animal production and health newsletter | |
| Insect and pest control newsletter | |
| Irradiation of roots and tubers | IAEA-TECDOC-937 |

PUBLICATIONS (cont.)

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|--|----------------------------------|
| Organochlorine insecticides in African agroecosystems | IAEA-TECDOC-931 |
| Human health | |
| Harmonization of health related environmental measurements using nuclear and isotopic techniques | Proceedings Series |
| The use of plane parallel chambers in high energy electron beams: An international code of practice for dosimetry | Technical Reports Series No. 381 |
| IAEA international code of practice for absorbed dose determination in photon and electron beams, second edition | Technical Reports Series No. 277 |
| Quality assurance in radiotherapy. Proceedings of the IAEA/ISRO meeting | IAEA-TECDOC-989 |
| SSDL newsletter | Nos 35, 36 |
| Marine environment, water resources and industry | |
| Effects of ionizing radiation on blood and components: A survey | IAEA-TECDOC-934 |
| Physical and chemical sciences | |
| CINDA 97: Index to literature and computer files of microscopic neutron data | Annual publication |
| Nuclear research reactors in the world, 11th edition | Reference Data Series No. 3 |
| Bulletin on atomic and molecular data for fusion | Nos 52, 53 |
| Nuclear data newsletter | Nos 23, 24 |
| Index of nuclear data libraries (revision 97) | IAEA-NDS-7 |
| On-line nuclear data services: A user's manual (revision 97) | IAEA-NDS-150 |
| Establishment of an international reference data library of nuclear activation cross sections | INDC(NDS)-361 |
| Atlas of neutron capture cross-sections | INDC(NDS)-362 |
| Summary report of the 1st Research Co-ordination meeting on compilation and evaluation of photonuclear data for applications | INDC(NDS)-364 |
| Status of nuclear data needed for radiation therapy and existing data development activities in Member States | INDC(NDS)-365 |
| Report of the IAEA Nuclear Data Section to the International Nuclear Data Committee for the period 1995/1996 | INDC(NDS)-366 |
| Histogram plots and cut-off energies for nuclear discrete levels | INDC(NDS)-367 |
| Update to Nuclear Data Standards for Nuclear Measurements | INDC(NDS)-368 |
| IAEA consultants meeting on critical assessment of an electron-impact cross-section database for Be and B plasma impurity ions | INDC(NDS)-369 |
| Ninth meeting of the International Fusion Research Council (IFRC) Subcommittee | INDC(NDS)-370 |
| Summary report of the 2nd Research Co-ordination meeting on development of reference charged particle cross-section database for medical radioisotope production | INDC(NDS)-371 |

PUBLICATIONS (cont.)

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|---|-----------------|
| Summary report of the 3rd Research Co-ordination meeting on development of reference input parameter library for nuclear model calculations | INDC(NDS)-372 |
| Extension and improvement of the FENDL library for fusion applications (FENDL-2) | INDC(NDS)-373 |
| Co-ordination of the Nuclear Reaction Data Centres (technical aspects) | INDC(NDS)-374 |
| Sampling, storage and sample preparation procedures for X ray fluorescence analysis of environmental materials | IAEA-TECDOC-950 |
| Research reactor instrumentation and control technology | IAEA-TECDOC-973 |
| Trends and techniques in neutron beam research for medium and low flux research reactors | IAEA-TECDOC-974 |
| Accelerator newsletter | |

Nuclear safety

| | |
|---|-----------------------|
| Reviewing the safety of existing nuclear power plants | Proceeding Series |
| Nuclear safety review | Part D, IAEA Yearbook |
| WWER-1000 steam generator integrity | IAEA-EBP-WWER-07 |
| Guidelines on pressurized thermal shock analysis for WWER nuclear power plants | IAEA-EBP-WWER-08 |
| Procedures for analysis of accidents in shutdown modes for WWER nuclear power plants | IAEA-EBP-WWER-09 |
| Volcanoes and associated topics in relation to nuclear power plant siting | IAEA-PSS-01 |
| Generic component reliability data for research reactor PSA | IAEA-TECDOC-930 |
| Pilot study on the management of ageing of instrumentation and control cables | IAEA-TECDOC-932 |
| Organizational factors influencing human performance in nuclear power plants | IAEA-TECDOC-943 |
| Procedures for self-assessment of operational safety | IAEA-TECDOC-954 |
| Regulatory surveillance of safety related maintenance at nuclear power plants | IAEA-TECDOC-960 |
| Assessment and management of ageing of major nuclear power plant components important to safety: Steam generators | IAEA-TECDOC-981 |
| Implementation of defence in depth for next generation light water reactors | IAEA-TECDOC-986 |

Radiation safety

| | |
|--|----------------------------------|
| Regulations for the safe transport of radioactive material, 1996 edition | Safety Standards Series No. ST-1 |
| Radiation and society: Comprehending radiation risk, Vol. 3 | Proceedings Series |
| National competent authorities responsible for approvals and authorizations in respect of the transport of radioactive material: List No. 28 | IAEA-NCAL-28 |
| Method for the development of emergency response preparedness for nuclear or radiological accidents | IAEA-TECDOC-953 |

PUBLICATIONS (cont.)

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|---|-----------------|
| Generic assessment procedures for determining protective actions during a reactor accident | IAEA-TECDOC-955 |
| Directory of national competent authorities' approval certificates for package design, special form material and shipment of radioactive material, 1997 edition | IAEA-TECDOC-956 |
| Dosimetric and biomedical studies conducted in Cuba of children from areas of the former USSR affected by the radiological consequences of the Chernobyl accident | IAEA-TECDOC-958 |
| One decade after Chernobyl: Summing up the consequences of the accident, poster presentations, Vols 1 and 2 | IAEA-TECDOC-964 |
| Review of events occurring during the transport of radioactive material for the period 1984–1993. A report on the IAEA's EVTRAM database | IAEA-TECDOC-966 |
| Low doses of ionizing radiation: Biological effects and regulatory control — Contributed papers | IAEA-TECDOC-976 |

Safeguards

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|-------------------------------------|---|
| Safeguards techniques and equipment | International Nuclear Verification Series No. 1 |
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Radioactive waste safety

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| Predicted radionuclide release from marine reactors dumped in the Kara Sea | IAEA-TECDOC-938 |
| Regulatory decision making in the presence of uncertainty in the context of the disposal of long lived radioactive wastes | IAEA-TECDOC-975 |

Policy making, co-ordination and support

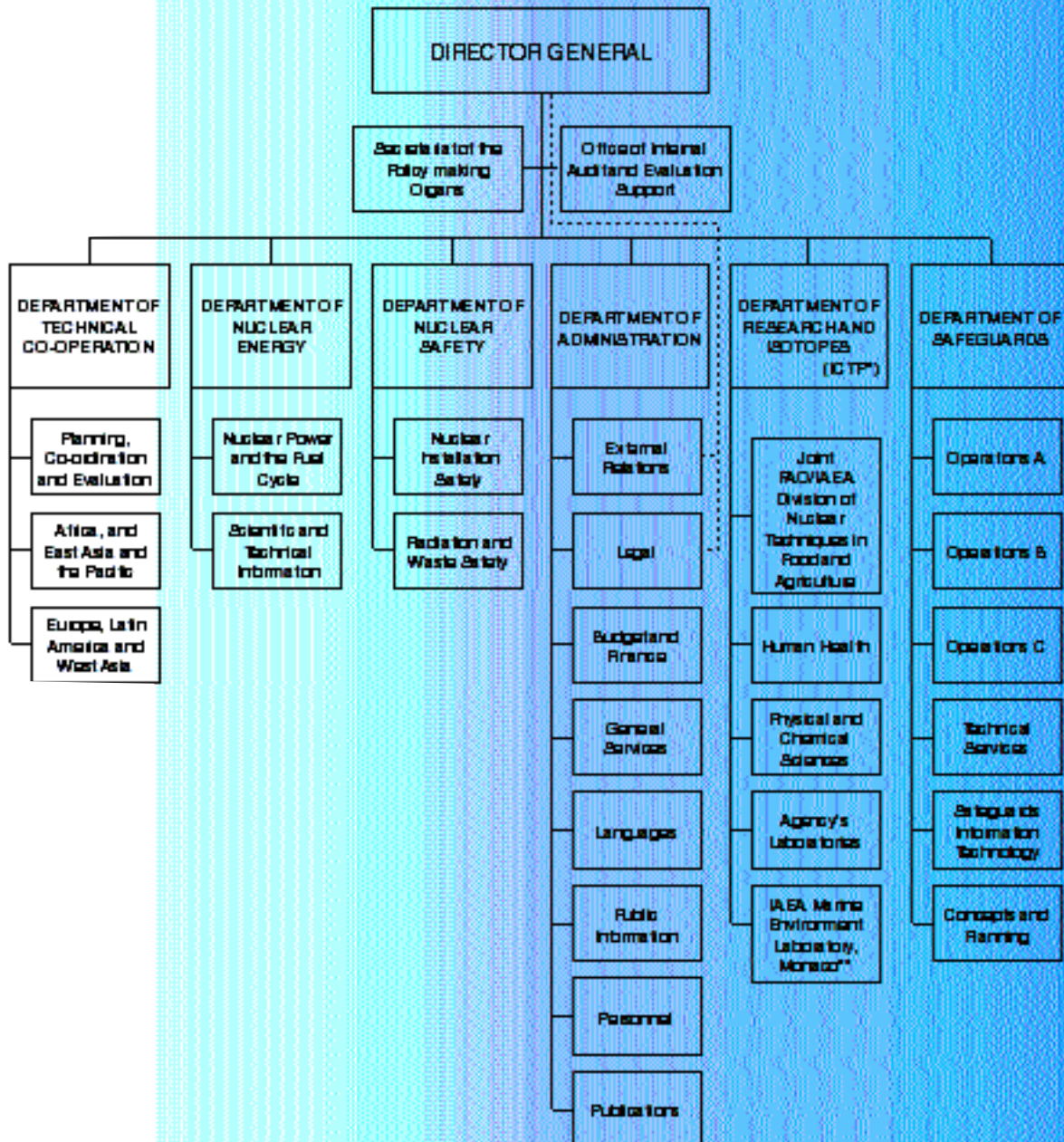
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|---|---------------------|
| IAEA yearbook 1997 | Annual Publication |
| History of the International Atomic Energy Agency: The first forty years (by David Fischer) | Special publication |
| International Atomic Energy Agency: Personal reflections | Special publication |

ABBREVIATIONS

| | |
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| ABACC | Brazilian–Argentine Agency for Accounting and Control of Nuclear Materials |
| AFRA | African Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology |
| ARCAL | Regional Co-operative Arrangements for the Promotion of Nuclear Science and Technology in Latin America |
| BWR | Boiling water reactor |
| CRP | Co-ordinated Research Programme |
| EURATOM | European Atomic Energy Community |
| FAO | Food and Agriculture Organization of the United Nations |
| FORATOM | Forum atomique européen |
| HWR | Heavy water reactor |
| IAEA-MEL | IAEA Marine Environment Laboratory |
| ICTP | International Centre for Theoretical Physics |
| ILO | International Labour Organisation |
| INDC | International Nuclear Data Committee |
| IOC | Intergovernmental Oceanographic Commission (UNESCO) |
| ISO | International Organization for Standardization |
| LWR | Light water reactor |
| NEA | Nuclear Energy Agency of the OECD |
| OECD | Organisation for Economic Co-operation and Development |
| OLADE | Organización Latinoamericana de Energía |
| OPANAL | Organismo para la Proscripción de las Armas Nucleares en América Latina y el Caribe |
| PAHO | Pan American Health Organization/WHO |
| PHWR | Pressurized heavy water reactor |
| PWR | Pressurized water reactor |
| RAF | Regional Africa |
| RAS | Regional East Asia and Pacific |
| RAW | Regional West Asia |
| RBMK | Light boiling water cooled graphite moderated pressure tube reactor (former USSR) |
| RCA | Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology |
| SQ | Significant quantity |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNIDO | United Nations Industrial Development Organization |
| UNSCEAR | United Nations Scientific Committee on the Effects of Atomic Radiation |
| WHO | World Health Organization |
| WWER | Water cooled and moderated energy reactor (former USSR) |

ORGANIZATIONAL CHART

(as of 31 December 1997)



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** With the participation of UNEP and IOC.