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NUCLEAR VERIFICATION AND SECURITY OF MATERIAL

MEASURES AGAINST ILLICIT TRAFFICKING IN NUCLEAR MATERIALS AND OTHER RADIOACTIVE SOURCES

BACKGROUND

1. On 1 October 1999, the General Conference adopted resolution GC(43)/RES/18 on "Measures against illicit trafficking in nuclear materials and other radioactive sources".
2. In that resolution, the General Conference, inter alia,
 - welcomed the activities in the field of prevention, detection and response undertaken by the Secretariat in support of efforts against illicit trafficking, including activities to:
 - improve the international standards for protecting nuclear and other radioactive materials from illegal uses, including the necessary guidelines for detecting and responding to illegal use of these materials,
 - assist Member States to assess and to improve their systems for protection and control of nuclear material and the security of other radioactive material by implementing IAEA standards and recommendations,
 - assist Member States on request to improve border controls of nuclear and other radioactive materials, and
 - provide training to staff in Member States for these purposes;
 - invited the Director General to submit a report to the Board of Governors on progress in the Secretariat's activities and on the possibilities:
 - of further improving the international standards in this area, particularly with regard to the security of radioactive material, and

- of enhancing co-operation and co-ordination with Member States and with other international organizations in preventing, detecting and responding to the illegal use of nuclear and other radioactive materials;
- invited the Director General to develop within available resources a plan describing the future activities to be undertaken in these areas and the time schedule for their implementation;
- requested the Director General to submit a report to the General Conference at its forty-fourth session on activities undertaken by the IAEA in the intervening period; and
- requested the Director General to bring the resolution to the attention of the UN General Assembly and invited the UN General Assembly to bear in mind, in its continued elaboration of an international convention on the suppression of acts of nuclear terrorism, the IAEA's activities in preventing and combating illicit trafficking in nuclear materials and other radioactive materials.

3. Resolution GC(43)/RES/18 was brought to the attention of the UN Secretary-General by means of a letter dated 29 October 1999 from the then Acting Director General of the IAEA.

4. This report summarizes the main activities relevant to the areas covered in resolution GC(43)/RES/18 carried out by the Secretariat in co-operation with Member States and with international organizations and other bodies. It consists of sections on *International legally binding undertakings and IAEA standards*, *Co-operation with Member States* and *Co-operation with international organizations and other bodies* and *Outlook* for the future.

5. The request to develop a plan describing the future activities to be undertaken and the time schedule of their implementation is presently being considered in consultation with experts from Member States. The resulting plan will be presented in a forthcoming report to the Board of Governors.

INTERNATIONAL LEGALLY BINDING UNDERTAKINGS AND IAEA STANDARDS

6. The IAEA continues to be engaged in the preparatory work required for updating international legal instruments and the development of new international standards and norms in this area.

Convention on the Physical Protection of Nuclear Material

7. Pursuant to the recommendation of the Senior Expert Group that "*Consideration should be given to the possible revision of the Convention on the Physical Protection of Nuclear Material to address the issues of prevention of unauthorized possession of nuclear material and access to nuclear facilities*" and in the light of comments made at the March 1999 session of the Board of Governors and additional views submitted to the Secretariat, the Director General convened an Open-Ended Expert Meeting to discuss whether there is a need to revise the Convention on the Physical Protection of Nuclear Material.¹ The meeting was held in Vienna from 15 to 17 November 1999.

8. At the Open-Ended Expert Meeting it was agreed that a more detailed examination of a number of issues related to - inter alia - the problem of illicit trafficking, and specifically any possible

¹ See document GC(43)/13, paras 7 and 8.

implications for physical protection (the IAEA programme for physical protection and bilateral physical protection assistance programmes), was necessary prior to any conclusions being drawn about the need to revise the Convention on the Physical Protection of Nuclear Material. To that end, it was decided to continue the work in a series of Working Group meetings with the participation of the IAEA Secretariat. The Working Group met in February and June 2000 and has two further meetings scheduled, for November 2000 and January 2001.

General Assembly elaboration of an international convention for the suppression of acts of nuclear terrorism

9. The Secretariat was invited to assist the United Nations Ad Hoc Committee on International Terrorism with the elaboration of a draft convention for the suppression of acts of nuclear terrorism.² The Secretariat participated in the 1998 and 1999 meetings of the Ad Hoc Committee within the context of a working group established by the Sixth Committee of the General Assembly, providing information on the IAEA's relevant responsibilities and activities. Consultations in the United Nations continue, and the Secretariat stands ready to assist the United Nations in this effort. The Ad Hoc Committee will meet again from 25 September to 6 October 2000.

Code of Conduct on the Safety and Security of Radioactive Sources

10. The Secretariat, pursuant to a request made by the Board of Governors in March 1999 that it develop an Action Plan for the safety of radiation sources and the security of radioactive materials, convened an Open-ended Meeting of Technical and Legal Experts to undertake exploratory discussions on a possible Code of Conduct on the safety of radiation sources and the security of radioactive materials. A report on these efforts is contained in Attachment 7 to document GOV/2000/34-GC(44)/7.

Technical documents on preventing, detecting and responding to illicit trafficking in radioactive materials

11. The World Customs Organization and the International Criminal Police Organization (Interpol) are contributing to the development of technical guidance for the prevention, detection and response to illicit trafficking in radioactive materials. A review of this work, undertaken in the light of the above-mentioned Action Plan for the safety of radiation sources and the security of radioactive materials, and various recent developments have led to the conclusion that the issues of detection of and response to illicit trafficking would be better covered in detailed technical documents rather than a Safety Guide. Such technical documents are intended primarily for law enforcement and customs officers, rather than the national bodies concerned with the regulation of radiation sources and radioactive materials which would be the recipients of a Safety Guide. In addition, the topic of prevention was considered to be covered in a draft Safety Guide on legal and governmental infrastructure for nuclear, radiation, radioactive waste and transport safety.

² See document GC(43)/13, paras 9 to 14.

CO-OPERATION WITH MEMBER STATES

Information exchange

12. The Secretariat is encouraging Member States to participate in the Illicit Trafficking Database Programme and to report all incidents of illicit trafficking in nuclear materials and other radioactive sources that come to their notice. Sixty-eight Member States are participating in the programme. The Secretariat continues to receive information from points of contact on cases of illicit trafficking that are detected in their countries. The database now contains information on 324 confirmed cases. During the last 12-month period, 51 reports were received. Some of the reported incidents involving nuclear materials deserve close attention - for example, the seizure of 920 grams of highly enriched uranium.

13. In 1999, improved software was developed for the illicit trafficking database. When fully applied, this software will permit the handling of additional and more detailed data, and more efficient data retrieval and analysis. The Secretariat is currently performing a comprehensive review of the data in the database with a view to determining what additional data are needed. The software and the data in the database will be made available to Member States' points of contact upon request. The Illicit Trafficking Database Programme will be reviewed at a meeting with points of contact on 15 to 17 November 2000.

14. An International Conference on "Security of Material - Measures to Detect, Intercept and Respond to the Illicit Uses of Nuclear Material and Radioactive Sources" will be held in Stockholm, Sweden, from 7 to 11 May 2001. This conference will focus on security, particularly the actual and potential illicit uses of nuclear and other radioactive materials and how best to deal with the associated proliferation threat and radiation risks.

15. The Secretariat has initiated efforts to increase bilateral information exchange and general co-operation with States in Central Asia. In December 1999, a regional seminar was held in Kazakhstan for countries of Central Asia plus Armenia, Azerbaijan and Georgia. As a result of the seminar, all States in this region expressed, in a joint statement, their determination to co-operate in combating illicit trafficking and are now participating in the Illicit Trafficking Database Programme.

Legal and regulatory frameworks

16. The IAEA's experience in providing legislative assistance has confirmed that, in order to achieve effective transfer of the knowledge and know-how necessary for implementation of the regulatory process, the concept of legislative assistance should involve: (i) interaction with individual States, entailing a long-term relationship and an ongoing process; (ii) an interface between legal and technical issues, requiring lawyers and technical experts to interact with each other and work jointly; and (iii) a transfer of knowledge through a combination of workshops, training, assistance in legislation drafting, and the development of reference material for the drafting and assessment of national nuclear legislation.

17. In providing legislative assistance to Member States, the Secretariat emphasizes the need to ensure that national legal regimes provide for measures aimed at preventing illicit trafficking in nuclear materials and other radioactive sources. In particular, during 1999,

legislative assistance to two Member States (Lithuania and Peru) was provided by the Secretariat in the context of the International Physical Protection Advisory Service (IPPAS), where assessments and reviews of national legislation governing the physical protection of nuclear materials and facilities are performed.

18. In 1999, within the framework of regional technical co-operation (TC) projects RER/0/015 (“Legislative assistance for the utilization of nuclear energy”) and RAS/9/023 (“Legislation for safe and peaceful nuclear activities”), the Secretariat continued to provide legislative assistance to States of Central and Eastern Europe and Newly Independent States and to States of East Asia and the Pacific region, respectively. In particular, assistance in reviewing draft laws and regulations in the areas of physical protection of nuclear materials and security of other radioactive sources was provided.

Protection of nuclear materials

Physical protection

19. Since 1995, the Secretariat has been organizing, upon request, IPPAS missions for the purpose of reviewing States’ physical protection systems and evaluating whether they meet international standards - and making suggestions for improvement where necessary. So far, eight IPPAS missions have been carried out in Central and Eastern Europe, one in Latin America and one in Africa. Two States have requested IPPAS missions for 2001.

20. A meeting was held in April 2000 to review the experience gained through the IPPAS programme. Representatives of all States which have hosted an IPPAS mission and all IPPAS team leaders participated in the meeting. The value of the IPPAS programme was underlined by the participants, but areas where improvements are necessary were identified. For example, in order that a larger number of IPPAS missions may be performed, more physical protection experts need to be recruited as potential team members and given introductory training by the Secretariat. Also, increased support from the Secretariat is needed for the production of draft IPPAS mission reports, and of final versions incorporating the host governments’ comments, as soon as possible after missions.

21. The participants in the programme review meeting emphasized the need to follow up IPPAS missions with meetings to review the implementation of IPPAS recommendations at an appropriate time after each mission. As requested, the Secretariat will give advice on the possibilities of obtaining assistance from States willing to provide necessary support. After several past IPPAS missions, informal follow-up consultations resulted in bilateral and IAEA assistance.

22. Member States’ experts have expressed the view that all States could benefit from IPPAS missions (for example, when addressing the need to validate State systems of physical protection through periodic management audits), and have suggested that the Secretariat plan for an increased number of such missions.

23. The IPPAS Guidelines³ will be reviewed and amended to reflect document INFCIRC/225/Rev. 4 (Corrected), *The Physical Protection of Nuclear Material and Nuclear Facilities*, and the recommendations made at the IPPAS programme review meeting.

24. Several training courses relating to physical protection have been conducted during the past year. An international training course on the basic elements and design of physical protection systems was conducted in the USA in May 2000. A regional training course on the design of physical protection systems was conducted in China for countries of the South East Asia and Pacific and the Far East regions in June 2000. The participants in these courses gained a basic understanding of the need for physical protection, of the existing international recommendations for physical protection and of the way in which States meet their international obligations in this field. Further courses are to be held in the Russian Federation in 2000 and the Czech Republic in 2001.

25. The Secretariat has organized two workshops in Lithuania to assist in the evaluation of that country's response force capabilities. The first, in November 1999, focused on assessing the time and capabilities needed by an adversary in order to sabotage a nuclear power plant and on developing a strategy to combat weaknesses in physical protection systems. The second, in July 2000, focused on evaluating the changes made to Lithuania's physical protection plan as a result of the first workshop.

26. The latest version of document INFCIRC/225 (INFCIRC/225/Rev.4 (Corrected)) underlines the importance of defining a Design Basis Threat (DBT) when one is addressing the threat of unauthorized removal of nuclear materials and of sabotage of nuclear facilities and materials and its implications for national physical protection systems. At the request of Member States, the Secretariat, together with national experts, has developed a methodology for assisting States in developing their own DBT. Under TC project RER/9/060 ("Physical Protection and Security of Nuclear Material"), the IAEA will hold a regional meeting in October 2000 with government authorities in Europe about the DBT methodology. Upon request from Member States, the Secretariat will organize, under TC project RER/9/060, national workshops or training events to support the implementation of the DBT methodology.

27. Through the fellowships and scientific visits envisaged under TC project RER/9/060, the Secretariat will enable qualified professionals to work with national physical protection organizations. The Secretariat would like to see an increase in the number of awards made for that purpose and will be requesting States to help by offering more opportunities for working with such organizations.

28. In implementing TC project RER/9/060, the Secretariat has consulted with the Member States offering bilateral support in order to ensure proper co-ordination of the support provided. It is expected that, as a result of this multi-disciplinary project, the complex of measures needed to prevent illicit trafficking will be better understood and actually implemented in the recipient Member States. A meeting between representatives of

³ Services Series No. 3, IPPAS Guidelines, Reference Document for the IAEA International Physical Protection Advisory Service, February 1999.

prospective donor and recipient Member States was held in March 1999, and action plans, based on the needs of individual States, have been developed for support through this project.

29. Similarly, TC project RLA/9/034 ("Physical protection of nuclear materials and installations") is designed to provide a basis for physical protection support to Member States in Latin America. A regional training course will be conducted in Argentina in October 2000.

Strengthening States' systems for accounting and control

30. Essential for combating illicit trafficking is an effective State system for accounting and control (SSAC). An effective SSAC not only provides the basis for a State and a facility operator to fulfil obligations in safeguards agreements, but is an important element in support of physical protection and export control systems.

31. The IAEA's Co-ordinated Technical Support Programme (CTSP) for Newly Independent States has been used as a mechanism for co-ordinating bilateral donor State assistance in the establishment and improvement of nuclear material accounting and control systems in those States. The bilateral assistance being provided by donor States for the CTSP includes training courses, workshops and seminars in support of the establishment and implementation of SSACs. Under the CTSP, the Secretariat is planning a series of workshops and seminars which will contribute to a strengthening of the SSACs in Newly Independent States, thereby also helping those States with the implementation of their safeguards agreements and with the conclusion and implementation of additional protocols.

32. The fourth CTSP review meeting took place in November 1999 and was attended by representatives of 14 Newly Independent States and nine donor States. At this meeting, both donor and recipient States emphasized the need for a document which would help them to perform self-assessments of the status of SSACs. The Secretariat distributed to the Newly Independent States a self-assessment document which provides a methodology on the basis of which needs for improvement and further assistance can be identified and addressed.

33. In October 1999 a workshop entitled *Familiarization with IAEA Safeguards Activities and NDA Measurement Techniques* was held in Uzbekistan; it was attended by participants from Uzbekistan and other states of the Central Asia region. In addition to providing technical information, this first workshop held in the region became a forum for discussing common problems and experiences. In June 2000 a similar workshop was held in Belarus for States of Eastern Europe. A further workshop in Uzbekistan is planned for October 2000.

34. To provide assistance in meeting specific needs, a seminar on *Safeguards Implementation at Ukrainian NPPs* was held in September 1999. Staff of Ukrainian nuclear power plants participated in the seminar, which was held at the IAEA's Headquarters, in Vienna, and in the Czech Republic, at the Dukovany Nuclear Power Plant. A follow-up seminar was held in January 2000 in Kiev, Ukraine. The purpose of the seminars was to enhance Ukraine's SSAC by identifying problems and recommending follow-up actions. In July 2000 a workshop was held in Ukraine on *Nuclear Material Accounting and Reporting* to provide hands-on training in the preparation of accountancy reports to the IAEA. Participants from Central and Eastern Europe attended the workshop.

35. An SSAC course was held in Australia in March-April 2000 for Member States of the Far East and the South East Asia and Pacific regions. In addition, the Secretariat provided lecturers for SSAC training courses and workshops held in Japan, in February 2000, for participants from Eastern Europe and Newly Independent States, and in Brazil, in May-June 2000, and Brazil and Argentina, in December 2000, for ABACC (Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials) personnel. In October 1999 a safeguards seminar for government officials from countries in the South East Asia and Pacific and the Far East regions was held in the Republic of Korea. The objective was to present the international obligations for nuclear material control in the context of the nuclear non-proliferation regime. An international training course on the implementation of SSACs will be organized jointly with the Russian Federation during August-September 2000. All these courses provide theoretical and practical training in the design, implementation and operation of SSACs.

36. A TC project on nuclear material control systems has been proposed for 2001-2002 to provide additional support for the establishment and implementation of SSACs in Central and Eastern Europe.

Protection of radioactive materials

37. Since 1997 the Secretariat has been conducting, at the request of Member States, missions for the purpose of analysing the legal and technical requirements involved in ensuring the adequate control of radiation sources, and thereby preventing the illegal and unauthorized use of such sources, and of identifying the associated support needs. In future missions there will be increased emphasis on the problems caused by so-called "orphan" sources. Document GOV/2000/34-GC(44)/7 provides a comprehensive report on the Secretariat's activities to improve the safety of radiation sources and the security of radioactive materials.

38. Through regional TC Model Projects for *Upgrading Radiation Protection Infrastructure* in Europe (RER/9/056), Latin America (RLA/9/030), Africa (RAF/9/024), the East Asia and Pacific region (RAS/9/021) and West Asia (RAW/9/006), the radiation safety infrastructures in 52 Member States are being strengthened in order to comply with the safety standards established by the IAEA for protection against ionizing radiation and for the safety of radiation sources. Under these Model Projects, laws, regulations and procedures aimed at ensuring the adequate control of radiation sources have been adopted in participating countries. Efforts have concentrated on the establishment of national regulatory authorities able to introduce effective systems of notification, authorization, inspection and enforcement and draw up inventories of all relevant radiation sources. They have helped to raise the level of safety of radiation sources, facilitating the location of lost sources and the prevention of illicit trafficking in radioactive materials. In addition, more than 50 regional and sub-regional training courses and workshops organized during the last two years have significantly upgraded the qualifications and expertise of personnel engaged not only in regulatory activities, but also in the prevention of illicit trafficking in nuclear materials and radioactive sources. Radiation monitors and other equipment which can be used for the location and identification of unattended sources have been provided to all Member States participating in these Model Projects.

39. The Secretariat has intensified its co-operation with the Austrian and Hungarian authorities in a joint project on the evaluation of radiation monitoring equipment for use at national borders. The testing of equipment conducted at the Austrian Research Centre, Seibersdorf, has been successfully completed. On the basis of the results, international minimum requirements for border monitoring systems are being formulated. Systems which meet requirements have been installed at the Austrian-Hungarian border and at Vienna Airport for testing.

40. The results of the equipment testing at the Austrian Research Centre have revealed that further improvements in the methodology and technology for the detection of nuclear materials at borders are necessary. Consequently, the Secretariat has proposed a co-ordinated research programme on *Technical Measures to Detect Illicit Trafficking in Nuclear and Other Radioactive Materials*. It is hoped that the co-ordinated research programme will yield results that are directly applicable in technical systems for helping to ensure the security of such materials.

41. The Secretariat has, together with the World Customs Organization (WCO) and Interpol, designed, for customs and other officials, a detection and response training programme consisting of a five-day course on combating illicit trafficking in nuclear and other radioactive materials. Under regional TC project RER/9/060, joint IAEA/WCO/Interpol training courses were held in September 1999 and June 2000. The quality of the training courses benefited from the practical experience gained in the equipment testing conducted at the Austrian Research Centre and at the Austrian-Hungarian border.

42. Further training courses will be held in September 2000 and 2001. In addition, through TC project RER/9/060 the IAEA is supporting training organized by individual Member States at the national level. For example, it has provided support for national training courses in Malta and Hungary organized jointly with the European Union in 1999 and 2000. Similar national courses are to be conducted with IAEA support in Belarus and Ukraine before the end of 2000.

CO-OPERATION WITH INTERNATIONAL ORGANIZATIONS AND OTHER BODIES

43. In order to enhance co-operation with other international organizations which, through their mandates, have an interest in preventing, detecting or responding to illegal cross-border movements of radioactive materials, the Secretariat convenes meetings with such organizations within the framework of the *Inter-Agency Co-ordination Committee on the Illicit Cross-Border Movement of Nuclear Materials and Other Radioactive Sources* which was established in October 1999.⁴ The Committee has agreed that the participating international organizations should further explore the possibilities of sharing the information related to illicit trafficking which is in their databases.

⁴Committee organizations: European Commission, EUROPOL, International Civil Aviation Organization, International Federation of Air Line Pilots Associations, International Maritime Organization, International Union of Railways, Interpol, UN Department for Disarmament Affairs, Universal Postal Union, World Customs Organization.

44. The participating international organizations have expressed interest in contributing to the development of a scale for use in assessing the proliferation and radiation risk implications of individual illicit trafficking incidents. The Secretariat initiated efforts to develop such a scale by convening a consultants meeting in January 2000. The consultants recommended that presently available scales for assessing the immediate impact of radiological accidents for emergency purposes be used for radioactive materials that are not nuclear materials. A measure to relate the proliferation impact of nuclear materials seized in trafficking is presently not available. In general, for seized radioactive materials it would be relevant to use three elements - actual radiological impact, potential radiological impact, and proliferation threat - as descriptive elements of the scale.

45. On the basis of a Memorandum of Understanding signed in May 1998 by the IAEA and the World Customs Organization that provides for increased co-operation in areas such as information exchange and training, joint training and development activities have continued. The annual meeting between the IAEA and the World Customs Organization, to be held in October 2000, will provide an opportunity to measure progress and strengthen co-operation.

46. Co-operation in the field of information exchange could be enhanced through, inter alia, the regular testing of communications between the IAEA and the points of contact established by the States participating in the *Programme for Preventing and Combating Illicit Trafficking in Nuclear Materials* being implemented by the Group of Eight's Non-Proliferation Experts Group (NPEG).⁵ The IAEA is maintaining a list of the points of contact, whose main function in a crisis situation would be to channel necessary information to senior policy-makers in a timely manner.

47. In this connection, it may be noted that the NPEG has established an International Technical Working Group (ITWG) - consisting of experts in detecting and responding to illegal uses of nuclear materials - to advise on methods of characterizing and tracing nuclear materials discovered in the course of efforts to prevent or combat illicit trafficking. The 2000 annual meeting of the ITWG was held, in June 2000, at the IAEA's Headquarters. It was noted during the meeting that the ITWG would be willing to contribute to the relevant IAEA programmes with technical advice and other support.

OUTLOOK

48. The best way of combating illicit trafficking in nuclear materials and other radioactive sources is to ensure effective prevention at the source of the materials. A comprehensive system of prevention - including detection and response - involves maintaining and implementing national legislation and regulations that are in compliance with international obligations and recommendations, and operating systems for nuclear material accounting, the notification and authorization of radioactive sources, the physical protection of nuclear materials, export/import control, law enforcement and border control. These activities - which are essential for effective prevention, detection and response to illicit trafficking - will remain the core of the IAEA's "Security of Material" programme.

⁵The *Programme for Preventing and Combating Illicit Trafficking in Nuclear Materials* was agreed upon by the Group of Eight in 1996, at the Moscow Summit (see document INFCIRC/509), and confirmed in 1997, at the Denver Summit.

49. During the past year, the Secretariat has increased its interaction with States in order to ensure effective systems for the control and protection of nuclear materials, and it will continue to enhance co-operation to this end.

50. The Secretariat is increasing its efforts relating to the safety of other radioactive sources.⁶ These efforts will be complemented by activities that relate to detecting, intercepting and responding to criminal activities (for example, terrorist activities) associated with illicit trafficking.

51. In the ongoing development of a comprehensive plan of activities, as required by resolution GC(43)/RES/18, the Secretariat will consider the proposals made by Member State experts with regard to activities to be performed under the "Security of Material" programme. The development of standards and guides to prevent, detect and respond to illicit trafficking in nuclear and other radioactive materials and providing for their application will be emphasized. The main vehicle for the delivery of expert services and training to Member States will continue to be the TC projects mentioned here and any new TC projects approved for 2001-2002.

52. A Programme Performance Assessment System (PPAS) evaluation of the "Security of Material" programme, to be carried out with the assistance of experts from Member States, was planned for 1999. In view of the efforts referred to above to strengthen the physical protection of nuclear materials and facilities, however, it was decided that it would be more effective to carry out the evaluation early in 2001.

RECOMMENDED ACTION BY THE BOARD

53. It is recommended that the Board take note of this document and authorize the Director General to transmit it to the General Conference for consideration at its forthcoming regular session.

⁶ See document GOV/2000/34-GC(44)/7.