

## Programme M. NUCLEAR SECURITY

**Rationale:** In response to requests by the General Conference and the Board of Governors, and in line with its statutory mandate, the Agency's nuclear security programme provides assistance to States in their efforts to establish the necessary infrastructure to protect nuclear materials as well as other radioactive materials against threats such as illegal possession, use, transfer and trafficking and to protect nuclear installations and transport against sabotage. The programme seeks also to assist Member States in their efforts to detect and respond to such activities should they occur. This programme deals specifically with the prevention, detection and response to malicious acts.

The Board of Governors approved, in principle, a plan of action for activities in the area of nuclear security. The plan was based on an evaluation of the potential threat of malicious acts involving nuclear materials and other radioactive materials, in use, storage or transport. The threat ranges from the theft of nuclear material for weapons purposes to dispersion of radioactive (including nuclear) material to cause radiological damage to persons, property or the environment, including the use of a radioactivity dispersion device (RDD, or a so called "dirty bomb"). The threats also include sabotage to a nuclear facility or transport. The activities include measures for prevention, detection and response as well as engineering safety measures for nuclear installations. In combination, these activities aim at providing a comprehensive approach to nuclear security.

In some countries significant radioactive sources are abandoned, or otherwise fall out of regulatory

control; they are often referred to as being "orphaned". These sources may, if found by terrorists, become used in RDDs. Searching, finding and bringing these sources under control are important activities covered under Programme K.

Presently, there does not exist a comprehensive set of guidelines and recommendations to serve as a benchmark for States in their efforts to improve nuclear security and as the basis for Agency services to assess and evaluate security measures implemented in States. Similarly, assistance and evaluation services are not available to meet the different needs of States. Additionally, the Agency's training programme is incomplete as regards nuclear security.

### *Specific criteria for prioritization:*

- First priority has been given to projects for establishing guidelines and recommendations, servicing conventions, and implementing decisions by the Board of Governors and the General Conference.
- Second priority has been given to projects, which provide for the application of standards and the necessary technology development.
- Third priority has been given to projects, which aim at strengthening the information exchange.

**Nuclear Security Fund:** All the projects of the nuclear security programme and Projects K.6.02, K.7.01, K.7.03, K.8.01, K.8.02, N.2.15 and U.4.03 contain activities that contribute to the Protection Against Nuclear Terrorism (GOV/2002/10) and are to be funded from voluntary contributions to the Nuclear Security Fund (NSF).

M.1.01	Nuclear security co-ordination	427 000
M.1.02	Nuclear security information	303 000
M.2.01	Developing guidelines and recommendations for physical protection	279 000
M.2.02	Developing and improving physical protection approaches	668 000
M.2.03	Nuclear safety engineering for physical protection	500 000
M.2.04	Advisory services for physical protection	578 000
M.2.05	Providing for upgraded and improved physical protection	553 000
M.2.06	Training in physical protection	1 252 000
M.3.01	Guidelines and recommendations for detection and response to malicious acts	544 000
M.3.02	Improved technology and instruments for detection of nuclear and other radioactive material in illicit trafficking	769 000
M.3.03	Securing radioactive materials against terrorism	475 000
M.3.04	Advisory services for detection and response to malicious acts	561 000
M.3.05	Provision of training and technical support for detection and response	1 270 000
N.2.15	State Systems of Accounting for and Control of Nuclear Material (SSAC)	627 000
K.6.02	Strengthening the regulatory control of radiation sources	200 000
K.7.01	Reviewing and revising the international regulations for the safe transport of radioactive material and supporting the development of regulatory guidance	250 000
K.7.03	Appraising national compliance with the international regulations for the safe transport of radioactive material	250 000
K.8.01	Enhancing international requirements and strengthening national planning for preparedness for, and response to, nuclear and radiological emergencies.	850 000
K.8.02	Strengthening and operating the Agency's Emergency Response Centre, including liaising with national competent authorities and relevant international organizations.	700 000
U.4.03	Legal services to Member States	344 000
	<b>Total</b>	<b>11 400 000</b>

**Objective:** To increase Member State awareness and ability to control and protect nuclear and other radioactive materials, nuclear installations and transports, from terrorist and other illegal activities, and to detect and respond to such events and provide engineering safety measures, as necessary.

Outcomes
<ul style="list-style-type: none"> <li>— Improved security of nuclear materials, other radioactive materials, nuclear facilities, locations and transports.</li> <li>— Improved capability of States to detect and respond to malicious acts involving nuclear material, other radioactive material, nuclear facilities, locations or nuclear transports.</li> <li>— Improved capability of States to provide for engineering safety measures in nuclear installations to respond to malicious acts.</li> <li>— Comprehensive and coherent approach to nuclear security reducing the overall risk that malicious acts against nuclear and other radioactive materials in nuclear facilities and transports cause radiological harm to the public, environment or property.</li> </ul>
Performance Indicators
<ul style="list-style-type: none"> <li>— Number of States implementing Agency developed nuclear security related guides and recommendations.</li> <li>— Number of persons trained in Agency sponsored training courses.</li> <li>— Use of Agency nuclear security assessment and evaluation services by Member States.</li> <li>— Increased level of co-operation and co-ordination with Member States and other international organizations.</li> </ul>

**Subprogramme M.1: Nuclear Security Information Management and Co-ordination**

**Rationale:** The effective implementation of the Agency’s activities relevant to nuclear security requires optimal mechanisms for co-ordination, including planning, prioritizing, monitoring and reporting. Co-ordination with other international organizations is required to avoid duplication of efforts and to increase the effective utilization of resources and expertise. The Agency’s interaction with Member States is the foundation for its nuclear security activities, and co-ordination of its activities with bilateral nuclear support programmes is necessary to ensure the efficient use of resources.

Information is key to understanding and combating perceived threats that would involve nuclear and other radioactive materials. Recurring incidents of illicit trafficking in these materials remain a concern. The Agency maintains the Illicit Trafficking Database, to which some 70 States contribute information on a voluntary basis. The compilation, evaluation and analysis of information relative to seizures, theft and other malicious acts involving

nuclear and other radioactive materials in facilities or transport provide the necessary support for directing and prioritizing nuclear security activities. Risks for credible acts of nuclear terrorism, as well as progress in the implementation of measures to improve the protection against nuclear terrorism must be better understood and communicated, as appropriate, to Member States and, the general public.

The Advisory Group on Nuclear Security (AdSec) will continue to play a key role in reviewing the Agency’s ongoing and proposed activities in nuclear security and advising the Director General on measures to strengthen the Agency’s role in this area, as well as helping to set priorities in implementing the various nuclear security activities.

**Objective:**

- To ensure effective and coherent implementation of the Agency’s cross-cutting nuclear security activities, as well as efficient co-ordination with Member States and other international organizations.
- To provide an effective information database on illicit trafficking, theft and other illegal activities involving the use of nuclear and other radioactive materials in nuclear facilities and transports.
- To develop additional information resources with the objective of providing a basis for planning nuclear security activities.

Outcomes
<ul style="list-style-type: none"> <li>— Co-ordination of activities leading to a comprehensive and coherent Agency-wide programme on nuclear security.</li> <li>— Reliable and relevant nuclear security related information.</li> <li>— Improved exchange of information with Member States and other international organizations, including joint activities and efficient use of resources.</li> </ul>
Performance Indicators
<ul style="list-style-type: none"> <li>— Transparent implementation of the activities.</li> <li>— Number of collaborating partners in the Agency and in other organizations and the level of their participation.</li> <li>— Quantity and quality of information and data related to nuclear security provided to the Secretariat, Member States and other organizations.</li> </ul>

**Programme changes and trends:** With significantly increased attention on, and resources available for, activities related to nuclear security after September 2001 and the complex matrix of activities which contribute to a comprehensive approach to nuclear security, there has been a sharp increase in the need for effective internal as well as external co-ordination. There is a significant increase in the requests for updated and complete information on illicit trafficking, theft and threats of acts in which nuclear material and other radioactive material in

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nuclear facilities and transports would be used for malicious purposes. Updating and maintaining the Illicit Trafficking Database will be done in synergy with work performed in project N.2.02, IT application support, using the infrastructure established with funding from NSF.

**Resource changes and trends:** The regular budget resources show increases of \$153 000 for 2004 and 2005 compared with 2003. The credible implementation of a high priority nuclear security programme necessitates an increase to the regular budget, mainly for staff costs. This is essential to support a significant increase in programme delivery, mainly driven by the plan of activities to protect against nuclear terrorism, continuity of knowledge, co-ordination and programme evaluation, and the management of extrabudgetary financial and in-kind contributions.

### Financial resources (2003 prices)

M.1	2003	2004	2005
Reg. budg.	160 000	313 000	313 000

#### **Recurrent project M.1.01: Nuclear security co-ordination**

**Main outputs:** The project will result in: reports on the Agency-wide nuclear security programme; methods for information sharing, and mechanisms for establishing/improving co-ordination with Member States and other international organizations.

**Ranking:** 1 ex aequo

#### **Recurrent project M.1.02: Nuclear security information**

**Main outputs:** The project will result in: up-to-date data bank on thefts, seizures and other malicious acts involving nuclear and other radioactive materials in use, storage or transport, including actual or threatened acts to construct or use nuclear and/or radiological dispersion devices; periodic reports with analysis of cases, trends and materials involved in illicit trafficking and other malicious acts involving nuclear and radioactive materials; a scale to characterize the significance of trafficking incidents; an improved Agency web page on physical protection; and an annual nuclear security report.

**Ranking:** 1 ex aequo

### **Subprogramme M.2: Physical Protection**

**Rationale:** Adequate physical protection of nuclear material and nuclear facilities is an essential element in the first line of defence against possible terrorist acts. Likewise, the physical protection of other radioactive materials, including radiation sources and radioactive waste, requires protection against criminal/terrorist access, use and transfer. While the development of appropriate regulatory systems for

the control of radioactive materials other than nuclear materials is covered within Programme K, this subprogramme concentrates on measures to protect against nuclear terrorism. States and international organizations must address these concerns at both the national and the international levels. The Agency has a central role in promoting and implementing activities that will improve the ability of States to provide adequate nuclear security.

Nuclear installations may be further protected from malevolent acts through the implementation of engineering safety measures.

There is wide recognition that the international physical protection regime, including the Convention on the Physical Protection of Nuclear Material (CPPNM), existing guidelines and recommendations and also their implementation in States, needs strengthening. Also, improved means and measures are needed to provide direct assistance to States in their efforts to establish the necessary regulatory, technical and administrative systems for the protection of nuclear material and nuclear facilities and for the timely detection of theft. These include training, advisory services and other supporting activities.

There is also an increasing recognition of the need to physically secure other radioactive materials against criminal uses, including theft and sabotage, and illegal transfers.

**Objective:** To improve the capacity for States to protect nuclear and other radioactive materials in use, storage or transport, against theft and illicit trafficking, and to protect nuclear installations, locations and transports against sabotage or threats thereof.

Outcome
<ul style="list-style-type: none"><li>— A strengthened international physical protection regime.</li><li>— Improved nuclear security arrangements in States.</li><li>— Improved engineering safety measures for nuclear installations</li></ul>
Performance Indicators
<ul style="list-style-type: none"><li>— Demonstrated improvement in guidelines and recommendations for physical protection and security.</li><li>— Number of Member States using the Agency's advisory services.</li><li>— Number of personnel in Member States well qualified in physical protection.</li><li>— Number of facilities that implemented physical protection and engineering safety upgrades through Agency co-ordination with bilateral support.</li></ul>

**Programme changes and trends:** There is a wide recognition that the physical protection of nuclear material and facilities is fundamental for protecting against nuclear terrorism. There is also an increasing recognition of the potential for other radioactive

materials, including radioactive sources and radioactive waste, to become part of terrorist activities, and therefore require increased protection. The proposed activities are in response to the General Conference request in September 2001 and decisions of Board of Governors taken in March 2002. These are more comprehensive as compared with earlier Agency programmes and broader in scope and include more activities of direct benefit to participating countries, for example assessment services and training. Ongoing efforts to strengthen the CPPNM will contribute to strengthening the international physical protection regime at the international level. Activities to improve control and accountability of nuclear material in States, as identified in the plan of action to protect against nuclear terrorism, are covered in project N.2.15, State Systems of Accounting for and Control of Nuclear Material, funded from the NSF.

**Resource changes and trends:** The regular budget resources show increases of \$35 000 for 2004 and 2005 compared to 2003. The credible implementation of a high priority nuclear security programme necessitates an increase to the regular budget. This is essential to support a significant increase in programme delivery, mainly driven by the plan of activities to protect against nuclear terrorism, continuity of knowledge, co-ordination and programme evaluation, and the management of extrabudgetary financial and in-kind contributions.

#### Financial resources (2003 prices)

M.2	2003	2004	2005
Reg. budg.	372 000	407 000	407 000

#### **Recurrent project M.2.01: Developing guidelines and recommendations for physical protection**

**Main outputs:** This project will result in new and revised guidance documents on physical protection. These will include: guidelines for the protection of nuclear power plants, research reactors and nuclear fuel cycle facilities, installations and locations against sabotage; guidelines on establishing and maintaining a national regulatory system for physical protection; specific guidelines for the physical protection of nuclear and other radioactive material in transport and in non-nuclear use; a fifth edition of INFCIRC/225 taking into account progress in the revision of the CPPNM; and specific guidance for the timely detection of theft. Guides on improved protection against the criminal use and transfer of other radioactive materials will be issued.

*Ranking:* 1 ex aequo

#### **Project M.2.02: Developing and improving physical protection approaches**

**Main outputs:** Methodology to address information technology based threat to nuclear facilities and materials; methodology to address the design basis threat for and the physical protection at a nuclear

installation or location with a mix of different nuclear and radioactive materials and activities; methodology to address threat to waste treatment and storage areas and other nuclear facilities and locations vulnerable to sabotage; methodologies to describe adequate physical protection at research facilities with multiple purposes, as well as of the transport of nuclear and other radioactive material. Approaches will be developed to address the insider threat, the malicious use of information technology of relevance for nuclear security, and to achieve a high level of security culture.

*Duration:* 2004–2005

*Ranking:* 13

#### **Recurrent project M.2.03: Nuclear safety engineering for physical protection**

**Main outputs:** A technical document will be produced on the methodology to identify and address vulnerabilities of nuclear fuel cycle facilities and other locations to sabotage threats. Guidelines for self-assessment of vulnerabilities of nuclear installations and for the security of the information and communication technology infrastructure will be issued.

*Ranking:* 1 ex aequo

#### **Recurrent project M.2.04: Advisory services for physical protection**

**Main outputs:** This project will result in: an expanded range of IPPAS modules for the physical protection evaluation and assessment services at State and facility levels; guidelines for each IPPAS module; IPPAS missions, conducted upon request and Design Basis Threat (DBT) workshops and meetings.

*Ranking:* 1 ex aequo

#### **Recurrent project M.2.05: Providing for upgraded and improved physical protection**

**Main outputs:** This project will result in: improved technical, administrative and regulatory physical protection systems, including follow-up to IPPAS mission recommendations; effective mechanisms to co-ordinate and co-operate with Member States having funds available for bilateral support to upgrade physical protection systems; increased overall resources to support the improvement of physical protection.

*Ranking:* 1 ex aequo

#### **Recurrent project M.2.06: Training in physical protection**

**Main outputs:** The main outputs will include: a comprehensive training programme, at the international, regional and national levels, meeting the requirements for different categories of staff, policy and decision makers and covering technical as

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well as regulatory aspects; a curriculum for new training courses on specific physical protection topics and an undergraduate/graduate curriculum in nuclear security, leading to the availability of well trained legal and technical experts for participation in IPPAS missions.

*Ranking:* 1 ex aequo

**Subprogramme M.3: Detection of and Response to Malicious Activities involving Nuclear and other Radioactive Materials**

**Rationale:** The theft, the threat of theft, or fraudulent possession and transfer of, as well as illicit trafficking in, nuclear and other radioactive material are matters of international concern, in particular with regard to proliferation. If preventive measures fail, States need to have measures in place to detect such incidents. Continued reports of nuclear trafficking incidents indicate a need to monitor borders to detect illicit trafficking in nuclear and other radioactive material and to improve the technology available for detection. Staff in law enforcement organizations need to be well trained to understand the problems and to use detection instruments. States would benefit from an international service to help them assess existing detection systems and techniques.

Radioactive radiation sources that are abandoned or lost (orphaned), could be used for terrorist activities. Efforts to recover and secure such sources are covered by Subprogramme K.6.

There are insufficient internationally accepted guidelines and recommendations available to States for detecting and responding to unlawful events in this regard. In addition there is no Agency service to assist States in assessing their detection and response capabilities.

**Objective:** To enhance the capabilities of States to detect, interdict and respond to incidents of theft, fraudulent possession, illicit nuclear trafficking, sabotage or threats thereof.

Outcomes
<ul style="list-style-type: none"> <li>— Increased probability of detecting malicious activities involving nuclear and other radioactive materials.</li> <li>— Improved State capability to respond to the seizure of nuclear and other radioactive material by law enforcement authorities and also to sabotage and threats thereof.</li> </ul>
Performance Indicators
<ul style="list-style-type: none"> <li>— Number of countries in which border monitoring is implemented and new procedures are in place as a result of Agency assistance.</li> </ul>

Performance Indicators (cont'd)
<ul style="list-style-type: none"> <li>— Number of countries implementing procedures to respond to malicious acts involving nuclear and other radioactive materials.</li> </ul>

**Programme changes and trends:** There will be a continued focus on the development of standards and guidance as well as a strong emphasis on assisting States in their implementation of consensus guidance and the installation of detection equipment. The promotion of development of technology and instruments for border monitoring will be done in synergy with work performed in project N.2.01, Instrument development and field support, using the available infrastructure, but funded from the NSF.

**Resource changes and trends:** The regular budget resources show increases of \$91 000 for 2004 and 2005 compared with 2003. The credible implementation of a high priority nuclear security programme necessitates an increase to the regular budget, mainly for staff costs. This is essential to support a significant increase in programme delivery, mainly driven by the plan of activities to protect against nuclear terrorism, continuity of knowledge, co-ordination and programme evaluation, and the management of extrabudgetary financial and in-kind contributions.

**Financial resources (2003 prices)**

M.3	2003	2004	2005
Reg. budg.	521 000	612 000	612 000

**Project M.3.01: Guidelines and recommendations for detection and response to malicious acts**

**Main outputs:** This project will result in: guidelines on detection at borders and elsewhere; recommendations on capabilities needed locally, nationally or at a region level to identify and characterize material seized in illicit trafficking, theft or other fraudulent possession; guidelines on response to illicit trafficking, theft or other fraudulent possession, sabotage or threat thereof.

*Duration:* 2004–2005

*Ranking:* 1 ex aequo

**Project M.3.02: Improved technology and instruments for detection of nuclear and other radioactive material in illicit trafficking**

**Main outputs:** This project will result in: improved techniques to detect illicit nuclear trafficking; reliable, user friendly and sensitive detection instruments for law enforcement officers; information gained from States and through the implementation of a pilot “Model Crossing Point”; guidelines to evaluate national laboratory capabilities to perform advanced analysis of nuclear and other radioactive materials seized in trafficking; information on current capabilities in nuclear and radioactive forensic analysis.

*Duration:* 2004–2005

*Ranking:* 1 ex aequo

***Recurrent project M.3.03: Securing radioactive materials against terrorism***

*Main outputs:* Criteria for evaluating where and how to physically protect radioactive materials that could be used for radiological terrorism will be developed and made available, based upon an evaluation of the threat. Guidelines for the protection of radioactive materials other than nuclear materials, including radioactive sources and waste, against malicious acts will be developed. Appraisal service available to States for assessing the security requirements of significant radiation sources will be established.

*Ranking:* 1 ex aequo

***Recurrent project M.3.04: Advisory services for detection and response to malicious acts***

*Main outputs:* This project will result in: guidelines for an evaluation service to be used upon request by

Member States for the evaluation of their security arrangements for significant radioactive sources, and arrangements to detect and respond to illicit trafficking, other fraudulent possession or malicious acts involving nuclear and other radioactive materials. Up to six missions will be carried out per year to assess security arrangements for significant sources and to evaluate national detection and response capabilities.

*Ranking:* 1 ex aequo

***Recurrent project M.3.05: Provision of training and technical support for detection and response***

*Main outputs:* This project will result in a comprehensive training programme for responsible national authorities and law enforcement staff; a set of training curricula for international, regional and national audiences; one international, two regional and two to four national training courses or workshops; one train-the-trainer course; and evaluation of the effectiveness of the training offered.

*Ranking:* 1 ex aequo