

Nuclear Security Glossary

Revision 3E
Draft 17 March 2010

FOREWORD

[TO BE PROVIDED BY THE SECRETARIAT AT A LATER TIME]

DRAFT

Introduction

The *Nuclear Security Glossary* contains the definition of terms used in the Nuclear Security Series of documents. The *Glossary* is designed to be a dynamic document that will expand as the Nuclear Security Series expands.

The initial version (Version 1) of the *Glossary* contained the definitions used in the document *Nuclear Security Fundamentals (Objective and Essential Elements of Nuclear Security)*, the top-tier document in the Nuclear Security Series. This version (Version 2) of the *Glossary* contains the definitions used in the Fundamentals document as well as those used in the Nuclear Materials (NM)/225¹ and Radioactive Materials (RM) recommendations-level documents.

Version 1 was specifically prepared to accompany *Nuclear Security Fundamentals* at the Technical Meeting to be held in November 2009. As planned, Version 2 is prepared for the NM/225 and RM second-tier recommendations-level documents as they proceed to their various Technical Meetings in February 2010. A subsequent version of the *Glossary* will be prepared to incorporate the definitions used in the Detection and Response recommendations-level documents for its TM in March 2010. Finally, a longer-term project will incorporate and harmonize the definitions in the present and future Nuclear Security Guides into the *Glossary*.

Version 2 incorporates some proposed revisions to the definitions found in Version 1. In addition, some of the definitions in Version 2 have multiple entries that may apply to only specific documents. For example, the definition of *nuclear material* has a different definition when used in the NM/225 and RM documents. When such multiple definitions occur, the defined term is underlined to show the reader that there are multiple definitions and the scope of usage the definition is set out beneath the definition and/or in the text of the definition.

Insofar as possible an effort has been made to be consistent whenever possible with the *Safety Glossary* and with the *Safeguards Glossary*, but readers are strictly cautioned that there may be significant differences in the definitions among the various glossaries and that the definitions in the *Nuclear Security Glossary* should not be used outside the field of *nuclear security*.

Structure

The definitions of the terms in the *Nuclear Security Glossary* are arranged alphabetically. Where two defined terms have the same meaning, one entry reads, "See [other entry]." Where the definition of a term is included as a sub-definition of another defined term, the entry will read, "See the definition of [other entry]."

Where examples have been added to some of the definitions of terms in order to assist the reader, the examples are in no way intended to be exhaustive or to limit the definition to the examples.

¹ Please note that for historical reasons the definitions used in the NM/225 document appear in the document itself and also appear in this *Glossary*.

Definitions

Access delay	<p>The element of a <i>physical protection system</i> designed to increase adversary penetration time for entry into and/or exit from the <i>nuclear facility</i> or <i>transport</i>. <i>Access delay</i> can be accomplished by <i>physical barriers</i>, activated delays, and/or personnel.</p>
Associated activity	<p>The possession, production, processing, use, storage, handling, disposal or transport of <i>nuclear material</i> or <i>other radioactive material</i>.</p>
Associated facility	<p>A <i>nuclear facility</i> or <i>radioactive material facility</i>.</p>
Authorization	<p>The granting by a <i>competent authority</i> of written permission for operation of an <i>associated facility</i> or carrying out an <i>associated activity</i>.</p>
Authorized person	<p>A natural or legal person that has been granted an <i>authorization</i>. An <i>authorized person</i> is often referred to as a "licensee," or "operator."</p>
Border crossing point	<p>A designated border crossing point is a place on the border between two States where travellers and/or goods are inspected and that is officially designated by the State. Often Customs and immigration facilities are provided at land border crossing points, seaports, international airports and other ports of entry.</p> <p>An undesignated border crossing points is any air, land and water crossing point that is not officially designated for travellers and/or goods by the State such as green borders, sea shores and local airports.</p>
Central alarm station	<p>An installation which provides for the complete and continuous alarm monitoring, assessment and communication with <i>guards</i>, facility management and <i>response forces</i>.</p>

<p>Competent authority</p>	<p>A governmental organization or institution that has been designated by a State to carry out one or more <i>nuclear security</i> functions.</p> <p>Example: <i>Competent authorities</i> include <i>regulatory bodies</i>, law enforcement, customs and border control, intelligence and security agencies, health agencies, etc.</p>
<p>Contingency plan</p>	<p>A predefined set of actions for responses to unauthorized acts indicative of attempted <i>unauthorized removal</i> or <i>sabotage</i>, including <i>threats</i> thereof, designed to effectively counter such acts.</p>
<p>Criminal Act</p>	<p>Conduct constituting criminal offences under domestic legislation.</p>
<p>Defense-in-depth</p>	<p>The combination of multiple layers of systems and measures that have to be overcome or circumvented before <i>nuclear security</i> is compromised.</p> <p>In the NM/225 document the term <i>nuclear security</i> is replaced by <i>physical protection</i>.</p>
<p>Design basis threat</p>	<p>The attributes and characteristics of potential <i>insider</i> and/or external adversaries, who might attempt <i>unauthorized removal</i> of <i>nuclear material</i> or <i>sabotage</i>, against which a <i>physical protection system</i> is designed and evaluated.</p>
<p>Detection</p>	<p>Awareness of <i>malicious act[s]</i> or <i>potential malicious act[s]</i> or measurement[s] indicating the unauthorized presence of <i>nuclear material</i>, or other <i>radioactive material</i> at an <i>associated facility</i> or an <i>associated activity</i> or a <i>strategic location</i>.</p>
<p>Detection (NM/225 and RM)</p>	<p>A process in a <i>physical protection system</i> that begins with sensing a potentially malicious or otherwise unauthorized act and that is completed with the assessment of the cause of the alarm.</p>
<p>Detection measure</p>	<p>Measures intended to detect a criminal or an <i>unauthorized act</i> with <i>nuclear security</i> implication.</p>

Detection system	Integrated set of <i>detection measures</i> including capabilities and resources necessary for <i>detection</i> of a <i>criminal act</i> or an <i>unauthorized act</i> with <i>nuclear security</i> implications.
Force-on-force exercise	A <i>performance test</i> of the <i>physical protection system</i> that uses designated personnel in the role of an adversary force to simulate an attack consistent with the <i>threat</i> or the <i>design basis threat</i> .
<u>Graded approach</u>	The application of <i>nuclear security measures</i> proportional to the potential consequences of a <i>malicious act</i> . In the NM/225 document the term <i>nuclear security</i> is replaced by <i>physical protection</i> .
Guard	A person who is entrusted with responsibility for patrolling, monitoring, assessing, escorting individuals or <i>transport</i> , controlling access and/or providing initial response.
Information alert	Time sensitive reporting that could indicate a <i>nuclear security</i> event, requiring assessment, and may come from a variety of sources, including operational information, medical surveillance, accounting and consigner/consignee discrepancies, border monitoring, etc.
Inner area	An area with additional protection measures inside a <i>protected area</i> , where Category I <i>nuclear material</i> is used and/or stored.
<u>Insider</u>	One or more individuals with authorized access to <i>associated facilities</i> or <i>associated activities</i> or to <i>sensitive information</i> or <i>sensitive information assets</i> , or one or more individuals with <i>nuclear security</i> responsibilities who could commit a <i>malicious act</i> or who could aid an external <i>threat</i> to do so.
<u>Insider (NM/225)</u>	One or more individual with authorized access to <i>nuclear facilities</i> or <i>nuclear material</i> in <i>transport</i> who could attempt <i>unauthorized removal</i> or <i>sabotage</i> , or who could aid an external adversary to do so.

<p>Instrument alarm</p>	<p>Signal from instruments that could indicate a nuclear security event, requiring assessment.</p> <p>An <i>instrument alarm</i> may come from devices that are portable or deployed at fixed locations and operated to augment normal commerce protocols and/or in a law enforcement operation.</p>
<p>Limited access area</p>	<p>Designated area containing a <i>nuclear facility</i> and <i>nuclear material</i> to which access is limited and controlled for physical protection purposes.</p>
<p>Major Public Event:</p>	<p>A high-profile event that a State has determined to be a potential <i>target</i>.</p>
<p><u>Malicious act</u></p>	<p>A wrongful act intentionally done or engaged in without legal justification or excuse or an act intended or known to be likely to cause death or serious injury to any person, material damage to any person or damage to property or to the environment. (GOV/2002/10, Protection against Nuclear Terrorism: Specific Proposals, 5 February 2002)</p> <p>A <i>potential malicious act</i> is an act that has potential <i>nuclear security</i> implications, but for which a determination has yet to be made that the actions are, in fact, a <i>malicious act</i>.</p> <p>Example: An incident in which a valid detection of an unauthorized shipment of <i>radioactive material</i> in an inbound truck at a border monitoring station is a <i>potential malicious act</i> from the <i>nuclear security</i> viewpoint until the <i>radioactive material</i> is identified and a determination has been made that the incident is, or is not, a component of a <i>malicious act</i>.</p>
<p><u>Malicious act</u> <u>NM/225 and RM</u></p>	<p>An act or attempt of <i>unauthorized removal of nuclear material or sabotage</i>.</p> <p>In the RM document the phrase <i>nuclear material</i> is replaced by <i>radioactive material</i>.</p>
<p>Not under control</p>	<p>When required controls or regulations are either absent or not being properly complied with for any reason, the affected <i>nuclear material</i> or <i>other radioactive material</i> is <i>not under control</i>.</p>

<p>Nuclear facility</p>	<p>A facility (including associated buildings and equipment) in which <i>nuclear material</i> is produced, processed, used, handled, stored or disposed of and for which a specific license is required.</p>
<p><u>Nuclear material</u></p>	<p><i>Nuclear material</i> is defined to be any material that is either <i>special fissionable material</i> or <i>source material</i> as defined in the IAEA Statute, Article XX.</p> <p>The term "special fissionable material" means plutonium-239; uranium- 233; uranium enriched in the isotopes 235 or 233; any material containing one or more of the foregoing; and such other fissionable material as the Board of Governors shall from time to time determine; but the term "special fissionable material" does not include source material.</p> <p>The term "uranium enriched in the isotopes 235 or 233" means uranium containing the isotopes 235 or 233 or both in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature. [IAEA Statute, Article XX]</p> <p>The term "source material" means uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope 235; thorium; any of the foregoing in the form of metal, alloy, chemical compound, or concentrate; any other material containing one or more of the foregoing in such concentration as the Board of Governors shall from time to time determine; and such other material as the Board of Governors shall from time to time determine. [IAEA Statute, Article XX]</p> <p>According to para 112 of INFCIRC/153, "the term source material shall not be interpreted as applying to ore or ore residue."</p>
<p><u>Nuclear material</u> (NM/225 and RM)</p>	<p>Material listed in the "Table: categorization of <i>Nuclear Material</i>" contained in Chapter 5, including the material listed in its footnotes.</p>
<p><u>Nuclear security</u></p>	<p>The prevention and detection of and response to, theft, <i>sabotage</i>, unauthorized access, illegal transfer or other <i>malicious acts</i> involving <i>nuclear material</i>, <i>other radioactive substances</i> or their <i>associated facilities</i>. (IAEA GOV/2005/50)</p>

Nuclear security culture	The assembly of characteristics, attitudes and behaviors of individuals, organization and institutions which serves as a sustainable means to support and enhance <i>nuclear security</i> .
Nuclear security event	An event that is assessed (evaluated) as having implications for <i>nuclear security</i> . In the NM/225 document the term <i>nuclear security</i> is replaced by <i>physical protection</i> .
Nuclear security regime	The <i>nuclear security regime</i> comprises: <ul style="list-style-type: none"> • the legislative and regulatory framework and administrative systems and measures governing the <i>nuclear security</i> of <i>nuclear material, other radioactive material, associated facilities, and associated activities</i>, • the institutions and organizations within the State responsible for ensuring the implementation of the legislative and regulatory framework and administrative systems of <i>nuclear security</i>; and • <i>nuclear security systems</i> and <i>nuclear security measures</i> at the facility level, transport level and activity level for <i>detection of, and response to, nuclear security events</i>. The <i>nuclear security regime</i> is composed of <i>nuclear security systems</i> . The <i>nuclear security systems</i> are made up from various <i>nuclear security measures</i> .
Nuclear security measures	Measures intended to prevent a <i>nuclear security threat</i> from completing a <i>malicious act</i> or to <i>detect</i> or <i>respond</i> to <i>nuclear security events</i> . In the RM document the phrase “ <i>nuclear security threat</i> ” is replaced by “ <i>threat</i> .”
Nuclear Security System	An integrated set of <i>nuclear security measures</i> .
Nuclear security threat	A person or group of persons with motivation, intention and capability to commit a <i>malicious act</i> .
Operator	Any person, organization, or government entity licensed or <i>authorized</i> to undertake the operation of an <i>associated facility</i> . In the NM/225 document the term <i>associated facility</i> is replaced by <i>nuclear facility</i> .

Other radioactive material	Any <i>radioactive material</i> that is not <i>nuclear material</i> .
Other radioactive substance	See <i>other radioactive material</i> .
Performance testing	Testing of the <i>physical protection system</i> element(s) and the total system to determine whether or not they are implemented as designed; adequate for the proposed natural, industrial and threat environments; and in compliance with established performance requirements.
Physical barrier	A fence or wall or a similar impediment which provides penetration delay and complements access control.
Physical protection measures	The personnel, procedures, and equipment that constitute a <i>physical protection system</i> .
Physical protection regime	A State's regime including: <ul style="list-style-type: none"> • the legislative and regulatory framework governing the physical protection of <i>nuclear material</i> and <i>nuclear facilities</i>; • the institutions and organizations within the State responsible for ensuring the implementation of the legislative and regulatory framework; and <i>facility-level and activity-level physical protection systems</i> .
Physical protection system	An integrated set of <i>physical protection measures</i> intended to prevent the completion of a <i>malicious act</i> .
Potential malicious act	See the definition of <i>malicious act</i> .
Protected area	Area inside a <i>limited access area</i> containing Category I or II <i>nuclear material</i> and/or <i>sabotage</i> targets surrounded by a <i>physical barrier</i> with additional <i>physical protection measures</i> .
Radiation	<i>Radiation</i> refers only to ionizing radiation, which is <i>radiation</i> capable of producing ion pairs in biological material(s).

Radiation search	The set of activities to detect, and identify suspicious nuclear or other <i>radioactive material</i> out of <i>regulatory control</i> and to determine its location.
Radiation survey	Activities to map the <i>radiation</i> background of natural and man-made <i>radioactive material</i> in an area or to facilitate later search activities.
Radioactive material	<p><i>Radioactive material</i> is any material designated in national law, regulation, or by a <i>regulatory body</i> as being subject to <i>regulatory control</i> because of its <i>radioactivity</i>.</p> <p>In the absence of such a designation by a State, <i>radioactive material</i> is any material for which protection is required by the IAEA publication “International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources,” Safety Series No. 115, current revision which defines radionuclide specific thresholds.</p> <p><i>Radioactive source</i> is a specific use of <i>radioactive material</i> that is defined by how the <i>radioactive material</i> is contained.</p> <p><i>Radioactive material</i> includes sealed and unsealed <i>radioactive material</i> and radioactive waste.</p> <p><i>Radioactivity</i> is the phenomenon whereby atoms undergo spontaneous random disintegration, usually accompanied by the emission of <i>radiation</i>.</p> <p><i>Radiation</i> refers only to ionizing radiation, which is <i>radiation</i> capable of producing ion pairs in biological material(s).</p> <p><i>Radioactive substance</i> and <i>radioactive material</i> have the same meaning. Similarly, the terms <i>other radioactive substance</i> and <i>other radioactive material</i> have the same meaning.</p>
Radioactive material facility	A facility (including associated buildings and equipment) in which <i>other radioactive material</i> is produced, processed, used, handled, stored or disposed of.
Radioactive source	<i>Radioactive material</i> that is permanently sealed in a capsule or closely bonded, in a solid form and which is not exempt from <i>regulatory control</i> . It also means any <i>radioactive material</i> released if the <i>radioactive source</i> is leaking or broken, but does not mean material encapsulated for disposal, or <i>nuclear material</i> within the nuclear fuel cycles of research and power reactors.

Radioactive substance	See <i>radioactive material</i> .
Radioactivity	The phenomenon whereby atoms undergo spontaneous random disintegration, usually accompanied by the emission of <i>radiation</i> .
Regulatory authority	See <i>regulatory body</i> .
Regulatory body	One or more authorities designated by the government of a State as having legal authority for conducting the regulatory process, including issuing <i>authorizations</i> , and thereby regulating nuclear, radiation, radioactive waste and transport safety.
Regulatory control	Any form of institutional control applied to <i>nuclear material</i> or other <i>radioactive material</i> , <i>associated facilities</i> , or <i>associated activities</i> by any <i>competent authority</i> as required by the legislative and regulatory provisions related to safety, security, and safeguards.
Response	All of the activities by a State or by an <i>operator</i> that involve the assessing and responding to a <i>nuclear security event</i> .
Response forces	Persons, on-site or off-site, who are armed and appropriately equipped and trained to counter an attempted <i>unauthorized removal of nuclear material</i> or an act of <i>sabotage</i> .
Response measure	Measure intended to assess alarm/alert and to respond to a <i>nuclear security event</i> .
Response system	Integrated set of <i>response measures</i> including capabilities and resources necessary for assessing the alarms/alerts and <i>response</i> to a <i>nuclear security event</i> .

<p>Sabotage</p>	<p>Any deliberate act directed against an <i>associated facility</i> or an <i>associated activity</i> that could directly or indirectly endanger the health and safety of personnel, the public, or the environment by exposure to <i>radiation</i> or release of <i>radioactive substances</i>.</p> <p>In the NM/225 document the phrase “ an <i>associated facility</i> or an <i>associated activity</i>” is replaced by “a <i>nuclear facility</i> or <i>nuclear material</i> or <i>transport</i>.”</p>
<p>Security plan</p>	<p>An approved document between the appropriate <i>competent authority</i> and <i>operator</i> and/or carrier regarding what <i>physical protection measures</i> must be present for <i>nuclear facility</i> or <i>transport</i> operations to be approved. A <i>security plan</i> includes sections dealing with design, evaluation, implementation, maintenance of the <i>physical protection system</i>, and with emergency management for response to <i>malicious acts</i>.</p>
<p>Sensitive information</p>	<p>Information, in whatever form, including software, the unauthorized disclosure, modification, alteration, destruction, or denial of use of which could compromise <i>nuclear security</i>.</p>
<p>Sensitive information assets</p>	<p>All equipment or components that are used to store, process, control or transmit <i>sensitive information</i>.</p> <p>Example: <i>Sensitive information assets</i> include control systems, networks, information systems and any other electronic or physical media.</p>
<p>Shipper</p>	<p>Any person, organization or government that prepares or offers a consignment of <i>nuclear material</i> for <i>transport</i> (i.e. the consignor).</p> <p>In the RM document “<i>nuclear material</i>” is replaced by “<i>radioactive material</i>.”</p>
<p>Source material</p>	<p>The term "source material" means uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope 235; thorium; any of the foregoing in the form of metal, alloy, chemical compound, or concentrate; any other material containing one or more of the foregoing in such concentration as the Board of Governors shall from time to time determine; and such other material as the Board of Governors shall from time to time determine. [IAEA Statute, Article XX]</p> <p>Ex. According to para 112 of INFCIRC/153, "the term source material shall not be interpreted as applying to ore or ore residue."</p>

<p>Special fissionable material</p>	<p>The term "special fissionable material" means plutonium-239; uranium- 233; uranium enriched in the isotopes 235 or 233; any material containing one or more of the foregoing; and such other fissionable material as the Board of Governors shall from time to time determine; but the term "special fissionable material" does not include source material.</p> <p>The term "uranium enriched in the isotopes 235 or 233" means uranium containing the isotopes 235 or 233 or both in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature. [IAEA Statute, Article XX]</p>
<p>Stand-off attack</p>	<p>An attack, executed at a distance from the target facility or <i>transport</i>, which does not require adversary access, or require the adversary to overcome the <i>physical protection system</i>.</p>
<p>Strategic location</p>	<p>A location of high security interest in the State which is a potential target for terrorist attacks using nuclear and other <i>radioactive material</i> or a location for <i>detection</i> of nuclear and other <i>radioactive material</i> that is out of <i>regulatory control</i>.</p>
<p>Sustainability</p>	<p>The continuous capability of a State's <i>physical protection regime</i>, together with the <i>operator's physical protection system</i> at a <i>nuclear facility</i> and/or a carrier's <i>physical protection system</i> during <i>transport</i>, of satisfying all performance and prescriptive requirements.</p>
<p>System for nuclear material accountancy and control</p>	<p>An integrated set of measures designed to provide information on, control of, and assurance of the presence of <i>nuclear material</i>, including those systems necessary to establish and track nuclear material inventories, control access to and detect loss or diversion of <i>nuclear material</i>, and ensure the integrity of those systems and measures.</p>

Target	<p><i>Nuclear material, other radioactive material, associated facilities, associated activities, or other locations or objects of potential exploitation by a nuclear security threat.</i></p> <p>Example: <i>Target</i> also includes <i>sensitive information</i> and <i>sensitive information assets</i>.</p>
Threat	<p>A person or group of persons with motivation, intention and capability to commit a <i>malicious act</i>. This is synonymous with <i>nuclear security threat</i>.</p>
Threat assessment	<p>An evaluation of the <i>threats</i> –based on available intelligence, law enforcement, and open source information- that describes the motivation, intentions, and capabilities of these <i>threats</i>.</p>
Transport	<p>International or domestic carriage of <i>nuclear material</i> by any means of transportation, beginning with the departure from a facility of the <i>shipper</i> and ending with the arrival at a facility of the receiver.</p>
Transport control centre	<p>A facility which provides for the continuous monitoring of a <i>transport conveyance</i> location and security status and for communication with the <i>transport conveyance</i>, and the <i>shipper/receiver</i>, and when appropriate its <i>guards</i>, and the <i>response forces</i>.</p>
Two-person rule	<p>A procedure that requires at least two authorized and knowledgeable persons to be present to verify each other that activities involving <i>nuclear material</i> and <i>nuclear facilities</i> are authorized in order to detect access or actions that are unauthorized.</p>
Unacceptable radiological consequences	<p>A level of radiological consequences, established by the State, above which the implementation of additional <i>nuclear security measures</i> is warranted.</p> <p>In the RM document the definition the word “additional” is deleted.</p>

Unacceptable radiological consequences (NM/225)

Unauthorized act

Unauthorized removal

Vital area

A level of radiological consequences, established by the State, above which the implementation of *physical protection measures* is warranted.

Conduct prohibited by domestic legislation other than penal legislation or by domestic regulations or violating an authorization (or license) involving an *associated facility* or *associated activity* that may have *nuclear security* implications.

The theft or other unlawful taking of *nuclear material*.

In the RM document the phrase *nuclear material* is replaced by *radioactive material*.

Area inside a *protected area* containing equipment, systems or devices, or *nuclear material*, the *sabotage* of which could directly or indirectly lead to high radiological consequences.