



# Backgrounder

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## Nuclear Security Enhancements Since September 11, 2001

### Nuclear Facility Security

The NRC took security seriously well before September 11, 2001, and has moved quickly and aggressively to further enhance security in light of the increased threat. Nuclear facilities, including nuclear power plants, already had a number of security and safeguards measures in place, in accordance with Commission regulations, making them among the most robust and well-protected civilian facilities in the country. These structures are designed to withstand extreme events such as hurricanes, tornadoes and earthquakes. Nevertheless, the events of September 11 have resulted in additional protections at nuclear power plants and enhanced coordination with Federal, State and local organizations responsible for protecting critical national infrastructure to ensure that these commercial facilities remain secure.

Following the September 2001 terrorist attacks, the NRC immediately advised nuclear facilities to go to the highest level of security in accordance with the system in place at the time. Since then, a series of Advisories, Orders, and Regulatory Issue Summaries have been issued to further strengthen security at NRC-licensed facilities including power reactors, decommissioning reactors, independent spent fuel storage installations, research and test reactors, uranium conversion facilities, gaseous diffusion plants, fuel fabrication facilities, certain users of radioactive materials, and transporters of spent fuel and radioactive materials.

Details of the specific actions are sensitive, but for facilities such as power reactors, they generally include:

- # increased patrols,
- # augmented security forces and capabilities,
- # additional security posts,
- # installation of additional physical barriers,
- # vehicle checks at greater stand-off distances,
- # enhanced coordination with law enforcement and military authorities;
- # more restrictive site access controls for all personnel; and

# expanded, expedited, and more thorough employee background checks.

For power reactors and fuel fabrication facilities having significant quantities of nuclear material, facility owners were required in April 2003 to revise the physical security plans, guard training and qualification plans, and contingency plans. The NRC reviewed these plans and the owners implemented them by October 2004.

## **Security Exercises**

The NRC temporarily suspended force-on-force exercises – commando-style mock attacks – immediately following the terrorist attacks of September 2001 due to concerns about their impact on security at the nuclear power plants in the heightened threat environment. These exercises assess the ability of a facility’s security force to protect against certain threats. In the summer of 2002, tabletop exercises – facilitated discussions using credible scenarios – were conducted involving a wide array of Federal, State, and local law enforcement and emergency planning officials.

In February 2003, the NRC resumed security exercises at the plants as part of a pilot project to evaluate the impacts of threat characteristics and security enhancements as well as to enhance the exercise process. In 2004, NRC resumed force-on-force exercises at the plants on a more aggressive schedule, so that NRC would evaluate an exercise at each plant site once every three years (previously every eight years), with tactical security drills in the intervening years. In addition, steps have been taken to improve the realism of these exercises. Additional information on FOF exercises is available on our web site at:

<http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/force-on-force.html> .

## **Security Personnel**

The NRC issued Orders on April 29, 2003, to power plant owners to augment additional training and qualifications requirements for security personnel. These Orders include more frequent firing of weapons, more realistic training under a broader range of conditions, and firing against moving as well as fixed targets. In order to minimize security personnel fatigue, the agency also issued Orders on the same day to require additional measures for security personnel fitness for duty and work hours controls. It ensures that excessive work hours do not challenge the ability of nuclear power plant security personnel to remain vigilant and effectively perform their duties.

## **Comprehensive Security Evaluation and Vulnerability Studies**

Shortly after September 11, 2001, the NRC undertook a comprehensive re-evaluation of the agency’s safeguards and security program, regulations, and procedures that have resulted in numerous security improvements. As part of this review, NRC has revised the adversary attributes in the design basis threats (DBTs) for radiological sabotage and for theft or diversion of nuclear material.

The DBT describes the adversary force composition and characteristics against which plant owners must design their physical protection systems and response strategies to defend against. The DBT applies to nuclear power plants and certain nuclear fuel fabrication facilities. The NRC has discussed security requirements with representatives of the nuclear industry cleared to receive such information, and authorized Federal and State agencies.

## **Aircraft Attacks**

The NRC believes that most effective strategy for preventing an aircraft attack and protecting our nation's infrastructure continues to be through enhanced measures such as airport passenger and baggage screening, strengthening of cockpit doors and the Air Marshal program.

The NRC has conducted an extensive analysis of the potential threat from aircraft attacks. While this analysis is classified, our studies confirm that the likelihood of such a scenario damaging the reactor core and releasing radioactivity that could affect public health and safety is low. Further, the studies confirm that even in the unlikely event of a radiological release due to terrorist use of a large aircraft, there would be time to take actions for protecting the public. Also, it is very unlikely that there would be a significant release of radiation from a deliberate attack of a large commercial aircraft on a spent fuel pool at a reactor site. Studies have shown NRC's emergency planning basis remains valid. Thus, we believe that nuclear power plant safety, security, and emergency planning programs continue to protect public health and safety.

We recognize that a large aircraft would cause significant damage to a civilian industrial facility and a corresponding psychological impact on the surrounding community and the nation as a whole. Nonetheless, we believe that nuclear power plants remain the most heavily protected civilian facilities in the country. After examining a number of emergency scenarios involving operating reactors, spent fuel pools and dry-cask storage installations, the NRC remains certain that enough time will be available to protect the public near those facilities. Given these enhancements made to safety, security, and emergency preparedness, the potential radiological consequences of an aircraft attack are very low.

In addition, certain interim compensatory measures have been put in place -- improved capabilities to respond to an event that results in damage to large areas of a nuclear power plant from explosions or fires. Additional measures have been put in place to protect against land attacks, including the use of a vehicle bomb, and against water-borne attacks.

## **Cyber Security**

The NRC also has taken steps to enhance cyber security at nuclear power plants. Since September 11, 2001, the NRC has issued a series of safeguards advisories and orders requiring nuclear power plant licensees to take certain actions, and many of them address cyber security. Additional measures to enhance cyber security are being considered as part of the comprehensive review of NRC's security program.

The NRC is working with appropriate Federal agencies to deal with a potential airborne threat. For example, the NRC has worked with the Federal Aviation Administration (FAA) and the Transportation Security Administration to put in place a Notice to Airmen advising pilots to not circle or loiter above nuclear power plants or they can expect to be interviewed by law enforcement personnel. In addition, the NRC maintains close liaison with the Department of Defense for response to suspicious events involving aircraft around nuclear facilities.

## **Security Against Dirty Bombs**

A radiological dispersal device (RDD) or “dirty bomb” is a conventional explosive, such as dynamite, combined with radioactive material that could be used to spread radioactive contamination. Although these devices would be unlikely to cause serious health effects beyond those caused by the detonation of the explosive, they could have a significant psychological impact, by causing fear, panic, and disruption. Additional information on dirty bombs is available at: <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/dirty-bombs.html> .

The NRC has been working with the Department of Energy (DOE), the Federal Bureau of Investigation (FBI), the International Atomic Energy Agency (IAEA) and others to enhance physical protection and control of sources of radioactive material that present the highest risk if used by a terrorist in an RDD. The work with DOE has been captured in an appendix to the IAEA’s Revised Code of Conduct on the Safety and Security of Radioactive Sources. Elements of “cradle-to-grave” security enhancements will include:

- ' verification of the legitimacy of applicants for licenses to use radioactive material;
- ' requirements governing the shipment, storage and use of high-risk sources;
- ' controls on access to radioactive sources to prevent diversion by an insider;
- ' tracking and inventorying high-risk sources to ensure they haven’t been lost or stolen;
- ' export and import controls on high-risk sources; and
- ' more frequent inspections to verify the adequacy of regulatory controls and measures to ensure safe disposal.

In June 2003, the NRC formed a Materials Security Working Group and a related Steering Committee to work with the States to enhance security for high-risk sources. A series of additional security actions were taken.

- ! NRC issued an Order June 6, 2003, to all panoramic irradiator and underwater irradiator licensees requiring implementation of additional measures to enhance security.
- ! NRC issued an Order January 12, 2004, to manufacturers and distributors of nuclear materials, requiring implementation of additional security measures.
- ! NRC also proposed a rule to enhance security of small gauges that contain radioactive material.
- ! NRC proposed enhanced requirements for tighter controls of imports and exports of high risk sources in September 2004.

## **Coordination and Communications**

The NRC has expanded its involvement with the FBI, other Federal intelligence and law enforcement agencies, NRC licensees, and military, State and local authorities. Communications have been expanded with the Department of Homeland Security (DHS), the Department of Defense, Federal Aviation Administration and others. The NRC also maintains close communications with nuclear regulators in Canada and Mexico, and has discussed security enhancements with nuclear regulatory bodies in other countries, including United Kingdom, France, Germany, Japan, and Romania.

In February 2003, NRC established a protected server system to facilitate exchange of sensitive information between NRC and licensees and authorized State officials. In June 2003, NRC and DHS co-sponsored a two-day Homeland Security Workshop on civilian nuclear security and incident response issues for State officials at NRC headquarters. This workshop was attended by approximately 300 participants from DHS, State Homeland Security Advisors, State Liaison Officers, State Radiation Control Directors, and other Federal and State governments and organizations. This workshop further strengthened NRC and DHS relations with these key State officials by increasing their awareness of DHS and NRC initiatives relating to homeland security and incident response.

## **NRC Emergency Operations Center and Emergency Plans**

The NRC has increased staffing of its Emergency Operations Center in headquarters around the clock that aids in the prompt dissemination of pertinent information to all concerned, including licensees, Federal, and State officials.

We have increased participation in emergency exercises related to security and counter-terrorism. These exercises have included dealing with dirty bombs, hijacked aircraft, stolen radioactive material, and sabotage of nuclear facilities. In May 2003, the NRC participated in the TOPOFF 2 exercise, the second Congressionally-mandated national exercise involving weapons of mass destruction and bio-terrorism, and has been extensively involved in follow up actions dealing with radiological dispersal device consequence modeling and recovery.

The NRC works with DHS and other Federal agencies in supporting the new National Response Plan and National Incident Management System and on refinement of the National Preparedness Policy.

In 2004, the NRC completed a major overhaul of the communications and computer systems in the Operations Center in headquarters. The new design enhances communications, provides greater access to information, and assists in the coordination of teams with response duties during emergencies. Similar upgrades have also been completed in the Regional Incident Response Centers.

## **Other Security Actions**

To consolidate security, safeguards, and incident response responsibilities, the NRC established an Office of Nuclear Security and Incident Response in April 2002. This office serves to streamline decision-making, improve information dissemination, and provides a more visible point of contact and effective counterpart to DHS, as well as other Federal agencies. In June 2003, the Agency established the position of Deputy Executive Director for Homeland Protection and Preparedness to increase the agency's attention to cross-cutting issues that affect security, incident response, emergency preparedness, vulnerability assessments and mitigation strategies, and external integration of comprehensive strategies for these areas.

The NRC developed a Threat Advisory and Protective Measures System that corresponds to the color-coded Homeland Security Advisory System which allows government officials to communicate the nature and degree of terrorist threats consistently nationwide. NRC's system identifies specific actions to be considered by NRC licensees for each threat level to counter projected terrorist threats. If a credible threat emerges against a specific nuclear facility, additional protective measures may be mandated even without a change in the overall threat level.

## **Security at NRC**

A host of enhanced security measures have been put in place at NRC headquarters in Rockville, Md., including the installation of concrete vehicle barriers, increased armed guards, stringent access procedures and ongoing intra-agency communications to keep all NRC employees informed of the latest developments. Security was also bolstered at NRC's four regional offices in King of Prussia, Pa., Atlanta, Ga., Lisle, Ill., and Arlington, Texas.

The NRC continues its review of public documents on its web site to remove sensitive information which could be of interest to terrorist planners, while it strives to provide the public with appropriate material on the NRC's activities and policies and other useful information. The NRC has refined its guidelines to identify sensitive information and is developing a new procedure regarding public meetings on security issues.

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