NRC NEWS

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"Protecting Nuclear Material And Facilities:
The Nuclear Regulatory Commission's Approach To Physical Security"
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Thank you, and good afternoon, everyone. I am pleased to have this opportunity to participate in your 2010 Government Summit and to join with my distinguished colleagues from other Federal agencies and the private sector, to share perspectives on security–related public policy issues.

I believe that conferences like this one serve a number of useful purposes. They bring together various actors in the security field who may otherwise have no direct contact with each other on a daily basis. They provide a venue for exchanging public and private sector experience. They illuminate the broader contexts that make those separate experiences part of a more holistic effort to protect the Nation's assets and infrastructure and to enhance protection of the American people. They provide a forum for educating the general public on security issues. Perhaps, most important of all, conferences such as this one keep us focused on the need to be vigilant and innovative in addressing potential security threats, particularly when, as now, the absence of any major successful terrorist activity in recent years on our homeland, and our success in detecting and preventing lower-level attempts, might create a false impression that we have succeeded in deterring future or more serious attempts.

Although all of us on the program today are involved in different aspects of security-related activities, I think we would probably agree that the security threat faced by the United States is very broad-based, encompassing chemical, biological, nuclear, and cyber threats, and that in each of these areas, there is such a wide range of methods and delivery systems available to accomplish malevolent purposes. Consequently, the task before us is not only multi-faceted but extremely complex. In addition, we would probably agree that the security threat to national infrastructure will be a continuing concern for the foreseeable future and presents a significant human threat to organized society.

These developments change the nature of conflict and conflict resolution in the twenty-first century and pose challenges for the future. The race we are now engaged in – and which we must win every day – is the race to assess on a real-time basis, and effectively put in place, those procedures which will provide the highest assurance that we can protect the national infrastructure and stay ahead of the curve.

As a result of these developments, there has been a steady demand for action by the Federal government to preserve the security of its citizens. The Department of Homeland Security, which was created in the aftermath of the September 11th attacks, is responsible for the overall government effort to enhance security, but various other agencies also play important roles. The agency that I represent, the U.S. Nuclear Regulatory Commission, is one of these important role players.

What I would like to do today is to explain what the NRC does in addressing security issues, how we are doing it, and where we are headed in the future, but before I do that, I would like to provide a little background on the NRC. I have two reasons for doing so – first, many of you in this audience may be unfamiliar with the role of the NRC, and second, the agency's background reveals some of the important authorities and limitations that have a profound impact on how we carry out our responsibilities.

The U.S. Nuclear Regulatory Commission was established in 1975, when the first governmental body that had been established to oversee the use of nuclear materials, the Atomic Energy Commission, was divided into two agencies. The reorganization was undertaken by Congress to establish a clear division of responsibilities between those parts of the government that managed the nation's nuclear weapons program and worked on programs to develop and promote the peaceful uses of nuclear energy, from those responsible for establishing the standards, licensing the operators, and enforcing the regulatory requirements over the civilian uses of nuclear materials. The organization known today as the Department of Energy inherited the first set of responsibilities, while the NRC inherited the Atomic Energy Commission's regulatory responsibilities.

This division of the Atomic Energy Commission's responsibilities means that in the security arena, the NRC has authority over nuclear reactors (such as the Nation's nuclear power industry, university, and research reactors), over commercial fuel facilities (comprised of fuel and fuel fabrication plants, enrichment facilities, and other specialized facilities), as well as nuclear material used in medical and industrial applications (such as nuclear gauges, well-logging devices, and other uses). I should note here that licensing and inspection of certain medical and industrial uses have been relinquished by the NRC to those State governments that choose to undertake this role under what is known as the "agreement state" program. Under this program, the Agreement States' authority does not extend to requirements solely aimed at protecting the common defense and security. Agreement States do, however, have the ability to regulate the public health and safety, which often also serves the purpose of ensuring security. The NRC retains the authority to take any necessary actions to protect the common defense and security. As a result, the NRC licenses and inspects approximately 5,000 medical and industrial users, while about 20,000 users are licensed by the 37 existing Agreement States. Security for nuclear materials owned and used by the federal government remains with the Department of

Energy, although the NRC does have very limited regulatory authority over a few specific activities of other Federal agencies, as outlined in various laws.

In inheriting the regulatory authority of the Atomic Energy Commission, the NRC also inherited the AEC's Commission structure. The NRC is therefore headed by five Commissioners, one of whom is designated by the President to serve as Chairman. Each Commissioner is nominated by the President, subject to confirmation by the U.S. Senate, generally to staggered five-year terms, although some Commissioners may be appointed to fill out an existing vacancy on the Commission. Since I serve on a Commission, I need to note that my remarks today represent my personal views rather than the views of the Commission.

In understanding the NRC's approach to national emergencies, it is important to recognize that, following the accident at Three Mile Island in 1979, President Carter issued Reorganization Plan No. 1 of 1980. This plan, which was approved by the Congress, enhanced the role of the NRC Chairman in emergency situations and for performing certain administrative functions of the Commission; however, policy-making remained a function of the full Commission. Consequently, unlike most other Federal agencies with a security role, the NRC is a deliberative body whose policy decisions require the agreement of a majority of the Commissioners.

Generally speaking, the Commission imposes its regulatory program on licensees through generically applicable regulations, site-specific licenses, and site-specific orders. Although, at first blush, the Commission might appear to be structurally ill-suited to respond to security threats and emergencies, it has, in fact, through the provisions of Reorganization Plan No. 1 and its ability to issue immediately effective orders, acted promptly to address security concerns, particularly with respect to the events of Sept. 11, 2001, a subject to which I will return later in my remarks.

Another important characteristic of the NRC that I need to mention here is its standing as an independent regulatory body. NRC's legal authority derives primarily from the Atomic Energy Act of 1954, which has been described as virtually unique in American statutory law in that it provides an extremely broad degree of discretion to the NRC's technical judgment. The concept of an independent agency was carried over to the Energy Reorganization Act of 1974, which specifically established "an independent regulatory commission to be known as the Nuclear Regulatory Commission." The Commission is therefore not formally part of the Executive or Legislative branches of government. NRC Commissioners may only be removed "for cause;" in other words, like judges, NRC Commissioners can only be removed for inefficiency, neglect of duty, or malfeasance in office. In addition, the President and Congress have no direct involvement in NRC decision-making except through their power of appointment and confirmation of individual Commissioners and the general oversight role of the Congress. This is intended to insulate the decision-making of the Commissioners so that they can decide policy matters focused solely on safety, security, and technical considerations. In the security arena, the Commission does not need the approval of any other entity to impose security requirements on its licensees, although it does coordinate its actions with the Department of Homeland Security and other Federal agencies, as appropriate.

In understanding the NRC's role in security matters, perhaps the most important aspect related to the Commission's establishment in 1975 was the specific articulation of its mission statement. The core of the NRC's mission statement is drawn from the requirements of the Atomic Energy Act. In effect, the Commission establishes requirements for the use of nuclear and radioactive material that "ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment."

From the standpoint of our discussion today, I think there are three important points to be made about this mission statement.

- First, the NRC is not a newcomer to the field of security, but rather has played an active role in promoting the common defense and security - through its security requirements - since its founding 35 years ago.
- Second, security is not the only responsibility assigned to the NRC and is not the agency's primary function; instead, the NRC, with a skill base rooted in science, technology, and engineering, is primarily responsible for protecting the public health and safety from the hazards associated with commercial use of nuclear materials. Although safety and security are seen as interrelated responsibilities that are generally complementary, the NRC is aware that it is possible that the application of specific security and safety requirements may require reconciliation. Consequently, enhancements to either need to be evaluated from both a safety and security perspective.
- Third, neither safety nor security can be approached as absolute objectives for which the goal of zero risk can be achieved. As the mission statement outlines, the Commission is seeking reasonable assurance of adequate protection for both safety and security.

All three of these considerations have continued to influence the development of the NRC's security program through the present.

The NRC inherited at its founding in 1975, in addition to the functions and the staff of the Atomic Energy Commission's regulatory side, a mature set of safety and security requirements established through regulations or incorporated in the technical specifications of those nuclear plants which had already been licensed in this country. In the safety area, these included special engineered features that constituted the defense-in-depth approach to safety – passive core sprays and pressure suppression pools, safety-injection systems that could inject large volumes of water into the reactor vessel if needed, and combinations of filters, scrubbers, and air circulators that would collect and retain radioactive gases and particles released by an accident. The final line of defense was the massive and heavily-reinforced concrete and steel buildings that contain the reactor and the reactor coolant system. In addition, the plants had to be constructed to meet certain design requirements. For example, the design basis earthquake for each plant required that the facility be constructed to be able to withstand the largest historical earthquake recorded in the area. Similarly, a design basis had been developed to address flooding, tsunamis, tornados, hurricanes, and other natural events. All of these requirements were based on existing science and state-of-the-art practices or on analysis involving calculations of, or experiments concerning, the effects of postulated accidents.

Security requirements, which were at the time referred to as "safeguards" requirements, did not impose new design features on individual plants but consisted instead of supplemental procedural controls, such as accounting processes, inspections, and access controls. The term "safeguards" referred to the prevention of theft, loss, or diversion of nuclear materials, or attempts to sabotage plant operations. These requirements were structured around the primary concern at the time, which was the potential for nuclear weapons proliferation to non-nuclear weapons states. Consequently, confirmation that the security objectives had been met could be determined by rigorous accounting measures to ensure that the protected material in the expected quantities was still there or that any material that could not be accounted for could reasonably be attributed to industrial processing. Theft and sabotage could be effectively addressed through access authorization processes and controls.

Terrorism sponsored by either state or non-state actors, and that had the potential to go beyond the objectives of theft and sabotage, had not yet surfaced as a global phenomenon. That would soon change, however, in light of the outbreak of bombings, assassinations, hijackings, and other terrorist actions in the late 1970s, which heightened concerns about terrorist intentions and capabilities. The Commission accordingly strengthened regulatory requirements for the transportation of nuclear material, for site security, and controls related to nuclear materials import and export.

The design basis for security, unlike those established in the safety context, did not define minimum requirements for the survivability of systems and components but instead sought to establish a theoretical external threat level that the commercial industry could reasonably be expected to plan for and defend against. The design basis threat, therefore, focused on potential adversary capabilities and intentions. Such intentions and capabilities were not subject to scientific analysis, calculation, or research. They were less likely to result in changes to the plants' structural design, and were subject to change based on information about potential threats that was provided by other Federal agencies.

The NRC again revisited its security requirements in the 1990s in light of new terrorist tactics. At this time, the NRC initiated a new special inspection procedure known as force-on-force exercises. These exercises, which consisted of a physical, mock attack on the selected licensed facility, were designed to test the ability of the licensee's security to meet the conditions specified in the design basis threat and were to be conducted once every eight years at each nuclear power plant. These force-on-force exercises provided the Commission – for the first time - a documented, verifiable test of the effectiveness of its security requirements and a mechanism for improving individual plant security plans and performance.

During this same period, a series of incidents abroad, involving abandoned or stolen radiotherapy machines and Cesium-137 sources, which had resulted in both fatalities and serious injuries, had begun to focus attention on the risks of lost or stolen radioactive sources. Termed the "orphan source" problem, these events lead – nationally and internationally – to greater efforts to improve safety by recovering the sources as they were discovered, as well as increased controls to prevent the creation of further orphan sources. While these collective efforts led also to the development of the International Atomic Energy Agency's "Code of Conduct for the

Safety and Security of International Sources," the regulatory focus in the U.S. generally remained on the protection of workers and the public from exposures as a result of misuse or accident, rather than on the security implications of these devices.

Although the introduction of force-on-force exercises represented a significant change in the Commission's approach to physical security and the Code of Conduct had elevated concern about missing sources, safety remained the agency's highest priority and its primary function until the terrorist attacks of Sept. 11, 2001, which had almost as great an impact on the Commission's approach to security and its security requirements, as the 1979 Three Mile Island Accident had had on the Commission's safety requirements. Almost immediately the NRC Chairman at that time, Dr. Richard Meserve, invoked the emergency procedures specified in Reorganization Plan No. 1 and put the agency and its licensees on alert mode even though no credible threat against NRC-licensed facilities had been or would subsequently be identified. At the same time, the full Commission began a series of meetings and discussions that would constitute a first-of-its kind comprehensive reassessment of its approach to physical security for both licensed facilities and radioactive materials.

As a result of these actions, the NRC took the following steps to enhance security at licensed facilities.

- The NRC issued over 60 safeguards and threat advisories to its licensees and subsequently issued orders to require increased security patrols, augmented security forces, additional security posts, increased vehicle standoff distances, cyber security measures, and enhanced coordination with law enforcement and intelligence communities.
- The NRC further enhanced access controls at nuclear power plants. NRC regulations already required that individuals with unescorted access to the plants undergo a background investigation which includes credit checks, employment history, reference examination, psychological testing, and an FBI criminal history records check. Further restrictions put in place included prohibitions on the use of temporary, unescorted access in sensitive areas.
- The NRC improved its coordination with other Federal agencies, which now includes the Department of Homeland Security, NORTHCOM, the FBI, and other agencies in support of the Nation's overall detection, prevention, mitigation, and response capabilities.
- The NRC consolidated security activities within its own organization by creating a new office, the Office of Nuclear Security and Incident Response, which also serves as the agency's security liaison with external organizations, including other Federal agencies.
- The NRC initiated further assessments of power reactor vulnerabilities to the intentional, malicious use of commercial aircraft in suicidal attacks by undertaking a broad ranging research program to understand the vulnerabilities of various classes of facilities to a wide spectrum of attacks. The Commission also directed nuclear power plant licensees to develop specific plans and strategies to respond to an event that could result in damage to large areas of their plants from impacts, explosions, or fire and to provide assurance that their emergency planning resources were sufficient to

respond to such an event. These studies – which took some time to conduct given the depth of the modeling and analysis - have been completed and have generally confirmed the following: 1) that the likelihood of damaging the reactor core and releasing radioactivity that could affect public health and safety is low; 2) that the NRC's emergency planning basis remains valid; 3) that spent fuel pools, which are well-engineered and protected structures, are amenable to simple and effective mitigative actions, if needed; and, 4) that dry spent fuel storage casks and transportation casks were very unlikely to release radioactive material as a result of aircraft impact.

- The NRC revised the land vehicle bomb provision as well as added a new capability for a water-borne vehicle bomb to the agency's design-basis threat.
- The NRC further enhanced security inspections by requiring that full security performance reviews, including force-on-force exercises, be conducted on a three-year, rather than an eight-year cycle.
- Specifically related to the nuclear materials area, the NRC enhanced measures to protect against the use of radiological dispersal devices, to identify and detect orphan sources, and to strengthen import and export controls on radioactive materials. The NRC continues to work with the international community regarding the IAEA Code of Conduct that I mentioned earlier and has implemented a National Source Tracking System, domestically.

These security enhancements, when combined with the engineered safety features incorporated into the construction of the currently licensed nuclear power plants, render nuclear facilities among the best protected and most hardened facilities within the Nation's critical infrastructure.

Although rapidly forged in the aftermath of the Sept. 11th attacks, in an atmosphere of great uncertainty and apprehension about the future, the comprehensive set of actions I have just described have proven their worth since that time and still form the core of the Commission's approach to physical security for nuclear facilities and materials. In the years since instituting these enhancements under emergency authorities, the NRC has followed these actions by codifying its various orders, alerts, and advisories, along with additional insights gained since the 2001 attacks into our regulations. These regulations, along with associated regulatory guidance documents, prescribe requirements for the establishment and maintenance of secure protection systems. For example, in 2007, the Commission, after extensive public comment, issued a revised rule modifying and updating the Design Basis Threat. In early 2009, the Commission issued its final rule providing an extensive revision to its regulations in 10 CFR Part 73 covering physical security requirements for nuclear power plants, and in late 2009 received a staff proposal to promulgate a new regulation to codify the additional security requirements for some categories of nuclear fuel facilities.

In addition to efforts to refine our regulations, there are two other developments that I would like to mention briefly. First, the NRC revised its agency Strategic Plan after Sept.11, 2001, to define two equal strategic agency goals: safety and security. In doing so, the Commission recognized that safety and security are interrelated and that to ensure adequate protection of public health and safety requires assurances about security in today's world.

Further, in order to achieve success in both areas, the agency must plan its resource needs and expenditures based on a consistent, coherent plan that includes both safety and security as its top priorities. Second, the NRC, which has received multiple applications to construct new nuclear power plants in the United States, has established a requirement that new reactor designs must take into account an aircraft impact assessment. This development is part of an effort to ensure that design engineers and security professionals take into account security "lessons learned" and "build security in" from the beginning. These efforts help ensure that both the NRC and the industry take a long-term view of security now and in the future.

In conclusion, I would like to leave you with some thoughts about the practical implications of NRC's approach to security, especially in a post-9/11 world.

- First, there are limits to the defensive capabilities that can be expected of the private sector. The NRC has placed significant regulatory requirements on its licensees but some aspects of security, for example defense against aircraft and against attackers with significant military abilities, are and will remain the responsibility of government and military authorities.
- Second, the defense of the Nation's critical infrastructure is best and most effectively examined from the standpoint of an integrated national strategy, not sector by sector. The chain will only be as strong as the weakest link.
- The NRC will continue to struggle with the need to balance the protection of sensitive security information with the need to ensure public confidence in nuclear energy by remaining one of the most open agencies in government. Striking this balance between openness and national security is and will continue to be a challenge not only for the NRC, but for many government agencies.
- The need to defend against the threat of terrorism will continue to be an element of our national policy dialogue for many decades to come. In such an environment, the NRC needs to keep security at the forefront of its thinking, yet not displace or diminish the obligation to protect the public health and safety from accidents. While safety and security are interrelated, they are not always synonymous in terms of probability or consequence.
- Further, the need to keep security firmly in mind cannot allow us to diminish or compromise who we are as a freedom and liberty-loving nation, or allow these concerns to deprive our Nation of life-saving and enhancing technologies such as the use of nuclear medicine techniques which benefit millions of U.S. patients each year. Measures to enhance the security of radioactive sources above the adequate protection standard should not have the effect of severely limiting their availability or compromising the delivery of quality health care to the American patient population.
- No single tool will provide adequate protection from terrorists. We must avoid complacency, keep our eye on the threat horizon, and continue to implement an integrated strategy.
- That being said, however, zero risk is not a practicable goal.
- Finally, we all – government agencies, the owners and operators of our national infrastructure, and concerned citizens (which means each of us) - need to work together to ensure the continued safety and security of the American people. It is,

simply put, our highest national calling and something which the Nuclear Regulatory Commission is focused on each and every day.

Thank you, again, for inviting me to your conference and for the opportunity to be with you this afternoon.