

Nuclear Security in a New World

FEATURE

by Richard A. Meserve

Regulators address the vulnerability of nuclear facilities

For decades, security against sabotage has been an important part of the Nuclear Regulatory Commission's (NRC's) regulatory activities and the responsibility of its licensees. Following the September 11, 2001, attacks in New York and Washington, D. C., the security of the nation's critical infrastructure became a major issue—including the potential vulnerability of its nuclear power plants. The NRC has taken significant actions in response to the September 11 attacks, but some major challenges lie ahead.

Three points deserve emphasis. First, and perhaps most important, there have been no specific credible threats of a terrorist attack against nuclear power plants. Of course, intelligence information indicates that al Qaeda considers nuclear facilities as potential targets. In light of the current threat environment, we and our licensees have tightened security.

Second, the physical protection at nuclear power plants is very strong. They are among the most formidable structures in existence and are guarded by well-trained and well-armed security forces, many of whom also have military and/or police experience. The security at nuclear plants is and always has been more substantial than that at other civilian facilities, and that security has been increased since September 11. Third, in response to today's elevated threat environment, the need exists to reexamine past security strategies to determine what should be changed. The NRC has undertaken a comprehensive review of its safeguards and security programs to ensure that we have the right protections in place for the long term.

Security today

The NRC's primary mission is to protect both the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The commission also regulates these nuclear materials and facilities to promote the common defense and security of the nation. Each company licensed by the NRC has a responsibility to defend its nuclear power plant, subject to scrutiny by the NRC. We require our licensees to provide high assurance that they can defend their facilities against a so-called "design-basis threat," or DBT.

Although the details of what constitutes a DBT are classified, it basically involves a commando raid by sev-

eral skilled attackers armed with automatic weapons, hand-carried explosives, and incapacitating agents who have the assistance of an insider and the use of a four-wheel-drive vehicle containing a bomb. Our licensees must have a comprehensive defensive strategy to defend against such an attack with measures that include a fenced perimeter (usually a double fence topped with razor wire), intrusion-detection devices, multiple barriers to access, heavily armed guards, and protected defensive positions to help prevent intruders from reaching vital equipment. The NRC subjects the adequacy of these defenses to detailed inspection, including periodic force-on-force exercises designed to probe for weaknesses.

The DBT, however, does not include an aircraft attack. In the aftermath of September 11, many asked about the consequences of a fully fueled airliner crashing into a nuclear power plant. We had to say candidly that we were not sure. We know that the containment buildings that house nuclear reactors are extremely robust; they typically are constructed of several feet of reinforced concrete with a steel lining. The plants benefit from redundant and diverse safety equipment so that if any active component becomes unavailable, another system will satisfy its function. Operators are trained to respond to unusual events, and carefully designed emergency plans are in place. Nuclear power plants are certainly far more capable of withstanding damage from an aircraft attack than other civilian facilities.

Although the NRC has never had reason previously to perform a detailed engineering analysis of the consequences of a deliberate attack by a large airliner, we are performing those analyses now with the assistance of organizations such as Sandia National Laboratories (Albuquerque, NM). One issue is what would happen within the concrete containment building if a large aircraft should penetrate it. For example, how much of the jet fuel would the initial fireball consume? How much fuel would be dispersed outside the containment building and how much would be left to burn inside? And would safety systems continue to function under these





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conditions and maintain the integrity of the reactor core? Our examination also includes consideration of ways to correct any vulnerabilities that are revealed.

Because an insider could provide significant assistance to an attacking force, the NRC has requirements to control entry to plants. Every potential employee who will have access to safety equipment must pass several background investigations, including examinations of past employment, references, credit history, and a Federal Bureau of Investigation (FBI) criminal-record check, and undergo psychological testing. During the course of employment, each employee is also subject to fitness-for-duty requirements, which include random drug and alcohol testing. The monitoring of employees is also required to ensure that any aberrant actions, such as erratic or threatening behavior, receive appropriate atten-

tion. We are currently evaluating whether to strengthen these requirements by actions such as periodic updates of background checks and placing greater restrictions on access to certain areas by employees who have not completed their full background investigations. What the NRC has done and what we are learning could provide useful security information to industrial or other sites that might attract a terrorist attack, such as dams and major telecommunications and computer centers.

The response

The commission has issued more than 30 advisories and orders to its licensees in response to the events of September 11. The measures include augmented security forces, increased patrols, additional security posts and physical barriers, moving vehicle-checkpoints further



away from buildings, greater coordination with law-enforcement and military authorities, and more restrictive control of site access. I also communicated with the governors of the states in which nuclear facilities are located to ensure that units, such as the National Guard and state police, are available if needed to support our licensees' defensive efforts. As a result, some governors assigned National Guard troops to work with security forces at nuclear power plants in their states. And the NRC continually assesses the threat environment in coordination with federal law-enforcement and intelligence agencies.

The NRC has not yet changed the DBT. Our advisories and orders have significantly increased security, and we were able to put them in place far more swiftly in the fluid threat situation in which we found ourselves after September 11 than if we had had to change the performance-based requirements in the DBT. Nonetheless, the NRC is revising the DBT and other elements of its regulatory framework, and we are doing so in consultation with other organizations, including the Department of Energy and the FBI.

Fundamental challenges

Several challenges require the attention of the NRC and the nation. Since September 11, there have been many discussions about the potential vulnerability of nuclear power plants to terrorist attack. Some argue that the only acceptable response to the risk is to shut down the nation's reactors. Others contend that we can continue with nuclear power, which provides about 20% of the country's electricity, so long as appropriate security measures are in place.

The crimes of September 11 were designed to shock the American people, in part by the very fact that they involved such large and imposing targets. In an effort to ensure that no such horror occurs again, there is a danger of learning the wrong lesson from the attacks—blaming the victim, so to speak. The destruction of a skyscraper does not suggest it was a mistake to build skyscrapers, just as the distribution of anthrax in the mail does not mean it is a mistake to have a postal service. If we allow terrorist threats to determine what we build and what we operate, we will retreat into the past—back to an era without suspension bridges, harbor tunnels, stadiums, or hydroelectric dams, let alone skyscrapers, liquid-natural-gas terminals, chemical factories, or nuclear power plants.



We cannot eliminate the terrorists' targets, but instead we must eliminate the terrorists themselves. A strategy of risk avoidance—the elimination of the threat by the elimination of potential targets—does not reflect a sound response. Rather, the evaluation of the terrorist threat to infrastructure, including nuclear facilities, should include a careful and realistic examination of risks and benefits to society and the development of appropriate defenses.

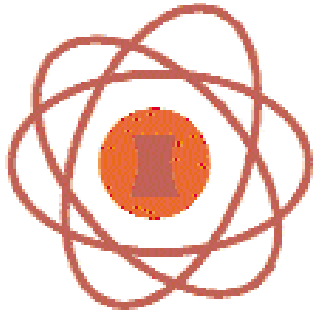
September 11 has made clear that our society must increase the vigilance with which we defend ourselves from terrorist attack. But the reality is that, as a society, we do not have infinite funds to spend for this purpose. Accordingly, we must allocate our defensive resources in a fashion that serves to minimize the total risk. As a result, any policy regarding the defense of nuclear facilities should be integrated in the overall response to the threat to infrastructure of all kinds.

Clearly, this is not a task that the NRC can undertake alone. We have sought, and will continue to seek, appropriate security at facilities subject to our jurisdiction. We are working with the newly constituted Office of Homeland Security and others to ensure that our strategy is coordinated with the other organizations responding to the threat of terrorist attacks. This effort poses a great challenge, however, because the task is large and defending the nation's infrastructure involves branches of government at all levels.

Although NRC licensees must defend nuclear power plants against the DBT, September 11 revealed a type of attack that neither the NRC nor other agencies anticipated. Thus, the attacks demanded that the NRC and its licensees reevaluate the scope of potential assaults.

There are limits, however, to what should be expected from a private guard force. For example, if it were determined that nuclear plants should be defended against aircraft attack, society would not expect licensees to acquire and operate anti-aircraft weaponry. Rather, this type of defense is better suited to the military. Similarly, there might be other types of attacks that should properly involve governmental response because of the size of the attacking force or the equipment that must be used to defend against them. As a result, in developing its policy, the NRC must differentiate the defensive obligation borne by licensees from that undertaken by government. This challenge is not unique to the NRC. Defining the appropriate defensive responsibilities of the public and





private sectors must be addressed for critical infrastructure of all kinds.

Another issue relates to the balance between security and openness. The NRC has sought to achieve public confidence through many


means, but perhaps the most effective tool is its policy of transparency. Because decisions made behind closed doors may be viewed with suspicion, we have sought to apply open decision processes that enable the public to become fully informed of the issues before us. We cannot aspire to a world in which our decisions will satisfy everyone, but we have hoped that everyone would see that we have reached them through fair and logical processes.

September 11 has made clear that we need to rethink just how open the NRC can and should be with respect to physical-security issues. In this process, we must give due regard to two vital but competing interests. The first is the public's right to know, a right that is grounded in law and that is one of the most cherished principles of our democracy. The other is the need to keep sensitive information away from those whose purpose is to destroy that democracy. We are striving to strike an appropriate balance between openness and security, but we must consider many issues. These include how much detail to make publicly available regarding changes in the DBT, and whether to release the detailed results of the security-efficacy tests the NRC conducts at nuclear power plants.

The NRC has taken regulatory action in response to the events of September 11 to fulfill our mission. These actions have involved not only nuclear power plants but also other types of licensees, such as nuclear-waste facilities. There is a need to reexamine past protective strategies to determine what permanent changes are needed, and, as a result, we are performing a comprehensive review of our safeguards and security programs to ensure that we have the right protections in place for the future. Many difficult issues, such as the definition of the roles of private industry and government in the defense of infrastructure, remain to be resolved.

Further reading

More information about the NRC's mission and activities is available at <http://www.nrc.gov>.

Regulations pertaining to nuclear reactors, the physical protection of plants, and materials security are contained in Title 10 of the *Code of Federal Regulations*, Parts 50 and 73, and are available at www.access.gpo.gov/#info. 

B I O G R A P H Y

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