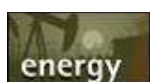


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Nuclear Power Plant Security: Voices from Inside the Fences September 12, 2002

Summary

Security guards at only one of four nuclear power plants are confident their plant could defeat a terrorist attack, according to interviews conducted by POGO for this report. The Nuclear Regulatory Commission (NRC) regulates the utilities operating nuclear power plants. The utilities generally subcontract with private guard companies for security services. The security guards say morale is currently very low and that they are under-manned, under-equipped, under-trained, and underpaid. More than 20 security guards protecting 24 nuclear reactors (located at 13 plants) were interviewed during POGO's investigation into nuclear plant security. POGO offers 29 recommendations to toughen security at the nuclear power plants.

▼ Table of Contents

Section A:

[Executive Summary](#)

[Foreword](#)

[Introduction](#)

[Increased Security Since September 11, 2001?](#)

Section B:

[The Guards: Under-manned, Under-equipped, Under-trained, Underpaid
 and Unsure about the Rules](#)

Section C:

[Outside Responders: What Help Can They Offer?](#)

[Federal Government Oversight: Dumbed-Down NRC Mock Attack Tests
 and Design Basis Threat](#)

[NRC Turns Blind Eye to Spent Fuel Pools](#)

[Decommissioning Reactors: NRC's Poor Stepchild](#)

[Letting Utilities Focus on Compliance Rather than Performance](#)

[Inadequate Whistleblower Protections](#)

[POGO Recommendations](#)

[Acronym Glossary](#)

[Endnotes](#)

Appendices

▼ To Print this Report



[Report - Section A](#)

[Report - Section B](#)

[Report - Section C](#)

[Report - Appendix](#) to print the Appendix use the file then print button in your browser or to print the full report with appendices in [pdf format](#).

▼ Executive Summary

Security guards at only one out of four nuclear power plants are confident their plant could defeat a terrorist attack, according to interviews conducted for this report by the Project On Government Oversight (POGO). The guards say morale is very low and that they are under-equipped, under-manned, and underpaid.



More than 20 security guards protecting 24 nuclear reactors (located at 13 plants) were interviewed during POGO's investigation into nuclear plant security. The guards' major concerns:

Under-manned: Prior to 9/11, the Nuclear Regulatory Commission (NRC) required only five to ten security guards on duty per nuclear reactor. Since then, the NRC has ordered the utilities to minimally increase the guard force. But more than half the guards POGO interviewed say their plants are relying on increased overtime of the existing guard force – up to six consecutive days of 12-hour shifts – rather than hiring more guards. Guards raised serious concerns about fatigue. While a few guards said their plants have increased the guard force – one plant has tripled the number of guards – most interviewed believe that they are still below adequate levels to defeat a real terrorist attack. According to one guard, "If an attack took place, most of the guards would run like hell."

Under-trained: Nuclear industry executives have repeatedly claimed that guards receive 270 hours of training before being posted; 90 hours per year to re-qualify with their weapons; and 30 hours per year in antiterrorist tactical exercises. None of these claims appear to be true. Most guards interviewed train with their weapons only once per year for two to three hours during their annual weapons qualification. Most also have had no training or practice in shooting at a moving target. "Tabletop" exercises are so rudimentary that utilities use red and blue colored clothes pins to depict locations and tactics of guards and terrorists.

Under-equipped: Many of the guards believe they are not equipped with adequate weaponry. The power and range of weapons provided to many of the guards is vastly inferior to the weapons known to be used by terrorists, due in part to restrictive state laws. According to one guard, terrorists will come armed with automatic weapons, sniper rifles, and grenades and the guard force "would be seriously outgunned, and won't have a chance."

Underpaid: Low wages and inadequate health, disability and other benefits are causing turnover in the guard force at some plants as high as 70-100% over the 3½ year life of a labor contract. At six nuclear facilities identified by POGO, security guards were being paid \$1 to \$4 less per hour than custodians or janitors. Guards also often earn less than workers in their area who face substantially less risk such as funeral attendants, manicurists, and aerobic instructors.

Unsure: Nearly all of the guards interviewed raised concerns about the lack of guidance on the use of deadly force. Guards are currently restricted from using deadly force unless an intruder is wielding a weapon or threatening the life of an individual. If a suicidal terrorist with a backpack (possibly containing explosives) jumped the fence and headed straight for a spent fuel pool or reactor, the guard could only observe and report the event. One guard summed up the problem stating: "If you pull the trigger, you're on your own and you'll need a good lawyer."

Since 9/11, the NRC has done little to bolster security at the power plants:

- The NRC requires utilities simply to delay attackers until outside help arrives from local sheriff departments, state police, or the FBI. However, the NRC is only just recognizing the chasm between how long plant security can hold off an attack and when outside responders could arrive. Tabletop exercises begun by NRC in July, 2002, indicate that it would take one to two hours for outside responders to arrive with SWAT capability. NRC's performance tests have shown that

successful terrorist attacks are over in between three to ten minutes.

- The NRC has failed to toughen security regulations. Current regulations reportedly only require nuclear plants to be prepared for an attack by three terrorists and one insider – a clearly inadequate scenario in light of the coordinated attack by 19 terrorists on 9/11. Recommended improvements have languished at the Commission.
- The NRC issued an order in February, 2002, that required utilities to make incremental upgrades in security by August, 2002. Those upgrades include minimal increases in the guard force, requirements that guards carry their primary weapons while on patrol (i.e. shotgun or rifle), and the movement of truck bomb barriers farther from reactor target sets.
- The NRC has not conducted force-on-force performance tests since 9/11. The NRC claims this is due to its current high-alert status. However, both the Department of Defense and the Department of Energy, which are also at high-alert status, have continued to test the performance of security over the past year. Prior to 9/11, power plants failed the mock force-on-force tests almost half the time according to closed-door Congressional testimony by NRC officials. POGO found that even those tests are seriously dumbed-down.

In addition to security guards, POGO also interviewed Army and Navy Special Forces personnel who conduct force-on-force tests, current and former NRC and other officials, a National Guard commander, and contractors. POGO's report is based on information and documents gathered from these sources. POGO briefed officials at the NRC on its findings.



▼ Foreword

The Project On Government Oversight (POGO) is an investigative organization that works with inside sources to improve public policy. Founded in 1981, POGO is a politically-independent, nonprofit watchdog that strives to promote a government that is accountable to the citizenry. This is our second report on inadequate security at nuclear facilities.

In early 2001, POGO began its first investigation into nuclear security, after more than a dozen high-level Department of Energy (DOE) security experts came forward with concerns regarding inadequate security at the DOE's nuclear weapons facilities.

Just prior to September 11, 2001, POGO completed that investigation, concluding that the nation's ten nuclear weapons facilities, which house nearly 1,000 tons of weapons-grade plutonium and highly-enriched uranium, regularly fail to protect this material during mock terrorist attacks. The resultant report, **"U.S. Nuclear Weapons Complex: Security at Risk,"** was released in October 2001.

Since the report's release, Congress, the General Accounting Office, and several federal agencies have undertaken reviews of POGO's findings which are as yet on-going. In the meantime, the Department of Energy has put into motion a plan to relocate tons of bomb-grade nuclear materials from one of three facilities POGO profiled for immediate attention. The facility, known as Technical Area 18, is located in an indefensible canyon at Los Alamos National Lab in New Mexico. Also since the report's release, more than 30 additional security experts and inside sources at the Department of Energy have contacted POGO to reveal documents and information about security weaknesses. As a result, POGO continues to expose the lack of security of our nation's nuclear weapons facilities.

Because of this work at nuclear weapons facilities, several current and former guards from commercial nuclear power plants began contacting POGO in early 2002 with similar concerns about inadequate security at the nation's nuclear power plants. POGO takes no position on nuclear power.

In April, POGO took a group of nuclear power plant security guards and former guards to brief nine congressional offices and committees about their concerns.

POGO then expanded its investigation, randomly contacting guards at additional facilities. In all, POGO interviewed over 20 guards protecting 24 reactors at 13 sites (both active and decommissioning). This represents more than one in five, or 23%, of the total reactors. These guards work at nuclear power plants across the country - in all four of the Nuclear Regulatory Commission (NRC) Regions. Most of these guards asked that neither they nor the utility that runs their plant be identified so as not to expose ongoing vulnerabilities, and because of the fear of reprisal from their employers. They are not "anti-nuclear." In fact, most of them have worked at nuclear power plants for more than ten years, many for most of their careers.

This report is based on the security concerns of over 20 guards interviewed by POGO. While these guards are certainly a small percentage of the security force working at nuclear power plants, it is surprising and unusual that this many were concerned enough either to contact POGO or be willing to be interviewed and provide their timely and on-the-ground testimony, in most cases in written statements. These guards all said they have come forward because they are hoping to help inform policymakers of the current security inadequacies by working with POGO. POGO did not use a questionnaire during the interviews, in an effort to avoid leading or directing the conversations, and obviously cannot independently

verify a good deal of their information. There have been no independent analyses by the Inspector General or the General Accounting Office evaluating the security concerns of nuclear plant guards since 1977. In an effort to corroborate these concerns, POGO consulted security specialists with military backgrounds who test and evaluate security at commercial reactors, current and former NRC and other federal security officials, contractors, and a National Guard supervisor who is supplementing security at a nuclear plant. These experts shared most of the guards' concerns about security at the nation's nuclear power plants. There are clearly common threads that run through the concerns addressed in this report.

A number of other people assisted with this report as well, including current and former Army and Navy Special Forces and DOE and NRC security experts who asked that their names not be revealed, as well as nuclear experts such as Dave Lochbaum of the Union of Concerned Scientists. POGO attempted numerous times to meet with nuclear industry representatives, but were repeatedly put off.

At the conclusion of our investigation, POGO briefed two NRC officials, including a Commissioner, of POGO's findings. There appears to be a growing awareness among some at the NRC about many of the problems raised by the guards, and an acknowledgment both that the NRC has relied far too much on the nuclear industry to provide insights and that there has been virtually no direct communication between the NRC and guard forces. Unfortunately, there is not unanimity at the Commissioner level about how and whether to address these concerns. It is clear that the NRC is not on a fast track to correct these problems. Currently, the NRC also vigorously opposes Congressional efforts to upgrade security. ([Appendix R](#))

Homeland Security Director Tom Ridge has encouraged the open discussion of our nation's vulnerabilities as the only way to push intransigent bureaucracies to make real security improvements. During a speech at the White House, he stated "... we will operate from a few basic principles. First, candor. No one should be wary of coming forward when they see a problem. It's the only way to define a solution. The urgency of our task dictates candor about our challenges and confidence in our ability to solve them."¹ This report is offered in that spirit.



▼ Introduction

There are 65 commercial nuclear power plants in 31 states operating 103 reactors. These plants generate about 20% of the nation's electricity. There are also 12 decommissioning reactors in the nation. While these reactors no longer produce electricity, they still have tons of radioactive spent nuclear fuel which remains stored in spent fuel pools and casks. Spent fuel pools are where the spent fuel rods are removed from reactors and placed in 45 foot deep pools of water for temporary storage. The Nuclear Regulatory Commission (NRC), an independent federal regulatory agency, is responsible for licensing and regulating these nuclear facilities and nuclear materials.²

As part of this responsibility, the NRC has the obligation to ensure that nuclear power plants are operated in a manner that protects public health, public safety and the environment. This includes the obligation to establish requirements which ensure that nuclear facilities are protected against acts of radiological sabotage and theft of nuclear material. To accomplish this, the NRC requires utilities operating nuclear reactors to submit security plans that it must approve.³ The vast majority of these utilities subcontract with private guard force companies to provide the protective services.

There is doubt about the effectiveness of the security of our nuclear power plants in many quarters. In the aftermath of 9/11, President Bush and other top government officials have said repeatedly that more terrorist attacks are likely. In his 2002 State of the Union Address, President Bush said that diagrams of nuclear power plants had been discovered in Al-Qaeda hideouts in Afghanistan.⁴

In April, the White House homeland security budget report, entitled "Securing the Homeland, Strengthening the Nation" identified nuclear facilities as among "the nation's highest risk targets" and among "the most vulnerable potential targets" of terrorists.⁵

Furthermore, during a briefing of the *New York Times* editorial board, Homeland Security Director Tom Ridge was asked, "given all the things he had to worry about - hijacked airlines, anthrax in the mail, smallpox, germs in crop-dusters - what did he worry about most? He cupped his hands prayerfully and pressed his fingertips to his lips. 'Nuclear,' he said simply."⁶

But it's not just political leaders and national security officials who are concerned about attacks on nuclear plants. The public is also concerned. Polls taken by news organizations show that the majority of Americans believe it is likely that terrorists will attack a nuclear power plant:

- In a Fox News poll of 900 registered voters nationwide in April 2002, 65% said they thought that security at U.S. nuclear power plants needs to be tightened.⁷
- In May 2002, *Time* and CNN asked 1,007 Americans how likely they thought it was that terrorists would attack a nuclear power plant in the next 12 months - 76% said they thought it was likely or somewhat likely.⁸

These concerns are not without basis.

More than half of the nation's nuclear power reactors are near metropolitan areas, including Indian Point near New York City; Salem and Hope Creek near Philadelphia; Limerick, also near Philadelphia; Seabrook and Pilgrim, both near Boston; and Waterford near New Orleans.⁹

While there has never been a successful terrorist attack on a nuclear power plant, there have been threats or attempts to penetrate or sabotage nuclear reactor sites reported in the United States.¹⁰ Officials have identified several attempts to penetrate security at nuclear plants since 1978. Most significantly, in the mid-1980s, three power lines leading to the Palo Verde plant in Arizona were sabotaged, and in 1989 four people were charged with conspiring to disable three Southwest nuclear plants.¹¹

According to a Princeton University study, the 1986 Chernobyl accident significantly contaminated over 140,000 square kilometers in Belarus, Russia and Ukraine; induced perhaps 10,000 child cases of thyroid cancer; resulted in the deaths of an uncertain number of plant and emergency workers; and otherwise affected the lives of over 7 million people.¹²

The NRC projected in 1981 that in a worst case accident at the San Onofre plant near San Clemente, California, as many as 130,000 deaths could result from an accident where the redundant safety mechanisms fail, and radioactivity reaches the environment in sufficient amounts to threaten the public, as might be caused by successful sabotage.¹³

NRC officials said in early September 2002 that the methodology used to project fatalities has changed since the 1981 study and that the projection is no longer valid. The officials said the NRC now estimates, based on a classified study, that in the most severe accident at a nuclear power plant, a handful to several dozen people would die soon after the accident and several hundred to several thousand people would develop health problems, such as cancer, over their lifetimes.

Currently, NRC commissioners, utility executives and nuclear industry lobbyists have all tried to alleviate the public's concerns. Richard Meserve, Chairman of the NRC, testified before Congress that the nation's nuclear plants have robust security, stating, "... NRC's current programs continue to provide a very high level of security We are comfortable with the security at our nuclear power plants."¹⁴

One official with the nuclear industry association Nuclear Energy Institute (NEI) even went so far as to argue that "the plants are overly defended at a level that is not at all commensurate with risk."¹⁵ Since then, NEI has run advertisements with pictures of well-armed and intimidating individuals and splashed with blazing headlines such as "Vigilant" and "More than Strong Fences - It's about the paramilitary security professionals who protect what's behind the fences."^(Appendix S)

Despite the assurances from Chairman Meserve and the nuclear industry that nuclear security is adequate, David N. Orrick, the NRC security official who conducts mock terrorist attack tests at nuclear power plants, testified to the contrary. He testified before Congress on April 11, 2002 that the NRC found "a significant weakness" in armed response during 37 out of 81 mock attacks and the mock "attackers" were able to take actions "which would lead to core damage and in many cases, to a probable radioactive release." In other words, the guard forces failed to protect the plants during these mock attack tests 46% of the time.¹⁶

As further evidence that post-9/11 security is not as "vigilant" as suggested by the nuclear industry or its regulators at the NRC, mock "terrorists" have told POGO they were able to enter a plant disguised as a work crew, "destroy" the target sets,¹⁷ and leave the plant completely undetected. In another example, mock "terrorists" created false identification badges and were able to enter the control room of a nuclear plant and exit unimpeded.

Some Members of Congress have become so frustrated with the NRC's resistance to seriously upgrading security that they are trying to legislate improvements in security.

This POGO report examines what has happened since 9/11, and the roles and problems at the nexus where the important players in nuclear power plant security meet: the guards, the utilities running the plants, local law enforcement and other outside responders to an attack, and NRC's federal oversight.

POGO found that the security forces at the nation's nuclear power plants, with a few exceptions, believe they are under-manned, under-trained, under-equipped, underpaid and unsure about the rules of using deadly force.



▼ Increased Security Since September 11, 2001?

The NRC has done little to effectively improve security at nuclear power plants since 9/11. Most significantly, the NRC has not toughened the Design Basis Threat (DBT) security regulations, which specify the number of outside attackers and inside co-conspirators that nuclear facilities must be prepared to defeat.¹⁸ The current DBT reportedly only requires nuclear plants to be prepared for an attack by three terrorists - hardly realistic given the coordinated attack by 19 terrorists on 9/11.¹⁹

According to NRC sources, the NRC's Threat Assessment Team recommended improvements to the currently inadequate DBT after 9/11. Unfortunately, that recommendation has languished at the Commissioner level and Chairman Meserve of the NRC testified in June 2002, that the Commission could not commit to a date for toughening the DBT.

Indecisiveness over increasing the DBT will further exacerbate the delay in implementing heightened security. Because it takes time to hire and train guards, reconfigure the physical layout of parts of the plant, and purchase equipment that meets the requirements of a new DBT, it will be at least two years *after*

9/11 before necessary upgrades are likely to be implemented.

Instead of upgrading the DBT, the NRC issued an order on February 25, 2002, to its utilities to make a temporary, incremental upgrade to their defensive posture.²⁰ These upgrades included minimally increasing the guard force, requiring the guards to actually carry their primary weapons while on patrol, and moving truck bomb barriers farther from reactor target sets. Plants were also ordered to address vehicle access control problems, for instance by requiring guards to escort chemical trucks in the security area, as well as to address the effectiveness of intrusion detection systems such as alarms on fences and doors. These improvements were required to be implemented by the end of August 2002 and were described by an NRC Commissioner as an "implicit" increase in the DBT.

On August 20, 2002, 11 months after 9/11, the NRC announced a new Homeland Security Advisory System. This new system, according to this NRC Commissioner, sent a "strong hint" to the plants that the NRC would not allow them to return their pre-9/11 security postures. It does not however, spell out exactly what the new expectations will be. ([Appendix R](#))

One example of changes in security that does not actually improve security is the utility companies' dependence on overtime. According to the majority of the guards interviewed by POGO, rather than dramatically increasing the number of guards, their plants are heavily relying on increased overtime of the existing guard force - with 12-hour shifts, six days a week being common. These guards raised serious concerns about the inability to remain fully alert under these circumstances.

Following 9/11, National Guard units were also stationed outside a number of nuclear power plants to patrol the perimeter. Security experts advise that while this may be a deterrent, it is not an effective tactic if there were a real attack on the plant. As the Special Forces describe the role of perimeter defense, the plant guards are alerted that an attack is underway when the National Guardsmen on the perimeter are killed - the proverbial canary in a coal mine. It was later discovered that at least some of the National Guard units were patrolling with unloaded weapons.²¹

Yet another example of insufficiently increased security is that to protect against larger truck bombs, the utilities were ordered to move the barriers back to 700 feet from the hardened target buildings. However, some experts believe this move is inadequate. The analysis used to arrive at this distance assumed the use of a smaller bomb than has been used by terrorists against a number of U.S. targets. The attacks against the World Trade Center (in 1993), the Murrah Building in Oklahoma City, and U.S. embassies and barracks overseas used larger trucks to deliver the bombs than were accounted for in the analysis. An NRC official has suggested that the move to 700 feet was derived more from a concern about the loss of convenient parking spaces, rather than from security considerations.

Because the NRC only requires guards at nuclear power plants to be able to delay, observe and report an attack, security guards are not expected to be able to defeat a terrorist attack without reinforcement from outside responders. The NRC, however, has only just begun tabletop testing the timelines for these responder teams to arrive at the plant. Initial estimates are one- to two- hours after the attack, even though performance tests have shown successful terrorist attacks to take between three and ten minutes.

In response to 9/11, the NRC also established the Office of Nuclear Security and Incident Response on April 7, 2002. However, only one of the five senior managers of this office has any security experience. The others are safety and emergency response experts. This is not much of a step forward for security.

Despite the critical need for increased security since 9/11, the NRC has not conducted force-on-force performance tests to determine whether or not the recent minimal upgrades in security have improved the performance of the guard force in handling even the current, inadequate DBT. The NRC claims this is due to its current high-alert status. However, both the Department of Defense and the Department of Energy, which are also at high-alert status, have continued to test the performance of security over the past year.



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