The World Trade Center Bombing, The Three Mile Island Intrusion and the Potential Threat to U.S. Nuclear Power Plants

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Introduction
The World Trade Center bombing marks a watershed in our and others' perceptions of America's vulnerability. Until last month's blast, many Americans regarded terrorism as something that happened elsewhere: a problem endemic to the already violent Middle East and revolution-prone countries of Latin America that occasionally spilled over onto the streets of Paris, London, and Madrid. The bombing shattered not only that complacency, but America's sense of security. Though frequently the target of terrorists abroad, the attack demonstrates that Americans can no longer believe themselves immune to such violence within their own borders. Whether the attack ultimately proves to be a single, isolated event or, as some have warned, the beginning of a new wave of terrorism in the United States, the fact remains that the bombing—and the evidence that suggests a conspiracy of possible international dimensions—is the most serious terrorist incident to have occurred in this country in nearly two decades.

In my testimony today, I have been asked to lend some perspective to the World Trade Center bombing—as well as to an incident that occurred last month at the Three Mile Island nuclear power plant, in Ephrata, Pennsylvania when an intruder entered the facility and remained at large for four hours—with respect to the potential terrorist threat to commercial nuclear power plants. As you may know, RAND has long been involved in research concerning terrorism in general and the likelihood of nuclear terrorism in particular. During the 1970s, we assisted in the development of the U.S. Department of Energy’s (DOE) adversary characterization and threat guidelines and in 1986 RAND participated in the reassessment conducted by the DOE.

*The views I will express today are my own and do not necessarily represent those of RAND or any of its research sponsors.

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that time, we have conducted additional studies on how trends in both international and domestic terrorism might affect the likelihood of nuclear terrorism, on insider crimes and the threat to DOE nuclear programs and facilities, and the characteristics of potential force-on-force attacks (i.e., armed attacks against defended targets) against DOE installations. In addition, five years ago I testified before a House of Representatives subcommittee similarly addressing the adequacy of the NRC's design basis threat in respect of vehicular intrusion. While some of my testimony summarizes RAND's work on these issues, I should point out that the views I will express today will be my own; they do not necessarily represent those of RAND or any of its research sponsors.

The Potential Terrorism Threat to Commercial Nuclear Power Plants

For more than two decades experts around the world have debated whether terrorists might someday attack nuclear power plants in order to acquire the strategic nuclear material needed to build a nuclear weapon, obtain radioactive materials for use in an act of blackmail or coercion, or simply to cause radioactive substances to be released into the environment and thus contaminate surrounding areas. The dramatically altered international environment


See Peter deLeon and Bruce Hoffman, The Threat of Nuclear Terrorism: A Reexamination (Santa Monica, CA: RAND, N-2706 January 1988); and, Bruce Hoffman, Recent Trends and Future Prospects of Terrorism in the United States (Santa Monica, CA: RAND, R-3618, May 1988).


The threat was first articulated in 1975 by Brian Michael Jenkins, then a member of The RAND Corporation research staff, in Will Terrorists Go Nuclear? (Santa Monica, CA: RAND, November 1975, P-5541). In response to the escalation—and intensification—of international terrorism during the mid-1980s (in particular the series of suicide car- and truck-bombings against United States and other foreign targets that occurred in the Middle East between 1983 and 1985) the debate acquired new relevance. Two contrasting views are evident, for example, in the testimonies of Jenkins and Paul Leventhal, the founder and president of the Washington, D.C.-based Nuclear Control Institute (a non-profit, public policy
today—where a "new world order" is emerging in the wake of the cold war—has focused renewed attention on this debate. Indeed, at a time when old empires and countries are crumbling and new ones are being built, the possession of a nuclear bomb or the development of a nuclear capability may become increasingly attractive either to new nations seeking to preserve their sovereignty or to would-be nations seeking to attain their independence. In both instances, terrorists may find new roles for their skills and expertise: they could be ordered by their own governments or employed by other countries either to steal nuclear weapons or strategic material from another country or themselves be paid to stage a covert attack either with a nuclear device or against a nuclear facility in order to conceal the involvement or complicity of their state patron. In this respect, the lesson of Iraq's overt invasion of Kuwait looms large. In the future, terrorists may become the "ultimate fifth column": a clandestine, cost-effective, force used to wage war covertly against more powerful rivals or to subvert neighboring countries or hostile regimes.

Let me briefly revisit this long-standing debate in light of both recent terrorism trends and the events in New York and Pennsylvania last month. Before doing so a significant caveat is necessary. It is difficult to render a conclusive assessment on the threat to commercial nuclear power plants or the security of nuclear systems because no viable attack against such facilities has yet occurred and there are no "lessons" to be drawn from past experience. Although various disturbances and arguably minor incidents of terrorism or sabotage in or against nuclear plants in the United States and elsewhere admittedly have taken place, none has endangered any part of their nuclear component, much less produced radioactive fallout. Nor have there been any credible threats from terrorists or other adversaries against nuclear power plants. With the exception of three—radioactively inconsequential—incidents against non-operational or newly completed nuclear power plants during the 1980s—that occurred in countries experiencing widespread civil insurrection like South Africa (where guerrillas penetrated the heavily guarded Koeberg nuclear power plant near Cape Town and damaged the control room) and Spain (where Basque terrorists fired a rocket-propelled grenade against a reactor containment tower then under construction in Lemoniz)\(^8\) and one in the United States (the bombing in May 1986 of the three of the four off-site power lines leading to the recently completed Palo Verde nuclear power plant in

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\(^8\)Both attacks, it should be emphasized, took place before the reactors were completed. See "Response by D.A.V. Fischer, What Nuclear Means and Targets Might Terrorists Find Attractive?" in Leventhal and Alexander, Nuclear Terrorism: Defining the Threat, pp. 85-86.
Arizona)-terrorists have neither attacked nuclear facilities, stolen nuclear weapons or weapon-grade nuclear materials, nor even committed credible nuclear hoaxes. Accordingly, any conclusions regarding the possibility of future terrorist attacks on a commercial nuclear power plant are speculative. At the same time, however, speculation informed by extensive research into the motivations, capabilities, intents, and operations of terrorists and other violent adversaries as well as a detailed knowledge of worldwide terrorist patterns and their relevance to potential acts of "nuclear" terrorism can be of assistance in making difficult security decisions in an uncertain environment.

In the past, most analyses of the possibility of nuclear terrorism tended to discount it because few terrorists know anything about the technical intricacies of either developing and triggering such a weapon or of engineering the release of radioactive contaminants from a reactor into the surrounding environment. As a 1988 RAND study observed, "Terrorists are generally not knowledgeable in nuclear technology (e.g., the conversion of stolen plutonium into an explosive device), whereas they have mastered the components of "conventional" terrorist attacks." Moreover, the internal dynamics and decision making processes of terrorist groups have tended to inhibit sudden escalations or changes in either tactics or level of violence, such as a potential act of nuclear terrorism would involve. Political, moral, and practical considerations also were seen to affect terrorist decision making. And, it was thought, there were few realistic demands that terrorists could make by threatening the use of such indiscriminate weapons.

The vast majority of terrorist activity throughout the world, moreover, has been primarily "symbolic," designed to call attention to themselves and/or to their causes and not necessarily to kill or harm anyone or wantonly destroy property. Terrorist attacks, therefore, tended not to be directed against people, but against "things"—inanimate objects such as embassies, consulates,

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9The reactor at the site was non-operational. See Testimony of Daniel Hirsch, Director, Program on Nuclear Policy, University of California at Santa Barbara in Oversight Hearing Before the Subcommittee on General Oversight and Investigations of the Committee on Interior and Insular Affairs, House of Representatives, "The Threat of Sabotage and Terrorism to Commercial Nuclear Powerplants," Washington, D.C., March 9, 1988, Serial No. 100-43, p. 41.

10A fourth incident may have been thwarted in 1985 when South Korean naval patrol craft killed four North Korean commandos attempting to come ashore near a South Korean nuclear power plant.

11Within the context of this study, the term "nuclear terrorism" is used to encompass a broad range of possible criminal acts. It includes actions against nuclear facilities, military or civilian, including vehicles transporting nuclear weapons, components, or materials; and those in which nuclear weapons, explosive devices, or materials are used to threaten or actually destroy people and property. The first type of action might serve as a precursor to the second; terrorists might assault or infiltrate a facility to steal a weapon or material for use in a future nuclear threat.

12DeLeon and Hoffman, The Threat of Nuclear Terrorism: A Reexamination, p. 4.

13Jenkins, Will Terrorists Go Nuclear?, pp. 6-7.
government offices, businesses, military installations, and airlines that, by dint of their national identification, are replete with symbolic connotation for the terrorists. Thus, diplomatic targets have historically been the focus of most terrorist attacks, followed by business, airline, military, and civilian targets—with attacks on energy, maritime, transportation, and communications targets comparatively rare, if not statistically insignificant.

Indeed, terrorists historically have rarely attempted, much less contemplated, the infliction of mass, indiscriminate casualties, such as a nuclear incident might entail. Of more than 8,000 terrorist incidents recorded in The RAND Chronology of International Terrorism since 1968, for example, only 52 evidence any indication of terrorists either plotting such attacks or seeking the use of chemical, biological, or nuclear weapons. Viewed from another perspective: since the beginning of the century fewer than a dozen terrorist incidents have been committed that individually have caused the deaths of more than a 100 persons. Thus, in addition to presenting serious operational challenges, it appears that terrorists have tended to regard any act of mass indiscriminate killing or destruction as "politically unpalatable." Such massive destruction and/or contamination could be expected to result in public revulsion, alienating any potential sympathizers to their cause (and in some instances actually harming precisely the population the terrorists purport to be representing, protecting or defending), and triggering severe government countermeasures to eliminate the terrorists. Finally, terrorists themselves have repeatedly

\[14\text{Accounting for twenty-three percent of terrorist operations in the 1980s; 29 percent in the 1970s, and 32 percent in 1968/69. Source: The RAND Chronology of International Terrorism.}

\[15\text{Twenty-one percent of terrorist operations in the 1980s and 1970s; and, 14 percent in the 1970s. Source: The RAND Chronology of International Terrorism.}

\[16\text{Twelve percent of terrorist operations in the 1980s; 21 percent in the 1970s; and 38 percent in 1968/69. Source: The RAND Chronology of International Terrorism.}

\[17\text{Ten percent of terrorist operations in the 1980s; seven percent in the 1970s; and .03 percent in 1968/69. Source: The RAND Chronology of International Terrorism.}

\[18\text{Nine percent of terrorist attacks in the 1980s; eight percent in the 1970s; and, none in 1968/69. Source: The RAND Chronology of International Terrorism.}

\[19\text{A bombing in Bessarabia in 1921; a 1925 bombing of a crowded cathedral in Sofia, Bulgaria; a largely unrecorded attempt to poison imprisoned German SS concentration camp guards shortly after World War II; the crash of a hijacked Malaysian passenger plane in 1977; the arson attack at a Teheran movie theater in 1979 that killed more than 400; the 1983 bombing of the U.S. Marine barracks in Lebanon that killed 241; the 1985 inflight bombing of an Air India passenger jet that killed all 328 persons on board; the simultaneous explosions that rocked an ammunition dump in Islamabad, Pakistan in 1988; the bombing of Pan Am flight 103 in 1988 that killed 278 persons; the 1989 inflight bombing of a French UTA flight that killed 171; and the inflight bombing, as in 1989, of a Colombian Avianca aircraft on which 107 persons perished. As Jenkins noted in 1985 of the list upon which the preceding is an expanded version: "Lowering the criterion to 50 deaths produces a dozen or more additional incidents. To get even a meaningful sample, the criterion has to be lowered to 25. This in itself suggests that it is either very hard to kill large numbers of persons or very rarely tried." Brian M. Jenkins, The Likelihood of Nuclear Terrorism (Santa Monica, CA: RAND, P-7119, July 1985), p. 7}
demonstrated over the past two decades that their goals and objectives can be accomplished using the same tactics and "off-the-shelf weapons" (though perhaps cleverly modified or adapted to their needs) that they have traditionally relied upon. Even in those instances involving comparatively more sophisticated state-sponsored terrorists, the bombs and other weapons used have been exclusively conventional, typically involving "off-the-shelf," as opposed to "high tech" or especially unique weaponry and materiel.

Bombings—mostly simple devices constructed from homemade, improvised explosive materials, commercially purchased or stolen dynamite, and plastic explosives procured or stolen from military stockpiles—have continued to account for roughly half of all the terrorist attacks throughout the world that occur annually; as they have since 1968. The reliance on bombing is not surprising: bombs provide a dramatic, yet fairly easy and often risk-free means of drawing attention to the terrorists and their causes. Few skills are required to manufacture a crude bomb, surreptitiously plant it at the target site, and then be miles away when it explodes. It can be, and frequently is, a one or two-person operation. Bombings therefore typically do not require the same organizational expertise, logistics, and knowledge required of more complicated or sophisticated operations.

It is not surprising, accordingly, to find that the frequency of various types of terrorist attacks decreases in direct proportion to the complexity or sophistication required. Attacks on installations (including, for example, assaults with hand grenades, bazookas, and rocket-propelled grenades; drive-by shootings; arson; vandalism; and sabotage other than bombing), accordingly, is the second most common tactic (accounting for fewer than 20 percent of all operations), followed by assassination/shooting; with kidnapping, hijacking, barricade and hostage situations variously accounting for the small number of remaining incidents.

The fact that these percentages have remained largely unchanged for the past 25 years provides compelling evidence that the vast majority of terrorist organizations are not tactically

20 State-sponsored terrorism is here defined as the general provision by governments of safe havens, logistical assistance, weapons, intelligence and training to terrorist organizations as well as the commissioning of specific terrorist acts at a government's behest.
21 Forty-nine percent of all terrorist attacks in the 1980s involved bombings; 53 percent in the 1970s; and, 44 percent in the 1968/69. Source: The RAND Chronology of International Terrorism.
23 Thirteen percent in the 1980s; nine percent in the 1970s; and only three percent in 1968/69. Source: The RAND Chronology of International Terrorism.
24 Kidnappings accounted for 10 percent of all terrorist attacks in the 1980s; nine percent in the 1970s; and just .01% in 1968/69; hijackings for four percent of the incidents in the 1980s; seven percent in the 1970s; and, 33 percent in 1968/69; and barricade and hostage for just one percent in the 1980s; three percent in the 1970s; and none in 1968/69. Source: The RAND Chronology of International Terrorism.
innovative. Radical in their politics, these groups appear to be conservative in their operations, weapons preference and target selection, adhering to the same limited operational repertoire year after year. What innovation does occur is in the methods used by terrorists to manufacture, conceal and detonate explosive devices, not in their tactics or their use of nonconventional weapons (i.e., either simple chemical or biological weapons, much less more complex nuclear ones). Terrorists, accordingly, continue to rely—as they have for more than a century—on the gun and the bomb: rarely deviating from an established modus operandi.

However, while there has been little change over time in terrorist tactics, targets, and weapons that might indicate escalation into the nuclear domain; at the same time terrorists have been undeniably more active and considerably more lethal: and this is worrisome. While the total volume of terrorist activity increased by a third in the 1980s compared to the previous decade, over the same time period terrorists killed twice as many persons. This increase in lethality is reflected in the 75 percent increase in the number of individual terrorist incidents resulting in fatalities, the 115 percent rise in the number of incidents that caused five or more fatalities and, especially in the 135 percent increase in the number of incidents that caused ten or more fatalities. Five reasons explain this trend:

- The terrorists’ apparent belief that lethality attracts—and, indeed, assures—attention;
- The improved effectiveness of terrorist organizations over time;
- The fact that terrorists themselves are operationally more capable and adept;
- The increase of state-sponsored terrorism; and,
- The resurgence of terrorism motivated by a religious imperative.

The latter two explanations may, of course, be of some relevance to the World Trade Center bombing.

Thus, if, for example, terrorist lethality continues to increase and the constraints, self-imposed and otherwise imposed on terrorists in the commission of mass murder erode further, actions involving chemical, biological, or nuclear weapons could conceivably become more attractive to some terrorist groups. Moreover, religious and/or ethnic fanaticism could more easily

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25 The series of attacks that occurred this past week in India—where 232 persons were killed and over 1,400 wounded in Bombay on Sunday and at least another 60 persons were killed in Calcutta on Wednesday—are the most recent cases in point. See Edward A. Gargan, “Blast in Calcutta Kills at Least 45,” New York Times, March 17, 1993.

26 According to The RAND Chronology of International Terrorism, 2,536 incidents occurred between 1970 and 1979 as compared to 3,658 between 1980 and 1989; a total of 4,077 persons were killed by terrorists between 1980 and 1989 as compared with the 1,975 killed between 1970 and 1979.

27 Unless otherwise noted, the statistics presented in this paper are derived from The RAND Corporation Chronology of International Terrorism.

28 For a fuller discussion of these reasons see Bruce Hoffman, Terrorist Targeting: Tactics, Trends, and Potentialities (Santa Monica, CA: RAND, P-7801, 1992).
allow terrorists to overcome previous psychological barriers to mass murder than could a radical political agenda. The record of terrorist acts by Shi'a Islamic groups, for example, underscores this point. Although these organizations have committed only eight percent of all international terrorist incidents since 1982, they are responsible for 30 percent of the total number of deaths recorded since then.\footnote{According to The RAND Corporation Chronology of International Terrorism between 1982 and 1989 Shi'a terrorist groups committed 247 terrorist incidents but were responsible for 1057 deaths.}

Hence, a terrorist group of religious zealots, with state support, in a context of an ongoing conflict elsewhere in the world could see the acquisition and use of a chemical, biological, or nuclear capability as a viable option. State sponsorship, in particular, could provide terrorists with the incentives, capabilities, and resources they previously lacked for undertaking an ambitious operation in any of these domains. Combined with intense ethnic enmity or a strong religious imperative, this could prove deadly.\footnote{Thesis originally advanced by the author in collaboration with Peter deLeon in The Threat of Nuclear Terrorism: A Reexamination (Santa Monica, CA: RAND, N-2706, January 1988).}

The World Trade Center Bombing, The Three Mile Island Incursion, and the NRC Design Basis Threat

How does the preceding discussion apply to the more specific question of the potential terrorist threat to commercial nuclear power plants in the United States? Let me emphasize here that no terrorist group has yet attacked an operational nuclear facility. Puerto Rican terrorists, however, have twice threatened to attack commercial nuclear energy facilities and on one occasion warned that they would detonate several radioactive devices.\footnote{In 1979, the FALN (Fuerzas Armadas de Liberacion Nacional or Armed Forces of the National Liberation) threatened to blow up New York’s Indian Point commercial nuclear power plant. The following year, during the takeover of the Dominican Republic’s embassy in Bogota, Colombia by M-19, a left-wing Colombian group, the FALN—in a show of “revolutionary solidarity”—warned the United States: “You must remember . . . that you have never experienced war in your vitals and that you have many nuclear reactors.” In addition, in 1975, a Puerto Rican group (believed to be the FALN) warned it would detonate 100 bombs, of which 25 were alleged to contain radioactive material. See Hoffman, Terrorism in the United States and the Potential Threat to Nuclear Facilities, pp. 7-8.}

And during the 1990 deployment of American military forces to Saudi Arabia following Iraq’s invasion of Kuwait, George Habash, the founder and leader of the Popular Front for the Liberation of Palestine (PFLP), threatened American cities with nuclear terrorist attacks.\footnote{Palestinian radical urges nuclear terror,” Washington Times, September 4, 1990 and Reuters, “Guerrillas ‘have finger on trigger’,” The Guardian (London), September 19, 1990. See also, Reuters, “Habash Reportedly Leaves Syria and Moves to Iraq,” New York Times, September 3, 1990.} Hence, one problem in assessing the terrorist threat to commercial nuclear power plants is that evaluations can only be based on deductions made from the analysis of both the historical record of conceptually similar
actions as well as what more recent trends potentially suggest. In respect of the World Trade Center bombing—which is still under investigation—it would be premature to offer any conclusive assessment of its implications on future terrorism in the United States in general, much less against commercial nuclear power plants in particular. Let me therefore offer some preliminary observations on the significance of the Trade Center bombing, how and why it differs from past terrorist incidents that have taken place in this country, and what the incident possibly suggests in terms of potential terrorist acts in the future.

The World Trade Center bombing is significant if for no other reason than the fact that six persons are dead and more than a thousand others injured. It was the first terrorist incident in this country since 1986 to kill anyone (when a former police officer was assassinated in Puerto Rico by one of that island’s violent separatist groups) and except for the 1975 bomb explosion at New York’s LaGuardia Airport that killed 11 persons and wounded 75 others, no other domestic terrorist incident has killed more people.

Admittedly, the U.S. has endured decades of mostly isolated or sporadic campaigns of both “homegrown” and “imported” terrorism. Indigenous terrorist organizations have included left-wing radicals opposed initially to the Vietnam War and later to American military involvement in Central America as well as extremist right-wing/white supremacist organizations espousing racism, anti-semitism and tax resistance. Terrorists motivated by specific, contentious domestic political issues such as legalized abortion, animal rights, and the environment, have also carried out attacks designed to draw attention to or further their own, specific agendas. Finally, individuals belonging to a variety of ethnic and emigre groups residing in the U.S. have used this country as a battleground in which to prosecute historical, often centuries-old enmities against rival ethnic or emigre peoples, internal dissidents or apostates, and, most often, against the diplomatic representatives of governments whom these groups oppose. Despite some expressions of sympathy and understanding of the terrorists’ goals and motivations, the ethnic or emigre communities that the terrorists purported to represent rarely provided explicit support of their violent actions and over time were increasingly alienated or embarrassed by the terrorist acts ostensibly committed in their name.

The World Trade Center bombing, however, differs from these previous instances of domestic terrorism in a number of respects. Our sense of immunity—however illusory it may actually have been—is now irrevocably lost. Despite the rapidity with which the case was

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33Indications our sense of immunity was illusory had already surfaced repeatedly during the 1980s. In 1987 a member of the renegade Palestinian Abu Nidal terrorist organization—and naturalized American citizen—was discovered living in Puerto Rico and in the process of establishing a network of terrorist cells and attendant support apparatus along the U.S. East coast. He was extradited to Israel in 1989 on charges that he led an attack on a civilian bus three years before. Later that year, three Canadians of Lebanese descent were
cracked, American law enforcement’s long string of impressive successes in thwarting the commission of violent acts by foreign terrorists in this country has ended. In this respect, the psychological defenses surrounding the U.S. have also been breached, which may possibly encourage future attacks. The perception believed to be prevalent among foreign terrorists concerning the difficulties of operating in the U.S.—which may have restrained past inclinations to carry out attacks in this country—have arguably eroded forever. Moreover, terrorists now have a somewhat better picture of how American law enforcement reacts and responds to terrorist acts, what clues it seeks, and what leads are followed. Accordingly, should terrorists again decide to strike here, it is unlikely that they will make the same mistakes that led to the accused bombers’ speedy apprehension.

Furthermore, despite the accused bombers’ almost comical ineptitude in avoiding capture, they were able to shake an entire city’s—if not country’s—complacency. If “amateurs” using ordinary, commercially-available materials can fashion a simple bomb and cause so much damage and destruction, one shudders to think what international terrorism’s genuine “professionals” could accomplish. Moreover, terrorism yet again has been shown to work—and to pay vast dividends in attention and publicity for comparatively little effort. The bombing itself and its attendant success in galvanizing the American media and capturing the country’s undivided attention, sends a powerful message to terrorists everywhere and may therefore encourage imitators.

Finally, the evidence thus far revealed by law enforcement in connection with the bombing may represent only the tip of the iceberg. The suspicious transfer of funds from an overseas bank to a joint account maintained here by the accused bombers just before the Trade Center blast raises the possibility of foreign involvement in, if not direction of, the operation. Moreover, the fact that, since 1985, at least two other worshippers at the same Jersey City mosque the two accused attended have also been implicated in terrorist or terrorist-related acts suggests the possibility that the Trade Center attack may not have been an isolated incident, but is part of some wider, long-term conspiracy, perhaps involving additional persons both in this country and abroad.34

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34 The first incident involves the arrest, in December 1985, of Sultan Ihab El Galali, an Egyptian-born travel agent, by U.S. Customs Service officers. El Galali was convicted of attempting to export 150 pounds of C-4 plastic explosives, 100 blasting caps, remote detonators and a 9-mm. silencer-equipped pistol to Palestinian terrorists in Israel and the Occupied Territories. He served 18 months in prison and has since been released. The
Given the above potential implications of the World Trade Center bombing, a re-evaluation of the United States' ability and preparedness to respond to potential future acts of terrorism in this country—including those possibly involving commercial nuclear power plants—is not only prudent, but necessary. Indeed, the February 7, 1993 incident at Three Mile Island—when a lone individual crashed his station wagon through two chain-link fences into the facility’s "protected area" and managed to elude security guards for four hours—sounds a cautionary note. Much like the "amateurish" terrorists who caused so much damage and destruction at the World Trade Center, one similarly shudders to think what "professional" terrorists, well-armed and trained in combat skills, driving something more formidable than a Plymouth station wagon could accomplish should they decide the defenses and security measures at this country’s commercial nuclear power plants were permeable and easy to penetrate.

The Three Mile Island incident further underscores a potential gap in the Nuclear Regulatory's (NRC) design basis threat that has been debated since at least 1988: specifically that it does not "recognize the possible use of land vehicles for the breaching of perimeter barriers and transporting adversary personnel and their equipment"; assuming instead that adversaries would enter the facility on foot to carry out an attack. When I testified before the House subcommittee investigating this same issue five years ago, I stated that it "seems self-evident that the NRC's design basis threat should be amended to include land vehicle use by potential adversaries. In each of the six adversary attributes and characteristics (encompassing terrorist assault, robbery, burglary, bombing, sabotage, and commando raid) identified in a previous RAND study of potential threats to domestic nuclear facilities, use of land vehicles figured prominently as a likely mode of transport to the intended target. Another RAND study, which assessed the outcome of a selected sample of raids executed by small organized military forces or irregular paramilitary groups (i.e., guerrilla and terrorist organizations), found that land vehicles had the highest rate of success of all the vehicle types used by raiding parties to travel to and from their targets." In light of the February 7th incident, this observation remains equally—if not even more—relevant today.

second, is the assassination of Rabbi Meir Kahane by El Sayyid A. Nosair, who also was born in Egypt and like El-Gawli and the two World Trade Center bombing suspects—Mohammed Salameh, and Nidal Ayyad—worshipped at the Masjid al-Salam Mosque in Jersey City. See John Kifner, "Kahane Suspect Is a Muslim With a Series of Addresses," New York Times, November 7, 1990.


37deLeon, et al., Attributes of Potential Criminal Adversaries of U.S. Nuclear Programs, pp. 43-49.

Finally, the nuclear industry has proposed that a number of regulatory requirements associated with the insider threat that appear to be only marginally effective should be relaxed. It is argued that, because personnel are monitored more closely now than in 1978, when the security regulations were first drawn up, that some of these requirements can be dispensed with. I am not sufficiently familiar with the specific regulations or arguments to render any definitive judgment. I would, however, like to call the Subcommittee’s attention to a RAND report published in 1990 that explored the characteristics of 62 reported insider crimes in order to gain insight into potential threats to the security of DOE nuclear programs.\textsuperscript{39}

Since there have been few actual insider criminal incidents against nuclear facilities, we relied in this study on analogous crimes whose aims and operations were similar to those of possible future crimes involving nuclear facilities. The report concluded that the insider criminal is among the most difficult and dangerous adversaries to defend against. He or she may be young or old, a long time employee or not. Financial gain was most likely to motivate an insider to help outsiders perpetrate a crime. Significantly, even those insiders who assisted ideological (i.e., terrorist) groups did so, not solely in support of the groups’ goals, but, in fact, to reap monetary and emotional rewards for themselves. However, while financial gain may be the insider’s predominant motivation, additional elements such as family ties, an intimate relationship, disillusionment or disgruntlement, misplaced altruism or ideological allegiances may play a role in the decision to commit or abet a criminal act against an employer. Insiders, we found, can accomplish great damage acting either alone, in cooperation with fellow insiders, or in league with outsiders.

Perhaps the most important finding of the study was that which related to planning and security. In most of the incidents we examined the success of the crime seemed to depend less on detailed planning or expert execution than on the exploitation of existing security flaws. Indeed, most of these crimes did not require sophisticated planning but rather were often mere targets of opportunity. This is a point brought out by the airline security official, quoted in the Nuclear Regulatory Commission report on insider crime published in 1980,\textsuperscript{40} who stated that most high value losses are not system failures, but people failures. In this respect, guard forces emerged as a special and particularly vexing problem, as guards were responsible for 41 percent of the crimes committed against the guarded targets in our database. Closely related to this is the observation that it is not necessarily the security routines themselves that are wanting, but the related fact that they often are not properly followed.

\textsuperscript{39}Hoffman et al., \textit{Insider Crime: The Threat to Nuclear Facilities and Programs.}
\textsuperscript{40}S.A. Mullen et al., \textit{Potential Threat to Licensed Nuclear Activities from Insiders (Insider Study)}, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, NUREG-0703, Washington, D.C., July 1980.
Essentially, we concluded that no organization, no matter how ingeniously protected, can operate without some trust in individuals on all levels. Beyond a certain point, security considerations in hiring, guarding, controlling and checking people can become so cumbersome as to impede the operation of the facility they are meant to protect from intrusion and interference. Thus this problem illuminates the problem inherent in all aspects of the nuclear issue: one accident or one successful crime is one too many. If a bank is robbed, or diamonds are stolen, or some factory is sabotaged or vandalized, society and the victim can generally absorb this without major disruption or discomfiture. But the social and political—as well, obviously, as the actual physical—fallout from a nuclear crime is such that we cannot be satisfied with adequate, or even very good, protection. On the other hand, total security can never be attained. What is feasible, however, is for security officials to keep all possibilities in mind at all times, so as to avoid surprises and be prepared at least for damage minimization, if damage prevention fails.

Concluding Remarks

One final observation seems in order: while the volume of worldwide terrorism fluctuates from year to year, one enduring feature is that Americans remain favored targets of terrorists abroad. Since 1968, the United States has annually headed the list of countries whose nationals and property are most frequently attacked by terrorists. This is a phenomenon attributable as much to the geographical scope and diversity of America’s overseas commercial interests and the large number of its military bases on foreign soil as to the U.S.’s stature as a superpower and leader of the free world. Terrorists, therefore, are attracted to American interests and citizens abroad precisely because of the plethora of readily available targets; the terrorists’ perceived difficulty of operating and striking targets in the U.S. itself; the symbolic value inherent in any blow struck against U.S. “expansionism,” “imperialism,” or “economic exploitation;” and, not least, because of the unparalleled opportunities for exposure and publicity from perhaps the world’s most extensive news media that any attack on an American target—especially one that involves civilian casualties—assures. These reasons suggest that, despite the end of both the cold war and the ideological polarization that divided the world, the U.S. will nonetheless remain an attractive target for terrorists seeking to attract attention to themselves and their causes. Moreover, as the only superpower, the U.S. may likely be blamed for more of the world’s ills—and therefore could be the focus of more terrorist attacks—than before. Thus, there may be both

41 Followed by Israel, France, Great Britain, West Germany, the Soviet Union, Turkey, Cuba, Spain, and Iran. Source: The RAND Chronology of International Terrorism.
42 One can envision ethnic, nationalist, and irredentist minorities turning to the U.S. for support and intervention—which, if not provided, could act as a catalyst for increased anti-American terrorism designed to coerce the U.S. to intervene on their behalf or to punish the U.S. for not intervening. Of course, terrorism designed to protest or reverse U.S.
opportunity and motive for future terrorism against the United States. These added to what
appears by the World Trade Center bombing to be our new vulnerability to terrorism may
therefore bring new dangers to us.

intervention in local conflicts (such as was the case in Lebanon during the 1980s) is likely to
continue as well.