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NIE 6-86

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The Likelihood of Nuclear Acts by Terrorist Groups

National Intelligence Estimate

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April 1986

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THE NATIONAL FOREIGN INTELLIGENCE BOARD CONCURS.

The following intelligence organizations participated in the preparation of the Estimate:

The Central Intelligence Agency, the Defense Intelligence Agency, the National Security Agency, the Federal Bureau of Investigation, and the intelligence organizations of the Departments of State and Energy.

Also Participating:

The Assistant Chief of Staff for Intelligence, Department of the Army
 The Director of Naval Intelligence, Department of the Navy
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Errata

Notice to recipients of National Intelligence Estimate: *The Likelihood of Nuclear Acts by Terrorist Groups*, NIE 6-86, Secret NoFORN Nocontract, April 1986. (U)

- The classification (S NF NC) should be added to the paragraph that concludes at the top of page 3. (U)
- Line 2 of the footnote on page 3 should read "low probability" instead of "low mobility." (U)

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NIE 6-86

**THE LIKELIHOOD OF
NUCLEAR ACTS BY
TERRORIST GROUPS**

Information available as of 17 April 1986 was used
in the preparation of this Estimate, which was
approved by the National Foreign Intelligence
Board on that date.

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SCOPE NOTE

We know of no case where a terrorist group has attempted or even seriously contemplated a terrorist act that had as its goal the release of nuclear radiation. While not terrorist in nature, threatening nuclear-related actions and credible hoaxes by disgruntled individuals acting alone and for personal motives are, however, on the record. These examples are evidence that acts of nuclear terrorism are possible if the right motivation develops. Moreover, recent worrisome developments—such as increases in attacks by West European terrorists against NATO targets, in Middle Eastern terrorist operations in Western Europe, and in the use of powerful vehicle bombs—have again raised the question of whether nuclear terrorism is just around the corner. (u)

This Estimate examines the judgments of previous interagency papers on the subject of nuclear terrorism to see if they still hold in light of whatever changes may have occurred in nuclear and terrorist trends in the last several years. It also assesses the likelihood that terrorist groups will undertake nuclear acts over the next several years. (u)

The following possible acts, when done with political intent by nonstate actors, are included in the category of nuclear terrorism:

- Construction and threatened use of an improvised nuclear device.
- Seizure of a nuclear weapon.
- Attacks on nuclear weapon storage facilities or weapons in transit.
- Attacks on or sabotage of nuclear power plants, fissile material production facilities, nuclear weapon production facilities, or nuclear waste storage sites.
- Theft and use of radioactive materials as contaminants.
- Credible hoaxes involving any of the above. (u)

The following topics are not discussed directly in this Estimate, although whatever governments do to counter the possibility of nuclear terrorism will also have beneficial effects against these threats:

- Actions by psychopaths that have no rational political intent.
- Actions by disgruntled individuals (such as former employees) that are taken to satisfy personal grievances.

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- Attacks on nuclear facilities where it is generally known that there is no chance of releasing radioactivity (for example, nuclear power plants under construction).
- Acts by states using their own agents (rather than acting through a separate subnational or international group).
- Acts by US terrorist groups. (u)

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KEY JUDGMENTS

We continue to rate as low to very low the prospects that terrorists will attempt *high-level* nuclear terrorism: that is, the most technically difficult, malevolent, and harmful types of nuclear acts.¹ This kind of nuclear terrorism would include construction and threatened detonation of an improvised nuclear device, theft and threatened detonation of a nuclear weapon, and the dispersal of radioactive materials in such a way as to threaten mass casualties or cause widespread contamination.

(S/N/T/S)

This assessment is based on four major considerations:

- High-level terrorism may be within the capabilities of a few terrorist groups. The constraints that exist against it, therefore, probably are primarily behavioral.
- Most important, the fact that most terrorists place a high premium on the political consequences of their actions probably helps dissuade them from threatening terrorist acts that could lead to mass, indiscriminate casualties, because such a threat would alienate even those that they consider to be sympathizers among the affected public. We note, for example, that the growth in terrorist-caused casualties that has occurred over the last decade is largely attributable to a higher rate of incidents in which fewer than 10 people were killed or wounded. In the only category that might approach "mass" casualties (over 200 casualties per incident), only three occurred in 1981-85, the same number as in 1976-80. It is possible, however, that some Middle Eastern and South Asian separatist and radical groups might feel less constrained than groups that act only domestically from attempting acts of nuclear terrorism against foreign populations.
- Even though extensive information has been available in the public domain since the early 1980s on what a terrorist would need to know for even the most technically difficult nuclear terrorist act, such actions as constructing an improvised nuclear device still remain beyond the capability of all but the most sophisticated and well funded of terrorist groups. There are no

¹ The reader should note that making judgments about the likelihood of nuclear terrorism is difficult because there is little on which to base our conclusions other than our perceptions of terrorists' overall capabilities and what motivates them in general. (U)

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signs that any of these groups has attempted to recruit the people with the advanced technical skills that would be needed for this kind of nuclear terrorism. Moreover, despite the growing use of vehicle bombs and commercially manufactured electronic detonators, there is little evidence that terrorists are becoming appreciably more sophisticated in their ability to construct devices, nuclear or otherwise.

- Government capabilities to protect their most sensitive nuclear targets generally have improved faster than have terrorist capabilities to penetrate those targets. While some vulnerabilities remain, physical security has been considerably improved in recent years at NATO nuclear weapons facilities, for weapons in transit in Western Europe, for nuclear weapons in the United States and Great Britain, and probably for those in France. Meanwhile, terrorist capabilities have changed hardly at all since the 1970s in terms of the sophistication of the weapons they use or in their choice of operating tactics. In general, they continue to prefer operations that do not arouse unusually intense government countermeasures, are of short duration, and that avoid well-defended targets. ~~(S)~~

Despite the improvements in the security afforded US nuclear weapons, potential vulnerabilities remain:

- Several Nike-Hercules nuclear weapons storage sites in West Germany will not receive full physical upgrades or new intrusion detection systems, because they are scheduled to be removed within the next three years.
- Those US Navy surface ships and submarines that carry nuclear weapons may be vulnerable to waterside attack, especially when they are being on and offloaded.
- The helicopters that are used to transport weapons in Western Europe could easily be shot down by terrorists.
- There is virtually nothing that can be done to make storage sites (or naval vessels in port) invulnerable to standoff attack. ~~(S)~~

In contrast to our judgment about high-level nuclear terrorism, we believe there is a somewhat greater possibility that terrorists will engage in those *lower level types of nuclear terrorism* that are designed mainly to garner publicity or to undermine a government's nuclear or other policies. We cannot, however, confidentially assign a specific probability to this prospect, although we doubt it reaches the "even chance" predicted by earlier assessments. For example, we note that, although their existing capabilities are sufficient for mounting direct attacks on

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nuclear facilities, terrorists and violent environmentalists who are opposed to the nuclear industry seem to have deliberately struck only peripheral facilities, attacks against which in no way could arouse the nuclear anxieties of the public. This suggests that, even if they are imperfectly understood, fundamental behavioral constraints continue to exist on terrorism involving nuclear matters. Moreover, there are no signs they are weakening.

One possible stimulus for overcoming these inhibitions might be if a patron state supplied backing and encouragement for an act of nuclear terrorism. A number of states—including the Soviet Union, Libya, and Iran—could conceivably have sufficient access to terrorist groups and the motivation to provide such support. We believe, however, that under present circumstances there is virtually no chance that the Soviet Union would encourage an act of nuclear terrorism. Moreover, the chances are slight that any of the others would see much profit at this time in nuclear terrorism or would be willing to risk the consequences of exposure of having backed such an endeavor.

[REDACTED]

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Section 1.4(c)

We also conclude that the prospects are low that foreign terrorists will attempt acts of nuclear terrorism of any kind in the United States. Over the years, there has been very little foreign terrorism in the United States and virtually none by foreign terrorists against official US targets. In our judgment, any of the foreign terrorist groups that might conceivably attack a US nuclear target—and they are probably restricted to major groups from Western Europe or the Middle East—would be most likely to do so in Western Europe, where they have a considerably greater operating capability than they do in the United States. (S-NF-W)

There are certain areas we believe are worth careful watching for signs that the behavioral constraints that seem to be preventing nuclear terrorism may in the future come under strain, break down, or no longer apply:

- Intense internal debate on nuclear targeting (possibly leading to splits or defections) within terrorist groups, similar to the kinds of debate that have sometimes occurred when other fundamental targeting changes were under consideration.

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- A significant rise in attacks by patron state-backed Middle Eastern terrorists on West European or US Government targets in Western Europe. This might indicate change in the priority such states as Libya, Syria, Iraq, and Iran now apparently assign to maintaining a relatively permissive operational environment in Western Europe for attacking other Middle East enemies.
- Any substantial change in the operating parameters of terrorist groups, such as a greater willingness to attack well-defended targets, to attempt complicated operations of long duration, or to use more exotic (for example, chemical or biological) weaponry.
- Terrorism associated with cult groups that, if they have an apocalyptic view of history and see themselves as the agent for bringing about the end of civilization as we know it, might not be bound by concern for public reaction. (S-17)

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DISCUSSION

Introduction

1. *New Concerns.* Several developments in patterns of terrorist activities in the last few years have generated new concerns that the prospects for nuclear terrorism are increasing:

- Since the end of 1984, in the wake of the deployment of US Pershing and cruise missiles, there has been a surge of terrorist attacks on NATO-related targets in Western Europe.
- Simultaneously, some terrorist groups in West Germany, France, and Belgium have increased their cooperation.
- Vehicle bombs have ushered in new levels of terrorist violence in the Middle East and, to a lesser extent, Western Europe. Moreover, the Shia suicide bomber is a new element on the terrorist scene.
- Middle Eastern terrorist groups have become increasingly active in Western Europe. (u)

2. *The Estimative Problem.* It is very difficult to make confident or precise estimates about the likelihood that terrorists will add nuclear acts to their arsenal of tactics. The estimative problem has at least three principal causes. First, the range of possible nuclear terrorist acts is so great—from the detonation of a stolen weapon or an improvised nuclear device that kills tens of thousands to a credible hoax that only stirs public alarm—that the calculation of probability is very complex and would differ significantly among the various kinds of acts. Second, according to the records of all US agencies that collect this information, only one terrorist incident has occurred in the last 10 years in which nuclear radiation might have been released.* Consequently, there is virtually no empirical

* On 18 December 1982, the African National Congress set off four charges at a just completed nuclear power plant in Koeberg, South Africa. Fresh nuclear fuel was at the reactor site but had not yet been loaded into the core. While we lack direct evidence of the intention of the attackers, the attack probably was designed to prevent the reactor from becoming operational rather than to threaten the release of radioactivity. (u)

evidence from which we can directly establish patterns, trends, and likelihoods. Third, we know almost nothing about whether terrorists ever consider nuclear acts and, if so, what factors influence how they think about them. In the area of motivation, therefore, our judgments about whether terrorists would want to attempt nuclear actions are based almost completely on deductions of uncertain accuracy from what we perceive to be the way they behave concerning nonnuclear matters. (u)

3. *Conclusions of Previous Estimates.* The previous relevant Estimates are a basic 1978 SNIE and two Memorandums to Holders in 1982.¹ They said, in essence, that:

- Public apprehension, especially in Western Europe, over nuclear matters was such that there was an even chance that terrorists would seek to conduct various kinds of low-level nuclear terrorist acts that would not risk serious release of radiation.
- The chances were moderately low to low that terrorists would attempt to steal or seize a nuclear weapon in Western Europe, to take over for bargaining purposes a nuclear weapons storage facility, or that a patron state such as Libya would sponsor some kind of nuclear terrorist act against the United States.
- The prospects were low to very low that terrorists would attempt to fabricate and use their own improvised nuclear device or that they would or could explode a stolen US weapon in a way that created a nuclear yield.
- If a nuclear terrorist incident occurred, it probably would take place overseas rather than in the United States. (u)

¹ The documents referred to are SNIE 7-78, *Likelihood of Attempted Acquisition of Nuclear Weapons or Materials by Foreign Terrorist Groups for Use Against the United States*, and Memorandums to Holders, with the same title, issued in February and March 1982. (u)

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New Incentives and Constraints

4. Whether terrorists become more or less likely to engage in nuclear acts over the next several years will be determined, as outlined below, by the net balance resulting from developments in four areas: (1) the degree to which nuclear information and materials become more or less available to terrorists, (2) the extent to which the levels of protection afforded by governments to possible targets improve or decline, (3) the amount and type of improvement or degradation of terrorist operational capabilities, and (4) whether possible motivations for engaging in nuclear terrorism become stronger or weaker. (v)

Availability of Nuclear Information, Materials, and Trained Personnel

5. *Nuclear Information.* If terrorists desired to engage in nuclear acts, they would not be constrained by lack of information. Since the early 1980s, more than adequate data has been available in the public domain of the sort that a terrorist would need to know for a wide range of terrorist acts, including: how to construct relatively crude but effective nuclear explosive devices, how US nuclear weapons sites in Western Europe are protected, how to bypass safety and security devices on the weapons, and the most effective ways to sabotage nuclear reactors. In all, a Department of Energy bibliography of publications that might be of interest to a nuclear-inclined terrorist has registered about 2,500 entries since 1982. More than a third of the publications appeared in the United States and Great Britain, but several entries are recorded each year in most of the countries that possess nuclear facilities in Western Europe and elsewhere, including Pakistan, India, and South Africa. (s)

6. *Fissile Material.* The amount of fissile material available has at least temporarily stabilized since the early 1980s. No new uranium enrichment facilities have opened in Western Europe since then, nor has the amount of plutonium being separated from spent reactor fuel increased significantly in the West. The amount of plutonium containing mixed oxide fuels being moved in international commerce, however, has grown. Most important, while there is an active gray market in components for building nuclear facilities, no gray market in fissile material has been or seems about to be developed. On the other hand, Pakistan is completing a facility that probably will be able to produce substantial amounts of enriched uranium, Argentina has one under construction, and India is beginning to accumulate significant amounts of unsafeguarded plutonium. (s)

7. *Trained Personnel.* There has been a steady growth worldwide in the number of personnel trained in such matters as nuclear reactor design and operation, uranium enrichment and reprocessing technology, and nuclear sciences. Moreover, the number of individuals who are or have been guards at nuclear facilities—including nuclear weapons sites—is growing. The expansion of these pools of trained people enlarges the group from which a terrorist organization might be able to recruit or coerce assistance from someone who would be knowledgeable about, for example, power reactor or weapon facility vulnerabilities. (s)

Changing Levels of Protection

8. *Security for Nuclear Weapons.* Largely in response to concerns about the possibility of terrorist attacks on nuclear facilities in Western Europe, governments have considerably improved security in recent years, both at NATO nuclear weapons facilities and for weapons being moved in Western Europe. Physical security has also been steadily tightened for nuclear weapons in the United States and for British weapons in the United Kingdom. British weapons are stored under conditions very similar to those in the United States, and regular exchanges of information take place between US and British nuclear security experts. We know much less about how the French protect their weapons but, because of rising activity by domestic French terrorist groups, levels of security probably have increased there also. (s)

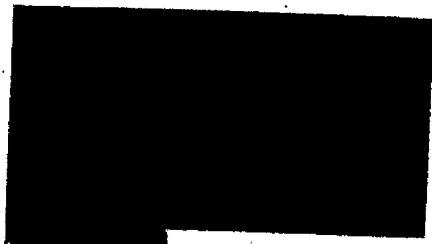
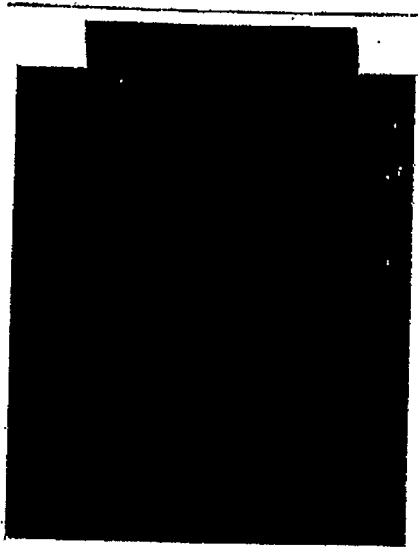
9. The effort to improve security for US weapons stored in the continental United States, in US non-NATO sites abroad, and in NATO facilities in Western Europe is being accomplished under a three-part Long-Range Security Program. The first part, a civil construction program to upgrade fences, lighting, guard towers, command centers, and the like, is complete in the United States and at non-NATO sites overseas, and is almost finished at the NATO facilities. The second part has been the introduction of more aggressive deployment concepts (for example, roving patrols around storage bunkers) and an intensified training program for guard personnel. In addition, improved intrusion detection systems have been installed at almost all nuclear weapons sites in the United States, and installation will be completed at the non-NATO overseas sites early in 1986. After testing at a site in West Germany is completed, comparable systems will be installed over a 30-month period at of the NATO sites. (s)

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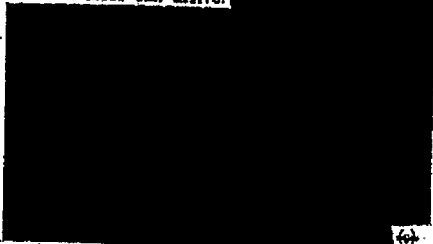
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10. The third part of the security improvement program is the installation of access denial devices

These systems will make it much more difficult for a terrorist group that has successfully breached a bunker to gain access to and carry off a weapon before an outside reaction force can arrive.

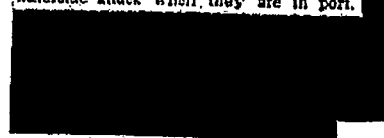


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12. Despite these improvements in the security afforded US nuclear weapons, potential vulnerabilities remain:

- Several Nike-Hercules nuclear weapons storage sites in West Germany have not received the full physical security upgrade and will not receive the new intrusion detection systems, because all these missiles are scheduled to be removed within the next three years. The Nike-Hercules missile is one of the oldest in the NATO inventory, and its safety and security systems are more easily bypassed than those in the newer weapons. In addition, the Nike-Hercules—when nuclear armed—is vulnerable to standoff attack and possible dispersal of nuclear material from the warhead.
- Those US Navy surface ships and submarines that carry nuclear weapons may be vulnerable to waterside attack when they are in port.
- The helicopters that are used to transport weapons in Western Europe could easily be shot down by terrorists.
- Perhaps most important, there is virtually nothing that can be done to make storage sites (or naval vessels in port) invulnerable to standoff attack.



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13. *Security for Nuclear Power Plants.* Operating nuclear power facilities exist in 26 countries around the world, of which 13 are developed countries, six are Communist nations, and seven (including South Africa) are Third World nations. In the past four years only 53 (fewer than half) of the new power reactors that had been scheduled to go on line have actually begun operating, and only Brazil, Hungary, and South Africa have joined the list of countries that produce nuclear power. Of these three countries, only South Africa has an active terrorist or insurgent problem. (U)

14. As with nuclear weapons sites, questions of how well protected nuclear power facilities are against possible terrorist acts relate directly to what kind of incident is under consideration. In brief, most nuclear power plants probably are not secure from standoff attacks, particularly if the terrorist intends simply to arouse public anxiety rather than to cause a major release of radioactivity. This is primarily because it is not economically feasible to surround most nuclear power plants with controlled buffer zones wide enough to put the plant beyond the range of the standoff weapons available to terrorists. (S)

15. It is difficult to generalize about levels of protection against other kinds of possible terrorist actions—particularly those that would involve internal sabotage or penetration of the nuclear plant's perimeter. All plants have some degree of protection against unauthorized intrusion and against "insider" sabotage, because this is built into International Atomic Energy Agency (IAEA) guidelines that apply to facilities where fissile material is present. Moreover, the worldwide concern created by the Three Mile Island accident in 1979 stimulated greater attention to safety considerations in the operation of many nuclear power plants—and many of the procedures adopted to enhance safety also improve security against sabotage. Nonetheless, the ability of nuclear power facilities to withstand external attack from a determined and well equipped terrorist group or to guard against sabotage of vital equipment within the facility varies widely from country to country. (S)

16.



17. Within the United States, in the last four years only a few new power reactors have come on line, and the security situation has not changed much with regard to vulnerabilities to external attack. As in Western Europe, the reactors are not easy targets to penetrate, much less to damage severely, but they probably are susceptible to attack, for example, by trucks loaded with explosives. In a few cases, it might be possible to place a truck bomb close enough to a facility so that, if it were detonated, massive damage would be caused that might eventually lead to the release of a large amount of radioactivity. Moreover, if the terrorist was willing to sacrifice himself, many nuclear power facilities probably could be attacked by crashing an explosives-laden truck through the facility gate and maneuvering close to a vital area before exploding it. (S)

18. Of possibly even greater concern worldwide is the potential for sabotage of a power reactor (indeed, any nuclear facility) by someone with authorized access to the facility—the problem of nuclear terrorism by an "insider." We have only limited information on how aware various countries are of this possibility and what precautions they take to guard against it. These might include security checks on applicants to screen out potential terrorists, and the installation of protective devices or access controls to prevent a would-be saboteur from, for example, turning valves that might disastrously shut down a reactor's cooling system.

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In the United States, industry standards exist on trustworthiness and psychological stability. Local police checks probably are carried out in most places on new hires, but these checks are likely to show only if the job applicant has a local criminal record or is a fugitive. Therefore, it is possible that a foreign terrorist with no local record could gain employment at a US nuclear plant. In fact, at present there is no way to ascertain with certainty how many, if any, foreign nationals may be employed at commercial nuclear reactor facilities, much less who they are and what kinds of contacts they have. Legislation to permit the Federal Bureau of Investigation to make national arrest data available on new hires with access to vital areas is pending in Congress. (S)

20. Even if it were possible to tightly screen all employees at power reactors, no one has yet come up with an effective way to cope with another kind of "insider" possibility. In this scenario, a terrorist group kidnaps and secretly holds hostage the family of an employee, who is forced to do their bidding at the threat of harm to his family. Thus a normally trustworthy insider might be forced to steal sensitive materials, facilitate the entry of "outsiders" into the facility, or commit sabotage himself. (S)

21. *Security of Fissile Material Production Facilities.* Because of the presence of fissile material, uranium enrichment plants and reprocessing facilities that chemically separate plutonium from spent fuel are also logical targets for terrorists. Of the 14 uranium enrichment plants now operating around the world, only the one in Pakistan was essentially completed in the last three years. Such facilities also exist in Great Britain, France, the Netherlands, the USSR, Japan, South Africa, China, and the United States. The facilities in the Netherlands, Japan, and Great Britain limit their output to low enriched uranium (enriched to less than 20 percent of U-235) for power reactor fuel, which is unattractive for use in a nuclear device. Plutonium is separated from spent fuel in Great Britain, France, West Germany, Italy, India, Japan, China, the USSR, and on a noncommercial basis in the United States. No new reprocessing facilities have come on line in the last four years, although this option is still considered attractive by nations with nuclear power programs that are potentially interested in gaining weapons-usable material. (S)

22. Because many of these plants produce weapons-grade material, they are, in general, at least as well protected as any nuclear weapons site. Any external attempt to penetrate such facilities and make off with the fissile material probably would require a larger group of well armed and trained commandos than most terrorist groups can muster. [REDACTED]

23. *Security of Other Radioactive Materials.* Two other kinds of nuclear material potentially usable by terrorists are spent fuel from a reactor and various radioactive isotopes that are used for an array of medical, commercial, and industrial purposes. Such materials at least theoretically could be used in a dispersal device to contaminate a site of economic or symbolic importance. Of the two types of material, spent fuel generally would be more hazardous for terrorists to use and more difficult to gain access to since, for the most part, it is kept in storage ponds in the same location and under the same security as the reactor that produced it. After it has decayed to a level at which it is safe to transport, the spent fuel is placed in sealed casks on board vehicles protected by varying degrees of security. Tests have demonstrated that the casks are very hard to breach with explosives and that, even when breached, not much radioactivity is released. Nonetheless, terrorists might not know this. In addition, if they were able to seize a cask, their possession of it probably would cause widespread public alarm and might give them some bargaining power whether or not they had the intention or capability of opening it. (S)

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24. Radioactive isotopes are a different matter. In general, they are much less protected from theft than enriched uranium, plutonium, or even spent fuel, and their use around the world is growing. Brazil, for example, is trying to develop new food preservation techniques by irradiating foodstuffs with cobalt-60 and cesium-137. It would be technically difficult to use radioactive isotopes effectively to cause many casualties or large area contamination. In addition, many of the isotopes are dangerous to handle and would need shielding. But if the terrorist intent were directed more at causing a psychological impact than at causing death or injury, solutions of such medical isotopes as iodine-131 could be injected into foodstuffs; or salts of cobalt-60, strontium-90, cesium-137, or radium-226 could be introduced into water supplies or scattered in a building by using them as an ingredient in a typical terrorist bomb. At a minimum, such usage would cause detectable levels of radioactivity and, in all likelihood, a strong public reaction even if the actual risk to public health was slight. (S)

Terrorist Capabilities and Motivations

25. *Examining Terrorist Capabilities.* For the most part, terrorist capabilities to accomplish particular kinds of nuclear terrorism can be most effectively estimated by judging them against the levels of protection governments have developed to guard against various types of illegal nuclear acts. The capabilities of two kinds of terrorist groups are of particular concern: groups that reside in countries where nuclear weapons are based or transit or that have nuclear facilities where significant amounts of radioactive materials are present, and groups that have demonstrated the ability to conduct significant extraterritorial operations even if there are no nuclear targets in their own country. These two categories include, in particular, the major terrorist organizations of Western Europe (such as the Red Brigades of Italy, the RAF of West Germany, the ETA of Spain, and Action Directe of France) and the more prominent Middle Eastern organization that operate abroad (such as the Abu Nidal group and certain of the radical Shia groups). Our general conclusions are that (1) government efforts to protect their most sensitive nuclear targets generally have improved faster than have terrorist capabilities to engage in high-level nuclear terrorism but that (2) relative terrorist capabilities to engage in lower level nuclear terrorism may have increased somewhat; for example, the ability of governments to protect their installations from standoff attacks probably has not improved, while terrorists may now have access to weapons that

make standoff attacks somewhat easier. These conclusions are based on assessing the extent to which changes have occurred in the following areas in the last several years. (S)

26. *Skilled Manpower.* With respect to probably the most worrisome prospect—that terrorists will develop the ability to fabricate their own nuclear devices or to bypass the safety and security mechanisms on a stolen nuclear weapon—there have been no signs in recent years that terrorist groups are attempting to recruit people with technical knowledge or skills in the fields of nuclear engineering, metallurgy, electronics, advanced explosives, and the like that would be necessary for this kind of nuclear terrorism. (S)

27. *Sophistication of Weapons.* In general, the kinds of arms used by terrorists have changed very little since the 1970s. The shoulder-fired SA-7 heat-seeking missile and the RPG-7 antitank rocket remain the most potent weapons generally found in terrorist inventories. Other, more effective standoff weapons do not seem to be in their possession. Although they probably are available on the gray market, terrorists have never used, for example, wire-controlled antitank weapons, which would considerably extend the range at which they could attack a nuclear facility. Moreover, other much less technically sophisticated—but still highly effective—devices, such as explosively driven flyer plates, are potentially available to terrorists but have not been used. (S)

28. *Use of Explosives.* The bomb has always been the favorite weapon of terrorists. Year after year most terrorist bombings, particularly in Western Europe, have not been designed to cause casualties or extensive damage. Within that general tendency, however, a notable change has occurred in recent times: the expanded use of the vehicle bomb. While this trend has been most prominent in the Middle East, since 1982 vehicle bombs have also been exploding with some regularity in Western Europe. There were, for example, seven such attacks in Western Europe in 1983, five in 1984, and five in 1985, in contrast with hardly any before that. The most disturbing aspect of vehicle bombs with regard to the potential for nuclear terrorism is that they improve the prospects for standoff attacks. The magnitude of the explosion from the several tons of explosives that can be packed in a vehicle at least raises the possibility that terrorists could cause extensive damage to a nuclear weapons site, a fissile material production facility, or a nuclear power reactor without risking their group by attempting to penetrate the security of these installations. (S)

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29. Another notable recent development is that terrorists are more frequently using somewhat more sophisticated means of detonating their bombs. Middle Eastern terrorists, in particular, often use radio controlled firing devices or electronic timers to set off their bombs. In Western Europe, the IRA in Northern Ireland frequently uses radio controlled firing devices, although terrorist groups on the continent seem to employ them much less often. The use of more sophisticated detonators does not mean, however, that terrorists are becoming substantially better able to build bombs—nuclear or otherwise—or to understand and manipulate the mechanical or electronic devices associated with nuclear weapons. This might be the case if terrorists were building their own radio controlled firing devices or electronic timers. So far, however, they have simply purchased and adapted commercial items. Even then, on many occasions these devices have failed, resulting in a premature explosion or none at all—an indication that terrorist technical abilities may not be appreciably improving. (S)

30. *Operational Tactics.* The "design criteria" for sensitive nuclear facilities in the United States and in most foreign nations usually specify that the security arrangements provided for the facility should be able to withstand an attack by [redacted] well-trained and dedicated commandos. A possible indicator, therefore, that terrorist capabilities to mount assaults against a nuclear weapons storage site were improving would be signs that they have begun to operate in groups large enough to defeat on-site resistance at well-defended facilities—that is, [redacted]. So far, at least, that does not appear to be the case. In all instances that we are aware of, terrorists in Western Europe and the Middle East continue to operate in groups that never exceed [redacted] and usually are smaller. That has been true of late, for example, in even the bloodiest and most-dramatic terrorist operations, such as the August 1985 detonation of a car bomb at the US Rhein-Main Airbase in West Germany, the hijacking of TWA 847, the seizure of the Achille Lauro cruise ship, and the attacks in December 1985 on the airports in Rome and Vienna. (S)

31. Terrorist groups operate in such small teams, particularly in Western Europe, in order to maintain compartmentation and because the number of hardcore activists from which members of an assault team probably would be drawn are very few. Recent estimates are, for example, that the activist hardcore of the RAF in West Germany numbers about 20 to 25 persons, that the Action Directe in France probably

has fewer than a dozen, and that the Communist Combatant Cells (CCC) in Belgium at its maximum had only about 10. The ETA in Spain and the Red Brigades in Italy are larger, each probably having at least 50 to 100 activists, but they also operate in very small groups for reasons of compartmentation. All of these groups have been hurt by significant police successes, which probably has further reduced their ability to mount operations that would require an unusually large number of personnel. Nonetheless, all of these groups have demonstrated the ability to recover from such setbacks. In addition, one recent trend that might enable the smaller groups to overcome personnel limitations has been a movement toward cooperation among the RAF, AD, and CCC. So far, however, the cooperation has been manifested in common propaganda releases and some shared use of resources (such as stolen dynamite) but apparently not in joint operations. (S)

32. *Changes in Targeting and Areas of Operation.* For the most part, terrorist groups seldom deviate much from their established modus operandi in terms of the targets they attack and where they operate. Two recent shifts, however, in these fundamental operating parameters are relevant in considering prospects for nuclear terrorism:

— Since late 1984, there has been a substantial increase in West European terrorist attacks against NATO installations, US military facilities, and various defense-related industries, principally in West Germany and Belgium. Although all of these attacks were against essentially unprotected targets (for example, the NATO oil pipeline), the attacks, particularly in West Germany, were part of a concerted effort stimulated by the RAF to strike symbols of US "imperialism" and to stir up opposition to NATO at a time of considerable public opposition to the deployment of US Pershing II and cruise missiles.

— Several Middle Eastern terrorist groups have demonstrated a growing ability to operate in Western Europe. Almost 60 terrorist incidents of Middle Eastern origin occurred there in 1984 and over 70 such incidents in 1985. Many of the attacks were by state agents of Libya, Syria, Iraq, and Iran against their respective Middle Eastern enemies. Some, however, were by terrorist organizations like the Abu Nidal Group, which is associated currently with Syria and Libya, and Hizballah, the radical Shia group located in Lebanon and generally influenced by Iran. (S NP)

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33. *Changes in Terrorist Motivations and Intentions.* As indicated earlier, we have little evidence of how terrorists think about the possibility of engaging in nuclear terrorism. No captured or repentant terrorist, to our knowledge, has ever been questioned on this subject, there are no human source reports on the question, and terrorist-originated documents do not refer to the topic. In seeking to understand, therefore, why terrorists up to now have not attacked nuclear targets and under what conditions these constraints might give way, we are limited to deductions drawn from information on how terrorists generally behave and to a small amount of material on how antinuclear environmental activists in West Germany have thought about sabotage of nuclear targets. (c)

34. *Norms of Terrorist Behavior.* In general, terrorists up to now seem to have acted in accordance with the following precepts, each of which could dissuade them from engaging in at least some kinds of nuclear terrorism:

— *Be attentive to the political consequences of a terrorist act.* Terrorists may believe that any act that appears to threaten release of radioactivity would alienate even their sympathizers among the public and therefore should be avoided. This is suggested by the fact that terrorists in Western Europe regularly attack construction, computer, and other business firms associated with the nuclear power industry, but, except for one isolated incident more than 10 years ago, they have never even threatened to attack an operating nuclear reactor or a facility where fissile material is stored.*

— *Be prudent about taking risks.* In deciding what acts to undertake terrorist groups generally seem to be conservative in terms of the degree of risk created for the group. This implies that the level of protection afforded nuclear facilities can make a difference in whether terrorists decide to attack them. They may also be deterred by the prospect of the massive government counterterrorist response that probably would be provoked by an act of nuclear terrorism.

— *Be frugal in expending resources.* Terrorist operations, especially in Western Europe, are usually of very short duration (for example, an assassination attempt or placement of a bomb), use a very small number of personnel, and are intended to

* On 15 August 1973, two plastic charges were detonated at the Morsins d'Arce reactor in France that destroyed a water tower and a radio telephone room. The Breton Liberation Front claims responsibility. (c)

have an immediate impact. These factors decrease the likelihood that the terrorist organizations we know today would be willing to make the extended commitment of time and resources necessary to mount those kinds of nuclear terrorist operations—such as building and threatening to use an improvised device or holding a government hostage with a stolen nuclear weapon—that do not lend themselves to quick resolution. They do not, however, affect the attractiveness of those operations—such as standoff attacks—that are designed for immediate effect. (c)

35. *West German Antinuclear Activists.* In addition to the possibility of attacks by terrorist organizations, the Intelligence Community has been concerned at least since the late 1970s that antinuclear environmentalists or peace movement supporters might turn to violence against nuclear facilities in an effort to force governments to change nuclear power or nuclear weapons policies. The fact that the leaders of the peace movement in Western Europe have worked hard to prevent terrorists from infiltrating and manipulating their demonstrations against deployment of Pershing II and cruise missiles suggests, however, that they would regard acts of nuclear terrorism as illegitimate. This also seems to be the case with the environmentalists who oppose nuclear power. All their violence has so far been directed at peripheral facilities and not at the power plants themselves. In addition, a 1979 West German underground handbook, which provides "Information on Practical Opposition to Atomic Plants" (primarily how to sabotage high voltage lines), contains the following language: "We state expressly that we do not consider it appropriate to sabotage the operation of the plant at the plant itself. We feel that no nuclear opponent should risk radioactive contamination of the population thereby. . . . We do not have anything against disrupting the operation so that a radioactive danger to people does not occur." (c)

36. *Areas of Concern.* Some recent developments have raised the question whether possible inhibitions against nuclear terrorism may be weakening. Of particular concern are:

— *Whether Middle Eastern terrorists operating in Western Europe are less concerned about the public reaction to their attacks than local terrorists would be.* Attacks by such organizations as the Abu Nidal Group or Hizballah on British, French, or even US nuclear weapon sites are more conceivable than by local terrorists because Middle Eastern terrorists would be less concerned about the consequences of such attacks on

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their own sympathizers. Nonetheless, Middle Eastern terrorists do care about world opinion, including that of West Europeans, as demonstrated by Hizballah's fairly skilled attempts to manipulate Western media in the aftermath of the TWA 847 hijacking. Moreover, the ability of Middle Eastern terrorists to operate against their principal targets—other Middle Easterners—in Western Europe benefits from the relatively permissive attitude taken toward them by some European governments in exchange for their not operating against domestic targets.

— *To what extent terrorist inhibitions against causing "mass" casualties may be changing.* The apparent increase in terrorist-caused casualties over the last decade and the memory of a few spectacular, bloody incidents have led some observers to fear that the reluctance terrorists have generally shown about killing indiscriminately and in large numbers was disappearing. This probably is not the case. Virtually all the recorded growth is attributable to a higher rate of incidents in which fewer than 100 casualties occurred (primarily where fewer than 10 were killed or wounded). In the only category that might approach "mass" casualties (over 200 per incident), only three occurred in 1981-85, the same number as in 1976-80. Moreover, the psychological state of mind necessary deliberately to kill the tens of thousand that might result from even a small nuclear explosion may be quite different from the state of mind necessary to kill the largest number (in the low hundreds) that terrorists have tried for up to now.

— *How much an apparent increase in fanaticism among some terrorists and the appearance of the "suicide" bomber has boosted the possibility that terrorists will take on the high risks they probably associate with nuclear terrorism.* The relevance of the spate of suicide bombing attacks that have occurred in the Middle East (and nowhere else) to prospects for nuclear terrorism probably is not great. Almost all of those who have sacrificed themselves have been—as far as we can tell—poor, uneducated Shia youths who are intensely indoctrinated by clerics and then infected into an operation as soon as possible, before their willingness to die has a chance to fade. This kind of fanatic is not the type who would be involved in risking slow death from exposure to insufficiently protected radiological material while building a nuclear device or

bypassing safety and security mechanisms in a weapon. It is conceivable that he could be used to drive a vehicle bomb into a nuclear facility—but there is also good reason to believe that it would be very difficult to transfer Shia suicide terrorism effectively outside its normal cultural setting into an industrialized, Western country. (S/N)

37. *State Support for Nuclear Terrorism.* One change that might make a difference in a terrorist group's capability for or interest in committing an act of nuclear terrorism would be a decision by a patron state to provide backing and encouragement for such an act. A number of states—the Soviet Union, Iran, and radical Arab states such as Libya, Syria, and Iraq—might have sufficient access to terrorist groups and the motivation that could conceivably lead them to make this decision. The paragraphs that follow examine what considerations may have constrained them from so far from backing nuclear terrorism and what, if anything, might dilute these constraints. (S)

38. *The Soviet Union.* It is hard to imagine any circumstances in which the Soviets would encourage a terrorist group to develop an independent nuclear capability, no matter how crude, by building a device or stealing a weapon. Lower levels of nuclear terrorism are another matter, however. Particularly at the time when West European countries were making the decision to participate in INF modernization and during the period of initial deployment of Pershing II and cruise missiles, any terrorist act that raised West European public concern about the safety of nuclear missiles might have stopped the program in its tracks. Clearly, the Soviets would have counted this a major success and would have been willing to take some level of risk to achieve it. There is no way of knowing for sure why they apparently made no move in this direction, but the following possible constraints make sense:

- Terrorism does not fit in with their overall strategic approach toward weakening NATO, which emphasizes portraying the USSR as a reasonable, peace-loving superpower, with which Western Europe can negotiate.
- As part of this effort, Moscow provides support and encouragement to the legal left in Western Europe. The legal left is the most likely to suffer from public backlash against terrorism by the radical left.
- The Soviets may not want to risk breaking the barrier against nuclear terrorism because Communist nuclear power facilities, particularly in Eastern Europe, might be vulnerable. (S/N)

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39. If these constraints are, in fact, the ones that apply, then it is likely that Soviet attitude toward nuclear terrorism will not change except as part of a much larger revision of their strategy in Western Europe. Nonetheless, the potential benefits for the Soviets from even relatively minor incidents that would raise concerns about safety of nuclear missiles are great enough that a change in Soviet attitude toward nuclear terrorism is far from inconceivable, especially if they perceive their present NATO policy as clearly failing. ~~(S)~~

40. *The Radical Arab States.* Syria's and Iraq's foreign policy goals, which have almost exclusively a regional focus, would not be advanced by nuclear terrorism except in the extremely unlikely case that they found a way to attack Israel's nuclear facilities. Libya, however, is of greater concern because of Qadhafi's hatred of the United States and his tendency to threaten West European governments (most recently the United Kingdom and Italy) with retaliation if they take anti-Libyan acts. Most Libyan terrorist attacks are carried out by state agents, but the probable Libyan backing the Abu Nidal Group received for its December 1985 attacks at the Vienna and Rome airports indicates that contacts with that group are strengthening. Until recently, Qadhafi had not, for the most part, directed terrorist assets against US interests, perhaps because of fear of retaliation should his sponsorship become revealed. In the past few months, however, there is evidence that Libyan assets have intensified their efforts to collect information on NATO bases, including military installations where US troops are stationed. ~~(S)~~

41. Qadhafi clearly believes in the legitimacy of terrorist violence and undoubtedly would love to strike a grievous blow against the United States. The chances that he would back an act of nuclear terrorism are reduced, however, by the likelihood that it would be very difficult to hide the Libyan hand even if a surrogate carried out the action. Moreover, the rest of the world probably would react by, at a minimum, isolating his regime totally. Even the Soviets, if they hoped to retain any influence in Western Europe, might have difficulty maintaining an arms supply relationship with a government that supported an act of nuclear terrorism there.

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42. *Iran.* The Iranian Government also clearly supports the use of terrorism as an acceptable means of striking at its enemies. Most of the terrorist acts in Western Europe with which Iran is associated were carried out by its own state agents and directed against Middle Eastern targets. Nonetheless, its links to Hizballah give Iran at least the potential to attack nuclear targets in Western Europe without directly exposing its own hand. The risk to Iran of being implicated in such an act, however, would be extremely high. As with Libya, the Iranian regime cannot afford to be cut off economically from the rest of the world, nor would there be much sense in taking the risk of provoking the Western industrialized countries into supporting Iraq more openly in its war with Iran. Both consequences could result if Hizballah attacked a nuclear target in Western Europe, because most of the world would simply assume that Iran was behind such an attack, given the strength of its ties to that organization. Consequently, while the possibility can never be completely excluded that Khomeini or some successor radical religious leader might irrationally lash out at the United States by sponsoring an act of nuclear terrorism, the probability of this happening is fairly remote. ~~(S)~~

Conclusions and Implications

43. In general, we conclude that none of the observed changes that may have occurred in the operational capabilities, targeting practices, levels of cooperation, patron state support, or terrorist motivations has significantly raised the likelihood that terrorists will attempt the most technically difficult, malevolent, and harmful of potential nuclear acts. Thus we judge the probability of these kinds of acts occurring remains low to very low. ~~(S)~~

44. We also conclude that the prospects that foreign terrorists will attempt acts of nuclear terrorism of any kind in the United States remain low. Over the years, there has been very little foreign terrorism in the United States and virtually none by foreign terrorists against official US targets. In our judgment, any of the terrorist groups—such as those from Western Europe and the Middle East—that might conceivably attack a nuclear target would be most likely to do so in Western Europe, where they have a considerably greater operating capability than they do in the United States. ~~(S)~~

45. In contrast to our judgment about high-level nuclear terrorism, we believe that there is a somewhat greater possibility that terrorists, particularly in Western Europe, will engage in those lower level types of

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nuclear terrorism that are designed mainly to garner publicity and undermine a government's nuclear or other policies. We cannot, however, confidently assign a specific probability to this prospect, although we doubt that it reaches the "even chance" predicted by the earlier Estimates. Capabilities for low-level kinds of nuclear terrorism may be increasing, but the behavioral constraints on terrorism involving nuclear matters show no signs of weakening. (S-NO-NO)

46. There are certain areas we believe are worth careful watching for signs that these behavioral constraints may in the future come under strain, break down, or no longer apply:

- If West European terrorists seriously begin to consider broadening their anti-NATO attacks to include nuclear targets, intense internal debate may occur that could lead to splits, defections, or, at a minimum, internally circulated documents that attempt to justify such a radical change. Similar debates—as when the Red Brigades first decided to attack non-Italian targets—have taken place when other fundamental shifts in targeting occurred.
- One sign that patron state-backed Middle Eastern terrorist groups operating in Western Europe were broadening their target selection to the point that they might consider attacking nuclear facilities would be a greater number of attacks by them on West European or US Government targets in Western Europe generally. This might indicate they were lowering the priority they now apparently assign to maintaining a relatively permissive environment there for attacking other Middle Eastern enemies.

— Any substantial change in the operating parameters of terrorists would be worth noting. This could include attacking well-defended targets, operating in squads of more than 10 attackers, moving toward complicated operations that persist for some period, or using more exotic (for example, chemical or biological) weaponry. (S-NO-NO)

47. All of the above indicators pertain to existing terrorist groups. There is the possibility, however, that if nuclear terrorism does occur—particularly the most malevolent and harmful kinds—that it would be perpetrated by a kind of terrorist not subject to current inhibitions, who may not yet exist. We have no way of predicting whether this will occur, but such a terrorist might, for example, evolve out of existing quasi-religious or rightwing, "survivalist" cults. A cult that spawned a terrorist group would be particularly worrisome, with respect to nuclear terrorism, if it (1) had an apocalyptic view of history that welcomed the end of the world or of civilization as we know it (2) saw itself as the agent for bringing about this end, and (3) featured nuclear energy somewhere in its doctrine. Such a group probably would be unconcerned as to how much of the public it alienated by its actions and might not care if it stimulated severe government countermeasures. Moreover, as cults sometimes do, it might be able to enlist in its ranks much more highly educated and technically trained members than appear to be attracted to today's terrorist groups. (S-NO-NO)