

# The Non-State Adversary

# The Non-State Adversary

This chapter discusses potential nuclear non-state adversaries and the civil liberties implications of measures to deter their actions against nuclear facilities or involving nuclear materials. In the context of nuclear proliferation, potential nuclear non-state adversaries encompass individuals or non-governmental groups that might take advantage of the spread of nuclear material, facilities, or weapons to harm or threaten society.

## THE NATURE OF NON-STATE ADVERSARIES AND THEIR ACTS

Nuclear non-state adversaries include those who might attempt to steal a nuclear weapon; to steal nuclear material to sell, ransom, or use to make a nuclear explosive or dispersal device; to purchase illegally, or smuggle, nuclear material, or otherwise participate in a nuclear blackmarket; or claim that they possess nuclear devices to extort concessions or cause alarm. The term also includes those who might undertake serious malevolent actions against nuclear facilities. They might threaten or actually attempt to sabotage a nuclear facility or transport vehicle, or seize temporary control of a nuclear facility.

These adversaries are often referred to collectively as criminals and terrorists, although all are criminals in that their actions would violate existing laws. The term criminal however, generally implies a purely profit motive while the term terrorist (in current usage) implies political objectives. The spectrum of potential nuclear non-state adversaries is much broader. It includes profit-minded criminals, political extremists, a dissident faction within a government, violent foes of the manufacture of nuclear arms or of civilian nuclear power programs, disgruntled employees of the nuclear industry, or individual lunatics. The actions that might con-

ceivably be carried out by such individuals or groups range from hoaxes to the construction and detonation of a nuclear explosive device which could kill hundreds or thousands of people and deny the use of large areas of land. Strictly speaking, nuclear adversary actions should not include minor incidents (such as vandalism), although it is useful to study minor incidents for indications of trends in the direction of more serious actions.

### The Spectrum of Potential Nuclear Actions

The non-state threat comprises a spectrum of potential actions, with varying degrees of difficulty to complete and varying degrees of consequences.

At the low end of this spectrum are bomb threats, nuclear hoaxes, and token acts of violence not aimed at producing serious casualties or damage. These in general pose little direct danger to public safety and require a minimum of skill, resources, and organization to carry through.

Further up the scale are actions such as low-level sabotage which could result in serious

damage to a nuclear facility and could endanger onsite personnel, although they would not necessarily pose a threat to public safety.

At the high end of the scale are actions such as theft of weapons material followed by the construction of a nuclear explosive device, or sabotage of a reactor which succeeded in causing a core-melt and breach of containment. The sabotage of a reactor was judged peripheral to the subject of this report: the proliferation of nuclear weapons. Therefore, this report has not assessed the difficulty of reactor sabotage.

Chapter VI assesses the resources required to construct a nuclear explosive device, and concludes that some clever and competent non-national groups could possibly design and construct a crude nuclear explosive having significant nuclear yield.

The effective design of security systems for nuclear facilities requires an understanding of the threat to be defended against. Defined threat levels can be used to gauge, as a first approximation, the difficulty of obtaining weapons material. Until recently, however, threat levels were not defined by the U.S. Nuclear Regulatory Commission (NRC). In January 1976, the NRC began a special review of the safeguards at 15 facilities licensed by it to possess significant amounts of highly enriched uranium or plutonium. In March 1976, the U.S. Energy Research and Development Administration (ERDA) began participating in the reviews. The threat levels defined for this review consisted of:

“An internal threat of one employee occupying any position, or an external threat comprised of three well-armed (legally obtainable weapons), well-trained individuals, including the possibilities of inside knowledge or assistance of one insider.”]

Of the 15 NRC licensed facilities involved in the safeguards reviews, 8 were judged adequate to withstand both the threats defined above.

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<sup>1</sup> NUREG-O095/ERDA 77-34; Joint ERDA-NRC Task Force on Safeguards (U) Final Report July 1976; Unclassified Version; p. ii.

More recently, NRC has required these facilities to begin upgrading their security to guard against an increased possible threat. This potential threat could involve a conspiracy of two or more insiders acting in collusion with an outside group of several attackers armed with automatic rifles, recoilless rifles, and high explosives. As part of the upgrading, full-field investigations and other security checks will be required for licensee employees who might effectively conspire to steal or divert weapons-grade material. The subject of physical security at nuclear facilities possessing material of weapons grade is discussed in more detail in chapter VIII “Safeguards Technology”,

In the section which follows, it will be seen that the nuclear incidents to date have all been low level.

## The Record of Nuclear Incidents<sup>2</sup>

Between 1969 and 1975, the AEC and then ERDA recorded 288 threats or incidents of violence in the United States directed at nuclear facilities or buildings or offices that were in some way related to nuclear activities, (This figure does not include nuclear hoaxes, of which there were 38 in roughly the same period. See the section on nuclear hoaxes below). Of these, 240 were bomb threats; 14 were bombings or attempted bombings; 22 were incidents of arson, attempted arson or suspicious fires; and 12 were cases of forced entry or other breaches of security. There was, in addition, one possible case of diversion of a minute quantity of plutonium. A number of incidents were directed against university research facilities or Federal office buildings. There were no casualties. The ERDA list is apparently not complete. Moreover, it seems unlikely that no incidents took place before 1969. A case of low-level reactor sabotage resulting in considerable onsite damage is not contained on the list. In addition, a night watchman was reportedly wounded by an intruder at the Vermont Yankee plant in 1971. This was the only known casualty in an adversary nuclear incident in the United States. Several known thefts of radioactive material

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<sup>2</sup>See appendix 111, volume 11 for details.

(but not radioactive waste or special nuclear material) do not appear on the list. (None of the material was used to endanger the public.)

There are no complete chronologies of incidents involving nuclear facilities or material elsewhere in the world. Those incidents that have been reported in the foreign press consist mainly of bomb threats, hoaxes, vandalism, low-level sabotage, a few thefts of low-enriched uranium, and one verified incident of non-lethal radioactive dispersal of material possibly stolen from a hospital. There have, however, been serious incidents of bombing and sabotage in Europe causing considerable damage to property. Demonstrations against the construction of new nuclear powerplants in West Germany, where antinuclear forces appear to have merged with extremist political movements, have resulted in violent confrontations with the police.

The combination of antinuclear elements with political extremists has led to violence in Europe where further violence and perhaps some escalation seems possible. There is no evidence in these incidents that any group has so far attempted to acquire plutonium, highly enriched uranium, or radioactive waste for use in an explosive or dispersal device.

Most of the nuclear incidents worldwide have been low-level and have not imperiled public safety. More such incidents can be expected as the nuclear industry expands. The record suggests that the nuclear industry will not be immune to the problems of bomb threats, low-level sabotage, and pilferage, which are common to other industries.

Publicity surrounding the incidents was not great, attracting international attention in only a few cases. The perpetrators included disgruntled employees, common thieves, political extremists, foes of nuclear power, and a few lunatics. Their motives included protest, greed, revenge, or desire for attention.

For the most part the perpetrators were individuals; a few consisted of small groups. The low-enriched uranium smuggling ring in India, involving contacts in at least three countries, showed the most organization. (See appendix III, volume II.)

Although all nuclear incidents to date have been of a relatively minor nature, this gives no excuse for complacency in the future. The present record of nuclear incidents was assembled in an era of relatively few nuclear reactors. In the future, nuclear power will be greatly expanded, even in low-growth projections, and plutonium recycle may afford potential non-state adversaries a number of highly visible targets. This fundamental change, coupled with marked trends towards increased violence, makes the past an uncertain predictor of the future.

Moreover, in many developing countries, internal coups, guerrilla wars, insurgent movements, and military regimes are common. One can imagine, for example, how a military coup could involve a struggle for control of a nuclear reactor or, even more serious, a reprocessing plant with its stocks of separated plutonium. Another factor gives cause for concern in the Third World. Developing countries may not have the resources necessary to provide adequate security around their newly acquired nuclear facilities. Thus, as the nuclear industry expands into the Third World, as it is apparently going to do over the next several decades, these facilities may become more attractive targets for insurgent and terrorist groups.

### **Origins of Increased Concern About the Non-State Adversary**

Although only minor nuclear incidents have occurred so far in the United States, public concern about the possibility of nuclear adversary actions, particularly nuclear terrorism, has been increasing in recent years. There appears to be a number of reasons for this. First among these are the rapid growth, actual and projected, of nuclear power plants throughout the world and the projected use of plutonium as a fuel. Increased demands for energy in both the industrialized and developing nations and the impacts of the oil embargo in 1973-1974 spurred the development of nuclear power.

Concurrent with the expansion of nuclear power, a national environmental movement grew in the United States. In their criticisms of

nuclear energy, many environmentalists have been giving increasing attention to the possibilities and consequences of deliberate malevolent actions by terrorists and criminals. Moreover, the great increase in violent crime and international terrorism, reported in detail by the mass media, have made malevolent acts seem more commonplace and closer to home. Expectations of violence are probably also increased by regular exposure to violence in fiction, particularly in movies and television. Finally, many of the events of the past 15 years have reduced public confidence in our social, political, and economic institutions. Whereas the citizens of the United States might have once accepted their leaders' statements that strong and sufficient measures were being taken to prevent nuclear adversary actions, the public now tends to be more skeptical of such assurances.

### The Growth of International Terrorism<sup>3</sup>

One of the reasons mentioned in the previous section for the growth of public concern about potential nuclear adversary action is the great increase in international terrorism.

Terrorism can be described as the use of actual or threatened violence to gain attention and to create fear and alarm, which in turn will cause people to exaggerate the strength of the terrorists and the importance of their cause. Since groups that use terrorist tactics are typically small and weak, the violence they practice must be deliberately shocking.

Terrorism has become an international phenomenon in recent years. Modern air travel provides terrorists with worldwide mobility, and mass communications provides them with a worldwide audience. New weapons have increased their capacity for violence, while society has become increasingly vulnerable because of growing dependence on complex systems and technology that can be exploited malevolently (e.g., nuclear energy, civil aviation).

During the last few years, small groups of extremists have repeatedly demonstrated that terrorist tactics can create international incidents causing national governments to negotiate before a worldwide audience.

In the presentation of data which follows, international terrorism is defined as terrorism that has clear international consequences. It includes incidents in which terrorists go abroad to strike their targets (as in the Lod Airport massacre), or select victims or targets because of their connections to a foreign state (as in the assassination or kidnapping of a diplomat), or attack international lines of communication and commerce (as in the hijacking of an airliner). It does not include incidents of domestic terrorism.

Since the late 1960's, international terrorism has been on a sharp upward curve, whether one measures such a curve on the basis of the number of terrorist incidents each year or on the basis of the number of casualties inflicted. (See figures V-1a and b.)

Figure V-2, taken from an unclassified CIA report "International Terrorism: Diagnosis and Prognosis," breaks international terrorist incidents down into several categories. (The totals in figure V-1, taken from data collected by the RAND Corporation differ slightly from the totals in figure V-2, because of slightly different reporting criteria.). All told, more than 140 terrorist organizations—including a number of fictional organizations created to shield the identity of the true perpetrators of some particularly shocking or politically sensitive acts—from nearly 50 different countries or disputed territories have thus far engaged in international terrorism. About 1,000 persons have died in international terrorist incidents since 1968; another 2,000 have been injured. If the casualties of domestic political violence are added, the number of deaths may reach 10,000. For comparison, 20,000 persons are murdered every year in the United States.

Some observers have been encouraged by an apparent decline in international terrorism in 1976. However, figures V-1a and b show that this apparent decline was not real; international terrorism rose in 1976. The *apparent* decline of international terrorism in 1976 can be explained by the fact that 1976 saw more

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<sup>3</sup>See appendix III, volume 11 FOR details.

Figure V-1 a.

### Total Number of Incidents of International Terrorism, 1968-1976

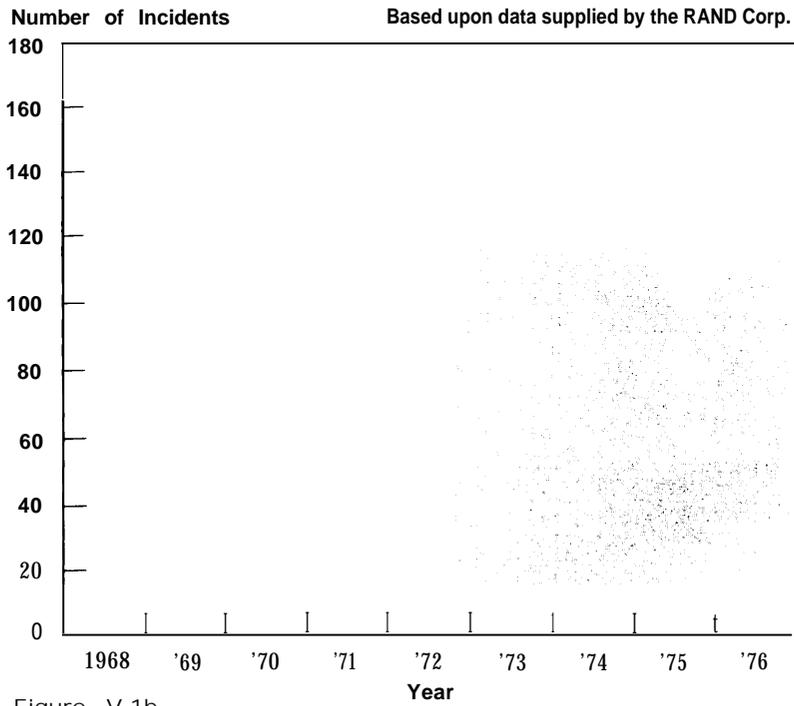


Figure V-1b.

### Total Number of Deaths in Incidents of International Terrorism, 1968-1976

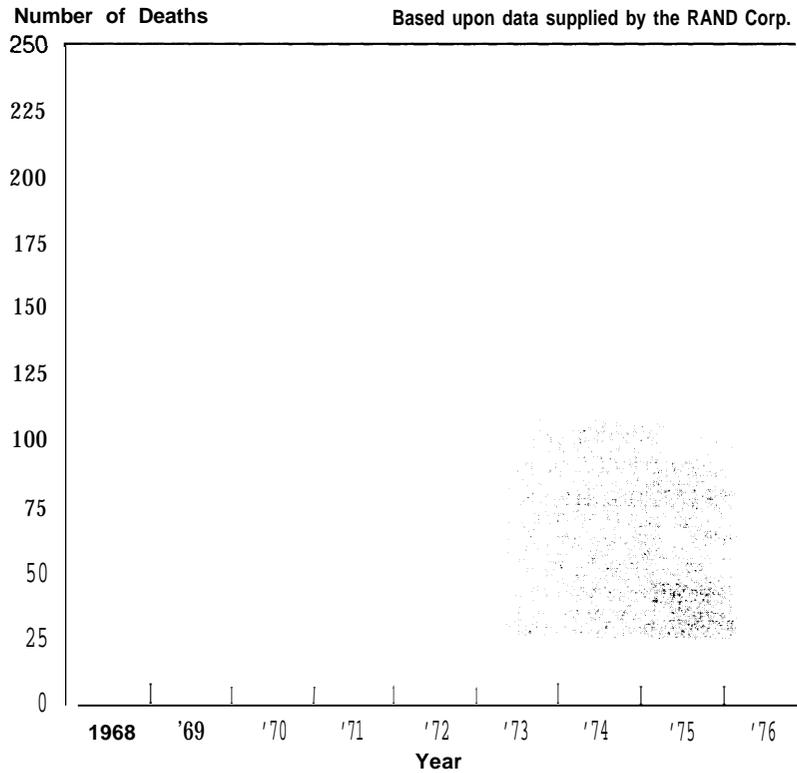
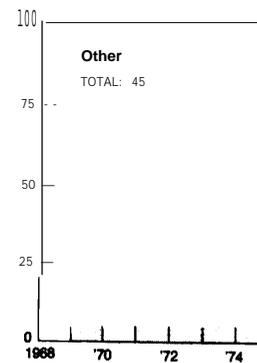
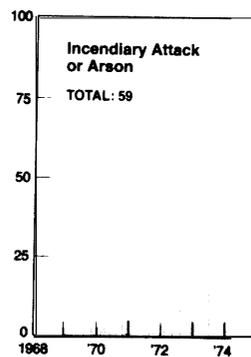
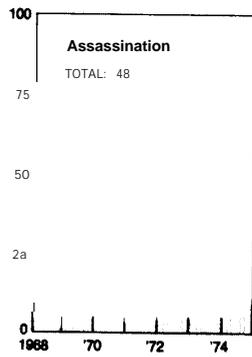
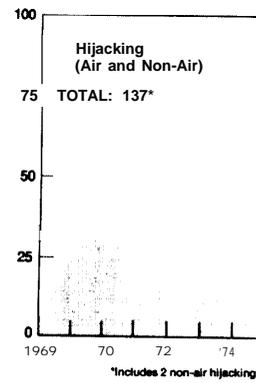
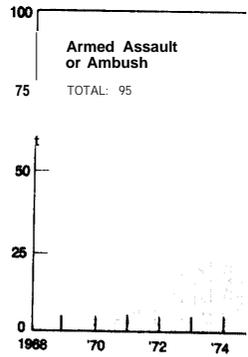
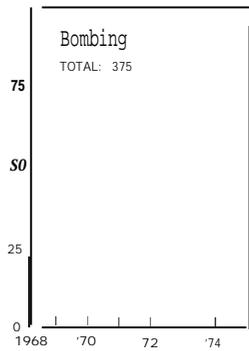
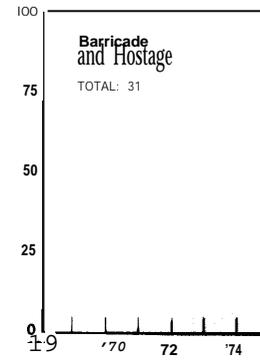
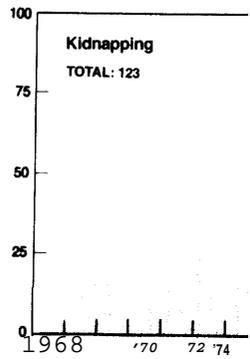


Figure V-2,  
**International and  
 Transnational Terrorist  
 Incidents by Category,  
 1968-75**  
 TOTAL: 913



SOURCE: *International and Transnational Terrorism: Diagnosis and Prognosis*,  
 PR 78 10030 Central Intelligence Agency (April 1978).

assassinations and murders and fewer hostage incidents than the preceding year. Hostage incidents may be in the news for days or even weeks; murder is usually in the news for a day or two.

Although any forecasts about terrorism in the future are conjectural, some trends are discernible.

Although few terrorists have reached their stated long-range goals, terrorism has proved useful in getting publicity and occasionally obtaining some political concessions. The record to date might even be considered reasonably positive from a terrorist perspective. Terrorist groups have been notably successful in avoiding capture and escaping punishment.

With the exception of a number of bilateral agreements providing for a greater exchange of intelligence and technical assistance, the international response to terrorism has been relatively weak and ineffective.

Terrorists will remain highly mobile, able to strike targets anywhere in the world. Recent developments in explosives, small arms, and sophisticated man-portable weapons will provide terrorists with an increased capacity for violence. They appear to be getting more knowledgeable in their tactics, their weapons, and their exploitation of the media. They will continue to emulate each other's tactics, especially those that win international publicity. Terrorist groups appear to be strengthening their links with each other, forming alliances, and providing mutual assistance. One result is the emergence of multinational freelance terrorist groups willing to carry out attacks on behalf of causes with which they are sympathetic, or to undertake specific operations or campaigns of terrorism on commission from client groups or governments. Nations or groups unable or unwilling to mount a serious challenge on the battlefield may employ such groups or adopt terrorist tactics as a means of surrogate warfare against their opponents. Moreover, there are signs that some international and domestic terrorist groups are beginning to recruit individuals who are attracted to violence not for political ideals, but for money or the lure of a clandestine lifestyle.

Terrorism can be expected to persist and perhaps increase as a mode of political expression,

## Potential Nuclear Terrorism

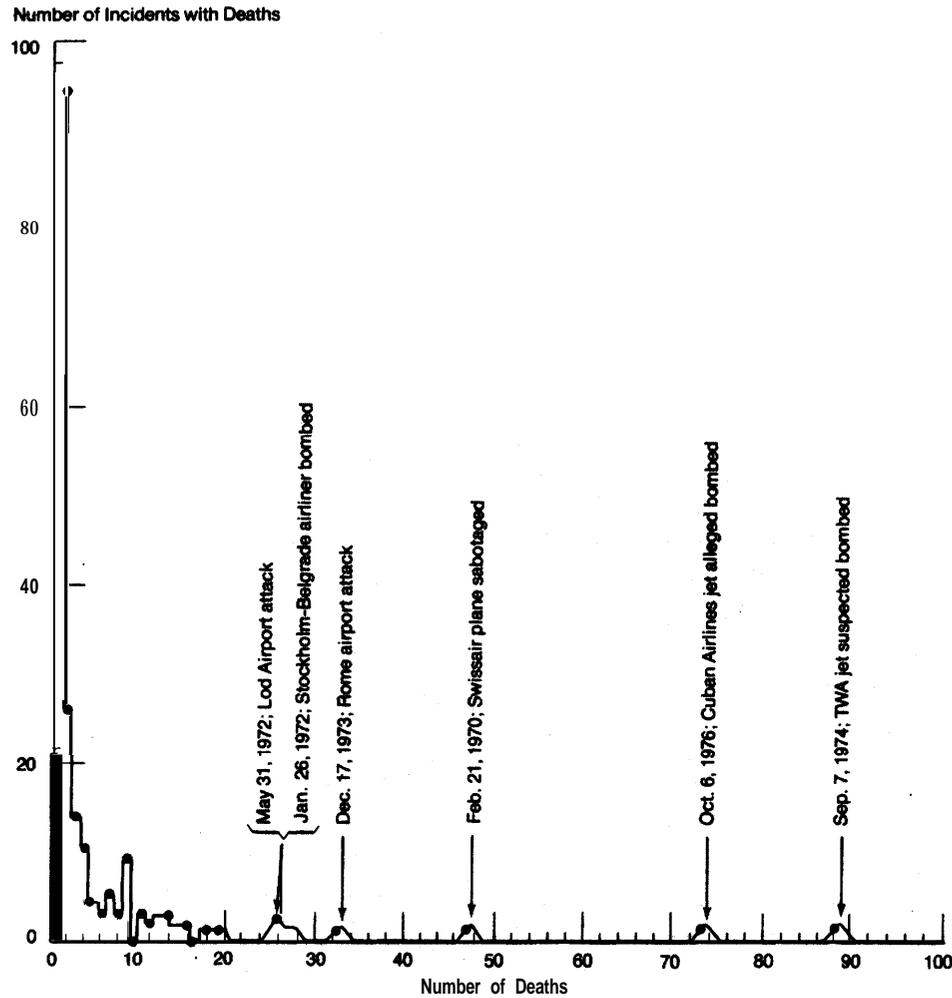
There is substantial disagreement among experts as to the likelihood of terrorist attempts to acquire a nuclear capability. A nuclear capability would greatly increase their potential destructive power. The detonation of a crude nuclear device in a carefully selected, heavily populated area could kill tens of thousands of people.

The historical record shows that in no single incident in the past 50 years have terrorists killed more than 150 people, and incidents involving more than 20 deaths are rare. (See figure V-3). This is not because of lack of capability. Terrorist groups could have acquired the means to kill many more people than they have, even by using only conventional explosives.

On the basis of the historical record and the theory of terrorism, it is not clear that causing mass casualties or widespread damage is attractive to a terrorist group. By using terrorist tactics, political extremists have created alarm, attracted worldwide attention to themselves and to their causes, compelled governments to negotiate and often grant concessions, while at the same time forcing governments to spend an unequal amount of resources for protection against terrorist attacks. Terrorists have contributed to the downfall of a few governments, aggravated North-South and East-West relations, kept the Palestinian question at the forefront of international concern, introduced strains in the Western alliance, and adversely affected the quality of life in many open or formerly open societies. They have achieved these results without resorting to mass murder.

Mass murder might actually be counterproductive. It might alienate sympathizers and potential supporters, provoke severe crackdowns that public opinion would demand and support, and threaten the survival of the organization itself. For these reasons, any scheme of nuclear destruction may create disagreement and dissension within the

Figure V-3.  
**Number of Deaths per Incident of Terrorism  
 Involving Any Deaths 1968-1976 (October 6)**



(See appendix III-A for more information on the death incidents.)

Based upon data supplied by the RAND Corp.

organization contemplating it, and expose the operation and the organization to betrayal. For these reasons, a number of experts have argued that mass murder appears unlikely to be contemplated by terrorists groups capable of making elementary political judgments.

However, there is no assurance that terrorists will continue to behave in the future as they have in the past. A desperate group might decide to strike one catastrophic blow,

Moreover, as Roberta Wohlstetter has suggested "... familiar political ends . . . some-

times involve a means like the Red Army terror in Lod Airport, a careless slaughter of innocents that may indeed be an omen of the sort of random killing we see in nuclear destruction."<sup>4</sup>

In addition, it should be recognized that pure massive destruction would serve the goals of nihilistic groups, should they emerge in the coming years.

<sup>4</sup>Roberta Wohlstetter, *Terror on a Grand Scale*, Survival, May/June 1976.

The primary attraction for terrorists to go nuclear may not be to cause mass casualties. Almost any nuclear action by terrorists would attract widespread attention. For example, if a terrorist group seized control of a nuclear power reactor or a nuclear weapons storage site, they would create a frightening situation and achieve worldwide publicity by the seizure alone. As another example, it might not be necessary for terrorists to actually design and construct a nuclear explosive device in order to achieve the effect they want. Extortion based on a credible nuclear threat would require less technical skill and risk but would still receive publicity, inspire fear, and, possibly, succeed in obtaining concessions.

In addition, as pointed out in appendix III of volume II, even nuclear explosions need not be equated with mass slaughter. The detonation of a nuclear explosive at any one of a number of important sites at a time when very few people would be about could have a stunning effect, while minimizing the number of deaths.

The whole area of motivations, incentives, demands and negotiations in the area of nuclear blackmail by terrorists (and other non-state adversaries) deserves systematic examination, which it has not received. At present, the published literature contains only speculations about the types of demands terrorists can, cannot, and are most likely to make. Many of these speculations are extremely ingenious, but their main focus is on the terrorist nuclear action itself; few attempt to come to grips with the much harder question of how a terrorist group could exploit the enormous leverage a nuclear device would give to effect a commensurate irreversible political change.

## **Organized Crime as a Potential Nuclear Non-State Adversary**

In this discussion, organized crime means an organization dedicated to illegal activities; its existence transcends any single act; the organization survives its members. Organized crime should be distinguished from individual groups of criminals that organize themselves to carry out specific crimes.

Whether organized crime should be considered a likely nuclear non-state adversary remains a matter of debate. Several studies and commentaries on the subject are summarized in appendix 111 of volume II. L. Douglas DeNike concludes that it is credible that organized crime would engage in nuclear activity:

“Armed with plutonium or high level waste, organized crime might demand Federal assurances of non-interference with their operations. Punishment for non-cooperation might be the loss of Washington, D. C., as a habitable center. Nuclear thieves could demand large sums of cash, control over policy or special concessions from national governments.”<sup>5</sup>

Considering the possibility of theft of nuclear material, the MITRE study concludes:

“They (organized crime) are interested solely in acquiring more money and power for themselves. . . They are involved in almost all the hijacking that goes on in the United States, and have been able to exert considerable control over substantial parts of industry, labor, and government. Their business is often international and they have longstanding and secure links in Europe, the Middle East, Latin America, and the Far East. There is little question that, for a sufficient amount of money, members of organized crime would take a contract to acquire special nuclear material for another party.”<sup>6</sup>

Other experts disagree that nuclear extortion or theft would be a likely activity for organized crime. This point of view has been summarized by Brian Jenkins:

§1 . . . one should be cautious about overestimating the attractiveness of engaging in nuclear extortion or trafficking in fissionable material to the criminal underworld, especially to organized crime. . . organized crime is a conservative, service-oriented industry. It provides gambling, prostitution, and narcotics. The profits from the provision of these services are good and, perhaps more important, steady, . . . There is a willing market for such services, and despite the social harm they cause, they may not be perceived by the

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<sup>5</sup>L. Douglas DeNike, *Radioactive Malevolence*, *Bulletin of the Atomic Scientists* (February 1974).

<sup>6</sup>*The Threat to Licensed Nuclear Facilities*, MITRE-7022, 95, The Mitre Corporation, September 1975.

public as a direct threat to individual or collective security. Indeed, the existence of organized crime depends a great deal on tacit public acceptance or at least indifference and therefore it has tended to avoid criminal ventures—for example, in this country kidnappings for huge ransoms—that are likely to arouse public anger. Nuclear blackmailing would bring tremendous heat on the organization and provoke crackdowns that could interrupt the flow of large steady profits from socially more acceptable crimes.”<sup>7</sup>

There is, however, one area of consensus within the debate. No one who has commented on the topic seriously believes that organized crime lacks the resources, skills, patience, or force necessary to steal special nuclear material or engage in an illicit international trade of material. The deterrents, if they exist, would possibly lie in fears by the leaders of organized crime that such actions would provoke public outrage and lead to severe responses that would seriously damage organized crime’s other profitable enterprises. If organized crime attempted to deter such counter-measures with a nuclear threat, it would mean, in effect, that the leaders of organized crime had decided to challenge the sovereignty of the nations in which their normal activities take place. This would require a fundamental change in the objectives of organized crime, which typically up to now has sought to make money and to acquire political influence to protect its investments and operations but not to directly acquire political authority at the highest levels or provoke political reaction.

At the same time, even those who believe that the risks to organized crime of involvement in nuclear theft or nuclear extortion probably exceed the perceived benefits, appear to find it credible that if a worldwide market for nuclear material develops, and if the price is right, organized crime (perhaps without becoming directly involved in the theft of nuclear material), might act as a fence or broker for the stolen goods. Plutonium or uranium could be stolen or fenced for their monetary value as commodities, that is, as

<sup>7</sup>Brian Jenkins, “Will Terrorists Go Nuclear?,” Paper #64, California Seminar on Arms Control and Foreign Policy, Santa Monica, October 1975.

reactor fuel or, in the case of low enriched uranium, as feed for dedicated facilities. (See chapter VII “Diversion From Commercial Power Systems” and “Dedicated Facilities”.) There are some indications that theft of low-enriched uranium for reactor fuel may have already happened in India. (See appendix III, volume II.) Thus, as nuclear power spreads worldwide, and especially if plutonium comes into widespread use as a reactor fuel, it is possible that organized crime might become involved in all aspects of black and gray markets in nuclear material as commodities. Such a development would be extremely dangerous. It is difficult to see how such a market could for long resist developing into a market for plutonium as bomb material.

Some observers argue that organized crime would not get involved in a black market in plutonium for bombs (or in assembled nuclear weapons), for the same reasons, discussed above, that they would not be likely to attack nuclear facilities or engage in nuclear extortion. Thus, organized crime might also steer clear of trading in special nuclear material as commodities, if they perceived the commodities market and the bomb market as closely linked. (See also chapter VII “Purchase and Theft” and appendix VII of volume 11.)

## Nuclear Hoaxes; Psychotics

A *nuclear hoax* is defined as a threat to detonate a nuclear explosive or to disperse radioactive material, when the threatener lacks the capacity or the dedication to carry out the threat. No such threat to date has been judged credible, and no perpetrators have had the capability of which they boasted, therefore all have been classed as nuclear hoaxes. There have been 38 nuclear hoaxes between 1970 and 1976. The characteristics of nuclear hoaxes are discussed in some detail in appendix III of volume II.

Hoaxes demonstrate that there are people who are thinking about using nuclear material to cause harm or as the coercive basis of a threat. It is not clear how many hoaxers, if they had access to nuclear material, would choose to mount a real threat rather than a hoax. There continue to be many conventional

bomb hoaxes even though dynamite is easy to come by. However, the interpretation of the available data, both nuclear and non-nuclear, suggests that there are those who would carry out a real nuclear threat if they had the nuclear material and the capability to use it.

It appears, from a study of hoaxes, that psychotics may be more attracted to nuclear threats than politically or criminally motivated persons. Psychotics may also be responsible for many of the low-level nuclear incidents that have occurred so far. Most psychotics would probably not attempt to do anything more serious than cause disruption. On the other hand, lunatics have been the perpetrators of many known schemes of mass murder. Thus, some psychotics would have the will to carry out the most destructive of nuclear adversary actions. In terms of actual capabilities, however, they of all the categories of potential nuclear non-state adversaries are usually the least competent. However, there are some brilliant psychotics who have technical knowledge and skill. If one such also has the will to cause destruction and has access to weapons material he would constitute a formidable adversary.

## Assessment of Threat Credibility

It is a vital and potentially difficult problem to distinguish a hoax from a real threat—that is, a threat backed up by capability and determination.

The FBI by Federal statute is the lead investigative agency in all cases where threats are made involving radioactive material. The nuclear aspects of threat assessment have been delegated to ERDA.

Current assessment of a nuclear threat consists of both a technical evaluation of the alleged nuclear device by ERDA and a behavioral evaluation principally by the FBI, of the threat message and the context in which it originated. So far, no perpetrators have backed up their allegations of a nuclear capability by any sort of evidence,

The usual approach has been to rule out the possibility of a credible threat. If the assessment found that the threat was not credible,

an assumption was usually made that it was a hoax. Positive criteria for establishing that a threat is in fact a hoax are being developed.

At this time, a great deal of emphasis is placed on evaluating technical aspects of the threat and accounting for the supplies of special nuclear material. However, even if all U.S. special nuclear material could be perfectly accounted for, a foreign source of special nuclear material could be used in a threat mounted in the United States.

The cost of evaluating, investigating, and reacting to nuclear threats is not insignificant. An increasing number of persons are acquiring information and technical expertise in nuclear matters. If a person very knowledgeable about nuclear matters were to initiate a hoax it would be difficult to negate its credibility from a technical and behavioral assessment alone. In such cases, the ability to assess the adversary's dedication to carry out the threat would be critical.

If the time should come when an adversary of verified capability presents a credible threat, then the ability to assess motivation, intent, and dedication will be essential if it is decided to establish communications.

## Summary

There are probably groups at large in the world today that possess or could acquire the resources necessary to become nuclear adversaries, if they wanted to. That is, they might be able to sabotage a reactor, steal fissile material, build a dispersal device, or possibly even a crude nuclear explosive device. Presently these include organized crime, certain terrorist groups who might undertake such actions with or without the assistance or complicity of a national government. Arguments arise less in the area of theoretical capabilities, but more in the area of intentions.

The historical record provides no evidence that any criminal or terrorist group has ever made any attempt to acquire fissile nuclear material or radioactive waste material for use in an explosive or dispersal device.

One ought to take little comfort from this fact, however. The lack of intelligence or visible evidence does not mean that the option has not been discussed; that some group might move in this direction without providing clues or warning. It is disquieting to realize that, in the past, most new terrorist groups have not been detected before their first terrorist act.

There is no logical progression that takes one easily from the existing pool of potential nuclear non-state adversaries to actual nuclear non-state adversaries, or from the nuclear incidents that have occurred to nuclear actions of greater consequence. Terrorist groups, as they presently exist, might be among future nuclear non-state adversaries, but their acquisition of a nuclear capability would not be a simple escalation of what has been demonstrated in terrorist actions thus far.

It is also a long conceptual jump from the present activities of organized crime to their acquisition of a nuclear capability.

Some authors of nuclear hoaxes have manifested desires of becoming nuclear non-state adversaries but none have demonstrated the required capabilities, and it is not certain that all hoaxers, even if they had access to nuclear material, would be anything more than hoaxers. In terms of intentions alone, some psychotics are potential nuclear non-state adversaries. In terms of capabilities they, of all the categories of potential nuclear non-state adversaries, are usually the least competent. To acquire a nuclear capability would require a quantum jump in capabilities for the vast majority of psychotics or an environmental change that would make the task much easier to accomplish.

Whether any of the current potential nuclear non-state adversaries, or other as yet undefined adversaries, will decide to actually go nuclear, cannot be answered at this time. Potential adversaries can be identified, their objectives, their capabilities, and the likely modes of operation if they do decide to go nuclear can be described.

There is left a vast area of uncertainty between what can be done and what will be done. The area of uncertainty could be

reduced if society had a better understanding of the possible motivations and utilities of nuclear action to potential adversaries; not how society assesses its utility, rather how potential adversaries might. Although a growing body of literature on terrorism exists, much less is known about how they reach their decisions to do or not do something, how they weigh the various factors involved, how they judge risks and benefits. Likewise, in the area of crime little is known how organized crime would address a decision in this area, nor is it known if the issue has ever come up.

The nuclear non-state adversary may not arise from those groups currently identified as potential nuclear non-state adversaries; there may already be, or there may appear in the future, new kinds of adversaries, or special subclasses of existing adversaries, that have not yet been identified who might be more likely to use nuclear means to achieve their objectives. Threats to nuclear facilities or involving the malevolent use of nuclear material may emerge on a different organizational or mental plane. In the past decade, international terrorists have become a significant problem. They are a new entity which has emerged in the past decade, and although they have not yet given any indication of going nuclear, they could transform into entities that might. It is difficult to say now what new entities may emerge in the coming decade.

The origin, level, and nature of the potential nuclear non-state threat may change. Among the current adversaries, new tactics may be invented to effectively exploit the leverage that a nuclear capability would give and achieve a goal commensurate with the threat. If an individual or group successfully carried out a scheme of nuclear extortion or destruction, other individuals or groups would probably imitate the act. Thus, the probability of a second incident occurring, especially after a success, would seem to be greater than the probability of the first. The growing ties among international terrorist groups, referred to earlier in this chapter, increase the possibility of imitation.

The political context may change. Terrorists with the capabilities for acquiring a nuclear

explosive may be placed in a desperate situation that will begin to erode the political arguments against nuclear action. The potential profits could become so enormous that organized criminal groups could be attracted to the nuclear industry. A war between two small nuclear powers may occur in which nuclear weapons are used, inviting further use by nations and subnational groups. Plutonium could become widely obtainable if adequate safeguards and physical security are not implemented, giving more entities the material with which to construct nuclear explosives.

Finally, the entire subject of adversary actions involving massive threats or destruction has apparently only started to receive systematic study. The imaginative use of chemicals or biological agents or even conven-

tional explosives as the basis of a massive threat has apparently not caused much concern in the public mind, although such materials may be more easily obtainable than nuclear material and require less skill to cause large loss of life. The origins of the nuclear age may have much to do with this; the word nuclear recalls Hiroshima, not PeachBottom. Nevertheless, although the concentration on potential non-state nuclear violence to the neglect of other forms of potential mass violence may be strictly speaking irrational, it may be intuitively correct. If non-state adversary groups with the will to threaten or carry out large-scale violence do appear, they may choose nuclear means, even if it is somewhat more difficult, because they understand the public fascination and fear, and know that the nuclear threat or act will have the greatest impact.

## CIVIL LIBERTIES IMPLICATIONS OF U.S. DOMESTIC SAFEGUARDS

Civil liberties issues have recently moved to a prominent position in the public consideration of nuclear power development. The growth of concern over the impact of nuclear power on civil liberties would probably have occurred even without consideration of plutonium reprocessing. As incidents of non-nuclear terrorism have mounted worldwide there has been an increased program to guard nuclear facilities against possible sabotage. Such increased security measures raise some issues of civil liberties impact, but the development of plutonium recycle and other nuclear technologies using material that could, if diverted, be made into nuclear explosives has set off the current debates.

Plutonium reprocessing offers the greatest opportunity for potential non-state adversaries—terrorist groups, profit-oriented criminal organizations, deranged persons, and disaffected employees of nuclear facilities—to obtain special nuclear material. Therefore, this section devotes its major attention to the civil liberties impact of safeguard measures necessary to prevent the theft of plutonium and to effect its recovery if stolen.

To analyze the potential impact of plutonium recycle on civil liberties, this section will:

- Provide a brief framework of civil liberties concepts.
- Describe the most likely size of a plutonium recycle industry' in the near future.
- Analyze possible safeguard measures for such an industry and discuss their civil liberties implications,
- Present three widely held positions about the acceptability of civil liberties risks in a plutonium-safeguards program.
- Provide observations on the underlying assumptions and relative strengths and weaknesses of these three positions.

Of necessity, this discussion must treat both background issues and policy arguments in compact form; a full treatment of these matters can be found in appendix III of volume II, along with an extensive bibliography.

## A Brief Framework of Civil Liberties Concepts

U.S. society regards protection of individual freedom and limitations on the exercise of Government power as fundamental tenets of the Republic. Some civil liberties interests, such as the right of religious belief and exercise, receive very broad, near-absolute status; other civil liberties interests, because their exercise has impact on public health and safety, the rights of others, or national security, have to be defined and applied by balancing competing social interests or conflicting civil liberties claims. The rise of new social and economic settings, new technologies, and complex urban life also require constant adaptation of the civil liberties concepts framed in the 18th century Bill of Rights.

What distinguishes U.S. society from many others, including some other democratic systems, is the belief that protection of civil liberty is so central to moral, political, and legal values that serious limitations on liberty should always be shown to be clearly necessary; that measures having such effects should be kept to the minimum required in a given circumstance; and that U.S. courts will weigh the need for such measures and are empowered to declare unconstitutional any laws or executive actions which transgress basic liberties.

In the context of plutonium recycle safeguards, the two aspects of civil liberties which would be most directly involved are *free expression* and *fair procedure*.

Free expression involves the guarantees of free speech, press, assembly, association, religion, and privacy protected by the First Amendment to the Federal Constitution and its State counterparts. Fair procedure, or due process, involves the standards by which Government investigatory activity should be conducted and the procedures under which Government makes formal determinations about individuals, in both administrative proceedings and criminal trials.

While courts play a central role in defining and enforcing constitutional rights in the United States, it is also tradition that the

legislatures and executive branches of Federal and State governments are expected to be, and often have been, strong guardians of the citizen's liberty. This means that debates over the civil liberties implications of Government programs such as plutonium recycle are policy matters for elected officials and the public to consider. What is good civil liberties policy, therefore, is not merely a matter of what the courts may have held to be constitutional law in prior-related situations. It is also what elected officials and the American public believe to be the best balance between liberty and other social interests in a particular context. This public responsibility is especially important in situations-of which plutonium recycle is one—where it may be unlikely that the courts will pass judgment in the early phases. (The role of the courts in assessing the civil liberties impacts of nuclear safeguards is discussed in greater detail in appendix III of volume II.)

Potential terrorist threats to obtain and use nuclear, chemical, or biological weapons pose especially knotty problems of civil liberties policy. Since dangers to human life and public safety could be great, safeguards against such activities must be strong and effective if public confidence is to be preserved. Yet safeguard measures which would sweep so widely as to curtail basic liberties for substantial numbers of people or for broad sectors of public life could move our society toward the kind of garrison-state environment that political terrorists hope to force upon democratic nations to undermine the vitality of their social orders. Walking the line between underreaction and overreaction is the goal of democratic societies, and careful examination in advance as how to draw that line is the context in which we must examine both the decision to develop and safeguard a plutonium industry and the likely impact of various safeguard measures on civil liberties.

### The Most Likely Size of a Plutonium Recycle Industry in the Near Future

When the consideration of civil liberties and plutonium recycle first arose during

1974-76, critics and supporters based their arguments on projections that envisaged a very large plutonium recycle industry in the next 25 to 50 years. By the year 2020, these early projections indicated that there would be some 60 plutonium fabricating and reprocessing plants and 2,000 reactors in the United States, an extraordinarily large number of shipments per year of special nuclear materials between fabricating plants, reprocessing plants, and storage sites; and a plutonium work force of over 1 million persons.

Official and unofficial projections have been scaled sharply downward during the past year. The following table (figure V-4), drawn from the Generic Environmental Statement on the use of Mixed Oxide Fuel (GESMO), indicates the current projections of components for a light water reactor industry using uranium and plutonium recycle. GESMO estimates that in 2000, 27,000 people would be employed in the fuel cycle and 55,000 people in the nuclear electrical power industry. Of these people, a maximum of 20,000 persons in the fuel cycle would be in positions requiring clearances, 13,000 of which would require full-field investigations.<sup>8</sup>

The size of the employment force needed to transport special nuclear material between fabricating and reprocessing plants has become a matter of uncertainty rather than firm projection. If the decision were made to collocate fabricating and reprocessing plants, this would eliminate the need for shipping pure plutonium offsite. Coprecipitation of plutonium oxide and uranium oxide at the reprocessing plant would also eliminate transportation of pure plutonium.

The size and distribution of a plutonium industry is now seen as much smaller than when the civil liberties impacts were first examined, and several major technological

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<sup>8</sup>In March 1977, the Nuclear Regulatory Commission announced a proposed rule to require 4,000 employees in private nuclear reactors to get a security clearance requiring full-field investigation, and 2,000 employees in such plants to get the equivalent of a "confidential" clearance, requiring a name check against national agency files. This program is aimed primarily at protecting against reactor sabotage.

aspects remain either uncertain or are open to choice rather than being technologically determined. How this affects the civil liberties problems will be discussed later,

## **Safeguard Measures for a Plutonium Industry and Their Civil Liberties Implications**

Current Federal law forbids the unauthorized possession of special nuclear material or efforts to obtain it illegally. Extensive personnel and physical security programs are used in military nuclear facilities, and in Government shipments of special nuclear material. The NRC's recent announcement of its intention to install a clearance program for employees of private nuclear reactors has already been noted. There are comparable personnel and physical security programs outside the nuclear industry to safeguard sensitive facilities (gold depositories, intelligence facilities); to screen out dangerous objects (airports scanning for weapons); and safeguard shipments of valuable or dangerous objects (bank currency shipments, nerve gas). This leads some commentators to conclude that plutonium safeguards would differ only in degree and not in kind from protective programs that our society already employs.

However, other commentators point to the extremely high level of harm that would be done if a nuclear diversion and explosion were successful (in numbers of deaths and long-term radiation effects), and to the immense public fear of nuclear explosion that a blackmail threat itself would generate. They conclude that these risks are so great that a plutonium safeguards program would have to be different in kind, not merely degree. It would have to be far more intense, permanent, and put more people outside the plutonium industry under preventive or responsive intelligence than anything presently in force.

There are several important points of agreement between these two views:

—If plutonium recycle is initiated, there would be a genuine need for high-security measures. In other words, this

Figure V-4

**The Projected LWR Industry, 1980-2000\* with U and Pu Recycle**

LWR Industry Components	Number of Facilities		
	1980	1990	2000
LWR'S	71	269	507
Mines**	416	1,856	4,125
Mills	21	56	77
UF6 Conversion Plants	2	4	5
Uranium Enrichment Plants	3	3	5
UO <sub>2</sub> Fuel Fabrication Plants	6	6	7
Reprocessing Plants	1	3	5
MOX Plants	1	3	8
Federal Repositories for Storage	0	2	2
Plutonium Shipments in metric tons**	5 tons	273 tons	1,170 tons
Commercial Burial Grounds	6	6	11

\*From Table S-10 of Final GESMO NUREG 0002, Vol. 1 Summary

● From Page XI-35 of Final GESMO NUREG 0002

would not be an instance where responsible critics would allege that there was no need for any strong measures, as they denied the presence of security risks serious enough to justify passage of the Alien or Sedition Laws in the 1790's, the Palmer round-ups of aliens in the 1920's, or the Joseph McCarthy investigations of the 1950's.

- In the general public debates over broad police powers of arrest, search, and seizure, some argue that work should be done on the underlying problems that cause high crime—such as unemployment or racial discrimination—rather than allow police to use intrusive or harsh techniques. In the case of potential threats against plutonium plants, however, there are no real prospects in the foreseeable future of adopting national or international policies to remove the causes of all political terrorism, individual derangement, or criminal conspiracies, thereby obviating the need for high-security measures.
- No complete technological solution is available, or is foreseen, that could entirely eliminate the need for other safeguards measures which could raise civil liberties issues.

For example, the machine scanners used in airport searches have made it unnecessary to require pat-down searches of millions of air travelers, thus providing a technological measure of high acceptability to the courts and the public. However, searches to recover plutonium, if diverted, could not presently be accomplished by radiation detection alone, and it would be necessary to use some measures that would have potential for violating civil liberties,

Having noted these areas of general agreement among observers of the safeguards problem, the types of safeguards used in the past in high-security contexts are described and their civil liberties implications discussed. These can be grouped under four headings: employee screening; material production; threat analysis; and recovery measures.

1. **Employee screening** ranges from minimal national agency name checks and questionnaires asking for detailed personal histories to full-field investigations asking neighbors, former employers, and associates about the background, loyalty, character, and life-style of applicants for employment. Screening may also entail the use of polygraphs to measure physical and emotional responses to questions about

suitability characteristics (use of drugs, thefts, lying about previous activities) or the use of psychological tests to investigate emotional and mental instability. All of these techniques could be directed at identifying employees who might use their position to steal or sabotage nuclear material. There are serious civil liberties concerns over both the standards of conduct employed in such screening (such as current denials of sensitive employment to homosexuals) and the verification techniques used (polygraphs and psychological tests, which have been attacked both as unreliable and as violations of privacy).

2. **Material protection** involves measures to control access to or misuse of special nuclear material. Some of these—such as mechanical detection of radioactive material, inspection of hand-carried items, and personal identity checks—do not raise serious civil liberties issues. Other techniques, such as visual or audio surveillance of workers on the job or pat-down searches (frisking) of individuals entering or leaving an area do raise civil liberties issues.
3. **Threat analysis** would involve efforts to obtain advance warning of diversion or sabotage attempts, or to guide recovery efforts should a successful diversion take place. Overt intelligence checks of potential assailants usually entail investigative techniques such as background inquiries, checks of law enforcement intelligence files, and physical surveillance. Covert intelligence measures may include electronic surveillance, surreptitious entries, use of informants and undercover agents, mail openings, and similar methods. While overt intelligence techniques may be both necessary and acceptable if limited to genuine potential terrorists, the classic civil liberties danger in such activity is that the investigative net is cast too widely, and covers large numbers of ideological dissidents. The covert intelligence techniques also raise this danger, exacerbated by the covert nature of the privacy-invading methods. Whether covert techniques are used

under administrative controls or are subject to either judicial or legislative committee supervision, bears on the degree of potential injury they will inflict.

4. Recovery measures are potentially the most dangerous to civil liberties. At the low end of the spectrum in potential harm are quarantines of the facility, full-scale searches of personnel, and searches of surrounding areas by mechanical (radioactivity) detectors. At the high end of the spectrum, should other measures fail, could be large-scale roundups of suspects, room-by-room physical searches by hand, wholesale evacuation of populations from target areas, censorship of the press, and harsh interrogation of persons strongly believed to be members of the diversion groups or who know the location of stolen material.

With this brief overview of the kinds of measures involved in safeguard programs, the following section discusses the estimate of civil liberties risks and tradeoffs in the context of three main positions about plutonium and civil liberties developed over the past few years.

### **Three Positions Widely Held in U.S. Society as to the Civil Liberties Risks of Plutonium Recycle**

The positions described below have been constructed from an analysis of public statements made by industry representatives, scientific and legal experts, executive-agency officials, members of Congress, public-interest groups, and similar commentators. The sources for their statements can be found in appendix III of volume II.

#### **Position One: A Plutonium Economy Would Require Such Extensive Safeguards and Curtailments of Civil Liberties That Its Creation Would Jeopardize Free Society in the United States.**

This position makes a number of key assumptions:

a. The presence of hundreds of thousands of pounds of plutonium in reprocessing plants or in transit—when 20 pounds would be enough to make a nuclear explosive, and with prevailing conditions of domestic and international terrorism—poses a situation so perilous to public safety that only a far-reaching, zero-risk safeguards program would be sufficient to protect the public. Therefore, that kind of sweeping safeguard program is the one to envisage.

b. The immense potential consequences of a nuclear diversion from inside or an assault from outside would probably lead the courts to uphold sweeping preventive intelligence measures. The courts would be even more likely to decline to interfere if Government took Draconian measures in response to a blackmail threat or nuclear incident. The release of intelligence agencies and security investigators from constitutional limits would not only be harmful in itself but would also be likely to stimulate surveillance and dossier-building in non-nuclear fields.

c. Even if a safeguards program were originally set up with strong civil liberties protection written into legislation or executive orders, public reaction to foreseeable incidents of diversion and blackmail, and certainly to any successful explosion, would lead to the dropping of such limitations and the adoption of a maximum security program. Thus no safeguards program can be expected to stay limited as a plutonium economy continues for any length of time.

d. The growing political movement opposing nuclear power will produce protest demonstrations focused on highly visible targets such as fuel-cycle facilities and transportation. This will require harsh protective responses and produce serious confrontations.

e. Giving industrial security forces and corporate managements a role in collecting data and managing security programs about employees would be harmful to sound employer-employee relations.

f. Given these likely consequences, and the fact that alternative energy sources such as coal or solar power require no such safeguard measures, proponents of plutonium recycle

must prove to Congress and the public that no other energy sources or conservation programs can be developed to meet American energy needs, even at higher but not unbearable economic costs.

Based on these assumptions, Position One concludes:

- . On civil liberties grounds alone, Congress should reject plutonium recycle.
- . The United States should not export plutonium recycle technology. This is partly to diminish the threat of diverted plutonium being smuggled into this country by terrorists, thus creating the need for extensive customs-search procedures. It is also urged in order to avoid having the United States export a technology that would inhibit the evolution of greater civil liberties in developing nations.

**Position Two: Safeguards Can Be Adopted For a Plutonium Industry That Would Be Both Effective Against Threats and Acceptable in Terms of Civil Liberties.**

Position Two proceeds from the following primary assumptions:

a. Operators of military and commercial nuclear facilities have been managing safeguard programs successfully for decades; adapting these to the new scope and requirements of a plutonium economy would therefore represent an expansion of present operations, not a totally new venture.

b. It is unacceptable for a strong society such as the United States to let potential threats from a few terrorists, criminals, or disturbed people deprive the American economy and the public of badly needed energy supply. Nuclear power is economically competitive with other sources, capable of safe use, and environmentally sound. The need to safeguard nuclear power facilities is no more a reason for rejecting nuclear power than potential threats against other vulnerable facilities, such as natural gas facilities, dams, city water reservoirs or subway systems constitute good reason to close them down.

c. Whether the size of a plutonium work force would be 20,000 or 1 million, it is

justified to set clearance standards for persons who choose to work in that industry. This deprives no one of her/his rights to pursue gainful employment, even in the nuclear field, as there will be many other nuclear research and operating facilities beside the commercial plutonium industry. The same justification of voluntary choice with advance knowledge is presently seen to justify other personnel security measures in highly sensitive operations outside the nuclear field.

d. The intrusions into personal liberties of workers, community residents, and diversion suspects that would take place if a diversion were detected or a nuclear blackmail threat made—a wesome as those situations are—are really no different than if nerve gas or a highly dangerous bacteriological agent were stolen from a civilian or military site. In all such cases, preliminary investigation by professionals would establish the credibility of the danger, negotiations would be weighed, and a response pursued appropriate to the situation. There is simply no way a democratic society can eliminate the possibility of such episodes.

e. Regarding intelligence-gathering about potential diverters, there is a need for obtaining intelligence about terrorist organizations and other groups whose actual conduct indicates that they might use nuclear means of violence. Legislation and regulations would carefully spell out the operational limits of such intelligence programs, both as to the range of groups on which data would be collected and the methods used to do so.

Based on these assumptions, Position Two reaches the following conclusions:

- . After full public participation in a rule-making proceeding addressing both safeguards requirements and civil liberties considerations, the United States should proceed with a plutonium licensing program.
- . The United States should also proceed with sales of plutonium recycle facilities abroad, under a safeguards program that would meet both U.S. and IAEA standards.

### **Position Three: An Acceptable Program of Plutonium Safeguards is Possible But Only If American Society is Willing to Run Some Permanent Risks of Diversion In Order to Keep Civil Liberties Risks at a Low Level.**

These assumptions underlie Position Three:

a. To adopt a zero-risk approach to safeguards, or even to speak of holding threats to negligible proportions, is to ensure that the civil liberties costs of such a program will be unbearably high. Once it is assumed that reducing threats to near zero is the objective, managers of a safeguards program would be driven to adopt highly dangerous techniques of personnel security and preventive intelligence.

b. Instead of this standard, there should be adoption of a standard that would trade-off some small risks of diversion against heavy risks to basic civil liberties. Americans should see the creation of a reasonable, efficient, and freedom-respecting network of safeguards as the approach to plutonium security.

c. This would mean deliberately rejecting some widely proposed techniques of personnel screening, employee monitoring, and preventive-intelligence gathering on anti-nuclear groups, not merely because many of these techniques are of doubtful effectiveness but because their civil liberties costs are too high. In balancing slightly greater risks of diversion against very heavy risks to basic freedoms, the decision would have to be made to protect freedoms.

d. A least restrictive alternative test can be applied to each component of a safeguards program. As a recent report to the Nuclear Regulatory Commission put it:

We think it vital that such a “least restrictive alternative” approach be the keystone of the NRC’s approach to the selection and shaping of safeguards measures. In approaching a particular safeguards problem, the Commission should evaluate the impact on civil liberties of each of the ways of solving that problem. The factors to be considered in evaluating the impact of various safeguards measures on civil liberties should include the following: (1) the extent of the intrusion on personal liberties; (2) the frequency and per-

vasiveness of the intrusion on civil liberties (Will it be part of a daily routine or will it only occasionally be employed? Will its effects be temporary and limited or long lasting?); (3) the number and types of individuals affected (employees in nuclear plants, members of suspected terrorist organizations or dissident groups, "innocent" members of the public); (4) the likelihood that a particular safeguards measure will actually be employed; and (5) the likelihood that the same or similar invasions of civil liberties will take place even if the safeguards measure under consideration is not employed.

e. For plutonium recycle to go forward, such a set of fully articulated tradeoffs would have to: be set out as the philosophy of a safeguards program; be tested before the public in a variety of hearings and proceedings; be fully accepted by the commercial firms and Government regulatory agencies most directly concerned; be written explicitly into legislation and implementing regulations; be subjected to firm annual reporting duties and legislative reviews; and have procedures created for both administrative appeals and judicial review.

f. It would be especially important to a proper safeguards program that the Nuclear Regulatory Commission not simply turn over to the discretion of the FBI the conduct of preventive intelligence for plutonium security, or leave the decisionmaking responsibility in a recovery effort or diversion response to ad hoc developments among Federal, State, and local officials. These activities, because they are among the most important for civil liberties, should be defined and supervised by the NRC, possibly with a congressional oversight role.

g. Holding to this line would involve continually reaffirming the bargain in the face of probable low-level and possible high-level incidents. This would mean that the American public would have to hold the line of moderation, refusing to let itself be stampeded by

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<sup>9</sup>Timothy B. Dyk, Daniel Marcus, and William J. Kolasky, Jr., *Civil Liberties Implications of a Safeguards Program for Special Nuclear Material in the Private Nuclear Power Industry*, a report to the Nuclear Regulatory Commission, October 31, 1975.

demagogues, and forcing sufficient public supervision to prevent the program being subverted by secret government.

Based on these assumptions, Position Three draws the following policy conclusions:

- Congress should go forward with a full-dress review of the need of plutonium recycle to meet America's future energy demands, and of whether this process can be made environmentally and physically safe. If the answer to these inquiries is yes, then Congress should receive from NRC a fully worked out plan for safeguards, which then would be publicly reviewed and implemented.
- Position Three takes no stand on the desirability or civil liberties risks of selling plutonium technology abroad.

### Observations and Comments on the Three Positions

The effort to isolate key differences among the three major positions obviously produces some rigidity in stating premises and conclusions. Someone may share one or more premises of a position without reaching the same final conclusion as the advocates of that position. For example, a person may believe that the voluntary nature of employment in a plutonium industry justifies personnel clearances without concluding that it justifies more intrusive techniques, such as polygraph examinations. Also, the differences between Position One (which would forego plutonium recycle because of civil liberties concerns) and the other two positions (which would go forward with plutonium recycle with different steps to solve civil liberties problems) are clearly more marked than the differences between Positions Two and Three.

There is also a sense in which each of the three positions outlined is partially right.

- Position One points correctly to the dangers of so much plutonium being handled in a world of terror and mishap; the public pressure that could be created to use Draconian safeguards measures; and the highly optimistic assumptions as to unbroken national

responsibilities and moderation on which both Positions Two and Three rest their faith,

- Position Two reminds us that the year 2020 will come gradually, allowing plutonium economy to develop slowly; safeguards could therefore be developed step by step, modifying the technology, physical locations, plant design, shipment procedures, and many other elements as it went along.
- Position Three suggests persuasively that it has been a traditional feature of American pragmatism to resist either/or choices, seeking ways to trade off one set of risks against another to preserve both liberty and order.

It is helpful also to examine the effect of some altered assumptions of safeguard approaches on these positions, and some of their weaker points.

- The concerns of Position One about diversion of special nuclear material during transportation would be greatly reduced if collocation of reprocessing and fabrication facilities or coprocessing (without collocation) completely eliminated transportation of weapons material. Similarly, concerns about assaults by outsiders would diminish if facilities containing material usable in weapons were convincingly designed to prevent removal of weapons material even by a large, heavily armed band. Such successful defenses for collocated facilities could reduce or eliminate the need for offsite security measures such as surveillance and dossier-building on members of the public. Finally, if the number of people in the plutonium industry who would be subjected to full background investigations and would be periodically subjected to on-job surveillance were very limited in number (such as several tens of thousands), the number of people affected is less than presently exists in the defense industry or other sensitive private activities. It is not clear, however, what number of employees must be affected in order to reach a point of civil liberties concern;

some people would regard 20,000 as an acceptable number for such intensive security measures; others might accept only lower numbers.

- The assurances contained in Position Two would be disputed by many knowledgeable persons. It is not *proven* that the past and present safeguards system has been totally successful. Because of the significant amounts of unaccounted for material accumulated over the last 20 years, the possibility that diversions have already occurred cannot be dismissed. However, none of this material has ever been involved in a weapons threat. (Note that all weapons threats received to date have been hoaxes. See chapter V and appendix III, volume II.) Nor is it clear that Position One is correct in saying that an expanded plutonium industry merely represents a difference in degree, not in type. In cases where a plutonium facility becomes a major or dominant employer in a community, there is less freedom of choice for residents as to whether they accede to the security restrictions or refuse to work at the facility. In small rural communities the company-town syndrome may appear, making it difficult for employees to resist extensive security measures.
- As for Position Three, past experience with security officers makes many persons doubtful about the possibility of containing a security program to least restrictive security procedures. Security personnel are prone to seek tighter measures; professionally, they tend to seek foolproof techniques that threaten infringement of civil liberties. Even with tight internal security and strong perimeter defenses, it is likely that security personnel would want to employ positive intelligence (e.g., surveillance and informers to identify potential attackers or critics). Also, the addition of ombudsmen or public advocates to the system to protect against unwarranted security intrusions is subject to the well-known danger that constant proximity to security processes

render them too sensitive to the needs of the security forces. Finally, Position Three may be ignoring the resulting effect of a successful diversion if followed by major threat or actual casualties. It is not clear that the original limited safeguards system contemplated by Position Three would survive the pressures of an outraged public determined to prevent any further incidents.

In trying to decide which one or combination of these views is right and therefore should be used in policymaking, it should be recognized that this is not a problem that can be put to the tests of either logic or empirical investigation. The reality is that each of these positions rests, fundamentally, on socio-political judgments as to how the U.S. Government and public opinion have dealt in the past with threats to national security (real or assumed); how Government and commercial security forces would be likely to carry out a safeguards program; how much privacy, dissent, protest, and cultural diversity our civil liberties traditions demand or our society should encourage; and how the American public would probably respond to diversions, blackmail threats, or a nuclear explosion, in terms of its shocked post-incident attitudes toward the scope of safeguards measures.

There is also no good decision guide in the way other industrialized democracies are dealing with the plutonium recycle issue. In

Britain, for example, the debate over plutonium and civil liberties is in almost exactly the same stage as in this country. There is support in British Government documents, parliamentary reports, commercial industry materials, and civic-group literature for each of the three positions outlined above.

In conclusion, the choice between the total ban on plutonium advocated by Position One and the acceptance of plutonium recycle by Positions Two and Three (though with different conceptions of how to conduct a safeguards program) is likely to be made on a total package basis by U.S. society, not on the basis of the civil liberties considerations alone. Indeed, the civil liberties aspects really tend to reinforce the existing orientations of each of the main contending parties debating the value and risks of plutonium recycle as an energy source.

The single most important conclusion suggested by this review is that if a plutonium industry as described earlier in figure V-4 were to be pursued in the near future, steady attention would need to be paid by Congress, the executive agencies, public-interest groups, and the courts to the way in which safeguards are defined, administered, monitored, and reviewed. Keeping a plutonium safeguards program consistent with civil liberties would become an important, continuing task of those who cherish American freedom.