Journal of Peace Studies Vol. 4, Issue 23, July-August, 1997

Nuclear Terrorism: A Threat to Global Security

Jagat Ballav Pattanaik*

***Jagat Ballav Pattanaik is a Ph.D. Scholar in International Politics in SIS/JNU, New Delhi.**

In the hazardous flux of world affairs the risks of nuclear terrorism are particularly insidious. The increasing level of technological sophistication among terrorist groups, coupled with a renewed determination to achieve political goals, has significantly raised the potential for nuclear terrorism. In recent years, the risks have increased significantly because of three factors: the growth and spread of nuclear weapons; the expansion of civilian nuclear programmes; and the increase in extremist political groups waging campaigns of terror[1]. Further, with the end of the Cold War and the disintegration of the erstwhile Soviet Unions, the question of the whereabouts and the security of the military and civilian nuclear potential has become the focus of public attention all over the world.

The past few years have been an upsurge in the size, sophistication and capabilities of terrorist groups around the world. Terrorist activities offers strongly motivated political or rebel groups, a way to dramatise and highlight their cause and influence their adversaries. Today no nation or region or community is totally immune to terrorist violence, or to its effects, which include deliberate and indiscriminate killing of civilians.

In the contemporary world, terrorism gathers its strength from several factors. Modern communications enable terrorists to project their cause and spread their message widely. They have been displaying increasing sophistication in their strikes not only in weaponry but also in ways of carrying out attacks. They have developed collaborative networks and refined their planning, intelligence and targeting methods. The growth of transnational terrorism i.e., the ability of the groups to work across national frontiers carries an inherent danger of terrorists, inflicting heavy casualties. However, a recently state-sponsored campaign of terror is on the rise.

This trend of contemporary escalation and sophistication of terrorism serves to highlight the growing dangers of nuclear blackmail and terrorism. The spread of nuclear technology provides the motive for terrorists to find or compile the capabilities to carry out the most dangerous portent of terrorism. Unlike the other acts of terrorism, nuclear terrorism would be more effective because of its wide impact in term of threat or casualties.

Meaning and Implications

Nuclear terrorism means “the unauthorised use or attempted use of nuclear explosive devices, use or attempted use of nuclear materials or attacks or attempted attacks on nuclear facilities and installations for extortionate purposes”[2]. The dominant motive of a terrorist group, which might attempt to divert nuclear material, would probably be to enhance its capabilities to use violence to achieve their goal. Diversion could place nuclear weapons in the hands of the groups that are quite

willing to resort to unlimited violence[3]. In these respects, a terrorist group, which possessed a few nuclear devices, would be in a qualitatively different position offensively and defensively than the one with only conventional arms.

The terrorist's access to nuclear weapons, nuclear power plants and nuclear wastes storage facilities coupled with some additional factors represent the most substantial portent of nuclear terrorism. Reporting on his fact-finding trip to US Air Force NATO nuclear weapons installations in Turkey, in April 1974, columnist Bob Wiedrich, wrote of nuclear weapons as 'potentially ripe for the plucking by any band of terrorists dedicated enough to risk their own lives'[4]. Terrorists are known to have a penchant for indiscriminate violence and many of them are insensitive to orthodox threats of developing pattern of co-operation among terrorist groups, and many nations tolerate and support terrorism [5]. In international relations, the tolerance and support of terrorism by certain states, stems from the belief that terrorist groups often work in the interests of the sponsored state. This explains the risk of factors inherent in such an activity.

The threat of nuclear terrorism results in the breakdown of physical and political order. Terrorist detonation of a nuclear explosive device would cause damage and casualties as a result of four specific forces: blast, thermal radiation, prompt nuclear radiation a long-term nuclear radiation. A nuclear explosion on the ground – most likely to be used by the terrorists - produces more local fallout than similar explosion in the air[6]. The damage produced by the blast wave from an explosion also depends on the topography of the immediate surroundings, and on the structural characteristics of the buildings in the target area. For example, a nuclear explosion with a one-ton yield in the open space, in a sparsely populated area, might produce slight damage. But the same explosion on a busy street might deliver a lethal dose of radiation to most of the occupants of buildings, as well as to people along the streets, within about 100 meters of radiation. Use of radiological weapons would result in death and the contamination of a wide range of scarce renewable resources. A reactor-core meltdown by the terrorists would involve a leakage of an immense amount of gaseous radioactive material that could expose populations to immediate death, cancer or genetic defects. These physical effects of nuclear terrorism, in turn, may substantially affect its political consequences.

Nuclear terrorism would result in political instability and violence inside the state. To counter this, the use of military force by the victim state cannot be overlooked. This action may be a prelude to a major international might undertake actions that could easily be misinterpreted by other, potential adversaries. Likely targets, of these actions sometimes, include states thought to have supplied nuclear materials to terrorist groups; states assumed to have harboured nuclear terrorist group before and/or after commission of terrorist acts; states thought to have supplied nuclear terrorists with non-nuclear supplies, technical resources, expertise, or money. Successful nuclear terrorism in one part of the world might be an invitation to terrorists in other parts of the world to use nuclear explosive devices, radiological weapons as an effective, spectacular means of achieving ethno-political objectives.

This growing international threat of nuclear terrorism during the Cold War period prompted the US Congress to enact the *Omnibus Diplomatic Security and Antiterrorism Act* in 1986. The legislation directs the President to open a number of national and international initiatives aimed at diminishing the dangers of nuclear blackmail and terrorism[7]. However, during the Cold War

period, diversion of nuclear materials, radioactive wastes and equipment to the international black market by unscrupulous agents got underway undermining the efficacy of the initiative. In the early part of 1988, Norway admitted that two shipments of heavy water were diverted to the black market, and later reported that the first shipment of fifteen tons was combined with heavy water from the then Soviet Union and diverted from Switzerland to Bombay[8].

Such actions by the sates make the initiatives pertaining to the containment of nuclear terrorism absolutely obsolete.

Is Nuclear Terrorism Feasible?

With the end of the Cold War and the disintegration of the erstwhile Soviet Union, one question strikes the minds of many people i.e., 'how real is the risk of nuclear terrorism?'

The alarming increase of nuclear smuggling reached its peak in 1994. Four instance of nuclear smuggling in 1990 rose surprisingly to 234 cases in 1993 and created concern and fear in the public mind[9]. In August 1994, 300 gms of the highly radioactive substance were seized at Munich airport[10]. Hence with the rise in smuggling of nuclear materials the possibility of terrorists accessibility and use of those substances also increases.

But contrarily, with the aid of the fissionable material available in the 'grey' market and the technical principles governing nuclear explosives known for years, the debate continues over the doubt: 'will the terrorists be able to construct a nuclear weapon?' In the past, many states have attempted to do just that using highly skilled personnel and resources and have not succeeded. This is so because building a nuclear weapon requires weapons-grade fissile material as well as the correct amount of a whole series of other "exotic" raw materials, which must also be of the correct quality[11]. Besides this, the construction of nuclear weapons requires highly qualified personnel from the fields of physics, chemistry, metallurgy and electronics equipped with technical know-how. Special technical equipment and complex components are also needed which are highly impossible to acquire without the approval of government. This is especially true for plutonium-based weapons since their development is particularly demanding in terms of the technology. Moreover, it is argued that even if terrorist organisations did manage to obtain a complete nuclear weapon, this does not mean that they would be able to use it and/or detonate it. Apart from the fact that most nuclear weapons are highly unsuitable for use in terrorist action owing to their size and the difficulties involved in transporting them. Such weapons are also fitted with a number of technical and organisational safety precautions and self-destruct mechanisms, which can only be bypassed by a small group of people belonging to a select circle of specially trained experts[12].

Notwithstanding the above limitations to improvise a nuclear device that seems so daunting, it may not be quite as imposing, when viewed from the prospective of a terrorist. The apprehension and threat of the cases of nuclear terrorism in future never be ruled out. First, as the available supply of fossil fuels continues to be depleted, a growing number of states can be expected to turn to nuclear power for energy-requirements. This represents a pre-eminent source of danger from terrorist use of nuclear weapons because the by-products of fission in the nuclear plant are the basic materials for a fission bomb or radiation dispersal device[13]. With fissionable material available, a

determined terrorist group, wishing to manufacture its own crude or home-made weapon, can do so without insurmountable difficulty. As early as the 1960s, various reports indicated that persons using only unclassified information as well as publicly available literature could design a crude device to function in the nuclear mode. For example, in 1975, an undergraduate at the Massachusetts Institute of Technology designed a workable bomb of low yield[14]. Similarly, in 1976, a Princeton University student put together a design for an explosive with half the power of the Hiroshima yield; the bomb could be built for $2000[15]. Hence it is obvious that any proficient terrorist groups, who can obtain a fissionable material, will have a reasonable chance of building, quite skillfully and safely, a crude bomb.

If obtaining or producing weapons grade plutonium becomes difficult in making bombs, then the terrorists can avoid the entire problem by simply buying it or getting it freely. A dispersal threat would be more credible than a bomb threat because it requires less material and a lower level of technological expertise. In this context, the dispersal of radiological weapons is important[16]. A plausible alternative to the explosion or threatened explosion of nuclear device is the utilisation of plutonium or any other radioactive nuclides for the dispersal of radioactivity in any given area, or the contamination of natural resources. For a narco-terrorist experienced in moving tons of illicit drugs around the world, a few pounds of plutonium is probably child's play, provided he follows basic safety measures. A determined terrorist group could place only three and one-half ounces of plutonium in an aerosol canister to produce a radiological weapon with potentially devastating effects[17]. Further, theft of fissionable materials, if not the bombs themselves are possible. The theft of fuel rods from atomic power stations in England in 1966[18], the apparent uranium smuggling operation uncovered in India in 1964[19] and the conspicuous intrusion attempts, surveillance operations, and disturbances at perimeter fences and areas outside nuclear weapons storage sites in Europe[20], explain that it is not very difficult to acquire nuclear material and to disperse it. In this context one case is worth mentioning here. A lone terrorist, calling himself a "justice guerrilla", protesting against prison conditions in Austria, dispersed radioactive materials in two trains in 1974; several people became ill in these incidents, and the perpetrator escaped[21].

The third and the frightening reason is the profound negative effects of nuclear proliferation. Although the current "nuclear club" is limited in membership, the rapid expansion of nuclear programmes in many countries involve massive investments in the construction and operation of civilian nuclear power plants, research reactors, laboratories, and reprocessing and enrichment facilities. Therefore, it will not be difficult for nations desiring to manufacture their own nuclear weapons to help in proliferation. Hence, there is a growing stockpile of nuclear fissionable materials, possibly actual weapons, in the countries and protecting them requires special technologies, safety systems, and tight security and surveillance.

Apart from the above it is conceivable that a terrorist group may target a nuclear reactor located away from their main area of operation in a region populated by those that they classify as "enemies". The technical problem in blowing up a reactor would be easier than those in designing and constructing a nuclear explosive. Explosives could be carried by a few people into a reactor or other facility and could cause major damage. Sometimes, reactor personnel held as hostages might be forced to assist their captors under duress. Having initiated a meltdown, they would either be the first victims of prompt radiation or would face likely capture if they try to escape. But this does not pose an insuperable barrier to a group with time resources, and determination. This is true of

the Latin American terrorists or Spain's Basques (who conducted a series of attacks on a nuclear company)[22] or West Germany's Red Army Faction, which targeted NATO facilities and weapon, manufactures. Further, a supportive local populace, an effective plan or both, could create such conditions.

Next, the potential of the terrorists has been increasing with the growing availability of powerful and light weapon systems that can be use to strike nuclear installations accurately. These weapons include surface-to-air rockets, shoulder-fired Stinger missiles, antitank rockets and grenades. This has been supplemented by the internationalisation of domestic terrorism. The underground groups are establishing links with other organisations overseas for purposes of training, procuring arms and receiving funds.

The rise of various separatist movements on ethnic and religious faultlines in the post-Cold War era has further raised the prospects of clandestine arms supply, both conventional and nuclear, from their support groups across the border. More so, the cross border smuggling of nuclear weapon-grade materials to the separatists is much sought after which will equip them with a devastating capability to go for a short cut to their aspiration of establishing a separate homeland.

Furthermore, in the post-Cold War scenario, the unstable situation in the former Soviet Union and the trans-national transfer of nuclear materials have to be perceived as a considerable risk factor. The military structures in Russia are strong enough in guarding nuclear storage facilities. So far there have been no cases of illegal smuggling but this stability is not necessarily set to continue into the future. The problem is to scrap the bulk of the erstwhile USSR's nuclear weapons without aiding the proliferation of such materials in the world's crisis regions. The nuclear threshold states, which have the knowledge and the resources, may be subjected to greatest temptation. More so when it comes to exploiting the delicate situation in the newly independent republics of the former Soviet Union and using it for their own gains. These states are the most likely ones to be able to integrate black-marketed nuclear materials and individual technical components into their existing programmes. This would enable them to a significant step closer to their objective of achieving a nuclear capacity of their own.

According to one classified report prepared by the CIA and other intelligence agencies, the situation has a potential for throwing up nuclear mercenaries and as such posed a great danger to the objectives and strategies of non-proflieration[23]. The unemployed scientists and military officers in the industry may yield to temptations offered by terrorists or other rebel groups. There seems to be enormous potential for driving away technologies and experts as people are looking forward to make a first buck[24].

Recently, in April 1996, group of seven industrial nations and Russia met in Moscow to tackle the nuclear issue. But the summit ended with no concrete result because the participants could not agree on how to deal with the plutonium and highly enriched uranium being recovered from dismantled warheads[25]. The differences among the US and Western Europe led all the leaders at their Moscow meeting do no more than promise to "identify appropriate strategies" for the management of surplus fissionable material. Also, the issue of nuclear smuggling from the former Soviet Union has remained on the non-proliferation agenda and has even led to arguments between Russia and

Germany. Under the nuclear Non-proliferation Treaty (NPT) the nuclear weapon states are not required to provide information about their nuclear materials production of inventories to any international agency[26]. Thus it becomes difficult to trace the source of smuggled nuclear materials. Moreover, although the US and the European Union are providing assistance to the former Soviet Union in the area of nuclear material control and accountancy, Russia is not willing to share all its nuclear secrets. In the case of Russia, American experts are reported to be convinced that weapons usable nuclear material is leaking out[27]. It is also believed that the existence of such material in vast quantities in the erstwhile Soviet Union is viewed as a temptation to terrorists.

In addition, the trans-national transfer of nuclear materials has been threatening the security of the world and the efforts towards nuclear non-proliferation have been of no avail. For example, China has violated the non-proliferation laws by exporting nuclear weapons technology to Pakistan. The Central Intelligence Agency (CIA) unearthed new evidence that China has transferred ring magnets to Pakistan which are used in gas centrifuges that enrich uranium for weapons[28]. Adding to this, China is currently building a 300-mega watt nuclear power plant at Chashma about 200 km south of Islamabad[29]. Such free flow of nuclear materials and construction of nuclear plants have raised the spectre of theft of plutonium or uranium in significant quantities aimed at political blackmail or terror. Even the use of nuclear weapons by Pakistan in waging a campaign of terror in India cannot be ruled out. As Pakistan has been involved in abetting terrorism in India, there is a possibility of her going to extent of providing nuclear materials to the violent groups inside India to achieve their narrow political gains.

Hence this vulnerability generates various measures at national and international levels to prevent the threat of nuclear terrorism.

Preventive Measures

High level of protection for strategic nuclear weapons and nuclear reactors is to be ensured to deter or preclude terrorist actions. This includes, in particular, the most advanced protective systems include a ‘Permissive Action Link’ (PAL) programme, which consists of a code system and a family of devices integral or attached to nuclear weapons that have been developed to reduce the probability of an unauthorised firing, nuclear detonation and the use of stolen arms[30].

The institutional response to terrorism encompasses preventive measures such as improved guard capabilities at reactor sites, better alerting and intelligence, and activities associated with response to a crisis once it is underway. With the large quantities of civil plutonium being processed, stored, and shipped in commercial activities in western Europe and Japan, opportunities for terrorist diversion of the weapon-usable materials are increasing day by day[31]. In South Asia, also, the development of plutonium and enrichment technologies and the growing volume of weapons-grade materials at facilities, storage sites or in transit, increases the risk of theft or diversion by terrorists or criminal bands. Hence, there must be commercial restrictions on the countries involved in the diversion of weapon-usable materials. Also, the reliability of nuclear plant employees should be periodically reviewed to deter insider links with terrorist elements in dispersing nuclear materials.

Next, the protection of nuclear installations is an important aspect of countering nuclear terrorism. Nuclear plants and research reactors in several parts of the world have little protection against a truck-bomb threat. The vehicular bombing of the US embassy and marine barracks in Beirut in 1983 and the series of similar suicide bomb attacks that followed were eye-openers for everybody as to what terrorists could do to nuclear facilities[32]. Hence, technological advancements and their application to the protection of nuclear plants are necessary to contain the threat of atomic terrorists. Improved safety systems that can better withstand terrorist raids should be installed at the nuclear facilities, and effective proof-devices and procedures should be developed for control rooms. Moreover, since inadequacy and laxity of security provide terrorists with avenue to wage a campaign of terror, the security forces should be thoroughly trained and authorised to offer maximum possible resistance.

Besides the above safeguards and preventive measures, there is a need for a concerted effort to initiate international discussions on ways to minimise the escalation of conflict arising from nuclear terrorism. Furthermore, the cooperation among the countries is must, which reduces the dangers of nuclear terrorism by means of effective confidence building measures.

Conclusion

Nuclear terrorism is an international problem having wide ranging implications. There have been substantial debates among the scholars about the likelihood of terrorist attempts to acquire a nuclear capability. But in recent years, the increasing level of technological sophistication among terrorist groups, coupled with a renewed firmness to achieve certain goals, has significantly raised the potential for nuclear terrorism. The rapid growth of civilian nuclear industry, the likelihood of increasing traffic in plutonium, enriched uranium, and radioactive waste material, the spread of nuclear technology and the rise of terrorism world-wide, all these enhance the opportunities for separatists or terrorists to engage in some type of nuclear action, which has a devastating effect. The proliferation of both potential nuclear power and terrorism means that the two trends may merge in future. In this context, one needs to agree with the final report of the International Task Force on Prevention of Nuclear Terrorism, which says that the "interest of terrorists to acquire nuclear weapons should be regarded as technically, politically and psychologically plausible."[33]

This possibility establishes the potentiality of the terrorist in the arena of ethno-nationalism & ethno-separatist movements to contain such a possibility on the international plane, and every effort must be initiated to minimise the use of weapon-grade nuclear materials. Attention should be paid to the safety of nuclear installations and to the question of theft of such materials. This would be the only defence against these materials falling into the hands of terrorists and curtail the possibility of an otherwise disastrous effect.

References

1. Paul Leventhal and Brahma Chellaney, "Nuclear Terrorism: Threat Perception and Response in South Asia", *Terrorism* (London), Vol. II, No. 6, 1988, p. 447.
2. Augustus R Norton and Martin H. Greenberg, eds., *Studies in Nuclear Terrorism* (Massachusetts: G. K. Hall & Co., 1979). p. 340.
3. *SIPRI*, 1976, Armaments and Disarmament in the Nuclear Age, pp. 103-04.

4. LR. Beres, *Terrorism and Global Security: The Nuclear Threat* (Colorado: Westview Press, 1979), p.16.
5. LR. Beres, *Apocalypse* (Chicago: University of Chicago Press, 1980), p.99
6. Mason Willrich and Teodore B. Taylor, *Nuclear Theft: Risks and Safeguards* (New York Praeger, 1977), p.22.
7. Paul Leventhal and Brahma Chellaney, n.1.p. 448.
8. *New York Times*, 4 November 1988, It is reported that India denied receiving any Norwegian heavy water, "Heavy Water Report Baseless: Rajiv", *The Hindustan Times* (New Delhi), 7 May 1988.
9. *National Herald* (New Delhi), 18 November 1995.
10. Ibid.
11. Ibid.
12. Ibid.
13. See Nuclear Theft and Terrorism, Sixteenth Strategy for Peace Conference: Discussion Group Report (October 1975), Cited in Augustus R. Norton and Martin H. Greenberg eds., n. 2, p. 362
14. *New York Times*, 27 February 1975.
15. *New York Times Magazine,*18 July 1977, p.66.
16. *New York Times,* 15 April 1978.
17. Yonash Alexander, Quoted in Harold J. Vetter and Gary R. Perlstein, *Perspectives on Terrorism* (California: Brooks Publishing Company, 1991), p. 179.
18. *Daily* Telegraph (London), 14 February 1975.
19. *Times* (London), 2 May 1974.
20. *Washington Post*, 1 May 1975.
21. *Washington Post*, 18 April 1974.
22. Kellen, Quoted in Paul Leventhal and Brahma Chellaney, n.1. pp. 458-59.
23. *US Congress, House Armed Service Commission, Testimony* by Robert Gates, April 1992.
24. *New York Times*, 1 January 1992.
25. *Times of India,* 28 April 1996.
26. Ibid.,
27. Ibid.,
28. *Times of India*, 6 February 1993.
29. *The Asian Age*, 6 December 1996.
30. US *Naval Institute Proceedings*, Vol. 115/10/1042, December 1989, p. 57.
31. Paul Leventhal and Brahma Chellaney, n.1, p. 452.
32. Ibid., pp. 452-53.
33. *The International Task Force Report*, Published in Paul L. Leventhal and Yonah Alexander, eds., Preventing Nuclear Terrorism (Lexington: Lexington Books, 1987), p. xii.