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Todd M. Masse, *Nuclear Jihad: A Clear and Present Danger?* Washington: Potomac Books, 2011. Pp. xvii, 339. ISBN 978-1-59797-528-5.

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Iran's nuclear ambitions have become an obsession in both Israel and the United States, so it is both timely and sensible to gauge the likelihood of an act of nuclear terrorism. Todd M. Masse, branch chief of the US Nuclear Regulatory Commission and a very experienced security analyst,¹ achieves this by reviewing in great detail the technical difficulties of producing a nuclear weapon or procuring an existing one and the motivation, competence, and achievement of international terrorists to date.

Nuclear terrorism is not a new threat, yet in the wake of the attacks of September 11, 2001, it took on a new urgency. New programs at both national and international levels were initiated and some gained enhanced levels of support. Notwithstanding this renewed support, the threat of nuclear terrorism, whatever its probability, remains with us today as a function of fissile material still at risk, the continuing diffusion of nuclear related technology through clandestine networks and possibly through a nuclear power renaissance, and a continuing WMD threat from al Qaeda. (199)

Masse divides those who assess the probability of terrorists detonating an IND (improvised nuclear device) into two categories: *conventionalists*, who believe it will inevitably occur, and *sceptics*, who think terrorists lack the skill, finances, and motivation to overcome the entailed technical challenges (2). That said, both groups agree that nuclear terrorism, however unlikely, would have a catastrophic impact (3).

Such terrorism could manifest itself in various ways: would-be perpetrators might acquire an intact nuclear weapon,² obtain enough fissile material to make a bomb, make a "dirty bomb" using a radioactive isotope, or sabotage a nuclear power plant and cause a lethal release of radiation (7). Each route poses seemingly insurmountable obstacles, which Masse surveys very thoroughly. Furthermore, he finds that human failing rather than technical inadequacy is likely to aid the terrorist in defeating even the most sophisticated defense systems. Masse offers two examples of such human failing. The first concerns the US-sponsored radioactive material "portal monitoring" equipment installed at the perimeter gates of a Russian nuclear facility: "In response to the American's question about how the portal monitoring system was working, the Russian responded, 'Oh, we shut it off most of the time because it is always going off.' 'Why?' asked the American. The Russian responded, 'Well ... it's the people on the buses. People go fishing in the lake, and when they catch fish and bring them on the bus, they set off the radiation monitor. And then we've got to respond'" (149). The second, collective, human failing, concerns the recent military confrontation between the United States and Russia over Georgia, which lies on the route for smuggling nuclear material out of former republics of the Soviet Union. The resultant damage to US-Russian cooperation increased the chances of successful smuggling (156).

Loose talk by scientists and politicians and an understandable fear of the unknown have led some 40 percent of Americans to believe terrorists will detonate a nuclear bomb inside the United States within five years (5). Masse presents many facts to counter such a belief: "the weight of a complete device would tend to be large, probably more than a ton" (95); Chechen terrorists conveyed a radioactive package into a Moscow park in 1996, but did not set off the device (144); a large country, Pakistan, could not explode a bomb until 1998, even though its nuclear program began in 1972 (126). The success of the 9/11 attackers, using a few cheap box-

1. He was formerly a John Hopkins University strategic assessment analyst and a researcher for both Congress and the FBI; he has appeared as an expert witness on matters of national and homeland security.

2. Terrorist acquisition of an intact nuclear weapon, alone, presents little danger. As the electronics officer of a British nuclear missile unit, I observed firsthand the multilevel controls in place to prevent rogue use of a captured/stolen missile.

cutters and airliner “bombs,” may also steer terrorists away from the troublingly complex nuclear option, as would the prospect of retaliatory nuclear strikes on their own homelands.

Masse also doubts that tensions between Israel and Iran will lead to a nuclear strike, since Iranian-backed terrorist organizations like Hezbollah have been able to inflict significant casualties without deploying WMDs. He also warns of the danger of an Israeli preemptive strike: “if such an attack were to take place, it is not unreasonable to expect enhanced Iranian nationalism, perhaps manifested through a more resolute commitment to build nuclear weapons; regional and perhaps international increases in terrorism; and potential oil supply disruptions out of the Persian Gulf” (157).

The commercial use of highly enriched uranium (HEU) has not prompted much public concern, apart from the case of Iran. Masse nevertheless addresses the issue, reminding us of the worrying (but apparently unsuccessful) terrorist breach of South Africa’s heavily guarded Pelindaba facility, which held enough HEU to make up to four nuclear weapons (159). Elsewhere there are large amounts of HEU fuel at operational (or shut down but not yet decommissioned) nuclear reactors at about a hundred sites in forty countries (162). The Pelindaba terrorist penetration occurred in 2007, a few years *after* UN Security Council Resolution 1540 called on “all states, in accordance with their national procedures, [to] adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transfer, or use nuclear, chemical, or biological weapons and their means of delivery for terrorist purposes” (163). Masse points out that the words “appropriate” and “effective” are left undefined. Later, he expands his discussion of HEU control mechanisms to include the “delegitimization” program³ instituted, with limited success, by the United States (163).

Masse knows, I suspect, that his book is very much a probability assessment; he certainly explores the minutiae of his subject in the detail required by such assessments. Seven clear, informative figures and nine detailed tables of data buttress his arguments, presenting a compendium of nuclear weapons and materials. For example, figures 1 and 2 summarize recent “Instances of Nuclear Material Compromise”; figure 7 illustrates “Multilayered, Defense-in-depth Nuclear Counter-terrorism,” complemented by table 1 offering an “Atomic Terrorist Task/Barrier” list; and table 7 assesses the leakage characteristics of nuclear weapon states.

As Masse puts it, “Conventional wisdom would lead one to conclude that nuclear terrorism in the United States is a clear and present danger—that the threat is imminent and nearly inevitable given the inexorable diffusion of technology and the intent of some terrorist groups to inflict mass casualties on the United States. Conventional wisdom, however, is only half right—the nuclear terrorism threat is clear but not necessarily present and not inevitable” (223). Later, in appendix A, he hedges his bet: “Regardless of one’s assessment of the probability of nuclear terrorism, there are no responsible analysts who believe the probability is zero” (233).

Reading *Nuclear Jihad* brings to mind Pandora’s Box and the world’s relative good fortune since 1945. A major power, the United States, suffered humiliation in Vietnam without exercising the nuclear option; two other, lesser nuclear powers, India and Pakistan, have behaved with similar restraint. That said, eternal vigilance is essential if catastrophe is to be avoided. Masse’s well-constructed, for the most part well-written⁴ book will enlighten both technocrat and layman on the more critical nuclear issues, many of which could not be covered in this review.⁵

3. The 1978 Reduced Enrichment for Research and Test Reactors program.

4. There are some overly long sentences (see my quotation from page 199), and more use of colons and semicolons would have improved the clarity of passages like the one I quote from page 223.

5. The book’s 232 pages of main text comprise eight chapters: 1: “Introduction,” 2: “The Terrorist Pathway to a Nuclear Detonation,” 3: “Fissile Material Compromise—Notification and Detection,” 4: “The Nuclear Terrorism Threat Spectrum—Demand,” 5: “The Nuclear Terrorism Threat Spectrum—Supply,” 6: “Nuclear Terrorism, Deterrence and Attribution,” 7: “U.S. and International Strategies and Initiatives to Prevent Nuclear Terrorism,” and 8: “Concluding Thoughts.” There are also four appendices: A: “U.S. Policy Options to Counter Nuclear Terrorism,” B: “Summary of Core U.S. Government Nuclear Terrorism Programs and Initiatives,” C: “Summary of Core U.S. Government Programs to Prevent Nuclear Terrorism,” D: “Abbreviations.” The book is also equipped with fifty-seven pages of notes, a three-page bibliography, and a fifteen-page index.