

Nuke Bomb Grade Materials Accounting Lax, DoE IG Says

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A 32 gram plutonium-beryllium source ... was not accounted for

Nearly four years after the National Academy of Sciences in April 2005 called for an examination of the security of spent nuclear reactor fuel storage sites at the nation's nuclear power plants in the wake of a Government Accountability Office (GAO) audit that found three power plants reported missing spent fuel and that accounting programs supposed to keep track of this spent fuel were deficient and poorly regulated by the Nuclear Regulatory Commission (NRC), the Department of Energy's (DoE) Inspector General has found that DoE can't account for nuclear materials at 15 out of 40 institutions with licenses to possess this material.

This includes Special Nuclear Material (SNM), which is defined by the Atomic Energy Act of 1954 as plutonium, uranium-233 or uranium enriched in the isotopes uranium-233 or uranium-235.

The new DoE IG audit concluded that "without improvement, [DoE] cannot properly account for and effectively manage its nuclear materials maintained by domestic licensees and may be unable to detect lost or stolen material."

DoE and NRC "share responsibility for nuclear material provided to domestic licensees, including accounting for the material and tracking its location," according to DoE IG Gregory H. Friedman in his audit report, "The Department's Management of Nuclear Materials Provided to Domestic Licensees."

Friedman stated "both organizations use the Department of Energy managed Nuclear Materials Management and Safeguards System (NMMSS), the government's official central nuclear materials accounting system, to assist them in carrying out their respective responsibilities."

DoE generally agreed with the recommendations in its IG's report, "and agreed that the department, through its program offices, needs to further enhance its oversight and management of nuclear materials provided to domestic licensees."

But as the DoE IG audit pointed out, as far back as "October 2001 ... [DoE] could not fully account for nuclear materials loaned or leased to domestic licensees, at least partly due to inaccurate and/or incomplete NMMSS record keeping." At that time recommendations were made by the IG that were "designed to ensure that [DoE] confirmed nuclear material balances, enhanced its control over these materials, and improved its coordination with the NRC."

DoE management "concurred with [the IG's] recommendations and pledged to take a number of actions designed to improve accountability."

The latest DoE IG audit was initiated as a follow-up "to determine whether the Department was adequately managing its nuclear materials provided to domestic licensees"; as it had pledged it would do more than seven years ago.

But this follow-up "review disclosed that the Department could not always accurately account for, and, had not adequately managed, significant quantities of nuclear material that had been provided to domestic licensees. For about 37 percent (15 of 40) of the domestic facilities we reviewed, the Department could not accurately account for the quantities and locations of certain nuclear materials. In a number of cases, the Department had also agreed to write-off large quantities without fully understanding the ultimate disposition of these materials."

Six years ago, in May 2003, NRC's Inspector General also reported weaknesses in NRC's oversight of all nuclear materials - not just spent reactor fuel. GAO reported that the IG's audit report, "Audit of NRC's Regulatory Oversight of Special Nuclear Materials," had found "that NRC's oversight did not provide adequate assurance that all licensees properly control and account or special nuclear material. The OIG found that NRC performed limited inspections of licensees' material control and accounting activities and could not assure the reliability of the tracking system for special nuclear material."

According to the new DoE IG audit, "waste processing facilities we visited were unable to verify that 6,711 grams of special nuclear material and 35,269 kilograms of depleted and/or normal uranium recorded in NMMSS as being in their custody, were either still under their control or had been treated and disposed of as waste.

Friedman determined that during 2004, a number of domestic licensees reported that their actual holdings of Department-owned nuclear materials were less than the quantities recorded in NMMSS and that DoE consequently agreed to write off over 20,000 grams of special nuclear material.

Elsewhere, the DoE IG found that a 32 gram plutonium-beryllium source on loan to a college and subsequently transferred to another academic institution was not accounted for in NMMSS.

Quantities of special nuclear material less than Category I quantities are referred to as Category II, III, and IV quantities and are not, by themselves, capable of producing a nuclear yield, but they nevertheless must be secured to prevent theft and used to make radioactive dispersal weapons or accumulation for use in a nuclear bomb.

"Except for a few instances, [DoE] had not regularly contacted domestic licensees to determine whether they had a continuing need for or wished to return nuclear materials in their possession," the new DoE IG audit found.

In total, Friedman's audit found DoE wrote off 20,580 grams of enriched uranium and 45 grams of plutonium from the NMMSS inventories of just the 40 facilities his office reviewed. It also wrote off 5,001 kilograms of normal uranium

and 189,139 kilograms of depleted uranium.

In October 2007, GAO reported that "the risks associated with Category I special nuclear material [plutonium, uranium-233, and highly enriched uranium] vary but include the nuclear detonation of a weapon or test device at or near design yield; the creation of improvised nuclear devices capable of producing a nuclear yield; theft for use in an illegal nuclear weapon; and the potential for sabotage in the form of radioactive dispersal, or "dirty bomb.""

"Considering the potential health risks associated with these materials and the potential for misuse should they fall into the wrong hands, the quantities written-off were significant," Friedman's latest audit emphasized.

Similarly, GAO's 2005 audit determined that "several [nuclear power] plants ... had missing or unaccounted for spent fuel rods or rod fragments," and noted that "nuclear power plants' performance in controlling and accounting for their spent fuel has been uneven."

GAO told lawmakers "information NRC has collected in response to the unaccounted-for spent fuel at one nuclear power plant in particular indicates that spent fuel rods outside of fuel assemblies are an issue at additional nuclear power sites. NRC inspectors often could not confirm that containers that were designated as containing loose fuel rods in fact contained the fuel rods. The containers, in some cases, were closed or sealed and, in other cases, the contents were not visible when looking into the spent fuel pool. Thus, spent fuel may be missing or unaccounted for at still other plants."

Meanwhile, "tubes, capsules and pellets of used radioactive material are piling up in the basements and locked closets of hospitals and research installations around the country, stoking fears they could get lost or, worse, stolen by terrorists and turned into dirty bombs," the Associated Press reported in September.

Known as Low Level Radioactive Waste, or LLRW, these materials are generated from medical, industrial, agricultural, and research applications. Common uses of radioactive material are in radiotherapy, radiography, smoke detectors, irradiation and sterilization of food and materials, measuring devices, and illumination of emergency exit signs.

These slightly radioactive wastes are piling up because of a shortage of approved LLRW disposal facilities, as GAO pointed out in a May 2008 report.

"While NRC prefers the disposal of LLRW, it allows on-site storage as long as the waste remains safe and secure," GAO reported.

But according to the AP report, "state and federal authorities say the waste is being monitored, but they acknowledge that it is difficult to track and inspected as little as once every five years. Government documents and dozens of ... interviews with nuclear waste generators, experts, watchdogs and officials show that thousands of

these small radioactive items have already been lost, and that worries are growing.”

“Instead of safely secured in one place, it’s stored in thousands of places in urban locations all over the United States,” Rick Jacobi, a nuclear waste consultant and former head of a Texas agency that unsuccessfully tried to create a disposal site for that state, was quoted saying.