

## **Nuclear Information and Resource Service**

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### **Armor Piercing Missile Perforates High-Level Radioactive Waste Storage/Transport Cask In U.S. Army Aberdeen Proving Grounds Test**

The nuclear industry claims that on-site high-level radioactive waste storage casks are invulnerable to terrorist attack even by aircraft. Actual tests suggest otherwise.

On June 25, 1998 the U.S. Army conducted a weapons test depicting the vulnerability of on-site nuclear waste storage casks at nuclear power stations. The demonstration was conducted by International Fuel Containers, Ltd. (IFC) at the Aberdeen Proving Grounds in Maryland. IFC is the U.S. agent for *Gesellschaft für Nuclear-Behälter mbH* (GNB), a large German high-level radioactive waste cask manufacturer owned by Germany's nuclear utilities. The cask is GNB's dual-purpose CASTOR cast-iron cask, used for transport and dry storage of irradiated nuclear fuel. Some 600 of these casks are already in use worldwide including at the Surry nuclear power plant in Virginia. The test was conducted to promote an over pack system.

A video of the test shows a TOW armor piercing anti-tank missile warhead perforating the cask wall. TOW missiles are 5 inches in diameter, less than 4 feet long, and weigh less than 50 pounds. Launched from a portable tripod launcher it has an effective range of nearly two miles. TOW is the most widely distributed anti-tank guided missile in service around the world including the U.S. and 36 other countries. Iran may have obtained 1,750 or more TOW missiles according to the Military Analysis Network.

CASTOR is among the most robust of various models of nuclear waste storage casks in existence. It is licensed by the U.S. Nuclear Regulatory Commission for storage of irradiated nuclear fuel (high-level radioactive waste) in this country. A CASTOR cask has forged iron walls 15 inches thick. Despite this, as the video shows, the TOW missile blasted a hole completely through the wall. If irradiated nuclear fuel had been inside, a serious release of radioactive particles and gases would have occurred.

Rail-car sized casks like the CASTOR can hold over 200 times the long-lasting radioactivity released by the Hiroshima atomic bomb. A terrorist attack on a dry storage cask combining a TOW or another missile to ventilate a cask with a launched incendiary weapon could release large quantities of deadly radioactivity. A gaping hole shown in the video would also breach radiation shielding exposing any closely approaching emergency responders, such as fire fighters, to fatal doses of gamma radiation in minutes.

Other models of dry casks used in the U.S. are much less robust than the tested CASTOR design, having walls of only a few to several inches of steel. Although the casks are most often surrounded by a thick layer of concrete – originally designed as radiation shielding, not a “flak jacket” while storing high-level radioactive waste at

reactor sites, the Aberdeen test clearly shows that the radiation shielding could be obliterated by a TOW missile. Thus, high-level radioactive waste dry storage casks in the U.S. are vulnerable to terrorist attack.

The test was meant to demonstrate that IFC's concrete over pack system or "flak jacket" could absorb a missile or explosive attack, thus protecting the CASTOR behind it. The question, however, remains what if attackers came with more than one missile to destroy the flak jacket then penetrate the CASTOR with a second or third round? Moreover, how rigorously tested are other cask designs currently in use around U.S. reactors without over pack systems to similar attack? How vulnerable are they?

CASTOR casks are also designed to transport irradiated nuclear fuel by train or heavy haul truck. However, casks already weighing well over 100 tons each cannot be shipped with an even heavier concrete barrier. The test further demonstrated that "naked" shipment casks would be targets of opportunity to a missile supported terrorist attack.



**Nuclear waste storage casks openly congregated at North Anna**

The video was obtained by Congresswoman Shelley Berkley (D-Nevada) and released to ABC News to demonstrate how vulnerable high-level radioactive waste shipments would be to terrorist attack. Despite this demonstration, both the U.S. Senate and House of Representatives overrode Nevada's veto against the proposed Yucca Mountain national dump for high-level radioactive waste, paving the way for up to 100,000 shipments of high-level radioactive waste by truck, train and barge through 45 states and the District of Columbia.

Congress must investigate the circumstances of this weapon-on-cask test and order that similarly rigorous testing be conducted on all current and proposed high-level radioactive waste cask designs. Dry casks currently storing high-level radioactive waste must be fortified and bunkered against terrorist attack, or else industry and government must factor in the risk of a large scale release of radioactivity due to a terrorist attack that successfully ventilates a cask and then ignites the stored radioactive waste inside.

For further information contact NIRS.