

EDO Principal Correspondence Control

FROM: DUE: 10/12/01
Mary Lampert
Massachusetts Citizens for Safe Energy
et al.

EDO CONTROL: G20010422
DOC DT: 09/24/01
FINAL REPLY:

TO: Chairman Meserve

FOR SIGNATURE OF : ** PRI **
Chairman Meserve

CRC NO: 01-0492

DESC: Terrorism and Nuclear Power Plants

ROUTING:
Travers
Paperiello
Kane
Norry
Craig
Burns/Cyr
Wessman, IRO
Virgilio, NMSS
Miller, RI
Matthews, ERCT

DATE: 10/02/01

ASSIGNED TO: NRR CONTACT: Collins

SPECIAL INSTRUCTIONS OR REMARKS:

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Date Printed: Oct 01, 2001 15:29

PAPER NUMBER: LTR-01-0492 **LOGGING DATE:** 10/01/2001
ACTION OFFICE: EDO

AUTHOR: Mary Lampert, et al.
AFFILIATION: MA
ADDRESSEE: Richard Meserve
SUBJECT: Concerns terrorism and nuclear power plants

ACTION: Signature of Chairman
DISTRIBUTION: RF, SECY to Ack

LETTER DATE: 09/24/2001
ACKNOWLEDGED: No
SPECIAL HANDLING:

NOTES:

FILE LOCATION: ADAMS

DATE DUE: ~~10/15/2001~~
10/16/2001 **DATE SIGNED:**

September 24, 2001

Dr. Richard A. Meserve
Chairman, U.S. Nuclear Regulatory Commission
U.S. N.R.C., Washington D.C. 20555-0001

RE: Terrorism and Nuclear Power Plants

To The Chairman of the U.S. N.R.C., Dr. Richard A. Meserve:

A few days before the attack on the World Trade Center and Pentagon, *U.S. News and World Report* published a special investigative report, *A Nuclear Nightmare, They look tough, but some plants are easy marks for terrorists* (issue dated 09-17-01, but published earlier).

In the aftermath of the terrorist attacks of September 11, the following Massachusetts public interest groups joined U.S. News and others in recognizing the undeniable fact that nuclear plants are among the most attractive terrorist targets -*Clean Water Action – Massachusetts, MASSPIRG, Greater Boston Physicians for Social Responsibility, Massachusetts Citizens for Safe Energy, Massachusetts Coalition to Stockpile Potassium Iodide (KI), Toxics Action Center, Citizens Awareness Network, C-10 Research and Education Foundation, Cape Downwinders.*

- BBC Monitoring reported September 12, 2001 that Russian intelligence warned the CIA that more attacks were imminent and that "the next target of the terrorists will be an American nuclear facility."
- Recent court testimony of Ahmed Ressam, the terrorist convicted of trying to import explosives into the US for the purpose of bombing Los Angeles International Airport. Ressam referred in his testimony to terrorist training in a camp in Afghanistan linked to Osama bin Laden where he received training to destroy enemy installations, including power plants, airports, railroads and large corporations (NYT, 07-04-01). Note that "power plants" were at the head of his list.
- Vermont's Governor, Howard Dean, appealed to the U.S. NRC to review Vermont Yankee's security and security culture in the wake of last Tuesday's terrorist attacks. He said that, "I am aware that in 1998 and again in February 2001 Vermont Yankee received violations as a result of your agency's testing of the plant's security readiness," he wrote. "I am also aware of the NRC's policy of allowing licensees to grant personnel unescorted access to the plant before completion of full security background checks. This policy resulted in granting access to a person who otherwise may not have been allowed at Vermont Yankee."

- Nuclear Control Institute, Washington DC www.nci.org provides comprehensive materials on terrorism and threats to nuclear reactors - with original sources.

The consequences of an attack on a nuclear plant would be horrific. One nuclear reactor contains more than 1000 times the radiation that would be released by a Hiroshima-sized atomic bomb. A 1982 study for the US Nuclear Regulatory Commission estimated a single attack on a nuclear plant could bring about 100,000 deaths in the first year after the accident, an additional 600,000 immediate injuries and 40,000 long term cancers. There would also be an immediate loss of tens of billions of dollars in property; and the land and property destroyed would remain useless for decades. Homeowner policies do not cover nuclear disasters.

We must take protective actions, now. We respectfully offer the following measures as necessary beginnings to address this problem. A rationale is attached.

Solutions to increase public safety and confidence.

1. Require armed guards (preferably state police, National Guard or some other entity that is independent of the utility) at nuclear power plants to guard against ground/sea terrorism and demonstrate to local communities that federal and state regulators are serious about protecting public health and safety.
2. Require the FAA to consider the practicality of no-flight zones over nuclear power plants.
3. Require the FAA to look into how to provide tighter control over general aviation. According to the Boston Globe (09-20-01) "To be honest with you the security at Plymouth Airport was relaxed," said Chris Hyldborg, owner and chief pilot of Alpha One Flight, a company that offers lessons and corporate pilot service at the airport. We need one level of security for all planes.
4. Require the NRC/FEMA/FAA and state regulators to factor intentional aircraft crashes into nuclear plants in their risk assessments for nuclear reactors. Now, they are not.
5. Require emergency planning and security measures to be maintained during the decommissioning process – until all spent fuel and radioactive materials are removed from the site. Now, they are not.
6. Require OSRE, actual force-on-force tests, to be held regularly at each reactor – both operating and decommissioned - and at minimum every other

year. Notification to the licensee of the attack should simply be the day of the mock attack, not 6 months earlier.

7. Require that the results of the OSRE security tests be part of the NRC's Annual Oversight Review and that the results are made easily available to the public.

8. Require that corrective actions be taken if security deficiencies are demonstrated, as a condition of further operation.

9. Require nuclear power plant operators go to highest alert after any serious incident, such as the terrorist attack on the World Trade Center and Pentagon. According to Dow Jones Newswires (09-14-01) the NRC simply asked operators to go on highest alert on a voluntary basis. They were not required to do so.

10. Require that nuclear plants shut down or at the very least power way down, in the event of a terrorist situation or other highest alert. Operators can perform functions best in a non-crisis situation. If any safety system is found inoperable, there may be time for corrective action before a real crisis hits. On September 11th, and despite being asked to go on highest alert, NRC status reports show that no nuclear power plant powered down.

11. Require changing the NRC policy that allows licensees to grant personnel unescorted access to the plant before completion of full security background checks.

12. Require enforcement of the two-man rule for workers on site.

13. Require nuclear plants to prohibit visitor tours and non-essential deliveries to the plants.

14. Require nuclear plants to broaden their owner-controlled area/off-limits. Adjacent public parks and fisherman's ramps, for example, must be permanently closed. Public relations can no longer take precedent over public safety.

15. Require that nuclear plant security include not only land, but also potential water access to the site.

16. Require stockpiling potassium iodide (KI) for the public. In Emergency Planning Zone communities, KI should be stockpiled in schools, shelters, Reception Centers, hospitals, nursing homes, and correctional facilities. Communities that are potentially down-wind, but from which evacuation is not possible because of their unique geographic location, should be treated like the EPZ. Cape Cod and the Islands are examples. In other communities outside the EPZ, require additional KI stockpiles in Emergency Management Agency headquarters and substations - so that KI can be moved to communities in the

effluent pathway in a timely manner. Institute a public education to inform the public about KI and where they can buy it for personal use.

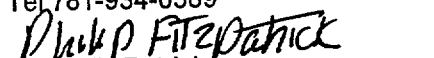
17. To meet our future energy needs, readjust our federal and state energy policy to foster the development of efficiency and renewables – safer and cheaper alternatives to nuclear energy. Except for a possible loss of power, nobody worries about terrorist attacks on windmills.


We hope that you will take swift action in areas where you have authority; and that you will strongly encourage appropriate agencies to act in areas for which they are responsible. A potential contact list is attached - Attachment II.


Thanking you in advance for your attention and consideration, we are sincerely,

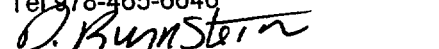


Mary Lampert
Massachusetts Citizens for Safe Energy
Duxbury Nuclear Advisory Committee
148 Washington St., Duxbury MA 02332
Tel 781-934-0389


Philip FitzPatrick,
Clean Water Action, Massachusetts
36 Bromfield Street, #204
Boston, MA 02108
Tel 617-338-6449

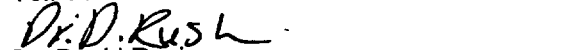

Matthew Wilson
Toxics Action Center
29 Temple Place, Boston, MA 02111
Tel 617-292-4821


Deb Katz
Citizens Awareness Network
Box 83 Shelburne Falls, MA 01370
Tel 978-465-6646



Daniel Burnstein
Center for Atomic Radiation Studies
Gardner Road, Brookline MA




Derek Haske
MASSPIRG
29 Temple Place
Boston, MA 02111
Tel: 617-292-4800


Dr. David Rush
Greater Boston Physicians Social Responsibility
68 Foster Street
Cambridge, MA 02138


Sandra Gavutis
C-10 Research and Education Foundation
44 Merrimac Street, Newburyport, MA 01950
Tel 978-465-6646


David Agnew, Diane Turco
Cape Downwinders
173 Morton Road, S.Chatham MA 02659-1334
Tel 508-432-1718


Dr. Richard Clapp
Boston University, School of Public Health
Boston, MA

Attachment I
Terrorism and Nuclear Power Plants
A Rationale for Action

Targets

Threats can come from both outside and inside the nuclear reactor's property. A terrorist's goal would be to release deadly radiation into the surrounding communities – radiation is the most poisonous and long-lived toxin on earth. In simple terms, nuclear facilities protect the public from radiation by steel reinforced concrete walls, zircaloy cladding surrounding fuel rods, and pools of circulating coolant water. A terrorist or saboteur would try to breach the containment, cut the water supply, or cut the electricity to disable operating and safety systems - nuclear power plants require outside power.

1. Reactor core - expose fuel rods inside the reactor core – a nuclear meltdown.

This can be accomplished by breaching the primary containment wall. A jet, smaller than that used in the World Trade Center attack, would do. The NRC conceded facilities could not withstand a jet crash (L.A. Times 09-22-01). The containment walls are 4 to 5 feet thick at the base and taper down to 1.5 to 2 feet thick at the top. A 1974 General Electric study shows the containment wall almost certainly would break if it were to be the kind of hit that the Pentagon took on Tuesday, September 11th. The GE study estimated that if a "heavy" airliner (defined by GE as more than 6.25 tons; the airliners used Tuesday weighed more than 150 tons) traveling at cruising speed hit the wall where the thickness is 2 feet, the chances of breaking through the wall would be 84%. At a thickness of 1.5 feet, penetration is certain.

2. Spent nuclear fuel cooling pool - Spent fuel pools are the most vulnerable targets. Spent fuel pools house many times more fuel rods than does the core; unlike the core, they are located outside primary containment. An accident would have far worse consequences. It is important to understand that "spent fuel" is a misnomer - it is a million times more radioactive than it was when it was loaded into the reactor. The "spent fuel" rods are being held in overcrowded pools. Pilgrim, for example, was designed to store temporarily 880 fuel rod assemblies; it now holds nearly 3,000 assemblies in the same place.

A collision that ruptured the pool and emptied it of water would not cause an explosion. Instead, the fuel rods would be exposed to air, and could quite quickly become hot enough to cause a fire, melt the zircaloy cladding, and release high levels of radiation into the environment. This could result simply from a loss of power or cooling water; it would not require a jumbo jet.

3. Spent nuclear fuel dry casks – Spent fuel storage installations

Because there is no national high level waste repository, spent fuel rods are being stored in spent fuel pools, discussed above, or piled outside in dry casks. Some cask sites are within the plants protected area but within striking distance of a shoulder-fired missile launched beyond the plant boundary. These sites lack vehicular barriers and the NRC does not require armed security. All currently decommissioned plants, such as Yankee Rowe and Maine Yankee, present this risk.

To appreciate the magnitude of the danger that spent fuel installations present, we refer you to the September 2000 Draft Report from the National Council on Radiation Protection, *Radiation Protection Issues Related to Terrorist Activities That Result In The Dispersal Of Radioactive Material*. Appendix A of the report (p.168) compares radiological consequences of the explosive dispersal of ¼ of a 5 year-old waste fuel assembly to that of a 10 kiloton weapon. 24 hours post-blast, the surface detonated weapon would yield 450 rads over 47 km². The PWR fuel would yield 450 rads over 2700 km². This is far worse than similar modeling for a complete reactor meltdown and loss of containment.

4. Necessary support systems

Alternatively, a nuclear meltdown could occur if secondary support systems were disabled. I.e. electrical power to a plant/spent fuel pool was cut-off thus disabling the backup generators, the main water supply to the plant/spent fuel pool was cut-off or otherwise interrupted, or a terrorist gained access to the control room.

Outside and Inside Threats

Outside Threats:

1. Truck Bombs: Shortly after the bombing of the Marine barracks in Beirut, the NRC commissioned "An Analysis of Truck Bombs Threats at Nuclear Facilities" which was performed by the Sandia National Laboratories in 1984. The study concluded:

Unacceptable damage to vital reactor systems could occur from a relatively small charge at close setback distances, and from larger but still reasonably sized charges at large set back distances, greater than the protected area for most plants.

This represented the NRC's most feared result. At some plants, a large bomb detonated offsite can cause enough damage to lead to a deadly release of

radiation or even a meltdown. Instead of taking steps for proper protection, the NRC hid the findings from the public and announced that the study was ongoing. FBI's counter terrorism expert, Dale Watson, stated that the truck bomb is the weapon of choice of terrorists. This was before September 11th.

2. Missiles/Explosives: With modern missiles, offsite launchings are also a real threat. In 1982 Israel took out an Iraqi plant under construction. Pilgrim fronts on Massachusetts Bay, has a narrow exclusion zone, an adjacent Shorefront Park open to the public, and lobsterman's dock on the reactor's property. This leaves vital areas vulnerable to portable missile launchers and/or large explosive packages on trucks or boats.

3. Aircraft: According to William Beecher, the director of public affairs for the US NRC,

Nuclear power plants aren't explicitly designed for a crash of a commercial aircraft of the type involved in this week's events

If an airliner hit a nuclear power plant, the reactor would not explode, but such a strike could destroy the plant's cooling systems. That could cause the nuclear fuel rods to overheat and produce a steam explosion that could release lethal radioactivity into the atmosphere (Vienna, Austria, AP Report, *Security Tightens at Nuclear Plants* 09/17/01). According to *US News and World Report*, September 2001, there are no security tests or plans to protect against a helicopter attack or other intentional airplane crash.

Despite all of this, David Lochbaum, nuclear engineer at the *Union of Concerned Scientists*, noted,

Federal regulations require U.S. nuclear power plant owners to take steps to protect their facilities from car bombs and not from attacks by truck bombs, waterborne vessels, or aircraft – such attacks are supposed to be prevented by the U.S. military under what is called the enemies of the state legislation.

Inside Threats:

The insider sabotage problem can not be discounted, either. The *Union of Concerned Scientists* has a list of well over 120 acts of sabotage at US nuclear plants. Most were perpetrated by disgruntled employees working at every job level - including control room operators and security guards. Electric cables have been cut, chemicals dumped into fuel pools and water systems and so on. There is a two-man rule that is supposed to prevent sabotage by permitting entrance into vital areas only if accompanied by a co-worker. But, not all of the plants follow the rule to the letter.

David Lochbaum, nuclear engineer at the *Union of Concerned Scientists*, adds that the Nuclear Regulatory Commission requires the nation's 103 nuclear power plants to guard against sabotage from a single insider. But the hijackings September 11th were apparently the work of three to five terrorists in each craft, and NRC regulations allow hundreds of people to work in power plants before their background security checks have been completed.

Regulatory (U.S. NRC) Response

Considering the above, and all the hype in Washington about terrorist threats in general, you would think that physical security at nuclear plants would be a top priority. It isn't.

The NRC's handling of physical security at nuclear reactors is another example of regulatory ineffectiveness. The NRC began pre-announced, force-on-force tests of security preparedness at nuclear power plants in the early 1990s. These NRC mock terrorist attacks involved three lightly armed attackers against a plant's physical defenses and squadrons of armed security personnel. The licensee is told the time of the attack. By 1998, these tests resulted in the destruction of redundant safety systems that would result in severe core damage leading to meltdown in 47 percent of the plants tested – including Pilgrim and Vt. Yankee.

The industry complained that the tests and subsequent safety improvements required cost too much money. NRC quietly discontinued the testing. Ensuing public outrage forced the agency to reconsider. They now allow plant owners to conduct the tests themselves, grade the tests themselves, and simply mail in the scores—virtually guaranteed to be high marks—to the NRC.

What if someone like Timothy McVeigh drove to a nuclear power plant with intentions of causing harm or bin Laden's trained pilots flew into a reactor? The people living near that plant would be better protected by security scoring 75 percent on a real test than 100 on an open-book, take-home, self-scored test. The public deserves and must get better protection than that provided by artificially inflated security test scores.

The NRC Reactor Oversight Process, a process that evaluates nuclear plants to ensure public safety and confidence, should include as a performance indicator the licensee's performance on real security tests – it doesn't.

Regional examples:

Pilgrim NPS, Plymouth MA

- Pilgrim failed NRC's OSRE tests.
- Pilgrim's background security checks for employees have also failed. Michael McDermott once worked at Pilgrim. He's the fellow who slept in a coffin and is accused of one of the worst workplace killings in the nation, Edgewater Technology in Wakefield MA, 2000. Carl Drega was another Pilgrim employee. Carl, after killing four people, was killed himself in a shootout with police on his booby-trapped property, 1997. His home was a mini-arsenal of explosives and weapons.
- Alcohol and drug use: A contract manager tested positive for illegal drug use (01/17/2001); a non-licensed supervisor tested positive for alcohol (02-3/08/01).
- Pilgrim's budget for security and the number of onsite security personnel have continued to decline over the past decade.
- At least until the September 11th attacks, a park is open to the public, a stones throw from the reactor; and lobstermen are allowed to drop their catch and store lobsterpots on the property, again a stones throw from the reactor.
- A hydrogen tank is very close to the main reactor building. Hydrogen is highly flammable.
- The spent fuel pool is overcrowded. It is inside the main reactor building, outside primary containment.
- Entergy, the new owner of Pilgrim, is on record as being one of the loudest critics of NRC's anti-terrorism exercises, OSRE program. It was quoted in a news report: "there was no threat to nuclear power plants ...and so any dollars spent on security were simply wasted." That was yesterday. A week after the attacks in New York and Washington, ENTERGY announced that it has begun an evaluation of all security, design and evacuation issues raised by the possibility of terrorist air assaults on nuclear plants (The Journal News, 09-18-01). This is positive. However, one would have to be naive not to be concerned that the profit motive once again will not taint Entergy's objectivity and receptivity to remedial action.

Vt. Yankee NPS, Vernon VT

- Vermont Yankee failed the OSRE test. It was unable to deter 5 out of 7 inspectors from breaching the fences at the facility. One NRC inspector smuggled in a plastic gun.
- Vermont Yankee's fuel pool is 7 stories up in the air in the reactor building, again outside primary containment.
- The containment building has cracks that are 15 and 20 feet long in areas raising further questions concerning the building's ability to withstand an attack.

Yankee Rowe, Rowe MA

- Yankee Rowe has 40,000,000 million curies in its fuel pool building, separate from the reactor that could not withstand an attack.
- Security with respect to shuttered reactors is far less than that at operating reactors since it was believed, at least until recently, that they posed a negligible threat in terms of terrorism.
- As far as we know shuttered reactors are not required to meet OSRE standards, even though the consequences from an attack on a shuttered, decommissioning reactor could be as great.

Laurent
148 Washington Street
Duxbury, MA 02332



0000

U.S. POSTAGE
PAID
KINGSTON, MA
02364
SEP 26, '01
AMOUNT

\$0.80
00018085-01

POST OFFICE

Dr. Richard A. Meserve
Chairman, U.S. N.R.C.
U.S. Nuclear Regulatory Commission
Washington DC 20555-0007