

From: "lampert" <lampert@adelphia.net>
To: "Francis Cameron" <FXC@nrc.gov>
Date: 9/8/05 10:25AM
Subject: Addendum to transcript ---NEI White Paper endorsement by NRC -comment

Chip:

Please add this to the transcript as an addendum to my submitted comments; and reply to this email so that I am assured of receipt. A copy is attached.
Thanks you and your facilitating skills are appreciated.

Mary lampert
781-934-0389

NRC Public Meeting on the Review of Emergency Preparedness Regulations and Guidance for Commercial Nuclear Power Plants (8/31 - 9/1/05)
Comments Mary Lampert, Town of Duxbury, Massachusetts

OFF SITE EMERGENCY PLANNING IN THE EVENT OF A NUCLEAR DISASTER

Addendum

September 8, 2005

NEI White Paper, "Range of Protective Actions for Nuclear Power Incidents," July 8, 2004 - Endorsed by NRC – Opposed by Citizens

Participants representing the public interest learned at the NRC Public Meeting on the Review of Emergency Preparedness Regulations and Guidance for Commercial Nuclear Power Plants on September 1, 2005 that NRC had endorsed the NEI White Paper, "Range of Protective Actions for Nuclear Power Incidents," July 8, 2004.

NRC's endorsement was opposed by all the public interest representatives at the table – Rochelle Becker (CA), Eric Epstein (PA), Debbie Grinnell (MA), Paul Gunter (NIRS), Mary Lampert (MA).

2.3.1 Evacuation

Industry position:

Issue 1: The minimum recommendation that shall be made at a General Emergency is to evacuate 2 miles around and 5 miles downwind from the plant. Subsequent recommendations should be based on EPA PAG's, changing plant conditions or changes in wind direction.

What's wrong?

1. Planning must be in place ahead of time for the worst case scenario not simply planning for the best case scenario. The impact of a terrorist attack or accident is likely to be much larger than 2 miles around and 5 miles downwind. Katrina should be an example of what goes wrong from poor planning based on false assumptions.

Industry's position makes about as much sense as only requiring evacuating the French Quarter and leaving the rest of New Orleans to fend for itself.

Facts - we know better

A. TMI - Department of Energy, March 30, 1973 – Confidential Information Memorandum - Subject: Report of White House Meeting on Three Miles Island Nuclear Plant Situation

"In response to questions, [NRC Chairman] Hendrie said there was a small possibility (perhaps a few percent) that additional significant releases could occur when the attempt was made to remove the gas bubble. He said, under those conditions, it would have to be decided ahead of time whether the risk was large enough to warrant a planned evacuation." "Hendrie said the evacuation distance could be as much as 20 miles."

B. Core Melt – Sandia CRAC-II Study

NRC requested Sandia National Lab to do a consequence analysis of a core melt at each reactor in the country. A core melt at Pilgrim NPS, for example, would result in a 20 mile peak 1st year fatal radius; a 65 mile peak 1st year injury radius; and 23,000 peak cancer deaths.[1] A spent fuel accident would be many times worse.

These estimates are conservative. The federal study, CRAC II:

- a.. used census data from 1970;
- b.. assumed entire 10-mile EPZ would be evacuated within at most six hours after issuance order;
- c.. assumed aggressive medical treatment for all victims of acute radiation exposure in developing numbers for early fatalities;
- d.. used a now obsolete correlation between radiation dose and cancer risk that underestimated the risk by a factor of 4 relative to current models; and current models need to be recalculated again based on the National Academy's BEIR VII Report (June 2005) that reconfirmed that there is no safe level of radiation, risks are greater than previously thought and health risks other than cancer must be considered –such as heart disease and birth defects;
- e.. sampled only 100 weather sequences out of over eight thousand (an entire year's worth), a method that underestimates the peak value over the course of a year by 30%

C. Spent Fuel Pool Accident -National Academy of Sciences[2]

"Finding 2A: Spent fuel storage facilities cannot be dismissed as targets for such attacks because it is not possible to predict the behavior and motivations of terrorists, and because of the attractiveness of spent fuel as a terrorist target given the well known public dread of radiation...The committee judges that attacks by knowledgeable terrorists with access to appropriate technical means are possible." NAS, p.4

"Terrorists view nuclear power plant facilities as desirable targets because of the large inventories of radionuclides they contain. The committee believes that knowledgeable terrorists might choose to attack spent fuel pools because: (1) at U.S. commercial nuclear power plants, these pools are less well protected structurally than reactor cores; (2) they typically contain inventories of medium – and long-lived radionuclides that are several times greater than those in individual reactor cores." NAS, p.36

"A loss-of-pool-coolant event resulting from damage or collapse of the pool could have severe consequences. Severe damage of the pool wall could potentially result from several types of terrorist attacks, for instance: (1) Attacks with large civilian aircraft; (2) Attacks with high-energy weapon; Attacks with explosive charges." NAS, p.49

"Finding 3B –... a terrorist attack that partially or completely drained a spent fuel pool could lead to a propagating zirconium cladding fire and the release of large quantities of radioactive materials to the environment. Details are provided in the committee's classified report." NAS, p.6

"Such (zirconium cladding) fires would create thermal plumes that could potentially transport radioactive aerosols hundreds of miles downwind under appropriate atmospheric conditions." NAS, p.50

"The excess cancer estimates ...to between 2,000 and 6,000 cancer deaths" p.45

Recommendation:

A. Plans should be based taking full account of the potential consequences of a terrorist attack or accident – planning must be for both the worst and best scenarios.

B. Currently there is the 10-mile EPZ; NRC has back-tracked and endorsed NEI's position, 2 miles round and 5 miles down wind; it makes more sense to consider (3) planning zones.

Perhaps the inner zone would remain at the current 0-10 miles; mid zone at 10.01-20; and 20.01 – out, to be determined. As an example, potassium iodide would be pre-distributed to both inner and mid zones, out to 20 miles, as mandated by Congress - Bioterrorism Act. The mid zone would be instructed to shelter with KI followed by an evacuation – phased in after inner core evacuates.

2. Shadow Evacuation – Rapid Communication by Public

A. Shadow Evacuation: We know that many outside the 2 mile circle and 5 mile downwind area will try to evacuate, and that they will be joined by people from further out. Three Mile Island provides the best, and perhaps only, realistic example. There, the Pennsylvania Governor issued an evacuation advisory (note, it was not an order). It was expected to have precipitated the flight of only 3,400 people (pregnant women and pre-school children within five miles of the plant); instead, a total of 144,000 people (a government figure) evacuated the surrounding region.

B. Additionally, folks have cell phones and other rapid means of communication --- the word will get out and they will try to leave.

Recommendation:

Communities well beyond 2 miles and 5 miles downwind and well beyond the 10-miles in planning will respond. Therefore, there must be planning for a large area – the area within which folks will react. For example, advocate sheltering as a first response for those further outlying communities followed by a phased evacuation - entry on to the major egress routes after the core has evacuated. This would save lives for those likely-to-be- affected. It was demonstrated in recent research near Indian Point that sheltering individuals in the 10.7-25 mile region would be preferable to evacuation – evacuation tends to increase population doses by placing more people in direct contact with the radioactive plume.[3]

3. The Key-Hole Theory is a Myth

Facts – we know better

Aubrey Godwin, Director Arizona Radiation Regulatory Agency, stated unequivocally at the NRC meeting August 31/September 1 that wind shifts every two hours. We know that in coastal areas wind shifts frequently – see wind analysis in the Appendices of Mary Lampert's report to the committee.

Recommendation

Therefore, planning and targeting resources to the mythical "key hole" should be taken out of all plans and procedures. Industry must be required to respond to the entire circle of all likely-to-be-impacted areas, well

beyond 2 miles and well beyond 10miles.

Impact – Conclusion

1. NRC endorsement of NEIs position is largely about saving money for the industry – not about saving lives and preventing unnecessary suffering. Industry is required to pay for required emergency planning expenses. If not required, they will not pay. Industry VPs are not Santa Claus; they are in business to make money.

If federal and state planners do not require industry to pay for the personnel and equipment needed to be in place to deal with those likely to be impacted in a real emergency, supplies and personnel will not be there –just as they were not there right after Katrina when needed. Lives are unnecessarily lost; preventable suffering happens. Neither can Federal and State planners assume that equipment, supplies, personnel required in an emergency (such as radiation monitors, potassium iodide stockpiles) can be shifted from one EPZ site within the state or region to another. There may be multiple attacks, as occurred in 9/11. Also it is worth noting that the Federal KI stockpile barely exists.

2. NRC endorsement of NEIs position is also, I suspect, about re-licensing old reactors. Many reactors, like Pilgrim, were built originally in sparsely populated areas. Now those areas have grown, are densely populated and the infrastructure is inadequate to handle the population in an emergency – clogged roads under ordinary circumstances are an example. Industry's and NRC's solution: shrink the zone – pretend – so that inadequate infrastructure and resources will “appear” adequate. The public is not fooled.

2.3.2 Sheltering

Industry position

Issue 2: Use of sheltering as an alternative to evacuation for short term releases

A licensee shall integrate the use of sheltering for short term releases into their protective action recommendation scheme. If a licensee cannot readily or accurately determine release duration, and dose or plant conditions warrant, then evacuation should be recommended.

What's wrong?

1. It is unlikely given the monitoring equipment etc that the licensee can “readily or accurately determine release duration” etc. It is likely that in some accident scenarios – such as a fast breaking accident coupled with inclement weather and clogged roadways that the public would be better off sheltering first (in conditions that maximize reducing dose) until the plume has passed and roadways open up allowing traffic to flow.

2. There is no discussion of distance. How far out from site should sheltering be made available? It would make sense to have sheltering beyond the current 10 mile EPZ so that those likely-to-be exposed, in reality, would be instructed to shelter until those closer in evacuated - in order to reduce traffic on evacuation routes.

Industry Position

Issue 3; Use of sheltering for special populations and impediments

Licensees shall incorporate sheltering into their emergency plans consistent with existing guidance. Licensee plans may indicate that the use of sheltering as an alternative to evacuation is a decision that will be made by offsite officials. Implementation of the licensee emergency plan commitment should incorporate allowance for offsite officials to utilize sheltering as an alternative to evacuation at their discretion, in accordance with the guidance. These plans should be developed and maintained in collaboration with those offsite officials. Thus licensees will typically recommend evacuation as dictated by the guidance, but will incorporate the proviso that the use of sheltering as an alternative is a local or state decision, and is acceptable.

What's wrong?

The language is unclear from reading the White Paper exactly who is responsible for paying to stockpile, maintain, and perform a dose analysis for public shelters and at what distance from the reactor site shelters are to be located— industry, state, local, nobody? Is industry simply passing the buck?

I suspect that the point of the White Paper fundamentally is to allow industry to avoid responsibility.

Submitted by,

Mary Lampert

148 Washington Street

Duxbury, MA 02332

Lampert@adelphia.net

[1] Calculation of Reactor Accident Consequences U.S. Nuclear Power Plants (CRAC-2), Sandia National Laboratory, 1982. "Peak" refers to the highest calculated values – it does not mean worst case scenario. This is due to uncertainties in the meteorological modeling acknowledged by Sandia. The model only considered one year's worth of data and does not model for precipitation beyond a 30-mile radius. This is significant because the highest consequence is predicted to occur when a radioactive

plume encounters rain over densely populated area. Peak Early Fatalities are deaths that result within the first year. Peak Early Injuries are radiation-induced injuries occurring in the first year that require hospitalization or other medical attention – such as sterility, thyroid nodules, vomiting and cataracts. Peak Cancer Deaths are predicted to occur over a lifetime. However, this is not the case with leukemia which is assumed to have occurred within the first 30 years following the accident.

[2] Safety and Security of Commercial Spent Nuclear Fuel Storage

Public Report, National Academy of Sciences, April 2005

[3] Chernobyl on the Hudson? - The Health and Economic Impacts of a Terrorist Attack at Indian Point Power Plant," was authored by Dr. Edwin Lyman, a senior staff scientist Union of Concerned Scientists. http://riverkeeper.org/document.php/317/Chernobyl_on_th.pdf

CC: "David Lochbaum" <dlochbaum@ucsusa.org>, "Paul Gunter" <pgunter@nirs.org>, "Eric Epstein" <ericepstein@comcast.net>, "Debbie Grinnel" <debbie@c-10.org>, "Sandra Gavutis" <sandra@c-10.org>, <beckers@thegrid.net>

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comment
Creation Date: 9/8/05 10:25AM
From: "lampert" <lampert@adelphia.net>
Created By: lampert@adelphia.net

Recipients

nrc.gov

owf5_po.OWFN_DO
 FXC (Francis Cameron)

thegrid.net

beckers CC

c-10.org

sandra CC (Sandra Gavutis)
 debbie CC (Debbie Grinnel)

comcast.net

ericepstein CC (Eric Epstein)

nirs.org

pgunter CC (Paul Gunter)

ucsusa.org

dlochbaum CC (David Lochbaum)

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