Mendiola, Doris

Subject: FW: Docket IDNRG-2012-0069
Attachments: Final Comments to NRC on Hardened Vents with Docket ID 7.8.12.pdf

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From: Barbara Warren [mailto:warrenba@msn.com]
Sent: Sunday, July 08, 2012 11:45 AM
To: Rulemaking Comments
Subject: Docket IDNRG-2012-0069

These comments relate to EA-12-050 and were sent on July 6th to two of the staff members associated with the Order and the Interim Staff Guidance. I did not have a docket ID on July 6th. So I am now sending to the docket.

Thank you for your attention.

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6/07/2012
77FR33777

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SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R. Fretz (rxf)

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July 6, 2012

Robert Fretz &
Nageswara Karipineni
US Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Re: Docket ID NRG-2012-0069: EA-12-050 ORDER Modifying Licenses with Regard to Reliable Hardened Containment Vents and the Interim Staff Guidance (ISG) regarding this Order

Dear Sirs,

We are writing to convey our many concerns regarding the NRC response to this issue raised by the Near Term Task Force Report recommendation. We believe that the background technical and scientific work for this Order and interim staff guidance is terribly inadequate and carries the potential of increasing the danger of these Mark I & II Boiling Water Reactors. We believe a much more substantial background document is needed that comprehensively covers multiple interacting issues including adequate measures to address station blackouts, hydrogen control, the need for spark-free equipment, radiological releases, filters and the presence or absence of a more severe scenario involving core damage. There may be additional issues as well.
The events at Fukushima and the Near Term Task Force Report were the basis of this order. This understanding should be fundamental to all actions related to hardened vents.
Both the Order and the ISG repeat a story about what happened at Fukushima. We have pasted part of this story below from the Order and included our notations in Bold.

> Approximately 40 minutes following the earthquake and shutdown of the operating units, the first large tsunami wave inundated the site, followed by additional waves. The tsunami caused extensive damage to site facilities and resulted in a complete loss of all ac electrical power at Units 1 through 5, a condition known as station blackout (SBO). In addition, all direct current electrical power was lost early in the event on Units 1 and 2, and after some period of time at the other units. Unit 6 retained the function of one air-cooled EDG. Despite their actions, the operators lost the ability to cool the fuel in the Unit 1 reactor after several hours, in the Unit 2 reactor after about 70 hours, and in the Unit 3 reactor after about 36 hours, resulting in damage to the nuclear fuel shortly after the loss of cooling capabilities. **There is now evidence of core damage following the earthquake and before the tsunami.**
>
> Operators first considered using the facility's hardened vent to control pressure in the containment within an hour following the loss of all ac power at Unit 1. **Operators did not have adequate information about core damage, so they were in a severe accident scenario and didn't know it.** The Emergency Response Center began reviewing accident management procedures and checking containment venting procedures to determine how to open the containment vent valves

without power. Ultimately, without adequate core and containment cooling, primary containment (drywell) pressure and temperature in Units 1, 2, and 3 substantially exceeded the design values for the containments. When the operators attempted to vent the containments, they were significantly challenged in opening the hardened wetwell (suppression chamber) vents because of complications from the prolonged SBO, and high radiation fields that impeded access. **High radiation fields indicate that venting would have meant a significant radiological release.**

At Fukushima Dai-ichi Units 1, 2, 3, and 4, venting the wetwell involved opening motor and air-operated valves. Similar features are used in many hardened vent systems that were installed in U.S. BWR Mark I containment plants following issuance of Generic Letter (GL) 89-16, "Installation of a Hardened Wetwell Vent." In the prolonged SBO situation that occurred at Fukushima, operator actions were not possible from the control room because of the loss of power, and the loss of pneumatic supply pressure to the air-operated valves. The resultant delay in venting the containment precluded early injection of coolant into the reactor vessel. The lack of coolant, in turn, resulted in extensive core damage, high radiation levels, hydrogen production and containment failure. The leakage of hydrogen gas into the reactor buildings resulted in explosions in the secondary containment buildings of Units 1, 3, and 4, and the ensuing damage to the facility contributed to the uncontrolled release of radioactive material to the environment. **The NRC is here advancing the idea that it was the delay in venting that prevented adequate cooling—not the early core damage, high heat and pressure, and SBO conditions.**

A comprehensive technical document is clearly in order to discuss and explore many questions that arise here. Clearly the scenario in Fukushima was a severe accident scenario. Yet the Hardened Vent Order, supposedly from the Near Term Task Force report, which was written to address the safety implications of the Fukushima catastrophe is specifically excluding the use of these vents for severe accidents. Venting is to be used for prevention of core damage solely, according to the NRC.

Previous accidents have shown us that there is a major problem assessing the extent of damage for months following an accident. This continues to be true at Fukushima. Given this problem, how does NRC propose to limit the use of vents to prevention only and not in situations where there is core damage and potential for significant radiological releases? This issue was not explored at all in the Interim Staff Guidance.

Approximately four years from now all Mark I & II reactors will have installed modifications to meet the new order—but they will not include spark-free valves and equipment, hydrogen control measures, or filters.

The problem of station blackouts is the main driver of the entire scenario put forward by the NRC supporting this questionable Order and the ISG, yet station blackouts have not yet been addressed. Rulemaking for SBOs may take several years. An interim order addressing station blackouts the backup equipment and the total number of hours of service would be the most sensible way to proceed and would address a significant contributor to loss of cooling capability. Wind and solar power backups should be seriously considered to address SBOs, as well as water-based generators in flowing rivers, in conjunction with adequate battery storage.

Hydrogen is only addressed in relation to avoiding cross connections for venting. No hydrogen controls are proposed and no measures in the constructions of the vents to prevent sparking sources from causing an explosion.

The issue of radiological releases has not been thoroughly considered. In the absence of full information for the reactor operator about the status of the core and adequacy of cooling we believe the use of venting could involve large scale radiological releases and harm to the public. We believe given the evidence provided related to this proceeding that the NRC is not addressing Fukushima or the Near Term Task Force Report but instead providing life support for a major problem associated with the nuclear reactors of the earliest designs. The containment for Mark Is is known to be too small to contain a severe accident. High pressures will occur with this containment and these reactors represent the majority of the oldest reactors in the nation. How embrittled are these Mark I containments? How many have cracks? It seems likely that reactor owners would be seeking all sorts of options to enable them to stay in business. This particular Flex option is not acceptable. We also believe it could facilitate regular radiological releases that could impact public health.

The NRC also raises a significant issue regarding the issue of loss of coolant accidents. According to the NRC there are three ways that the hardened vent could be activated inadvertently – compromising emergency core cooling.

> "However, an inadvertent actuation of HCVS due to a design error, equipment malfunction, or operator error during a design basis loss-of-coolant accident (DBLOCA) could potentially have an opposite effect. The emergency core cooling system (ECCS) pumps start on a DBLOCA and operate at a high flow rate, providing core injection. A number of Mark I and Mark II plants rely on containment accident pressure (CAP) to provide adequate NPSH to the ECCS pumps during the first few hours after a DBLOCA. The HCVS has no function during a DBLOCA. The vent should not be open during a DBLOCA; however, if it were to be open, the CAP would be compromised thus leading to a potential failure of the ECCS pumps due to inadequate NPSH. Therefore, prevention of inadvertent actuation is an important issue for all plants but extremely more important for plants relying on CAP."

We believe the issue of hardened vents is a highly technical issue that needs more serious consideration. We were shocked to hear NRC staff describe the use of the vents for prevention of core damage and to understand that the Order and the ISG have nothing to do with Fukushima or severe accidents. We were promised renewed attention to safety following Fukushima. While we recognize the importance of hardened vents, this proposal is not comprehensive in dealing with all the relevant issues, is not scientifically supportable and is therefore unacceptable.

Thank you for your attention.

Sincerely,

Barbara J. Warren

Barbara J. Warren

Executive Director