Gallardy, Vivian

From: Tom Gurdziel <tgurdziel@twcny.rr.com>
Sent: Friday, June 03, 2016 10:35 PM
To: CHAIRMAN Resource
Cc: Johnson, Michael; Screnci, Diane; Sheehan, Neil; Lyon, Jill:(NMP); Bridget Frymire; ESTRONSKI@aol.com
Subject: [External_Sender] Phase 2 Comments on June 3, 2016
Attachments: Use No Water Reply.jpg

Good morning,

I have these comments on "Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants, Phase 2".

From Chapter 4, Reevaluation of Findings and Recommendations from Previous NAS Reports

Page 93 "If the USNRC carries out the independent examination of surveillance and security measures that was recommended by National Research Council (2006), then the present committee recommends that it include an examination of the effectiveness of measures for addressing the "insider threat."

Page 94 The term "zirconium fire" is used to describe the self-sustaining oxidation of zirconium fuel cladding."

Page 96 "The classified report (National Research Council, 2004) identified particular terrorist attack scenarios that were judged by its authoring committee to have the potential to damage spent fuel pools and result in the loss of water coolant." USNRC has not undertaken additional analysis of terrorist attack scenarios.

Page 96 "...new remote-guided aircraft technologies have come into widespread use"

Page 97 Reconfiguring spent fuel in pools does not completely eliminate the risks of zirconium cladding fires, particularly during certain periods following reactor shutdowns and for certain fuel and water configurations in the pool.

Page 98 The present committee finds (Finding 4.6) that these additional experiments and analysis have substantially improved the state of knowledge concerning spent fuel behavior following partial or complete loss of pool water.

Page 98 The USNRC and the nuclear industry have made good progress in implementing the actions in Recommendation 3E-1 in National Research Council (2006).

Page 99 Dry cask storage for older, cooler spent fuel has inherent advantages over pool storage.

Page 101 The USNRC has made a commendable effort to improve the sharing of pertinent information on vulnerability and consequence analyses of spent fuel storage with nuclear power plant operators and dry cask storage system vendors.

Page 101 An NEI representative informed the committee that the industry is satisfied with the content and timeliness of security-related information that it is receiving from the Commission.

Pages 102 – 110 Table 4.1 presents a comparison of current Findings and Recommendations, and those of 2006.

From Appendix 4A, Dry Cask Storage Regulations

Page 111 There are three different sets of requirements...enforced by the USNRC.

Page 112 "The USNRC has pointed out "continuing differences between general license and specific license ISFSI security requirements is not appropriate..."""

Page 113 "Risk informed" refers to a vulnerability assessment methodology that takes into account both threat- and non-threat-based information. "Performance based" refers to the application of a dose acceptance limit to ISFSIs.

From Chapter 5, Security Risk Assessment

The entire chapter is way over my head.

From Appendix 5A, Expert Elicitation

Same here.

From Appendix 5B, CARVER Analysis

And here, too.

From Chapter 6, Loss-of-Coolant Events in Spent Fuel Pools

Page 133 Plants apparently have 60 days after each fuel offload to reconfigure their spent fuel pools into a 1 x 4 dispersion of high- and low-density heat assemblies, unless such configuration can be shown to be inapplicable or unachievable.

Page 135 Spent fuel pool accidents were not included in the SOARCA.

Page 144 & 145 In a complete-loss-of-pool-coolant scenario, most of the oxidation of zirconium cladding occurs in an air environment. For a partial-loss-of-pool-coolant scenario (or slow drainage in a complete-loss-of-pool-coolant scenario), the initial oxidation of zirconium cladding will occur in a steam environment. The complete loss does NOT result in hydrogen production. The partial loss does result in the production of hydrogen.

Which reminds me that I believe I have suggested to each individual USNRC Commissioner by printed letter my "Use No Water" idea in the past year or two with reference to severe reactor core accident response (not thinking about spent fuel pools at that time.)

From Appendix 6A, USNRC and Sandia Studies

No comments.

Thank you,

Tom Gurdziel

NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 10, 2013

Mr. Tom Gurdziel
9 Twin Orchard Drive
Oswego, NY 13126

Dear Mr. Gurdziel:

Thank for your letter dated February 28, 2013 to Chairman Allison Macfarlane expressing your view that water should not be injected into the reactor vessel once the reactor fuel starts to melt during severe accident conditions. You also suggested that the water should be used to fill up the primary containment.

The concept of whether to inject water onto melting fuel has been considered since at least 1975, when it was thought that core melting could not be arrested once it had started. The conclusions of research since that time found that water should be injected onto melting fuel. The accident at TMI-2 in 1979 demonstrated that a core melt can be arrested by supplying water to the reactor vessel after core melt commences. The accident also demonstrated the non-uniform progress of core damage within a core, which shows that not all the core is degrading to the same extent at the same time. Additionally, German experiments also showed that a metal-water reaction can be quenched by supplying water.

The concept of filling a BWR containment vessel with water is not as straight forward as it might appear. Structurally, a BWR drywell may be able to withstand the loads created by filling a significant portion with water. However, if the severe accident was caused by a seismic event, such as occurred at Fukushima, then aftershocks should be expected. It is not structurally clear whether the sloshing of water inside the containment and other hydrodynamic forces would create loads which might challenge the integrity of the containment.

Nevertheless, under the NRC's Fukushima Near Term Task Force (NTTF) recommendation 8, "Strengthen and Integrate Onsite Emergency Response," the implementation of Severe Accident Management Guidelines will be further considered.

Sincerely yours,

Kathy Halvey Gibson, Director
Division of Systems Analysis
Office of Nuclear Regulatory Research