

**From:** Gray, Mel  
**Sent:** Wednesday, September 04, 2013 10:19 AM  
**To:** BettyShank  
**Cc:** Thompson, Margaret; Barber, Scott; DiPaolo, Eugene; Perkins, Leslie; Sheehan, Neil; Screnci, Diane  
**Subject:** Response to your email dated August 5, 2013, entitled "Questions - GE shutdown tests at Limerick"

Dear Ms. Shank,

In an August 5, 2013 e-mail, you raised questions about a generic issue identified by General Electric Hitachi (GEH) related to the ability of certain control rods to scram (rapidly insert) during a seismic event (earthquake) in GEH Boiling Water Reactors (BWRs). The actions that GEH recommended for this concern were to ensure that fuel channels (the sheaths that surround the fuel assembly) were not bowed enough to cause this concern. Your concerns were specific to Limerick and the actions that Exelon staff took to address this issue.

In your first two questions, you requested that we e-mail you an actual copy of the results of the Unit 1 and 2 testing for this issue. These types of test results are licensee-controlled documents that are not submitted to the NRC. We do review them if we decide to inspect the test to verify the results met the acceptance criteria and other NRC rules and requirements. However, in general, the NRC does not retain copies of test results reviewed during an inspection. In this case, we do not have copies of the test results you are requesting.

Regarding use of ADAMS (NRC's electronic document management system), it is NRC policy to provide responses that use ADAMS accession numbers. The system allows access by members of the public. Others can also access the questions that you ask, as well as the NRC response to your questions including the specific references. Thus, ADAMS accession numbers will be included where applicable.

Regarding your questions on the specific testing at Limerick, the NRC Resident Inspectors assigned to the plant performed a review of the operability determinations that Exelon staff completed as a result of the GEH Part 21 report (ADAMS Accession No. ML102460537) related to the seismic impact on fuel channel distortion. The documented results can be found in NRC Inspection Report 05000352/20011004 and 05000352/20011004, dated November 4, 2011, (ADAMS Accession No. ML113088146). The NRC resident inspectors also observed fuel channel distortion testing and verified that the testing results met GE's recommendations for Limerick Units 1 and 2. These conclusions are documented in NRC Inspection Report 05000352/20011005, dated January 20, 2012, (ADAMS Accession No. ML12020A071) and in NRC Inspection Report 05000352/2012003, dated August, 1, 2012, respectively (ADAMS Accession No. ML12214A454). No unacceptable conditions were identified.

During their review, the inspectors also noted that Limerick performed fuel channel distortion testing at least every 120 days on control rods adjacent to fuel channels that have been determined to be susceptible to distortion. For the testing, the company used the evaluation methodology recommended by GEH in the Part 21 report. Limerick has replaced fuel channels determined to be susceptible to distortion using the evaluation methodology recommended by GEH. Since the issuance of the Part 21 report in 2010, Limerick has replaced, on average, approximately 24 fuel channels per refueling outage (every 2 years) on both Unit 1 and Unit 2.

You also questioned Limerick's design against earthquakes based on the existing fault lines near the site and the likelihood that the earthquake risk may be affected by recent studies. During original licensing of the plants, the NRC reviewed earthquake risk in NUREG-0991, dated August 1983, which was the NRC's Safety Evaluation Report (SER) concerning the application for an operating license for Limerick, Units 1 and 2. As discussed on page 2-44 of the SER, the NRC noted that three faults have been mapped and investigated within 2 miles of the site. The closest one is the Sanatoga fault. A panel of experts in Appalachian geology

and the NRC staff concluded that that these faults experienced their last displacements more than 500,000 years ago. This section of the SER concluded that there were no capable faults in the site area.

Regarding the Severe Accident Management Alternatives (SAMA), this issue was reviewed during license renewal proceedings for the Limerick units. The NRC plans to respond to all public comments on the Draft Supplemental Environmental Impact Statement (DSEIS) in Appendix A of the Final SEIS which we plan to issue in January 2014.

I trust that this information is responsive to your needs. If you have additional questions, please do not hesitate to contact me at 610-337-5209.

Sincerely,

Mel Gray

Chief, Branch 4  
Division of Reactor Projects  
NRC Region I Office