ENCLOSURE 6

Email dated December 04, 2015, M.N. Baker (NRC) to C.T. Terry (BWXT), Questions from the Seismic General Letter Response

Johnson, Robert L

From: Baker, Merritt <Merritt.Baker@nrc.gov>
Sent: Friday, December 04, 2015 9:16 AM
To: Terry, Chris T; Spangler, David L; Johnson, Robert L
Subject: EXTERNAL:questions from the seismic Generic Letter response
Attachments: BWXT Request for Supplemental Information for Generic Letter 2015.docx

As we discussed, Jonathan has requested some additional information or reports that I believe are available.

The next step would be to have a phone call to ensure all parties understand the questions.

Please take a look at the questions and advise if there is a date and time between now and December 18 when we could have such a phone call.

BWXT Request for Supplemental Information for Generic Letter 2015-01

Regulatory Basis: The regulations in 10 CFR 70.62(c)(1), requires, in part, that each licensee shall conduct and maintain an ISA that is of appropriate detail for the complexity of the process that identifies, among other things, "potential accident sequences caused by process deviations or other events internal to the facility and credible external events, including natural phenomena." The regulations in 10 CFR 70.62(c)(1) also require, in part, identification of the consequence and the likelihood of occurrence of each potential accident sequence, and the methods used to determine the consequences and likelihoods.

1. Regarding BWXT response to Generic Letter request (1) b.i.
    a. BWXT stated that it has assembled all pertinent original records and drawings to which the facility was constructed. BWXT also stated that it created a timeline that summarizes the year and code to which each building that contains regulated material was built. For buildings that contain regulated material, provide a description of the code of record, applicable design basis and design calculations for seismic and high wind events.
    b. BWXT stated that it used ASCE 31-03 (ASCE, 2003) methodology to conduct seismic and wind response analysis of the Main Bays and "A" Bays of the facility which houses regulated material, to determine the survivability of the facility when subjected to IBC 2009 (ICC, 2009) natural phenomena hazards. Provide information and/or analyses reports with descriptions of the records, drawings, design codes, idealizations and assumptions made to conduct the seismic and wind response analysis for the Main Bays and "A" Bays of the facility.
    c. BWXT stated that it performed a qualitative analysis of the buildings other than Main Bays and "A" Bays of the facility that contain regulated material. Provide this qualitative analysis report.
2. Regarding BWXT response to Generic Letter request (1) b.ii.
    a. BWXT concluded that are no accident sequences as a result of natural phenomena;
        i. Provide the basis for the use of an initiating event frequency of 1x10-4/year. The use of this initiating event frequency assumes that the structures systems and components can withstand loads (e.g. ground motions) resulting from events having an occurrence of 1 in every 10,000 years.
        ii. Provide the basis for the use of an initiating event frequency of 1x10-5/year for flooding events. In addition, provide the basis for using an optimum spacing factor of (1/10) in the Container Storage Building or Railyard Storage Building.
        iii. Provide the basis for using an optimum spacing factor of (1/10) and an optimum moderation factor of (1/10) to characterize the risk profile under dynamic events such as earthquakes and high winds events.
3. Regarding BWXT response to Generic Letter request (1) b.iii.
    a. Provide the basis to conclude that there are no accidents as a result of natural phenomena on the basis of the likelihood of the events. Natural phenomena

hazards are characterized by a likelihood and a magnitude of loading (dynamic loading, flood levels, etc.).

b. Provide a description of the safety assessments for natural phenomena event describing the capacity of internal systems structures and components to withstand the design basis loads, or the safety assessments of the potential consequences as a result of failures of internal components. This assessment should demonstrate that the consequences of failures of internal components do not exceed the performance requirements of 10 CFR 70.61.

4. BWXT referenced a letter dated February 14, 2014, CA England (B&WV) to MN Baker (NRC),B&W NOG-L progress update on URI 70-27/2012-006-001, from Temporary Inspection Report No. 70-27/2012-006 as part of the information to respond to the generic letter.
   a. Regarding Technical Work Record NCS-TR-0001, Rev. 0 Probability of a Tornado Strike at NOG-L
      i. Provide a description of how the values of Table 5, "Total probabilities," were obtained.
      ii. Consistent with the concept of defense in depth, and considering the potential range of wind speed that can be expected at the site under tornado event, provide a description of preventative and/or mitigation measures to limit the potential consequences under an imminent tornado event. In addition, provide a description of the assessment for the potential for tornado missile impacts at the site.
   b. Regarding Technical Work Record NCS-TR-00002, Rev. 0 "Likelihood of a Criticality Accident Initiated by a Seismic Event at Mt. Athos"
      i. Provide the basis for the use of the Modified Mercalli (MM) Intensity Scale as a methodology to assess the impacts of earthquakes at the facility. The MM Intensity Scale, composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.
      ii. Page 10 of the report list two conclusions drawn from a comparison of the design/evaluation criteria for natural phenomena hazards in DOE-STD-1020. These conclusions do not correlate to the definition of performance categories as defined in DO-STD-1020. A Performance Category correlates to a specific performance goal (in terms of a mean annual probability of failure) and they are based on a combination of the seismic hazard exceedance levels and accounting for the level of conservatism used in the design/evaluation.