

Regulatory Guide Periodic Review

Regulatory Guide Number: **1.166, Revision 0**

Office/Division/Branch: **RES/DE/SGSEB**

Title: **Pre-Earthquake Planning and Immediate Nuclear Power Plant Operator Post-Earthquake Actions**

Technical Lead: **Sarah Tabatabai and Rasool Anooshehpour**

Recommended Staff Action: **Revise**

1. What are the known technical or regulatory issues with the current version of the RG?

The RG dates to 1997 and provides criteria for plant shutdown after an earthquake. An issue of concern is inoperable seismic instrumentation or data processing equipment following a severe earthquake. In that case, it may be necessary to rely on the criteria in Appendix A of the guide. The criteria provide guidelines for making a plant shutdown determination (i.e., exceedance of the operating basis earthquake or OBE) if the seismic instrumentation or data processing equipment is inoperable. Appendix A criteria need to be revised to include more recently available tools (e.g. the U.S. Geological Survey's ShakeCast) for use in plant shutdown determinations. Updating of Appendix A, is important in light of recent beyond design basis earthquake experience at North Anna, Virginia, Fukushima Dai Ichi, and the Kashiwazaki-Kariwa nuclear power plants in Japan.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

This RG provides criteria for plant shutdown after an earthquake. Therefore, the impact of not updating Appendix A, which provides guidelines for determining whether the OBE has been exceeded if the seismic instrumentation or data processing equipment is inoperable, could be significant in light of more recent earthquake experience. Specifically, it has been identified that the seismic instrumentation at many operating plants is very old and needs to be replaced. Furthermore, earthquakes recorded on these old instruments may be difficult to process in a timely manner. As a result, it may be necessary to rely on the criteria in Appendix A.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contract resources?

Revision of the RG will take approximately 0.2 FTE of NRC staff time. The effort will involve updating references, and assessing lessons learned from the recent earthquakes that impacted the North Anna Power, Fukushima-Dai-ichi, and Kashiwazaki-Kariwa Nuclear Power Plants with respect to making a plant shutdown determination. The effort will also involve updating the criteria listed in Appendix A, which provides guidelines for making a plant shutdown determination if the seismic instrumentation or data processing equipment is inoperable. No contract dollars are needed.

4. **Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Revise.

5. **If a RG should be revised, provide a conceptual plan and timeframe to accomplish this.**

The staff expects to release a draft RG for public comment by Quarter 1 of FY 2016.

NOTE: This review was conducted in April 2014 and reflects the staff's plans as of that date. These plans are tentative and subject to change.