Purpose and Approach

Enclosure 3 to the NRC 50.54(f) Letter [Reference x] states the following purposes of the NRC request:

- To gather information with respect to Near-Term Task Force (NTTF) Recommendation 2.3, as amended by staff requirements memorandum (SRM) associated with SECY-11-0124 and SECY-11-0137,
- To request licensees to develop a methodology and acceptance criteria for seismic walkdowns to be endorsed by the NRC staff,
- To request licensees to perform seismic walkdowns using the NRC-endorsed walkdown methodology, as defined herein,
- To identify and address degraded, nonconforming, or unanalyzed conditions through the corrective action program, and
- To verify the adequacy of licensee monitoring and maintenance procedures.

Additionally, the NRC 50.54(f) Letter includes under "Requested Actions" the request that the walkdown "verify current plant configuration with the current license basis."

50.54(f) Response Approach

The overall approach for addressing the actions and information requested in the 50.54(f) Letter includes the following activities, as shown in Figures 1-1 through 1-4:

- **Selection of a "Seismic Walkdown Equipment List (SWEL)"** which includes 3 elements:

    1. Equipment Sample that represents systems needed to place a reactor in hot shutdown, control reactivity, pressure and inventory, remove decay heat (e.g., Ultimate Heat Sink (UHS)), and maintain containment function, as well as include diverse plant environments and major modifications—see Figure 1-1

    2. Spent Fuel Pool equipment sample, and features that could potentially cause rapid drain-down of the pool—see Figure 1-2

    3. IPEEE Seismic Vulnerabilities identified and dispositioned during the IPEEE—see Figure 1-3

- **Seismic Walkdown**, including walkdowns of equipment selected in SWEL 1, SWEL 2 and SWEL 3, and walk-bys of the areas containing SWEL items—see Figure 1-4

- **Licensing Basis Evaluation**, as needed—see Figure 1-4

Equipment Sample

As shown in Figure 1-1, screen #1 is used to select Seismic Category I SSCs (because they have a seismic licensing basis). Some SC I SSCs can be eliminated by screen #2, as follows:

- Seismic Category I structures are typically confirmed to meet their seismic licensing bases through analyses. Periodic inspections of SC I structures for degradation (e.g., concrete spalling) that might undermine their licensing basis are conducted in accordance with plant Maintenance Rule structural inspections.

- Primary Containment penetrations are typically confirmed to meet their seismic licensing bases through analyses. Periodic inspections and/or testing to ensure penetrations are not degraded are required by ASME Section XI.

- Seismic Category I piping systems have been confirmed to meet their licensing bases through several NRC programs, e.g., IE Bulletin 79-14. System engineering periodic walkdowns and ASME Section XI In-service Inspections ensure SC I piping systems are maintained in accordance with their licensing bases.

Cable/conduit raceways and HVAC ductwork, although not included as "equipment" in the SWEL, are reviewed during area walk-bys of the spaces containing items on the SWEL.

Screen #3 identifies equipment from systems required for safe shutdown, i.e., needed to bring the reactor to hot shutdown. The four reactor safety functions, reactivity control, pressure control, inventory control, and decay heat removal, plus containment functions, must be maintained by frontline and supporting system equipment.

Screen #4 represents the sample selections made to ensure that SWEL 1 includes:

- equipment needed for the 5 safety functions, from both frontline and supporting systems

- major new or replacement equipment within the past 15 years (approximate completion of seismic IPEEE evaluations)

- diverse types of equipment are included, e.g., the 21 classes of equipment considered in seismic IPEEE and USI A-46 programs

- equipment located in different environments, e.g., dry/cool vs. hot/damp

For planning purposes, it is expected that SWEL 1 will include approximately 100 items of equipment.

Spent Fuel Pool

As shown in Figure 1-2, the first screen is to determine whether the SFP SSCs are Seismic Category I and therefore have a seismic licensing basis. Note, however, that all plants are expected to have a SC I spent fuel pool because it is integral to the SC I Reactor Building (BWR) or Auxiliary Building (PWR). As noted above, SC I structures are not included in the SWEL scope because they are addressed by existing programs. The additional input to SWEL 2 would be features of the SFP that could potentially cause a rapid drain-down of the pool. Note that it is possible that due to the pool's design, there are no features in this category.

For planning purposes, it is expected that SWEL 2 will include approximately 10 items of equipment.

Improvements to Address IPEEE Seismic Vulnerabilities

Figure 1-3 outlines the approach for responding to the 50.54(f) request that "improvements made as part of the licensees' response to the individual plant examination of external events (IPEEE) program for seismic issues should be reported." As shown in Figure 1-3, if review of the IPEEE documentation and licensing correspondence determines that physical modifications were made to plant equipment, such equipment would be added to the scope of the walkdowns through SWEL 3.

Seismic Walkdowns, Area Walk-Bys, and Licensing Basis Evaluations

Figure 1-4 outlines the approach for seismic walkdowns of items on the combined SWEL (i.e., SWELs 1, 2 and 3), area walk-bys, and licensing basis evaluations.

The walkdowns are specifically focused on the two most important contributors to equipment performing its function following a seismic event (based on decades of data from strong-motion earthquakes): anchorage and adverse seismic interactions with nearby objects.

The area walk-bys are to be conducted in each area that contains an item on the SWEL. The area walk-by will consider the overall condition of the area with respect to seismic concerns, e.g., whether there are obvious concerns like unanchored or significantly degraded equipment in the area. An assessment of cable/conduit raceways and HVAC ducting (if applicable) will be included in the walk-bys. It should be noted that the walk-bys are looking for obvious abnormalities, not performing a detailed evaluation of each item in the area.

Items of concern from both the equipment walkdowns and area walk-bys are evaluated with respect to their seismic licensing basis, as shown in screen #. If the equipment or item of concern is determined to not meet its seismic licensing basis, then the issue will be evaluated under the plant's Corrective Action Program (CAP). Under the CAP the root cause of such situations will be determined, and an assessment of the extent of such conditions will be performed.

Clarifications

Seismic Protection

The term "seismic protection" is used in several places in the 50.54(f) Letter, including Requested Information Item 1.d "Identification of SSCs requiring seismic protection . . .". SSCs that must function during and/or following an earthquake are designed for the displacements, velocities, or accelerations associated with the seismic event; therefore the term protection is more appropriate when used with respect to flooding or high wind events. The seismic walkdown required by the 50.54(f) letter will confirm that the seismic licensing basis is met.

Licensee Monitoring and Maintenance Procedures

The 50.54(f) Letter requires the seismic walkdown activity to "verify the adequacy of licensee monitoring and maintenance procedures. This will not be done directly by the walkdown, but it will be indirectly verified based on the findings from the walkdown, e.g., if degraded conditions are found, they will be evaluated under the plant's CAP.