Seismic Qualification Testing Services

Background

Westinghouse is an industry leader in providing equipment qualification services to the nuclear industry. The Nuclear Automation (NA) facility located in New Stanton, Pennsylvania (USA), is a direct source for nuclear-grade equipment and safety-related qualification services.

Westinghouse complies with the requirements of U.S. Nuclear Regulatory Commission (NRC) 10CFR50 Appendix B, 10CFR21, International Standards Organization (ISO) 9001, ISO 9000-3, American Society of Mechanical Engineers (ASME) NQA-1 and International Atomic Energy Agency (IAEA) 50-C-QA.

Integrated in-house qualification and commercial dedication services implemented by highly experienced personnel allow Westinghouse to be a single source for supplying virtually any part of safety-related applications. Seismic testing services are required to provide evidence that safety-related equipment can perform its intended safety function(s) during and/or after the specified seismic motions.

The testing is performed in accordance with regulations and standards such as:

- NRC Regulatory Guides and Requirements
- Institute of Electrical and Electronic Engineers (IEEE) Std. 344, IEEE Std. 323 and supporting standards
- International codes and standards
- Uniform and International Building Codes (UBCs, IBCs)
- ASME, American Institute of Steel Construction (AISC) and other industry codes
Description
The cornerstone of the Westinghouse seismic testing service is a digitally controlled, independent, tri-axial seismic table. The seismic table is modular and can be used to test full-size cabinets as well as components and subassemblies.

Testing is performed on supporting fixtures that typically require higher acceleration due to in-equipment amplification.

Westinghouse offers a full range of services and engineering expertise in comprehensive plant-specific or generic seismic qualification tests that are tailored to meet the customer’s specifications. The programs can include:

- Seismic simulation (random, complex)
- Vibration and resonance search testing
- In-situ testing
- Modal testing

Benefits
The use of independent tri-axial testing reduces test time and costs, as well as test specimen fatigue. Multiple items can be tested simultaneously to reduce the overall qualification costs.

The Westinghouse seismic table employs three electromechanical driving motors with optimum digital controls to closely envelop requirements and minimize over-testing. A state-of-the-art data acquisition system is available to meet the customer’s requirements.

Testing and inspections are performed by trained and experienced Westinghouse personnel. All test programs are documented in detailed test reports.

Experience
Westinghouse is a global leader and supplier of seismic qualification testing services for utilities. Westinghouse’s innovative test facility can accommodate test specimens of all sizes, from control board equipment and sensors to full-size cabinets (up to 4,000 pounds). For applications that need even larger payloads and higher accelerations, Westinghouse has ready access to larger seismic tables at other test facilities.

Seismic Table Specifications:
- Test Object Weight: Up to 4,000 lbs*
- Input Displacements: ± 7 in
- Input Velocity: ± 94 in/sec
- Peak Spectral Acceleration: 30 g max (5% damping) test unit with 300 lbs 6 g max (5% damping) with 4000 lb test unit

*Note: Additional resources available to accommodate larger payloads.