

Seismic Qualification Testing Services

Background

Westinghouse's Qualification Operations has been an industry leader in providing equipment qualification services to the nuclear industry for over 40 years and is headquartered in New Stanton, Pennsylvania (USA) with global operations.

Integrated in-house qualification and commercial dedication services implemented by highly experienced and qualified 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 for harsh, mild environments, and some commercial applications.

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



Westinghouse seismic shake table

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.

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, such as chatter monitoring, etc.

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) and partner with other facilities when larger.

Westinghouse works with our customers to help the equipment pass the seismic testing. Our in-house engineering and manufacturing resources allow us to aid our customers to modify and redesign the test article if needed unlike other test facilities that remove test equipment upon failure and move it to the back of the test queue.

With each seismic test, you receive a test report that contains the test plan, inspections (including photographs), functional test results (if required), resonance testing (if required), and verification plots that the seismic requirements meet IEEE 344 that show the TRS vs. RRS envelopes, Damping Value, ZPA, Time History, PSD, the statistical independence of input drive signals and the stationarity of the table motion. . Any test anomalies are documented and resolved. Testing can be video-taped if desired.



Switchgear test program



Instrumentation and control electronics test program

Seismic Table Specifications

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