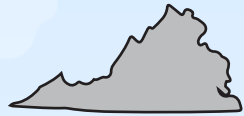


## Demonstrating Safety Against Powerful Earthquakes



### North Anna - 2011

Two reactors remained safe during an 5.8 earthquake originating 11 miles away in Mineral, Va. Ground motion at the plant site exceeded the seismic design for the plant; however there was virtually no damage at the facility.



### Onagawa - 2011

Several reactors on the coast of Japan were affected by a 9.0 earthquake. The Onagawa nuclear plant, closest to the source of the earthquake, shut down as designed. All systems at the plant performed as designed to maintain safety at the three reactors. The Fukushima Daiichi and Daini plants also were structurally sound after the earthquake, but were damaged by a tsunami.



### Kashiwaski-Kariwa - 2007

The plant experienced ground motion beyond its seismic design from a 6.9 earthquake, just offshore of Japan. All reactors shut down safely.



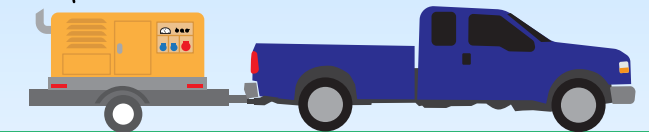
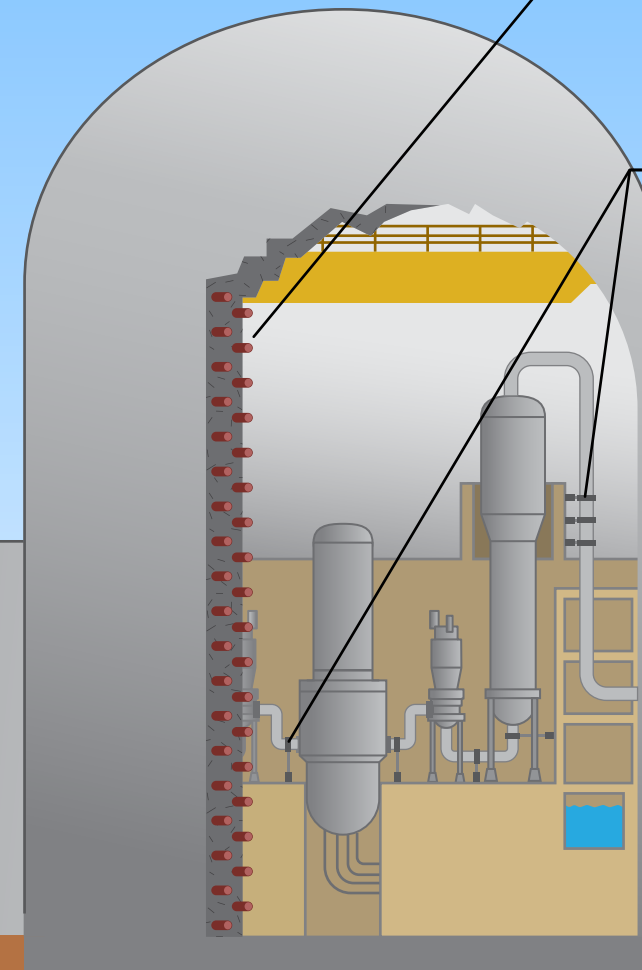
## Nuclear Plant Robust Design/Construction

Nuclear plants are unyielding structures with multiple layers of safety designed and built into the structure.

Many of the features designed to keep radiation inside the plant also ensure that it is well protected against extreme natural events.

Stringent engineering standards require that structures and components be able to withstand powerful earthquakes. Huge shock absorbers that weigh up to hundreds of pounds and heavy supports fortify important reactor components and systems.

New seismic evaluations, plus the addition of portable equipment to maintain power and cooling to plant systems, enhance protection against earthquakes.



## Nuclear Regulatory Commission Seismic Requirements

- Nuclear plants designed to withstand the strongest ground motion recorded for the site
- Safety features go above and beyond to account for uncertainties in seismic data
- NRC regularly reevaluates seismic data

Seismic Activity



## Recent Research

- 2010 — NRC's seismic review found nuclear plants to be safe
- 2011 — NRC folded plans for new site-specific assessments into post-Fukushima requirements
- 2012 — New seismic source model published; peer-reviewed by U.S. Geological Survey
- 2013-14 — Experts are reevaluating seismic protection at each reactor site