



ID: P1.2-540

Type: E-poster

## Design Reliability Assessment of Nuclear Power Plants in Java Island Based on Response Spectra Analysis of Major Earthquakes Around Java in the Last Five Years

The potential development of Nuclear Power Plants (NPPs) in Java is crucial due to the need for alternative energy to meet high electricity demand. A comprehensive study is required to ensure structural safety against earthquake hazards. This research evaluates the seismic design reliability of NPPs in Java by analysing response spectra from significant earthquakes over the last five years. Considering Java's tectonic complexity, influenced by subduction zones and strike-slip faults, this study uses the latest ground motion prediction models and probabilistic seismic hazard analysis from the National Earthquake Study Center and the Ministry of Public Works and Housing to generate location-specific response spectra based on Indonesia's national standards (SNI). These spectra are compared with acceleration spectra from earthquakes recorded by BMKG's accelerograph network. Preliminary results show that while the acceleration spectra recorded by BMKG's equipment are lower than the design specifications set by SNI PUSGEN, updated spectra and Uniform Hazard Spectra are needed to better represent local seismic characteristics. This study emphasizes integrating local seismic data through site effect analysis and hazard assessment methods to ensure the safety and resilience of NPPs in Java, considering differences between measurement data and SNI designs. Seismic risk mitigation must consider recent data.

### E-mail

edy.santoso@bmkg.go.id

### In-person or online preference

**Primary authors:** Mr SANTOSO, Edy (Indonesian Agency for Meteorological, Climatological and Geophysics (BMKG)); Ms SATIVA, Oriza (Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG)); Mr PRAMONO, Sigit (Meteorology, Climatology, and Geophysical Agency of Indonesia (BMKG))

**Presenter:** Mr SANTOSO, Edy (Indonesian Agency for Meteorological, Climatological and Geophysics (BMKG))

**Session Classification:** P1.2 The Solid Earth and its Structure

**Track Classification:** Theme 1. The Earth as a Complex System: T1.2 The Solid Earth and its Structure