

Protection of Nuclear Installations from External Hazards

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Protection of nuclear installations (such as nuclear power plants, research reactors, spent fuel storage facilities, etc.) for external hazards is one of the principle safety considerations in their siting and design process. These external hazards are grouped under two major categories; those which are caused by nature and those which are induced by man. In the first category earthquakes, floods and extreme meteorological events are the most prominent, although other hazards such as volcanoes are also included. In the second category, explosions (solid, liquid or gas), airplane crashes and external fires are considered.

The International Atomic Energy Agency (IAEA) has published a Safety Code on the Siting of Nuclear Power Plants (NPPs) as well as a suite of Safety Guides on all natural and man-induced external events. This suite also includes Safety Guides related to the impact of the nuclear installation on the surrounding population and the environment.

The IAEA has started a process of revising the Safety Code (this will be called Requirements after revision) as well as all of the Safety Guides within the next several years. This revision will be based on several considerations:

- feedback from IAEA services related to external hazards to nuclear facilities within the period 1990 - 1999,
- new developments concerning external hazards, i.e.
 1. regulatory approach to licensing
 2. external event "Probabilistic Safety Assessments" for new and existing plants
 3. new data from significant recent external events worldwide
 4. new approaches in data collection and methods of analysis.

The paper summarizes the intended changes to be incorporated into the new Requirements consistent with the received feedback and the state of the art. Although the paper will address all external hazards, it will concentrate on natural hazards and in particular the evaluation of geological and seismic hazards for nuclear facilities.