Draft Terms for Inclusion in RIDM Desktop Glossary

Non-PRA Risk Information:

Risk information that can result from operational experience; compensatory measures; mitigating factors (both environmental and engineered); probabilistic or risk information at the system, structure, or component level; additional probabilistic information from traditional engineering methodologies, such as estimates of mean-time-to-failure from operational experience or fatigue curves; and other engineering judgment that uses credible engineering or experiential information to form a judgment of a complete risk triplet: (1) what can go wrong, (2) how likely it is, and (3) what the consequences are.

Risk (Assessment, Analysis):

Risk assessment or risk analysis and PRA are often incorrectly used as synonyms. A PRA is one type of risk assessment or risk analysis. PRAs have a structured format and quantifies the ultimate consequences. A qualitative risk assessment or analysis is a risk evaluation that uses descriptions or distinctions based on some characteristic rather than on some quantity or measured value.

In comparison to a risk assessment or analysis, a PRA generates different ways to measure risk, called risk metrics, which satisfy specified safety objectives or goals. The consequences are manifested in the onset of core damage and each level of the PRA uses different risk metrics, which can be found in the discussion of Level 1, 2, and 3 PRAs.

Risk Insights:

The results and findings that come from a PRA, which for reactors includes identification of dominant accident sequences, estimates of CDF and LERF, and importance measures of structures, systems, and components (SSC). One of the main objectives of a PRA is to gain insights about a facility's response to initiating events and accident progression, including the expected interactions among the facility's SSCs, and between the facility and its operating staff. Risk insights are derived by investigating in a systematic manner: (1) what can go wrong, (2) how likely it is, and (3) what the consequences are. A risk assessment is a systematic method for addressing these questions as they relate to understanding issues like: important hazards and initiators, important accident sequences and their associated SSC failures and human errors, system interactions, vulnerable plant areas, likely outcomes, sensitivities, and areas of uncertainty. Risk insights can be obtained via both quantitative and qualitative investigations. As noted in RG 1.174, quantitative risk results from PRA calculations are typically the most useful and complete characterization of risk, but they are generally supplemented by qualitative risk insights and traditional engineering analysis. Qualitative risk insights include generic results, i.e., results that have been learned from numerous PRAs that have been performed in the past, and from operational experience, and that are applicable to a group of similar plants.

In contrast, for results and findings that come from other non-PRA risk information, see Non-PRA Risk Information.

Risk-Informed (Approach, Decision-making, Regulation)

The modifying term "risk-informed" is applied to decision-making and regulation activities that combine risk information (e.g., PRA results) with other factors (e.g., engineering design features) to arrive at a decision. The terms risk-informed approach, risk-informed decision-making, and risk-informed regulation are often used interchangeably and somewhat correctly to describe the same concept; therefore, these terms are grouped under the same definition. However, as indicated below, each of these terms has its own distinct meaning:

Risk-Informed Approach:

A 'risk-informed' approach to regulatory decision-making represents a philosophy whereby risk insights are considered together with other factors to establish requirements that better focus licensee and regulatory attention on design and operational issues commensurate with their importance to health and safety. A 'risk-informed' approach enhances the traditional approach by: (a) allowing explicit consideration of a broader set of potential challenges to safety, (b) providing a logical means for prioritizing these challenges based on risk significance, operating experience, and/or engineering judgment, (c) facilitating consideration of a broader set of resources to defend against these challenges, (d) explicitly identifying and quantifying sources of uncertainty in the analysis, and (e) leading to better decision-making by providing a means to test the sensitivity of the results to key assumptions. Where appropriate, a risk-informed regulatory approach can also be used to reduce unnecessary conservatism in deterministic approaches, or can be used to identify areas with insufficient conservatism and provide the bases for additional requirements or regulatory actions.

Risk-Informed Decision-making:

An approach to regulatory decision making, in which insights from probabilistic risk assessment are considered with other engineering insights.

Risk-Informed Regulation:

An approach to regulation taken by the NRC, which incorporates an assessment of safety significance or relative risk. This approach ensures that the regulatory burden imposed by an individual regulation or process is appropriate to its importance in protecting the health and safety of the public and the environment.

A term often used incorrectly in place of risk-informed is risk-based; these terms are not synonyms. A risk-based approach to decision-making or regulation means that the decision or regulation is based only on risk information (e.g., risk results obtained from a PRA), whereas a risk-informed approach combines risk information with other factors to arrive at a decision or develop regulations.