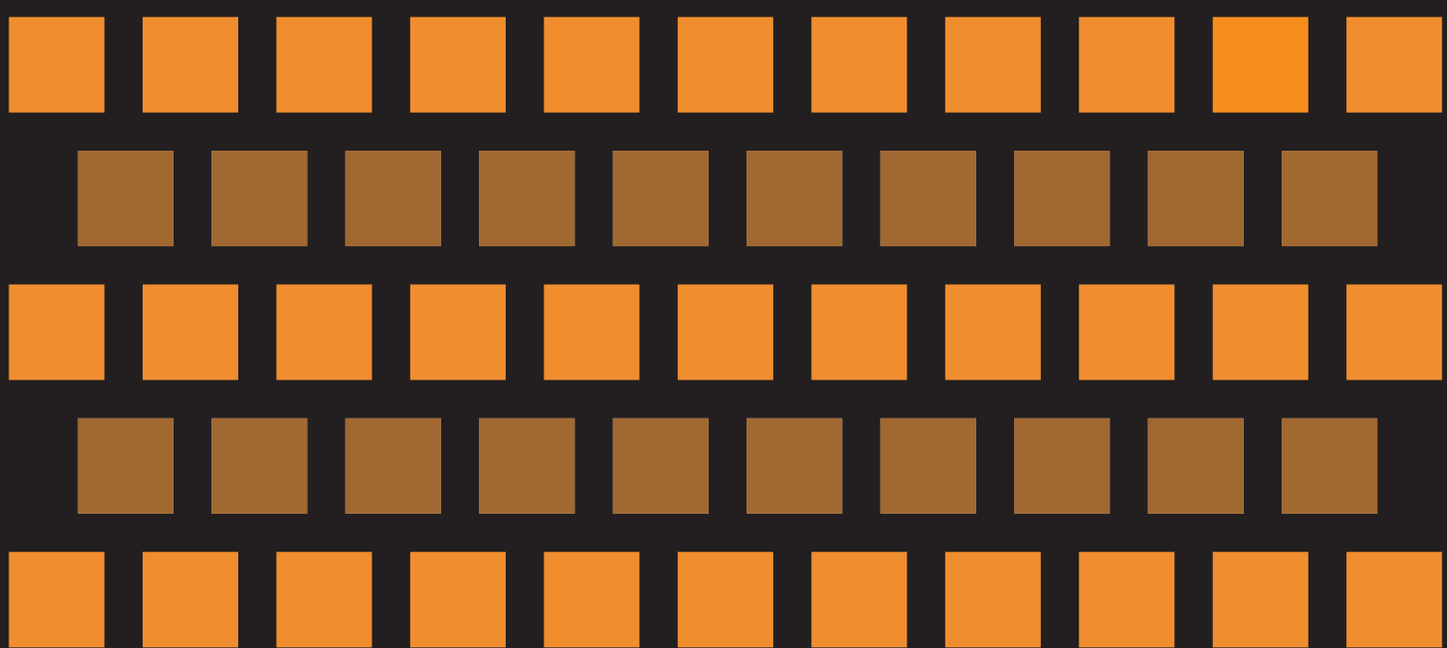
STP/NU-001

RISK INITIATIVES IN ASME NUCLEAR CODES AND STANDARDS



ASME STANDARDS TECHNOLOGY, LLC

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FOREWORD

This document is the result of a research and development project administered by the ASME Standards Technology, LLC on behalf of ASME Nuclear Codes & Standards (C&S).

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SUMMARY

This report documents the historical technical basis and provides an assessment of coherence among the nuclear power plant risk-informed initiatives that have been undertaken in the ASME Section XI, Operations and Maintenance (O&M), and Nuclear Risk Management organizations of ASME Nuclear C&S. Five risk-informed inservice inspection (ISI) and repair/replacement Code Cases are discussed relative to ASME Section XI initiatives and six risk-informed inservice testing (IST) Code Cases are summarized relative to ASME O&M Committee actions. Finally, discussion of the ASME Probabilistic Risk Assessment (PRA) Standard for nuclear power plant applications is provided including the development of two Addenda to the PRA Standard within the ASME Committee on Nuclear Risk Management (CNRM).

The conclusion of this review of completed ASME risk-informed initiatives is that coherence definitely exists across these standards actions. Figure 6 is presented to illustrate the relationship and foundation of how the various ASME Code Cases and the PRA Standard are used to implement risk-informed safety classification (RISC) and treatment of structures, systems, and components (SSCs). Coherence is derived from the application of a dozen or so common attributes across the risk-informed ISI, repair/replacement, and IST Code Cases, as given in Table 5.

Because these initiatives emerged at different times and without a central plan that was common across the ASME Nuclear C&S committees, there is variation in how the attributes are applied. The applications themselves also contribute to this variation. However, this review of each of the key attributes shows that consistency still exists across the applications relative to the intent that is to be derived from each attribute. Variation within an attribute is acceptable as long as its intended purpose is achieved. However, it is recommended that cognizant groups within the ASME Nuclear C&S organization review these attributes across current and emerging ASME risk-informed initiatives to ensure that coherency and consistency are fully achieved.

It is hoped that as the various ASME Nuclear C&S committees continue to move forward in the use of risk-informed technology in standards development actions, this report will be used as a reference for ensuring or enhancing coherence in future ASME initiatives.