

ANS's Advanced Reactors Working Group Addresses NEIMA

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Outline and Purpose

- ▶ What is the Advanced Reactors Working Group (ARWG)?
- ▶ How does ARWG work to propose ANS positions?
- ▶ ARWG, the Nuclear Energy Innovation and Modernization Act (NEIMA) and ANS work on Risk-Informed and Performance-Based (RIPB) concepts
- ▶ NEIMA and RIPB
- ▶ Value Proposition for ANS initiative on NEIMA
- ▶ Broader implications of ANS involvement
- ▶ Summary

The purpose of this presentation is to initiate formulation of an ANS position on how NEIMA's objectives are to be achieved relative to RIPB concepts and methods

The Advanced Reactors Working Group (ARWG)

- ▶ ARWG was instituted in December 2021 by bringing together four Divisional components of ANS
- ▶ It is to serve as a focal point and coordinator for ANS work related to advanced reactors
- ▶ It monitors key developments and activities related to advanced reactors
- ▶ It follows advanced reactor rulemakings and proposes to ANS leadership opportunities for engagement
- ▶ It supports standards development for advanced reactors
- ▶ It works with ANS Divisions to ensure that ANS meetings and publications adequately cover advanced reactors
- ▶ It supports ANS Government Affairs on advanced reactor policy issues and statements to stay current

Process for ARWG Proposals for ANS to Consider

- ▶ ARWG is expected to identify proposals that represent unique contributions that ANS can make regarding advanced reactors
 - ▶ ANS contribution should reflect technical depth of the knowledge of its members
 - ▶ ANS proposals should promote realization of the promise of advanced reactors in a tangible way
 - ▶ ANS proposals should fill gaps in contributions made by other stakeholders
- ▶ Expected steps in the process may be as follows:
 - ▶ ARWG agrees on the subject matters to develop proposals
 - ▶ ARWG assigns Divisional members to lead development of proposal
 - ▶ ARWG sets parameters such as schedule and level of detail
 - ▶ ARWG reviews and finalizes draft to submit to ANS
 - ▶ ARWG submits draft for ANS President's and/or Board approval

Connecting NEIMA, ANS and RIPB

- ▶ NEIMA represents statutory obligations on US agencies to support advanced reactors in unprecedented ways
- ▶ ANS can help realize NEIMA's aspirations by working with NRC and DOE
 - ▶ The proximate basis for unique ANS contributions could be the specialized expertise within technical Divisions
 - ▶ ANS's Standards Committee is a knowledge center for RIPB concepts and methods
 - ▶ A collaborative role for ANS with NRC and DOE vis-à-vis advanced reactors needs to be demonstrated to be credible
- ▶ Enhancement of ANS efforts is needed because past activities of a similar nature have not been impactful
- ▶ Specific provisions of NEIMA correspond so closely to current ANS activities that ANS has a duty in the public interest to contribute to NEIMA's success.

NEIMA and RIPB

An Overview

- ▶ NEIMA's Sections 2, 3, 102 and 103 have implicit or explicit references to RIPB
- ▶ Example of implicit reference to RIPB occurs in "PURPOSE" statement
 - ▶ NEIMA should address "expertise and regulatory processes" to "allow innovation and commercialization" of advanced reactors
 - ▶ "Innovation and commercialization" were not disallowed prior to NEIMA
 - ▶ There is wide recognition that merely allowing innovation does not promote advanced reactor development from regulatory and economic perspectives
 - ▶ "Modernization" in NEIMA has come to mean use of RIPB concepts and methods
- ▶ A more explicit reference to RIPB occurs in definition of "Technology-Inclusive Regulatory Framework"
 - ▶ "Methods of evaluation that are flexible and practicable for application to a variety of technologies"
 - ▶ RIPB techniques should be used where appropriate

RIPB in NEIMA Sec. 102

- ▶ Sec. 102 deals with NRC User Fees and Annual Charges
 - ▶ Sec. 102 also includes NRC reporting requirements
- ▶ Sec. 102(c) “Report to Increase the Use of Risk-Informed and Performance-Based Evaluation Techniques and Regulatory Guidance”
 - ▶ The report (issued 6-months after NEIMA) should have included information on increasing RIPB in evaluation techniques and regulatory guidance
 - ▶ In the two years after the report large amounts of information regarding evaluation techniques and regulatory guidance have come to light
 - ▶ It is not clear how much of an increase in RIPB concepts and methods these documents represent
- ▶ Sec. 102(c) includes “Coordination and Stakeholder Input”
 - ▶ Among those whose input is to be sought are, “... the nuclear energy industry, a diverse set of technology developers, and other public stakeholders.”
 - ▶ Would “other public stakeholders” include ANS and consequentially ARWG?

RIPB in NEIMA Sec. 103

- ▶ Sec. 103 is entitled “Advanced Nuclear Reactor Program”
 - ▶ Sub-Section 103(a) deals with “Licensing”
 - ▶ Sub-Section 103(b) deals with “Report to Establish Stages in the Commercial Advanced Nuclear Reactor Licensing Process”
 - ▶ Sub-Section 103(c) deals with “Report to Increase the Use of Risk-Informed and Performance-Based Evaluation Techniques and Regulatory Guidance”
- ▶ “Licensing” includes
 - ▶ “Staged Licensing”
 - ▶ “Risk-Informed Licensing”
 - ▶ Includes requirement to “...develop and implement, where appropriate, strategies for the increased use of risk-informed, performance-based licensing evaluation techniques and guidance for commercial advanced nuclear reactors within the existing regulatory framework, including evaluation techniques and guidance for the resolution of the following:...”
 - ▶ Includes “Technology-Inclusive Regulatory Framework” associated with ongoing rulemaking
- ▶ Does ANS have input to offer to increase the likelihood that “Purpose” of NEIMA will be realized?

RIPB in NEIMA Sec. 103 (continued)

- ▶ Sub-Section 103(b) related to staged licensing includes:
 - ▶ (iii) collaboration with standards-setting organizations to identify specific technical areas for which new or updated standards are needed and providing assistance if appropriate to ensure the new or updated standards are developed and finalized in a timely fashion;
 - ▶ Does ANS have input to offer on this subject?
- ▶ Sub-Section 103(c) on increasing the use of RIPB includes
 - ▶ Ability of NRC to develop and implement RIPB evaluation techniques and guidance to resolve
 - ▶ LBE selection and evaluation, use of mechanistic source terms, containment performance, emergency preparedness, and qualification of advanced nuclear reactor fuel among other issues
- ▶ ARWG recognizes the ongoing activities by various parties on these matters. However, it is apparent that gaps exist that ANS could highlight and fill.

Potential Value Proposition for ANS Contribution on RIPB

- ▶ The ANS President issued a letter to the NRC on March 3, 2021, to offer ANS comments on the RIPB aspects of the ongoing Part 53 rulemaking.
 - ▶ The letter conveyed support for the structure of the ongoing rulemaking
 - ▶ Concerns were expressed regarding specific details in the rule language published at that time
 - ▶ Later rule language released does not appear to have taken account of the unnecessarily prescriptive aspects of the rulemaking proceeding.
- ▶ ANS addressed the ACRS on March 17, 2021, elaborating ANS positions
 - ▶ Although there is no specific acknowledgement to ANS input, some influence is apparent in later rulemaking developments
- ▶ At this point the one area on which ANS input appears likely to have significant impact relates to ensuring that NEIMA's aspirations related to RIPB are realized in an efficient manner.

NEIMA Needs RIPB Definition

- ▶ Sec 3 of NEIMA has definitions of various terms, but does not define RIPB
- ▶ Sec 103 refers to RIPB evaluation techniques and guidance within the existing regulatory framework
- ▶ It is reasonable to interpret “evaluation techniques and guidance” to mean NUREG-0800, ISGs, and Regulatory Guides among others
- ▶ It is reasonable to interpret “existing regulatory framework” to mean regulations in 10 CFR Parts 50 and 52 among others
- ▶ By such interpretation Sub-Section 103(a) would appear to require that SRP sections and Reg Guides issued over the past few years to support implementation of Parts 50 and 52 should have included strategies for RIPB implementation
- ▶ Considering the number of advanced reactor developers planning to use Parts 50 and 52 this provision in NEIMA is likely to have helped them
- ▶ Should ANS strongly advocate for SRM-SECY-98-0144 to be the formal basis for defining RIPB in the context of NEIMA?

Opportunities for ANS Contributions

- ▶ ANS can contribute to developing the expertise and regulatory processes broadly to support advanced nuclear reactors in its technical programs
- ▶ ANS can highlight the specifics of what it means to “allow innovation and commercialization”
- ▶ ANS can address specifics of technology-inclusive activities to examine whether methods of evaluation are using RIPB to enable flexibility and practicability for various technologies
- ▶ ANS can examine reports to Congress to assess whether they reflect appropriate use of RIPB within the existing regulatory framework
- ▶ ANS can spotlight where regulatory provisions, evaluation techniques, and guidance are unnecessarily prescriptive
 - ▶ Sometimes this happens just by limiting the range of choices available to advanced reactor developers

ANS as a Stakeholder in Advanced Reactor Activities

- ▶ The success of advanced reactors development in the US depends on the active participation of many government and non-government entities
- ▶ ANS is a technical Society with members steeped in every aspect of nuclear technology and delve into technical details more than many such entities
- ▶ ANS is not encumbered by specific agendas in the same way as many others
- ▶ It is highly likely that gaps exist in the areas covered by stakeholders which can be covered by ANS to promote NEIMA
- ▶ In particular, the application of RIPB concepts and methods appears not to be an area of interest to the degree that it is for ANS
- ▶ ANS's technical Divisions should be given the opportunity to contribute
- ▶ ANS's RP3C has a wealth of information in the Community of Practice webinars to add to the available resources
 - ▶ Recorded sessions can be accessed at the ANS website

Summary

- ▶ ANS has instituted the ARWG to have a focal point for advanced reactor activities within and outside the Society
- ▶ ARWG's efforts will emphasize enabling ANS to bring its technical expertise to bear on addressing the whole range of issues that may affect advanced reactors
- ▶ ANS's activities related to RIPB concepts and methods stand out as a technical area in which ANS can make a significant contribution
- ▶ NEIMA includes requirements involving RIPB which constitute opportunities for ANS to add value to ongoing proceedings and activities