

ASTM Workshop on Emerging Trends in Nuclear Energy – The Standards Component

**Anaheim, California
June 15, 2011**

Proceedings (Unofficial)

INTRODUCTION

Pat Picariello – Director, Developmental Operations – ASTM International

- ASTM Survey went out to each Executive Subcommittee, and the results were discussed at the January 2011 ASTM meeting in Baltimore.
- A database was created by ASTM of standards referenced in NRC Regulations and was provided to NRC.
- ASTM is currently in the process of setting up a portal to access that information.

NRC Consensus Standards Program

Stuart Richards – Office of Nuclear Regulatory Research – NRC

- The policy is for NRC to participate in standards development and to utilize standards where it lessens burden on NRC (i.e., referencing a consensus standard is more cost effective and may be more technically appropriate than creating a regulation or regulatory guide).
- Of the four ways standards are recognized, the least frequent is in Regulations, and the most frequent is in Regulatory Guides and Standard Review Plans.
- The ease of employing standards depends on the NRC process for creating and modifying their documents, which is in the following order of increasing difficulty: Regulations, Regulatory Guides, Standard Review Plans and “other documents”.
- Rulemaking (changing Regulations) has been simplified for citations to the ASME Code (and perhaps to IEEE) so there may be hope for those regulations citing ASTM standards; some barriers exist nevertheless.
- An alternative may be to modify the Regulations to cite ASTM standards in Regulatory Guides and to maintain the citations in the Guides.

- Another practical solution would be to cite currently acceptable ASTM standards in Standard Review Plans – but the process for modifying Standard Review Plans was not sufficiently described to judge its merits over the Rule change and Regulatory Guide revision process.
- “Other documents” may also have advantages but content and process information needs to be further defined.
- Closing comment: NRC – ASTM engagement is required within the NESCC initiative.

NRC Status and Plans for License Renewal – A Role for Consensus Standards

Dr. Allen Hiser – Office of Nuclear Reactor Regulation – NRC

- NRC requests ASTM assistance to manage 104 operating plants plus new ones.
- He described the overall regulatory framework (10 CFR) for plant operation, license renewal (including “aging management”), and power uprate.
- NRC intends to use workshops to consider operating experience, plus ways to assess age-related degradation and bringing in international experience and expertise.
- He identified several key technical issues that may be discussed and prioritized in Workshops: potential new age-related degradation mechanisms (TGSCC, long-term irradiation embrittlement mechanisms (e.g., “late-blooming phases”), adequacy of aging management plans (AMP, plant specific and generic, and audits/self-assessment/follow-up aspects [or perhaps Standards?]), and factoring above into GALL Report so can consider 80-years as well as 60-year operation.
- Listed the following for industry to address: vessel embrittlement (prediction method such as ASTM E900; treatment of vessel inspection results in pressure-temperature limit curves; role of nozzles in pressure-temperature limits; and adapting ASTM E185 to 60 and 80 year operation); reactor internals materials (in situ testing, etc.); electrical cables (submerged underground cables, test/empirical tools/methods for predicting longevity, aging assessment methods); and concrete (cracks and spalling, alkaline silica reaction, inspections/repair processes).
- Concluded that regulatory process needs modification to incorporate license renewal needs (60 to 80 years with respect to age-related degradation); encouraged ASTM to be involved; and “instrument calibration” was mentioned as possible ASTM action (via Q&A).

NRC Status and Plans for New and Advanced Reactors

Michael Norato – Office of New Reactors – NRC

- NRC needs the areas mentioned in Hiser's presentation to manage the new plants as well as solutions for the yet-to-be-discovered list of technical issues.
- His Branch is already interacting (and has been over at least ten years) with ASME on construction codes, small-bore piping, high-temperature design and liquid metal design.

Concrete Codes and Standards for Nuclear Power Plants: NESCC Recommendation for Future Development

Clarissa Ferraris – National Institute of Standards and Technology

- NIST has been collaborating with ANSI and other NESCC participants on the NESCC initiative. The ongoing Task Group on Concrete Codes and Standards (CTG) was described as an example of the initiative.
- The CTG report has been finalized—it contains recommendations that have been reviewed by industry, government and SDOs. The Mattson report (NUREG CR 5973) was cited as the underlying study for NESCC.
- One question was raised about whether Nuclear Waste was an active NESCC topic – it is not but perhaps should be considered.

ASTM Roadmap for Supporting Nuclear Energy

Steve Byrne – Consultant – ASTM International

- The results of the ASTM survey have been shared with NRC and will be provided to NIST for use going forward.
- Consideration may be given to taking those results back to the ASTM Subcommittees for additional review and for attempting to identify additional topics of importance and under which subcommittee (or other SDO) the topic should be developed.
- Some process considerations were described in the context of generating a roadmap for supporting the civil nuclear energy development.

Q&A Feedback

1. ASTM standards for calibration of equipment/monitoring instruments.
2. Should nuclear waste be addressed by NESCC?

3. ASTM should engage DOE to assure standards development is underway for new plants.
4. Need to facilitate process for updating NRC references to ASTM (and other) standards and establishing consistency with other SDOs.
5. Blue Ribbon Commission Report due out in next several months.
6. Streamlining NRC adoption of new standards/Codes: NRC needs industry to propose what standards should be cited/used; can use NESCC as forum; can further develop/expand ASTM survey (and distribute current version to NIST); need to consider impact of regulatory change with respect to Back-fit requirement.
7. ASTM Takeaway – focus on Regulatory Guides and SRPs as path to better standards inclusion in NRC versus trying to change regulations.
8. Should Fuel Fabrication facilities be considered in NESCC scope? Such as Savannah River?
9. What is effective way of following up with individual ASTM committees?