August 28, 2014

Mr. John W. Stetkar, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: STANDARD REVIEW PLAN CHAPTER 19 AND SECTION 17.4

Dear Mr. Stetkar:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to the three recommendations noted in the Advisory Committee on Reactor Safeguards (ACRS) letter dated July 16, 2014, regarding the ACRS review of Chapter 19 and Section 17.4 of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition." We appreciate the time and effort that the ACRS has devoted to this important subject, as reflected in meetings held with the ACRS Subcommittee for Reliability and Probabilistic Risk Assessment (PRA) on March 20, 2014, and the ACRS full committee on July 10, 2014.

**ACRS RECOMMENDATIONS AND NRC STAFF RESPONSES**

Recommendation 1: Section 17.4 and Section 19.3 of the Standard Review Plan (SRP) should be combined to provide consistent guidance for reviews of risk-significant non-safety-related structures, systems, and components (SSCs). The guidance should not distinguish between plant designs that employ "passive" safety features or "active" safety features. The guidance should consolidate expectations for regulatory and licensee programs that provide assurance of adequate availability and reliability for risk-significant non-safety-related SSCs that are not covered by the plant Technical Specifications.

> *Response*: The staff has reviewed and considered the purpose and objectives of guidance in SRP Sections 17.4, "Reliability Assurance Program," and 19.3, "Regulatory Treatment of Non-Safety Systems for Passive Advanced Light Water Reactors." Although both SRP sections address the treatment of non-safety-related SSCs, they have important differences as discussed below. Therefore, the staff concludes that the review of these topics needs to be, and will continue to be, well coordinated, while not consolidated.
>
> SRP Section 17.4
>
> SRP Section 17.4 provides guidance for developing and implementing a reliability assurance program (RAP) for all new reactors licensed in accordance with 10 CFR Part 52. The RAP covers safety-related and non-safety-related SSCs. In regard to non-safety-related SSCs, the objective of the RAP is that holders of a combined license (COL) will establish appropriate programmatic controls, quality assurance controls, and reliability, availability, or condition performance goals for

non-safety-related SSCs that are significant contributors to plant safety, as determined within the RAP. This is done by including these SSCs in operational programs specified in the final safety analysis report, such as the maintenance rule and inservice inspection and testing.

SRP Section 19.3

SRP Section 19.3 provides guidance for regulatory treatment of non-safety systems (RTNSS), which applies only to those plants that utilize passive safety systems. RTNSS addresses (1) the larger uncertainty in passive safety-system reliability due to the unique motive forces passive systems rely on as compared to plants with active safety systems, (2) the dependence on some non-safety-related SSCs for assuring that safety functions necessary to bring the plant to a safe cold shutdown condition are maintained in the period beyond 72 hours after an accident, and (3) the potential for unique system interactions between passive systems and active systems that are operating simultaneously. The fundamental basis for additional treatment of non-safety SSCs specified in the RTNSS process has not changed. Levels of treatment for non-safety-related SSCs in the RTNSS program may be different from operational programs that include RAP SSCs. For example, specific design requirements for protection from natural hazards normally apply to some SSCs covered by RTNSS, but this requirement is not addressed at all for non-safety SSCs in RAP. Another example is that availability controls are required for some SSCs covered by RTNSS that are stronger than those provided through the RAP and 10 CFR Part 50.65(a)(4) of the maintenance rule. Such requirements may include limiting conditions for operation and surveillance requirements specified in either plant Technical Specifications or separate administrative controls.

In conclusion, the staff believes that SRP Sections 17.4 and 19.3 serve specific purposes and should remain as separate sections of the SRP. Nevertheless, the staff does agree with the overriding goal of the ACRS, which is to provide consistent, coordinated, and consolidated guidance where appropriate, and looks forward to additional interactions with the ACRS along these lines.

Recommendation 2: The staff should re-evaluate the criteria that are used to determine risk significance in a manner that is consistent for a broad spectrum of designs and absolute levels of overall plant risk. Additionally, risk importance measures should be applied at the component level, and not at the level of specific failure modes.

*Response:* The specific criteria for determining the risk significance of SSCs are included in Regulatory Guide (RG) 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities.” These criteria are in the form of thresholds for specific risk importance measures. RG 1.200 and the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) Standard for PRA which it endorses were developed with operating reactors in mind and have not yet been updated to address PRAs that support applications for plants with substantially lower overall risk profiles. As such, the criteria used to determine risk significance may not be appropriate for a broad spectrum of plants and should be re-evaluated as noted by the ACRS. The staff will pursue revision of the criteria to make them consistent with a broad spectrum of designs and absolute levels of overall plant risk as it reviews applicable industry and regulatory guidance.

The staff has considered the need for changes to SRP Section 17.4 in light of the Committee's recommendation to apply risk importance measures at the component level rather than at the level of specific failure modes. The selection of SSCs for inclusion in the RAP is primarily based on risk significance at the SSC level as discussed under Acceptance Criterion A.3 in SRP Section 17.4. Dominant failure modes are identified by the COL holder prior to fuel load to inform the integration of RAP into operational programs as discussed in Part I of SRP Section 17.4, "Areas of Review." Dominant failure modes are not relied upon for the selection of SSCs for inclusion in RAP. As discussed in Acceptance Criterion A.6 in SRP Section 17.4, dominant failure modes should be determined from a variety of sources which include deterministic and PRA information.

Recommendation 3: The staff should consider revised guidance that endorses PRA conformance with ASME/ANS Capability Category II requirements to the greatest extent achievable at the design certification and combined license stages of the licensing reviews. Staff reviewers should assess the adequacy of peer reviews that are performed for the PRA and justifications why specific elements of Capability Category II cannot be achieved.

*Response:* The acceptance criterion in SRP Section 19.0 for conformance with the ASME/ANS Standard for PRA is that supporting requirements (SR) for each PRA element be met at the Capability Category (CC) I level. The purpose of the CCs is to allow for variance in the acceptable level of technical adequacy of the PRA for different applications of the PRA. This led to the existing position that applicants for design certification (DC) and COL need to meet CC I level.

The staff evaluated the potential benefit of requiring DC and COL applicants to meet CC II by reviewing each SR and the differences between the requirements for CC I and CC II. In many of the cases where there is a difference, CC II expands the CC I requirement and to make the PRA more reflective of the specific plant. In many of these cases, a DC or COL applicant would not be able to satisfy the CC II requirement due to the lack of plant-specific information (e.g., operating experience, interviews with operators, plant walk-downs) available at the DC and COL application stage.

The staff's experience in licensing COLs and certifying DCs has shown that a standard of CC I for conformance with the ASME/ANS Standard for PRA has resulted in PRAs which are sufficient for meeting the Commission's objectives for use of PRA in the design of new and advanced reactors. The subsequent PRAs developed by holders of a combined license prior to fuel load may be used to support operational programs (e.g., maintenance rule) and risk-informed applications (e.g., risk-informed Technical Specifications). Use of the PRA for these applications will dictate that COL holders strive to meet the ASME/ANS Standard for PRA at the CC II level.

The ACRS letter states that some of the recommendations involve issues that extend beyond revisions to the SRP and associated regulatory guidance. We look forward to future interactions with the Committee to discuss specific issues associated with these recommendations and issues that extend beyond these SRP revisions.

Sincerely,

***/RA/***

Mark A. Satorius
Executive Director
for Operations

cc: Chairman Macfarlane
Commissioner Svinicki
Commissioner Magwood
Commissioner Ostendorff
SECY

The ACRS letter states that some of the recommendations involve issues that extend beyond revisions to the SRP and associated regulatory guidance. We look forward to future interactions with the Committee to discuss specific issues associated with these recommendations and issues that extend beyond these SRP revisions.

Sincerely,

***/RA/***

Mark A. Satorius
Executive Director
for Operations

cc: Chairman Macfarlane
Commissioner Svinicki
Commissioner Magwood
Commissioner Ostendorff
SECY

DISTRIBUTION: OEDO-14-00495
J. Segala, OEDO
M. Dudek, OEDO
S.Schroer, NRO
M. Caruso, NRO
L. Mrowca, NRO
RidsAcrsAcnw_MailCTR
RidsNroMailCenter
RidsNrrOd
RidsResOd
RidsNroDsra

ADAMS Accession Number: ML14204A004 *via e-mail EDO-002

| OFFICE | NRO/DSRA/SPRA | NRO/DSRA/SPRA | NRO/DSRA/SPRA |
|---|---|---|---|
| NAME | SSchroer | MCaruso | LMrowca |
| DATE | 8/11/2014 | 8/11/2014 | 8/11/2014 |
| OFFICE | NRO/DSRA | QTE | NRO |
| NAME | JMonninger | JDougherty* | GTracy-GHolahan for |
| DATE | 8/14/2014 | 8/18/2014 | 8/19/2014 |
| OFFICE | EDO | | |
| NAME | MSatorius | | |
| DATE | 8/28 /2014 | | |

**OFFICIAL RECORD COPY**