POLICY ISSUE
(Notation Vote)

September 20, 2018 SECY-18-0093

FOR: The Commissioners

FROM: Margaret M. Doane
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SUBJECT: RECOMMENDED CHANGE TO VERIFICATION OF THE DESIGN RELIABILITY ASSURANCE PROGRAM

PURPOSE:

The purpose of this paper is to seek Commission approval to discontinue the use of inspections, tests, analyses, and acceptance criteria (ITAAC) to verify the effectiveness of the design reliability assurance program (D-RAP). Commission direction would be beneficial at this time to reduce unnecessary regulatory burden for current and future applicants submitting design certification (DC) or combined license (COL) applications. This paper does not address any new commitments or resource implications.

BACKGROUND:

The reliability assurance program applies to plant structures, systems, and components (SSCs) that are risk significant (or important contributors to plant safety). The program is intended to provide reasonable assurance of the following:

> (1) an advanced reactor is designed, constructed, and operated in a manner that is consistent with the assumptions and risk insights for these risk-significant SSCs, (2) the risk-significant SSCs do not degrade to an unacceptable level during plant operations, (3) the frequency of transients that challenge advanced reactor SSCs are minimized, and (4) these SSCs function reliably when challenged.[1]

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1 See SECY-95-132, "Policy and Technical Issues Associated With the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs (SECY-94-084)" dated May 22, 1995 (ADAMS Accession No. ML003708005).

The reliability assurance program has two stages. The first stage, referred to as the D-RAP, occurs before initial fuel load. An applicant for DC is responsible for establishing the scope, purpose, objective, and essential elements of an effective reliability assurance program and implementing those portions of the D-RAP that apply to DC. A COL applicant is responsible for augmenting and completing the remainder of the D-RAP to include any site-specific design information. The second stage comprises the reliability assurance activities conducted during the operations phase of the plant's license. Reliability assurance activities during the operations phase are implemented through regulatory requirements for SSCs, including the maintenance rule program, quality assurance program, inservice inspection, inservice testing, and surveillance testing.

The need for a program to ensure design reliability for evolutionary advanced light-water reactors was first discussed in SECY-89-013.[2] The staff presented an interim position on requiring a reliability assurance program for these reactors in SECY-93-087 [3] and a final position for Commission approval in SECY-94-084.[4] In the SRM to SECY-94-084, the Commission approved having a D-RAP, subject to Commission direction in the SRM and "resolution of the OGC recommendation to implement the D-RAP using the ITAAC process."[5] Shortly thereafter, the Commission issued an SRM to COMIS-94-007, which stated the following:

> In addition, the staff should include an ITAAC for D-RAP in the design certification rulemaking for the ABWR and System 80+ design. The staff should also develop an ITAAC for future applications prior to [final design approval] issuance.

In response to Commission direction, the staff revised its reliability assurance program proposal, which was reflected in SECY-95-132. The Commission approved the staff's reliability assurance program proposal in the SRM to SECY-95-132.[6] Consistent with Commission direction, since 1995, the staff has ensured that the D-RAP is described in DC applications and that ITAAC for D-RAP are included in all DCs and all COLs issued.

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2 See SECY-89-013, "Design Requirements Related to the Evolutionary Advanced Light Water Reactors (ALWRs)," dated January 19, 1989 (ADAMS Accession No. ML003707947).

3 See SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor (ALWR) Designs," dated April 2, 1993 (ADAMS Accession No. ML003708021).

4 See SECY-94-084, "Policy and Technical Issues Associated With the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs," dated March 28, 1994 (ADAMS Accession No. ML003708068).

5 See SRM to SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems," dated June 30, 1994 (ADAMS Accession No. ML003708098).

6 See SRM to SECY-95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs (SECY-94-084)," dated June 28, 1995 (ADAMS Accession No. ML003708019).

While the Commission explicitly approved ITAAC for D-RAP, the Commission subsequently took a different approach regarding ITAAC for operational programs. In SECY-02-0067,[7] the staff requested Commission approval to require COL applications to include ITAAC for operational programs required by regulations, such as training and emergency planning (EP).

In the SRM to SECY-02-0067,[8] the Commission disapproved the staff's proposal, concluding that ITAAC are not necessarily required for operational programs other than EP. The Commission explained that ITAAC should encompass only those matters that, by their nature, cannot be resolved before construction. The Commission further stated that most of the operational areas in which the staff had proposed ITAAC could and should be resolved at the time of COL issuance. Consistent with this framework, the staff was directed to resolve the maximum number of programmatic issues before issuing the COL. In the SRM, the Commission also stated the following:

> Although the NRC inspection process does not replace a particular ITAAC, an ITAAC for a program should not be necessary if the program and its implementation are fully described in the application and found to be acceptable by the NRC at the COL stage. The burden is on the applicant to provide the necessary and sufficient programmatic information for approval of the COL without ITAAC.

SECY-04-0032[9] and SECY-05-0197[10] further addressed the use of ITAAC for operational programs. In the SRM to SECY-04-0032,[11] the Commission defined the term "fully described" to mean that "the program is clearly and sufficiently described in terms of the scope and level of detail to allow a reasonable assurance finding of acceptability." In SECY-05-0197, the staff informed the Commission of its determination that, with the exception of EP, a COL applicant could fully describe the operational programs that were discussed in the paper. Therefore, ITAAC would not be necessary for these operational programs.

In SECY-05-0197, the staff noted that a COL applicant may choose to submit a complete program description for any particular operational program, but omit implementation information and instead include ITAAC. The staff also noted that unique circumstances involving a

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7 See SECY-02-0067, "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for Operational Programs (Programmatic ITAAC)," dated April 15, 2002 (ADAMS Accession No. ML020700641).

8 See SRM to SECY-02-0067, "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for Operational Programs (Programmatic ITAAC)," dated September 11, 2002 (ADAMS Accession No. ML022540755).

9 See SECY-04-0032, "Programmatic Information Needed for Approval of a Combined License without Inspections, Tests, Analyses and Acceptance Criteria," dated February 26, 2004 (ADAMS Accession No. ML040230079).

10 See SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," dated October 28, 2005 (ADAMS Accession No. ML052770257).

11 See SRM to SECY-04-0032, "Programmatic Information Needed for Approval of a Combined License without Inspections, Tests, Analyses and Acceptance Criteria," dated May 14, 2004 (ADAMS Accession No. ML041350440).

particular application may raise an implementation issue for an operational program that is best resolved by an ITAAC. However, the staff expected these circumstances to be rare.

SECY-04-0032, SECY-05-0197, and the associated SRMs were silent on ITAAC for D-RAP. Therefore, subsequent DCs and COLs continued to include D-RAP ITAAC.

DISCUSSION:

The scope of the D-RAP and its implementation are fully described in the application for DC and again (modified as necessary) in each COL application. The staff reviews the D-RAP in accordance with NUREG-0800 "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants."[12] The staff has inspected the D-RAP ITAAC at four units under construction in 2017. In every case, the D-RAP has been carried out in a manner consistent with the program as described in the application.

The NRC could continue to require D-RAP ITAAC, if necessary to provide reasonable assurance that the facility has been designed in a manner that is consistent with the assumptions and risk insights for the risk significant SSCs within scope of the D-RAP. This would be appropriate if the program is not fully described in the design certification application, reviewed by the staff, and accepted before the design is certified.

However, the staff has determined that when the D-RAP is fully described, ITAAC are unnecessary and provide little value. The Commission already concluded as a general matter that ITAAC are not needed for operational programs that are fully described in the application (other than EP). Since ITAAC are not required for operational programs, it is not consistent to require ITAAC for D-RAP, which is also programmatic in nature.

The staff has been interacting with NEI and other external stakeholders over the last several years to discuss standardization of ITAAC. NEI concluded that rather than revision, the D-RAP ITAAC are not needed at all and has expressed this point in public meetings.[13] No other stakeholders have opposed deletion of this ITAAC.

The staff has independently concluded that D-RAP ITAAC are not needed. The staff considered leaving the requirement in place, but such a determination would be inconsistent with the staff's conclusion that ITAAC for this program impose an unnecessary burden on COL holders and the staff without commensurate safety benefit.

The staff also considered eliminating the requirement only for future applications, but this option would forego the opportunity to eliminate a regulatory burden, albeit a small one, associated with closure of D-RAP ITAAC in existing licenses and design certifications.

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[12] See NUREG-0800 "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants", issued March 29, 2007 (ADAMS Accession No. ML070660036).

[13] See, e.g., Standardization of ITAAC for Part 52 Applications – Industry Perspectives Presentation for April 1, 2015 Meeting (ADAMS Accession No. ML15106A543).

RECOMMENDATION:

The staff recommends that the Commission approve discontinuing the use of ITAAC to verify the effectiveness of the D-RAP. Applicants for DCs and COLs would no longer be required to propose ITAAC for the D-RAP provided that the application fully describes the program. Additionally, COL holders and COL applicants would be free to propose a departure from certified designs that require D-RAP ITAAC, and D-RAP ITAAC could be removed from a design certification through an application to amend or renew the certification.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. Discontinuing use of ITAAC to verify the effectiveness of the D-RAP will not affect budgeted resource needs.

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FOR

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RECOMMENDED CHANGE TO VERIFICATION OF THE DESIGN RELIABILITY ASSURANCE PROGRAM – DATE September 20, 2018

ADAMS Accession No: ML18192B471 ***Via E-mail** SECY-012

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