

**POLICY ISSUE  
(Information)**

August 5, 2010

SECY-10-0100

FOR: The Commissioners

FROM: Michael R. Johnson, Director  
Office of New Reactors

SUBJECT: STAFF PROGRESS IN RESOLVING ISSUES ASSOCIATED WITH  
INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA

PURPOSE:

The purpose of this paper is to inform the Commission of progress made by the staff in resolving issues associated with inspections, tests, analyses, and acceptance criteria (ITAAC), including the progress that has been made on developing a process to ensure that the validity of conclusions regarding acceptability of completed ITAAC is maintained.

This paper does not address any new commitments or resource implications.

SUMMARY:

The staff is making good progress on its efforts to develop a proposed rule and guidance to address ITAAC maintenance during the period between a licensee's submittal of an ITAAC completion letter and the Commission's Title 10 of the *Code of Federal Regulations*, Part 52, Section 103(g) (10 CFR 52.103(g)) finding. The staff plans to provide a proposed rule to the Commission in August 2010, and issue the associated draft guidance for public comment shortly after publication of the proposed rule. The staff also completed an evaluation of when changes to structures, systems, and components (SSCs) or emergency preparedness (EP)

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program elements related to closed ITAAC would necessitate license amendments and is developing guidance to provide additional clarity. The staff has been developing an ITAAC Closure Verification Process (ICVP) and associated implementing documents to ensure staff readiness for verification of closed ITAAC. The U.S. Nuclear Regulatory Commission (NRC) staff, the U.S. Department of Energy (DOE), Southern Nuclear Company, and Westinghouse are planning to conduct a demonstration project to exercise the ICVP through a number of simulated ITAAC closure activities. The staff will use insights gained from the exercise to enhance the ICVP, as necessary. The staff is also updating Regulatory Issue Summary (RIS) 2008-05, "Lessons Learned to Improve Inspections, Tests, Analyses, and Acceptance Criteria Submittal," dated February 27, 2008, to include additional lessons learned from recent and ongoing reviews of applications. The Office of New Reactors (NRO) has developed and is providing training to the technical review staff on these lessons learned in this area and is communicating these insights to industry and stakeholders.

#### BACKGROUND:

In SECY-08-0117, "Staff Approach To Verify Closure of Inspections, Tests, Analyses, and Acceptance Criteria and To Implement Title 10 CFR 52.99, 'Inspection during Construction,' and Related Portion of 10 CFR 52.103(g) on the Commission Finding," dated August 7, 2008, (Agencywide Documents Access and Management System (ADAMS) Accession No.(ML081220237), the staff provided an update on plans to inspect and perform the closure verification of licensee-completed ITAAC. The staff also described how it intends to implement 10 CFR 52.99, "Inspection during construction," and the related provision of 10 CFR 52.103(g) regarding the Commission finding on whether all ITAAC acceptance criteria are met. The staff requirements memorandum related to SECY-08-0117, dated January 14, 2009, (ADAMS Accession No. ML090140136), directed the staff to keep the Commission informed of progress in resolving issues associated with ITAAC, including instances where successfully completed ITAAC are no longer satisfied.

In SECY-09-0119, "Staff Progress in Resolving Issues Associated with Inspections, Tests, Analyses, and Acceptance Criteria," dated August 26, 2009, (ADAMS Accession No. ML091980327), the staff discussed progress toward resolving issues concerning ITAAC maintenance<sup>1</sup> and reporting, including the notification thresholds for events that may invalidate a previous determination that an ITAAC has been successfully completed. The staff also provided an update on its approach for making its recommendation to the Commission regarding the finding under 10 CFR 52.103(g) on whether all ITAAC in the combined license (COL) are met.

The staff hosted nine public workshops in the last 12 months to solicit input and exchange views on issues related to ITAAC closure and maintenance associated with previously successfully completed ITAAC. The agency held a Category II public meeting on July 29, 2010, to discuss the ITAAC closure and verification demonstration exercise. Members of the public, the Nuclear Energy Institute (NEI), industry representatives, and other external stakeholders participated in these public workshops.

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<sup>1</sup> ITAAC Maintenance applies after ITAAC has been completed and provides confidence that the ITAAC continue to be met and that no activity has invalidated the basis for determining that the ITAAC are met.

DISCUSSION:ITAAC Maintenance Regulatory Guidance and Rulemaking Progress

In SECY-09-0119, the staff informed the Commission of its progress in resolving issues concerning ITAAC maintenance and reporting, including the notification thresholds for events that may invalidate a previous determination that an ITAAC has been successfully completed. The staff, through public workshops, has made significant progress in developing and refining the notifications for completion of all ITAACs and notification of ITAAC maintenance issues.

The staff has prepared a proposed rule and will soon seek the Commission's approval of its proposal to amend the regulations in 10 CFR 52.99. Specifically, the staff will propose new provisions that apply after a licensee has completed an ITAAC and has submitted an ITAAC closure letter (ICL) to the NRC. The new provisions would require the licensee to (1) report new information that materially alters the basis for determining that a prescribed inspection, test, or analysis was performed as required or finding that a prescribed acceptance criterion is met, (2) document the basis for all ITAAC notifications, and (3) notify the NRC of completion of all ITAAC activities. The staff plans to submit this proposed rule for Commission review in August 2010 and, if approved by the Commission, would issue the proposed rule for public comment following the incorporation of any Commission comments.

The staff is also preparing Revision 1 to Regulatory Guide 1.215, "Guidance for ITAAC Closure under 10 CFR Part 52," issued October 2009, to incorporate guidance associated with ITAAC maintenance. The staff plans to issue the proposed guidance to address ITAAC maintenance and supplemental reporting for public comment concurrent with or shortly following the proposed rule publication.

License Amendments Necessitated by Changes to ITAAC

To address Commission comments from the staff's last briefing on ITAAC maintenance issues on September 22, 2009, the staff has evaluated when changes to SSCs or EP program elements related to closed ITAAC result in the ITAAC not being met such that a license amendment would be necessary. License amendments related to ITAAC performance are not unique to ITAAC maintenance. A license amendment would be necessary, even in the performance of the original ITAAC, if the licensee cannot perform the "prescribed" inspections, tests, or analyses or show that the acceptance criteria have been met.

The regulation at 10 CFR 52.98(f) states, "Any modification to, addition to, or deletion from the terms and conditions of a combined license, including any modification to, addition to, or deletion from the inspections, tests, analyses, or related acceptance criteria contained in the license is a proposed amendment to the license. There must be an opportunity for a hearing on the amendment." For amendment of an ITAAC originating from the referenced certified design, the licensee would also request an exemption from the standard design certification (DC) rule pursuant to 10 CFR 52.99(d)(1).

Enclosure 1 to SECY 09-0119 presented four reporting thresholds to identify whether activities would materially alter the ITAAC determination bases during the ITAAC maintenance period. The staff used these reporting thresholds as a basis for considering whether a license amendment would be necessary during the ITAAC maintenance period.

During a public workshop held on December 17, 2009, the staff presented and discussed with stakeholders events or activities associated with the ITAAC maintenance thresholds that would call for a license amendment. Enclosure 1 to this paper presents the updated and refined ITAAC maintenance thresholds and scenarios when license amendments would be necessary for each threshold.

### ITAAC Closure Verification Process

The staff has been developing an ICVP that it will use to determine whether ITAAC are properly completed based on a licensee's declarations in an ICL. The staff will apply the ICVP to verify that the requirements of 10 CFR 52.99 are correctly implemented. The staff has developed draft office instructions that delineate the ICVP and has initiated efforts to develop an information technology system that will facilitate implementation. The three major segments of the ICVP are (1) the ICL acceptance review, (2) the verification of ITAAC closure, and (3) the reevaluation and opening of a closed ITAAC. Enclosure 2 to this paper includes the current version of the ICVP flowchart.

During the acceptance review, the staff will determine whether an ICL has the correct format and references in accordance with the ICL templates provided in NEI 08-01, "Industry Guideline for the ITAAC Closure Process under 10 CFR Part 52," issued January 2009, and endorsed by the staff in Regulatory Guide 1.215. The templates were discussed in a series of public meetings that included NEI, industry, and other stakeholders.

The staff will verify that ITAAC are met based on a review of the information included in ICLs and the applicable inspection results documented in the Construction Inspection Program Information Management System (CIPIMS). NRO will lead this review, and will involve other offices such as the Office of Nuclear Security and Incident Response (NSIR) and Regional Offices, as needed. The ICVP will function similarly for the closure of ITAAC targeted for NRC inspection and nontargeted ITAAC.

The staff expects that closed ITAAC, which were maintained by licensee programs, will be reopened if the staff makes of an ITAAC finding<sup>2</sup> or if one of the four thresholds developed for ITAAC maintenance reporting requirements is exceeded. Enclosure 1 to this paper presents these thresholds.

The staff also issued Inspection Procedure 40600, "Licensee Program for ITAAC Management," which provides guidance to verify that licensees have established programmatic controls to govern the ITAAC closure process, including the process for preparing and approving closure letters. The guidance also verifies that the licensee has implemented an ITAAC maintenance program to ensure that SSCs continue to meet the acceptance criteria described in the ICLs until the Commission finding described in 10 CFR 52.103(g) is made.

The ICVP has received substantial review by stakeholders within the agency over the past year. Additionally, the NRO technical staff and Region II inspection staff evaluated the effectiveness of the process during a counterpart meeting in March 2010. During the meeting, the staff

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<sup>2</sup> An ITAAC finding is a greater-than-minor inspection finding that occurs after the NRC receives the original ICL and directly affects the closure of an ITAAC.

evaluated six ITAAC closure scenarios and their expected outcomes. The staff confirmed that the ICVP incorporates the key elements to be considered in the process. The staff also plans to further test the ICVP during an ITAAC closure demonstration project with DOE and industry (described below). The ICVP is an essential NRC process that supports the Commission's finding in accordance with 10 CFR 52.103(g).

#### Simulated ITAAC Closure and Verification Demonstration Exercise

The staff is participating in a simulated ITAAC closure demonstration exercise with industry and DOE, the project sponsor. The purpose of the pilot exercise is to verify that both industry closure processes and NRC verification processes are reliable and efficient to support ITAAC closure. During this simulated exercise, Southern Nuclear Company and Westinghouse will prepare ITAAC closure packages and submit simulated 10 CFR 52.99(c)(1) notifications (ICL) to the NRC. The staff will have the opportunity to review these closure packages and completion letter submittals. The pilot exercise is expected to provide insights on the process and the expected level of detail and information contained in the closure packages and completion letters. Initially, the exercise will be limited to five ITAAC of varying complexity selected from the Westinghouse AP1000 design.

The exercise will be conducted under the assumptions that a COL has been issued with ITAAC and the plant is being constructed. Actual ITAAC performance by the licensee and inspections by Region II staff will not occur, but will be informed by elements of the inspection program. ITAAC performance and inspection data will be simulated to test the process.

The staff will facilitate the exercise through ITAAC public workshops, which should provide for an open and interactive series of discussions. Two meetings are currently planned to start the project, discuss observations on the exercise, identify issues with the processes, and provide solutions. Should the staff determine that there is value, DOE may expand the pilot to engage other new reactor vendors and applicants in similar demonstrations based on available resources, schedule implications, and anticipated benefits.

NRC Headquarters and Region II staff will participate by developing an inspection plan, documenting simulated inspection results in CIPIMS, evaluating the significance of inspection findings, exercising various aspects of the construction oversight process, and implementing the ICVP. One key objective for the exercise is to gain insights into communications among NRC Headquarters staff, Region II staff, and licensees if any issues are identified.

The exercise will also include an action to evaluate the surge in ITAAC closure submittals expected during the last year of a new nuclear power plant (NPP) construction project. Results from this evaluation may provide insights into how the NRC can better prepare for the expected impact of the surge on staff resources. At the completion of the exercise, the NRC staff will draft a lessons-learned report to highlight successes in the ICVP and to identify areas in need of continued refinement. The exercise is scheduled for completion by the end of February 2011. Enclosure 3 to this paper provides an abstract for this exercise.

### RIS 2008-05 Update and Staff Training for the “Best Practices” in ITAAC Development

The NRC issued RIS 2008-05 in February 2008, (ADAMS Accession No. ML073190162) to communicate the best practices associated with the quality, clarity, and inspectability of ITAAC submitted as part of the applications for early site permits, standard DCs, or COLs. The NRC expects to issue Revision 1 to RIS 2008-05 in 2010, to expand discussion on the lessons learned and additional issues identified with respect to ITAAC inspectability.

Revision 1 to RIS 2008-05 will include a new “ITAAC scope” section. This section addresses issues identified during the staff’s ongoing reviews of applications. The staff is resolving these issues with applicants through requests for additional information. The issues include considerations for additional ITAAC in design areas if needed, as well as wording which enhances the objectivity and clarity of ITAAC. The staff has also identified cases in which the inspections, tests, or analyses (ITA) and the acceptance criteria (AC) are inconsistent with each other and cases in which the ITA or AC do not align with the associated design commitment. RIS 2008-05, Revision 1 will also address the proper consideration of ITAAC revisions and the need for “extent-of-condition” evaluations for consistency and applicability issues of generic concerns.

The NRC has presented the issues included in Revision 1 to RIS 2008-05 during public workshops attended by industry and stakeholders. Workshop attendees mutually agreed that a need exists for an increased understanding by the NRC, industry, and the public on the meaning of certified ITAAC and on those ITAAC specific to a COL. The revision also reinforces the “best practices” for ITAAC approval and acceptance and the importance of submitting ITAAC suitable for inspection.

To complement the guidance provided in both RIS 2008-05 and its revision, training sessions were conducted for NRO technical reviewers and inspection program staff on April 20, 2010, and July 13, 2010. These training sessions summarized the lessons learned and discussed specific examples. The revision of RIS 2008-05 and the internal staff training sessions are helping to inform all stakeholders and to minimize recurrence of these types of issues.

### Planned ITAAC Work

The staff plans continued interaction with industry and the public to further refine key elements of ITAAC closure and ITAAC maintenance. In addition, the staff has worked with other offices, such as NSIR, and has proactively incorporated specialized areas, such as security and EP into ITAAC maintenance guidance. On July 16, 2010, NEI submitted Revision 4 of NEI 08-01 (ML102010076) requesting NRC review and endorsement. The staff is reviewing this revision of NEI 08-01 and expects to issue a revision to Regulatory Guide 1.215 incorporating elements of ITAAC closure and ITAAC maintenance, as well as endorsing NEI 08-01 with any necessary clarifications.

The staff continues to work on issues involving Design Acceptance Criteria (DAC). The staff established a DAC working group in November 2009 to focus on issues associated with DAC resolution. The working group initiated and is currently participating in a DAC inspection to better develop the closure verification oversight process and details associated with digital instrumentation and controls DAC. Additionally, the working group continues to hold public

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meetings with stakeholders, as well as briefings to the Advisory Committee on Reactor Safeguards.

COORDINATION:

This paper has been coordinated with the Office of General Counsel (OGC). OGC has no legal objection to this paper.

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Enclosures:

1. ITAAC Maintenance Thresholds  
and Associated License Amendments
2. ITAAC Closure Verification Process Flowchart
3. Simulated ITAAC Closure Demonstration Proposal

Inspections, Tests, Analyses, and Acceptance Criteria  
Maintenance Thresholds and Associated License Amendments

Enclosure 1 to SECY 09-0119, "Staff Progress in Resolving Issues Associated with Inspections, Tests, Analyses, and Acceptance Criteria," dated August 26, 2009, presented four thresholds for identifying when activities would materially alter the determination bases for inspections, tests, analyses, and acceptance criteria (ITAAC). Throughout the past year, the U.S. Nuclear Regulatory Commission staff refined the ITAAC maintenance thresholds after interactions with interested stakeholders during the ITAAC public workshop series. These refinements are intended to optimize the effectiveness of the thresholds and to clearly articulate the criteria for reporting. Each item below is an updated version of the thresholds proposed in Enclosure 1 to SECY 09-119. Following each threshold is a discussion on license amendments that would be necessary beyond the envelope of the threshold. These discussions describe scenarios that pertain to the threshold and state when a license amendment would be necessary.

Threshold 1: Postwork Verification

Will the postwork verification (PWV) use a significantly different approach than the original performance of the inspection, test, or analysis (ITA) as described in the original ITAAC notification?

Threshold 1 involves situations in which the occurrence of an event could call into question whether a licensee continues to meet an acceptance criterion (AC). Such situations could involve many types of maintenance activities, including component replacement. After work is complete, a PWV will be used to confirm that the licensee still meets the AC. The PWV is not a performance of the ITA because the licensee has already satisfied the requirement to perform the ITA; instead, the PWV and its results supplement the performance of the ITA to provide confidence that the licensee continues to meet the AC. The nature and the scope of the PWV will depend upon the nature of the initiating event, the maintenance activities undertaken, and the specific ITAAC that is implicated by the event. If the PWV represents an alternate approach that is significantly different from the approach described in the original ITAAC notification, a supplemental notification is necessary to provide the agency and members of the public information that is material to the agency's determination on ITAAC.

Because the PWV is not a performance of the ITA but rather a supplement to the performance of the ITA, the PWV does not have to comport with the ITA set forth in the license. However, the licensee would need to seek an amendment to that ITA in the license if no reasonable "alternate" PWV approach is available to demonstrate that the AC continues to be met. Whether an alternative PWV is reasonable or not depends on several factors, including the engineering justification provided and the wording of both the ITA and the AC. A reasonable alternative to the original ITA represents a different, yet acceptable, engineering equivalent for performing the activity prescribed in the ITAAC. As an example, if a test was the original prescribed ITA, then the PWV should also be a test, or possibly a combination of a test and analysis or a test and an inspection. The PWV methodology should generally follow the methodology used in the original prescribed ITA.

A license amendment would also be necessary if the PWV reveals that the licensee never met the AC because the original ITA, as worded in the license, was flawed.

## Threshold 2: Engineering Changes

Will an engineering change be made that materially alters the determination that the acceptance criteria are met?

License amendments would also be necessary if the engineering change results in the need to identify new AC or if the engineering change results in a design for which the AC as written cannot be demonstrated using the original ITAs.

## Threshold 3: Population of Systems, Structures, and Components

Will there be additional items that need to be verified through the ITAAC?

A license amendment would be needed if there are additional items subject to verification through the existing ITAAC, but the licensee proposes not to perform the ITAs specified in the ITAAC. An amendment would also be required if new or amended ITAAC are needed to cover new items (e.g., the new items are of a different type than those covered in the original ITAAC).

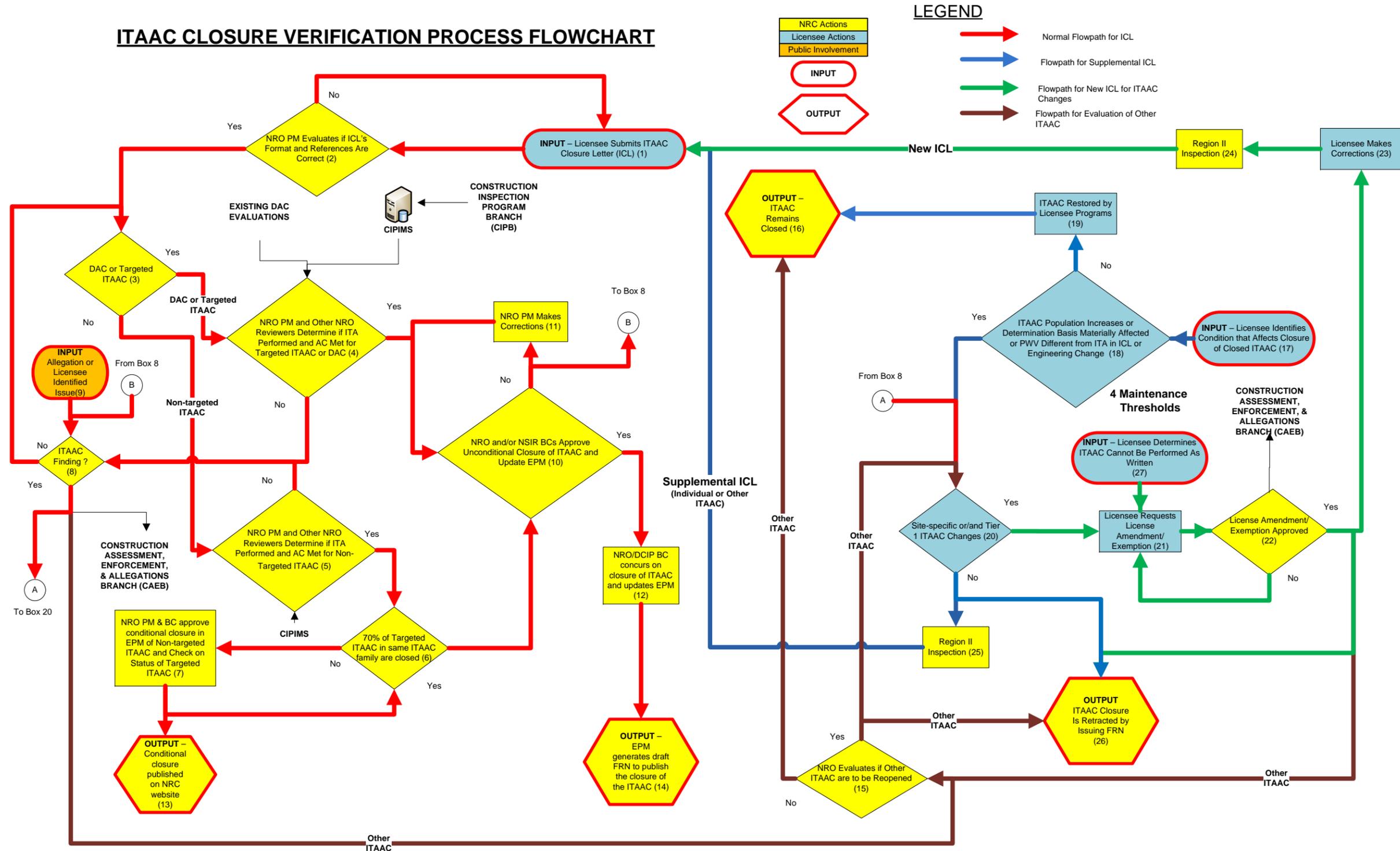
## Threshold 4: Complete and Valid ITAAC Representation

Will any other licensee activities materially alter the ITAAC determination basis?

A license amendment would be needed if an update of the determination basis necessitates a change to any portion of ITAAC in the license for reasons not covered under thresholds 1, 2, and 3.

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## ITAAC CLOSURE VERIFICATION PROCESS FLOWCHART



## DESCRIPTION OF ITAAC CLOSURE VERIFICATION PROCESS

- (1) Licensee may submit to the NRC initial, new, or supplemental ICLs. If (22) is “yes”, the licensee submits a new ICL for a license amendment/exemption for changes to site-specific and/or Tier 1 ITAAC. If (20) is “no”, the licensee submits a supplemental ICL for licensee actions that may affect the closure of a previously closed ITAAC, physical installations, post-maintenance verification of SSCs associated with an ITAAC, and the content of an ICL previously submitted to the NRC. NRO PM determines during an “acceptance review” if the ICL has correct format and references based on the examples of ICLs developed by the NRC and industry.
- (2) If (2) is “no”, either the format or/and the references of an ICL is/are not correct. The NRC informs the licensee by a letter of the rejection of the ICL. Licensee corrects the errors in the ICL and resubmits it for “acceptance” by the NRC. If (2) is “yes”, both the format and the references of an ICL are correct. The DCIP PM should also verify that all ITAAC-related construction findings for an ITAAC or DAC are closed. The NRO PM manually acknowledges acceptance of the ICL in EPM by an electronic signature.
- (3) NRO PM determines if the ITAAC is a DAC or Targeted ITAAC.
- (4) If (3) is “yes”, the ITAAC is either a DAC or targeted ITAAC. NRO PM determines for this DAC or ITAAC if its ITA was performed and its AC was met based on sufficient information in the ICL. This decision is made by referring to inspection records in CIPIMS, licensee's certifications in the ICL, and if necessary, licensee's supporting documentation at plant site. For the DAC or targeted ITAAC, primary and secondary technical reviewers, assigned to this review by their NRO and/or NSIR respective branch chiefs, may provide input to the decision on the closure of the DAC or ITAAC. The inspection records for the DAC will contain evaluations of the portion of the design not reviewed during the design reviews for the design certification application. NRO PM and reviewers approve the DAC or targeted ITAAC as being ready for closure and manually indicate their approval in EPM by their electronic signatures.
- (5) If (3) is “no”, the ITAAC is a non-targeted ITAAC. NRO PM and reviewers determine for the non-targeted ITAAC if its ITA was performed and its AC met based on sufficient information and the licensee certifications in the ICL. This review will be similar to that for targeted ITAAC and DAC, except there may be no inspection records in CIPIMS to further corroborate the closure of a non-targeted ITAAC.
- (6) If (5) is “yes”, NRO PM will determine if 70% of targeted ITAAC in the same ITAAC family, as non-targeted ITAAC, are closed.
- (7) If (6) is “no”, the NRO PM & BC conditionally close the non-targeted ITAAC in EPM. The conditional closure of a non-targeted ITAAC does not go through entire ITAAC review cycle, but the review stops at a designated NRO BC. The conditional closure can be revoked by inspection, allegations, maintenance, or design issues that arise against ITAAC in the same ITAAC family as the non-targeted ITAAC. If non-targeted ITAAC is conditionally closed, NRO PM manually checks periodically on whether the 70% of targeted ITAAC in same ITAAC family have been closed based on information in EPM concerning the targeted ITAAC. If the non-targeted ITAAC is conditionally closed, the NRC will publish its conditional closure on an NRC website selected for that purpose. If the conditional closure of the non-targeted ITAAC is revoked, that will be published on this same website.
- (8) If either (4) or (5) or (10) is/are “no” or if there is an allegation or licensee-identified issue (9) that affects ITAAC closure, NRO PM informs the DCIP assessment branch about the ITA not being performed or/and the AC not being met. DCIP assessment team, Region II, and other NRO and/or NSIR divisions will determine if there should be an ITAAC finding. An ITAAC finding will prevent an ITAAC from being closed and could cause a closed ITAAC and other closed ITAAC in same ITAAC family to be reopened. If an ITAAC finding requires ITAAC changes, a new ICL(s) is/are required at (22), but if changes are only to physical installation or/and documentation supporting closure of an ITAAC in an ICL or at site, then supplemental ICL(s) will be required at (20). If (8) is “no”, then ITAAC re-enters ITAAC review process just prior to (3).
- (9) Allegation or licensee-identified issue against an open or previously closed ITAAC that affects its closure is received and reviewed by DCIP, Region II, applicable NRO and/or NSIR divisions. Allegation may result in an ITAAC finding at (8) which may (a) prevent the closure of an ITAAC, or (b) cause a closed ITAAC and other ITAAC in same ITAAC family to be reopened.
- (10) If (4) or (6) is “yes”, NRO and/or NSIR branch chiefs manually approve the DAC or targeted ITAAC or non-targeted ITAAC for unconditional closure in EPM by their electronic signatures.
- (11) If (10) is “no”, NRO and/or NSIR BCs have made comments which have to be corrected before the ITAAC can be approved for closure. A NRO PM will make the changes, and they will be reviewed by a designated NRO BC for concurrence. If NRO and/or NSIR BCs have comments that call for some action by the licensee, the NRO PM will initiate contact with the licensee based on direction by NRO/BC.
- (12) If (10) is “yes,” DCIP/BC concurs with closure of the ITAAC and issuance of the FRN. DCIP/BC's concurrence is manually input into EPM
- (13) NRO PM publishes conditional closure of the non-targeted ITAAC on an NRC website.
- (14) EPM generates a draft FRN when DCIP/BC concurs on closure of the ITAAC. The draft FRN is sent to appropriate NRC group for issuance. The draft FRN may announce the closure of one or several ITAAC.
- (15) When an ITAAC cannot be closed “yes” output at (8) or must be reopened “yes” output at ( 22), NRO evaluates if the closures of other ITAAC in the same ITAAC family are affected. A supplemental ICL must go through the process for ITAAC closure before the impact on other closed ITAAC in same ITAAC family can be determined. If (15) is no, then the other ITAAC being evaluated remain closed (16).
- (16) ITAAC remains closed if licensee through its programs restores ITAAC to compliant condition (19). In addition, if (15) is “no”, then ITAAC remain(s) closed (16).
- (17) Licensee actions precipitate a condition that affects the closure of a previously closed ITAAC.
- (18) Licensee determines one or more of the four maintenance thresholds for an ITAAC has been exceeded due to one or more of the following: (a) population of SSCs identified in ITAAC has increased or (b) the determination basis of the ICL for ITAAC is materially affected due to licensee activities, or c) post-work verification, different from the original ITA for ITAAC, is performed which requires an engineering justification, or (d) an engineering change for SSCs associated with the ITAAC materially affects the determination that the acceptance criteria of the ITAAC was met..
- (19) If (18) is “no”, then licensee programs, like PI&R, configuration management, etc, restore ITAAC to compliant condition, and ITAAC remains closed (16).
- (20) If (8), (15), or/and (18) is “yes”, then the licensee evaluates if changes are required to Tier 1 or site-specific ITAAC due to (a) exceeding a maintenance threshold (18) , (b) ITAAC finding (8), and/or (c) for other ITAAC being reopened (15).
- (21) If (20) is a “yes”, then the licensee requests a license amendment and exemption to seek changes to a Tier1 ITAAC or submits just a license amendment to seek changes to a site-specific ITAAC.
- (22) License amendment approved or disapproved by the NRC. If approved, the closure of ITAAC is affected because of Tier 1 or/and site-specific ITAAC changes, and the licensee submits new ICL(s). If not approved, then the licensee will make changes to license amendment and resubmit to the NRC. Other closed ITAAC in same ITAAC family as ITAAC being reopened are evaluated to determine if their closure is also affected (15). The determination will have to be made for those other ITAAC if they are to be reopened also.. The NRO PM shall status the individual and other ITAAC, which is/are contained in license amendment, as being “reopened” in EPM when license amendment is approved. For those ITAAC that need to be reopened, EPM will be updated to reflect the status of those ITAAC as being “reopened.”
- (23) Licensee receives a letter from NRC about the license amendment being approved. Licensee makes the necessary corrections which consist of any or all of the following for all the ITAAC affected: (a) modifications to affected physical installations, (b) change(s) to ITAAC and/or Tier 1 of Design Control Document of specific certified design, (c) revision to supporting calculations and analyses for an ITAAC, (d) performance of a new ITA, (e) validation that new AC of affected ITAAC is/are now met, and/or (f) changes to content of ICL(s). The other ITAAC in same ITAAC family go through this same process when a licensee amendment for singular ITAAC is approved.
- (24) Region II performs additional inspections, as required, after informal notice from licensee to verify the licensee corrections identified in Item (22) above. After Region II performs inspections, if necessary, then the licensee makes any additional changes and submits new ICL(s) to the NRC because of the ITAAC changes identified for the individual and other ITAAC.
- (25) If (20) is “no”, then Region II performs additional inspections, as required, after informal notice from licensee to verify the licensee corrections made because one or more of the four maintenance thresholds was crossed.. After Region II performs inspections, if necessary, then the licensee makes any additional changes and submits a supplemental ICL to the NRC. The supplemental ICL should indicate whether the closure of the ITAAC is affected or not. If closure is affected, the NRC will issue an FRN (26) to revoke its closure. The determination of whether closure of ITAAC is affected may be made by the NRC after review of supplemental ICL or before supplemental ICL is submitted by the licensee. If the determination is made after review of supplemental ICL, then a revised supplemental ICL will have to be submitted by the licensee that reflects that closure of ITAAC is affected.
- (26) If (15) or (22) is “yes”, then an FRN is published to revoke the closure of the ITAAC previously closed.
- (27) Licensee determines that a given ITAAC as written cannot be performed because ITA cannot be implemented or AC met.



**U.S. Nuclear Regulatory Commission  
U.S. Department of Energy  
Southern Nuclear Company  
Westinghouse**

**Simulated Inspections, Tests, Analyses, and  
Acceptance Criteria Closure and Verification  
Demonstration Proposal**

July 29, 2010

## **Background:**

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants,” requires combined license (COL) applicants to submit and perform inspections, tests, analyses, and acceptance criteria (ITAAC) in order to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the COL. The licensee notifies the U.S. Nuclear Regulatory Commission (NRC) that it has completed the ITAAC by submitting an ITAAC closure letter (ICL) stating that the prescribed inspections, tests, and analyses have been performed and that the prescribed acceptance criteria have been met. In turn, the NRC staff will review all ICLs to verify that the prescribed ITAAC are met, and will then issue a *Federal Register* notice (FRN) of the staff’s determination of the successful completion of the ITAAC. When the staff has verified that all ITAAC have been closed, the Commission will decide whether to make a finding that the licensee has met the acceptance criteria in the COL. If the Commission finds that all the acceptance criteria are met, then the licensee may operate the facility under 10 CFR 52.103(g).

Currently, the staff is gaining experience by inspecting the ITAAC contained in the Vogtle limited work authorization and by conducting a pilot inspection of design acceptance criteria related to the South Texas Project. Additionally, the staff has several initiatives in progress to ensure that the ITAAC closure and verification processes are effective and efficient. These initiatives include: (1) holding NRC internal workshops to develop the inspection strategy and exercise the ITAAC closure verification process, (2) working with applicants on the development and refinement of the ITAAC schedule, (3) preparing proposed rule language for ITAAC maintenance, (4) holding bimonthly Category 3 public workshops with stakeholders to evaluate and resolve issues associated with ITAAC closure, and (5) revising Regulatory Issue Summary 2008-05, “Lessons Learned To Improve Inspections, Tests, Analyses, and Acceptance Criteria Submittal,” dated February 27, 2008, on ITAAC quality and inspectability and conducting related internal training.

In addition to the ongoing activities, the U.S. Department of Energy (DOE) proposes to sponsor an exercise with the NRC and industry to demonstrate the review and closure of ITAAC. This exercise can be quite valuable because previous commercial reactors that were constructed and licensed under 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” did not use ITAAC. Furthermore, industry and the NRC staff have long known that a substantial percentage of ITAAC will be completed in the year leading to the scheduled date for fuel loading. Accordingly, through discussions with DOE on its proposal, the staff suggested a study on the expected surge in ITAAC submittals during the last stages of construction to evaluate possible strategies to effectively and efficiently complete the reviews at the end of the construction process. The staff and DOE have agreed to cooperatively pursue this demonstration project. DOE will focus its efforts on the selection and the possible financial reimbursement of participating licensees and vendors. The NRC staff will facilitate the ITAAC closure process, including the coordination of efforts with the participating licensees and vendors.

## **Objective and Approach:**

The objective of this demonstration project is to verify that both the industry closure processes and the NRC verification processes are reliable and efficient to support ITAAC closure. Specifically, the industry will simulate the development of several ITAAC closure documents and the submission of the associated ITAAC closure notifications under 10 CFR 52.99(c)(1). During this process, NRC Region II staff will simulate inspection planning and the documentation of inspection results in the Construction Inspection Program Information Management System (CIPIMS). NRC Headquarters staff in the Office of New Reactors (NRO) will simulate the review of ICLs submitted by the applicant and inspection results documented in CIPIMS. NRO will also simulate the NRC's internal ITAAC closure verification process.

Participants in this exercise will initially include the NRC, DOE as a project sponsor, and Westinghouse and Southern Nuclear Company (SNC) as the participating applicants. Based on available resources, schedule implications, and expected benefits, the NRC staff may engage other new reactor vendors and applicants in similar demonstrations.

Lastly, the exercise will involve evaluation of the surge in ITAAC closure submittals expected during the last year of construction of a new nuclear power plant.

For purposes of this demonstration project, participants will assume that ITAAC exist and that the plant is under construction. Actual NRC Region II inspections will not take place; instead, inspection data will be simulated to test the process.

## **Demonstration Plan:**

The ITAAC closure demonstration project will include the following five ITAAC from the AP1000, Revision 17 design:

- (1) ITAAC 2.1.02.07a.i – The Reactor Coolant System (RCS) Harsh Environment Type Test
- (2) ITAAC 2.2.01.04a.ii – Containment System Impact Testing
- (3) ITAAC 2.2.02.01 – Passive Containment Cooling Functional Arrangement
- (4) ITAAC 2.2.03.08c.i – Injection Line Flow Resistance Testing and Analysis
- (5) ITAAC 2.6.03.08 – DC System Fault Current Analysis

Westinghouse and SNC will participate in the initial demonstration. Other design centers and license applicants may participate in future demonstrations. The exercise will be facilitated using the existing NRC ITAAC workshop infrastructure, which is open to public participation and provides for a series of open and interactive discussions as the exercise progresses. The project is divided into the following four stages:

(1) ITAAC Performance

The applicant will simulate the performance of the selected ITAAC and develop the documentation required to support ITAAC closure. As part of the ITAAC closure package, the applicant will prepare the ICL to provide information sufficient to demonstrate that the inspections, tests, and analyses have been performed and that the acceptance criteria are met based on the templates provided in NEI 08-01, "Industry Guideline for the ITAAC Closure under 10 CFR Part 52," issued January 2009.

Concurrently, NRC Region II staff will prepare an inspection plan for the selected ITAAC, document the selected ITAAC information and the simulated inspection results in CIPIMS, and generate information reports pertaining to ITAAC inspections. Stage 1 of the exercise concludes when the ITAAC performance demonstration is completed and when the ITAAC closure package is prepared and made available to the NRC.

(2) ITAAC Closure

Once the ITAAC closure package is made available to the NRC and the agency receives the ICL, the staff will exercise the NRC's ITAAC closure verification process. The NRO staff will process the ICL as outlined in the draft ITAAC closure verification process office instruction and its appendices. This review may include the use of NRO technical staff to evaluate complex technical information. Stage 2 of the exercise concludes when the staff verifies proper ITAAC closure and simulates the publishing of an FRN.

(3) Exercise Workshop

The NRC will hold a public workshop to summarize and discuss the exercise and to present the ICLs. Participants will discuss their observations of the exercise, identify issues with the process, and propose solutions. Westinghouse will also present the analysis results of the makeup and volumes of the system-specific ITAAC in the expected surge of ITAAC closure submittals during the last year of construction. The issues associated with the expected surge in ITAAC should be discussed in detail to identify strategies to minimize any schedule impact. Stage 3 of the exercise concludes when the participants complete and achieve the goals of the workshop.

(4) Lessons Learned

The NRC will draft a lessons-learned report that highlights successes in the ITAAC closure and verification processes and that details areas that could be further refined. The report will include input gathered from participants and the public throughout the exercise and during the public workshops. The staff will continue to coordinate with the applicant on the refinement of the ITAAC closure schedule, based on insights that it

obtains from the analysis of the ITAAC closure surge, to mitigate any potential delays in ITAAC inspections and closures and to minimize the impact on NRC resources.

**Milestones Summary:**

<b>Milestones</b>	<b>Date</b>
Project Development Meeting	Completed
Abstract Development	Completed
NRO Management Endorsement	Completed
DOE/Westinghouse/SNC Endorsement	Completed
Public Meeting/Project Initiation	Completed
Stage 1 Complete (ITAAC Performance)	September 30, 2010
Stage 2 Complete (ITAAC Closure)	November 19, 2010
Stage 3 Complete (Exercise Workshop)	December 16, 2010
Stage 4 Complete (Lessons Learned)	February 28, 2011

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**Exercise Guidance:**

- 10 CFR Part 52
- NRC Inspection Manual Chapter 2503, “Construction Inspection Program: Inspections of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC),” dated October 3, 2007
- ITAAC Inspection Procedures 65000 series
- Regulatory Guide 1.215, “Guidance for ITAAC Closure under 10 CFR Part 52”
- NEI 08-01
- NRC ITAAC Closure Verification Process Office Instructions (Draft)

# Simulated ITAAC Closure and Verification Demonstration Flowchart

