

POLICY ISSUE INFORMATION

August 7, 2008

SECY-08-0117

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: 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

PURPOSE:

This information paper provides an update on how the U.S. Nuclear Regulatory Commission (NRC) staff plans to inspect and perform closure verification of inspections, tests, analyses, and acceptance criteria (ITAAC). This paper also describes how the staff plans to implement the main portions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.99, "Inspection during construction," and the related portion of 10 CFR 52.103(g) on the Commission finding. Additionally, this paper discusses several other key ITAAC closure issues. This paper does not address any new commitments or resource implications.

BACKGROUND:

In June 2007, the staff formed an ITAAC closure working group to address ITAAC closure-related issues using a multidisciplinary approach. The Division of Construction Inspection and Operational Programs (DCIP) leads the working group which includes representatives from

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other divisions in the Office of New Reactors (NRO), the Office of Nuclear Security and Incident Response (NSIR), the Office of the General Council (OGC), and NRC Region II. As directed by the staff requirements memorandum for SECY-07-0047, "Staff Approach to Verifying the Closure of Inspections, Tests, Analyses, and Acceptance Criteria Through a Sample-based Inspection program", dated May 16, 2007, the staff has continued to obtain industry and stakeholder input for the new reactor inspection program through the conduct of nine public meetings. On July 11, 2007, the staff briefed the Advisory Committee on Reactor Safeguards (ACRS) on the sampling methodology and statistical thresholds for selecting the ITAAC that will be inspected. In a letter to the Chairman dated July 24, 2007, the ACRS concurred with the staff's approach to the ITAAC closure verification process. This approach for selecting the sample of ITAAC will be used for inspection of construction under combined licenses.

DISCUSSION:

In accordance with 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," applicants submit ITAAC that are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will operate as designed. After issuance of a combined license, a licensee completes the ITAAC contained in the combined license during construction and then submits closure notification letters to the NRC pursuant to 10 CFR 52.99. In parallel, the NRC staff performs sampling inspections and also performs closure verification for all ITAAC. The staff has made progress on key issues related to ITAAC closure as follows:

- (1) Issuance of lessons learned on ITAAC quality and content
- (2) Development of a construction operating experience program
- (3) Development of guidance on how to inspect site-specific ITAAC
- (4) Development of guidance on how to implement 10 CFR 52.99; 10 CFR 52.103(g); and the NRC closure verification process
- (5) Evaluation, planning, and budgeting for the various information technology needs.

Collectively, accomplishments in these five areas demonstrate progress on key issues related to ITAAC closure and the Commission finding pursuant to 10 CFR 52.103(g).

The staff reviewed ITAAC contained in design control documents for the AP1000 and the Advanced Boiling Water Reactor (ABWR) designs and identified lessons learned related to the quality, structure and inspectability of ITAAC. The staff communicated these lessons learned to external stakeholders in Regulatory Issue Summary 2008-05, "Lessons Learned to Improve Inspections, Tests, Analyses, and Acceptance Criteria Submittal," dated February 27, 2008. Additionally, in close coordination with the Office of Nuclear Reactor Regulation, the staff is building a construction experience program for new reactors. The construction experience and generic communication programs are essential to ensure that generic issues that arise domestically and internationally are screened for applicability to new reactors. For example, the staff has initiated a generic communication for three recent construction events, at Okiluoto 3, the Mixed Oxide Fuel Fabrication Facility, and Flamanville-3, involving concrete and reinforcing steel issues. Also, the staff issued Information Notice 2008-04, "Counterfeit Parts Supplied to Nuclear Power Plants," dated April 7, 2008.

Each combined license application (COLA) contains site-specific ITAAC that consist of systems that are outside the scope of the standard design. One example of a site-specific ITAAC is the

ultimate heat sink which may vary based on the source of cooling water for the plant. The staff will review and inspect the site-specific ITAAC using a method similar to the prioritization methodology described in SECY-07-0047. The staff will form expert panels that will select the site-specific ITAAC samples based on safety significance and the ability to inspect. The COLAs also contain ITAAC for emergency preparedness (EP) and physical security. Staff has determined that all physical security and EP ITAAC will be inspected. The staff based this decision on the relatively small number of physical security and EP ITAAC, the qualitative nature of the Security and EP ITAAC, and their high relative importance. In addition to the ITAAC inspections, the staff is planning comprehensive inspections of the operational programs for security and EP. This will include force-on-force security inspections and NRC observations of EP exercises.

Following the 2007 revision to 10 CFR Part 52, the staff developed guidance to implement the revision to 10 CFR 52.99 that requires licensees to notify the NRC of the successful completion of ITAAC. Specifically, 10 CFR 52.99(c) requires that the licensee notifications contain sufficient information to demonstrate that the inspections, tests and analyses are performed and the acceptance criteria are met. The staff and industry have focused efforts on defining the "sufficient information" necessary to describe how the ITAAC have been performed and the basis for determining that the required acceptance criteria have been met. During a comprehensive series of public workshops that featured templates for sample notifications and specific examples, the agency and stakeholders achieved a consensus on the format and level of detail for 10 CFR 52.99 notifications. Enclosure 1 contains an example of a completed ITAAC notification under 10 CFR 52.99(c)(1). Enclosure 2 contains an example of an uncompleted ITAAC notification under 10 CFR 52.99(c)(2). The uncompleted ITAAC notification requires additional information to support a predictive finding that the ITAAC will be completed and that the acceptance criteria will be met. Also, in accordance with 10 CFR 52.99(c)(1), notifications made of uncompleted ITAAC will subsequently require a second notification once the licensee has completed the work and met the prescribed acceptance criteria. On April 2, 2008, the industry submitted Nuclear Energy Institute (NEI) 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52," for staff review. Once staff comments are resolved, the staff plans to issue a regulatory guide that will endorse this industry guidance document. A draft regulatory guide is planned by the end of 2008.

The staff has begun to develop the internal NRC infrastructure necessary to perform "closure verification" of licensee 10 CFR 52.99 notifications. Section 10 CFR 52.99 requires, among other things, that licensees notify the NRC that the prescribed inspections, tests and analyses have been performed and the associated acceptance criteria are met. The closure verification process includes the receipt and review of the licensee closure letter, verification of NRC inspection results, review of any information that could bear on ITAAC from other sources, and issuance of a *Federal Register* Notice (FRN) of the staff's determination of the successful completion of ITAAC. This process will be led by the DCIP and closely coordinated with NRC Region II, OGC, other NRO divisions, and NSIR. The staff has reviewed ITAAC and grouped similar ITAAC into families to form an ITAAC inspection matrix. As part of the ITAAC closure strategy, the staff plans to ensure that a sufficient number of ITAAC targeted for direct inspection have been inspected prior to closing other ITAAC in the same family that were not directly inspected. This strategy should minimize the likelihood that a closed non-targeted ITAAC will require a revision or retraction of the 10 CFR 52.99 notification and FRN because of an inspection finding related to the targeted ITAAC in that family.

There may be instances where a structure, system, or component (SSC) associated with a completed ITAAC will require maintenance or modification. Through its adoption of NEI 08-01, the industry plans to make a commitment to use enhanced maintenance, quality assurance, and corrective action programs to confirm that the acceptance criteria continue to be met for completed ITAAC. The staff expects the licensees, through the use of these enhanced programs, to evaluate the impact of maintenance and modification activities on previously closed ITAAC. Retractions of the associated FRN will only be required for instances where SSC modification or maintenance resulted in the SSC not meeting the acceptance criteria for a completed ITAAC.

The staff has also developed guidance for the portion of 10 CFR 52.103(g) related to the Commission finding that the combined license (COL) acceptance criteria are met. Enclosure 3 contains a flowchart that describes how ITAAC closure information is utilized in the 10 CFR 52.103(g) finding process. Development of this process was closely coordinated with external stakeholders. An important aspect of the 10 CFR 52.103(g) process is to confirm that the acceptance criteria continue to be met for completed ITAAC that were completed well before the Commission makes the 10 CFR 52.103(g) finding. Based on the ITAAC closure notification and supporting information from the licensee, the completion of all ITAAC closure activities by the NRC staff, the completion of any required hearing by the Commission, and a review of any other pertinent information, the Commission will be in a position to make a finding that all ITAAC acceptance criteria are met.

The staff has also formed a new information technology (IT) working group to assess all construction inspection program development needs. The goal is to develop IT processes and supporting budget requirements that not only facilitate the NRC ITAAC closure strategy, but also support the NRC Region II capability to develop an integrated NRC inspection schedule, based upon all of the individual licensees' site-specific construction schedules. Integrated scheduling is important because it allows resource loading and helps to project future resource and skill needs.

NRC Region II personnel have started the development of detailed inspection strategies for the targeted ITAAC associated with AP1000 and ABWR designs. Staff will assess the inspection resource estimates that result from the detailed planning process against the NRO resource estimates that have been generically developed based upon analysis of inspection needs for the certified design ITAAC. The staff is also estimating the resources needed for engineering support required for the closure of ITAAC with a predominant design/engineering focus. The staff will develop any necessary additional initiatives to assure that the Construction Inspection Program supports an ITAAC inspection, acceptance, and completion process under 10 CFR 52.99. This will support the Commission making a finding as specified in 10 CFR 52.103(g), that a licensee has met all the acceptance criteria of its COL.

COORDINATION:

The Office of the General Counsel has reviewed this package and has no legal objection. The NRC Region II and the Office of Nuclear Security and Incident Response have also reviewed this package and concur.

/RA/

R. W. Borchardt
Executive Director
For Operations

Enclosures:

1. Sample Completed ITAAC Notification
Under 10 CFR 52.99(c) (1)
2. Sample Uncompleted ITAAC Notification
Under 10 CFR 52.99(c) (2)
3. Flowchart and Description of Implementation
of Under 10 CFR 52.99 and 10 CFR 52.103(g)

Sample ITAAC Closure Letter

XX/YY/ZZZZ (Date)

To: NRC

From: {Name of Licensee}
{Site Name and Unit #(s)}
{Docket #(s)}

Subject: Completion of ABWR ITAAC 2.15.12 Item 5

The purpose of this letter is to notify the NRC of the completion of {Site Name and Unit #(s)} Inspection, Test, Analysis, and Acceptance Criteria (ITAAC) 2.15.12 Item 5 for the Control Building (C/B) Main Control Room system, in accordance with 10 CFR 52.99(c)(1). The closure process for this ITAAC is based on the guidance described in NEI-08-01 (Reference 1).

ITAAC Statement

Design Commitment

The main control area envelope is separated from the rest of the C/B by walls, floors, doors and penetrations which have a three-hour fire rating.

Inspection/Test/Analysis

Inspections of the as-built structure will be conducted.

Acceptance Criteria

The as-built C/B has a main control area envelope separated from the rest of the C/B by walls, floors, doors and penetrations which have a three-hour fire rating.

ITAAC Determination Basis

The EPC constructor installed the C/B Main Control Room Envelope walls, floors, doors, and penetrations with approved designs and equipment that ensure the C/B Main Control Room Envelope (MCRE) boundaries have the required three - hour fire rating. Doors have been procured with UL/FM three-hour fire ratings and satisfy the requirements of NFPA 80 (Reference 4). During the installation, the EPC constructor performed inspections and surveys for rebar installation, concrete conformance to requirements, wall thickness, wall locations, penetration seal configurations and UL/FM listings for doors and satisfactory installation of doors and penetrations.

Sample ITAAC Closure Letter

The Licensee performed a final visual inspection in accordance with the C/B CRE As-built Walk-down/Inspection Procedure (Reference 3) of the completed installation of the C/B Main Control Envelope to verify it is separated from the rest of the C/B by walls, floors, doors and penetrations having a three-hour fire rating. The procedure includes inspection checklists to confirm, for example, that installed fire doors have three-hour fire ratings and that the doors open and close unimpeded. These inspections and reviews confirmed that the as-built configuration meets ITAAC 2.15.12 Item 5 Acceptance Criteria.

ITAAC Related Construction Finding Review

In accordance with plant procedures for ITAAC close-out, {Licensee} performed a review of ITAAC-related construction findings and associated corrective actions. This review determined that three such findings, listed below, have been identified.

1. {ITAAC-related construction finding #1}
2. {ITAAC-related construction finding #2}
3. {ITAAC-related construction finding #3}

The corrective actions for each finding have been completed and each finding closed. This review is documented in the close-out package for ITAAC 2.15.12 Item 5 (Reference 2), which is available for NRC review.

ITAAC Closure Statement

Based on the above information, {Licensee} hereby notifies the NRC that ITAAC 2.15.12 Item 5 was performed for {Site Name and Unit #(s)}, and that the prescribed acceptance criteria were met.

We request NRC staff confirmation of this determination and publication of the required notice in the Federal Register per 10 CFR 52.99.

If there are any questions, please contact {Name of Contact Person for licensee} at {Telephone Number for Contact Person}.

Sincerely,

{Signature of Licensee Representative}
{Typed Name of Licensee Representative}
{Title of Licensee Representative}

Sample ITAAC Closure Letter

References (available for NRC review)

1. NEI-08-01, Industry Guideline for ITAAC Closure Process Under 10 CFR Part 52
2. ITAAC 2.15.12 Item 5 Closeout Package
3. C/B CRE As-built Walk-down/inspection Procedure, C/B-CRE-WD-XXXX
4. NFPA 80, Fire Doors and Fire Windows

**225 Day Notification
ITAAC-ABWR 2.14.4a Item 4a**

XX/YY/ZZZZ (Date)

{Name of Licensee}
{Site Name and Unit #(s)}
{Docket #(s)}

Subject: Notification of Uncompleted ABWR ITAAC 2.14.4a Item 4a

ITAAC Statement

Design Commitment

The SGTS (Standby Gas Treatment System) maintains a negative pressure of 6.35 mm water gauge or greater in the secondary containment relative to the outdoor atmosphere within 20 minutes when the secondary containment is isolated.

Inspection/Test/Analysis

Tests will be conducted on each as-built SGTS division.

Acceptance Criteria

The SGTS maintains a negative pressure of 6.35 mm water gauge or greater in the secondary containment relative to the outdoor atmosphere within 20 minutes when the secondary containment is isolated.

Actions Achieved Toward ITAAC Closure

Progress as of (Month, Day, Year) toward completing this ITAAC is approximately 25 percent with the SGTS Negative Pressure Test Procedure XXX.XXX.XXX (Reference 1) and Negative Pressure Test Package (Reference 2) generated, but the test, associated inspection activities, and test analysis results remain to be completed. Completion of the test will be per the construction schedule. Test personnel have significant experience with Negative Pressure System test procedures, test packages, testing, inspections, and test result analysis. Completion of a successful test will confirm that SGTS maintains a negative pressure of 6.35 mm water gauge or greater in the secondary containment relative to the outdoor atmosphere within 20 minutes when the secondary containment is isolated.

The as-built divisions of the SGTS System identified within the secondary containment negative pressure test boundaries are established by the constructor based on plant design drawings and specifications. These design documents provide design and operating temperatures and pressures which allow assembly of the SGTS Negative Pressure Test Package per Procedure

225 Day Notification
ITAAC-ABWR 2.14.4a Item 4a

XXX.XXX.XXX, Negative Pressure Testing. Negative Pressure Testing personnel are trained in accordance with the Negative Pressure Testing Procedure, and test results are analyzed, documented, and retained. The Negative Pressure Test Package (Reference 2) consists of the following:

1. Negative Pressure Test Package Index Sheet
2. Negative Pressure Test Report
3. Drawing showing the SGTS system test boundary
4. Equipment List

The Negative Pressure Test Package documentation was prepared by the Negative Pressure Test Engineer, test rig and equipment set up was by the Negative Pressure Test Crew, inspection for leaks was by the Quality Inspector, and verification of test results documentation was by Quality Assurance.

Actions Remaining to Attain ITAAC Closure

Prior to final acceptance of the negative pressure test results of the SGTS System, a package documentation review will ensure compliance to 6.35 mm water gauge or greater in the secondary containment relative to the outdoor atmosphere within 20 minutes when the secondary containment is isolated. Any deviations identified will be resolved prior to system turnover to Start Up. The Negative Pressure Test Package documentation review by Quality Assurance will be per Quality Procedure XXX (Reference 3).

ITAAC Closure Schedule

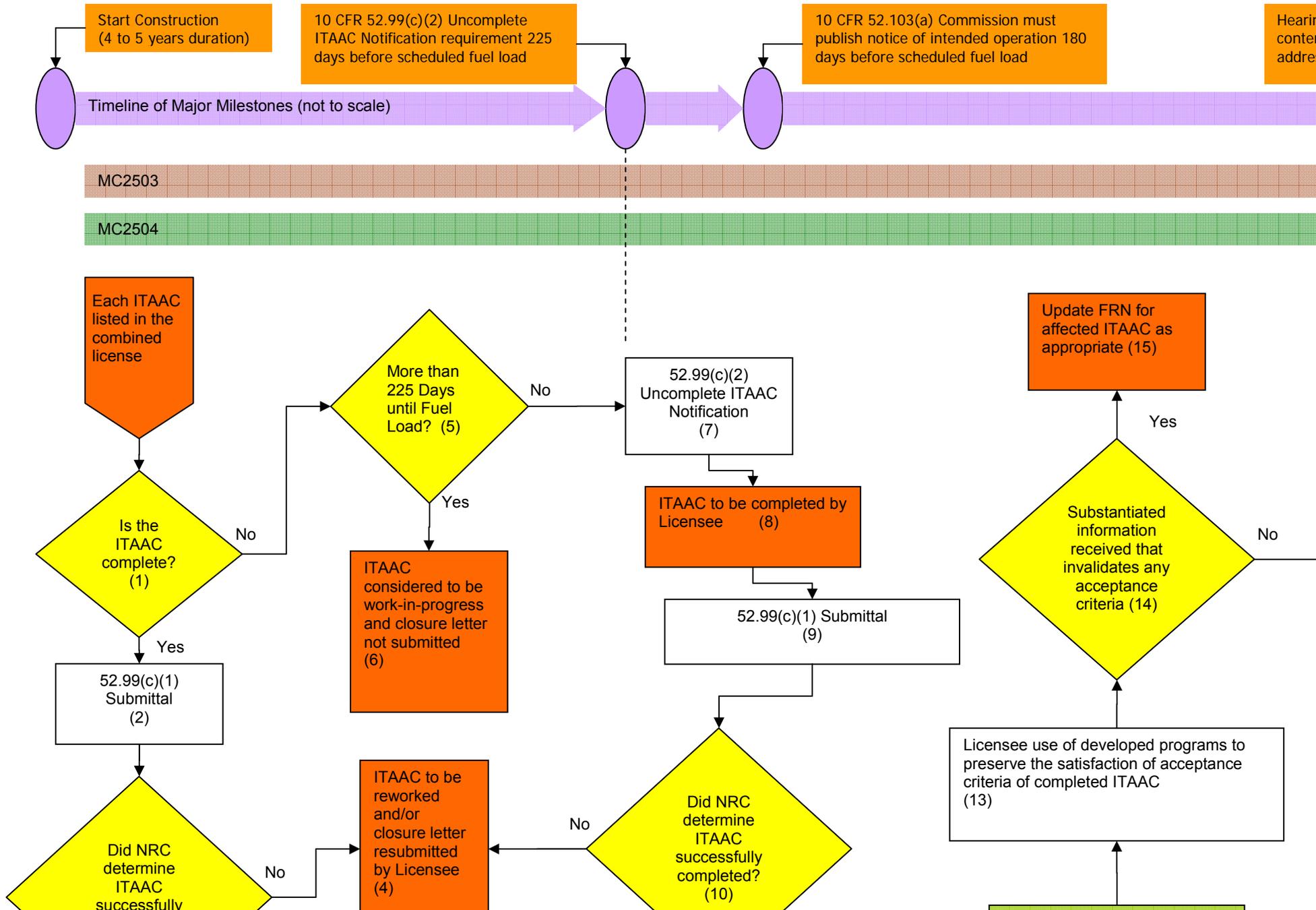
ITAAC 2.14.4 Item 4a is being tracked in the ITAAC database. ITAAC 2.14.4 Item 4a Closeout Package (Reference 4) is scheduled to be issued by [month, day, year]. The Closure Letter for ITAAC 2.14.4 Item 4a will follow our review and acceptance of these documents.

Construction and Operations Negative Pressure Test programs are based upon procedures written and approved by Licensee (or their designee). Personnel performing the Negative Pressure Test are trained per the approved procedures. Such programs with appropriate third party inspections and documentation have been in use for industry outages for many years. These successful industry programs coupled with satisfactory negative pressure test results through (Month, Day, Year) showing completion of the major portions of this ITAAC at our facility provides confidence that [Licensee] will successfully complete this ITAAC.

References (available for NRC review)

- 1 Procedure XXX.XXX.XXX, Negative Pressure Testing
- 2 SGTS Negative Pressure Test Package (Initial Draft)
- 3 Quality Assurance Procedure XXX
- 4 ABWR ITAAC 2.14.4a Item 4a Closeout Package (Initial Draft)

The 52.99 and 52.103(g) Process Flowchart and Tim



Process block descriptions:

- (1) This is the first decision block for any given ITAAC, and the Licensee needs to assess each ITAAC from the during construction regardless of its completed or uncomplete status for processing through this flowchart.
- (2) If (1) is 'yes', then the Licensee must submit a closure letter pursuant to 10 CFR 52.99(c)(1).
- (3) The NRC will perform ITAAC closure verification activities, including direct inspection, engineering review ITAAC family. Licensee performance within an ITAAC family is taken into consideration for determination on su that the staff has determined that the ITAAC was successfully completed and is 'closed'. 'No' indicates that the IT
- (4) If (3) is 'no', the NRC has determined that either the 52.99(c)(1) closure letter information is insufficient, or t ITAAC. The Licensee will either need to resubmit a closure letter that contains sufficient information demonstrati to rework the ITAAC and redo the inspections, tests, and analyses. In either case, the Licensee will need to resubr
- (5) If (1) is 'no', the Licensee needs to identify if the time to scheduled fuel load is greater than 225 days. At the 52.99(c)(2) uncomplete ITAAC notifications for those ITAAC not yet completed and the 52.99(c)(1) closure letter
- (6) If (5) is 'yes', there is no 52.99(c)(2) uncomplete notification required for this ITAAC, and the ITAAC under
- (7) If (5) is 'no', the Licensee needs to submit to the NRC a 52.99(c)(2) uncomplete ITAAC notification. This n demonstrate that the ITAAC will be performed.
- (8) Entry here indicates that an individual ITAAC remains in the uncomplete population. Once the Licensee con block (9) is entered.
- (9) Upon successfully meeting the acceptance criteria for a given ITAAC, the Licensee can submit the 52.99(c)(
- (10) The NRC will perform ITAAC closure verification activities. This decision block is identical to block (3).
- (11) If (10) is 'yes', the NRC staff has determined that the acceptance criteria has been met.
- (12) The NRC determination that an ITAAC is successfully completed is published in the Federal Register until th 52.103(a). The NRC can publish a Federal Register Notice for individual ITAAC (if needed) or multiple ITAAC (publish a Federal Register Notice after the last date for submission of requests for hearing under 52.103(a).
- (13) The Licensee will apply developed or enhanced programs such as QA and maintenance to preserve that satisfi applicable structures, systems, and components (SSCs).
- (14) Any substantiated information received by the NRC, including allegations, can invalidate an ITAAC's accept
- (15) If (14) is 'yes', then, depending on the severity of the substantiated allegation or information received, the Fe updated accordingly. Also depending on the severity of the situation, the Licensee may or may not have options av affected ITAAC.