EXAMPLES OF POST ITAAC COMPLETION ACTIVITIES REQUIRING SUPPLEMENTAL CLOSURE LETTERS TO THE NRC BASED ON PROPOSED NRC THRESHOLDS

NRC THRESHOLD #1 – Post Work Verification (PWV)

Does the PWV use a significantly different approach than the original performance of the ITA as described in the original ITAAC letter?

Example 1 – ESBWR ITAAC For The Nuclear Boiler System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
11. Check valves listed in Table 2.1.2-1 open and close under system pressure, fluid flow, and temperature conditions.	Tests of installed valves for opening and closing will be conducted under system preoperational pressure, fluid flow, and temperature conditions.	Based on the direction of the differential pressure across the valve, each check valve listed in Table 2.1.2-1 opens and closes.

Feedwater inboard isolation check valves

Preoperational testing of the feedwater system has been completed, the ITAAC has been closed, and the plant is ready to load fuel, pending the 103(g) finding. During the movement of construction materials in the area, one of the subject valves is damaged.

The damaged valve is replaced with a like spare. The new valve is tested at a significantly different condition than the preoperational test condition. The valve functions properly and an engineering analysis concludes that the valve meets the ITAAC acceptance criteria.

A supplemental closure letter is required because the post-work testing is different than the original ITA (i.e., different test pressure, temperature, flow).

Example # 2: ABWR ITAAC 2.2.4.3h – SLC Pump As-Built NPSH

Design Commitment – The SLC pumps have sufficient NPSH.

ITA – Tests will be conducted on the as-built SLC System by injecting demineralized water using both SLC System pumps from the storage tank to the RPV with the storage tank at the low level (pump trip level) and a temperature of greater than or equal to 43 ^{o}C.

Acceptance Criteria – The available NPSH exceeds the NPSH required as demonstrated by the SLC System injecting greater than or equal to 378 liters/minute.

Problem – The ITAAC has been completed and satisfactorily closed. However, a SLC pump has been physically damaged such that replacement is required with a spare

pump. At this time plant conditions do not allow using the storage tank as a source of water for the PWV. The test tank will need to be used as the water source. An engineering justification is required to demonstrate that PWV is equivalent to the test required by the ITA.

A supplemental closure letter is required.

Example # 3: ABWR ITAAC 2.2.6.5a – RSS Electrical Independence

Design Commitment - Each of two RSS divisions is powered from its respective Class 1E division. In the RSS, independence is provided between Class 1E divisions, and between Class 1E divisions and non-Class 1E equipment.

ITA - Tests will be performed on the RSS by providing a test signal in only one Class 1E division at a time.

Acceptance Criteria - The test signal exists only in the Class 1E division under test in the RSS.

Problem - The ITAAC was closed as each of the two RSS divisions was tested and met the acceptance criteria. During other construction activities in the area, a portion of the raceway carrying Division II Class 1E cable was damaged.

Power to RSS Division II was removed during repair work. The section of tray was replaced with the same type tray section. The damaged cable was replaced with the same type cable. The components were replaced and retested according to the original ITA, and returned to service.

No supplemental closure letter is required. [The post-work verification was the same as the testing method described in the original ITA and closure letter.]

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NRC THRESHOLD #2 – Engineering Changes

Has an engineering change been implemented that materially alters the determination that the acceptance criteria are met?

Example #1: AP1000 2.1 02.05b –

Design Commitment - Each of the lines identified in Table 2.1.2-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability.

ITA - Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability.

Acceptance Criteria - A report exists and concludes that each of the as-built lines identified in Table 2.1.2-2 for which functional capability is required meets the requirements for functional capability.

Problem – A pipe support is damaged during pre-operational testing of the RCS system. An evaluation determines that the pipe support cannot be repaired or replaced within the original location tolerances.

A design change would be required to specify hanger repair/replacement, including an evaluation to ensure the repair will meet the conditions of the closed ITAAC.

A supplemental closure letter is required.

Example # 2: ABWR ITAAC 2.12.13.3 – Tests – As-Built DG SYS Starts – Air Start Receiver Tank Capacity

Design Commitment – DG air start receivers have capacity for five DG starts without recharging their tanks.

ITA – Tests on the as-built DG Systems will be conducted by starting the DGs five times.

Acceptance Criteria – As-built DGs start five times without recharging their start receiver tanks.

Problem – The testing has been satisfactorily completed and the ITAAC has been closed. The vendor then makes a recommendation that the air receiver tanks need to have 10% larger capacity to provide additional margin. Based on the vendor recommendation, the larger air receiver tanks are procured and installed via an engineering change. Plant documentation is updated to reflect the change.

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A supplemental closure letter is not required because the larger capacity tank does not materially alter the ITAAC determination.

The licensee would send an ITAAC Component Replacement Letter.

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NRC THRESHOLD #3 – Population of SSCs and Subcomponents

Has the population of SSCs and related subcomponents been increased after closure notification, which results in more items being subject to the prescribed verification?

Example # 1: ABWR ITAAC 2.15.12.3 – As-Built Insp. – C/B Fire Rating

Design Commitment - Interdivisional walls, floors, doors, and penetrations, and penetrations in the external C/B walls to connecting tunnels, have a three hour fire rating.

ITA – Inspections of the as-installed inter-divisional boundaries and external wall penetrations to connecting tunnels will be conducted.

Acceptance Criteria – The as-installed walls, floors, doors, and penetrations that form the inter-divisional boundaries, and penetrations in the external C/B walls to connecting tunnels, have a three hour fire rating.

Problem – The ITAAC has been completed and satisfactorily closed. However, an existing penetration needs to be relocated due to a construction error. A core bore is performed and new fire barrier installed using the design change process and approved procedures. The existing penetration is sealed.

The additional penetration constitutes a change in the number of SSCs.

A supplemental closure letter is required.

Example # 2: ABWR ITAAC 5.0-1.5 – PA Illumination (Site Security)

Design Commitment - Isolation zones and exterior areas within the protected area are provided with illumination to permit observation of abnormal presence or activity of persons or vehicles.

ITA - Inspection of the illumination in the isolation zones and external areas of the protected area will be performed to confirm sufficient illumination to permit observation.

Acceptance Criteria - A report exists and concludes that illumination in isolation zones and exterior areas within the protected area is 0.2 foot candles measured horizontally at ground level or, alternatively, sufficient to permit observation.

Problem - ITAAC 5.0-1.5 has been closed. A new storage facility has been installed within the isolation zone which creates areas with less that 0.2 foot candle illumination.

The project must install one new light to eliminate the problem. There has been an additional SSC added even though the test was performed in the same manner.

A supplemental closure letter is required.

NRC THRESHOLD #4 – Complete and Valid Representation of the ITAAC

Do any licensee activities warrant augmentation of the statements made in the ITAAC determination basis?

Example # 1: ABWR ITAAC 2.15.6.9 – Fire Hazards Report

Design Commitment – A plant fire hazards analysis considers potential fire hazards and assesses the effects of postulated fire on the ability to shutdown the reactor and to maintain the reactor in a safe, cold shutdown condition. Each postulated fire is documented in a Fire Hazards Report.

ITA – Inspections of the Fire Hazards Report will be conducted.

Acceptance Criteria - A Fire Hazards Report exists for the as-built plant and concludes that for each postulated fire, the plant can be shutdown and maintained in a safe, cold shutdown condition.

Problem – After completion of the Fire Hazards Report and closure of the ITAAC, it becomes necessary to revise the Fire Hazards Report because of a postulated fire scenario that was not previously considered. The Fire Hazards Report is revised and the ITAAC Determination Basis is also revised so that it is complete and accurate.

A supplemental closure letter is required.

Example # 2: ABWR ITAAC 4.0-1.10.1 – Implementing Procedure (Emergency Plan)

Design Commitment - EP Program Elements - 10.0 Implementing Procedures:
The licensee has submitted detailed implementing procedures for its emergency plan no less than 180 days prior to fuel load.

ITA - An inspection of the submittal letter will be performed.

Acceptance Criteria - STP has submitted detailed implementing procedures for the onsite emergency plan no less than 180 days prior to fuel load.

Problem – After the Implementing Procedures for the emergency plan have been submitted, the Implementing Procedures are revised to resolve NRC questions. A new submittal letter is issued to transmit the revised Implementing Procedures to the NRC.

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A supplemental closure letter is required since the basis for the closed ITAAC has changed.

Example # 3: ABWR ITAAC 2.15.12.3 – As-Built INSP. – C/B – Fire Rating

Design Commitment - Inter-divisional walls, floors, doors and penetrations, and penetrations in the external C/B walls to connecting tunnels, have a three-hour fire rating.

ITA - Inspections of the as-installed interdivisional boundaries and external wall penetrations to connecting tunnels will be conducted.

Acceptance Criteria - The as-installed walls, floors, doors and penetrations that form the inter-divisional boundaries, and penetrations in the external C/B walls to connecting tunnels, have a three-hour fire rating.

Problem - The ITAAC was closed and the NRC has already approved closure of ITAAC family 15A (which includes ITAAC 2.15.12.3). The door XXX was damaged by surrounding construction activities and must be replaced. The exact door could not be found and a similar door with a **6 hour** fire rating was put in its place using approved design control and construction procedures.

A supplemental closure letter is not required since the replacement component exceeds the requirements of the acceptance criteria.