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**Consolidated ITAAC 2.1.02.02a [Index 13]
and Draft ICN**

**ASME Code Section III Design Report ITAAC
for Reactor Coolant System**

December 12, 2017

ASME ITAAC Background

- LAR 17-006 [ML17216A065] created 13 individual ITAACs; one for each ASME piping system. These 13 systems are comprised of:
 - 406 components per Unit
 - 378 pipe lines per Unit
- All ASME ITAAC (except SFS) have these three subcategories of ITAAC:
 - ASME design reports
 - Hydrostatic test reports
 - Non-Destructive Exams (NDE) of pressure boundary welds
- Additionally, seven systems require Functional Capability and Leak Before Break reports which are beyond the requirements of the ASME.
- Of the 13 systems, five systems are targeted ITAAC*: RCS (13)*, RXS (72)*, CNS (91)*, PCS (120)*, PXS (159)*, SGS (220), VES (253), CVS (285), 355 (RNS), 392 (SFS), 431 (WLS), 459 (PSS), 678 (VBS)



ASME ITAAC Requirements Summary

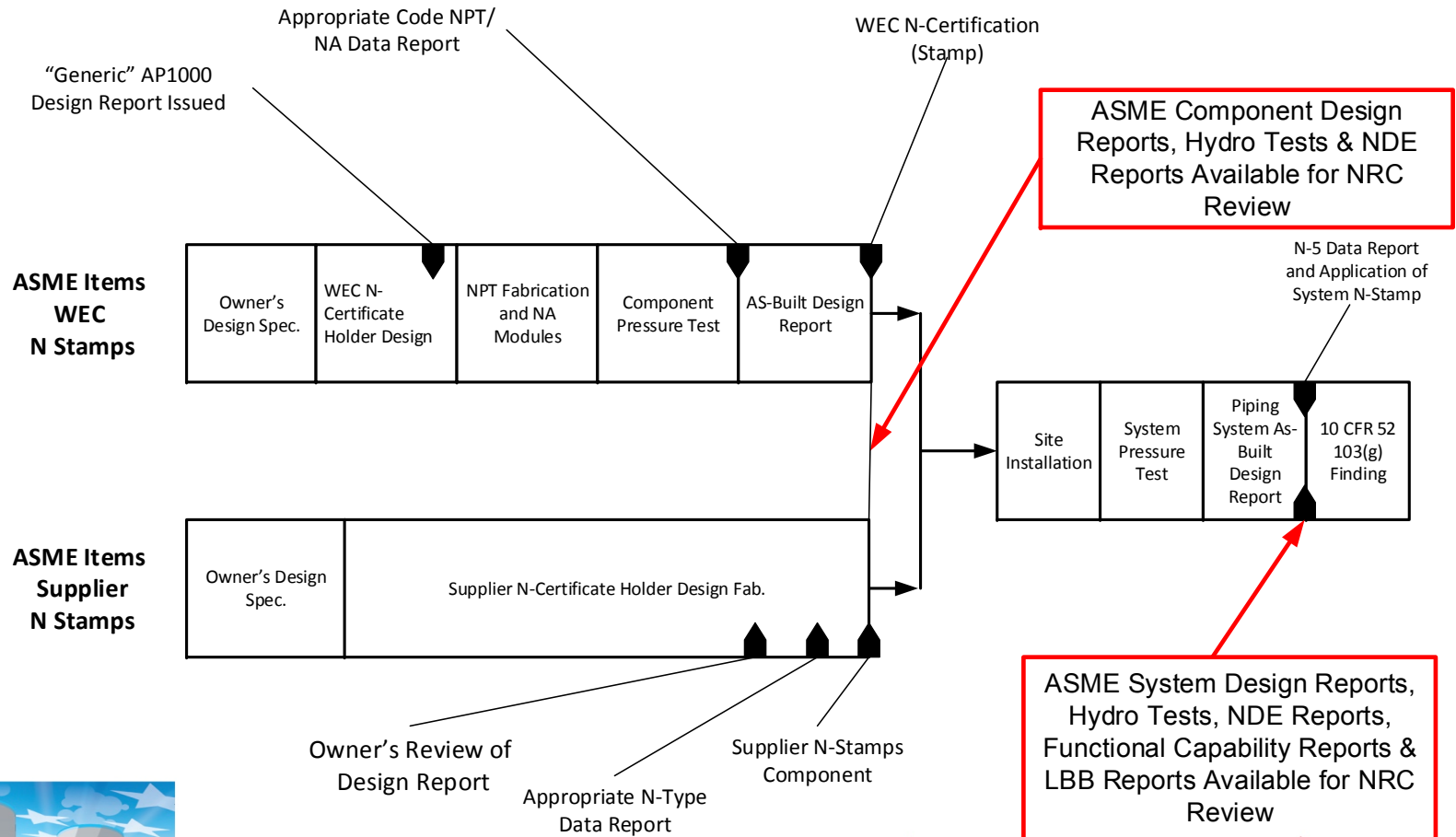
Components	Piping
(2a) Components are designed and fabricated per ASME Code Section III.	(2b) Piping is designed and fabricated per ASME Code Section III.
(3a) Components pressure boundary welds are nondestructively examined per the ASME Code	(3b) Piping pressure boundary welds are nondestructively examined per the ASME Code
(4a) Components are pressure tested per ASME Code Section III	(4b) Piping is pressure tested per ASME Code Section III
	(5b) Piping meets functional capability requirements <i>(for select systems)</i>
	(6) Piping meets leak before break criteria or an evaluation is performed of the protection from the dynamic effects of line rupture. <i>(for select systems)</i>



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ASME Section III Project Stages



ASME Item Reconciliation

- For components, the design report work is complete once the reconciliation is performed (as-built design report stage).
- For piping, the “as-built” reconciliation conducted immediately prior to stamping completes the Design Report portion of the ITAAC (piping stress analysis is reconciled to “as-built” conditions), and the Code Data Reports generated during the fabrication process complete the NDE and hydrostatic testing portions.



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Final System Design Reconciliation

- Following system installation in its final location, quality inspections, non-destructive examinations, and hydrostatic tests are performed in accordance with the site ASME quality assurance program to identify and reconcile any deviations from the design specifications.
- The ASME N-5 Code Data report, Functional Capability Report, and LBB reports are approved after all deviations are reconciled to demonstrate the as-built system has been designed and constructed in accordance with the design specifications that comply with the ASME Section III Code.



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ITAAC Closure Notification #13

- Incorporated NRO comments from #355 Normal Residual Heat Removal System (RNS) ICN
 - Added language that Design Reports meet NCA-3550 requirements
 - Added language on additional piping restrictions
 - Included affirmative language on meeting AC (e.g., no unacceptable NDE indications, no visual leakage from pressure boundary welds.)
 - Reworded ITAAC Findings review to mention consolidated ITAAC.
 - Added language regarding meeting FC and LBB requirements



Proposed Strategy for Region II Inspections

Inspect ASME component as-manufactured reports for ITAAC closure in advance of final as-built piping system design report.

- Resource levelization: Reviews that would have previously been within 12 months of fuel load can be pulled forward to when the documentation is available (typically site delivery)
- Surge mitigation: ASME component reviews are removed from the schedule compression that exists near the All ITAAC Complete Letter
- Strategy results in 812 components that can be reviewed earlier



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Proposed Strategy for NRO ICN Reviews

Submit a single system ICN

Considerations:

- Preferred strategy
- Avoids ITAAC maintenance associated with Partial ICNs
- A larger ICN is submitted; however, it is mitigated by the early UIN submittals

Submit Partial ICNs

Considerations:

- Mitigates surge by verifying subparts as they are completed
- Reserved for use in certain circumstances (e.g., PCS design report)



Questions?



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**Consolidated ITAAC 2.1.02.05a.i [Index 19] and
Draft ICN**

**Equipment Qualification (EQ) ITAAC for
Reactor Coolant System**

December 12, 2017

COL Appendix C - 2.1.2 Reactor Coolant System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
5.a) The seismic Category I equipment identified in Table 2.1.2-1 can withstand seismic design basis loads without loss of safety function.	i) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.1.2-1 are located on the Nuclear Island.	i) The seismic Category I equipment identified in Table 2.1.2-1 is located on the Nuclear Island.
	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function.
	iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.	iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.
7.a) The Class 1E equipment identified in Table 2.1.2-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	i) Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment.	i) A report exists and concludes that the Class 1E equipment identified in Table 2.1.2-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.
	ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.	ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.1.2-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.



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Draft ICN Determination Basis

- **The consolidated ICN was developed utilizing:**
 - ✓ Examples from NEI 08-01 D32, D43, D44, D45 and Demo 1
 - ✓ Submitted Located On, Seismic As-Built, and Harsh As-Built UINs and As-Designed ICNs (pre-consolidation)
 - ✓ Lessons learned from the ASME draft ICN comments
- **A single table (ICN Attachment A) addresses all 5 ITAAC requirements of COL Appendix C, Table 2.1.2-1**
- **The Methodology of the 5 ITA/AC**
 - ✓ Type test and analysis (as-designed)
 - ✓ Inspection (as-built)
- **Future consolidated EQ ICNs will follow this template**



Draft ICN Work

- Table Top IDB Review and Comment



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RCS Commodities Targeted for Inspection

Component	Commodity	Seismic only	Principal Closure Document (PCD) Acceptance
Flow Sensor	JE52 (Ultra)		11/4/2016*
ADS Discharge Header Vacuum Relief Valve	PV18		1/17/2017*
Flow Sensor	JE52 (Rosemount)		1/31/2017*
RCP Speed Sensor	JE62		3/24/2017*
Steam Generator	MB01	Yes	3/27/2017*
RCP Bearing Water Temp. Sensor	MP01 (RCP RTD)		4/14/2017
Motor Operated Valve	PV01 (flex wedge)		5/23/2017*
ADS Isolation MOV	PV01 (globe stop)		5/23/2017*
Squib Valve	PV70		5/24/2017*
Pressurizer Safety Valve	PV62	Yes	5/25/2017*
Temperature Sensor	JE53		7/11/2017*
Pressurizer	MV20	Yes	11/2/2017
ADS Sparger	MW01	Yes	1/14/2018
RV Head Vent valve	PV13		2/28/2018
Reactor Coolant Pump (RCP)	MP01	Yes	3/31/2018

* Region II Inspection Completed

NOTE: As-Built PCD Inspections per Construction Schedule



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Proposed Strategy for Region II PCD Inspections

For As-Built ITAAC PCDs

- Multiple PCDs for NRC inspections
 - ✓ Similar to the EQ Commodity PCD Inspections completed by Region II
 - ✓ Based on construction schedule completion for the logical submittal of each PCD (by level, rooms, etc.)
- Considerations
 - ✓ One PCD on smaller systems (i.e., RXS and IIS)



Proposed Strategy for NRO ICN Review

For As-Built ITAAC ICNs

- One ICN per ITAAC for NRO Review
 - ✓ UINs submitted and accepted by NRO
 - ✓ Workshops on draft ICNs, as needed
 - ✓ Minimize ICN Maintenance Requirements
 - ✓ EQ ICNs will follow this template (19 systems)
- Considerations
 - ✓ May submit Partial ICNs for complex systems close to 103(g) (i.e., PCS and CVS)



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SNC 103(g) Milestone Schedule

December 12, 2017

SNC 103(g) Milestone Schedule

- **T= -270 (days)** **SNC notification of fuel load date to NRC with updates every 30 days on fuel load date**
- **T= -255** **Begin Region II and NRO monthly 103(g) status meetings**
 - ICN Closure Status
 - 103(g) related NRC Inspection finding closures
 - 103(g) related COL License Condition requirements closure
- **T= -225** **Uncompleted ITAAC Notification. There will be approximately 65-70 uncompleted ITAAC**
 - Projected ITAAC Index Numbers to be provided June 2018



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SNC 103(g) Milestone Schedule

- **T= -180** **NRC publishes “Notice of Intended Operation”**
- **T= -120** **Deadline for request of public hearing on ITAAC Acceptance Criteria which have not been, or will not be met; and will have consequence to health and safety of public**
- **T= -120** **Begin Region II and NRO 103(g) biweekly status meetings**
 - ICN Closure Status
 - 103(g) related NRC Inspection finding closures
 - 103(g) related COL License Condition requirements closure



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SNC 103(g) Milestone Schedule

- **T= -90**
Begin joint Region II and NRO 103(g) biweekly status meeting
 - ICN Closure Status
 - 103(g) related NRC Inspection finding closures
 - 103(g) related COL License Condition requirements closure
- **T= -73**
Reactor Vessel flow vibration testing ICN #79 submitted
- **T= -66**
Graded EP exercise ICNs # 870, 871 and 872 submitted
- **T= -65**
PRHR HX heat removal performance test ICN # 175 submitted



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SNC 103(g) Milestone Schedule

- **T= -60**
Begin joint Region II and NRO 103(g) weekly status meeting
 - ICN closure status
 - 103(g) related NRC Inspection finding closures
 - 103(g) related COL License Condition requirements closure
 - 103(g) finding action item status
 - New 103(g) finding issues
- **T= -45**
Integrated Leak Rate Test ICN #107 submitted



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SNC 103(g) Milestone Schedule

- **T= -15**
Begin Joint Region II and NRO 103(g) daily status meeting
 - Final ICN closures
 - 103(g) finding action item status
 - New 103(g) finding issues
 - 103(g) related NRC Inspection finding closures
 - 103(g) related COL License Condition requirements closure
- **T= -10**
All ITAAC Complete Notification
- **T=0**
103(g) finding received



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