

PART 52, PRESERVICE AND INSERVICE INSPECTION - REVIEW OF PROGRAM

PROGRAM APPLICABILITY: 2504

73054-01 INSPECTION OBJECTIVE

01.01 To ascertain whether the licensee's program pertaining to the Preservice Inspection (PSI) and Inservice Inspection (ISI) is in conformance with regulatory requirements of 10 CFR 50.55a and the licensee's commitments and is ready to support the operation of the facility.

01.02 To ascertain that the PSI and ISI Programs include: the proper scope of components, inspection requirements, and have been approved.

01.03 To ascertain that the Quality Assurance Program will support execution of the PSI/ISI programs.

01.04 To ascertain that the Repair/Replacement Program is established to allow repairs and replacements to be made in accordance with 10 CFR 50.55a and ASME Code requirements.

01.05 To ascertain that records maintenance and retention will support execution of the PSI/ISI program.

01.06 To ascertain that proper training requirements for personnel are established.

01.07 To ascertain that reporting requirements and methods have been established.

01.08 To ascertain that the PSI/ISI program includes methods for requesting relief from **or alternatives to the** requirements.

73054-02 INSPECTION REQUIREMENTS AND GUIDANCE

General Guidance: This review of the licensee's program includes the PSI program of each unit **prior to initial startup** and the planned ISI program of each unit for the first 10-year interval. The inspection percentages should be increased, as outlined in the following sections, if inspection results reveal issues in certain areas of program development.

The preservice inspection program consists of preservice examinations which are performed upon completion of the construction code requirements and completed prior to initial plant startup. These examinations serve as the baseline for which future ISI examination results can be compared.

Preservice examination requirements are defined in the ASME Code, Section III and Section XI and may include Radiographic (RT), Ultrasonic (UT), Liquid Penetrant (PT), Magnetic Particle (MT) and Eddy Current (ECT) NDE Methods, and Visual Examination (VT).

This procedure covers all ASME Code, Section XI, ISI activities with the exception of those items in the PSI program that are covered in the Preoperational Test Program, which is detailed by other Inspection Procedures indexed in Appendix B of Inspection Manual Chapter 2504. Some licensees may have implemented a risk informed ISI program. Currently, implementation of a risk informed ISI program requires NRC authorization in accordance with 10 CFR 50.55a(a)(3) as an alternative to the ISI requirements of Section XI of the ASME Code. If the licensee has implemented a risk informed ISI program, obtain the submittal and the NRC's safety evaluation before reviewing the program. Alternatively, support may be obtained from NRO in conducting the risk informed ISI inspection. The risk informed approach is not applicable to the PSI requirements.

For the purpose of this inspection procedure, the term, "PSI/ISI program," includes the PSI/ISI plan, the repair/replacement program, and the administrative, technical, and quality assurance program and procedures required to implement the plan. Verification of the conformance of the PSI and ISI programs using this IP may be performed together or separately. This will depend on the licensee's implementation schedule and the Region's plan and schedule for the IMC 2504 inspections.

Pursuant to 10 CFR 50.55a, each construction permit, issued under 10 CFR Part 50, is subject to all the conditions in §50.55a in addition to those specified in §50.55. All the provisions of §50.55a that are applicable to holders of construction permits for nuclear power reactors also apply to holders of combined licenses issued under 10 CFR Part 52, except that combined license holders are not subject to the conditions of paragraphs (f) and (g) of §50.55a until after the Commission makes the finding under §52.103(g).

10 CFR 50.55a(g)(3)(i) and 10 CFR 50.55a(g)(3)(ii) both require that components are designed to provide access for inservice examination and that components meet the preservice inspection requirements set forth in the Code editions and addenda applied to their construction. 10 CFR 50.55a(g)(3)(i) applies to ASME Code Class 1 components (including supports), and 10 CFR 50.55a(g)(3)(ii) applies to ASME Code Class 2 and 3 components (including supports for components that are classified as ASME Code Class 1, 2 and 3).

10 CFR 50.55a(g)(3)(v), states, "All components (including supports) may meet the requirements set forth in subsequent editions of codes and addenda or portions thereof which are incorporated by reference in paragraph (b) of this section {10 CFR 50.55a}, subject to the conditions therein." This provision allows the holder of a construction permit or combined license to use later editions and addenda of the code that are incorporated by reference in paragraph (b) of § 50.55a, for preservice inspection only, without the need for NRC approval or authorization.

02.01 Program Organization. Verify the following items are included in the PSI/ISI program:

- a. Identification of all licensee commitments and regulatory requirements pertinent to PSI/ISI testing and monitoring.

Guidance: The inspector should contact the licensing project manager for the site to determine the status of any relief requests involving PSI/ISI activities. The inspector should develop a list of requirements and commitments, and determine if the licensee's program provides a means of tracking requirements and commitments.

If a risk informed ISI program has been adopted, the inspector should obtain the licensee submittal that requested use of this alternative method and the safety evaluation report issued by the NRC. Compare this material to the ISI program to ensure the requirements are met.

- b. Preservice examination requirements for containment are included in the PSI/ISI program plan and meet the requirements of IWE-2200 and IWL-2200.
- c. Means of preparing plans and schedules and filing them with enforcement and regulatory authorities having jurisdiction at the facility.
- d. An adequate organizational staff is available with sufficient training and experience to plan, control and oversee the performance of PSI/ISI work.
- e. There is procedural guidance on specifying the skill set and qualification level of contracted NDE personnel and the NDE procedures that they will be using.
- f. Site administrative procedures to define the authority and responsibilities of the persons or organizations involved with the final evaluation and acceptance of PSI/ISI results for the licensee.
- g. Process for demonstrating alternative nondestructive examination methods to the ANII in accordance with the ASME Code, Section XI.
- h. The Code edition and addenda to be used for PSI/ISI is identified.

02.02 Program Scope and Approval. Verify the PSI/ISI program, including examinations and tests, is in conformance with relevant ASME Code, Section XI editions and addenda, and Code cases proposed for use as part of the plan, as follows:

Guidance: Pursuant to 10 CFR 50.55a(g) and ASME Code, Section XI, IWA-2420, and Section XI, IWA-6000, the licensee develops PSI and ISI plans and schedules. Exceptions to or deviations from testing requirements shall be in accordance with those permitted by the PSI/ISI program as approved by the NRC.

It may be necessary to obtain support from NRO to support this phase of inspections. Contact NRO as needed to obtain the necessary support.

- a. Obtain a listing of all ASME Code, Section XI Class 1, 2 and 3 components and welds in the PSI/ISI database.
- b. Obtain drawings of Class 1 systems, including all applicable components. Components include all related items such as vessels, piping, pumps, etc. and any applicable welds, bolted connections, and integral attachments subject to examination in accordance with Section XI.
 1. Use table IWB-2500 of the ASME Code, Section XI to verify all Class 1 components and ensure they are listed within the PSI/ISI database.
 2. Verify that the appropriate percentages of components were selected for PSI/ISI examination as required by IWB-2200 and the tables of IWB-2500, or the optional Code Cases approved for use at the site, or the applicable risk informed ISI requirements, excluding those exempted by IWB-1220.
 3. Verify that the proper PSI/ISI examination for Class 1 components is identified in the database.
 4. Identify any Class 1 weld/component not included in the database.
 5. Review can be terminated once 15% of the total components on the listing have been verified, and no Class 1 components were inappropriately omitted from the PSI/ISI database. If components were inappropriately omitted from the database, continue the review with an additional 15% of the database. If no additional components inappropriately omitted from the database conclude the review. The review sample should include each of the examination categories.
 6. If additional components are identified that were inappropriately omitted from the PSI/ISI database, terminate the review and notify the licensee and reschedule another review after the licensee corrects the deficiencies and reviews the database.
- c. Obtain drawings showing the bolted connections and welds for three Class 2 piping systems, including vessels. The systems selected for inspection should be relatively large systems in comparison to other Class 2 systems.
 1. Use table IWC-2500 of the ASME Code, Section XI to verify all Class 2 components and ensure they are listed within the PSI/ISI database. If a risk informed ISI has been approved verify the Class 2 components are listed within the ISI database.
 2. Verify that the appropriate percentages of components were selected for PSI/ISI examination as required by the tables of IWC-2500, or the appropriate risk informed ISI requirements.

3. Verify that the proper PSI/ISI examination for Class 2 components is identified in the database.
 4. If components were inappropriately omitted from the database, review the drawings for an additional three piping systems as outlined above. If no other components were inappropriately omitted, terminate the review.
 5. If additional components are identified that were inappropriately omitted, terminate the review and notify the licensee and reschedule another review after the licensee corrects and reviews the database.
- d. For one of the Class 1 and 2 systems, conduct a detailed review of the drawings and, if construction has commenced, walk down the system to validate the system, ensuring all welds are depicted, and evaluate a selection of the components chosen by the licensee for inspection to ascertain accessibility and clearances for future in-service inspections. Determine if construction modifications have added welds, if so, have these welds been added to the PSI/ISI scope. If there are no examples of added welds, are there procedural controls to prevent omissions?
 - e. Obtain drawings for ten ASME Code Class 3 components (preferably different types of components), showing the welded attachments.
 1. Conduct a detailed review of the ten drawings and if the components are present on site verify the accuracy of the welded attachment details for five of these components.
 2. Identify all the attachment welds that are part of the ASME Code, Section XI PSI/ISI scope as identified in the tables of IWD-2500 and ensure they are listed within the ISI database.
 3. Verify that the appropriate number of attachment welds was selected for PSI/ISI examination as required by IWD-2200 and are identified in the table of IWD-2500.
 4. Verify that the proper PSI/ISI examination for Class 3 components is identified in the database.
 - f. Obtain a listing of all ASME Class 1, 2, and 3 piping and component supports in the PSI/ISI database. Obtain, at a minimum, 30 piping isometric drawings from ASME Class 1, 2, and 3 systems that show pipe support designation and location
 1. Verify that all piping/component supports on these drawings are contained within the PSI/ISI database.
 2. Verify that the proper inspections are specified for piping/component supports in the PSI/ISI database in accordance with IWF-2500.

3. During the construction phase, the inspector should field verify (walk down) 10 of the piping isometric drawings and checking the accuracy of the pipe support information.
 - g. Verify that the proper inspections are specified for the containment in the PSI/ISI database in accordance with IWE/IWL-2500.
 - h. Verify that any Code Cases proposed for use as part of the PSI or ISI plans are approved by the NRC, per 10 CFR 50.55a and detailed in Regulatory Guide 1.147, or have been approved by NRC for use as an alternative to the Code.
 - i. Verify that relief from Code requirements has been approved by NRC prior to use.
 - j. Verify that alternatives to the Code requirements, if any, have been authorized by NRC prior to use pursuant to 10 CFR 50.55a(a)(3).
 - k. The inspector may utilize the latest revision of the Electric Power Research Institute Pressurized Water Reactor Steam Generator Examination Guidelines as guidance for the inspection of steam generator tubing. ISI requirements for steam generator tubing are included in the plant Technical Specifications.
 - l. Verify that the services of an Authorized Nuclear Inservice Inspector (ANII) have been procured and the PSI and ISI plans have been reviewed by the ANII in accordance with Article IWA-2120 of the ASME Code.
 - m. Verify that the PSI and ISI plans have been reviewed and approved by the licensee's site nuclear safety review committee, or equivalent, and the review and approval has been documented.

02.03 Quality Assurance Program. Verify the following items are included in the licensee's and PSI/ISI contractor's quality assurance programs:

- a. Procedures for the maintenance of required PSI/ISI records.
- b. QA review includes assurance that plans and procedures have been reviewed and meet regulatory requirements.
- c. Procedures are established for the corrective action of conditions adverse to quality as detected during examination, including provisions to preclude repetition of such adverse conditions.
- d. Audits or surveillance of PSI/ISI activities are conducted by qualified QA personnel to verify compliance with the PSI/ISI program.
- e. Procedures are established to effectively oversee contractor activities concerned with PSI/ISI.

Guidance: PSI and ISI activities are subject to QA audit, monitor, surveillance, and QC inspection. The licensee's QA Manual and (if applicable) contractor's QA Manual should cover all PSI and ISI activities.

The QA program must be documented in accordance with 10 CFR 50, **Appendix B**, or ASME NQA-1, [Edition as permitted in 10CFR50.55a(b)(2)(x)] "Quality Assurance Program Requirements for Nuclear Facility Applications." **Note that in RG 1.28, "Quality Assurance Program Criteria (Design and Construction)," the staff currently endorses the Part I and Part II requirements of ASME NQA-1-2008 and the NQA-1a-2009 Addenda for the implementation of a QA program during design and construction phases of nuclear power plants and fuel processing plants.**

02.04 Code Repair/Replacement Program Review. For repairs made to ASME Code components prior to the Commission making its finding under 10 CFR 52.103(g), verify that the repair meets ASME Code, Section III requirements. For repairs/replacements made after the 52.103(g) finding, verify that the Repair/Replacement Program meets the requirements of the ASME Code, Section XI, in that it includes the following:

Guidance: The Repair/Replacement Program will be a document or set of documents that defines the managerial and administrative control for repair/replacement activities. Elements of a repair/replacement program that the licensee's procedure should include are:

- a. Identification of the Edition and addenda of ASME Code, Section XI to be used for the repair/replacement program.

Guidance: Typically, this will correspond to the Edition and Addenda identified in the inservice inspection program. It is, however, permissible to use later Editions and Addenda of the ASME Code, Section XI for repair/replacement activities, provided all related requirements are met and NRC approval has been obtained.

- b. Requirements for the preparation of a repair/replacement plan whenever a repair/replacement activity is to be performed.
- c. Notification of the Authorized Inspection Agency prior to starting a repair/replacement activity.
- d. Requirements for Authorized Inspection Agency approval of the Owner's Report for Repair/Replacement Activity, Form NIS-2, upon completion of all required repair/replacement plan activities.
- e. Means for reconciliation of Owners requirements, Code requirements, material requirements, etc.
- f. Suitability review of replacements of failed components.

- g. If repair/replacement activities have occurred at the time of inspection, then verify that the licensee has evaluated all repair and replacement actions in accordance with 10 CFR 50.59 to ensure that a license amendment is not required.

Guidance: If the inspector finds it necessary to conduct a more detailed inspection of the technical aspects of the process procedures used in the repair/replacement activity (i.e., welding, NDE), the 55050 and 57050 series IPs should be used. The inspector, however, should ensure that only the welding and NDE requirements of the Code section used in the repair (ASME Code, Section III or XI) are applied to the inspection of the process procedures.

02.05 Records. Verify that provisions for the maintenance and retention of records, including inspection, examination, test reports, repair and replacement, QA, and NDE records have been established in the PSI/ISI program.

Guidance: As required by ASME Code, Section III or XI, the licensee prepares records of inservice inspection. The standard FSAR specifies record retention periods, and ASME NQA-1-2008 and the NQA-1a-2009 Addenda, and RG 1.28 provide guidance on retention periods and design features for a permanent record storage facility. It is not necessary that all PSI and ISI records be stored onsite. Special concern should be given to the acquisition and proper storage of PSI records for the PSI performed by the component manufacturer.

02.06 Qualification of Personnel. Verify the program specifies personnel qualification requirements consistent with the ASME Code, and other applicable documents.

Guidance: The inspector should review the licensee's written practice and ensure qualified personnel are being used for examinations. As required by ASME Code, Section XI, personnel performing nondestructive examinations shall be qualified and certified using a written practice in accordance with ANSI/ASNT CP-189, as amended by the requirements of IWA-2300. Other certifications (i.e. SNT-TC-1a, ANS45.2.6, etc.) are valid until recertification is required. ASME NQA-1-2008 and the NQA-1a-2009 Addenda, Part I, provides guidance to ensure that commitments to qualifications of organizational staff are met. The inspector should also be aware of NRC/industry initiatives in the area of qualification of procedures and personnel for ISI, such as the EPRI Performance Demonstration Initiative for the qualification of procedures and personnel for ultrasonic testing.

02.07 Reporting Requirements. Verify that the licensee's program includes the ASME Code and plant Technical Specification requirements, as applicable, for submittal of written reports of PSI/ISI results and repairs/replacements.

Guidance: Intent of the review is to ensure the licensee's program has provisions for submitting the required reports as outlined in the ASME Code or any other applicable document such as a Technical Requirements Manual or site director procedures manual.

For reviews during construction, just prior to commercial service, the inspector should review the PSI summary report and initial ISI program, if available and ensure they have been filed with the NRC for review, or that the program has proper instruction to send the PSI summary report and ISI program to the NRC.

02.08 Relief Requests. Verify that the licensee's program contains guidance regarding the identification and processing of requests for relief from ASME Code requirements **that are impractical pursuant to 10 CFR 50.55a(g)(5)(iii)**. Select up to 5 relief requests (if any were requested), conduct a walk down inspection or an ISI data review, as appropriate, and verify that the basis for the relief requested is valid and accurate.

Guidance: Requests for relief based on component inaccessibility should be verified by performing a field inspection (walk down) of the item for which relief was requested. For requests based on other limitations to inspection, a review of existing NDE data should be performed. Also, during PSI program reviews, the inspector should verify that the relief requests do not involve matters that are reject able under the original system construction code (i.e., ASME Code Section III) **unless specifically authorized in the relief request or alternative**.

73054-03 RESOURCE ESTIMATE

Total resource estimate is between 400 and 516 hours, depending on what is identified during the inspection. The inspection hours are broken out by sections as identified below.

03.01 Review of the Program Organization. In accordance with section 02.01, which involves a review of programmatic procedures, should take 40 hours.

03.02 Review of the Program Approval. In accordance with section 02.02, which includes review of drawings, databases, and walk downs, should take on the order of 300-400 hours, depending on issues that arise.

03.03 Review of the Quality Assurance Program. In accordance with section 02.03 should take on the order of 10 hours.

03.04 Review of the Repair/Replacement Program. In accordance with section 02.04 should take on the order of 10 hours.

03.05 Review of Records. In accordance with section 02.05 is included within the estimate for the review of section 02.01.

03.06 Review of Qualification of Personnel. In accordance with section 02.06 should take on the order of 16 hours.

03.07 Review of Reporting Requirements. In accordance with section 02.07 in included with in the estimate for the review of section 02.01.

03.08 Review of Relief Requests. In accordance with section 02.08, which includes walk downs of specific inspection points for which relief has been requested should take on the order of 24-40 hours.

73054-04 REFERENCES

ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components"

ANSI/ASNT CP-189 "ASNT Standard for Qualification and Certification of Nondestructive Personnel"

ASME NQA-1-2008, "Quality Assurance Program Requirements for Nuclear Facility Applications"

ASME NQA-1a-2009 Addenda to ASME NQA-a-2008, "Quality Assurance Program Requirements for Nuclear Facility Applications"

Regulatory Guide 1.28, "Quality Assurance Program Criteria (Design and Construction)"

Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability - ASME Section XI Division 1"

10 CFR 50.55a, "Codes and Standards"

10 CFR 52.99, "Inspection During Construction"

73051-05 PROCEDURE COMPLETION

Transition of the ISI to the ROP will constitute completion of this procedure.

END

Attachment 1: Revision History for IP 73054

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Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment and Feedback Resolution Accession Number
N/A	07/01/08 CN 08-019	Initial issue to support inspections of operational programs described in IMC 2504, Non-ITAAC Inspections. Completed 4 year search of historical CNs and found no commitments.	N/A	ML070920379
N/A	ML13231A038 09/25/13 CN 13-023	Revised to update ASME and other references and to make editorial changes.	N/A	ML13231A039