

# NRC INSPECTION MANUAL

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## INSPECTION PROCEDURE 50051

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### REACTOR VESSELS AND INTERNALS QA REVIEW

PROGRAM APPLICABILITY: 2512

#### 50051-01 INSPECTION OBJECTIVES

01.01 To determine whether the technical requirements detailed or referenced in Chapters 1, 3, 5, 6 and 17 of the facility SAR associated with reactor vessel and internals have been adequately addressed in the construction specifications, drawings, and work procedures and whether the established system of management controls is adequate.

01.02 To determine whether quality assurance plans, instructions, and procedures for the reactor vessel and internals have been established in the facility QA Manual and implementing procedures and whether these documents conform with the QA program described in Chapter 17 of the facility SAR.

01.03 To determine whether specification or procedural controls associated with the reactor vessel and internals are adequate and determine whether any potentially generic problems or other weaknesses exist within the preparing technical organization.

#### Inspection Schedule

<u>Inspection</u>	<u>May Be Started</u>	<u>Must Be Started</u>	<u>Must Be Completed</u>
Reactor Vessel	Installation Complete - 6 months		Before work is 10% complete.
Internals	Installation Complete - 6 months		Before work is 10% complete.

#### 50051-02 INSPECTION REQUIREMENTS

02.01 For each onsite organization with QA (including QC) responsibilities relative to reactor vessel and internals installation, determine whether quality assurance plans (instruction and procedures) have been established, and whether they conform with the QA program described in Chapter 17 of the facility SAR. This shall be accomplished by completing the inspection requirements of IE 35100 relative to reactor vessel and internals installation.

02.02 Determine whether the licensee has an established audit program (including plans, procedures, and schedule) covering the safety-related work and control functions in the area of reactor and internals installation.

02.03 Determine whether the licensee and each contractor has an established program for ensuring that all craft, examination, and inspection personnel associated with reactor and internals installation are trained and qualified to perform their assigned work.

02.04 Determine whether appropriate and adequate procedures are included or referenced in the QA manual to assure that activities associated with reactor vessel and internals installation are controlled and performed according to NRC requirements and SAR commitments. In particular, ascertain whether provisions have been established to assure conformance with applicable requirements for the following activities:

a. Receipt Inspection and Handling

1. Receipt inspections verify that the reactor vessel, associated components, and internals are undamaged and are in conformance with specifications, including any special protection requirements.
2. Handling and storage activities are in accordance with established procedures.
3. Record-keeping requirements are adhered to.

b. Crane and Rigging Testing and Vessel Lifting

1. Crane and rigging testing and vessel lifting procedures are established prior to lifting the reactor pressure vessel (RPV) and internals.
2. Braking and holding test procedures are established prior to RPV and internals lifting.

c. RPV and Internals Installation

1. Work procedures are established for RPV and internals installation activities, which cover handling, placement, leveling, final adjustment, and data recording.
2. Use of special technical personnel whenever complex or unusual installation activities are involved.
3. Record-keeping requirements are met.
4. Installation records reflect the actual as-installed conditions.

d. RPV and Internals Installation Inspection

1. Inspection activities cover pertinent installation activities (such as vessel and internals placement, leveling, and final adjustment) to assure that applicable specifications and work procedures are accomplished as specified.
2. Inspection activities meet established procedures, including record-keeping requirements and qualifications of inspection personnel responsible for RPV and internals installation inspection.

e. Post-Installation Activities

1. Vessel and internals protection procedures and internal cleanliness preservation procedures are established prior to need.
2. Procedures established in (1) above are adhered to.

#### 50051-03 INSPECTION GUIDANCE

03.01 Applicable portions of the SAR should be reviewed to determine licensee commitments relative to quality assurance requirements associated with reactor vessel installation prior to review in this area. The inspector should make this determination during inspection preparation.

03.02 The purpose of the inspection requirements in Section 02 is to determine whether the licensee-contractor(s) have met the QA program requirements (described in the SAR) for this work.

03.03 Findings from this inspection activity should address each element as being satisfactory, being unresolved and requiring resolution, or being in violation and requiring correction. When significant inadequacies are identified in specifications or procedures indicating weakness within the preparing technical organization, the inspector should inform cognizant regional supervision. The issue should be addressed at the appropriate level of licensee management.

#### 03.04 Specific Guidance

Note: The guidance below refers to specific subsections of 02, above.

02.04b. Provision should be included to assure that reactor vessel and internals handling procedures have been established, reviewed and approved before starting of this activity. These procedures should include precautions to avoid damage, such as pretesting of slings and related handling accessories, use of chafing pads and, usually optional, provisions to monitor (by the use of load cells, for example) forces applied by the lifting equipment.

02.04c. Provisions should be included to assure that reactor vessel placement/positioning and internals handling procedures have been established, reviewed, and approved before starting this activity. These procedures should include precautions to avoid damage to the reactor vessel and to adjacent components and structures and to assure placement within tolerances as specified; such as: use of applicable procedures and specified lifting equipment only, prohibition of forced fitting, and use of equipment and procedures to enable small, controlled movements of the vessel and internals as they reach their final position.

#### 50051-04 REFERENCES

SAR, Chapters 1, 3, 4, 5 and 17, including pertinent codes and standards referenced in these chapters

Regulatory Guide 1.38, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants"

Regulatory Guide 1.39, "Housekeeping Requirements for Water-Cooled Nuclear Power Plants"

Regulatory Guide 1.65, "Materials and Inspections for Reactor Vessel Closure Studs"

Regulatory Guide 1.88, "Collection, Storage and Maintenance of Nuclear Power Plant Quality Assurance Records"

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