



NRC Workshop on Vendor Oversight for New Reactor Construction

NRC Perspective on the Inspection of Commercial-Grade Dedication Programs and Critical Characteristics

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Topic Areas

1. Dedication Process
2. NRC Inspection Procedure 43004
“Inspection of Commercial-Grade
Dedication Programs”
3. Critical Characteristics

Dedication Process

- The overall function of a dedication program is to provide an alternate means of satisfying the requirements of 10 CFR 50 Appendix B with regard to procurement and acceptance of commercial grade items (and services) for use as basic components.
- There are two principle criteria that the dedication process should be designed to meet:
 - Criterion III, “Design Control,” and
 - Criterion VII, “Control of Purchased Material, Equipment and Services.”
- An effective dedication program must include provisions to demonstrate that a dedicated item or service is suitable for safety-related applications.

Dedication Process (cont'd)

- An acceptable dedication program includes
 - Technical Evaluation – identifies
 - Technical requirements
 - Quality requirements
 - Acceptance Method – Verifies that the technical and quality requirements have been met.
- Note: The dedication program must specify those characteristics important to the design, material and performance of an item so that verification of those characteristics will provide reasonable assurance that the item will perform its intended safety function.

Inspection Procedure (IP) 43004

- Issued October, 2007
- Incorporates CGD guidance
- Extensive stakeholder interactions
- Stakeholder task group comments on key dedication areas addressed

IP 43004 Guidance

- Clarifies equivalency evaluations, like-for-like evaluations, and seismic/environmental considerations.
- Received industry comments on key dedication areas.
- Quality and Vendor branches have performed several vendors inspections using this procedure.

IP 43004 Guidance (cont'd)

- Inspection Requirements
 - Review for suitability of applications per Criterion III, “Design Control,” of Appendix B
 - CGI acceptance criteria per Criterion VII, “Control of Purchased Material, Equipment, and Services”
 - CGI program development and implementation

IP 43004 Guidance (cont'd)

- Technical Evaluations
- Determine item's safety function and service conditions
- Environmental and seismic qualification
- Review of vendor's technical data
- Failure Modes and Effects Analysis (FMEA)
- Identification of item's critical characteristics
- Determine appropriate verification /acceptance methods

IP 43004 Guidance (cont'd)

- Like-for-Like CGI Replacements
 - Purchased from same vendor, same time frame, same manufacturing process, OR
 - No changes in design, materials, or manufacturing processes since procurement of the item being replaced
 - Meeting the same industry standards may be a necessary condition, but is **NOT** sufficient for like-for-like determination

IP 43004 Guidance (cont'd)

- Equivalency evaluations
 - Document differences between original item and replacement item
 - Identify and verify critical characteristics during acceptance
 - Should **NOT** be used as sole basis to accept a CGI for safety related use

Critical Characteristics

- Consider Important Design, Material, And Performance Characteristics
- FMEA / Industry Experience / Manufacturer's Technical Data
- Item functionality under All Design Basis Conditions

Identification of Critical Characteristics

- Special Considerations for Applications Requiring Environmental or Seismic Qualification
 - IDENTIFY CHARACTERISTICS THAT WILL PROVIDE ASSURANCE THAT SEISMIC AND ENVIRONMENTAL QUALIFICATION IS MAINTAINED