

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20055-0001

July 25, 1996

NRC INFORMATION NOTICE 96-40: DEFICIENCIES IN MATERIAL DEDICATION AND
PROCUREMENT PRACTICES AND IN AUDITS OF VENDORS

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The United States Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to deficiencies in the dedication practices of manufacturers and suppliers of commercial-grade items such as fasteners, pipe, fittings, and structural shapes that are supplied as components of more complex pieces of equipment. This information notice also identifies deficiencies in licensee audits of manufacturers and suppliers. It is expected that the recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Background

The NRC has conducted a series of inspections of material manufacturers and suppliers to assess the effectiveness of quality assurance practices related to the supply of materials to nuclear plants. These inspections focused, in part, on assessing the effectiveness of current procurement practices in preventing substandard material from entering the nuclear supply chain. The inspections are limited to suppliers of simple material products, such as fasteners, pipe, fittings, and structural shapes. A list of the vendors that were inspected and the corresponding NRC inspection report numbers are included in Attachment 1. Although all vendors included in this series of inspections are accredited by the American Society of Mechanical Engineers (ASME) to supply material meeting the quality requirements of Subarticle NCA 3800 of Section III of the ASME Code, purchases of both ASME Code and non-Code material were reviewed.

Discussion

The inspection results suggest that material purchased to ASME Code requirements from vendors accredited by the ASME was generally of acceptable quality for nuclear applications. Material procured in this manner complies

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with the quality assurance requirements of Title 10 of the Code of Federal Regulations, Part 50, Appendix B.

The NRC staff identified a concern that some licensees accepted material under the ASME Code small parts exemption (NX 2610) apparently without review for suitability of application by an N Certificate holder as required by the ASME Code. This type of material is typically supplied under the vendor commercial-grade material dedication program and does not meet the material quality requirements specified in Section NCA 3800 of the ASME Code.

Non-Code Material purchased to 10 CFR 50 Appendix B quality requirements from all vendors (including ASME accredited vendors) is typically supplied under the vendor's commercial grade material dedication program and certified as meeting Appendix B to 10 CFR Part 50. For items purchased in this manner, a number of concerns were identified:

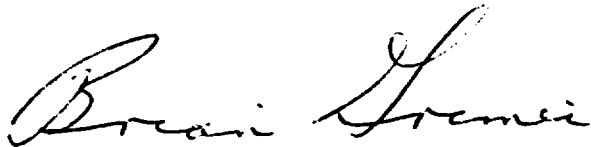
- Inconsistent approach to identification of the critical characteristics of the material dedicated. Guidance for selection of critical characteristics was not provided or was inadequate. Some vendors identify all material specification requirements as critical, while others select certain parameters which may be based on ease of verification.
- Indirect verification methods. Some vendors use direct verification methods when testing material while others use indirect methods (e.g., hardness testing to verify tensile properties).
- Heat traceability generally was not established for material to be verified by destructive testing. No technical bases or confidence levels were established when using sampling plans to test material from potentially nonhomogeneous lots.
- Audits by licensees or those performed by the Nuclear Procurement Issues Council (NUPIC) were often ineffective in identifying the problems described above. Insufficient detail was provided in audit reports to enable a third-party user to draw meaningful conclusions about the vendor commercial-grade-item dedication program or the material sampling program.
- Licensee purchase orders for material were often confusing and sometimes contained conflicting information.

On September 21, 1995, the NRC staff met with representatives from NUPIC to discuss the results of NRC inspections of material suppliers as well as recent improvements in the NUPIC audit process. At this meeting, NUPIC informed the NRC staff that the NUPIC inspection checklists have been changed to require that audit reports provide additional discussion on the commercial-grade-item dedication process, including a discussion of any sampling plans used as part of the dedication process.

As noted in the listed inspection reports, the NRC concluded that the commercial-grade material dedicated and supplied by the vendors inspected during this series of inspections could not be considered as equivalent to material manufactured under an Appendix B program or to material supplied under the quality requirements of ASME Code, Section III, NCA 3800. This situation resulted primarily from failure to establish material traceability and insufficient sampling to verify critical characteristics of nonhomogeneous lots. Devoting increased attention to the commercial-grade dedication processes of vendors and the inclusion of more meaningful technical and quality specifications in licensee purchase orders can address this problem.

In correspondence with several of the vendors that were inspected, the NRC reiterated the 10 CFR Part 21 definition of the term "dedication" as an acceptance process undertaken to provide reasonable assurance that a commercial-grade item to be used as a basic component will perform its intended safety function and, in this respect, is deemed equivalent to an item that is designed and manufactured under an Appendix B quality assurance program. The correspondence also identified a procurement option that could be used for a significant volume of safety-related material without requiring the vendor to perform a complete verification of all specification parameters. The complete text of this correspondence has been published in NUREG-0040, "Licensee Contractor and Vendor Inspection Status Report," Vol. 19, No. 4, October-December 1995, under "Correspondence Related to Vendor Issues."

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contacts listed below or the Office of Nuclear Reactor Regulation project manager.



Brian K. Grimes, Acting Director
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Technical Contacts: Uldis Potapovs, NRR
(301) 415-2959
E-mail: uxp@nrc.gov

Larry Campbell, NRR
(301) 415-2976
E-mail: llc3@nrc.gov

Attachments:

1. Vendors (Material Suppliers) Inspected
2. List of Recently Issued NRC Information Notices

Vendors (Material Suppliers) Inspected

| <u>Vendor</u> | <u>Inspection Date</u> | <u>NRC Report Number</u> |
|--|---|----------------------------------|
| Mid-South Nuclear, Inc. Birmingham, Alabama | January 25-28, 1994 August 22-25, 1995 | 99901270/94-01 99901270/95-01 |
| Cardinal Industrial Prod. Las Vegas, Nevada | November 29-December 1, 1995 | 99901076/94-01 |
| Mackson, Inc. Rock Hill, South Carolina | February 15-17, 1995 | 99901179/95-01 |
| Energy & Process Corp. Tucker, Georgia | May 8-11, 1995 | 99900866/95-01 |

LIST OF RECENTLY ISSUED
 NRC INFORMATION NOTICES

| Information Notice No. | Subject | Date of Issuance | Issued to |
|------------------------|---|------------------|--|
| 96-09, Supp. 1 | Damage in Foreign Steam Generator Internals | 07/10/96 | All holders of OLs or CPs for pressurized-water reactors |
| 96-39 | Estimates of Decay Heat Using ANS 5.1 Decay Heat Standard May Vary Significantly | 07/05/96 | All holders of OLs or CPs for nuclear power reactors |
| 96-38 | Results of Steam Generator Tube Examinations | 06/21/96 | All holders of OLs or CPs for pressurized water reactors |
| 96-37 | Inaccurate Reactor Water Level Indication and Inadvertent Draindown During Shutdown | 06/18/96 | All pressurized water reactor facilities holding an operating license or a construction permit |
| 96-36 | Degradation of Cooling Water Systems Due to Icing | 06/12/96 | All holders of OLs or CPs for nuclear power reactors |
| 96-35 | Failure of Safety Systems on Self-Shielded Irradiators Because of Inadequate Maintenance and Training | 06/11/96 | All U.S. Nuclear Regulatory Commission irradiator licensees and vendors |
| 96-34 | Hydrogen Gas Ignition during Closure Welding of a VSC-24 Multi-Assembly Sealed Basket | 05/31/96 | All holders of OLs or CPs for nuclear power reactors |
| 96-33 | Erroneous Data From Defective Thermocouple Results in a Fire | 05/24/96 | All material and fuel cycle licensees that monitor temperature with thermocouples |

OL = Operating License
 CP = Construction Permit

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Original signed by Brian K. Grimes

Brian K. Grimes, Acting Director
 Division of Reactor Program Management
 Office of Nuclear Reactor Regulation

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 (301) 415-2959
 E-mail: uxp@nrc.gov
 Larry Campbell, NRR
 (301) 415-2976
 E-mail: 11c3@nrc.gov

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1. Vendors (Material Suppliers) Inspected
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*SEE PREVIOUS CONCURRENCES Tech Editor has concurred & reviewed on 06/06/96

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| DATE | 06/12/96 | 06/28/96 | 07/23/96 | | | |

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Technical Contacts: Uldis Potapovs, NRR
(301) 415-2959
internet:uxp@nrc.gov

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(301) 415-2976
internet:llc3@nrc.gov

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Division of Reactor Program Management
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internet:uxp@nrc.gov

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(301) 415-2976
internet:l1c3@nrc.gov

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Brian K. Grimes, Acting Director
 Division of Reactor Program Management
 Office of Nuclear Reactor Regulation

Technical Contacts: Uldis Potapovs, NRR
 (301) 415-2959
 internet:uxp@nrc.gov

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 (301) 415-2976
 internet:llc3@nrc.gov

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| NAME | UPotapovs/ LCambell | UP (Comments) | RGall | AChaffee | BGrimes | | | |
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