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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

April 11, 1986

IE INFORMATION NOTICE NO. 86-25: TRACEABILITY AND MATERIAL CONTROL OF MATERIAL AND EQUIPMENT, PARTICULARLY FASTENERS

Addressees:

All nuclear power reactor facilities holding a construction permit (CP) or an operating license (OL).

Purpose:

This notice is provided to alert recipients of potentially significant problems identified during NRC Construction Appraisal Team (CAT) inspections of licensee programs for the inspection of material and equipment, particularly fasteners, to prevent the use of incorrect or defective materials, parts and components. It is expected that the recipients will review the information for applicability to their facilities and consider actions, if appropriate, to preclude similar problems from occurring at their facilities. However, suggestions contained in this notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

During NRC CAT inspections conducted since 1982, deficiencies in material traceability and control of fasteners were identified at 11 sites. This raised questions regarding the adequacy of controls to prevent the use of incorrect or defective fastener materials. A brief summary of findings for each site is attached. See Attachment 1.

Discussion


The deficiencies in material traceability and control of fasteners identified at 11 sites mentioned above were attributed to ineffective site inspection programs and vendor surveillance activities by the licensees. Deficiencies were found in fasteners for large vendor-supplied mechanical and electrical equipment (e.g., pump-motor assemblies mounted on skids) and in bolting for battery racks and electrical equipment cabinets at many sites. These and other deficiencies are described in Attachment 1.

Because fastener deficiencies, if uncorrected, could adversely affect operational safety and/or safety in case of seismic events, recipients of this notice should review the information presented to avoid similar deficiencies at their facilities.

It is important that particular attention be given to licensee programs for ensuring the traceability of material and equipment and to prevent the use of incorrect or defective materials, parts and components. It is important that the licensee be aware of 10 CFR 50, Appendix B, Criterion VIII - Identification and Control of Materials, Parts and Components and applicable codes and specifications and that measures have been established and implemented for identification and control of materials, parts and components and for traceability both to the approved design basis and to the source. It is important that required identification of the item is maintained by heat number, part number, serial number, or other appropriate means, either on the item or on records traceable to the item as required, and that required markings are on the item.

The licensee has the responsibility to use qualified individuals to examine markings on material and equipment and verify that the markings represent material and equipment as specified by the design drawings and specifications. In the case of fasteners, compliance with the applicable material specification (e.g., ASTM or ASME material and grade) is verified by required markings on bolts and nuts and certified material test reports or certificates of conformance as required by the applicable procurement drawings and specifications and/or by the applicable codes and specifications. In the case of vendor-supplied equipment assemblies containing fasteners, it is important to verify compliance with approved vendor drawings and specifications and other information such as materials used for equipment qualification tests and/or analyses. It is important that caution be exercised to ensure that the required markings on material and equipment, including fasteners, not only exist but that the markings indicate the correct material and grade as specified.

No specific action or written response is required by this information notice. If you have any questions regarding this matter, please contact the Regional Administrator of the appropriate NRC Regional Office, or this office.


Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: Henry Phillips, IE
(301) 492-4531

Attachments:

1. Summary of Deficiencies Found During
NRC CAT Inspections at Various Sites
2. List of Recently Issued IE Information Notices

SUMMARY OF DEFICIENCIES FOUND DURING
NRC CAT INSPECTIONS AT VARIOUS SITES

South Texas Project Units 1 and 2

During the NRC CAT inspection conducted at the South Texas Project in October and November 1985, lack of traceability was found for fastener materials for certain vendor-supplied large mechanical equipment assemblies mounted on skids and for certain electrical equipment. It also was found that engineering had deleted the requirement of the specified national standard for manufacturers marking of fasteners intended for electrical cable tray and conduit supports, which contributed to the resulting uncertainty of fastener control and traceability during and after installation. For details refer to Construction Appraisal Team Inspection Report 50-498/85-21 and 50-499/85-19.

Byron Unit 2 Station

During the NRC CAT inspection conducted at the Byron Unit 2 Station in August and September 1985, significant lack of traceability was found for fastener materials, including assembly and mounting bolts for large vendor-supplied pumps/motors; bolts for battery racks, electrical switchgear and other equipment; and bolts attaching heating, ventilation, and air conditioning (HVAC) duct sections. For details refer to Construction Appraisal Team Inspection Report 50-455/85-27.

Clinton Power Station

During the NRC CAT inspection conducted at the Clinton Power Station in May and June 1985, lack of traceability was found for some vendor-supplied fastener materials, including bolts for large pump-motor and skid-mounted pump-turbine assemblies, and mounting bolts for HVAC control cabinets. For details refer to Construction Appraisal Team Inspection Report 50-461/85-30.

Millstone Unit 3

During the NRC CAT inspection conducted at the Millstone Unit 3 site in February and March 1985, significant lack of traceability was found for vendor-supplied fastener materials, including bolts for mounting large pump motors, bolts for battery racks, and bolts for interconnecting adjacent motor control center cabinets. For details refer to Construction Appraisal Team Inspection Report 50-423/85-04.

Shearon Harris Unit 1

During the NRC CAT inspection conducted at the Shearon Harris Unit 1 site in October and November 1984, problems were identified regarding traceability of fastener materials, including large embedded anchor bolts and equipment mounting bolts and nuts. It was noted that both the applicant and the NRC Region II had previously identified such deficiencies and corrective actions were in progress by the applicant. For details refer to Construction Appraisal Team Inspection Report 50-400/84-41.

River Bend Unit 1

During the NRC CAT inspection conducted at the River Bend Unit 1 site in July and August 1984, deficiencies were found in material traceability and control of some safety-related fasteners, piping flange components, and environmental control of weld filler material storage ovens. Also, work or rework of some flange joints was being accomplished without QC or engineering knowledge or concurrence, which also resulted in a loss of material control. For details refer to Construction Appraisal Team Inspection Report 50-458/84-23.

Seabrook Station

During the NRC CAT inspection conducted at the Seabrook Station in April and May 1984, problems were identified regarding traceability of embedded anchor bolt/nut assemblies, equipment mounting bolts and nuts, flange fasteners and the use of indeterminate fastening materials in seismic bolting applications. For details refer to Construction Appraisal Team Inspection Report 50-443/84-07.

Waterford Steam Electric Station Unit 3

During the NRC CAT inspection conducted at the Waterford Steam Electric Station Unit 3 in February and March 1984, traceability deficiencies were found for such fastener items as embedded anchor bolts; equipment mounting bolts/studs, nuts and washers; and flange joint studs and nuts. For details refer to Construction Appraisal Team Inspection Report 50-382/84-07.

Nine Mile Point Station Unit 2

During the NRC CAT inspection conducted at the Nine Mile Point Station Unit 2 in November and December 1983, material traceability deficiencies were found for ASME III Class 1 linear NF hanger parts for the reactor coolant recirculation system, and a number of examples of deficiencies in material control for safety-related fasteners and unused weld material were found in the plant. For details refer to Construction Appraisal Team Inspection Report 50-410/83-18.

Perry Nuclear Power Plant Units 1 and 2

During the NRC CAT inspection conducted at the Perry Nuclear Power Plant Units 1 and 2 in August and September 1983, deficiencies were found in traceability and material control for fasteners and small components. For details refer to Construction Appraisal Team Inspection Report 50-440/83-31, 50-441/83-30.

Washington Nuclear Plant Number 2 (WNP-2)

During the NRC CAT inspection conducted at WNP-2 in May and June 1983, problems were identified in the area of fastener traceability. Specifically, improper or uncontrolled material substitutions were noted with respect to fastener quality on pipe flanges, valve bonnets, mechanical connections, and pump couplings. For details refer to Construction Appraisal Inspection Report 50-397/83-29.

LIST OF RECENTLY ISSUED
 IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-24	Respirator Users Notice: Increased Inspection Frequency For Certain Self-Contained Breathing Apparatus Air Cylinders	4/11/86	All power reactor facilities holding an OL or CP; research and test reactor facilities; fuel cycle licensees and Priority 1 material licensees
86-23	Excessive Skin Exposures Due To Contamination With Hot Particles	4/9/86	All power reactor facilities holding an OL or CP
86-22	Underresponse Of Radition Survey Instrument To High Radiation Fields	3/31/86	All power reactor facilities holding an OL or CP and research and test reactors
86-21	Recognition Of American Society Of Mechanical Engineers Accreditation Program For N Stamp Holders	3/31/86	All power reactor facilities holding an OL or CP and all recipients of NUREG-0040 (white book)
86-20	Low-Level Radioactive Waste Scaling Factors, 10 CFR Part 61	3/28/86	All power reactor facilities holding an OL or CP
86-19	Reactor Coolant Pump Shaft Failure At Crystal River	3/21/86	All power reactor facilities holding an OL or CP
86-18	NRC On-Scene Response During A Major Emergency	3/26/86	All power reactor facilities holding an OL or CP
86-17	Update Of Failure Of Auto- matic Sprinkler System Valves To Operate	3/24/86	All power reactor facilities holding an OL or CP

OL = Operating License
 CP = Construction Permit