

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
WASHINGTON, D.C. 20555-0001

June 7, 1995

**NRC INFORMATION NOTICE 95-29: OVERSIGHT OF DESIGN AND FABRICATION ACTIVITIES  
FOR METAL COMPONENTS USED IN SPENT FUEL DRY  
STORAGE SYSTEMS**

Addressees

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

Independent spent fuel storage installation designers and fabricators.

Purpose

The U.S. Nuclear Regulatory Commission is issuing this information notice to alert addressees to observed shortcomings in oversight of design and fabrication activities for metal components used in spent fuel dry storage systems. It is expected that 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 are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

As part of an application for an independent spent fuel storage installation license or spent fuel dry storage system certificate of compliance, the applicant provides quality assurance commitments to NRC pursuant to the requirements of Part 72, Subpart G, of Title 10 of the *Code of Federal Regulations*. The holder of a general license under 10 CFR Part 72, Subpart K, must implement the quality assurance program approved by NRC under its 10 CFR Part 50 license for activities under the general license. NRC performs inspections of licensees and certificate of compliance holders to verify adequate implementation of these regulatory requirements.

NRC has been conducting quality assurance inspections of designers and fabricators of metal components for dry storage systems since 1991. Metal components of dry storage systems are normally fabricated at vendor facilities located offsite from a power reactor licensee. These components include items (e.g., storage canister, storage basket, and onsite transfer cask) that are not part of the concrete installation structures. Inspections have been conducted at design facilities, fabrication facilities and reactor licensee sites to review specific dry storage system quality requirements and their implementation. A total of six NRC inspection reports have been issued to date: specifically, Inspection Report Nos. 722501/91-02, 721007/92-01, 721004/93-07, 72-1007/94-207, 72-0010/94-210, and 72-0010/94-212. The results

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of these inspections are relevant to licensees and certificate holders who are currently, or are planning to be, involved in design, fabrication or oversight activities associated with dry storage systems. In five of the six inspections, NRC identified shortcomings in the implementation of quality assurance commitments. The most frequent inspection findings are categorized in Attachment 1, "Inspection Findings for Design and Fabrication Activities of Metal Components Used in Spent Fuel Dry Storage Systems."

### Discussion

NRC inspects the implementation of licensee and certificate holder quality assurance programs to verify the quality of metal components used in dry storage systems. In order to ascertain compliance with safety analysis report commitments, the inspection teams review design and fabrication records, weldment radiographs, licensee oversight of vendor activities, fabrication processes, nondestructive examination activities, and personnel qualifications.

As shown in Attachment 1, the majority of inspection findings were in the areas of document control, quality assurance records, and control of purchased material, equipment and services.

These inspection results present a number of findings which individually may not be of high safety significance. However, when the inspection team identifies many occurrences of the same type of finding, or many findings in a variety of areas, the overall assurance of quality is undermined. On several occasions, the quality of safety-related hardware was indeterminate at the conclusion of the inspection. Only after extensive searches for missing quality records, physical reexamination or testing were the issues resolved. The time required to resolve these inspection findings has resulted in significant delays in schedules to reactor facility licensees and certificate holders.

### Related Generic Communications

IN 95-28, "Emplacement of Support Pads for Spent Fuel Dry Storage Installations at Reactor Sites."

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



**Brian K. Grimes, Director  
Division of Project Support  
Office of Nuclear  
Reactor Regulation**



**Donald A. Cool, Director  
Division of Industrial and  
Medical Nuclear Safety  
Office of Nuclear Material  
Safety and Safeguards**

**Technical contacts: Stephen C. O'Connor, NMSS  
(301) 415-7878**

**Stephen S. Koenick, NRR  
(301) 415-2841**

**Attachments:**

- 1. Inspection Findings for Design and Fabrication  
Activities of Metal Components Used in  
Spent Fuel Dry Storage Systems**
- 2. List of Recently Issued NMSS Information Notices**
- 3. List of Recently Issued NRC Information Notices**

*Attachment Filed  
in Jacket*

**INSPECTION FINDINGS FOR DESIGN AND FABRICATION ACTIVITIES  
OF METAL COMPONENTS USED IN SPENT FUEL DRY STORAGE SYSTEMS**

<b>Quality Assurance (QA) Program Section</b>	<b>No. of Inspection Findings</b>
Document Control	20
Maintenance of QA Records	19
Control of Purchased Material, Equipment, and Services	18
Control of Measuring and Test Equipment	16
Instructions, Procedures, and Drawings	14
Inspection (Fabrication Hold Points and Quality Control)	12
Nonconforming Materials, Parts, or Components	11

**Description of QA Program Findings:**

- Document control deficiencies can be summarized generally as outdated revisions of procedures, instructions and drawings located where they may be used inadvertently by personnel, or missing authorization signatures, dates or approval stamps.
- Maintenance of QA records deficiencies can be summarized generally as inadequacies in maintaining sufficient documented evidence of welder qualifications, dimensional checks, certified material test reports, or records of weld repairs.
- Control of purchased material, equipment, and services deficiencies can be summarized generally as use of contractors or suppliers not on an approved vendor list, missed periodic audits of contractors or suppliers on an approved vendor list, or inadequate examination of products on delivery.
- Control of measuring and test equipment deficiencies can be summarized generally as use of inappropriate or uncalibrated equipment in fabrication, test or operation activities.
- Deficiencies in instructions, procedures and drawings can be summarized generally as performing activities affecting quality that are not in accordance with approved documented guidelines.
- Inspection deficiencies can be summarized generally as fabrication hold points not witnessed and approved by authorized personnel, or unqualified quality control inspection personnel.
- Nonconforming materials, parts or components deficiencies can be summarized generally as nonconforming items not identified as such to prevent inadvertent use, or not tracked and documented properly to maintain a complete history of materials used in fabrication.

LIST OF RECENTLY ISSUED  
NMSS INFORMATION NOTICES

<b>Information Notice No.</b>	<b>Subject</b>	<b>Date of Issuance</b>	<b>Issued to</b>
95-28	Emplacement of Support Pads for Spent Fuel Dry Storage Installations at Reactor Sites	06/05/95	All holders of OLs or CPs for nuclear power reactors.
95-25	Valve Failure during Patient Treatment with Gamma Stereotactic Radiosurgery Unit	05/11/95	All U.S. Nuclear Regulatory Commission Medical Licensees.
94-64, Supp. 1	Reactivity Insertion Transient and Accident Limits for High Burnup Fuel	04/06/95	All holders of OLs or CPs for Nuclear Power Reactors and all fuel fabrication licensees.
95-07	Radiopharmaceutical Vial Breakage during Preparation	01/27/95	All U.S. Nuclear Regulatory Commission medical licensees authorized to use byproduct material for diagnostic procedures.
95-01	DOT Safety Advisory: High Pressure Aluminum Seamless and Aluminum Composite Hoop-Wrapped Cylinders	01/04/95	All U.S. Nuclear Regulatory Commission licensees.
94-89	Equipment Failures at Irradiator Facilities	12/28/94	All U.S. Nuclear Regulatory Commission irradiator licensees.
89-25, Rev. 1	Unauthorized Transfer of Ownership or Control of Licensed Activities	12/07/94	All fuel cycle and material licensees.
94-81	Accuracy of Bioassay and Environmental Sampling Results	11/25/94	All U.S. Nuclear Regulatory Commission licensees.

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95-28	Emplacement of Support Pads for Spent Fuel Dry Storage Installations at Reactor Sites	06/05/95	All holders of OLs or CPs for nuclear power reactors.
95-27	NRC Review of Nuclear Energy Institute, "Thermo-Lag 330-1 Combustibility Evaluation Methodology Plant Screening Guide"	05/31/95	All holders of OLs or CPs for nuclear power plants.
95-26	Defect in Safety-Related Pump Parts due to Inadequate Heat Treatment	05/31/95	All holders of OLs or CPs for nuclear power reactors.
94-61, Supp. 1	Corrosion of William Power Gate Valve Disc Holders	05/25/95	All holders of OLs or CPs for nuclear power reactors.
95-25	Valve Failure during Patient Treatment with Gamma Stereotactic Radiosurgery Unit	05/11/95	All U.S. Nuclear Regulatory Commission Medical Licensees.
95-24	Summary of Licensed Operator Requalification Inspection Program Findings	04/25/95	All holders of OLs or CPs for nuclear power reactors.
95-23	Control Room Staffing Below Minimum Regulatory Requirements	04/24/95	All holders of OLs or CPs for nuclear power reactors and all licensed operators and senior operators at those reactors.
95-22	Hardened or Contaminated Lubricants Cause Metal Clad Circuit Breaker Failures	04/21/95	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License  
CP = Construction Permit

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orig /s/'d by BKGrimes

orig /s/'d by DACool

Brian K. Grimes, Director  
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 Office of Nuclear Material  
 Safety and Safeguards

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 (301) 415-7878

Stephen S. Koenick, NRR  
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Attachments:

1. Inspection Findings for Design and Fabrication Activities of Metal Components Used in Spent Fuel Dry Storage Systems
2. List of Recently Issued NMSS Information Notices
3. List of Recently Issued NRC Information Notices

DOCUMENT NAME: 95-29.IN

\*See previous concurrence

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OFFICE	OECB/DOPS	ADM:PUB	C:EMEB/DE	D:DOTS	PD3-III
NAME	SSKoenick*	Tech Ed*	GBagchi*	RSpessard*	GHMarcus*
DATE	05/ /95	05/19/95	05/23/95	05/23/95	05/25/95
OFFICE	SC:OECB/DOPS	OECB/DOPS	D:IMNS/NMSS	C:OECB/DOPS	D:OOPS/NRR
NAME	EFGoodwin*	RJKiessel*	DACool	AEChaffee*	BKGrimes
DATE	05/25/95	05/25/95	05/5/95	05/26/95	05/5/95

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NAME	EFGoodwin*	RJKiessel*	DACool	AEChaffee*	BKGrimes <i>del</i>
DATE	05/25/95	05/25/95	05/ /95	05/26/95	05/ /95

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*NMSS (SCDB) originated  
 this IN, not NRR,  
 [Signature]*

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DATE	05/19/95	05/19/95	05/23/95	05/23/95	05/25/95
OFFICE	SC:OECB/DOPS	OECB/DOPS	D:IMNS/NMSS	C:OECB/DOPS	D:DOPS/NRR
NAME	EFGoodwin <i>FOR SSK</i>	RJKiessel	DCool	AEChaffee	BKGrimes
DATE	05/25/95	05/25/95	05/ /95	05/ /95	05/ /95