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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

JUN 27 1979

In Reply Refer To:
RII:JPO
50-413, 50-414
50-488, 50-489
50-490, 50-491
50-492, 50-493

Duke Power Company
Attn: L. C. Dail, Vice President
Design Engineering
P. O. Box 33189
Charlotte, North Carolina 28242

Gentlemen:

The enclosed Circular 79-11, is forwarded to you for information. No written response to this Circular is required. If you require additional information regarding this subject, please contact this office.

Sincerely,

James P. O'Reilly
Director

Enclosures:
1. IE Circular No. 79-11
2. List of IE Circulars
Issued in the Last
12 Months

337 352

7907180 288

cc w/encl:
D. G. Beam, Project Manager
Post Office Box 223
Clover, South Carolina 29710

J. T. Moore, Project Manager
Post Office Box 422
Gaffney, South Carolina 29340

337 353

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

June 27, 1979

IE Circular No. 79-11

DESIGN/CONSTRUCTION INTERFACE PROBLEM

Description of Circumstances:

Apparent inadequate communication between nuclear steam supply system (NSSS), architect/engineer (A/E) and constructors have resulted in several cases where reactor vessels or the supports have been misoriented. The misorientation problems appear to occur at sites where dual reactor units are being constructed and one primary system layout is a mirror image of the other.

In 1975 TVA reported a misorientation problem with the Sequoyah Unit 2 reactor vessel. Westinghouse was the NSSS supplier and TVA provided their own A/E service.

In 1977 the Southern California Edison Company reported a reactor vessel misorientation at San Onofre Unit 2. Combustion Engineering was the NSSS supplier and Bechtel provided the A/E service.

In 1979 the Texas Utilities Generating Company reported a reactor vessel support system misorientation at Comanche Peak Unit 2. Westinghouse supplied the NSSS, Gibbs and Hill was the plant engineer and Brown and Root was the constructor.

Even though there appears to be minimal safety implications associated with the particular misorientation problems mentioned, repetition of the same type of errors suggests breakdowns in the design/construction interface relationships that could in turn lead to more significant safety problems.

Corrective preventive action is recommended for the following reasons:

- If the interface control system between the NSSS/AE/Construction is marginal or ineffective as evidenced by the misorientation of reactor vessels and their supports, it is possible that other safety related equipment may also be misoriented and/or mislocated. In some cases the errors may not be as obvious as a misoriented reactor vessel.

- This type of error can and has resulted in hardware modifications and could cause functional and/or structural changes that affect design and operating parameters.

- In translating NSSS design information into site construction documents, the A/E may make changes to facilitate construction of the balance of plant. These translations may also introduce errors which may not be

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recognized as errors by the A/E's review system. The organization responsible for function and/or structural design must be made aware of changes affecting design and operating parameters so that proper evaluation is performed.

It is recognized that there are effective field construction inspection systems, deficiency reporting systems and as-built check systems to uncover and correct for deviations from design. However, these are reactive type systems that address the problems after the errors occur and that rely on detection of errors and design deviations in the construction phase. The detection of certain other errors and design deviations may only be recognizable at the design level.

The NRC's concern is that in some instances sufficient checks at the design level are not being performed to preclude design errors discovered at the construction site and that the designer may not be aware of other design related changes that affect design and operating parameters. The 10 CFR 50, Appendix B requirement that addresses this concern is contained in Criteria III which states in part:

"Measures shall be established for the identification and control of design interfaces and for coordination among participating design organizations. These measures shall include the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces."

Preventive action at the design level is necessary to minimize the possibility of the appropriate parties not being aware of A/E and construction related design changes and to prevent errors from occurring. An appropriate preventive action would be to have the NSSS review A/E drawings that show the location, orientation, clearance, etc., for equipment that the NSSS has functional and/or structural design responsibility.

All holders of construction permits should be aware of the potential problems caused by inadequate communication between the design organization and the construction organization and should take appropriate action to assure themselves that adequate interface controls are established and implemented.

No written response to this circular is required. If you require additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

IE Circular No. 79-11
June 27, 1979

LISTING OF IE CIRCULARS ISSUED IN LAST TWELVE MONTHS

Circular No.	Subject	Date of Issue	Issued To
78-12	HPCI Turbine Control Valve Lift Rod Bending	6/30/78	All Holders of BWR OLs or CPs for plants with HPCI Terry Turbine
78-13	Inoperability of Multiple Service Water Pumps	7/10/78	All Holders of Reactor OLs and CPs except for plants located in: AL, AK, CA, FL, GA, LA, MS, SC
78-14	HPCI Turbine Reversing Chamber Hold Down Bolting	7/12/78	All Holders of BWR OLs or CPs for plants with a HPCI Terry Turbine excepting Duane Arnold and Monticello
78-15	Checkvalves Fail to Close In Vertical Position	7/20/78	All Holders of Reactor OLs or CPs
78-16	Limitorque Valve Actuators	7/26/78	All Holders of Reactor OLs or CPs
78-17	Inadequate Guard Training/ Qualification and Falsified Training Records	10/13/78	All Holders of and applicants for Reactor OLs
78-18	UL Fire Test	11/6/78	All Holders of Reactor OLs or CPs
78-19	Manual Override (Bypass) of Safety Actuation Signals	12/28/78	All Holders of CPs

LISTING OF IE CIRCULARS ISSUED IN
LAST TWELVE MONTHS

Circular No.	Subject	Date of Issue	Issued to
79-01	Administration of Unauthorized Byproduct Material to Humans	1/12/79	All Holders of Licensees except Teletherapy Medical Licensees and each Radiopharmaceutical Suppliers
79-02	Failure of 120 Volt Vital AC Power Supplies	2/16/79	All Holders of Reactor OLs and CPs
79-03	Inadequate Guard Training-Qualification and Falsified Training Records	2/23/79	All Holders of and applicants for Special Nuclear Material Licenses in Safeguards Group I
79-04	Loose Locking Nut On Limitorque Valve Operators	3/16/79	All Holders of Reactor OLs or CPs
79-05	Moisture Leakage In Stranded Wire Conductors	3/20/79	All Holders of Reactor OLs or CPs
79-06	Failure to Use Syringe and Battle Shields in Nuclear Medicine	4/19/79	All Holders of Medical Licensees except teletherapy licensees
79-07	Unexpected Speed Increase of Reactor Recirculation MG Set Resulted in Reactor Power Increase	5/2/79	All Holders of BWR OL's or CP's
79-08	Attempted Extortion - Low Enriched Uranium	5/18/79	All Fuel Facilities Licensed by NRC
79-09	Occurrences of Split or Punctured Regulator Diaphragms In Certain Self Contained Breathing Apparatus	6/22/79	All Materials Priority I, Fuel Cycle and Operating Reactor Licensees

LISTING OF IE CIRCULARS ISSUED IN
LAST TWELVE MONTHS

Circular No.	Subject	Date of Issued	Issued to
79-10	Pipefittings Manufactured from Unacceptable Material	6/26/79	All Power Reactor Licensees with a CP and/or OL