UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

August 22, 1980

Docket No. 50-333

Power Authority of the State of New York
James A. FitzPatrick Nuclear Power Plant
ATTN: Mr. R. J. Pasternak
Resident Manager
P. O. Box 41
Lycoming, New York 13093

Gentlemen:

The enclosed IE Circular No. 80-18, "10 CFR 50.59 Safety Evaluations for Changes to Radioactive Waste Treatment Systems," is forwarded to you for information. No written response is required. If you desire additional information regarding this matter, please contact this office.

Sincerely,

Boyce H. Grier

Boyce H. Grier
Director

Enclosures:
1. IE Circular No. 80-18
2. List of Recently Issued IE Circulars

CONTACT: P. J. Knapp
(8-488-1291)

cc w/encls:
George T. Berry, President and Chief Operating Officer
J. P. Bayne, Senior Vice President-Nuclear Generation
A. Klausmann, Director, Quality Assurance
M. C. Cosgrove, Site Quality Assurance Engineer
J. F. Davis, Chairman, Safety Review Committee
C. M. Pratt, Assistant General Counsel
G. M. Wilverding, Manager-Nuclear Licensing

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

August 22, 1980

IE Circular No. 80-18: 10 CFR 50.59 SAFETY EVALUATIONS FOR CHANGES TO RADIOACTIVE WASTE TREATMENT SYSTEMS

Discription of Circumstances:

Recent inspection efforts at operating power reactors have revealed numerous instances in which licensees have failed to perform adequate safety evaluations to support changes made to the design and/or operation of facility radioactive waste treatment systems. These safety evaluations are required by the regulations of 10 CFR 50.59 whenever changes are made in the facility as described in the Safety Analysis Report (SAR).

The inadequacies of the evaluations have caused radiological safety hazards to occur unidentified and therefore to remain unevaluated and uncorrected. In two particular cases, the inadequately evaluated system changes resulted in system failures that caused an uncontrolled release of radioactivity to the environment. In each of these situations, a proper 10 CFR 50.59 safety evaluation should have identified and corrected deficiencies in the system modification and/or operation and would have prevented the inadvertent release of radioactivity.

NRC followup examination of the situation indicates that the inconsistency and/or inadequacy of licensee safety evaluations may be widespread. A wide range of opinions seems to exist among licensees as to what constitutes an appropriate 10 CFR 50.59 safety evaluation, particularly for radwaste systems. Therefore, the following discussion and/or guidance is provided for licensee use in preparing future 10 CFR 50.59 safety evaluations to support changes in the design and/or operation of the radioactive waste treatment systems of licensed facilities.

Although the contents of this guidance are specifically directed to the radioactive waste systems, the general principles and philosophy of the 10 CFR 50.59 safety evaluation guidance are also applicable to the facility design and operation as a whole; thus, the application of 10 CFR 50.59 should reflect a consistent approach.

Discussion:

The requirements of 10 CFR 50.59 are composed of three essential parts. First, paragraph (a)(1) is permissive in that it allows the licensee to make changes to the facility and its operation as described in the Safety Analysis Report without prior approval, provided that a change in Technical Specifications is not involved or an "unreviewed safety question" does not exist. Criteria for determining whether an "unreviewed safety question" exists are defined in paragraph (a)(2). Second, paragraph (b) requires that records of changes made under the authority of paragraph (a)(1) be maintained. These records are required to include a written safety evaluation that provides the

basis for determining whether an "unreviewed safety question" exists. Paragraph (b) also requires a report (at least annually) of such changes to the NRC. Third, paragraph (c) requires that proposed changes in Technical Specifications be submitted to the NRC as an application for license amendment. Likewise, proposed changes to the facility or procedures and the proposed conduct of tests that involve an "unreviewed safety question" are required to be submitted to the NRC as an application for license amendment.

Any proposed change to a system or procedures described in the SAR, either by text or drawings, should be reviewed by the licensee to determine whether it involves an "unreviewed safety question." Maintenance activities that do not result in a change to a system (permanent or temporary), or that replace components with replacement parts procured with the same (or equivalent) purchase specification, do not require a written safety evaluation to meet 10 CFR 50.59 requirements. However, a safety evaluation is required to meet the provisions of 10 CFR 50.59 and any change must be reported to the NRC as required by 10 CFR 50.59(b) if the following circumstances occur: (1) components described in the SAR are removed; (2) component functions are altered; (3) substitute components are utilized; or (4) changes remain following completion of a maintenance activity.

Notice to Licensees:

For all cases requiring a written safety evaluation, the safety evaluation must set forth the bases and criteria used to determine that the proposed change does or does not involve an "unreviewed safety question." A simple statement of conclusion in itself is not sufficient. However, depending upon the significance of the change, the safety evaluation may be brief. The scope of the evaluation must be commensurate with the potential safety significance of the proposed change or test. The depth of the evaluation must be sufficient to determine whether or not an "unreviewed safety question" is involved. These evaluations and analyses should be reviewed and approved by an appropriate level of management before the proposed change is made.

An important part of the "unreviewed safety question" determination is the evaluation and analysis of the proposed change by the licensee to assure that (1) potential safety hazards are identified, and (2) corrective actions are taken to eliminate, mitigate, or control the hazards to an acceptable level. All realistic failure modes and/or malfunctions must be considered and protection provided commensurate with the potential consequences. All applicable regulatory requirements, including Technical Specifications, must be complied with so that the proposed change shall not represent an "unreviewed safety question." Also, the margin of safety as defined in the bases of the Technical Specifications shall not be reduced by the proposed change.

For radioactive waste systems, the appropriate portions of 10 CFR 20, 30, 50, 71, and 100, the facility Technical Specifications, and 40 CFR 190 (Environmental Dose Standard) are applicable.

Additional specific criteria that should be reviewed prior to the modification of radioactive waste systems are presented below:

(1) System modifications should be evaluated against the seismic, quality group and quality assurance criteria in Regulatory Guide 1.143. Design

provisions for controlling releases of radioactive liquids, as presented in Regulatory Guide 1.143, should also be evaluated.

(2) Radiological controls should be evaluated against the criteria in Regulatory Guide 1.21 and Standard Review Plan Section 11.5, "Process and Effluent Radiological Monitoring and Sampling Systems."

(3) Systems involving potentially explosive mixtures should be evaluated against the criteria in Standard Review Plan Section 11.3, "Gaseous Waste Management System," subsection II, item 6.

(4) System design and operation should be evaluated to assure that the radiological consequences of unexpected and uncontrolled releases of radioactivity that is stored or transferred in a waste system are a small fraction of the 10 CFR 100 guidelines; i.e., less than 0.5 rem whole body dose, 1.5 rem thyroid from gaseous releases, and less than the radionuclide concentrations of 10 CFR 20, Appendix B, Table II, Column 2 from liquid releases at the nearest water supplies. (See Standard Review Plan Sections 15.7.1, 15.7.2, and 15.7.3 for more details.)

The evaluation must include an analysis encompassing the above criteria to the extent that the criteria are applicable to the proposed changes; i.e., if the modifications involve a change addressed by the above regulations and criteria, then the modifications must be evaluated in terms of these regulations and criteria.

In conclusion, for any change in a facility radioactive waste system as described in the SAR, a safety evaluation is required in accordance with 10 CFR 50.59. In this safety evaluation and the "unreviewed safety question" determination, the evaluation criteria in Items 1-4 above should be used. If the proposed modification (design, operation, or test) represents a departure from this evaluation criteria, one of the following actions should be taken:

(1) The proposal should be modified to meet the intent of the criteria;

(2) The evaluation/determination must present sufficient analyses to demonstrate the acceptability of the departure; or,

(3) Commission approval must be received prior to implementing the modification (i.e., an unreviewed safety issue may be involved).

No written response to this circular is required. If additional information regarding this subject is required, contact the Director of this office.

RECENTLY ISSUED
IE CIRCULARS

Circular No.	Subject	Date of Issue	Issued to
80-17	Fuel Pin Damage Due to Water Jet from Baffle Plate Corner	7/23/80	All holders of a PWR power reactor OL or CP
80-16	Operational Deficiencies In Rosemount Model 510DU Trip Units and Model 1152 Pressure Transmitters	6/27/80	All holders of a power reactor OL or CP
80-15	Loss of Reactor Coolant Pump Cooling and Natural Circulation Cooldown	6/20/80	All holders of a power reactor OL or CP
80-14	Radioactive Contamination of Plant Demineralized Water System and Resultant Internal Contamination of Personnel	6/24/80	All holders of a power or research reactor OL or CP, and fuel cycle licensees
80-13	Grid Strap Damage in Westinghouse Fuel Assemblies	5/18/80	All holders of a power reactor OL or CP
80-12	Valve-Shaft-To-Actuator Key May Fall Out of Place When Mounted Below Horizontal Axis	5/14/80	All holders of a power reactor OL or CP
80-11	Emergency Diesel Generator Lube Oil Cooler Failures	5/13/80	All holders of a power reactor OL or CP
80-10	Failure to Maintain Environmental Qualification of Equipment	4/29/80	All holders of a power reactor OL or CP
80-09	Problems With Plant Internal Communications Systems	4/28/80	All holders of a power reactor OL or CP
80-08	BWR Technical Specification Inconsistency - RPS Response Time	4/18/80	All holders of a General Electric BWR power reactor OL
80-07	Problems with HPCI Turbine Oil System	4/3/80	All holders of a power reactor OL or CP
80-06	Control and Accountability Systems for Implant Therapy Sources	4/14/80	Medical Licensees in Categories G and G1