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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 14, 1984

TO ALL LICENSEES OF BOILING WATER REACTORS (BWRS)

Gentlemen:

SUBJECT: PROCEDURAL GUIDANCE FOR PIPE REPLACEMENT AT BWRS
(Generic Letter 84-07)

This letter provides guidance to licensees planning to replace recirculation system piping (or other reactor coolant system pressure boundary piping) with material that is less susceptible to intergranular stress corrosion cracking. In particular, guidance is provided regarding NRC reviews and approvals that may be necessary.

10 CFR 50.59 specifies the conditions that would require prior NRC approval of changes in the facility. In your compliance with 10 CFR 50.59, we recognize that the decision on whether your planned replacement program involves an unreviewed safety questions can be difficult, and that an understanding of the NRC position on this issue would be helpful in planning your program. The purpose of this letter is to provide as clear a statement as possible of our views on this issue.

We encourage programs to replace piping so as to minimize the potential for cracking and we will expeditiously review any submittals provided to us so as to not delay this important improvement program. We encourage early submittal of appropriate requests for review for those situations that require prior approval. Prior NRC approval is not necessary unless the proposed change to the facility involves an unreviewed safety question or a change in Technical Specifications.

In all cases, licensees must perform and document appropriate reviews and analyses in accordance with 10 CFR 50.59 and the facility Technical Specifications. These analyses should be maintained by the licensee, in accordance with Commission regulations and the applicable license, to permit the staff to audit such evaluations, as necessary. In those cases where licensees determine that their program for pipe replacement does not involve an unreviewed safety question, there remains the concern that the NRC may, at a later date, disagree with that determination, thereby potentially delaying the program. To minimize that possibility, we have developed a position regarding the major considerations in a pipe replacement program which licensees can use in determining the necessity or desirability of seeking prior NRC approval. That position is contained in the enclosure to this letter.

Replacement of recirculating system piping may involve individual and collective radiation exposure to plant workers beyond that in other routine maintenance work. 10 CFR Part 20 requires that licensees "make every reasonable effort to maintain radiation exposures, and releases of radioactive materials in effluents to unrestricted areas, as low as is reasonably achievable." We request that a

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description of your radiation protection program for the pipe replacement effort be furnished to us as early as possible before initiating the replacement program. Your submittal should include a description of appropriate pre-planning procedures, shielding, equipment, personnel training, estimated total cumulative dose, and other measures to be initiated that will keep exposures as low as reasonably achievable. We anticipate that most pipe replacment programs can be accomplished through suitable controls so as to limit cumulative exposures to less than about 2000 person-rem. We will plan to meet with licensees whose programs involve greater dose estimates.

This request has been approved by OMB Clearance Number 3150-0011, which expires April 30, 1985.

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
Procedural Guidance

ENCLOSURE

PROCEDURAL GUIDANCE FOR PIPE REPLACEMENT AT BWR'S

As a result of the occurrence of intergranular stress corrosion cracking (IGSCC) in the recirculation system piping at a number of Boiling Water Reactors (BWRs), several licensees have indicated their intention to replace the recirculation piping with material that is less susceptible to IGSCC. The purpose of this document is to present NRC staff guidance regarding procedural requirements applicable to the replacement of recirculation system piping. Depending on the specific changes that may be involved, such changes may be authorized in various ways under Commission regulations.

Replacement of a reactor coolant system component by another component of the same kind (not changing any feature described in the FSAR) would not be prohibited by the Commission regulations.

Replacement which involves changes, but which does not involve an amendment to the license or Technical Specifications, may be carried out without prior Commission approval, if the changes involve no unreviewed safety questions. The definition of an unreviewed safety question is set forth in 10 CFR 50.59. Most Technical Specifications contain provisions governing the way a licensee is to assess changes to determine whether they involve unreviewed safety questions. Not only should each aspect of change be carefully considered in making a determination under 10 CFR 50.59, but the overall cumulative effect of the various changes, considered as a whole, should also be assessed.

There may be cases involving difficult questions concerning whether some aspect may be an unreviewed safety question. Such cases may be processed as a license amendment authorizing the replacement program*. Changes which entail changes in Technical Specifications may be authorized only by license amendment**. License amendments involving no significant hazards considerations will be processed expeditiously - after 30 days notice in the Federal Register and sufficient time for staff review.

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*The case of Nine Mile Point, the first major pipe replacement case, was handled by the amendment process.

**If the changes in Technical Specifications are limited in number and can be evaluated as a matter distinct from the replacement program, such changes may be processed separately from the replacement program.

If there is a request for a hearing concerning an amendment for which there is a final determination that the amendment involves no significant hazards, the amendment may be granted notwithstanding such request. The hearing, if any, would be held after the amendment has been issued. If the changes are such as to involve a significant hazards consideration, and a hearing is requested, the license amendment would await the outcome of the proceeding.

We have reviewed information concerning the programs under consideration by some licensees, and conclude that certain proposed features of such programs having the characterisitics discussed below, subject to the results of the plant specific evaluations required by 10 CFR 50.59, do not involve unreviewed safety questions.

Design Specifications

Design specifications are prepared covering all aspects of construction of the replaced piping system, including the Codes designated for use. Construction as used above is an all-inclusive term comprising materials, design, fabrication, installation, examination, testing and inspection.

Codes

Either:

(1) The codes and standards described in the FSAR, consistent with current regulations, as the original licensing basis for issuance of the facility operating license are utilitized;

Or, and preferably:

(2) The Code edition used for the construction of the piping system is, to the extent practical, the latest Code edition and addenda. If the later Codes are used, practical adjustments are made in using upgraded Code provisions to accommodate the limitations of design, geometry and items of the original piping systems and its supports which are not replaced. The quality and overall margins required in the original design are not to be impaired in determining the extent to which adjustments are made in using upgraded Code provisions.

Materials

The materials used are those that have received staff reveiw and approval as documented in NUREG-0313, Rev. 1.

Design Changes

Replacement components and their resulting effect upon system performance provide an equivalent overall safety margin as provided in the originally licensed design. Within this constraint, there may be design changes that clearly enhance the safety function of the system under replacement, such as, changes to reduce the number of welds or changes to facilitate inspection. Piping, pipe supports and any remaining original components are covered in the specifications of loading combinations and appropriate allowable limits provided for the replaced system.

Analysis

A stress analysis for the recirculation and other replaced piping systems is to be performed, that demonstrate that allowable limits have not been exceeded. The loads and loading combinations used in the FSAR or as described in SRP Section 3.9.3 should be used in the stress analysis.

Whip restraints and jet impingement design must follow FSAR criteria or that of Standard Review Plan Section 3.6.2.

Fabrication, Installation, Examination and Testing

Fabrication, installation, examination and testing is to be performed in accordance with the applicable Code designated under Codes.

Inspection/Quality Assurance

Programmatic quality assurance and independent (third party) inspection requirements appropriate to the replaced piping are to be followed.

System Characteristics

Flow rates, temperatures, and pressures must not be significantly different than those evaluated in the FSAR. The performance of Engineered Safety Features must not be degraded by the replaced piping systems.

Discussion of 10 CFR 50.59

The NRC staff has developed this guidance without incorporating the results of any detailed review of a specific plant or specific plant Technical Specifications. A detailed case-specific review could lead to a positive unreviewed safety question conclusion even though the general guidance provided above would suggest a negative conclusion. A positive conclusion would be reached if, for example, the combination of FSAR codes and updated codes leads to a reduced safety margin for some plant structure, system or component, and this reduced margin either increases the possibilities or consequences of an accident or malfunction of equipment important to safety which was evaluated in the FSAR, or created the possibility of some new accident or malfunction, or pertains to a margin of safety in the basis for any Technical Specification. The margin of safety defined by a Technical Specification would comprise several safety margins within a given system. In such a circumstance the margins of safety for individual components within the system could well be adjusted without any effect on the margin of safety for the system as defined in the Technical Specifications. Thus each licensee must perform the specific, detailed review required by 10 CFR 50.59(a)(2) and in all cases the results of the detailed, case-specific review are controlling over the general guidance provided in this enclosure. Not all repairs involve changes and if they do not, no plant-specific review pursuant to 50.59 is required.