

NUCLEAR REGULATORY COMMISSION

Notice of Opportunity to Comment on Model Safety Evaluation on
Technical Specification Improvement Regarding Extension of Reactor Coolant
Pump Motor Flywheel Examination for Westinghouse Plants
Using the Consolidated Line Item Improvement Process

AGENCY: Nuclear Regulatory Commission.

ACTION: Request for comment.

SUMMARY: Notice is hereby given that the staff of the Nuclear Regulatory Commission (NRC) has prepared a model safety evaluation (SE) relating to a change in the technical specification (TS) required inspection interval for reactor coolant pump (RCP) flywheels at Westinghouse-designed reactors. This change was proposed for incorporation into the Standard Technical Specifications (STS) for Westinghouse Plants (NUREG-1431) by the Westinghouse Owners Group (WOG) participants in the Nuclear Energy Institute's Technical Specification Task Force (TSTF), and is designated as TSTF-421, Revision 0. The proposed change to the TS would extend the RCP motor flywheel examination frequency from the currently approved 10-year inspection interval, to an interval not to exceed 20 years. The allowed extension in the inspection interval would allow licensees to improve their coordination of the flywheel examination with planned RCP refurbishments. The NRC staff has also prepared a model no significant hazards consideration (NSHC) determination relating to this matter. The purpose of this model is to permit the NRC to efficiently process amendments that propose to incorporate this change into plant-specific TSs. Licensees of nuclear power reactors to which the models apply could request amendments confirming the applicability of the SE and NSHC determination to their reactors. The NRC staff is requesting comments on the model SE and

model NSHC determination prior to announcing their availability for referencing in license amendment applications.

DATES: The comment period expires (insert date 30 days from date of publication in the FEDERAL REGISTER). Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received on or before this date.

ADDRESSES: Comments may be submitted either electronically or via U.S. mail.

Submit written comments to: Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, Mail Stop: T-6 D59, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Hand deliver comments to: 11545 Rockville Pike, Rockville, Maryland, between 7:45 a.m. and 4:15 p.m. on Federal workdays.

Copies of comments received may be examined at the NRC's Public Document Room, 11555 Rockville Pike (Room O-1F21), Rockville, Maryland.

Comments may be submitted by electronic mail to CLIP@nrc.gov.

FOR FURTHER INFORMATION CONTACT: William Reckley, Mail Stop: O-7D1, Division of Licensing Project Management, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-1323.

SUPPLEMENTARY INFORMATION:

Background

Regulatory Issue Summary 2000-06, "Consolidated Line Item Improvement Process for Adopting Standard Technical Specification Changes for Power Reactors," was issued on March 20, 2000. The consolidated line item improvement process (CLIP) is intended to

improve the efficiency of NRC licensing processes. This is accomplished by processing proposed changes to the STS in a manner that supports subsequent license amendment applications. The CLIIP includes an opportunity for the public to comment on proposed changes to the STS following a preliminary assessment by the NRC staff and finding that the change will likely be offered for adoption by licensees. This notice is soliciting comment on a proposed change to the STS that extends the inspection interval for RCP flywheels from 10 years to 20 years. The CLIIP directs the NRC staff to evaluate any comments received for a proposed change to the STS and to either reconsider the change or to proceed with announcing the availability of the change for proposed adoption by licensees. Those licensees opting to apply for the subject change to TSs are responsible for reviewing the staff's evaluation, referencing the applicable technical justifications, and providing any necessary plant-specific information. Each amendment application made in response to the notice of availability would be processed and noticed in accordance with applicable rules and NRC procedures.

This notice involves changes to extend the inspection interval for RCP flywheels for those plants with Westinghouse designs. This proposed change was proposed for incorporation into the STS by the WOG as TSTF-421, Revision 0. Much of the technical support for TSTF-421, Revision 0, was provided in topical report WCAP-15666, Revision 0, "Extension of Reactor Coolant Pump Motor Flywheel Examination," submitted on August 24, 2001. The NRC staff's acceptance of the topical report is documented in an SE dated May 5, 2003, which is accessible electronically from the Agencywide Documents Access and Management System's (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html> (ADAMS Accession No. ML031250595). Persons who do not have access to ADAMS or who encounter problems in accessing the

documents located in ADAMS, should contact the NRC PDR Reference staff by telephone at 1-800-397-4209, 301-415-4737, or by e-mail to pdr@nrc.gov.

Applicability

This proposed change to the inspection interval for RCP motor flywheels is applicable to plants with Westinghouse-designed nuclear steam supply systems. The CLIP does not prevent licensees from requesting an alternative approach or proposing changes other than those proposed in TSTF-421. Variations from the approach recommended in this notice may, however, require additional review by the NRC staff and may increase the time and resources needed for the review.

Public Notices

This notice requests comments from interested members of the public within 30 days of the date of publication in the FEDERAL REGISTER. Following the staff's evaluation of comments received as a result of this notice, the staff may reconsider the proposed change or may proceed with announcing the availability of the change in a subsequent notice (perhaps with some changes to the SE or proposed NSHC determination as a result of public comments). If the staff announces the availability of the change, licensees wishing to adopt the change will submit an application in accordance with applicable rules and other regulatory requirements. The staff will in turn issue for each application a notice of consideration of issuance of amendment to facility operating license(s), a proposed NSHC determination, and an opportunity for a hearing. A notice of issuance of an amendment to operating license(s) will also be issued to announce the revised requirements for each plant that applies for and receives the requested change.

Proposed Safety Evaluation

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

Consolidated Line Item Improvement

Technical Specification Task Force (TSTF) Change TSTF-421
Extension of Reactor Coolant Pump Motor Flywheel Examinations**1.0 INTRODUCTION**

By application dated [], [Licensee] (the licensee) requested changes to the Technical Specifications (TSs) for [facility]. The proposed changes would extend the reactor coolant pump (RCP) motor flywheel examination frequency from the currently approved 10-year inspection interval to an interval not to exceed 20 years. These changes are based on Technical Specification Task Force (TSTF) change traveler TSTF-421 (Revision 0) that has been approved generically for the Westinghouse Standard Technical Specifications (STS), NUREG-1431. A notice announcing the availability of this proposed TS change using the consolidated line item improvement process (CLIIP) was published in the FEDERAL REGISTER on [] (xx FR yyyy).

2.0 REGULATORY EVALUATION

The function of the RCP in the reactor coolant system (RCS) of a pressurized water reactor plant is to maintain an adequate cooling flow rate by circulating a large volume of primary coolant water at high temperature and pressure through the RCS. Following an assumed loss of power to the RCP motor, the flywheel, in conjunction with the impeller and motor assembly, provides sufficient rotational inertia to assure adequate primary coolant flow during RCP coastdown, thus resulting in adequate core cooling. A concern regarding the overspeed of the RCP and its potential for failure led to the issuance of Regulatory Guide (RG) 1.14, "Reactor Coolant Pump Flywheel Integrity," Revision 1, dated August 1975. RG 1.14 describes a method acceptable to the NRC staff of addressing concerns related to RCP

vibration and the possible effects of missiles that might result from the failure of the RCP flywheel. The need to protect components important to safety from such missiles are included in General Design Criterion 4, "Environmental and Dynamic Effects Design Basis," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which is applicable to plants that obtained their construction permits after May 21, 1971.

Specific requirements to have an RCP Flywheel Inspection Program consistent with RG 1.14 or previously issued relaxations from the RG are included in the Administrative Controls Section of the TSs. The purpose of the testing and inspection programs defined in the TSs is to ensure that the probability of a flywheel failure is sufficiently small such that additional safety features are not needed to protect against a flywheel failure. The RG provides criteria in terms of critical speeds that could result in the failure of a RCP flywheel during normal or accident conditions. In addition to the guidance in RG 1.14, the NRC has more recently issued RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," which provides guidance and criteria for evaluating proposed changes that use risk-informed justifications.

A proposed justification for extending the RCP flywheel inspections from a 10-year inspection interval to an interval not to exceed 20 years was provided by the Westinghouse Owners Group (WOG) in topical report WCAP-15666, "Extension of Reactor Coolant Pump Motor Flywheel Examination," transmitted by letter dated August 24, 2001. The topical report addressed the proposed extension for all domestic WOG plants. The NRC accepted the topical report for referencing in license applications in a letter and safety evaluation dated May 5, 2003 (ADAMS Accession No. ML031250595).

3.0 TECHNICAL EVALUATION

TS [5.5.7], Reactor Coolant Pump Flywheel Inspection Program, reflects the licensee's previous adoption of a TS change that defined the allowable alternative to the inspections described in RG 1.14. The inspections are defined as in-place ultrasonic examination over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or an alternative surface examination (magnetic particle testing [MT] and/or liquid penetrant testing [PT]) of exposed surfaces defined by the volume of the disassembled flywheel. The allowable interval for these inspections was extended in the previous amendment to "approximately 10 year intervals coinciding with the Inservice Inspection schedule as required by ASME [American Society of Mechanical Engineers, Boiler and Pressure Vessel Code,] Section XI." The change proposed in this amendment application would revise the allowable inspection interval to "20 year intervals."

The justification for the proposed change was provided in WCAP-15666, which the staff accepted for referencing in license applications by a letter and safety evaluation dated May 5, 2003. The topical report addresses the three critical speeds defined in RG 1.14: (a) the critical speed for ductile failure, (b) the critical speed for non-ductile failure, and (c) the critical speed for excessive deformation of the flywheel. The staff found that the topical report adequately addressed these issues and demonstrated that acceptance criteria, for normal and accident conditions defined in RG 1.14, would continue to be met for all domestic WOG plants following an extension of the inspection interval. The topical report also provided a risk assessment for extending the RCP flywheel inspection interval. The staff's review, documented in the SE for the topical report, determined that the analysis methods and risk estimates are acceptable when compared to the guidance in RG 1.174.

In conclusion, the staff finds that the regulatory positions in RG 1.14 concerning the three critical speeds are satisfied, and that the evaluation indicating that critical crack sizes are

not expected to be attained during a 20-year inspection interval is reasonable and acceptable. The potential for failure of the RCP flywheel is, and will continue to be, negligible during normal and accident conditions. The change is therefore acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the [State] State official was notified of the proposed issuance of the amendments. The State official had [choose one: (1) no comments, or (2) the following comments - with subsequent disposition by the staff].

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (xx FR xxxxx). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Proposed No Significant Hazards Consideration Determination

Description of Amendment Request: The proposed amendment revises TS [5.5.7, "Reactor Coolant Pump Flywheel Inspection Program,"] to extend the allowable inspection interval to 20 years.

Basis for proposed no significant hazards consideration determination: As required by 10 CFR 50.91(a), an analysis of the issue of no significant hazards consideration is presented below:

Criterion 1 - The Proposed Change Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated

The proposed change to the RCP flywheel examination frequency does not change the response of the plant to any accidents. The RCP will remain highly reliable and the proposed change will not result in a significant increase in the risk of plant operation. Given the extremely low failure probabilities for the RCP motor flywheel during normal and accident conditions, the extremely low probability of a loss-of-coolant accident (LOCA) with loss of offsite power (LOOP), and assuming a conditional core damage probability (CCDP) of 1.0 (complete failure of safety systems), the core damage frequency (CDF) and change in risk would still not exceed the NRC's acceptance guidelines contained in RG 1.174 ($<1.0E-6$ per year). Moreover, considering the uncertainties involved in this evaluation, the risk associated with the postulated failure of an RCP motor flywheel is significantly low. Even if all four RCP motor flywheels are considered in the bounding plant configuration case, the risk is still acceptably low.

The proposed change does not adversely affect accident initiators or precursors, nor alter the design assumptions, conditions, or configuration of the facility, or the manner in which the plant is operated and maintained; alter or prevent the ability of structures, systems, components (SSCs) from performing their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits; or affect the source term, containment

isolation, or radiological release assumptions used in evaluating the radiological consequences of an accident previously evaluated. Further, the proposed change does not increase the type or amount of radioactive effluent that may be released offsite, nor significantly increase individual or cumulative occupational/public radiation exposure. The proposed change is consistent with the safety analysis assumptions and resultant consequences. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Criterion 2 - The Proposed Change Does Not Create the Possibility of a New or Different Kind of Accident From Any Accident Previously Evaluated

The proposed change in flywheel inspection frequency does not involve any change in the design or operation of the RCP. Nor does the change to examination frequency affect any existing accident scenarios, or create any new or different accident scenarios. Further, the change does not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or alter the methods governing normal plant operation. In addition, the change does not impose any new or different requirements or eliminate any existing requirements, and does not alter any assumptions made in the safety analysis. The proposed change is consistent with the safety analysis assumptions and current plant operating practice. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Criterion 3 - The Proposed Change Does Not Involve a Significant Reduction in a Margin of Safety.

The proposed change does not alter the manner in which safety limits, limiting safety system settings, or limiting conditions for operation are determined. The safety analysis acceptance criteria are not impacted by this change. The proposed change will not result in

plant operation in a configuration outside of the design basis. The calculated impact on risk is insignificant and meets the acceptance criteria contained in RG 1.174. There are no significant mechanisms for inservice degradation of the RCP flywheel. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above and the previous discussion of the amendment request, the requested change does not involve a significant hazards consideration.

Dated at Rockville, Maryland, this 13th day of June 2003

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Robert A. Gramm, Acting Director
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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