

UNITED STATES NUCLEAR REGULATORY COMMISSION

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# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO R.E. GINNA'S PROPOSED INSERVICE INSPECTION PROGRAM

## REACTOR COOLANT PUMP FLYWHEEL INSPECTION

#### ROCHESTER GAS AND ELECTRIC CORPORATION

## R. E. GINNA NUCLEAR POWER PLANT

## DOCKET NO. 50-244

#### 1.0 INTRODUCTION

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By letter dated March 18, 1997, Rochester Gas and Electric Corporation (the licensee) submitted for staff review its assessment of the plant-specific applicability of Westinghouse Topical Report, WCAP-14535, "Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination" for Ginna. The reactor coolant pump (RCP) inspection requirements for RCP flywheels is in Ginna's inservice inspection (ISI) program, and the current proposed ISI programs were provided by the licensee in a letter dated July 8, 1997. The licensee intended to change the RCP flywheels inspection intervals to be in accordance with the conclusion of the safety evaluation (SE) on WCAP-14535.

The function of RCP in the reactor coolant system (RCS) of a pressurized-water reactor (PWR) 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. A concern over overspeed of the RCP and its potential for failure led to the issuance of Regulatory Guide (RG) 1.14 in 1971. Since then, all licensees for PWR plants, with very few exceptions, have adopted the guidelines of RG 1.14 to conduct their RCP flywheel examinations. These requirements are normally specified in the individual plant's Technical Specifications. However, the licensee for R.E. Ginna specified the requirements in its ISI program.

In a September 12, 1996, letter to Mr. Sushil C. Jain from Brian W. Sheron (NRC), the staff issued the SE on the Westinghouse Topical Report WCAP-14535. The SE concluded that the inspection interval of 10 years was justified for: (1) flywheels made of SA 533 B material and do not belong to Group 10 and 15; (2) flywheels made of SA 533 B material and belong to these two groups if justified by some additional analyses. To justify a change in the flywheel inspection interval for flywheels not made of SA 533 B material, an assessment must be made using the same methodology as in WCAP-14535, and using the appropriate material properties.

Enclosure



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#### . 2.0 <u>EVALUATION</u>

In the SE to the Westinghouse Topical Report WCAP-14535, the staff determined that the evaluation methodology for RCP flywheels in WCAP-14535 is appropriate and the criteria is in accordance with the design criteria of RG 1.14 for a fatigue life of at least 10 years. In the SE, the staff specified:

- (1) Licensees who plan to submit a plant-specific application of this topical report for flywheels made of SA 533 B material need to confirm that their flywheels are made of SA 533 B material. Further, licensees having Group-15 flywheels need to demonstrate that material properties of their A516 material is equivalent to SA 533 B material, and its reference temperature, RT<sub>NDT</sub>, is less than 30 °F.
- (2) Licensees who plan to submit a plant-specific application of this topical report for their flywheels not made of SA 533 B or A516 material need to either demonstrate that their flywheel material properties are bounded by those of SA 533 B material, or provide the minimum specified ultimate tensile stress,  $S_u$ , the fracture toughness,  $K_{Ic}$ , and the reference temperature,  $RT_{NDT}$ , for that material. For the latter, the licensees should employ these material properties, and use the methodology in the topical report, as extended in the two responses to the staff's request for additional information (RAI), to provide an assessment to justify a change in inspection schedule for their plants.
- (3) Licensees meeting either (1) or (2) above should either conduct a qualified in-place ultrasonic testing (UT) examination of the volume from the inner bore of the flywheel to the circle of one-half the outer radius or conduct a surface examination (MT and/or PT) of exposed surfaces defined by the volume of the disassembled flywheels once every 10 years. The staff considers this 10-year inspection requirement not burdensome when the flywheel inspection is conducted during scheduled ISI inspection or RCP motor maintenance. This would provide an appropriate level of defense in depth.

The licensee confirmed in its submittal that the flywheels for R. E. Ginna are made of SA 533 B material, and they do not belong to either Group 10 or Group 15 flywheels. Therefore, the plant-specific applicability of WCAP-14535 to R. E. Ginna has been established, and the 10-year inspection requirement with details specified above is acceptable. The licensee's inspection records indicate that "A" RCP flywheel was inspected in March 1994, and "B" flywheel in April 1995. The next inspection dates for these two flywheels will be March 2004 and April 2005.

# 3.0 CONCLUSION

In the review of the licensee's submittals, the staff has determined that the analysis in the Westinghouse Topical Report WCAP-14535 is applicable to the R. E. Ginna plant. Hence, the staff accepts the licensee's proposed changes to Section 3.0, "Reactor Coolant Pump Flywheel Program," of the ISI program for R. E. Ginna. The inspection intervals are specified in Section 3.2.1 of the ISI program: "Installed RCP flywheels shall either have a ultrasonic examination over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or conduct a UT and a surface (MT and/or PT) examination of exposed surfaces defined by the volume of the disassembled flywheels once every 10 years."

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Date: August 7, 1997