July 19, 2006

Mrs. Mary G. Korsnick
Vice President R.E. Ginna Nuclear Power Plant
R.E. Ginna Nuclear Power Plant, LLC
1503 Lake Road
Ontario, NY 14519

SUBJECT: R.E. GINNA NUCLEAR POWER PLANT - RELIEF REQUEST NO. PR-3 REGARDING TESTING OF AUXILIARY FEEDWATER PUMPS (TAC NO. MD0316)

Dear Mrs. Korsnick:

By letter dated March 7, 2006, as supplemented on May 1 and 15, 2006, R.E. Ginna Nuclear Power Plant, LLC (Ginna LLC), requested relief from certain inservice testing (IST) requirements of the 1988 Edition of the American Society of Mechanical Engineers *Code for Operations and Maintenance of Nuclear Power Plants* (ASME OM Code). Specifically, Ginna LLC requested relief for the auxiliary feedwater pumps from the requirement that the IST be conducted with the pump operating at specified test reference conditions and that test parameters, including flow rate, be determined and recorded.

On May 15, 2005, the NRC staff granted, pursuant to 10 CFR 50.55a(a)(3), the temporary verbal authorization for the alternative IST as described in Relief Request PR-3. The staff's final written authorization, including the results of the its review, is now provided in the enclosed safety evaluation.

The NRC staff has determined that requiring the installation of flow measurement devices would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. In addition, the licensee's proposed alternative provides reasonable assurance that the AFW pumps will be operationally ready. Therefore, the NRC staff authorizes the licensee's proposed alternative, pursuant to 10 CFR 50.55a(a)(3)(ii), to measure the differential pressure, in lieu of flow rate, to assess AFW pump hydraulic performance during quarterly tests and to apply the guidance from the Comprehensive Pump Test requirements,

including flow rate, of the of the ASME OM Code, 2001 Edition, for biennial testing. This alternative is authorized for the remainder of the fourth 10-year IST program interval, which ends on December 31, 2009.

Sincerely,

/RA/

Richard J. Laufer, Chief
Project Directorate I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-244

Enclosure:
As stated

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING INSERVICE TESTING OF AUXILIARY FEEDWATER PUMPS

FOR RELIEF REQUEST PR-3

R.E. GINNA NUCLEAR POWER PLANT

DOCKET NO. 50-244

1.0 INTRODUCTION

By letter dated March 7, 2006, as supplemented on May 1 and 15, 2006, R.E. Ginna Nuclear Power Plant, LLC (the licensee), requested relief from certain inservice testing (IST) requirements of the 1988 Edition of the American Society of Mechanical Engineers *Code for Operations and Maintenance of Nuclear Power Plants* (ASME OM Code). Specifically, the licensee requested relief for the auxiliary feedwater pumps from the requirements that the IST be conducted with the pump operating at specified test reference conditions and that test parameters, including flow rate, be determined and recorded.

2.0 REGULATORY EVALUATION

Section 50.55a of Part 50 to Title 10 of the *Code of Federal Regulations* (10 CFR 50.55a) requires that the IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed at 120-month (10-year) IST program intervals in accordance with the specified ASME Code incorporated by reference in the regulations, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Nuclear Regulatory Commission (NRC), pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In accordance with 10 CFR 50.55a(f)(4)(ii), licensees are required to comply with the requirements of the latest edition and addenda of the ASME Code incorporated by reference in the regulations 12 months prior to the start of each 120-month IST program interval. In accordance with 50.55a(f)(4)(iv), IST of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b), subject to NRC approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions and addenda are met. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for the facility. Section 50.55a authorizes the NRC to approve alternatives and to grant relief from ASME Code requirements upon making necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, “Guidance on Developing Acceptable Inservice Testing Programs,” provides alternatives to Code requirements that are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NRC Report NUREG-1482, Revision 1, “Guidance for Inservice Testing at Nuclear Power Plants.”

The Ginna IST program plan was developed in accordance with the 1988 Edition of the ASME OM Code (ASME OM - 1988).

3.0 EVALUATION

3.1 System/Component for which Relief is Requested:

The components affected by this relief request are AFW pumps:

GROUP A PUMPS
"A" preferred motor-driven AFW pump - PAF01A
"B" preferred motor-driven AFW pump - PAF01B

GROUP B PUMPS
Turbine-driven AFW pump - PAF03
"C" standby motor-driven AFW pump - PSF01A
"D" standby motor-driven AFW pump - PSF01B

3.2 Code Requirements:

The licensee requested relief from ASME OM -1988, Part 6, Sections 5.2, 5.2(b), 5.2(c), and 5.2(d), which require an inservice test be conducted with the pump operating at specified test reference conditions and that test parameters, including flow rate, be determined and recorded.

3.3 Proposed Alternative:

The licensee proposed:

The Auxiliary Feedwater Pumps will be group designated commensurate with the definitions of ASME OM CODE-2001, ISTB-2000:

GROUP A PUMPS
"A" preferred motor-driven AFW pump - PAF01A
"B" preferred motor-driven AFW pump - PAF01B

GROUP B PUMPS
Turbine-driven AFW pump-PAF03
"C" standby motor-driven AFW pump - PSF01A
"D" standby motor-driven AFW pump - PSF01B

Quarterly testing of the designated Group A AFW pumps (PAF01A, PAF01B) will be performed on mini-flow recirculation measuring the differential pressure across the pump, and measuring vibration using ASME OM CODE-2001, ISTB-5121, and NRC Generic Letter 89-04, Staff Position 9, 'Pump Testing Using Minimum-Flow Return Line With Or Without Flow Measuring Devices', for guidance.

Quarterly testing of the designated Group B AFW pumps (PAF03, PSF01A, PSF01B) will be performed on mini-flow recirculation measuring the differential

pressure across the pump, using ASME OM CODE-2001, ISTB-5122, and NRC Generic Letter 89-04, Staff Position 9, 'Pump Testing Using Minimum-Flow Return Line With Or Without Flow Measuring Devices', for guidance. Quarterly testing of the designated Group B AFW pump (PAF03) will also include speed measurement and flow measurement.

A biennial Comprehensive Pump Test (CPT) will be performed for all five AFW pumps using ASME OM Code-2001, ISTB-5123 for guidance, and will include the following measurements:

Speed (PAF03 only)
Differential Pressure
Flow Rate
Vibration

3.4 Licensee's Basis for Relief:

The licensee stated:

The AFW pumps, each have a minimum-flow path that can be utilized for the respective Group A and Group B tests. The minimum flow lines used for these pumps provide a fixed resistance flow path from the pump discharge to the Condensate Storage Tank or Test Tank(s) and then back to the suction of each pump. During the performance of the quarterly pump testing, pump differential pressure will be measured and trended. This provides a reference value for differential pressure that can be duplicated during subsequent tests.

The performance of pump tests using a fixed resistance flow path is an acceptable alternative to the Code requirements as per NUREG-1482, NRC Staff Position 9, "Pump Testing Using Minimum-Flow Return Line With Or Without Flow Measuring Devices." This methodology provides for the acquisition of repeatable differential pressure, which is an adequate means of monitoring pump degradation. The tests associated with the grouping of the AFW pumps have been endorsed through a later code edition.

Concerns identified in NRC Bulletin 88-04, 'Potential Safety-Related Pump Loss', with regard to minimum recirculation flow line sizing, have been assessed and verified to not be of concern during pump testing.

Therefore, the current testing protocol which has the potential for service water intrusion and requires a reactivity change, and the cost of installing either temporary or permanent flow instrumentation imposes an undue burden without a compensating increase in the level of quality and safety.

3.5 Staff Evaluation

The ASME Class 3 AFW pumps are centrifugal pumps (Ginna UFSAR) subject to quarterly inservice testing. The licensee has proposed that IST, of the 5 AFW pumps in question, be conducted in accordance with the current applicable Code for the fourth 10-year program interval identified as ASME OM - 1988, "Operation and Maintenance of Nuclear Power Plants," Part 6, combined with guidance from Subsections ISTB-5121, ISTB-5122 and ISTB-5123 of the ASME OM Code - 2001 and NRC GL 89-04, Position 9.

For Group A pumps, ISTB-5121 states that tests shall be conducted with the pumps operating at a specified reference point. ISTB-5121 also specifies that the test parameters in Table ISTB-3000-1 shall be determined and recorded as required by paragraphs ISTB-5121(a), (b), (c), (d), and (e). Paragraphs ISTB-5121(b) and (c) and Table ISTB-3000-1 require the flow rate be determined.

For Group B pumps, ISTB-5122 states that tests shall be conducted with the pumps operating at a specified reference point. ISTB-5122 also specifies that the test parameters of Table ISTB-3000-1 shall be determined and recorded as required by paragraphs ISTB-5121(a), (b), (c), and (d). Paragraph ISTB-5122 and Table ISTB-3000-1 require either the differential pressure or the flow rate be determined for pumps other than positive displacement types.

In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee proposed an alternative to the ASME OM Code, Part 6 requirements, which require that the flow be determined and recorded during quarterly testing. Section 5.2 of Part 6 requires that, where system resistance cannot be varied, flow rate and pressure shall be determined and compared to their reference values. The licensee identified that, during the biennial Comprehensive Pump Tests, an instrumented flow path is available and the pump flow rate would be measured.

The NRC staff has reviewed the licensee's proposed alternative and has determined that, due to the AFW system design, the mini-flow return lines are the only flow paths that can be utilized for quarterly testing of AFW pumps. However, the installed miniflow lines are not designed for pump testing purposes. The installed mini-flow lines cannot support full flow testing and can only provide a fixed resistance flow path from the pump discharge to the condensate storage tank and then back to the suction of each pump. The mini-flow lines are also not equipped with instrumentation that can provide measurements of pump flow. Therefore, without system modifications, quarterly testing with the mini-flow lines does not allow flow to be measured.

Guidance for pump testing using mini-flow lines is outlined in NUREG-1482, and in Position 9, "Pump Testing Using Minimum-Flow Return Line With Or Without Flow Measuring Devices," of NRC GL 89-04. Consistent with this approach, the NRC staff has determined that the increased interval for full-flow testing is an acceptable alternative to the Code requirements provided that pump differential pressure, flow rate and bearing vibration measurements are taken during this testing and that quarterly testing also measuring at least pump differential pressure and vibration is continued. The licensee's proposed alternative will conduct quarterly pump tests on mini-flow recirculation and will measure the differential pressure across the 5 AFW pumps in lieu of measuring the flow, which meets the guidance contained in Position 9. The licensee's proposed alternative also specified that, in addition to the quarterly testing, biennial Comprehensive Pump Tests will be conducted, which would measure pump flow rates when an instrumented flow path is available. The NRC staff finds that, by following the

guidance provided in Position 9 and by performing biennial Comprehensive Pump Tests, the licensee's proposed alternative approach is an acceptable alternative to the requirements of the Code and will provide reasonable assurance that the AFW pumps will be operationally ready.

The licensee stated that the cost would exceed $60,000 annually to install and maintain temporary flow measurement devices or more than $300,000 to install permanent flow devices into the mini-flow lines in order to meet the ASME OM Code requirements and support the quarterly testing of the five AFW pumps. The NRC staff considers this cost to be an undue burden when compared to the limited benefits gained by the results of the tests with reduced flow using mini-flow lines. Therefore, the NRC staff has determined that installing flow measurement devices in order to comply with the ASME OMa Code - 1988 requirements would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

4.0 CONCLUSION

Based on a determination that requiring the installation of flow measurement devices would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety, and because the licensee's proposed alternative provides reasonable assurance that AFW pumps will be operationally ready, the NRC staff authorizes the licensee's proposed alternative pursuant to 10 CFR 50.55a(a)(3)(ii). This authorization will allow the licensee to measure the differential pressure (in lieu of flow rate) in order to assess the AFW pumps' hydraulic performance during quarterly tests and apply the guidance from the Comprehensive Pump Test requirements, including flow rate, of the ASME OM Code - 2001 for biennial testing.

Principal Contributor: R. McNally

Date: July 19, 2006