



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

March 18, 2004

MEMORANDUM TO: ACRS Members

FROM: Marvin D. Sykes, Senior Staff Engineer, ACRS /RA/

SUBJECT: ACRS REVIEW OF THE PLANT LICENSE RENEWAL
APPLICATION AND RELATED FINAL SAFETY EVALUATION
REPORT (SER) FOR THE ROBERT E. GINNA NUCLEAR POWER
PLANT

The Committee is currently scheduled to meet on Friday, April 16, 2004 to discuss the license renewal application submitted by Rochester Gas and Electric (RG&E) and the related Safety Evaluation Report (SER) for the R.E. Ginna Nuclear Power Plant. I have enclosed a copy of the status report for your review prior to the meeting. Copies of the approved meeting agenda will be forwarded to you at a later date. Copies of the license renewal application, draft SER, and relevant inspection and audit reports were forwarded to the Members in an earlier memorandum dated October 9, 2003.

If you are not scheduled to be present at the upcoming meeting, please provide your written comments to the Subcommittee Chair, Mario Bonaca, with a copy to me by March 31, 2004.

For additional information, please call me at (301) 415-8716 or e-mail MDS1@NRC.GOV.

Attachment: As stated

cc w/Attachments: J. Barton

cc w/o Attachments: J. Larkins
H. Larson
S. Duraiswamy

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
PLANT LICENSE RENEWAL FOR THE
R.E. GINNA NUCLEAR POWER PLANT
APRIL 16, 2004
ROCKVILLE, MARYLAND**

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U. S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of the Robert E. Ginna Nuclear Power Plant," February 2004.

Cognizant ACRS Member: M. Bonaca, Subcommittee Chair
Cognizant ACRS Staff Engineer: Marvin D. Sykes

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
 PLANT LICENSE RENEWAL FOR
 R.E. GINNA NUCLEAR POWER PLANT
 APRIL 16, 2004
 ROCKVILLE, MARYLAND**

SCHEDULE

Cognizant Staff Engineer: Marvin D. Sykes MDS1@nrc.gov (301) 415-8716

| Topics | Presenters | Time |
|--|---|---------------------------------|
| I. Opening Remarks | Mario Bonaca, ACRS | 8:30-8:35 p.m. 5 minutes |
| II. Staff Introduction | P.T. Kuo, NRR | 8:35 - 8:40 p.m. 5 minutes |
| III. Overview of License Renewal Application a. The Application b. Plant Design/Operational Issues c. Major Equipment Replacement/Repairs d. Resolved Open Items Equipment Qualification Equivalent Margins Analysis Recovery from SBO e. Commitment Tracking f. Plant Ownership | George Wrobel, et al. Rochester Gas and Electric | 8:40- 9:05 p.m. 25 minutes |
| IV. Overview of NRC Safety Evaluation Report a. Resolution of Open Items b. Inspection/Audit Results c. Staff Conclusions | Russ Arrighi, NRR | 9:05 - 9:20 p.m. 15 minutes |
| VI. Committee Discussion | Mario Bonaca, ACRS | 9:20 - 10:00 p.m. 40 minutes |
| VII. Closing | Mario Bonaca, ACRS | 10:00 p.m. |

Note

- Presentation time should not exceed 50 percent of the total time allocated for specific items. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
PLANT LICENSE RENEWAL FOR THE
R.E. GINNA NUCLEAR POWER PLANT
APRIL 16, 2003
ROCKVILLE, MARYLAND**

- STATUS REPORT -

PURPOSE:

The purpose of this meeting session is to review and discuss the results of the staff review of the License Renewal Application (LRA) for the Rochester Gas and Electric (RG&E), Robert E. Ginna Nuclear Power Plant and the related Safety Evaluation Report (SER). Ginna is a Systematic Evaluation Program (SEP) plant.

BACKGROUND:

The LRA for Ginna was submitted by RG&E in a letter dated July 30, 2002, consistent with the format and content described in the Generic Aging Lessons Learned (GALL) report. The R. E. Ginna Station is a two-loop pressurized water reactor rated at 1520 MWt or 490 MWe, located in Wayne County, near Rochester, New York on the south shore of Lake Ontario, which is the plant ultimate heat sink and the source of circulating. The turbine and condenser system as well as the nuclear steam supply system were designed and supplied by Westinghouse. The remainder of the plant was designed by either RG&E or Gilbert Associates, Incorporated. The current plant operating licensee expires September 18, 2009. RG&E is the current owner of the plant but Constellation Energy has agreed to purchase the plant from RG&E. The sale is contingent upon NRC issuance of a renewed operating license.

DISCUSSION

The staff has completed planned license renewal inspections focused on the Scoping and Screening and Aging Management Program Review. The inspections included examinations of selected procedures and records and interviews of personnel to verify licensee adherence to 10 CFR 54 requirements. The inspection team consisted of NRC and contractor personnel. A few minor issues were identified but none were considered to be potentially risk significant.

There were 8 open items and 7 confirmatory items identified in the SER w/Open Items that was provided to the Committee on October 9, 2003. The staff has reviewed the applicants response responses and has closed out all of the Open Items. The basis for closing the following Open Items can be found in the following Sections: 2.3.3.2, 2.3.3.3, 2.3.3.6, 2.5.1.1, 3.1.2.3.4, 3.1.2.3.7, 3.6.2.4.4, and 4.2.2.2.

OI 2.3.3.2-1: The applicant did not provide adequate basis for concluding that a failure in the out-of-scope piping will not result in failure of the component cooling water (CCW) system in performing its intended functions. The staff could not make its finding regarding the acceptability of the applicant's basis without information such as the available methods of detecting piping failure, the inventory of CCW that could be lost through failed piping from the time of detection to failure of the component cooling water system, the rate of loss of inventory

through a failed pipe considering that the system is pressurized, and the time necessary for reasonable assurance that operators could identify and isolate the failed piping.

OI 2.3.3.3-1: The staff requested that the applicant justify the exclusion of the alternate spent fuel pool (SFP) makeup water supply piping and valves from the scope of license renewal and AMR. The applicant stated that Ginna was built before RG 1.13 was issued and therefore did not apply. The applicant further stated that RG 1.13 is used as guidance, but is not a requirement. The staff cannot reconcile the applicant's argument with the fact that these alternative makeup water supply paths are relied upon in Ginna's CLB not only to offset boil-off due to the loss of SFP cooling, but also to mitigate potential leaks in the SFP liner. The staff noted that although these makeup water paths are non safety-related, they are within the scope of 10 CFR Part 54 because their failure could prevent satisfactory performance of functions necessary to prevent or mitigate significant offsite exposures resulting from SFP accidents. In other words, redundancy is not an adequate basis in itself to exclude a system from AMR. As such, all of the components that comprise these alternate flow paths should be within the scope of license renewal and subject to an AMR per the requirements of 10 CFR 54.4(a)(2).

OI 2.3.3.6-1: The applicant did not provide an adequate basis for concluding that the fire service water booster pump, piping, and valves back to the service water system were excluded from the scope of license renewal.

OI 2.5-1: The staff questioned the elimination of cables M0089 and M0108 from the license renewal scope. These circuits are part of the offsite power path that brings offsite power into the safety buses. The staff asked the applicant to clarify how the Ginna plant can be brought to a shutdown condition from the offsite power supply if these circuits to the safety-related shutdown buses are not included within the scope of license renewal.

OI 3.6-1: The LRA does not address aging effects associated with the metallic electrical current carrying components of the phase bus. Oxidation and corrosion of the metallic components, or loosening of the fastener components (bolted bus connections) are examples of aging stressors that are not addressed. The applicant was asked to provide a description of its aging management program used to detect aging effects associated with these aging stressors; or provide justification why such a program is not needed.

OI 4.2.2-1: The applicant changed its method of determining the reference temperature for pressurized thermal shock (RT_{PTS}) value for the limiting weld, SA-847, from one that was based on the chemistry factor from Table 1 in RG 1.99, Revision 2 and 10 CFR 50.61 to one that was based on the use of the Ginna surveillance data. Two methods of determining the chemistry factor and RT_{PTS} value are identified in 10 CFR 50.61 – one method based on the amount of copper and nickel in the weld and one based on the use of surveillance data. As specified in 10 CFR 50.61(c)(2)(ii)(A) the surveillance data deemed credible according to the criteria of paragraph (c)(2)(i) of 10 CFR 50.61 must be used to determine the material-specific chemistry factor. The applicant chose to utilize surveillance data in determining the chemistry factor but has not demonstrated that the data satisfies the credibility criteria of paragraph (c)(2)(i) of 10 CFR 50.61.

OI B2.1.28-1: The applicant indicated that Ginna has two surveillance capsules left in the core. The current schedule is to withdraw one of the capsules during the 2003 refueling

outage. At that time, the capsule will have received a fast neutron fluence of 5.25×10^{19} , more than the projected dose at 60 years of 4.85×10^{19} . Because Ginna has performed, and submitted to the NRC, a reactor vessel equivalent margins analysis, the applicant indicated that it does not plan on testing that capsule. In addition, the current plan is to leave one capsule in the reactor vessel until about 2009, at which point it will have received a fast neutron fluence equivalent to 80 years of operation. However, Item 6 in GALL XI.M31 indicates that the applicant is to withdraw one capsule at an outage in which the capsule receives a neutron fluence equivalent to the 60-year fluence so that the capsule may be tested in accordance with the requirements of the American Society for Testing and Materials (ASTM) E-185. Therefore, the staff believes the capsule withdrawn during the 2003 refueling outage should be tested.

OI B2.1.36-1: The applicant's program inspects locations in the thimble tube associated with geometric discontinuities or area changes along the reactor coolant flow path, such as areas near the lower core plate, the core support forging, the lower tie plate, and the vessel penetrations. These locations are susceptible to wear resulting from flow-induced vibration. The applicant states that all 36 thimble tubes are within the scope of this inspection program. The staff found the scope of the program to be adequate because all 36 thimble tubes are within scope and the inspection is performed at locations most susceptible to wear resulting from flow-induced vibration. However, the applicant has not identified the locations on the thimble tubes and guide tubes to be inspected for stress-corrosion cracking (SCC).

The staff identified 7 confirmatory items in the SER with Open Items. Each of the following confirmatory items was resolved to the satisfaction of the staff.

CI 2.3.3.2-1: The applicant stated that the piping, valve bodies, bonnets, and pump casings that can be used to fill the component cooling surge tank from the reactor water makeup tank, shown on drawing 33013-1245, are not within the scope of license renewal. It is the applicant's position that a failure of any makeup capability other than that provided by the surge tank will not affect a safety function; therefore, the makeup capability from the reactor makeup water system is out of the scope of the Rule. The staff cannot reconcile the applicant's response with the fact that the Ginna CLB relies upon makeup to the component cooling water system in the event of leakage during post-accident operation. The components of the makeup water supply to the component cooling water system may be required to replace system leakage necessary to maintain operation of the CCW, and as such, are within the scope of license renewal and subject to an AMR per the requirements of 10 CFR 54.4(a)(2)

CI 2.3.3.5-1: The staff requested that the applicant justify why a portion of the service water system piping that is not subject to an AMR connects two parallel portions of the service water system piping that are subject to an AMR at valves 4733, 4651B, and 4562B. These valves are shown as normally open on license renewal boundary drawing 33013-1250, 3-LR, at locations I2, I7, and J7. The applicant responded that those portions of the service water, chilled water, and control room ventilation systems that are subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), are identified in the LRA. While UFSAR Sections 9.4.3 and 6.4 describe all the design functions of the control room area ventilation system, only some design functions meet the inclusionary criteria in 10 CFR 54.21(a)(1). While control room

cooling via chilled water with the heat ultimately rejected to service water is the preferred method, it is not the only method and does not take into account cooling via radiant heat conduction into the surrounding building members or the cooling provided by the exchange of air through the filtration and pressure boundary equipment. The staff evaluated the applicant's response and did not identify information in the references cited by the applicant that provides the information needed to support exclusion of the piping from the scope of license renewal.

CI 2.3.3.10-1: The applicant stated that specific cooling/heating coils and heat exchangers have a pressure boundary intended function, that is, "their heat transfer function is not credited in the current licensing basis." However, the staff noted that under the component group, "heat exchangers," in LRA Tables 2.3.3-9 and 2.3.3-10, both pressure boundary and heat transfer are listed as intended functions. This appears to be in contradiction with the above response and was discussed with the applicant.

CI 3.3.2.3.4-1: The applicant describes its AMP to manage aging of the components exposed to the fuel oil environment. The LRA states that this AMP is consistent with GALL AMP XI.M30, "Fuel Oil Chemistry," with exceptions regarding not adding biocides, stabilizers, or corrosion inhibitors to the fuel oil and not sampling for particles in accordance with the modified ASTM D2276 test procedure. The applicant stated that in a review of plant-specific operating experience no evidence of oil degradation or MIC has ever been observed. Therefore, addition of biocides, stabilizers, or corrosion inhibitors has not been needed to date. Effectiveness of using fuel oil without additives will be verified by the results of periodic inspections of the fuel storage tanks. The applicant also modified its position regarding measuring particles and applying the "clear and bright" method for determining water and particulate contamination in the diesel fuel oil. The applicant made a commitment to change its technical specifications by incorporating specific particulate testing requirements for diesel generator fuel oil in accordance with the ASTM D2276 standard or its successor, and eliminating the need for the "clear and bright" method of the ASTM D4176 standard.

CI 3.6-1: The applicant was asked to provide a description of its AMP used to detect aging effects associated with certain aging stressors. With regard to the splice box that was constructed in 1989 to join the existing aluminum conductor Westinghouse phase bus to the new copper conductor Unibus phase bus, the applicant stated that, "It is assumed that Penetrox was used to connect the aluminum to the copper transition piece because the Westinghouse bus was not plated at the field cut/prepared end." The applicant should confirm that Penetrox or another suitable antioxidant material was indeed used on the electrical joint mating surfaces. Although the splice box will have only 40 years of operation at the end of the license renewal period of extended operation, lack of a suitable antioxidant coating on the aluminum to copper mating surfaces could result in early failure of the electrical joint.

CI 4.3-1: The applicant indicated that the American National Standards Institute (ANSI) B31.1 limit of 7000 equivalent full range cycles may be exceeded during the period of extended operation for the NSSS sampling system. The staff requested that the applicant describe the existing qualification of the NSSS sampling system and provide the maximum calculated thermal stress range for affected portions of the system. The applicant indicated that the engineering evaluation of the affected portions of the NSSS

sampling system has been completed and concluded that the NSSS sampling system is acceptable for the period of extended operation. The staff agrees with the applicant's conclusion. The applicant should update the UFSAR Supplement summary to include the TLA evaluation of the NSSS sampling system as described above.

CI 4.3-2: The applicant indicated that the CUF for the pressurizer surge line nozzle is not expected to exceed 1.0 during the period of extended operation. The staff finds the applicant's evaluation to be reasonable. The applicant should update the UFSAR Supplement summary to include a description of the completed environmental fatigue evaluation of the pressurizer surge line as described above.

The applicant has responded to these confirmatory items and the staff reviewed the responses and has closed out all of the Confirmatory Items. The basis for closing the CIs can be found in the following Sections: 2.3.3.2, 2.3.3.5, 2.3.3.10 3.3.2.3.4, 3.6.2.4.4, 4.3.2.2, and 4.3.2.7.

Within the final SER, the staff concluded that the applicant had satisfied the requirements of 10 CFR 54 and has imposed two general license conditions which will require the applicant to include the USAR Supplement in the next USAR update required by 10 CFR 50.71(e) following issuance of the renewed license and complete future inspections identified in the USAR Supplement prior to the period of extended operation. No other plant-specific license conditions were included.

Commitments made by the applicant related to aging management programs (AMPs) to manage aging effects of structures, systems, and components (SSCs) prior to the period of extended operation are included in Appendix A of the SER, along with the implementation schedule and the source of the commitment.

NOTABLE OPERATIONAL ISSUES/EVENTS

Westinghouse 2-Loop 1520 MWt PWR
Initial License granted September 18, 1969
SEP Plant
Provisional to Full-Term License Conversion December 10, 1984
Construction Permit to Operating License Recapture - August 9, 1991
Steam Generator Replacement - 1996
Improved Standard Technical Specifications - 1996
Baffle-Barrel Bolt Inspection/Replacement - 1999
Reactor Vessel Head Replacement - 2003
Visual Inspection of Lower Head Completed - 2003
Plant Sale Anticipated - Summer 2004

EXPECTED COMMITTEE ACTION

The ACRS is expected to provide a letter report to the Commission recommending a course of action on this matter.