Maria Korsnick
Vice President

1503 Lake Road
Ontario, New York 14519-9364
585.771.3494
585.771.3943 Fax
maria.korsnick@constellation.com

Constellation Energy
R.E. Ginna Nuclear Power Plant

June 8, 2005

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: **R.E. Ginna Nuclear Power Plant**
Docket No. 50-244

Supplementary Information Associated with the Proposed License Amendment to Provide a One-time Integrated Leak Rate Test (ILRT) Interval Extension

On March 10, 2005, R.E. Ginna Nuclear Power Plant, LLC (Ginna LLC) submitted a proposed license amendment request for a onetime extension to the ILRT interval frequency. Subsequent to the submittal, as the result of recent discussions with the NRC staff, Ginna LLC would like to provide the attached additional information associated with the ILRT interval extension.

There are no new commitments being made in this submittal. Should you have questions regarding the information in this submittal, please contact George Wrobel at (585) 771-3535 or george.wrobel@constellation.com.

Very truly yours,

Mary G. Korsnick

Mary G. Korsnick

100133I

A001

STATE OF NEW YORK :
: **TO WIT:**
COUNTY OF WAYNE :

I, Mary G. Korsnick, being duly sworn, state that I am Vice President – R.E. Ginna Nuclear Power Plant, LLC (Ginna LLC), and that I am duly authorized to execute and file this request on behalf of Ginna LLC. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other Ginna LLC employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

Mary G. Korsnick

Subscribed and sworn before me, a Notary Public in and for the State of New York and County of Monroe, this 8th day of June, 2005.

WITNESS my Hand and Notarial Seal:

Michalene A. Bruto
Notary Public

My Commission Expires:

January 11, 2007
Date

MICHALE[illegible]
Notary Public, [illegible] York
Registration No [illegible]018576
Monro[illegible]
Commission [illegible] Jan 11, 2007

Attachment: ILRT Frequency Extension Supplemental Information

cc: S. J. Collins, NRC
D. M. Skay, NRC
Resident Inspector, NRC

Peter R. Smith
New York State Energy, Research, and Development Authority
17 Columbia Circle
Albany, NY 12203-6399

Mr. Paul Eddy
NYS Department of Public Service
3 Empire Plaza, 10th Floor
Albany, NY 12223-1350

ATTACHMENT

ILRT Frequency Extension Supplemental Information

ILRT Frequency Extension Supplemental Information

1. In Enclosure 1 to the March 10, 2005 letter, Section 2.3, "Description of Containment", it is stated that the containment liner is insulated with closed-cell polyvinyl foam with metallic sheeting up to a point above the spring line. In this regard, please provide the following:

    a. clarification as to whether the inside surface of the insulated region of the liner is considered accessible and inspectible,

    b. a description of how a flaw on the inside surface of the liner in the insulated region would be detected visually (or otherwise) as part of the normal inspection program for this region,

    c. a discussion of whether the foam insulation could contribute to an increased potential for corrosion either at the foam-liner interface (inside liner surface) or the liner-concrete interface (outside liner surface), and

    d. an assessment of the impact on the risk results (ΔLERF) if both sides of the liner in the insulated region were considered to be in contact with foreign material and subject to corrosion. (This may be part of the parametric studies in RAI 2 below.)

Reply 1a The cylindrical portion of the containment liner is insulated with closed-cell polyvinyl foam with metallic sheeting up to a point above the spring line. The metallic sheeting is permanently sealed to prevent moisture intrusion. The insulated portion of the containment liner that is insulated is identified as inaccessible in accordance with the ISI Program. (*Reference the Containment Program, Section 13, Article 1.7.1.2 of the Fourth Interval Inservice Inspection (ISI) Program)*

Reply 1b Visual inspections of the accessible insulated portion of the Containment Liner are routinely performed by the Boric Acid Corrosion Program, the Inservice Inspection Program and the Appendix J Program. When conditions exist, i.e., presence of boric acid, standing water, damage to insulation, evidence of corrosion, etc., in accessible areas that could indicate the presence of, or result in, degradation to inaccessible areas an evaluation of the acceptability of inaccessible areas is required. If it is determined that the potential exists for degradation of the inaccessible area the insulation will be removed and the steel liner will be examined for degradation. An example of this from NUREG-1786 is provided as follows:

> Review of plant-specific operating experience and recent maintenance and corrective action documents identified only one nonconforming condition at the moisture barrier (caulking) which protects the inaccessible portion of the Containment steel liner from corrosion. This condition was discovered during inservice inspections performed to meet the requirements of ASME Section XI, Subsection IWE in 2000. As

discussed in the response to RAI B2.1.3-3, insulation was removed and the liner was exposed for visual inspection in two areas. Evidence of minor surface corrosion was present in the area with the nonconforming caulking detail. Ultrasonic thickness readings were taken in both areas, including locations above and along the interface between the liner and the Containment concrete floor. All measured values exceeded the minimum required thickness with considerable margin. The liner was cleaned, re-coated and the moisture barrier restored in accordance with original design specification requirements in both areas.

As a result of this discovery, the configuration of the moisture barrier was inspected around the entire circumference of the Containment and verified to be intact with no visible gaps or discontinuities. Additional inspections of the liner were performed during the 2002 refueling outage. As discussed in the response to RAI B2.1.3-3, approximately 70 linear feet of the liner were exposed and ultrasonic thickness measurements taken at four different excavated areas below the floor level. These measurements verified that no loss of liner thickness had occurred at these locations. The exposed portion of the liner was again cleaned, re-coated, and the moisture barrier restored in accordance with original design specification requirements.

Additional inspections of the moisture barrier and liner are planned during the second and third periods of the Fourth ISI interval, which commenced on January 1, 2000. The condition of the inaccessible portions of the Containment liner may be assessed by evaluation of the condition of the liner at the interface with the concrete floor. Therefore, inspections performed under the ASME Section XI, Subsections IWE/IWL ISI Program will provide reasonable assurance that aging effects for the inaccessible portions of the liner plate can be managed so that the liner plate will continue to perform its intended function consistent with the current licensing basis during the period of extended operation. Because previous inspections of the inaccessible portions of the liner (behind the moisture barrier) revealed only minor degradation, and because additional inspections of both the moisture barrier and liner will take place under the applicant's ASME Section XI, Subsections IWE and IWL Inservice Inspection Program, the staff finds that the applicant has provided a reasonable basis for concluding that the aging of the containment liner behind the insulation and the moisture barrier will be adequately managed consistent with its CLB during the extended period of operation. As such, the staff considers RAI 3.6-16 closed. (*Reference NUREG-1786, Safety Evaluation Report Related to the License Renewal of R.E. Ginna Nuclear Power Plant Docket No. 50-244, Article 3.5.2.4.1.2*)

Reply 1c — Review of plant-specific operating experience and recent maintenance and corrective action documents has not shown the occurrence of liner plate corrosion induced by closed-cell polyvinyl foam in contact with the liner. The liner is coated with a zinc rich coating to protect the metal from corrosion.

During steam generator replacement in 1996, two large holes were cut in the containment dome. A visual inspection of the demolished area was conducted. The general condition of the inspected area was excellent. No signs of degradation or damage was detected. The liner plates and welded joints accessible to inspection had no sign of deterioration. In summary this study showed that the liner of the containment building after almost 30 years of being exposed to the environment has not degraded and the effect of aging has been insignificant on this particular structure. (*Reference Ginna Technical Report No. 96135-TR-01, "Containment Dome Material and Structural Assessment*)

During the 2005 refueling outage, additional liner ultrasonic thickness measurements were taken. These measurements verified that no loss of liner thickness had occurred at these locations. The exposed portion of the liner was again cleaned, re-coated, and the moisture barrier restored in accordance with original design specification requirements.

There has been no indication in over thirty years of operation that the presence of closed-cell polyvinyl foam in contact with the liner has contributed to an increased potential for corrosion either at the foam-liner interface (inside liner surface) or the liner-concrete interface (outside liner surface).

Reply 1d An area-at-risk correction for the area in contact with concrete is not appropriate for the area where foreign material is not likely to contact the containment since the majority of the steel liner or shell for all plants has at least one side of the surface subject to this reduced corrosion (and none has been observed). (*Reference Attachment 1, to the March 10, 2005 letter, Section A.8.1*)

In addition, the Corrosion Factor Calculation was adjusted, doubling the liner surface area potentially contacted by foreign material from 41313.34 ft^2 to 82626.67 ft^2 and this resulted in the doubling of the total likelihood of non-detected corrosion related containment leakage due to increased test interval from 3 to 15 years from 0.1635% to 0.3239%. This resulted in an increase of 2.2E-09 in LERF over Baseline (per year) for the 15 year test interval.

2. In Enclosure 1 to the March 10, 2005 letter, Section 2.9, "Common Industry Questions Related to ILRT Extensions", Response 5, it is indicated that the attached risk assessment for Ginna provides: (1) a series of parametric sensitivity studies regarding the potential age-related corrosion effects on the steel liner, and (2) a discussion on the effects the ILRT extension would have on the total LERF (internal and external events) for Ginna. However, this information was not included in the attached risk assessment. Please provide the noted information.

Reply 2.1 The sensitivity studies regarding the potential age-related corrosion effects on the steel liner are found in Pages 53 - 66 of Attachment 1 to the March 10, 2005 letter.

Reply 2.2 The effects the ILRT extension would have on the total LERF have been incorporated in Attachment 1, Pages 40 - 43, based on Revision 4.3 of the Ginna PRA model which includes internal events, internal floods, fires, and shutdown events.

3. In Section 3.0 of Attachment 1 to the March 10, 2005 letter, it is indicated that the risk impacts of the ILRT extension are based on the Ginna internal events PRA. In Table 4.2-2, the total core damage frequency (CDF) based on Revision 4.3 of the Ginna PRA model (presumably for internal events only) is reported as 5.37E-5 per year. In the previous version of the PRA (Revision 4.2), the total CDF for both internal and external events combined was 4.0E-5 per year, with approximately 2.0 E-5 per year from internal events. In this regard, please provide the following:

   a. confirmation that the CDF values reported in Table 4.2-2 are for internal events only, and

   b. a discussion of the major reasons for the net increase in CDF from 2.0E-5 per year in Revision 4.2 to 5.37E-5 per year in Revision 4.3.

Reply 3a The risk impacts of the ILRT extension and Table 4.2-2 are based on the Ginna PSA which includes more than the internal events, it also includes; internal floods, fires, and shutdown events. Revision 4.3 of the Ginna PSA was used for this submittal. This revision incorporated a significant number of changes to Revision 4.2, as a result of the peer review performed on that revision. In Revision 4.2, the total CDF was 3.98E-05/yr, while for Revision 4.3, the total CDF is 5.37E-05/yr. The contribution from each of the four categories is shown below:

	Revision 4.2	Revision 4.3
Internal Events	1.28E-05/yr	1.15E-05/yr
Internal Flooding	8.78E-06/yr	7.94E-06/yr
Fires	1.14E-05/yr	2.58E-05/yr
Shutdown	6.81E-06/yr	8.46E-06/yr
Total	3.98E-05/yr	5.37E-05/yr

Reply 3b A brief description of some of the changes to the Ginna PSA that contributed to the differences in CDF between the two revisions, including whether the change resulted in an increase or decrease in CDF, follows.

Internal Events:

The total change in internal events CDF from Rev. 4.2 to Rev. 4.3 is a decrease of 1.30E-06/yr. Some of the changes from Rev. 4.2 to Rev. 4.3 include:

1) Updating loss of offsite power (LOOP) frequencies and non-recovery probabilities, resulting in an increase in CDF;

2) Re-calculation of pre-initiator human errors using an updated methodology, resulting in a decrease in CDF; and
3) Updating the values for the fraction of time the plant spends in different modes, and offsite power configurations, resulting in a decrease in CDF.

Internal Flooding:

The total change in internal flooding events CDF from Rev. 4.2 to Rev. 4.3 is a decrease of 8.34E-07/yr. Some of the changes from Rev. 4.2 to Rev. 4.3 include:

1) Updating the values for certain flood initiators, resulting in an increase in CDF;
2) Enhancing the model to account for flood barriers, resulting in a decrease in CDF, and;
3) Updating the values for the fraction of time the plant spends in different modes, and offsite power configurations, resulting in a decrease in CDF.

Fires:

The total change in fire CDF from Rev. 4.2 to Rev. 4.3 is an increase of 1.44E-05/yr. Some of the changes from Rev. 4.2 to Rev. 4.3 include:

1) Updating the PSA model to use the latest revision of the Westinghouse seal LOCA analysis (WCAP-16141), resulting in an increase in CDF;
2) Enhancing the modeling of Appendix R fire scenarios, resulting in an increase in CDF;
3) Expanding the PSA model to account for the possibility of smaller fires impacting either train of AC power, resulting in an increase in CDF, and;
4) Updating values for the fraction of time the plant spends in different modes, and offsite power configurations, resulting in a decrease in CDF.

Shutdown:

The total change in shutdown CDF from Rev. 4.2 to Rev. 4.3 is an increase of 1.65E-06/yr. Some of the changes from Rev. 4.2 to Rev. 4.3 include:

1) Enhancing the shutdown model to better account for cavitation and loss of RHR pumps during low loop levels, resulting in an increase in CDF;
2) Updating shutdown loss of offsite power frequency and non-recovery probabilities (note that the shutdown LOOP frequency decreased while non-recovery probabilities increased), resulting in a decrease in CDF;
3) Minor model enhancements to instrument bus logic resulting in a decrease in CDF, and;
4) Enhancements to account for latent human failures of low temperature overpressure (LTOP) pressure transmitters resulting in an increase in CDF.

4. The approach used to assess the impact of the ILRT extension on leak detection probability (Section 4.4 of Attachment 1 to the March 10, 2005 letter) appears to be based on a 1994 EPRI methodology, and results in only a 15 percent increase in the non-detection probability for an extension of the ILRT interval to 15 years. A revision to this methodology was developed by EPRI in 2001 that corrected the original methodology in several areas, including the above. The revised methodology (referred to as the NEI Interim Guidance) would indicate larger risk impacts (i.e., a factor of 5 rather than a 15 percent increase in the non-detection probability) for the ILRT interval extension. In view of the non-conservative nature of the original EPRI methodology, please provide a re-assessment of the risk impacts of the requested change for Ginna based on the NEI Interim Guidance.

Reply 4 The Ginna risk assessment was performed using the approved methodology based on the 1994 EPRI report and as used in previously approved submittals for 15 year ILRT extensions. The 2001 interim guidance was also used to provide updated statistical information related to plant failure history etc. In light of the above question, two other risk evaluations have been performed with the results tabulated below. These evaluations are based on the NEI Interim Guidance from November 2001 and the EPRI "Risk Impact Assessment of Extended Integrated Leak Rate Testing Intervals", Document 1009325, Final Report, December 2003. It should be noted that neither of these newer methodologies have been formally approved for use. The EPRI Document 1009325 methodology is still in the formal review process by the NRC.

	Attachment 1 to the March 10, 2005 letter	NEI Interim Guidance Nov. 2001	EPRI 1009325 Dec. 2003
When the ILRT interval is 15 years, the risk contribution of leakage (person-rem/yr) represented by Class 3 accident scenarios is increased to:	3.85% of the total risk.	13.39% of the total risk.	2.39% of the total risk.
The total integrated increase in risk contribution from reducing the ILRT test frequency from the once-per-10-year frequency to once-per-15 years is:	0.15%	4.27%	0.75%
The total integrated increase in risk contribution from reducing the ILRT test frequency from 3-per-10-year (baseline) frequency to once-per-15 years is:	0.46%	10.90%	1.82%
The risk increase in LERF from the original 3-in-10 years test frequency to once-per-15 years is:	2.44E-08/yr	5.20E-07/yr	4.67E-08/yr
The risk increase in LERF over the once-per-10 year test interval(per-year):	7.38E-09/yr	2.17E-07/yr	1.95E-08/yr
The increase in conditional containment failure probability (CCFP) from the once-per-10-year test interval:	0.16%	.4%	0.04%
The increase in conditional containment failure probability (CCFP) from the original 3-in-10 years test frequency to once-per-15 years is:	0.49%	.97%	0.09%

Regulatory Guide 1.174 provides guidance for determining the risk impact of plant-specific changes to the licensing basis. Small changes in risk are defined in Regulatory Guide 1.174 as increases of CDF in the range of 1E-06/yr to 1E-05/yr or increases in LERF in the range of 1E-07/yr to 1E-06/yr. Since the ILRT does not impact CDF, the relevant criterion is LERF. The calculated LERF increases using the approaches applied in the March 10th, 2005 submittal, and EPRI 1009235 (2003) were less than 1E-07/yr, which is in Region III of the LERF acceptability curve. The increase in LERF using the NEI Interim Guidance (2001) were in the range of 1E-07/yr to 1E-06/yr, which is in Region II of the LERF acceptability curve. The acceptance guidelines for this change are that it can be reasonably shown that the total LERF is less than 1E-05/yr and that the cumulative changes be tracked. The baseline LERF from Rev. 4.3 of the Ginna PSA is 6.44E-06. Based on the LERF increase calculated using the NEI Interim Guidance (i.e., 5.2E-07), the total LERF for the requested change is 6.96E-06/yr which meets the total LERF criterion and will be tracked. It is therefore concluded the LERF criteria for acceptability is satisfied for all three approaches.