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July 27, 2006

U. S. Nuclear Regulatory Commission  
Washington, DC 20555

**ATTENTION:** Document Control Desk

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

**Request for Extension for Completing Corrective Actions for Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors**

This letter requests an extension of the completion date for activities needed for final resolution of recirculation sump related issues at the R.E. Ginna Nuclear Power Plant (Ginna).

By Generic Letter 2004-02, Reference (a), the Nuclear Regulatory Commission (NRC) requested that pressurized water reactor licensees evaluate the potential for post-accident debris to impede or prevent the recirculation functions of emergency core cooling and containment spray systems. The NRC stated, in that generic letter, that all actions should be completed by December 31, 2007. The R.E. Ginna Nuclear Power Plant, LLC (Ginna LLC) responses to the generic letter were transmitted by References (b), (c), and (d). Ginna LLC stated, in Reference (d), that Ginna would complete the installation of an active strainer system to support closure of GL 2004-02 by December 31, 2007.

Ginna LLC recently, through Reference (e), notified the NRC that we have suspended project activities related to the active strainer, including the necessary license amendment request. The active strainer solution was being proposed at Ginna due the relatively small size of the containment structure and the potential capabilities for the system with regards to debris loading. Recent active strainer testing has provided unsatisfactory results causing a loss of confidence in the design as a fundamental solution to NRC GSI-191 and Generic Letter 2004-02. The project is now changing from an active strainer design to a passive strainer design solution which is in alignment with the remainder of the industry. Vendors are currently being contacted for the design, testing, delivery and installation of the new containment emergency sump screens. Ginna LLC had planned to initiate implementation of the active strainer system during the Fall 2006 refueling outage. In view of the long lead times required for design and procurement of passive strainer screens, sufficient time does not exist to initiate implementation this Fall, the only scheduled refueling outage prior to December 31, 2007. Also, the Ginna passive screen design still has a

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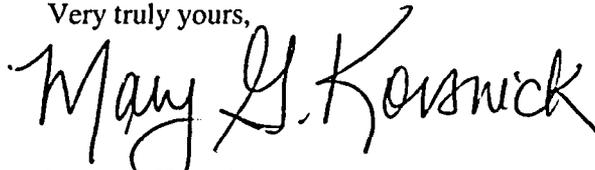
number of open industry and plant specific design issues to be resolved, including downstream effects and chemical effects analyses.

Considering the above, a short extension to the completion schedule is respectfully requested to extend the completion of the corrective actions required by Generic Letter 2004-02 for Ginna from December 31, 2007 to the Spring 2008 refueling outage, which is currently scheduled to begin April 8, 2008. To improve existing margins until all modifications can be implemented, Ginna LLC is currently planning to install additional interim passive strainer modules that will increase the available screen area by approximately 630%, and a flow diverter wall, during the Fall 2006 refueling outage.

Attachment 1 to this letter provides the technical basis for the proposed extension. The technical basis is consistent with the criteria for such extensions provided in SECY-06-0078, Reference (f). Attachment 2 provides the new regulatory commitments made in this letter in tabular form. Ginna LLC requests approval of the proposed extension by September 29, 2006.

Should you have questions regarding this matter, please contact Mr. Robert Randall at (585) 771-3734, or robert.randall@constellation.com.

Very truly yours,

A handwritten signature in black ink that reads "Mary G. Korsnick". The signature is written in a cursive, flowing style.

Mary G. Korsnick

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*

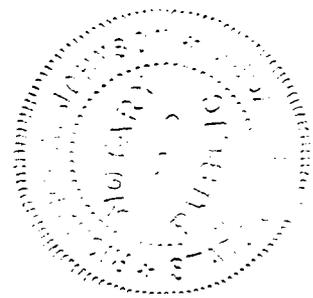
Subscribed and sworn before me, a Notary Public in and for the State of New York and County of Wayne, this 27 day of July, 2006.

WITNESS my Hand and Notarial Seal:

*Richard A. Johnson*  
Notary Public

My Commission Expires: 21 Oct. 2006

RICHARD A. JOHNSON  
NOTARY PUBLIC, STATE OF NEW YORK  
No. 01J06082344  
QUALIFIED IN WAYNE COUNTY  
MY COMMISSION EXPIRES OCT. 21, 2006



**REFERENCES:**

- (a) NRC Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors, dated September 13, 2004
- (b) Letter from Mary G. Korsnick (Ginna LLC) to Donna M. Skay (NRC), dated March 7, 2005, 90 Day Response to NRC Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors
- (c) Letter from Mary G. Korsnick (Ginna LLC) to Document Control Desk (NRC), dated July 15, 2005, Response to NRC Request for Additional Information Re: NRC Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors
- (d) Letter from Mary G. Korsnick (Ginna LLC) to Document Control Desk (NRC), dated August 31, 2005, Response to NRC Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors

- (e) Letter from Mary G. Korsnick (Ginna LLC) to Document Control Desk (NRC), dated June 29, 2006, Response to NRC Generic Letter 2004-02, Update of Response to Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors (TAC No. MC4687)
- (f) SECY-06-0078, from L. A. Reyes, NRC Executive Director for Operation, to NRC Commissioners, dated March 31, 2006, Status of Resolution of GSI-191, Assessment of [Effect of] Debris accumulation on PWR Sump Performance, (ML053620174)

cc: S. J. Collins, NRC  
P. D. Milano, NRC  
Resident Inspector, NRC

J. P. Spath, NYSERDA  
P. Eddy, NYS Dept. of Public Services

**ATTACHMENT (1)**

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**JUSTIFICATION FOR EXTENSION REQUEST FOR COMPLETION  
DATE OF THE R.E. GINNA CONTAINMENT SUMP MODIFICATION**

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## ATTACHMENT (1)

### JUSTIFICATION FOR EXTENSION REQUEST FOR COMPLETION DATE OF THE R.E. GINNA CONTAINMENT SUMP MODIFICATION

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The following is a description of how Ginna LLC has established that safety is maintained until all corrective actions can be completed associated with GSI-191 and Generic Letter 2004-02. This is intended to support Ginna LLC's request for an extension of the completion date for the Ginna corrective actions from December 31, 2007 (as required by the Generic Letter 2004-02) to the beginning of our 2008 refueling outage which is currently scheduled to begin April 8, 2008.

#### 1. New Screen Installation

Ginna LLC is planning to install new interim passive sump strainer modules that will increase the available screen area by approximately 600 ft<sup>2</sup> (630%) during the Fall 2006 refueling outage, to improve existing margins until the final design can be implemented. The final design solution will determine whether the interim strainers will become a portion of the final design or will be removed and replaced by the final strainer design, which will be installed during the Spring 2008 refueling outage.

#### 2. Flow Diverter Wall Installation

Ginna LLC is planning to install a new flow diverter wall in the basement of containment that will reduce the direct transport path of debris into the recirculation sump from a postulated break in the 'B' Reactor Coolant System (RCS) compartment. The 'B' RCS loop compartment contains the highest postulated accident generated debris. The debris would be forced to transport around the periphery of containment in order to reach the sump. The flow diverter wall will allow for increased settling and interception as debris transports, to reduce the quantity of debris that could potentially reach the sump.

#### 3. Debris Quantity/Size/Transportability

As described in Section 3.1.2.1 of NUREG/CR-6808 (Knowledge Base for the Effects of Debris on PWR Emergency Core Cooling Sump Performance, February 2003), the results of debris generation experiments of fibrous materials demonstrate that impingement of a high-pressure jet onto fibrous insulation (jacketed or not) will generate debris which spans a wide range of sizes ranging from individual fibers, to interwoven strands, to fiber clusters, to clumps of insulation, to nearly intact pillows.

Each of these different debris sizes has different transport velocities. From Section 5.1.3 of NUREG/CR-6808, fine debris such as individual fibers would remain suspended in the sump pool, and ultimately most of the fine insulation debris, referred to as small fines, would be transported to the sump screen. From Section 5.2.1, test data is given which shows that water velocities of 0.2 ft/s are needed to move sunken individual shreds of insulation (i.e., small fines), 0.5 ft/s is needed to move small pieces, and 0.9-1.5 ft/s is needed to move large pieces. For the Ginna submerged containment sump screen having an initial gross surface area of 95 ft<sup>2</sup>, the flow velocity at the sump inner screen is approximately  $\leq 0.12$  ft/second. This value was conservatively based on two residual heat removal (RHR) pumps operating at 2500 gpm each while the current design would be approximately 75% of that value. Consequently, the actual flow velocities would be approximately 75% of this value (0.09 ft/second). This would indicate that only small fines of suspended fibrous insulation would be transported to the Ginna sump.

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### JUSTIFICATION FOR EXTENSION REQUEST FOR COMPLETION DATE OF THE R.E. GINNA CONTAINMENT SUMP MODIFICATION

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At Ginna, the sump strainer is currently surrounded by a concrete curb approximately 6 inches high. Thus, the suction flow stream to the sump will be above the floor surface where the debris will have settled. Section 3.4.3.6 of NEI-04-07 states that the debris sizes assumed are the most conservative for purposes of debris transport and headloss. In accordance with Section 3.4.3.3.1 of the NEI-04-07, it is required that 60% of the generated debris is assumed to be small fines and that 100% of these small fines are assumed to transport to the sump. Given the low transport velocities and debris curb which exist at Ginna, only small fines will be transported to the sump screen. Furthermore, it is the larger pieces of fiber which after being caught on the sump screen would trap the small fines and thus build up the debris bed. With flow velocities low enough to only move these small fines of insulation much of this insulation will pass through the sump screen.

#### 4. Leak-Before-Break

Ginna LLC currently has NRC approval to invoke the leak-before-break (LBB) principle to address the dynamic effects of a cold leg, or hot leg break in the Reactor Coolant System (RCS). This approval was based on a plant specific evaluation (WCAP-15837) of the inherent toughness of the cold leg and hot leg piping at Ginna which concluded that the probability of a pipe failure before noticeable leakage could be detected and the plant brought into a safe-shutdown condition was negligibly small. The leak-before-break methodology has also been approved for the RCS branch lines (pressurizer surge line, accumulator lines, and residual heat removal (RHR) lines). While leak-before-break is not being used to establish the design basis debris load on the new sump screens, the use of LBB results in a substantial reduction in the zone of influence, and thus a significant reduction in the postulated debris generation and loading on the sump screens. With the installation of the additional sump screen area, the possibility of screen clogging due to debris is greatly reduced and the operation of Ginna until the spring 2008 outage is acceptable.

#### 5. Containment Cleanliness

Procedures direct a containment closeout inspection with explicit instructions for removing trash and debris from all areas of Containment. These procedures incorporate the industry guidance of Nuclear Energy Institute (NEI) 02-01, Revision 1 to minimize miscellaneous debris sources within the containment. Specifically, the procedures require that no loose debris (rags, trash, clothing, etc) is present in the containment which could be transported to the containment recirculation sumps. Also, instructions are provided to ensure no debris is lodged on the sump strainer, or is located inside the sump strainer. The sump strainer itself is to be inspected for structural distress. By maintaining high standards of containment cleanliness and inspection, Ginna is able to minimize debris loads, and ensure the sump strainer is in optimal condition should a loss-of-coolant accident occur.

#### 6. Operator Training and Actions

As discussed in our responses to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors," Ginna has implemented a number of interim corrective actions to assure core cooling and containment integrity. In the letter of August 18, 2005 the NRC staff concluded that Ginna LLC was responsive to and met the intent of Bulletin 2003-01 for Ginna.

The compensatory measures implemented by Ginna LLC included operator training on indications of and responses to recirculation sump clogging, aggressive containment cleaning and foreign

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material controls, ensuring containment drainage paths are unblocked, and ensuring recirculation sump screens are free of adverse gaps and breaches. Ginna LLC will maintain these compensatory measures throughout the proposed extension period.

#### 7. Information Notice 2005-26

On September 16, 2005, NRC issued Information Notice (IN) 2005-26, "Results of Chemical Effects Head Loss Tests in a Simulated PWR Sump Pool Environment." The IN only applies to plants that have calcium silicate (Cal-Sil) insulation and utilize trisodium phosphate (TSP) as a buffering agent in the containment sump. Ginna uses sodium hydroxide as the sump buffering agent, not TSP. Therefore, the concerns raised in the IN are not applicable to Ginna.

#### Conclusion

Based upon the above discussions, Ginna LLC has determined that safety will be maintained until all corrective actions are completed during the Spring 2008 refueling outage.

**ATTACHMENT (2)**  
**REGULATORY COMMITMENTS**

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REGULATORY COMMITMENT	DUE DATE
Install new interim sump strainer modules.	Prior to startup from Fall 2006 refueling outage.
Install a new flow diverter wall in the basement of containment.	Prior to startup from Fall 2006 refueling outage.
Install final sump strainer design.	Prior to startup from Spring 2008 refueling outage.
Maintain NRC Bulletin 2003-01 compensatory measures.	Throughout the proposed extension period.