WPLNRC-1002838

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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: **R.E. Ginna Nuclear Power Plant**
Renewed Facility Operating License No. DPR-18
Docket No. 50-244

Response to Preliminary White Finding in Inspection Report No. 05000244/2013005; EA-13-247

Reference: (a) Letter from Michael Scott (NRC) to Joseph Pacher (CENG), R.E. Ginna Nuclear Power Plant, LLC – NRC Integrated Inspection Report 05000244/2013005 with Preliminary White Finding, February 14, 2014

On February 14, 2014 R.E. Ginna Nuclear Power Plant, LLC (Ginna) received the NRC Integrated Assessment Report (Ref. (a)) describing a preliminary white finding associated with a postulated flood impacting the 125VDC system. Ginna recognizes the significance associated with the inadequate evaluation of this concern when our staff identified the penetrations. While follow-up inspections were planned to be conducted, we agree that we did not thoroughly evaluate or promptly correct the condition. Assumptions were made about the manhole drains which proved to be incorrect. As a result, the site has initiated a Root Cause Analysis to perform a comprehensive review of Problem Identification and Resolution aspects of this finding.

Ginna was not originally designed or licensed to mitigate flooding from Deer Creek. During the Systematic Evaluation Program (SEP) in the early 1980s, the NRC staff established a minimum requirement for Ginna to provide protection against a flooding event. This requirement was established as a Standard Project Flood (SPF) plus one additional foot of margin. The NRC staff and contractors calculated a SPF of 15,000 cubic feet per second (cfs) and Ginna determined that the SPF plus one foot of margin was 17,300 cfs. This flooding level would require more than 16" of rain in 24 hours. This is more than three times the highest recorded 24-hour rainfall record of approximately 5" experienced in the Western NY region (1987, Buffalo NY). If such a historic rainfall condition were to occur and flooding reached 17,300 cfs, ingress into the battery rooms will not occur and the condition of the penetrations has no impact on plant safety. During the SEP, the NRC staff also requested that Ginna provide a cost-benefit analysis to assess whether a higher level of protection was justified. On this basis, Ginna committed to provide a level of protection equivalent to 26,000 cfs, or approximately 26" of rainfall in 24 hours. Prior to sealing the penetrations, such a flood level would have impacted the battery rooms as described in the inspection report.

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Ginna staff provided the NRC with bounding estimates of the increase in Core Damage Frequency (CDF) based on simplifying assumptions regarding the level at which flooding impacts site equipment. Specifically, Ginna conservatively assumed that the manhole begins to flood at 18,000 cfs and offsite power is lost at 21,000 cfs due to onsite switchgear impacts. The inspection report reflects these assumptions. However these bounding estimates of CDF are influenced by the flood frequencies assumed. In response to the inspection report, a new detailed computer model was developed for flooding impact on site. The results of this re-evaluation demonstrate that flooding of the manhole does not occur until 20,000 cfs and onsite switchgear equipment which brings offsite power to the station is not lost for values below the limiting flood of 26,000 cfs. Maintaining offsite power for only four hours after the onset of flooding significantly reduces the potential for the worst case consequences of this event. Ginna recognizes that floods of this magnitude may have unexpected impacts, however the results of our new analysis demonstrate that the significance of the condition is less than the original bounding estimates would otherwise indicate.

Ginna recognizes that considerable uncertainty exists with many external events; however Ginna believes it is necessary to determine the frequencies of such events using the best available methods and information in order to establish a risk profile for the plant. Since the NRC flood frequency analysis was performed in 1983, Ginna has included 30 additional years of regional stream flow information in addition to 87 years of precipitation data to better characterize the flood frequency. We have also included several data sets from streams that are much more similar to Deer Creek and closer to Ginna. While we recognize the staff's position that there are currently no acceptable methods to determine flood frequency of less than 1E-4/year for Ginna, we consider it important to ensure that we take all appropriate measures to meet the hazard frequency screening criteria of 1E-5/yr as described in NUREG-1407. We will continue to follow industry developments in this area and apply the best available methods to properly characterize the flooding risks to Ginna. As the next improvement opportunity, Ginna will develop and implement a method of estimating and recording daily flow rates during peak flow conditions. This process will be piloted in the spring and fall of 2014 to determine the best methods of providing long term monitoring.

Our Probabilistic Risk Assessment (PRA) has been instrumental in providing insight into major modifications that the site is undertaking in response to several regulatory initiatives including NFPA-805 and our response to the Fukushima event. These projects are installing a new 1000 KW Diesel Generator, 160,000 gallon condensate tank, an additional injection pump, and a hardened facility to protect this equipment from external events. This equipment will allow Ginna to provide decay heat removal and primary system inventory independent of the existing installed equipment. This equipment has been designed to operate at water levels exceeding our current licensing basis flood, independent of all existing AC and DC power systems. The project started prior to the Fukushima event and most of the equipment will be operational this year. In 2015, the project will be fully implemented, representing one of the largest investments at the site in recent history. This system contains several enhanced features intended to reduce the plant risk profile during earthquakes, fires, floods, and other external hazards. With such a system in place, the plant would have been able to completely mitigate the most significant effects of a design basis flood under the same set of conditions recognized in 2013. While these improvements alone will provide a very large benefit to plant risk, Ginna has also committed to have an additional 1000 KW diesel generator and portable injection pump onsite as redundant spares. Ginna's response to these important regulatory initiatives has exceeded regulatory requirements in an effort to ensure safe and reliable operation against a new set of hazards not previously considered within our industry.

As discussed in the inspection report, the penetrations have been sealed and the condition no longer exists. This does not minimize or change our response to the inadequate evaluation performed upon identification of this condition. The causal factors associated with Problem Identification and Resolution will be fully evaluated as part of the Root Cause Analysis and corrective actions established to prevent recurrence. While the Root Cause Analysis is not yet complete, several important insights have been obtained to date and are provided in Enclosure 1. CENG and Ginna appreciate the opportunity to provide our insight and response to this important matter.

Sincerely,

JP/JAJ

Enclosure: (1) Ginna Station Root Cause Insights

cc: NRC Regional Administrator, Region I
NRC Project Manager, Ginna
NRC Resident Inspector, Ginna

Enclosure (1)

Ginna Station Root Cause Insights

Enclosure 1 - Ginna Station Root Cause Insights

Although evaluations are still in progress, several important insights have been identified to date concerning both the inadequate evaluation and the historical design issues regarding flooding. One commonality of both aspects is a wide spread belief by Ginna staff that the flooding condition could not occur. Each day, Ginna staff walk across Deer Creek and the visual perception did not provide a level of concern to a majority of the staff. The photographs shown below provide examples of what site staff sees in a typical day.

Due to the visual reference, a majority of site staff did not believe that Deer Creek can flood at levels that would challenge Ginna. This is compounded by the challenges technical staff experience when they attempt to calculate how flooding conditions could occur. Since external events provide an input to the site risk profile, it is conservatively estimated that a flooding event at 26,000 cfs will occur once in 165,000 years. Such events did not seem realistic or tangible to plant staff. The events considered in our licensing basis require a flow of more than four times the typical rate of the local Genesee river or nearly twice that of the lower Hudson river to have a significant impact on Ginna. Such flow rates could not be conceptualized by site staff based on the visual references provided above.

The Root Cause Analysis has identified that site staff and leaders believed they had a more intuitive understanding of external natural events. This belief stemmed from over 40 years of operating experience without flooding from Deer Creek, nor the conditions that would lead to flooding. Our challenge is to ensure that site staff and leaders consider all events as possible, no matter how improbable, and take conservative actions.

As we complete the Root Cause Analysis, we will continue to explore these causal factors using a systematic approach and establish corrective actions to prevent recurrence. While this process is ongoing, Ginna has implemented several Compensatory Actions. These include a review of historical issues to ensure appropriate evaluations have been conducted, as well as implementation of an oversight board which provides challenge to the closure of conditions adverse to quality that have safety and regulatory implications. An Extent of Condition review is substantially complete, ensuring that no additional concerns exist. Our long term actions will focus on completing ongoing modifications and ensuring that inadequate risk perception is identified and challenged by site leaders.