UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

July 11, 2012

LICENSEE: Entergy Nuclear Operations, Inc.

FACILITY: Palisades Nuclear Plant

SUBJECT: SUMMARY OF THE JULY 7, 2012, AND JULY 8, 2012, MEETINGS REGARDING PALISADES NUCLEAR PLANT SAFETY INJECTION REFUELING WATER TANK (SIRWT)

On July 7, 2012, the U.S. Nuclear Regulatory Commission (NRC) held a Conference Call Meeting with members of the Palisades management team at their request. Discussions were related to the recent work that was performed on the SIRWT, its current status and the tentative path forward. The licensee indicated that they performed inspections on 100% of welds on the floor plates and on the floor to wall welds in the SIRWT. Many weld indications were ground out and re-welded. Seven through-wall leaks were identified and repaired. In addition, the tank nozzles K, L and M were core-bored and replaced with new nozzles. Stiffener plates were installed to provide additional support to these nozzles. The welds on the F nozzles were ground out to accommodate new welds, and stiffener plates were installed. The licensee concluded that the tank has improved structural integrity and that the current structural integrity is acceptable.

The licensee reported the SIRWT was filled to 96% and the contents recirculated. They stated that the current leakage from the tank is estimated at 16 gallons per day, although they were not certain how much of this leakage was directly from the tank. They said that some of the leakage could be attributed to the water (related to the leak prior to the outage) that was being squeezed out of the sand bed that supports the tank as the tank was being filled. Therefore, the licensee needed additional time to confirm the actual leak rate; and stated that they may proceed with flaw evaluation using the American Society of Mechanical Engineers (ASME) code case 705. The licensee stated that the long term plan was to replace the bottom of the SIRW tank or use a coating scheme that prevents possible through-wall cracks.

The NRC noted that despite all the work performed, the tank appeared to be leaking and questioned the licensee for a related cause. The licensee described that the potential stresses resulting from the flexing of the tank's bottom during fill resulted in expanding the already existing porous welds that were present since plant construction. The licensee said that this was based on possible visual indications from the in-tank crawler. The NRC questioned whether this determination related to the stresses at the bottom of the tank still applied after the tank was full. It appeared that after the outage, the leak rate was stable for some time and then

started increasing. The licensee explained that this was related to a nozzle crack and since all the nozzles were inspected, repaired or replaced, there would be no nozzle-related issues. The NRC acknowledged this, but was not is a position to currently agree with the stated hypothesis.

The NRC discussed the control room leakage related to the hairline cracks in the concrete ceiling and expressed concern that all the issues related to the leaks and potential pipe ruptures were not addressed to ensure that control room leakage was prevented. The licensee responded that the flow from large water sources would flow to the Component Cooling (CC) room, and through a flood barrier, and that adequate compensatory measures, such as installed berms, were in place to prevent pooled water from entering the control room. The NRC stated that the documents provided to date did not support the licensee's statement. The licensee agreed to review their documentation to ensure that those items were covered and addressed as needed.

The licensee discussed their plans of potentially starting up the plant after completion of an operability evaluation, using the ASME code case to provide information related to the most limiting flaw in the SIRW tank and assessed through a leakage amount. The NRC staff noted that there may be some issues with using this ASME code case since the degradation cannot be bounded and thus, the limiting flaw geometry cannot be used. The licensee agreed to provide a plan or schedule for the use of the ASME code case, including documents, to the senior resident inspector at Palisades.

The call lasted about an hour. Enclosure 1 is a list of attendees for the meeting

On July 8, 2012, the NRC held another Conference Call Meeting with members of the Palisades management team. The meeting was requested by the NRC after the licensee provided SIRWT evaluations to the NRC staff. Discussions were related to the operability evaluation and ASME code case evaluation related to the SIRWT. The licensee indicated that the concrete in the catacombs that was located above safety related components in the main control room allowed water to seep through the cracks. Therefore, they installed temporary berms as a compensatory measure to prevent water from entering the control room. The NRC questioned if the licensee had a high degree of confidence that the leakage would not reach the control room in case any components related to the SIRW tank were to break. The licensee stated that they installed a berm in the east and west catacombs to contain leakage. There is new leakage associated with the west wall that borders the turbine building from the main control room that they have not evaluated. Although there was no impact to control room equipment, they will assess the west wall for operability, review the compensatory measures for adequacy and assess whether their actions are compliant with the Final Safety Analysis Report (FSAR) prior to changing modes.

The NRC questioned if they evaluated the operability of the control room for cases such as a pipe break, seismic event or tornado missile generation and impact from non-seismic class I piping. The licensee confirmed that all the piping from the SIRWT entering the catacombs is classified as seismic class I. They said that the piping would not fail due to a seismic event and therefore, would not impact any components in the control room. They mentioned that their design basis flooding analysis states that any major leakage from the catacombs is routed to the CC room. The NRC noted this was not in their evaluation. They also confirmed that they would

update the operability evaluation to reflect this information. The NRC questioned if the plant's FSAR should be changed to state the impact of breaks in the seismic piping from the SIRWT on the main control room. The licensee stated that they didn't believe any changes to the FSAR were required; however, they would evaluate the question for any required actions.

The NRC disagreed with the licensee's ASME code case methodology when they stated that the SIRWT degradation could be bounded. The site provided a detailed assessment from one of the code experts to indicate the thought process of how they determined the bounded maximum flaw. The site discussed the conservatisms of assuming there is only one leak, at the worse case location (which they emphasized was in the G nozzle and it was highly unlikely to be in that location since it was recently inspected), worse case flaw geometry and an additional factor of two as required by the code case. The licensee said if a flaw existed, it was likely at the bottom of the tank, and provided much less crack propagation propensity. There was considerable discussion in this area. The NRC noted since there is no real bound for the flaw either geometrically or environmentally, the bounding crack would exist around the entire assumed pipe circumference, which would not be acceptable. We informed them that they should use the 'right hand side' of the methodology (page 2 of ASME code case 705) to evaluate the growth of the as-found degradation. This method would assure the crack growth was properly assessed. Although the NRC noted the crack growth did not appear significant and there may be no safety issue, the code process was needed to ensure an adequate assessment was performed. The NRC noted that this was the correct method to be applied. If they decided not to use that methodology, they needed to call Jack Giessner prior to proceeding. The licensee agreed that they would consider the 'right hand side' of the ASME code case 705 methodology and that they will notify the NRC, specifically Jack Giessner, if they decided not to use it. The NRC informed the licensee that we expect to see the flaw growth rate evaluation prior to the mode change/startup.

The licensee stated that they will update the SIRWT operability evaluation to include the documentation related to the main control room envelope, include the discussion of the seismically qualified pipes related to the SIRWT and flow analysis associated with water from the catacombs being directed to the CC room, and through a flood barrier in the turbine bldg. The NRC notified the licensee that they needed to ensure that the implied function of the concrete in the catacombs is met by ensuring that the main control room will not be flooded as a result of the leakage. The licensee stated that they would include a licensee mode hold during the plant startup to evaluate the new leakage in the west wall of the catacombs.

The call lasted about an hour. Enclosure 2 is a list of attendees for the meeting.

/RA/
John B. Giessner, Branch Chief
Branch 4
Division of Reactor Projects

Docket Nos. 50-255 and 72-007
License No. DPR-20

Enclosures:
1. List of Meeting Attendees for the July 7, 2012, Conference Meeting
2. List of Meeting Attendees for the July 8, 2012, Conference Meeting

cc w/encl: Distribution via List Serv

LIST OF MEETING ATTENDEES FOR THE JULY 7, 2012
CONFERENCE MEETING

NRC Attendees
Chuck Casto, Regional Administrator
John Giessner, Chief, Division of Reactor Projects, Branch 4
David Hills, Chief, Division of Reactor Services, Engineering Branch 1
Thomas Taylor, Palisades Senior Resident Inspector
James Neurauter, Senior Reactor Inspector
David Alley, Senior Materials Engineer, Nuclear Reactor Regulation, Piping and NDE Branch

Licensee Attendees
Anthony Vitale, Palisades Site Vice President
Anthony Williams, Palisades General Manager Plant Operations
Barry Davis, Entergy Nuclear General Manager Engineering
Charles Arnone, Palisades Nuclear Safety Assurance Director
Dave Mannai, Entergy Nuclear Sr. Manager, Nuclear Safety and Licensing
Otto Gustafson, Palisades Licensing Manager
Darrell Corbin, Palisades Assistant Operations Manager – Support

LIST OF MEETING ATTENDEES FOR THE JULY 8, 2012
CONFERENCE MEETING

NRC Attendees
Chuck Casto, Regional Administrator
Steven Reynolds, Director, Division of Reactor Safety
John Giessner, Chief, Division of Reactor Projects, Branch 4
David Hills, Chief, Division of Reactor Services, Engineering Branch 1
Thomas Taylor, Palisades Senior Resident Inspector
James Neurauter, Senior Reactor Inspector
David Alley, Senior Materials Engineer, Nuclear Reactor Regulation, Piping and NDE Branch
Mahesh Chawla, Project Manager, Nuclear Reactor Regulation, Plant Licensing Branch III-1

Licensee Attendees
Anthony Vitale, Palisades Site Vice President
Anthony Williams, Palisades General Manager Plant Operations
Barry Davis, Entergy Nuclear General Manager Engineering
Charles Arnone, Palisades Nuclear Safety Assurance Director
Dave Mannai, Entergy Nuclear Sr. Manager, Nuclear Safety and Licensing
Otto Gustafson, Palisades Licensing Manager
Jim Miksa, Palisades Engineering Programs and Components Manager
Chris Plachta, Palisades Nuclear Oversight Manager
Todd Mulford, Palisades Assistant Operations Manager – Shift
Tom Fouty, Palisades Engineering Supervisor
Jeff Erickson, Palisades Licensing Engineer
Hal Gustin, Structural Integrity Associates, Inc.
Paul Bruck, Lucius Pitkin, Inc

Letter to Entergy Nuclear Operations, Inc. from J. Giessner dated July 11, 2012

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