NMC
Committed to Nuclear Excellence

Palisades Nuclear Plant
Operated by Nuclear Management Company, LLC

January 30, 2007

10 CFR 50, Appendix H

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Palisades Nuclear Power Plant
Docket 50-255
License No. DPR-20

Supplement to Reactor Vessel Surveillance Coupon Removal Schedule

By letter dated September 19, 2006, pursuant to 10 CFR 50, Appendix H, III.C.3, Nuclear Management Company, LLC (NMC) requested Nuclear Regulatory Commission (NRC) review and approval of a revision to the reactor vessel surveillance capsule removal schedule for the Palisades Nuclear Plant (PNP). On December 14, 2006, a teleconference was held with NRC staff and it was subsequently determined that a supplement was needed to the September 19, 2006 letter. Enclosure 1 provides the supplement for PNP.

Summary of Commitments

This letter contains no new commitments and completes one license renewal commitment.

License Renewal Commitment 31 made by letter dated March 22, 2005:

"Evaluate and revise as necessary, the surveillance capsule withdrawal and testing schedule of FSAR Table 4-20 such that at least one capsule remains in the reactor vessel and is tested during the period of extended operation to monitor the effects of long-term exposure to neutron irradiation."

This submittal closes License Renewal Commitment 31.

Paul A. Harden
Site Vice President, Palisades Nuclear Plant
Nuclear Management Company, LLC

Enclosures (1)

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ENCLOSURE 1
SUPPLEMENT TO REACTOR VESSEL SURVEILLANCE COUPON REMOVAL SCHEDULE
PALISADES NUCLEAR PLANT

The Palisades Nuclear Plant (PNP) reactor vessel surveillance program was designed to comply with the requirements of the American Society of Testing and Materials (ASTM) Standard Practice E 185-66, "Recommended Practice for Surveillance Tests on Structural Materials in Nuclear Reactors." Alternatively, a plant may apply the requirements of ASTM Standard Practice E 185-82, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels, E 706 (IF)," as the basis for meeting the reactor vessel (RV) surveillance capsule withdrawal requirements of 10 CFR Part 50, Appendix H. Table 1 of ASTM E 185-82 recommends that either a minimum of three, four, or five surveillance capsules be removed from the vessels, based on the limiting amount of RT_{NDT} shift (limiting ΔRT_{NDT}) that is projected to occur at the clad-vessel interface location of the RV at the end-of-licensed plant life (EOL). ASTM E 185-82 establishes the following criteria for determining the minimum number of capsules that are to be removed in accordance with a withdrawal schedule and the number of capsules that are to be tested:

- For plants with projected RT_{NDT} shifts (i.e., ΔRT_{NDT}) less than 100ºF (56°C), three capsules are required to be removed from the RV and the first two capsules are required to be tested (for dosimetry, tensile-ductility, Charpy-V impact toughness, and alloying chemistry).
- For plants with projected ΔRT_{NDT} between 100°F (56°C) and 200°F (111°C), four surveillance capsules are to be removed from the RV and the first three capsules are required to be tested.
- For plants with projected ΔRT_{NDT} above 200°F (111°C), five surveillance capsules are required to be removed from the RV and the first four capsules are required to be tested.
- Standard Practice ASTM E 185-82 permits the last scheduled surveillance capsules in three, four, or five capsule withdrawal schedules to be removed without the implementation of testing. However, licensees who opt to pull their final required capsules without the implementation of testing are required by the Standard Practice to hold the capsules in storage.

Table 1 of ASTM Standard Practice E 185-82 also provides specific criteria for removal of surveillance capsules. The removal times are based on criteria that the surveillance capsules be removed after a certain amount of power operation has elapsed or at various times when the RV shell is projected to achieve certain levels of neutron fluence. The intent of the Standard Practice is to achieve a set of testing data over a range of neutron fluences for the RV that bounds the current life of the plant. Of key importance are the removal criteria for the second to last and final capsules required for capsule withdrawal. For the second-to-last required capsule in a withdrawal schedule, the ASTM standard requires that the capsules be pulled at either 15 effective full-power years (EFPYs) or at the time when the capsule is equivalent to the limiting fluence projected for the clad-base metal interface of the RV at EOL, whichever time comes first. For the final capsule that is required for removal, ASTM E 185-82 requires that the capsule be removed at a time when the neutron fluence projected for the capsule is between the limiting fluence value projected for the RVs at the EOL and two times that value.

The purpose of the proposed change to the Reactor Vessel Surveillance Program is to reflect extended plant operation under the renewed operating license in a schedule that conforms with ASTM 185-82.

The PNP RV has a limiting ΔRT_{NDT} value greater than 200°F. Therefore, because the ΔRT_{NDT} value is greater than 200°F, ASTM E 185-82 recommends that, at a minimum, five capsules be removed from the reactor during the operating period, and the first four capsules be tested. The PNP has removed and tested four capsules. An additional capsule would be removed and tested, as specified by the proposed withdrawal schedule, during the extended operating period.

The following table reflects how the PNP Reactor Vessel Surveillance Program meets ASTM E 185-82, for a surveillance program that has at least 5 surveillance capsules. The fifth capsule is proposed to be removed and tested during the renewed license period. Capsules W-280 and W-260 both remain available for subsequent removal and testing should it be deemed necessary.

Withdrawal Sequence	EFPY	Capsule	EFPY	Fluence (10^{19} n/cm^2)
First	1.5[A]	A-240	2.26	4.01
Second	3[D]	W-290	5.21	0.926
Third	6[C]	W-110	9.95	1.66
Fourth	15[B]	W-100	16.93	2.10
Fifth	EOL[E]	W-80	~31.96	~3.06
Reserved		W-280		
Reserved		W-260		
Reserved		T-150		

A. Or at the time when the accumulated neutron fluence of the capsule exceeds 5×10^{22} n/m^2 (5×10^{18} n/cm^2), or at the time when the highest predicted ΔRT_{NDT} of all encapsulated materials is approximately 28°C (50°F), whichever comes first.

B. Or at the time when the accumulated neutron fluence of the capsule corresponds to the approximate EOL fluence at the reactor vessel inner wall location, whichever comes first.

C. Or at the time when the accumulated neutron fluence of the capsule corresponds to the approximate EOL fluence at the reactor vessel ¼ T location, whichever comes first.

D. Or at the time when the accumulated neutron fluence of the capsule corresponds to a value midway between that of the first and third capsules.

E. Not less than once or greater than twice the peak EOL vessel fluence. This may be modified on the basis of previous tests. This capsule may be held without testing

License Renewal Commitment 31 made by letter dated March 22, 2005, states:

"Evaluate and revise as necessary, the surveillance capsule withdrawal and testing schedule of FSAR Table 4-20 such that at least one capsule remains in the reactor vessel and is tested during the period of extended operation to monitor the effects of long-term exposure to neutron irradiation."

This submittal closes the above commitment.