

July 8, 2003

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

**PALISADES NUCLEAR PLANT  
DOCKET 50-255  
LICENSE DPR-20  
REQUEST FOR ENFORCEMENT DISCRETION – CONTAINMENT AIR COOLER  
RECIRCULATION FAN V-4A**

Nuclear Management Company, LLC (NMC), the licensee for the Palisades Nuclear Plant, requests regional enforcement discretion from compliance with certain requirements of Technical Specification 3.6.6, "Containment Cooling Systems." Condition A of Technical Specification 3.6.6 requires that with one or more containment cooling trains inoperable, restore the train(s) to operable status within 72 hours. Condition B of Technical Specification 3.6.6 requires that if Condition A cannot be met, be in mode 3 within 6 hours and in mode 4 within 30 hours.

Palisades is operating at approximately 88% power. Containment air cooler recirculation fan V-4A was declared inoperable at 0414 hours eastern daylight savings time (EDT) on July 1, 2003, when the fan tripped due to thermal overload. The root cause of this failure has not yet been determined. NMC is not able to complete the repair and post maintenance testing within the allowed outage time. Without enforcement discretion, Palisades is required to be in at least mode 3 by 1014 hours EDT on July 4, 2003. NMC requests that the Nuclear Regulatory Commission (NRC) exercise discretion not to enforce compliance with the actions required in TS 3.6.6.B.1 and B.2 to avoid a plant shutdown that would impose an unnecessary plant transient without a significant offsetting safety benefit.

The attachment provides the information specified in NRC Regulatory Issue Summary 2001-20, "Revisions to Staff Guidance for Implementing NRC Policy in Notices of Enforcement Discretion," dated November 14, 2001.

This request was verbally transmitted to members of the NRC staff on July 3, 2003, at 1100 hours EDT. The NRC verbally granted the request on July 3, 2003, at 1337 hours EDT.

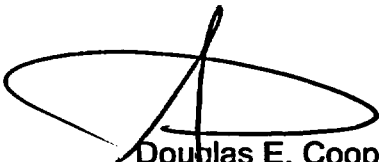
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**This letter contains one new commitment and no revisions to existing commitments.**

**The new commitment is:**

**Ensure compensatory actions provided in section 7 of the attachment are continued for the duration of this enforcement discretion.**

**I declare under penalty of perjury that the foregoing is true and accurate. Executed on July 8, 2003.**

A handwritten signature in black ink, appearing to be 'Douglas E. Cooper', written over a horizontal line.

**Douglas E. Cooper  
Site Vice-President, Palisades**

**CC   Regional Administrator, USNRC, Region III  
Project Manager, USNRC, NRR  
NRC Resident Inspector, Palisades**

**Attachment**

**ATTACHMENT**

**NUCLEAR MANAGEMENT COMPANY, LLC  
PALISADES NUCLEAR PLANT  
DOCKET 50-255**

**July 8, 2003**

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**9 Pages Follow**

**REQUEST FOR ENFORCEMENT DISCRETION**  
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**1. TECHNICAL SPECIFICATION REQUIREMENT OR LICENSE CONDITION THAT WILL BE VIOLATED**

Palisades Technical Specification (TS) 3.6.6, "Containment Cooling Systems," requires two containment cooling trains to be operable in modes 1, 2 and 3. Condition A of TS 3.6.6 requires that with one or more containment cooling trains inoperable, restore the train(s) to operable status within 72 hours. Condition B of TS 3.6.6 requires that if Condition A cannot be met, be in mode 3 within 6 hours and in mode 4 within 30 hours.

**2. CIRCUMSTANCES SURROUNDING THE SITUATION, INCLUDING APPARENT ROOT CAUSES, THE NEED FOR PROMPT ACTION AND RELEVANT HISTORICAL EVENTS**

On June 19, 2003, while performing a routine containment entry, an auxiliary operator found loose parts on the floor directly below the containment air cooler recirculation fan V-4A. The loose parts consisted of screws, nuts and bolts, a lock washer and a pipe plug. Current readings were taken on the fan motor. The readings were about 10% greater than similar readings taken in August 2002. Fan housing vibration was also measured and found to be high when compared to general industry standards for rotating equipment. A visual inspection was performed confirming the parts were associated with V-4A. Palisades TS Bases defines V-4A as a component on the left train of containment cooling. The left train of containment cooling was declared inoperable and TS Action Statement 3.6.6.A.1 was entered, which placed the plant in a 72 hour action completion time.

The fan motor was inspected and some evidence of degradation was noted. The fan wheel inspection cover was removed to examine the wheel for correct blade pitch and to assess any other degradation that would have resulted from the conditions noted above. The blade pitch settings were observed to be correct and all the blades were intact with no evidence of lost material. It was noted that there was some resistance when the fan wheel was rotated by hand. Corrective maintenance was performed to replace the missing fasteners and the fan was restarted. Post maintenance vibration and motor current measurements were obtained with no significant changes noted from previous vibration measurements and nameplate current. The fan was declared operable on June 20, 2003, at 1913 hours eastern daylight savings time (EDT) based on visual inspection results, current readings, and vibration levels that were at acceptable levels. The fan met the requirements for design basis function.

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Vibration monitoring was performed on June 30, 2003, which indicated that there was no significant change in V-4A vibration from the data recorded on June 20, 2003. The measured vibration from V-4A was significantly higher when compared to measured vibration on two other containment recirculation fans [V-3A and V-3B].

Nuclear Management Company, LLC (NMC) developed a plan to replace the V-4A motor and scheduled the work to begin July 17, 2003.

On July 1, 2003, at 0414 hours EDT, containment air cooler fan V-4A was declared inoperable due to tripping on thermal overload. TS Action Statement 3.6.6.A.1 was entered. Initial inspection of the V-4A fan motor indicated that two of the mounting anchors were broken, the fan motor shaft was bent, the fan blades had contacted the fan housing and the rotating element could not be rotated by hand.

Review of maintenance and operating history and evaluation of vibration data suggest an apparent cause of bearing failure in the motor. The root cause of this bearing failure has not yet been determined and actions are in place to collect data for root cause evaluation.

**3. SAFETY BASIS FOR THE REQUEST, INCLUDING AN EVALUATION OF THE SAFETY SIGNIFICANCE AND POTENTIAL CONSEQUENCES OF THE PROPOSED COURSE OF ACTION, INCLUDING RISK ASSESSMENT**

The containment air cooling system includes four air handling and cooling units, referred to as containment air coolers (CACs), which are located entirely within the containment building. Three of the CACs (VHX-1, VHX-2 and VHX-3) are safety related coolers and are cooled by service water. The fourth CAC (VHX-4) is not taken credit for in maintaining containment temperature within limit but is used during normal operation along with the three CACs to maintain containment temperature below design limits. The service water inlet valve for VHX-4 is closed on a safety injection signal to conserve service water flow.

Each CAC has two vaneaxial fans with direct connected motors, which draw air through the cooling coils. Both of these fans are normally in operation, but only one fan and motor for each CAC is rated for postaccident conditions. The postaccident safety-related fan units, V-1A, V-2A, V-3A and V-4A, serve not only to provide forced flow for the associated cooler, but also to provide mixing of unsprayed containment areas to assure the assumed iodine removal by the

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containment spray. The fan units also support the functioning of the hydrogen recombiners. A single operating safety related fan unit will provide enough air flow to assure that there is adequate mixing of unsprayed containment areas to assure the assumed iodine removal by the containment spray.

The fan associated with VHX-4, V-4A, is assumed in the design basis safety analysis as assisting in the containment atmosphere mixing function. This function is accomplished by providing adequate ventilation for unsprayed regions of the containment atmosphere, thereby allowing the containment atmosphere to be treated as a single, uniformly mixed volume as described in Chapter 14 of the Final Safety Analysis Report (FSAR). This assumption is consistent with section 6.5.2, of NUREG-0800, "Standard Review Plan."

However, several industry data sources have shown adequate containment mixing occurs when considering the turbulent effects of the blowdown and containment sprays. These include NUREG/CR-5966, "A Simplified Model of Aerosol Removal by Containment Sprays," and NUREG/CR-5662, "Hydrogen Combustion Control and Value-Impact Analysis for PWR Dry Containments." The turbulent nature of the containment atmosphere following an accident with containment spray will serve to mix any unsprayed areas and equalize any differences in radionuclide concentrations between sprayed and unsprayed areas. Therefore, the assumption that the containment atmosphere is a single, uniformly mixed volume remains valid, providing the containment spray system is in operation.

This request for enforcement discretion has been assessed from a probabilistic risk standpoint. This assessment determined that there is no net increase in radiological risk by allowing the plant to operate while V-4A is being repaired. While V-4A is credited in Chapter 14 of the FSAR for mixing, the probabilistic safety assessment (PSA) analysis does not credit V-4A as a necessary condition for mixing to ensure radiological scrubbing. The PSA credits the sprays as a means of scrubbing airborne fission products. Given the availability of the containment spray system, mixing would occur once the sprays are initiated. Therefore, there is no impact on the performance of equipment modeled in the PSA. Section 7 describes the compensatory measures that will be enforced to ensure the continued availability of the containment sprays and fan coolers. The compensatory measures to ensure the continued availability of the containment sprays and containment coolers more than offset any increased risk associated with V-4A being unavailable.

There is a risk associated with plant shutdown. The "transition risk" is associated with the change from steady state operation with equipment operation maintained by control systems within established parameters to reduced power

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states where operation of important equipment transfers to manual control. During the transition, equipment not previously operating will be required to be placed in service. The possibility of failures associated with this equipment is less well known than the current state of equipment required for power operation. Examples include potential electrical or mechanical failures of the reactor protection system and control rod drive system that could occur when the reactor is transitioned from mode 1 to mode 3. Manual manipulation of equipment and necessary adjustments in equipment performance to achieve the necessary rate of power reduction introduces the potential for human errors not present or not offset by the system controls in service during power operation.

Additionally, the likelihood of transient events that could occur may be increased during the transition. Previous evaluations have shown that the frequency of loss of main feedwater and loss of offsite power events is higher during the transition to lower power levels when the systems are operated in manual. Perturbations in other systems during the shutdown may challenge operators when their principal focus should be maintaining proper functioning of the systems required for the shutdown. As the shutdown progresses, and dependant on the final state to be achieved, the level of redundancy of available equipment to mitigate events is reduced. Equipment that may be available, but that has been placed in manual, would require manual restoration versus automatic response of certain systems during power operations. As a consequence of the power reduction, similar risks are possible during the return to power.

During maintenance on V-4A, foreign material exclusion controls are in place, in accordance with procedural requirements, to maintain containment sump integrity.

**4. JUSTIFICATION FOR THE DURATION OF THE NONCOMPLIANCE**

NMC requests that the NRC exercise discretion not to enforce compliance with the actions required in TS 3.6.6.B.1 and B.2, to allow for restoration of the containment air cooler recirculation fan V-4A to operable status. The duration of the noncompliance is limited to the time required to complete the necessary repairs including scaffold erection, motor replacement, anchor bolt installation, containment restoration and required testing. This duration also includes margin to accommodate expected variations in repair and testing, including fan balancing. This proposed action would allow the following completion times associated with Actions 3.6.6:

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**Action**

B.1 - Mode 3 in six hours  
B.2 - Mode 4 in 30 hours

**Complete By:**

1414 hours EDT on July 8, 2003.  
1414 hours EDT on July 9, 2003.

The enforcement discretion would be in effect until V-4A is restored to operable status or the above completion time is reached, whichever occurs first.

**5. BASIS FOR DETERMINING THAT THE NONCOMPLIANCE WILL NOT BE OF POTENTIAL DETRIMENT TO THE PUBLIC HEALTH AND SAFETY AND THAT NO SIGNIFICANT HAZARD CONSIDERATION IS INVOLVED**

Nuclear Management Company, LLC (NMC) has evaluated this request for enforcement discretion against the criteria set forth in 10 CFR 50.92 and concludes that the request involves no significant hazards consideration. The evaluation is provided below.

1. Does the change involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated?

The proposed action does not physically alter any plant structures, systems, or components and does not affect or create new accident initiators or precursors. The allowed outage time for a component is not an accident initiator; therefore, there is no significant increase in the probability of accidents previously evaluated.

This proposed action does not involve a significant increase in consequences of an accident previously evaluated. Required analytical limits are maintained. The proposed action does not affect the types or amounts of radionuclides released following an accident, or the initiation and duration of their release. Therefore, the probability of occurrence or the consequences of accidents previously evaluated are not significantly increased.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed action does not physically alter any structures, systems, and components, and does not affect or create new accident initiators or precursors. The accident analysis assumptions and results are bounded due to the turbulent nature of the containment atmosphere providing adequate mixing of unsprayed regions. No new failures or interactions have been created.



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Therefore, the proposed action does not create the possibility of a new or different kind of accident from any accident previously evaluated.

**3. Does the change involve a significant reduction in a margin of safety?**

The margin of safety is related to the ability of the CACs to perform their design function. VHX-1, VHX-2 and VHX-3 remove energy from the atmosphere within the containment building during normal operation. In the event of a design basis accident (DBA), VHX-1, VHX-2 and VHX-3 function to limit the containment building pressure rise and reduce the leakage of airborne radioactivity by providing a means of cooling the containment atmosphere. VHX-4 is not taken credit for in the design basis safety analysis for heat removal.

The fan associated with VHX-4, V-4A, however, is assumed in the design basis safety analysis as assisting in the containment atmosphere mixing function. This function is accomplished by providing adequate ventilation for unsprayed regions of the containment atmosphere, thereby allowing the containment atmosphere to be treated as a single, uniformly mixed volume as described in Chapter 14 of the Final Safety Analysis Report (FSAR). The turbulent nature of the containment atmosphere following an accident with containment spray will serve to mix any unsprayed areas and equalize any differences in radionuclide concentrations between sprayed and unsprayed areas.

The proposed action does not involve a significant reduction in the margin of safety because the analytical limits in the safety analysis are maintained. Although the proposed action deviates from a requirement in Technical Specification 3.6.6, it does not affect any safety limits or other operational parameter limits or setpoints in the Technical Specifications. Therefore, the proposed action does not significantly reduce the margin of safety.

**6. BASIS FOR CONCLUDING THAT THE REQUEST WILL NOT INVOLVE ADVERSE CONSEQUENCES TO THE ENVIRONMENT**

NMC has evaluated the requested enforcement discretion against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. NMC has determined that the requested action meets the criteria for a categorical exclusion set forth in

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10 CFR 51.22(c)(9). This determination is based on the fact that the proposed action is being requested as enforcement discretion to a license issued pursuant to 10 CFR 50, and that the change involves no significant hazards considerations.

Although the proposed action involves noncompliance with a requirement of the Technical Specifications,

- (i) The proposed action involves no significant hazards consideration.
- (ii) There is no significant change in the types or a significant increase in the amounts of any effluent that may be released offsite, since the proposed action does not affect the generation of any radioactive effluent nor does it affect any of the permitted release paths; and
- (iii) There is no significant increase in individual or cumulative occupational radiation exposure. The action proposed in this request for enforcement discretion will not significantly affect plant radiation levels, and, therefore, do not significantly affect dose rates and occupational exposure. Accordingly, the proposed action meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9).

**7. PROPOSED COMPENSATORY MEASURES**

The following compensatory measures are in effect for the duration of the enforcement discretion:

- a. No additional equipment associated with the containment cooling systems shall be removed from service or worked on for the duration of the V-4A inoperability. This includes the remaining equipment on the affected (left) train of containment cooling, as well as the equipment on the redundant (right) train of containment cooling as described in Technical Specification Bases 3.6.6. This includes the following equipment: Diesel Generators 1-1 and 1-2; Containment Spray Pumps P-54A, P-54B and P-54C; and Containment Air Cooler Recirculation Fans V-1A, V-2A and V-3A.
- b. The above listed equipment associated with the containment cooling systems shall be protected outside of containment, with physical barriers and administrative controls, preventing work on this equipment.

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- c. No corrective maintenance, preventative maintenance or surveillance testing shall be performed on the above listed equipment, or the attendant support equipment required by the Technical Specification definition of "Operable – Operability", for the duration of the V-4A inoperability.
- d. The physical barriers referenced in item 2 above shall be verified shiftly for the duration of the V-4A inoperability and logged in the Operations Log.
- e. No work shall be allowed that could potentially jeopardize stable plant operation, including no work on Turbine Stop Valve #2 (which is limiting plant power output), for the duration of the V-4A inoperability.
- f. The Plant Operations Crew shall be briefed on these compensatory measures.
- g. If an equipment failure occurs that could affect the containment cooling function, the Operations Superintendent shall be contacted and will convene a Plant Review Committee meeting to evaluate plant status, determine if the basis for the Nuclear Regulatory Commission's (NRC) approval of the enforcement discretion relative to LCO 3.6.6 is affected, and determine the need to notify the NRC.

**8. PLANT REVIEW COMMITTEE APPROVAL**

This request was reviewed and approved by the Plant Review Committee.

**9. WHICH NOED CRITERION FOR APPROPRIATE PLANT CONDITIONS IS SATISFIED AND HOW IT IS SATISFIED**

NMC has evaluated the requested enforcement discretion against the criteria specified in section B of NRC Inspection Manual, Part 9900: "Technical Guidance, Operations – Notices of Enforcement Discretion [NOED]," issued November 2, 2001. This section states, "for an operating plant, the NOED is intended to (a) avoid unnecessary transients as a result of compliance with the license condition and, thus, minimize the potential safety consequences and operational risks, or (b) avoid testing, inspection, or system realignment that is inappropriate for the particular plant conditions."

The NOED criteria in section 2.1.1(a) for an operating plant are satisfied. Palisades is operating at approximately 88% power. Compliance with Technical Specification 3.6.6 would initiate an unnecessary transient by requiring the plant

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to shutdown on July 4, 2003. The proposed action would allow continued plant operation to perform the required repair and testing. Approval of the NOED will preclude the operational risk associated with a transient during the shutdown. No corresponding health and safety benefit is gained by requiring a plant shutdown. Based on the above, the criteria are satisfied.

**10. MARKED-UP TECHNICAL SPECIFICATIONS PAGES IDENTIFYING PROPOSED CHANGES (IF APPLICABLE)**

No Technical Specification changes are required. A license amendment is not practical because the plant will return to compliance with the existing license in a short period of time.

**11. DISCUSSION OF CIRCUMSTANCES INVOLVING SEVERE WEATHER OR OTHER NATURAL EVENTS**

The proposed enforcement discretion does not involve severe weather or other natural events.

No severe weather is predicted. The grid is stable, with no distress expected.