Consumers Energy

A CMS Energy Company

Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043

Tel: 616 764 2296
Fax: 616 764 2425

**Thomas J. Palmisano**
Site Vice President

September 2, 1999

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

**DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT**
REVISED LICENSEE EVENT REPORT 98-011-01, INADEQUATE LUBE OIL COLLECTION SYSTEM FOR PRIMARY COOLANT PUMPS

Revised Licensee Event Report (LER) 98-011-01 is attached. The LER describes a condition in which the oil collection system for the primary coolant pump motors required by 10 CFR 50, Appendix R, Section III.O, is inadequate. This condition is reportable to the NRC in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition outside the design basis of the plant.

SUMMARY OF COMMITMENTS

This letter contains no new commitments and no revisions to existing commitments.

Thomas J. Palmisano
Site Vice President

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

Attachment

IE22

NRC FORM 366 (4/95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 4/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

| FACILITY NAME (1) | DOCKET NUMBER (2) | Page (3) |
|---|---|---|
| CONSUMERS ENERGY COMPANY<br>PALISADES NUCLEAR PLANT | 05000255 | 1 of 4 |

TITLE (4)
## LICENSEE EVENT REPORT 98-011-01, INADEQUATE LUBE OIL COLLECTION SYSTEM FOR PRIMARY COOLANT PUMPS

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER 05000 |
| 12 | 17 | 98 | 98 | 011 | 01 | 09 | 02 | 99 | FACILITY NAME | DOCKET NUMBER 05000 |

| OPERATING MODE (9) | N | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check one or more) (11) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| POWER LEVEL (10) | 0 | | 20.2201(b) | | 20.2203(a)(2)(v) | | 50.73(a)(2)(i) | | 50.73(a)(2)(iii) |
| | | | 20.2203(a)(1) | | 20.2203(a)(3)(i) | X | 50.73(a)(2)(ii) | | 50.73(a)(2)(x) |
| | | | 20.2203(a)(2)(i) | | 20.2203(a)(3)(ii) | | 50.73(a)(2)(iii) | | 73.71 |
| | | | 20.2203(a)(2)(ii) | | 20.2203(a)(4) | | 50.73(a)(2)(iv) | | OTHER |
| | | | 20.2203(a)(2)(iii) | | 50.36(c)(1) | | 50.73(a)(2)(v) | | Specify in Abstract below or in NRC Form 366A |
| | | | 20.2203(a)(2)(iv) | | 50.36(c)(2) | | 50.73(a)(2)(vii) | | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| Barbara E. Dotson, General Technical Analyst | (616) 764-2265 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|---|---|---|---|---|---|---|---|---|---|
| B | LL | RVR | | N | | | | | |
| | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|---|---|
| | YES If yes, COMPLETE EXPECTED COMPLETION DATE | X | NO | | | | |


ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

10 CFR 50 Appendix R, Section III.O, requires that each of the primary coolant pump (PCP) motors be provided with a lube oil collection system and that its associated collection tank be sized to contain the entire lube oil system inventory of the PCP motor. Contrary to the above, on December 17, 1998, with the plant in cold shutdown, the PCP motor lube oil collection tanks were discovered to be undersized with respect to their ability to hold a PCP motor's entire lube oil system inventory. The discrepancy applies to the lube oil collection tank for each of the four PCPs.

This condition is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition outside the design basis of the plant.

This condition has low safety significance. The collection tank is large enough to collect any random leakage associated with normal operation. For a single catastrophic lube oil system failure, a relatively small amount of oil would overflow from the collection tank and be directed to the floor area in the vicinity of the collection tank away from any potential ignition source. Therefore, any overflow would not create a fire hazard.

## EVENT DESCRIPTION

10 CFR 50 Appendix R, Section III.O, requires that each of the primary coolant [AB] pump [P] motors [MO] be provided with a lube oil collection system and that its associated collection tank [TK] be sized to contain the entire lube oil system [LL] inventory of the primary coolant pump (PCP) motor. Contrary to the above, on December 17, 1998, with the plant in cold shutdown, the PCP motor lube oil collection tanks were discovered to be undersized with respect to their ability to hold a PCP motor's entire lube oil system inventory. The discrepancy applies to the lube oil collection tank for each of the four PCPs.

This condition is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition outside the design basis of the plant.

## ANALYSIS OF EVENT

In December 1998, it was identified that the oil collection tanks could not hold the combined contents of the PCP upper and lower motor lube oil reservoirs. In May 1999, it was identified that the installed hand pump suction lines for removing oil from the collection tanks do not extend to the tank bottom, thus further reducing the usable volume of the oil collection tanks due to the volume of oil which would remain in the tanks. Tank dimensions field verified at this time also resulted in a slight further reduction in usable tank volume. The primary result of this additional information was the discovery that the usable volume of an oil collection tank is not sufficient to contain the entire volume of oil stored in a PCP upper oil reservoir.

The lube oil system for a PCP motor consists of independent upper and lower reservoirs, lube oil coolers and associated piping. As a result, the maximum lube oil volume from any single failure would be the entire contents of either the upper reservoir or the lower reservoir, but not both.

The upper PCP motor oil reservoir, cooler and associated piping can contain up to approximately 87 gallons of oil. The lower PCP motor oil reservoir, cooler and associated piping can contain up to approximately 18 gallons of oil. The total motor lube oil inventory is 105 gallons.

Each collection tank is sized to hold approximately 84 gallons of lube oil. A collection tank that has been emptied by its hand pump, will retain approximately five gallons of oil in the bottom of the tank since, as stated above, the pump suction line for removing oil does not extend to the bottom of the tank. Therefore, the usable collection tank volume is approximately 79 gallons.

Consequently, each lube oil collection tank is undersized by approximately 26 gallons (105 - 79) with respect to its ability to hold a PCP motor's entire lube oil inventory. For a single worst case

leak of the upper reservoir system, the collection tanks are undersized by approximately 8 gallons (87 - 79). The collection tanks have sufficient usable volume to accommodate a single worst case leak in the lower reservoir (18 gallons vice usable volume of 79 gallons).

PCP motor lube oil level in each reservoir is monitored closely during operation. The quantity of oil in the upper reservoir between the fill level and the low level alarm is approximately 20 gallons. The quantity of oil in the lower reservoir between the fill level and the low level alarm is approximately five gallons. Procedure controls for lube oil levels below these normal operating ranges require the PCP to be shut down. Therefore, despite a collection tank's inability to contain the entire lube oil inventory of the combined upper and lower reservoirs of a PCP, or even the entire upper reservoir alone, the collection tank is able to meet its design function which is to collect random oil leakage and prevent it from becoming a fire hazard.

## SAFETY SIGNIFICANCE

This condition has low safety significance. The size of each collection tank is large enough to collect any random leakage associated with normal operation. Since the upper and lower lube oil systems for a PCP are separate, it is not considered credible that both systems would catastrophically fail simultaneously. Therefore, the worst case scenario is failure of an upper reservoir oil system with an entire loss of its oil inventory. Any oil that would overflow the collection tank in this instance, would be directed to the floor in the vicinity of the collection tank, where no source of ignition exists (the floor surface is relatively cool, approximately 100 degrees F, compared to the 400 degrees F lube oil flash point). Therefore, a fire hazard could not result from a potential overflow of the collection tank.

## CAUSE OF EVENT

The design change process in place at the time of the original installation (early 1980s) did not contain an appropriate level of rigor. Consequently, the design information was not appropriately validated and the erroneous assumptions were carried forward.

## CORRECTIVE ACTIONS

An exemption from the 10 CFR 50 Appendix R requirements is being pursued for the existing collection tank design.

The design change process has evolved significantly since the early 1980s including implementation of multi-disciplinary design reviews, more rigorous technical reviews and

increased emphasis on post-modification testing. Therefore, no further corrective actions are prescribed for the design change process as the result of this occurrence.