7590-01

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	Docket No. 50-271
	)	
VERMONT YANKEE NUCLEAR POWER CORPORATION	)	
	)	
(Vermont Yankee Nuclear Power Station)	)	

ORDER CONFIRMING LICENSEE COMMITMENTS
ON PIPE CRACK RELATED ISSUES

I.

The Vermont Yankee Nuclear Power Corporation (VYNPC or the licensee) is the holder of Facility Operating License No. DPR-28 which authorizes operation of the Vermont Yankee Nuclear Power Station (Vermont Yankee or the facility) at steady state reactor power levels not in excess of 1593 megawatts thermal. The facility is a boiling water reactor located at the licensee's site in Windham County, Vermont.

II.

During the 1984 refueling outage at Vermont Yankee, augmented inservice inspection was performed on the recirculation and residual heat removal system piping. The original sample size, in accordance with Generic Letter 84-11, covered 55 welds and was expanded to 69 welds after ultrasonic indications were reported on welds in the original sampling. Welds most likely to crack were selected for inspection. Overall, a total of 17 welds were found to show reportable linear indications.

One defective weld containing a short axial crack was repaired by weld overlay. Five welds reported to be cracked during the last refueling outage were determined to be not cracked by using advanced ultrasonic testing methods. The 17 previously overlay repaired welds were reexamined and the results of the reexamination showed that the structural and bond integrity of these overlays was maintained. The cracks in the 16 unrepaired defective welds were relatively shallow (12-27% of wall thickness). Crack growth calculations based on fracture mechanics analysis have shown that the cracks in the unrepaired defective welds will not grow to a size beyond the limits based on limit-load analysis during the next 12-month fuel cycle.

The staff reviewed the licensee's submittals and performed its own independent evaluations. The staff's review included the ultrasonic examination results, and the weld overlay design and the flaw evaluation to support the continuing service for one fuel cycle of 23 overlay repaired welds and 16 unrepaired defective welds. The staff also reviewed the personnel qualifications, test methods and equipment used in the inspection, and concluded that the licensee has used experienced personnel to perform the examination of the clad weld metal, and that the examinations performed by the licensee could detect lack of clad bond and could identify flaws in the clad weld metal that would affect the structural integrity of the clad overlay.

The staff, therefore, concluded on the basis of the results of the IGSCC inspection and repairs that the Vermont Yankee plant could be safely returned to operation for a 12-month fuel cycle of operation.

III.

Although the conservative calculations performed by the licensee and reviewed by the staff indicate that the cracks will not progress to the point of leakage during the next fuel cycle, and very wide margins are expected to be maintained over crack growth which could compromise safety, some residual uncertainties in the identification of cracks and in crack sizing and growth rate still remain.

Because of these uncertainties, we have determined that Technical Specification monitoring requirements in the containment for unidentified leakage should be modified to reflect new limiting conditions for operation and surveillance requirements. These enhanced surveillance measures will provide adequate assurance that possible cracks in pipes will be detected before growing to a size that will compromise the safety of the plant.

In order to provide additional assurance that leakage from the eight uninspected 28-inch recirculation pipe welds will be promptly identified, the licensee will install six local leakage detectors (moisture sensitive tapes), to monitor the potential leakage from these locations, and to inform the NRC promptly of any significant changes in the moisture sensitive tape status.

By letter dated March 13, 1984, the licensee expressed its intent to replace, during the 1985 outage, piping susceptible to intergranular stress corrosion cracking (IGSCC). Because the staff acceptance of the repairs was based on consideration of only a single additional cycle of operation, (See Staff Safety Evaluation, dated August , 1984) the staff concluded that 1985 piping replacement should be a firm commitment.

By letters dated July 30, 1984 and July 31, 1984, the licensee committed to the above described conditions on leakage monitoring, notification of changed moisture sensitive tape status, which will provide substantial assurance of prompt detection of leakage, and to 1985 piping replacement. I have determined that the public health, safety and interest require that the licensee's commitments be formalized by an immediately effective Order.

IV.

Accordingly, pursuant to Sections 103, 161i, 161o and 182 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Parts 2 and 50, IT IS HEREBY ORDERED EFFECTIVE IMMEDIATELY THAT:

1. The licensee shall operate the reactor in accordance with requirements on coolant leakage in Attachment A in lieu of the present requirements in Section 3.6.C of the Technical Specifications.
2. The licensee will orally notify the NRC Project Manager before the close of the next working day in the case of any significant changes in the status of the moisture sensitive tape.
3. The Vermont Yankee facility will remain shutdown following the current 12-month fuel cycle until the reactor recirculation and residual heat removal system stainless steel piping are replaced.

V.

The licensee, or any other adversely affected person, may request a hearing within twenty days of the date of publication of this Order in the

Federal Register. A request for hearing shall be addressed to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. A copy shall also be sent to the Executive Legal Director at the same address. A REQUEST FOR A HEARING SHALL NOT STAY THE IMMEDIATE EFFECTIVENESS OF THIS ORDER.

If a hearing is requested, the Commission will issue an Order designating the time and place of any such hearing. If a hearing is held concerning this Order, the issue to be considered at the hearing shall be whether the licensee should comply with the requirements set forth in Section IV of this Order.

This Order is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Gus C. Lainas, Acting Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 28th day of August, 1984.

Attachment:
A. Vermont Yankee Reactor
Coolant Leakage Limits

ATTACHMENT A

VERMONT YANKEE REACTOR COOLANT LEAKAGE LIMITS

COOLANT LEAKAGE

1. During power operation, Reactor Coolant System leakage into the primary containment shall be limited to:

   a. 5 GPM unidentified leakage when averaged over the previous 24-hour period; and

   b. 20 GPM identified leakage when averaged over the previous 24-hour period.

2. Any time the reactor is in the run mode, Reactor Coolant System leakage into the primary containment from unidentified sources shall be limited to:

   a. 2 GPM increase in unidentified leakage within the previous 24-hour period (see Note 1).

3. If the requirements of Item 1 cannot be met, initiate action as follows:

   a. With any Reactor Coolant System leakage greater than any one of the limits specified in Item 1.a or 1.b reduce the leakage rate to within the limits or be in at least hot shutdown in 12 hours and in cold shutdown in the next 24 hours.

4. If the requirements of Item 2 cannot be met, initiate action as follows:

   a. With any increase in unidentified leakage of greater than or equal to 2 GPM, averaged over the previous 24-hour period, identify the source of leakage or be in at least hot shutdown in 12 hours and in cold shutdown in the next 24 hours.

5. Both the drywell sump and air sampling systems shall be operable during power operation. From and after the date that one of the drywell sump systems is made or found inoperable for any reason, reactor operation is permissible only during the succeeding 24 hours. From and after the date that the air sampling system is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

6. If the requirements of Item 5 cannot be met, an orderly shutdown shall be initiated and the reactor brought to a cold shutdown condition within 24 hours.

NOTE 1: During the first 24 hours in the run mode following startup, the limits of Item 2 may be waived provided the requirements of Item 1 are met.

COOLANT LEAKAGE (Surveillance)

Reactor Coolant System leakage shall be demonstrated to be within the limits of Items 1 and 2 by checking and logging the leakage collected in the primary containment floor and equipment sumps at least once per 4 hours. In addition, the primary containment atmosphere activity shall be checked and logged at least once per 8 hours.