



Entergy Nuclear Operations, Inc.
Pilgrim Station
600 Rocky Hill Road
Plymouth, MA 02360

June 17, 2004

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

SUBJECT: Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
Docket No.: 50-293
License No.: DPR-35

10 CFR 50.46(a)(3)(ii) Annual Report

REFERENCES: 1. Entergy letter to U.S. NRC, dated April 29, 2003,
Annual 10 CFR 50.46(a)(3)(ii) Report
2. GE Nuclear Energy Report NEDC-31852P, "Pilgrim Nuclear Power
Station SAFER/GESTR-LOCA Analysis," Rev. 2

LETTER NUMBER: 2.04.051

Dear Sir or Madam:

This letter submits the annual report required by 10 CFR 50.46(a)(3)(ii).

As described in Reference 1, a reanalysis of the Pilgrim Station LOCA analysis was conducted as part of the core reload for the 2003 refueling outage that began in April 2003. Beginning with startup for fuel cycle 15 operation in May 2003, the reanalysis (Reference 2) established a new licensing basis peak clad temperature (PCT) for GE11 fuel (2120 degrees F) and GE14 fuel (2130 degrees F).

Since the reanalysis, five 10 CFR 50.46 notification letters were issued by General Electric/Global Nuclear Fuels; of these, one is applicable to Pilgrim Station. The notification letters and impact on the Pilgrim Station evaluation model and licensing basis PCT are described in the Enclosure of the this letter. In summary, a change in the evaluation model resulted in no impact to the above licensing basis PCT for GE11 and GE14 fuel, and the maximum local oxidation and core wide oxidation remains less than 10 CFR 50.46 limits.

This letter contains no commitments.

Please feel free to contact me, (508) 830-8403, if there are any questions regarding this subject.

Sincerely,

Bryan Ford
Licensing Manager

DWE/dm

Enclosure: 1 page

A001

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Pilgrim Nuclear Power Station

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cc: Mr. Lee Licata, Project Manager
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ENCLOSURE
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Notification Letter 2003-01 was not applicable to Pilgrim Station.

Notification Letter 2003-02 was not applicable to Pilgrim Station.

Notification Letter 2003-03 was not applicable to Pilgrim Station.

Notification Letter 2003-04 was not applicable to Pilgrim Station.

Notification Letter 2003-5 reported a change in the evaluation model. The change involves a new postulated heat source during the LOCA event. The new heat source involves the recombination of hydrogen and oxygen with the fuel bundle during the core heatup. The additional heat will increase the temperature of the steam heat sink in the fuel bundle, resulting in a potential increase in the PCT and local oxidation. This recombination is spontaneous at temperatures greater than approximately 900°F. The hydrogen is generated by the steam-zirconium reaction during heatup. The oxygen enters the vessel either as a dissolved gas in the ECCS water or through the break when the vessel fully depressurizes and draws containment non-condensable gases back into the vessel.

The change was evaluated. The evaluation assumed that recombination occurs within the fuel channels at the cladding surface. This reaction is oxygen limited because there is not sufficient oxygen to react with all available hydrogen. For jet pump plants, such as Pilgrim Station, the increase in heat of reaction was calculated from the combination of oxygen released from evaporation of the ECCS liquid and hydrogen released from metal-water reaction. For jet pump plants with inerted containments, such as Pilgrim Station, the impact on PCT was found to be insignificant. For Pilgrim Station, the change resulted in no impact to the licensing basis PCT, and the maximum local oxidation and core wide oxidation remained less than 10 CFR 50.46 limits.