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SUBJECT: Responds to NRC Bulletin 88-008, "Thermal Stresses in Piping Connected to RCS."

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September 28, 1988

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U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Mr. Carl Stahle
PWR Project Directorate No. 1
Washington, D.C. 20555

Subject: Response to NRC Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant System", dated June 22, 1988
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Stahle:

In response to the requirements of NRC Bulletin 88-08, the following actions have been or will be taken.

NRC Request

1. Review systems connected to the RCS to determine whether unisolable sections of piping connected to the RCS can be subjected to stresses from temperature stratification or temperature oscillations that could be induced by leaking valves and that were not evaluated in the design analysis of the piping. For those addressees who determine that there are no unisolable sections of piping that can be subjected to such stresses, no additional actions are requested except for the report required below.

Response

1. Systems connected to the RCS have been reviewed and it has been determined that there are three unisolable sections of piping connected to the RCS that have a potential for thermal cycling. These three sections of piping are: the Loop B hot leg charging line, the auxiliary spray and the Loop A cold leg alternate charging.

   The Loop B hot leg charging and the auxiliary spray are both considered to have a low probability of suffering from thermal cycling for the following reasons:

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(a) Both lines are isolated by air operated globe valves, whose pressure boundary isolation reliability is considered to be better than that of the Farley manual isolation valve.

(b) The normal pressure drop across the isolation valves is less than 50 psi, much less than the 320 psi pressure drop across the leaking valve at Farley.

(c) The normal temperature differential across the isolation valves is approximately 125°F, much less than the temperature differential across the leaking valve at Farley.

The Loop A cold leg alternate charging connection is considered to have a low probability of thermal cycling for the following reasons:

(a) The isolation valve closest to the downstream check valve and cold leg connection is an air operated globe valve. This valve is considered to have a better pressure boundary isolation reliability than the Farley manual isolation valve.

(b) The normal pressure drop across the isolation valve is 78 psi which is much less than the 320 psi pressure drop of the leaking Farley valve.

(c) While the normal temperature in this line would be cool enough to provide a potential for thermal cycling; a second, normally closed, isolation valve serves to assure that the probability of leakage is remote.

NRC Request

2. For any unisolable sections of piping connected to the RCS that may have been subjected to excessive thermal stresses, examine nondestructively the welds, heat-affected zones and high stress locations, including geometric discontinuities, in that piping to provide assurance that there are no existing flaws.

Response

2. The unisolable portions of the above three pipe segments will be volumetrically examined before the end of the next refueling outage. This outage is currently scheduled to be entered during March 1989. Several locations in the affected portion of each of these lines have previously been subject to a surface examination. No indications have been found.

NRC Request

3. Plan and implement a program to provide continuing assurance that unisolable sections of all piping connected to the RCS will not be subjected to combined cyclic and static thermal and other stresses that could cause fatigue failure during the remaining life of the unit. This assurance may be provided (1) redesigning and modifying these sections of piping to withstand combined stresses caused by various loads including temporal and spatial distributions of temperature resulting from leakage across valve seats, (2) instrumenting this piping to detect adverse temperature distributions and establishing appropriate limits on temperature distributions, or (3) providing means for ensuring that pressure upstream from block valves which might leak is monitored and does not exceed RCS pressure.

Response

3. A program to provide continuing assurance that unisolable sections of all piping connected to the RCS will not be subjected to combined cyclic and static thermal and other stresses that could cause fatigue failure during the remaining life of the unit will be initiated. Based on the low probability of thermal cycling, as described in 1 and 2 above, the program is expected to consist of additional volumetric examinations of the areas of concern on the subject piping. The results of these examinations, together with additional engineering evaluations, will determine the frequency and nature of future examinations. Should examination results or other information provide evidence of increased probability of thermal cycling, monitoring or other additional measures will be implemented as appropriate.

NRC Request

4. For operating plants not in extended outages, Action 1 should be completed within 60 days of receipt of this bulletin, and Actions 2 and 3, if required, should be completed before the end of the next refueling outage. If the next refueling outage ends within 90 days after receipt of this bulletin, then Actions 2 and 3 may be completed before the end of the following refueling outage.

For operating plants in extended outages and for plants under construction, Action 1 should be completed within 60 days of receipt of this bulletin or before achieving criticality, whichever is later, and Actions 2 and 3 should be completed before achieving criticality, unless criticality is scheduled to occur within 90 days of receipt of this bulletin. In that case, Actions 2 and 3 should be completed before the end of the next refueling outage.

Response

4. As described in 2 above, nondestructive examination of the unisolable portions of the subject piping will be completed prior to startup from the next refueling outage. A program, as described in 3 above, for providing future assurance will be developed prior to the end of the same outage.

Very truly yours,

Robert C. Mecredy
General Manager
Nuclear Production

Subscribed and sworn to before me
on this 28th day of September, 1988.

LYNN I. HAUCK
Notary Public in the State of New York
MONROE COUNTY
Commission Expires Nov. 30, 19[illegible]

xc: U.S. Nuclear Regulatory Commission
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Ginna Senior Resident Inspector