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CRUTCHFIELD,D. Operating Reactors Branch 5

SUBJECT: Responds to SEP Topic III-5.B, "Pipe Break Outside Containment." Installation of jet impingement shields to protect main steam safety & relief valves not needed, Item resolved.

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June 16, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: SEP Topic III-5.B, Pipe Break Outside Containment
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Crutchfield:

RG&E has made an evaluation of the issue noted in Section 3.3.1.1 of NUREG-0821, the R.E. Ginna Final Integrated Plant Safety Assessment Report (IPSAR), dealing with the installation of jet impingement shields to protect the main steam safety and relief valves. Based on a failure-effects systems review, which is intended to supplement the review performed as part of the NRC's September 4, 1981 SER for SEP Topic III-5.B, RG&E has concluded that this protection is not necessary, and that safe shutdown can be attained even assuming the occurrence of postulated high energy line break failures, and their consequential effects.

Prior to the discussion of the acceptability of the present arrangement, RG&E emphasizes that major failures in the affected feedwater piping are not expected to occur at all. RG&E has instituted an augmented inservice inspection program, which is intended to ensure that any flaws in potentially problematic areas of the feedwater piping system will not become through-wall cracks prior to discovery. Nonetheless, the following discussion will postulate that design basis cracks in the feedwater piping can occur.

The specific issue identified in the IPSAR for SEP Topic III-5.B is the protection of the "A" main steam safety valves, and atmospheric relief valve, from a crack in the "B" main feedwater line. If the feedwater line crack is postulated to occur, the potential would exist for the resulting jet to impinge on the nearby "A" main steam safety valves, atmospheric relief valve, and steam admission valve for the turbine-driven auxiliary feedwater pump. Based on the relatively small size of the postulated crack, and the significant strength of the valves and

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attached piping, it is not expected that a major failure would occur, such as loss of structural integrity. However, RG&E believes it is possible that the safety-related valves could inadvertently open, (the steam admission valves are normally closed MOV's and would be expected to remain closed). If, in the worst case, all four safety valves and the relief valve were to open, it would result in the rapid blowdown of the "A" steam generator to the atmosphere. This blowdown would be approximately 1 ft^2, substantially smaller than the design basis break size at the outlet of the steam generator of 4.37 ft^2. Thus, all core analyses would remain enveloped, and the design basis environment in the intermediate building would not be exceeded. Also, there would be no effect on any safety-related equipment outside the intermediate building, and therefore all mitigating safety systems would remain operable. In order to maintain the required decay heat removal. The "A" feedwater line would be isolated to limit the SG blowdown, and the standby AFW system would be actuated, with auxiliary feedwater flow directed to the "B" steam generator, since all FW cracks of concern are located upstream of the feedwater check valve. This auxiliary feedwater flow would be removed via the safety and/or relief valves.

Since safe shutdown could be maintained, and cooldown to RHR system actuation parameters (350°F and 360 psig) would be attainable, RG&E thus does not consider this issue to be of concern, and thus does not consider any modifications to be required.

RG&E has also considered the consequences associated with the postulated crack failure in the north-south portion of the "A" feedwater line in the intermediate building, which could possibly affect the safety and relief valves on both the "A" and "B" steam lines. RG&E does not consider this a credible scenario, since all the valves are at least 60 feet from this portion of the feedwater line, and the "B" loop valves would be shielded by the "A" loop valves. However, even if this were to occur, the resultant break area of approximately 2 ft^2 would still be smaller than the design basis steam line break of 4.37 ft^2. Thus, the primary system cooldown rate would not exceed that already considered in the plant safety analysis. Also, all required mitigating safety systems would be operable, since they are not located in the intermediate building. Finally, safe shutdown could be maintained indefinitely, simply by supplying standby Auxiliary Feedwater to the "A" or "B" steam generator, while relieving the steam via the open safety and/or relief valves. Thus, RG&E considers the potential consequences due to this scenario also to be acceptable.

Based on these analyses, RG&E considers this item of SEP Topic III-5.B to be acceptably resolved, with no additional modifications required. RG&E reiterates that the other open issue from the Final IPSAR, the protection of the steam line

components from breaks in the turbine building, is still under active review by RG&E. As noted in the IPSAR, this latter issue is expected to be resolved in conjunction with our proposed "Structural Reanalysis Program".

Very truly yours,

John E. Maier