GE Nuclear Energy

OG92-907-62
August 19, 1992

To: BWR Owners' Group Members Plant Operations Superintendents

Subject: EFFECTS OF NON-CONDENSABLE GASES ON BWR COLD LEG RPV WATER LEVEL INSTRUMENTATION

Attachment: Strip Chart Showing Notching Effect During Normal Cooldown

Note: This letter is being forwarded to you in response to Action Item #14A resulting from the July 29, 1992 meeting between the NRC and the BWROG/RRG on BWR Reactor Vessel Water Level Indication. Action 14A reads "Provide revised guidance to the plant operators."

Recent events have indicated that non-condensable gases may collect in solution in a RPV water level instrument cold reference leg over time. During depressurization of the RPV the non-condensable gases can evolve and affect the water level indicated by the instrument. The susceptibility of a given plant to this phenomenon cannot be predicted currently because it may vary with several factors. The BWR Owners' Group has embarked upon a program to quantify this effect for various plant configurations and operating conditions. The purpose of this letter is to provide interim recommendations for accommodating this effect during normal and off-normal plant operation until the Owners' Group work is complete.

During a relatively slow RPV depressurization such as that associated with a normal cooldown, any dissolved non-condensables will evolve relatively slowly. The effect of this evolution has been observed only after the RPV pressure has been reduced to below 450 psig. The effect that has been observed has been alternating step increases and decreases in indicated level ("notching") such as that illustrated on the attached strip chart showing data from an operating plant. Under these conditions, the lower indicated level (bottom of the notch) should be considered to be the more accurate indicated level. Should more than one RPV water level instrument experience this phenomenon, it is not expected that the observed notching on different instruments, which have correspondingly different reference legs, would have the same magnitude or period.

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ADD: Amy Cubbage 8E23

During a rapid RPV depressurization such as that associated with opening all the ADS valves, any dissolved gases will evolve more rapidly and may actually expel some water from the instrument reference leg. As with the slow depressurization, we expect this effect to be significant only after RPV pressure has been decreased to below 450 psig. It is expected that two different reference legs will not be affected to the same extent. However, when RPV pressure stabilizes, notching may not be observed, and the only indication that the phenomenon has occurred may be significant differences between instrument indications (after correction for off-calibration temperature and pressure conditions). In this situation, the lowest valid corrected (if available) water level indication should generally be considered to be the most accurate.

It may be possible for the various water level indications to diverge to such an extent that even after correction for off-calibration conditions the operator may decide that RPV water level cannot be determined. In this situation, just as when the RPV water level cannot be determined for any other reason, RPV flooding is appropriate as currently specified in the generic Emergency Procedure Guidelines (EPGs).

As part of the ongoing Owners' Group effort, the Emergency Procedures Committee will be evaluating the impact of this phenomenon on the generic EPGs. We will continue to keep you advised of any further recommendations or potential changes to the EPGs which result from this evaluation.

Sincerely,

B.T. Williamson II, Chairman
Emergency Procedure Committee
(205) 729-2455
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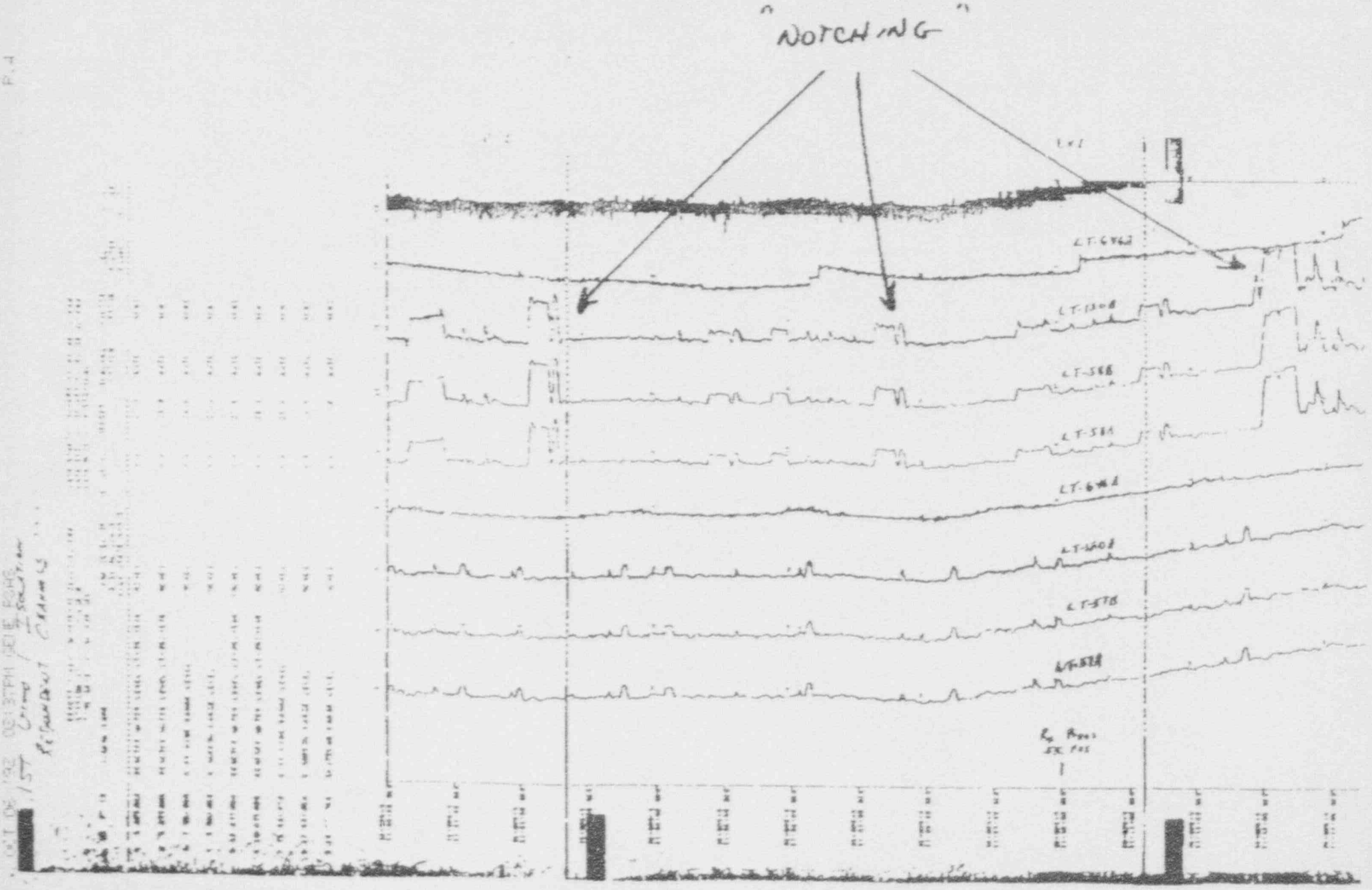
cc: CL Tully, BWROG Chairperson
LA England, BWROG Vice Chairman
GJ Beck, RRG Chairman
Emergency Procedure Committee
Primary Representatives

ATTACHMENT 1



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