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SUBJECT: Advises that current means of determining open/closed status of main steam relief valves consistent w/criteria of Reg Guide 1.97 & addl instrumentation to monitor status will not be installed.

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April 20, 1988

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
Regulatory Guide 1.97 Report

Dear Sir:

By letter dated July 11, 1985 the NRC transmitted an interim report for Oconee addressing the Staff's review of the Regulatory Guide 1.97 Report submitted by a Duke letter dated September 28, 1984. Within the July 11, 1985 NRC letter, the NRC Staff requested additional information regarding the open items identified in the interim report. A response to the Staff's request was provided by a Duke letter dated September 9, 1985 and was supplemented by a February 18, 1986 letter.

One of the open items identified by the NRC interim report concerned indication of the main steam safety/relief valve position. By the September 9, 1985 letter, Duke had committed to install instrumentation for monitoring each main steam relief valve (MSRV) open/closed status. Initially (per the September 28, 1984 Duke letter) Duke's position regarding this item was that current means of monitoring valve(s) was adequate for the intended monitoring status function and, as such, a modification to install additional instrumentation for each valve was not necessary. Please be advised that Duke, at this time, does not intend to install additional instrumentation for each MSRV to provide a direct open/closed status of the valve's position. Accordingly, Duke recants the commitment made by the September 9, 1985 Duke letter to install additional instrumentation for monitoring MSRV open/closed status.

As discussed in the September 28, 1984 Duke letter, Duke believes current means of monitoring MSRV open/closed status are adequate and consistent with the intended monitoring function. Indirect indication of MSRV open/closed status is provided to the operator by the steam generator pressure indication located in the control room.

By monitoring the steam generator pressure instrumentation, the operator would be alerted to the fact that a main steam relief valve(s) is(are) opened. In addition, any significant steam release through a MSRV will result in a loud sound that would be audible to personnel in the plant. Duke acknowledges that the current instrumentation provided in the control room (steam generator pressure instrumentation), does not provide the open/closed status of each MSRV. This limitation, however, is of little consequence to the overall acceptability with Regulatory Guide 1.97 criteria due to the design and functional capabilities of MSRVs. Further, if confirmation of the open/closed status of each MSRV is desired, visual observation can be easily performed. Although the July 11, 1985

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NRC letter did not provide any discussion or bases for concluding that Duke has not provided acceptable instrumentation, the following paragraphs discuss Duke's bases for concluding that current instrumentation (steam generator pressure indication) satisfies the Regulatory Guide 1.97 criteria for this variable.

The type of variable specified by Regulatory Guide 1.97 for MSRV Instrumentation is type D. As such, the instrumentation should provide information to indicate the operation of individual safety systems and should help the operator to make appropriate decisions in using the individual system in mitigating the consequences of an accident. Thus, Duke contends that the current means of monitoring MSRV open/closed status at Oconee complies with the Regulatory Guide 1.97 criteria for type D variables.

In applying the Regulatory Guide 1.97 criteria, the system in question is the MSRVs and the operational information to be provided by the monitoring instrument is the open/closed status of the valves. The function of the MSRVs is to relieve main steam pressure in order to prevent overpressurization of the main steam lines. The valves are a passive device, in that the valves are self-actuating (independent of operator action). The most likely time that the MSRVs will actuate (open) would be following a turbine trip while at a significant Power level (>50% Full Power). Shortly after a MSRV opens, the valve is designed to reseat.

If a valve was to malfunction (fail to reseat or fail open), the symptoms (excessive heat transfer) and subsequent response would be similar to a main steam line break (MSLB) event. For all practical purposes, a MSRV which fails completely open or which fails to reset is a MSLB event. As such, the symptoms that the operator would observe involve excessive heat transfer; decreasing RCS pressure and temperature, decreasing pressurizer level and/or low steam generator pressure. The magnitude or rate of decrease would be dependent on the size of the break. Thus by observing the steam generator pressure indication the operator would be able to determine which steam line had the stuck valve/break. As noted above, the diagnosis of the event is assisted by observing the RCS pressure indication, RCS temperature indication steam generator level indication and the pressurizer level indication. By observing these indications the operator will be able to estimate the size of the leak and be able to evaluate the impact on the unit. The corrective actions to be initiated by the operator to mitigate the consequence of the event will be based upon the cooling rate and shrinkage effects upon the RCS. If the RCS cooling rate and shrinkage is severe the operator will promptly isolate feedwater and all isolable steam paths on the affected steam generator, and if not severe, the steam leak paths will be identified and appropriate actions taken to isolate the path. If the path is a failed MSRV, the action required to isolate is to reduce main steam pressure until the valve(s) reseat. As noted above, the decision to isolate a steam generator or any other corrective action that would be initiated by the operator does not rely on indication of the open/closed status of each valve but the steam pressure within the line as well as other indications (i.e., RCS pressure and temperature, pressurizer level, etc...).

An additional operational concern to be addressed is a steam generator tube rupture (SGTR) coincident with a failed open MSRV. If a SGTR event has occurred, the operator will be alerted to the situation by observing the radiation monitors on the main steam lines (RIA-16,17) and/or on the condenser air ejector (RIA-40)

or by an uncontrolled increase in the steam generator level. The operator, in response to a SGTR event is to shutdown the reactor in a controlled stable manner in order to avoid a reactor trip or lifting of the MSRVs. However, if a MSRV failed open during a SGTR event, the operator would still be alerted to this fact by monitoring the indication for steam generator pressure. Duke acknowledges that the response of this instrument during a SGTR with a failed open MSRV maybe somewhat ambiguous. This, however, can be compensated for by visual and/or audible observations, in that a stuck open MSRV sounds much like a freight train running through the plant and would be instantly noticed. Procedures instruct that personnel be dispatched throughout the plant to monitor for radioactivity if a SGTR event were to occur. These individuals would be able to hear and/or see any significant steam releases through a MSRV. In addition, once it has been determined that a SGTR event has occurred, the Emergency Plan for Oconee would be activated providing additional personnel and awareness. An Operator's response to a SGTR with failed open MSRV event would be the same, depressurize the RCS as expeditiously as possible and isolate the affected steam generator. The operators actions to a SGTR event with or without a failed open MSRV does not need to be based on indication of open/closed status for each MSRV.

In addition, the information obtained by monitoring steam generator pressure instrumentation and visual verification can be utilized in calculations to conservatively estimate the mass flow through the MSRV. Duke recognizes that with the installation of a direct indication of valve position, a slight reduction in the uncertainty in estimating the mass flow through these valves could be realized. This, however, would not necessarily translate into a reduction in the overall uncertainty associated with calculating effluent releases and in estimating the resultant dose. The uncertainty in estimating the mass flow through the MSRVs is insignificant when compared to the other uncertainty factors associated with the Dose Assessment models (i.e., Source Term, Dispersion Model, Partition Factors). As such, no real benefit would be achieved by installing the requested instrumentation.

In summary the current means of determining the open/closed status of the MSRVs are consistent with the criteria of Regulatory Guide 1.97 for this variable. Accordingly, Duke will not be installing additional instrumentation to monitor the open/closed status for each of the MSRVs.

Very truly yours,

Hal B. Tucker

PFG/3/sbn

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