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SUBJECT: Forwards response to NRC 931117 RAI re util 901023 proposed amend to TS 3.1.3.1, "Control Rods" to provide action statement for inoperable scram discharge volume vent &/or drain valves.

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February 22, 1994
G02-94-046

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21**
REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATION 3.1.3.1, ACTIONS FOR INOPERABLE SCRAM DISCHARGE VOLUME VENT AND DRAIN LINES, RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

References:
1) Letter, G02-90-178, dated October 23, 1990, GC Sorensen (SS) to NRC, same subject
2) Letter, dated November 17, 1993, JW Clifford (NRC) to JV Parrish (SS), "Request for Additional Information with Regard to Proposed Amendment to Technical Specification (TS) 3.1.3.1 - Control Rods, for Washington Nuclear Plant, Unit No. 2 (TAC No. M77947)"

Reference 1 requested a change to the subject Technical Specification to provide an Action Statement for inoperable scram discharge volume vent and/or drain valves. Reference 2 requested additional information in order to complete the review of Reference 1. The attached provides the Supply System's response to the request for additional information.

Sincerely,

JVP.

J. V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

PLP/bk
Attachment

cc: KE Perkins - NRC RV
NS Reynolds - Winston & Strawn
JW Clifford - NRC
DL Williams - BPA/399
NRC Site Inspector - 927N

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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
SCRAM DISCHARGE VOLUME VENT AND DRAIN LINES

ATTACHMENT

NRC Request:

1.0 Regarding the bases for the 7-day requirement to restore the valve(s) to operable status;

1.1 The Supply System states the function of these valves is a containing function and specifications should apply actions no more severe than the primary containment isolation valves (LCO 3.6.3). Furthermore, the licensee states the actions provided are considered consistent with required actions for the primary containment isolation valves, but the proposed request provides 7 days as compared to 4 hours to restore the inoperable valve stated in LCO 3.6.3. What is the justification that the Supply System used for the 7 days to be considered consistent with the required actions for the primary containment isolation valves?

Supply System Response:

It is the intent of the Technical Specification change submittal to be consistent with, but not identical to, LCO 3.6.3.

Briefly, the present actions for LCO 3.6.3 are to maintain one valve operable in the affected penetration and within 4 hours:

1. restore the inoperable valve to operable , or

2. isolate the penetration and perform the appropriate actions for the system associated with the isolation.

3. Otherwise, entry into HOT SHUTDOWN within the next 12 hours and COLD SHUTDOWN within the following 24 hours.

The present actions for an inoperable Scram Discharge Volume vent or drain valve is an immediate entry into LCO 3.0.3 which requires:

1. within one hour commence action to be in STARTUP within the next 6 hours, and at least HOT SHUTDOWN within the following 6 hours, and COLD SHUTDOWN within the subsequent 24 hours.

The one hour "commence action to be in STARTUP" is a more severe action than the 4 hour, LCO 3.6.3 action, which provides time to restore operability. Because a "containing function" is the concern, the contrast in relative severity of actions lead the Supply System to request the change to Specification 3.1.3.1.

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The actions proposed in the submittal for an inoperable SDV vent or drain valve are to verify operability of the redundant valve in the affected line or isolate the line in 8 hours and within 7 days:

1. restore the inoperable valve to operable, or

2. be in HOT SHUTDOWN within the next 12 hours.

The "consistency" in actions between 3.6.3 and the proposal are:

1. a verification of operability of the remaining isolation valve in the affected penetration,

2. isolation of the affected penetration within a reasonable time, (the proposed change does not isolate unless both valves in the penetration can not be proven operable)

3. provision for a period of time to allow the inoperable valve to be restored to operable, and

4. a direction for shutdown if operability could not be restored.

The discussion put forth for consistency was that actions other than 3.0.3 should be applicable for inoperable SDV vent and drain valves and actions similar to those presently allowed should be considered for implementation. It was not the intention of the Supply System that the discussion of consistency applied to the timeframes. A discussion of timeframes is provided in response to question 1.2.

<u>NRC Request:</u>

1.0 Regarding the bases for the 7-day requirement to restore the valve(s) to operable status;

1.2 The Supply System specifies that the amendment is similar in practice to TS at Grand Gulf, Perry, Clinton, River Bend and Susquehanna; however, in review of TS of those respective plants, the completion time is 24 hours to restore the SDV vent and/or drain valves to operability. What is the justification that the Supply System used for the 7 days completion time being similar in practice to the TS of the plants listed above?

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Supply System Response:

The original intent of this submittal was to use a completion time similar to that of the listed plants. That is the reason page three refers to these plants and states that "These proposed action statements and allowed outage times are similar to those in practice at Grand Gulf, Perry, Clinton, River Bend, and Susquehanna." As originally drafted this statement was accurate.

However, at the time this submittal was prepared NRR, NUMARC and the BWR Owner's Group were involved in reviewing this Specification and determining appropriate timeframes for the Allowed Outage Time (AOT) and interval before isolation or verification of redundant valve operability (7 days and 8 hours respectively). This was part of the Improved Technical Specifications (ITS) program which resulted in NUREGs 1433 and 1434 for BWRs. These values were approved and are used in the NUREGs.

At the time of submittal it was determined to request one change for both consistent actions and timeframes once rather than make two submittals one for appropriate actions and another to obtain the timeframes approved in the NUREGs. Due to an oversight, the reference to similar allowed outage times was not corrected to be more accurate.

The Supply System has identified a similar Technical Specification change request for LaSalle Units 1 and 2 was approved January 15, 1993. Amendments 89 and 74, for LaSalle units 1 and 2 respectively, state:

3.1.3.1

d. With one or more SDV vent or drain lines with one valve inoperable,

   1. Isolate## the associated line within 7 days.

   2. Otherwise, be in HOT SHUTDOWN within the next 12 hours.

e. With one or more SDV vent or drain lines with both valves inoperable,

   1. Isolate## the associated line within 8 hours.

   2. Otherwise, be in HOT SHUTDOWN within the next 12 hours.

##An isolated line may be unisolated under administrative control to allow draining and venting of the SDV.

No shutdown requirement is imposed by the LaSalle amendments if the line can be isolated. The change requested by the Supply System does impose a shutdown requirement unless the valves are restored to operable status. However, the timeframes before action is required to be taken, 7 days and 8 hours, are similar.

NRC Request:

2.0 Regarding 10 CFR 50.92;

2.1 The Supply System needs to demonstrate that the amendment does not represent a significant hazard because it does not involve a significant increase in the probability or consequences of a accident previously evaluated. The submittal specifies a 7-day period to restore the inoperable valves that "will not allow continuous operation and thereby adequately limits the probability of a single failure to create an unisolated path for reactor coolant release." What is the criteria used to determine the "adequacy" of the 7-day period of continued operation to limit the probability of a single failure to create an unisolated path for a release?

Supply System Response:

In response to the request that the Supply System demonstrate that the change does not represent a significant increase in the probability of an accident previously evaluated, as stated in the October 23, 1990 submittal, the SDV vent and drain valves are not identified as initiators for any accident previously analyzed. Therefore, the addition of the SDV vent and drain valves Action Statement does not increase the probability of an accident previously evaluated because the probability of previously evaluated accidents remains the same with or without the proposed Action Statement.

In response to the request that the Supply System demonstrate that the change does not represent a significant increase in the consequences of an accident previously evaluated, the intent of the allowable out-of-service time (AOT), whether 7 days or 24 hours, is to limit the period that the single failure criterion may not be preserved. The AOT qualifies the statement "will not allow continuous operation and thereby adequately limits the probability of a single failure to create an unisolated path for reactor coolant release" since a shutdown would be required after the AOT has been exceeded. Therefore, the proposed change provides an ACTION which will assure the SDV will be available to perform its intended safety function.

The 7 day AOT is reasonable and does not significantly increase the consequences of an accident when compared to the 24 hour AOT, given the level of redundancy in the lines and the low probability of a scram occurring during the time that the valve(s) are inoperable. The SDV is still isolable since the redundant valve in the affected line is

OPERABLE or the line, and therefore the SDV, is isolated. This action is consistent with NUREG-1433. Further, an unisolable line is bounded by the consequences of a structural failure of the SDV following a scram. The Staff reviewed this event in NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping." In this evaluation, the Staff concluded that, for a bounding leakage case corresponding to a rupture of the SDV, the offsite doses would be well within the limits of 10 CFR Part 100, and that adequate core cooling would be maintained. The failure to isolate one or more SDV vent or drain lines is bounded by this evaluation.

The extended AOT is appropriate in that in the event of a scram, the release of reactor coolant to the reactor building through the affected vent or drain line, if both valves failed to close, can be terminated by resetting the scram, which would close the scram outlet valves.

NRC Request:

2.0 Regarding 10 CFR 50.92;

2.2 How was it determined that the increased time of exposing the plant to a single failure of the SDV vent and drain valves is an insignificant reduction in a margin of safety?

Supply System Response:

As discussed above in the response to item 2.1, the increased time of exposing the plant to a single failure of the SDV vent and drain valves was based upon the level of redundancy in the lines and the low probability of a scram occurring during the time that the valves are inoperable.

As stated in the October 23, 1990 submittal the small exposure to a single failure event allows time to restore the system to operability and thereby any decrease in margin is offset by the benefit of avoiding an unnecessary plant transient.

Also the conclusions of NUREG-0803 (for a bounding leakage case corresponding to a rupture of the SDV) imply that the offsite doses of an unisolable SDV vent or drain line are well within the limits of 10 CFR Part 100. This further minimizes any differences in the margin of safety associated with the present Technical Specifications as compared to the requested change and the avoidance of an unnecessary plant shutdown as allowed in the requested change.

ATTACHMENT

NRC Request:

3.0 Regarding background of scram discharge valves;

3.1 What is the normal leakage for a 7-day period?

Supply System Response:

Scram discharge valve leakage is not specifically monitored. There are 185 scram discharge valves that, if leaking, would discharge into the SDV. With the SDV vent and drain valves open, the SDV drains into the Reactor Building equipment drain system and into a common sump with several other inputs from the reactor building and the drywell. The sump is monitored by recording sump pump (50 gpm capacity) run time every 4 hours and totalling this value over 24 hours. Excessive run time (> 1.1 hours/day) initiates a trouble shooting effort to identify the source of excessive leakage. Although not necessarily indicative of the leakage of the scram discharge valves through the SDV, the average pump run time is typically .8 hours in a 24 hour period which is an approximate value of 2400 gallons per day. Drywell identified leakage, which drains into the sump and contributes to the sump pump run time is monitored separately and is typically between 1 to 2 gallons per minute, equating to between 1440 to 2880 gallons per day. The difference between the volume crudely estimated by sump pump run time and the drywell identified leakage bounds the CRD leakage through the SDVs. Using 1440 as a lower bound for drywell leakage, the amount that might be attributed to CRD leakage, typically, would be 960 gallons (2400 - 1440). This would imply a typical bounding leakage rate of approximately 40 gallons per hour. As discussed in the WNP-2 Technical Specification Bases page B 2-9, the combined volume of margin between the SDV high level alarm and the free volume necessary to accommodate the water from a scram is 178.4 gallons (87.1 gallons "A" volume plus 91.3 gallons "B" volume). If it was necessary to isolate the volumes an administratively controlled opening of the drain valve could be performed on a schedule to provide adequate margin to the alarm and scram setpoints. An increase to the 1.1 hours of run time on the sump pump from the typical .8 hours equates to an additional 37.5 gallons per hour which when combined with the 40 gallons above can still be accommodated with an appropriate schedule of SDV draining.

Indications of excessive scram discharge valve leakage would be rod drift which would be alarmed in the control room and increased Control Rod Drive (CRD) temperatures which are recorded remotely from the Control Room but observed and recorded on operator logs each shift. The Control Room Supervisor is informed of any CRD temperature greater than 250°F. As deemed necessary plant engineering staff is informed of the increased temperature.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
SCRAM DISCHARGE VOLUME VENT AND DRAIN LINES

ATTACHMENT

NRC Request:

3.0 Regarding background of scram discharge valves;

3.2 What is the risk with respect to radiological exposure and primary containment isolation should a redundant valve fail in a single line?

3.3 What would be the radiation release due to a scram?

Supply System Response:

With regard to risk should a redundant valve fail in a single line, bounding leakage case indicates that the offsite doses are well within the limits of 10 CFR 100 and adequate core cooling is maintained. This is documented in NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping," dated August 1981. This report includes an evaluation of the licensing basis for the SDV piping and an assessment of the potential for the SDV piping to fail while in service. A discussion of the SDV during normal plant operation is provided in FSAR Section 4.6.1.1.2.4.2.6.

The proposed footnote(*) allows periodic draining of the SDV when a line is isolated. This reduces the potential for an inadvertent scram due to high SDV level. During these periods, the line may be unisolated under administrative control to allow accumulated water to be drained. The administrative controls ensure that the valve can be closed quickly, by a dedicated operator, if a scram occurs with the valve open. The 8 hour AOT to isolate the line is based on the low probability of a scram occurring while the line is not isolated and the unlikelihood of significant CRD seal leakage.

During normal operation, the only source of leakage into the SDV is from leakage past the scram outlet valves. This leakage is typically maintained at very small values, because excessive leakage past the scram outlet valves would cause control rods to drift, and require that the affected control rods be fully inserted and isolated. In the event that the SDV drain lines were isolated, SDV level increase would be slow enough such that ample time would be present for actions to be taken to drain the SDV after receipt of a level alarm in the control room and before an automatic scram on high SDV level.