ATTACHMENT 1

Proposed Catawba Unit 1 and 2 Technical Specifications Changes

INSERT FOR TECHNICAL SPECIFICATIONS

INSERT A (for Bases Section 3/4.4.4)

The OPERABILITY of the PORVs and block valves is determined on the basis of their being capable of performing the following functions: 1) Manual control of PORVs to control Reactor Coolant System pressure. This is a function that is used for the steam generator tube rupture accident coincident with a loss of all offsite power and for plant shutdown. 2) Maintaining the integrity of the reactor coolant pressure boundary. This is a function that is related to controlling identified leakage and ensuring the ability to detect unidentified reactor coolant pressure boundary leakage. 3) Manual control of the block valve to unblock an isolated PORV to allow it to be used for manual control of Reactor Coolant System pressure and isolate a PORV with excessive seat leakage. 4) Automatic control of PORVs to control Reactor Coolant System pressure. This is a function that reduces challenges to the code safety valves for overpressurization events. 5) Manual control of a block valve to isolate a stuck-open PORV.

REACTOR COOLANT SYSTEM

3/4.4.4 RELIEF VALVES

LIMITING CONDITION FOR OPERATION

3.4.4 All power-operated relief valves (PORVs) and their associated block valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one or more PORV(s) inoperable, because of excessive seat leakage, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s) with power maintained to the block valve(s); otherwise, be in at least HOT STANDBY within the next 6 hours and in ~~COLD~~ HOT SHUTDOWN within the following ~~30~~ 6 hours.

b. With one or two PORVs inoperable due to causes other than excessive seat leakage, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s) and remove power from the block valve(s); restore the PORV(s) to OPERABLE status within the following 72 hours or be in HOT STANDBY within the next 6 hours and in ~~COLD~~ HOT SHUTDOWN within the following ~~30~~ 6 hours.

c. With ~~more than one~~ three PORVs inoperable due to causes other than excessive seat leakage, within 1 hour either restore ~~each of the PORV(s)~~ at least one PORV to OPERABLE status or close their associated block valve(s) and remove power from the block valve(s) and be in HOT STANDBY within the next 6 hours and ~~COLD~~ HOT SHUTDOWN within the following ~~30~~ 6 hours.

d. With one or more block valve(s) inoperable and not closed, within 1 hour ~~(1) restore the block valve(s) to OPERABLE status, or close the block valve(s) and remove power from the block valve(s), or close the PORV and remove power from its associated solenoid valve; and (2) apply the ACTION b. or c. above, as appropriate, for the isolated PORV(s).~~ restore the block valve(s) to OPERABLE status or place its associated PORV switch(es) in the 'close' position. Restore at least one block valve to OPERABLE status within the next hour if three block valves are inoperable; restore one remaining inoperable block valve(s) to OPERABLE status within 72 hours; otherwise, be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

e. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.4.4.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE at least once per 18 months by:

a. Performance of a CHANNEL CALIBRATION, and

b. Operating the valve through one complete cycle of full travel.

4.4.4.2 Each block valve shall be demonstrated OPERABLE at least once per 92 days by operating the valve through one complete cycle of full travel unless the block valve is closed with power removed in order to meet the requirements of ACTION b. or c. in Specification 3.4.4.

4.4.4.3 The emergency power supply for the PORVs ~~and block valves~~ shall be demonstrated OPERABLE at least once per 18 months by:

a. Manually transferring motive power from the normal (air) supply to the emergency (nitrogen) supply,

b. Isolating and venting the normal (air) supply, and

c. Operating the valves through a complete cycle of full travel.

REACTOR COOLANT SYSTEM

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.9.3 At least one of the following Overpressure Protection Systems shall be OPERABLE:

a. Two power operated relief valves (PORVs) with a lift setting of less than or equal to 450 psig, or

b. The Reactor Coolant System depressurized with a Reactor Coolant System vent of greater than or equal to 4.5 square inches.

APPLICABILITY: MODE 4 when the temperature of any Reactor Coolant System cold leg is less than or equal to 285°F, MODE 5 and MODE 6 ~~with the reactor vessel head on.~~ when the head is on the reactor vessel.

ACTION:

a. With one PORV inoperable in MODE 4, restore the inoperable PORV to OPERABLE status within 7 days or ~~depressurize and vent~~ the Reactor Coolant System through at least a 4.5 square inch vent within the next 8 hours. complete depressurization and venting of

~~b.~~ c. With both PORVs inoperable, ~~depressurize and vent~~ complete depressurization and venting of the Reactor Coolant System through at least a 4.5 square inch vent within 8 hours.

~~c.~~ d. In the event either the PORVs or the Reactor Coolant System vent(s) are used to mitigate a Reactor Coolant System pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the PORVs or Reactor Coolant System vent(s) on the transient, and any corrective action necessary to prevent recurrence.

~~d.~~ e. The provisions of Specification 3.0.4 are not applicable.

b. With one PORV inoperable in MODES 5 or 6, restore the inoperable PORV to OPERABLE status within 24 hours or complete depressurization and venting of the Reactor Coolant System through at least a 4.5 square inch vent within the next 8 hours.

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE by:

a. Performance of an ANALOG CHANNEL OPERATIONAL TEST on the PORV actuation channel, but excluding valve operation, ~~within 31 days prior to entering a condition in which the PORV is required OPERABLE and~~ at least once per 31 days; ~~thereafter when the PORV is required OPERABLE;~~

b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per 18 months; and

c. Verifying the PORV isolation valve is open at least once per 72 hours when the PORV is being used for overpressure protection.

4.4.9.3.2 The Reactor Coolant System vent(s) shall be verified to be open at least once per 12 hours* when the vent(s) is being used for overpressure protection.

*Except when the vent pathway is provided with a valve which is locked, sealed, or otherwise secured in the open position, then verify these valves open at least once per 31 days.

SAFETY VALVES (Continued)

relief capability and will prevent overpressurization. In addition, the Overpressure Protection System provides a diverse means of protection against overpressurization at low temperatures.

During operation, all pressurizer Code safety valves must be OPERABLE to prevent the Reactor Coolant System from being pressurized above its Safety Limit of 2735 psig. The combined relief capacity of all of these valves is greater than the maximum surge rate resulting from a complete loss-of-load assuming no Reactor trip until the first Reactor Trip System Trip Setpoint is reached (i.e., no credit is taken for a direct Reactor trip on the loss-of-load) and also assuming no operation of the power-operated relief valves or steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Code.

3/4.4.3 PRESSURIZER

The limit on the maximum water volume in the pressurizer assures that the parameter is maintained within the normal steady-state envelope of operation assumed in the SAR. The limit is consistent with the initial SAR assumptions. The 12-hour periodic surveillance is sufficient to ensure that the parameter is restored to within its limit following expected transient operation. The maximum water volume also ensures that a steam bubble is formed and thus the Reactor Coolant System is not a hydraulically solid system. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability of the plant to control Reactor Coolant System pressure and establish natural circulation.

3/4.4.4 RELIEF VALVES

The power-operated relief valves (PORVs) and steam bubble function to relieve Reactor Coolant System pressure during all design transients up to and including the design step load decrease with steam dump. ~~Operation of the PORVs minimizes the undesirable opening of the spring-loaded pressurizer Code safety valves.~~ Each PORV has a remotely operated block valve to provide a positive shutoff capability should a relief valve become inoperable. Testing of the PORVs includes the emergency N_2 supply from the Cold Leg Accumulators. INSERT A This test demonstrates that the valves in the supply line operate satisfactorily and that the nonsafety portion of the instrument air system is not necessary for proper PORV operation.

3/4.4.5 STEAM GENERATORS

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the Reactor Coolant System will be maintained. The program for inservice inspection of steam

NO CHANGES THIS PAGE.
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ONLY

BASES

PRESSURE/TEMPERATURE LIMITS (Continued)

Although the pressurizer operates in temperature ranges above those for which there is reason for concern of nonductile failure, operating limits are provided to assure compatibility of operation with the fatigue analysis performed in accordance with the ASME Code requirements.

LOW TEMPERATURE OVERPRESSURE PROTECTION

The OPERABILITY of two PORVs or a Reactor Coolant System vent opening of at least 4.5 square inches ensures that the Reactor Coolant System will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the cold legs are less than or equal to 285°F. Either PORV has adequate relieving capability to protect the Reactor Coolant System from overpressurization when the transient is limited to either: (1) the start of an idle reactor coolant pump with the secondary water temperature of the steam generator less than or equal to 50°F above the cold leg temperatures, or (2) the start of a Safety Injection pump and its injection into a water solid Reactor Coolant System.

The Maximum Allowed PORV Setpoint for the Low Temperature Overpressure Protection System (LTOPS) is derived by analysis which models the performance of the LTOPS assuming various mass input and heat input transients. Operation with a PORV Setpoint less than or equal to the maximum Setpoint ensures that Appendix G criteria will not be violated with consideration for a maximum pressure overshoot beyond the PORV Setpoint which can occur as a result of time delays in signal processing and valve opening, instrument uncertainties, and single failure. To ensure that mass and heat input transients more severe than those assumed cannot occur, Technical Specifications require lockout of all but one Safety Injection pump and all but one centrifugal charging pump while in MODES 4, 5, and 6 with the reactor vessel head installed and disallow start of a RCP if secondary temperature is more than 50°F above primary temperature.

The Maximum Allowed PORV setpoint for the LTOPS will be updated based on the results of examinations of reactor vessel material irradiation surveillance specimens performed as required by 10 CFR Part 50, Appendix H, and in accordance with the schedule in Table 4.4-5.

3/4.4.10 STRUCTURAL INTEGRITY

The inservice inspection and testing programs for ASME Code Class 1, 2, and 3 components ensure that the structural integrity and operational readiness of these components will be maintained at an acceptable level throughout the life of the plant. These programs are in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i).

Components of the Reactor Coolant System were designed to provide access to permit inservice inspections in accordance with Section XI of the ASME Boiler and Pressure Vessel Code, and applicable Addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i).

ATTACHMENT 2

Justification and Safety Analysis

Background/Justification:

On June 25, 1990, the NRC issued Generic Letter 90-06, Resolution of Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability", and Generic Issue 94, "Additional Low-Temperature Overpressure Protection for Light-Water Reactors", Pursuant to 10 CFR 50.54(f). This generic letter provided staff positions regarding actions which should be taken to improve the reliability of PORVs and block valves, specifically:

1) Including PORVs and block valves in the quality assurance program per 10 CFR 50, Appendix B;

2) Including PORVs, valves in PORV control air systems, and block valves within the scope of the inservice testing program; and

3) Modifying the Technical Specifications for the PORVs and LTOP systems.

Duke Power Company's response to the generic letter, dated December 20, 1990, addressed items 1 and 2 above. The purpose of this Technical Specification amendment submittal is to address item 3.

Bases/Safety Analysis:

The NRC staff has recently determined that over the years, the role of PORVs has changed such that PORVs are now relied upon by many plants to perform one or more of the following safety-related functions:

1) Mitigation of a design basis steam generator tube rupture accident,

2) Low-temperature overpressure protection of the reactor vessel during startup and shutdown, and

3) Plant cooldown in compliance with Branch Technical Position RSB 5-1 to SRP 5.4.7, "Residual Heat Removal (RHR) System".

At Catawba, the PORVs are utilized for all three of the above functions.

The proposed Technical Specifications changes are being submitted in accordance with the guidance provided by the NRC in its resolution of Generic Issue 70, "PORV and Block Valve Reliability" and Generic Issue 94, "Additional Low-Temperature Overpressure Protection for Light-Water Reactors". These changes are consistent with the Catawba design and safety analyses. The specific changes are discussed individually in the next section. Where deviation from the guidance provided by the NRC exists, justification for the deviation is provided.

Regarding Generic Issue 94, licensees were requested to verify whether certain administrative restrictions concerning the restart of inactive reactor coolant pumps and concerning the operability of high pressure safety injection pumps have been implemented. These restrictions were imposed as a result of Unresolved Safety Issue (USI) A-26, "Reactor Vessel Pressure Transient Protection (Overpressure Protection)". These administrative restrictions have been previously implemented at Catawba.

Description of Proposed Technical Specifications Changes:

Limiting Condition for Operation 3.4.4

- Action statement a. is expanded to require power to be maintained to the block valve(s) when they are closed due to excessive PORV seat leakage. This is to ensure that the valve(s) remain operable and capable of being opened to allow the PORV(s) to be used to control primary system pressure.

- All appropriate action statements in this LCO have been modified to terminate the forced shutdown requirements in hot shutdown rather than cold shutdown, since the LCO only applies to Modes 1, 2, and 3.

- Action statement b. is changed to include the cases when either one or two PORVs are inoperable.

- Action statement c. is changed to only include the case where three PORVs are inoperable. The action statement is also changed to only require at least one PORV to be restored operable (as opposed to all three) because if only one PORV is restored, then action statement b. would apply. It should be noted that while the proposed changes to action statements b. and c. are actually less restrictive than the current specification, these changes are consistent with the guidance provided in the generic letter.

- Action statement d. is modified to establish remedial measures consistent with the function of the block valves. The prime importance for the capability to close the block valve is to isolate a stuck-open PORV. If the block valve(s) cannot be restored to operable status within one hour, the remedial action is to place the associated PORV switch(es) in the "close" position to preclude its automatic opening for an overpressure event and to avoid the potential for a stuck-open PORV at a time that the block valve is inoperable. (The guidance contained in the generic letter states to place the PORV in manual control; however, Catawba's PORV control switches are labeled "open", "close", and "auto", so the proposed change is consistent with the Catawba design.) The time allowed to restore the block valve(s) to operable status is based upon the remedial action time limits for inoperable PORVs per action statements b. and c. since the PORVs are not capable of mitigating an overpressure event when the PORV switches are in the "close" position. The change being submitted for action statement d. deviates slightly from the guidance contained in the generic letter in that this action statement only applies when the block valve(s) are inoperable and not closed (per the addition of the phrase "and not closed"). If the block valve(s) are inoperable while they are closed, then the PORV flow path itself would be considered to be inoperable by the plant operations staff and action statements b. or c. would be assumed to apply.

Surveillance Requirement 4.4.4.1

- The generic letter recommends that PORVs be stroked during Mode 3 or Mode 4 in order to accurately simulate environmental effects on the valves. The basis for this recommendation is that testing during Mode 5 may not be a representative test for assessing PORV performance

- under normal plant operating conditions. Catawba currently strokes the PORVs during Mode 4 and is therefore in compliance with the generic letter's guidance in this regard. It is felt that it would not be appropriate to change Surveillance Requirement 4.4.4.1.b. to explicitly indicate that the valve must be cycled during Mode 4, since this specification is only applicable during Modes 1, 2, and 3.

- The generic letter also recommends that Surveillance Requirement 4.4.4.1 be expanded to require operating solenoid air control valves and check valves on air accumulators in PORV control systems through a complete cycle of full travel. Surveillance Requirement 4.4.4.3 requires the PORVs to be stroked while aligned to the emergency nitrogen supply, with the normal air supply vented; this cycles the necessary valves. It is therefore not necessary to expand Surveillance Requirement 4.4.4.1 in this regard.

Surveillance Requirement 4.4.4.3

- The guidance contained in the generic letter indicates that motive and control power for the PORVs and block valves should be manually transferred from the normal to the emergency power bus. At Catawba, transferring control power does not apply because the PORVs and block valves are normally powered from an essential bus. Transferring motive power does not apply to the block valves; they are not pneumatic. Hence the Catawba specification, as currently written, complies with the guidance contained in the generic letter. (Since the block valves are normally powered from an essential bus, the phrase "and block valves" is being deleted from surveillance requirement 4.4.4.3.)

Limiting Condition for Operation 3.4.9.3

- In LCO 3.4.9.3, the applicability is modified to change the phrase "with the reactor vessel head on" to "when the head is on the reactor vessel". It should be noted that in the guidance contained in the generic letter, it is suggested that the applicability of the LCO be clarified to exclude Mode 6 when the Reactor Coolant System is adequately vented and that the depressurizing and venting of the Reactor Coolant System should no longer be classified as an overpressure protection system. The generic letter recommends that an additional action statement be added to specify verifying the vent pathway when the Reactor Coolant System is depressurized and vented. This proposed structure appears inappropriate, because once the Reactor Coolant System is vented, LCO 3.4.9.3 would no longer apply and the action statement requiring verification of the vent pathway would therefore not have to be entered. For this reason, it is being proposed that the present structure of the Catawba Technical Specifications be maintained in that the depressurizing and venting of the Reactor Coolant System will continue to be classified as an overpressure protection system and the requirement to verify the vent pathway when the system is depressurized and vented will continue to be governed by surveillance requirement 4.4.9.3.2.

- Action statement a. is modified to clarify that it is only applicable in Mode 4.

- Action statement b. is added to reduce the allowable outage time for an inoperable PORV to 24 hours in Modes 5 or 6.

- Action statements a., b., and c. are clarified to indicate that required depressurizing and venting of the Reactor Coolant System must be completed within the specified period.

Surveillance Requirement 4.4.9.3

- Surveillance requirement 4.4.9.3.a. is simplified by removing requirements that exist because of general requirements applicable to all surveillance requirements as specified in Section 4.0 of the Technical Specifications.

Bases Section 3/4.4.4

- The bases for the PORV and block valve Technical Specifications are expanded to identify the major functions of the PORVs and block valves. These major functions are as follows:

  1) Manual control of Reactor Coolant System pressure following accidents,

  2) Maintaining reactor coolant pressure boundary integrity by controlling leakage,

  3) Manual control of block valves to isolate and unblock PORVs (for manual pressure control and for controlling PORV seat leakage),

  4) Automatic control of Reactor Coolant System pressure to prevent code safety valve challenges, and

  5) Manual control of block valves to isolate a stuck-open PORV.

  The expanded bases more clearly delineate these functions.

Conclusions:

The above changes to the Catawba Technical Specifications are being submitted in accordance with NRC guidance contained in Generic Letter 90-06. These changes impose certain additional restrictions concerning the operability of the PORVs and block valves and therefore will result in an overall improvement in safety. Appropriate technical justification has been provided for the cases where deviation from the generic letter's guidance exists.

Duke Power Company has concluded that the proposed amendments will not be inimical to the health and safety of company personnel or to the public.

ATTACHMENT 3

Analysis of Significant Hazards Consideration

Analysis of Significant Hazards Consideration:

Duke Power Company has made the determination that this amendment request involves a no significant hazards consideration by applying the standards established by the Commission's regulation in 10CFR 50.92. This ensures that operation of the facility in accordance with the proposed amendment would not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) involve a significant reduction in a margin of safety.

The Commission has provided guidelines pertaining to the application of the three standards by listing specific examples in 48FR14870. Example (ii) relates to a change that constitutes an additional limitation, restriction, or control not presently included in the Technical Specifications.

In this case the changes proposed by this request are similar to Example (ii) in that they result from NRC guidance contained in Generic Letter 90-06. The changes consist mainly of additional restrictions in the limiting conditions for operation for the PORVs and block valves (and LTOP systems when the PORVs are used for LTOP), as well as clarified surveillance requirements.

The following evaluation measures aspects of this proposal against the Part 50.92(c) requirements to demonstrate that all three standards are satisfied.

First Standard

The amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

From an accident and transient mitigation standpoint, the PORVs can be utilized to perform several safety-related functions. These include mitigation of a steam generator tube rupture accident, low-temperature overpressure protection of the reactor vessel, and plant cooldown. In addition, the PORVs can be an accident initiator in the case where a failed-open PORV results in a small break loss of coolant accident (SBLOCA).

The proposed changes will increase the likelihood that the PORVs and block valves will be available for performing their safety-related functions. They will also reduce the probability of accident sequences which may result from PORV and block valve failures. For the case where the PORVs are utilized as a means of LTOP, the proposed changes (specifically, the reduced allowable outage time while in Modes 5 and 6) will ensure that both channels of overpressure protection equipment maintain a high availability in the event that they are called upon to mitigate a low-temperature overpressurization transient.

Based on the above, the proposed Technical Specifications changes will not involve a significant increase in the probability or consequences of an accident that has been previously evaluated.

Second Standard

The amendment would not create the possibility of a new or different kind of accident from any kind of accident previously evaluated.

With the exception of a failed-open PORV resulting in a SBLOCA as indicated above, the PORVs and block valves cannot initiate accident sequences. The proposed changes will not result in the PORVs and block valves being operated or utilized in a deleterious manner; therefore, the possibility of a new or different kind of accident is not created.

Third Standard

The amendment would not involve a significant reduction in a margin of safety.

Overall plant safety would be enhanced as a result of the additional restrictions placed on the PORVs and block valves (and LTOP channels when the PORVs are used for LTOP). (While it is true that the proposed changes to action statements b. and c. in LCO 3.4.4 are actually less restrictive than the current specification, this fact does not involve a significant reduction in any safety margin and the proposed changes are consistent with the guidance provided in the generic letter.) In addition, for GI-70 and GI-94, the NRC has made the determination that there will be a substantial increase in overall protection of the public health and safety as a result of the implementation of actions recommended by Generic Letter 90-06, including the recommended Technical Specifications changes.

Based on the above and the supporting technical justification, Duke Power Company has concluded that there is no significant hazard consideration involved in this amendment request.