

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.1 ACCUMULATORS

COLD LEG INJECTION

LIMITING CONDITION FOR OPERATION

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- 3.5.1.1 Each cold leg injection accumulator shall be OPERABLE with:
- a. The isolation valve open,
  - b. A contained borated water volume of between 8022 and 8256 gallons
  - c. A boron concentration of between 1900 and 2100 ppm,
  - d. A nitrogen cover-pressure of between 430 and 484 psig, and
  - e. A water level and pressure channel OPERABLE.

APPLICABILITY: MODES 1, 2, and 3\*.

ACTION:

- a. With one accumulator inoperable, except as a result of a closed isolation valve, restore the inoperable accumulator to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.
- b. With one accumulator inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in at least HOT STANDBY within 6 hours and reduce pressurizer pressure to less than 1000 psig within the following 6 hours.

SURVEILLANCE REQUIREMENTS

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- 4.5.1.1.1 Each cold leg injection accumulator shall be demonstrated OPERABLE:
- a. At least once per 12 hours by:
    - 1) Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and
    - 2) Verifying that each cold leg injection accumulator isolation valve is open.

\*Pressurizer pressure above 1000 psig.

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Justification and Safety Analysis

The proposed changes of the Technical Specifications are concerned with ACTION requirements associated with Technical Specification 3.5.1.1.

The current Technical Specification ACTION requirement (a) requires that in the event a cold leg accumulator becomes inoperable for reasons other than a closed isolation valve and cannot be restored to operable status within 1 hour, the reactor be placed in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

The proposed Technical Specification differs from the current specification in that reducing the pressurizer pressure below 1000 psig (within the following 6 hours) will be required rather than placing the reactor in HOT SHUTDOWN (within the following 6 hours).

The proposed change to ACTION (a) does not involve a reduction in the margin of safety at McGuire Nuclear Station. In the event of a planned reduction in reactor coolant system pressure, it is standard procedure at McGuire to isolate the cold leg accumulators below 1000 psig in order to prevent inadvertent injection of the accumulator contents into the RCS. Therefore, the cold leg injection accumulators serve no safety function below 1000 psig.

The Limiting Condition for Operation is applicable for Mode 3 (HOT STANDBY) only above 1000 psig by the current Specification 3.5.1.1, thus the accumulators are not required to be OPERABLE when pressurizer pressure is below 1000 psig; therefore the accumulators are not necessary to mitigate the consequences of any anticipated event that may occur with the reactor in this state.

Another proposed change concerns the ACTION (b) required by the Specification 3.5.1.1. The proposed changes would place the reactor in HOT STANDBY in 6 hours and reduce the pressurizer pressure below 1000 psig within the following 6 hours in case an isolation valve is found closed and cannot be immediately opened. The current specifications require power reduction to HOT STANDBY within 1 hour and HOT SHUTDOWN within the following 12 hours in event of a closed (and inoperable) cold leg accumulator isolation valve.

As previously discussed, the change to proceed below 1000 psig rather than to HOT SHUTDOWN does not involve a reduction in the safety margin at McGuire. The change to allow 6 hours to reach HOT STANDBY and the following 6 hours to reduce pressurizer pressure below 1000 psig in the case of a closed and inoperable isolation valve does not pose a safety risk. Presently, the Specification allows 6 hours to reach HOT STANDBY if an accumulator is inoperable for any reason other than a closed (and inoperable) cold leg accumulator isolation valve; thus the additional 5 hours has been determined to pose no additional risks. The change will make ACTION (a) and (b) consistent.

The proposed changes reflect the revisions currently being considered in the Standard Technical Specifications Revision V for the Westinghouse PWRs.

It should also be noted that proposed changes have previously been submitted for the Limiting Conditions for operation, 3.5.1.1b and 3.5.1.1d. These proposed changes were submitted with the McGuire Unit 2/Cycle 2 reload submittal which was transmitted by Mr. H. B. Tucker's letter of November 16, 1984. The changes proposed in the reload submittal would establish the same limits for borated water volume and nitrogen cover pressure in the accumulators for both units. The changes proposed in the reload submittal are expected to be approved prior to this proposal, and each proposal does not impact upon the other.

Analysis of Significant Hazards Consideration

Pursuant to the requirements of 10CFR50.91, this analysis provides a determination that the proposed modification of the Technical Specification 3.5.1.1 does not involve a significant hazards consideration, as defined by 10CFR50.92.

The proposed changes concern the Cold Leg Injection Accumulator System. There are two main changes involved in the Specification 3.5.1.1:

- 1) A proposed change to permit 6 hours to place the reactor in HOT STANDBY instead of the 1 hour currently allowed in event of inoperability of the Cold Leg Injection Accumulator System due to a closed and inoperable isolation valve.
- 2) A proposed change to lower the pressurizer pressure below 1000 psig. within 6 hours instead of placing the reactor in HOT SHUTDOWN within 6 hours.

The first change does not involve any significant hazards consideration, as the situation is allowed for similar circumstances. The difference (1 hour to be in HOT STANDBY rather than 6 hours) is due to an error in Revision IV of the Standard Technical Specifications, and is presently being incorporated into Revision V of the Westinghouse Standard Technical Specifications. Since 6 hours are also permitted to place the reactor in HOT STANDBY if the Cold Leg Injection System is inoperable due to reasons other than closed inoperable isolation valves, the inoperability of Cold Leg Injection Accumulators for 6 hours is already considered to pose negligible adverse safety consequences. Thus the proposed change is no less conservative than other portions of the Specification 3.5.1.1 ACTION statement.

The second change requires that pressurizer pressure be lowered below 1000 psig within 6 hours instead of placing the reactor in HOT SHUTDOWN as currently required. Since McGuire procedures require that the Cold Leg Injection Accumulators be isolated below 1000 psig reactor coolant system pressure to prevent inadvertent injection, the accumulators serve no safety function below 1000 psig, and thus the inoperability or failure of the Cold Leg Injection Accumulators below 1000 psig has no safety implications. There is no possibility of any new accident mechanisms or consequences arising due to the proposed changes.

The proposed amendments 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.

Based upon the preceding analysis, Duke Power Company concludes that the proposed amendments do not involve a significant hazards consideration.

EMERGENCY CORE COOLING SYSTEMS

UPPER HEAD INJECTION

LIMITING CONDITION FOR OPERATION

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3.5.1.2 Each Upper Head Injection Accumulator System shall be OPERABLE with:

- a. The isolation valves open,
- b. The water-filled accumulator containing a minimum of 1850 cubic feet of borated water having a concentration of between 1900 and 2100 ppm of boron, and
- c. The nitrogen bearing accumulator pressurized to between 1206 and 1264 psig.

APPLICABILITY: MODES 1, 2, and 3\*.

ACTION:

- a. With the Upper Head Injection Accumulator System inoperable, except as a result of a closed isolation valve(s), restore the Upper Head Injection Accumulator System to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 1900 psig within the following 6 hours.
- b. With the Upper Head Injection Accumulator System inoperable due to the isolation valve(s) being closed, either immediately open the isolation valve(s) or be in at least HOT STANDBY within 6 hours and reduce pressurizer pressure to less than 1900 psig within the following 6 hours.

SURVEILLANCE REQUIREMENTS

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4.5.1.2 Each Upper Head Injection Accumulator System shall be demonstrated OPERABLE:

- a. At least once per 12 hours by:
  - 1) Verifying the contained borated water volume and nitrogen pressure in the accumulators, and
  - 2) Verifying that each accumulator isolation valve is open.

\*Pressurizer Pressure above 1900 psig.

Justification and Safety Analysis

The proposed changes of the Technical Specifications are concerned with the ACTION requirements associated with Specification 3.5.1.2.

The current Technical Specification 3.5.1.2 ACTION (a) requires that in event of an inoperable Upper Head Injection System (UHI) except as a result of closed isolation valve(s) the UHI is to be restored to operable status within 1 hour or the reactor is to be placed in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. The proposed Technical Specification differs from the current specification in that it requires that the pressurizer pressure be reduced below 1900 psig within 6 hours instead of the requirement to place the reactor in HOT SHUTDOWN within 6 hours. The proposed change is no less conservative than the current Specification. The Limiting Conditions for Operation currently contained in Technical Specification 3.5.1.2 apply to mode 3 (HOT STANDBY) only above 1900 psig. Previous safety analyses have shown that the Upper Head Injection System serves no safety function when RCS pressure is below 1900 psig. Therefore, this change to the "ACTION" statement will have no adverse impact on safety. Also, as presently written, if the UHI system becomes inoperable and cannot be restored within the given time frame, it is possible to get out of the Applicability of the Specification (Mode 3 above 1900 psig) prior to completing the "Action" (reaching Mode 4, HOT SHUTDOWN) statement. This proposed change would eliminate this inconsistency.

Another proposed change concerns Technical Specification 3.5.1.2 ACTION (b). The current ACTION (b) requires that if the UHI System is inoperable due to closed valve(s), either immediately open the valves or be in HOT STANDBY within 1 hour and be in HOT SHUTDOWN within next 12 hours. The proposed Technical Specifications seek to modify these requirements. The requirement to place the reactor in HOT STANDBY within 1 hour is changed by allowing 6 hours to place the reactor in HOT STANDBY mode. In the case of inoperability of the UHI system, due to something other than closed inoperable isolation valves, Technical Specification 3.5.1.2 ACTION (a) also permits 6 hours to attain to HOT STANDBY status. The "ACTION" requirements of parts (a) and (b) are presently different only as the result of an error of inconsistency in Revision IV of the Standard Technical Specifications for Westinghouse PWRs, on which McGuire's Technical Specifications are based. (This error is being corrected in Revision V of the Westinghouse Standard Technical Specifications.) The requirement to put the reactor in HOT STANDBY due to an inoperable UHI system needs to be consistent for all causes. The proposed change is no less conservative than the existing Specification and would make the "ACTION" statements consistent for an inoperable UHI system.

The proposed changes are a result of a utility wide review of the Technical Specification 3.5.1.2. The proposed changes have been incorporated in the draft Revision V of the Standard Technical Specifications for the Westinghouse PWRs. The proposed changes do not have any adverse safety implications.

The proposed changes are contingent upon approval of the change submitted with the McGuire Unit 2/Cycle 2 reload submittal as transmitted by Mr. H. B. Tucker's letter of November 16, 1984. The change to the specification proposed in the reload submittal would disallow power operation with the UHI system inoperable, which is more conservative than the present specification, which allows power operation up to 46% of rated thermal power with the UHI system inoperable, thus the proposal in the reload submittal should be approved prior to this proposal being approved.

Analysis of Significant Hazards Consideration

Pursuant to the requirements of 10CFR50.91, this analysis provides a determination that the proposed modification of the Technical Specification 3.5.1.2 does not involve a significant hazards consideration, as defined by 10CFR50.92.

The proposed changes concern the Upper Head Injection System. There are two proposed changes in Specification 3.5.1.2 requiring significant hazards evaluation:

- 1) A proposed change to allow 6 hours to place the reactor in HOT STANDBY instead of 1 hour currently allowed in the event of inoperability of the UHI system due to a closed, inoperable isolation valve.
- 2) A proposed change to lower the pressurizer pressure below 1900 psig within 6 hours instead of placing the reactor in HOT SHUTDOWN within 6 hours.

The proposed change to allow 6 hours to place the reactor in HOT STANDBY instead of 1 hour as in ACTION (b), is reasonable and maintains conservatism, as in ACTION (a) of Specification 3.5.1.2. The potential addition of 5 hours of power operation with UHI inoperable does not present a significant risk to plant safety as permitted under ACTION (a) of the Specification. The reason for the present difference is an error in Revision IV of the Westinghouse Standard Technical Specifications on which McGuire's Technical Specifications are based. This is being corrected in Revision V of the Westinghouse Standard Technical Specifications.

The second change permits reducing the pressurizer pressure to below 1900 psig in Mode 3 instead of proceeding to HOT SHUTDOWN within 6 hours. It is recognized in the current specification 3.5.1.2 that UHI system operability is not necessary below 1900 psig in mode 3. Therefore the proposed change does not have any adverse implications for plant safety.

The proposed changes are in the process of being incorporated into Revision V of the Standard Technical Specifications for the Westinghouse PWRs.

The proposed amendments 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.

Based upon the preceding analysis, Duke Power Company concludes that the proposed amendments do not involve a significant hazard consideration.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 1% of tank volume by verifying the boron concentration of the solution in the water-filled accumulator;
- c. At least once per 18 months by:
  - 1) Verifying that each accumulator isolation valve closes automatically when an actual or simulated water level signal of  $76.25 \pm 3.3$  inches above the bottom inside edge of the water-filled accumulator exists. If actual water level is used, then the accumulator shall be at atmospheric pressure.
  - 2. Verifying that the total dissolved nitrogen and air in the water-filled accumulator is less than 80 scf per 1800 cubic feet of water (equivalent to  $5 \times 10^{-5}$  pounds nitrogen per pounds water).
- d. At least once per 5 years by replacing the membrane installed between the water-filled and nitrogen bearing accumulators.



Justification and Safety Analysis

The proposed changes to the McGuire's Technical Specifications concern the surveillance requirements for the Upper Head Injection (UHI) System. The current specification 4.5.1.2.c requires clarification regarding the methods employed to verify its compliance.

The current Technical Specification 4.5.1.2.c requires that, at least once every 18 months verify that each accumulator isolation valve closes automatically when the water level is  $76.25 \pm 3.3$  inches above the bottom inside edge of the water filled accumulator with atmospheric pressure in the accumulator. In its present form Specification 4.5.1.2.c could be interpreted to mean that the actual tank water level is to be reduced to the setpoint in order to verify that each accumulator isolation valve closes. However such an interpretation is not practical and is not consistent with testing performed on other systems where an instrument reaching a setpoint actuates a device. Further discussion of this matter may be found in Mr. H. B. Tucker's letter of December 20, 1984 to Mr. J. P. O'Reilly (Region II Administrator) which is primarily concerned with the subject Specification.

At McGuire the normal practice is to conduct the tests required by specification 4.5.1.2.c as a channel calibration. The entire loop from the level transmitter to the valve actuation is tested. Testing by sequential, overlapping or total channel steps is allowed. The use of actual process system fluid level is not required. For these types of instrumentation loops, it is not reasonable or practical to manipulate the entire process system so as to achieve the required actuation setpoint. Instead, test signals are used to perform the operational test. Such signals are placed as close to the sensor as possible. The test is considered successful if the channel responds with the required range and accuracy to known values of input signals. This type of testing using simulated signals is also employed for other safety related systems including pressurizer water level (high), steam generator water level (low) and many others.

Since the current methods employed by the McGuire Nuclear Station to verify testing required by the Specification 4.5.1.2.c are considered highly reliable and used industry wide, it is the intent of Duke Power Company to revise the specification 4.5.1.2.c to clarify that use of an actual or simulated water level signal in testing is acceptable. The proposed change supplies a needed clarification and does not have any adverse safety implication.

Another proposed change concerns Specification 4.5.1.2.d. This change requires that the membrane installed in the UHI accumulators be replaced every 5 years and the removed membrane be tested to verify that it bursts at a differential pressure of  $40 \pm 10$  psi. The requirement to test the removed membrane is being deleted in Revision V of the Standard Technical Specifications for Westinghouse PWRs. This membrane is usually replaced more often than once every 5 years and testing the removed membrane does not have any significant safety implication as it is a post-service, destructive test. Duke Power Company proposes to delete the requirement to test the removed membrane from McGuire's Technical Specifications.

Analysis of Significant Hazards Consideration

Pursuant to the requirements of 10CFR50.91, this analysis provides a determination that the proposed modifications of the Technical Specifications do not involve a significant hazards consideration, as defined by 10CFR50.92.

The proposed changes to the Technical Specifications supply a needed clarification for Specification 4.5.1.2.c. The proposed change contains a rewording of the test and does not have any adverse safety implications. Another change involves deletion of the requirement to subject the membrane in the UHI tank to a rupture test after it has been removed from service. This requirement is being deleted in Revision V of the Standard Technical Specifications for the Westinghouse PWRs. Post service destructive testing of this component does not affect plant operation or performance of UHI components in any manner, thus this requirement is not needed.

The proposed amendments 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.

Based upon the preceding analysis, Duke Power Company concludes that the proposed amendments do not involve a significant hazard consideration.