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2CAN070401

July 8, 2004

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

SUBJECT: License Amendment Request
Shutdown Cooling Automatic Closure Interlock Removal
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Arkansas Nuclear One, Unit 2 (ANO-2). Entergy proposes to delete the surveillance requirement associated with the Shutdown Cooling (SDC) Automatic Closure Interlock (ACI), ANO-2 Technical Specification (TS) Surveillance Requirement (SR) 4.5.2.d.1. The NRC approved Standard Technical Specifications, Combustion Engineering Plants (NUREG-1432) includes this surveillance requirement. However, the NRC has previously approved removal of this function for several U.S. commercial nuclear power facilities.

The NRC and the nuclear power industry have placed significant emphasis on increasing the reliability of SDC systems in pressurized water reactors. As a result, several U.S. commercial nuclear power facilities have removed the ACI function from the SDC system because historical data indicated that ACI was a significant contributor to loss of SDC events. A review of the ANO-2 Safety Analysis Report (SAR) has concluded that the ACI function is not credited in the mitigation or prevention of any accidents. In addition, a comparison of this function against the criteria set forth in 10 CFR 50.36 concluded that the ACI function does not meet the requirements for inclusion in the TSs. Therefore, Entergy proposes to delete SR 4.5.2.d.1 and physically disable or remove the ACI function. The removal of the ACI function will result in an overall improvement in nuclear safety.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards consideration. The bases for these determinations are included in the attached submittal.

The proposed change includes new commitments as summarized in Attachment 3.

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Entergy requests approval of the proposed amendment by February 15, 2005. Once approved, the amendment shall be implemented within 60 days. Although this request is neither exigent nor emergency, your prompt review is requested.

If you have any questions or require additional information, please contact David Bice at 479-858-5338.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 8, 2004.

Sincerely,

JSF/dbb

Attachments:
1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. List of Regulatory Commitments

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Attachment 1

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Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2).

The proposed change will revise the Technical Specifications (TSs) to delete the Automatic Closure Interlock (ACI) Surveillance Requirement (SR) 4.5.2.d.1 associated with TS 3.5.2, ECCS Subsystems – $T_{ave} \geq 300$ °F.

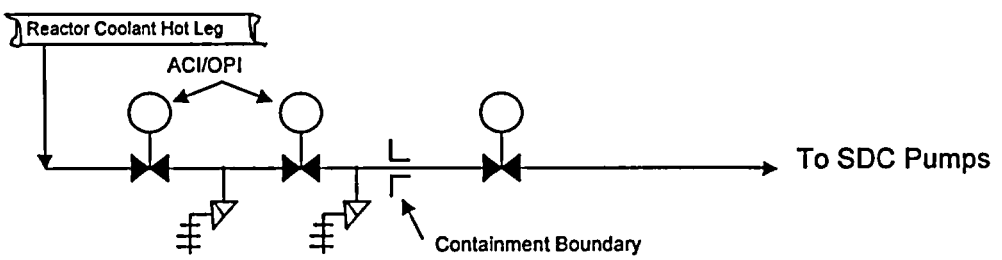
2.0 PROPOSED CHANGE

The proposed change will eliminate the ACI testing requirements of SR 4.5.2.d.1. A TS requirement to verify the operability of the existing Open Permissive Interlock (OPI) associated with the SDC system will not be incorporated. The NRC approved Standard Technical Specifications, Combustion Engineering Plants (NUREG-1432) include requirements for both an ACI and OPI function. However, the NRC has previously approved removal of the ACI function for several U.S. commercial nuclear power facilities. Reference to NUREG-1432 will henceforth be referred to as Improved Technical Specifications or ITS.

3.0 BACKGROUND

The Shutdown Cooling (SDC) System is designed as a low pressure system. The shutdown cooling suction line inside containment contains two normally de-energized locked-closed motor operated valves in series, ensuring that the low pressure piping is not exposed to normal Reactor Coolant System (RCS) pressure. Administrative controls, procedures and interlocks prevent opening these valves before the RCS has been depressurized. Key-operated control switches are provided in the control room to permit opening of the isolation valves. Interlocks prevent the valves from being opened unless RCS pressure is below 300 psia (OPI). If a valve has been opened and RCS pressure rises above the setpoint, the valve is automatically closed by the interlock (ACI). Inadvertent operation of one of these normally locked closed motor operated gate valves at elevated RCS pressures would have no effect on operating events or sequences.

Although the reactor coolant pressure boundary ends at the second isolation valve inside containment, the penetration of the piping through the containment barrier is considered a GDC 55 (Reference 2) penetration based on the 10 CFR 50.2 definition of the reactor coolant pressure boundary (RCPB) (Reference 3). This results in a third in-series motor-operated valve located just outside of containment. The containment isolation valve is normally de-energized and locked closed. The low pressure piping downstream of the second inside isolation valve is protected from overpressure by a relief valve which is an acceptable automatic isolation device in this configuration. System configuration is illustrated simplistically below:



Two diverse restricted-range pressure measurement channels provide a control room indication of RCS pressure during plant startup and shutdown. These pressure channels provide signals to the two shutdown cooling suction isolation valves inside containment (which close and are prevented from opening above a selected setpoint) and the safety injection tank (SIT) isolation valves (to ensure they are open). For the SDC ACI function, loss of electric power to either pressure measurement channel can cause the associated SDC isolation valve to close; however, the valve can be opened manually.

Operating procedures, administrative controls and the interlocks all serve to ensure that the isolation valves are not open when pressure in the RCS is greater than the design pressure of the SDC suction piping. There are no specific regulatory guides or general design criteria which apply to these interlocks. The interlocks serve no protective function during abnormal or accident situations, as defined in IEEE 279-1971. The requirements of IEEE 279-1971 are written expressly for protection systems, and as such, they are not directly applicable to these interlocks. The ACI was originally intended to serve as an operator aid that acts to limit the probability that low pressure SDC system piping would remain aligned to the RCS during RCS heat up and cool down activities.

Loss of both interlock channels, coupled with violation of administrative controls and procedures is required to remove the pressure boundary between the RCS and the piping comprising the SDC system.

A detailed description of the operation of the SDC ACI function is included in Section 7.6.1.1 of the ANO-2, Safety Analysis Report (Reference 4).

Low Temperature Overpressure Relief Valves

Two Low Temperature Overpressure (LTOP) relief valves are operator-enabled during cool down with RCS temperature between 275 °F and 270 °F and isolated during heat up between 275 °F and 280 °F. The setpoint of the LTOP relief valve is less than or equal to 430 psig. The LTOP relief valves are located inside containment and are connected to the RCS. Overpressure protection may also be provided by an equivalent RCS opening. Examples of equivalent RCS openings are removal of the steam generator primary manway on the hot leg, removal of the pressurizer safety valve, removal of the pressurizer manway, or removal of the reactor vessel head. An alarm circuit is provided to alert the operator if the RCS temperature drops to 270 °F and any LTOP isolation valve is not fully open.

The relief capacity of one LTOP relief valve can accommodate mass or energy addition events. The limiting LTOP design basis event is the energy addition event. The analyses assume that the SITs are either isolated or depressurized such that they are unable to challenge LTOP relief setpoints. The LTOP relief valves will be able to mitigate (1) the starting of the first reactor coolant pump when the pressurizer water volume is < 910 ft^3 and when the secondary water temperature of the steam generator is less than or equal to 100 °F above the RCS temperature (energy addition event), or (2) the simultaneous injection of one HPSI pump and all three charging pumps (mass addition event). Because the SDC system effectively becomes an extension of the RCS when SDC is in service, the LTOP relief valves act as overpressure protection devices for the SDC system.

No credit has been taken for operator action after the LTOP relief valves have been placed in service or an equivalent RCS opening has been established. In order that the RCS to be protected from a single failure in the protection system, a redundant LTOP relief valve train is included in the protection system design. If redundancy is not available, an equivalent RCS opening is established.

Studies by both the nuclear industry and the NRC have indicated that the ACI function has led to several loss of SDC events. Because of this, the NRC has encouraged removal of the ACI function, as discussed in Generic Letter 88-17 (Reference 5). The Generic Letter recommended that those seeking removal of the ACI function consider the approach taken by Pacific Gas and Electric (Reference 6). As a result, Combustion Engineering (CE) evaluated removal of the ACI function as a means to improve SDC system reliability. The evaluation (Reference 7) addressed seven guidelines for ACI removal as recommended by the NRC in a memorandum dated January 28, 1985 (Reference 8). Discussions with respect to each of these guidelines are included in the following section.

4.0 TECHNICAL ANALYSIS

As illustrated in the previous section of this attachment, three in-series, motor-operated valves (MOVs) are installed between the RCS and the SDC system. Each of these valves is normally de-energized closed during plant operation above Mode 5, except when SDC is in service in Mode 4. The valve position for each MOV is indicated in the control room. Valve manipulation is accomplished via a key-operated control switch. The keys required to operate each control switch are strictly controlled and are normally removed. Site procedures provide significant guidance, caution, and limits associated with operation of the SDC MOVs. Inadvertent operation of both inside-containment MOVs is required to expose the SDC penetration piping to elevated RCS pressures. As described previously, the penetration piping contains a relief valve to aid in minimizing overpressurization effects although the relief capacity is not sufficient to protect the piping with both inside-containment MOVs open at RCS operating pressure. Inadvertent operation of all three SDC suction MOVs is required to expose suction piping from the penetration to the normally locked-closed Low Pressure Safety Injection (LPSI) pump suction valve. The LPSI system itself is not impacted by such inadvertent operations of the three SDC suction MOVs. Because numerous physical and procedural controls bound the operation of these MOVs, the ACI and OPI functions are not required for protection of the ANO-2 SDC system.

As stated above, all three SDC MOVs are locked closed during normal operation. Although this eliminates the need for an OPI function, Entergy has no current plans to physically disable the OPI function. Because the MOVs are physically secured closed when SDC is not in operation, the discussion of risks and other site impacts associated with the removal of the ACI function will be limited to operations while SDC is in service, or the transition of establishing or securing the SDC system.

As stated previously, the ITS includes requirements for both the ACI and OPI function. These requirements were intended to prevent inadvertent mispositioning of SDC suction valves that separate the normally high pressure RCS from the low pressure SDC system. Exposing the SDC system to high RCS pressures could result in an Event V intersystem loss of coolant accident (ISLOCA) and subsequent release of radiological fluid outside the containment building. Because the SDC systems of nuclear generating facilities can differ greatly in specific design, it is appropriate for these requirements to be presented in the ITS to ensure

this high – low pressure interface remains protected. However, the design of the ANO-2 SDC system and supporting equipment, coupled with station procedures and strict administrative controls provide sufficient assurance that the SDC system will not be inadvertently exposed to pressures above system design. The ACI and OPI functions are, therefore, not required to provide this protection with regard to the ANO-2 facility.

Reactor Systems Branch Technical Position (BTP) 5-1 (Reference 9) describes the ACI and OPI functions. In order to increase the reliability of the SDC system as a method of removing decay heat from the RCS and decrease the probability of future loss of SDC events, Entergy proposes to delete the ACI requirements from the ANO-2 TSs and physically defeat this function from impacting the SDC system. There are no current plans to remove the OPI function. However, because the ANO-2 system design and administrative controls provide sufficient assurance that SDC system suction valves will not be inadvertently mispositioned, no commitment is made by Entergy to maintain this function for the life of the plant. The OPI function is included in the ANO-2 SAR and will continue to be controlled under the requirements of 10 CFR 50.59.

The following provides a review of the criteria set forth in 10 CFR 50.36 for TS limiting condition for operations to justify the removal of the SDC ACI function from the TS. In addition, justification for excluding the SDC OPI function from the TSs is provided with regard to the criteria set forth in 10 CFR 50.36.

Criterion 1 – Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Two diverse restricted-range pressure measurement channels provide a control room indication of RCS pressure during plant startup and shutdown in the control room. The operability of either the SDC ACI or OPI function will not affect these indications. The SDC ACI and OPI functions are not part of installed instrumentation used to detect abnormal degradation of the RCS pressure boundary.

Criterion 2 – A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

A review of the Safety Analysis Report (SAR) Chapter 15 accident analysis concluded that the SDC ACI and OPI functions are not credited in the mitigation or prevention of any accidents and, therefore, do not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii), Criterion 2, for inclusion in the TSs.

Criterion 3 – A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

A review of the SAR Chapter 15 accident analysis concluded that the SDC ACI and OPI functions are not credited in the mitigation or prevention of any accidents and, therefore, do not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii), Criterion 3, for inclusion in the TSs.

Criterion 4 – A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The SDC ACI and OPI functions are considered to be insignificant risk contributors to the core damage frequency and offsite dose assessment. Based on an industry study (Reference 10), removal of the SDC ACI function will result in an overall safety improvement.

In accordance with the aforementioned CE topical report (Reference 7), the removal of the ACI function has been evaluated against the following 7 guidelines.

1. Means Available to Prevent a LOCA Outside Containment

   The ANO-2 design provides two barriers between the RCS and the SDC system suction containment penetration piping. An additional barrier is provided between the penetration piping and the pumps and components associated with the SDC system. The design provides a very high confidence that at least one barrier can be established and maintained under postulated conditions. The design also includes independent power supplies. In removing the ACI function, Entergy commits to establishing independent valve position indication powered separately from the normal control power source for each inside-containment SDC MOV (see Attachment 3). Procedural controls, personnel training, and automatic audible and visual alarms act to prevent inadvertent positioning of the SDC suction MOVs. All three SDC suction MOVs are locked closed upon completion of SDC system operations and realignment of the system to support the Low Pressure Safety Injection (LPSI) function. Exposing the SDC system to high RCS pressures would require significant disregard for several administrative controls and the mispositioning of the isolation MOVs.

2. Alarms to Notify the Operator that SDC System Suction Valves are Mispositioned

   ANO-2 currently uses a SDC suction pressure alarm with audible and visual indication in the control room to alert operators if RCS pressure is increased above setpoint when SDC is aligned. The setpoint is administratively controlled. To support ACI removal, a separate alarm will be installed. A control room annunciator will illuminate and sound when either of the two inside-containment SDC system suction valves is not fully closed with RCS pressure rising above setpoint. A setpoint value will be established that is well below the SDCS design pressure. The alarm will obtain its valve position input from a source independent of valve control functions or position indication (e.g., spare rotor). The alarm will be independent of the valve's normal power supply and will fail in the alarm state on loss of power. Following removal of the ACI function, this alarm will be verified operational to ensure the alarm circuit has not been adversely impacted by the required wiring modifications. Entergy considers this post-test of the alarm a commitment (see Attachment 3). In addition to this control board panel alarm, other SDC-related alarm functions are maintained and annuciated by plant computers, including the required Safety Parameter Display System (SPDS) computer. An example of such alarming capability is a setting for SDC pump discharge pressure (discharge pressure increases as RCS pressure increases) and the low range RCS pressure indicators presented in the Background Section above. In summary, the status of the SDC system is considered of great importance and is extensively monitored anytime the system is in service.

3. Verification of the Adequacy of Relief Valve Capacity

Although the SDC piping contains relief valves, these valves are not credited to protect the SDC system from all unexpected RCS pressurization events. Nevertheless, the SDC system relief capacity does provide added margin not assumed in the overpressure protection analysis. For overpressure protection, ANO-2 utilizes two LTOP relief valves connected to the RCS which discharged to the Quench Tank and ultimately to the containment building sump. The LTOP relief valves will be placed in service prior to commencing SDC operations and are set to lift at approximately 445 psia, well below the SDC system design pressure of 575 psia. Likewise, the SDC system will be secured prior to removing the LTOP relief valves from service during a plant heatup. As discussed in the Background Section above, only one LTOP is required to satisfy relief capability for inadvertent heatup and RCS fill events. TSs and site procedures, however, require both LTOP relief valves to be in service or an equivalent opening in the RCS when the plant is operating at low temperatures.

Other TS and administratively controlled requirements also aid in preventing the likelihood of pressurization events. For example, any Safety Injection Tank (SIT) that is pressurized to ≥ 300 psig must be isolated and only one High Pressure Safety Injection (HPSI) pump may be capable of injection during low temperature and pressure operations (Reference TS 3.4.12). Such restrictions limit the probability that a significant inadvertent RCS inventory addition could take place.

Due to the slow-acting nature of the SDC suction MOVs, the ACI function is not credited for overpressure protection. Nevertheless, the inherent ANO-2 design coupled with TS and administrative controls are sufficient to ensure overpressure protection of the SDC system is adequately afforded.

4. Means Other Than ACI to Ensure that Both Isolation Valves are Closed

As discussed previously, the ANO-2 design includes three SDC suction MOVs. Only two of these are considered pressure boundary valves (Reference 3) and currently receive a close signal from the ACI circuitry. All three MOVs are operated by a key switch in the Control Room and are strictly controlled. Although the ACI function serves as a backup to operator action, operation of the MOVs is primarily an operator function, relying on manual operator action to control. As discussed previously, alarm capability is sufficient to alert operators when pressures approach or exceed 300 psia, well below the SDC system design pressure of 575 psia. In addition, procedures require all three valves to be locked closed following termination of SDC operations during plant heatup. These factors, along with additional administrative and procedural controls remain sufficient to ensure the SDC suction MOVs will be closed any time RCS pressure is raised above 300 psia, regardless of the evolution in progress.

5. Assurance that the OPI is not Affected by ACI Removal

As stated previously, the OPI function is not currently planned for removal and will be tested for functionality following ACI removal (see Attachment 3). However, it has been clearly shown that the many design, administrative, and procedural restrictions are more than sufficient to ensure the SDC system is effectively isolated from the RCS prior to exceeding SDC system design pressure. Because the three SDC suction MOVs are

locked closed when SDC is not in service, it is not possible for these valves to be inadvertently operated during normal operations. Even if the valves were not locked closed, exposing the SDC system to high RCS pressures would require (1) removal or disregard for danger tags installed on power supplies, (2) closure of power supply breakers, (3) a key (for the key operated hand switch on the control board), and (4) opening of at least the two inside-containment valves. In addition, the OPI function does not meet the criteria of 10 CFR 50.36 for inclusion in the TSs. The OPI function is not required to prevent overpressurization of the SDC system and adds no significant safety margin with regard to ACI removal. Although the OPI function will be tested to ensure it remains enabled following removal of the ACI function (see Attachment 3), continued safe operation is not contingent on the continued operability of the OPI function.

6. Assurance that Valve Position Indication will Remain Available in the Control Room after ACI Removal

   Continuous indication, powered separately from the components control power, will be provided in the Control Room for the inside containment SDC suction MOVs. This indication will be verified to remain intact following removal of the ACI function. Entergy considers these indication circuits and the post-test of the indicating circuits a commitment (see Attachment 3).

7. Assessment of the Effect of ACI Removal on SDC System Availability and LTOP

   As discussed previously, two LTOP relief valves are provided to mitigate overpressure events during low temperature conditions due to inadvertent RCS heatup and fill scenarios. No portion of the SDC system is used for LTOP protection or credited in the LTOP analysis. The removal of the ACI function has no affect on LTOP capability.

   Because a variety of strict procedural, administrative, and design controls must be violated to align the SDC system during normal plant operation, no credible risk impact exists for operation above SDC transition periods. Therefore, plant risk is evaluated only for the time periods of transition to and from SDC system operation and for periods when the SDC system is otherwise aligned from the RCS. For these shutdown conditions, ACI removal eliminates the possibility of loss of SDC events due to inadvertent actuation of the ACI function. For ANO-2, the possibility of such an event is most often a result of RCS pressure being maintained above approximately 265 psia to support Reactor Coolant Pump (RCP) operation (net positive suction head (NPSH) requirements) yet below the ACI setpoint of 300 psia. Furthermore, considering instrument uncertainty, the actual ACI setpoint may be below 300 psia. With such a narrow RCS pressure operating window, even minor plant maneuvering could result in an ACI actuation and a loss of SDC event. In addition, various testing and maintenance activities required to be performed during shutdown conditions can result in inadvertent actuation of ACI, again resulting in a loss of SDC event.

   A generic risk evalaution of the ACI removal impact on SDC system availability was performed by the Combustion Engineering Owners Group (CEOG) (Reference 10). In this evaluation, it was determined that a 39% decrease in SDC unavailability is expected during refueling operations. The SDCS unavailability was evaluated for two cases: 1) SDC system suction valves with ACI only, and 2) SDCS suction valves with ACI

removed. Although this evaluation was performed considering a SDC system with two suction flow paths, it is stated in the study that the percentage decrease for a SDC system with one suction flow path is expected to be the same as for dual SDC system suction paths.

The aforementioned CEOG evaluation (Reference 10) also concludes there will be an approximate 13% reduction in ISLOCA frequency for SDC system suction valves with ACI only (1.28E-7/year) versus SDC system suction valves with alarm only (1.12E-7/year). Because this evaluation assumes failure of both ACI-actuated valves, the ISLOCA frequency was found to be insensitive to base case operator error probabilities. In addition, the frequency at which the alarm circuitry is tested was found to be of little significance.

While the CEOG evaluation is intended to be a generic evaluation, there are some differences in the ANO-2 design that must be considered. It is noted that ANO-2 design includes a single SDC system suction line instead of dual SDC suction lines. The CEOG evaluation notes however that these values will decrease by a factor of two if a SDC system with only one suction flow path is considered. The change in ISLOCA frequency will be the same for a SDC system with one or two suction flow paths. ANO-2 also uses two MOVs in series in lieu of a MOV and hydraulically operated valve (HOV) in series as is considered in the CEOG evaluation. Using the same methodology of the CEOG evaluation for two MOVs and considering a single SDC system suction line, the ISLOCA frequency reduces from 6.92E-08 to 5.59E-08, respectively or an approximate 19% reduction for SDC system with ACI only versus SDC system suction valves with alarm only.

Biblis-A ISLOCA Event of December 1987

In addition to the above the NRC, in a January 1989 meeting with the CE Owners Group, requested that each plant requesting removal of the ACI function evaluate their specific plant design and controls against the December 1987 Biblis-A ISLOCA Event. In the Biblis-A event of 1987, an operator attempted to close a mispositioned pressure isolation valve that should have been closed prior to startup. To support valve closure, the operator attempted to manage the pressure differential across the valve by opening a second valve. In doing so, a path from the RCS to atmosphere was established resulting in a short term release.

With regard to the RCS/SDC suction interface, this event is not credible at ANO-2 due to the number of valves that must be manipulated, the requirement to obtain a key in order to operate the valves, the necessity to energize administratively controlled circuit breakers, and the fact that all three SDC suction MOVs are locked closed by procedure after securing the SDC system in preparation for plant heatup. Therefore, it is not assumed that an operator could inadvertently bypass these redundant controls to open any SDC suction MOVs during normal plant operation.

Risk Summary

Based on the above, the negligible increase in overall plant risk resulting from the removal of the ACI functions capability to close the associated SDC suction MOVs is greatly offset by the significant increase in SDC availability resulting from the removal of

ACI. The loss of SDC can play an important safety role in reactor operations depending on the configuration of the RCS when the loss occurs. Because the overall result is an increase in plant safety, the removal of ACI is appropriate.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed change has been evaluated to determine whether applicable regulations and requirements continue to be met. Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the Technical Specifications (TS), and do not affect conformance with any General Design Criterion (GDC) differently than described in the Safety Analysis Report (SAR).

5.2 No Significant Hazards Consideration

Entergy proposes to delete the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) Surveillance Requirement (SR) 4.5.2.d.1, ECCS Subsystems – $T_{ave} \geq 300$ °F, associated with the requirement to maintain an operable Automatic Closure Interlock (ACI) for the Shutdown Cooling (SDC) suction isolation valves.

Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The removal of the ACI function is consistent with the guidelines previously endorsed by the NRC in Generic Letter 88-17. Removal of this function results in a calculated decrease in intersystem Loss of Coolant Accident (ISLOCA) frequency. Additionally, the removal of the ACI function will result in a decrease in SDC system unavailability and a corresponding decrease in risk associated with loss of SDC events. As a result, the proposed change will result in a net decrease in risk and a net improvement in plant safety.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The presence or omission of an ACI function is not considered an accident initiator nor is this function credited in any safety analyses for the prevention or mitigation of any accident. Alarms, design features, and strict administrative/procedural controls support correct and timely operator action to ensure the SDC system will not be exposed to high Reactor Coolant System (RCS) pressure.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The ACI function is not credited in a margin of safety analysis for any accident previously evaluated. Removal of the ACI function will result in an overall net increase in nuclear safety. Appropriate alarm, design features, and administrative controls will continue to ensure proper isolation and isolation maintenance of the SDC system during plant operations with elevated RCS pressures.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 Precedence

The following table provides similar industry submittal and approval history with respect to the removal of the ACI function, both from the TSs and from the physical plant. The major deviation from these submittals is that Entergy does not propose to incorporate a requirement for OPI within the TSs.

Plant	Submittal Date(s)	Date Approved by NRC
Waterford 3	July 25 & November 7, 1990	January 9, 1991
San Onofre	April 15 & May 7, 1991	August 12, 1991
St. Lucie	October 21, 1992	March 18, 1993
Calvert Cliffs	November 3, 1993	August 24, 1994

7.0 References

1. 10 CFR 50.36, Technical Specifications

2. 10 CFR Part 50, Appendix A, General Design Criteria 55, Reactor Coolant Pressure Boundary Penetrating Containment

3. 10 CFR 50.2, Definitions, *Reactor Coolant Pressure Boundary*

4. ANO-2 SAR

5. Generic Letter 88-17, Loss of Decay Heat Removal

6. U.S. Nuclear Regulatory Commission, NRR Safety Evaluation Relating to Removal of Auto Closure Interlock Function at Diablo Canyon, February 17, 1988

7. CE NPSD-548, Requirements for the Removal of the Shutdown Cooling Suction Valve Auto-Closure Interlock

8. NRC Memorandum from G. W. Sheron (Chief, Reactor Systems Branch), dated January 28, 1985.

9. Branch Technical Position RSB 5-1, Design Requirements of the Residual Heat Removal System

10. CE NPSD-550, Risk Evaluation of Removal of Shutdown Cooling System Auto-Closure Interlock, September 1989

Attachment 2

2CAN070401

Proposed Technical Specification Changes (mark-up)

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
2CV-5101	HPSI Hot Leg Injection Isolation	Closed
2CV-5102	HPSI Hot Leg Injection Isolation	Closed
2BS26	RWT Return Line	Open

b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2. At least once daily of the areas affected within containment if containment has been entered that day, and during the final entry when CONTAINMENT INTEGRITY is established.

d. At least once per 18 months by:

~~1. Verifying automatic isolation and interlock action of the shutdown cooling system from the Reactor Coolant System when the Reactor Coolant System pressure is above 300 psia.~~

~~2.~~ A a visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

e. At least once per 18 months, during shutdown, by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on SIAS and RAS test signals.

2. Verifying that each of the following pumps start automatically upon receipt of a Safety Injection Actuation Test Signal:

a. High-Pressure Safety Injection pump.

b. Low-Pressure Safety Injection pump.

Attachment 3

2CAN070401

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Prior to removal of the Automatic Closure Interlock (ACI) function, independent valve position indication powered separately from the normal control power source shall be established for each inside containment Shutdown Cooling (SDC) suction motor-operated (MOV) valve.	X		
Prior to removal of the ACI function, Operations procedures will be revised to ensure Low Temperature Overpressure (LTOP) relief valves are in service prior to placing SDC in service and SDC is removed from service prior to removing the LTOPs from service.		X	
Following removal of the Automatic Closure Interlock (ACI) function, the alarm circuitry associated with alerting operators of a high (SDC) suction pressure event shall be verified functional.	X		
Following removal of the ACI function, independent valve position indication of the inside containment SDC suction MOVs shall be verified functional with the associated breaker control power source de-energized.	X		
Following removal of the ACI function, the Open Permissive Interlock (OPI) function shall be verified to remain functional.	X		