ATTACHMENT

TO

1CAN069401

PROPOSED TECHNICAL SPECIFICATION

AND

RESPECTIVE SAFETY ANALYSES

IN THE MATTER OF AMENDING

LICENSE NO. DPR-51

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT ONE

DOCKET NO. 50-313

DESCRIPTION OF PROPOSED CHANGES

The proposed changes revise the Arkansas Nuclear One - Unit 1 (ANO-1) Technical Specifications (TS) as follows:

1. Specification 3.4.1.4 and its associated footnote, have been deleted. The requirements of Specification 3.4.1.4 have been incorporated as Specification 3.4.3 which now specifies the Limiting Conditions for Operation for the emergency feedwater (EFW) system. This specification consists of two parts, specifying the operability requirements when the unit is above cold shutdown (CSD) conditions and when the reactor coolant system temperature is above 280°F. A footnote clarifies the testing requirements of the turbine-driven EFW pump.
2. The existing requirements of Specification 3.4.2 have been relocated to Section 3.5 'Instrumentation Systems' as Specification 3.5.1.15.
3. The existing requirements of Specification 3.4.3 have been relocated to Section 3.5 'Instrumentation Systems' as Specification 3.5.1.16.
4. Existing Specification 3.4.4 has been modified to refer only to Specification 3.4.1, and has been renumbered as Specification 3.4.2.
5. Specification 3.4.4 now specifies the actions required if the Limiting Condition for Operation specified in 3.4.3 is not met. The specification consists of five (5) actions depending upon which specified condition is met.
6. The Bases associated with Section 3.4 has been revised to reflect the changes in this section and provide additional information to the operator. Information concerning the emergency feedwater initiation and control (EFIC) system has been relocated to the Section 3.5 Bases. A correction has been made to the EFIC information to correct a value to the as-built plant condition.
7. Specification 4.8.1.a.1 has been revised to require testing of the turbine-driven EFW pump within 24 hours after reaching the Hot Shutdown condition following a plant startup.
8. Specification 4.8.1.a.2 has been revised to correct a typographical error. The word "thorough" has been changed to "through."
9. Specification 4.8.1.c has been revised to require verification of proper EFW flow path alignment by verifying valve alignment from the 'Q' Condensate Storage Tank (CST) to each steam generator prior to relying upon any steam generator for heat removal.
10. Specification 4.8.1.e.1 has been revised to verify automatic actuation of each automatic valve in each flow path upon receipt of an actual or simulated actuation signal.
11. Specification 4.8.1.e.2 has been revised to verify automatic actuation of each automatic steam supply valve upon receipt of an actual or simulated actuation signal, and to clarify the required plant conditions for this test.
12. Specification 4.8.1.e.3 has been revised to verify automatic start of motor-driven EFW pump upon receipt of an actual or simulated actuation signal.
13. The Bases for Section 4.8 have been revised to reflect the changes in this section and to provide additional information to the operator.

The proposed changes incorporate the intent of the EFW specifications incorporated in NUREG 1430 "Restructured Standard Technical Specifications for B&W Plants" issued in September of 1992. The specifications have been revised to correspond to the ANO-1 custom TS format, and to correspond to the as-built condition of ANO-1.

BACKGROUND

The design requirement of the EFW system is to provide a minimum flow sufficient to remove heat load equal to 3½ per cent full power operation. The system minimum flow requirement is 500 gpm. This takes into account a single failure, pump recirculation flow, seal leakage, and pump wear. The EFW system is designed to be in full operation within 60 seconds after receiving an actuation signal.

The ANO-1 EFW system is described in the ANO-1 Safety Analysis Report (SAR) Section 10.4.8 and consists of two independent trains of safety grade components. The two EFW pumps, one steam turbine-driven and one motor-driven each rated at 3½ per cent of full load capacity, provide sufficient capacity for dissipating the total reactor decay heat, and are piped up to permit either pump to supply the total required feedwater to both steam generators. The turbine-driven EFW pump is powered by steam from either steam generator, upstream of the main steam line isolation valves. The motor-driven EFW pump is powered from the "red train" 4160v Emergency Diesel Generator backed Engineering Safeguards bus. EFW flow is supplied to the steam generators through piping independent of the main feedwater piping and via a separate feed ring located near the top of each steam generator.

EFW system initiation is automatic upon any one of the following: loss of both main feedwater pumps, Anticipated Transients Without Scram Mitigating System Actuation Circuitry portion of the Diverse Reactor Overpressure Prevention System (DROPS/AMSAC) actuation; loss of all four reactor coolant pumps; low steam generator pressure; Emergency Core Cooling System (ECCS) actuation; or, low steam generator level. The automatic initiation on loss of the main feedwater pumps is automatically bypassed when reactor power is less than 10% of full power and the bypass is automatically removed when reactor power is greater than 10% of full power. The automatic initiation of the DROPS/AMSAC on loss of main feedwater flow is automatically bypassed when reactor power is less than 45% of full power. This bypass is automatically removed when reactor power is greater than 45% of full power. The automatic initiation on low steam generator pressure is manually bypassed by the operator during plant shutdown when the steam generator pressure is <725 psig and >625 psig. This bypass is manually reset during plant startup when steam generator pressure is >625 psig and <725 psig, with a backup automatic reset at approximately 745 psig. The automatic initiation on loss of all four reactor coolant pumps is manually bypassed by the operator during plant shutdown before stopping the last reactor coolant pump with reactor coolant temperature <280°F. This bypass is manually reset by the operator during plant startup after starting the second reactor coolant pump. The automatic initiation from ECCS actuation is manually bypassed by the operator during plant shutdown when the reactor coolant system pressure is <1650 psig. This bypass is automatically reset during plant startup

when the reactor coolant system pressure exceeds 1650 psig. In the event of failure of the automatic initiating circuitry, the system is capable of manual actuation from the control room.

The auxiliary feedwater pump takes suction from the main feed pump suction header and discharges into the main feedwater line downstream of the main feedwater pumps. The auxiliary feedwater pump is motor-driven and receives its electrical power from one of the 4160v non-Emergency Diesel Generator backed balance-of-plant electrical busses. The auxiliary feedwater pump receives no automatic start signals and requires operator action to be placed in operation. Availability of the auxiliary feedwater pump is demonstrated each startup and shutdown by the use of the auxiliary feedwater pump as the normal source of feedwater to the steam generators at reactor power levels of less than approximately 2% full power. Continued availability is assured by a program of inspections performed as required by the ANO Preventative Maintenance Program.

The actions currently required by Specification 3.4.5 crediting the auxiliary feedwater pump were reviewed and approved by the NRC staff in a Safety Evaluation dated February 2, 1981 (for ANO-1 TS Amendment No. 50). The ANO-1 EFW system design has been reviewed and accepted by the NRC staff, as documented in two Safety Evaluations dated October 6, 1983 (for NUREG-0737, Item II.E.1.2) and July 26, 1982 (for NUREG-0737, Item II.E.1.2). The ANO-1 EFW system has also been evaluated and found to be acceptable by the NRC staff under Generic Issue 124, Auxiliary Feedwater System Reliability, as documented in a System Reliability Assessment dated August 24, 1988.

DISCUSSION OF CHANGE

Changes to the Limiting Conditions for Operation associated with Section 3.4 "Steam and Power Conversion"

The requirements for the initiate functions of the Emergency Feedwater Initiation and Control (EFIC) currently specified by TS 3.4.2, 3.4.2.a, 3.4.2.b, and 3.4.2.c have been relocated to the Instrumentation section as TS 3.5.1.15. This change is considered to be administrative in nature as no changes in the intent of the requirements have been made. The relocation of this specification places the requirement for this instrumentation system in a more appropriate section, i.e., the Instrumentation section.

The requirements for the automatic steam generator isolation system operability currently specified by TS 3.4.3 have been relocated to the Instrumentation section as TS 3.5.1.16. This change is considered to be administrative in nature as no changes in the intent of the requirements have been made. The relocation of this specification places the requirement for this instrumentation system in a more appropriate section, i.e., the Instrumentation section.

TS 3.4.1.4 and its associated footnote have been deleted. The EFW Limiting Condition for Operation (LCO) is now specified as TS 3.4.3. The current LCO requires operability of both EFW pumps when the reactor is heated above 280°F. The NUREG 1430 LCO for EFW has

been incorporated into the ANO-1 TS, however since ANO-1 is a Custom TS plant, the LCO has been modified to fit the custom format. This specification requires the motor-driven EFW pump to be operable when the Reactor Coolant System (RCS) is above cold shutdown conditions and any steam generator is relied upon for heat removal. This change results in a more restrictive specification in that the motor-driven EFW pump is now required to be operable at a slightly lower plant condition. It also requires the turbine-driven EFW pump to be operable when RCS temperature is above 280°F. This specification has a footnote allowing an exception to the operability of the turbine-driven EFW pump. This exception allows performance of the surveillance test requirement at the appropriate plant condition as specified by TS 4.8.1. This ensures that a sufficient steam supply exists to perform the surveillance, and clarifies the operability requirement of the turbine-driven pump.

TS 3.4.4 has been revised and renumbered as TS 3.4.2. References to the current TS 3.4.2 and TS 3.4.3 have been deleted as these specifications have been relocated. No TS requirements have been changed by this particular change. They have only been relocated and renumbered. Therefore, this change is characterized as administrative in nature.

Changes to the required Actions and Allowable Outage Times associated with Section 3.4 "Steam and Power Conversion System"

TS 3.4.4 now specifies the required Actions and Allowable Outage Times (AOTs) in the event the EFW LCO, as specified by TS 3.4.3, is not met. The changes incorporate the guidance and requirements of NUREG 1430 which have been modified to the ANO-1 custom format. A new action (TS 3.4.4.2) has been incorporated which allows one steam generator supply path to the turbine-driven EFW pump to be inoperable for 7 days. This condition was not previously specified in the ANO-1 TSs and results in a clarification of the operability requirements of the EFW system.

TS 3.4.4.1 specifies the required Actions associated with an inoperable motor-driven EFW pump as required by TS 3.4.3.1. This change results in a new Action not previously specified in the ANO-1 TSs, results in a clarification of the requirements for the motor-driven EFW pump, and is more restrictive than the existing TS requirement.

TS 3.4.4.3 specifies the required Actions and AOTs associated with the inoperability of one train of EFW or its associated EFW pump when the RCS temperature is >280°F, as specified by TS 3.4.3.1 and TS 3.4.3.2. Under this requirement, with one train of EFW inoperable, a 72 hour Allowable Outage Time is specified. The current TS allow a 36 hour AOT. This results in a relaxation of the existing ANO-1 TS requirements and the supporting analysis will be discussed below.

TS 3.4.4.4 specifies the required Actions and AOTs associated with the inoperability of both EFW trains or their associated EFW pumps. ANO has modified the requirements of NUREG 1430 to recognize the plant specific construction of ANO-1. This specification requires placing the unit in the hot shutdown condition within 6 hours. ANO-1 uses the main

feedwater pumps to supply feedwater to the steam generators at all power levels from ~2% to 100% full power. Below ~2% full power, ANO-1 normally uses the non-safety related auxiliary feedwater pump to supply feedwater to the steam generators until the decay heat system can be placed in service. This capability allows ANO-1 to achieve the hot shutdown condition, and to further cool the RCS to the point at which the decay heat removal system can be placed in service, without reliance upon the EFW system.

The actions associated with a loss of both of the EFW pumps and the auxiliary feedwater pump have been modified to prevent possible upsets to the plant when no capability exists to supply feedwater to the steam generators below 2% full power. Currently, Specification 3.4.5.3 requires an immediate plant runback to ~5% full power with feedwater supplied by the main feedwater pumps when both of the EFW pumps are inoperable and the auxiliary feedwater pump is unavailable. This change modifies the requirements of NUREG 1430 to recognize the plant specific construction of ANO-1. Specification 3.4.4.5 now requires immediate action to restore one EFW train to operable status. LCO 3.0.3 and all other LCO Required Actions requiring mode changes are suspended until one train of EFW is restored to operable status. This action prevents an action, such as a power change, which might perturb the unit and result in a reactor trip. This specification no longer requires an immediate runback to ~5% full power. This change is viewed as an enhancement to safety, in that actions which could result in a plant transient have been deleted.

Changes to the Bases associated with Section 3.4 "Steam and Power Conversion System"

The Section 3.4 Bases information describing the EFIC system has been relocated to Section 3.5. One change has been made to the relocated information. The information describing EFIC logic which determines which steam generator to feed on a steam line/feedwater line break gives a pressure differential of 150 psig. The as-built plant condition for the EFIC system uses a 100 psig differential pressure to determine the intact steam generator and is described in SAR Section 7.1.4.2.3. This change corrects a conflict between the ANO-1 SAR and the TS Bases.

Information has been added to the Section 3.4 Bases. Specifically, the information relates to the LCOs and required Actions specified. This information provides the operator with the basis for the individual specifications and clarifies the intent of the specifications associated with EFW. The information was extracted from NUREG 1430 and formatted to the ANO-1 custom format.

Changes to Section 3.5 "Instrumentation Systems"

Requirements associated with the EFIC system have been relocated as TS 3.5.1.15 and 3.5.1.16. This places the requirements for this instrumentation system with the requirements for other instrumentation systems, resulting in greater consistency in the ANO-1 TS. The actions associated with the EFIC instrumentation are currently contained in TS Table 3.5.1-1.

The requirements have not been revised and this change is considered to be administrative in nature.

Bases information associated with the EFIC system has been relocated to Section 3.5. One change, as discussed above, has been made which corrects an inconsistency between the ANO-1 Safety Analysis Report and the TS. This relocation is also considered to be administrative in nature.

Changes to Section 4.8 "Emergency Feedwater Pump Testing"

Specification 4.8.1.a.1 has been revised. This change modifies the existing phrase "upon achieving hot shutdown" by allowing testing of the turbine-driven EFW pump "within 24 hours after reaching the Hot Shutdown condition." This change clarifies when the operability of the turbine-driven EFW pump must be demonstrated. The hot shutdown condition is defined by TS as existing at an average reactor coolant system temperature of ≥525 °F. A temperature of 525 °F corresponds to a steam generator pressure of approximately 830 psig. The NUREG 1430 value for the steam generator pressure associated with testing a turbine-driven EFW pump is denoted as a plant specific value. TS 4.8.1.a.1 will continue to refer to the hot shutdown condition for turbine-driven pump testing in accordance with the existing ANO-1 licensing basis. The previous wording gave no time limit for performance of the surveillance requirement. This change places a 24 hour limit on entry into the hot shutdown condition for testing of the turbine-driven EFW pump. These changes allow testing of the affected components under conditions in which sufficient steam supply exists for surveillance testing.

A typographical error has been corrected in specification 4.8.1.a.2. The word "thorough" has been corrected to read "through." This change is considered to be administrative in nature.

Specification 4.8.1.c has been revised. NUREG 1430 specifies verification of proper valve alignment from the condensate source to each steam generator prior to entering Hot Standby when the unit has been in Cold Shutdown or less for more than 30 days. Since the ANO-1 TS definition for the Hot Standby condition is less restrictive than the NUREG 1430 definition, this verification will be performed prior to relying on any steam generator for heat removal when the unit has been in Cold Shutdown or less for more than 30 days. This specification results in allowing the unit to verify alignment by the performance of a formal valve alignment, or the performance of a flow test. This change results in added flexibility for the unit, and allows the unit to specify the appropriate post-maintenance alignment method for the EFW components in the plant operating or maintenance procedures. Proposed TS 3.4.3.1 and TS 3.4.3.2 require the associated EFW flow path to be operable in addition to the EFW pumps. This encompasses the requirement to position, and control the position, of manual valves in the flow paths, as required by the existing Specification 4.8.1.c.

Specification 4.8.1.e.1 has been revised to insert the phrase "actual or simulated" in the surveillance requirement. Previously, this specification was not specific on the type of

actuation signal required to actuate the automatic valves. This change clarifies the specification, removing a potential area for mis-interpretation, and is considered to be administrative in nature.

Specification 4.8.1.e.2 has been revised. The revisions include the insertion of the phrase "actual or simulated" as discussed for Specification 4.8.1.e.1 and a statement that clarifies when this test is required to be performed. The specification previously required testing of the turbine-driven EFW pump steam supply valves, but specified no time limit for the performance of the surveillance requirement. This change requires testing of the affected components under conditions in which sufficient steam supply exists for surveillance testing as has been discussed for the turbine-driven EFW pump in Specification 4.8.1.a.1.

Specification 4.8.1.e.3 has been revised to insert the phrase "actual or simulated" in the surveillance requirement. Previously, this specification was not specific on the type of actuation signal required to actuate the automatic valves. This change clarifies the specification, removing a potential area for mis-interpretation, and is considered to be administrative in nature.

Changes to the Bases associated with Section 4.8 "Emergency Feedwater Pump Testing"

Information has been added to the Bases for Section 4.8 to clarify the intent of the specifications associated with surveillance testing of the EFW system. This information states the basis for delaying the testing of the turbine-driven EFW pump until suitable test conditions are established. The information provided also clarifies and states the basis for the EFW system alignment verification specified in TS 4.8.1.c. This information was extracted from NUREG 1430 and formatted to the ANO-1 custom format.

ANO-1 Plant Specific Analysis Supporting Extension of AOT for One Inoperable Train of EFW

ANO has performed a plant specific evaluation to assess the potential core damage frequency (CDF) risk impact resulting from the extension of the ANO-1 EFW AOT from 36 hours to 72 hours. The ANO-1 Probabilistic Risk Assessment (PRA) dated April 29, 1993 (1CAN049301) submitted to the NRC in response to Generic Letter 88-20, Individual Plant Examination (IPE) for Severe Accident Vulnerabilities, provides the basis for the current CDF value of 4.67E-05/rx-yr. The ANO-1 PRA considers the EFW system's unavailability due to test and maintenance as basic events. The evaluation of this AOT extension used the experience and data gained from the ANO PRA applications performed to date. It is inherently conservative in that it does not account for the potential risk reduction realized from fewer plant shutdowns and subsequent startups that will be attributed to an extended AOT. The evaluation used the guidance stated in the "Negligible Risk Increase" (NRI) approach discussed in EPRI Report TR-101894, Final Report, Risk-Based Technical Specification Program, dated January 1993.

Plant interviews were conducted as a part of this evaluation to determine how the extended AOT would affect the current philosophy of returning affected systems to operation. Key individuals from the ANO-1 Maintenance and System Engineering organizations were included in the interviews. The responses indicate that for critical components like those in the EFW system, the plant philosophy is to restore the component to operable status as soon as possible. In addition, testing, surveillance and maintenance activities on the opposite train of components are minimized to preclude perturbations to these systems. Any maintenance activities that can impact plant stability are closely evaluated prior to implementation, and discretionary tasks are deferred.

The impact of various increases in the expected EFW train test and maintenance (T&M) unavailability was evaluated per a sensitivity study. This study determined the T&M unavailability values associated with increased maintenance duration. The evaluation then determined and compared the CDF impact on the ANO-1 CDF with the NRC Safety Goal.

There are several industry wide guidance documents that provide reference points (i.e., base risk measure) against which the AOT risk measure may be compared. Federal Register 50FR32138, Policy Statement on Severe Reactor Accidents Regarding Future Designs and Existing Plants, relates a base risk measure to a total CDF value and states: "A typical result of a PRA which is used by the NRC in reaching safety decisions is the estimated core meltdown probability of about one in ten thousand (1.0E-04) per reactor-year." This value is commonly referred to as the NRC Safety Goal. The new ANO-1 CDF values, incorporating the proposed AOT extension, are 4.73E-05 (for the turbine-driven EFW pump) and 4.70E-05 (for the motor-driven EFW pump). These values do not exceed the NRC Safety Goal. This verifies, from a high level perspective, that the proposed AOT does not pose undue risk to the public health and safety.

SECY-91-270, Interim Guidance on Staff Implementation of the Commission's Safety Goal Policy, dated August 27, 1991, and NUMARC 91-04, Severe Accident Issue Closure Guidelines, dated January 1992, both identify proposed compensatory measures for CDF values that, although not directly addressing this AOT extension, can be used to assess the relative impact of the proposed AOT extension. From these guidance documents, ANO has concluded that an action, condition, or sequence of events that has a cumulative impact on CDF (ΔCDF) of less than 1.0E-06/yr, with a corresponding conditional containment failure probability of less than or equal to 0.1, is of low enough risk to justify taking no action to further reduce risk. This position is substantiated by NRC Office for Analysis and Evaluation of Operational Data (AEOD) guidance provided in NUREG/CR-4674, Precursors to Potential Severe Core Damage Accidents, dated August 1991. Screening guidance in section 2.1 of NUREG/CR-4674 defines low risk events as those involving a conditional probability of core damage less than 1.0E-06/yr. The change in CDF values associated with the proposed AOT extension are 6.16E-07 (for the turbine-driven EFW pump) and 3.04E-07 (for the motor-driven EFW pump) and are less than the screening guidance of NUREG/CR-4674. ANO has concluded that the evaluated values fall within the category of events of low risk significance.

EPRI Report TR-101894 considered previous AOT extension submittals and associated NRC reviews. The EPRI reviews determined that CDF increases on the order of 2% and up to 6% had been found acceptable by the NRC with no compensatory measures required, depending on the relative importance of the affected system. The maximum calculated CDF impact values associated with the proposed AOT extension are 0.62%, for the turbine-driven EFW pump, and 0.30%, for the motor-driven EFW pump. These values are well within the acceptance region in which no compensatory measures are required.

The impact on the CDF is considered minor based on the fact that the current operating philosophy of returning components to operable status as soon as possible is not expected to change as a result of the proposed AOT extension. In addition, the unquantified risk benefits associated with an extended AOT, due to a lower potential for unnecessary plant shutdowns and subsequent startups, further support the conclusion that the ANO-1 CDF impact is minimal. Therefore, ANO has concluded that the increased risk resulting from the extension of the AOT from 36 hours to 72 hours is acceptable.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

An evaluation of the proposed change has been performed in accordance with 10CFR50.91(a)(1) regarding no significant hazards considerations using the standards in 10CFR50.92(c). A discussion of these standards as they relate to this amendment request follows:

Criterion 1 - Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated.

The Emergency Feedwater (EFW) system mitigates the consequences of any event with a loss of normal feedwater. This system is not the initiator of any previously analyzed accident, and therefore, changes to the specifications applicable to the EFW system present no significant increase in the probability of any previously evaluated accident.

The changes that revise the required Actions and Allowable Outage Times associated with the EFW system have been evaluated for their effect on the Core Damage Frequency (CDF) previously calculated in the ANO-1 Probabilistic Risk Assessment (PRA). The new ANO-1 CDF values, incorporating the proposed AOT extension, are 4.73E-05 (for the turbine-driven EFW pump) and 4.70E-05 (for the motor-driven EFW pump). These values do not exceed the NRC Safety Goal of 1.0E-04 per reactor year, as stated in the Federal Register 50FR32138. The ΔCDF associated with these changes (6.16E-07 for the turbine-driven EFW pump and 3.04E-07 for the motor-driven EFW pump) have been evaluated with respect to criteria contained in SECY-91-270, dated August 27, 1991, and NUMARC 91-04, dated January 1992, and fall within the category of events of low risk significance requiring no compensatory measures. This evaluation has shown the risk associated with the proposed changes to pose no undue risk to public health and safety, to be categorized as having low risk

significance, and involve no significant increase in the consequences of an accident previously evaluated.

The changes revising the Limiting Conditions for Operation result in more restrictive controls on the operability of the motor-driven EFW pump. The previous specification required operability of both EFW pumps when the reactor was heated above 280°F. The proposed change requires the operability of the motor-driven EFW pump whenever the unit is above the cold shutdown condition and any steam generator is relied upon for heat removal. With this change, the motor-driven EFW pump is now required to be operable in a condition not previously specified, constituting an additional requirement not previously specified. This change does not involve a significant increase in the consequences of an accident previously evaluated.

The changes revising the Limiting Conditions for Operation also incorporate an Allowable Outage Time for the turbine-driven EFW pump steam supply valves which was not previously specified. The 7 day AOT is reasonable based on:

1. The redundant steam supply (from the opposite steam generator) to the turbine-driven EFW pump is operable,
2. The motor-driven EFW pump is operable, and
3. The probability of an event occurring that would require the inoperable steam supply valve to actuate is relatively low.

The changes to the surveillance specifications clarify the proper conditions required for the operability test of the turbine-driven EFW pump, and revise the requirement for the verification of proper EFW flow path valve alignment. The change clarifying the test conditions is required to ensure a sufficient steam supply to the turbine-driven EFW pump to perform the test. During plant startup, from an RCS temperature of 280°F to an RCS temperature of ~525°F (corresponding to a steam generator pressure of ~830 psig) the turbine-driven EFW pump is classified as available until operability is proven by successful completion of the surveillance requirement. The proposed changes state that the EFW pumps and their associated flow paths shall be operable when the RCS is above the cold shutdown condition with any steam generator relied upon for heat removal (motor-driven EFW pump) and when RCS temperature is ≥280°F (turbine-driven EFW pump). This specification requires that the flow paths be properly aligned to maintain operability and is as restrictive as the current TS 4.8.1.c. The revised specification incorporates a new requirement to verify proper alignment prior to relying upon any steam generator for heat removal. This allows the operator flexibility in determining the method of verification. Some methods that could be considered as fulfilling this requirement would include valve alignment checks, or a flow test verifying a level decrease in the 'Q' condensate storage tank with a corresponding level increase in both steam generators. These changes result in no significant increase in the consequences of an accident previously evaluated.

The other proposed changes included in this submittal, including the Bases changes, are considered to be administrative in nature and have no effect on the consequences of an accident previously evaluated. Relocation of the Emergency Feedwater Initiation and Control (EFIC) requirements from section 3.4 to Section 3.5 places the requirements for this instrumentation system with the requirements for other instrumentation systems, resulting in greater consistency throughout the ANO-1 TS. Information in the Bases associated with the EFIC system has been corrected to reflect the actual plant condition and resolve a conflict with the ANO-1 Safety Analysis Report. The Bases changes add clarifying information to aid the operator in determining the applicability of the various EFW specifications.

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

Criterion 2 - Does Not Create the Possibility of a New or Different Kind of Accident from any Previously Evaluated.

The proposed changes introduce no new mode of plant operation. The EFW system is not an event initiator. It functions to mitigate the consequences of any event with a loss of normal feedwater.

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

Criterion 3 - Does Not Involve a Significant Reduction in the Margin of Safety.

The changes proposed to the Limiting Conditions for Operation associated with the EFW system are more conservative than the current specification, thus resulting in an increase in the margin of safety. The proposed changes to the actions required when both of the EFW trains are inoperable and the auxiliary feedwater pump is unavailable no longer require an immediate plant runback, that is currently required, which could introduce a plant transient, thus resulting in an increase in the margin of safety.

The changes revising the Limiting Conditions for Operation also incorporate an Allowable Outage Time for the turbine-driven EFW pump steam supply valves which was not previously specified. The 7 day AOT is reasonable based on:

1. The redundant steam supply (from the opposite steam generator) to the turbine-driven EFW pump is operable,
2. The motor-driven EFW pump is operable, and
3. The probability of an event occurring that would require the inoperable steam supply valve to actuate is relatively low.

The changes to the surveillance specifications clarify the proper conditions required for the operability test of the turbine-driven EFW pump, and revise the requirement for the

verification of proper EFW flow path valve alignment. The change clarifying the test conditions is required to ensure a sufficient steam supply to the turbine-driven EFW pump to perform the test. During plant startup, from an RCS temperature of 280°F to an RCS temperature of ~525°F (corresponding to a steam generator pressure of ~830 psig) the turbine-driven EFW pump is classified as available until operability is proven by successful completion of the surveillance requirement. The proposed changes state that the EFW pumps and their associated flow paths shall be operable when the RCS is above the cold shutdown condition with any steam generator relied upon for heat removal (motor-driven EFW pump) and when RCS temperature is ≥280°F (turbine-driven EFW pump). This specification requires that the flow paths be properly aligned to maintain operability and is as restrictive as the current TS 4.8.1.c. The revised specification incorporates a new requirement to verify proper alignment prior to relying upon any steam generator for heat removal. This allows the operator flexibility in determining the method of verification. Some methods that could be considered as fulfilling this requirement would include manual valve alignment checks, or a flow test verifying a level decrease in the 'Q' condensate storage tank with a corresponding level increase in both steam generators.

This change does involve an incremental reduction in the margin of safety since the extension of the EFW Allowable Outage Time from 36 hours to 72 hours does result in a slight increase in the Core Damage Frequency (CDF) as calculated in the ANO-1 Probabilistic Risk Assessment. The new ANO-1 CDF values, incorporating the proposed AOT extension, are 4.73E-05 (for the turbine-driven EFW pump) and 4.70E-05 (for the motor-driven EFW pump). These values do not exceed the NRC Safety Goal of 1.0E-04 per reactor year, as stated in the Federal Register 50FR32138. The ΔCDF associated with these changes (6.16E-07 for the turbine-driven EFW pump and 3.04E-07 for the motor-driven EFW pump) have been evaluated with respect to criteria contained in SECY-91-270, dated August 27, 1991, and NUMARC 91-04, dated January 1992, and fall within the category of events of low risk significance requiring no compensatory measures. This reduction is not considered significant in that the increase in CDF has been evaluated as posing no undue risk to the public health and safety and is categorized as having low risk significance.

The other proposed changes included in this submittal, including the Bases changes, are considered to be administrative in nature. Relocation of the Emergency Feedwater Initiation and Control (EFIC) requirements from section 3.4 to Section 3.5 places the requirements for this instrumentation system with the requirements for other instrumentation systems, resulting in greater consistency throughout the ANO-1 TS. Information in the Bases associated with the EFIC system has been corrected to reflect the actual plant condition and resolve a conflict with the ANO-1 Safety Analysis Report. The Bases changes add clarifying information to aid the operator in determining the applicability of the various EFW specifications.

Therefore, this change does <u>not</u> involve a significant reduction in the margin of safety.

Therefore, based upon the reasoning presented above and the previous discussion of the amendment request, Entergy Operations has determined that the requested change does not involve a significant hazards consideration.