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2CAN021501

February 6, 2015

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

SUBJECT: License Amendment Request
Allowance to Eliminate Movement of Control Element Assembly 18 from Surveillance Requirement 4.1.3.1.2 for the Remainder of Cycle 24
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

Dear Sir or Madam:

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.90, Entergy Operations, Inc. (Entergy) is submitting a request for an amendment to Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications (TS) to eliminate exercising Control Element Assembly (CEA) 18 for the remainder of operating Cycle 24, currently scheduled to end September 20, 2015. The proposed amendment would modify a Note to Surveillance Requirement (SR) 4.1.3.1.2 such that CEA 18 may be excluded from SR performance for the remainder of Cycle 24.

This amendment is necessary due to a degrading Upper Gripper Coil (UGC), located atop the Reactor Vessel head, which is the coil that normally holds the CEA in place. This degradation was first identified in the fall of 2014 during performance of SR 4.1.3.1.2. As a result, the Lower Gripper Coil (LGC) was energized to hold the CEA in place over the next SR interval (92 days). However, further degradation of the UGC was noted during SR 4.1.3.1.2 performance in January 2015, even though the UGC had not been in service (energized) over the preceding SR interval. Should the UGC fail during CEA movement, the CEA will drop into the core, resulting in a reactivity transient and subsequent power reduction, and could result in a plant shutdown if the CEA is deemed to be unrecoverable. Therefore, Entergy requests CEA 18 not be exercised during the remaining two performances of SR 4.1.3.1.2, which will permit entry into refueling outage 2R24 when repairs can be completed. 2R24 is currently scheduled to commence in the fall, 2015.

A001
NRR

Attachment 1 provides a description and assessment of the proposed TS change. Attachments 2 and 3 contain a markup of existing TS and a revised (clean) TS page, respectively.

The next performance of SR 4.1.3.1.2, after applying a 25% allowance permitted by SR 4.0.2, is required by May 4, 2015. Entergy requests approval of the proposed license amendment by April 30, 2015, with the amendment being implemented immediately on approval.

In accordance with 10 CFR 50.91(a)(1), "Notice for public comment," the analysis about the issue of no significant hazards consideration (NSHC) using the standards in 10 CFR 50.92 is being provided to the Commission in accordance with the distribution requirements in 10 CFR 50.4.

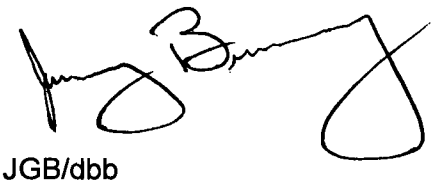
In accordance with 10 CFR 50.91(b)(1), a copy of this application and the reasoned analysis about NSHC is being provided to the designated Arkansas state official.

This letter contains no new regulatory commitments.

If you have any questions or require additional information, please contact Stephenie Pyle at 479-858-4704.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on February 6, 2015.

Sincerely,



JGB/dbb

Attachments:

1. Description and Assessment of the Proposed Change
2. Proposed Technical Specification Change (mark-up)
3. Revised (clean) Technical Specification Page

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Attachment 1 to

2CAN021501

Description and Assessment of the Proposed Changes

DESCRIPTION AND ASSESSMENT OF THE PROPOSED CHANGES

1.0 DESCRIPTION

The proposed amendment would modify Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) Surveillance Requirement (SR) 4.1.3.1.2 to eliminate the requirement to move Control Element Assembly (CEA) 18 for the remainder of the current fuel cycle, Cycle 24. Cycle 24 is currently scheduled to end September 20, 2015. The SR requires that each CEA not fully inserted in the core shall be determined to be operable by movement of at least five inches in any one direction at least once per 92 days. The proposed change will modify a Note to SR 4.1.3.1.2, previously applicable to CEA 43 during Cycle 15 operation, as follows:

> Note 1 - Movement of CEA #1843 is not required for the remainder of Cycle 2415. If an outage of sufficient duration occurs prior to the end of Cycle 2415, maintenance activities will be performed to restore the CEA.

This amendment is necessary due to a degrading Upper Gripper Coil (UGC), located atop the Reactor Vessel head, which normally holds the CEA in place. This degradation was first identified in the fall of 2014 during performance of SR 4.1.3.1.2. As a result, the Lower Gripper (LGC) was energized to hold the CEA in place over the next SR interval (92 days). However, further degradation of the UGC was noted during SR 4.1.3.1.2 performance in January 2015, even though the UGC had not been in service (energized) over the preceding SR interval. Should the UGC fail during CEA movement, the CEA will drop into the core, resulting in a reactivity transient and subsequent power reduction, and could result in a plant shutdown if the CEA is deemed to be unrecoverable.

Attachment 2 provides a markup page of the existing TS to which illustrates the proposed change. Attachment 3 provides a revised (clean) TS page. Because the Note is self-explanatory and because the exception will only be applicable until the end of Cycle 24, no changes to the TS Bases are proposed at this time.

2.0 ASSESSMENT

2.1 Description of CEA

The ANO-2 CEAs are clustered into groups of five "fingers" sharing a common Control Element Drive Mechanism (CEDM). Four fingers are assembled in a 4.05-inch square array around the fifth central finger. The individual fingers in a given CEA are spaced so as to enter the CEA guide tubes in the corresponding fuel assembly. The fuel assembly structure is designed to guide the CEAs. This design results in relatively free movement of the CEAs.

ANO-2 has 81 CEAs that are used for reactivity control. The CEAs are divided into nine groups, of which two are Shutdown Groups designated Groups A and B, six are Regulating Groups designated Groups 1 through 6, and one group is designated as Group P. CEA 18 is in Shutdown Bank B. The shutdown groups are the first withdrawn during startup and the last inserted during a planned shutdown. On a reactor startup, Groups 1 through 5 must be withdrawn in a prescribed sequence and with the prescribed overlap. Groups 6 and P are the last groups to be withdrawn during reactor startup. During power operations, insertion of

Groups 1 through 5 and Groups A and B is prohibited, except to complete performance of the SR 4.1.3.1.2 CEA exercise test. Because CEA 18 is in Shutdown Group B, this CEA must remain fully withdrawn at all times when the reactor is critical, except during performance of SR 4.1.3.1.2.

2.2 Description/Operation of CEDM Control System (CEDMCS)

The CEDMCS performs the following functions:

- Add large amount of negative reactivity when the Reactor Trip Circuit Breakers are opened via commands from the Reactor Protection System Trip paths.
- Provide for rapid insertion of CEAs when a secondary plant load rejection occurs.
- Provide a stable and controlled approach to criticality during plant startup from Mode 3 to Mode 2.
- Provide for reactivity control at all power levels and Axial Shape Index (ASI) control at higher power levels (> 15%). The extent of CEA motion for ASI control varies over core life.
- Provide for "Cocked Rod" Protection during plant heatup and cooldown (Shutdown Groups A and B fully withdrawn to provide immediately large insertion of negative reactivity if needed).
- Permit exercise of each CEA as required by TS SR 4.1.3.1.2.

The CEDM is an electromechanical device that uses induced magnetic fields to operate a mechanism for moving a CEA. The pressure housings for the CEDMs are threaded onto nozzles on the Reactor Vessel head and seal welded. A hollow, grooved drive shaft extends through the drive mechanism to the top of the control element assembly. Latches in the drive unit engage the grooves on the CEA extension shaft and provide means for lifting, holding, and inserting the CEA. Coils mounted in a coil stack assembly slide over the mechanism pressure housing and rest upon a locating shoulder. These coils provide the magnetic flux that operates the mechanical parts of the drive within the pressure housing. Linear motion of these parts causes operation of latching devices, which translate the motion of the parts to the CEDM drive shaft. Holding and moving the CEA occurs when power is sequentially applied to the coils. Each mechanism has five electrical coils. Power to these coils is controlled by the CEDMCS. The coils and external electrical components are cooled by forced airflow from the CEDM cooling units.

The proper sequencing of each coil causes withdrawal and insertion of the CEA. A reactor trip is accomplished by rapid insertion of the CEAs when the CEDM coils are de-energized. When this happens, the latches are disengaged from the drive shaft and the CEAs fully insert into the core by means of gravity.

The coil designations from top (of stack) to bottom are as follows:

Lift Coil (LC)
Upper Gripper Coil (UGC)
Pull Down Coil (PDC)
Load Transfer Coil (LTC)
Lower Gripper Coil (LGC)

Withdrawal or insertion of CEAs is accomplished by applying programmed voltage levels, in the proper sequence, to the five CEDM coils. There are three possible states for each coil:

- High voltage (~ 140 ± 5 VDC) to quickly energize the coil,
- Low voltage (~ 40 ± 5 VDC) to maintain the coil energized, or
- Off

The initial condition of a CEA prior to receiving a motion command is the "holding" mode. In this mode the UGC is energized at low voltage engaging the Upper Gripper latch within the drive shaft. During normal plant operation when conditions do not require CEA movement, all 81 CEAs will be in the "holding" mode with the UGC energized at low voltage.

During performance of CEA maintenance activities, the subgroup containing the CEA on which the maintenance is to be performed is placed on a Hold Bus. The purpose of the Hold Bus is to allow maintenance to be performed on an individual subgroup without dropping the associated CEAs. This is accomplished by placing an alternate low voltage supply in parallel with, and downstream of, the normal low voltage supply. Once a subgroup has been placed on the Hold Bus, its normal power may be de-energized. The CEAs will remain in place due to the voltage applied to the UGCs; however, the associated CEAs cannot be inserted or withdrawn while on the Hold Bus. Only one subgroup can be assigned to the Hold Bus at a time. If a reactor trip signal is received while a subgroup is assigned to the Hold Bus, all CEAs within the subject subgroup, as well as the remaining CEAs, will insert into the core.

The CEDMCS is described in Section 7.2.1 of the ANO-2 SAR.

3.0 TECHNICAL ANALYSIS

During the October 2, 2014, Quarterly Exercise in accordance with TS SR 4.1.3.1.2, the CEA 18 UGC current trace indicated more "noise" than expected. The current draw was measured to be 6 amps (normal ~ 4 amps). CEA-18 was transferred to the LGC, de-energizing the UGC. This was considered an indication of UGC degradation (reference Condition Report (CR)-ANO-2-2014-2814). The UGC was added to outage 2R24 (fall 2015) and administrative controls established to only energize the subject UGC when necessary, specifically during the three quarterly CEA exercises remaining in operating Cycle 24.

The following CEA exercise performed in January 2015, indicated further degradation of the CEA 18 UGC with a measured current draw of 10 amps, even though the UGC had not been in service during the SR interval. Despite the progressive degradation, CEA 18 was exercised successfully. Note that CEA 18 is the only coil exhibiting this behavior. After exercising the CEA, the Automatic CEDM Timing Module (ACTM) automatically transferred CEA 18 to the LGC due to an abnormal voltage reading on the UGC. Currently, the LGC is energized as the "holding" coil for CEA 18 instead of the UGC, which is degrading.

The CEA drives are electromechanical devices that convert electrical energy into mechanical motion. The CEA coils provide the magnetic flux that operates the mechanical parts of the drive within the pressure housing. Linear motion of these parts causes operation of latching devices, which translate the motion of the gripper assembly to the CEDM drive shaft.

The primary failure modes of an inductor (coil) are:

- One or more winding shorts
- An open coil

Heating is the primary driver of both failure modes. The heating is primarily internal and largely a result of the coil being energized.

The majority of the failure modes are related to the coil dielectric or insulation breakdown. The shorted-winding condition is the most common cause of coil failure. It occurs when the insulation resistance, or dielectric, fails within a winding, allowing a secondary, or parasitic, current path. Although a single shorted turn in a winding may not have an immediate effect on a coil's performance, the point of dielectric failure becomes a source of additional heat. This localized heat buildup causes further insulation breakdown. Furthermore, the shorted turns reduce the overall circuit resistance resulting in additional current draw and additional heat generation (I^2R heating).

CEA-18 troubleshooting has indicated an increase in current which is believed to be caused by shorted turns in the coil winding. An open coil has not been observed for CEA-18. The possible causes of the shorted turns in the coil winding are as follows:

- Short term high current causing overheating and winding insulation break down.
- Thermal and age related degradation of the coil insulation.
- Excessive voltage resulting in insulation break down.
- Manufacture defect which results in localized heating.

The coil will burn open at an estimated 20 amps; however, the supply breaker will trip between 12-16 amps. The degrading material condition indicates a high probability of the supply breaker tripping after the coil is reenergized and subsequently exercised. Therefore, the CEA has a high potential of dropping into the core.

The increase in current draw between the two surveillance tests most likely indicates an initial turn-to-turn short followed by additional turn-to-turn faulting. These shorts most likely occurred during the exercise when the CEA is energized. When the CEDMCS selects a coil, it applies a high voltage of 140 VDC which insures gripper engagement, followed by application of a holding voltage of 40 VDC after the mechanical action takes place.

The turn-to-turn shorts indicate a degraded dielectric which is resulting in localized heating. The coil will further degrade with continued use or if energized. The degradation is not linear or predictable. The localized heating can result in further turn-to-turn shorts which will increase current draw, or will result in the coil burning open. Either condition has the high potential of causing the CEA to drop into the core.

Monitoring the health of the coil and predicting failure is not feasible. A simple ohm measurement is not possible due to the long electrical runs from the CEDMCS room to the reactor head, which along with EMI/RFI (electromagnetic and radio frequency interference) due to other operating equipment, result in induced currents on the coil leads. The induced currents and noise make simple ohm measurements inaccurate.

Another method used at ANO to verify coil resistance applies a known voltage to the coil. The coil is in series with a known value resistor. The measurement of the voltage drop across the resistor provides the means to calculate the coil resistance. This second method is not advisable due to apparent localized heating in the coil. Energizing the coil for the measurement will result in additional heating and further degradation or failure. Additionally, the lower resistance is a result of the failure and does not predict location or source of the internal heating. The probability of the coil burning open is equal to the probability of further turn-to-turn shorts; neither of which can be predicted reliably.

All UGCs were replaced in refueling outage 2R19 (March 2008). Further exercising of this CEA significantly increases the potential for CEA drop, which would result in a reactivity excursion and power reduction, and could lead to a shutdown of the reactor. Therefore, Entergy requests NRC approval to not perform the remaining two SR 4.1.3.1.2 CEA exercise tests that are due to be performed before repairs can be completed in the upcoming fall 2015 refueling outage 2R24. Coil replacement requires access atop the reactor vessel.

The purpose of SR 4.1.3.1.2 is to verity that the CEAs are moveable and trippable (i.e., otherwise free from mechanical binding). This is accomplished by moving each CEA in the Manual Individual Mode, i.e., only one CEA is moved at a time by the Control Room Operator. Instrument and Control technicians normally verify proper operation of the CEDM coils during performance of this test. The technician utilizes a digital recorder with storage/print capabilities, which plots the voltage and current supplied to each coil during a withdrawal or insertion sequence. These traces can be used during troubleshooting efforts to determine if the CEDMCS is energizing the CEA coils in the proper sequence and is applying the proper voltages for the optimum length of time. Successful movement of the CEAs indicates no mechanical binding exists.

As stated in Reference 1, the possibility of warped CEAs, which could result in mechanical binding, is minimal since the ANO-2 CEAs were replaced in 1995. In addition, the five finger design of the CEAs ensures relatively free movement. Because of the design of the CEDMCS, electrical problems will not prevent insertion of a CEA into the core when the reactor trip breakers are opened. However, mechanical failures, which would result in less than full insertion of a CEA upon reactor trip, could be significant, although are much less common and have not been noted during testing. ANO-2 has not experienced mechanical binding. As stated in Reference 1, only two documented instances of individual CEAs failing to insert fully when dropped had been previously recorded. In both cases, the CEA dropped to approximately 11 inches above the bottom of the core. The cause in each case was debris in the fuel assembly, not mechanical binding. SR 4.1.3.1.2 would not detect this condition, since the CEAs were trippable and moved freely in the upper portion of the core. No further occurrences of CEAs failing to fully insert have been identified since the Reference 1 request.

Reactivity Impact

Because CEA 18 is trippable and is expected to remain so, no additional reactivity considerations need to be taken into consideration. However, to further demonstrate the acceptability of eliminating performance of SR 4.1.3.1.2 for CEA 18 for the remainder of Cycle 24, the following reactivity information is provided.

The TS definition of Shutdown Margin (SDM) is:

> Shutdown Margin shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all control element assemblies are fully inserted except for the single assembly of highest reactivity worth which is assumed to be fully withdrawn.

TSs 3.1.1.1 (Modes 1 through 4) and 3.1.1.2 (Mode 5) specify that SDM shall be greater than or equal to that specified in the Core Operating Limits Report (COLR). The Cycle 24 COLR SDM operating limit is 5.0% Δk/k in Modes 1 through 5. Calculations were performed at various Effective Full Power Days (EFPDs) throughout the remainder of Cycle 24 operation, and Entergy has determined that a minimum SDM of 5.5142% Δk/k would exist following a reactor trip assuming both CEA 18 and the single CEA of highest reactivity worth fail to insert, well above the 5.0% Δk/k SDM requirement of the COLR. This value was calculated at End of Cycle conditions which were determined to bound operation through the remainder of Cycle 24. It should be noted that the preceding discussion does not reflect the response of the Control Room Operator; procedures require emergency boration of the Reactor Coolant System at a minimum rate of 40 gpm (gallons per minute) with 2500 ppm (parts per million) of borated water if one or more CEAs fail to fully insert into the core following a reactor trip. Reactivity control is of primary importance in accident mitigation and Operator training.

Based on the above, it can be shown analytically that SDM in excess of the COLR limit will be present at all times for the remaining portion of Cycle 24 if CEA 18 fails to insert into the core.

Other Changes – Administrative

During preparation of this license amendment request, Entergy identified that the footer of the affected TS page did not contain all of the previous amendment numbers relevant to TS Page 3/4 1-18. ANO-2 TS Amendment 173 (ML021560200, December 22, 1995) increased the CEA exercise test frequency to 92 days, although at the time this test (SR 4.1.3.1.2) was located on TS Page 3/4 1-19 (information was subsequently moved to the current page). ANO-2 TS Amendment 244 (ML021130826, April 24, 2002) involved a power uprate to the unit. This amendment was complex and, in part, relocated SR 4.1.3.1.2 from TS Page 3/4 1-19 to Page 3/4 1-18. The markups of Amendment 244 TS pages were submitted prior to Amendment 235 approval (Reference 1), which added the current SR 4.1.3.1.2 'Note' associated with CEA 43. Neither Amendment 173 nor 235 were included in the footer of TS Page 3/4 1-18 upon approval of TS Amendment 244. Therefore, for historical traceability, the aforementioned amendment numbers are being added back to the footer of TS Page 3/4 1-18.

4.0 REGULATORY ANALYSIS

4.1 No Significant Hazards Consideration Determination

Entergy Operations, Inc. (Entergy) has evaluated the proposed changes to the TS using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

Entergy proposes a change to a Note associated with Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) Surveillance Requirement (SR) 4.1.3.1.2 to eliminate the requirement to move Control Element Assembly (CEA) 18 for the remainder of the current fuel cycle, Cycle 24. Cycle 24 is currently scheduled to end September 20, 2015. The SR requires that each CEA not fully inserted in the core shall be determined to be operable by movement of at least five inches in any one direction at least once per 92 days. A non-technical change is also included to the footer of the affected TS page for historical purposes. Because this addition of references to previous TS amendments is administrative only, this change is not discussed under the three criteria below.

Basis for no significant hazards consideration determination: As required by 10 CFR 50.91(a), Entergy analysis of the issue of no significant hazards consideration is presented below:

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

   Response: No

   One function of the CEAs is to provide a means of rapid negative reactivity addition into the core. This occurs upon receipt of a signal from the Reactor Protection System. This function will continue to be accomplished with the approval of the proposed change. Typically, once per 92 days each CEA is moved at least five inches to ensure the CEA is free to move. CEA 18 remains trippable (free to move) as illustrated by the last performance of SR 4.1.3.1.2 in January 2015. However, due to abnormally high coil voltage and current measured on the CEA 18 Upper Gripper Coil (UGC), future exercising of the CEA could result in the CEA inadvertently inserting into the core, if the UGC were to fail during the exercise test. The mis-operation of a CEA, which includes a CEA drop event, is an abnormal occurrence and has been previously evaluated as part of the ANO-2 accident analysis. Inadvertent CEA insertion will result in a reactivity transient and power reduction, and could lead to a reactor shutdown if the CEA is deemed to be unrecoverable. The proposed change would minimize the potential for inadvertent insertion of CEA 18 into the core by maintaining the CEA in place using the Lower Gripper Coil (LGC), which is operating normally. The proposed change will not affect the CEAs ability to insert fully into the core upon receipt of a reactor trip signal.

   No modifications are proposed to the Reactor Protection System or associated Control Element Drive Mechanism Control System logic with regard to the ability of CEA 18 to remain available for immediate insertion. The accident mitigation features of the plant are not affected by the proposed amendment. Because CEA 18 remains trippable, no additional reactivity considerations need to be taken into consideration. Nevertheless, Entergy has evaluated the reactivity consequences associated with failure of CEA 18 to

insert upon a reactor trip in accordance with TS requirements for Shutdown Margin (SDM) and has determined that SDM requirements would be met should such an event occur at any time during the remainder of Cycle 24 operation.

Therefore, this 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

   CEA 18 remains trippable. The proposed change will not introduce any new design changes or systems that can prevent the CEA from perform its specified safety function. As discussed previously, CEA mis-operation has been previously evaluated in the ANO-2 accident analysis. Furthermore, SDM has been shown to remain within limits should an event occur at any time during the remainder of operating Cycle 24 such that CEA 18 fails to insert into the core upon receipt of a reactor trip signal.

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

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

   Response: No

   SR 4.1.3.1.2 is intended to verify CEAs are free to move (i.e., not mechanically bound). The physical and electrical design of the CEAs, and past operating experience, provides high confidence that CEAs remain trippable whether or not exercised during each SR interval. Eliminating further exercising of CEA 18 for the remainder of Cycle 24 operation does not directly relate to the potential for CEA binding to occur. No mechanical binding has been previously experienced at ANO-2. CEA 18 is contained within a Shutdown CEA Group and is not used for reactivity control during power maneuvers (the CEA must remain fully withdrawn at all times when the reactor is critical). In addition, Entergy has concluded that required SDM will be maintained should CEA 18 fail to insert following a reactor trip at any point during the remainder of Cycle 24 operation.

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

Based upon the reasoning presented above, Entergy concludes that the requested change involves no significant hazards consideration, as set forth in 10 CFR 50.92(c), "Issuance of Amendment."

4.2 Applicable Regulatory Requirements/Criteria

10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Plant," requires, in part, safety system designs with adequate margin to ensure specified acceptable fuel design limits are not exceeded. The applicable General Design Criteria (GDC) for CEA design requirements included the following:

GDC-4, "Environmental and Dynamic Effects Design Bases," requires that systems, structures and components (SSCs) important to safety be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents;

GDC-10, "Reactor Design," requires that SSCs important to safety be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents;

GDC-23, "Protection System Failure Modes," requires that the protection system be designed to fail into a safe state;

GDC-25, "Protection System Requirements for Reactivity Control Malfunctions," requires that the protection system be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems;

GDC-26, "Reactivity Control System Redundancy and Capability," insofar as it requires that two independent reactivity control systems be provided, with both systems capable of reliably controlling the rate of reactivity changes resulting from planned, normal power changes;

GDC-27, "Combined Reactivity Control Systems Capability," requires that the reactivity control systems be designed to have a combined capability, in conjunction with poison addition by the emergency core cooling system, of reliably controlling reactivity changes under postulated accident conditions, with appropriate margin for stuck rods. to assure the capability to cool the core is maintained:

GDC-28, "Reactivity Limits," requires that the reactivity control systems be designed to assure that the effects of postulated reactivity accidents can neither result In damage to the reactor coolant pressure boundary greater than limited local yielding, nor disturb the core, Its support structures, or other reactor vessel Internals so as to significantly impair the capability to cool the core; and

GDC-29, "Protection Against Anticipated Operational Occurrences," (AOOs) requires that the protection and reactivity control systems be designed to assure an extremely high probability of accomplishing their safety functions in event of AOOs.

The amendment request has concluded that CEA 18 is not mechanically bound and its failure to insert would not result in inadequate SDM should both CEA 18 and the CEA having the highest reactivity worth fail to insert following a reactor trip. Delaying SR performance for approximately five months until the UGC can be replaced has no impact on the CEA's ability to move. Nevertheless, because required SDM will continue to be met given the aforementioned scenario (two CEAs remain fully withdrawn post-trip), no fuel design limits will be challenged as a result of this amendment request should it be approved. In addition, the amendment request has no impact on the second reactivity control system at ANO-2 (boration). Therefore, compliance with the aforementioned regulation is maintained.

4.3 Precedence

This amendment and exemption request is similar to that approved for ANO-2 due to degradation of CEA 43 in 2001 (Reference 1).

5.0 ENVIRONMENTAL CONSIDERATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, and would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change 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 change.

6.0 REFERENCES

1. NRC Safety Evaluation Report dated October 22, 2001, "Arkansas Nuclear One, Unit 2 – Issuance of Amendment Re: Allowance to Eliminate Movement of Control Element Assembly #43 for the Remainder of Cycle 15 (TAC No. MB2779) (2CNA100104) (ML012960550)

Attachment 2 to

2CAN021501

Proposed Technical Specification Change (mark-up)

ACTION: (Continued)

e. With more than one CEA misaligned from any other CEA in its group by more than 7 inches (indicated position), be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each CEA shall be determined to be within 7 inches (indicated position) of all other CEAs in its group at least once per 12 hours.

4.1.3.1.2 Each CEA not fully inserted in the core shall be determined to be OPERABLE by movement of at least 5 inches in any one direction at least once per 92 days. (Note 1)

Note 1 - Movement of CEA #1843 is not required for the remainder of Cycle 2415. If an outage of sufficient duration occurs prior to the end of Cycle 2415, maintenance activities will be performed to restore the CEA.

Attachment 3 to

2CAN021501

Revised (clean) Technical Specification Page

ACTION: (Continued)

e. With more than one CEA misaligned from any other CEA in its group by more than 7 inches (indicated position), be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each CEA shall be determined to be within 7 inches (indicated position) of all other CEAs in its group at least once per 12 hours.

4.1.3.1.2 Each CEA not fully inserted in the core shall be determined to be OPERABLE by movement of at least 5 inches in any one direction at least once per 92 days. (Note 1)

Note 1 - Movement of CEA 18 is not required for the remainder of Cycle 24. If an outage of sufficient duration occurs prior to the end of Cycle 24, maintenance activities will be performed to restore the CEA.